



Element Attribute Documentation

MSRSW V2.3.0 (single language)

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Abstract

This document describes MSRSW-230 including the extensions for the architecture driven design of engine control units.

It is intended to serve as a DTD reference and a global description of semantics. This document will be accompanied by a explicit use case description which specifies the particular usage of the elements and the domain specific aspects of the semantics in greater detail.



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Introduction

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a About this document

a.1 Purpose of this document

This document describes MSRSW-230 including the extensions for the architecture driven design of engine control units.

It is intended to serve as a DTD reference and a global description of semantics. This document will be accompanied by a explicit use case description which specifies the particular usage of the elements and the domain specific aspects of the semantics in greater detail.

It is a working document which is delivered as is and which is constantly updated and enhanced. Not all elements are described up to now. But the overall structure can be recognized.

a.2 Intended audience

This document is intended for process developers and tool developers.



1 Standard Attributes

Description

These attribute are so called Standard Attributes since they occur on every element within the DTD. They will only be described here to save document space.

Example

Formal Description

Name	Type	Values / Default	Notes
[S] (implied)	cdata		Signature under which the calculated signature belonging to the contents of an element, can be stored, e.g. CRC.
[SI] (implied)	cdata		Description of the semantic meaning of an element.
[SYSCOND] (implied)	cdata		Makes it possible to differ between a view on a instance and a content switch based on a system constant. For more details how this attribute ist to be filled, please refer to Chapter 2.630 SW-SYSCOND p.511
[T] (implied)	cdata		Time stamp specification
[VIEW] (implied)	cdata		Arbitrary term for realization of a conceptual view. In this way, text components can be inserted or masked out in editor, or when a document is generated.

2 Elemente der MSRSW DTD

2.1 ABS

Beschreibung

Use **<ABS>** to enter the absolute values of a parameter in a parameter table.

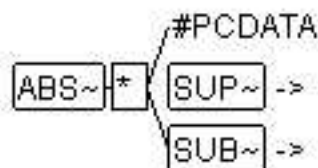
Beispiel

```
<ABS>5</ABS>
```

Formale Beschreibung

Hat als Kontext: [PRM-CHAR p. 178](#)

Ist Kontext für: Text, [SUP p. 221](#), [SUB p. 220](#)



ABS.PNG

2.2 ACCEPTANCE-COND

Beschreibung

Use **<ACCEPTANCE-COND>**, to enter the **conditions of approval** . The conditions can be entered in report style in the element **<NCOI-1>**.

Beispiel

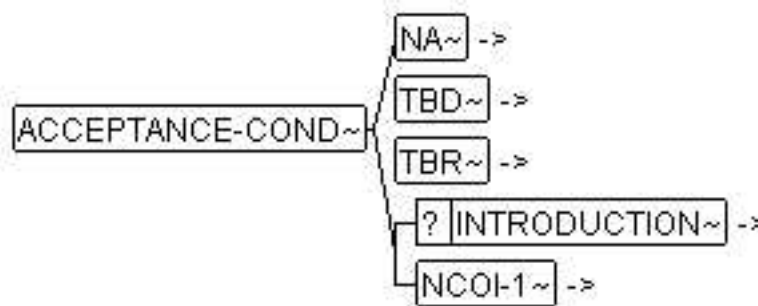
This sample uses has an introduction which is followed by a **<NCOI-1>** containing descriptive chapters.

```
<ACCEPTANCE-COND>
  <INTRODUCTION>
    <P>Introduction to the conditions...</P>
  </INTRODUCTION>
  <NCOI-1>
    <CHAPTER>
      <LONG-NAME>Overview</LONG-NAME>
      <P>Text ...</P>
    </CHAPTER>
    <CHAPTER>
      <LONG-NAME>Deliveries</LONG-NAME>
      <P>Text ...</P>
    </CHAPTER>
  </NCOI-1>
</ACCEPTANCE-COND>
```

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA p. 111](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



ACCEPTANCE-COND.PNG

2.3 ADD-DESIGN-DOC

Beschreibung

The opportunity to describe and reference *additional development documents* in the form of continuous text.

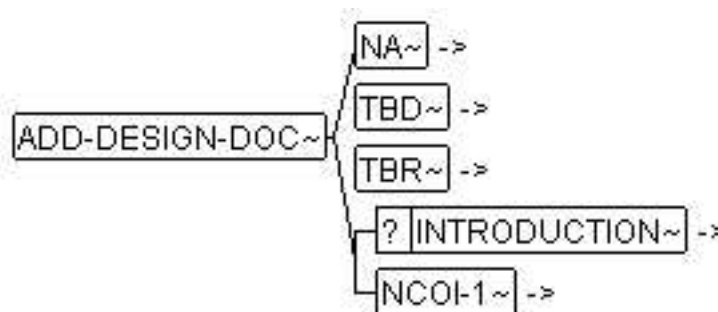
Use `<ADD-DESIGN-DOC>`, to insert **additional development documents** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



ADD-DESIGN-DOC.PNG

2.4 ADD-INFO

Beschreibung

`<ADD-INFO>` gives the opportunity to provide *additional information* to a structure in the form of continuous text. The element is a subset of a `<CHAPTER>` element which enables a several ways of expressions.

Beispiel

This sample shows a typedefinition with an `<ADD-INFO>` at the end showing the desired definition in C syntax.

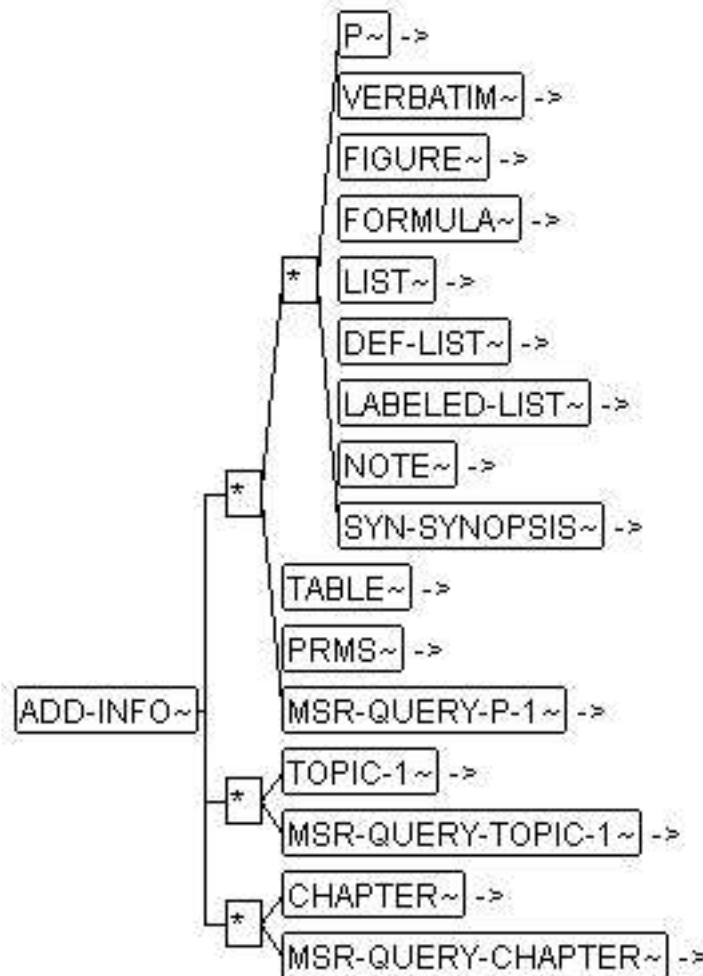


```
<SW-CLASS>
<LONG-NAME>type of pointer of pointer to a constant object of one_level_t</LONG-NAME>
<SHORT-NAME>pointer_pointer_t</SHORT-NAME>
<CATEGORY>SIMPLE_TYPEDEF</CATEGORY>
<SW-DATA-DEF-PROPS>
  <SW-POINTER>
    <SW-DATA-DEF-PROPS>
      <SW-POINTER>
        <SW-DATA-DEF-PROPS>
          <SW-CLASS-REF>one_level_t</SW-CLASS-REF>
          <SW-IMPL-POLICY>STANDARD_CONST</SW-IMPL-POLICY>
        </SW-DATA-DEF-PROPS>
      </SW-POINTER>
    </SW-DATA-DEF-PROPS>
  </SW-POINTER>
</SW-DATA-DEF-PROPS>
<ADD-INFO>
  <VERBATIM>typedef const one_level_t ** pointer_pointer_t;</VERBATIM>
</ADD-INFO>
</SW-CLASS>
```

Formale Beschreibung

Hat als Kontext: [REQUIREMENT p. 190](#), [SW-CALIBRATION-METHOD p. 257](#), [SW-CALIBRATION-METHOD p. 258](#), [SW-CALPRM p. 260](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#), [SW-COLLECTION-SPEC p. 327](#), [SW-COMPONENT-SPEC p. 330](#), [SW-CPU-SPEC p. 352](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-DATA-DICTIONARY-SPEC p. 372](#), [SW-FEATURE p. 386](#), [SW-INSTANCE-SPEC p. 427](#), [SW-OPER-MODE p. 470](#), [SW-SCHEDULING-SPEC p. 499](#), [SW-SERVICE p. 500](#), [SW-SERVICE-PROTOTYPE p. 505](#), [SW-TASK p. 531](#), [SW-TASK-SPEC p. 538](#), [SW-UNIT p. 545](#), [SW-USER-RIGHT-SPEC p. 559](#), [SW-VARIABLE p. 563](#), [SW-VARIABLE-PROTOTYPE p. 568](#), [SW-VCD-SPEC p. 583](#)

Ist Kontext für: [P p. 172](#), [VERBATIM p. 626](#), [FIGURE p. 95](#), [FORMULA p. 100](#), [LIST p. 133](#), [DEF-LIST p. 81](#), [LABELED-LIST p. 130](#), [NOTE p. 166](#), [SYN-SYNOPSIS p. 589](#), [TABLE p. 592](#), [PRMS p. 181](#), [MSR-QUERY-P-1 p. 147](#), [TOPIC-1 p. 610](#), [MSR-QUERY-TOPIC-1 p. 153](#), [CHAPTER p. 44](#), [MSR-QUERY-CHAPTER p. 146](#)



ADD-INFO.PNG

2.5 ADD-INFO-5

Beschreibung

<ADD-INFO-5> has the same purpose as the <ADD-INFO> element and gives the opportunity to provide *additional information* to a structure in the form of continuous text. The only difference is that <ADD-INFO-5> has a limited set of elements. The information can only be entered in one level since no subchapters or topics are available.

Beispiel

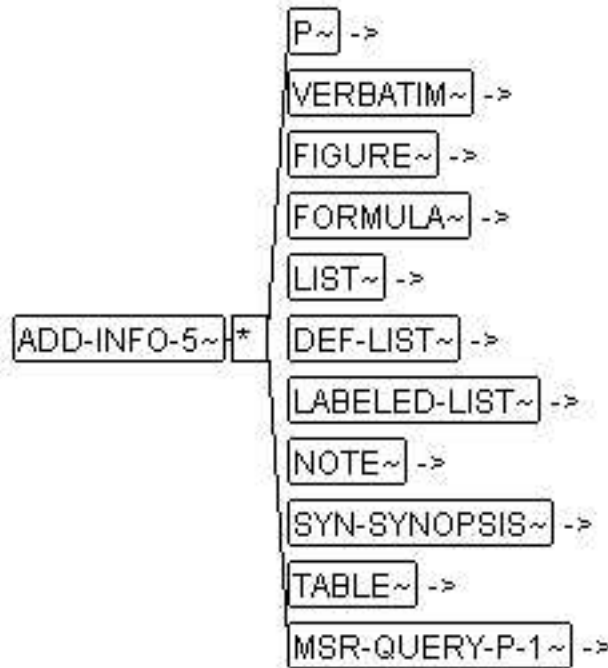
This sample show how some information has been added to describe a Service Argument.

```
<SW-SERVICE-ARG>
  <LONG-NAME>Temp Input Value</LONG-NAME>
  <SHORT-NAME>gTemp</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-BASE-TYPE-REF>real32</SW-BASE-TYPE-REF>
  </SW-DATA-DEF-PROPS>
  <ADD-INFO-5>
    <P>It might seem unnecessary to take the gTemp into account, but....</P>
  </ADD-INFO-5>
</SW-SERVICE-ARG>
```


Formale Beschreibung

Hat als Kontext: [CONF-ITEM p. 59](#), [CONF-PRO-VALUE p. 63](#), [SW-SERVICE-ARG p. 502](#), [SW-SERVICE-RETURN p. 509](#), [SYN-ARGUMENT p. 583](#), [SYN-EXAMPLE p. 585](#), [SYN-RETURN-VALUE p. 587](#), [SYN-SEMANTICS p. 588](#)

Ist Kontext für: [P p. 172](#), [VERBATIM p. 626](#), [FIGURE p. 95](#), [FORMULA p. 100](#), [LIST p. 133](#), [DEF-LIST p. 81](#), [LABELED-LIST p. 130](#), [NOTE p. 166](#), [SYN-SYNOPSIS p. 589](#), [TABLE p. 592](#), [MSR-QUERY-P-1 p. 147](#)



ADD-INFO-5.PNG

2.6 ADD-SPEC

Beschreibung

This element provides you with the opportunity to add *additional specifications*. The specification can have an introduction and an arbitrary amount of underlying chapters. The chapters are wrapped by the `<NCOI-1>` element.

Beispiel

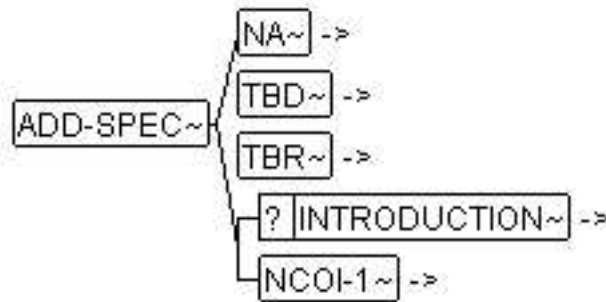
```
<ADD-SPEC>
  <INTRODUCTION>
    <P>This component must provide....</P>
  </INTRODUCTION>
  <NCOI-1>
    <CHAPTER>
      <LONG-NAME>Overview</LONG-NAME>
      <P>.....</P>
    </CHAPTER>
  </NCOI-1>
</ADD-SPEC>
```

Formale Beschreibung

Hat als Kontext: [CONTRACT-ASPECTS p. 73](#), [DATA-REQUIREMENTS p. 76](#), [DESIGN-REQUIREMENTS p. 84](#), [FAILURE-MANAGEMENT p. 93](#), [FUNCTIONAL-REQUIREMENTS p. 108](#), [GENERAL-HARDWARE p. 109](#), [GENERAL-INTERFACES p. 109](#),

[GENERAL-PRODUCT-DATA-1](#) p. 110, [GENERAL-PROJECT-DATA](#) p. 111, [GENERAL-REQUIREMENTS](#) p. 113, [GENERAL-SOFTWARE](#) p. 114, [SW-ARCHITECTURE](#) p. 237, [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



ADD-SPEC.PNG

2.7 ADDRESS

Beschreibung

Use **<ADDRESS>** , to enter the street name of the company address, e.g. where a project participant is located. One line can be entered since all carriage returns typically are ignored.

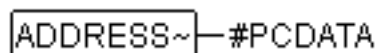
Beispiel

`<ADDRESS>Quilt Steet 43</ADDRESS>`

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text



ADDRESS.PNG

2.8 ADMIN-DATA

Beschreibung

<ADMIN-DATA> can be used to set administrative information for an element. This administration information is to be treated as metadata such as revision id or state of the file. There are basically four kinds of metadata

- The language and/or used languages.
- Revision information covering e.g. revision number, state, release date, changes. Note that this information can be given in general as well as related to a particular company.
- Document metadata specific for a company
- Formatting controls that can affect layouts for example.
- Revision information for the element.



Beispiel

This sample shows how the language and some revision information has been defined for an element.

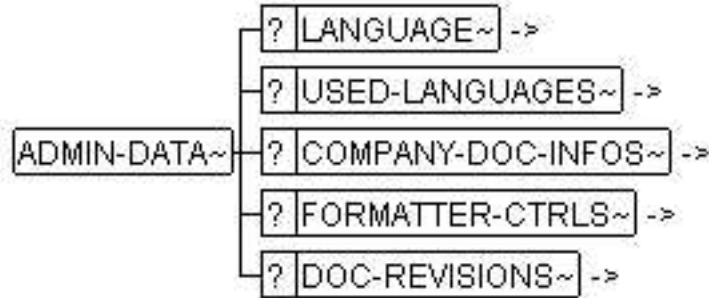
```
<ADMIN-DATA>
  <LANGUAGE>en</LANGUAGE>
  <DOC-REVISIONS>
    <DOC-REVISION>
      <REVISION-LABEL>2</REVISION-LABEL>
      <STATE>review-candidate</STATE>
      <TEAM-MEMBER-REF ID-REF="w1">W1</TEAM-MEMBER-REF>
      <DATE>15.8.2001</DATE>
      <MODIFICATIONS>
        <MODIFICATION>
          <CHANGE>fixed typos</CHANGE>
          <REASON>typos were found in the internal review</REASON>
        </MODIFICATION>
      </MODIFICATIONS>
    </DOC-REVISION>
    <DOC-REVISION>
      <REVISION-LABEL>1</REVISION-LABEL>
      <STATE>initial draft</STATE>
      <TEAM-MEMBER-REF ID-REF="w1">W1</TEAM-MEMBER-REF>
      <DATE>12.8.2001</DATE>
      <MODIFICATIONS>
        <MODIFICATION>
          <CHANGE>Created the document</CHANGE>
          <REASON>According to video-conference held at Jul2001</REASON>
        </MODIFICATION>
      </MODIFICATIONS>
    </DOC-REVISION>
  </DOC-REVISIONS>
</ADMIN-DATA>
```

Formale Beschreibung

Hat als Kontext: [CHAPTER](#) p. 44, [CONF-ITEMS](#) p. 62, [CONF-RULE](#) p. 64, [CONF-RULES](#) p. 68, [FUNCTIONAL-REQUIREMENTS](#) p. 108, [GENERAL-PRODUCT-DATA-1](#) p. 110, [GENERAL-PROJECT-DATA](#) p. 111, [GENERAL-REQUIREMENTS](#) p. 113, [MSRSW](#) p. 155, [REQUIREMENT](#) p. 190, [REQUIREMENT-SPEC](#) p. 195, [SW-ADDR-METHOD](#) p. 228, [SW-ADDR-METHODS](#) p. 233, [SW-ARCHITECTURE](#) p. 237, [SW-AXIS-TYPE](#) p. 245, [SW-AXIS-TYPES](#) p. 249, [SW-BASE-TYPE](#) p. 250, [SW-BASE-TYPES](#) p. 255, [SW-CALIBRATION-METHOD](#) p. 257, [SW-CALIBRATION-METHOD-SPEC](#) p. 258, [SW-CALPRM](#) p. 260, [SW-CALPRM-PROTOTYPE](#) p. 266, [SW-CALPRMS](#) p. 275, [SW-CLASS](#) p. 276, [SW-CLASS-ATTR-IMPL](#) p. 294, [SW-CLASS-INSTANCE](#) p. 300, [SW-CLASS-INSTANCES](#) p. 304, [SW-CLASS-PROTOTYPE](#) p. 305, [SW-CLASSES](#) p. 311, [SW-CODE-SYNTAX](#) p. 311, [SW-CODE-SYNTAXES](#) p. 317, [SW-COLLECTION](#) p. 318, [SW-COLLECTION-SPEC](#) p. 327, [SW-COMPONENT-SPEC](#) p. 330, [SW-COMPU-METHOD](#) p. 336, [SW-COMPU-METHODS](#) p. 341, [SW-CPU-MEM-SEG](#) p. 347, [SW-CPU-SPEC](#) p. 352, [SW-DATA-CONSTR](#) p. 361, [SW-DATA-CONSTRS](#) p. 366, [SW-DATA-DICTIONARY](#) p. 372, [SW-EVENT-SPEC](#) p. 384, [SW-FEATURE](#) p. 386, [SW-FEATURE-INTERFACE](#) p. 399, [SW-GENERIC-AXIS-PARAM-TYPE](#) p. 415, [SW-GLOSSARY](#) p. 419, [SW-INSTANCE](#) p. 420, [SW-INSTANCE-PROPS-VARIANT](#) p. 423, [SW-INSTANCE-SPEC](#) p. 427, [SW-INSTANCE-TREE](#) p. 428, [SW-MC-BASE-TYPE](#) p. 440, [SW-MC-COMMUNICATION-SPEC](#) p. 445, [SW-MC-FRAME](#) p. 447, [SW-MC-INTERFACE](#) p. 451, [SW-MC-INTERFACE-IMPL](#) p. 453, [SW-MC-INTERFACE-SOURCE](#) p. 456, [SW-MC-INTERFACE-SPEC](#) p. 460, [SW-OPER-MODE-SPEC](#) p. 472, [SW-RECORD-LAYOUT](#) p. 476, [SW-RECORD-LAYOUTS](#) p. 496, [SW-SCHEDULING-SPEC](#) p. 499, [SW-SERVICE](#) p. 500, [SW-SERVICE-PROTOTYPE](#) p. 505, [SW-SERVICES](#) p. 510, [SW-SYSTEM](#) p. 517, [SW-SYSTEMCONST](#) p. 521, [SW-SYSTEMCONSTS](#) p. 530, [SW-TASK](#) p. 531, [SW-TASK-SPEC](#) p. 538, [SW-TEMPLATE](#) p. 539, [SW-TEMPLATES](#) p. 543, [SW-UNIT](#) p. 545, [SW-UNITS](#) p. 550, [SW-USER-ACCESS-CASE](#) p. 551, [SW-USER-GROUP](#) p. 555,

[SW-USER-RIGHT-SPEC p. 559](#), [SW-VARIABLE p. 563](#), [SW-VARIABLE-PROTOTYPE p. 568](#), [SW-VARIABLES p. 575](#), [SW-VCD-CRITERION p. 577](#), [SW-VCD-SPEC p. 583](#)

Ist Kontext für: [LANGUAGE p. 131](#), [USED-LANGUAGES p. 617](#), [COMPANY-DOC-INFOS p. 54](#), [FORMATTER-CTRLS p. 100](#), [DOC-REVISIONS p. 88](#)



ADMIN-DATA.PNG

2.9

ANNOTATION

Beschreibung

Textual comments are stored in this element, which refer to the object that is to be described. These are intended for use during the development process, to transfer information from one stage to the next. In this way, a specific note can be passed on from the function development, for instance, to the calibration phase.

A comment consists of:

- Heading (**<LABEL>**), clearly indicating the comments
- Origin of the comment: e.g. a tool or a process phase (**<ANNOTATION-ORIGIN>**)
- the comment itself (text) (**<ANNOTATION-TEXT>**)

Beispiel

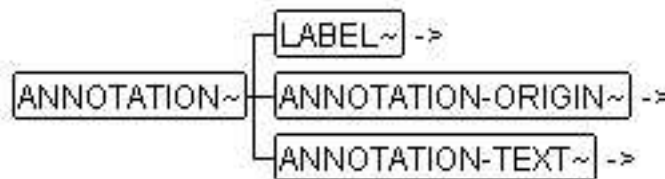
```

<ANNOTATION>
  <LABEL>Todo</LABEL>
  <ANNOTATION-ORIGIN>Brainstorming</ANNOTATION-ORIGIN>
  <ANNOTATION-TEXT>
    <P>Check this with the developer.</P>
  </ANNOTATION-TEXT>
</ANNOTATION>
  
```

Formale Beschreibung

Hat als Kontext: [ANNOTATIONS p. 34](#), [SW-COLLECTION p. 318](#)

Ist Kontext für: [LABEL p. 128](#), [ANNOTATION-ORIGIN p. 33](#), [ANNOTATION-TEXT p. 33](#)



ANNOTATION.PNG

2.10 ANNOTATION-ORIGIN

Beschreibung

This element identifies the origin of a comment, which may be passed on through various process phases for instance.

Beispiel

```
<ANNOTATION>
  <LABEL>Do not change this</LABEL>
  <ANNOTATION-ORIGIN>funcdev</ANNOTATION-ORIGIN>
  <ANNOTATION-TEXT>
    <P>This feature should not be changed, even if the customer
      requests it. You should tell him that it risks serious trouble.</P>
  </ANNOTATION-TEXT>
</ANNOTATION>
```

Formale Beschreibung

Hat als Kontext: [ANNOTATION](#) p. 32

Ist Kontext für: Text

ANNOTATION-ORIGIN~ #PCDATA

ANNOTATION-ORIGIN.PNG

2.11 ANNOTATION-TEXT

Beschreibung

This element contains paragraphs <P> or <VERBATIM> for specifying a textual comment in an <ANNOTATION> .

Beispiel

Please refer to [ANNOTATION](#) p. 32 for a sample.

Formale Beschreibung

Hat als Kontext: [ANNOTATION](#) p. 32

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626

ANNOTATION-TEXT~ * { P~ -> VERBATIM~ -> }

ANNOTATION-TEXT.PNG

2.12 ANNOTATIONS

Beschreibung

Container-Element for <ANNOTATION> , please refer to [ANNOTATION](#) p. 32 for more information.

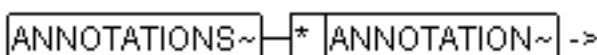
Beispiel

Please refer to [ANNOTATION p. 32](#) for samples.

Formale Beschreibung

Hat als Kontext: [SW-CALPRM p. 260](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-FEATURE p. 386](#), [SW-INSTANCE-PROPS-VARIANT p. 423](#), [SW-SERVICE-PROTOTYPE p. 505](#), [SW-VARIABLE p. 563](#), [SW-VARIABLE-PROTOTYPE p. 568](#)

Ist Kontext für: [ANNOTATION p. 32](#)



ANNOTATIONS.PNG

2.13 AREA

Beschreibung

This element specifies a region in an image map. Image maps enable authors to specify regions in an object (e.g. a graphic) and to assign a specific activity to each region (e.g. load a document, launch a program etc.).

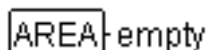
Beispiel

```
<AREA SHAPE="RECT" COORDS="63,28,99,46" HREF="msrrep-id:EADOC-SUP"/>
```

Formale Beschreibung

Hat als Kontext: [MAP p. 137](#)

Hat keinen Inhalt.



AREA.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[SHAPE] (default)	namedtokengroup	<ul style="list-style-type: none"> RECT CIRCLE POLY DEFAULT 	The interpretation of the coordinates [COORDS] is controlled by the value of [SHAPE].

Attribut	Typ	Wertebereich	Anmerkungen
[ACCESSKEY] (implied)	cdata		This attribute assigns an access key to an element. An access key is an individual character (e.g. "B") within the document character range. If an access key with an element assigned to it is pressed, the element comes into focus. The activity performed when an element comes into focus, is dependent on the element itself.
[ALT] (implied)	cdata		This attribute specifies the text to be inserted as an alternative to illustrations, shapes or applets, where these cannot be displayed by user agents.
[CLASS] (implied)	cdata		Blank separated list of classes
[COORDS] (implied)	cdata		This attribute specifies the position and shape on the screen. The number of values and their order depend on the geometrical figure defined. Possible combinations are:
[HREF] (implied)	cdata		This attribute specifies the memory location of a web resource. It is therefore able to specify a link between the current element and the target element.
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[NOHREF] (implied)	namedtokengroup	• NOHREF	If this attribute is set, <AREA> has no associated link.
[ONBLUR] (implied)	cdata		The ONBLUR-Event occurs, when focus is switched away from an element. A script can be stored in this attribute to be performed in the Event.



Attribut	Typ	Wertebereich	Anmerkungen
[ONCLICK] (implied)	cdata		The ONCLICK-Event occurs, if the current element is clicked-on. A script can be stored in this attribute to be performed in the Event.
[ONDBLCLICK] (implied)	cdata		The ONDBLCLICK-Event occurs, if the current Event is clicked-on. A script can be stored in this attribute to be performed in the Event.
[ONFOCUS] (implied)	cdata		The ONFOCUS-Event occurs, if an element comes into focus (e.g. through navigation using the tab button). A script can be stored in this attribute to be performed in the Event.
[ONKEYDOWN] (implied)	cdata		The ONKEYDOWN-Event occurs, if a button on the current element is pressed down. A script can be stored in this attribute to be performed in the Event.
[ONKEYPRESS] (implied)	cdata		The ONKEYPRESS-Event occurs, if a button on the current element is pressed down and released. A script can be stored in this attribute to be performed in the Event.
[ONKEYUP] (implied)	cdata		The ONKEYUP-Event occurs, if a button on the current element is released. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEDOWN] (implied)	cdata		The ONMOUSEDOWN-Event occurs, if the mouse button used for clicking is held down on the current element. A script can be stored in this attribute to be performed in the Event.



Attribut	Typ	Wertebereich	Anmerkungen
[ONMOUSEMOVE] (implied)	cdata		The ONMOUSEMOVE-Event occurs, if the mouse pointer is moved on the current element (i.e. it is located on the current element). A script can be stored in this attribute to be performed in the Event.
[ONMOUSEOUT] (implied)	cdata		The ONMOUSEOUT-Event occurs, if the mouse pointer is moved from the current element. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEOVER] (implied)	cdata		The ONMOUSEOVER-Event occurs, if the mouse pointer is moved to the current element from another location outside it. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEUP] (implied)	cdata		The ONMOUSEUP-Event occurs if the mouse button used for clicking is released on the current element. A script can be stored in this attribute to be performed in the Event.
[STYLE] (implied)	cdata		Information on the associated style
[TABINDEX] (implied)	cdata		This attribute specifies the position of the current element in tabbing-order for the corresponding document. The value must lie between 0 and 32767. The Tabbing Order defines the sequence in which elements are focused on, when the user navigates using the keyboard.

Attribut	Typ	Wertebereich	Anmerkungen
[TITLE] (implied)	cdata		Title information of the <AREA> -element

2.14 AVAILABILITY

Beschreibung

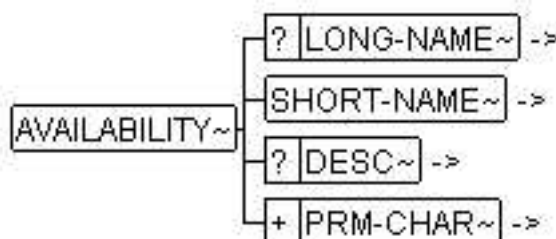
Use <AVAILABILITY>, to enter **availability** .

Beispiel

Formale Beschreibung

Hat als Kontext: [USEFUL-LIFE-PRMS](#) p. 618

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [PRM-CHAR](#) p. 178



AVAILABILITY.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.15 BINARY-COMPATIBILITY

Beschreibung

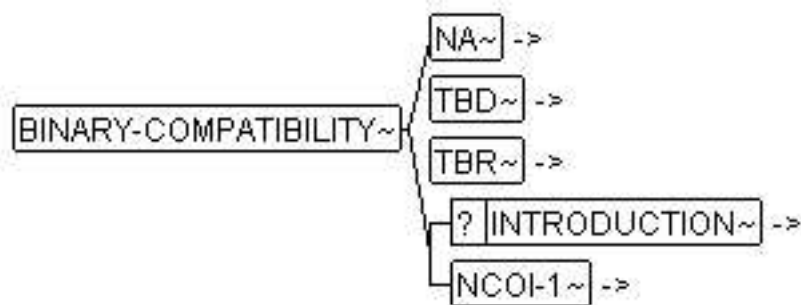
Use <**BINARY-COMPATIBILITY**>, to enter **binary compatibility** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-SOFTWARE](#) p. 114

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



BINARY-COMPATIBILITY.PNG

2.16 BIT-POSITION

Beschreibung

This element is used by a Variable that actually is a part of an other Variable called Host Variable. The BIT-POSITION points out the starting point of the Variable in the Host Variable.

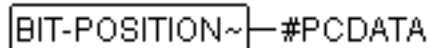
Beispiel

```
<BIT-POSITION>4</BIT-POSITION>
```

Formale Beschreibung

Hat als Kontext: [SW-BIT-REPRESENTATION](#) p. 255

Ist Kontext für: Text



```
BIT-POSITION~ — #PCDATA
```

BIT-POSITION.PNG

2.17 BR

Beschreibung

This element is the same as function here as in a HTML document i.e. it forces a line break.

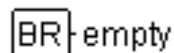
Beispiel

```
<P>The first row<BR/>the second row</P>
```

Formale Beschreibung

Hat als Kontext: [P](#) p. 172, [TBR](#) p. 597, [VERBATIM](#) p. 626

Hat keinen Inhalt.



```
BR — empty
```

BR.PNG

2.18 BYTE-ORDER

Beschreibung

This element specifies the byte order of the parent element. The byte order is defined with the attribute **[TYPE]**. Possible values are:

- MOST-SIGNIFICANT-BYTE-FIRST
- MOST-SIGNIFICANT-BYTE-LAST

Beispiel

```
<BYTE-ORDER TYPE="MOST-SIGNIFICANT-BYTE-FIRST"/>
```

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE p. 250](#), [SW-CPU-SPEC p. 352](#), [SW-MC-BASE-TYPE p. 440](#)

Ist Kontext für: Text

BYTE-ORDER~—#PCDATA

BYTE-ORDER.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (required)	namedtokengroup	<ul style="list-style-type: none"> MOST-SIGNIFICANT-BYTE-FIRST MOST-SIGNIFICANT-BYTE-LAST 	

2.19

C-CODE

Beschreibung

Use <**C-CODE**> to insert a formula defined as C-Code.

Beispiel

Formale Beschreibung

Hat als Kontext: [FORMULA p. 100](#)

Ist Kontext für: Text

C-CODE~—#PCDATA

C-CODE.PNG

2.20

C-IDENTIFIER

Beschreibung

This element enables the insertion of a conversion formula identifier in tabular form, in accordance with the programming language, C. This means that the mapping of conversion formulae in C-enumerators can be supported.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE p. 343](#)

Ist Kontext für: Text

C-IDENTIFIER~|#PCDATA

C-IDENTIFIER.PNG

2.21 CALIBRATION

Beschreibung

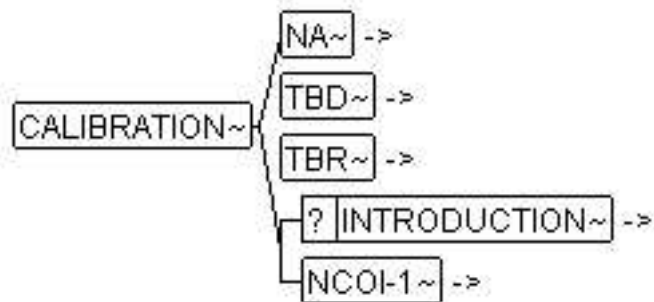
Use **<CALIBRATION>**, to insert commands for **calibration** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



CALIBRATION.PNG

2.22 CATEGORY

Beschreibung

This element assigns a category to the parent element. The category can be used by a semantic checker in post-processes to ensure that the parent object is defined correctly i.e. has the right number of elements for example.

Beispiel

This example shows how **<CATEGORY>** is used to qualify a calibration parameter as a map. Further processing could now establish whether two axes also has to be specified.

```

<SW-CALPRM>
  <SHORT-NAME>KF_XYZ</SHORT-NAME>
  <CATEGORY>MAP</CATEGORY>
  ...
</SW-CALPRM>
  
```

Formale Beschreibung

Hat als Kontext: [CONF-ITEM p. 59](#), [CONF-RULE p. 64](#), [MSRSW p. 155](#), [REQUIREMENT p. 190](#), [SW-ADDR-METHOD p. 228](#), [SW-AXIS-TYPE p. 245](#), [SW-BASE-TYPE p. 250](#), [SW-CALIBRATION-METHOD p. 257](#), [SW-CALPRM p. 260](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-ATTR-IMPL](#)

p. 294, SW-CLASS-INSTANCE p. 300, SW-CLASS-PROTOTYPE p. 305,
SW-CODE-SYNTAX p. 311, SW-COLLECTION p. 318, SW-COMPU-METHOD
p. 336, SW-CPU-MEM-SEG p. 347, SW-DATA-CONSTR p. 361, SW-EVENT
p. 377, SW-EVENT-SOURCE p. 382, SW-FEATURE p. 386, SW-FEATURE-INTERFACE
p. 399, SW-FEATURE-VARIANT p. 410, SW-GENERIC-AXIS-PARAM-TYPE
p. 415, SW-INSTANCE p. 420, SW-INSTANCE-TREE p. 428, SW-MC-BASE-TYPE
p. 440, SW-MC-FRAME p. 447, SW-MC-INTERFACE p. 451, SW-MC-INTERFACE-SOUR
p. 456, SW-OPER-MODE p. 470, SW-RECORD-LAYOUT p. 476, SW-SERVICE
p. 500, SW-SERVICE-ARG p. 502, SW-SERVICE-PROTOTYPE p. 505,
SW-SERVICE-RETURN p. 509, SW-SYSTEM p. 517, SW-SYSTEMCONST
p. 521, SW-TASK p. 531, SW-TEMPLATE p. 539, SW-UNIT p. 545,
SW-USER-ACCESS-CASE p. 551, SW-USER-GROUP p. 555, SW-VARIABLE
p. 563, SW-VARIABLE-PROTOTYPE p. 568, SW-VCD-CRITERION p. 577,
SYN-CAPTION p. 584

Ist Kontext für: Text

CATEGORY~|#PCDATA

CATEGORY.PNG

2.23

CHANGE

Beschreibung

<CHANGE> is used to enter a modification text for a <MODIFICATION> element. The element has the same contents and features as a normal Paragraf element <P>.

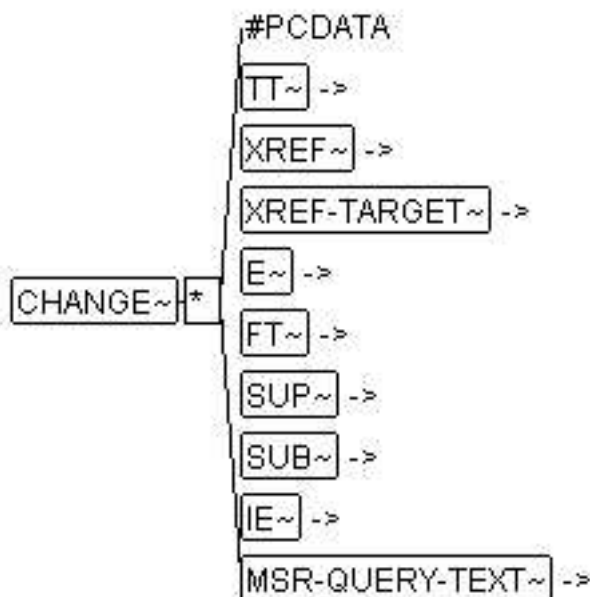
Beispiel

```
<CHANGE>This code is now optimized for <IT TYPE="PRODUCT">C#</IT>.</CHANGE>
```

Formale Beschreibung

Hat als Kontext: [MODIFICATION](#) p. 143

Ist Kontext für: Text, [TT](#) p. 614, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [MSR-QUERY-TEXT](#) p. 153



CHANGE.PNG

2.24 CHAPTER

Beschreibung

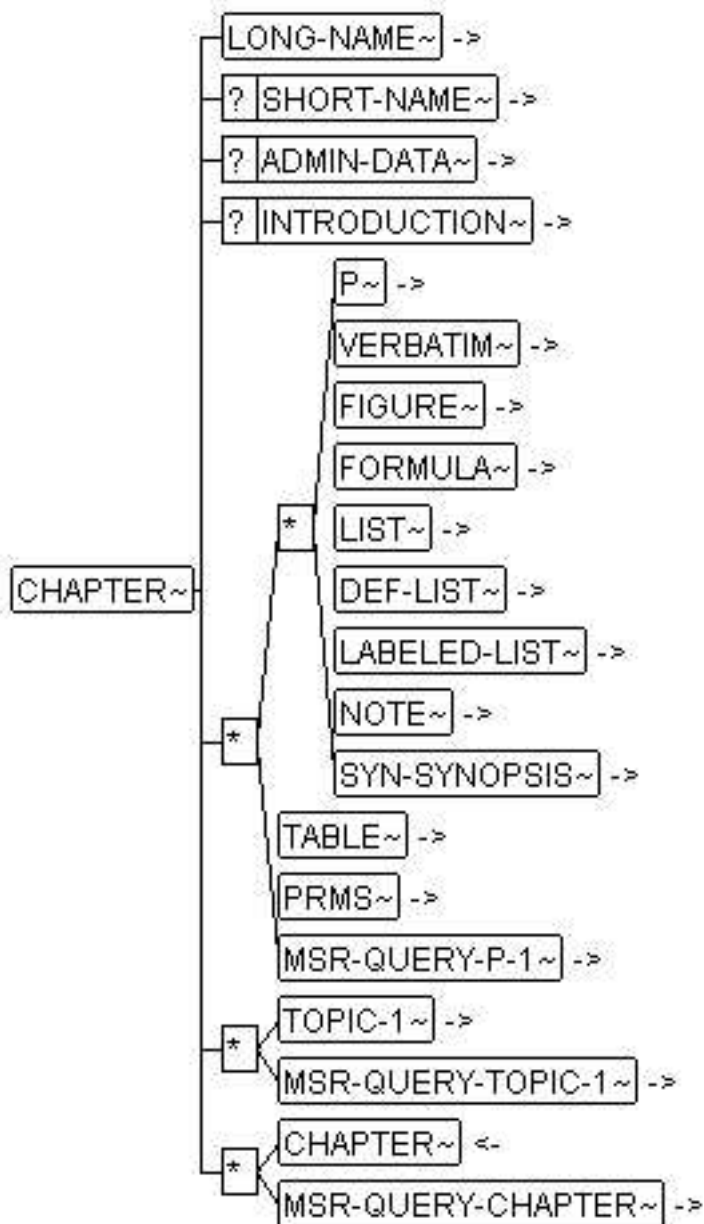
Use **<CHAPTER>** , to create a chapter structure.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-CHAPTER](#) p. 149, [NCOI-1](#) p. 162, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-COMPONENTS](#) p. 332, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [SYN-SYNOPSIS](#) p. 589, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



CHAPTER.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[BREAK] (implied)	namedtokengroup	<ul style="list-style-type: none"> BREAK NO-BREAK 	Select BREAK to insert a page break ahead of the chapter title.

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the parent element. The syntax has its origins in the help system utilized. This is often used to calculate an object ID or a widget name hierarchy from a window system, which is then correlated with the help entries.
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> • KEEP • NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[F-ID-CLASS] (fixed)	nmtoken	CHAPTER	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.25 CITY

Beschreibung

Use **<CITY>** to enter the city in the company address where a project participant is located.

Beispiel

```
<CITY>London</CITY>
```

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text

CITY~—#PCDATA

CITY.PNG

2.26 CODE

Beschreibung

Use **<CODE>**, to enter the **code** .

A variant definition requires a variant code, variant characteristics, or values for variant characteristics. The code can be a number or a name.

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHAR](#) p. 620, [VARIANT-CHAR-VALUE](#) p. 624, [VARIANT-DEF](#) p. 624

Ist Kontext für: Text

CODE~—#PCDATA

CODE.PNG

2.27 COLSPEC

Beschreibung

Use **<COLSPEC>** , to insert and specify a column in a table.

Beispiel

```
<COLSPEC COLNAME="col1" COLNUM="1" COLWIDTH="1.00*" />
```

Formale Beschreibung

Hat als Kontext: [TFOOT](#) p. 605, [TGROUPO](#) p. 606, [THEAD](#) p. 608

Hat keinen Inhalt.

COLSPEC empty

COLSPEC.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ALIGN] (implied)	namedtokengroup	<ul style="list-style-type: none"> • LEFT • RIGHT • CENTER • JUSTIFY • CHAR 	<p>LEFT - The table contents is justified left.</p> <p>RIGHT - The table contents is justified right.</p> <p>CENTER - The table contents is centered horizontally.</p> <p>JUSTIFY - The table contents is displayed with justified typesetting. There is an equal distance from the left and right-hand edges of the cell.</p> <p>CHAR - The alignment of the table contents is set by [CHAR] .</p>
[CHAR] (implied)	cdata		<p>If [ALIGN]="CHAR", this one-character value of [CHAR] specifies the alignment sign e.g. "bzlw", as a decimal point separator. The sign cannot be a SDATA entity.</p>
[CHAROFF] (implied)	nmtoken		<p>If [ALIGN] ="CHAROFF", this value indicates the percentage of the current column width to the left edge of the alignment sign in the [CHAR]-attribute. If there is no alignment sign in the element <COLSPEC> , alignment is always horizontal right. The default value is taken from <TGROUP> .</p>
[COLNAME] (implied)	nmtoken		<p>Now, specify an identification name for the column that has been modified, e.g. column1 for the first one.</p>

Attribut	Typ	Wertebereich	Anmerkungen
[COLNUM] (implied)	nmtoken		At this point you should specify the placement of the modified column within the table, e.g. 1 for the first column.
[COLSEP] (implied)	nmtoken		At this point, you should determine whether the column guides are to be visible. You should enter 0 , if no column guides are to be displayed. You should enter 1 , if the column guides are to be displayed.
[COLWIDTH] (implied)	cdata		Next, specify the width of the modified column in the table. You can enter absolute values such as 4 cm, or relative values marked with *, e.g. 2* for column widths double those of other columns.
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the column guides are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.

2.28 COMMENT

Beschreibung

This element contains a commentary in text form.

Beispiel

<COMMENT>This section is maintained by John.</COMMENT>

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-PROPS](#) p. 149

Ist Kontext für: Text

COMMENT~ — #PCDATA

COMMENT.PNG

2.29 COMMUNICATION

Beschreibung

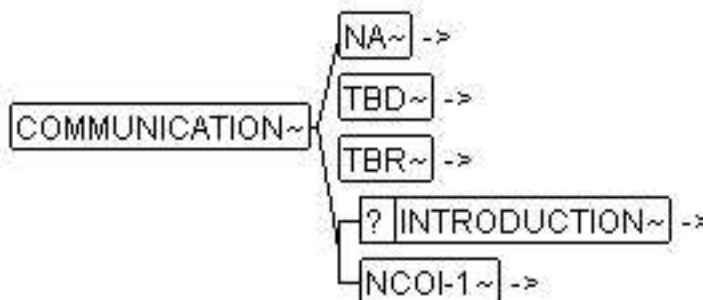
This element contains the functional requirements concerning communication, in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [FUNCTIONAL-REQUIREMENTS](#) p. 108

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



COMMUNICATION.PNG

2.30 COMMUNICATION-INTERFACE

Beschreibung

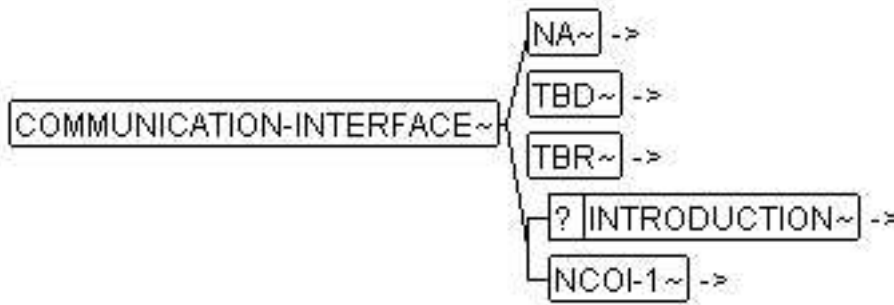
Use <COMMUNICATION-INTERFACE>, to enter the **communication interfaces** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-INTERFACES](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



COMMUNICATION-INTERFACE.PNG

2.31 COMPANIES

Beschreibung

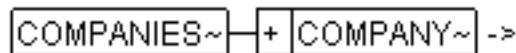
<COMPANIES> can be used to describe the companies involved in the project. The company responsible for the generation or maintenance of the file or some parts of the file is determined by a <TEAM-MEMBER-REF> within <ADMIN-DATA> . In simple cases there is only one company.

Beispiel

Formale Beschreibung

Hat als Kontext: [PROJECT](#) p. 183

Ist Kontext für: [COMPANY](#) p. 51



COMPANIES.PNG

2.32 COMPANY

Beschreibung

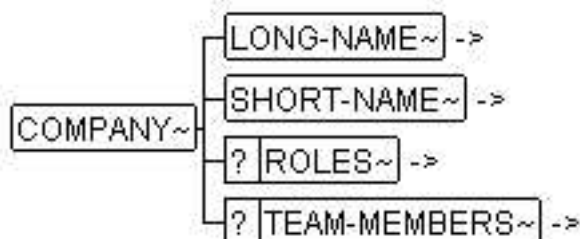
Use <COMPANY> , to describe the company, its role and its members.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANIES](#) p. 51

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [ROLES](#) p. 201, [TEAM-MEMBERS](#) p. 603



COMPANY.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[ROLE] (implied)	nmtoken		Select MANUFACTURER, if the company participating in the project is a manufacturer/partner. Select SUPPLIER, if this is the function of the company participating in the project.
[F-CHILD-TYPE] (fixed)	cdata	LONG-NAME:SELECT	Old Child Type. Warning: This attribute is included in the DTD for compatibility with older versions and should not be used for any new implementations. It may be removed in future versions of the DTD. The attribute contains information stating which child elements of the element carrying this attribute, should be checked by a semantic checker.



Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	COMPANY	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" like: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[F-NAMESPACE] (fixed)	nmtokens	TEAM-MEMBER	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.33 COMPANY-DOC-INFO

Beschreibung

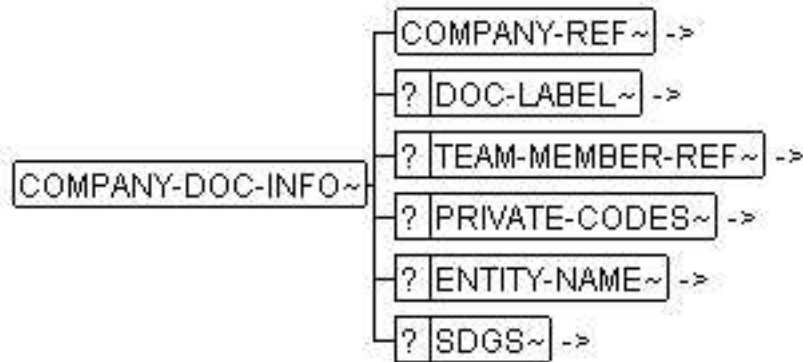
Use `<COMPANY-DOC-INFO>`, to generate document information on the companies participating in the project.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFOS](#) p. 54

Ist Kontext für: [COMPANY-REF](#) p. 54, [DOC-LABEL](#) p. 87, [TEAM-MEMBER-REF](#) p. 600, [PRIVATE-CODES](#) p. 176, [ENTITY-NAME](#) p. 89, [SDGS](#) p. 210



COMPANY-DOC-INFO.PNG

2.34 COMPANY-DOC-INFOS

Beschreibung

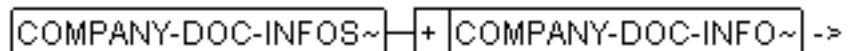
Use <COMPANY-DOC-INFOS> , to generate a summary of the document information on the companies participating in the project.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADMIN-DATA](#) p. 30

Ist Kontext für: [COMPANY-DOC-INFO](#) p. 53



COMPANY-DOC-INFOS.PNG

2.35 COMPANY-REF

Beschreibung

Use <COMPANY-REF> , to refer to the company for which you wish to generate corporate-specific document information.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO](#) p. 53, [COMPANY-REVISION-INFO](#) p. 56

Ist Kontext für: Text

COMPANY-REF~ — #PCDATA

COMPANY-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	COMPANY	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF) used to address the target of a hyperlink can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.36 COMPANY-REVISION-INFO

Beschreibung

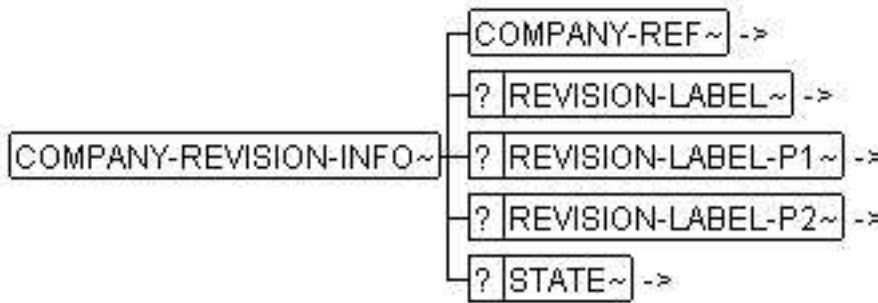
Use **<COMPANY-REVISION-INFO>** , to generate information on document version within the respective company.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-REVISION-INFOS](#) p. 57

Ist Kontext für: [COMPANY-REF](#) p. 54, [REVISION-LABEL](#) p. 198, [REVISION-LABEL-P1](#) p. 199, [REVISION-LABEL-P2](#) p. 199, [STATE](#) p. 218



COMPANY-REVISION-INFO.PNG

2.37 COMPANY-REVISION-INFOS

Beschreibung

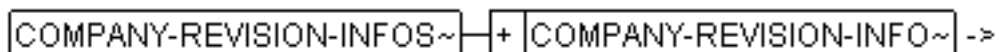
Use <COMPANY-REVISION-INFOS> , to generate a summary of the information on document version within a company.

Beispiel

Formale Beschreibung

Hat als Kontext: [DOC-REVISION](#) p. 87

Ist Kontext für: [COMPANY-REVISION-INFO](#) p. 56



COMPANY-REVISION-INFOS.PNG

2.38 COMPATIBILITY

Beschreibung

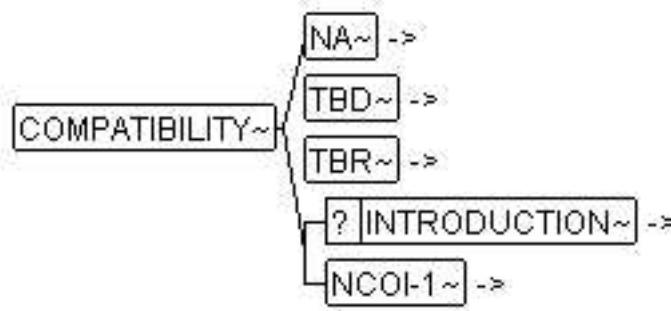
Use <COMPATIBILITY>, to describe the **similarity to other systems / compatibility** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-SOFTWARE](#) p. 114

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



COMPATIBILITY.PNG

2.39 COND

Beschreibung

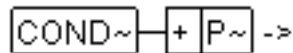
Use <COND> , to enter marginal conditions for which parameter values are valid.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR p. 178](#)

Ist Kontext für: [P p. 172](#)



COND.PNG

2.40 CONF-DEFAULT-VALUE

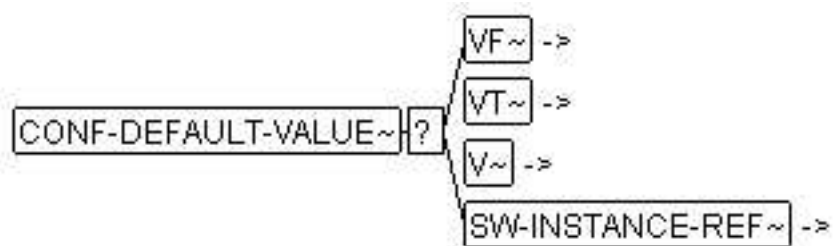
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS p. 72](#)

Ist Kontext für: [VF p. 628](#), [VT p. 630](#), [V p. 619](#), [SW-INSTANCE-REF p. 424](#)



CONF-DEFAULT-VALUE.PNG

2.41 CONF-FORWARDING

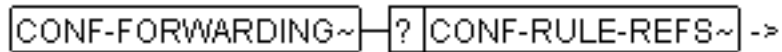
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64

Ist Kontext für: [CONF-RULE-REFS](#) p. 67



CONF-FORWARDING.PNG

2.42 CONF-ITEM

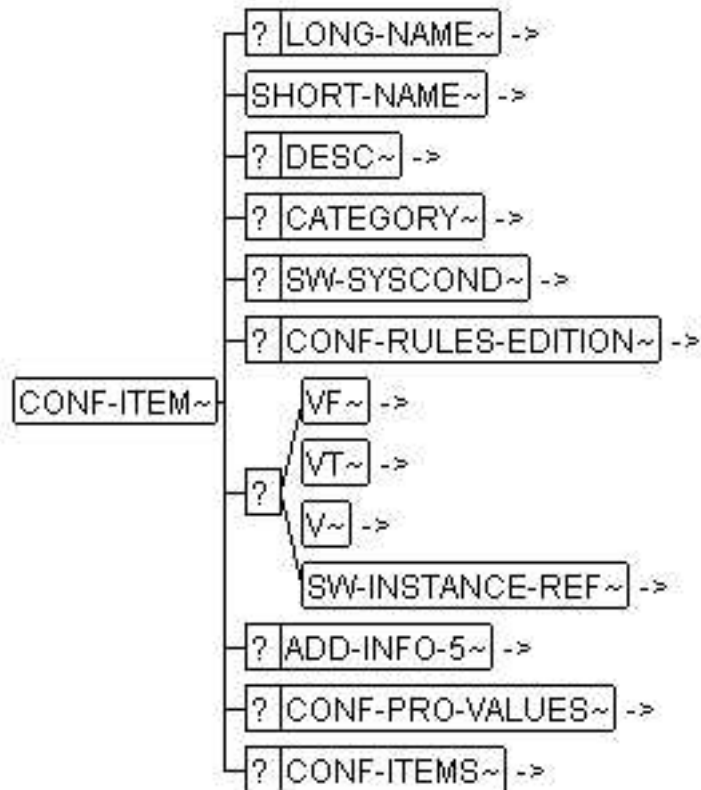
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-ITEMS](#) p. 62

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SW-SYSCOND](#) p. 511, [CONF-RULES-EDITION](#) p. 68, [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [SW-INSTANCE-REF](#) p. 424, [ADD-INFO-5](#) p. 28, [CONF-PRO-VALUES](#) p. 64, [CONF-ITEMS](#) p. 62



CONF-ITEM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	CONF-ITEM	

2.43 CONF-ITEM-CODED-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [LOWER-LIMIT](#) p. 136, [MAX-TEXT-LENGTH](#) p. 141, [MIN-INCR-SIZE](#) p. 142, [MIN-TEXT-LENGTH](#) p. 142, [SW-CALPRM-MAX-TEXT-SIZE](#) p. 265, [SW-COMPU-GENERIC-MATH](#) p. 334, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-MAX-AXIS-POINTS](#) p. 437, [SW-MIN-AXIS-POINTS](#) p. 469, [SW-NUMBER-OF-AXIS-POINTS](#) p. 470, [SW-SYSCOND](#) p. 511, [UPPER-LIMIT](#) p. 616, [VF](#) p. 628

Ist Kontext für: Text

CONF-ITEM-CODED-REF~—#PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	CONF-ITEM	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.44 CONF-ITEM-PHYS-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [LOWER-LIMIT](#) p. 136, [MAX-TEXT-LENGTH](#) p. 141, [MIN-INCR-SIZE](#) p. 142, [MIN-TEXT-LENGTH](#) p. 142, [SW-CALPRM-MAX-TEXT-SIZE](#) p. 265, [SW-COMPU-GENERIC-MATH](#) p. 334, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-MAX-AXIS-POINTS](#) p. 437, [SW-MIN-AXIS-POINTS](#) p. 469, [SW-NUMBER-OF-AXIS-POINTS](#) p. 470, [SW-SYSCOND](#) p. 511, [UPPER-LIMIT](#) p. 616, [VF](#) p. 628

Ist Kontext für: Text

CONF-ITEM-PHYS-REF~—#PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	CONF-ITEM	

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.45 CONF-ITEMS

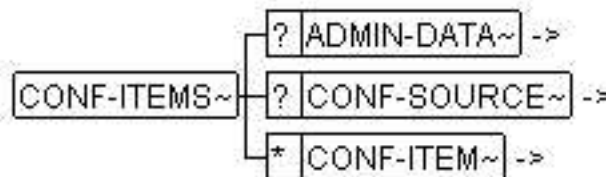
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-ITEM](#) p. 59, [CONF-SPEC](#) p. 71

Ist Kontext für: [ADMIN-DATA](#) p. 30, [CONF-SOURCE](#) p. 68, [CONF-ITEM](#) p. 59



CONF-ITEMS.PNG

2.46 CONF-KEY-COUNT

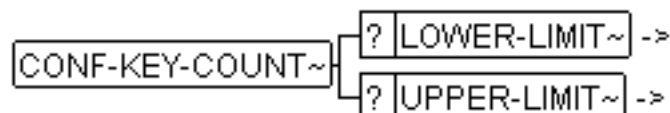
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-KEY-SPEC](#) p. 63

Ist Kontext für: [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616



CONF-KEY-COUNT.PNG

2.47 CONF-KEY-ITEM

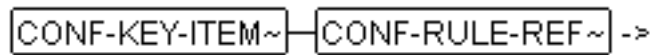
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-KEY-SPEC](#) p. 63

Ist Kontext für: [CONF-RULE-REF](#) p. 66



CONF-KEYITEM.PNG

2.48 CONF-KEY-LOOKUP

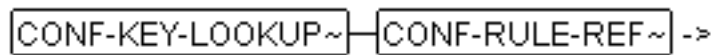
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS](#) p. 72

Ist Kontext für: [CONF-RULE-REF](#) p. 66



CONF-KEYLOOKUP.PNG

2.49 CONF-KEY-SPEC

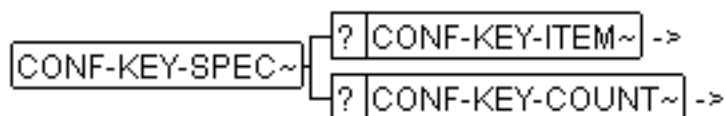
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64

Ist Kontext für: [CONF-KEY-ITEM](#) p. 62, [CONF-KEY-COUNT](#) p. 62



CONF-KEYSPEC.PNG

2.50 CONF-PRO-VALUE

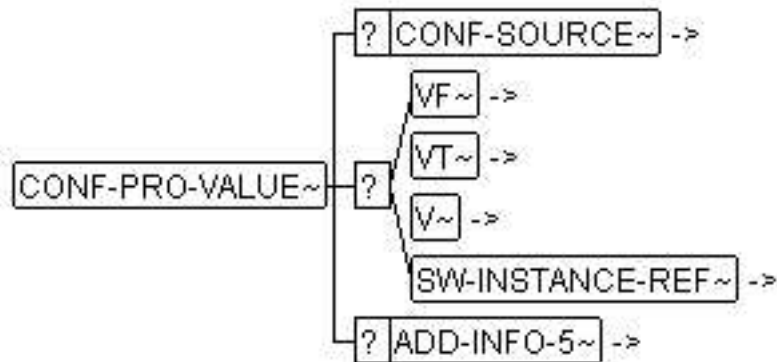
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-PRO-VALUES](#) p. 64

Ist Kontext für: [CONF-SOURCE](#) p. 68, [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [SW-INSTANCE-REF](#) p. 424, [ADD-INFO-5](#) p. 28



CONF-PRO-VALUE.PNG

2.51 CONF-PRO-VALUES

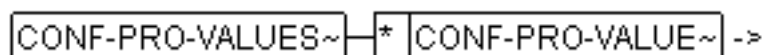
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-ITEM](#) p. 59

Ist Kontext für: [CONF-PRO-VALUE](#) p. 63



CONF-PRO-VALUES.PNG

2.52 CONF-RULE

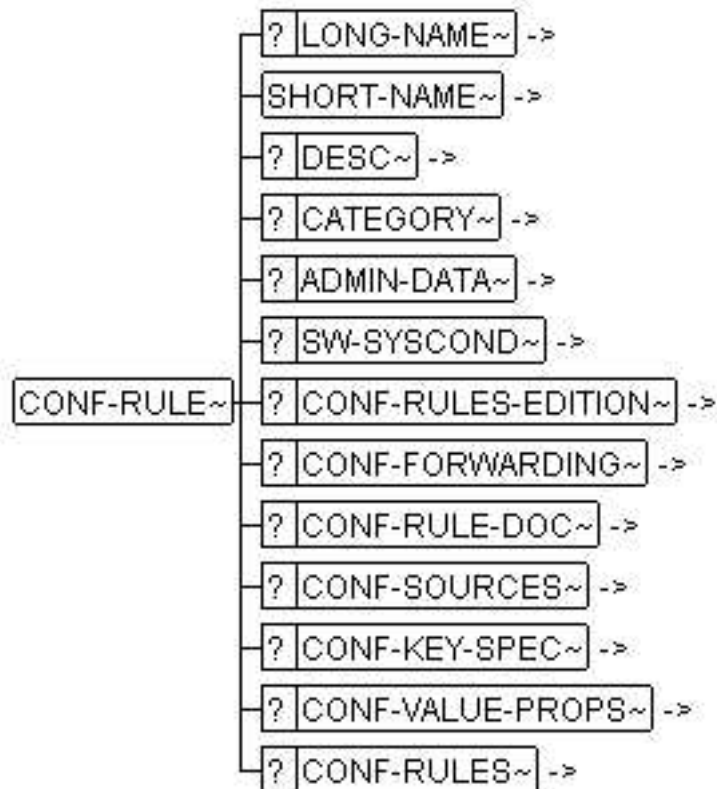
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULES](#) p. 68

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-SYSCOND](#) p. 511, [CONF-RULES-EDITION](#) p. 68, [CONF-FORWARDING](#) p. 58, [CONF-RULE-DOC](#) p. 65, [CONF-SOURCES](#) p. 69, [CONF-KEY-SPEC](#) p. 63, [CONF-VALUE-PROPS](#) p. 72, [CONF-RULES](#) p. 68



CONF-RULE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	CONF-RULE	

2.53 CONF-RULE-DOC

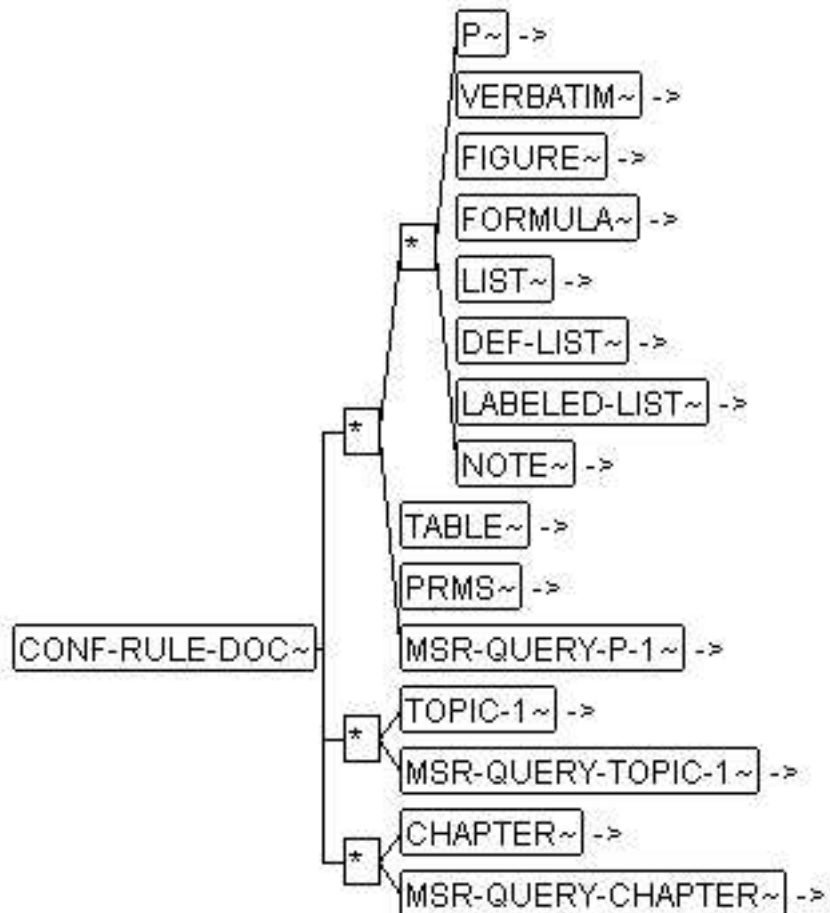
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



CONF-RULE-DOC.PNG

2.54 CONF-RULE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-KEY-ITEM](#) p. 62, [CONF-KEY-LOOKUP](#) p. 63, [CONF-RULE-REF-SYSCOND](#) p. 67, [CONF-RULE-REFS](#) p. 67

Ist Kontext für: Text

CONF-RULE-REF~ - #PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (default)	cdata	CONF-RULE	
[ID-REF] (implied)	idref		
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.55 CONF-RULE-REF-SYSCOND

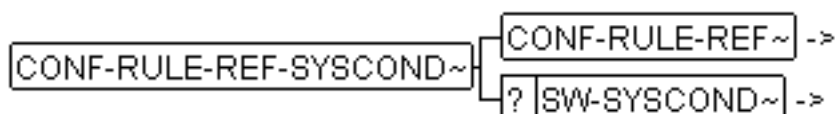
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE-REFS](#) p. 67

Ist Kontext für: [CONF-RULE-REF](#) p. 66, [SW-SYSCOND](#) p. 511



2.56 CONF-RULE-REFS

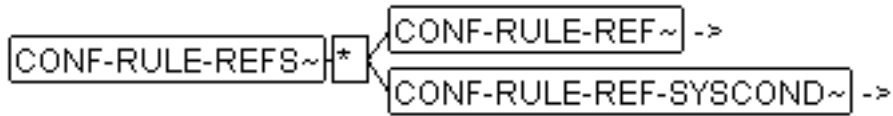
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-FORWARDING](#) p. 58, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [CONF-RULE-REF](#) p. 66, [CONF-RULE-REF-SYSCOND](#) p. 67



CONF-RULE-REFS.PNG

2.57 CONF-RULES

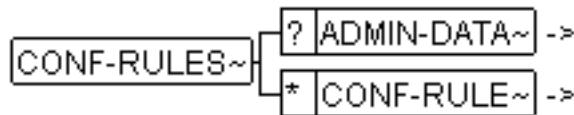
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64, [CONF-SPEC](#) p. 71

Ist Kontext für: [ADMIN-DATA](#) p. 30, [CONF-RULE](#) p. 64



CONF-RULES.PNG

2.58 CONF-RULES-EDITION

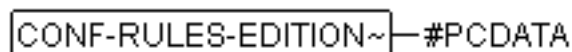
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-ITEM](#) p. 59, [CONF-RULE](#) p. 64

Ist Kontext für: Text



CONF-RULES-EDITION.PNG

2.59 CONF-SOURCE

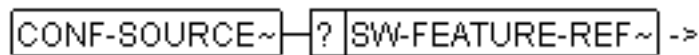
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-ITEMS](#) p. 62, [CONF-PRO-VALUE](#) p. 63

Ist Kontext für: [SW-FEATURE-REF](#) p. 407



CONF-SOURCE.PNG

2.60 CONF-SOURCE-COUNT

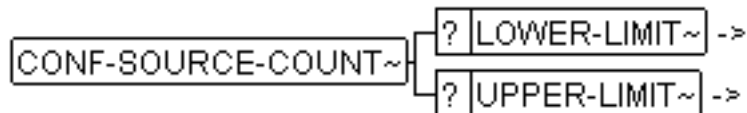
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCES](#) p. 69

Ist Kontext für: [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616



CONF-SOURCE-COUNT.PNG

2.61 CONF-SOURCES

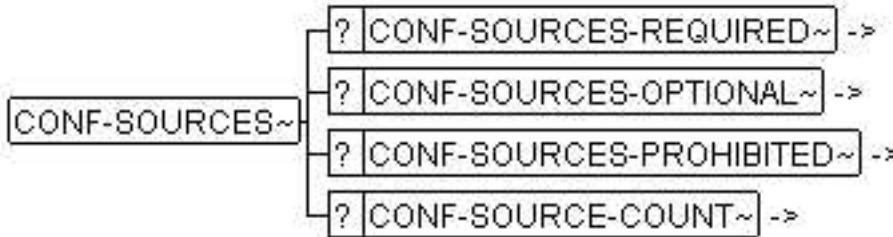
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64

Ist Kontext für: [CONF-SOURCES-REQUIRED](#) p. 70, [CONF-SOURCES-OPTIONAL](#) p. 70, [CONF-SOURCES-PROHIBITED](#) p. 70, [CONF-SOURCE-COUNT](#) p. 69



CONF-SOURCES.PNG

2.62 CONF-SOURCES-OPTIONAL

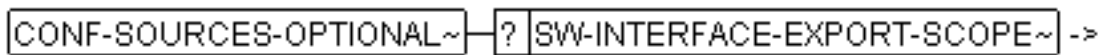
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCES](#) p. 69

Ist Kontext für: [SW-INTERFACE-EXPORT-SCOPE](#) p. 433



CONF-SOURCES-OPTIONAL.PNG

2.63 CONF-SOURCES-PROHIBITED

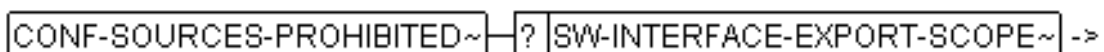
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCES](#) p. 69

Ist Kontext für: [SW-INTERFACE-EXPORT-SCOPE](#) p. 433



CONF-SOURCES-PROHIBITED.PNG

2.64 CONF-SOURCES-REQUIRED

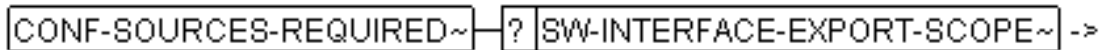
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCES](#) p. 69

Ist Kontext für: [SW-INTERFACE-EXPORT-SCOPE](#) p. 433



CONF-SOURCES-REQUIRED.PNG

2.65 CONF-SPEC

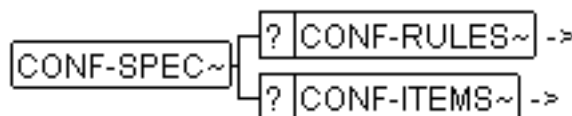
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [CONF-RULES](#) p. 68, [CONF-ITEMS](#) p. 62



CONF-SPEC.PNG

2.66 CONF-VALUE-CONSTR

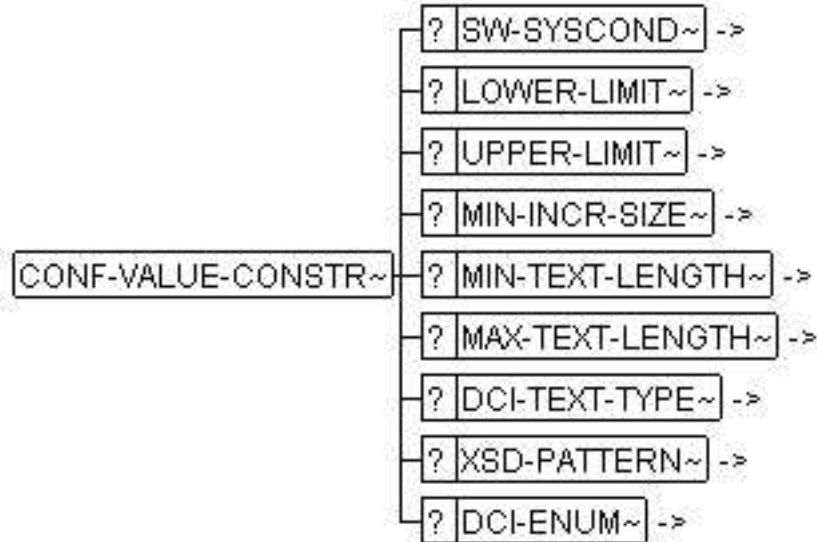
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTRS](#) p. 72

Ist Kontext für: [SW-SYSCOND](#) p. 511, [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616, [MIN-INCR-SIZE](#) p. 142, [MIN-TEXT-LENGTH](#) p. 142, [MAX-TEXT-LENGTH](#) p. 141, [DCI-TEXT-TYPE](#) p. 79, [XSD-PATTERN](#) p. 637, [DCI-ENUM](#) p. 78



CONF-VALUE-CONSTR.PNG

2.67 CONF-VALUE-CONSTRS

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS](#) p. 72

Ist Kontext für: [CONF-VALUE-CONSTR](#) p. 71



CONF-VALUE-CONSTRS.PNG

2.68 CONF-VALUE-PROPS

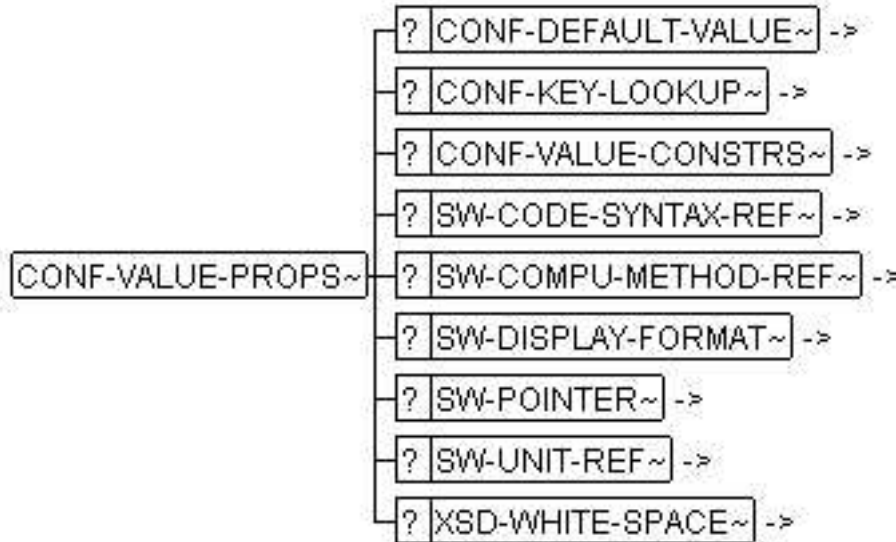
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-RULE](#) p. 64

Ist Kontext für: [CONF-DEFAULT-VALUE](#) p. 58, [CONF-KEY-LOOKUP](#) p. 63, [CONF-VALUE-CONSTRS](#) p. 72, [SW-CODE-SYNTAX-REF](#) p. 314, [SW-COMPU-METHOD-REF](#) p. 338, [SW-DISPLAY-FORMAT](#) p. 374, [SW-POINTER](#) p. 473, [SW-UNIT-REF](#) p. 548, [XSD-WHITE-SPACE](#) p. 637



CONF-VALUE-PROPS.PNG

2.69 CONTRACT-ASPECTS

Beschreibung

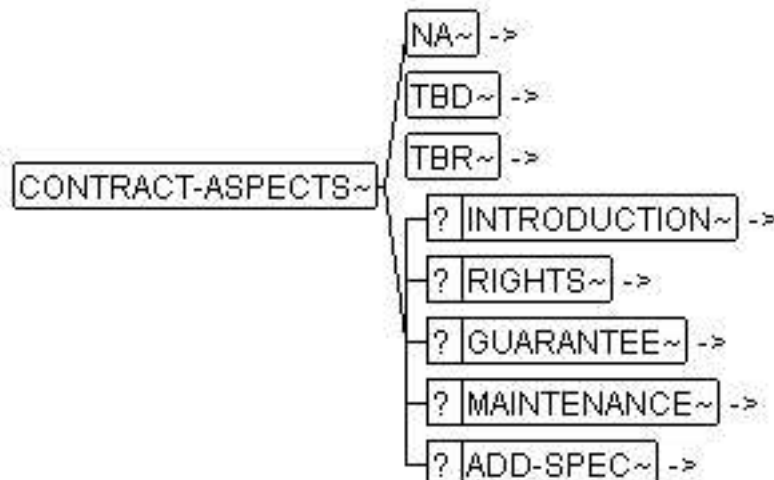
Use <CONTRACT-ASPECTS>, to enter the **contractual aspects** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [RIGHTS](#) p. 200, [GUARANTEE](#) p. 119, [MAINTENANCE](#) p. 137, [ADD-SPEC](#) p. 29



CONTRACT-ASPECTS.PNG

2.70 CRITICAL-ASPECTS

Beschreibung

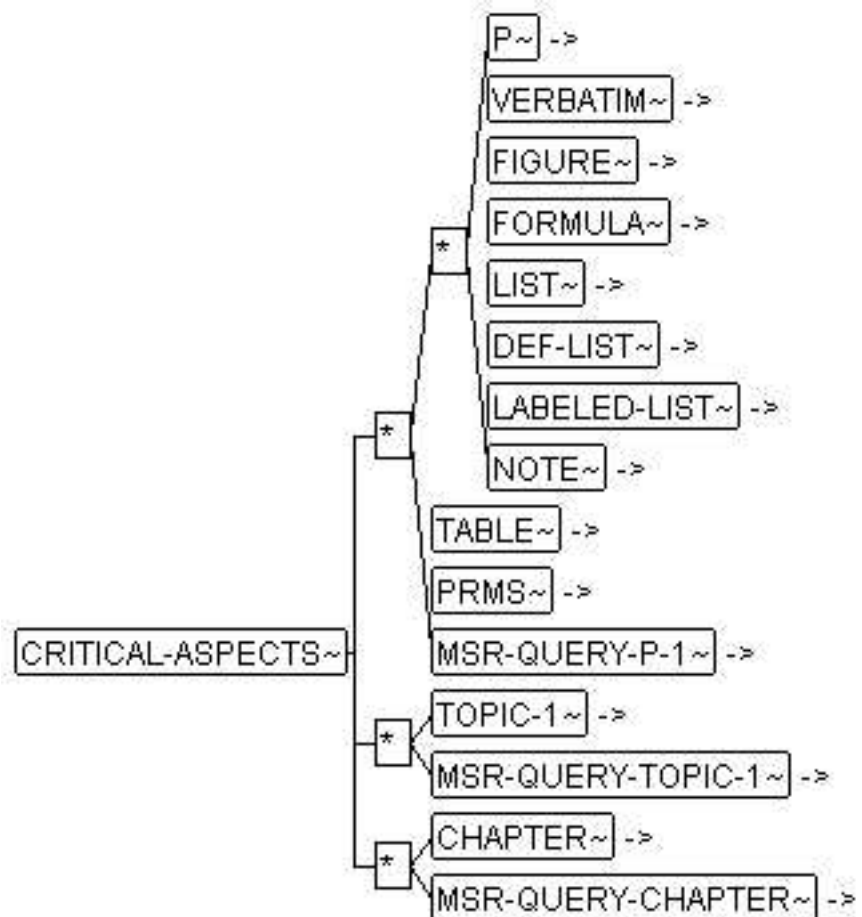
Use **<CRITICAL-ASPECTS>** , to specify critical aspects in text form within a requirement.

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



CRITICAL-ASPECTS.PNG

2.71 DATA-DESC

Beschreibung

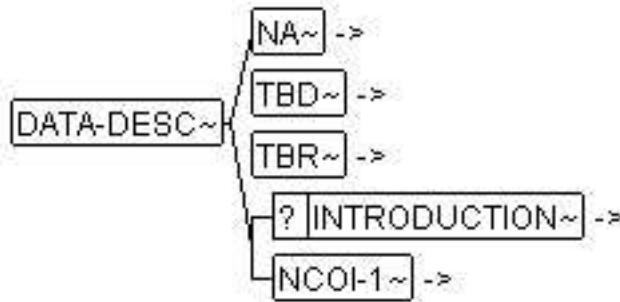
<DATA-DESC> is used to describe data in text form. **<DATA-DESC>** is basically a root for a document which can contain several chapters.

Beispiel

Formale Beschreibung

Hat als Kontext: [DATA-REQUIREMENTS](#) p. 76

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



DATA-DESC.PNG

2.72 DATA-REQUIREMENTS

Beschreibung

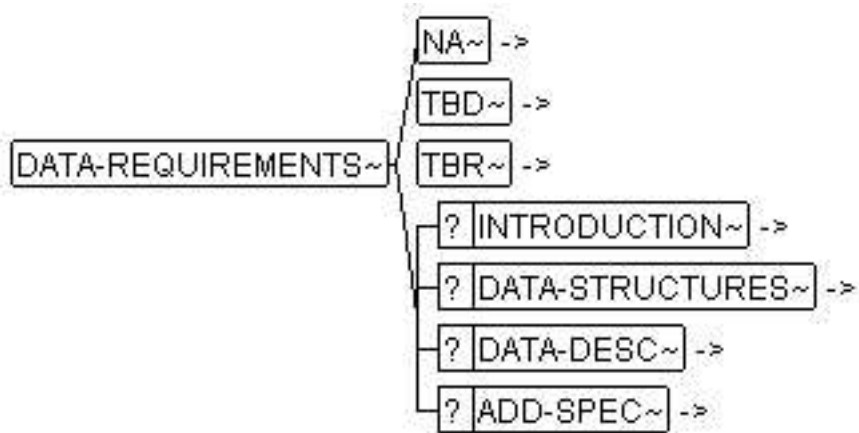
Use <DATA-REQUIREMENTS>, to enter the **data-orientated requirements** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-SOFTWARE](#) p. 114

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [DATA-STRUCTURES](#) p. 76, [DATA-DESC](#) p. 75, [ADD-SPEC](#) p. 29



DATA-REQUIREMENTS.PNG

2.73 DATA-STRUCTURES

Beschreibung

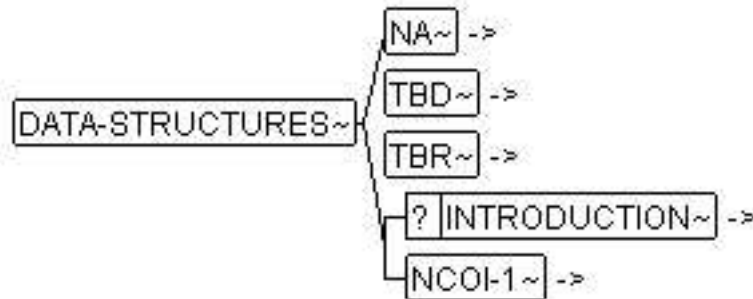
Use *DATA-STRUCTURES*, to describe the **data structures** in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [DATA-REQUIREMENTS](#) p. 76

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



DATA-STRUCTURES.PNG

2.74 DATE

Beschreibung

<DATE> is used to capture a time stamp. It must match to one of the following syntaxes based on [*Standard: Representation of dates and times*]. In multilingual DTDs **<DATE>** is also multilingual.

`<YYYY>-<MM>-<DD> [T<hh>: <mm>: <ss>]`

`<YYYY>.<MM>.<DD> [T<hh>: <mm>: <ss>]`

`<YYYY>/<MM>/<DD> [T<hh>: <mm>: <ss>]`

The last pattern is the most preferred one, since it reflects a common use in US.

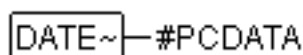
Beispiel

`<DATE>2001-03-20T09:00:00</DATE>`

Formale Beschreibung

Hat als Kontext: [DOC-REVISION](#) p. 87, [SCHEDULE](#) p. 207, [SW-CS-ENTRY](#) p. 355

Ist Kontext für: Text



DATE.PNG

2.75 DATE-1

Beschreibung

Use **<DATE-1>** , to enter the validity date of a standard document, or the creation date of an external document.

The element is like **<DATE>** but is never handled multilingual.

<DATE> is used to capture a time stamp. It must match to one of the following syntaxes based on [/ Standard: Representation of dates and times]:

```
<YYYY>-<MM>-<DD> [T<hh>: <mm> : <ss>]
```

```
<YYYY> . <MM> . <DD> [T<hh>: <mm> : <ss>]
```

```
<YYYY>/<MM>/<DD> [T<hh>: <mm> : <ss>]
```

The last pattern is the most preferred one, since it reflects a common use in US.

Beispiel

Formale Beschreibung

Hat als Kontext: [STD p. 219](#), [XDOC p. 630](#)

Ist Kontext für: Text

```
DATE-1 ~ #PCDATA
```

DATE-1.PNG

2.76 DCI-ENUM

Beschreibung

A **<dc-enum>** represents an enumeration type. Each enumeration value is entered in a **<DCI-ENUM-ENTRY>**.

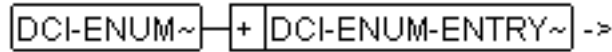
Beispiel

```
<DCI-ENUM>
  <DCI-ENUM-ENTRY>
    <V>Audi</V>
  </DCI-ENUM-ENTRY>
  <DCI-ENUM-ENTRY>
    <V>Porsche</V>
  </DCI-ENUM-ENTRY>
  <DCI-ENUM-ENTRY>
    <V>Volvo</V>
  </DCI-ENUM-ENTRY>
  <DCI-ENUM-ENTRY>
    <V>Saab</V>
  </DCI-ENUM-ENTRY>
</DCI-ENUM>
```

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR p. 71](#)

Ist Kontext für: [DCI-ENUM-ENTRY p. 78](#)



DCI-ENUM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[CASE-SENSITIVE] (implied)	namedtokengroup	<ul style="list-style-type: none"> CASE-SENSITIVE NO-CASE-SENSITIVE 	

2.77

DCI-ENUM-ENTRY

Beschreibung

<DCI-ENUM-ENTRY> represents a single enumeration value in an enumeration type.

Beispiel

```
<DCI-ENUM-ENTRY>
  <V>Audi</V>
</DCI-ENUM-ENTRY>
```

Formale Beschreibung

Hat als Kontext: [DCI-ENUM](#) p. 78

Ist Kontext für: [VT](#) p. 630, [DESC](#) p. 83



DCI-ENUM-ENTRY.PNG

2.78

DCI-TEXT-TYPE

Beschreibung

This element, defines a set of text constraints which could also be expressed by the other available constraints but is provided for convenience and consistency reasons. If any of the other dedicated constraints is defined, they silently override the defaults given by the <DCI-TEXT-TYPE>.

Currently, only one <DCI-TEXT-TYPE> setting is available:

IDENTIFIER_C: Text settings having this text type must obey the rules for valid identifiers in the C programming language:

- They must consist only of uppercase or lowercase ASCII characters or numbers (this also excludes e.g. umlauts or spaces)
- They must not start with a number
- Some keywords are reserved and therefore forbidden: auto, bool, break, case, char, const, continue, default, do, double, else, enum, extern, float, for, goto, if, inline, int, long, main, register, return, short, signed, sizeof, static, struct, switch, typedef, union, unsigned, void, volatile, while
- Length is restricted to 1...31 characters

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR](#) p. 71

Ist Kontext für: Text



DCI-TEXT-TYPE.PNG

2.79

DEF

Beschreibung

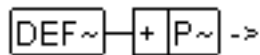
Use `<DEF>` , to enter a paragraph within the definition list for describing the title.

Beispiel

Formale Beschreibung

Hat als Kontext: [DEF-ITEM](#) p. 80

Ist Kontext für: [P](#) p. 172



DEF.PNG

2.80

DEF-ITEM

Beschreibung

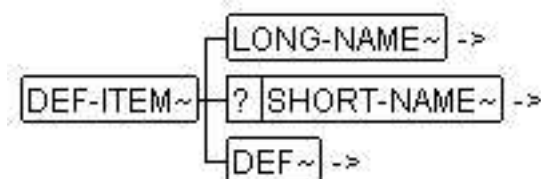
Use `<DEF-ITEM>` , to enter the title of an enumeration element in the definition list.

Beispiel

Formale Beschreibung

Hat als Kontext: [DEF-LIST](#) p. 81

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DEF](#) p. 79



DEF-ITEM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> • KEEP • NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[F-ID-CLASS] (fixed)	nmtoken	DEF-ITEM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.81 DEF-LIST

Beschreibung

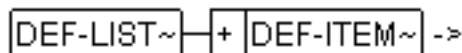
Use **<DEF-LIST>** , to create a definition list, where the marginal notes can be referenced.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO p. 26](#), [ADD-INFO-5 p. 28](#), [CHAPTER p. 44](#), [CONF-RULE-DOC p. 65](#), [CRITICAL-ASPECTS p. 74](#), [ENTRY p. 90](#), [FREE-INFO p. 103](#), [INTRODUCTION p. 124](#), [ITEM p. 126](#), [LABELED-ITEM p. 129](#), [MSR-PROCESSING-LOG p. 144](#), [MSR-QUERY-RESULT-P-1 p. 150](#), [MSR-QUERY-RESULT-P-2 p. 150](#), [NCOI-1 p. 162](#), [NCOI-3 p. 163](#), [REAL-TIME-REQUIREMENTS p. 186](#), [REQUIREMENT-BODY p. 192](#), [REQUIREMENTS-DEPENDENCY p. 196](#), [RISKS p. 200](#), [SW-ADDR-METHOD-DESC p. 229](#), [SW-APPLICATION-NOTES p. 234](#), [SW-CARB-DOC p. 275](#), [SW-CODE-SYNTAX-DESC p. 313](#), [SW-FEATURE-DEF p. 391](#), [SW-FEATURE-DESC p. 392](#), [SW-GENERIC-AXIS-DESC p. 414](#), [SW-MAINTENANCE-NOTES p. 436](#), [SW-TEST-DESC p. 543](#), [TECHNICAL-ASPECTS p. 603](#), [TOPIC-1 p. 610](#), [TOPIC-2 p. 612](#)

Ist Kontext für: [DEF-ITEM p. 80](#)



DEF-LIST.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.82 DEMARCATION-OTHER-PROJECTS

Beschreibung

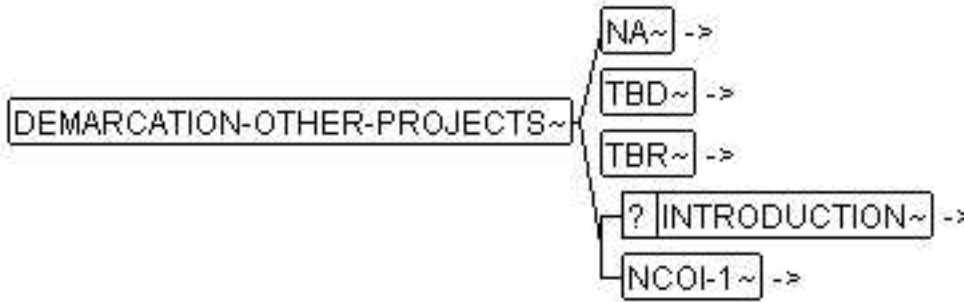
Use *DEMARCATION-OTHER-PROJECTS*, to enter the **factor distinguishing this project from others** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



DEMARCATION-OTHER-PROJECTS.PNG

2.83 DEPARTMENT

Beschreibung

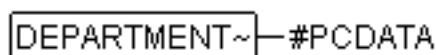
Use `<DEPARTMENT>` , to enter the department of a project participant.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text



DEPARTMENT.PNG

2.84 DESC

Beschreibung

`<DESC>` represents a general but brief description of the object in question.

Beispiel

`<DESC>` This calibration is a gain

that is used for the transition period between crank to run. It between 1000 and 1500.

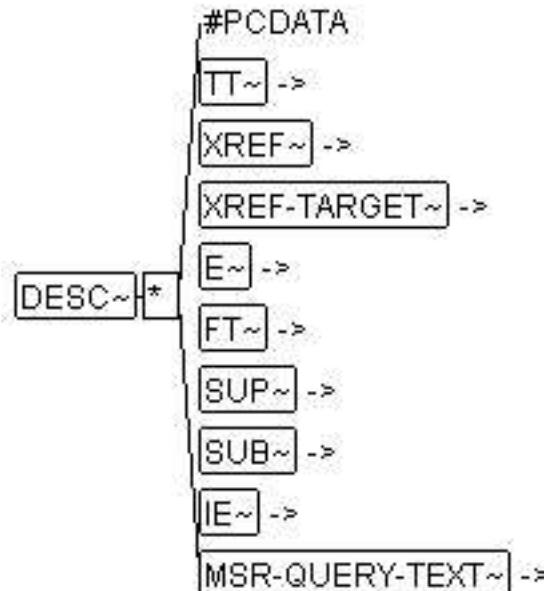
`</DESC>`

Formale Beschreibung

Hat als Kontext: [AVAILABILITY](#) p. 38, [CONF-ITEM](#) p. 59, [CONF-RULE](#) p. 64, [DCI-ENUM-ENTRY](#) p. 78, [FIGURE](#) p. 95, [LIFE-TIME](#) p. 132, [MTBF](#) p. 158, [OPERATING-TIME](#) p. 169, [OVERALL-PROJECT](#) p. 171, [PPM](#) p. 175, [PRM](#) p. 177, [PROJECT](#) p. 183, [REQUIREMENT](#) p. 190, [SDG-CAPTION](#) p. 209

, SW-ADDR-METHOD p. 228, SW-AR-RELATION p. 235, SW-AXIS-TYPE p. 245, SW-BASE-TYPE p. 250, SW-CALIBRATION-METHOD p. 257, SW-CALPRM p. 260, SW-CALPRM-PROTOTYPE p. 266, SW-CLASS p. 276, SW-CLASS-ATTR-IMPL p. 294, SW-CLASS-INSTANCE p. 300, SW-CLASS-PROTOTYPE p. 305, SW-CODE-SYNTAX p. 311, SW-COLLECTION p. 318, SW-COMPU-METHOD p. 336, SW-COMPU-SCALE p. 343, SW-CPU-MEM-SEG p. 347, SW-DATA-CONSTR p. 361, SW-DATA-DEPENDENCY p. 369, SW-DATA-DICTIONARY-SPEC p. 372, SW-EVENT p. 377, SW-EVENT-SOURCE p. 382, SW-FEATURE p. 386, SW-FEATURE-INTERFACE p. 399, SW-FEATURE-OWNED-ELEMENT-SET p. 405, SW-FEATURE-VARIANT p. 410, SW-GENERIC-AXIS-PARAM-TYPE p. 415, SW-INSTANCE p. 420, SW-INSTANCE-PROPS-VARIANT p. 423, SW-INSTANCE-TREE p. 428, SW-INTERFACE-ACCESSED-ELEMENT-SET p. 431, SW-INTERFACE-EXPORT p. 432, SW-INTERFACE-IMPORT p. 434, SW-MC-BASE-TYPE p. 440, SW-MC-FRAME p. 447, SW-MC-GENERIC-INTERFACE p. 448, SW-MC-INTERFACE p. 451, SW-MC-INTERFACE-SOURCE p. 456, SW-OPER-MODE p. 470, SW-POINTER p. 473, SW-PROCESS p. 475, SW-PROCESS-LIST p. 475, SW-RECORD-LAYOUT p. 476, SW-RECORD-LAYOUT-GROUP p. 486, SW-RECORD-LAYOUT-V p. 493, SW-SERVICE p. 500, SW-SERVICE-ACCESSED-ELEMENT-SET p. 501, SW-SERVICE-ARG p. 502, SW-SERVICE-PROTOTYPE p. 505, SW-SERVICE-RETURN p. 509, SW-SYSTEM p. 517, SW-SYSTEMCONST p. 521, SW-TASK p. 531, SW-TEMPLATE p. 539, SW-UNIT p. 545, SW-USER-ACCESS-CASE p. 551, SW-USER-GROUP p. 555, SW-VARIABLE p. 563, SW-VARIABLE-PROTOTYPE p. 568, SW-VCD-CRITERION p. 577, SYN-ARGUMENT p. 583, SYN-CAPTION p. 584, SYN-EXAMPLE p. 585, SYN-RETURN-VALUE p. 587, SYN-SEMANTICS p. 588, TBD p. 595

Ist Kontext für: Text, TT p. 614, XREF p. 633, XREF-TARGET p. 636, E p. 88, FT p. 104, SUP p. 221, SUB p. 220, IE p. 121, MSR-QUERY-TEXT p. 153



DESC.PNG

2.85

DESIGN-REQUIREMENTS

Beschreibung

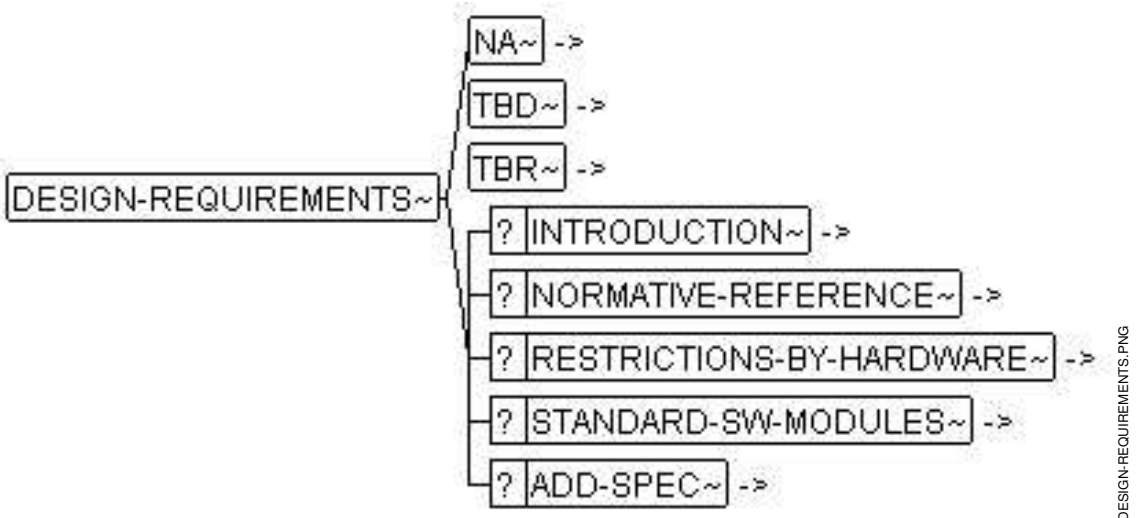
Use *DESIGN-REQUIREMENTS*, to enter **requirements regarding software design** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-SOFTWARE](#) p. 114

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NORMATIVE-REFERENCE](#) p. 165, [RESTRICTIONS-BY-HARDWARE](#) p. 198, [STANDARD-SW-MODULES](#) p. 218, [ADD-SPEC](#) p. 29



2.86

DEVELOPMENT-PROCESS-SPEC

Beschreibung

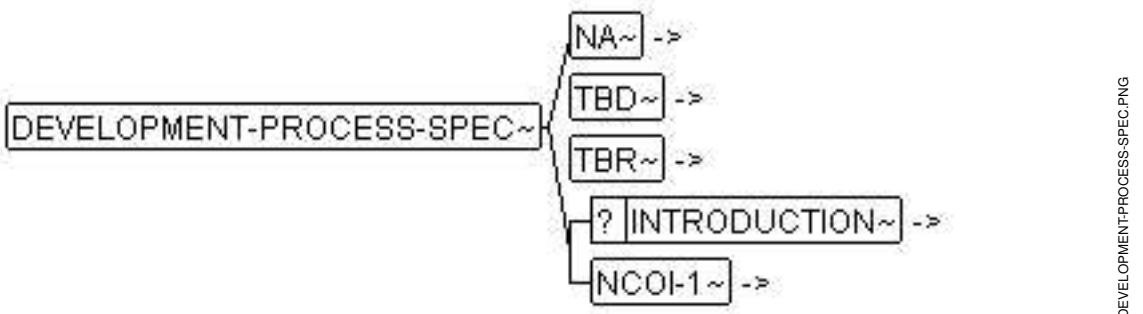
Use *DEVELOPMENT-PROCESS-SPEC*, to enter the **definition of the development process** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



2.87 DIAGNOSIS

Beschreibung

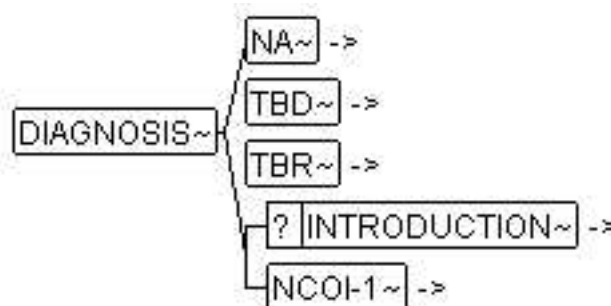
This element contains the functional requirements affecting the scope of diagnosis, in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [FUNCTIONAL-REQUIREMENTS](#) p. 108

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



DIAGNOSIS.PNG

2.88 DIR-HAND-OVER-DOC-DATA

Beschreibung

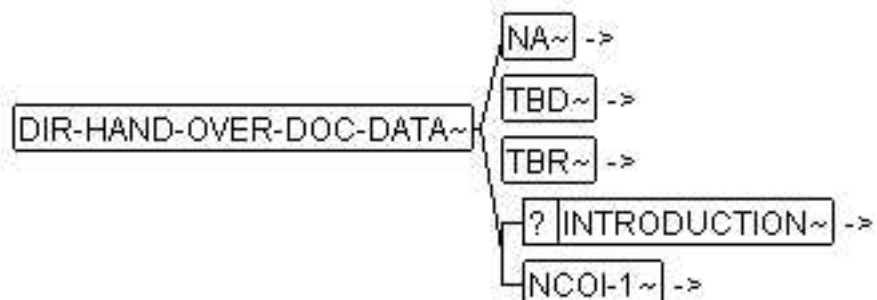
Use *DIR-HAND-OVER-DOC-DATA*, to enter the **directory of transferred documents** . The directory location is entered in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



DIR-HAND-OVER-DOC-DATA.PNG

2.89 DOC-LABEL

Beschreibung

Use **<DOC-LABEL>** , to enter the title of the document, or a label for the part of the document for which you wish to generate administrative data.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO](#) p. 53

Ist Kontext für: Text

`DOC-LABEL~` — #PCDATA

DOC-LABEL.PNG

2.90 DOC-REVISION

Beschreibung

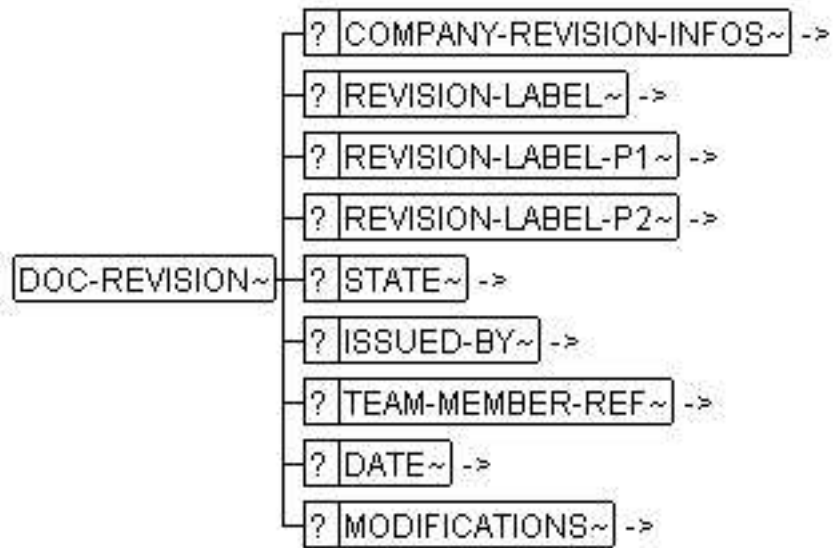
Use **<DOC-REVISION>** , to generate information on the corresponding document version.

Beispiel

Formale Beschreibung

Hat als Kontext: [DOC-REVISIONS](#) p. 88

Ist Kontext für: [COMPANY-REVISION-INFOS](#) p. 57, [REVISION-LABEL](#) p. 198, [REVISION-LABEL-P1](#) p. 199, [REVISION-LABEL-P2](#) p. 199, [STATE](#) p. 218, [ISSUED-BY](#) p. 126, [TEAM-MEMBER-REF](#) p. 600, [DATE](#) p. 77, [MODIFICATIONS](#) p. 143



DOC-REVISION.PNG

2.91 DOC-REVISIONS

Beschreibung

<DOC-REVISIONS> is a container for the entire change-history for an object containing <ADMIN-DATA> and <DOC-REVISIONS>. Although the sequence of changes can be determined by sorting <DOC-REVISIONS> according to <DOC-REVISION>/ <DATE>, it is recommended that the most recent <DOC-REVISION> is the first child of <DOC-REVISIONS> .

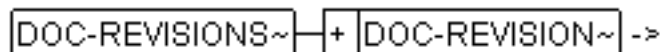
Beispiel

For an example, see [Chapter 2.8 ADMIN-DATA p. 30](#) .

Formale Beschreibung

Hat als Kontext: [ADMIN-DATA p. 30](#)

Ist Kontext für: [DOC-REVISION p. 87](#)



DOC-REVISIONS.PNG

2.92 E

Beschreibung


Use <E> , to highlight sections of text within a paragraph element.

Beispiel

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [FT](#) p. 104, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [LABEL](#) p. 128, [LONG-NAME](#) p. 134, [LONG-NAME-1](#) p. 135, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597, [VERBATIM](#) p. 626

Ist Kontext für: Text

 #PCDATA

EPNG

Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> • BOLD • ITALIC • BOLDITALIC • PLAIN 	You can highlight text using BOLD or ITALIC to alter its appearance.
[COLOR] (implied)	cdata		Color value, specified in SRBG (http://www.w3.org/Graphics/Color/sRGB) A Color value can either be a hexadecimal value (prefixed with #) or one of the predefined color names, e.g "black", "dodgerblue" or "indianred". The color names are case-insensitive.
[FONT] (implied)	namedtokengroup	<ul style="list-style-type: none"> • MONO • DEFAULT 	

2.93

EMAIL

Beschreibung

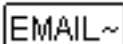
Use <EMAIL> , to enter the email address of a project participant.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text

 #PCDATA

EMAIL.PNG

2.94 ENTITY-NAME

Beschreibung

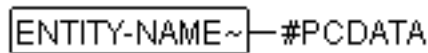
Use **<ENTITY-NAME>** , to create a company-specific file name for the document or document part.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO](#) p. 53

Ist Kontext für: Text



ENTITYNAME.PNG

2.95 ENTRY

Beschreibung

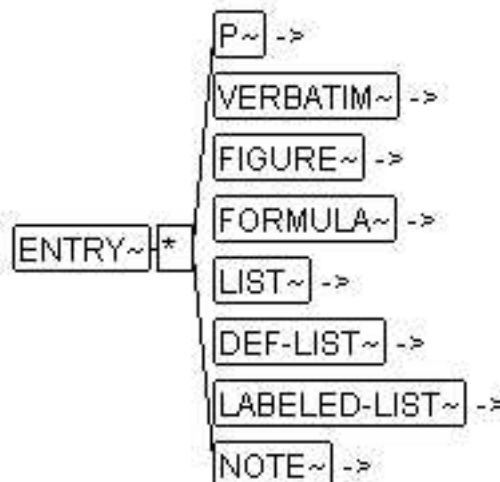
Use **<ENTRY>** , that contains a paragraph element to display the contents of a table cell.

Beispiel

Formale Beschreibung

Hat als Kontext: [ROW](#) p. 202

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166



ENTRY.PNG



Attribut	Typ	Wertebereich	Anmerkungen
[MOREROWS] (default)	nmtoken	0	Modify the attribute to merge the appropriate <ENTRY> cell with the cells belonging to the subsequent rows. Enter 0 if you do not wish to merge any cells. Enter 1 to merge a cell with a cell in the next row. Enter a numeric value n to merge a cell with cells in n subsequent rows.
[ROTATE] (default)	nmtoken	0	Enter the angle by which the contents of a cell should be rotated.
[VALIGN] (default)	namedtokengroup	<ul style="list-style-type: none">• TOP• BOTTOM• MIDDLE	TOP - The contents of the table is aligned to the upper edge of the cell. BOTTOM - The contents of the table is aligned to the lower edge of the cell. MIDDLE - The contents of the table is centered to the vertical.
[ALIGN] (implied)	namedtokengroup	<ul style="list-style-type: none">• LEFT• RIGHT• CENTER• JUSTIFY• CHAR	LEFT - The table contents is justified left. RIGHT - The table contents is justified right. CENTER - The table contents is centered horizontally. JUSTIFY - The table contents is displayed with justified typesetting. There is an equal distance from the left and right-hand edges of the cell. CHAR - The alignment of the table contents is set by [CHAR] .
[CHAR] (implied)	cdata		If [ALIGN]="CHAR" , this specifies the alignment sign e.g. "bzlw", as a decimal point separator from an existing value of [CHAR] . The sign cannot be a SDATA entity.



Attribut	Typ	Wertebereich	Anmerkungen
[CHAROFF] (implied)	nmtoken		If [ALIGN] ="CHAR", this value indicates the percentage of the current column width to the left edge of the alignment sign in the [CHAR] -attribute. If there is no alignment sign in the element <ENTRY> , alignment is always horizontal right. The default value is taken from <COLSPEC> or <SPANSPEC> .
[COLNAME] (implied)	nmtoken		Now, specify an identification name for the column that has been modified, e.g. column1 for the first one.
[COLSEP] (implied)	nmtoken		At this point, you should determine whether the column guides of a cell are to be visible. You should enter 0 , if no column guides are to be displayed. You should enter 1 , if the column guides are to be displayed.
[NAMEEND] (implied)	nmtoken		Identification number of the final column included in the merge.
[NAMEST] (implied)	nmtoken		Identification number of the first column to be merged.
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the row guides of a cell are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.
[SPANNAME] (implied)	nmtoken		Identification name of a specified column merge.

2.96 EXTENSIBILITY

Beschreibung

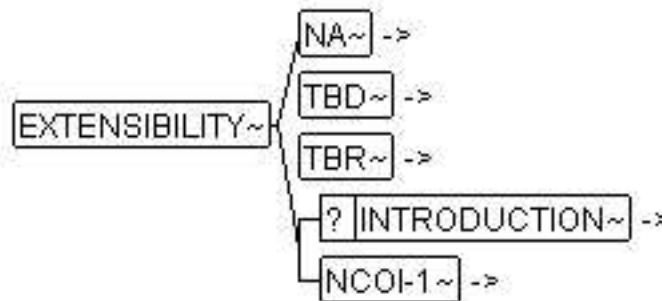
Use <EXTENSIBILITY>, to enter the **expandability** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-SOFTWARE](#) p. 114

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



EXTENSIBILITY.PNG

2.97 FAIL-SAVE-CONCEPT

Beschreibung

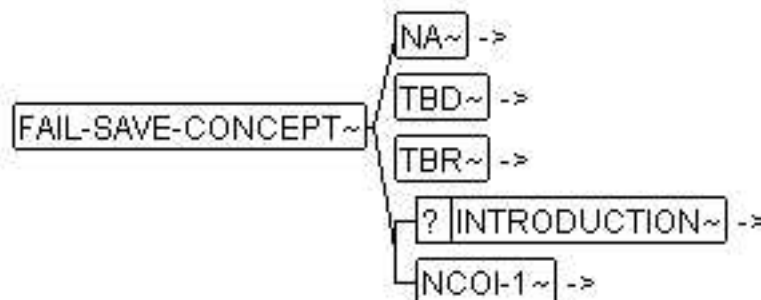
Use <FAIL-SAVE-CONCEPT>, to enter the **emergency run concept** .

Beispiel

Formale Beschreibung

Hat als Kontext: [FAILURE-MANAGEMENT](#) p. 93

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



FAIL-SAVE-CONCEPT.PNG

2.98 FAILURE-MANAGEMENT

Beschreibung

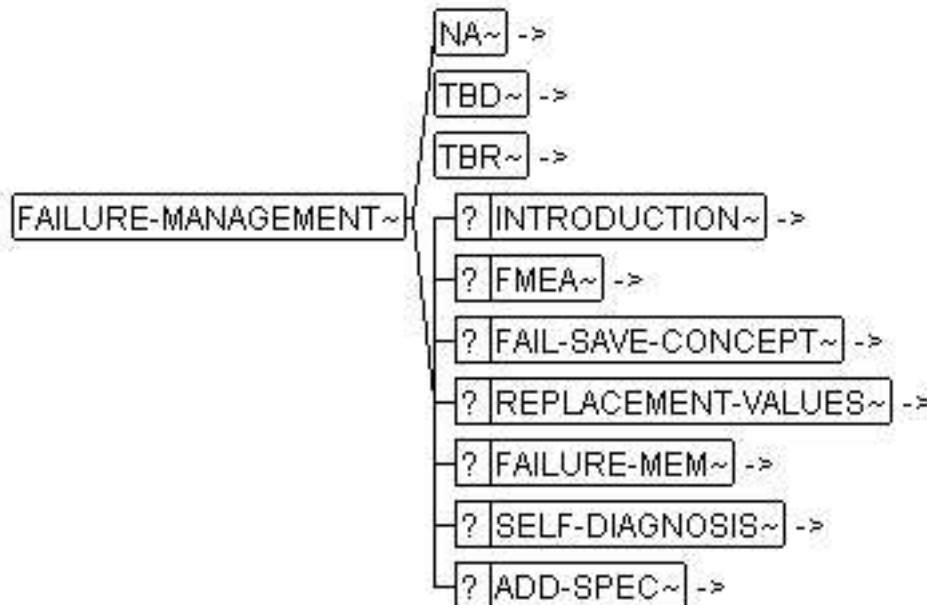
Use **<FAILURE-MANAGEMENT>**, to enter the **failure procedure** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [FMEA](#) p. 98, [FAIL-SAVE-CONCEPT](#) p. 93, [REPLACEMENT-VALUES](#) p. 190, [FAILURE-MEM](#) p. 94, [SELF-DIAGNOSIS](#) p. 211, [ADD-SPEC](#) p. 29



FAILURE-MANAGEMENT.PNG

2.99 FAILURE-MEM

Beschreibung

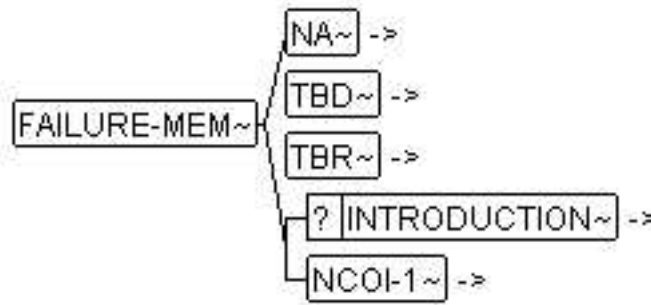
Use **<FAILURE-MEM>**, to enter the **fault memory** .

Beispiel

Formale Beschreibung

Hat als Kontext: [FAILURE-MANAGEMENT](#) p. 93

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



FAILURE-MEM.PNG

2.100 FAX

Beschreibung

Use <**FAX**> , to enter the fax number of a project participant.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text

FAX~—#PCDATA

FAX.PNG

2.101 FIGURE

Beschreibung

Use <**FIGURE**> , to integrate graphics into a document.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [FIGURE-CAPTION](#) p. 97, [GRAPHIC](#) p. 115, [MAP](#) p. 137, [VERBATIM](#) p. 626, [DESC](#) p. 83

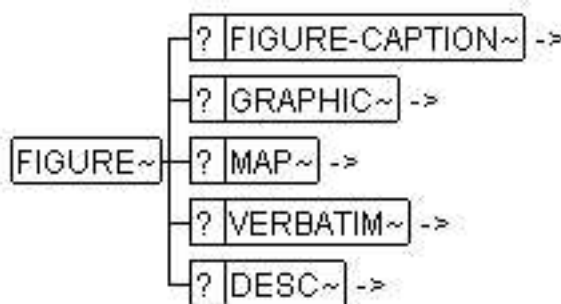


FIGURE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[FLOAT] (implied)	namedtokengroup	<ul style="list-style-type: none"> FLOAT NO-FLOAT 	Permits a check, in the case of a <FIGURE> that cannot be broken up, to determine whether the <FIGURE> can be shifted elsewhere, so that the page can be used to a greater advantage (compare to flat at TeX).
[FRAME] (implied)	namedtokengroup	<ul style="list-style-type: none"> TOP BOTTOM TOPBOT ALL SIDES NONE 	<p>TOP - Border at the top of the picture</p> <p>BOTTOM - Border at the bottom of the figure</p> <p>TOPBOT - Borders at the top and bottom of the figure</p> <p>ALL - Borders all around the figure</p> <p>SIDES - Borders at the sides of the figure</p> <p>NONE - No borders around the figure</p>
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	KEEP: ensures that the graphic and the element preceding it are not separated. NO-KEEP separates the two elements.
[PGWIDE] (implied)	namedtokengroup	<ul style="list-style-type: none"> PGWIDE NO-PGWIDE 	PGWIDE: enables the expansion of the diagram to fit across the entire page. NO-PGWIDIE suppresses expansion across the page if, for example, a fixed margin has been given.

2.102 FIGURE-CAPTION

Beschreibung

This element specifies the title of an illustration.

Beispiel

Formale Beschreibung

Hat als Kontext: [FIGURE](#) p. 95

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212

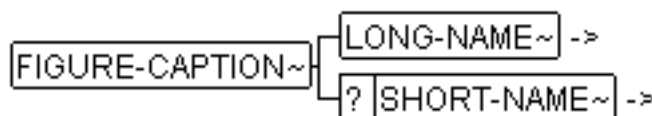


FIGURE-CAPTION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	FIGURE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.103 FLASH-PROGRAMMING

Beschreibung

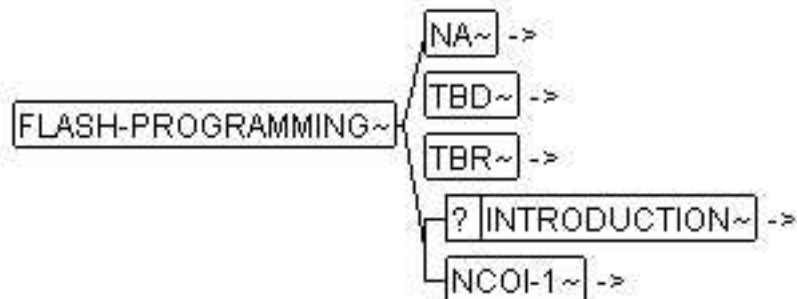
Use <FLASH-PROGRAMMING>, to enter the **flash-programming** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-INTERFACES](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



FLASH-PROGRAMMING.PNG

2.104 FMEA

Beschreibung

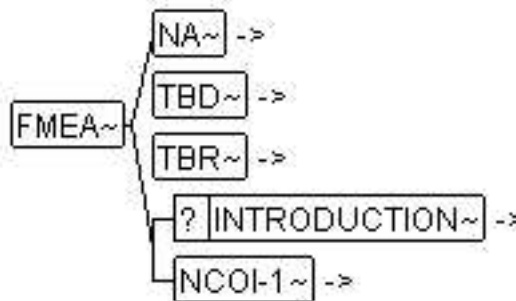
Use **<FMEA>**, to enter the **FMEA (Failure Mode Effects Analysis)**.

Beispiel

Formale Beschreibung

Hat als Kontext: [FAILURE-MANAGEMENT](#) p. 93

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



FMEA.PNG

2.105 FORMATTER-CTRL

Beschreibung

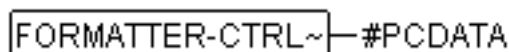
This element contains instructions to be formatted that can be freely specified, such as the scope of the context in which **<FORMATTER-CTRL>** is located. Here, the attribute **[SI]** can carry on further useful information obtained through the formatting process.

Beispiel

Formale Beschreibung

Hat als Kontext: [FORMATTER-CTRLS](#) p. 100

Ist Kontext für: Text



FORMATTER-CTRL.PNG

Attribut	Typ	Anmerkungen
[TARGET-SYSTEM] (implied)	cdata	This attribute can specify a target system which is valid for the current setting. If the attribute is absent, it is valid for all target systems. The target systems determine how this attribute should be interpreted. For example, the view control on creation of a help file could proceed in the following way: if there is a formatter-ctrl, si="view" target-system="htmlhelp", this will be used. If there is no specific view, but a formatter-ctrl si="view", without a target system specification, then this is used.

2.106 FORMATTER-CTRLS

Beschreibung

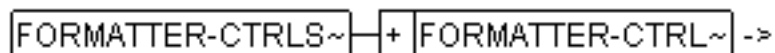
Container-Element for <FORMATTER-CTRL> .

Beispiel

Formale Beschreibung

Hat als Kontext: [ADMIN-DATA](#) p. 30

Ist Kontext für: [FORMATTER-CTRL](#) p. 99



FORMATTER-CTRLS.PNG

2.107 FORMULA

Beschreibung

Use <FORMULA> , to enter a formula in a document.

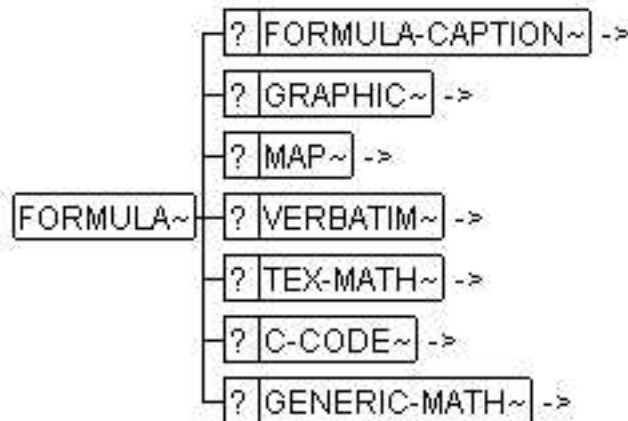
Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103

, INTRODUCTION p. 124, ITEM p. 126, LABELED-ITEM p. 129, MSR-PROCESSING-LOG p. 144, MSR-QUERY-RESULT-P-1 p. 150, MSR-QUERY-RESULT-P-2 p. 150, NCOI-1 p. 162, NCOI-3 p. 163, REAL-TIME-REQUIREMENTS p. 186, REQUIREMENT-BODY p. 192, REQUIREMENTS-DEPENDENCY p. 196, RISKS p. 200, SW-ADDR-METHOD-DESC p. 229, SW-APPLICATION-NOTES p. 234, SW-CARB-DOC p. 275, SW-CODE-SYNTAX-DESC p. 313, SW-FEATURE-DEF p. 391, SW-FEATURE-DESC p. 392, SW-GENERIC-AXIS-DESC p. 414, SW-MAINTENANCE-NOTES p. 436, SW-TEST-DESC p. 543, TECHNICAL-ASPECTS p. 603, TOPIC-1 p. 610, TOPIC-2 p. 612

Ist Kontext für: FORMULA-CAPTION p. 101, GRAPHIC p. 115, MAP p. 137, VERBATIM p. 626, TEX-MATH p. 604, C-CODE p. 41, GENERIC-MATH p. 115



FORMULA.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	KEEP: ensures that the formula and the element preceding it are not separated. NO-KEEP separates the two elements.

2.108 FORMULA-CAPTION

Beschreibung

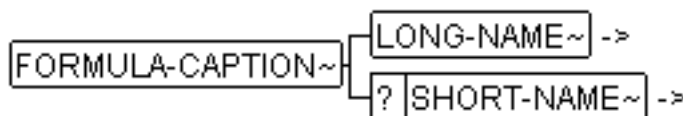
This element specifies the identification or heading of a formula.

Beispiel

Formale Beschreibung

Hat als Kontext: [FORMULA](#) p. 100

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	FORMULA	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.109 FR-FEATURE-REF

Beschreibung

`<FR-FEAUTURE-REF>` is used to reference a `<FR-FEATURE>` describing a specific character-istic of the system. The `<FR-FEATURE>` is normally handled with the MSRFR DTD.

Beispiel

`<FR-FEATURE-REF>Cruise Control</FR-FEATURE-REF>`

Formale Beschreibung

Hat als Kontext: [SW-SYSCOND](#) p. 511

Ist Kontext für: Text

FR-FEATURE-REF~ — #PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	FR-FEATURE	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.110 FREE-INFO

Beschreibung

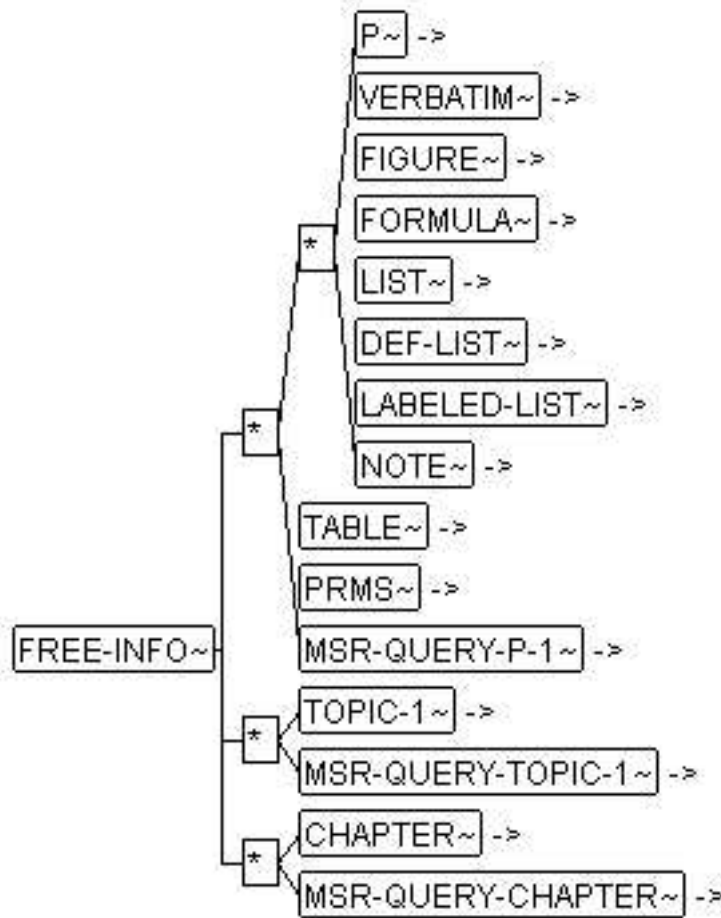
Use **<FREE-INFO>**, to enter the **details** in the form of continuous text.

Beispiel

Formale Beschreibung

Hat als Kontext: [KEY-DATA](#) p. 128

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



FREE-INFO.PNG

2.111 FT

Beschreibung

Use **<FT>** , to create a footnote.

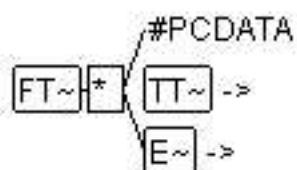
Beispiel

<FT>This text appears as a footnote**</FT>**

Formale Beschreibung

Hat als Kontext: [CHANGE p. 43](#), [DESC p. 83](#), [INDENT-SAMPLE p. 121](#), [ITEM-LABEL p. 127](#), [MSR-QUERY-RESULT-TEXT p. 151](#), [P p. 172](#), [REASON p. 187](#), [TBR p. 597](#)

Ist Kontext für: Text, [TT p. 614](#), [E p. 88](#)



FTP.PNG

2.112 FUNCTION-OVERVIEW

Beschreibung

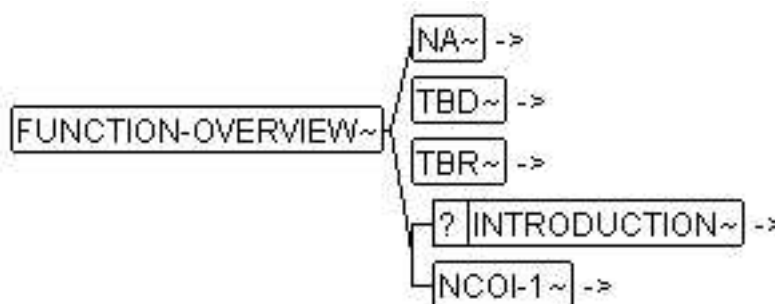
Use **<FUNCTION-OVERVIEW>**, to enter the **functional overview** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



FUNCTION-OVERVIEW.PNG

2.113 FUNCTION-REF

Beschreibung

This is an external reference to a **<FUNCTION>** within an instance of MSRSYS DTD.

Beispiel

```

<MSRSW>
  <SW-SYSTEMS>
    <SW-SYSTEM ID="IDB7C9BC9rad7F9FF">
      <LONG-NAME>Demonstrator System</LONG-NAME>
      <SHORT-NAME>Demosys</SHORT-NAME>
      <SW-COMPONENT-SPEC>
        <SW-COMPONENTS>
          <SW-FEATURE ID="IDB7C9BC9radFEF65">
            <SHORT-NAME>Demofeature</SHORT-NAME>
            <SW-FULFILS>
              <FUNCTION-REF ID-REF="id-demofeature">sysdemo</FUNCTION-REF>
            </SW-FULFILS>
          </SW-FEATURE>
        </SW-COMPONENTS>
      </SW-COMPONENT-SPEC>
    </SW-SYSTEM>
  </SW-SYSTEMS>
  <LOCS>
    <NAMELOC ID="id-demofeature">
      <LONG-NAME>Demonstratorfunktion</LONG-NAME>
      <SHORT-NAME>Demofeature aus MSRSYS</SHORT-NAME>
      <NMLIST DOCORSUB="&msrsys-instance;">sysdemo</NMLIST>
    </NAMELOC>
  </LOCS>
</MSRSW>
  
```

Formale Beschreibung

Hat als Kontext: [SW-FULFILS](#) p. 413

Ist Kontext für: Text

FUNCTION-REF~—#PCDATA

FUNCTION-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-EXT-ID-CLASS] (fixed)	nmtoken	FUNCTION	Fixed External ID Class. The value of this attribute classifies links and external link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an external object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	EXTERNAL	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language) The names of the locator attributes e.g. ID-REF, used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.114 FUNCTIONAL-REQUIREMENTS

Beschreibung

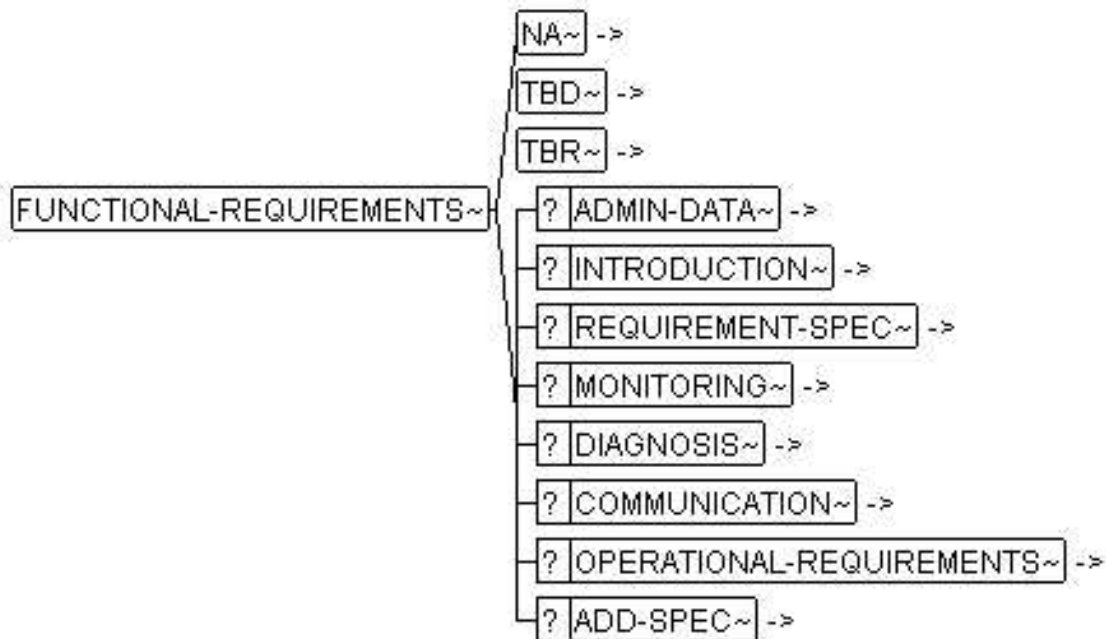
This element is the actual root element of an MSRSW instance sub-tree in which requirements are stored. In addition to administrative (<ADMIN-DATA>, <ADD-SPEC>) and introductory (<INTRODUCTION>) elements they may also contain the requirement specifications (<REQUIREMENT-SPEC>).

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-REQUIREMENTS](#) p. 113

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [REQUIREMENT-SPEC](#) p. 195, [MONITORING](#) p. 144, [DIAGNOSIS](#) p. 86, [COMMUNICATION](#) p. 50, [OPERATIONAL-REQUIREMENTS](#) p. 170, [ADD-SPEC](#) p. 29



FUNCTIONAL-REQUIREMENTS.PNG

2.115 GENERAL-COND

Beschreibung

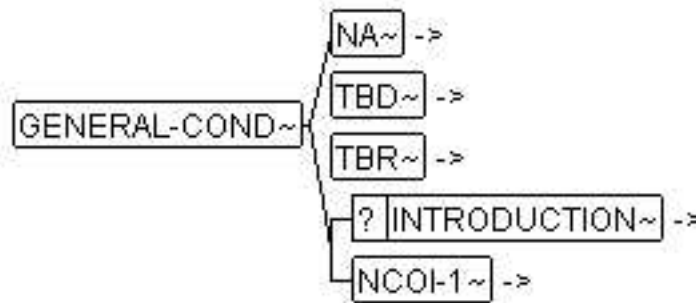
Use <GENERAL-COND>, to enter the **general marginal conditions**.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



GENERAL-COND.PNG

2.116 GENERAL-HARDWARE

Beschreibung

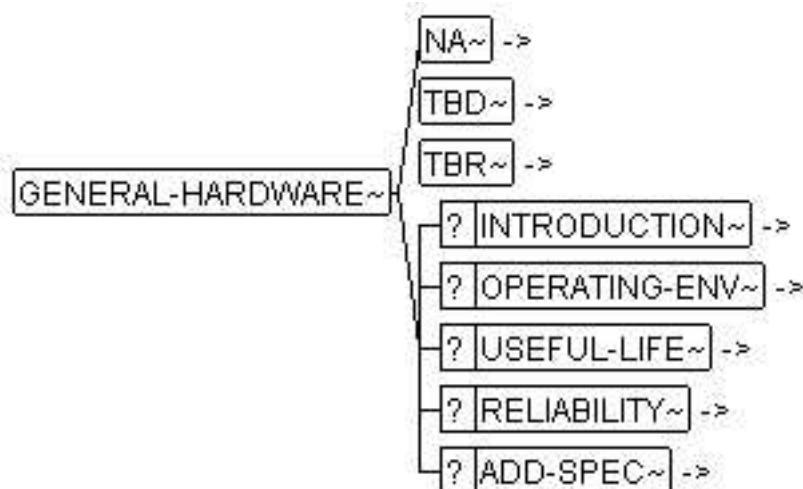
Use <GENERAL-HARDWARE>, to enter the **general hardware conditions** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [OPERATING-ENV](#) p. 169, [USEFUL-LIFE](#) p. 617, [RELIABILITY](#) p. 188, [ADD-SPEC](#) p. 29



GENERAL-HARDWARE.PNG

2.117 GENERAL-INTERFACES

Beschreibung

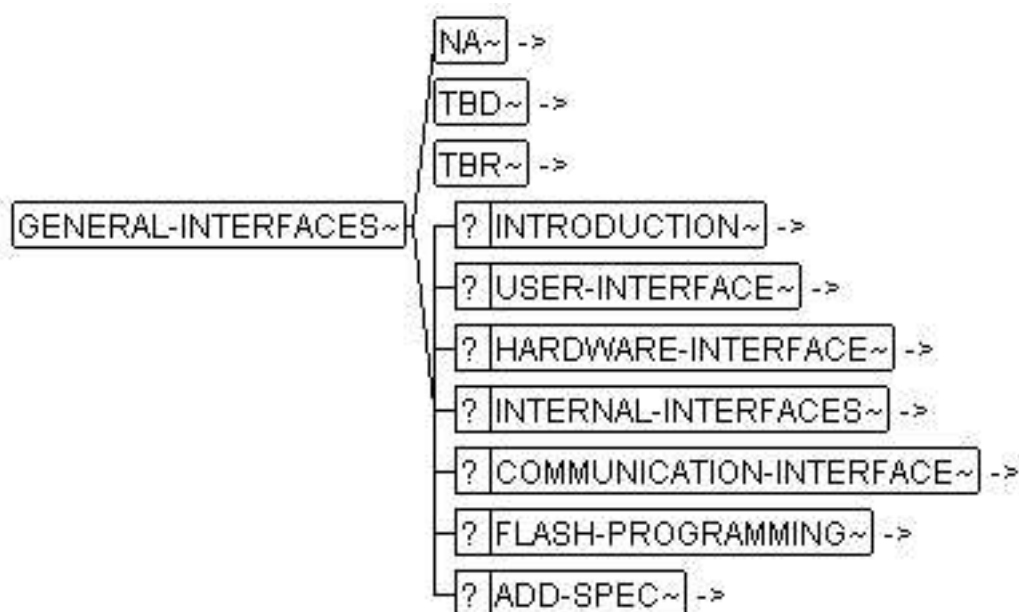
Use **<GENERAL-INTERFACES>**, to enter the **interface requirements** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [USER-INTERFACE](#) p. 618, [HARDWARE-INTERFACE](#) p. 120, [INTERNAL-INTERFACES](#) p. 123, [COMMUNICATION-INTERFACE](#) p. 50, [FLASH-PROGRAMMING](#) p. 98, [ADD-SPEC](#) p. 29



GENERAL-INTERFACES.PNG

2.118 GENERAL-PRODUCT-DATA-1

Beschreibung

Use **<GENERAL-PRODUCT-DATA-1>**, to specify the **general requirements** regarding the software.

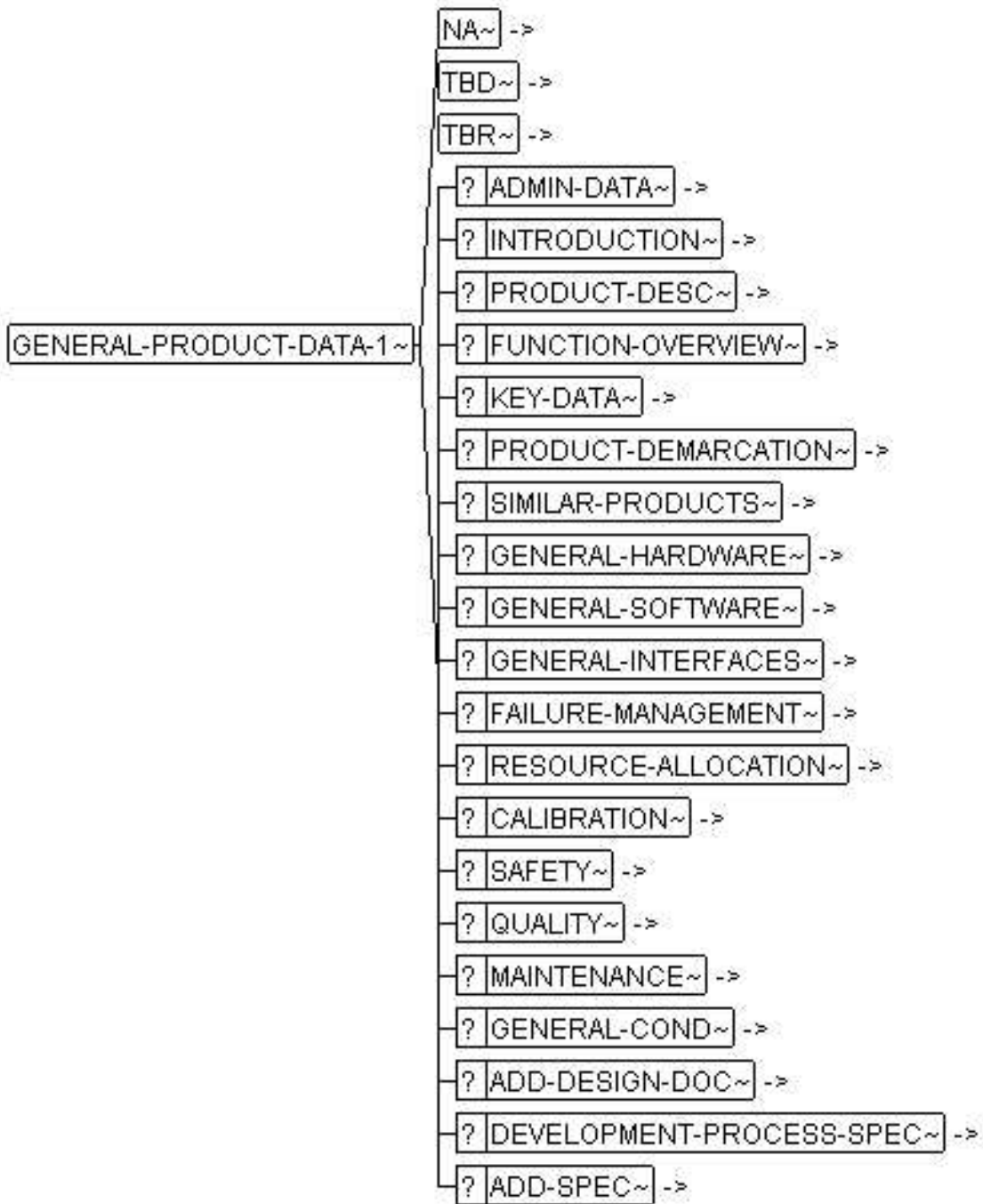
Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-REQUIREMENTS](#) p. 113

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [PRODUCT-DESC](#) p. 182, [FUNCTION-OVERVIEW](#) p. 104,

KEY-DATA p. 128, PRODUCT-DEMARCATON p. 182, SIMILAR-PRODUCTS p. 215, GENERAL-HARDWARE p. 109, GENERAL-SOFTWARE p. 114, GENERAL-INTERFACES p. 109, FAILURE-MANAGEMENT p. 93, RESOURCE-ALLOCATION p. 197, CALIBRATION p. 42, SAFETY p. 203, QUALITY p. 186, MAINTENANCE p. 137, GENERAL-COND p. 108, ADD-DESIGN-DOC p. 26, DEVELOPMENT-PROCESS-SPEC p. 85, ADD-SPEC p. 29



GENERAL-PRODUCT-DATA-1.PNG



2.119 GENERAL-PROJECT-DATA

Beschreibung

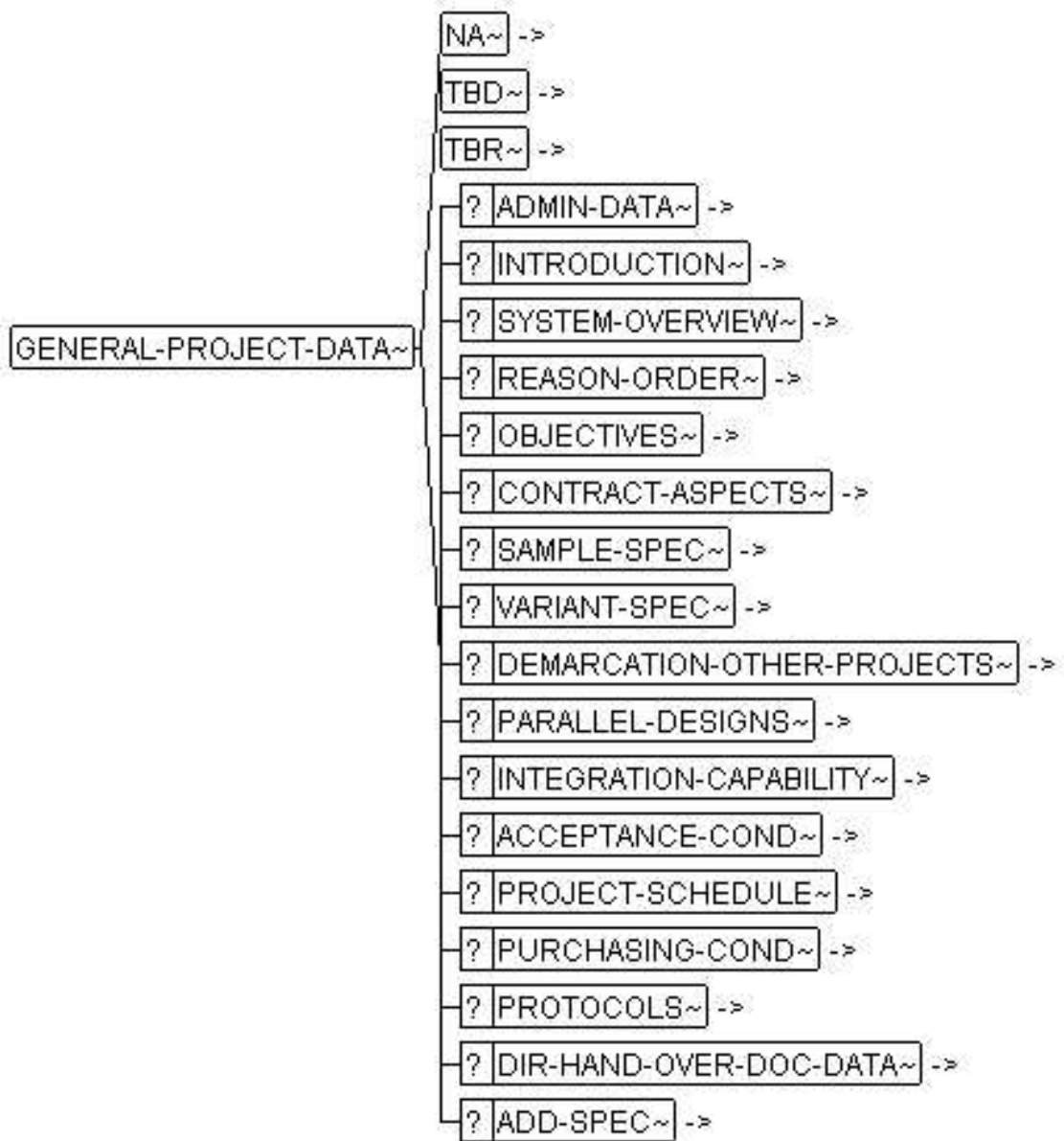
Use <GENERAL-PROJECT-DATA>, to enter the **general project data** .

Beispiel

Formale Beschreibung

Hat als Kontext: [PROJECT](#) p. 183

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SYSTEM-OVERVIEW](#) p. 591, [REASON-ORDER](#) p. 188, [OBJECTIVES](#) p. 168, [CONTRACT-ASPECTS](#) p. 73, [SAMPLE-SPEC](#) p. 207, [VARIANT-SPEC](#) p. 626, [DEMARCATION-OTHER-PROJECTS](#) p. 82, [PARALLEL-DESIGNS](#) p. 173, [INTEGRATION-CAPABILITY](#) p. 122, [ACCEPTANCE-COND](#) p. 25, [PROJECT-SCHEDULE](#) p. 184, [PURCHASING-COND](#) p. 185, [PROTOCOLS](#) p. 184, [DIR-HAND-OVER-DOC-DATA](#) p. 86, [ADD-SPEC](#) p. 29



GENERAL-PROJECT-DATA.PNG

2.120 GENERAL-REQUIREMENTS

Beschreibung

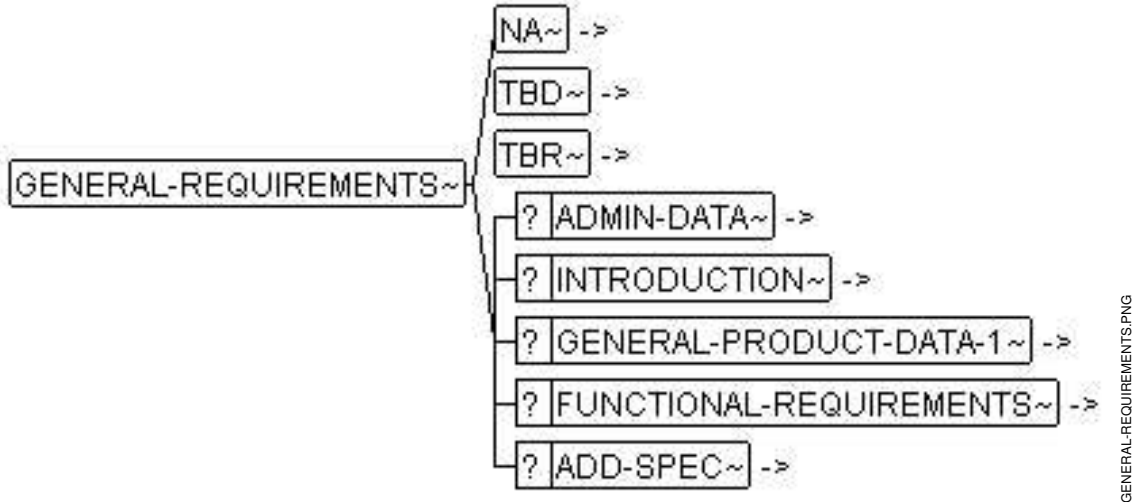
This element specifies general requirements which for example can be defined in the requirement management.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [ADMIN-DATA p. 30](#), [INTRODUCTION p. 124](#), [GENERAL-PRODUCT-DATA-1 p. 110](#), [FUNCTIONAL-REQUIREMENTS p. 108](#), [ADD-SPEC p. 29](#)



2.121 GENERAL-SOFTWARE

Beschreibung

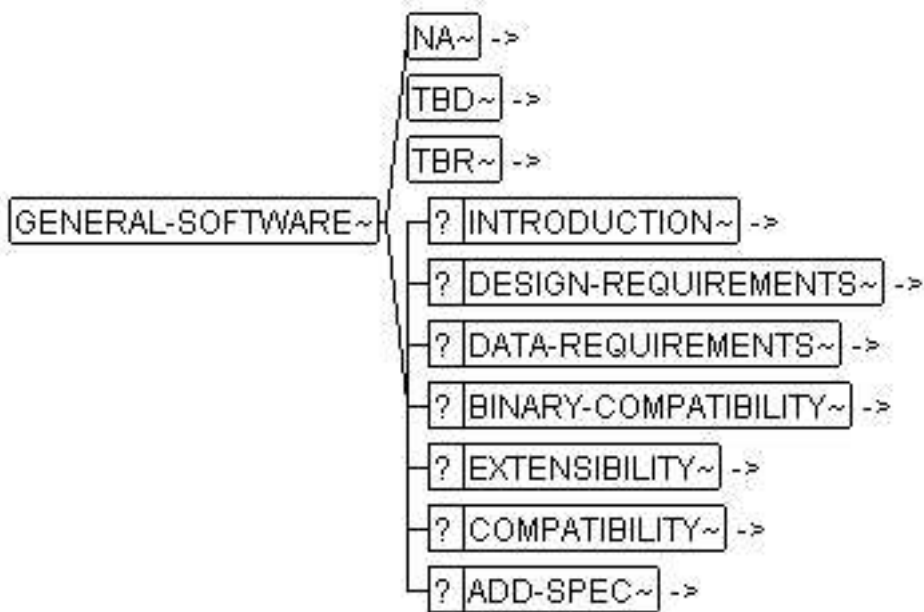
Use <GENERAL-SOFTWARE> to enter the **general software requirements** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [DESIGN-REQUIREMENTS p. 84](#), [DATA-REQUIREMENTS p. 76](#), [BINARY-COMPATIBILITY p. 39](#), [EXTENSIBILITY p. 92](#), [COMPATIBILITY p. 57](#), [ADD-SPEC p. 29](#)



GENERAL-SOFTWARE.PNG

2.122 GENERIC-MATH

Beschreibung

Use <**GENERIC-MATH**> to insert semantic and mathematical descriptions which are processed by a math-processor.

Beispiel

Formale Beschreibung

Hat als Kontext: [FORMULA](#) p. 100

Ist Kontext für: Text

GENERIC-MATH~ #PCDATA

GENERIC-MATH.PNG

2.123 GRAPHIC

Beschreibung

Use <**GRAPHIC**> , to integrate an already existing graphic in the context elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [FIGURE](#) p. 95, [FORMULA](#) p. 100

Ist Kontext für: Text

GRAPHIC~—#PCDATA

GRAPHIC.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[EDITFIT] (default)	namedtokengroup	<ul style="list-style-type: none"> • AS-IS • ROTATE-90-CW • ROTATE-90-CCW • ROTATE-180 • FIT-TO-TEXT • FIT-TO-PAGE • LIMIT-TO-TEXT • LIMIT-TO-PAGE • ROTATE-90-CW-FIT-TO-TEXT • ROTATE-90-CCW-FIT-TO-TEXT • ROTATE-180-LIMIT-TO-TEXT • ROTATE-90-CW-LIMIT-TO-PAGE • ROTATE-90-CCW-LIMIT-TO-PAGE • ROTATE-180-LIMIT-TO-PAGE • 0 • 1 • 2 • 3 	FIT properties of the graphic in edit mode.



Attribut	Typ	Wertebereich	Anmerkungen
[FIT] (default)	namedtokengroup	<ul style="list-style-type: none">• AS-IS• ROTATE-90-CW• ROTATE-90-CCW• ROTATE-180• FIT-TO-TEXT• FIT-TO-PAGE• LIMIT-TO-TEXT• LIMIT-TO-PAGE• ROTATE-90-CW-FIT-TO-TEXT• ROTATE-90-CCW-FIT-TO-TEXT• ROTATE-180-LIMIT-TO-TEXT• ROTATE-90-CW-LIMIT-TO-PAGE• ROTATE-90-CCW-LIMIT-TO-PAGE• ROTATE-180-LIMIT-TO-PAGE• 0• 1• 2• 3	Modify the attribute [FIT] , to determine the way in which the graphic should be inserted. Enter the attribute value 0 , to insert a graphic in its original dimensions. The graphic is adapted, if it is too big for the space for which it was intended.

Attribut	Typ	Wertebereich	Anmerkungen
[HTML-FIT] (default)	namedtokengroup	<ul style="list-style-type: none"> • AS-IS • ROTATE-90-CW • ROTATE-90-CCW • ROTATE-180 • FIT-TO-TEXT • FIT-TO-PAGE • LIMIT-TO-TEXT • LIMIT-TO-PAGE • ROTATE-90-CW-FIT-TO-TEXT • ROTATE-90-CCW-FIT-TO-TEXT • ROTATE-180-LIMIT-TO-TEXT • ROTATE-90-CW-LIMIT-TO-PAGE • ROTATE-90-CCW-LIMIT-TO-PAGE • ROTATE-180-LIMIT-TO-PAGE • 0 • 1 • 2 • 3 	Determines whether the graphic should be adapted to fit the dimensions of the window.
[CATEGORY] (implied)	namedtokengroup	<ul style="list-style-type: none"> • BARCODE • CONCEPTUAL • ENGINEERING • FLOWCHART • GRAPH • LOGO • SCHEMATIC • WAVEFORM 	Here, you can enter the category of the graphic. This can be used to generate a list of graphics from specific categories.
[EDIT-HEIGHT] (implied)	cdata		Height of the graphic in editor
[EDIT-WIDTH] (implied)	cdata		Width of the graphic in editor
[EDITSCALE] (implied)	cdata		Scale of the graphic in edit mode.

Attribut	Typ	Wertebereich	Anmerkungen
[FILENAME] (implied)	cdata		Here, you should enter the file name under which the system for reproduction can call the graphic.
[HEIGHT] (implied)	cdata		In this attribute, the height of the graphic can be altered.
[HTML-HEIGHT] (implied)	cdata		Height of the graphic displayed online in html and htmlhelp.
[HTML-SCALE] (implied)	cdata		Scale of the graphic when displayed in html and htmlhelp.
[HTML-WIDTH] (implied)	cdata		Width of the graphic displayed online in html and htmlhelp.
[NOTATION] (implied)	cdata		Now the format of the graphic file must be specified, e.g. EPS.
[SCALE] (implied)	cdata		In this element the dimensions of the graphic can be altered proportionally.
[WIDTH] (implied)	cdata		In this attribute, the width of the graphic can be altered.

2.124 GUARANTEE

Beschreibung

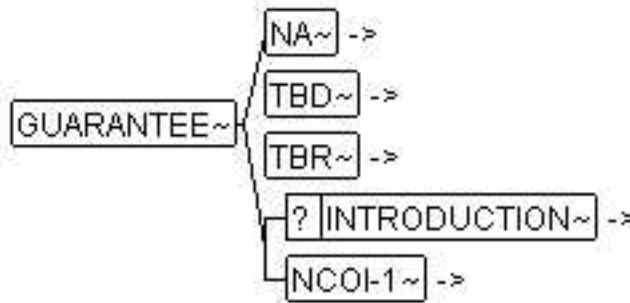
Use <GUARANTEE>, to enter the **guarantee** .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONTRACT-ASPECTS p. 73](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



GUARANTEE.PNG

2.125 HARDWARE-INTERFACE

Beschreibung

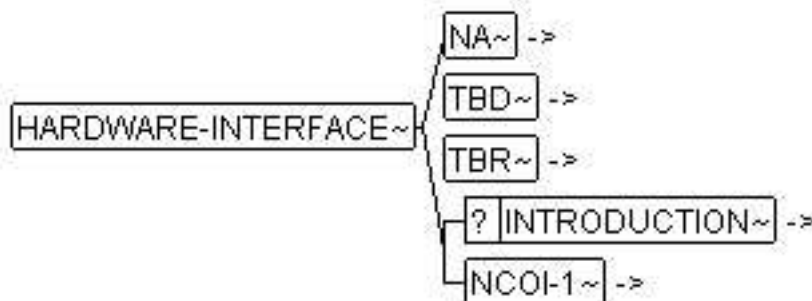
Use <**HARDWARE-INTERFACE**> to enter the **interfaces to hardware** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-INTERFACES](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



HARDWARE-INTERFACE.PNG

2.126 HOMEPAGE

Beschreibung

Use <**HOMEPAGE**> , to enter the company email address of a project participant.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text

HOME PAGE ~ #PCDATA

HOME PAGE.PING

2.127 IE

Beschreibung

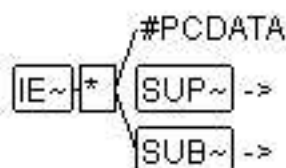
Use <IE> to create an index that is to appear in the index directory.

Beispiel

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [LABEL](#) p. 128, [LONG-NAME](#) p. 134, [LONG-NAME-1](#) p. 135, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597

Ist Kontext für: Text, [SUP](#) p. 221, [SUB](#) p. 220



IE.PING

Attribut	Typ	Anmerkungen
[TYPE] (implied)	cdata	Indicates a type of the respective element.

2.128 INDENT-SAMPLE

Beschreibung

Use <INDENT-SAMPLE> to set the amount of indentation for the parent object.

Beispiel

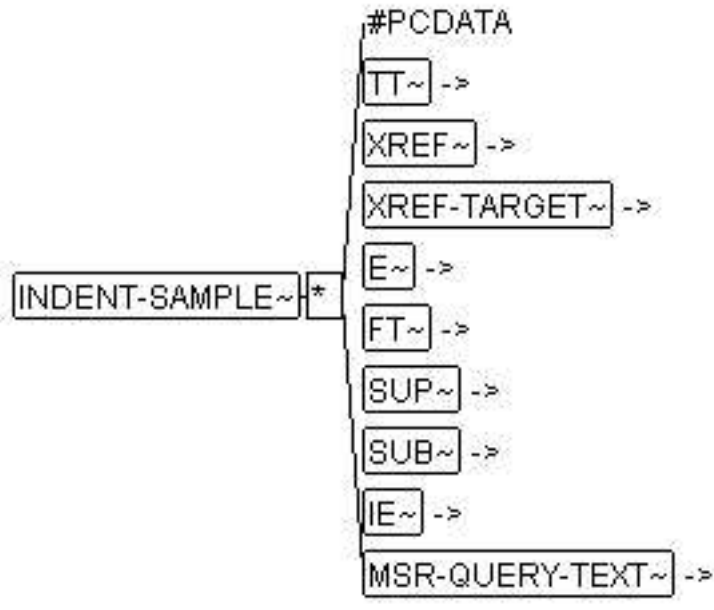
The following example sets an indentation of one unit.

```
<INDENT-SAMPLE>X</INDENT-SAMPLE>
```

Formale Beschreibung

Hat als Kontext: [LABELED-LIST](#) p. 130

Ist Kontext für: Text, [TT](#) p. 614, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [MSR-QUERY-TEXT](#) p. 153



INDENT-SAMPLE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ITEM-LABEL-POS] (default)	namedtokengroup	<ul style="list-style-type: none"> NO-NEWLINE NEWLINE NEWLINE-IF-NECESSARY 	NO-NEWLINE - line break inside the first column. NEWLINE - no line break inside the first column. The description regarding designation begins in the second row. NEWLINE-IF-NECESSARY - no line break inside the first column. If the marginal notes designation is longer than in the <INDENT-SAMPLE> , the description begins in the second row. Otherwise it begins in the first.

2.129 INTEGRATION-CAPABILITY

Beschreibung

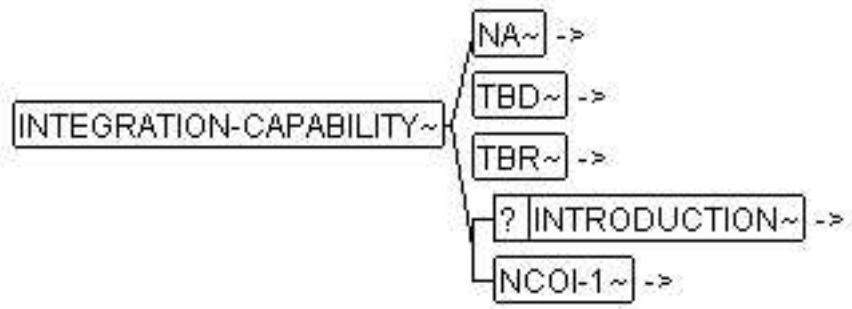
Use **<INTEGRATION-CAPABILITY>**, to enter the **integration capacity** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



INTEGRATION-CAPABILITY.PNG

2.130 INTERNAL-INTERFACES

Beschreibung

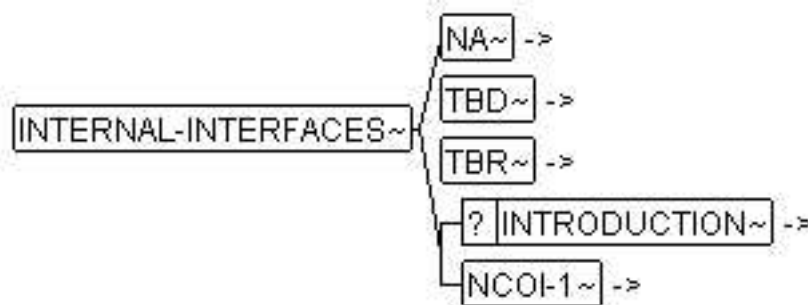
Use <INTERNAL-INTERFACES> to enter the **internal interfaces** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-INTERFACES](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



INTERNAL-INTERFACES.PNG

2.131 INTERRUPT-SPEC

Beschreibung

This container describes the architecture of the program interrupts in verbal form. A more formal specification is possible through the assignment of data to the **[SI]** attributes in the <NCOI-1> sub-tree.

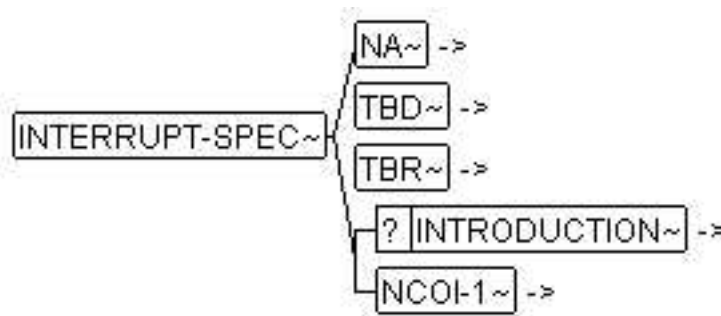
Beispiel

```
<INTERRUPT-SPEC>
<INTRODUCTION>
  <P>This chapter describes the general architecture of external events.</P>
</INTRODUCTION>
<NCOI-1>
  <P>The software utilizes the following interrupts:</P>
  <TABLE>
    <TABLE-CAPTION>
      <LONG-NAME>Interrupt table</LONG-NAME>
    </TABLE-CAPTION>
    <TGROUP COLS="4">
      <COLSPEC COLNUM="1" COLNAME="col1" COLWIDTH="1.00*">
      <COLSPEC COLNUM="2" COLNAME="col2" COLWIDTH="4.90*">
      <COLSPEC COLNUM="3" COLNAME="col3" COLWIDTH="2.97*">
      <COLSPEC COLNUM="4" COLNAME="col4" COLWIDTH="2.97*">
      <THEAD>
        <ROW>
          <ENTRY SI="LABEL" COLNAME="col1">
            <P>Label</P>
          </ENTRY>
          <ENTRY COLNAME="col2">
            <P>Description</P></ENTRY>
          <ENTRY COLNAME="col3">
            <P>Priority</P>
          </ENTRY>
          <ENTRY SI="SERVICE-ROUTINE" COLNAME="col4">
            <P>Service routine</P>
          </ENTRY>
        </ROW>
      </THEAD>
      <TBODY>
        <ROW>
          <ENTRY COLNAME="col1"><P>IRQ1</P></ENTRY>
          <ENTRY COLNAME="col2"><P>Timer</P></ENTRY>
          <ENTRY COLNAME="col3"><P>medium</P></ENTRY>
          <ENTRY COLNAME="col4"><P>0x1000</P></ENTRY>
        </ROW>
        <ROW>
          <ENTRY COLNAME="col1"><P>IRQ2</P></ENTRY>
          <ENTRY COLNAME="col2"><P>Angle interrupt</P></ENTRY>
          <ENTRY COLNAME="col3"><P>high</P></ENTRY>
          <ENTRY COLNAME="col4"><P>0x1004</P></ENTRY>
        </ROW>
      </TBODY>
    </TGROUP>
  </TABLE>
</NCOI-1>
</INTERRUPT-SPEC>
```

Formale Beschreibung

Hat als Kontext: [SW-ARCHITECTURE p. 237](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



INTERRUPT-SPEC.PNG

2.132 INTRODUCTION

Beschreibung

<INTRODUCTION> provides a general introduction to the object in question.

- Use <P> to enable the processing systems to perform a word wrapping.
- Use <VERBATIM> if white-spaces are significant.

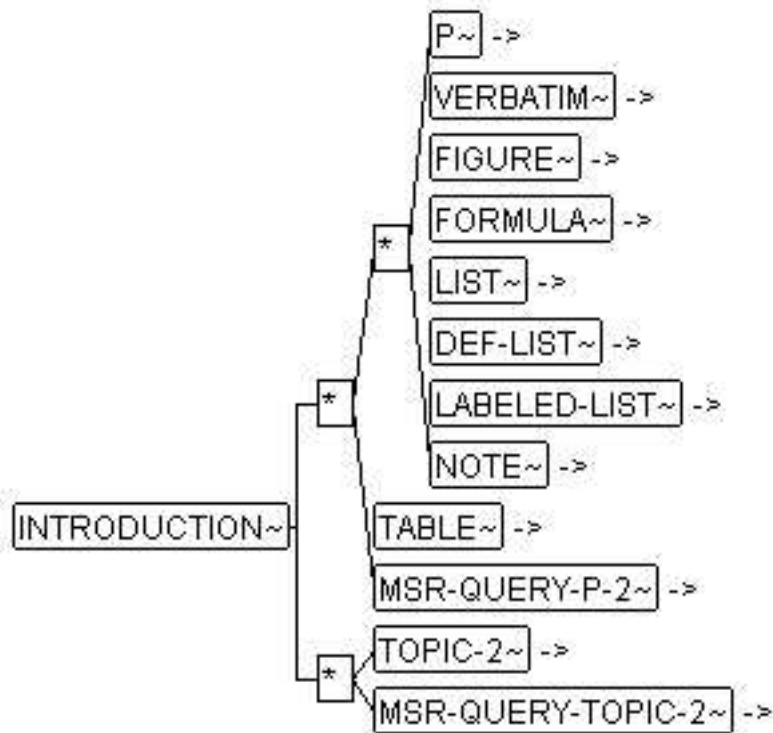
Beispiel

```
<INTRODUCTION>
    <P>This File is used to illustrate, how CDF can be implentend according
    to ASAM-MCD-2MC 2.0 resp. MSRSW.DTD 2.2.0 </P>
</INTRODUCTION>
```

Formale Beschreibung

Hat als Kontext: [ACCEPTANCE-COND](#) p. 25, [ADD-DESIGN-DOC](#) p. 26, [ADD-SPEC](#) p. 29, [BINARY-COMPATIBILITY](#) p. 39, [CALIBRATION](#) p. 42, [CHAPTER](#) p. 44, [COMMUNICATION](#) p. 50, [COMMUNICATION-INTERFACE](#) p. 50, [COMPATIBILITY](#) p. 57, [CONTRACT-ASPECTS](#) p. 73, [DATA-DESC](#) p. 75, [DATA-REQUIREMENTS](#) p. 76, [DATA-STRUCTURES](#) p. 76, [DEMARCATON-OTHER-PROJECTS](#) p. 82, [DESIGN-REQUIREMENTS](#) p. 84, [DEVELOPMENT-PROCESS-SPEC](#) p. 85, [DIAGNOSIS](#) p. 86, [DIR-HAND-OVER-DOC-DATA](#) p. 86, [EXTENSIBILITY](#) p. 92, [FAIL-SAVE-CONCEPT](#) p. 93, [FAILURE-MANAGEMENT](#) p. 93, [FAILURE-MEM](#) p. 94, [FLASH-PROGRAMMING](#) p. 98, [FMEA](#) p. 98, [FUNCTION-OVERVIEW](#) p. 104, [FUNCTIONAL-REQUIREMENTS](#) p. 108, [GENERAL-COND](#) p. 108, [GENERAL-HARDWARE](#) p. 109, [GENERAL-INTERFACES](#) p. 109, [GENERAL-PRODUCT-DATA-1](#) p. 110, [GENERAL-PROJECT-DATA](#) p. 111, [GENERAL-REQUIREMENTS](#) p. 113, [GENERAL-SOFTWARE](#) p. 114, [GUARANTEE](#) p. 119, [HARDWARE-INTERFACE](#) p. 120, [INTEGRATION-CAPABILITY](#) p. 122, [INTERNAL-INTERFACES](#) p. 123, [INTERRUPT-SPEC](#) p. 123, [KEY-DATA](#) p. 128, [MAINTENANCE](#) p. 137, [MONITORING](#) p. 144, [MSRSW](#) p. 155, [NORMATIVE-REFERENCE](#) p. 165, [OBJECTIVES](#) p. 168, [OPERATING-ENV](#) p. 169, [OPERATIONAL-REQUIREMENTS](#) p. 170, [OVERVIEW](#) p. 171, [PARALLEL-DESIGNS](#) p. 173, [PRODUCT-DEMARCATON](#) p. 182, [PRODUCT-DESC](#) p. 182, [PROJECT-SCHEDULE](#) p. 184, [PROTOCOLS](#) p. 184, [PURCHASING-COND](#) p. 185, [QUALITY](#) p. 186, [REASON-ORDER](#) p. 188, [RELIABILITY](#) p. 188, [REPLACEMENT-VALUES](#) p. 190, [REQUIREMENT-SPEC](#) p. 195, [RESOURCE-ALLOCATION](#) p. 197, [RESTRICTIONS-BY-HARDWARE](#) p. 198, [RIGHTS](#) p. 200, [SAFETY](#) p. 203, [SAMPLE-SPEC](#) p. 207, [SELF-DIAGNOSIS](#) p. 211, [SIMILAR-PRODUCTS](#) p. 215, [STANDARD-SW-MODULES](#) p. 218, [SW-ARCHITECTURE](#) p. 237, [SW-CALIBRATION-METHOD-SPEC](#) p. 258, [SW-COLLECTION-SPEC](#) p. 327, [SW-COMPONENT-SPEC](#) p. 330, [SW-CPU-SPEC](#) p. 352, [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-EVENT-SPEC](#) p. 384, [SW-GLOSSARY](#) p. 419, [SW-INSTANCE-SPEC](#) p. 427, [SW-MC-COMMUNICATION-SPEC](#) p. 445, [SW-OPER-MODE-SPEC](#) p. 472, [SW-SCHEDULING-SPEC](#) p. 499, [SW-SYSTEM](#) p. 517, [SW-TASK-SPEC](#) p. 538, [SW-TEST-SPEC](#) p. 544, [SW-USER-RIGHT-SPEC](#) p. 559, [SW-VCD-SPEC](#) p. 583, [SYSTEM-OVERVIEW](#) p. 591, [TIME-DEPENDENCY](#) p. 608, [USEFUL-LIFE](#) p. 617, [USER-INTERFACE](#) p. 618, [VARIANT-SPEC](#) p. 626

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [MSR-QUERY-P-2](#) p. 148, [TOPIC-2](#) p. 612, [MSR-QUERY-TOPIC-2](#) p. 154



INTRODUCTION.PNG

2.133 ISSUED-BY

Beschreibung

This element contains the name of the person who initiated the document revision. If the initiator cannot be referenced as **<TEAM-MEMBER>** in the current document his name can be given in this element.

Beispiel

Formale Beschreibung

Hat als Kontext: [DOC-REVISION](#) p. 87

Ist Kontext für: Text

ISSUED-BY~ #PCDATA

ISSUED-BY.PNG

2.134 ITEM

Beschreibung

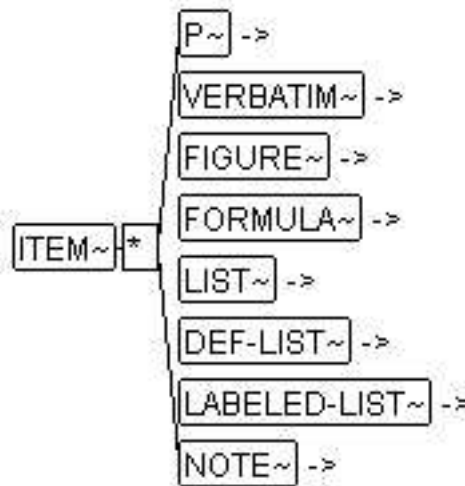
Use **<ITEM>** to create entries in a **<LIST>**.

Beispiel

Formale Beschreibung

Hat als Kontext: [LIST](#) p. 133

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166



ITEM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.135 ITEM-LABEL

Beschreibung

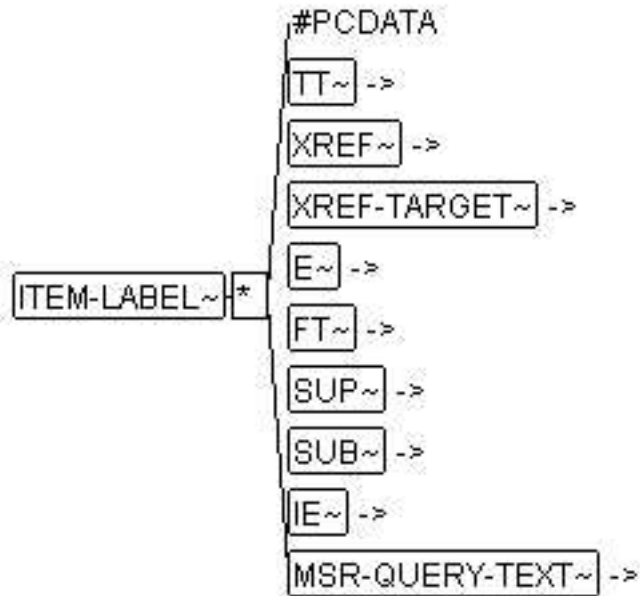
Use `<ITEM-LABEL>` to enter the label for the parent object.

Beispiel

Formale Beschreibung

Hat als Kontext: [LABELED-ITEM](#) p. 129, [SYN-ARGUMENT](#) p. 583, [SYN-OBJECT](#) p. 587

Ist Kontext für: Text, [TT](#) p. 614, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [MSR-QUERY-TEXT](#) p. 153



ITEM-LABEL.PNG

2.136 KEY-DATA

Beschreibung

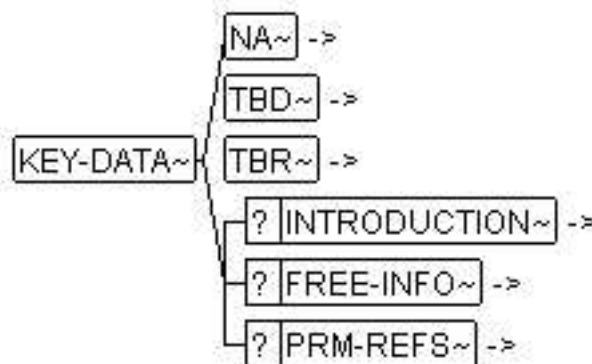
Use <KEY-DATA>, to enter the **characteristic parameters** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [FREE-INFO](#) p. 103, [PRM-REFS](#) p. 181



KEY-DATA.PNG

2.137 LABEL

Beschreibung

<LABEL> is used as a long designator (similar to <LONG-NAME>) for objects which cannot be referenced. In this case it is the name of the corresponding project.

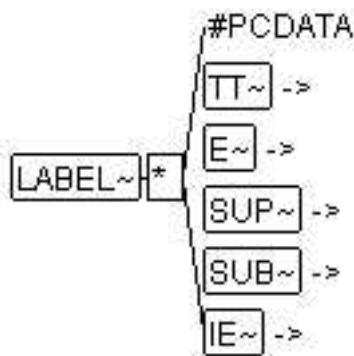
Beispiel

Refer to [Chapter 2.208 PROJECT-DATA](#) p. 183 for an example, where <LABEL> is the name of the corresponding project.

Formale Beschreibung

Hat als Kontext: [ANNOTATION](#) p. 32, [MATCHING-DCI](#) p. 139, [NOTE](#) p. 166, [OVER-ALL-PROJECT](#) p. 171, [PRMS](#) p. 181, [PROJECT](#) p. 183, [SW-CALIBRATION-METHOD-V](#) p. 259, [SW-CALPRM-VALUE-AXIS-LABELS](#) p. 274, [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-PROCESS](#) p. 475, [SW-SERVICE-ARG](#) p. 502, [SW-SERVICE-RETURN](#) p. 509, [VG](#) p. 629

Ist Kontext für: Text, [TT](#) p. 614, [E](#) p. 88, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121



LABEL.PNG

2.138 LABELED-ITEM

Beschreibung

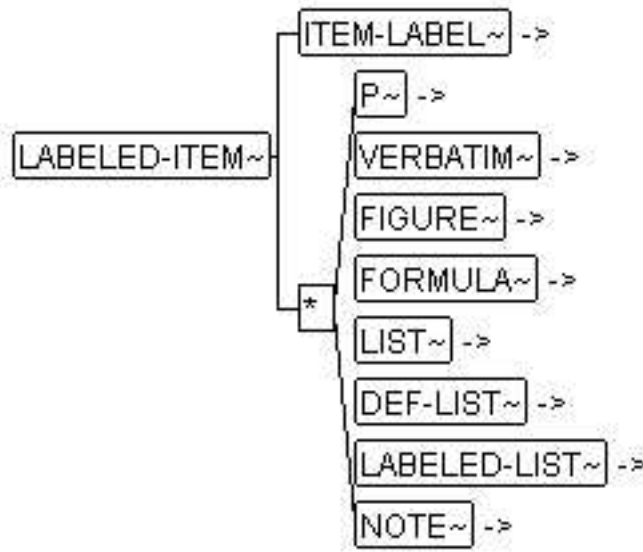
Use <LABELED-ITEM> to create an entry in a labeled list. The list can be nested by creating a new <LABELED-LIST> within the <LABELED-ITEM> .

Beispiel

Formale Beschreibung

Hat als Kontext: [LABELED-LIST](#) p. 130

Ist Kontext für: [ITEM-LABEL](#) p. 127, [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166



Labeled-Item.png

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.139 LABELED-LIST

Beschreibung

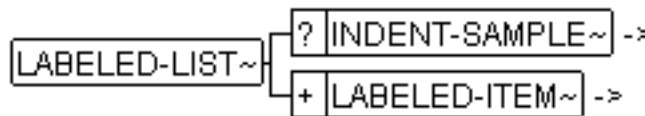
Use <LABELED-LIST> to create a list with labels that can be nested.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [INDENT-SAMPLE](#) p. 121, [LABELED-ITEM](#) p. 129



LABELED-LISTPNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.140 LANGUAGE

Beschreibung

<LANGUAGE> represents the human language used within the file. Its primary use is to prompt the tools to switch to an appropriate language.

This element is in accordance with the ISO 639-1 two letter language codes (*Codes for the Representation of Names of Languages* (<http://www.loc.gov/standards/iso639-2/langcodes.html>)). The most frequently used codes are given in [Table 1 Most common language codes \(alphabetical\)](#) p. 131 :

Table 1: Most common language codes (alphabetical)

Code	Language
de	German
en	English
es	Spanish
fr	French

Table 1 (Cont.): Most common language codes (alphabetical)

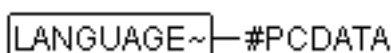
Code	Language
it	Italian
jp	Japanese

Beispiel

Formale Beschreibung

Hat als Kontext: [ADMIN-DATA](#) p. 30

Ist Kontext für: Text



LANGUAGE.PNG

2.141 LIFE-TIME

Beschreibung

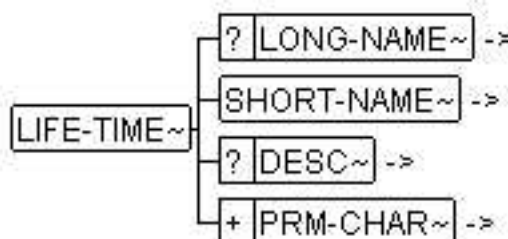
Use <LIFE-TIME> to enter the **operation life-time** .

Beispiel

Formale Beschreibung

Hat als Kontext: [USEFUL-LIFE-PRMS](#) p. 618

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [PRM-CHAR](#) p. 178



LIFE-TIME.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.142 LIST

Beschreibung

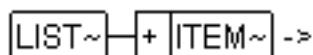
Use <LIST> , to create a numbered or unnumbered list. The list can be nested by adding a new list inside the <ITEM> element.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [ITEM](#) p. 126



Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> • UNNUMBER • NUMBER 	UNNUMBER - enumeration without numbering NUMBER - numbered enumeration
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> • KEEP • NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.143 LOCS

Beschreibung

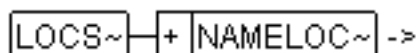
Use <LOCS> to generate references to external documents.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [NAMELOC p. 160](#)



LOCS.PNG

2.144 LONG-NAME

Beschreibung

Use <LONG-NAME> to create a comprehensive name for the context element.

Beispiel

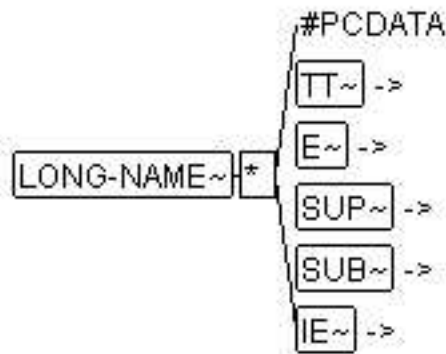
<LONG-NAME>Variable 1 that keeps the cabin preassure</LONG-NAME>

Formale Beschreibung

Hat als Kontext: [AVAILABILITY p. 38](#), [CHAPTER p. 44](#), [COMPANY p. 51](#), [CONF-ITEM p. 59](#), [CONF-RULE p. 64](#), [DEF-ITEM p. 80](#), [FIGURE-CAPTION p. 97](#), [FORMULA-CAPTION p. 101](#), [LIFE-TIME p. 132](#), [MTBF p. 158](#), [NAMELOC p. 160](#), [OPERATING-TIME p. 169](#), [PPM p. 175](#), [PRM p. 177](#), [REQUIREMENT p. 190](#), [SAMPLE p. 203](#), [SDG-CAPTION p. 209](#),

[SW-ADDR-METHOD](#) p. 228, [SW-AXIS-TYPE](#) p. 245, [SW-BASE-TYPE](#) p. 250, [SW-CALIBRATION-METHOD](#) p. 257, [SW-CALPRM](#) p. 260, [SW-CALPRM-PROTOTYPE](#) p. 266, [SW-CLASS](#) p. 276, [SW-CLASS-ATTR-IMPL](#) p. 294, [SW-CLASS-INSTANCE](#) p. 300, [SW-CLASS-PROTOTYPE](#) p. 305, [SW-CODE-SYNTAX](#) p. 311, [SW-COLLECTION](#) p. 318, [SW-COMPU-METHOD](#) p. 336, [SW-CPU-MEM-SEG](#) p. 347, [SW-DATA-CONSTR](#) p. 361, [SW-EVENT](#) p. 377, [SW-EVENT-SOURCE](#) p. 382, [SW-FEATURE](#) p. 386, [SW-FEATURE-INTERFACE](#) p. 399, [SW-FEATURE-VARIANT](#) p. 410, [SW-GENERIC-AXIS-PARAM-TYPE](#) p. 415, [SW-INSTANCE](#) p. 420, [SW-INSTANCE-TREE](#) p. 428, [SW-MC-BASE-TYPE](#) p. 440, [SW-MC-FRAME](#) p. 447, [SW-MC-INTERFACE](#) p. 451, [SW-MC-INTERFACE-SOURCE](#) p. 456, [SW-OPER-MODE](#) p. 470, [SW-RECORD-LAYOUT](#) p. 476, [SW-SERVICE](#) p. 500, [SW-SERVICE-ARG](#) p. 502, [SW-SERVICE-PROTOTYPE](#) p. 505, [SW-SERVICE-RETURN](#) p. 509, [SW-SYSTEM](#) p. 517, [SW-SYSTEMCONST](#) p. 521, [SW-TASK](#) p. 531, [SW-TEMPLATE](#) p. 539, [SW-UNIT](#) p. 545, [SW-USER-ACCESS-CASE](#) p. 551, [SW-USER-GROUP](#) p. 555, [SW-VARIABLE](#) p. 563, [SW-VARIABLE-PROTOTYPE](#) p. 568, [SW-VCD-CRITERION](#) p. 577, [SYN-CAPTION](#) p. 584, [TABLE-CAPTION](#) p. 595, [TEAM-MEMBER](#) p. 599, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612, [VARIANT-CHAR](#) p. 620, [VARIANT-DEF](#) p. 624

Ist Kontext für: [Text](#), [TT](#) p. 614, [E](#) p. 88, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121



LONG-NAME.PNG

2.145 LONG-NAME-1

Beschreibung

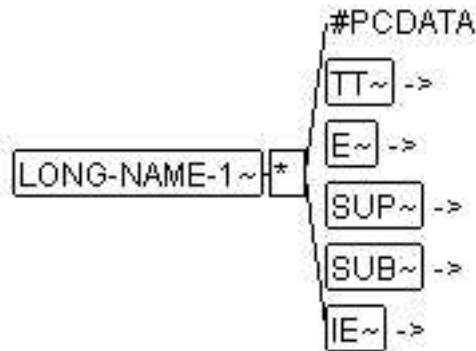
Use <LONG-NAME-1> to create a comprehensive name for the context element

Beispiel

Formale Beschreibung

Hat als Kontext: [STD](#) p. 219, [XDOC](#) p. 630, [XFILE](#) p. 632, [XREF-TARGET](#) p. 636

Ist Kontext für: [Text](#), [TT](#) p. 614, [E](#) p. 88, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121



LONG-NAME-1.PNG

2.146 LOWER-LIMIT

Beschreibung

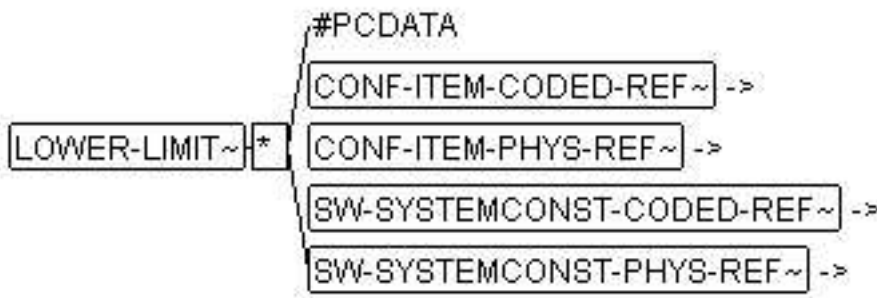
This element specifies the lower limit of a closed, half-open or open interval. It can also be set to infinity by setting the attribute INTERVAL-TYPE to INFINITE. No value has to be set in the case of an infinite interval.

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-KEY-COUNT p. 62](#), [CONF-SOURCE-COUNT p. 69](#), [CONF-VALUE-CONSTR p. 71](#), [SW-COMPU-SCALE p. 343](#), [SW-INTERNAL-CONSTRS p. 434](#), [SW-PHYS-CONSTRS p. 472](#), [SW-SCALE-CONSTR p. 498](#)

Ist Kontext für: [Text](#), [CONF-ITEM-CODED-REF p. 60](#), [CONF-ITEM-PHYS-REF p. 61](#), [SW-SYSTEMCONST-CODED-REF p. 524](#), [SW-SYSTEMCONST-PHYS-REF p. 526](#)



LOWER-LIMIT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[INTERVAL-TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> OPEN CLOSED INFINITE 	OPEN: open interval CLOSED: closed interval INFINITE: infinite interval

2.147 MAINTENANCE

Beschreibung

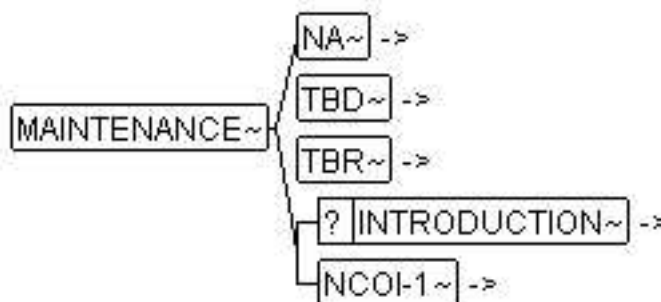
Use <MAINTENANCE> to enter the **maintenance** .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONTRACT-ASPECTS p. 73](#), [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



MAINTENANCE.PNG

2.148 MAP

Beschreibung

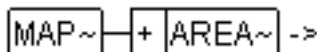
Image maps enable authors to specify regions of an image or object and assign a specific action to each region (e.g., retrieve a document, run a program, etc.) When the region is activated by the user, the action is executed.

Beispiel

Formale Beschreibung

Hat als Kontext: [FIGURE p. 95](#), [FORMULA p. 100](#)

Ist Kontext für: [AREA p. 34](#)



MAPPING

Attribut	Typ	Anmerkungen
[CLASS] (implied)	cdata	Blank separated list of classes



Attribut	Typ	Anmerkungen
[ID] (implied)	id	Unambiguous identifier of the element within the document.
[NAME] (implied)	nmtoken	This attribute assigns a name to the image map in the MAP element. This name can be used to be referenced in an HTML image through the attribute USEMAP. Although this is not actually necessary in the MSR model, it was inserted in order to support the MAPs which were created for HTML.
[ONCLICK] (implied)	cdata	The ONCLICK-Event occurs, if the current element is clicked-on. A script can be stored in this attribute to be performed in the Event.
[ONDBLCLICK] (implied)	cdata	The ONDBLCLICK-Event occurs, if the current Event is clicked-on. A script can be stored in this attribute to be performed in the Event.
[ONKEYDOWN] (implied)	cdata	The ONKEYDOWN-Event occurs, if a button on the current element is pressed down. A script can be stored in this attribute to be performed in the Event.
[ONKEYPRESS] (implied)	cdata	The ONKEYPRESS-Event occurs, if a button on the current element is pressed down and released. A script can be stored in this attribute to be performed in the Event.
[ONKEYUP] (implied)	cdata	The ONKEYUP-Event occurs, if a button on the current element is released. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEDOWN] (implied)	cdata	The ONMOUSEDOWN-Event occurs, if the mouse button used for clicking is held down on the current element. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEMOVE] (implied)	cdata	The ONMOUSEMOVE-Event occurs, if the mouse pointer is moved on the current element (i.e. it is located on the current element). A script can be stored in this attribute to be performed in the Event.

Attribut	Typ	Anmerkungen
[ONMOUSEOUT] (implied)	cdata	The ONMOUSEOUT-Event occurs, if the mouse pointer is moved from the current element. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEOVER] (implied)	cdata	The ONMOUSEOVER-Event occurs, if the mouse pointer is moved to the current element from another location outside it. A script can be stored in this attribute to be performed in the Event.
[ONMOUSEUP] (implied)	cdata	The ONMOUSEUP-Event occurs if the mouse button used for clicking is released on the current element. A script can be stored in this attribute to be performed in the Event.
[STYLE] (implied)	cdata	Information on the associated style
[TITLE] (implied)	cdata	Title information of the <MAP> -element

2.149 MATCHING-DCI

Beschreibung

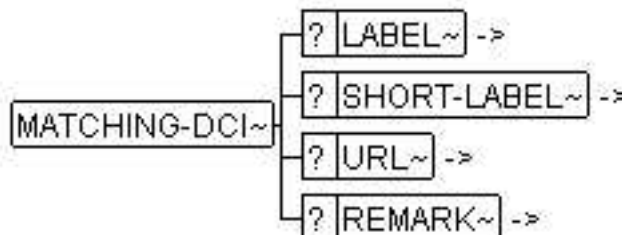
<MATCHING-DCI> represents a reference to a *DCI* instance (Document Content Information) to which the current file should match. The official identification of the DCI is denoted by **<URL>** which points to the DCI file. The other elements are given to provide information.

Beispiel

Formale Beschreibung

Hat als Kontext: [MATCHING-DCIS](#) p. 140

Ist Kontext für: [LABEL](#) p. 128, [SHORT-LABEL](#) p. 211, [URL](#) p. 616, [REMARK](#) p. 189



MATCHING-DCI.PNG

2.150 MATCHING-DCIS

Beschreibung

<MATCHING-DCIS> represents all Document Content Information specifications to which the current file should comply. As there may be multiple DCI instances, the current file should match all of them. Nevertheless, the check is only requested according to the case currently in use.

Especially in the case of the CDF, a *CDF processor* is obliged to check if the CDF-DCI is mentioned in <MATCHING-DCIS> .

Beispiel

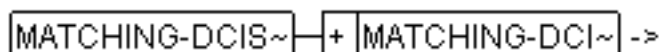
In the following example, the current file would match *CDF* as well as *PACO* which would support more of the features in *MSRSW.DTD* .

```
<MATCHING-DCIS>
  <MATCHING-DCI>
    <LABEL>Parameter Contents File</LABEL>
    <SHORT-LABEL>PACO2.0</SHORT-LABEL>
    <URL>http://www.msr-wg.de/dcis/paco.dci.xml</URL>
  </MATCHING-DCI>
  <MATCHING-DCI>
    <LABEL>Calibration Data File Specification</LABEL>
    <SHORT-LABEL>CDF</SHORT-LABEL>
    <URL>http://www.asam.net/dcis/cdf.dci.xml</URL>
  </MATCHING-DCI>
</MATCHING-DCIS>
```

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [MATCHING-DCI p. 139](#)



MATCHING-DCIS.PNG

2.151 MAX

Beschreibung

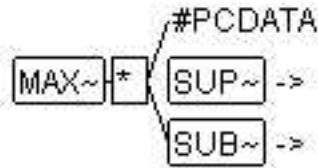
Use <MAX> to enter the maximum values of a parameter in a table of parameters.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR p. 178](#)

Ist Kontext für: Text, [SUP p. 221](#), [SUB p. 220](#)



MAX.PNG

2.152 MAX-TEXT-LENGTH

Beschreibung

Use **<MAX-TEXT-LENGTH>** to enter the maximum allowed text length. The value can be set directly or be assigned by expressions containing constants.

Beispiel

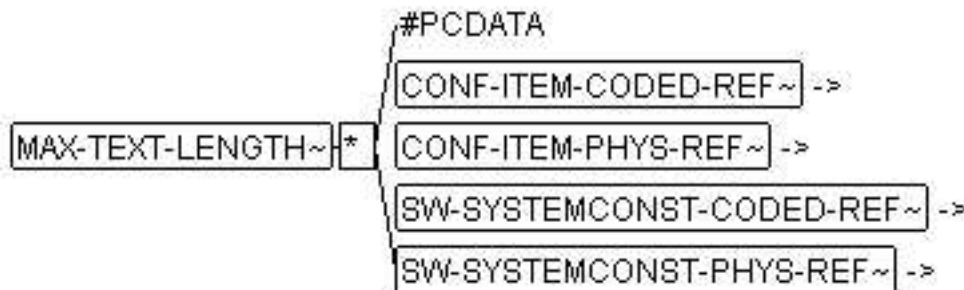
```

<MAX-TEXT-LENGTH>
  7 + <SW-SYSTEMCONST-PHYS-REF>myConst</SW-SYSTEMCONST-PHYS-REF>
</MAX-TEXT-LENGTH>
  
```

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR](#) p. 71

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



MAX-TEXT-LENGTH.PNG

2.153 MIN

Beschreibung

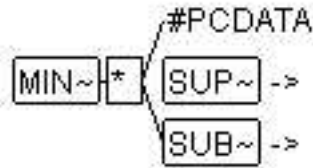
Use **<MIN>** to enter the minimum values of a parameter in a table of parameters.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR](#) p. 178

Ist Kontext für: Text, [SUP](#) p. 221, [SUB](#) p. 220



MIN.PNG

2.154 MIN-INCR-SIZE

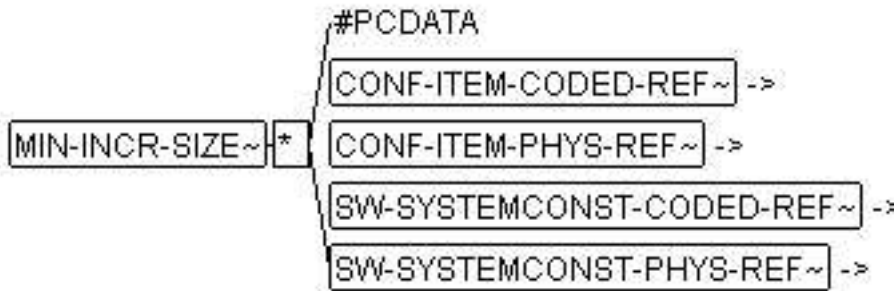
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR](#) p. 71

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



MIN-INCR-SIZE.PNG

2.155 MIN-TEXT-LENGTH

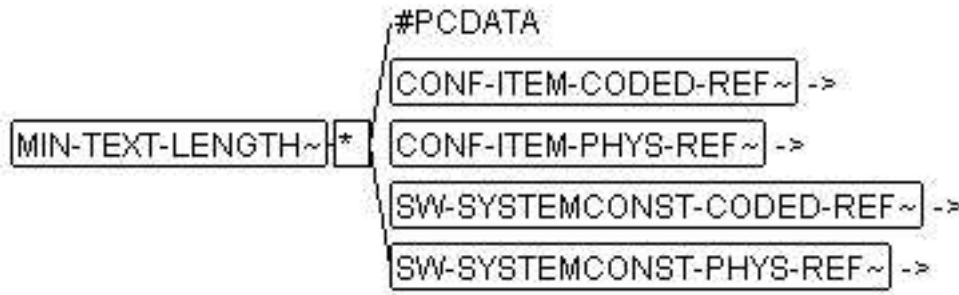
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR](#) p. 71

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



MIN-TEXT-LENGTH.PNG

2.156 MODIFICATION

Beschreibung

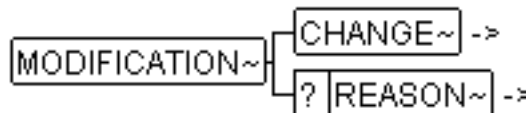
Use <MODIFICATION> to record what has changed in a document in comparison to its predecessor.

Beispiel

Formale Beschreibung

Hat als Kontext: [MODIFICATIONS](#) p. 143

Ist Kontext für: [CHANGE](#) p. 43, [REASON](#) p. 187



MODIFICATION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> • CONTENT-RELATED • DOC-RELATED 	DOC-RELATED - document-specific changes have necessitated a new document version. CONTENT-RELATED - product-specific changes have necessitated a new document version.

2.157 MODIFICATIONS

Beschreibung

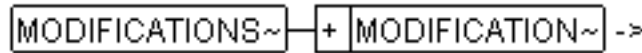
<MODIFICATIONS> contains the changes in a document in comparison to its predecessor.

Beispiel

Formale Beschreibung

Hat als Kontext: [DOC-REVISION](#) p. 87

Ist Kontext für: [MODIFICATION](#) p. 143



MODIFICATIONS.PNG

2.158 MONITORING

Beschreibung

This element provides a verbal description containing the requirements for system monitoring that is to be implemented in the ECU.

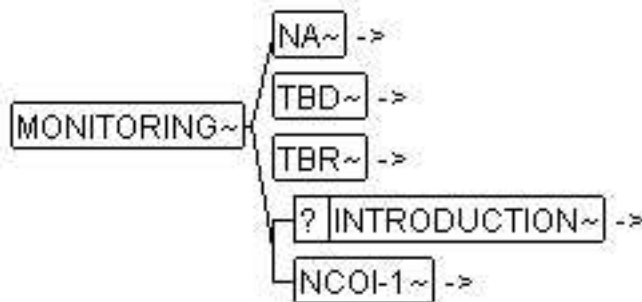
Beispiel

```
<MONITORING>
  <NCOI-1>
    <P>The system shall implement an hardware based
      watchdog to ensure that the software is working. </P>
  </NCOI-1>
</MONITORING>
```

Formale Beschreibung

Hat als Kontext: [FUNCTIONAL-REQUIREMENTS](#) p. 108

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



MONITORING.PNG

2.159 MSR-PROCESSING-LOG

Beschreibung

This element is a placeholder in which tools responsible for the automatic processing of the instance can store processing execution information (log information). It is advisable to create an individual chapter (**<CHAPTER>**) for every process executed. The most recent chapter should come first (sorting according to date).

Beispiel

```
<MSR-PROCESSING-LOG>
  <CHAPTER>
    <LONG-NAME>MSR-Query 2.10.2001</LONG-NAME>
```

```

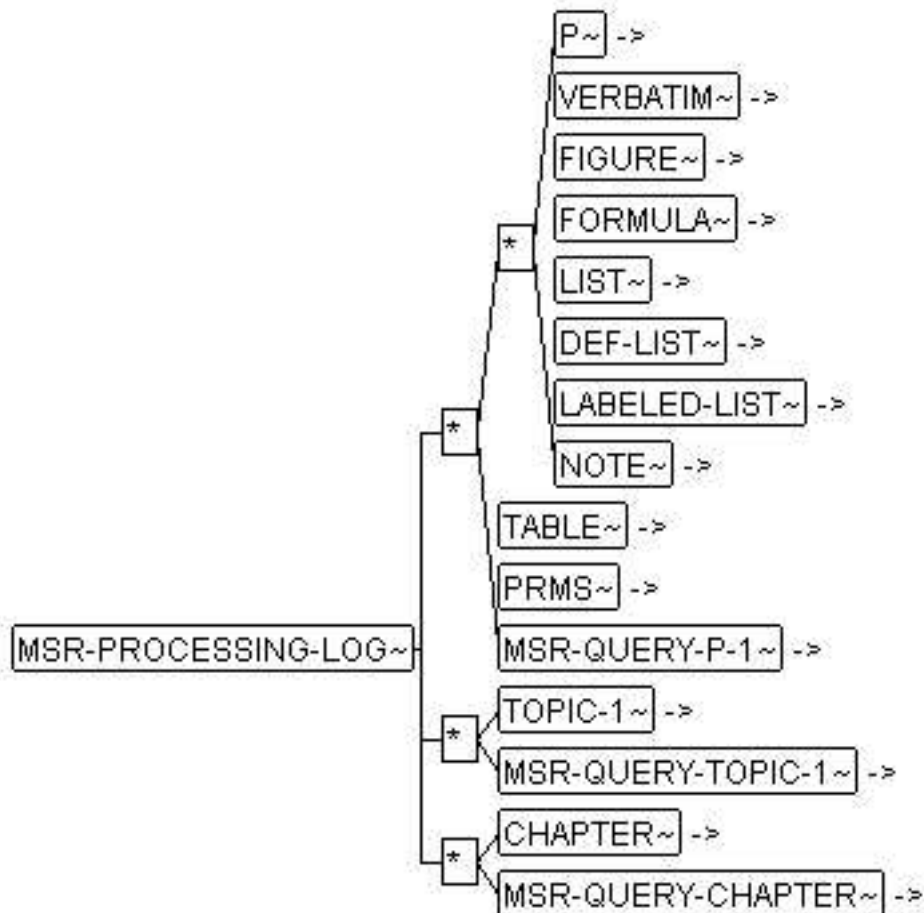
<SHORT-NAME>msrquery.2001.10.02-1</SHORT-NAME>
<VERBATIM>MSR-Query processor Version 0.99 run at 2.10.2001 reading file
c:\examples\myexample.sgm warning: duplicate ID found ("hugo") error: query
"replacechapters" not implemented 20 queries processed 1 warning 1
error
</VERBATIM>
</CHAPTER>
<CHAPTER>
<LONG-NAME>MSR-Query 1.10.2001</LONG-NAME>
<SHORT-NAME>msrquery.2001.10.01-1</SHORT-NAME>
<VERBATIM>MSR-Query processor Version 0.99 run at 1.10.2001 reading file
c:\examples\myexample.sgm warning: duplicate ID found ("hugo") error: query
"replacechapters" not implemented 20 queries processed 1 warning 1
error
</VERBATIM>
</CHAPTER>
</MSR-PROCESSING-LOG>

```

Formale Beschreibung

Hat als Kontext: [MSRSW](#) p. 155

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



2.160 MSR-QUERY-ARG

Beschreibung

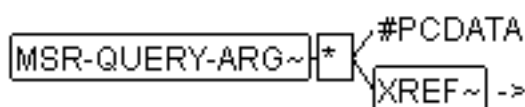
This element specifies an argument within a so-called *MSR-QUERY* which is named in the sister element **<MSR-QUERY-NAME>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-PROPS](#) p. 149

Ist Kontext für: Text, [XREF](#) p. 633



MSR-QUERY-ARG.PNG

2.161 MSR-QUERY-CHAPTER

Beschreibung

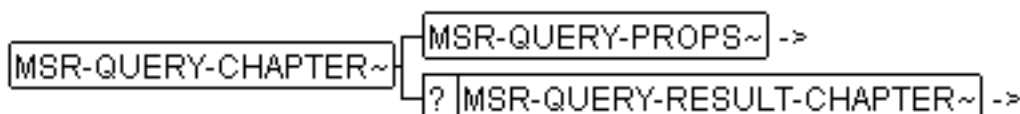
This element contains a chapter generated through an external query or a chapter generated in an external program (in **<MSR-QUERY-RESULT-CHAPTER>**), as well as the data necessary to enable a conclusion to be drawn as to the origins of a chapter (in **<MSR-QUERY-PROPS>**).

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [NCOI-1](#) p. 162, [REALTIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-CHAPTER](#) p. 149



MSR-QUERY-CHAPTER.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.162 MSR-QUERY-NAME

Beschreibung

This element specifies the name of the *MSR-QUERY* triggered.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-PROPS](#) p. 149

Ist Kontext für: Text

```
MSR-QUERY-NAME~—#PCDATA
```

MSR-QUERY-NAME.PNG

2.163 MSR-QUERY-P-1

Beschreibung

This element contains the arguments **<MSR-QUERY-PROPS>**. In addition, it may also contain result elements in text form, embedded in **<MSR-QUERY-RESULT-P-1>**, which correspond to a *MSR-QUERY*, generated either by an external program or an external query, for the purpose of integrating the element into an MSRSW instance.

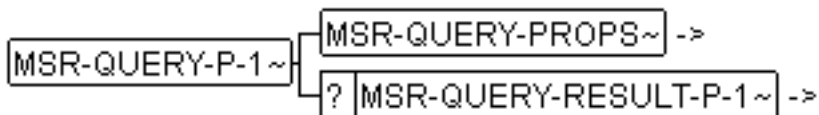
Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [NCOI-1](#) p. 162, [REALTIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#)

p. 234, SW-CARB-DOC p. 275, SW-CODE-SYNTAX-DESC p. 313, SW-FEATURE-DEF p. 391, SW-FEATURE-DESC p. 392, SW-MAINTENANCE-NOTES p. 436, SW-TEST-DESC p. 543, TECHNICAL-ASPECTS p. 603, TOPIC-1 p. 610

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-P-1](#) p. 150



MSR-QUERY-P-1.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.164 MSR-QUERY-P-2

Beschreibung

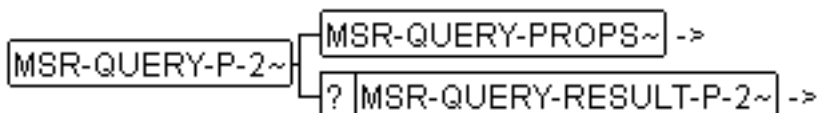
This element contains the arguments **<MSR-QUERY-PROPS>**. In addition, it may also contain result elements in text form, embedded in **<MSR-QUERY-RESULT-P-2>**, which correspond to a *MSR-QUERY*, generated either by an external program or an external query, for the purpose of integrating the element into an MSRSW instance.

Beispiel

Formale Beschreibung

Hat als Kontext: [INTRODUCTION](#) p. 124, [NCOI-3](#) p. 163, [TOPIC-2](#) p. 612

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-P-2](#) p. 150



MSR-QUERY-P-2.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.165 MSR-QUERY-PROPS

Beschreibung

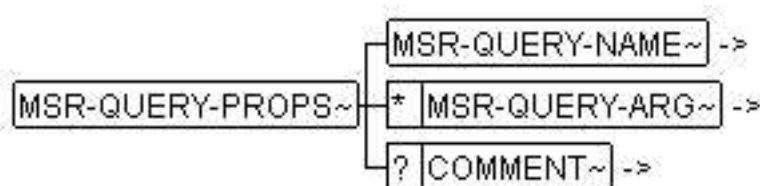
This element specifies the characteristics and arguments of a *MSR-QUERY*, that is, the name **<MSR-QUERY-NAME>**, the arguments **<MSR-QUERY-ARG>** and if required, the comment **<COMMENT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-CHAPTER](#) p. 146, [MSR-QUERY-P-1](#) p. 147, [MSR-QUERY-P-2](#) p. 148, [MSR-QUERY-TEXT](#) p. 153, [MSR-QUERY-TOPIC-1](#) p. 153, [MSR-QUERY-TOPIC-2](#) p. 154

Ist Kontext für: [MSR-QUERY-NAME](#) p. 147, [MSR-QUERY-ARG](#) p. 145, [COMMENT](#) p. 49



MSR-QUERY-PROPS.PNG

2.166 MSR-QUERY-RESULT-CHAPTER

Beschreibung

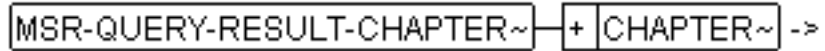
This element contains the result chapter of a *MSR-QUERY* , which was generated by an external program or an external query, so that it could be integrated into an MSRSW instance.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-CHAPTER](#) p. 146

Ist Kontext für: [CHAPTER](#) p. 44



MSR-QUERY-RESULT-CHAPTER.PNG

2.167 MSR-QUERY-RESULT-P-1

Beschreibung

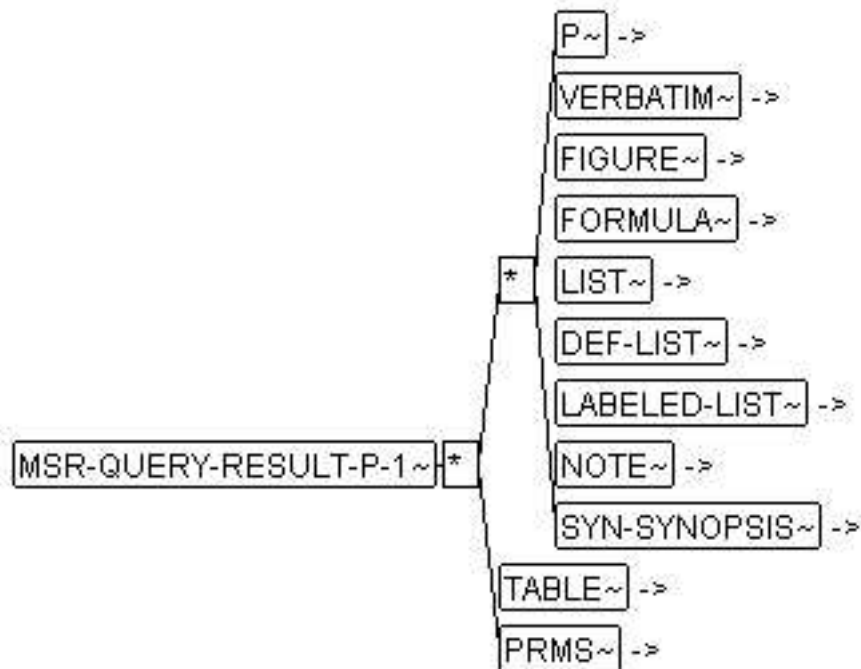
This element contains the result element of a *MSR-QUERY* in text form, which was generated by an external program or an external query, so that it could be integrated into an MSRSW instance. Unlike [<MSR-QUERY-RESULT-P-2>](#), [<MSR-QUERY-RESULT-P-1>](#) may still contain [<PRMS>](#) elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-P-1](#) p. 147

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [SYN-SYNOPSIS](#) p. 589, [TABLE](#) p. 592, [PRMS](#) p. 181



MSR-QUERY-RESULT-P-1.PNG

2.168 MSR-QUERY-RESULT-P-2

Beschreibung

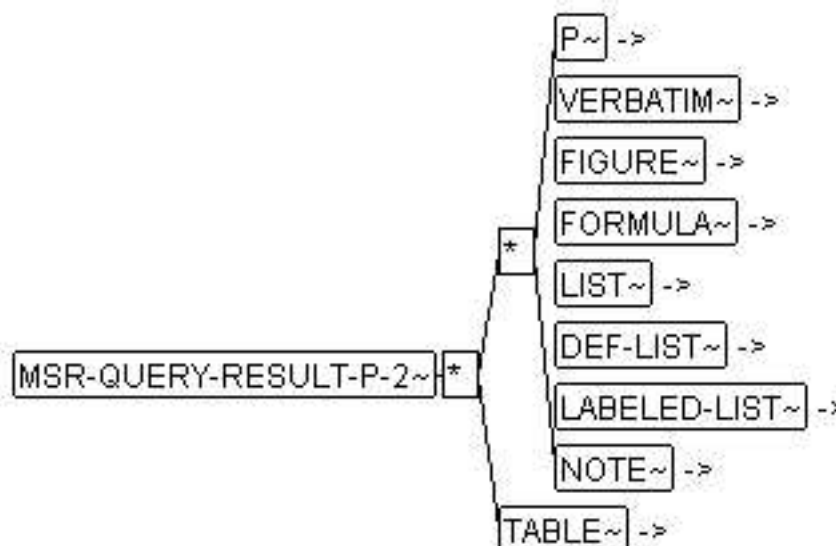
This element contains the result element of a *MSR-QUERY* in text form, which was generated by an external program or an external query, so that it could be integrated into an MSRSW instance. Unlike `<MSR-QUERY-RESULT-P-1>`, `<MSR-QUERY-RESULT-P-2>` may contain no `<PRMS>` elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-P-2](#) p. 148

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592



MSR-QUERY-RESULT-P-2.PNG

2.169 MSR-QUERY-RESULT-TEXT

Beschreibung

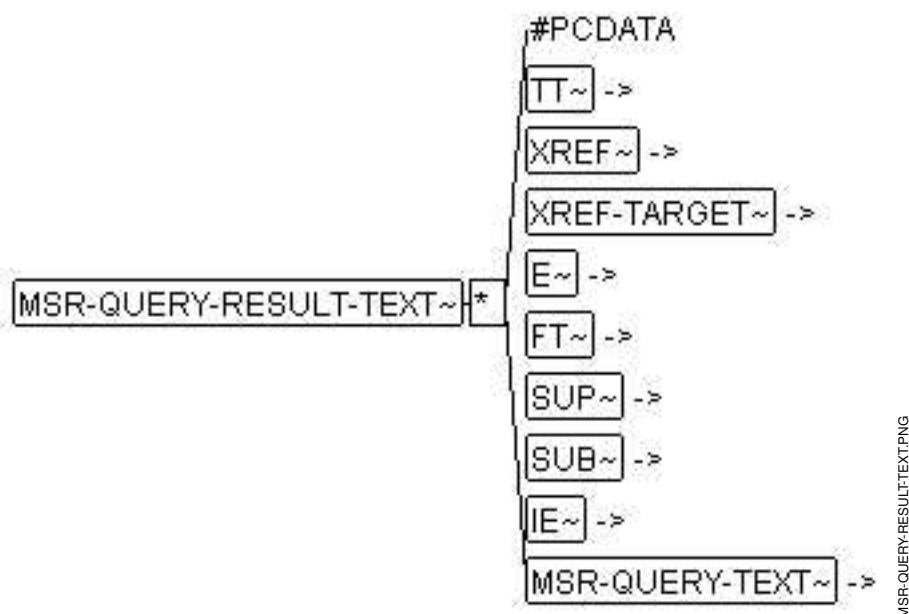
This element contains the textual description within `<MSR-QUERY-TEXT>`, generated by a *MSR-QUERY*, which encompasses no further sub-paragraphs.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-TEXT](#) p. 153

Ist Kontext für: [Text](#), [TT](#) p. 614, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [MSR-QUERY-TEXT](#) p. 153



MSR-QUERY-RESULT-TEXT.PNG

2.170 MSR-QUERY-RESULT-TOPIC-1

Beschreibung

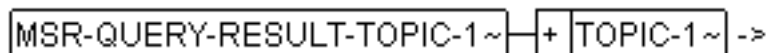
This element contains the result of a **<TOPIC-1>** element generated from an external *MSR-QUERY*.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-TOPIC-1](#) p. 153

Ist Kontext für: [TOPIC-1](#) p. 610



MSR-QUERY-RESULT-TOPIC-1.PNG

2.171 MSR-QUERY-RESULT-TOPIC-2

Beschreibung

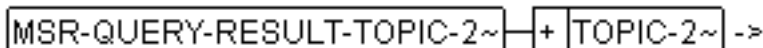
This element contains the result of a **<TOPIC-2>** element generated from an external *MSR-QUERY*.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSR-QUERY-TOPIC-2](#) p. 154

Ist Kontext für: [TOPIC-2](#) p. 612



MSR-QUERY-RESULT-TOPIC-2.PNG

2.172 MSR-QUERY-TEXT

Beschreibung

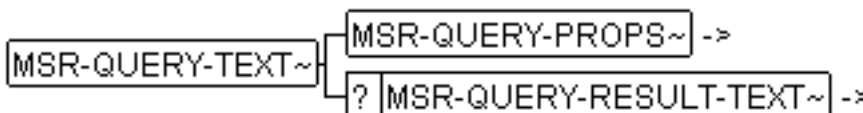
This element contains a *MSR-QUERY* specified more accurately in the subelement **<MSR-QUERY-PROPS>**, as well as the textual description generated as a result of it within the subelement **<MSR-QUERY-TEXT>**, which contains no further subparagraphs.

Beispiel

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-TEXT](#) p. 151



MSR-QUERY-TEXT.PNG

2.173 MSR-QUERY-TOPIC-1

Beschreibung

This element contains a generated TOPIC-1 element with a result in **<MSR-QUERY-RESULT-TOPIC-1>**. This is from an external *MSR-QUERY* which is defined more accurately in **<MSR-QUERY-PROPS>**.

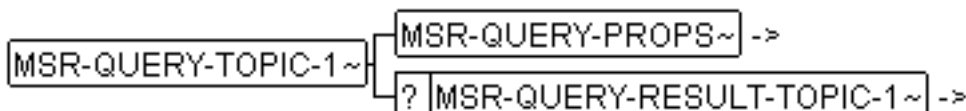
Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [NCOI-1](#) p. 162, [REALTIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#)

p. 200, SW-ADDR-METHOD-DESC p. 229, SW-APPLICATION-NOTES
 p. 234, SW-CARB-DOC p. 275, SW-CODE-SYNTAX-DESC p. 313,
 SW-FEATURE-DEF p. 391, SW-FEATURE-DESC p. 392, SW-MAINTENANCE-NOTES
 p. 436, SW-TEST-DESC p. 543, TECHNICAL-ASPECTS p. 603

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-TOPIC-1](#) p. 152



MSR-QUERY-TOPIC-1.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.174 MSR-QUERY-TOPIC-2

Beschreibung

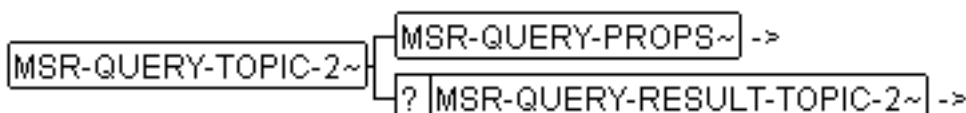
This element contains a generated TOPIC-2 element with a result in **<MSR-QUERY-RESULT-TOPIC-2>**. This is from an external *MSR-QUERY* which is defined more accurately in **<MSR-QUERY-PROPS>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [INTRODUCTION](#) p. 124, [NCOI-3](#) p. 163

Ist Kontext für: [MSR-QUERY-PROPS](#) p. 149, [MSR-QUERY-RESULT-TOPIC-2](#) p. 152



MSR-QUERY-TOPIC-2.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.175

MSRSW

Beschreibung

This element is the root element of an MSRSW instance. Hence the entire sub-tree of the MSRSW instance is located under the element MSRSW which otherwise, is never used. All elements below **<MSRSW>** are optional, to enable the results of various process phases (which can run in sequence or parallel) to be integrated into an MSRSW instance.

In **<SHORT-NAME>** you can assign your own identifier to the instance, which can be evaluated by external applications. In **<CATEGORY>** a specific, in some parts process/application-dependent category of the MSRSW instance can be given, which can then be evaluated by the semantic checker in post processes, e.g. in connection with **<MATCHING-DCI>**.

In **<PROJECT-DATA>** project-specific details can be given, where the current MSRSW instance is included in their scope of validity.

<ADMIN-DATA> describes administrative data for the current MSRSW instance, e.g. languages used, version information, formatting instructions, companies participating in the generating of the instance etc.).

<INTRODUCTION> is intended for a concise, textual description of the MSRSW instance, which can incorporate several paragraphs, but no chapter structures.

The main contents of an MSRSW instance is located beneath **<SW-SYSTEMS>**. This enables the support of several ECU systems, as well as of a system with more than one CPU.

In the sub-tree of the element **<GENERAL-REQUIREMENTS>**, information is stored which concerns the requirement management phase.

The A2ML BLOB definitions are stored in **<SW-MC-COMMUNICATION-SPEC>**.

A glossary can be created in **<SW-GLOSSARY>**.

Non-SGML/XML data can be referenced or checked-in the sub-tree of **<SPECIAL-DATA>**.

The validity of the semantics can be checked using so-called Document Control Instances. These can be specified in the sub-tree of **<MATCHING-DCIS>**.

<MSR-PROCESSING-LOG>

It is possible to reference in external documents through the assignment of data to **<LOCS>**.

Beispiel

```
<MSRSW>
  <SHORT-NAME>DEMO</SHORT-NAME>
  <ADMIN-DATA>
    <LANGUAGE>en</LANGUAGE>
```

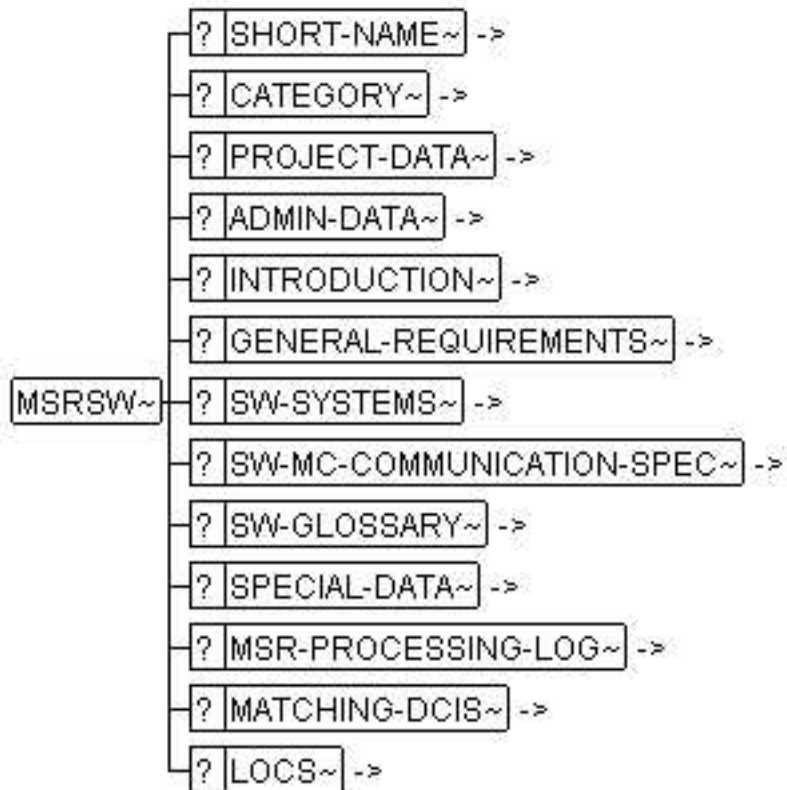


```
</ADMIN-DATA>
<INTRODUCTION>
  <P>This is a demonstration file to illustrate, how CDF could be
  implemented in ASAM-MCD-2MC 2.0</P>
</INTRODUCTION>
<SW-SYSTEMS>
  <SW-SYSTEM>
    <SHORT-NAME>DEMO</SHORT-NAME>
    <SW-INSTANCE-SPEC>
      <SW-INSTANCE-TREE>
        <SHORT-NAME>DEMODATA</SHORT-NAME>
        <SW-INSTANCE>
          <SHORT-NAME>FBAM</SHORT-NAME>
          <SW-INSTANCE-PROPS-VARIANTS>
            <SW-INSTANCE-PROPS-VARIANT>
              <SW-AXIS-CONTS>
                <SW-AXIS-CONT> </SW-AXIS-CONT>
              </SW-AXIS-CONTS>
            </SW-INSTANCE-PROPS-VARIANT>
          </SW-INSTANCE-PROPS-VARIANTS>
        </SW-INSTANCE>
      </SW-INSTANCE-TREE>
    </SW-INSTANCE-SPEC>
  </SW-SYSTEM>
  <SHORT-NAME>Testdata</SHORT-NAME>
  <SW-INSTANCE>
    <SHORT-NAME>FBAM</SHORT-NAME>
    <SW-INSTANCE-PROPS-VARIANTS>
      <SW-INSTANCE-PROPS-VARIANT>
        <SW-AXIS-CONTS>
          <SW-AXIS-CONT> </SW-AXIS-CONT>
        </SW-AXIS-CONTS>
      </SW-INSTANCE-PROPS-VARIANT>
    </SW-INSTANCE-PROPS-VARIANTS>
  </SW-INSTANCE>
</SW-INSTANCE-TREE>
</SW-SYSTEMS>
<MATCHING-DCIS>
  <MATCHING-DCI>
    <URL>http://www.asam.net/dci/cdf.dci.xml</URL>
  </MATCHING-DCI>
</MATCHING-DCIS>
</MSRSW>
```

Formale Beschreibung

Hat als Kontext: Root

Ist Kontext für: [SHORT-NAME](#) p. 212, [CATEGORY](#) p. 42, [PROJECT-DATA](#) p. 183, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [GENERAL-REQUIREMENTS](#) p. 113, [SW-SYSTEMS](#) p. 531, [SW-MC-COMMUNICATION-SPEC](#) p. 445, [SW-GLOSSARY](#) p. 419, [SPECIAL-DATA](#) p. 217, [MSR-PROCESSING-LOG](#) p. 144, [MATCHING-DCIS](#) p. 140, [LOCS](#) p. 134



MSRSW.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[F-BUILD] (default)	cdata	1022	
[F-CM-TOOL-ID] (default)	cdata	\$Id: msrsw_v2_2_2_rb17_v1_7_p3.sl-eadoc.xml,v 1.1 2005/02/16 12:36:09 FGO2SI Exp \$	
[F-REVISION-ID] (default)	cdata	1.7 p3	
[PUBID] (default)	cdata	-//MSR//DTD MSR SOFTWARE DTD:V2.2.2:RB17:LA:1.0 XML Schema EN	Public Identifier. Unlike [F-PUBID] , this can be used to identify the DTD of an application.



Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtokens	CHAPTER COMPANY DEF-ITEM EXTER- NAL FIGURE FOR- MULA PRM RE- QUIREMENT SAM- PLE SDG STD SW- MC-BASE-TYPE SW- MC-FRAME SW-MC- INTERFACE SW- MC-INTERFACE- SOURCE SYN- OPSIS TABLE TEAM-MEMBER TOPIC VARIANT- DEF VARIANT-CHAR XDOC XFILE XREF- TARGET	Fixed Namespace. This attribute is as- signed to elements which define a names- pace for linkable ob- jects. The attribute contains a list of ele- ments, where the ele- ment carrying the at- tribute serves as a namespace. This is used by processors which use the MSR natural linking mech- anism. (Natural links address their link tar- get with a sequence of short-names in- cluding the names- paces and the object itself e.g. '/test.xml/sw- system1/sw-var1')
[F-PUBID] (fixed)	cdata	-//MSR//DTD MSR SOFTWARE DTD:V2.2.2:RB17:LA:1 AeXMod:MSR and DTD//EN	Fixed Public ID. Unlike [PUBID] this cannot contain the public iden- tifier of the current MSRSW.DTD.
[HYTIME] (fixed)	nmtoken	HYDOC	HYTIME is the stan- dard attribute used to define a HYTIME ar- chitectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time- based Structuring Lan- guage). It enables the use of a generic archi- tectural form processor for link processing and transition.

2.176

MTBF

Beschreibung

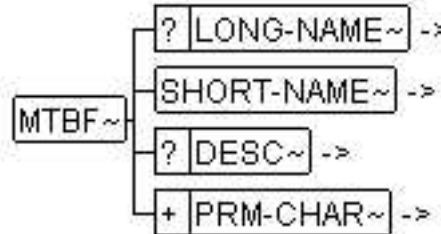
Use <MTBF>, to enter the **MTBF (Mean Time Between Failures)** .

Beispiel

Formale Beschreibung

Hat als Kontext: [RELIABILITY-PRMS](#) p. 189

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [PRM-CHAR](#) p. 178



MTBF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.177

NA

Beschreibung


Use `<NA>` to designate something as **Not Applicable** and to give a **explanation** if required.

Beispiel

Formale Beschreibung

Hat als Kontext: [ACCEPTANCE-COND](#) p. 25, [ADD-DESIGN-DOC](#) p. 26, [ADD-SPEC](#) p. 29, [BINARY-COMPATIBILITY](#) p. 39, [CALIBRATION](#) p. 42, [COMMUNICATION](#) p. 50, [COMMUNICATION-INTERFACE](#) p. 50, [COMPATIBILITY](#) p. 57, [CONTRACT-ASPECTS](#) p. 73, [DATA-DESC](#) p. 75, [DATA-REQUIREMENTS](#) p. 76, [DATA-STRUCTURES](#) p. 76, [DEMARICATION-OTHER-PROJECTS](#) p. 82, [DESIGN-REQUIREMENTS](#) p. 84, [DEVELOPMENT-PROCESS-SPEC](#) p. 85, [DIAGNOSIS](#) p. 86, [DIR-HAND-OVER-DOC-DATA](#) p. 86, [EXTENSIBILITY](#) p. 92, [FAIL-SAVE-CONCEPT](#) p. 93, [FAILURE-MANAGEMENT](#) p. 93, [FAILURE-MEM](#) p. 94, [FLASH-PROGRAMMING](#) p. 98, [FMEA](#) p. 98, [FUNCTION-OVERVIEW](#) p. 104, [FUNCTIONAL-REQUIREMENTS](#) p. 108, [GENERAL-COND](#) p. 108, [GENERAL-HARDWARE](#) p. 109, [GENERAL-INTERFACES](#) p. 109, [GENERAL-PRODUCT-DATA-1](#) p. 110, [GENERAL-PROJECT-DATA](#) p. 111, [GENERAL-REQUIREMENTS](#) p. 113, [GENERAL-SOFTWARE](#) p. 114, [GUARANTEE](#) p. 119, [HARDWARE-INTERFACE](#) p. 120, [INTEGRATION-CAPABILITY](#) p. 122, [INTERNAL-INTERFACES](#) p. 123, [INTERRUPT-SPEC](#) p. 123, [KEY-DATA](#) p. 128, [MAINTENANCE](#) p. 137, [MONITORING](#) p. 144, [NORMATIVE-REFERENCE](#) p. 165, [OBJECTIVES](#) p. 168, [OPERATING-ENV](#) p. 169, [OPERATIONAL-REQUIREMENTS](#) p. 170, [OVERVIEW](#) p. 171, [PARALLEL-DESIGNS](#) p. 173, [PRODUCT-DEMARICATION](#) p. 182, [PRODUCT-DESC](#) p. 182, [PROJECT-SCHEDULE](#) p. 184, [PROTOCOLS](#) p. 184, [PURCHASING-COND](#) p. 185, [QUALITY](#) p. 186, [REASON-ORDER](#) p. 188, [RELIABILITY](#) p. 188, [REPLACEMENT-VALUES](#) p. 190, [REQUIREMENT-SPEC](#) p. 195, [RESOURCE-ALLOCATION](#) p. 197, [RESTRICTIONS-BY-HARDWARE](#) p. 198, [RIGHTS](#) p. 200, [SAFETY](#) p. 203, [SAMPLE-SPEC](#) p. 207, [SELF-DIAGNOSIS](#) p. 211, [SIMILAR-PRODUCTS](#) p. 215, [STANDARD-SW-MODULES](#) p. 218, [SW-ARCHITECTURE](#) p. 237, [SW-CALIBRATION-METHOD-SPEC](#) p. 258, [SW-COLLECTION-SPEC](#) p. 327, [SW-COMPONENT-SPEC](#) p. 330, [SW-CPU-SPEC](#) p. 352, [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-EVENT-SPEC](#) p. 384, [SW-GLOSSARY](#) p. 419, [SW-INSTANCE-SPEC](#) p. 427, [SW-MC-COMMUNICATION-SPEC](#) p. 445, [SW-OPER-MODE-SPEC](#) p. 472, [SW-SCHEDULING-SPEC](#) p. 499, [SW-SYSTEM](#) p. 517, [SW-TASK-SPEC](#) p. 538, [SW-TEST-SPEC](#) p. 544, [SW-USER-RIGHT-SPEC](#) p. 559, [SW-VCD-SPEC](#) p. 583, [SYSTEM-OVERVIEW](#) p. 591, [TIME-DEPENDENCY](#) p. 608, [USEFUL-LIFE](#) p. 617, [USER-INTERFACE](#) p. 618, [VARIANT-SPEC](#) p. 626

Ist Kontext für: Text

 #PCDATA

NA.PNG

2.178 NAMELOC

Beschreibung

Use **<NAMELOC>** to identify the external document of a cross-reference spanning more than one document, that is to be referenced.

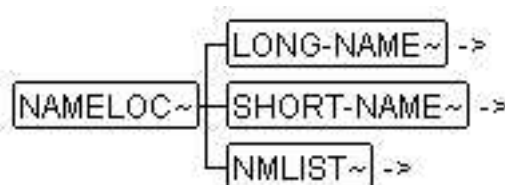
Beispiel

See [Chapter 2.113 FUNCTION-REF](#) p. 105 .

Formale Beschreibung

Hat als Kontext: [LOCS](#) p. 134

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [NMLIST](#) p. 164



NAMELOC.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[EXT-ID-CLASS] (implied)	nmtoken		External ID Class. The value of this attribute classifies links and external link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an external object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	EXTERNAL	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYTIME] (fixed)	nmtoken	NAMELOC	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). This enables the use of a generic architectural form processor for link processing and transition.

2.179 NCOI-1

Beschreibung

Use <NCOI-1> to generate information that is not content-orientated. This information is known as general document contents.

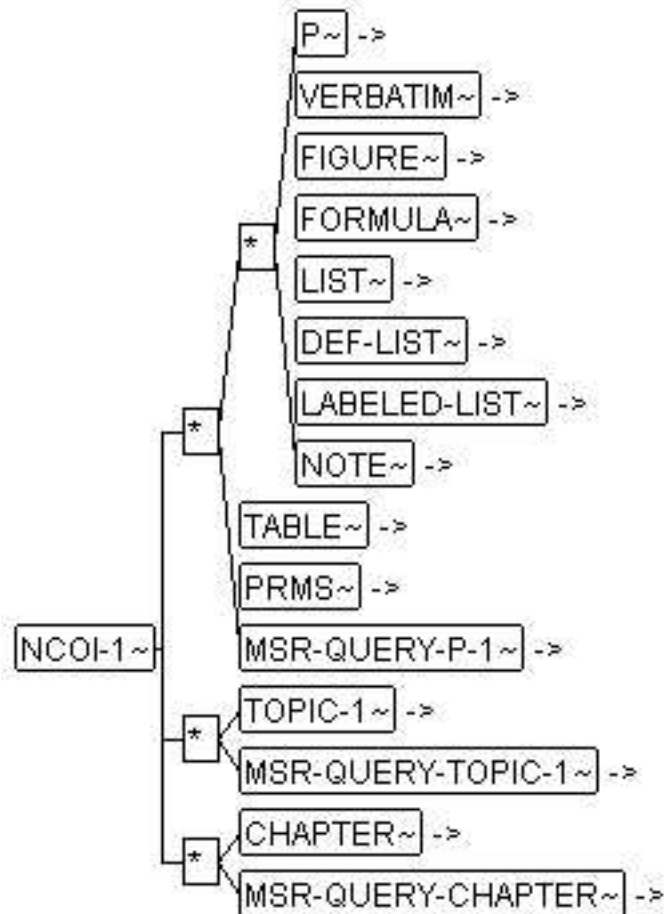
Beispiel

Formale Beschreibung

Hat als Kontext: [ACCEPTANCE-COND](#) p. 25, [ADD-DESIGN-DOC](#) p. 26, [ADD-SPEC](#) p. 29, [BINARY-COMPATIBILITY](#) p. 39, [CALIBRATION](#) p. 42, [COMMUNICATION](#) p. 50, [COMMUNICATION-INTERFACE](#) p. 50, [COMPATIBILITY](#) p. 57, [DATA-DESC](#) p. 75, [DATA-STRUCTURES](#) p. 76, [DEMARCA-TION-OTHER-PROJECTS](#) p. 82, [DEVELOPMENT-PROCESS-SPEC](#) p.

85, DIAGNOSIS p. 86, DIR-HAND-OVER-DOC-DATA p. 86, EXTENSIBILITY p. 92, FAIL-SAVE-CONCEPT p. 93, FAILURE-MEM p. 94, FLASH-PROGRAMMING p. 98, FMEA p. 98, FUNCTION-OVERVIEW p. 104, GENERAL-COND p. 108, GUARANTEE p. 119, HARDWARE-INTERFACE p. 120, INTEGRATION-CAPABILITY p. 122, INTERNAL-INTERFACES p. 123, INTERRUPT-SPEC p. 123, MAINTENANCE p. 137, MONITORING p. 144, NORMATIVE-REFERENCE p. 165, OBJECTIVES p. 168, OPERATING-ENV p. 169, OPERATIONAL-REQUIREMENTS p. 170, OVERVIEW p. 171, PARALLEL-DESIGNS p. 173, PRODUCT-DEMARCATON p. 182, PRODUCT-DESC p. 182, PROJECT-SCHEDULE p. 184, PROTOCOLS p. 184, PURCHASING-COND p. 185, QUALITY p. 186, REASON-ORDER p. 188, REPLACEMENT-VALUES p. 190, RESOURCE-ALLOCATION p. 197, RESTRICTIONS-BY-HARDWARE p. 198, RIGHTS p. 200, SAFETY p. 203, SAMPLE p. 203, SELF-DIAGNOSIS p. 211, SIMILAR-PRODUCTS p. 215, STANDARD-SW-MODULES p. 218, SW-GLOSSARY p. 419, SW-TEST-SPEC p. 544, SYSTEM-OVERVIEW p. 591, TIME-DEPENDENCY p. 608, USER-INTERFACE p. 618

Ist Kontext für: P p. 172, VERBATIM p. 626, FIGURE p. 95, FORMULA p. 100, LIST p. 133, DEF-LIST p. 81, LABELED-LIST p. 130, NOTE p. 166, TABLE p. 592, PRMS p. 181, MSR-QUERY-P-1 p. 147, TOPIC-1 p. 610, MSR-QUERY-TOPIC-1 p. 153, CHAPTER p. 44, MSR-QUERY-CHAPTER p. 146



2.180 NCOI-3

Beschreibung

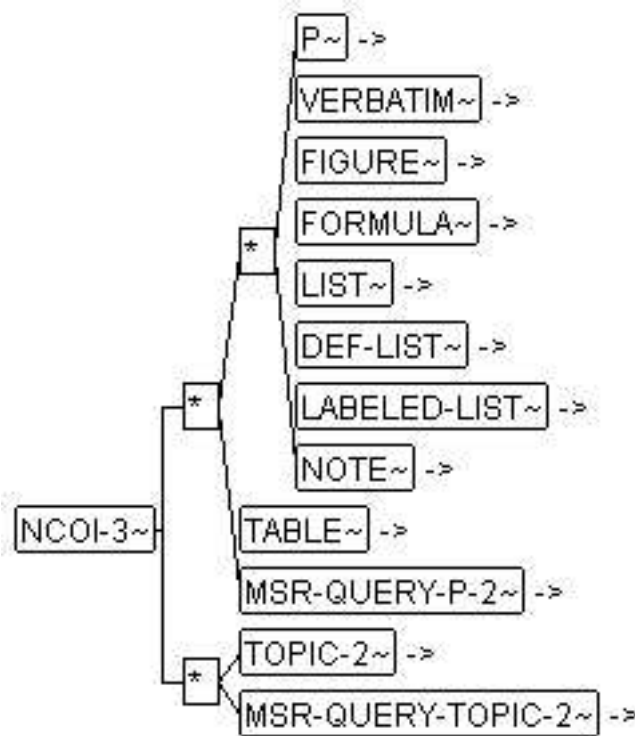
Use <NCOI-3> to enter the **details**. See also *NCOI-1*.

Beispiel

Formale Beschreibung

Hat als Kontext: [RELIABILITY](#) p. 188, [USEFUL-LIFE](#) p. 617

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [MSR-QUERY-P-2](#) p. 148, [TOPIC-2](#) p. 612, [MSR-QUERY-TOPIC-2](#) p. 154



NCOI-3.PNG

2.181 NMLIST

Beschreibung

Use <NMLIST> to enter the name of an entity or element, to be referenced in an external document.

Beispiel

Formale Beschreibung

Hat als Kontext: [NAMELOC](#) p. 160

Ist Kontext für: Text

NMLIST~—#PCDATA

NMLIST.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[NAMETYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> ENTITY ELEMENT 	ENTITY - reference to an entity in an external document. ELEMENT - reference to an element in an external document.
[DOCORSUB] (implied)	entity		SGML/XML document or sub-document, the prologue of which declares entities or elements that occur in NMLIST. Refer to [FUNCTION-REF] for an example.
[HYTIME] (fixed)	nmtoken	NMLIST	HYTIME is the standard attribute use to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.182 NORMATIVE-REFERENCE

Beschreibung

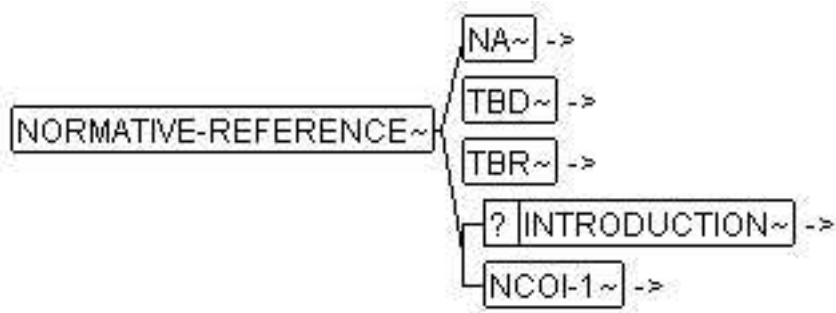
Use <**NORMATIVE-REFERENCE**> to enter the **compliance to standards** .

Beispiel

Formale Beschreibung

Hat als Kontext: [DESIGN-REQUIREMENTS](#) p. 84

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



2.183 NOTATION

Beschreibung

This element indicates the data format of the external file in which the superordinated XFILE is located. The identifier itself must be arranged amongst the project participants. The contents of **<NOTATION>** are treated in a similar way to an SGML notation format.

Possible values are for example:

Notation	Meaning
EPS	Encapsulated Postscript
PDF	Portable Document Format
PaCo	Parameter Contents File in MSRSW2.2 structure
...	...

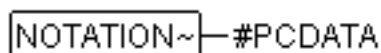
Beispiel

```
<P>Please refer to
  <XFILE>
    <LONG-NAME-1>Parameter Contents file</LONG-NAME-1>
    <SHORT-NAME>0711paco</SHORT-NAME>
    <URL>../pacos/0711paco.xml</URL>
    <NOTATION>PaCo</NOTATION>
    <TOOL>DDCL</TOOL>
    <TOOL-VERSION>1.3</TOOL-VERSION>
  </XFILE>
</P>
```

Formale Beschreibung

Hat als Kontext: [XFILE](#) p. 632

Ist Kontext für: Text



2.184 NOTE

Beschreibung

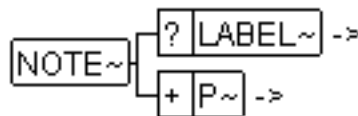
Use **<NOTE>** to highlight particular safety or usage notes.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [LABEL](#) p. 128, [P](#) p. 172



NOTE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[NOTE-TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> CAUTION HINT TIP INSTRUCTION EXERCISE OTHER 	CAUTION - dangers involving instruments and personnel during operation. HINT - special operation features TIP - measures to improve efficiency INSTRUCTION - important instructions EXERCISE - practical examples OTHER - additional notes
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[USER-DEFINED-TYPE] (implied)	cdata		Allows user-specific notes to be introduced.

2.185 NUMBER

Beschreibung

Use <NUMBER> to enter the version number of an external document that is referenced.

Beispiel

Formale Beschreibung

Hat als Kontext: [XDOC p. 630](#)

Ist Kontext für: Text

NUMBER~|#PCDATA

NUMBER.PNG

2.186 NUMBER-OF-BITS

Beschreibung

Number of bits of a bit variable (described by <SW-BIT-REPRESENTATION>), calculation based on the position specified by the parallel element <BIT-POSITION> .

Beispiel

See [Chapter 2.305 SW-BIT-REPRESENTATION p. 255](#)

Formale Beschreibung

Hat als Kontext: [SW-BIT-REPRESENTATION p. 255](#)

Ist Kontext für: Text

NUMBER-OF-BITS~|#PCDATA

NUMBER-OF-BITS.PNG

2.187 OBJECTIVES

Beschreibung

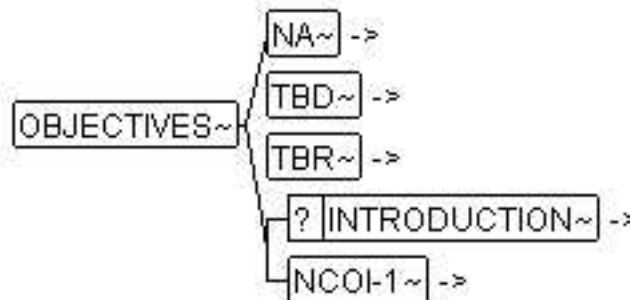
Use <OBJECTIVES>, to enter the objectives for the system. The objectives are entered in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA p. 111](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



OBJECTIVES.PNG

2.188 OPERATING-ENV

Beschreibung

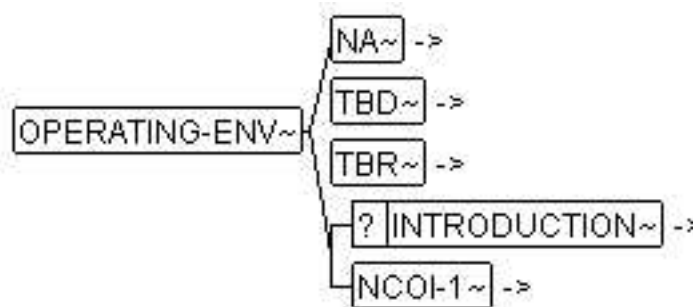
This element verbally describes the operation environment in which the system is to be applied with the software. This is part of the general requirements <**GENERAL-REQUIREMENTS**>. Unlike <**OPERATIONAL-REQUIREMENTS**>, which specifies operation requirements to be fulfilled internally through the software, <**OPERATING-ENV**> describes the operation environment which is influenced by external factors.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-HARDWARE p. 109](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



OPERATING-ENV.PNG

2.189 OPERATING-TIME

Beschreibung

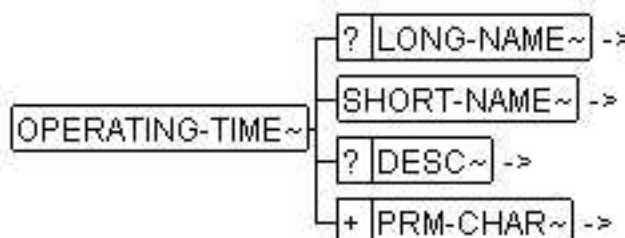
This element verbally describes requirements concerning operation duration, on the system with the software. This is part of the general requirements <**GENERAL-REQUIREMENTS**>.

Beispiel

Formale Beschreibung

Hat als Kontext: [USEFUL-LIFE-PRMS](#) p. 618

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [PRM-CHAR](#) p. 178



OPERATING-TIME.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.190

OPERATIONAL-REQUIREMENTS

Beschreibung

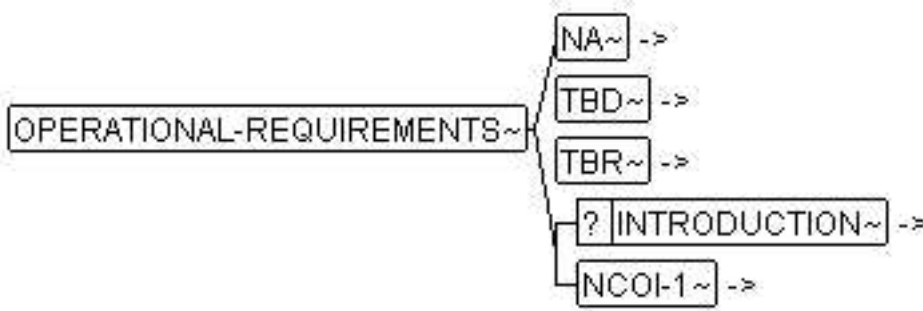
This element describes operation requirements to be fulfilled by the system. For example requirements regarding performance. Unlike `<OPERATING-ENV>` which specifies the operation environment influenced by external factors `<OPERATIONAL-REQUIREMENTS>` describes the operation requirements that are to be fulfilled internally through the software.

Beispiel

Formale Beschreibung

Hat als Kontext: [FUNCTIONAL-REQUIREMENTS](#) p. 108

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



OPERATIONAL-REQUIREMENTS.PNG

2.191 OVERALL-PROJECT

Beschreibung

Use <OVERALL-PROJECT> to enter the name of the overall project. It is also possible to supply a short description as information.

Beispiel

Formale Beschreibung

Hat als Kontext: [PROJECT-DATA](#) p. 183

Ist Kontext für: [LABEL](#) p. 128, [DESC](#) p. 83



OVERALL-PROJECT.PNG

2.192 OVERVIEW

Beschreibung

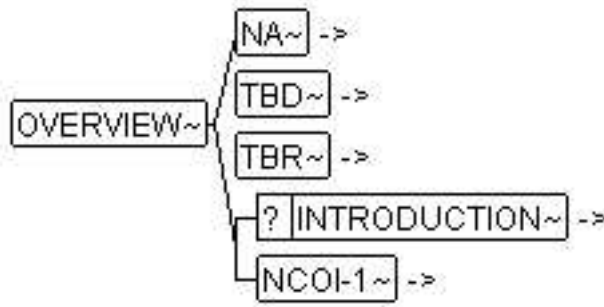
In this element can an overview of the SW architecture for the current <SW-SYSTEM> be given.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ARCHITECTURE](#) p. 237

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



OVERVIEW.PNG

2.193 P

Beschreibung

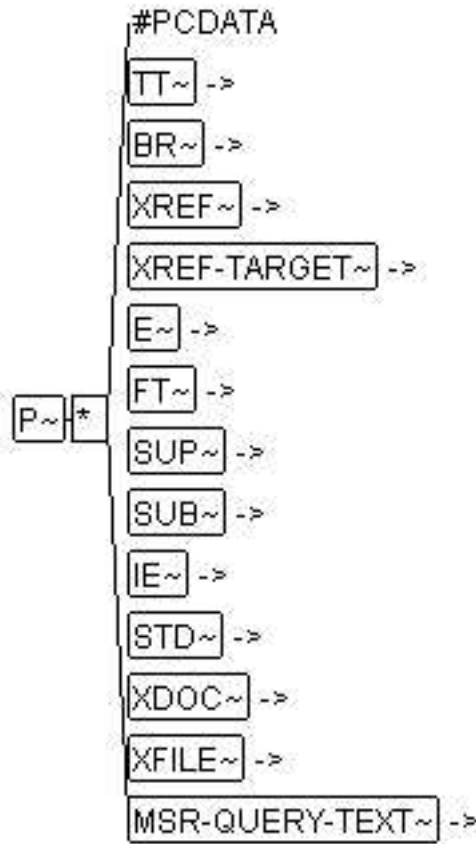
Use **<P>** to create a paragraph for continuous texts.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [ANNOTATION-TEXT](#) p. 33, [CHAPTER](#) p. 44, [COND](#) p. 58, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [DEF](#) p. 79, [ENTRY](#) p. 90, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [NOTE](#) p. 166, [REALTIME-REQUIREMENTS](#) p. 186, [REMARK](#) p. 189, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [SYN-FORMAT](#) p. 585, [SYN-INCLUDE](#) p. 586, [SYN-OBJECT](#) p. 587, [SYN-SEE-ALSO](#) p. 588, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [Text](#), [TT](#) p. 614, [BR](#) p. 40, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [STD](#) p. 219, [XDOC](#) p. 630, [XFILE](#) p. 632, [MSR-QUERY-TEXT](#) p. 153



PPING

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.194 PARALLEL-DESIGNS

Beschreibung

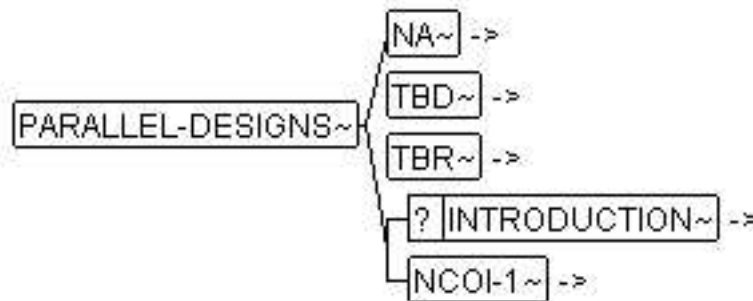
Use <PARALLEL-DESIGNS> to enter the **parallel developments** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



PARALLEL-DESIGNS.PNG

2.195 PHONE

Beschreibung

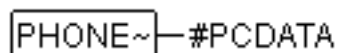
Use <PHONE> to enter the telephone number of a project participant.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text



PHONE.PNG

2.196 POSITION

Beschreibung

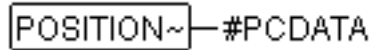
Use <POSITION> to enter references to the relevant positions of a standard.

Beispiel

Formale Beschreibung

Hat als Kontext: [STD p. 219](#), [XDOC p. 630](#)

Ist Kontext für: Text



POSITION.PNG

2.197

PPM

Beschreibung

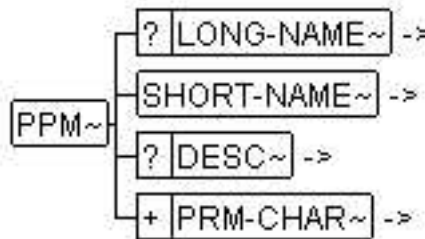
Use <PPM> to enter the **PPM (Parts Per Million)** .

Beispiel

Formale Beschreibung

Hat als Kontext: [RELIABILITY-PRMS p. 189](#)

Ist Kontext für: [LONG-NAME p. 134](#), [SHORT-NAME p. 212](#), [DESC p. 83](#), [PRM-CHAR p. 178](#)



PPM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.198 PRIVATE-CODE

Beschreibung

Use <**PRIVATE-CODE**> to generate data for specially adapted systems or for processes.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRIVATE-CODES](#) p. 176

Ist Kontext für: Text

PRIVATE-CODE~ — #PCDATA

PRIVATE-CODE.PNG

Attribut	Typ	Anmerkungen
[TYPE] (implied)	cdata	Indicates a type of the respective element.

2.199 PRIVATE-CODES

Beschreibung

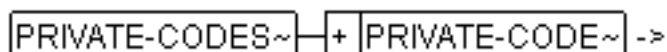
Use <**PRIVATE-CODES**> to create a summary of the data for specially adapted systems or for processes.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO](#) p. 53

Ist Kontext für: [PRIVATE-CODE](#) p. 176



PRIVATE-CODES.PNG

2.200 PRM

Beschreibung

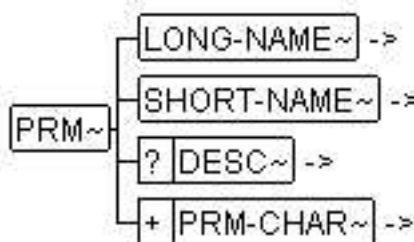
Use <**PRM**> to create a parameter table

Beispiel

Formale Beschreibung

Hat als Kontext: [PRMS](#) p. 181, [RELIABILITY-PRMS](#) p. 189, [USEFUL-LIFE-PRMS](#) p. 618

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [PRM-CHAR](#) p. 178



PRM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.201 PRM-CHAR

Beschreibung

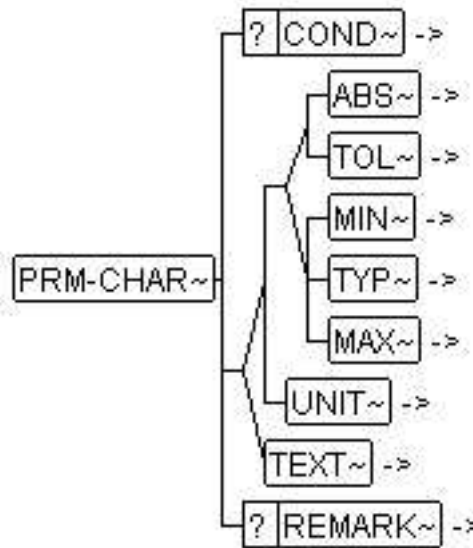
Use <PRM-CHAR> to generate parameter values.

Beispiel

Formale Beschreibung

Hat als Kontext: [AVAILABILITY](#) p. 38, [LIFE-TIME](#) p. 132, [MTBF](#) p. 158, [OPERATING-TIME](#) p. 169, [PPM](#) p. 175, [PRM](#) p. 177

Ist Kontext für: [COND](#) p. 58, [ABS](#) p. 25, [TOL](#) p. 609, [MIN](#) p. 141, [TYP](#) p. 615, [MAX](#) p. 140, [UNIT](#) p. 615, [TEXT](#) p. 605, [REMARK](#) p. 189



PRM-CHAR.PNG

2.202 PRM-REF

Beschreibung

Use <PRM-REF>, to enter a reference to a parameter table.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-REFS](#) p. 181

Ist Kontext für: Text

PRM-REF~ #PCDATA

PRM-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	PRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.203 PRM-REFS

Beschreibung

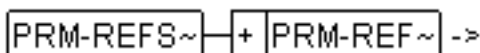
Use <PRM-REFS> to enter **parameter references** .

Beispiel

Formale Beschreibung

Hat als Kontext: [KEY-DATA](#) p. 128

Ist Kontext für: [PRM-REF](#) p. 179



PRM-REFS.PNG

2.204 PRMS

Beschreibung

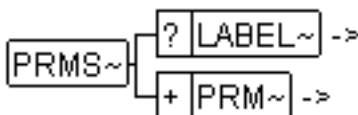
Use <PRMS> to create a parameter table for a number of parameters.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [NCOI-1](#) p. 162, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610

Ist Kontext für: [LABEL](#) p. 128, [PRM](#) p. 177



PRMS.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

2.205 PRODUCT-DEMARCATON

Beschreibung

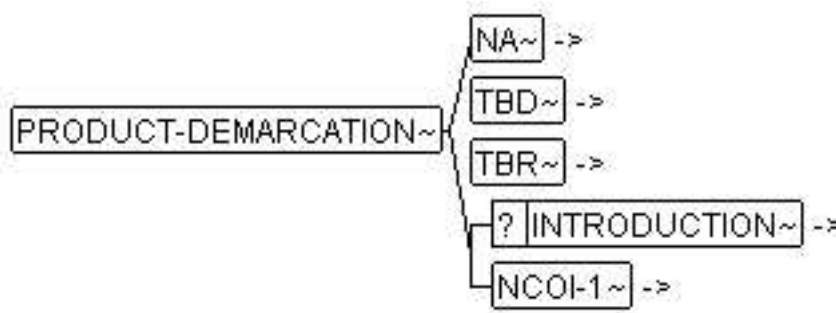
Use <**PRODUCT-DEMARCATON**> to enter the **product limitation** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



PRODUCT-DEMARCATON.PNG

2.206 PRODUCT-DESC

Beschreibung

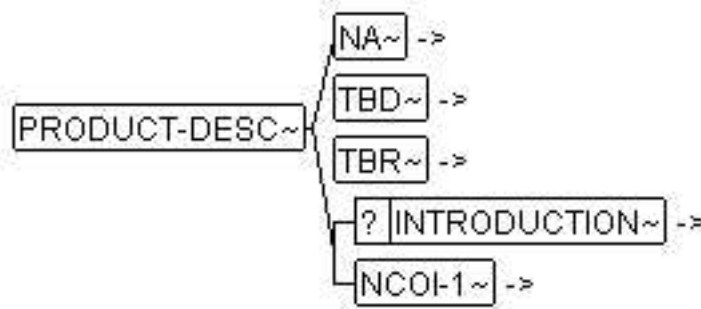
Use <**PRODUCT-DESC**> to enter a short product description.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



PRODUCT-DESC.PNG

2.207 PROJECT

Beschreibung

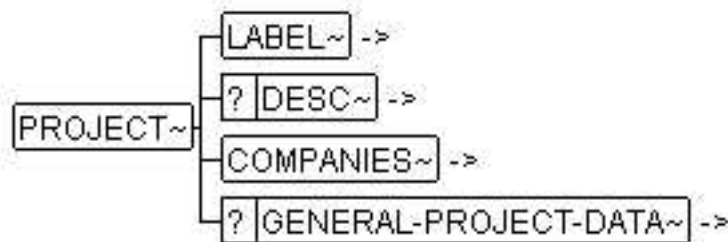
Use **<PROJECT>** to enter the corresponding **project** .

Beispiel

Formale Beschreibung

Hat als Kontext: [PROJECT-DATA](#) p. 183

Ist Kontext für: [LABEL](#) p. 128, [DESC](#) p. 83, [COMPANIES](#) p. 51, [GENERAL-PROJECT-DATA](#) p. 111



PROJECT.PNG

2.208 PROJECT-DATA

Beschreibung

Use **<PROJECT-DATA>** to gather information on the project to which the file belongs. Although this wrapper element seems to be superfluous in *CDF*, it exists because it is possible to have more project related information in *MSRSW.DTD* .

Beispiel

`<PROJECT-DATA>`

```

<PROJECT>
<LABEL>demo project for CDF file format with MSRSW.DTD</LABEL>
  
```

```

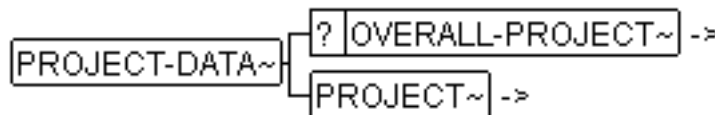
<DESC> this project is used to illustrate how CDF format can be defined by
following the structures of ASAM-MCD-2MC 2.0 resp. MSRSW.DTD 2.2.0
</DESC>
<COMPANIES>
  <COMPANY ROLE="SUPPLIER" ID="rb">
    <LONG-NAME>Robert Bosch GmbH</LONG-NAME>
    <SHORT-NAME>Bosch</SHORT-NAME>
    <TEAM-MEMBERS>
      <TEAM-MEMBER ID="wl">
        <LONG-NAME>Bernhard Weichel</LONG-NAME>
        <SHORT-NAME>Wl</SHORT-NAME>
        <ROLES>
          <ROLE>Author</ROLE>
        </ROLES>
        <DEPARTMENT>GS/EMW4</DEPARTMENT>
      </TEAM-MEMBER>
    </TEAM-MEMBERS>
  </COMPANY>
</COMPANIES>
</PROJECT>
</PROJECT-DATA>

```

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [OVERALL-PROJECT p. 171](#), [PROJECT p. 183](#)



PROJECT-DATA.PNG

2.209 PROJECT-SCHEDULE

Beschreibung

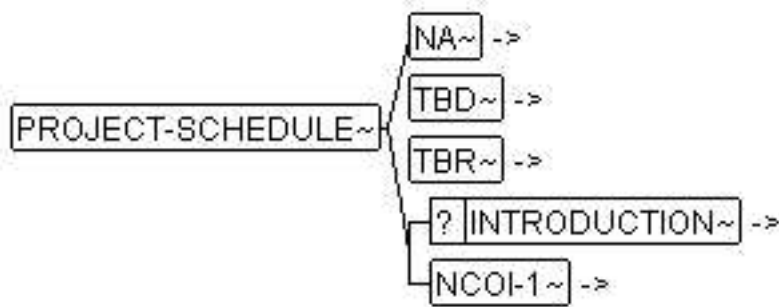
Use <PROJECT-SCHEDULE> to enter the **project schedule** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA p. 111](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



PROJECT-SCHEDULE.PNG

2.210 PROTOCOLS

Beschreibung

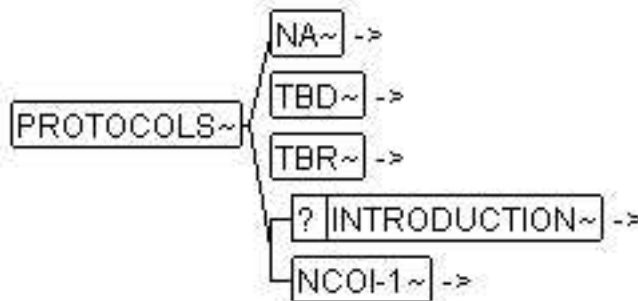
Use <PROTOCOLS> to enter the **protocol/consultation notes** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



PROTOCOLS.PNG

2.211 PUBLISHER

Beschreibung

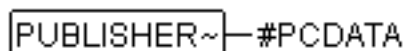
Use <PUBLISHER> to enter the publisher of an external document that is being referenced.

Beispiel

Formale Beschreibung

Hat als Kontext: [XDOC](#) p. 630

Ist Kontext für: Text



PUBLISHER.PNG

2.212 PURCHASING-COND

Beschreibung

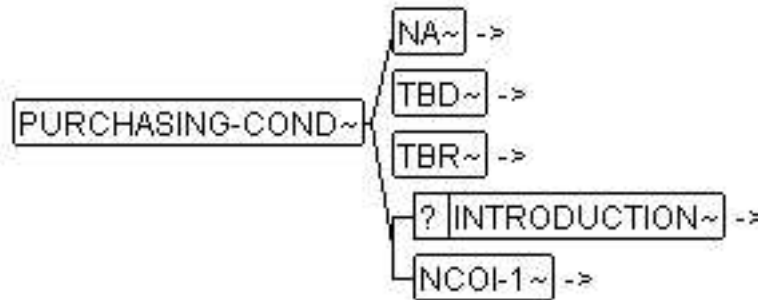
Use <PURCHASING-COND> to enter the purchasing conditions.

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



PURCHASING-COND.PNG

2.213 QUALITY

Beschreibung

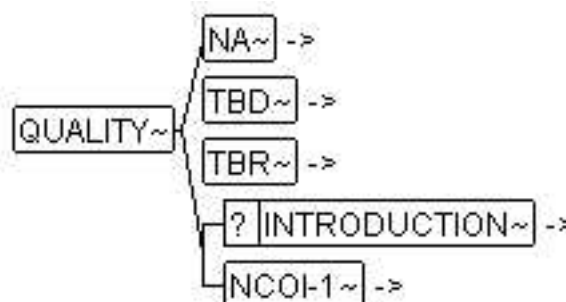
Use <QUALITY> to enter the **quality model** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



QUALITY.PNG

2.214 REALTIME-REQUIREMENTS

Beschreibung

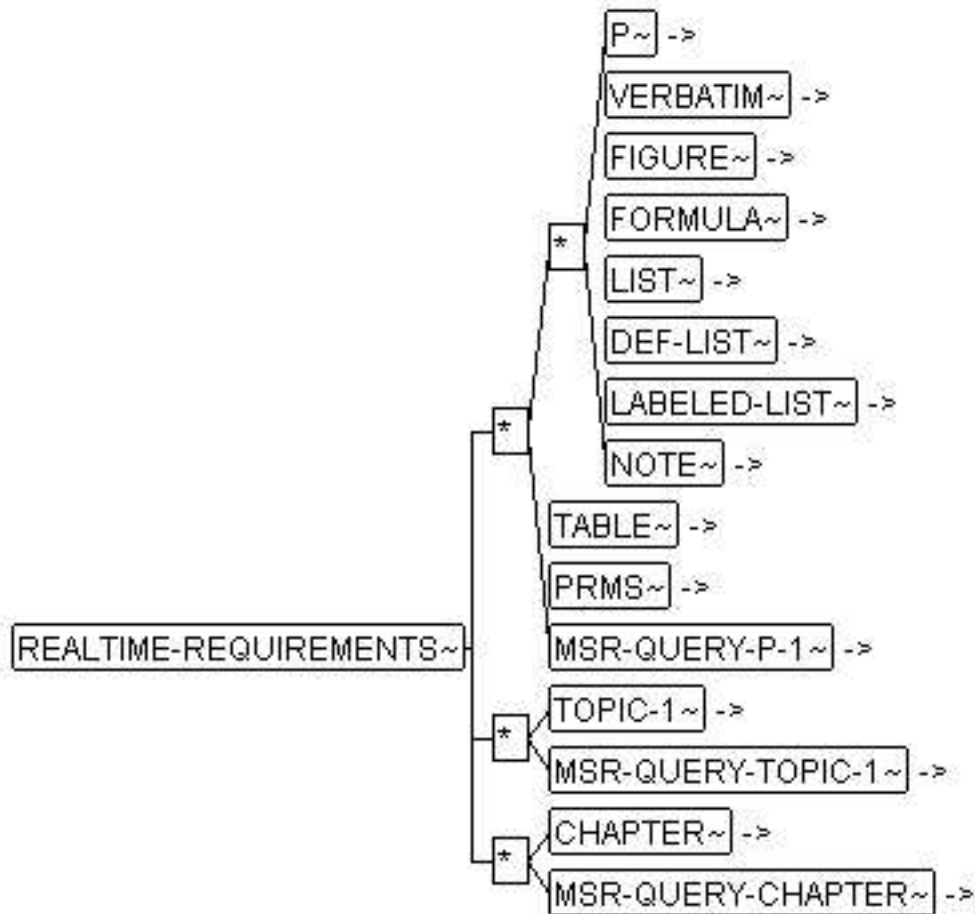
This element specifies the textual requirements for real-time operation.

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



2.215 REASON

Beschreibung

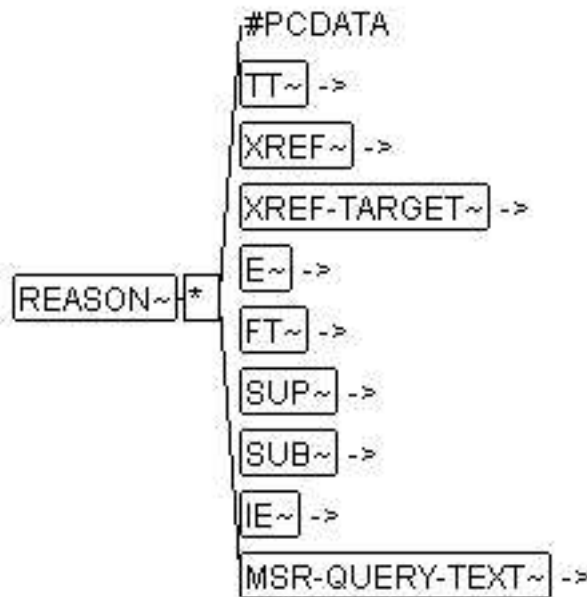
Use `<REASON>` to cite the reason for changes to the document version.

Beispiel

Formale Beschreibung

Hat als Kontext: [MODIFICATION](#) p. 143

Ist Kontext für: [Text](#), [TT](#) p. 614, [XREF](#) p. 633, [XREF-TARGET](#) p. 636, [E](#) p. 88, [FT](#) p. 104, [SUP](#) p. 221, [SUB](#) p. 220, [IE](#) p. 121, [MSR-QUERY-TEXT](#) p. 153



REASON.PNG

2.216 REASON-ORDER

Beschreibung

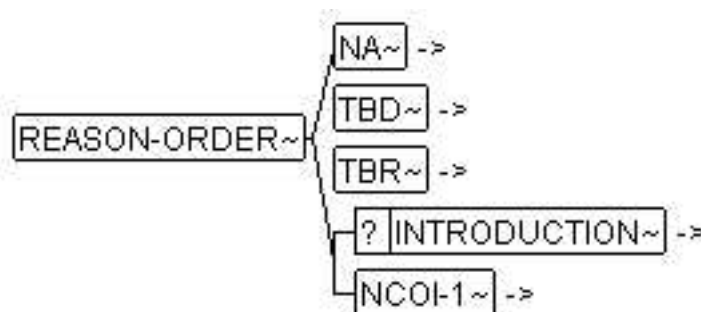
Use `<REASON-ORDER>` to enter an **order explanation** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



REASON-ORDER.PNG

2.217 RELIABILITY

Beschreibung

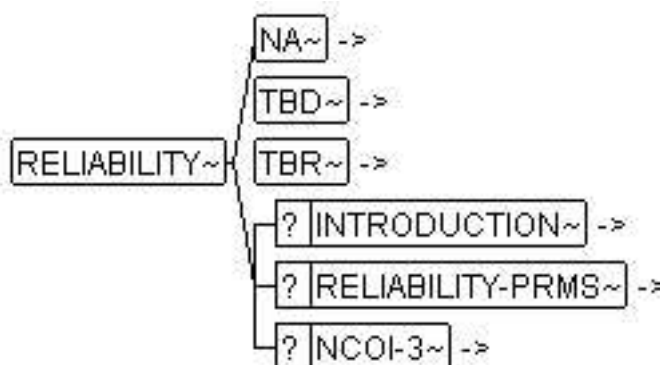
Use <RELIABILITY> to enter **reliability** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-HARDWARE](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [RELIABILITY-PRMS](#) p. 189, [NCOI-3](#) p. 163



RELIABILITY.PNG

2.218 RELIABILITY-PRMS

Beschreibung

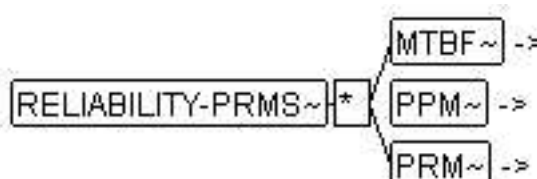
Use <RELIABILITY-PRMS> to enter the **parameters** .

Beispiel

Formale Beschreibung

Hat als Kontext: [RELIABILITY](#) p. 188

Ist Kontext für: [MTBF](#) p. 158, [PPM](#) p. 175, [PRM](#) p. 177



RELIABILITY-PRMS.PNG

2.219 REMARK

Beschreibung

<REMARK> is used for comments e.g. on the specific calibration state. There are two options:

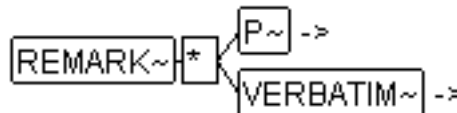
- Use <P> to enable the processing systems to perform a word wrapping.
- Use <VERBATIM> if a white-space is significant.

Beispiel

Formale Beschreibung

Hat als Kontext: [MATCHING-DCI p. 139](#), [PRM-CHAR p. 178](#), [SW-CS-ENTRY p. 355](#)

Ist Kontext für: [P p. 172](#), [VERBATIM p. 626](#)



REMARK.PNG

2.220 REPLACEMENT-VALUES

Beschreibung

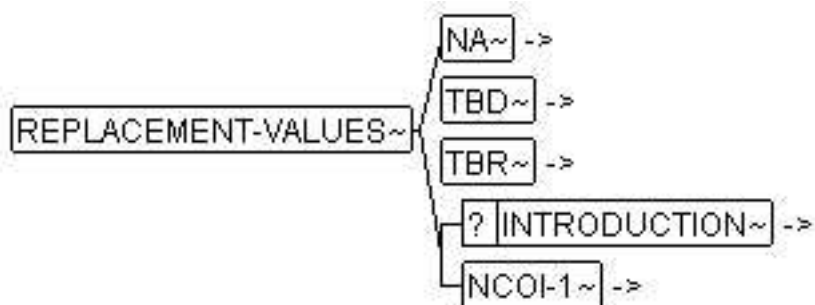
Use <REPLACEMENT-VALUES>, to enter the **replacement values** .

Beispiel

Formale Beschreibung

Hat als Kontext: [FAILURE-MANAGEMENT p. 93](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



REPLACEMENT-VALUES.PNG

2.221 REQUIREMENT

Beschreibung

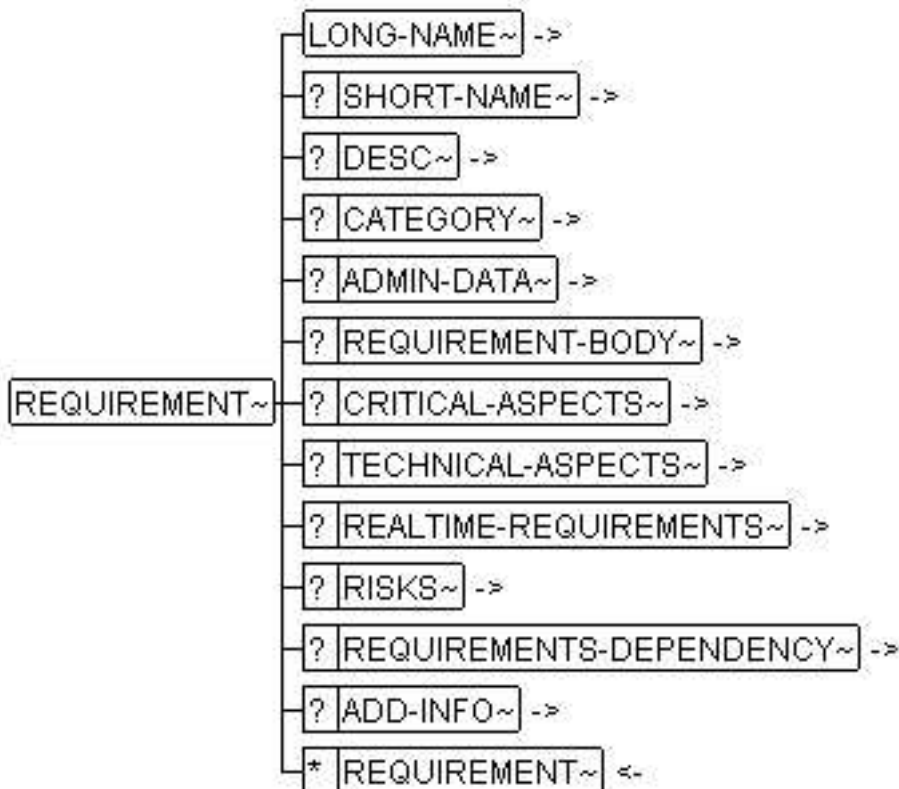
This element contains a requirement with a short, paragraph-long description <**DESC**>, administrative data <**ADMIN-DATA**>, the complete description of the requirement <**REQUIREMENT-BODY**>, critical aspects that must be observed <**CRITICAL-ASPECTS**>, technical aspects <**TECHNICAL-ASPECTS**>, real-time requirements <**REALTIME-REQUIREMENTS**>, risks <**RISKS**>, requirement dependencies <**REQUIREMENTS-DEPENDENCY**> and additional information <**ADD-INFO**>. A requirement <**REQUIREMENT**> may in turn contain requirements <**REQUIREMENT**>

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190, [REQUIREMENTS](#) p. 195

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [REQUIREMENT-BODY](#) p. 192, [CRITICAL-ASPECTS](#) p. 74, [TECHNICAL-ASPECTS](#) p. 603, [REALTIME-REQUIREMENTS](#) p. 186, [RISKS](#) p. 200, [REQUIREMENTS-DEPENDENCY](#) p. 196, [ADD-INFO](#) p. 26, [REQUIREMENT](#) p. 190



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	REQUIREMENT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" like: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.222 REQUIREMENT-BODY

Beschreibung

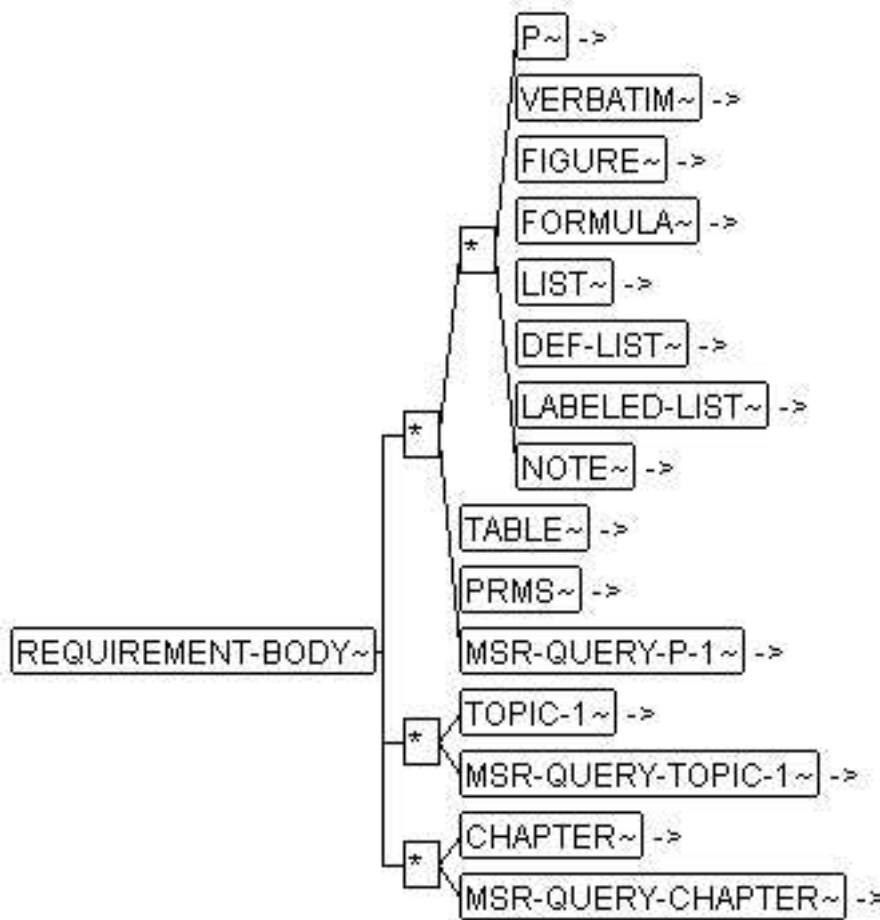
This element contains the textual description of a requirement, which can be distributed over chapter structures.

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



REQUIREMENT-BODY.PNG

2.223 REQUIREMENT-REF

Beschreibung

This element describes a reference to a requirement **<REQUIREMENT>**. The reference is established using the **[ID-REF]**-attribute contents of the **<REQUIREMENT-REF>**-element which points to an **<REQUIREMENT>**-element with an **[ID]**-attribute of the same value. The reference can also occur via the contents of the **<REQUIREMENT-REF>**-element, which then has the same contents as the **<SHORT-NAME>** of a **<REQUIREMENT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FULFILS](#) p. 413

Ist Kontext für: Text

REQUIREMENT-REF~ — #PCDATA

REQUIREMENTREF.PNG



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	REQUIREMENT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF) used to address the target of a hyperlink can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute use to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.224 REQUIREMENT-SPEC

Beschreibung

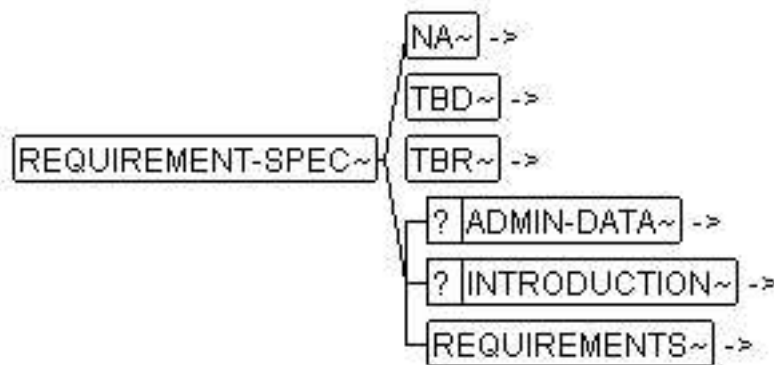
This element contains the specification of functional requirements. If given, explanations for these can be found in <INTRODUCTION> .

Beispiel

Formale Beschreibung

Hat als Kontext: [FUNCTIONAL-REQUIREMENTS](#) p. 108

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [REQUIREMENTS](#) p. 195



REQUIREMENT-SPEC.PNG

2.225 REQUIREMENTS

Beschreibung

Container-Element for <REQUIREMENT> .

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT-SPEC](#) p. 195

Ist Kontext für: [REQUIREMENT](#) p. 190



REQUIREMENTS.PNG

2.226

REQUIREMENTS-DEPENDENCY

Beschreibung

This element describes the cross-references from one requirement to another, in text form. A formal dependency is not specified here, although this is possible if **<XREF>** is used.

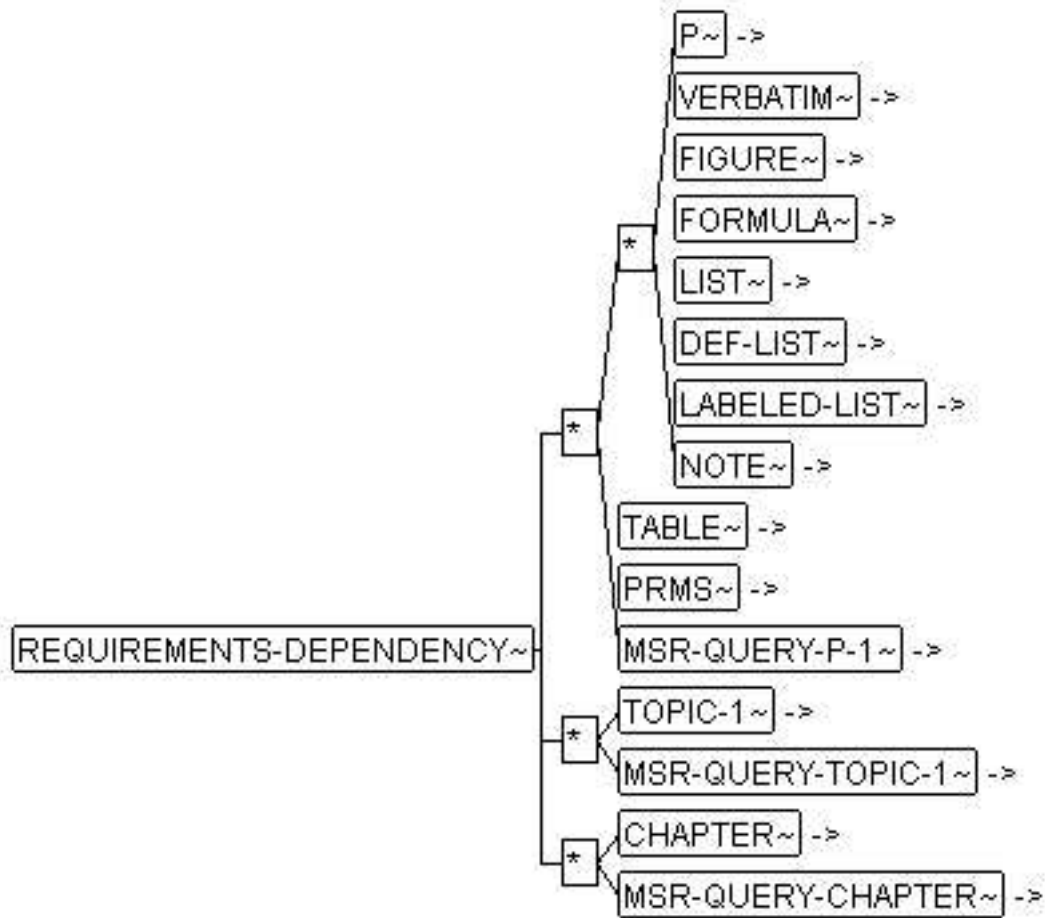
Beispiel

```
<REQUIREMENTS>
  <REQUIREMENT ID="IDMUSTHAVELAMP">
    <LONG-NAME>The system shall have warning lamp</LONG-NAME>
  </REQUIREMENT>
  <REQUIREMENT ID="IDDETECTDANGER">
    <LONG-NAME>The system shall detect dangerous situations</LONG-NAME>
  </REQUIREMENT>
  <REQUIREMENT ID="ID72DE4BF3rad10F26">
    <LONG-NAME>The warning lamp shall flash on danger</LONG-NAME>
    <REQUIREMENTS-DEPENDENCY>
      <TOPIC-1 ID="ID72DE4BF3rad98328">
        <LONG-NAME>Prerequisites</LONG-NAME>
        <P><XREF ID-CLASS="REQUIREMENT" ID-REF="IDMUSTHAVELAMP"></XREF></P>
        <P><XREF ID-CLASS="REQUIREMENT" ID-REF="IDDETECTDANGER"></XREF></P>
      </TOPIC-1>
    </REQUIREMENTS-DEPENDENCY>
  </REQUIREMENT>
</REQUIREMENTS>
```

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



REQUIREMENTS-DEPENDENCY.PNG

2.227 RESOURCE-ALLOCATION

Beschreibung

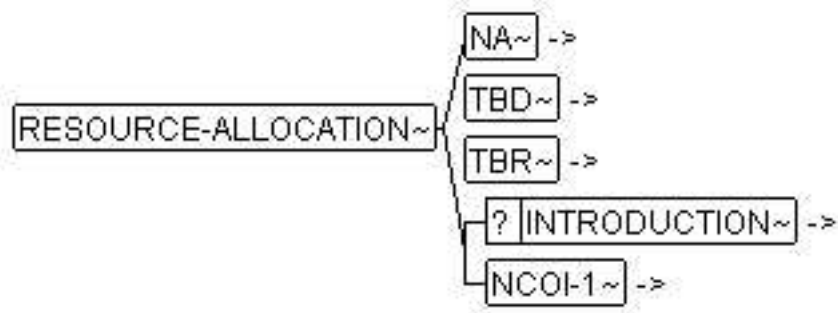
Use **<RESOURCE-ALLOCATION>**, to insert **commands regarding exploitation of resources**

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1 p. 110](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



RESOURCE-ALLOCATION.PNG

2.228 RESTRICTIONS-BY-HARDWARE

Beschreibung

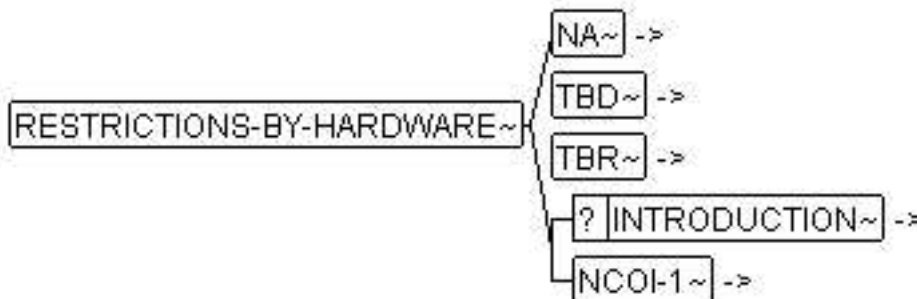
Use <RESTRICTIONS-BY-HARDWARE>, to enter **limitations caused by the hardware** .

Beispiel

Formale Beschreibung

Hat als Kontext: [DESIGN-REQUIREMENTS](#) p. 84

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



RESTRICTIONS-BY-HARDWARE.PNG

2.229 REVISION-LABEL

Beschreibung

Use <REVISION-LABEL>, to enter the version number of the document, or the document section to which administrative is applied.. The syntax is free and refers to the configuration management plan respectively the version management tool being used.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY-REVISION-INFO](#) p. 56, [DOC-REVISION](#) p. 87

Ist Kontext für: Text

`REVISION-LABEL~`—#PCDATA

REVISION-LABEL.PNG

2.230 REVISION-LABEL-P1

Beschreibung

Use `<REVISION-LABEL-P1>`, to enter the version number of the **first predecessor** of the document, or the document section to which administrative is applied.. The syntax is free and refers to the configuration management plan respectively the version management tool being used. This element is used, if the document or document section is the result of a merge process in which two branches are merged in to one new revision.

Beispiel

```
<REVISION-LABEL>1.4</REVISION-LABEL>  
  <REVISION-LABEL-P1>1.2.1.3</REVISION-LABEL-P1>  
  <REVISION-LABEL-P2>1.3.1.4</REVISION-LABEL-P2>
```

This example shows a scenario where the **current** revision **1.4** is produced by merging **1.3.1.4** into **1.2.1.3**

Formale Beschreibung

Hat als Kontext: [COMPANY-REVISION-INFO](#) p. 56, [DOC-REVISION](#) p. 87

Ist Kontext für: Text

`REVISION-LABEL-P1~`—#PCDATA

REVISION-LABEL-P1.PNG

2.231 REVISION-LABEL-P2

Beschreibung

Use `<REVISION-LABEL-P1>`, to enter the version number of the **second predecessor** of the document, or the document section to which administrative is applied.. The syntax is free and refers to the configuration management plan respectively the version management tool being used. This element is used, if the document or document section is the result of a merge process in which two branches are merged in to one new revision.

Beispiel

```
<REVISION-LABEL>1.4</REVISION-LABEL>  
  <REVISION-LABEL-P1>1.2.1.3</REVISION-LABEL-P1>  
  <REVISION-LABEL-P2>1.3.1.4</REVISION-LABEL-P2>
```

This example shows a scenario where **current** revision **1.4** is produced by merging **1.3.1.4** into **1.2.1.3**

Formale Beschreibung

Hat als Kontext: [COMPANY-REVISION-INFO](#) p. 56, [DOC-REVISION](#) p. 87

Ist Kontext für: Text

REVISION-LABEL-P2~ -#PCDATA

REVISION-LABEL-P2.PNG

2.232 RIGHTS

Beschreibung

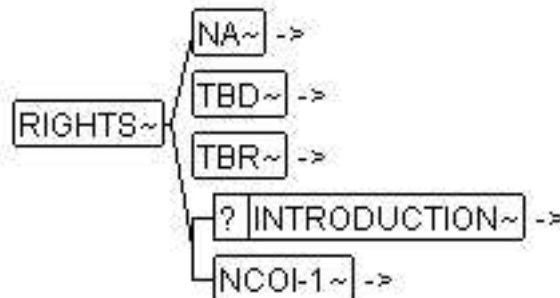
Use <RIGHTS>, to enter the **licensing rights** .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONTRACT-ASPECTS](#) p. 73

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



RIGHTS.PNG

2.233 RISKS

Beschreibung

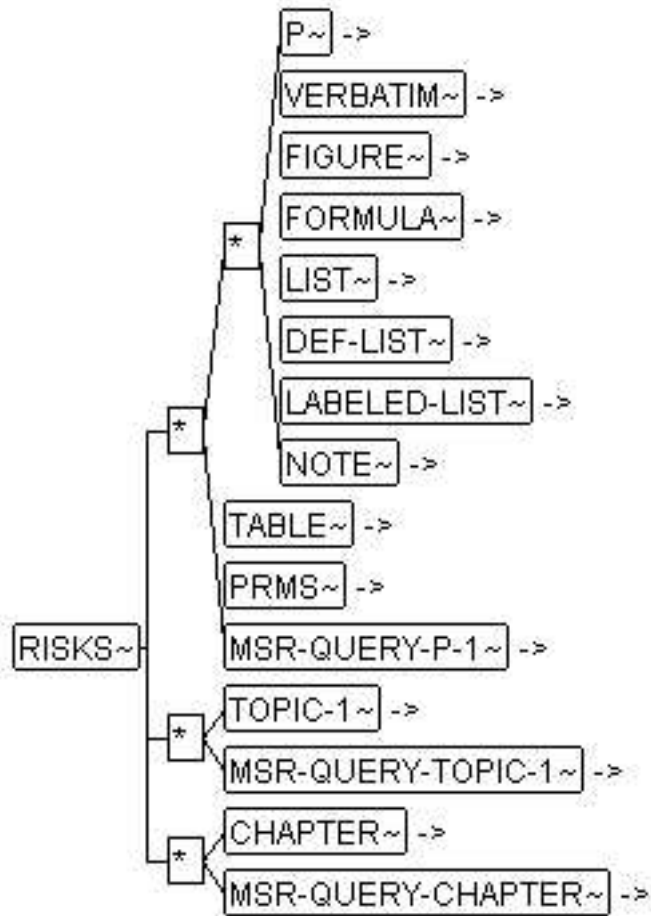
In this element, textual descriptions of risks concerning a functional requirement can be indicated.

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



RISKS.PNG

2.234 ROLE

Beschreibung

<ROLE> denotes one particular role adopted by the team member within the current project. Roles include "Author", "Calibration engineer", "Supporter", "Quality assurance".

Beispiel

Formale Beschreibung

Hat als Kontext: [ROLES](#) p. 201

Ist Kontext für: Text

ROLE~ — #PCDATA

ROLE.PNG

2.235 ROLES

Beschreibung

<ROLES> is a wrapper containing all the roles attributed to one particular team member involved in the project.

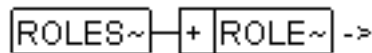
Beispiel

for an example, see [Chapter 2.208 PROJECT-DATA](#) p. 183

Formale Beschreibung

Hat als Kontext: [COMPANY](#) p. 51, [TEAM-MEMBER](#) p. 599

Ist Kontext für: [ROLE](#) p. 201



ROLES.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[F-CHILD-TYPE] (fixed)	cdata	ROLE:SELECTION	Fixed Child Type. Warning: This attribute is included in the DTD for compatibility with older versions and should not be used for any new implementations. It may be removed in future versions of the DTD. The attribute contains information stating which child elements of the element carrying this attribute, should be checked by a semantic checker.

2.236 ROW

Beschreibung

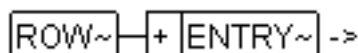
Use <ROW> , to create a row in a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [TBODY](#) p. 597, [TFOOT](#) p. 605, [THEAD](#) p. 608

Ist Kontext für: [ENTRY](#) p. 90



ROW.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[VALIGN] (default)	namedtokengroup	<ul style="list-style-type: none"> • TOP • BOTTOM • MIDDLE 	TOP - The contents of the row is aligned to the upper edge of the cell. BOTTOM - The contents of the row is aligned to the lower edge of the cell. MIDDLE - The contents of the row is centered to the vertical.
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the row guides of a cell are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.

2.237

SAFETY

Beschreibung

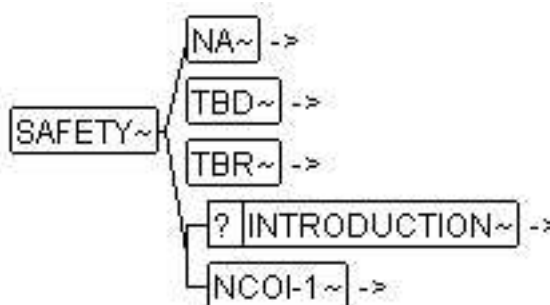
Use <SAFETY>, to determine **confidentiality** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



SAFETY.PNG

2.238 SAMPLE

Beschreibung

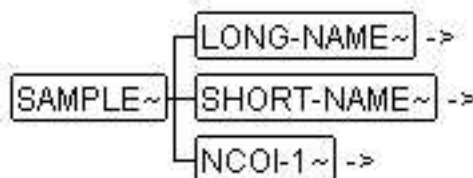
Use <SAMPLE>, to enter the **prototype** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SAMPLES](#) p. 207

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [NCOI-1](#) p. 162



SAMPLE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-CHILD-TYPE] (fixed)	cdata	LONG-NAME:SELECT	Fixed Child Type. Warning: This attribute is included in the DTD for compatibility with older versions and should not be used for any new implementations. It may be removed in future versions of the DTD. The attribute contains information stating which child elements of the element carrying this attribute, should be checked by a semantic checker.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SAMPLE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.239 SAMPLE-REF

Beschreibung

Use <SAMPLE-REF>, to enter the **prototype reference** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SCHEDULE](#) p. 207

Ist Kontext für: Text

SAMPLE-REF~

 — #PCDATA

SAMPLE-REFPING

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SAMPLE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.240 SAMPLE-SPEC

Beschreibung

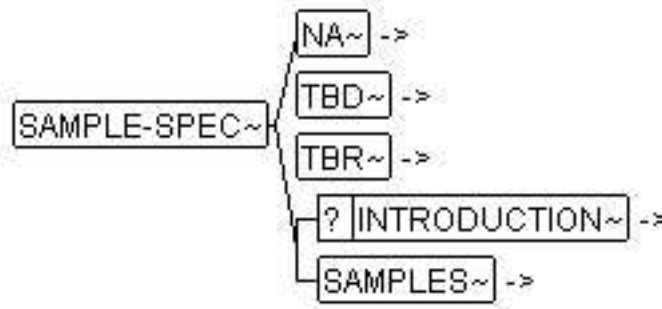
Use **<SAMPLE-SPEC>**, to enter the **prototype definitions** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [SAMPLES](#) p. 207



SAMPLE-SPEC.PNG

2.241 SAMPLES

Beschreibung

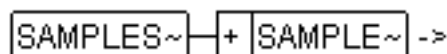
Use **<SAMPLES>**, to enter the **prototype** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SAMPLE-SPEC](#) p. 207

Ist Kontext für: [SAMPLE](#) p. 203



SAMPLES.PNG

2.242 SCHEDULE

Beschreibung

Use **<SCHEDULE>** to enter the **schedule** .

Beispiel

Formale Beschreibung

Hat als Kontext: [TBD](#) p. 595

Ist Kontext für: [SAMPLE-REF](#) p. 205, [DATE](#) p. 77



SCHEDULE.PNG

2.243

SD

Beschreibung

This element is a "Special Data" element. By using this element it is possible to extend the dtd with a "new" element tag.

Beispiel

If the element:

```
<BIG-NUMBER>1000</BIG-NUMBER>
```

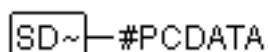
is required but doesn't exist in the dtd it can be created with a **<SD>** element. It would then look like this:

```
<SD GID="BIG-NUMBER">1000</SD>
```

Formale Beschreibung

Hat als Kontext: [SDG](#) p. 208

Ist Kontext für: Text



SD.PNG

Attribut	Typ	Anmerkungen
[GID] (required)	cdata	Identification name of the new element
[ID-CLASS] (implied)	nmtoken	
[ID-REF] (implied)	idref	

2.244 SDG

Beschreibung

SDG (*Special Data Group*) is a backdoor used to handle elements that has not yet been defined in a DTD. The **<SDG>** is a container for one or several **<SD>** that defines new elements and carries the information. Special Data should only be used moderately since all elements should be defined in the dtd. Thereby should SDG be considered as a temporary solution when elements are missing. If a **<SDG-CAPTION>** element is created along with a **<SHORT-NAME>** it is possible to reference the **<SDG>** structure via a **<XREF>**.

Beispiel

If the element structure:

```
<MY-NUMBERS>
    <BIG-NUMBER>1000</BIG-NUMBER>
    <SMALL-NUMBER>1</SMALL-NUMBER>
</MY-NUMBERS>
```

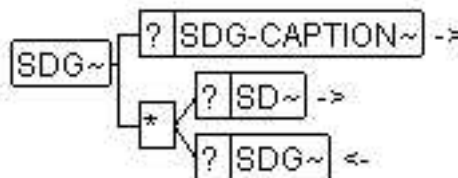
is required but doesn't exist in the dtd it can be created with a **<SDG>** and some **<SD>** elements. It would then look like this:

```
<SDG GID="MY-NUMBERS">
    <SD GID="BIG-NUMBER">1000</SD>
    <SD GID="SMALL-NUMBER">1</SD>
</SDG>
```

Formale Beschreibung

Hat als Kontext: [SDG p. 208](#), [SDGS p. 210](#), [SPECIAL-DATA p. 217](#)

Ist Kontext für: [SDG-CAPTION p. 209](#), [SD p. 208](#), [SDG p. 208](#)



SDG.PNG

Attribut	Typ	Anmerkungen
[GID] (required)	cdata	Identification name of the element group

2.245 SDG-CAPTION

Beschreibung

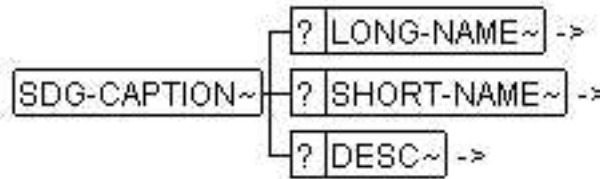
This enables a **<SHORT-NAME>** to be assigned to **[ID]** and enables a **<LONG-NAME>** to be assigned to a special data group **<SDG>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SDG p. 208](#)

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83



SDG-CAPTION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SDG	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.246 SDGS

Beschreibung

This is a container for one or several **<SDG>** (Special Data Group) elements.

Special data groups (SDGs) are a standard extension mechanism for harmonized objects; they are used to store data for that no other element exists of the data model in a structured way. It could be considered as a "well formed island" which allows to carry specific data even if the DTD itself does not explicitly supports it. this prevents a process designer or a user to entirely switch to another technology if information must be transferred which is not explicitly supported.

Beispiel

Examples for the usage of SDGs within harmonized objects are the company specific documentation in COMPANY DOC INFO. This document defines the structure of SDGs but not their content.

The following example is taken from *ASAM MCD 2 Harmonized Data Objects, Version 1.0-RC2*

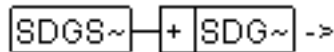
```

<SDGS>
  <SDG>
    <SDG-CAPTION ID="SDGC_ValidPL" TI="G">
      <SHORT-NAME>ValidPL</SHORT-NAME>
      <LONG-NAME>Validity production line</LONG-NAME>
      <DESC>establishes the relation between ECU and production line</DESC>
    </SDG-CAPTION>
    <SD SI="prodline">E46-M3</SD>
    <SD SI="prodline">E39-M3</SD>
    <SD SI="prodline">E39-M5</SD>
  </SDG>
  <SDG>
    <SDG-CAPTION ID="SDGC_DiagInd" TI="D">
      <SHORT-NAME>DiagInd</SHORT-NAME>
      <LONG-NAME>Diagnosisindex</LONG-NAME>
    </SDG-CAPTION>
    <SD>0.7</SD>
  </SDG>
</SDGS>
  
```

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO p. 53](#)

Ist Kontext für: [SDG p. 208](#)



SDGS.PNG

2.247 SELF-DIAGNOSIS

Beschreibung

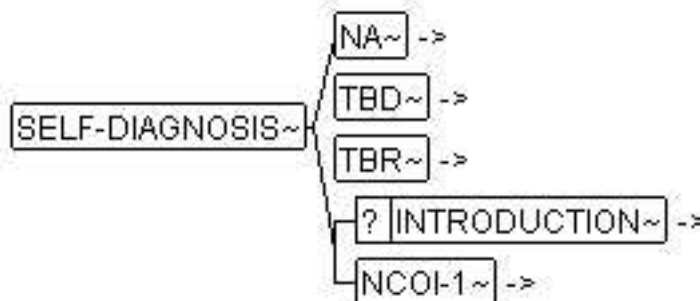
Use **<SELF-DIAGNOSIS>** to enter the **self-diagnosis** .

Beispiel

Formale Beschreibung

Hat als Kontext: [FAILURE-MANAGEMENT p. 93](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [NCOI-1 p. 162](#)



SELF-DIAGNOSIS.PNG

2.248 SHORT-LABEL

Beschreibung

This element specifies a short name for the context element. This label cannot be referenced in the same way as a **<SHORT-NAME>** in connection with MSRSW (queries, external applications etc.).

Beispiel

See [Chapter 2.150 MATCHING-DCIS p. 140](#) [Chapter 2.150 MATCHING-DCIS p. 140](#) .

Formale Beschreibung

Hat als Kontext: [MATCHING-DCI p. 139](#), [SW-MC-GENERIC-INTERFACE p. 448](#), [SW-PROCESS p. 475](#), [SW-PROCESS-LIST p. 475](#), [SW-SERVICE-ARG p. 502](#), [SW-SERVICE-RETURN p. 509](#)

Ist Kontext für: Text

`SHORT-LABEL~`—#PCDATA

SHORT-LABEL.PNG

2.249 SHORT-NAME

Beschreibung

Use **<SHORT-NAME>** to generate a short name for the context element, which enables it to be **referenced** .

Beispiel

Formale Beschreibung

Hat als Kontext: [AVAILABILITY p. 38](#), [CHAPTER p. 44](#), [COMPANY p. 51](#), [CONF-ITEM p. 59](#), [CONF-RULE p. 64](#), [DEF-ITEM p. 80](#), [FIGURE-CAPTION p. 97](#), [FORMULA-CAPTION p. 101](#), [LIFE-TIME p. 132](#), [MSRSW p. 155](#), [MTBF p. 158](#), [NAMELOC p. 160](#), [OPERATING-TIME p. 169](#), [PPM p. 175](#), [PRM p. 177](#), [REQUIREMENT p. 190](#), [SAMPLE p. 203](#), [SDG-CAPTION p. 209](#), [STD p. 219](#), [SW-ADDR-METHOD p. 228](#), [SW-AXIS-TYPE p. 245](#), [SW-BASE-TYPE p. 250](#), [SW-CALIBRATION-METHOD p. 257](#), [SW-CALPRM p. 260](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-ATTR-IMPL p. 294](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#), [SW-CODE-SYNTAX p. 311](#), [SW-COLLECTION p. 318](#), [SW-COMPU-METHOD p. 336](#), [SW-CPU-MEM-SEG p. 347](#), [SW-DATA-CONSTR p. 361](#), [SW-EVENT p. 377](#), [SW-EVENT-SOURCE p. 382](#), [SW-FEATURE p. 386](#), [SW-FEATURE-INTERFACE p. 399](#), [SW-FEATURE-VARIANT p. 410](#), [SW-GENERIC-AXIS-PARAM-TYPE p. 415](#), [SW-INSTANCE p. 420](#), [SW-INSTANCE-TREE p. 428](#), [SW-MC-BASE-TYPE p. 440](#), [SW-MC-FRAME p. 447](#), [SW-MC-INTERFACE p. 451](#), [SW-MC-INTERFACE-SOURCE p. 456](#), [SW-OPER-MODE p. 470](#), [SW-RECORD-LAYOUT p. 476](#), [SW-SERVICE p. 500](#), [SW-SERVICE-ARG p. 502](#), [SW-SERVICE-PROTOTYPE p. 505](#), [SW-SERVICE-RETURN p. 509](#), [SW-SYSTEM p. 517](#), [SW-SYSTEMCONST](#)

[p. 521, SW-TASK](#) [p. 531, SW-TEMPLATE](#) [p. 539, SW-UNIT](#) [p. 545, SW-USER-ACCESS-CASE](#) [p. 551, SW-USER-GROUP](#) [p. 555, SW-VARIABLE](#) [p. 563, SW-VARIABLE-PROTOTYPE](#) [p. 568, SW-VCD-CRITERION](#) [p. 577, SYN-CAPTION](#) [p. 584, TABLE-CAPTION](#) [p. 595, TEAM-MEMBER](#) [p. 599, TOPIC-1](#) [p. 610, TOPIC-2](#) [p. 612, VARIANT-CHAR](#) [p. 620, VARIANT-DEF](#) [p. 624, XDOC](#) [p. 630, XFILE](#) [p. 632, XREF-TARGET](#) [p. 636](#)

Ist Kontext für: Text

`SHORT-NAME~`—#PCDATA

SHORTNAME.PNG

2.250 SI-UNIT

Beschreibung

Describes a standardized unit of measurement, which can be used to convert other units of measurement. The following belong to this:

- Amount of substance
- Electric current
- Length
- Mass
- Luminous intensity
- Temperature
- Time

The measuring unit exponents are determined using the specific attributes.

The definition of a `<SW-UNIT>` can be based both on a `<SI-UNIT>` and on any other unit of measurement, using the reference `<SW-UNIT-REF>` . Here the following must be observed:

- When using referenced units of measurement, the chain of references must end at a SI-UNIT.
- The conversion of the current unit of measurement into the unit of measurement referenced is specified through `<SW-UNIT-CONVERSION-METHOD>` . Here the following is valid:

$$\text{SW-UNIT} = \text{SW-UNIT-GRADIENT} * \text{SW-UNIT-REF} + \text{SW-UNIT-OFFSET}$$

Conversion of measuring units

Beispiel

```
<SW-UNIT ID="HERTZ">
  <LONG-NAME>HERTZ</LONG-NAME>
  <SHORT-NAME>Hz</SHORT-NAME>
  <SW-UNIT-DISPLAY>Hz</SW-UNIT-DISPLAY>
  <SI-UNIT TIME-EXPO="-1"></SI-UNIT>
</SW-UNIT>
<SW-UNIT ID="UPM">
  <LONG-NAME>ROTATES PER MINUTE</LONG-NAME>
  <SHORT-NAME>UPM</SHORT-NAME>
  <SW-UNIT-DISPLAY>UPM</SW-UNIT-DISPLAY>
  <SW-UNIT-CONVERSION-METHOD>
    <SW-UNIT-GRADIENT>0.0166</SW-UNIT-GRADIENT>
    <SW-UNIT-OFFSET>0</SW-UNIT-OFFSET>
  </SW-UNIT-CONVERSION-METHOD>
  <SW-UNIT-REF ID-REF="HERTZ">HERTZ</SW-UNIT-REF>
</SW-UNIT>
```

$$\text{UPM} = 0.0166 * \text{Hz} + 0$$

Formale Beschreibung

Hat als Kontext: [SW-UNIT](#) p. 545

Ist Kontext für: Text

SI-UNIT~—#PCDATA

SI-UNIT.PNG

Attribut	Typ	Anmerkungen
[AMOUNT-OF-SUBSTANCE-EXPO] (implied)	cdata	Exponent of substance amount unit
[ELECTRIC-CURRENT-EXPO] (implied)	cdata	Exponent of electricity unit
[LENGTH-EXPO] (implied)	cdata	Exponent of unit of length
[LUMINOUS-INTENSITY-EXPO] (implied)	cdata	Exponent of unit of luminous intensity
[MASS-EXPO] (implied)	cdata	Exponent of unit of mass
[THERMODYNAMIC-TEMPERATURE-EXPO] (implied)	cdata	Exponent of unit of temperature
[TIME-EXPO] (implied)	cdata	Exponent of unit of time

2.251 SIGNAL-REF

Beschreibung

Use **<SIGNAL-REF>** to reference a Hardware signal. It is e.g. used within MSRSW to associate events with a signal in the hardware system.

Beispiel

```
<SW-EVENT-SOURCE >
  <LONG-NAME>Kickdown pressed</LONG-NAME>
  <SHORT-NAME>ev_kickdown</SHORT-NAME>
  <SIGNAL-REF>/body/kickdown</SIGNAL-REF>
</SW-EVENT-SOURCE>
```

This example illustrates an event source which is connected to the signal **kickdown** within a hardware system named **body**. It is implemented as a reference which is resolved according to the regular MSR linking mechanism.

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SOURCE](#) p. 382

Ist Kontext für: Text

SIGNAL-REF~ — #PCDATA

SIGNAL-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[EXT-ID-CLASS] (fixed)	nmtoken	SIGNAL	
[F-ID-CLASS] (fixed)	nmtoken	EXTERNAL	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.252 SIMILAR-PRODUCTS

Beschreibung

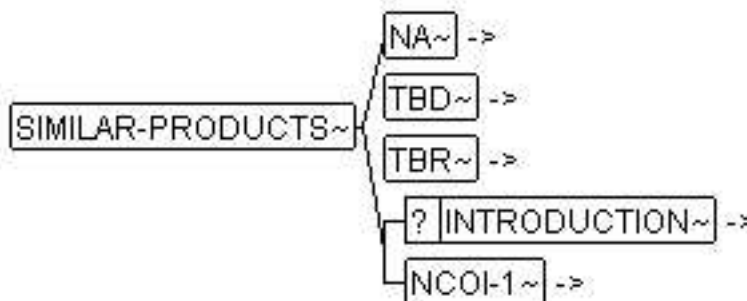
Use <SIMILAR-PRODUCTS> to enter a **reference to similar products** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PRODUCT-DATA-1](#) p. 110

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



SIMILAR-PRODUCTS.PNG

2.253 SPANSPEC

Beschreibung

Use <SPANSPEC> to determine the identification data for a merging of columns.

Beispiel

Formale Beschreibung

Hat als Kontext: [TGROUPE](#) p. 606

Hat keinen Inhalt.

`SPANSPEC` empty

SPANSPEC.PING

Attribut	Typ	Wertebereich	Anmerkungen
[NAMEEND] (required)	nmtoken		Identification number of the final column to be merged.
[NAMEST] (required)	nmtoken		Identification number of the first column to be merged.
[SPANNAME] (required)	nmtoken		Identification name for the column merging specified
[ALIGN] (default)	namedtokengroup	<ul style="list-style-type: none"> • LEFT • RIGHT • CENTER • JUSTIFY • CHAR 	LEFT - The table contents is justified left. RIGHT - The table contents is justified right. CENTER - The table contents is centered horizontally. JUSTIFY - The table contents is displayed with justified typesetting. There is an equal distance from the left and right-hand edges of the cell. CHAR - The alignment of the table contents is set by [CHAR] .
[CHAR] (implied)	cdata		If [ALIGN] ="CHAR", this specifies the alignment sign e.g. "bzlw", as a decimal point separator from an existing value of [CHAR] . The sign cannot be a SDATA entity.

Attribut	Typ	Wertebereich	Anmerkungen
[CHAROFF] (implied)	nmtoken		If [ALIGN] ="CHAR", this value indicates the percentage of the current column width to the left edge of the alignment sign in the [CHAR] -attribute. If there is no alignment sign in the element <ENTRY> , alignment is always horizontal right. The default value is taken from the <COLSPEC> element, which is located in the attribute [NAMEST] .
[COLSEP] (implied)	nmtoken		At this point, you should determine whether the column guides of a cell are to be visible. You should enter 0 , if no column guides are to be displayed. You should enter 1 , if the column guides are to be displayed.
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the row guides of a cell are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.

2.254 SPECIAL-DATA

Beschreibung

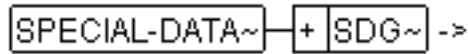
Container element for **<SDG>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [SDG p. 208](#)



SPECIAL-DATA.PNG

2.255 STANDARD-SW-MODULES

Beschreibung

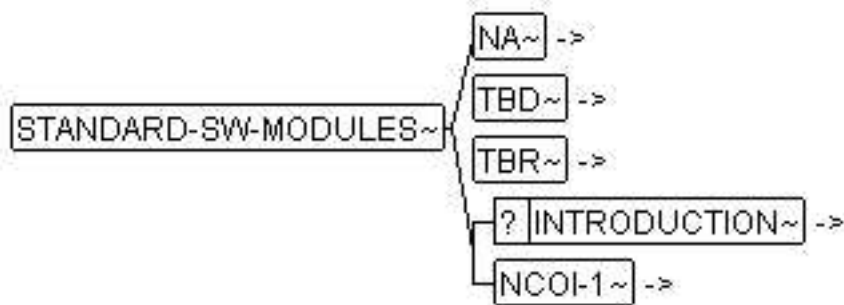
Use **<STANDARD-SW-MODULES>** to enter the **standardized SW module** .

Beispiel

Formale Beschreibung

Hat als Kontext: [DESIGN-REQUIREMENTS](#) p. 84

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



STANDARD-SW-MODULES.PNG

2.256 STATE

Beschreibung

<STATE> represents the current state of the current file according to the configuration management plan.

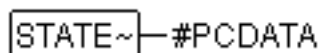
Beispiel

`<STATE>reviewed</STATE>`

Formale Beschreibung

Hat als Kontext: [COMPANY-REVISION-INFO](#) p. 56, [DOC-REVISION](#) p. 87

Ist Kontext für: Text



STATE.PNG

2.257 STATE-1

Beschreibung

Use <STATE-1> to enter the version and state of a standard or an external document.

Beispiel

Formale Beschreibung

Hat als Kontext: [STD](#) p. 219, [XDOC](#) p. 630

Ist Kontext für: Text

STATE-1~ — #PCDATA

STATE-1.PNG

2.258 STD

Beschreibung

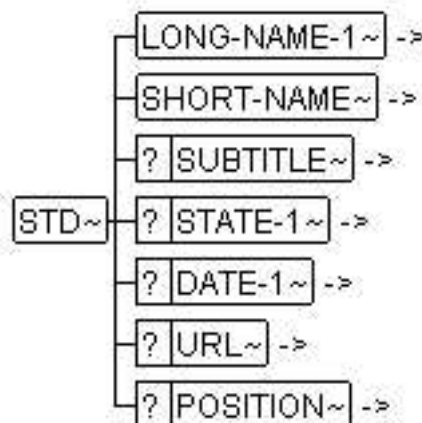
Use <STD> to reference external standards within a paragraph element.

Beispiel

Formale Beschreibung

Hat als Kontext: [P](#) p. 172, [TBR](#) p. 597

Ist Kontext für: [LONG-NAME-1](#) p. 135, [SHORT-NAME](#) p. 212, [SUBTITLE](#) p. 220, [STATE-1](#) p. 218, [DATE-1](#) p. 77, [URL](#) p. 616, [POSITION](#) p. 174



STD.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	STD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.259

SUB

Beschreibung

Use <SUB> to display sections of text within a paragraph element, in a smaller font beneath the base line.

Beispiel

Formale Beschreibung

Hat als Kontext: [ABS](#) p. 25, [CHANGE](#) p. 43, [DESC](#) p. 83, [IE](#) p. 121, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [LABEL](#) p. 128, [LONG-NAME](#) p. 134, [LONG-NAME-1](#) p. 135, [MAX](#) p. 140, [MIN](#) p. 141, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [SW-UNIT-DISPLAY](#) p. 546, [TBR](#) p. 597, [TEXT](#) p. 605, [TOL](#) p. 609, [TYP](#) p. 615, [UNIT](#) p. 615

Ist Kontext für: Text

SUB~—#PCDATA

SUB.PNG

2.260 SUBTITLE

Beschreibung

Use **<SUBTITLE>** to enter a sub-heading of an external standard.

Beispiel

Formale Beschreibung

Hat als Kontext: [STD](#) p. 219

Ist Kontext für: Text

SUBTITLE~—#PCDATA

SUBTITLE.PNG

2.261 SUP

Beschreibung

Use **<SUP>** to display sections of text within a paragraph element, in a smaller font above the base line.

Beispiel

Formale Beschreibung

Hat als Kontext: [ABS](#) p. 25, [CHANGE](#) p. 43, [DESC](#) p. 83, [IE](#) p. 121, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [LABEL](#) p. 128, [LONG-NAME](#) p. 134, [LONG-NAME-1](#) p. 135, [MAX](#) p. 140, [MIN](#) p. 141, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [SW-UNIT-DISPLAY](#) p. 546, [TBR](#) p. 597, [TEXT](#) p. 605, [TOL](#) p. 609, [TYP](#) p. 615, [UNIT](#) p. 615

Ist Kontext für: Text

SUP~—#PCDATA

SUP.PNG

2.262 SW-ACCESS-DEF

Beschreibung

This element describes a specific entry into the "access authorization table". This means it indicates which users (**<SW-USER-GROUP-REF>**) that are permitted to execute different types of access operations (**<SW-USER-ACCESS-CASE-REF>**) on which objects (**<SW-COLLECTION-REF>**).

This following notes apply:

- If no **<SW-COLLECTION>** is referenced, the access authorization applies to all objects.

- The access semantics must be controlled through the allocation of an arranged **<SHORT-NAME>** within **<SW-USER-ACCESS-CASE>**. For this purpose, a verbal description can be given in **<DESC>** under **<SW-USER-ACCESS-CASE>**. This refers to necessary priorities among the access operations.
- The concept of the access authorization as being an open system (anything is permitted), or as a closed system (nothing is permitted), must be carried out by allocating the semantics of the **<SW-USER-ACCESS-CASES>** appropriately.
- It is logical that the access system is regarded first as a closed system.

Beispiel

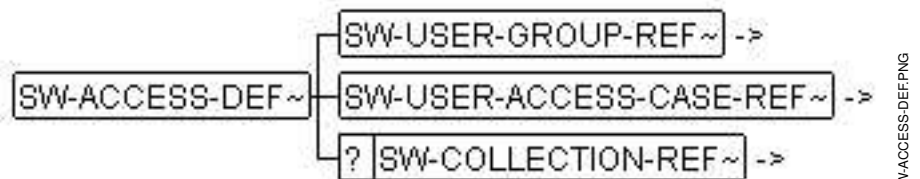
Example of a closed system:

```
<SW-USER-RIGHT-SPEC>
  <SW-USER-GROUPS>
    <SW-USER-GROUP ID="ALL-USERS">
      <DESC>If no user is referred to, all users belong to this group </DESC>
    </SW-USER-GROUP>
    <SW-USER-GROUP ID="THE-BOSSSES">
      <LONG-NAME>The bosses of this world</LONG-NAME>
      <SHORT-NAME>the-bosses</SHORT-NAME>
      <SYSTEM-USERS>
        <SYSTEM-USER>bigates</SYSTEM-USER>
        <SYSTEM-USER>gebush</SYSTEM-USER>
        <SYSTEM-USER>vlputin</SYSTEM-USER>
        <SYSTEM-USER>frbeckenbauer</SYSTEM-USER>
      </SYSTEM-USERS>
    </SW-USER-GROUP>
  </SW-USER-GROUPS>
  <SW-USER-ACCESS-CASES>
    <SW-USER-ACCESS-CASE ID="READ-ACCESS">
      <LONG-NAME>Read access</LONG-NAME>
      <SHORT-NAME>Read</SHORT-NAME>
    </SW-USER-ACCESS-CASE>
    <SW-USER-ACCESS-CASE ID="NO-ACCESS">
      <LONG-NAME>No access</LONG-NAME>
      <SHORT-NAME>No-Access</SHORT-NAME>
      <DESC>"No-Access" establishes a closed system. Access can be grantet explicitly by anot
    </SW-USER-ACCESS-CASE>
  </SW-USER-ACCESS-CASES>
  <SW-USER-ACCESS-DEFINTIONS>
    <SW-ACCESS-DEF>
      <SW-USER-GROUP-REF ID-REF="THE-BOSSSES">the-bosses</SW-USER-GROUP-REF>
      <SW-USER-ACCESS-CASE-REF ID-REF="READ-ACCESS">Read</SW-USER-ACCESS-CASE-REF>
    </SW-ACCESS-DEF>
    <SW-ACCESS-DEF>
      <SW-USER-GROUP-REF ID-REF="ALL-USERS">ALL-USERS</SW-USER-GROUP-REF>
      <SW-USER-ACCESS-CASE-REF ID-REF="NO-ACCESS">No-Access</SW-USER-ACCESS-CASE-REF>
    </SW-ACCESS-DEF>
  </SW-USER-ACCESS-DEFINTIONS>
</SW-USER-RIGHT-SPEC>
```

Formale Beschreibung

Hat als Kontext: [SW-USER-ACCESS-DEFINTIONS](#) p. 555

Ist Kontext für: [SW-USER-GROUP-REF](#) p. 556, [SW-USER-ACCESS-CASE-REF](#) p. 552, [SW-COLLECTION-REF](#) p. 321



2.263 SW-ACCESS-DURATION

Beschreibung

Use **<SW-ACCESS-DURATION>** to define the period of time that an object is being accessed. The object can for example be a variable. The duration is set with a CSE code and a CSE code factor.

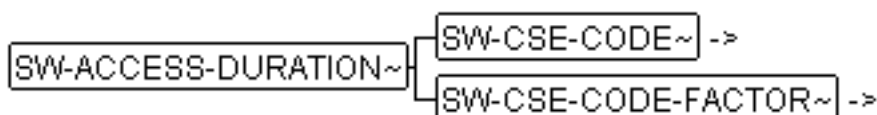
Beispiel

```
<SW-ACCESS-DURATION>
  <SW-CSE-CODE>4</SW-CSE-CODE>
  <SW-CSE-CODE-FACTOR>1</SW-CSE-CODE-FACTOR>
</SW-ACCESS-DURATION>
```

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-ACCESS-DURATION.PNG

2.264 SW-ACCESSED-CALPRMS

Beschreibung

Use **<SW-ACCESSED-CALPRMS>** to list all calibration parameters that will be accessed by the parent object. It can for example list all parameters that a **<SW-SERVICE>** is accessing. All parameters that only will be accessed under certain conditions can be entered under the **<SW-CALPRM-REF-SYSCOND>** structure, e.g. when a system constant has a specific value.

Beispiel

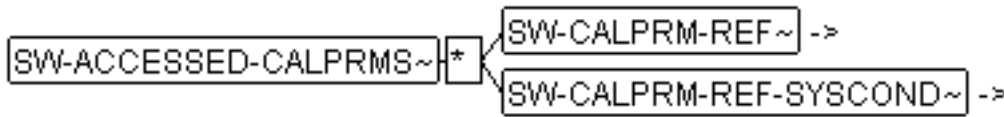
The parameter Calprm1 is always accessed and Calprm3 is only accessed when LINA_Gear > 0.

```
<SW-ACCESSED-CALPRMS>
  <SW-CALPRM-REF>Calprm1</SW-CALPRM-REF>
  <SW-CALPRM-REF-SYSCOND>
    <SW-CALPRM-REF>Calprm3</SW-CALPRM-REF>
    <SW-SYSCOND>
      <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>>0
    </SW-SYSCOND>
  </SW-CALPRM-REF-SYSCOND>
</SW-ACCESSED-CALPRMS>
```

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431, [SW-SERVICE](#) p. 500, [SW-SERVICE-ACCESSED-ELEMENT-SET](#) p. 501, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [SW-CALPRM-REF](#) p. 270, [SW-CALPRM-REF-SYSCOND](#) p. 272



SW-ACCESSED-CALPRMS.PNG

2.265 SW-ACCESSED-CLASS-INSTANCES

Beschreibung

Use **<SW-ACCESSED-CLASS-INSTANCES>** to list all class instances that will be accessed by the parent object. It can for example list all class instances that a **<SW-SERVICE>** is accessing. All instances that only will be accessed under certain conditions can be entered under the **<SW-CLASS-INSTANCE-REF-SYSCOND>** structure, e.g. when a system constant has a specific value.

Beispiel

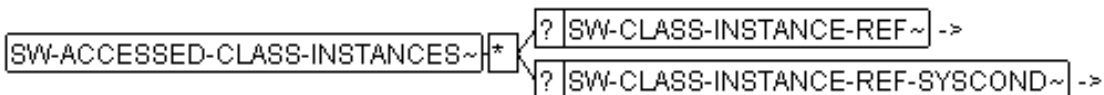
```

<SW-ACCESSED-CLASS-INSTANCES>
  <SW-CLASS-INSTANCE-REF>ClassIn1</SW-CLASS-INSTANCE-REF>
  <SW-CLASS-INSTANCE-REF-SYSCOND>
    <SW-CLASS-INSTANCE-REF>ClassIn3</SW-CLASS-INSTANCE-REF>
    <SW-SYSCOND>
      <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&gt;0
    </SW-SYSCOND>
  </SW-CLASS-INSTANCE-REF-SYSCOND>
</SW-ACCESSED-CLASS-INSTANCES>
  
```

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-ACCESSED-ELEMENT-SET p. 431](#), [SW-SERVICE p. 500](#), [SW-SERVICE-ACCESSED-ELEMENT-SET p. 501](#), [SW-SERVICE-IMPL p. 503](#)

Ist Kontext für: [SW-CLASS-INSTANCE-REF p. 301](#), [SW-CLASS-INSTANCE-REF-SYSCOND p. 303](#)



SW-ACCESSED-CLASS-INSTANCES.PNG

2.266 SW-ACCESSED-SERVICE

Beschreibung

Use **<SW-ACCESSED-SERVICE>** to list all services that will be accessed by the parent object (actually it is the parent of the container **<SW-ACCESSED-SERVICES>**). It can for example list all services that a **<SW-SERVICE>** is accessing. All services that only will be accessed under certain conditions can be defined with the **<SW-SYSCOND>** structure, e.g. when a system constant has a specific value. The service will only be included when the **<SW-SYSCOND>** is evaluated to true.

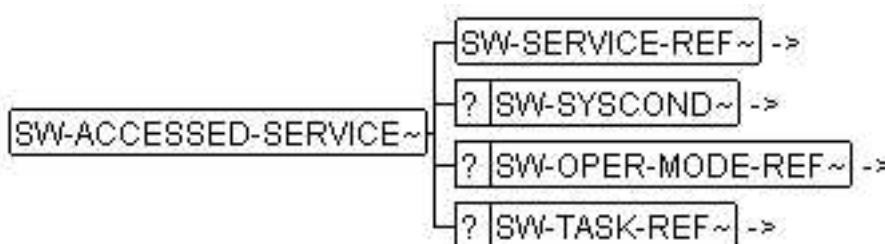
Beispiel

```
<SW-ACCESSED-SERVICE>
  <SW-SERVICE-REF>Serv1</SW-SERVICE-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&gt;0
  </SW-SYSCOND>
</SW-ACCESSED-SERVICE>
```

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-SERVICES](#) p. 225

Ist Kontext für: [SW-SERVICE-REF](#) p. 508, [SW-SYSCOND](#) p. 511, [SW-OPER-MODE-REF](#) p. 471, [SW-TASK-REF](#) p. 535



SW-ACCESSED-SERVICE.PNG

2.267

SW-ACCESSED-SERVICES

Beschreibung

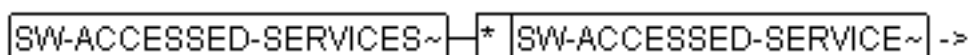
This is a container for all services that are being accessed by the parent to this element.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431, [SW-SERVICE](#) p. 500, [SW-SERVICE-ACCESSED-ELEMENT-SET](#) p. 501, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [SW-ACCESSED-SERVICE](#) p. 224



SW-ACCESSED-SERVICES.PNG

2.268

SW-ACCESSED-VARIABLE

Beschreibung

<SW-ACCESSED-VARIABLE> defines a variable that is being accessed from for example a service. The variable reference can either be entered directly or it can be made dependent of a system condition. There are also some additional properties such as:

- <SW-VARIABLE-USAGE>

to set READ, WRITE or READWRITE for example.

- **<SW-VARIABLE-ACCESS-SEQUENCE>**
- **<SW-VARIABLE-ACCESS-IMPL>**

to set the implementation e.g OPTIMISED

- **<SW-ACCESS-DURATION>**

to set the access duration.

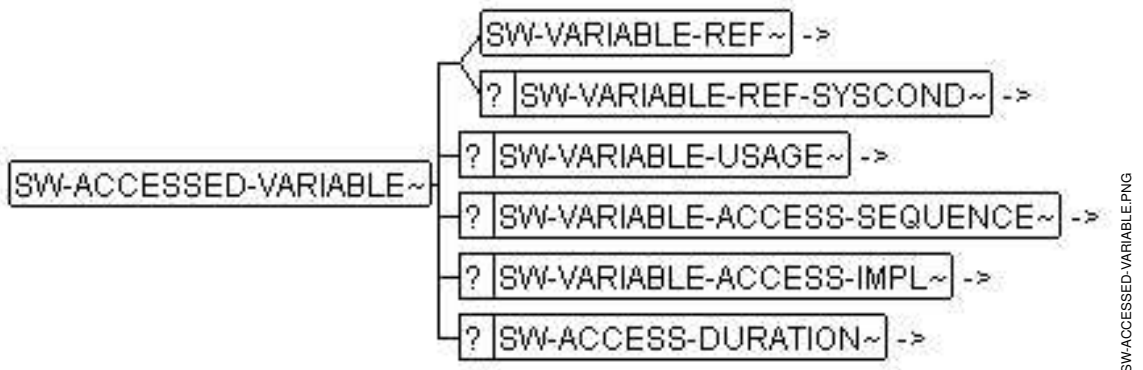
Beispiel

```
<SW-VARIABLE-REF>TST_varSimple_mp</SW-VARIABLE-REF>
  <SW-VARIABLE-USAGE>READ</SW-VARIABLE-USAGE>
  <SW-VARIABLE-ACCESS-IMPL>OPTIMISED</SW-VARIABLE-ACCESS-IMPL>
</SW-ACCESSED-VARIABLE>
```

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLES](#) p. 226

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-VARIABLE-REF-SYSCOND](#) p. 574, [SW-VARIABLE-USAGE](#) p. 574, [SW-VARIABLE-ACCESS-SEQUENCE](#) p. 566, [SW-VARIABLE-ACCESS-IMPL](#) p. 565, [SW-ACCESS-DURATION](#) p. 222



2.269 SW-ACCESSED-VARIABLES

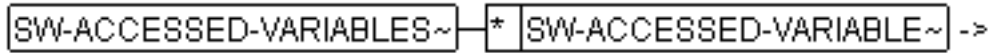
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431, [SW-SERVICE](#) p. 500, [SW-SERVICE-ACCESSED-ELEMENT-SET](#) p. 501, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [SW-ACCESSED-VARIABLE](#) p. 225



2.270 SW-ADDR-INFO

Beschreibung

This element provides the information required to address a memory object. For this purpose, the following must be input:

- The memory segment (referenced through **<SW-CPU-MEM-SEG-REF>**) in which the memory object is to be stored (e.g. RAM, ROM).
- The base address, given by **<SW-BASE-ADDR>**
- The offset, specified using **<SW-ADDR-OFFSET>**
- The size of the memory object **in bytes**, indicated by **<SW-SIZEOF-INSTANCE>** . This is required for the recalculation of the individual component addresses, on temporary storage of the structures.

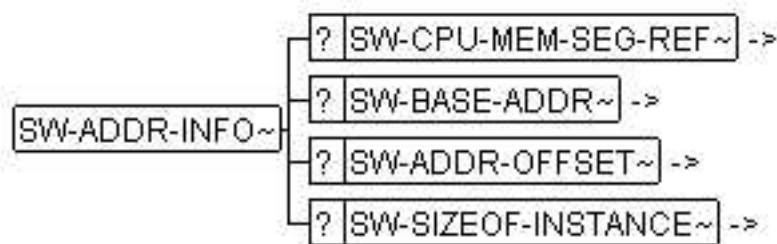
Beispiel

```
<SW-ADDR-INFO>
  <SW-CPU-MEM-SEG-REF>RAM</SW-CPU-MEM-SEG-REF>
  <SW-ADDR-OFFSET>0x100</SW-ADDR-OFFSET>
  <SW-SIZEOF-INSTANCE>25</SW-SIZEOF-INSTANCE>
</SW-ADDR-INFO>
```

Formale Beschreibung

Hat als Kontext: [SW-ADDR-INFOS p. 227](#), [SW-CPU-ADDR-EPK p. 346](#)

Ist Kontext für: [SW-CPU-MEM-SEG-REF p. 349](#), [SW-BASE-ADDR p. 249](#), [SW-ADDR-OFFSET p. 233](#), [SW-SIZEOF-INSTANCE p. 510](#)



2.271 SW-ADDR-INFOS

Beschreibung

Container-Element for **<SW-ADDR-INFO>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-PROPS-VARIANT](#) p. 423

Ist Kontext für: [SW-ADDR-INFO](#) p. 227



SW-ADDR-INFO.PNG

2.272 SW-ADDR-METHOD

Beschreibung

An address schematic **<SW-ADDR-METHOD>** describes how variables or parameters are addressed in the ECU. Address methods can take the form of direct addressing or indirect addressing using a vector.

The principle role of this element is the declaration of keywords (in the subelement **<SHORT-NAME>**) for the address calculation process. The process itself is given a verbal description (in **<SW-ADDR-METHOD-DESC>**) rather than a formal one. However, a formal reference **<SW-CPU-MEM-SEG-REF>** to the memory segment concerned is issued.¹ This approach was adopted as the number of possible address schematics is relatively small. A complete formal description would create unnecessary work.

Beispiel

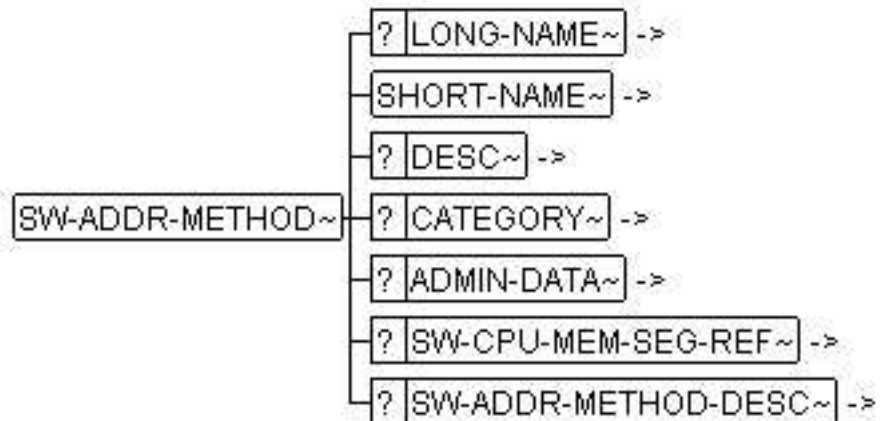
```
<SW-ADDR-METHODS>
  <SW-ADDR-METHOD ID="IDBIT">
    <LONG-NAME>This is Addr-Method Bit</LONG-NAME>
    <SHORT-NAME>Bit</SHORT-NAME>
    <SW-CPU-MEM-SEG-REF></SW-CPU-MEM-SEG-REF>
    <SW-ADDR-METHOD-DESC>
      <VERBATIM>Adressierschema: Bit Kopfzeile: BitHeader Fusszeile: BitFooter Adressierart:
    </SW-ADDR-METHOD-DESC>
  </SW-ADDR-METHOD>
</SW-ADDR-METHODS>
```

Formale Beschreibung

Hat als Kontext: [SW-ADDR-METHODS](#) p. 233

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CPU-MEM-SEG-REF](#) p. 349, [SW-ADDR-METHOD-DESC](#) p. 229

¹ In future versions further formal components may be added to this, if required.



SW-ADDR-METHOD.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-ADDR-METHOD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.273 SW-ADDR-METHOD-DESC

Beschreibung

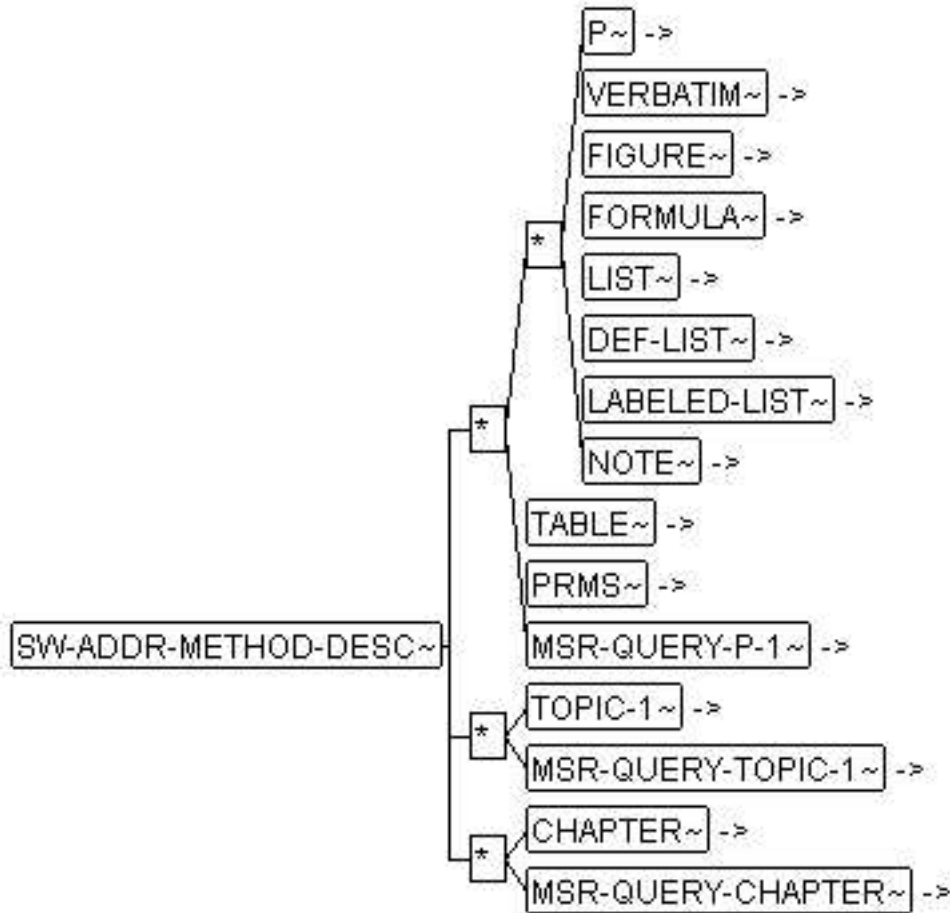
Verbal description of the method for addressing variables or parameters.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ADDR-METHOD](#) p. 228

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-ADDR-METHOD-DESC.PNG

2.274 SW-ADDR-METHOD-REF

Beschreibung

This element refers to an addressing method **<SW-ADDR-METHOD>**. The reference is established using the **[ID-REF]**-attribute contents of the **<SW-ADDR-METHOD-REF>**-element which indicates an **<SW-ADDR-METHOD>**-element with an **[ID]**-attribute of the same value. The reference can also emerge via the **<SHORT-NAME>** of the **<SW-ADDR-METHOD-REF>**-element, which then has the same contents as the **<SHORT-NAME>** of a **<SW-ADDR-METHOD>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ADDR-METHOD-REF-SYSCOND](#) p. 232, [SW-ADDR-METHOD-REFS](#) p. 233, [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text



SW-ADDR-METHOD-REF~—#PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-ADDR-METHOD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language) The names of the locator attributes e.g. ID-REF used to address the target of a hyper-link can be mapped to names defined in the HYTIME standard, that is LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.275 SW-ADDR-METHOD-REF-SYSCOND

Beschreibung

Use `<SW-ADDR-METHOD-REF-SYSCOND>` to create a `<SW-ADDR-METHOD-REF>` that will be valid only when the corresponding `<SW-SYSCOND>` expression evaluates to true. This is useful when a `<SW-ADDR-METHOD-REF>` shall be used when system constant has a certain value.

Beispiel

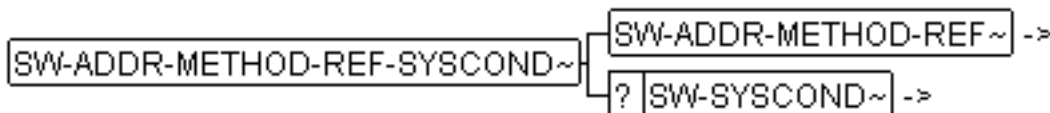
This addressing method reference is used when LINA_Gear is less or equal to 4.

```
<SW-ADDR-METHOD-REF-SYSCOND>
  <SW-ADDR-METHOD-REF>Addr_Ref</SW-ADDR-METHOD-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-ADDR-METHOD-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-ADDR-METHOD-REFS](#) p. 233

Ist Kontext für: [SW-ADDR-METHOD-REF](#) p. 230, [SW-SYSCOND](#) p. 511



SW-ADDR-METHOD-REF-SYSCOND.PNG

2.276 SW-ADDR-METHOD-REFS

Beschreibung

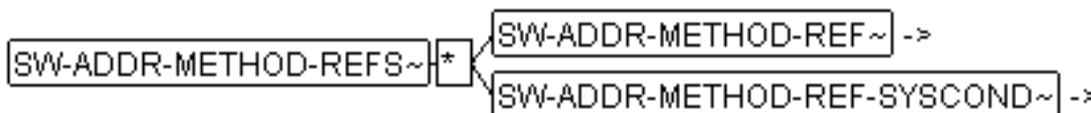
Container element for <SW-ADDR-METHOD-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-ADDR-METHOD-REF](#) p. 230, [SW-ADDR-METHOD-REF-SYSCOND](#) p. 232



SW-ADDR-METHOD-REFS.PNG

2.277 SW-ADDR-METHODS

Beschreibung

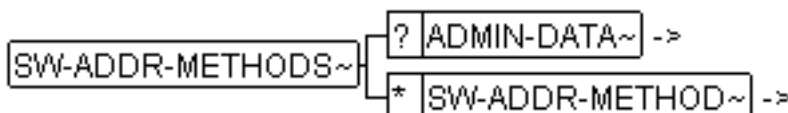
Container element for <SW-ADDR-METHOD> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-ADDR-METHOD](#) p. 228



SW-ADDR-METHODS.PNG

2.278 SW-ADDR-OFFSET

Beschreibung

This element specifies the offset of a memory object.

Beispiel

See [Chapter 2.270 SW-ADDR-INFO](#) p. 227

Formale Beschreibung

Hat als Kontext: [SW-ADDR-INFO](#) p. 227

Ist Kontext für: Text

`SW-ADDR-OFFSET~`—#PCDATA

SW-ADDR-OFFSET.PNG

2.279 SW-ALIAS-NAME

Beschreibung

This element describes an alias name which can be used for compatibility to other naming conventions.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

`SW-ALIAS-NAME~`—#PCDATA

SW-ALIAS-NAME.PNG

2.280 SW-APPLICATION-NOTES

Beschreibung

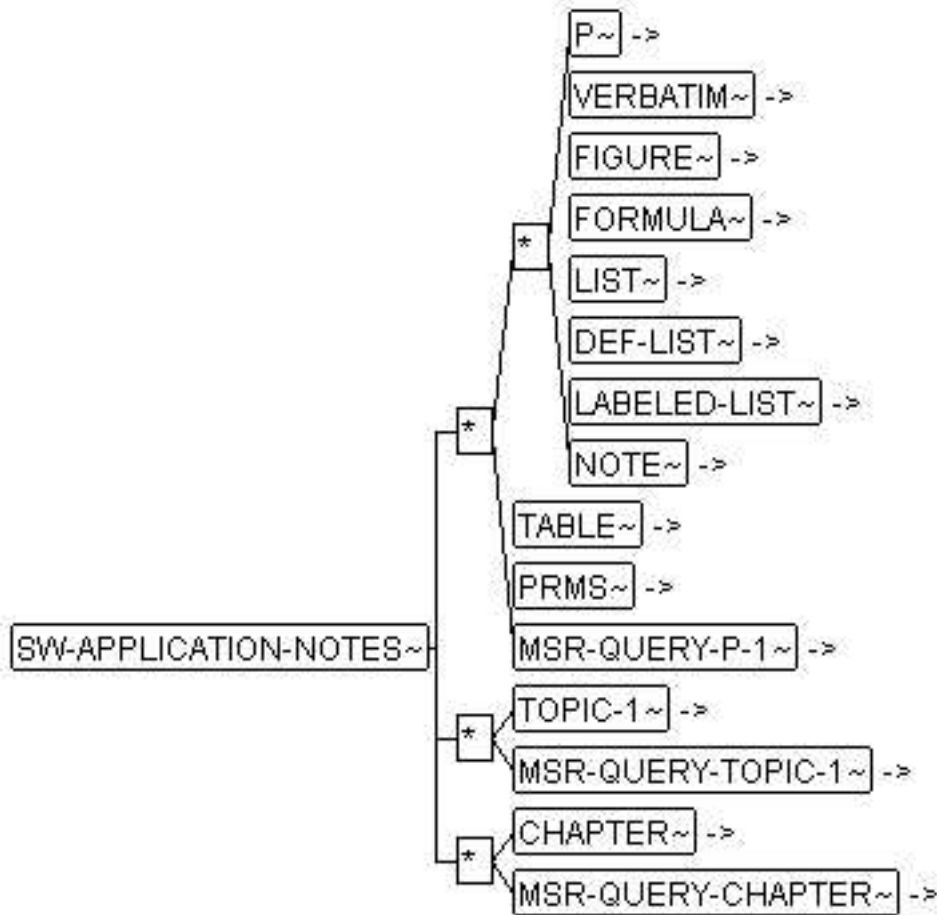
In this element are application instructions specified in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-APPLICATION-NOTES.PNG

2.281 SW-AR-RELATION

Beschreibung

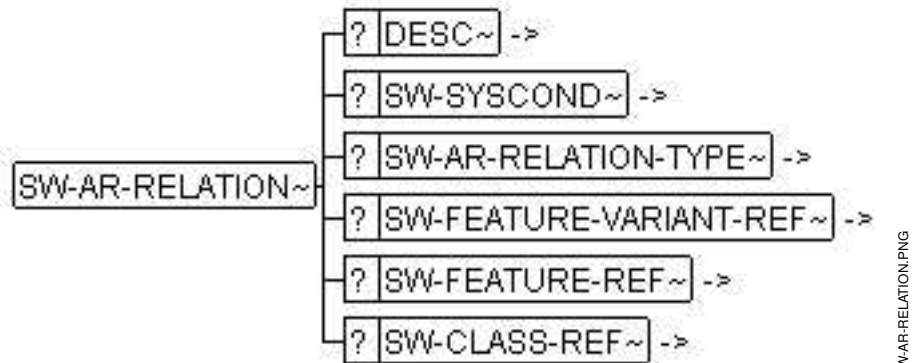
This element contains information about relations between SW-Components except from relations within a component such as Part-of or Variant-of relations. The element **<SW-AR-RELATION-TYPE>** defines the type of relation. The elements SW-FEATURE-VARIANT-REF, SW-FEATURE-REF and/or SW-CLASS-REF defines the SW-Component to which this SW-Component relates to.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AR-RELATIONS](#) p. 236

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-AR-RELATION-TYPE](#) p. 236, [SW-FEATURE-VARIANT-REF](#) p. 412, [SW-FEATURE-REF](#) p. 407, [SW-CLASS-REF](#) p. 308



2.282 SW-AR-RELATION-TYPE

Beschreibung

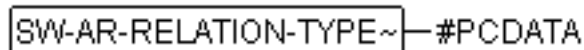
Please look at the description for [<SW-AR-RELATION>](#).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AR-RELATION](#) p. 235

Ist Kontext für: Text



2.283 SW-AR-RELATIONS

Beschreibung

SW-AR-RELATIONS can contain 0..n [<SW-AR-RELATION>](#) elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-AR-RELATION](#) p. 235



2.284 SW-ARCHITECTURE

Beschreibung

This element provides a verbal description of the existing software system architecture. The verbal description still follows a predefined structuring pattern, however:

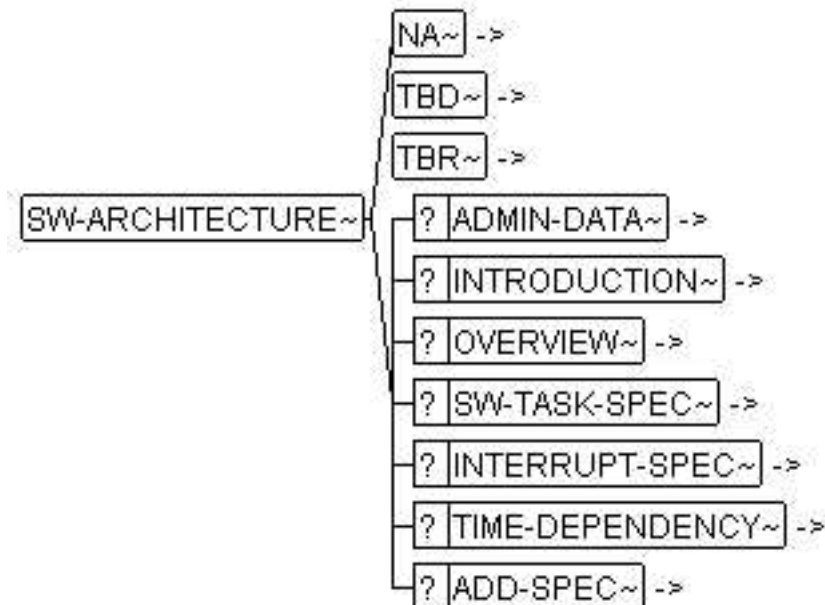
- Overview <**OVERVIEW**>
- Task specification and process structure <**SW-TASK-SPEC**>
- Interrupt specification <**INTERRUPT-SPEC**>
- Temporal dependencies <**TIME-DEPENDENCY**>
- Other dependencies <**ADD-SPEC**>

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [OVERVIEW](#) p. 171, [SW-TASK-SPEC](#) p. 538, [INTERRUPT-SPEC](#) p. 123, [TIME-DEPENDENCY](#) p. 608, [ADD-SPEC](#) p. 29





2.285 SW-ARRAY-INDEX

Beschreibung

Specifies the field index for exactly one coordinate of a characteristic variable array in an instance **<SW-INSTANCE>**. The instance corresponds either with a structure, a class attribute or a field index.

The array index begins at 0.

Beispiel

```
<SW-INSTANCE ID="IDTEST">
  <LONG-NAME>Kenngrößen-Array</LONG-NAME>
  <SHORT-NAME>kgr_a</SHORT-NAME>
  <SW-INSTANCE ID="IDB6433D7radB380B">
    <SW-ARRAY-INDEX>0</SW-ARRAY-INDEX>
    <SW-FEATURE-REF>test_AG</SW-FEATURE-REF>
    <CATEGORY>curve_individual</CATEGORY>
    <SW-INSTANCE-PROPS-VARIANTS>
      <SW-INSTANCE-PROPS-VARIANT>
        <SW-AXIS-CONTS>
          <SW-AXIS-CONT>
            <SW-UNIT-REF>Grad-C</SW-UNIT-REF>
            <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
            <SW-VALUES-PHYS>
              <V>-49.3</V>
              <V>-48.6</V>
              <V>-47.8</V>
              <V>-47.1</V>
              <V>-46.4</V>
              <V>-45.7</V>
            </SW-VALUES-PHYS>
          </SW-AXIS-CONT>
        </SW-AXIS-CONTS>
      </SW-INSTANCE-PROPS-VARIANT>
    </SW-INSTANCE-PROPS-VARIANTS>
  </SW-INSTANCE>
  <SW-INSTANCE ID="IDB6433D7radBBD87">
    <SW-ARRAY-INDEX>1</SW-ARRAY-INDEX>
    <SW-FEATURE-REF>test_AG</SW-FEATURE-REF>
    <CATEGORY>curve_individual</CATEGORY>
    <SW-INSTANCE-PROPS-VARIANTS>
      <SW-INSTANCE-PROPS-VARIANT>
        <SW-AXIS-CONTS>
          <SW-AXIS-CONT>
            <SW-UNIT-REF>Grad-C</SW-UNIT-REF>
            <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
            <SW-VALUES-PHYS>
              <V>-49.3</V>
              <V>-48.6</V>
              <V>-47.8</V>
              <V>-47.1</V>
              <V>-46.4</V>
              <V>-45.7</V>
            </SW-VALUES-PHYS>
          </SW-AXIS-CONT>
        </SW-AXIS-CONTS>
      </SW-INSTANCE-PROPS-VARIANT>
    </SW-INSTANCE-PROPS-VARIANTS>
  </SW-INSTANCE>
```

```

        </SW-VALUES-PHYS>
        </SW-AXIS-CONT>
        </SW-AXIS-CONTS>
        </SW-INSTANCE-PROPS-VARIANT>
        </SW-INSTANCE-PROPS-VARIANTS>
        </SW-INSTANCE>
        <SW-INSTANCE ID="IDB6433D7rad2B10B">
        <SW-ARRAY-INDEX>2</SW-ARRAY-INDEX>
        <SW-FEATURE-REF>test_AG</SW-FEATURE-REF>
        <CATEGORY>curve_individual</CATEGORY>
        <SW-INSTANCE-PROPS-VARIANTS>
        <SW-INSTANCE-PROPS-VARIANT>
        <SW-AXIS-CONTS>
        <SW-AXIS-CONT>
        <SW-UNIT-REF>Grad-C</SW-UNIT-REF>
        <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
        <SW-VALUES-PHYS>
        <V>-49.3</V>
        <V>-48.6</V>
        <V>-47.8</V>
        <V>-47.1</V>
        <V>-46.4</V>
        <V>-45.7</V>
        </SW-VALUES-PHYS>
        </SW-AXIS-CONT>
        <SW-AXIS-CONT>
        <SW-UNIT-REF>dez</SW-UNIT-REF>
        <SW-AXIS-INDEX>0</SW-AXIS-INDEX>
        <SW-VALUES-PHYS>
        <V>1.0</V>
        <V>2.0</V>
        <V>3.0</V>
        <V>4.0</V>
        <V>5.0</V>
        <V>6.0</V>
        </SW-VALUES-PHYS>
        </SW-AXIS-CONT>
        </SW-AXIS-CONTS>
        </SW-INSTANCE-PROPS-VARIANT>
        </SW-INSTANCE-PROPS-VARIANTS>
        </SW-INSTANCE>
        </SW-INSTANCE>

```

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE](#) p. 420

Ist Kontext für: Text

SW-ARRAY-INDEX~ — #PCDATA

SW-ARRAY-INDEX.PNG

2.286

SW-ARRAYSIZE

Beschreibung

The existence of **<SW-ARRAYSIZE>** turns the parent element into a multidimensional object. It is then possible to create arrays of variables, parameters etc. **<SW-ARRAYSIZE>** should **not be used** to imitate stereotypes such as curves or maps since these structures are stored in the DTD itself as own elements, refer to **<SW-CALPRM-AXIS-SET>** for a **<SW-CALPRM>**. Apart from that any array can be created.

Beispiel

```

<SW-VARIABLE>
  <LONG-NAME>This is Array1</LONG-NAME>
  <SHORT-NAME>Array1</SHORT-NAME>
  <SW-ARRAYSIZE>
    <VF>3</VF>
  </SW-ARRAYSIZE>

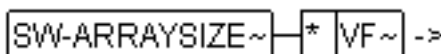
```

```
<SW-DATA-DEF-PROPS>
  <SW-ADDR-METHOD-REF>OffsetAdS1</SW-ADDR-METHOD-REF>
  <SW-BASE-TYPE-REF>UWORD</SW-BASE-TYPE-REF>
  <SW-CALIBRATION-ACCESS>CALIBRATION</SW-CALIBRATION-ACCESS>
  <SW-CODE-SYNTAX-REF>Bit</SW-CODE-SYNTAX-REF>
  <SW-COMPU-METHOD-REF>default</SW-COMPU-METHOD-REF>
</SW-DATA-DEF-PROPS>
</SW-VARIABLE>
```

Formale Beschreibung

Hat als Kontext: [SW-CALPRM p. 260](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#), [SW-SERVICE-ARG p. 502](#), [SW-SERVICE-RETURN p. 509](#), [SW-VARIABLE p. 563](#), [SW-VARIABLE-PROTOTYPE p. 568](#)

Ist Kontext für: [VF p. 628](#)



SW-ARRAYSIZE.PNG

2.287

SW-AXIS-CONT

Beschreibung

Description **of the contents** of a characteristic variable axis, specified in the subelement **<SW-AXIS-INDEX>**, as well as the optional data assignment of the corresponding values e.g. physical and integer values to the subelements **<SW-VALUES-PHYS>**, **<SW-VALUES-CODED>** etc. If there is more than one axis, the axis with index 1 is incremented first. This means that the values are given in the following order:

v(1,1)	...	v(n,1)
v(1,2)	...	v(n,2)
...		
v(1,m)	...	v(n, m)

The element **<SW-AXIS-CONT>** appears as long as the corresponding instantiated variable or parameter has an axis. The axis currently relevant is specified in the subelement **<SW-AXIS-INDEX>** .

The contents of the axis can be specified on different levels:

- Physical (**<SW-VALUES-PHYS>**)
- Decimal-coded (**<SW-VALUES-CODED>**)
- Hexadecimal-coded (**<SW-VALUES-CODED-HEX>**)
- Any other representations (**<SW-VALUES-GENERIC>** in connection to attribute **[TYPE]**)

Since the MSRSW.DTD should also be used to transport purely physical data independently of the details in the data dictionary, it is important that measuring units can be specified. These are referenced using **<SW-UNIT-REF>** .

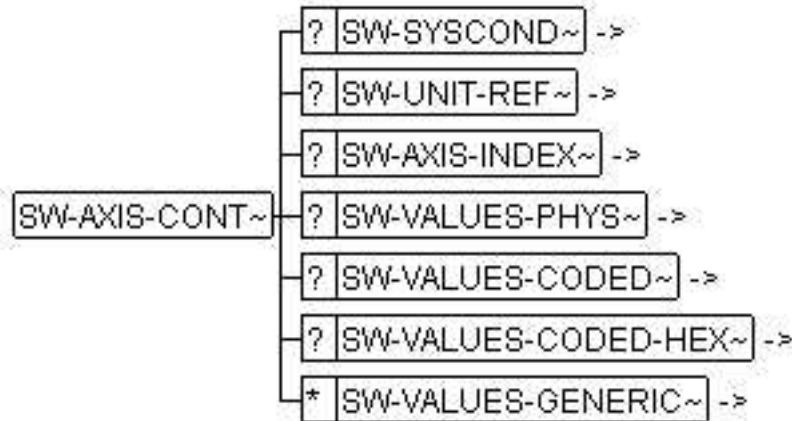
Beispiel

For an example, see [Chapter 2.285 SW-ARRAY-INDEX p. 237](#) [Chapter 2.501 SW-INSTANCE p. 420](#) .

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONTS](#) p. 241

Ist Kontext für: [SW-SYSCOND](#) p. 511, [SW-UNIT-REF](#) p. 548, [SW-AXIS-INDEX](#) p. 243, [SW-VALUES-PHYS](#) p. 562, [SW-VALUES-CODED](#) p. 560, [SW-VALUES-CODED-HEX](#) p. 560, [SW-VALUES-GENERIC](#) p. 561



SW-AXIS-CONT.PNG

2.288 SW-AXIS-CONTS

Beschreibung

<SW-AXIS-CONTS> describes the contents of all axes belonging to a certain characteristic variable.

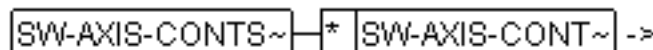
Beispiel

See [Chapter 2.285 SW-ARRAY-INDEX](#) p. 237 [Chapter 2.501 SW-INSTANCE](#) p. 420 .

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-PROPS-VARIANT](#) p. 423

Ist Kontext für: [SW-AXIS-CONT](#) p. 240



SW-AXIS-CONTS.PNG

2.289 SW-AXIS-GENERIC

Beschreibung

This element defines an axis for the base points calculated in the ECU. The ECU is equipped with a fixed calculation algorithm. Parameters for the algorithm can be stored in the data component of the ECU. The following is valid:

- The algorithm to be used is specified as <SW-AXIS-TYPE> in the data dictionary **semi-formal** (reservation of keyword and specification of parameters). Thus when forming an axis, the algorithm is given through the appropriate reference (<SW-AXIS-TYPE-REF>).

- The number of base points to be calculated is defined in **<SW-NUMER-OF-AXIS-POINTS>** . This element exists to enable the number of axis points to be stored explicitly, although it could also be described as **<SW-GENERIC-AXIS-PARAM>** .
- The calculated base points can be stored on a physical level in the element **<SW-VALUES-PHYS>** , which means that it is not necessary for the required calculation algorithm to be implemented in every MCD system.
- The calculated base points can be stored on a standardized level in the element **<SW-VALUES-CODED>** , which means that it is not necessary for the required calculation algorithm to be implemented in every MCD system.

Beispiel

```

<SW-AXIS-TYPE ID="ID72ED69DFrad6E82E">
  <SHORT-NAME>shiftOffset</SHORT-NAME>
  <SW-GENERIC-AXIS-DESC>
    <P>This is an axis with shift and offset.</P>
  </SW-GENERIC-AXIS-DESC>

  <SW-GENERIC-AXIS-PARAM-TYPES>
    <SW-GENERIC-AXIS-PARAM-TYPE>
      <SHORT-NAME>shift</SHORT-NAME>
    </SW-GENERIC-AXIS-PARAM-TYPE>

    <SW-GENERIC-AXIS-PARAM-TYPE>
      <SHORT-NAME>offset</SHORT-NAME>
    </SW-GENERIC-AXIS-PARAM-TYPE>
  </SW-GENERIC-AXIS-PARAM-TYPES>
</SW-AXIS-TYPE>
<SW-CALPRM>
  <SHORT-NAME>Festkl</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-CALPRM-AXIS-SET>
      <SW-CALPRM-AXIS>
        <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
        <SW-AXIS-INDIVIDUAL>
          <SW-AXIS-GENERIC>
            <SW-AXIS-TYPE-REF>ShiftOffset</SW-AXIS-TYPE-REF>
          </SW-AXIS-GENERIC>
        </SW-AXIS-INDIVIDUAL>
      </SW-CALPRM-AXIS>
    </SW-CALPRM-AXIS-SET>
  </SW-DATA-DEF-PROPS>
</SW-CALPRM>

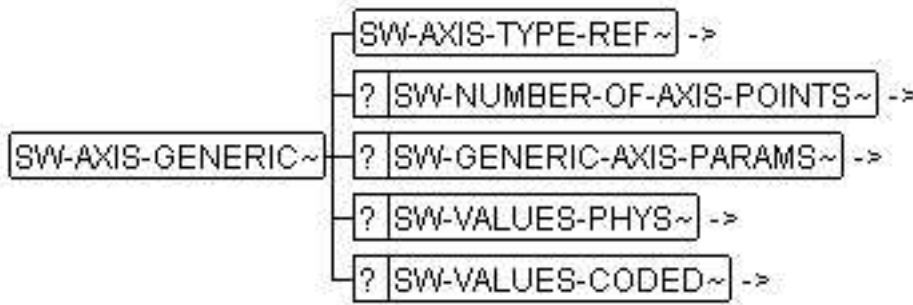
<SW-CALPRM>
  <SHORT-NAME>Festkl</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-CALPRM-AXIS-SET>
      <SW-CALPRM-AXIS>
        <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
        <SW-AXIS-INDIVIDUAL>
          <SW-AXIS-GENERIC>
            <SW-AXIS-TYPE-REF>ShiftOffset</SW-AXIS-TYPE-REF>
          </SW-AXIS-GENERIC>
        </SW-AXIS-INDIVIDUAL>
      </SW-CALPRM-AXIS>
    </SW-CALPRM-AXIS-SET>
  </SW-DATA-DEF-PROPS>
</SW-CALPRM>

```

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL](#) p. 244

Ist Kontext für: [SW-AXIS-TYPE-REF](#) p. 246, [SW-NUMBER-OF-AXIS-POINTS](#) p. 470, [SW-GENERIC-AXIS-PARAMS](#) p. 418, [SW-VALUES-PHYS](#) p. 562, [SW-VALUES-CODED](#) p. 560



SW-AXIS-GENERIC.PNG

2.290 SW-AXIS-GROUPED

Beschreibung

A group axis is described in **<SW-AXIS-GROUPED>**, as an alternative to **<SW-AXIS-INDIVIDUAL>**. A group axis is specified using

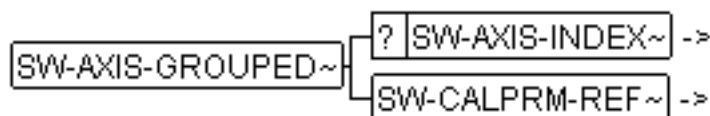
- the reference (**<SW-CALPRM-REF>**) to the parameter from which an axis should be imported, which is then to serve as a group axis
- the index of the axis to be used (**<SW-AXIS-INDEX>**). This index should only be specified if the parameter under **<SW-CALPRM-REF>** contains more than one axis. It is standard practise for the axis index of parameters with more than one axis, to be set to 1, if data has not been assigned to **<SW-AXIS-INDEX>** .
- If SW-AXIS-INDEX is equal to 0, the interpolation result of the referenced parameter is used as a base point index. This means that the keyword *CURVE_AXIS_REF* can be supported.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-AXIS](#) p. 263

Ist Kontext für: [SW-AXIS-INDEX](#) p. 243, [SW-CALPRM-REF](#) p. 270



SW-AXIS-GROUPED.PNG

2.291 SW-AXIS-INDEX

Beschreibung

<SW-AXIS-INDEX> describes the index referring to the axis currently described, for which the contents is specified. The index satisfies the following convention:

- 0: This is the value-axis of a curve or a map.
- 1: This is the X-axis of a curve or a map.
- 2: This is the Y-axis of a map.
- 3: This is the Z-axis of a cuboid.

Beispiel

See [Chapter 2.291 SW-AXIS-INDEX](#) p. 243 [Chapter 2.501 SW-INSTANCE](#) p. 420 .

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONT](#) p. 240, [SW-AXIS-GROUPED](#) p. 243, [SW-CALPRM-AXIS](#) p. 263

Ist Kontext für: Text

```
SW-AXIS-INDEX~|#PCDATA
```

SW-AXIS-INDEX.PNG

2.292

SW-AXIS-INDIVIDUAL

Beschreibung

This element describes an axis integrated into a parameter (field etc.). The integration makes this individual to each parameter. The so-called group axis represents the counterpart to this. It is conceived as an independent parameter and is referenced by the respective parameters used (**<SW-CALPRM-REF>** within **<SW-AXIS-GROUPED>**).

The specification of this axis incorporates:

- Possible input variables for the axis (**<SW-VARIABLE-REFS>**).

It is possible to specify more than one variable. Here the following is valid:

- The variable with the highest priority must be given first. It is used in the generation of the code and is also displayed first in the application system.
- All variables referenced must be of the same physical nature. This is usually detected in that the conversion formulae affected refer back to the same (**<SI-UNIT>** s).
- This multiple referencing allows a base point distribution for more than one input variable to be used. One example of this are the temperature curves, which can depend both on the induction air temperature and the engine temperature.

These variables can be displayed simultaneously by MCD systems (adjustment systems), enabling operating points to be shown in the curves.

- a conversion formula (**<SW-COMPU-METHOD-REF>**)
- a measuring unit (**<SW-UNIT-REF>**)
- a bit representation (**<SW-BIT-REPRESENTATION>**)
- Maximum and minimum number of axis base points (**<SW-MAX-AXIS-POINTS>**, **<SW-MIN-AXIS-POINTS>**)
- Plausibility checks (**<SW-DATA-CONSTR-REF>**)
- Generic axis characteristics (**<SW-AXIS-GENERIC>**), in the event that such an axis is involved.

The specifications **<SW-VARIABLE-REFS>**, **<SW-COMPU-METHOD-REF>**, **<SW-UNIT-REF>** can exist in parallel, although physically speaking, only one is practical. This parallelism introduces flexibility into the development process, as axes can be described purely physically, without a conversion formula being available.

The following priority exists:

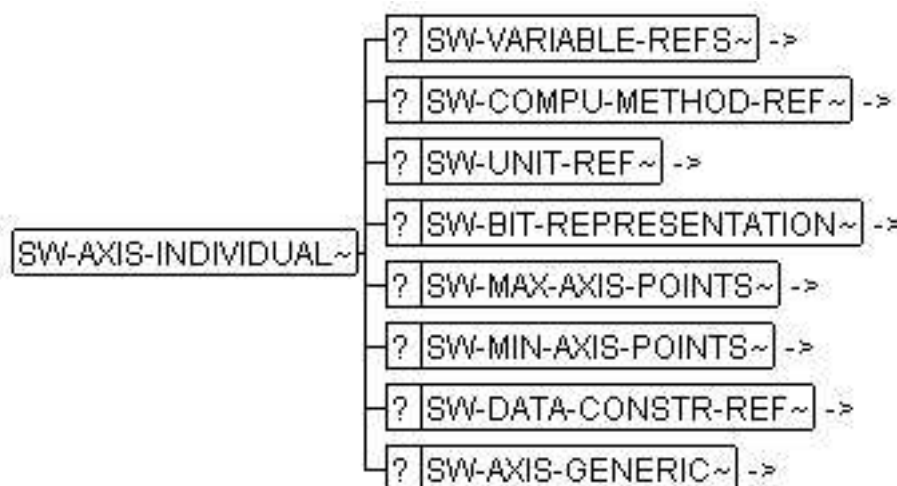
1. <SW-VARIABLE-REFS>
2. <SW-COMPU-METHOD-REF>
3. <SW-UNIT-REF>

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-AXIS](#) p. 263

Ist Kontext für: [SW-VARIABLE-REFS](#) p. 574, [SW-COMPU-METHOD-REF](#) p. 338, [SW-UNIT-REF](#) p. 548, [SW-BIT-REPRESENTATION](#) p. 255, [SW-MAX-AXIS-POINTS](#) p. 437, [SW-MIN-AXIS-POINTS](#) p. 469, [SW-DATA-CONSTR-REF](#) p. 362, [SW-AXIS-GENERIC](#) p. 241



SW-AXIS-INDIVIDUAL.PNG

2.293 SW-AXIS-TYPE

Beschreibung

Reserves names for specific axis calculation strategies. No formal specification is given, due to the fact that it is possible to use arbitrary algorithms for calculating axis-points. Instead, the algorithm is described verbally; the parameters (<SW-GENERIC-AXIS-PARAM-TYPES>) are specified formally with respect to their names and constraints. As a result, <SW-AXIS-TYPE> mainly reserves appropriate keywords.

Beispiel

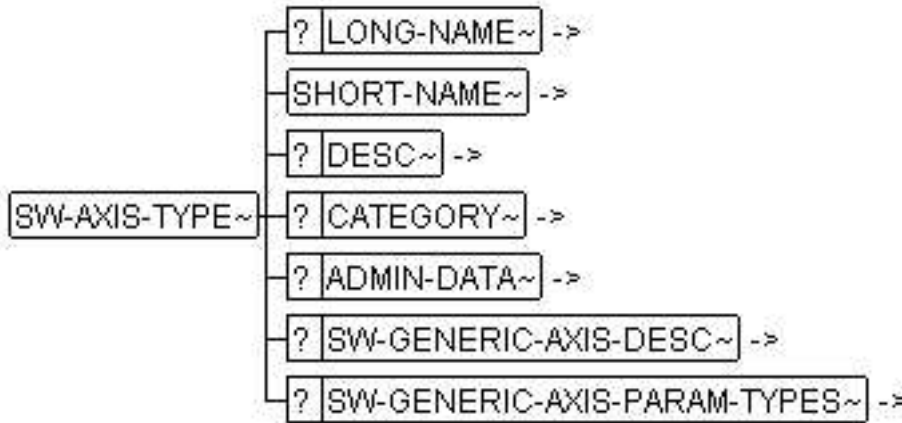
```

<SW-AXIS-TYPES>
  <SW-AXIS-TYPE>
    <LONG-NAME>ACHENSTYP FR KENNWERTEBLOCK, UM ANZAHL DARSTELLEN ZU KNNEN</LONG-NAME>
    <SHORT-NAME>KWB</SHORT-NAME>
  </SW-AXIS-TYPE>
</SW-AXIS-TYPES>
  
```

Formale Beschreibung

Hat als Kontext: [SW-AXIS-TYPES](#) p. 249

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-GENERIC-AXIS-PARAM-TYPES](#) p. 418



SW-AXIS-TYPE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-AXIS-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[F-NAMESPACE] (fixed)	nmtokens	SW-GENERIC-AXIS-PARAM-TYPE	

2.294

SW-AXIS-TYPE-REF

Beschreibung

This element references an element <SW-AXIS-TYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-GENERIC p. 241](#), [SW-AXIS-TYPE-REF-SYSCOND p. 248](#),
[SW-AXIS-TYPE-REFS p. 249](#)

Ist Kontext für: Text

SW-AXIS-TYPE-REF~—#PCDATA

SW-AXIS-TYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-AXIS-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.295 SW-AXIS-TYPE-REF-SYSCOND

Beschreibung

Use **<SW-AXIS-TYPE-REF-SYSCOND>** to create a **<SW-AXIS-TYPE-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-AXIS-TYPE-REF>** shall be used when system constant has a certain value.

Beispiel

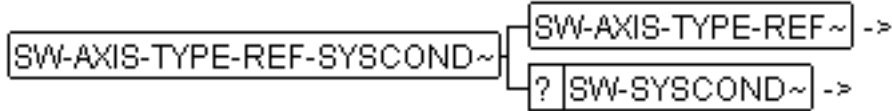
This Axis Type reference is used when LINA_Gear is less or equal to 4.

```
<SW-AXIS-TYPE-REF-SYSCOND>
  <SW-AXIS-TYPE-REF>Axis_type_Ref</SW-AXIS-TYPE-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-AXIS-TYPE-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-AXIS-TYPE-REFS](#) p. 249

Ist Kontext für: [SW-AXIS-TYPE-REF](#) p. 246, [SW-SYSCOND](#) p. 511



SW-AXIS-TYPE-REF-SYSCOND.PNG

2.296 SW-AXIS-TYPE-REFS

Beschreibung

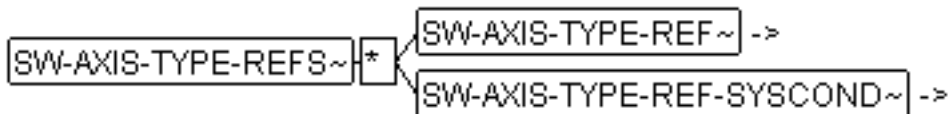
Container element for <SW-AXIS-TYPE-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-AXIS-TYPE-REF](#) p. 246, [SW-AXIS-TYPE-REF-SYSCOND](#) p. 248



SW-AXIS-TYPE-REFS.PNG

2.297 SW-AXIS-TYPES

Beschreibung

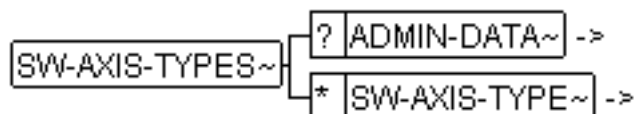
Container to describe all generic axes in the system.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-AXIS-TYPE](#) p. 245



SW-AXIS-TYPES.PNG

2.298 SW-BASE-ADDR

Beschreibung

This element specifies the base address of a memory object.

Beispiel

See [Chapter 2.270 SW-ADDR-INFO](#) p. 227

Formale Beschreibung

Hat als Kontext: [SW-ADDR-INFO](#) p. 227

Ist Kontext für: Text

`SW-BASE-ADDR~`—#PCDATA

SW-BASE-ADDR.PNG

2.299 SW-BASE-TYPE

Beschreibung

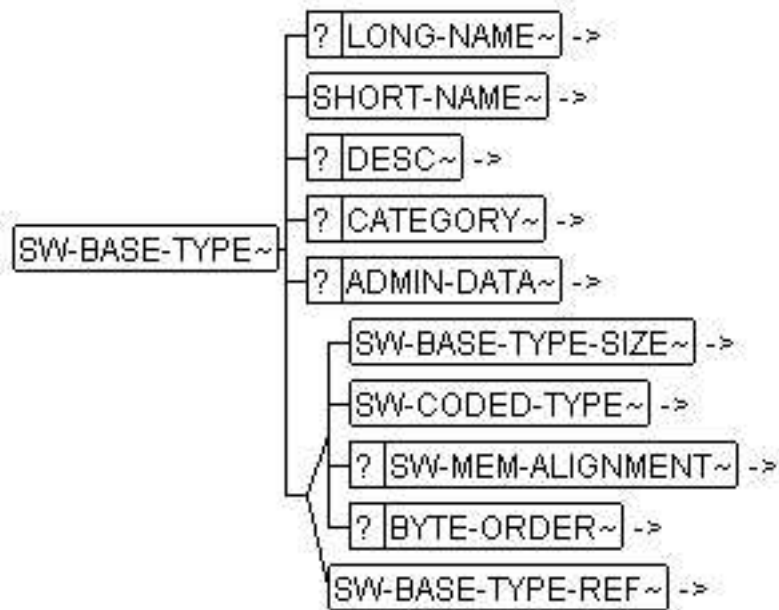
A `<SW-BASE-TYPE>` is used by variables, parameters and record layouts. In `<SW-RECORD-LAYOUT>`, a `<SW-BASE-TYPE>` can be referenced/used through the element `<SW-BASE-TYPE-REF>`. This specifies how the object in question, denoted by the container (`<SW-VARIABLE>` or `<SW-CALPRM>`) of `<SW-DATA-DEF-PROPS>` , is to be stored in the ECU memory.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPES](#) p. 255

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-BASE-TYPE-SIZE](#) p. 254, [SW-CODED-TYPE](#) p. 317, [SW-MEM-ALIGNMENT](#) p. 465, [BYTE-ORDER](#) p. 40, [SW-BASE-TYPE-REF](#) p. 251



SW-BASE-TYPE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-BASE-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.300

SW-BASE-TYPE-REF

Beschreibung

This element references the element `<SW-BASE-TYPE>`.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE p. 250](#), [SW-BASE-TYPE-REF-SYSCOND p. 253](#), [SW-BASE-TYPE-REFS p. 254](#), [SW-CALPRM-AXIS p. 263](#), [SW-CALPRM-TEXT p. 274](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-MC-BASE-TYPE p. 440](#), [SW-RECORD-LAYOUT-V p. 493](#)

Ist Kontext für: Text

SW-BASE-TYPE-REF~—#PCDATA

SW-BASE-TYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-BASE-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.301 SW-BASE-TYPE-REF-SYSCOND

Beschreibung

Use **<SW-BASE-TYPE-REF-SYSCOND>** to create a **<SW-BASE-TYPE-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-BASE-TYPE-REF>** shall be used when system constant has a certain value.

Beispiel

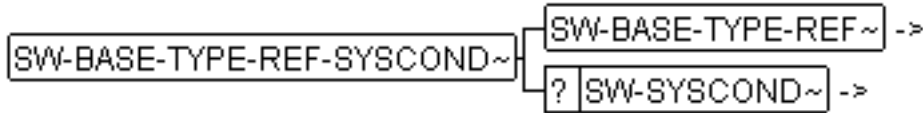
This Base Type reference is used when LINA_Gear is less or equal to 4.

```
<SW-BASE-TYPE-REF-SYSCOND>
  <SW-BASE-TYPE-REF>base_type_Ref</SW-BASE-TYPE-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-BASE-TYPE-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE-REFS](#) p. 254

Ist Kontext für: [SW-BASE-TYPE-REF](#) p. 251, [SW-SYSCOND](#) p. 511



SW-BASE-TYPE-REF-SYSCOND.PNG

2.302 SW-BASE-TYPE-REFS

Beschreibung

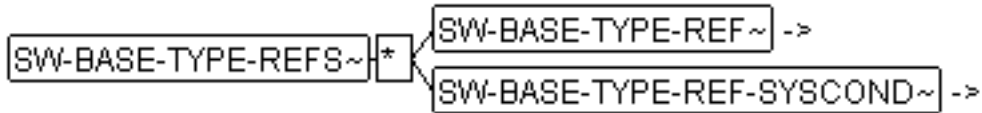
Container element for **<SW-BASE-TYPE-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-BASE-TYPE-REF](#) p. 251, [SW-BASE-TYPE-REF-SYSCOND](#) p. 253



SW-BASE-TYPE-REFS.PNG

2.303 SW-BASE-TYPE-SIZE

Beschreibung

Describes the length of the data type specified in the container (**<SW-BASE-TYPE>** or **<SW-MC-BASE-TYPE>**) in bits. When used within **<SW-CPU-SPEC>** , this specification denotes the data word size of the CPU.

Beispiel

```

<SW-BASE-TYPE>
  <SHORT-NAME>LONG<SHORT-NAME>
  <SW-BASE-TYPE-SIZE>32</SW-BASE-TYPE-SIZE>
  </SHORT-NAME></SHORT-NAME>
</SW-BASE-TYPE>
  
```

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE](#) p. 250, [SW-CPU-SPEC](#) p. 352, [SW-MC-BASE-TYPE](#) p. 440

Ist Kontext für: Text

SW-BASE-TYPE-SIZE~ #PCDATA

SW-BASE-TYPE-SIZE.PNG

2.304 SW-BASE-TYPES

Beschreibung

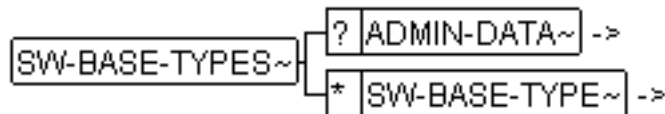
Container element for **<SW-BASE-TYPE>**. In addition, administrative data can be specified in **<ADMIN-DATA>**.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC p. 372](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [SW-BASE-TYPE p. 250](#)



SW-BASE-TYPES.PNG

2.305 SW-BIT-REPRESENTATION

Beschreibung

Description of the structure of a bit variable: comprises of the **<BIT-POSITION>** in a memory object (e.g. **<SW-HOST-VARIABLE>**, which stands parallel to **<SW-BIT-REPRESENTATION>**) and the **<NUMBER-OF-BITS>**. In this way, interrelated memory areas can be described. Non-related memory areas are not supported.

Beispiel

```

<SW-VARIABLE ID="ID01">
  <LONG-NAME>Variable_01</LONG-NAME>
  <SHORT-NAME>Variable_01</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-ADDR-METHOD-REF>defaultAdrS</SW-ADDR-METHOD-REF>
    <SW-BASE-TYPE-REF ID-REF="UWORD">UWORD</SW-BASE-TYPE-REF>
    <SW-COMPU-METHOD-REF ID-REF="B-TRUE">B-TRUE</SW-COMPU-METHOD-REF>
    <SW-DISPLAY-FORMAT>%13.11</SW-DISPLAY-FORMAT>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE>

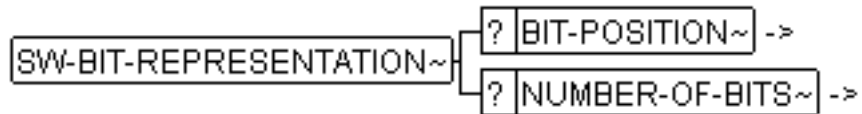
<SW-VARIABLE ID="ID02">
  <LONG-NAME></LONG-NAME>
  <SHORT-NAME>Variable_02</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-ADDR-METHOD-REF>defaultAdrS</SW-ADDR-METHOD-REF>
    <SW-BASE-TYPE-REF ID-REF="UBIT">UBIT</SW-BASE-TYPE-REF>
    <SW-BIT-REPRESENTATION>
      <BIT-POSITION>5</BIT-POSITION>
      <NUMBER-OF-BITS>1</NUMBER-OF-BITS>
    </SW-BIT-REPRESENTATION>
    <SW-CALIBRATION-ACCESS>CALIBRATION</SW-CALIBRATION-ACCESS>
    <SW-CODE-SYNTAX-REF>Bit</SW-CODE-SYNTAX-REF>
    <SW-COMPU-METHOD-REF>B_TRUE</SW-COMPU-METHOD-REF>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE>
  
```

```
<SW-HOST-VARIABLE>
  <SW-VARIABLE-REF>Variable_01</SW-VARIABLE-REF>
</SW-HOST-VARIABLE>
</SW-DATA-DEF-PROPS>
</SW-VARIABLE>
```

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL](#) p. 244, [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [BIT-POSITION](#) p. 39, [NUMBER-OF-BITS](#) p. 168



SW-BIT-REPRESENTATION.PNG

2.306 SW-CALIBRATION-ACCESS

Beschreibung

Describes the applicability of parameters and variables. Valid values are:

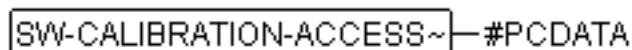
- *CALIBRATION* : applicable
- *NO-CALIBRATION* : not applicable
- *NOT-IN-MEMORY* : not in the EPROM (not for variables)
- *ADAPTIVE* : adaptive characteristic variables (not for variables)
- *NOT-ACCESSIBLE* : The element will not appear in an ASAP file.
- *READ-ONLY* : The element will only appear as read-only in an ASAP file.
- *READ-WRITE* : Both read and write access.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-AXIS](#) p. 263, [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text



SW-CALIBRATION-ACCESS.PNG

2.307 SW-CALIBRATION-HANDLE

Beschreibung

This element describes specific parameters, for the calibration method given in the container. The contents of the element depends on this method and cannot be defined in general terms.

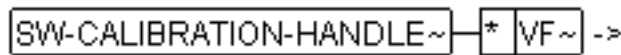
Beispiel

```
<SW-CALIBRATION-METHOD>
  <SHORT-NAME>InCircuit</SHORT-NAME>
  <SW-CALIBRATION-METHOD-VERSIONS>
    <SW-CALIBRATION-METHOD-VERSION>
      <LABEL>V2</LABEL>
      <SW-CALIBRATION-HANDLE>
        <VF>0x10000</VF>
        <VF>0x200</VF>
        <VF>0x4</VF>
        <VF>0x30000</VF>
        <VF>0x20000</VF>
      </SW-CALIBRATION-HANDLE>
    </SW-CALIBRATION-METHOD-VERSION>
  </SW-CALIBRATION-METHOD-VERSIONS>
</SW-CALIBRATION-METHOD>
```

Formale Beschreibung

Hat als Kontext: [SW-CALIBRATION-METHOD-VERSION](#) p. 259

Ist Kontext für: [VF](#) p. 628



SW-CALIBRATION-HANDLE.PNG

2.308 SW-CALIBRATION-METHOD

Beschreibung

This element is used to indicate the different access methods implemented in the ECU, which can be used regardless of the actual ECU interface.

The **<SHORT-NAME>** labels the calibration method to be used. A convention regarding the meaning of the calibration methods must be agreed upon between the parties involved. The following strings are already in use: "InCircuit", "SERAM", "DSERAP", "BSERAP"

The actual parameters for the calibration method are specified in **<SW-CALIBRATION-HANDLE>**.

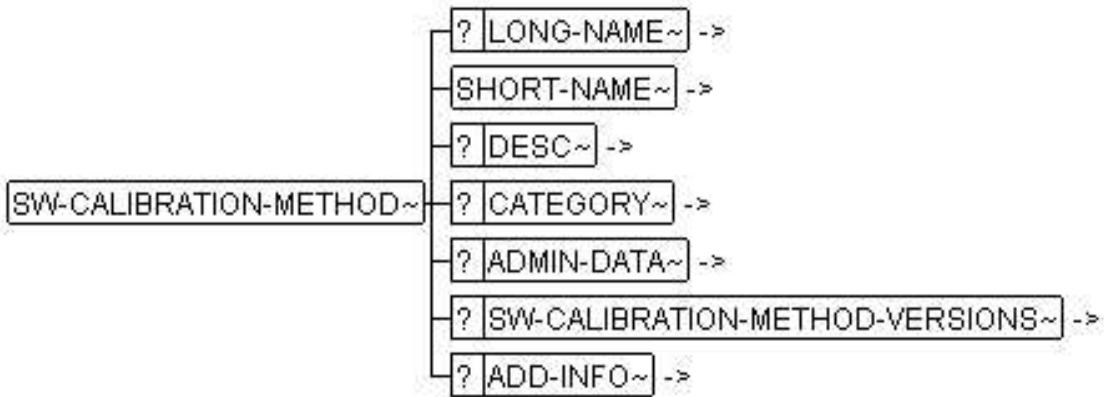
Beispiel

See [Chapter 2.307 SW-CALIBRATION-HANDLE](#) p. 256

Formale Beschreibung

Hat als Kontext: [SW-CALIBRATION-METHODS](#) p. 260

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CALIBRATION-METHOD-VERSIONS](#) p. 259, [ADD-INFO](#) p. 26



SW-CALIBRATION-METHOD.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-CALIBRATION-METHOD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.309 SW-CALIBRATION-METHOD-SPEC

Beschreibung

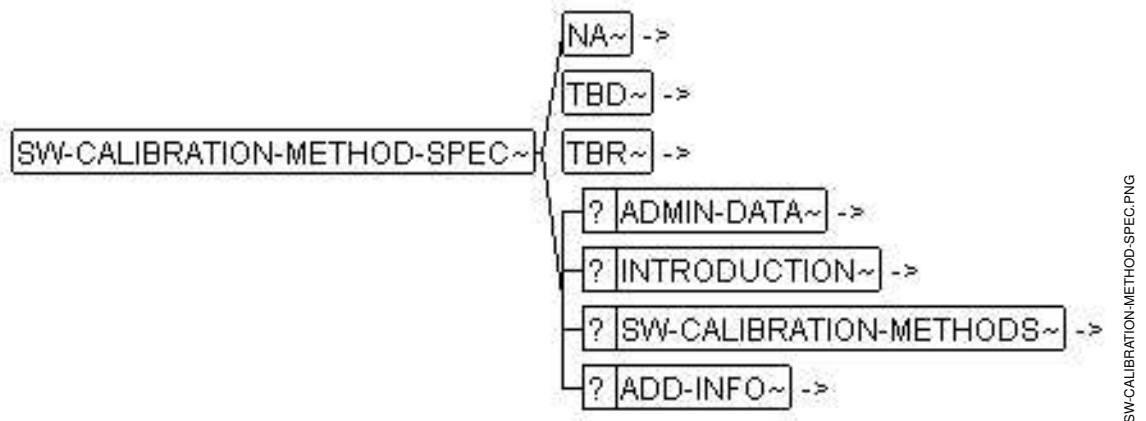
This element describes the methods via which the various application systems can access the ECU. Several methods can be implemented simultaneously, which for their part can exist in several versions (`<SW-CALIBRATION-METHOD-VERSION>`).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-CALIBRATION-METHODS](#) p. 260, [ADD-INFO](#) p. 26



SW-CALIBRATION-METHOD-SPEC.PNG

2.310 SW-CALIBRATION-METHOD-VERSION

Beschreibung

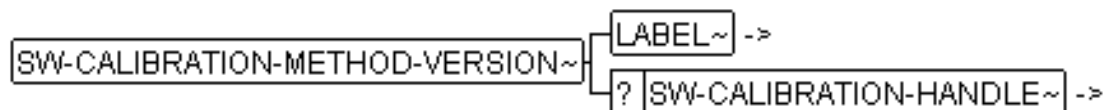
This element describes a specific version of an application method. The version number is given in **<LABEL>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALIBRATION-METHOD-VERSIONS](#) p. 259

Ist Kontext für: [LABEL](#) p. 128, [SW-CALIBRATION-HANDLE](#) p. 256



SW-CALIBRATION-METHOD-VERSION.PNG

2.311 SW-CALIBRATION-METHOD-VERSIONS

Beschreibung

Container element for **<SW-CALIBRATION-METHOD-VERSION>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALIBRATION-METHOD](#) p. 257

Ist Kontext für: [SW-CALIBRATION-METHOD-VERSION](#) p. 259



SW-CALIBRATION-METHOD-VERSIONS.PNG

2.312 SW-CALIBRATION-METHODS

Beschreibung

Container element for `<SW-CALIBRATION-METHOD>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALIBRATION-METHOD-SPEC](#) p. 258

Ist Kontext für: [SW-CALIBRATION-METHOD](#) p. 257



SW-CALIBRATION-METHODS.PNG

2.313 SW-CALPRM

Beschreibung

This element specifies the characteristics of calibration parameters in the ECU. Calibration parameters are objects that are not adapted to the run time of the vehicle. Instead, they calibrated to a greater extent in the application phase. Variables are quite the opposite (`<SW-VARIABLE>` s), being objects that are manipulated during the run time of the software.

For the most part, calibration parameters consist of:

- Long and short names (`<LONG-NAME>`, `<SHORT-NAME>`)
- Short description (`<DESC>`)
- Category (`<CATEGORY>`), describing the basic structure of the parameter
- Field parameter (`<SW-ARRAYSIZE>`), in case the parameter an array

- The technical characteristics (**<SW-DATA-DEF-PROPS>**)²
- Sub-structures simulated through the integration of **<SW-CALPRMS>** .
- Comments (**<ANNOTATIONS>**), enabling notes to be passed on from one stage to the next, throughout the development process.
- Additional information (**<ADD-INFO>**) in verbal form. Here, formal components can also be accommodated when **[SI]** -attributes are used.

Table 2: Allocation of <CATEGORY>

Value ³	Meaning	Remark
VALUE	Characteristic value	This represents a single value.
CURVE_INDIVIDUAL	Characteristic	This represents a curve with an embedded axis.
MAP_INDIVIDUAL	Map	This represents a map with embedded axes.
CURVE_FIXED	Fixed characteristic	This indicates a curve where the axes are calculated by the ECU program. The algorithm is fixed and therefore the axis-points can not be calibrated. The parameters of the algorithm may in some cases be specified by applying <SW-AXIS-GENERIC> .
MAP_FIXED	Fixed map	This indicates a map where the axes are calculated by the ECU program. The algorithm is fixed and therefore the axis-points can not be calibrated. The parameters of the algorithm may in some cases be specified by applying <SW-AXIS-GENERIC> .
CURVE_GROUPED	Group characteristic	This indicates a curve which uses the axis-points of another calibration parameter which is then referred to by <SW-CALPRM-REF> in <SW-AXIS-GROUPED> .
MAP_GROUPED	Group map	This indicates a map which uses the axis-points of another calibration parameter which is then referred to by <SW-CALPRM-REF> in <SW-AXIS-GROUPED> .
ASCII	Characteristic text	This indicates a parameter in text form (e.g. a message).
STRUCTURE	Parameter structure	This indicates a structure of calibration parameters. In this case, an embedded <SW-CALPRM> should exist.
VALUE_BLOCK	Characteristic values block	This indicates a homogeneous parameter set which is handled as a block. Unlike structures or arrays, the components of a value block appear in the instance tree within one <SW-INSTANCE> .
AXIS_VALUES	Group datapoints	This indicates the axis points of a calibration parameter, which are referenced in <SW-AXIS-GROUP> by a calibration parameter of the category MAP_GROUPED or CURVE_GROUPED .

Beispiel

The next example illustrates a single value.

```
<sw-calprm id="ABGMSIGH"> <long-name>threshold for exh. temp. for wiring-interruption with Ri-diagnosis downstr
```

The next example illustrates a map.

```
<SW-CALPRM ID="FKKVS">
  <LONG-NAME>factor to correct fuel delivery system</LONG-NAME>
  <SHORT-NAME>FKKVS</SHORT-NAME>
  <DESC></DESC>
  <CATEGORY>MAP</CATEGORY>
  <SW-DATA-DEF-PROPS>
    <SW-CALIBRATION-ACCESS>CALIBRATION</SW-CALIBRATION-ACCESS>
    <SW-CALPRM-AXIS-SET>
      <SW-CALPRM-AXIS>
        <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
        <SW-AXIS-INDIVIDUAL>
          <SW-VARIABLE-REFS>
            <SW-VARIABLE-REF ID-REF="NMOT">NMOT</SW-VARIABLE-REF>
          </SW-VARIABLE-REFS>
          <SW-MAX-AXIS-POINTS>16</SW-MAX-AXIS-POINTS>
        </SW-AXIS-INDIVIDUAL>
      </SW-CALPRM-AXIS>
    </SW-CALPRM-AXIS-SET>
  </SW-DATA-DEF-PROPS>
</SW-CALPRM>
```

² These are identical to the technical characteristics of variables

³ Conforms to ASAP


```

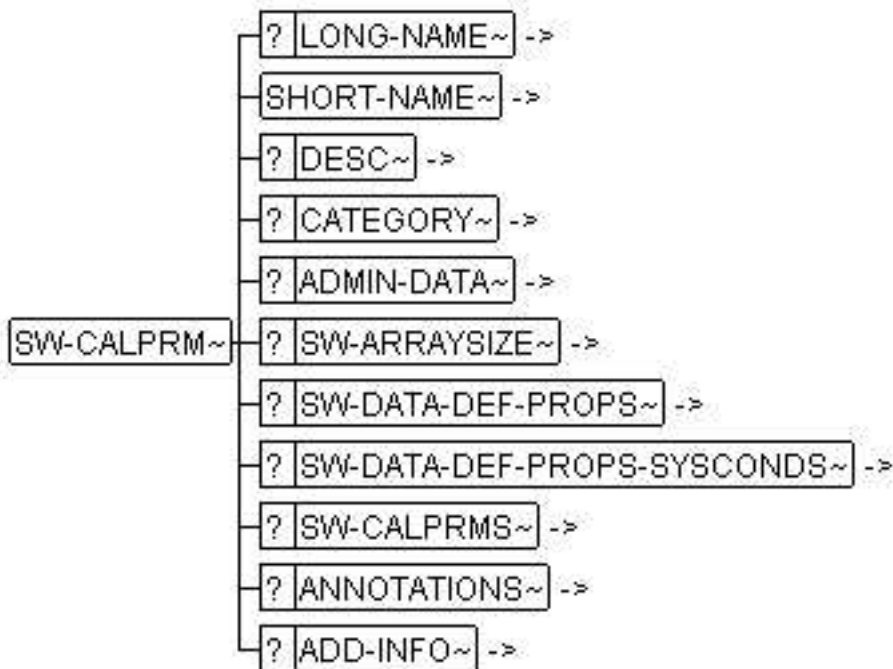
</SW-AXIS-INDIVIDUAL>
</SW-CALPRM-AXIS>
<SW-CALPRM-AXIS>
  <SW-AXIS-INDEX>2</SW-AXIS-INDEX>
  <SW-AXIS-INDIVIDUAL>
    <SW-VARIABLE-REFS>
      <SW-VARIABLE-REF ID-REF="TEVFA-W-KGE">TEVFA-W-KGE</SW-VARIABLE-REF>
    </SW-VARIABLE-REFS>
    <SW-MAX-AXIS-POINTS>16</SW-MAX-AXIS-POINTS>
  </SW-AXIS-INDIVIDUAL>
</SW-CALPRM-AXIS>
</SW-CALPRM-AXIS-SET>
<SW-COMPU-METHOD-REF ID-REF="FAK-UW-B2">FAK-UW-B2</SW-COMPU-METHOD-REF>
<SW-DATA-CONSTR-REF ID-REF="DC-FKKVS">DC-FKKVS</SW-DATA-CONSTR-REF>
<SW-DISPLAY-FORMAT>%8.6</SW-DISPLAY-FORMAT>
<SW-INTERPOLATION-METHOD>linear</SW-INTERPOLATION-METHOD>
<SW-RECORD-LAYOUT-REF ID-REF="SIMPLE-MAP">SIMPLE-MAP</SW-RECORD-LAYOUT-REF>
</SW-DATA-DEF-PROPS>
</SW-CALPRM>

```

Formale Beschreibung

Hat als Kontext: [SW-CALPRMS](#) p. 275

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-CALPRMS](#) p. 275, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



SW-CALPRM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-CALPRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[F-NAMESPACE] (fixed)	nmtoken	SW-CALPRM	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.314 SW-CALPRM-AXIS

Beschreibung

This element specifies an individual input parameter axis (abscissa). The following belongs to this:

- Which axis is involved (<SW-AXIS-INDEX>)

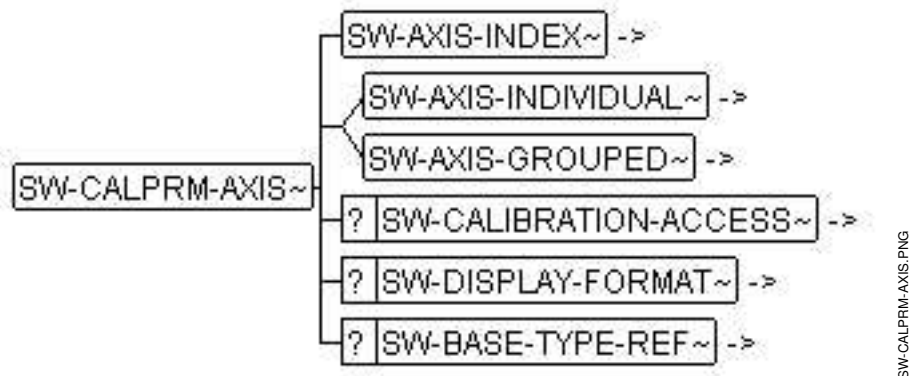
- Whether the axis is integrated (**<SW-AXIS-INDIVIDUAL>**) or whether it is adopted from another parameter (**<SW-AXIS-GROUPED>**).
- Whether the axis can be applicated (**<SW-CALIBRATION-ACCESS>**).
- Which display format should be used for the axis (**<SW-DISPLAY-FORMAT>**).
- Which base type should be used for the axis (**<SW-BASE-TYPE-REF>**).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-AXIS-SET](#) p. 264

Ist Kontext für: [SW-AXIS-INDEX](#) p. 243, [SW-AXIS-INDIVIDUAL](#) p. 244, [SW-AXIS-GROUPED](#) p. 243, [SW-CALIBRATION-ACCESS](#) p. 256, [SW-DISPLAY-FORMAT](#) p. 374, [SW-BASE-TYPE-REF](#) p. 251



SW-CALPRM-AXIS.PNG

2.315 SW-CALPRM-AXIS-SET

Beschreibung

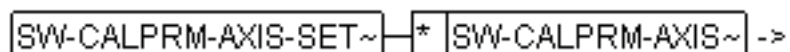
This element specifies the input parameter axes (abscissas) of parameters (and variables, if these are used adaptively).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [SW-CALPRM-AXIS](#) p. 263



SW-CALPRM-AXIS-SET.PNG

2.316 SW-CALPRM-IMPL

Beschreibung

This element describes the implementation details of a class attribute which manifests itself as a calibration parameter.

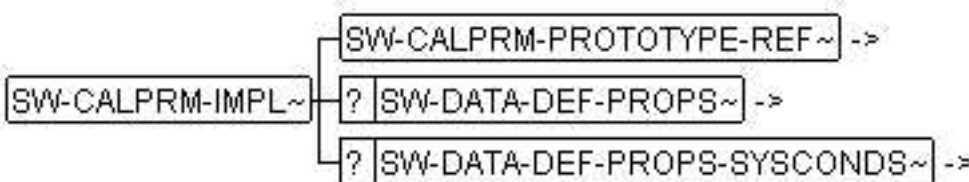
Beispiel

See [Chapter 2.331 SW-CLASS](#) p. 276

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-IMPLS](#) p. 265

Ist Kontext für: [SW-CALPRM-PROTOTYPE-REF](#) p. 268, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368



SW-CALPRM-IMPL.PNG

2.317 SW-CALPRM-IMPLS

Beschreibung

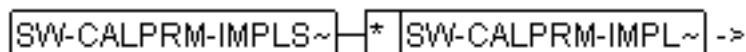
Container element for `<SW-CALPRM-IMPL>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL](#) p. 294, [SW-CLASS-ATTR-INSTANCE-IMPL](#) p. 298

Ist Kontext für: [SW-CALPRM-IMPL](#) p. 264



SW-CALPRM-IMPLS.PNG

2.318 SW-CALPRM-MAX-TEXT-SIZE

Beschreibung

Maximum length of a text parameter, the length is equivalent with the number of characters.

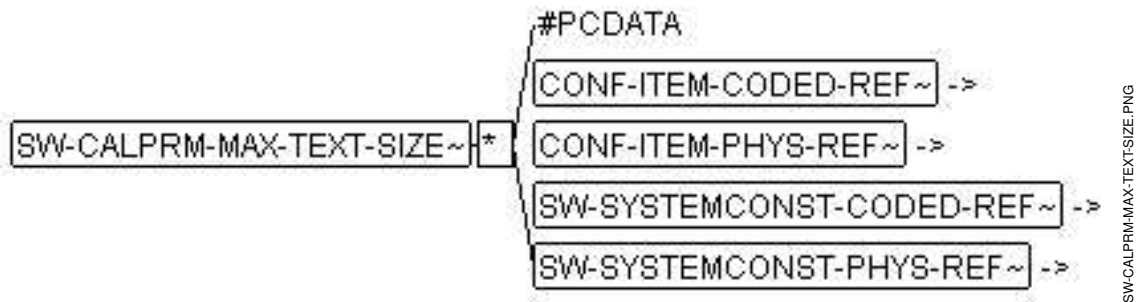
Beispiel

See [Chapter 2.327 SW-CALPRM-TEXT](#) p. 274

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-TEXT](#) p. 274

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-CALPRM-MAX-TEXT-SIZE.PNG

2.319 SW-CALPRM-NO-EFFECT-VALUE

Beschreibung

This element describes the value to which the parameter must be set, so that it remains without a consequence.

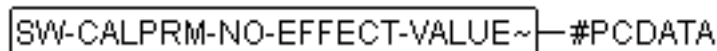
It is for example used if new parameters are introduced to the ECU that cannot yet be applied. Settings to the **<SW-CALPRM-NO-EFFECT-VALUE>** ensures software compatibility to an earlier version.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text



SW-CALPRM-NO-EFFECT-VALUE.PNG

2.320 SW-CALPRM-PROTOTYPE

Beschreibung

This element describes the prototype declaration of a class attribute, which is used as a calibration parameter.

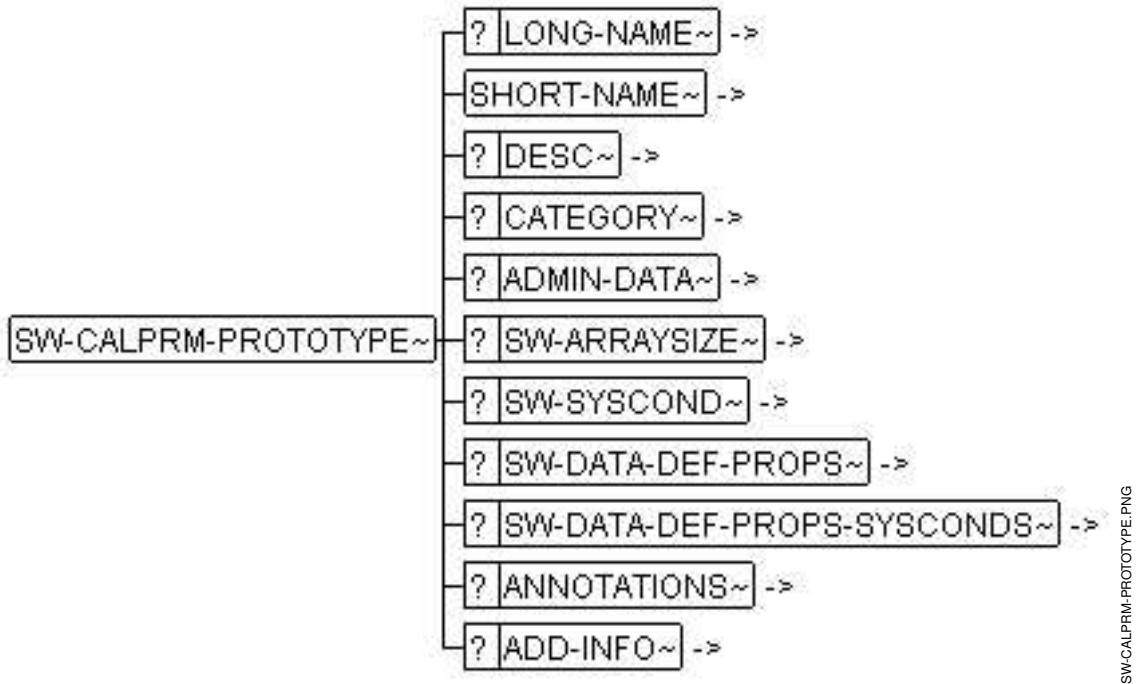
Beispiel

See [Chapter 2.331 SW-CLASS](#) p. 276

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-PROTOTYPES](#) p. 270

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-SYSCOND](#) p. 511, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	cdata	SW-CALPRM-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.321 SW-CALPRM-PROTOTYPE-REF

Beschreibung

Through this element, a <SW-CALPRM-PROTOTYPE> is referenced.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-IMPL](#) p. 264

Ist Kontext für: Text

```
SW-CALPRM-PROTOTYPE-REF~|#PCDATA
```



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CALPRM-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.322 SW-CALPRM-PROTOTYPES

Beschreibung

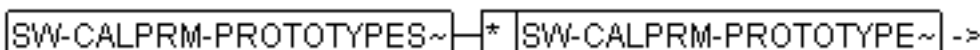
Container element for <SW-CALPRM-PROTOTYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR](#) p. 293

Ist Kontext für: [SW-CALPRM-PROTOTYPE](#) p. 266



SW-CALPRM-PROTOTYPES.PNG

2.323 SW-CALPRM-REF

Beschreibung

Through this element, a <SW-CALPRM> is referenced.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-CALPRMS](#) p. 223, [SW-AXIS-GROUPED](#) p. 243, [SW-CALPRM-REF-SY](#) p. 272, [SW-CALPRM-REFS](#) p. 273, [SW-CONSTR-OBJECTS](#) p. 345, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-FEATURE-EXPORT-CALPRMS](#) p. 395, [SW-FEATURE-IMPORT-CALPRMS](#) p. 397, [SW-FEATURE-LOCAL-PARAMS](#) p. 403, [SW-VCD-CRITERION](#) p. 577



Ist Kontext für: Text

SW-CALPRM-REF~|#PCDATA

SW-CALPRM-REFPING

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CALPRM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e.g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.324 SW-CALPRM-REF-SYSCOND

Beschreibung

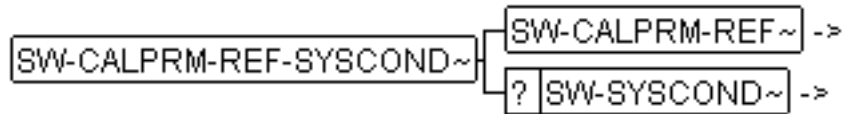
This element is a conditional reference to a calibration parameter. It is used to ensure that the assignment of calibration parameters to functions is dependent on the settings of system constants. For this reason, the element exists in parallel to **<SW-CALPRM-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-CALPRMS p. 223](#), [SW-CALPRM-REFS p. 273](#), [SW-FEATURE-EXPORT p. 395](#), [SW-FEATURE-IMPORT-CALPRMS p. 397](#), [SW-FEATURE-LOCAL-PARAMS p. 403](#)

Ist Kontext für: [SW-CALPRM-REF p. 270](#), [SW-SYSCOND p. 511](#)



SW-CALPRM-REF-SYSCOND.PNG

2.325 SW-CALPRM-REFS

Beschreibung

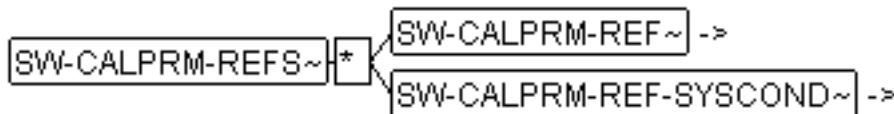
Container element for **<SW-CALPRM-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT p. 320](#), [SW-FEATURE-ELEMENTS p. 394](#)

Ist Kontext für: [SW-CALPRM-REF p. 270](#), [SW-CALPRM-REF-SYSCOND p. 272](#)



SW-CALPRM-REFS.PNG

2.326 SW-CALPRM-TARGET

Beschreibung

In some systems, the result of a base point search (group axis) or an interpolation, is temporarily stored using a parameter, in the form of variables. For this purpose, the **<SW-CALPRM-TARGET>** contains a reference to a variable performing the role of intermediate storage.

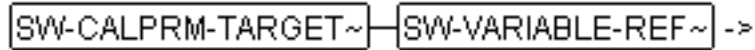
The element establishes a 1:1 relationship between the variable referenced and the superordinated **<SW-DATA-DEF-PROPS>**, or its father element. In this respect, it would be superfluous as this could be addressed directly. However SW-CALPRM-TARGET serves to **explicitly** express the semantics of the reference.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: [SW-VARIABLE-REF p. 572](#)



2.327 SW-CALPRM-TEXT

Beschreibung

SW-CALPRM-TEXT specifies textual parameters in the ECU. For this purpose, the following must be defined:

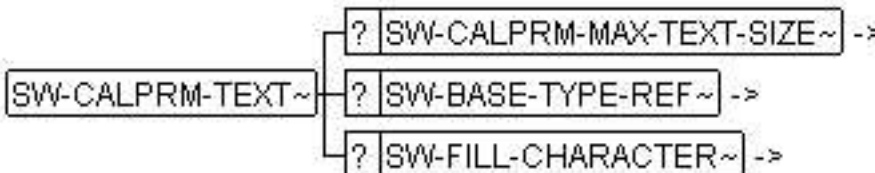
- The maximum length of the text
- The filler character for texts which are shorter than the maximum permitted text length.
- The base type for every character in the text string **<SW-BASE-TYPE-REF>** , is used to describe the string coding.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [SW-CALPRM-MAX-TEXT-SIZE](#) p. 265, [SW-BASE-TYPE-REF](#) p. 251, [SW-FILL-CHARACTER](#) p. 413



2.328 SW-CALPRM-VALUE-AXIS-LABELS

Beschreibung

This element is used to record textual descriptions of axis values and is contained in ASAP1.4, for reasons of backward compatibility.

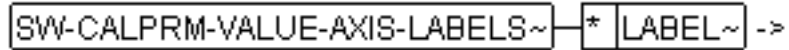
In new systems, the application should be implemented via conversion formulae.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [LABEL](#) p. 128



2.329 SW-CALPRMS

Beschreibung

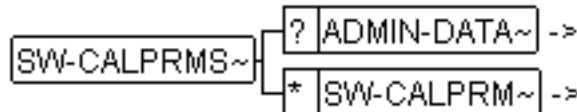
Container element for <SW-CALPRM> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM p. 260](#), [SW-DATA-DICTIONARY-SPEC p. 372](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [SW-CALPRM p. 260](#)



2.330 SW-CARB-DOC

Beschreibung

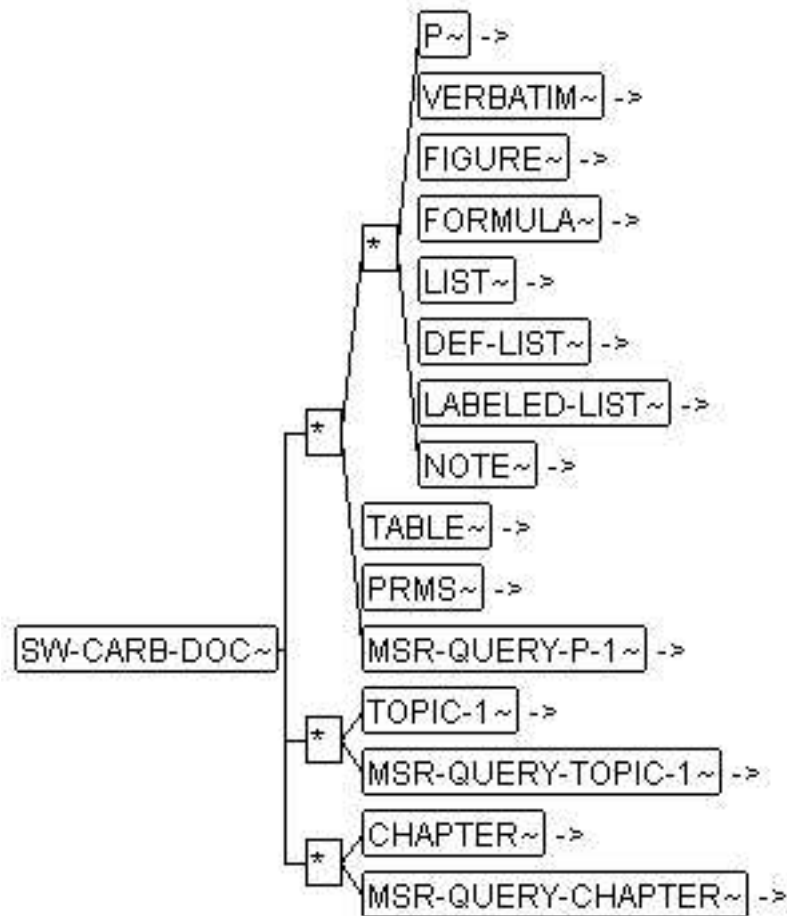
This element records the documentation, specifically requested by *CARB* .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS p. 276](#), [SW-FEATURE p. 386](#)

Ist Kontext für: [P p. 172](#), [VERBATIM p. 626](#), [FIGURE p. 95](#), [FORMULA p. 100](#), [LIST p. 133](#), [DEF-LIST p. 81](#), [LABELED-LIST p. 130](#), [NOTE p. 166](#), [TABLE p. 592](#), [PRMS p. 181](#), [MSR-QUERY-P-1 p. 147](#), [TOPIC-1 p. 610](#), [MSR-QUERY-TOPIC-1 p. 153](#), [CHAPTER p. 44](#), [MSR-QUERY-CHAPTER p. 146](#)



SW-CARB-DOC.PNG

2.331 SW-CLASS

Beschreibung

A **<SW-CLASS>** enables the object-oriented programming model. A class may provide multiple implementations. In MSRSW.DTD, this primarily covers the implementation of variables and parameters originating in the instantiation of this class. Therefore, a **<SW-CLASS>** can optionally contain 1 to n **<SW-CLASS-ATTR-IMPLS>**, with each representing a particular class implementation. A **<SW-CLASS>** contains 0 to n **<SW-CLASS-ATTR>**s attributes. This is merely the list of variables, parameters and objects to be established by the instantiation of the class. This is one of the reasons why a **<SW-INSTANCE-TREE>** is necessary. A **<SW-CLASS>** contains 0 to n **<SW-CLASS-METHOD>** s, each of which representing a particular class method. The methods are described informally. This branch is connected to future extensions.

Classes are instantiated within the data dictionaries, either globally or within a feature. Therefore a **<SW-CLASS-INSTANCE>** in a Data Dictionary contains a reference to a . This represents a particular instance of a . The contents of this element replace the contents of the referenced **<SW-CLASS>** , thus defining the particular implementation.

Beispiel

The following example illustrates a small system comprising of one class with three instances utilizing different implementations. The class has a component which a class in itself and as such, is an example of an embedded class. The example is complete in the sense that all referenced objects are present.



```
<MSRSW PUBID      ="/MSR//DTD MSR SOFTWARE DTD:V2.2.2:MSRSW.DTD//EN"
  F-PUBID          ="/MSR//DTD MSR SOFTWARE DTD:V2.2.2:MSRSW.DTD//EN"
  F-NAMESPACE="CHAPTER COMPANY DEF-ITEM EXTERNAL FIGURE FORMULA PRM REQUIREMENT SAMPLE
              STD SW-ADDR-METHOD SW-AXIS-TYPE SW-BASE-TYPE SW-CALPRM SW-CALPRM-PROTOTYPE
              SW-CLASS-PROTOTYPE SW-CLASS-ATTR-IMPL SW-CLASS-INSTANCE SW-CLASS SW-CODE-SYN
              SW-COLLECTION SW-COMPU-METHOD SW-CPU-MEM-SEG SW-DATA-CONSTR SW-FEATURE
              SW-GENERIC-AXIS-PARAM-TYPE SW-INSTANCE-TREE SW-INSTANCE SW-MC-BASE-TYPE
              SW-MC-INTERFACE-SOURCE SW-MC-INTERFACE SW-RECORD-LAYOUT SW-SYSTEMCONST SW-SY
              SW-TASK SW-TEMPLATE SW-UNIT SW-USER-ACCESS-CASE SW-USER-GROUP SW-VARIABLE-PR
              SW-VARIABLE SW-VCD-CRITERION TABLE TEAM-MEMBER TOPIC VARIANT-DEF VARIANT-CHA
  HYTIME          ="HYDOC">

  <SW-SYSTEMS>
    <SW-SYSTEM ID      ="ID49163FEDRADCE418"
      F-ID-CLASS      ="SW-SYSTEM"
      F-NAMESPACE="SW-ADDR-METHOD SW-AXIS-TYPE SW-BASE-TYPE SW-CALPRM SW-CALPRM-PROTO
                  SW-CLASS-PROTOTYPE SW-CLASS-ATTR-IMPL SW-CLASS-INSTANCE SW-CLASS S
                  SW-COLLECTION SW-COMPU-METHOD SW-CPU-MEM-SEG SW-DATA-CONSTR SW-FEA
                  SW-GENERIC-AXIS-PARAM-TYPE SW-INSTANCE-TREE SW-INSTANCE SW-RECORD-
                  SW-SYSTEMCONST SW-TASK SW-TEMPLATE SW-UNIT SW-USER-ACCESS-CASE SW-
                  SW-VARIABLE-PROTOTYPE SW-VARIABLE SW-VCD-CRITERION">
      <LONG-NAME>
        <L-4 L="4">Demonstrator für Klassen</L-4>
      </LONG-NAME>
      <SHORT-NAME>ClassDemo</SHORT-NAME>
      <SW-DATA-Dictionary-SPEC></SW-DATA-Dictionary-SPEC>
    </SW-SYSTEM>
  </SW-SYSTEMS>
</MSRSW>
```

Here we define the required measurement units:

```
<SW-UNITS>
  <SW-UNIT ID      ="ID4F1ADF2DRAD46366"
    F-ID-CLASS      ="SW-UNIT">
    <SHORT-NAME>rpm</SHORT-NAME>
    <SI-UNIT><?xm-replace_text {SI-UNIT}></SI-UNIT>
  </SW-UNIT>

  <SW-UNIT ID      ="ID4F1ADF2DRADC299F"
    F-ID-CLASS      ="SW-UNIT">
    <SHORT-NAME>gradkw</SHORT-NAME>
    <SI-UNIT><?xm-replace_text {SI-UNIT}></SI-UNIT>
  </SW-UNIT>

  <SW-UNIT ID      ="ID4F1AEL36RAD07900"
    F-ID-CLASS      ="SW-UNIT">
    <SHORT-NAME>ms</SHORT-NAME>
    <SW-UNIT-CONVERSION-METHOD>
      <SW-UNIT-GRADIENT>1000</SW-UNIT-GRADIENT>
      <SW-UNIT-OFFSET>0</SW-UNIT-OFFSET>
    </SW-UNIT-CONVERSION-METHOD>
    <SI-UNIT TIME-EXPO="1"><?xm-replace_text {SI-UNIT}></SI-UNIT>
  </SW-UNIT>
</SW-UNITS>
```

Here we have global class instances. Note that the class itself is specified later.

```
<SW-CLASS-INSTANCES>
  <SW-CLASS-INSTANCE ID      ="ID49163FECRADA984D"
    F-ID-CLASS      ="SW-CLASS-INSTANCE">
    <SHORT-NAME>no-fun</SHORT-NAME>
    <DESC>Das ist die Instantiierung eines globalen objektes der Klasse nonsense. Es wird die
    <SW-CLASS-REF ID-REF="NONSENSE">nonsense</SW-CLASS-REF>
    <SW-CLASS-ATTR-IMPL-REF ID-REF      ="ID49163FECRAD4BFD7"
      HYTIME      ="CLINK"
      HYNAMES      ="LINKEND ID-REF"
      F-ID-CLASS="SW-CLASS-ATTR-IMPL">highend</SW-CLASS-ATTR-IMPL-REF>
  </SW-CLASS-INSTANCE>

  <SW-CLASS-INSTANCE ID      ="ID49163FECRAD51C6A"
    F-ID-CLASS      ="SW-CLASS-INSTANCE">
    <SHORT-NAME>no-sports </SHORT-NAME>
    <DESC>Das ist eine weitere Instantiierung eines globalen objektes der Klasse nonsense. Es
    <SW-CLASS-REF ID-REF="NONSENSE">nonsense</SW-CLASS-REF>
    <SW-CLASS-ATTR-IMPL-REF ID-REF      ="ID49163FECRAD4BFD7-1"
      HYTIME      ="CLINK"
      HYNAMES      ="LINKEND ID-REF"
      F-ID-CLASS="SW-CLASS-ATTR-IMPL">lowend</SW-CLASS-ATTR-IMPL-REF>
  </SW-CLASS-INSTANCE>

  <SW-CLASS-INSTANCE ID      ="ID49163FECRAD353DD"
    F-ID-CLASS      ="SW-CLASS-INSTANCE">
    <SHORT-NAME>no-life </SHORT-NAME>
    <DESC>Das ist eine weitere Instantiierung eines globalen objektes der Klasse nonsense. Es
```




```
<SW-CLASS-REF ID-REF      ="NONSENSE"  
              HYTIME      ="CLINK"  
              HYNAMES     ="LINKEND ID-REF"  
              F-ID-CLASS="SW-CLASS">nonsense</SW-CLASS-REF>  
<SW-CLASS-ATTR-IMPL-REF ID-REF      ="ID49163FECRAD4BFD7"  
                       HYTIME      ="CLINK"  
                       HYNAMES     ="LINKEND ID-REF"  
                       F-ID-CLASS="SW-CLASS-ATTR-IMPL">highend</SW-CLASS-ATTR-IMPL-REF>  
  
</SW-CLASS-INSTANCE>  
</SW-CLASS-INSTANCES>
```

Here we specify the required code syntaxes.

```
<SW-CODE-SYNTAXES>  
<SW-CODE-SYNTAX ID      ="ID4F1ADF2DRAD6B70"  
                  F-ID-CLASS="SW-CODE-SYNTAX">  
  <SHORT-NAME>kf-8</SHORT-NAME>  
</SW-CODE-SYNTAX>  
  
<SW-CODE-SYNTAX ID      ="ID4F1ADF2DRAD41815"  
                  F-ID-CLASS="SW-CODE-SYNTAX">  
  <SHORT-NAME>kf-32</SHORT-NAME>  
</SW-CODE-SYNTAX>  
  
<SW-CODE-SYNTAX ID      ="ID4F1ADF2DRADA3D4F"  
                  F-ID-CLASS="SW-CODE-SYNTAX">  
  <SHORT-NAME>k1-8</SHORT-NAME>  
</SW-CODE-SYNTAX>  
  
<SW-CODE-SYNTAX ID      ="ID4F1ADF2DRADA8D81"  
                  F-ID-CLASS="SW-CODE-SYNTAX">  
  <SHORT-NAME>k1-32</SHORT-NAME>  
</SW-CODE-SYNTAX>  
</SW-CODE-SYNTAXES>
```

Here we define the required base types.

```
<SW-BASE-TYPES>  
<SW-BASE-TYPE ID      ="ID4F1ADF2DRAD66771"  
                F-ID-CLASS="SW-BASE-TYPE">  
  <SHORT-NAME>byte</SHORT-NAME>  
  <SW-BASE-TYPE-SIZE>8</SW-BASE-TYPE-SIZE>  
  <SW-CODED-TYPE>integer</SW-CODED-TYPE>  
</SW-BASE-TYPE>  
  
<SW-BASE-TYPE ID      ="ID4F1ADF2DRAD2A264"  
                F-ID-CLASS="SW-BASE-TYPE">  
  <SHORT-NAME>long</SHORT-NAME>  
  <SW-BASE-TYPE-SIZE>32</SW-BASE-TYPE-SIZE>  
  <SW-CODED-TYPE>integer</SW-CODED-TYPE>  
</SW-BASE-TYPE>  
</SW-BASE-TYPES>
```

Since classes are handled as software components, they are defined within **<SW-COMPONENT-SPEC>** . Here we define a class "nonsense" and the subclass which is instantiated as part of "nonsense".

```
<SW-COMPONENT-SPEC>  
<SW-COMPONENTS>  
<SW-CLASS ID      ="NONSENSE"  
          F-ID-CLASS ="SW-CLASS"  
          F-NAMESPACE="SW-CALPRM-PROTOTYPE SW-CLASS-PROTOTYPE SW-VARIABLE-PROTOTYPE">  
  <SHORT-NAME>nonsense </SHORT-NAME>  
  <SW-FEATURE-DESC>  
    <P>Diese Klasse dient nur zur Demonstration der Mglichkeiten in MSRSW.</P>  
    <LIST TYPE="UNNUMBER">  
      <ITEM>  
        <P>Klassenbeschreibung</P>  
      </ITEM>  
      <ITEM>  
        <P>Klassenattribute</P>  
      </ITEM>  
      <ITEM>  
        <P>Methoden</P>  
      </ITEM>  
    </LIST>  
  </SW-FEATURE-DESC>  
</SW-CLASS-ATTR></SW-CLASS-ATTR>  
</SW-CLASS>  
</SW-COMPONENTS>  
</SW-COMPONENT-SPEC>
```

The class attributes are initially specified as prototypes. Subsequently the implementations available in the ECU are specified in **<SW-CLASS-ATTR-IMPLS>**. The attributes may manifest them-



selves as variables (**<SW-VARIABLE-PROTOTYPE>**s, calibration parameters (**<SW-CALPRM-PROTOTYPE>**s) or class instances (**<SW-CLASS-PROTOTYPE>** s).

```
<SW-VARIABLE-PROTOTYPES>
  <SW-VARIABLE-PROTOTYPE ID          ="ID49163FEDRAD112E9"
                                F-ID-CLASS="SW-VARIABLE-PROTOTYPE">
    <SHORT-NAME>N</SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Variable instantiiert.
  </SW-VARIABLE-PROTOTYPE>

  <SW-VARIABLE-PROTOTYPE ID          ="ID49163FEDRAD77C19"
                                F-ID-CLASS="SW-VARIABLE-PROTOTYPE">
    <SHORT-NAME>TL </SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Variable instantiiert.
  </SW-VARIABLE-PROTOTYPE>

  <SW-VARIABLE-PROTOTYPE ID          ="ID49163FEDRAD65A29"
                                F-ID-CLASS="SW-VARIABLE-PROTOTYPE">
    <SHORT-NAME>TMOT </SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Variable instantiiert.
  </SW-VARIABLE-PROTOTYPE>
</SW-VARIABLE-PROTOTYPES>
```

These are calibration parameter prototypes:

```
<SW-CALPRM-PROTOTYPES>
  <SW-CALPRM-PROTOTYPE ID          ="ID49163FECRAD0EE17"
                                F-ID-CLASS="SW-CALPRM-PROTOTYPE">
    <SHORT-NAME>WLN </SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Parameter instantiiert.
  </SW-CALPRM-PROTOTYPE>

  <SW-CALPRM-PROTOTYPE ID          ="ID49163FECRADB7A5D"
                                F-ID-CLASS="SW-CALPRM-PROTOTYPE">
    <SHORT-NAME>WTL </SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Parameter instantiiert.
  </SW-CALPRM-PROTOTYPE>

  <SW-CALPRM-PROTOTYPE ID          ="ID49163FECRAD360C"
                                F-ID-CLASS="SW-CALPRM-PROTOTYPE">
    <SHORT-NAME>WTMOT </SHORT-NAME>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als Parameter instantiiert.
  </SW-CALPRM-PROTOTYPE>

  <SW-CALPRM-PROTOTYPE ID          ="ID49163FECRAD9F29"
                                F-ID-CLASS="SW-CALPRM-PROTOTYPE">
    <SHORT-NAME>KFNTL </SHORT-NAME>
  </SW-CALPRM-PROTOTYPE>
</SW-CALPRM-PROTOTYPES>
```

These are class instance prototypes:

```
<SW-CLASS-PROTOTYPES>
  <SW-CLASS-PROTOTYPE ID          ="ID49163FECRADE0ACB"
                                F-ID-CLASS="SW-CLASS-PROTOTYPE">
    <SHORT-NAME>substuff </SHORT-NAME>
    <SW-CLASS-REF ID-REF          ="ID49163FECRAD19FEB"
                                HYTIME    ="CLINK"
                                HYNAMES   ="LINKEND ID-REF"
                                F-ID-CLASS="SW-CLASS">Subclass</SW-CLASS-REF>
    <DESC>Das ist ein Prototyp für ein Attribut der Klasse, welche sich als instanz der Klasse
    Subclass instantiiert. Durch diese Instantiierung wird es seine Attribute einbringen.</DESC>
  </SW-CLASS-PROTOTYPE>
</SW-CLASS-PROTOTYPES>
```

Here, the particular implementations of the various prototypes are specified:

```
<SW-CLASS-ATTR-IMPLS>
  <SW-CLASS-ATTR-IMPL ID          ="ID49163FECRAD4BFD7-1"
                                F-ID-CLASS="SW-CLASS-ATTR-IMPL">
    <LONG-NAME>Lowend-Implementierung, z.B. als 8 bit</LONG-NAME>
    <SHORT-NAME>highend </SHORT-NAME>
    <SW-VARIABLE-IMPLS>
      <SW-VARIABLE-IMPL>
        <SW-VARIABLE-PROTOTYPE-REF ID-REF    ="ID49163FEDRAD112E9"
                                    HYTIME    ="CLINK"
                                    HYNAMES   ="LINKEND ID-REF"
                                    F-ID-CLASS="SW-VARIABLE-PROTOTYPE">N</SW-VARIABLE-PROTOTYPE-REF>

      <SW-DATA-DEF-PROPS>
        <SW-BASE-TYPE-REF ID-REF    ="ID4F1ADF2DRAD66771"
                          HYTIME    ="CLINK"
                          HYNAMES   ="LINKEND ID-REF"
                          F-ID-CLASS="SW-BASE-TYPE">byte</SW-BASE-TYPE-REF>

      </SW-DATA-DEF-PROPS>
    </SW-VARIABLE-IMPL>
  </SW-CLASS-ATTR-IMPL>
```



```
<SW-VARIABLE-IMPL>
  <SW-VARIABLE-PROTOTYPE-REF ID-REF      ="ID49163FEDRAD77C19"
    HYTIME      ="CLINK"
    HYNAMES     ="LINKEND ID-REF"
    F-ID-CLASS="SW-VARIABLE-PROTOTYPE">TL</SW-VARIABLE-PROTOTYPE-REF>

  <SW-DATA-DEF-PROPS>
    <SW-BASE-TYPE-REF ID-REF      ="ID4F1ADF2DRAD66771"
      HYTIME      ="CLINK"
      HYNAMES     ="LINKEND ID-REF"
      F-ID-CLASS="SW-BASE-TYPE">byte</SW-BASE-TYPE-REF>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE-IMPL>
<SW-VARIABLE-IMPL>
  <SW-VARIABLE-PROTOTYPE-REF ID-REF      ="ID49163FEDRAD65A29"
    HYTIME      ="CLINK"
    HYNAMES     ="LINKEND ID-REF"
    F-ID-CLASS="SW-VARIABLE-PROTOTYPE">TMOT</SW-VARIABLE-PROTOTYPE-REF>

  <SW-DATA-DEF-PROPS>
    <SW-BASE-TYPE-REF ID-REF      ="ID4F1ADF2DRAD66771"
      HYTIME      ="CLINK"
      HYNAMES     ="LINKEND ID-REF"
      F-ID-CLASS="SW-BASE-TYPE">byte</SW-BASE-TYPE-REF>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE-IMPL>
</SW-VARIABLE-IMPLS>
<SW-CALPRM-IMPLS>
  <SW-CALPRM-IMPL>
    <SW-CALPRM-PROTOTYPE-REF ID-REF      ="ID49163FECRAD0EE17"
      HYTIME      ="CLINK"
      HYNAMES     ="LINKEND ID-REF"
      F-ID-CLASS="SW-CALPRM-PROTOTYPE">WLN</SW-CALPRM-PROTOTYPE-REF>

    <SW-DATA-DEF-PROPS>
      <SW-CODE-SYNTAX-REF ID-REF      ="ID4F1ADF2DRADA3D4F"
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Here, the subclass called "Subclass" of "nonsense" is specified:

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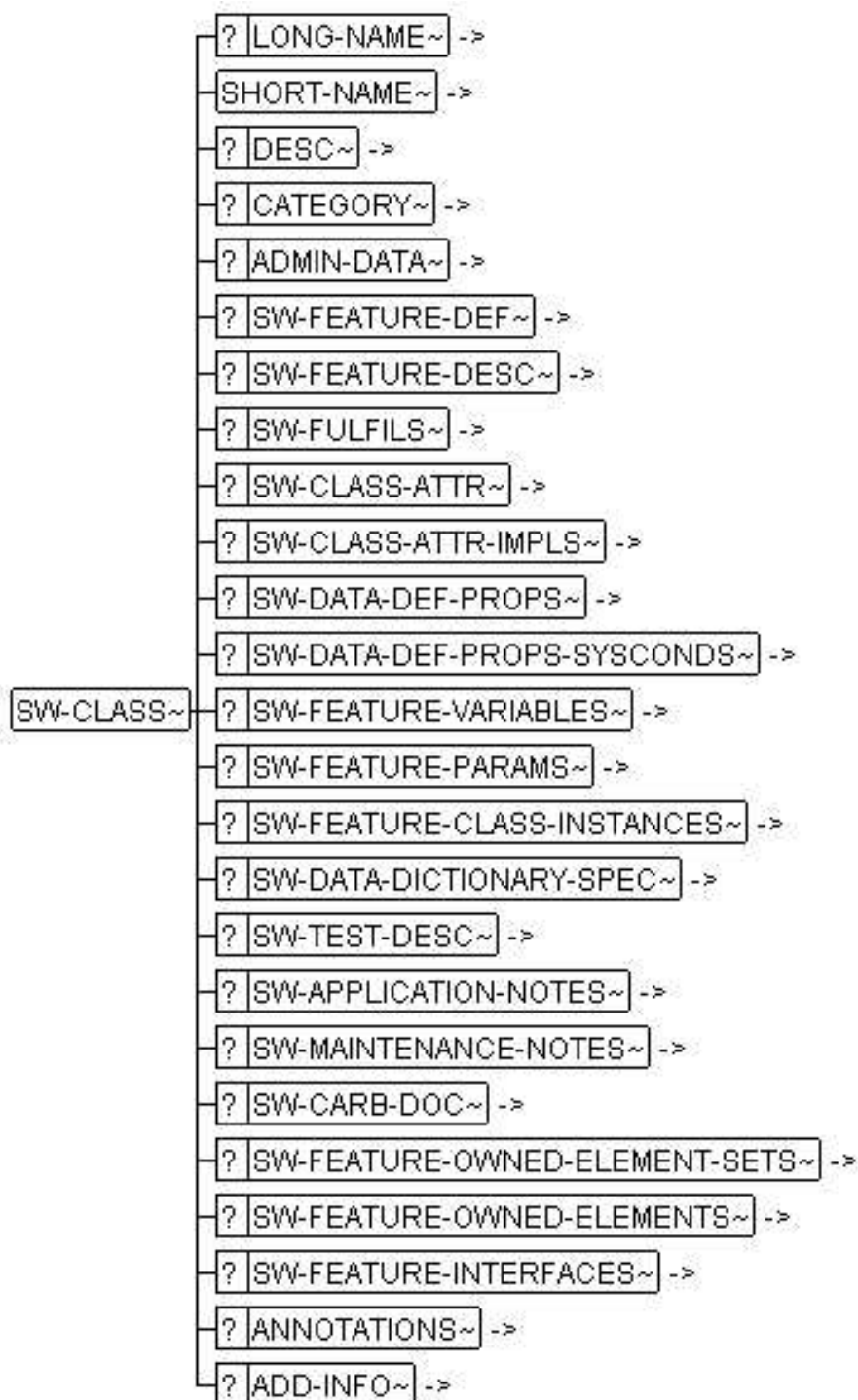
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Formale Beschreibung

Hat als Kontext: [SW-CLASS-PROTOTYPE](#) p. 305, [SW-CLASSES](#) p. 311, [SW-COMPONENTS](#) p. 332

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-FULFILS](#) p. 413, [SW-CLASS-ATTR](#) p. 293, [SW-CLASS-ATTR-IMPLS](#) p. 298, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-FEATURE-VARIABLES](#) p. 410, [SW-FEATURE-PARAMS](#) p. 407, [SW-FEATURE-CLASS-INSTANCES](#) p. 390, [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-TEST-DESC](#) p. 543, [SW-APPLICATION-NOTES](#) p. 234, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-CARB-DOC](#) p. 275, [SW-FEATURE-OWNED-ELEMENT-SETS](#) p. 406, [SW-FEATURE-OWNED-ELEMENTS](#) p. 406, [SW-FEATURE-INTERFACES](#) p. 402, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



SW-CLASS.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.



Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtokens	CHAPTER DEF- ITEM FIGURE FOR- MULA PRM SDG STD SW-ADDR- METHOD SW-AXIS- TYPE SW-BASE- TYPE SW-CALPRM SW-CALPRM- PROTOTYPE SW- CLASS-ATTR- IMPL SW-CLASS- INSTANCE SW- CLASS-PROTOTYPE SW-CODE-SYNTAX SW-COMPU- METHOD SW- DATA-CONSTR SW-FEATURE- INTERFACE SW- GENERIC-AXIS- PARAM-TYPE SW- RECORD-LAYOUT SW-SERVICE SW- SERVICE-ARG SW-SERVICE- PROTOTYPE SW- SERVICE-RETURN SW-SYSTEMCONST SW-TEMPLATE SW- UNIT SW-VARIABLE SW-VARIABLE- PROTOTYPE SYN- OPSIS TABLE TOPIC XDOC XFILE XREF- TARGET	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.332 SW-CLASS-ATTR

Beschreibung

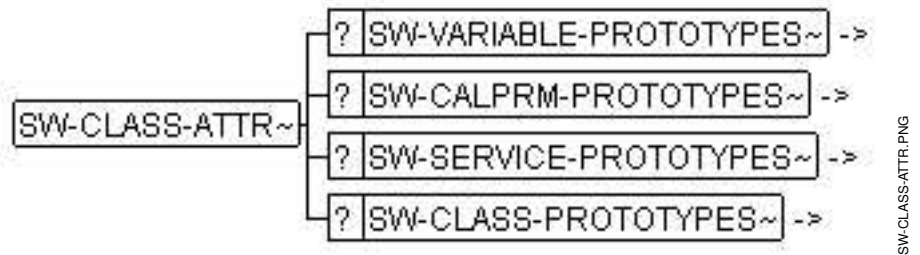
Defines the object-oriented class-attributes containing the prototypes: **<SW-VARIABLE-PROTOTYPES>** which denote attributes within the classes that are variables, **<SW-CALPRM-PROTOTYPES>** which denote attributes within the classes that are calibration parameters, **<SW-SERVICE-PROTOTYPES>** which denote attributes within the classes that are services and **<SW-CLASS-PROTOTYPES>** which denote attributes within the classes that are class instances themselves.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276

Ist Kontext für: [SW-VARIABLE-PROTOTYPES](#) p. 571, [SW-CALPRM-PROTOTYPES](#) p. 270, [SW-SERVICE-PROTOTYPES](#) p. 506, [SW-CLASS-PROTOTYPES](#) p. 308



SW-CLASS-ATTR.PNG

2.333 SW-CLASS-ATTR-IMPL

Beschreibung

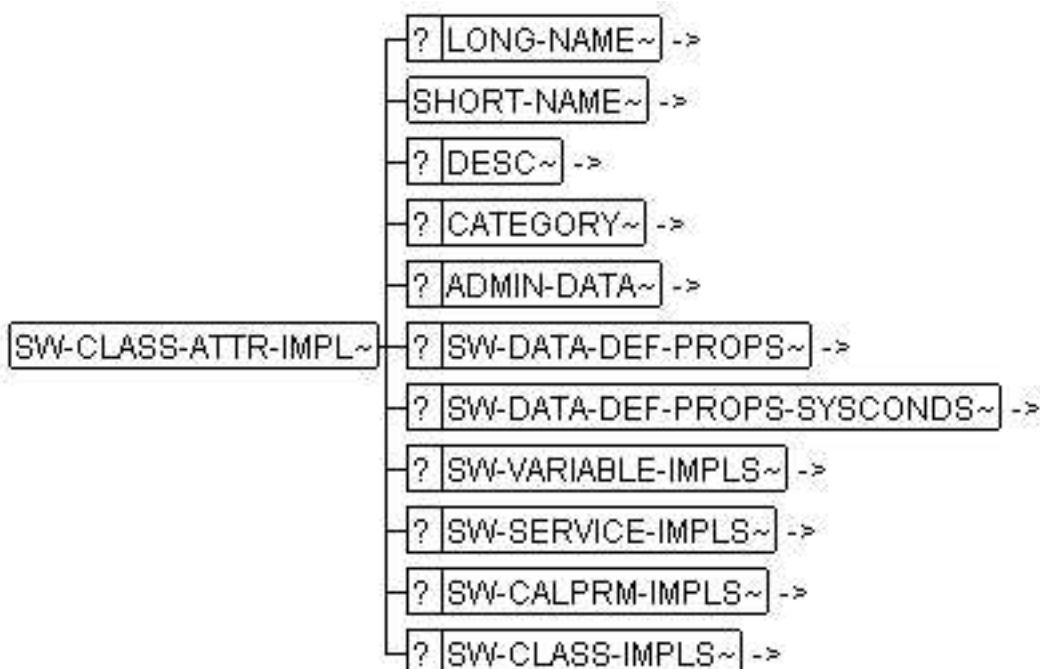
Defines the object-oriented class-attributes: [Chapter 2.688 SW-VARIABLE-IMPLS](#) p. 567 which implement attributes that are variables, [Chapter 2.317 SW-CALPRM-IMPLS](#) p. 265 which implement attributes that are calibration parameters and [Chapter 2.340 SW-CLASS-IMPLS](#) p. 299 which implement attributes that are class instances themselves.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPLS](#) p. 298

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-VARIABLE-IMPLS](#) p. 567, [SW-SERVICE-IMPLS](#) p. 504, [SW-CALPRM-IMPLS](#) p. 265, [SW-CLASS-IMPLS](#) p. 299



SW-CLASS-ATTR-IMPL.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-CLASS-ATTR-IMPL	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.334 SW-CLASS-ATTR-IMPL-REF

Beschreibung

This element references <SW-CLASS-ATTR-IMPL> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL-REF-SYSCOND](#) p.297, [SW-CLASS-ATTR-IMPL-REFS](#) p. 298, [SW-CLASS-INSTANCE](#) p. 300, [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

SW-CLASS-ATTR-IMPL-REF~—#PCDATA



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS-ATTR-IMPL	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.335 SW-CLASS-ATTR-IMPL-REF-SYSCOND

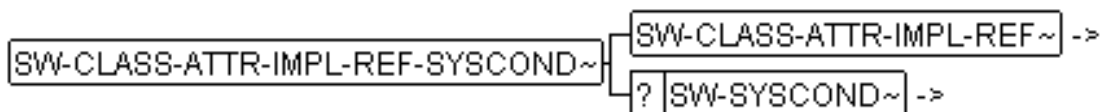
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL-REFS](#) p. 298

Ist Kontext für: [SW-CLASS-ATTR-IMPL-REF](#) p. 295, [SW-SYSCOND](#) p. 511



SW-CLASS-ATTR-IMPL-REF-SYSCOND.PNG

2.336 SW-CLASS-ATTR-IMPL-REFS

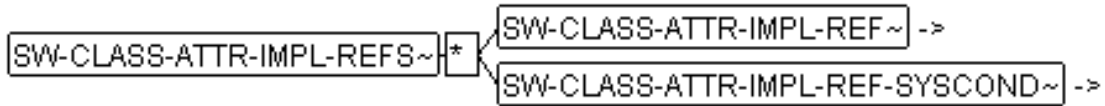
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-CLASS-ATTR-IMPL-REF](#) p. 295, [SW-CLASS-ATTR-IMPL-REF-SYSCOND](#) p. 297



SW-CLASS-ATTR-IMPL-REFS.PNG

2.337 SW-CLASS-ATTR-IMPLS

Beschreibung

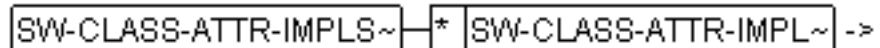
Container element for **<SW-CLASS-ATTR-IMPL>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276

Ist Kontext für: [SW-CLASS-ATTR-IMPL](#) p. 294



SW-CLASS-ATTR-IMPLS.PNG

2.338 SW-CLASS-ATTR-INSTANCE-IMPL

Beschreibung

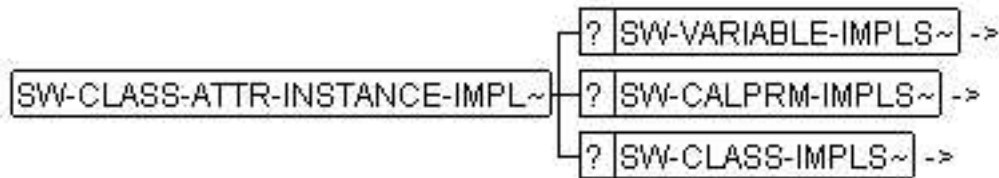
<SW-CLASS-ATTR-INSTANCE-IMPL> is used to create an instance from a model (Models are defined with SW-CLASS) where some specifications shall be changed / overwritten. This implementation will then be a instance specific implementation (Classes are usually only implemented under **<SW-CLASS-IMPLS>**).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-INSTANCE](#) p. 300

Ist Kontext für: [SW-VARIABLE-IMPLS](#) p. 567, [SW-CALPRM-IMPLS](#) p. 265, [SW-CLASS-IMPLS](#) p. 299



SW-CLASS-ATTR-INSTANCE-IMPL.PNG

2.339 SW-CLASS-IMPL

Beschreibung

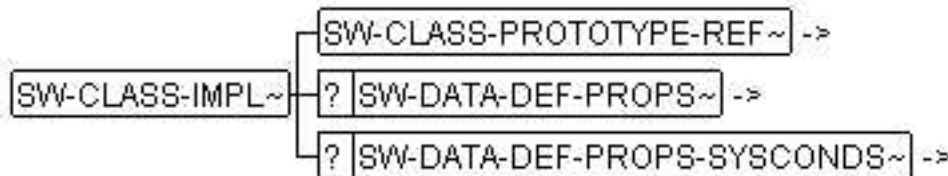
This element describes the implementation details of a class attribute which manifests itself as a class.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-IMPLS](#) p. 299

Ist Kontext für: [SW-CLASS-PROTOTYPE-REF](#) p. 306, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368



SW-CLASS-IMPL.PNG

2.340 SW-CLASS-IMPLS

Beschreibung

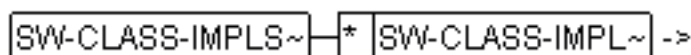
Container element for <SW-CLASS-IMPL> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL](#) p. 294, [SW-CLASS-ATTR-INSTANCE-IMPL](#) p. 298

Ist Kontext für: [SW-CLASS-IMPL](#) p. 299



SW-CLASS-IMPLS.PNG

2.341 SW-CLASS-INSTANCE

Beschreibung

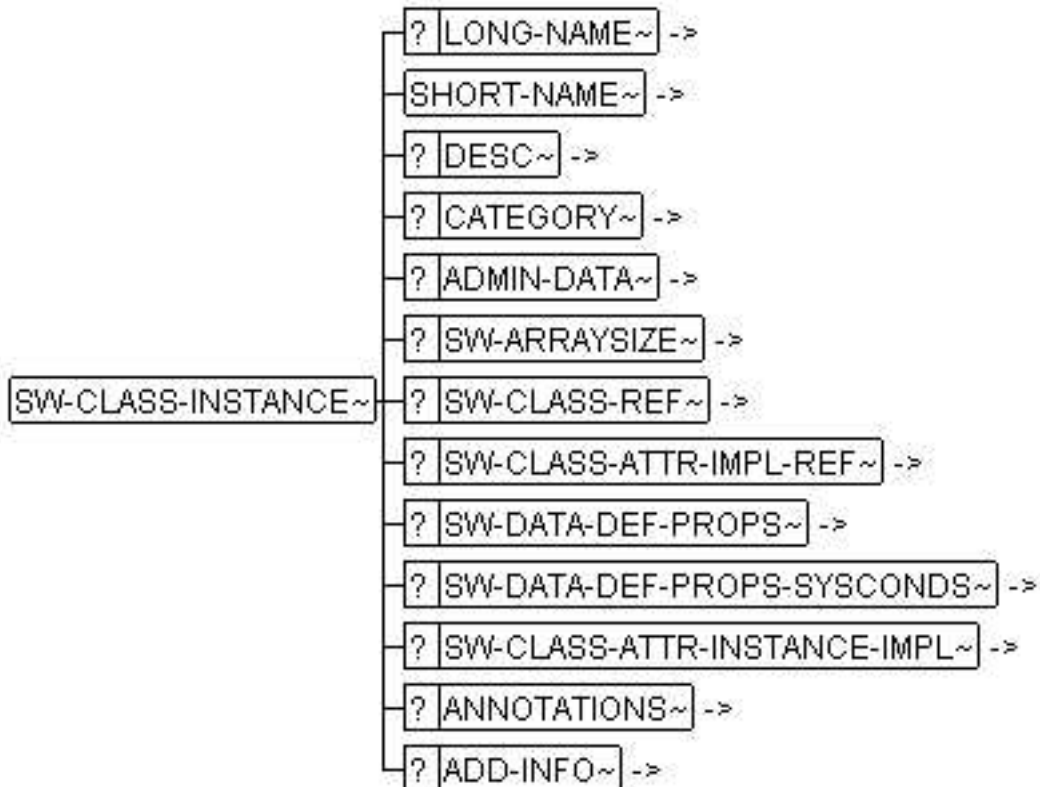
Defines the particular instantiation of a referenced **<SW-CLASS>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-INSTANCES](#) p. 304

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-CLASS-REF](#) p. 308, [SW-CLASS-ATTR-IMPL-REF](#) p. 295, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-CLASS-ATTR-INSTANCE-IMPL](#) p. 298, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



SW-CLASS-INSTANCE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS-INSTANCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.342 SW-CLASS-INSTANCE-REF

Beschreibung

This element refers to an **<SW-CLASS-INSTANCE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-CLASS-INSTANCES](#) p. 224, [SW-CLASS-INSTANCE-REF-SYSCOND](#) p. 303, [SW-CLASS-INSTANCE-REFS](#) p. 304, [SW-FEATURE-EXPORT-CLASS-INSTANCES](#) p. 396, [SW-FEATURE-IMPORT-CLASS-INSTANCES](#) p. 398, [SW-FEATURE-LOCAL-CLASS-INSTANCES](#) p. 403

Ist Kontext für: Text

SW-CLASS-INSTANCE-REF ~ #PCDATA



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS-INSTANCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.343 SW-CLASS-INSTANCE-REF-SYSCOND

Beschreibung

Use **<SW-CLASS-INSTANCE-REF-SYSCOND>** to create a **<SW-CLASS-INSTANCE-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-CLASS-INSTANCE-REF>** shall be used when system constant has a certain value.

Beispiel

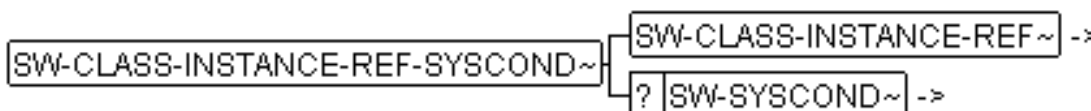
This Class Instance reference is used when LINA_Gear is less or equal to 4.

```
<SW-CLASS-INSTANCE-REF-SYSCOND>
  <SW-CLASS-INSTANCE-REF>class_i_Ref</SW-CLASS-INSTANCE-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-CLASS-INSTANCE-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-CLASS-INSTANCES p. 224](#), [SW-CLASS-INSTANCE-REFS p. 304](#)

Ist Kontext für: [SW-CLASS-INSTANCE-REF p. 301](#), [SW-SYSCOND p. 511](#)



SW-CLASS-INSTANCE-REF-SYSCOND.PNG

2.344 SW-CLASS-INSTANCE-REFS

Beschreibung

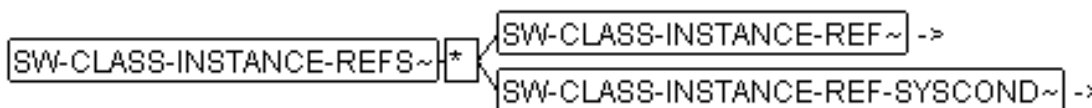
Container element for **<SW-CLASS-INSTANCE-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-CLASS-INSTANCE-REF](#) p. 301, [SW-CLASS-INSTANCE-REF-SYSCOND](#) p. 303



SW-CLASS-INSTANCE-REFS.PNG

2.345

SW-CLASS-INSTANCES

Beschreibung

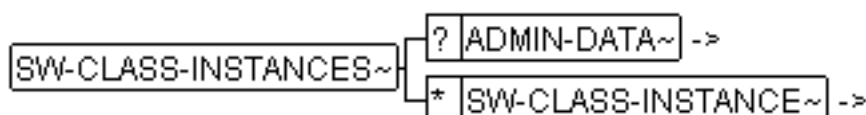
Container element for <SW-CLASS-INSTANCE> in a data dictionary.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-CLASS-INSTANCE](#) p. 300



SW-CLASS-INSTANCES.PNG

2.346

SW-CLASS-PROTOTYPE

Beschreibung

This element describes the prototype declaration of a class attribute, which appears in the form of a class.

Beispiel

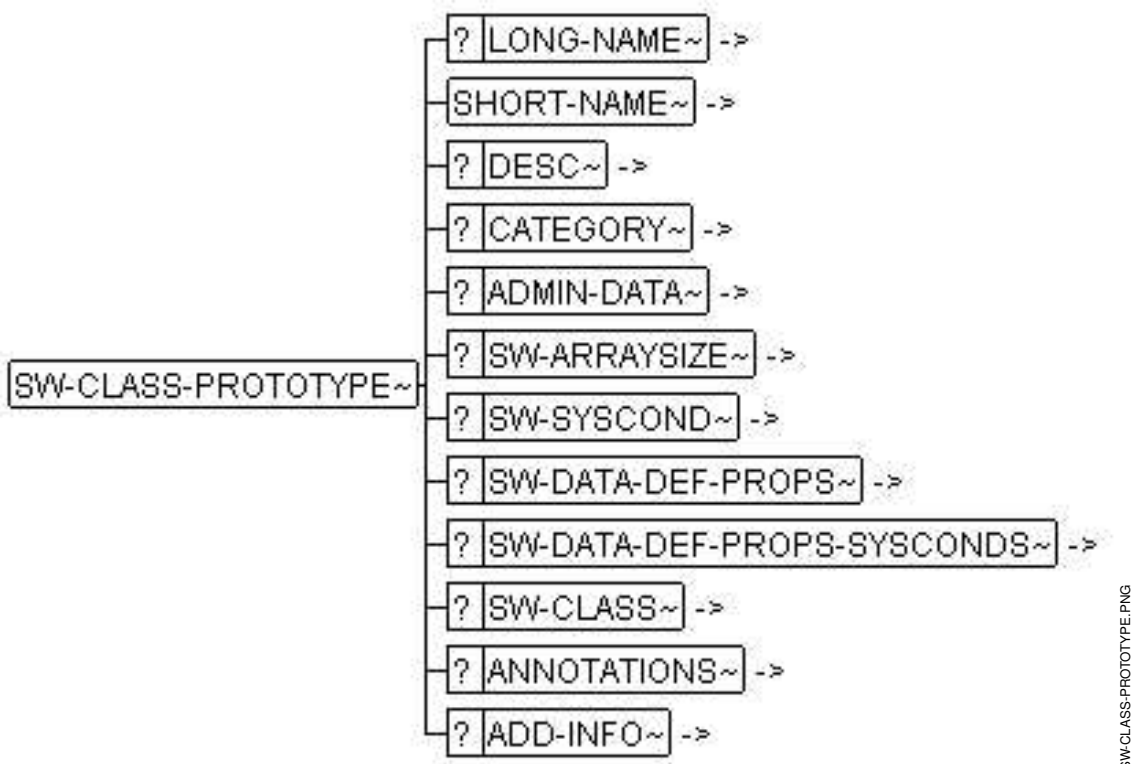
See [Chapter 2.331 SW-CLASS](#) p. 276

Formale Beschreibung

Hat als Kontext: [SW-CLASS-PROTOTYPES](#) p. 308

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-SYSCOND](#) p. 511,

[SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368,
[SW-CLASS](#) p. 276, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-CLASS-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.347 SW-CLASS-PROTOTYPE-REF

Beschreibung

This element points to a `<SW-CLASS-PROTOTYPE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-IMPL](#) p. 299

Ist Kontext für: Text

`SW-CLASS-PROTOTYPE-REF~` — #PCDATA

SW-CLASS-PROTOTYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.348 SW-CLASS-PROTOTYPES

Beschreibung

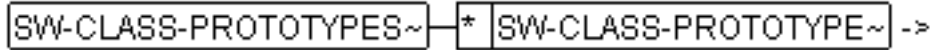
Container element for <SW-CLASS-PROTOTYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR](#) p. 293

Ist Kontext für: [SW-CLASS-PROTOTYPE](#) p. 305



2.349 SW-CLASS-REF

Beschreibung

This element points to a <SW-CLASS> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AR-RELATION p. 235](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-REF-SYSCOND p. 310](#), [SW-CLASS-REFS p. 310](#), [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: Text



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-CLASS	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.350 SW-CLASS-REF-SYSCOND

Beschreibung

Use `<SW-CLASS-REF-SYSCOND>` to create a `<SW-CLASS-REF>` that will be valid only when the corresponding `<SW-SYSCOND>` expression evaluates to true. This is useful when a `<SW-CLASS-REF>` shall be used when system constant has a certain value.

Beispiel

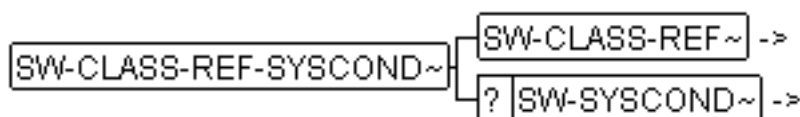
This Class reference is used when LINA_Gear is less or equal to 4.

```
<SW-CLASS-REF-SYSCOND>
  <SW-CLASS-REF>class_Ref</SW-CLASS-REF>
</SW-SYSCOND>
  <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
</SW-SYSCOND>
</SW-CLASS-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-CLASS-REFS](#) p. 310

Ist Kontext für: [SW-CLASS-REF](#) p. 308, [SW-SYSCOND](#) p. 511



SW-CLASS-REF-SYSCOND.PNG

2.351 SW-CLASS-REFS

Beschreibung

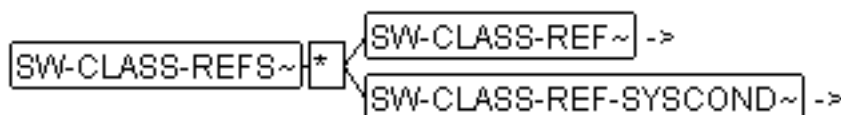
This is a container for SW-CLASS-REFS.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-CLASS-REF](#) p. 308, [SW-CLASS-REF-SYSCOND](#) p. 310



SW-CLASS-REFS.PNG

2.352 SW-CLASSES

Beschreibung

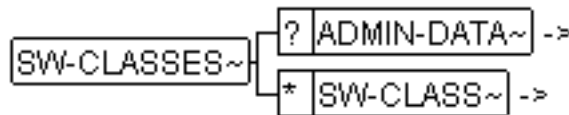
Container for classes.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC p. 372](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [SW-CLASS p. 276](#)



SW-CLASSES.PNG

2.353 SW-CODE-SYNTAX

Beschreibung

Code syntax objects fix the representation of the variables and parameters in the program source file. These code syntax objects are defined centrally in **<SW-CODE-SYNTAXES>** and are connected to variables and parameters by means of **<SW-CODE-SYNTAX-REF>**.

The principle role of this element is the declaration of keywords (in the subelement **<SHORT-NAME>**) for the code generation procedure. The process itself is given a verbal description (in **<SW-CODE-SYNTAX-DESC>**) rather than a formal one. This approach was adopted as the number of possible code syntax schematics is relatively small. A complete formal description would create unnecessary work.

It is possible however, to store a process-dependent micro syntax in **<SW-CODE-SYNTAX-DESC>**, for example within **<VERBATIM>** and to label this through a suitable data assignment to the attribute **[SI]**.

Beispiel

```

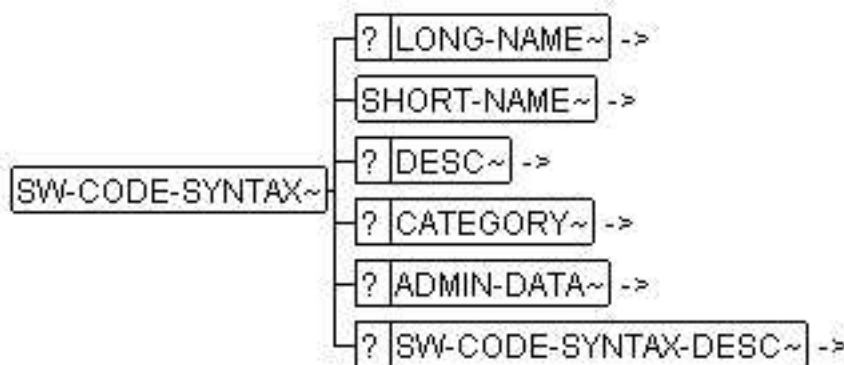
<SW-CODE-SYNTAXES>
  <SW-CODE-SYNTAX ID="IDCS1">
    <LONG-NAME>CodeSyntax-Objekt für Systemkonstanten</LONG-NAME>
    <SHORT-NAME>$cSyKgsSys</SHORT-NAME>
    <SW-CODE-SYNTAX-DESC>
      <VERBATIM>CodeSyntax: $cSyKgsSys CodeSyntax-Objekt für Systemkonstanten HFm: #ifndef <KGR>
        <IWERTE> #elif (<KGR> != <IWERTE>) #error »» <KGR> multiple defined #endif QFM
          <IWERTE> */ </IWERTE>
        </KGR></KGR></IWERTE></KGR></IWERTE>
      </KGR></KGR></VERBATIM>
    </SW-CODE-SYNTAX-DESC>
  </SW-CODE-SYNTAX>

  <SW-CODE-SYNTAX ID="IDCS2">
    <LONG-NAME>This is Code Syntax 2</LONG-NAME>
    <SHORT-NAME>Bit</SHORT-NAME>
    <SW-CODE-SYNTAX-DESC>
      <VERBATIM>CodeSyntax: Bit HFm: extern bit <RAM>; QFm: bit <RAM>
        <INITWERTIDEF>" = <INITWERTIDEF>;"; </INITWERTIDEF></INITWERTIDEF>
      </RAM></RAM></VERBATIM>
    </SW-CODE-SYNTAX-DESC>
  </SW-CODE-SYNTAX>
</SW-CODE-SYNTAXES>
  
```

Formale Beschreibung

Hat als Kontext: [SW-CODE-SYNTAXES](#) p. 317

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CODE-SYNTAX-DESC](#) p. 313



SW-CODE-SYNTAX.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CODE-SYNTAX	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.354 SW-CODE-SYNTAX-DESC

Beschreibung

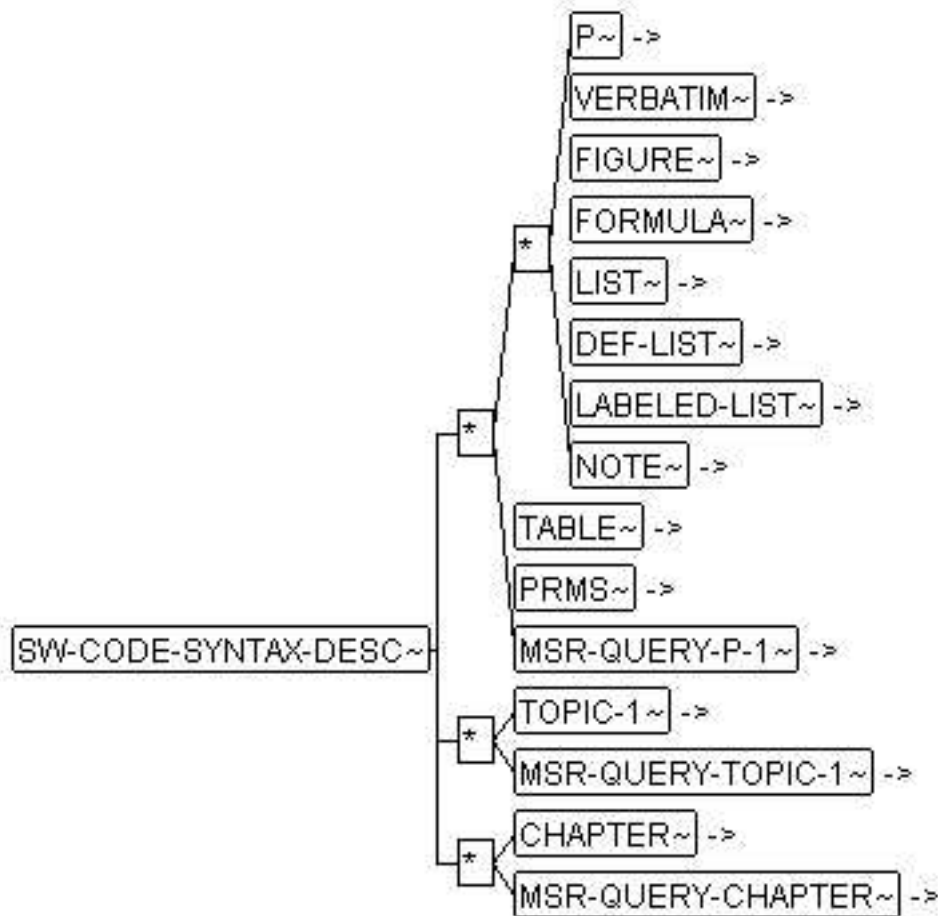
Verbal description of the algorithm for outputting the variables or parameters in the program source file (generation of code).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CODE-SYNTAX](#) p. 311

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-CODE-SYNTAX-DESC.PNG

2.355 SW-CODE-SYNTAX-REF

Beschreibung

This element refers to an `<SW-CODE-SYNTAX>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS](#) p. 72, [SW-CODE-SYNTAX-REF-SYSCOND](#) p. 316, [SW-CODE-SYNTAX-REFS](#) p. 316, [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

SW-CODE-SYNTAX-REF~ — #PCDATA

SW-CODE-SYNTAX-REFPING

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CODE-SYNTAX	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.356 SW-CODE-SYNTAX-REF-SYSCOND

Beschreibung

Use **<SW-CODE-SYNTAX-REF-SYSCOND>** to create a **<SW-CODE-SYNTAX-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-CODE-SYNTAX-REF>** shall be used when system constant has a certain value.

Beispiel

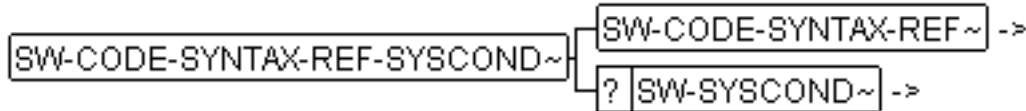
This Code Syntax reference is used when LINA_Gear is less or equal to 4.

```
<SW-CODE-SYNTAX-REF-SYSCOND>
  <SW-CODE-SYNTAX-REF>code_syn_Ref</SW-CODE-SYNTAX-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-CODE-SYNTAX-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-CODE-SYNTAX-REFS](#) p. 316

Ist Kontext für: [SW-CODE-SYNTAX-REF](#) p. 314, [SW-SYSCOND](#) p. 511



SW-CODE-SYNTAX-REF-SYSCOND.PNG

2.357 SW-CODE-SYNTAX-REFS

Beschreibung

Container element for **<SW-CODE-SYNTAX-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-CODE-SYNTAX-REF](#) p. 314, [SW-CODE-SYNTAX-REF-SYSCOND](#) p. 316



SW-CODE-SYNTAX-REFS.PNG

2.358 SW-CODE-SYNTAXES

Beschreibung

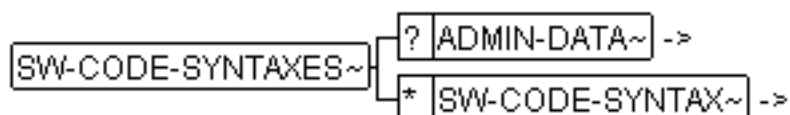
Container element for **<SW-CODE-SYNTAX>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-CODE-SYNTAX](#) p. 311



SW-CODE-SYNTAXES.PNG

2.359 SW-CODED-TYPE

Beschreibung

Gives a name to the coding belonging to a data object of a base type, in the memory. The name is therefore a keyword, denoting the interpretation of the bits in a base type. Possible values are:

unsigned	Refers to an unsigned integer number.
signed	Refers to a signed integer number.
bcd	Refers to a decimal number in binary code.
IEEE_floating_point	Refers to a floating point number according to <i>IEEE</i> standards. These standards exist for 32 and 64 bit floating point numbers.
DSP-fractional	This is a fractal data type which appears in connection with digital signal processors, e.g. Siemens Tricore databook.

Indicates whether the current data type is SIGNED or UNSIGNED. For example, for a signed data type, the contents of SW-CODED-TYPE is:

```
<SW-CODED-TYPE>SIGNED</SW-CODED-TYPE>
```

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE](#) p. 250, [SW-MC-BASE-TYPE](#) p. 440

Ist Kontext für: Text

```
SW-CODED-TYPE~|#PCDATA
```

SW-CODED-TYPE.PNG

2.360 SW-COLLECTION

Beschreibung

<SW-COLLECTION> describes a generic group mechanism which allows the free grouping of different objects in the DTD (especially <sw-variables>, <sw-param>s and <sw-function>s). The composition is located within <SW-COLLECTION-CONT> .

Group definition can be carried out for a number of purposes. These include:

- application of access rights
- building work packages for the calibration phase
- assigning responsibilities
- general data management
- Selection criteria in an *MCD-System* .

A group can specify sub-groups. A generic collection mechanism is implemented, supporting the following requests:

- Collections comprise of objects such as variables, calibration parameters, functions, collections, compu-methods, units etc. (thus allowing embedded collections).

- Collections are assigned to multiple purposes which can be predefined and also freely defined.
- The contents of a collection are defined by specifying objects which are included in the collection. To maintain clarity, it is not necessary to list the objects which are not included. This can be achieved by inverting collections on application.
- Collections can be inverted on application for any purpose.
- Purposes defined via collections may override properties defined elsewhere in the ASAP file. For instance, if a parameter belongs to a collection with the purpose "readonly", it cannot be manipulated in the *mcd system*, regardless of the value of the attribute **[calibration]** .
- It is possible to define the rules dictating how a collection is established (**<sw-collection-rules>**). The objects can be selected using references, wildcards and regular expressions. In future versions, additional means may be implemented such as properties, query languages and scripting (which is already implemented as a preliminary solution in the dtd).
- Collections can also be defined by applying previously defined collections (**<sw-collection-refs>**). Circular references are not permitted and must be detected.
- The collections can also be specified through applying the rules to the database and resolving **<sw-collection-refs>** (acting as subcollections).

If a collection is applied, only the result is taken into consideration.

References contained within elements (e.g. the variable of a parameter axis), which make up the result, are not resolved automatically. This means that the collection comprises only of those objects mentioned explicitly.

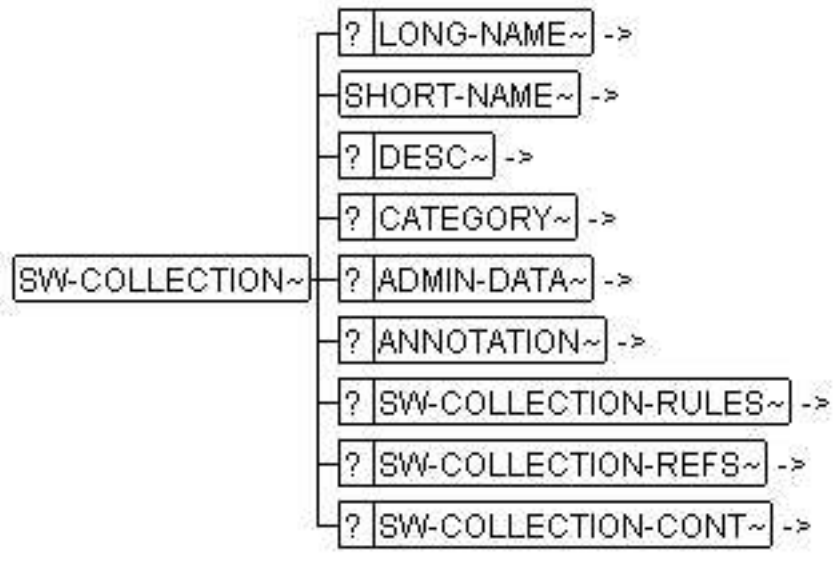
- Whenever a collection is applied, it can be used either inverted or in its direct form. This is specified with the attribute **[invert]** in **<sw-collection-ref>** .
- Collections apply to only one file (strictly speaking to one parse unit).
- The collections have no order.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTIONS](#) p. 329

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [ANNOTATION](#) p. 32, [SW-COLLECTION-RULES](#) p. 326, [SW-COLLECTION-REFS](#) p. 323, [SW-COLLECTION-CONT](#) p. 320



SW-COLLECTION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ROOT] (default)	namedtokengroup	<ul style="list-style-type: none"> • ROOT • NO-ROOT 	This collection is displayed in an editing system as a possible point of entry for further navigation. This provides you with the opportunity to generate different views on the data in the ECU and also, to offer corresponding navigators. Example :
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-COLLECTION	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.361 SW-COLLECTION-CONT

Beschreibung

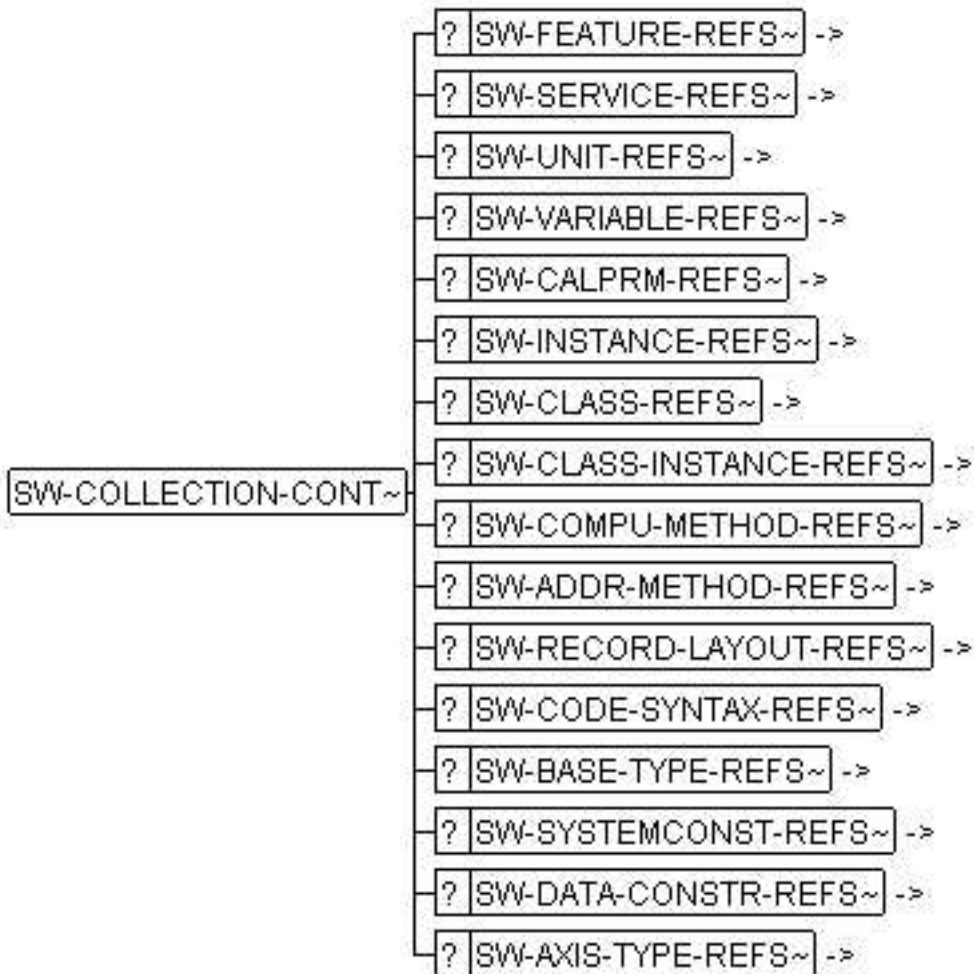
This element contains the composition of an **<SW-COLLECTION>** , which can consist of any objects included in the ECU software.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION](#) p. 318

Ist Kontext für: [SW-FEATURE-REFS](#) p. 409, [SW-SERVICE-REFS](#) p. 509, [SW-UNIT-REFS](#) p. 550, [SW-VARIABLE-REFS](#) p. 574, [SW-CALPRM-REFS](#) p. 273, [SW-INSTANCE-REFS](#) p. 427, [SW-CLASS-REFS](#) p. 310, [SW-CLASS-INSTANCE-REFS](#) p. 304, [SW-COMPU-METHOD-REFS](#) p. 340, [SW-ADDR-METHOD-REFS](#) p. 233, [SW-RECORD-LAYOUT-REFS](#) p. 492, [SW-CODE-SYNTAX-REFS](#) p. 316, [SW-BASE-TYPE-REFS](#) p. 254, [SW-SYSTEMCONST-REFS](#) p. 530, [SW-DATA-CONSTR-REFS](#) p. 365, [SW-AXIS-TYPE-REFS](#) p. 249



SW-COLLECTION-CONT.PNG

2.362 SW-COLLECTION-REF

Beschreibung

This element references an **<SW-COLLECTION>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESS-DEF](#) p. 221, [SW-COLLECTION-REFS](#) p. 323

Ist Kontext für: Text

SW-COLLECTION-REF~ —#PCDATA

SW-COLLECTION-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[INVERT] (default)	namedtokengroup	<ul style="list-style-type: none"> • INVERT • NO-INVERT 	INVERT can assume the values INVERT and NO-INVERT. In the case of INVERT, the collection is excluded. This means that if, in an SW-Collection, another collection with INVERT="INVERT" is referenced, the elements of the collection referenced, are extracted from the resulting total set.
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-COLLECTION	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.363 SW-COLLECTION-REFS

Beschreibung

Container element for <SW-COLLECTION-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION](#) p. 318

Ist Kontext für: [SW-COLLECTION-REF](#) p. 321

`SW-COLLECTION-REFS~` * `SW-COLLECTION-REF~` ->

SW-COLLECTION-REFS.PNG

2.364 SW-COLLECTION-REGEXP

Beschreibung

This element specifies a regular expression, e.g. a-zA-Z0-9_, which is to be executed on the set to be selected.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-REGEXPS](#) p. 324

Ist Kontext für: Text

`SW-COLLECTION-REGEXP~` #PCDATA

SW-COLLECTION-REGEXP.PNG

2.365 SW-COLLECTION-REGEXPS

Beschreibung

Container element for `<SW-COLLECTION-REGEXP>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-RULE](#) p. 324

Ist Kontext für: [SW-COLLECTION-REGEXP](#) p. 324

`SW-COLLECTION-REGEXPS~` * `SW-COLLECTION-REGEXP~` ->

SW-COLLECTION-REGEXPS.PNG

2.366 SW-COLLECTION-RULE

Beschreibung

Describes a rule with which the objects for a compilation **<SW-COLLECTION>** can be selected. The selection is possible using:

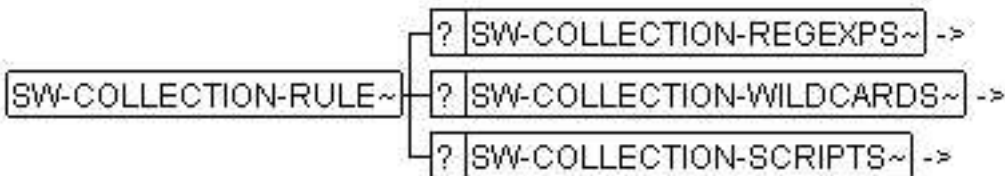
- Wildcards on the **<SHORT-NAME>**s objects to be selected (**<SW-COLLECTION-WILDCARDS>**)
- Regular expressions on the **<SHORT-NAME>**s of the objects to be selected (**<SW-COLLECTION-REGEXPS>**)
- Scripts (**<SW-COLLECTION-SCRIPTS>**)

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-RULES](#) p. 326

Ist Kontext für: [SW-COLLECTION-REGEXPS](#) p. 324, [SW-COLLECTION-WILDCARDS](#) p. 328, [SW-COLLECTION-SCRIPTS](#) p. 327



SW-COLLECTION-RULE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[RESOLVE-REFS] (default)	namedtokengroup	<ul style="list-style-type: none"> • RESOLVE-REFS • NOT-RESOLVE-REFS 	Indicates whether the objects bound by the objects selected, e.g. conversion formulae, are included in the selection.

Attribut	Typ	Wertebereich	Anmerkungen
[SCOPE] (default)	namedtokengroup	<ul style="list-style-type: none"> • SW-ADDR-METHOD • SW-AXIS-TYPE • SW-BASE-TYPE • SW-CALPRM • SW-CLASS • SW-CLASS-INSTANCE • SW-CODE-SYNTAX • SW-COMPU-METHOD • SW-DATA-CONSTR • SW-FEATURE • SW-INSTANCE • SW-RECORD-LAYOUT • SW-SERVICE • SW-SYSTEMCONST • SW-UNIT • SW-VARIABLE • ALL 	Indicates the type of the object to be selected e.g. SW-VARIABLE, SW-CALPRM. The contents of this attribute must conform with the contents of the element <SW-COLLECTION-CONT> parallel to the father element <SW-COLLECTION-RULES> .

2.367 SW-COLLECTION-RULES

Beschreibung

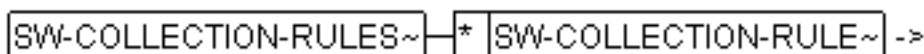
Container element for **<SW-COLLECTION-RULE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION](#) p. 318

Ist Kontext für: [SW-COLLECTION-RULE](#) p. 324



2.368 SW-COLLECTION-SCRIPT

Beschreibung

This element specifies a script in the **[LANGUAGE]** which is used on the current set being selected.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-SCRIPTS](#) p. 327

Ist Kontext für: Text

`SW-COLLECTION-SCRIPT~` — #PCDATA

SW-COLLECTION-SCRIPT.PNG

Attribut	Typ	Anmerkungen
[LANGUAGE] (implied)	cdata	Language to be used on the current set to be selected.

2.369 SW-COLLECTION-SCRIPTS

Beschreibung

Container element for `<SW-COLLECTION-SCRIPT>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-RULE](#) p. 324

Ist Kontext für: [SW-COLLECTION-SCRIPT](#) p. 326

`SW-COLLECTION-SCRIPTS~` — * `SW-COLLECTION-SCRIPT~` ->

SW-COLLECTION-SCRIPTS.PNG

2.370 SW-COLLECTION-SPEC

Beschreibung

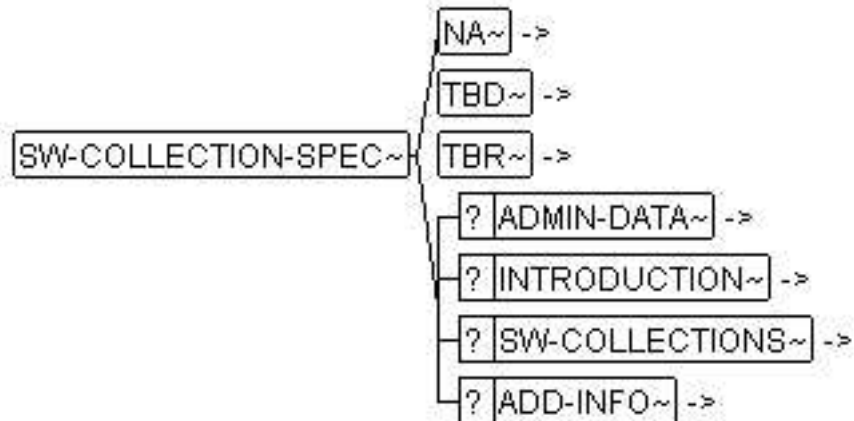
Describes the contents of parameter and variable groups.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-COLLECTIONS](#) p. 329, [ADD-INFO](#) p. 26



SW-COLLECTION-SPEC.PNG

2.371 SW-COLLECTION-WILDCARD

Beschreibung

This element specifies a wildcard (e.g. ABC*), which must be applied to the current set to be selected, e.g. <SHORT-NAME> s.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-WILDCARDS](#) p. 328

Ist Kontext für: Text



SW-COLLECTION-WILDCARD.PNG

2.372 SW-COLLECTION-WILDCARDS

Beschreibung

Container element for <SW-COLLECTION-WILDCARD> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-RULE](#) p. 324

Ist Kontext für: [SW-COLLECTION-WILDCARD](#) p. 328



SW-COLLECTION-WILDCARDS.PNG

2.373 SW-COLLECTIONS

Beschreibung

Container element for **<SW-COLLECTION>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-SPEC](#) p. 327

Ist Kontext für: [SW-COLLECTION](#) p. 318



SW-COLLECTIONS.PNG

2.374 SW-COMPARISON-VARIABLES

Beschreibung

These variables can be used to display the value of a variable on the value axis of a calibration parameter (characteristic), that is currently displayed in the MCD-System. The purpose is to compare the appropriate result from the calibration parameter in question, with a value being calculated or taken from a sensor (the comparison variable).

The sole purpose of this comparison-variable is to serve the calibration process.

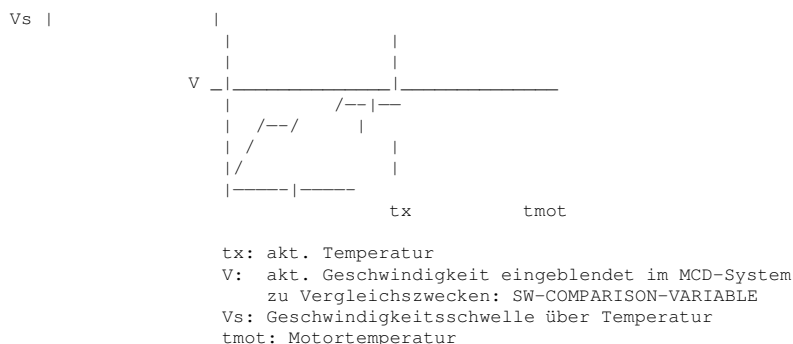


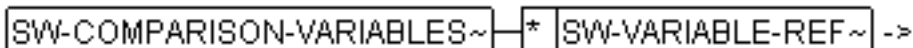
Figure 1: Screen representation of comparison variable

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572



SW-COMPARISON-VARIABLES.PNG

2.375

SW-COMPONENT-SPEC

Beschreibung

Takes up descriptions of SW system components in **<SW-COMPONENTS>** :

1. Functional characteristics or functions in the SW of an ECU (**<SW-FEATURE>**).
2. Classes (**<SW-CLASS>**)
3. Other descriptions (**<CHAPTER>**) not directly occurring in the ECU software.

The structure of **<SW-COMPONENT-SPEC>** is related to the document, in that the sequence is chosen to correspond to the printed documentation. The structure of the components is semi-formal, i.e. to a large extent, the characteristics are described in the form of free text. There is a formal structure for these data flows (**<SW-FEATURE-VARIABLES>** etc.).

The conceptual differences between **<SW-FEATURE>** and **<SW-CLASS>** can be found in the following table [Table 3 Correlation between classes and feature p. 330](#) .

Table 3: Correlation between classes and feature

	Feature	Class
Purpose	Used for specific features of the ECU	Used as recyclable functionality (building block) to establish features
Interfaces	Messages and global variables used as inputs and outputs	A class can have methods which can be invoked.

Table 3 (Cont.): Correlation between classes and feature

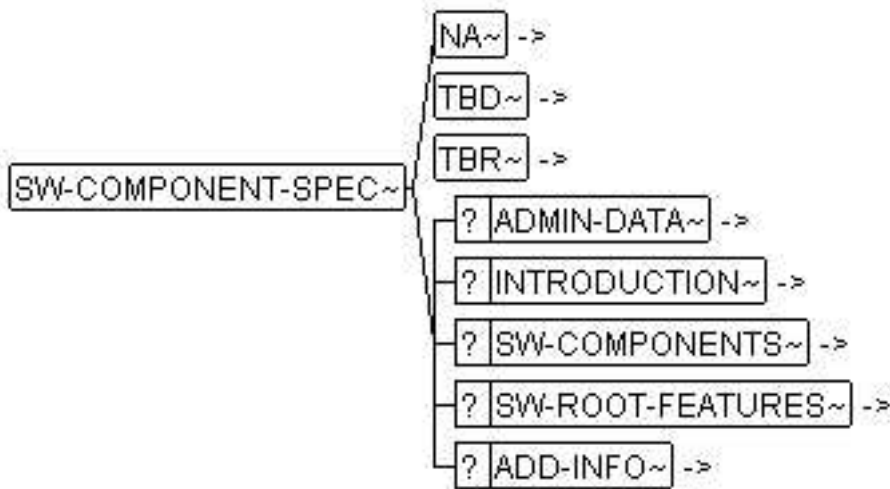
	Feature	Class
Instantiation	The feature is instantiated implicitly. Therefore a feature can be instantiated only once within one software system.	The class must be instantiated within one or more features.
scope of variables, parameters, namespaces	The feature can have local variables/parameters as well as global ones. The communication merely uses the global ones.	a class can establish local variables/parameters for memory purposes. If the <i>MCD-system</i> needs access to such variables/parameters, then they are instantiated with the instantiation of the class itself. A class may touch global variables/parameters which are already instantiated.
Implementation		The implementation of variables/parameters may differ from instance to instance. It must therefore be possible to manipulate the implementation of the variables/parameters when the class is instantiated.
Class types		There are basically two types of class: <ul style="list-style-type: none"> Classes which establish visible and calibratable variables/parameters. These are known as open classes. Classes which do not establish visible variables/parameters. These are known as closed classes. "Open" and "closed" reflects the view of the calibration phase. If packages are introduced, it is not necessary to keep this distinction.
Remarks		Classes can be very large such as "exhaust-gas-control", or very small such as "delay". The large ones are instantiated only a few times while the small ones are usually instantiated rather more frequently. In most cases, large classes appear as open classes while small classes appear as closed ones.
Documentation	The features are described in various aspects such as <sw-feature-defintion> , <sw-carb-doc> etc.	In case of "large" classes, the description of class comes close to the documentation of a feature. On the other hand "small" classes may only be described as a small table, with the graphic image and the methods. In general a specific structure for the documentation of methods is recommended.
Relevant in ASAP/MSR	features are relevant at any time, since they are responsible for establishing the system itself.	The "open" classes are most relevant for documentation purposes, as well as for the instantiation of variables/parameters. In an MSRSW-file it is therefore the case, that only those classes which instantiate variables/parameters, must be instantiated within the features.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM p. 517](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [ADMIN-DATA p. 30](#), [INTRODUCTION p. 124](#), [SW-COMPONENTS p. 332](#), [SW-ROOT-FEATURES p. 497](#), [ADD-INFO p. 26](#)



SW-COMPONENT-SPEC.PNG

2.376 SW-COMPONENTS

Beschreibung

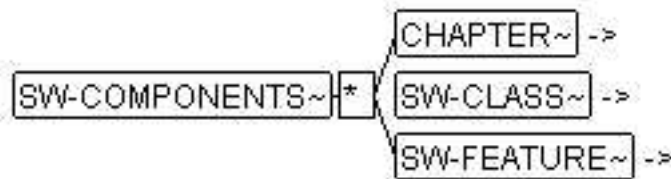
Container element for `<SW-CLASS>`, `<SW-FEATURE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPONENT-SPEC](#) p. 330

Ist Kontext für: [CHAPTER](#) p. 44, [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386



SW-COMPONENTS.PNG

2.377 SW-COMPU-CONST

Beschreibung

This element is used if a constant value is valid in a section of a conversion formula. It ensures that the constancy of the section is clearly marked.

Beispiel

```

<SW-COMPU-SCALE>
  <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
  <UPPER-LIMIT INTERVAL-TYPE="CLOSED">10</UPPER-LIMIT>
  <sw-compu-const>
    <VT>FALSE</VT>
  </sw-compu-const</E>
</SW-COMPU-SCALE>
<SW-COMPU-SCALE>
  <UPPER-LIMIT INTERVAL-TYPE="CLOSED">20</UPPER-LIMIT>
  <sw-compu-const>

```

```
<VT>TRUE</VT>
</sw-compu-const</E>
</SW-COMPU-SCALE>
```

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE p. 343](#)

Ist Kontext für: [VF p. 628](#), [V p. 619](#), [VT p. 630](#)



SW-COMPU-CONST.PNG

2.378 SW-COMPU-DEFAULT-VALUE

Beschreibung

This element can be used to specify an output value for a conversion formula, if the value to be converted lies outside the plausibility limit. Although this is possible for all conversion formulae, it is especially valid for variables with tabular conversion formulae.

It is not advisable to set this default value in *MCD-Systemen*, as this could prevent defective conditions from being detected.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-INTERNAL-TO-PHYS p. 335](#), [SW-COMPU-PHYS-TO-INTERNAL p. 342](#)

Ist Kontext für: Text

```
SW-COMPU-DEFAULT-VALUE~ #PCDATA
```

SW-COMPU-DEFAULT-VALUE.PNG

2.379 SW-COMPU-DENOMINATOR

Beschreibung

Describes the rational coefficients for the divisor, in a fractional rational conversion formula, with rational coefficients.

Beispiel

See [Chapter 2.392 SW-COMPU-RATIONAL-COEFFS p. 343](#)

Formale Beschreibung

Hat als Kontext: [SW-COMPU-RATIONAL-COEFFS](#) p. 343

Ist Kontext für: [VF](#) p. 628, [V](#) p. 619



SW-COMPU-DENOMINATOR.PNG

2.380 SW-COMPU-GENERIC-MATH

Beschreibung

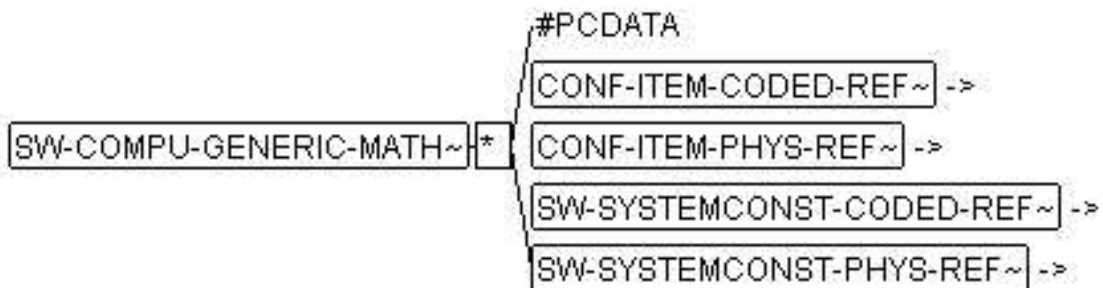
This element describes a calculation formula as a simple arithmetical expression in which system constants, referenced by `<SW-SYSTEMCONST-CODED-REF>` and `<SW-SYSTEMCONST-PHYS-REF>`, are substituted.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE](#) p. 343

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-COMPU-GENERIC-MATH.PNG

Attribut	Typ	Anmerkungen
[LEVEL] (implied)	nmtoken	Placeholder to describe an indicator of a language level for the mathematics e.g. INFORMAL or MATHML2.0

2.381 SW-COMPU-IDENTITY

Beschreibung

If given, a 1:1 conversion is specified by `<SW-COMPU-IDENTITY>`.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD](#) p. 336

Ist Kontext für: Text

`SW-COMPU-IDENTITY~` #PCDATA

SW-COMPU-IDENTITY.PNG

2.382 SW-COMPU-INTERNAL-TO-PHYS

Beschreibung

Describes the conversion formula which converts internal values into physical values.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD](#) p. 336

Ist Kontext für: [SW-COMPU-SCALES](#) p. 344, [SW-COMPU-DEFAULT-VALUE](#) p. 333

`SW-COMPU-INTERNAL-TO-PHYS~` { `SW-COMPU-SCALES~` -> `? SW-COMPU-DEFAULT-VALUE~` ->

SW-COMPU-INTERNAL-TO-PHYS.PNG

2.383 SW-COMPU-INVERSE-VALUE

Beschreibung

The purpose of this element is to specify a functional value for a definition section (`<SW-COMPU-SCALE>`) of a conversion formula. The specification of the inverse value causes constant functions to become unambiguously inversible, section-by-section. In this way the otherwise necessary specification of the inverse function can be omitted.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE](#) p. 343

Ist Kontext für: [VF](#) p. 628, [V](#) p. 619, [VT](#) p. 630



2.384 SW-COMPU-METHOD

Beschreibung

Describes the relationship between physical domain and the mathematical domain which then is implemented in the ECU. Thus the SW-COMPU-METHOD mainly converts a value **with** physical dimension to a normalized number which is a value **without** physical dimension. This involves the following principles:

- The conversion can be specified in both directions. If the mapping is unambiguous, the specification in one direction can be omitted.
- The conversion itself can be defined section by section (**<SW-COMPU-SCALES>**). Here, simplification possibilities are valid if the mapping is continuous. The element **<SW-COMPU-IDENTITY>** is used for a 1:1 mapping, i.e. the 1:1 mapping is marked explicitly.
- The conversion formula determines the physical characteristics. Therefore it contains units of measurement (**<SW-UNIT-REF>**).
- The conversion formula does **not** determine the data-technical storage of the standardized variables. For this reason there is no reference to SW-BASE-TYPE. The data-technical storage of the standardized variables must be specified for the corresponding data objects (e.g. **<SW-VARIABLE>**).
- The conversion formula has ranges of values for its input and output variables. These can be specified both directly and indirectly, as well as on a physical level and a standardized level.

Here, conversions from physical to internal values (or vice-versa) can be specified (**<SW-COMPU-PHYS-TO-INTERNAL>**, **<SW-COMPU-INTERNAL-TO-PHYS>**), display formats can be given (**<SW-DISPLAY-FORMAT>**), measurement units can be referenced (**<SW-UNIT-REF>**) and interval limits can be specified (**<SW-PHYS-CONSTRS-1>**, **<SW-INTERNAL-CONSTRS-1>**). The element **<SW-COMPU-IDENTITY>** is used to designate the 1:1 conversions.

Beispiel

```

<SW-COMPU-METHOD ID="B-TRUE">
  <LONG-NAME>this is SW-COMPU-METHOD B-TRUE</LONG-NAME>
  <SHORT-NAME>B_TRUE</SHORT-NAME>
  <SW-DISPLAY-FORMAT>%s</SW-DISPLAY-FORMAT>
  <SW-COMPU-INTERNAL-TO-PHYS>
    <SW-COMPU-SCALE>
      <SW-COMPU-SCALE>
        <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
        <UPPER-LIMIT INTERVAL-TYPE="CLOSED">0</UPPER-LIMIT>
        <SW-COMPU-INVERSE-VALUE>
          <V>0</V>
        </SW-COMPU-INVERSE-VALUE>
      <SW-COMPU-CONST>
        <VT>FALSE</VT>
      </SW-COMPU-CONST>
    </SW-COMPU-SCALE>
    <SW-COMPU-SCALE>
      <LOWER-LIMIT INTERVAL-TYPE="CLOSED">1</LOWER-LIMIT>
      <UPPER-LIMIT INTERVAL-TYPE="CLOSED">1</UPPER-LIMIT>
      <SW-COMPU-INVERSE-VALUE>
        <V>1</V>
      </SW-COMPU-INVERSE-VALUE>
    </SW-COMPU-SCALE>
  </SW-COMPU-INTERNAL-TO-PHYS>
</SW-COMPU-METHOD>
  
```

```

<SW-COMPU-CONST>
  <VT>TRUE</VT>
</SW-COMPU-CONST>
</SW-COMPU-SCALE>
<SW-COMPU-SCALE>
  <LOWER-LIMIT INTERVAL-TYPE="CLOSED">2</LOWER-LIMIT>
  <UPPER-LIMIT INTERVAL-TYPE="CLOSED">2</UPPER-LIMIT>
  <SW-COMPU-INVERSE-VALUE>
    <V>2</V>
  </SW-COMPU-INVERSE-VALUE>
<SW-COMPU-CONST>
  <VT></VT>
</SW-COMPU-CONST>
</SW-COMPU-SCALE>
</SW-COMPU-SCALES>
</SW-COMPU-INTERNAL-TO-PHYS>
</SW-COMPU-METHOD>

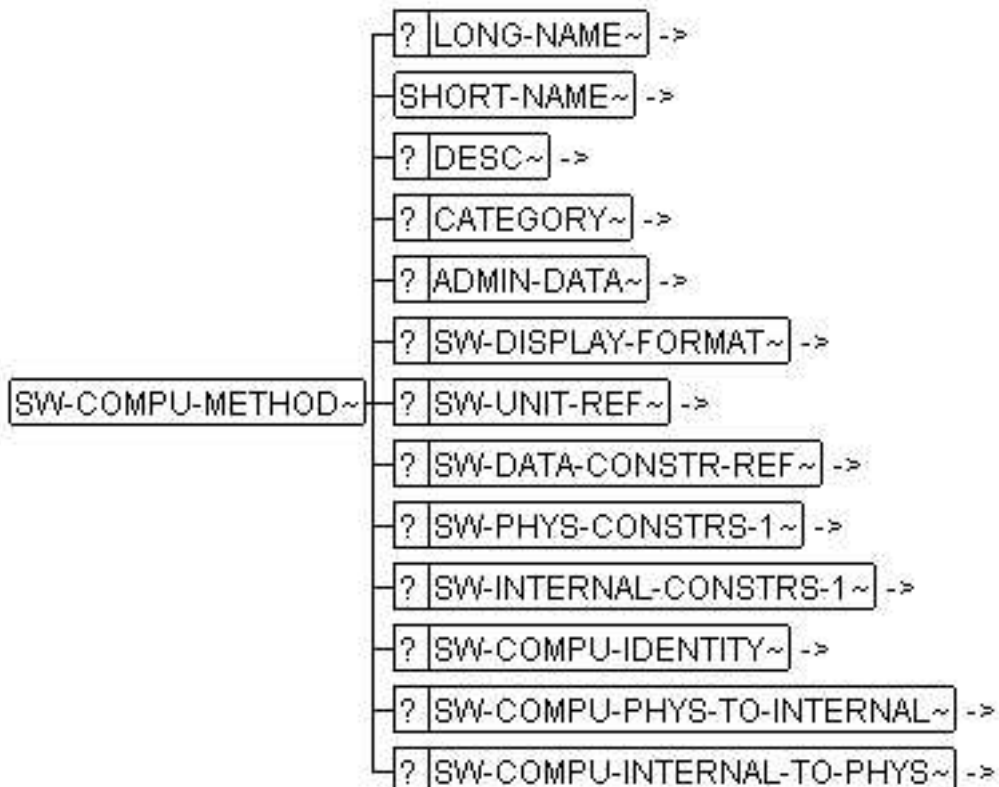
```

many more elaborate examples can be found in *ASAM MCD 2 Harmonized Data Objects*

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHODS](#) p. 341

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-DISPLAY-FORMAT](#) p. 374, [SW-UNIT-REF](#) p. 548, [SW-DATA-CONSTR-REF](#) p. 362, [SW-PHYS-CONSTRS-1](#) p. 473, [SW-INTERNAL-CONSTRS-1](#) p. 435, [SW-COMPU-IDENTITY](#) p. 334, [SW-COMPU-PHYS-TO-INTERNAL](#) p. 342, [SW-COMPU-INTERNAL-TO-PHYS](#) p. 335



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-COMPU-METHOD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.385 SW-COMPU-METHOD-REF

Beschreibung

This element references an <SW-COMPU-METHOD> .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS p. 72](#), [SW-AXIS-INDIVIDUAL p. 244](#), [SW-COMPU-METHOD-REF p. 340](#), [SW-COMPU-METHOD-REFS p. 340](#), [SW-CONSTR-OBJECTS p. 345](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-VCD-CRITERION p. 577](#)

Ist Kontext für: Text

SW-COMPU-METHOD-REF~—#PCDATA



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-COMPUTHEMETHOD	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.386 SW-COMPU-METHOD-REF-SYSCOND

Beschreibung

Use `<SW-COMPU-METHOD-REF-SYSCOND>` to create a `<SW-COMPU-METHOD-REF>` that will be valid only when the corresponding `<SW-SYSCOND>` expression evaluates to true. This is useful when a `<SW-COMPU-METHOD-REF>` shall be used when system constant has a certain value.

Beispiel

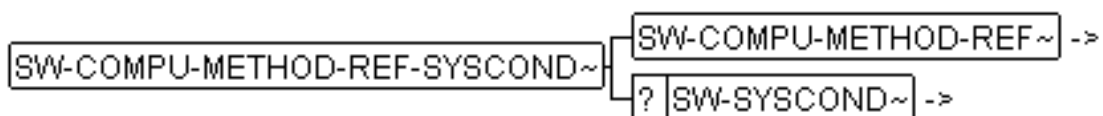
This Computation Method reference is used when LINA_Gear is less or equal to 4.

```
<SW-COMPU-METHOD-REF-SYSCOND>
  <SW-COMPU-METHOD-REF>comp_Ref</SW-COMPU-METHOD-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-COMPU-METHOD-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD-REFS](#) p. 340

Ist Kontext für: [SW-COMPU-METHOD-REF](#) p. 338, [SW-SYSCOND](#) p. 511



SW-COMPU-METHOD-REF-SYSCOND.PNG

2.387 SW-COMPU-METHOD-REFS

Beschreibung

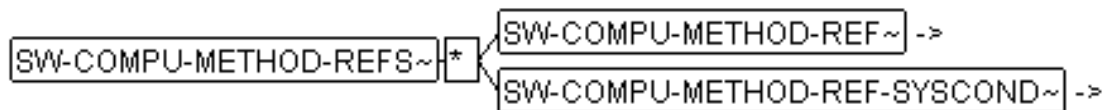
Container element for `<SW-COMPU-METHOD-REF>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-COMPU-METHOD-REF](#) p. 338, [SW-COMPU-METHOD-REF-SYSCOND](#) p. 340



SW-COMPU-METHOD-REFS.PNG

2.388 SW-COMPU-METHODS

Beschreibung

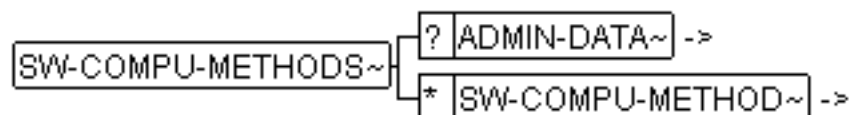
Container element for `<SW-COMPU-METHOD>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-COMPU-METHOD](#) p. 336



SW-COMPU-METHODS.PNG

2.389 SW-COMPU-NUMERATOR

Beschreibung

Describes the rational coefficients for the counter, in a fractional rational conversion formula, with rational coefficients.

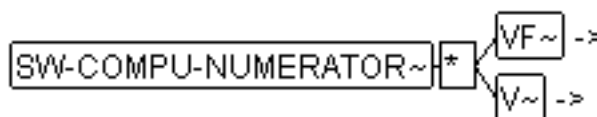
Beispiel

See [Chapter 2.392 SW-COMPU-RATIONAL-COEFFS](#) p. 343

Formale Beschreibung

Hat als Kontext: [SW-COMPU-RATIONAL-COEFFS](#) p. 343

Ist Kontext für: [VF](#) p. 628, [V](#) p. 619



SW-COMPU-NUMERATOR.PNG

2.390 SW-COMPU-PHYS-TO-INTERNAL

Beschreibung

Describes the conversion formula which converts physical values into internal values.

Internal value = sum in **<SW-COMPU-NUMERATOR>** over **<VF>**_i * physⁱ / sum in **<SW-COMPU-DENOMINATOR>** over **<VF>**_i * physⁱ

Beispiel

The fractional rational conversion formula below simulates the formula:

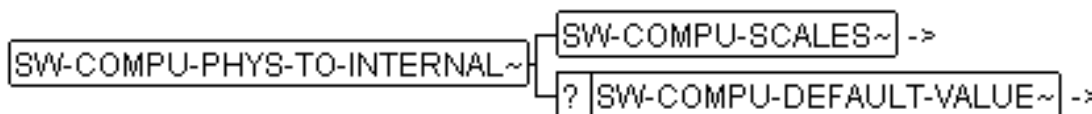
internal = (1 * phys + 2 / 40)

```
<SW-COMPU-RATIONAL-COEFFS>
  <SW-COMPU-NUMERATOR>
    <VF>2</VF>
    <VF>1</VF>
  </SW-COMPU-NUMERATOR>
  <SW-COMPU-DENOMINATOR>
    <VF>40</VF>
  </SW-COMPU-DENOMINATOR>
</SW-COMPU-RATIONAL-COEFFS>
```

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD](#) p. 336

Ist Kontext für: [SW-COMPU-SCALES](#) p. 344, [SW-COMPU-DEFAULT-VALUE](#) p. 333



SW-COMPU-PHYS-TO-INTERNAL.PNG

2.391 SW-COMPU-PROGRAM-CODE

Beschreibung

This element contains the description of a calculation formula, written in programming language.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE](#) p. 343

Ist Kontext für: Text

`SW-COMPU-PROGRAM-CODE~` - #PCDATA

SW-COMPU-PROGRAM-CODE.PNG

Attribut	Typ	Anmerkungen
[LANG-SUBSET] (implied)	cdata	Describes the language subset to be used for the program code. E.g Ansii-C
[PROGRAM-LANG] (implied)	cdata	Indicates the programming language used.
[USED-LIBS] (implied)	cdata	Indicates the libraries used.

2.392 SW-COMPU-RATIONAL-COEFFS

Beschreibung

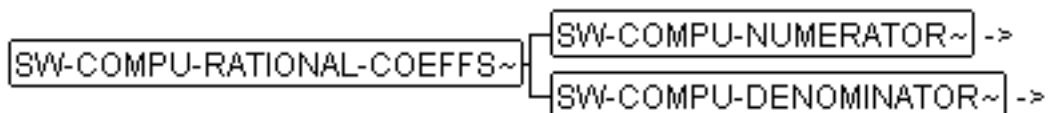
Describes the rational coefficients for counters (`<SW-COMPU-NUMERATOR>`) and divisors (`<SW-COMPU-DENOMINATOR>`) of the scaling instruction in the father element `<SW-COMPU-SCALE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALE](#) p. 343

Ist Kontext für: [SW-COMPU-NUMERATOR](#) p. 341, [SW-COMPU-DENOMINATOR](#) p. 333



SW-COMPU-RATIONAL-COEFFS.PNG

2.393 SW-COMPU-SCALE

Beschreibung

Describes the conversion from internal to physical values (or vice-versa). Here, upper and lower limits (`<UPPER-LIMIT>`, `<LOWER-LIMIT>`) can be determined, as well as the coefficients of a fractional rational conversion instruction (`<SW-COMPU-RATIONAL-COEFFS>`).

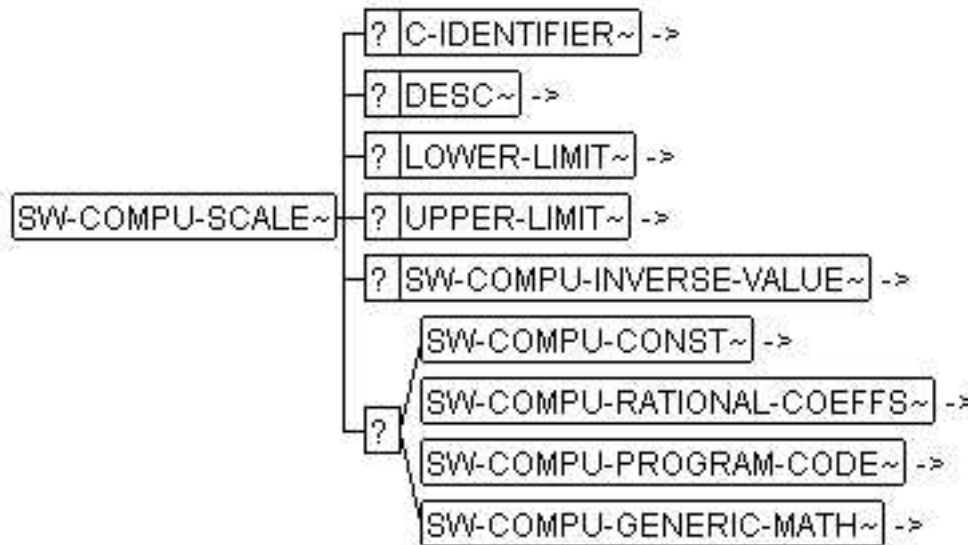
Beispiel

In the example (see [<SW-COMPU-METHOD>](#)) intervals of internal values are assigned to functional values using a table.

Formale Beschreibung

Hat als Kontext: [SW-COMPU-SCALES](#) p. 344

Ist Kontext für: [C-IDENTIFIER](#) p. 41, [DESC](#) p. 83, [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616, [SW-COMPU-INVERSE-VALUE](#) p. 335, [SW-COMPU-CONST](#) p. 332, [SW-COMPU-RATIONAL-COEFFS](#) p. 343, [SW-COMPU-PROGRAM-CODE](#) p. 342, [SW-COMPU-GENERIC-MATH](#) p. 334



SW-COMPU-SCALE.PNG

2.394 SW-COMPU-SCALES

Beschreibung

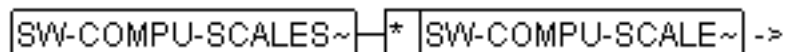
Container element for [<SW-COMPU-SCALE>](#) .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-INTERNAL-TO-PHYS](#) p. 335, [SW-COMPU-PHYS-TO-INTERNAL](#) p. 342

Ist Kontext für: [SW-COMPU-SCALE](#) p. 343



SW-COMPU-SCALES.PNG

2.395 SW-CONSTR-LEVEL

Beschreibung

This element describes the category of a constraint. One of its functions is in the area of constraint violation, where it can be used from a certain level, to produce error messages .

The contents of **<SW-CONSTR-LEVEL>** is a positive integer. The higher the level, the more stringent the check.

The determination of the level itself is dependent on the process and must be established by the process partners.

Beispiel

```
<SW-DATA-CONSTR>
  <SHORT-NAME>NMOT_GE0</SHORT-NAME>
  <DESC>Drehzahl darf nicht negativ sein!</DESC>
  <SW-DATA-CONSTR-RULE>
    <SW-CONSTR-LEVEL>3</SW-CONSTR-LEVEL>
    <SW-INTERNAL-CONSTRS>
      <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
    </SW-INTERNAL-CONSTRS>
  </SW-DATA-CONSTR-RULE>
</SW-DATA-CONSTR>
```

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR-RULE](#) p. 365

Ist Kontext für: Text

SW-CONSTR-LEVEL ~ #PCDATA

SW-CONSTR-LEVEL.PNG

2.396 SW-CONSTR-OBJECTS

Beschreibung

Parameters or variables can reference plausibility checks. The assignment of data to **<SW-CONSTR-OBJECTS>** makes the reverse direction possible.

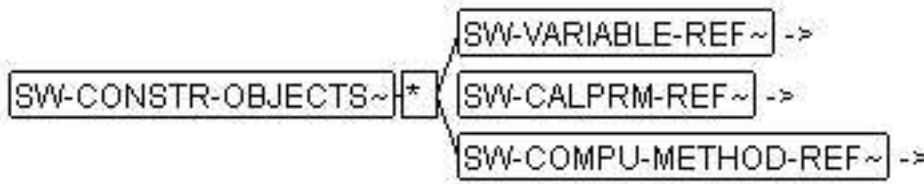
In this way for example plausibility libraries stored in external files can be latched beneath the previous element **<SW-DATA-CONSTRS>** -element.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR](#) p. 361

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-CALPRM-REF](#) p. 270, [SW-COMPU-METHOD-REF](#) p. 338



SW-CONSTR-OBJECTS.PNG

2.397 SW-CPU-ADDR-EPK

Beschreibung

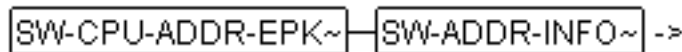
This element specifies the address of the EPROM Identifier. It corresponds to the ASAM keyword *ADDR_EPK* (**E**prom **K**ennung = EPROM Identifier).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC](#) p. 352

Ist Kontext für: [SW-ADDR-INFO](#) p. 227



SW-CPU-ADDR-EPK.PNG

2.398 SW-CPU-CALIBRATION-OFFSET

Beschreibung

This element specifies a fixed address offset, which must be added when calibration parameters are accessed. This is significant for

- Near pointers in calibration objects. Some record layouts include near pointers inside a calibration object. This is used by the calibration system to calculate the absolute values through adding the **<SW-CPU-CALIBRATION-OFFSET>** .
- Variant Coding. Some ECU projects include multiple data sets for different engine or vehicle projects served by one common ECU. By using the **<SW-CPU-CALIBRATION-OFFSET>** , a selection of project base addresses can be made.

Beispiel

```
<SW-CPU-CALIBRATION-OFFSET>0x1000</SW-CPU-CALIBRATION-OFFSET>
```

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC](#) p. 352

Ist Kontext für: Text

`SW-CPU-CALIBRATION-OFFSET~`—#PCDATA

2.399 SW-CPU-EPK

Beschreibung

This element specifies the EPROM identifier of the ECU, i.e. the string that should be located under the address of `<SW-CPU-ADDR-EPK>` in the ECU.

Beispiel

```
<SW-CPU-EPK>EPROM identifier test</SW-CPU-EPK>
```

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC p. 352](#)

Ist Kontext für: Text

`SW-CPU-EPK~`—#PCDATA

2.400 SW-CPU-MEM-SEG

Beschreibung

The name of a `<SW-CPU-MEM-SEG>` can be used for references from Interface-Data-Blobs, as well as to provide an accurate description of the memory through memory types `<SW-MEM-TYPE>` and attributes `<SW-MEM-ATTR>` (*INTERN* and *EXTERN*). The parameter `<SW-MEM-OFFSET>` is used to describe a number of mirrored segments. `<SW-CPU-MEM-SEGS>` with the same `<SW-MEM-TYPE>` and the same `<SW-MEM-ATTR>` must not overlap. In addition all `<SW-CPU-MEM-SEG>` with the `<SW-MEM-PROGRAM-TYPE>` *CODE*, *DATA*, *OFFLINE_DATA*, *RESERVED* may not mutually overlap to acquire linear address space for access to calibration data. However, all other `<SW-CPU-MEM-SEG>`s with different `<SW-MEM-TYPE>` or different `<SW-MEM-ATTR>` may overlap. This includes internal and external memory segments, for example.

The following table contains descriptions of some useful `<SW-MEM-PROGRAM-TYPE>` and `<SW-MEM-TYPE>` combinations as well as their meaning:

Table 4: Useful combinations for `<SW-MEM-PROGRAM-TYPE>` and `<SW-MEM-TYPE>`

Combination	Meaning
CODE/FLASH	Executable code: has to be preserved for downloading and HEX-file generation.
DATA/FLASH or DATA/EEPROM	Calibration data: can be modified by the user via calibration systems.
RESERVED/FLASH	Specific code or data: has to be preserved for HEX-file generation but not for download.

Table 4 (Cont.): Useful combinations for <SW-MEM-PROGRAM-TYPE> and <SW-MEM-TYPE>

Combination	Meaning
DATA/RAM	Calibration data: will be modified by ECU and calibration systems.
OFFLINE_DATA/FLASH	Calibration data: will only be modified without ECU access, online calibration is not allowed.
VARIABLES/RAM	RAM of the ECU for variables (measurement values and others).
REGISTER/RAM	RAM of the ECU for special purpose values.
SERAM/RAM	ECU-RAM section available for serial application. For usage see also: Chapter 2.308 SW-CALIBRATION-METHOD p. 257 .

Hint:

FLASH has been used as a synonym for EPROM and ROM.

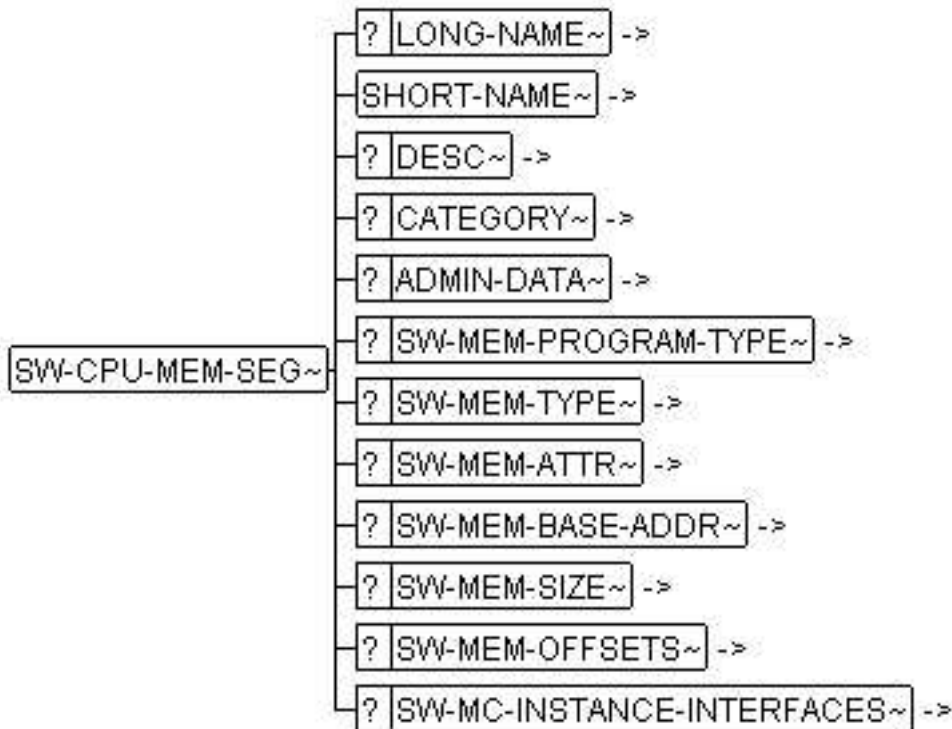
Beispiel

```
<SW-CPU-MEM-SEGS>
  <SW-CPU-MEM-SEG>
    <LONG-NAME>Data internal Flash</LONG-NAME>
    <SHORT-NAME>Data1</SHORT-NAME>
    <DESC>This describes Data for internal Flash.</DESC>
    <SW-MEM-PROGRAM-TYPE>DATA</SW-MEM-PROGRAM-TYPE>
    <SW-MEM-TYPE>FLASH</SW-MEM-TYPE>
    <SW-MEM-ATTR>INTERN</SW-MEM-ATTR>
    <SW-MEM-BASE-ADDR>0x4000</SW-MEM-BASE-ADDR>
    <SW-MEM-SIZE>0x200</SW-MEM-SIZE>
    <SW-MEM-OFFSETS>0x10000</SW-MEM-OFFSETS>
  </SW-CPU-MEM-SEG>
</SW-CPU-MEM-SEGS>
```

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEGS p. 351](#)

Ist Kontext für: [LONG-NAME p. 134](#), [SHORT-NAME p. 212](#), [DESC p. 83](#), [CATEGORY p. 42](#), [ADMIN-DATA p. 30](#), [SW-MEM-PROGRAM-TYPE p. 467](#), [SW-MEM-TYPE p. 468](#), [SW-MEM-ATTR p. 465](#), [SW-MEM-BASE-ADDR p. 466](#), [SW-MEM-SIZE p. 468](#), [SW-MEM-OFFSETS p. 467](#), [SW-MC-INSTANCE-INTERFACES p. 450](#)



SW-CPU-MEM-SEG.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-CPU-MEM-SEG	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.401 SW-CPU-MEM-SEG-REF

Beschreibung

This element references `<SW-CPU-MEM-SEG>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ADDR-INFO p. 227](#), [SW-ADDR-METHOD p. 228](#)

Ist Kontext für: Text

SW-CPU-MEM-SEG-REF~

 — #PCDATA

SW-CPU-MEM-SEG-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-CPU-MEM-SEG	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.402 SW-CPU-MEM-SEGS

Beschreibung

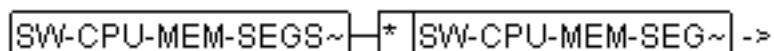
Container element for <SW-CPU-MEM-SEG> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC p. 352](#)

Ist Kontext für: [SW-CPU-MEM-SEG p. 347](#)



2.403 SW-CPU-NUMBER-OF-INTERFACES

Beschreibung

This element specifies the number of calibration interfaces made available by the CPU.

Beispiel

```
<SW-CPU-NUMBER-OF-INTERFACES>2</SW-CPU-NUMBER-OF-INTERFACES>
```

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC](#) p. 352

Ist Kontext für: Text

```
SW-CPU-NUMBER-OF-INTERFACES~|#PCDATA
```

SW-CPU-NUMBER-OF-INTERFACES.PNG

2.404 SW-CPU-SPEC

Beschreibung

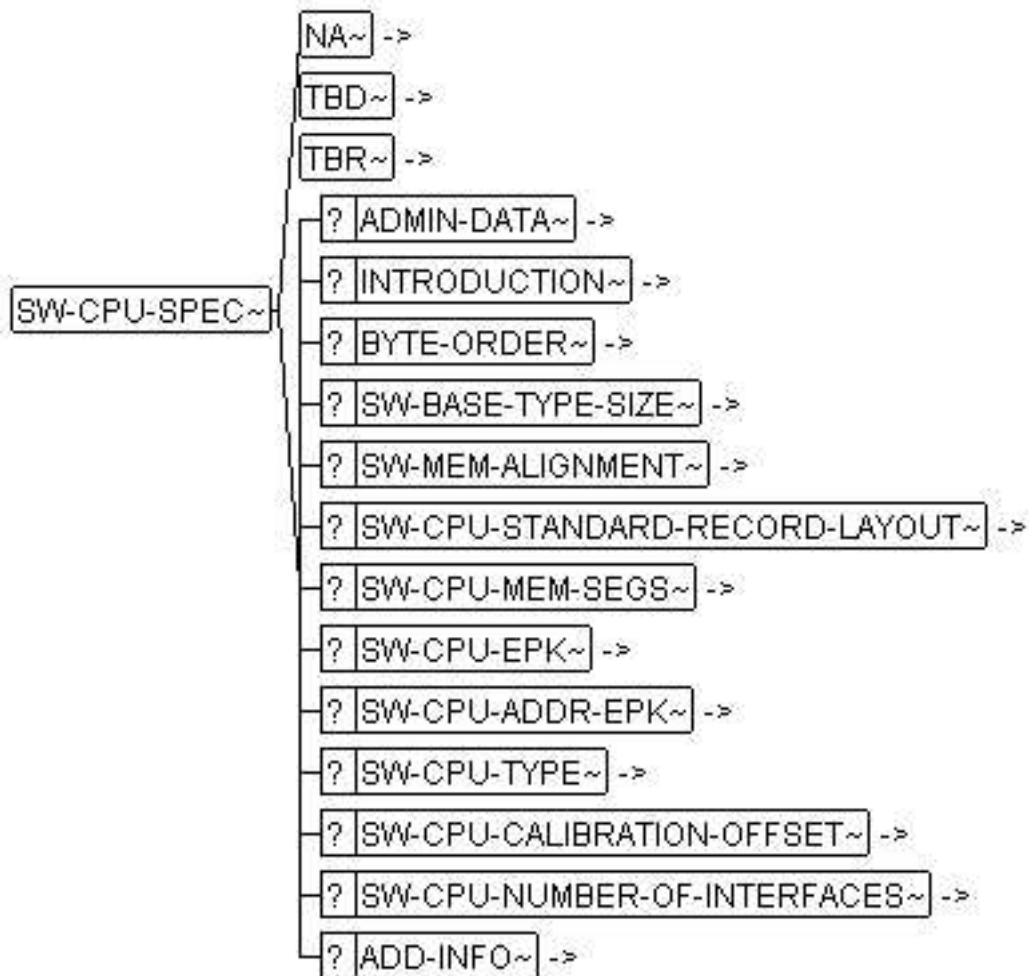
This element is to specify the relevant details of the CPU within the control unit according to ASAM-MCD-2MC. If one ECU contains multiple CPUs then we have multiple **<SW-SYSTEM>** s.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [BYTE-ORDER](#) p. 40, [SW-BASE-TYPE-SIZE](#) p. 254, [SW-MEM-ALIGNMENT](#) p. 465, [SW-CPU-STANDARD-RECORD-LAYOUT](#) p. 353, [SW-CPU-MEM-SEGS](#) p. 351, [SW-CPU-EPK](#) p. 347, [SW-CPU-ADDR-EPK](#) p. 346, [SW-CPU-TYPE](#) p. 354, [SW-CPU-CALIBRATION-OFFSET](#) p. 346, [SW-CPU-NUMBER-OF-INTERFACES](#) p. 351, [ADD-INFO](#) p. 26



SW-CPU-SPEC.PNG

2.405 SW-CPU-STANDARD-RECORD-LAYOUT

Beschreibung

This element specifies the default record layout, which is valid if no record layout is specified in a calibration parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC](#) p. 352

Ist Kontext für: [SW-RECORD-LAYOUT-REF](#) p. 490

SW-CPU-STANDARD-RECORD-LAYOUT~ SW-RECORD-LAYOUT-REF~ ->

SW-CPU-STANDARD-RECORD-LAYOUT.PNG

2.406 SW-CPU-TYPE

Beschreibung

This element provides a verbal description of the type of CPU used.

Beispiel

```
<SW-CPU-TYPE>Intel 4711</SW-CPU-TYPE>
```

Formale Beschreibung

Hat als Kontext: [SW-CPU-SPEC](#) p. 352

Ist Kontext für: Text

SW-CPU-TYPE~ #PCDATA

SW-CPU-TYPE.PNG

2.407 SW-CS-CONTEXT

Beschreibung

This element specifies the current work package for the current application status of an application object. A work package is a summary of complete functions.

Beispiel

See [Chapter 2.411 SW-CS-HISTORY](#) p. 356 .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY](#) p. 355

Ist Kontext für: Text

SW-CS-CONTEXT~ #PCDATA

SW-CS-CONTEXT.PNG

2.408 SW-CS-DATA-IDENTIFIER

Beschreibung

This element specifies the version of a data status belonging to a certain application status, which in turn relates to a characteristic variable that is to be applied.

Beispiel

See [Chapter 2.411 SW-CS-HISTORY](#) p. 356 .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY](#) p. 355

Ist Kontext für: Text

SW-CS-DATA-IDENTIFIER~|#PCDATA

SW-CS-DATA-IDENTIFIER.PNG

2.409 SW-CS-ENTRY

Beschreibung

This element describes an entry into the history of all application states. Application states can be specified for the following elements:

- Characteristic variables
- Functions
- Work packages (summary of functions)
- Data status

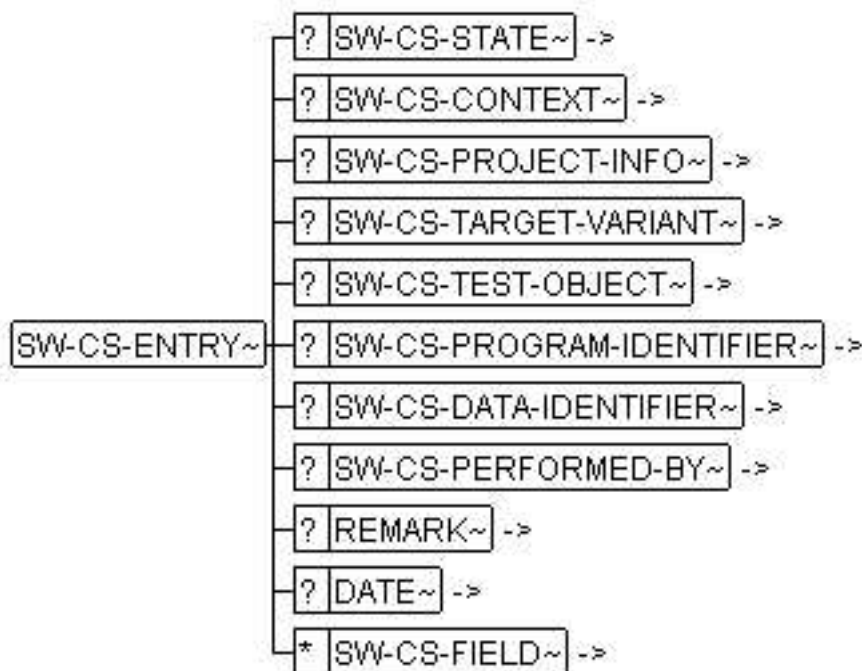
Beispiel

See [Chapter 2.411 SW-CS-HISTORY](#) p. 356 .

Formale Beschreibung

Hat als Kontext: [SW-CS-HISTORY](#) p. 356

Ist Kontext für: [SW-CS-STATE](#) p. 358, [SW-CS-CONTEXT](#) p. 354, [SW-CS-PROJECT-INFO](#) p. 358, [SW-CS-TARGET-VARIANT](#) p. 359, [SW-CS-TEST-OBJECT](#) p. 359, [SW-CS-PROGRAM-IDENTIFIER](#) p. 357, [SW-CS-DATA-IDENTIFIER](#) p. 354, [SW-CS-PERFORMED-BY](#) p. 357, [REMARK](#) p. 189, [DATE](#) p. 77, [SW-CS-FIELD](#) p. 356



SW-CS-ENTRY.PNG

2.410 SW-CS-FIELD

Beschreibung

This element contains random information on application status. It is adopted to ensure compatibility to random data assignments to the MSRSW instance. The respective semantics of the data assignment of SW-CS-FIELD must be given in the attribute **[SI]** .

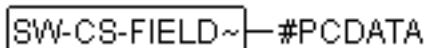
Beispiel

```
<SW-CS-FIELD SI="Review-State">reviewed by Senior engineer<SW-CS-FIELD>
```

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY](#) p. 355

Ist Kontext für: Text



SW-CS-FIELD.PNG

2.411 SW-CS-HISTORY

Beschreibung

Container element for **<SW-CS-ENTRY>**, for the storage of calibration states. **<SW-CS-HISTORY>** allows the history of the calibration process to be tracked, for either one particular calibration item or the entire calibration list. The history therefore allows more than one history entry to be stored.

Beispiel

```
<SW-CS-HISTORY>
  <SW-CS-ENTRY>
    <SW-CS-STATE>calibrated</SW-CS-STATE>
    <SW-CS-CONTEXT>development of demo version</SW-CS-CONTEXT>
    <SW-CS-PROJECT-INFO>Demo-Project CDF / ASAM-MCD-2D</SW-CS-PROJECT-INFO>
    <SW-CS-TARGET-VARIANT>automatic gear</SW-CS-TARGET-VARIANT>
    <SW-CS-TEST-OBJECT>Vehicle: S-Nn-4455</SW-CS-TEST-OBJECT>
    <SW-CS-PROGRAM-IDENTIFIER>67985</SW-CS-PROGRAM-IDENTIFIER>
    <SW-CS-DATA-IDENTIFIER>67985:123.4</SW-CS-DATA-IDENTIFIER>
    <SW-CS-PERFORMED-BY>Weichel</SW-CS-PERFORMED-BY>
    <REMARK>
      <P>Note that we did not really calibrate this. The current structure is for demonstrati
    </REMARK>
    <DATE>18.05.2001T13.23</DATE>
    <SW-CS-FIELD SI="feeling">We did feel good while doing this stuff.</SW-CS-FIELD>
  </SW-CS-ENTRY>
</SW-CS-HISTORY>
```

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-PROPS-VARIANT p. 423](#), [SW-INSTANCE-TREE p. 428](#)

Ist Kontext für: [SW-CS-ENTRY p. 355](#)



SW-CS-HISTORY.PNG

2.412 SW-CS-PERFORMED-BY

Beschreibung

<SW-CS-PERFORMED-BY> specifies the individual responsible for assigning the current calibration state. Although this could be a reference to a <TEAM-MEMBER>, it is in actual fact simply a string. This is because data might be copied from project to project, an activity which would serve to invalidate the formal reference.

Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY p. 356](#).

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY p. 355](#)

Ist Kontext für: Text



SW-CS-PERFORMED-BY.PNG

2.413 SW-CS-PROGRAM-IDENTIFIER

Beschreibung

<SW-CS-PROGRAM-IDENTIFIER> denotes the identifier of the ECU program, used while calibrating the current calibration item up to the state of the current calibration history.

To some extent, this should provide a basis for determining the matching *SYMBOLIC-FILE* according to the *CDF* specification.

Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY p. 356](#) .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY p. 355](#)

Ist Kontext für: Text

```
SW-CS-PROGRAM-IDENTIFIER~|#PCDATA
```

SW-CS-PROGRAM-IDENTIFIER.PNG

2.414 SW-CS-PROJECT-INFO

Beschreibung

<SW-CS-PROJECT-INFO> enables the specification of a project identifier for indicating the project in which the current calibration state was achieved. This is useful since calibration items can be copied from one project to another. Therefore the information provided in the <PROJECT-DATA> does not suffice in this case.

Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY p. 356](#) .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY p. 355](#)

Ist Kontext für: Text

```
SW-CS-PROJECT-INFO~|#PCDATA
```

SW-CS-PROJECT-INFO.PNG

2.415 SW-CS-STATE

Beschreibung

<SW-CS-STATE> is used to denote the current state of the calibration item, depending on the context of the instantiated function. The legal values must be defined within the process.

Beispiel

```
<SW-CS-STATE>fineTuned<SW-CS-STATE>
```

For a further example, see [SW-CS-HISTORY p. 356](#) .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY p. 355](#)

Ist Kontext für: Text

```
SW-CS-STATE~|#PCDATA
```

SW-CS-STATE.PNG

2.416 SW-CS-TARGET-VARIANT

Beschreibung

<SW-CS-TARGET-VARIANT> is used to specify the target system variant through which the current calibration state was achieved.

Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY p. 356](#) .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY p. 355](#)

Ist Kontext für: Text

```
SW-CS-TARGET-VARIANT~|#PCDATA
```

SW-CS-TARGET-VARIANT.PNG

2.417 SW-CS-TEST-OBJECT

Beschreibung

<SW-CS-TEST-OBJECT> denotes the calibrated object within the current calibration item. This is usually a vehicle or a particular test environment.

Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY](#) p. 356 .

Formale Beschreibung

Hat als Kontext: [SW-CS-ENTRY](#) p. 355

Ist Kontext für: Text

`SW-CS-TEST-OBJECT~`—#PCDATA

SW-CS-TEST-OBJECT.PNG

2.418 SW-CSE-CODE

Beschreibung

This element is used for parameterizing the ASAP1b-interface.

Figure 2: ASAP1b-Prinzip (tbd)

During parameterization, specifications concerning the scaling units must be made at various points. The values of these specifications (codes for scaling units, CSE) are uniformly laid down:

Table 5: Scaling Units CSE

Value	Unit	Referred to	Comment
0	1 µsec	Time	
1	10 µsec	Time	
2	10 µsec	Time	
3	1 msec	Time	
4	10 msec	Time	
5	100 msec	Time	
6	1 sec	Time	
7	10 sec	Time	
8	1 min	Time	
9	1 h	Time	
10	1 d	Time	
100	Angular degrees	Angle	
101	Revolutions 360 degrees	Angle	
102	Cycle 720 degrees	Angle	e.g. in case of IC engines
103	Cylinder segment	Combustion	e.g. in case of IC engines
998	When frame available	Time	Source defined in the ASAP 2 keyword, FRAME
999	Always if there is new value		Calculation of a new upper range limit after receiving a new partial value, e.g. when calculating a complex trigger condition
1000	Non deterministic		Without fixed scaling

Beispiel

See [Chapter 2.603 SW-REFRESH-TIMING](#) p. 496

Formale Beschreibung

Hat als Kontext: [SW-ACCESS-DURATION](#) p. 222, [SW-EVENT-CYCLE](#) p. 378, [SW-EVENT-FREQUENCY](#) p. 378, [SW-EVENT-FREQUENCY-MIN](#) p. 379, [SW-EVENT-LAXITY](#) p. 379, [SW-EVENT-PHASE](#) p. 380, [SW-REFRESH-TIMING](#) p. 496, [SW-TASK-DEADLINE](#) p. 533, [SW-TASK-LATENCY](#) p. 534

Ist Kontext für: Text

`SW-CSE-CODE~`—#PCDATA

SW-CSE-CODE.PNG

2.419 SW-CSE-CODE-FACTOR

Beschreibung

This element describes the coefficient of the `<SW-CSE-CODE>` which is parallel to `<SW-CSE-CODE-FACTOR>` for a `<SW-REFRESH-TIMING>` .

If, for example, the value in `<SW-CSE-CODE-FACTOR>` is 360 and the value in `<SW-CSE-CODE>` is 100, this is equivalent to the value 1 in `<SW-CSE-CODE-FACTOR>` and the value 101 in `<SW-CSE-CODE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESS-DURATION](#) p. 222, [SW-EVENT-CYCLE](#) p. 378, [SW-EVENT-FREQUENCY](#) p. 378, [SW-EVENT-FREQUENCY-MIN](#) p. 379, [SW-EVENT-LAXITY](#) p. 379, [SW-EVENT-PHASE](#) p. 380, [SW-REFRESH-TIMING](#) p. 496, [SW-TASK-DEADLINE](#) p. 533, [SW-TASK-LATENCY](#) p. 534

Ist Kontext für: Text

`SW-CSE-CODE-FACTOR~`—#PCDATA

SW-CSE-CODE-FACTOR.PNG

2.420 SW-DATA-CONSTR

Beschreibung

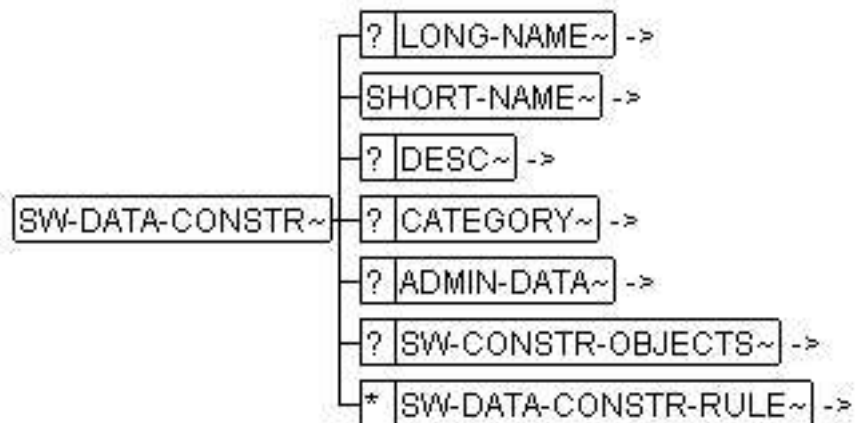
A data constraint `<SW-DATA-CONSTR>` may be applied to data objects such as calculation methods, variables and parameters. Therefore, a `<SW-DATA-CONSTR-RULE>` is supplied.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTRS](#) p. 366

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CONSTR-OBJECTS](#) p. 345, [SW-DATA-CONSTR-RULE](#) p. 365



SW-DATA-CONSTR.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-DATA-CONSTR	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.421 SW-DATA-CONSTR-REF

Beschreibung

This element references an **<SW-DATA-CONSTR>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL p. 244](#), [SW-COMPU-METHOD p. 336](#), [SW-DATA-CONSTR-REF- p. 364](#), [SW-DATA-CONSTR-REFS p. 365](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-GENERIC-AXIS-PARAM-TYPE p. 415](#)

Ist Kontext für: Text

SW-DATA-CONSTR-REF~ — #PCDATA

SW-DATA-CONSTR-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-DATA-CONSTR	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.422 SW-DATA-CONSTR-REF-SYSCOND

Beschreibung

Use **<SW-DATA-CONSTR-REF-SYSCOND>** to create a **<SW-DATA-CONSTR-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-DATA-CONSTR-REF>** shall be used when system constant has a certain value.

Beispiel

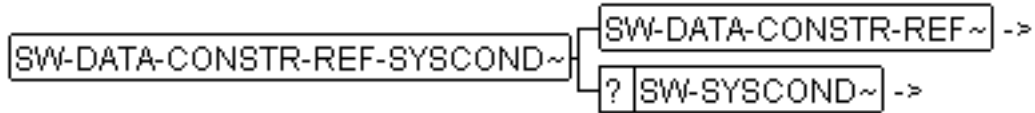
This Data Constraint reference is used when LINA_Gear is less or equal to 4.

```
<SW-DATA-CONSTR-REF-SYSCOND>
  <SW-DATA-CONSTR-REF>Axis_type_constr_Ref</SW-DATA-CONSTR-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-DATA-CONSTR-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR-REFS](#) p. 365

Ist Kontext für: [SW-DATA-CONSTR-REF](#) p. 362, [SW-SYSCOND](#) p. 511



SW-DATA-CONSTR-REF-SYSCOND.PNG

2.423 SW-DATA-CONSTR-REFS

Beschreibung

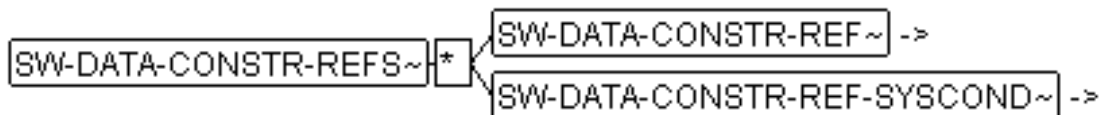
Container element for **<SW-DATA-CONSTR-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-DATA-CONSTR-REF](#) p. 362, [SW-DATA-CONSTR-REF-SYSCOND](#) p. 364



SW-DATA-CONSTR-REFS.PNG

2.424 SW-DATA-CONSTR-RULE

Beschreibung

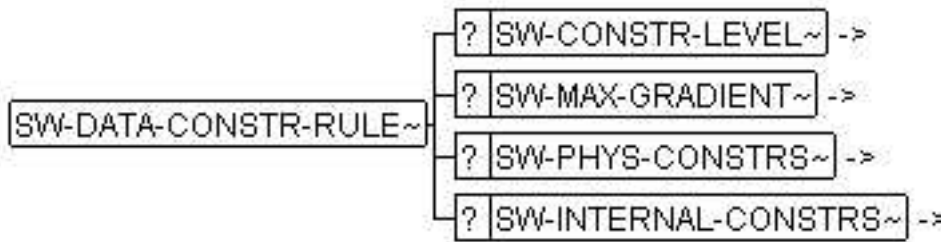
Describes the internal or physical limits for variables or parameter values in the elements **<SW-PHYS-CONSTRS>** or **<SW-INTERNAL-CONSTRS>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR](#) p. 361

Ist Kontext für: [SW-CONSTR-LEVEL](#) p. 344, [SW-MAX-GRADIENT](#) p. 438, [SW-PHYS-CONSTRS](#) p. 472, [SW-INTERNAL-CONSTRS](#) p. 434



SW-CONSTR-RULE.PNG

2.425 SW-DATA-CONSTRS

Beschreibung

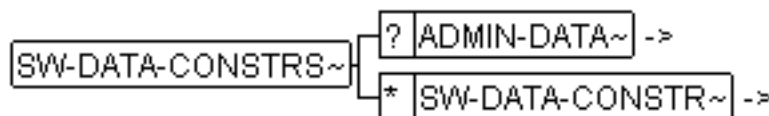
Container element for **<SW-DATA-CONSTR>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC p. 372](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [SW-DATA-CONSTR p. 361](#)



SW-DATA-CONSTRS.PNG

2.426 SW-DATA-DEF-PROPS

Beschreibung

This element describes all of the distinguishing characteristics of a data object (variable or parameter). **<SW-DATA-DEF-PROPS>** is used in every case, where characteristics of data objects must be given.

It is inevitable that not all of the inputs are useful all of the time. Hence, the process definition or the DCI has the task of implementing limitations.

The **<SW-DATA-DEF-PROPS>** describe the characteristics of all axes:

- The characteristics of the argument axes (abscissas) are described in **<SW-CALPRM-AXIS-SET>** .
- The characteristics of the value axis are described directly in **<SW-DATA-DEF-PROPS>** .

Beispiel

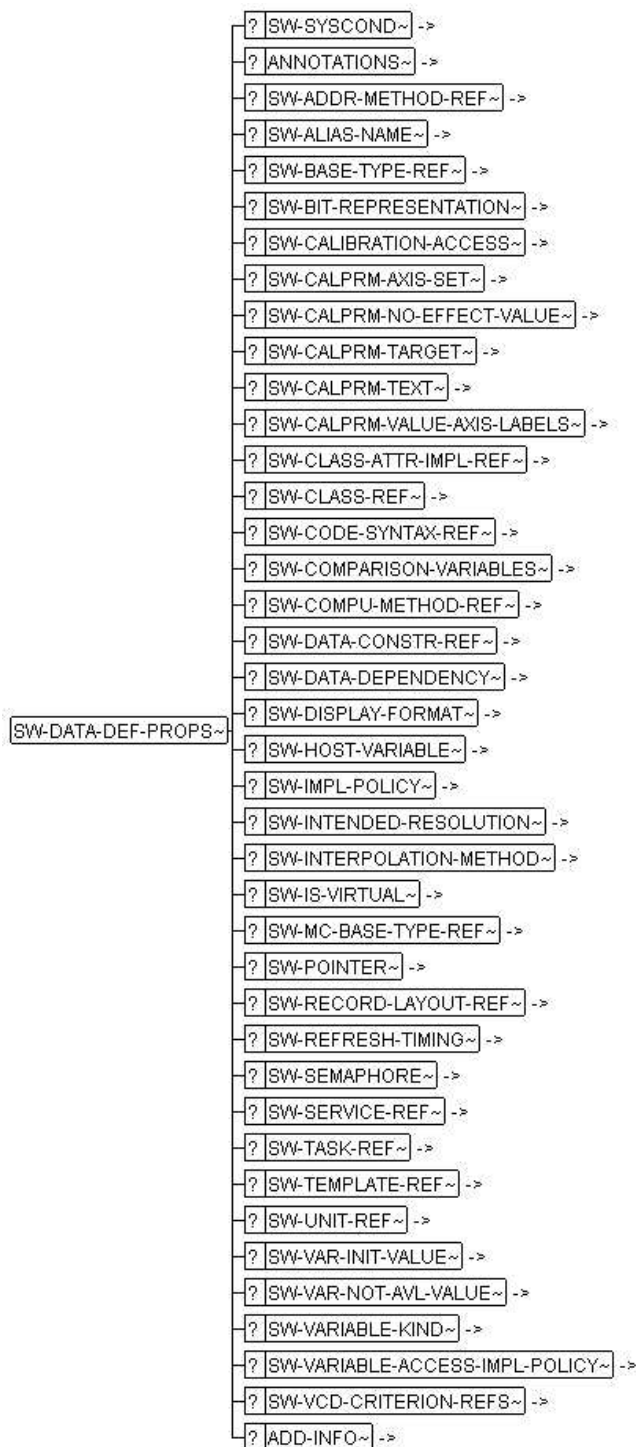
Formale Beschreibung

Hat als Kontext: [SW-CALPRM p. 260](#), [SW-CALPRM-IMPL p. 264](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-ATTR-IMPL p. 294](#), [SW-CLASS-IMPL p. 299](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#),



[SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-INSTANCE-PROPS-VARIANT](#) p. 423, [SW-POINTER](#) p. 473, [SW-SERVICE-ARG](#) p. 502, [SW-SERVICE-RETURN](#) p. 509, [SW-SYSTEMCONST](#) p. 521, [SW-TEMPLATE](#) p. 539, [SW-VARIABLE](#) p. 563, [SW-VARIABLE-IMPL](#) p. 567, [SW-VARIABLE-PROTOTYPE](#) p. 568

Ist Kontext für: [SW-SYSCOND](#) p. 511, [ANNOTATIONS](#) p. 34, [SW-ADDR-METHOD-REF](#) p. 230, [SW-ALIAS-NAME](#) p. 234, [SW-BASE-TYPE-REF](#) p. 251, [SW-BIT-REPRESENTATION](#) p. 255, [SW-CALIBRATION-ACCESS](#) p. 256, [SW-CALPRM-AXIS-SET](#) p. 264, [SW-CALPRM-NO-EFFECT-VALUE](#) p. 266, [SW-CALPRM-TARGET](#) p. 273, [SW-CALPRM-TEXT](#) p. 274, [SW-CALPRM-VALUE-AXIS-LABELS](#) p. 274, [SW-CLASS-ATTR-IMPL-REF](#) p. 295, [SW-CLASS-REF](#) p. 308, [SW-CODE-SYNTAX-REF](#) p. 314, [SW-COMPARISON-VARIABLES](#) p. 329, [SW-COMPU-METHOD-REF](#) p. 338, [SW-DATA-CONST-REF](#) p. 362, [SW-DATA-DEPENDENCY](#) p. 369, [SW-DISPLAY-FORMAT](#) p. 374, [SW-HOST-VARIABLE](#) p. 419, [SW-IMPL-POLICY](#) p. 420, [SW-INTENDED-RESOLUTION](#) p. 430, [SW-INTERPOLATION-METHOD](#) p. 435, [SW-IS-VIRTUAL](#) p. 436, [SW-MC-BASE-TYPE-REF](#) p. 441, [SW-POINTER](#) p. 473, [SW-RECORD-LAYOUT-REF](#) p. 490, [SW-REFRESH-TIMING](#) p. 496, [SW-SEMAPHORE](#) p. 499, [SW-SERVICE-REF](#) p. 508, [SW-TASK-REF](#) p. 535, [SW-TEMPLATE-REF](#) p. 540, [SW-UNIT-REF](#) p. 548, [SW-VAR-INIT-VALUE](#) p. 562, [SW-VAR-NOT-AVL-VALUE](#) p. 563, [SW-VARIABLE-KIND](#) p. 567, [SW-VARIABLE-ACCESS-IMPL-POLICY](#) p. 566, [SW-VCD-CRITERION-REFS](#) p. 581, [ADD-INFO](#) p. 26



SW-DATA-DEF-PROPS.PNG

2.427 SW-DATA-DEF-PROPS-SYSCONDS

Beschreibung

Use **<SW-DATA-DEF-PROPS-SYSCOND>** to create a **<SW-DATA-DEF-PROPS>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true, The **<SW-SYSCOND>** element inside the **<SW-DATA-DEF-PROPS>** is used. This is useful when a **<SW-DATA-DEF-PROPS>** shall be used when system constant has a certain value.

Beispiel

This **<SW-DATA-DEF-PROPS>** is used when LINA_Gear is less or equal to 4.

```
<SW-DATA-DEF-PROPS-SYSCOND>
  <SW-DATA-DEF-PROPS>
    <SW-SYSCOND>
      <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
    </SW-SYSCOND>
    <SW-BASE-TYPE-REF>int</SW-BASE-TYPE-REF>
    ...
  </SW-DATA-DEF-PROPS>
</SW-DATA-DEF-PROPS-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-CALPRM p. 260](#), [SW-CALPRM-IMPL p. 264](#), [SW-CALPRM-PROTOTYPE p. 266](#), [SW-CLASS p. 276](#), [SW-CLASS-ATTR-IMPL p. 294](#), [SW-CLASS-IMPL p. 299](#), [SW-CLASS-INSTANCE p. 300](#), [SW-CLASS-PROTOTYPE p. 305](#), [SW-INSTANCE-PROPS-VARIANT p. 423](#), [SW-POINTER p. 473](#), [SW-SERVICE-ARG p. 502](#), [SW-SERVICE-RETURN p. 509](#), [SW-SYSTEMCONST p. 521](#), [SW-TEMPLATE p. 539](#), [SW-VARIABLE p. 563](#), [SW-VARIABLE-IMPL p. 567](#), [SW-VARIABLE-PROTOTYPE p. 568](#)

Ist Kontext für: [SW-DATA-DEF-PROPS p. 366](#)

```
SW-DATA-DEF-PROPS-SYSCONDS~ * SW-DATA-DEF-PROPS~ ->
```

SW-DATA-DEF-PROPS-SYSCONDS.PNG

2.428 SW-DATA-DEPENDENCY

Beschreibung

This element describes the interdependencies of variables and parameters. These can be used for example, to treat virtual parameters.

Beispiel

The following example describes a scenario in which the adjacent leg A of a right-angled triangle is stored in the ECU with the hypotenuse of the length 1. The length of the opposite leg B (= $\text{SQRT}(1-A^2)$) or the area covered by the opposite leg B_AREA, is relevant for the physical understanding of the application engineer. Hence, three calibration parameters are introduced, of which two (B and B_AREA) are virtual. The example is taken from the ASAP1.3.

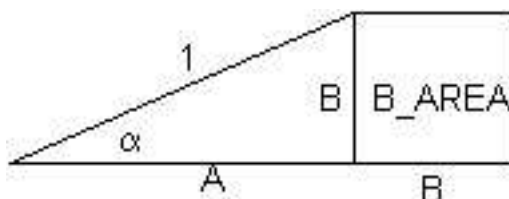


Figure 3: SW-DATA-DEPENDENCY

graphics/B_AREA.png

```

<SW-CALPRMS>
  <SW-CALPRM>
    <LONG-NAME>Eingangsparameter</LONG-NAME>
    <SHORT-NAME>A</SHORT-NAME>
    <DESC>A ist die im Speicher abgelegte Ankathete</DESC>
  </SW-CALPRM>

  <SW-CALPRM>
    <LONG-NAME>Abhängiger Parameter</LONG-NAME>
    <SHORT-NAME>B</SHORT-NAME>
    <DESC>Dies ist die Gegenkathete</DESC>
    <SW-DATA-DEF-PROPS>
      <SW-DATA-DEPENDENCY>
        <SW-DATA-DEPENDENCY-FORMULA>sqrt(1 - X1 * X1)</SW-DATA-DEPENDENCY-FORMULA>
        <SW-DATA-DEPENDENCY-ARGS>
          <SW-CALPRM-REF>A</SW-CALPRM-REF>
        </SW-DATA-DEPENDENCY-ARGS>
      </SW-DATA-DEPENDENCY>
      <SW-IS-VIRTUAL>yes</SW-IS-VIRTUAL>
    </SW-DATA-DEF-PROPS>
  </SW-CALPRM>

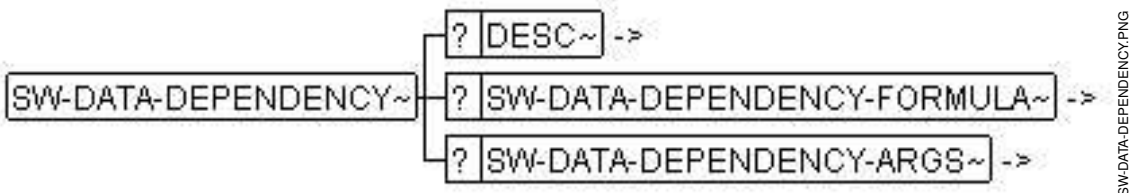
  <SW-CALPRM>
    <LONG-NAME>Fläche</LONG-NAME>
    <SHORT-NAME>B_Area</SHORT-NAME>
    <SW-DATA-DEF-PROPS>
      <SW-DATA-DEPENDENCY>
        <DESC>Dies ist die Fläche, die durch ein Quadrat aus B aufgespannt wird.</DESC>
        <SW-DATA-DEPENDENCY-FORMULA>X1 * X1</SW-DATA-DEPENDENCY-FORMULA>
        <SW-DATA-DEPENDENCY-ARGS>
          <SW-CALPRM-REF>B</SW-CALPRM-REF>
        </SW-DATA-DEPENDENCY-ARGS>
      </SW-DATA-DEPENDENCY>
      <SW-IS-VIRTUAL>yes</SW-IS-VIRTUAL>
    </SW-DATA-DEF-PROPS>
  </SW-CALPRM>
</SW-CALPRMS>

```

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#), [SW-RELATED-CONSTRS p. 497](#)

Ist Kontext für: [DESC p. 83](#), [SW-DATA-DEPENDENCY-FORMULA p. 371](#), [SW-DATA-DEPENDENCY-ARG p. 370](#)



2.429 SW-DATA-DEPENDENCY-ARGS

Beschreibung

This element specifies the elements used in a **<SW-DATA-DEPENDENCY>** .

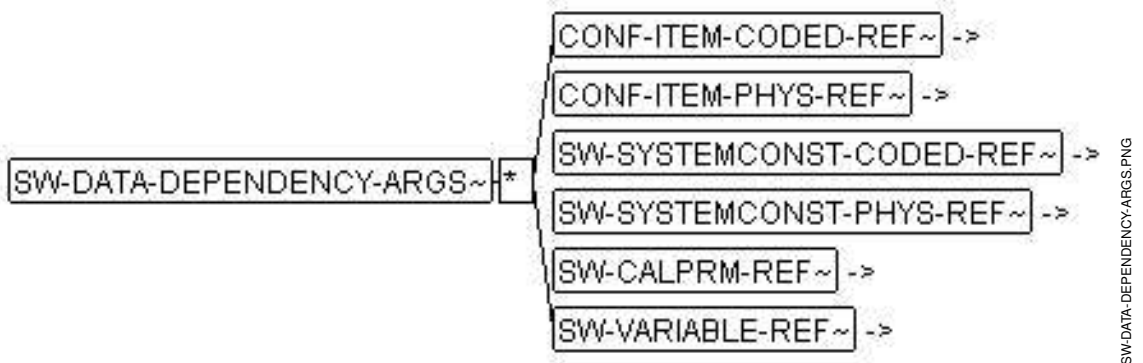
Beispiel

See [Chapter 2.428 SW-DATA-DEPENDENCY p. 369](#)

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEPENDENCY p. 369](#)

Ist Kontext für: [CONF-ITEM-CODED-REF p. 60](#), [CONF-ITEM-PHYS-REF p. 61](#), [SW-SYSTEMCONST-C p. 524](#), [SW-SYSTEMCONST-PHYS-REF p. 526](#), [SW-CALPRM-REF p. 270](#), [SW-VARIABLE-REF p. 572](#)



2.430 SW-DATA-DEPENDENCY-FORMULA

Beschreibung

This element describes the formula with which the dependencies between the participating objects are defined. The formulae are texts which formulate first order arithmetical expressions.

The following syntax is valid:

```
numeric_expression ::= ( "-"expression ) | ( expression ( "+" | "-" | "*" | "/" | "^" ) expression )
expression ::= ( number | variable | numeric_expression | ( "(" expression ")" ) | sinus_statement
sinus_statement ::= "sin" "(" expression ")"
cosinus_statement ::= "cos" "(" expression ")"
sqrt_statement ::= "sqrt" "(" expression ")"
number ::= integer_literal | float_literal
variable ::= Any valid Object in question
integer_literal ::= ( "1..9" { "0..9" } ) | ( "0" "x" "0..9a..f" { "0..9a..f" } )
float_literal ::= ( decimal_digits "." decimal_digits exponent_part ) | ( "." decimal_digits
decimal_digits ::= "0..9" { "0..9" }
exponent_part ::= "e" "+" | "-" decimal_digits
white-space ::= tabulator | blank | newline | carriage_return | {tabulator | blank | newline | c
tabulator ::= \t
blank ::= " "
newline ::= \n
carriage_return ::= \c
```

Beispiel

See [Chapter 2.428 SW-DATA-DEPENDENCY](#) p. 369

Further examples are:

$X1 + X2^2 (X1 - X2)^2$

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEPENDENCY](#) p. 369

Ist Kontext für: Text

SW-DATA-DEPENDENCY-FORMULA~ #PCDATA

2.431 SW-DATA-DICTIONARY-SPEC

Beschreibung

A Data-dictionary contains information on the data structures and related objects in an ECU. A Data-dictionary may appear in two locations in order to express different scopes within the ECU:

- <SW-SYSTEM> This indicates a **global Data-dictionary** definition, which means that all objects contained in these Data-dictionaries are known globally within the ECU.
- <SW-FEATURE> This represents a **local Data-dictionary**. This is local to the particular feature (sometimes called module or component) in the ECU software. The objects within this Data-dictionary are known locally within the feature. They may be addressed by prefixing by the <SHORT-NAME> of the feature.

Unless the ECU uses local data objects, all calibration parameters and variables should be placed in the global Data-dictionary.

The Data-dictionary mainly defines three kinds of objects which occur in the ECU:

- <SW-VARIABLE> These objects (often called measurements) represent all data which is variable during the runtime of the ECU.
- <SW-CALPRM> These objects (often called calibration parameters) represent data which is adjusted during the calibration process of the ECU.
- <SW-CLASS-INSTANCE> These objects (currently new to the domain of ECUs) represent instantiations of particular classes. These instantiations are specified as a reference to the class and to one of the implementations provided by the class (see [Chapter 2.331 SW-CLASS p. 276](#)).

In addition to this, the data dictionary contains auxiliary definitions required to specify the three main items mentioned above. These auxiliary definitions are ⁴:

- <SW-UNIT> Physical unit
- <SW-COMPU-METHOD> Methods to convert physical data to normalized data.
- <SW-BASE-TYPE> Definitions of basic types within the ECU such as "Unsigned Integer", "Float". These basic types may be standardized by ASAM with regards to their name and technical properties.
- <SW-CODE-SYNTAX> Containers for generator-specific definitions of how to describe the data objects (variables, calibration parameters) in the intended programming language.
- <SW-RECORD-LAYOUT> Defines how the data objects (variables, calibration parameters etc.) should be stored in the ECU memory. As an example, this definition specifies the sequence of axis points in the ECU memory.
- <SW-ADDR-METHOD> Reserves names serving as keywords for how the data objects **might be addressed** within the ECU-memory.
- <SW-AXIS-TYPE> Reserves names for specific axis computing strategies. For the reason that it is possible to use arbitrary algorithms to calculate axis-points, no formal specification is given. Instead, the algorithm

⁴ Each of the following elements is described in the singular form in spite of the fact that the data dictionary allows multiple instances of each of them



is described verbally; the parameters are specified formally with respect to their name and constraints.

<SW-TEMPLATE>

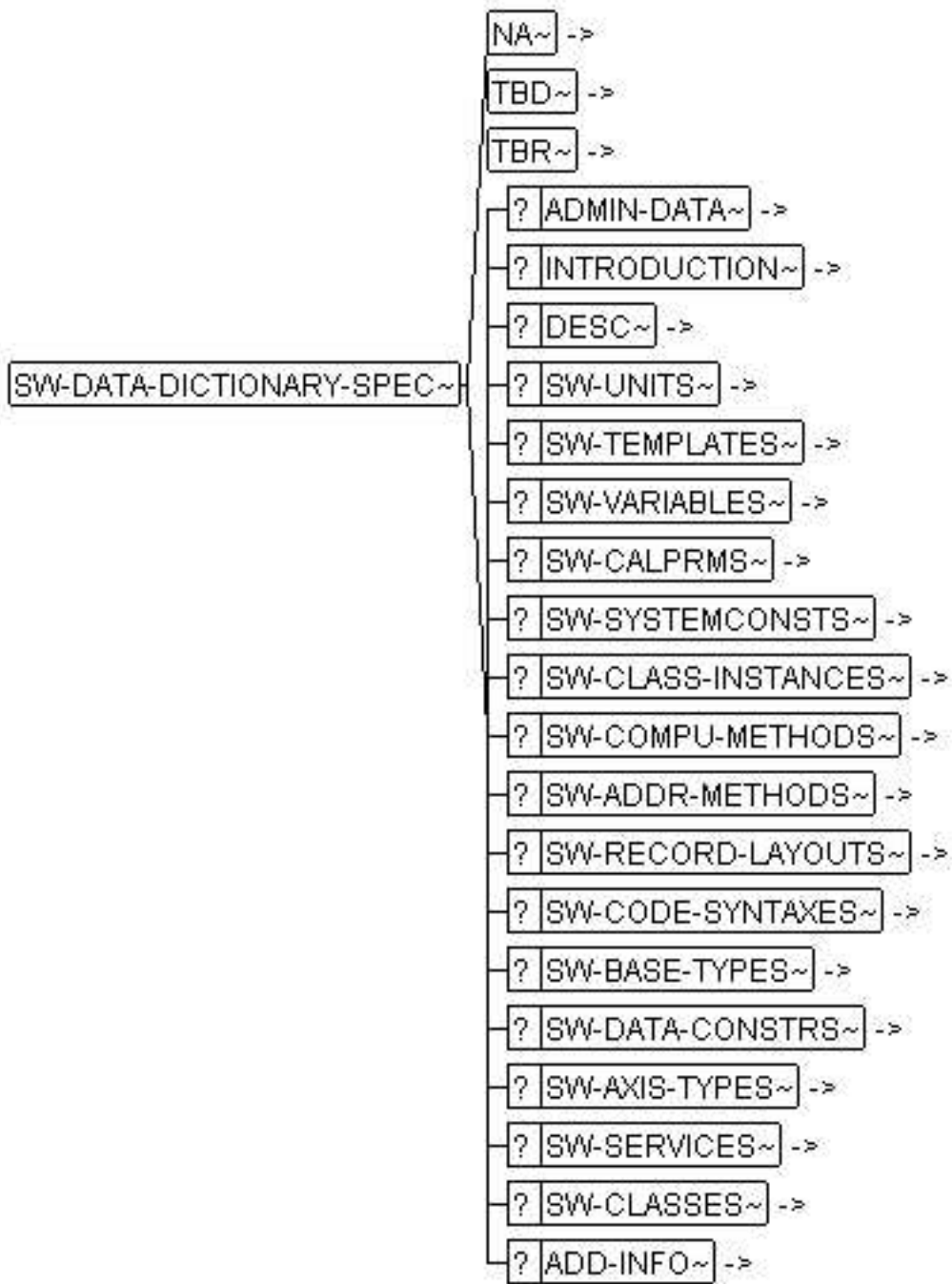
These templates are used to predefine some properties of variables or parameters. The templates can be used to simplify the typing task. They have **no architectural** meaning, so they have no influence on the data model in the ECU.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386, [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [DESC](#) p. 83, [SW-UNITS](#) p. 550, [SW-TEMPLATES](#) p. 543, [SW-VARIABLES](#) p. 575, [SW-CALPRMS](#) p. 275, [SW-SYSTEMCONSTS](#) p. 530, [SW-CLASS-INSTANCES](#) p. 304, [SW-COMPU-METHODS](#) p. 341, [SW-ADDR-METHODS](#) p. 233, [SW-RECORD-LAYOUTS](#) p. 496, [SW-CODE-SYNTAXES](#) p. 317, [SW-BASE-TYPES](#) p. 255, [SW-DATA-CONSTRS](#) p. 366, [SW-AXIS-TYPES](#) p. 249, [SW-SERVICES](#) p. 510, [SW-CLASSES](#) p. 311, [ADD-INFO](#) p. 26



2.432 SW-DISPLAY-FORMAT

Beschreibung

This element describes the display format in "printf"-format of the syntax for the programming language C.

One of its uses is for conversion formulae **<SW-COMPU-METHOD>** .

This element may contain a format specification for the display of values of this setting. The format specification adheres to the syntax defined for printf format specification fields (e.g. "%f.2"), but due to the numerical nature of value settings, only the format types are allowed:

- d: Signed decimal integer
- i: Signed decimal integer
- o: Unsigned octal integer
- u: Unsigned decimal integer
- x: Unsigned hexadecimal integer, using "abcdef"
- X: Unsigned hexadecimal integer, using "ABCDEF"
- e: Signed value having the form [-]d.ddd e [sign]ddd where *d* is a single decimal digit, *ddd* is one or more decimal digits, *ddd* is exactly three decimal digits, and *sign* is + or -
- E: Identical to the e format except that E rather than e introduces the exponent
- f: Signed value having the form [-]ddd.dddd, where *ddd* is one or more decimal digits; the number of digits before the decimal point depends on the magnitude of the number, and the number of digits after the decimal point depends on the requested precision
- g: Signed value printed in f or e format, whichever is more compact for the given value and precision; trailing zeros are truncated, and the decimal point appears only if one or more digits follow it
- G: Identical to the g format, except that E, rather than e, introduces the exponent (where appropriate)

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS p. 72](#), [SW-CALPRM-AXIS p. 263](#), [SW-COMPU-METHOD p. 336](#), [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: Text

`SW-DISPLAY-FORMAT~`—#PCDATA

SW-DISPLAY-FORMATPNG

2.433 SW-EFFECT

Beschreibung

The effect of the parent element `<SW-EFFECTING-VARIABLE>` is given as a keyword in `<SW-EFFECT>`. The values must be agreed upon by the parties involved.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EFFECTING-VARIABLE p. 377](#)

Ist Kontext für: Text

SW-EFFECT~ -#PCDATA

SW-EFFECT.PNG

Attribut	Typ	Anmerkungen
[ORIGIN] (implied)	cdata	Indicates from whom the information originates. The <SW-EFFECT> -flow is generated with Ascet and then revised manually. In this case, those from ASCET are entered as Origin=Ascet, for manual revision work, Origin=Username is entered.

2.434 SW-EFFECT-FLOW

Beschreibung

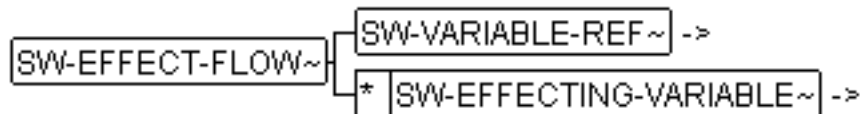
Insert <SW-EFFECT-FLOW> into <SW-FUNCTION-VARIANT> to describe how the referenced variable <SW-VARIABLE-REF> is influenced by <SW-EFFECTING-VARIABLE>. The effect is given as a keyword in the child node <SW-EFFECT> of <SW-EFFECTING-VARIABLE> . The values must be agreed upon by the partners.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EFFECT-FLOWS](#) p. 376

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-EFFECTING-VARIABLE](#) p. 377



SW-EFFECT-FLOW.PNG

2.435 SW-EFFECT-FLOWS

Beschreibung

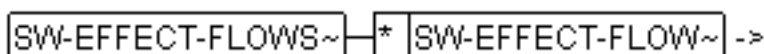
Container element for <SW-EFFECT-FLOW> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-EFFECT-FLOW](#) p. 376



SW-EFFECT-FLOWS.PNG

2.436 SW-EFFECTING-VARIABLE

Beschreibung

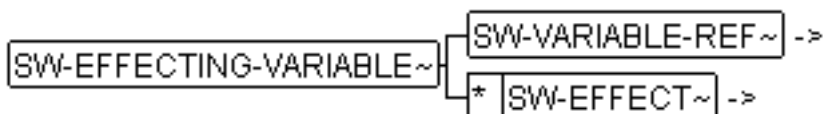
In the Element **<SW-EFFECTING-VARIABLE>**, the variable referenced by its sister element **<SW-VARIABLE-REF>** is influenced by the child element **<SW-VARIABLE-REF>** of **<SW-EFFECTING-VARIABLE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EFFECT-FLOW](#) p. 376

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-EFFECT](#) p. 375



SW-EFFECTING-VARIABLE.PNG

2.437 SW-EVENT

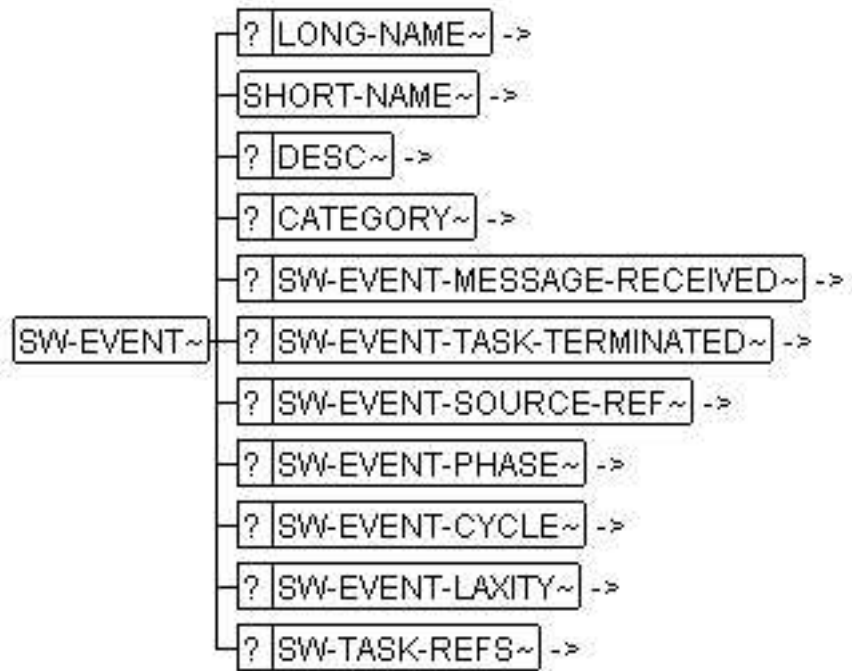
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENTS](#) p. 385

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SW-EVENT-MESSAGE-RECEIVED](#) p. 380, [SW-EVENT-TASK-TERMINATED](#) p. 385, [SW-EVENT-SOURCE-REF](#) p. 383, [SW-EVENT-PHASE](#) p. 380, [SW-EVENT-CYCLE](#) p. 378, [SW-EVENT-LAXITY](#) p. 379, [SW-TASK-REFS](#) p. 537



SW-EVENT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-EVENT	

2.438

SW-EVENT-CYCLE

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-EVENTCYCLE.PNG

2.439 SW-EVENT-FREQUENCY-MAX

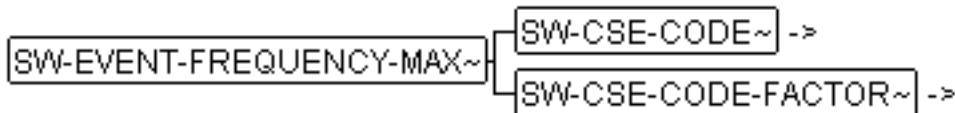
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SOURCE](#) p. 382

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-EVENT-FREQUENCY-MAX.PNG

2.440 SW-EVENT-FREQUENCY-MIN

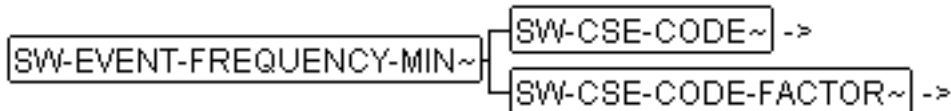
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SOURCE](#) p. 382

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-EVENT-FREQUENCY-MIN.PNG

2.441 SW-EVENT-LAXITY

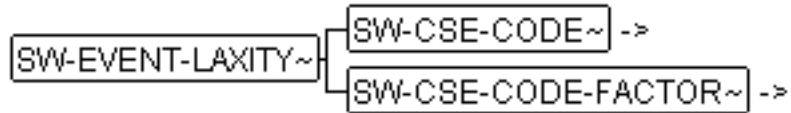
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-EVENTLAXITY.PNG

2.442 SW-EVENT-MESSAGE-RECEIVED

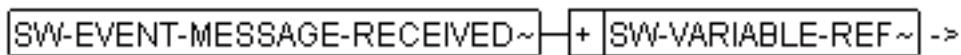
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572



SW-EVENT:MESSAGE-RECEIVED.PNG

2.443 SW-EVENT-PHASE

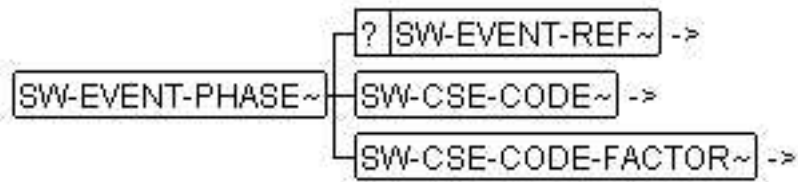
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: [SW-EVENT-REF](#) p. 381, [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-EVENTPHASE.PNG

2.444 SW-EVENT-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-PHASE](#) p. 380, [SW-EVENT-REF-SYSCOND](#) p. 381, [SW-EVENT-REFS](#) p. 382

Ist Kontext für: Text



SW-EVENTREF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-EVENT	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.445 SW-EVENT-REF-SYSCOND

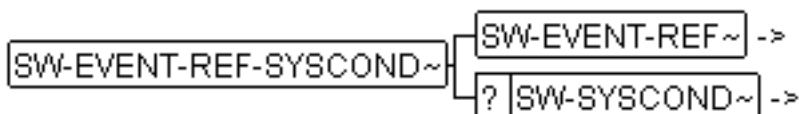
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-REFS](#) p. 382

Ist Kontext für: [SW-EVENT-REF](#) p. 381, [SW-SYSCOND](#) p. 511



SW-EVENT-REF-SYSCOND.PNG

2.446 SW-EVENT-REFS

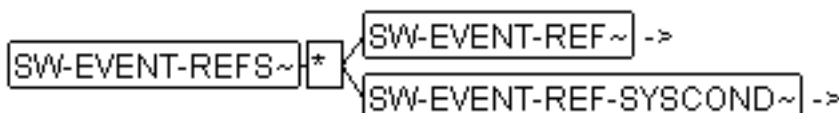
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-OPER-MODE](#) p. 470

Ist Kontext für: [SW-EVENT-REF](#) p. 381, [SW-EVENT-REF-SYSCOND](#) p. 381



SW-EVENT-REFS.PNG

2.447 SW-EVENT-SOURCE

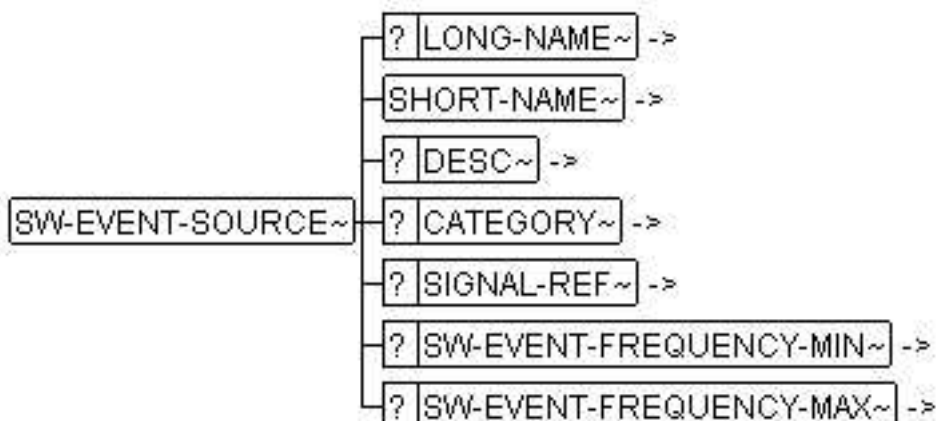
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SOURCES](#) p. 384

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SIGNAL-REF](#) p. 214, [SW-EVENT-FREQUENCY-MIN](#) p. 379, [SW-EVENT-FREQUENCY-MAX](#) p. 378



SW-EVENT-SOURCE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-EVENT-SOURCE	

2.448 SW-EVENT-SOURCE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: Text

SW-EVENT-SOURCE-REF~|#PCDATA

SW-EVENT-SOURCE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-EVENT-SOURCE	

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.449 SW-EVENT-SOURCES

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SPEC](#) p. 384

Ist Kontext für: [SW-EVENT-SOURCE](#) p. 382



SW-EVENT-SOURCES.PNG

2.450 SW-EVENT-SPEC

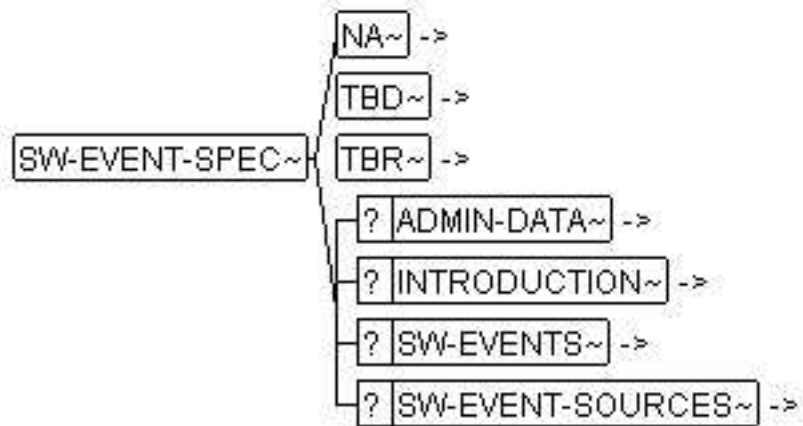
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SCHEDULING-SPEC](#) p. 499

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-EVENTS](#) p. 385, [SW-EVENT-SOURCES](#) p. 384



SW-EVENT-SPEC.PNG

2.451 SW-EVENT-TASK-TERMINATED

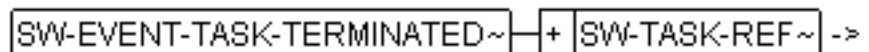
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377

Ist Kontext für: [SW-TASK-REF](#) p. 535



SW-EVENT-TASK-TERMINATED.PNG

2.452 SW-EVENTS

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT-SPEC](#) p. 384

Ist Kontext für: [SW-EVENT](#) p. 377



2.453 SW-FEATURE

Beschreibung

A **<SW-FEATURE>** describes a specific ECU feature with regards to functionality, used data and processing. It may define its own [Chapter 2.431 SW-DATA-DICTIONARY-SPEC p. 372](#) and [Chapter 2.486 SW-FEATURE-VARIABLES p. 410](#) for feature-local purposes.

A **<SW-FEATURE>** is usually used to describe a software component. A software system is build of software components, where each component may have any number of sub components. The static view of the software system is described with **<SW-FEATURE-DECOMPOSITION>** .

Each **<SW-FEATURE>** may define its interfaces **<SW-FEATURE-INTERFACES>** .

The common name of the software component is defined in **<SW-FEATURE>** **<SHORT-NAME>** , while the unique name is defined in **<SW-FEATURE>** **<SW-FEATURE-VARIANT>** **<SHORT-NAME>** .

Beispiel

```
<SW-FEATURE>
  <LONG-NAME>Low Idle Governer</LONG-NAME>
  <SHORT-NAME>LIGov</SHORT-NAME>
  <SW-FEATURE-OWNED-ELEMENTS>
    <SW-FEATURE-ELEMENTS>
      <SW-CALPRM-REFS>
        <SW-CALPRM-REF>TST_calSimple_C</SW-CALPRM-REF>
        <SW-CALPRM-REF>TST_calSimple2_C</SW-CALPRM-REF>
      </SW-CALPRM-REFS>
      <SW-CLASS-INSTANCE-REFS>
        <SW-CLASS-INSTANCE-REF>TST_calClassInstance1</SW-CLASS-INSTANCE-REF>
        <SW-CLASS-INSTANCE-REF>TST_calClassInstance2</SW-CLASS-INSTANCE-REF>
      </SW-CLASS-INSTANCE-REFS>
      <SW-CLASS-REFS>
        <SW-CLASS-REF>TST_calClass</SW-CLASS-REF>
      </SW-CLASS-REFS>
      <SW-SYSTEMCONST-REFS>
        <SW-SYSTEMCONST-REF>SYS1</SW-SYSTEMCONST-REF>
      </SW-SYSTEMCONST-REFS>
      <SW-VARIABLE-REFS>
        <SW-VARIABLE-REF>TST_varStruct</SW-VARIABLE-REF>
        <SW-VARIABLE-REF>TST_varArray</SW-VARIABLE-REF>
      </SW-VARIABLE-REFS>
    </SW-FEATURE-ELEMENTS>
  </SW-FEATURE-OWNED-ELEMENTS>
  <SW-FEATURE-INTERFACES>
    <SW-FEATURE-INTERFACE>
      <CATEGORY>EXPORT</CATEGORY>
      <SHORT-NAME>LIGov_Ex</SHORT-NAME>
    <SW-INTERFACE-EXPORTS>
      <SW-INTERFACE-EXPORT>
        <SW-INTERFACE-EXPORT-SCOPE>
          <SW-INTERFACE-EXPORT-LEVEL>global</SW-INTERFACE-EXPORT-LEVEL>
        </SW-INTERFACE-EXPORT-SCOPE>
        <SW-FEATURE-ELEMENTS>
          <SW-CALPRM-REFS>
            <SW-CALPRM-REF>TST_calSimple_C</SW-CALPRM-REF>
            <SW-CALPRM-REF>TST_calSimple2_C</SW-CALPRM-REF>
          </SW-CALPRM-REFS>
          <SW-CLASS-INSTANCE-REFS>
            <SW-CLASS-INSTANCE-REF>TST_calClassInstance1</SW-CLASS-INSTANCE-REF>
            <SW-CLASS-INSTANCE-REF>TST_calClassInstance2</SW-CLASS-INSTANCE-REF>
          </SW-CLASS-INSTANCE-REFS>
          <SW-CLASS-REFS>
            <SW-CLASS-REF>TST_calClass</SW-CLASS-REF>
          </SW-CLASS-REFS>
          <SW-SYSTEMCONST-REFS>
            <SW-SYSTEMCONST-REF>SYS1</SW-SYSTEMCONST-REF>
          </SW-SYSTEMCONST-REFS>
        </SW-FEATURE-ELEMENTS>
      </SW-INTERFACE-EXPORT>
    </SW-INTERFACE-EXPORTS>
  </SW-FEATURE-INTERFACE>
</SW-FEATURE>
```



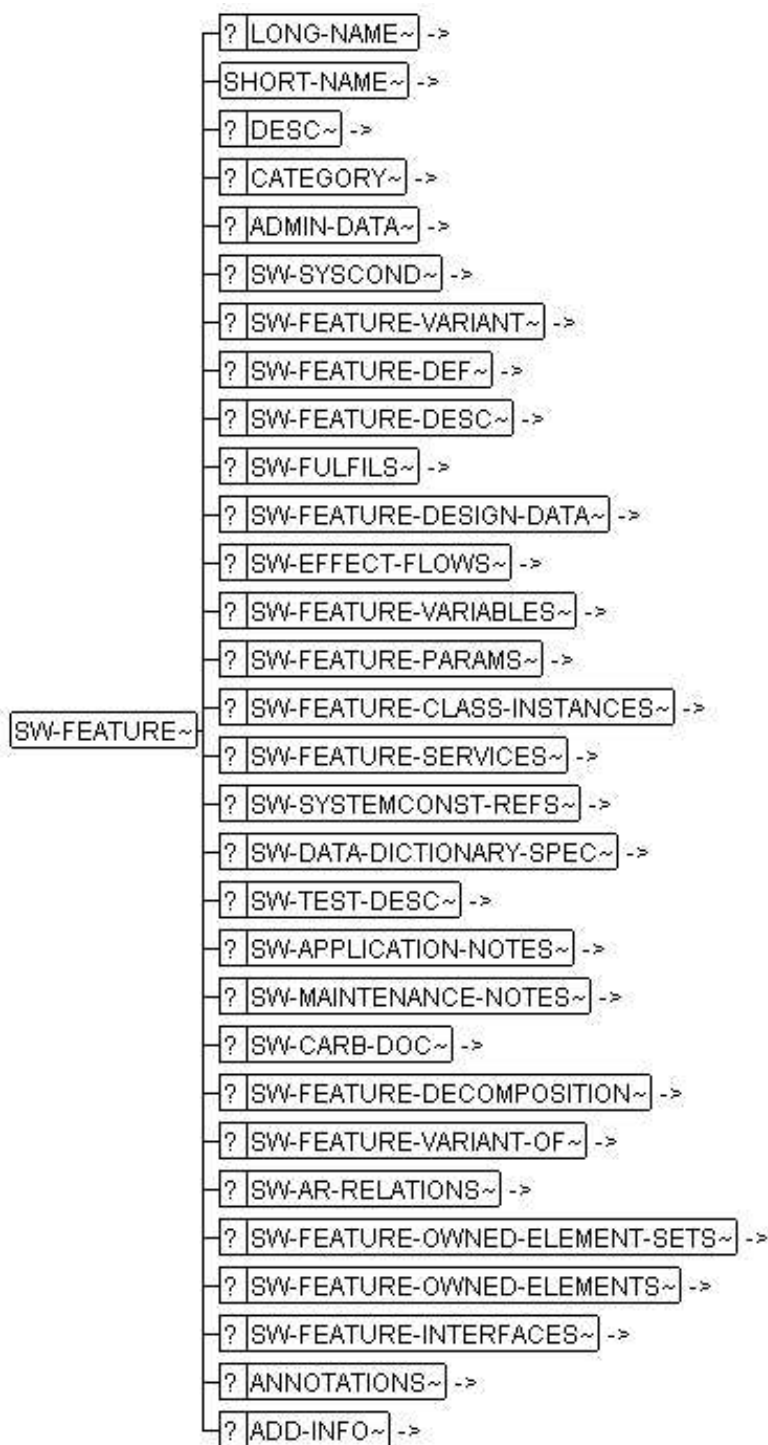
```
<SW-VARIABLE-REFS>
  <SW-VARIABLE-REF>TST_varStruct</SW-VARIABLE-REF>
  <SW-VARIABLE-REF>TST_varArray</SW-VARIABLE-REF>
</SW-VARIABLE-REFS>
</SW-FEATURE-ELEMENTS>
</SW-INTERFACE-EXPORT>
</SW-INTERFACE-EXPORTS>
</SW-FEATURE-INTERFACE>
<SW-FEATURE-INTERFACE>
  <SW-INTERFACE-IMPORTS>
  <SW-INTERFACE-IMPORT>
    <CATEGORY>EXPORT</CATEGORY>
    <SHORT-NAME>LIGov_Ex</SHORT-NAME>
  </SW-FEATURE-ELEMENTS>
  <SW-CALPRM-REFS>
  <SW-CALPRM-REF>IMP_calImport_C</SW-CALPRM-REF>
  </SW-CALPRM-REFS>
  <SW-VARIABLE-REFS>
  <SW-VARIABLE-REF>IMP_varImport1</SW-VARIABLE-REF>
  <SW-VARIABLE-REF>IMP_varImport2N40</SW-VARIABLE-REF>
  </SW-VARIABLE-REFS>
  </SW-FEATURE-ELEMENTS>
</SW-INTERFACE-IMPORT>
</SW-INTERFACE-IMPORTS>
</SW-FEATURE-INTERFACE>
</SW-FEATURE-INTERFACES>
</SW-FEATURE>
```

Example for the software component (**<SW-FEATURE>**) Low Idle Governer with owned elements and interfaces.

Formale Beschreibung

Hat als Kontext: [SW-COMPONENTS p. 332](#)

Ist Kontext für: [LONG-NAME p. 134](#), [SHORT-NAME p. 212](#), [DESC p. 83](#), [CATEGORY p. 42](#), [ADMIN-DATA p. 30](#), [SW-SYSCOND p. 511](#), [SW-FEATURE-VARIANT p. 410](#), [SW-FEATURE-DEF p. 391](#), [SW-FEATURE-DESC p. 392](#), [SW-FULFILS p. 413](#), [SW-FEATURE-DESIGN-DATA p. 393](#), [SW-EFFECT-FLOWS p. 376](#), [SW-FEATURE-VARIABLES p. 410](#), [SW-FEATURE-PARAMS p. 407](#), [SW-FEATURE-CLASS-INSTANCES p. 390](#), [SW-FEATURE-SERVICES p. 410](#), [SW-SYSTEMCONST-REFS p. 530](#), [SW-DATA-DICTIONARY-SPEC p. 372](#), [SW-TEST-DESC p. 543](#), [SW-APPLICATION-NOTES p. 234](#), [SW-MAINTENANCE-NOTES p. 436](#), [SW-CARB-DOC p. 275](#), [SW-FEATURE-DECOMPO p. 391](#), [SW-FEATURE-VARIANT-OF p. 411](#), [SW-AR-RELATIONS p. 236](#), [SW-FEATURE-OWNED-ELEMENT-SETS p. 406](#), [SW-FEATURE-OWNED-ELEMENTS p. 406](#), [SW-FEATURE-INTERFACES p. 402](#), [ANNOTATIONS p. 34](#), [ADD-INFO p. 26](#)



SW-FEATURE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.



Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtokens	CHAPTER DEF- ITEM FIGURE FOR- MULA PRM SDG STD SW-ADDR- METHOD SW-AXIS- TYPE SW-BASE- TYPE SW-CALPRM SW-CALPRM- PROTOTYPE SW- CLASS SW-CLASS- ATTR-IMPL SW- CLASS-INSTANCE SW-CLASS- PROTOTYPE SW- CODE-SYNTAX SW- COMPU-METHOD SW-DATA-CONSTR SW-FEATURE- INTERFACE SW- FEATURE-VARIANT SW-GENERIC-AXIS- PARAM-TYPE SW- RECORD-LAYOUT SW-SERVICE SW- SERVICE-ARG SW-SERVICE- PROTOTYPE SW- SERVICE-RETURN SW-SYSTEMCONST SW-TEMPLATE SW- UNIT SW-VARIABLE SW-VARIABLE- PROTOTYPE SYN- OPSIS TABLE TOPIC XDOC XFILE XREF- TARGET	Fixed Namespace. This attribute is as- signed to elements which define a names- pace for linkable ob- jects. The attribute contains a list of ele- ments, where the ele- ment carrying the at- tribute serves as a namespace. This is used by processors which use the MSR natural linking mech- anism. (Natural links address their link tar- get with a sequence of short-names in- cluding the names- paces and the object itself e.g. '/test.xml/sw- system1/sw-var1')

2.454 SW-FEATURE-CLASS-INSTANCES

Beschreibung

Container element for <SW-FEATURE-EXPORT-CLASS-INSTANCES>, <SW-FEATURE-IMPORT-CLASS-INSTANCES>, <SW-FEATURE-LOCAL-CLASS-INSTANCES> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-FEATURE-EXPORT-CLASS-INSTANCES](#) p. 396, [SW-FEATURE-IMPORT-CLASS-INSTANCES](#) p. 398, [SW-FEATURE-LOCAL-CLASS-INSTANCES](#) p. 403



SW-FEATURE-CLASS-INSTANCES.PNG

2.455 SW-FEATURE-DECOMPOSITION

Beschreibung

This element allows a hierarchy to be drawn from the functional description of software, in that a **<SW-FEATURE>** is composed through a reference to other components. A process sequence can also be specified in this composition (see **<SW-SUBCOMPONENT>**).

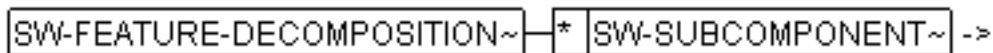
Beispiel

```
<SW-FEATURE>
  <SHORT-NAME>Zusammengesetztes Feature</SHORT-NAME>
  <SW-FEATURE-DECOMPOSITION>
    <SW-SUBCOMPONENT>
      <SW-FEATURE-REF>SF1</SW-FEATURE-REF>
      <SW-PROCESSES>
        <SW-PROCESS>
          <SHORT-LABEL>Initialisierung</SHORT-LABEL>
          <SW-TASK-REF>init</SW-TASK-REF>
        </SW-PROCESS>
        <SW-PROCESS>
          <SHORT-LABEL>Zeitscheibe 1</SHORT-LABEL>
          <SW-TASK-REF>10msec</SW-TASK-REF>
        </SW-PROCESS>
      </SW-PROCESSES>
    </SW-SUBCOMPONENT>
  </SW-FEATURE-DECOMPOSITION>
</SW-FEATURE>
```

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-SUBCOMPONENT](#) p. 511



SW-FEATURE-DECOMPOSITION.PNG

2.456 SW-FEATURE-DEF

Beschreibung

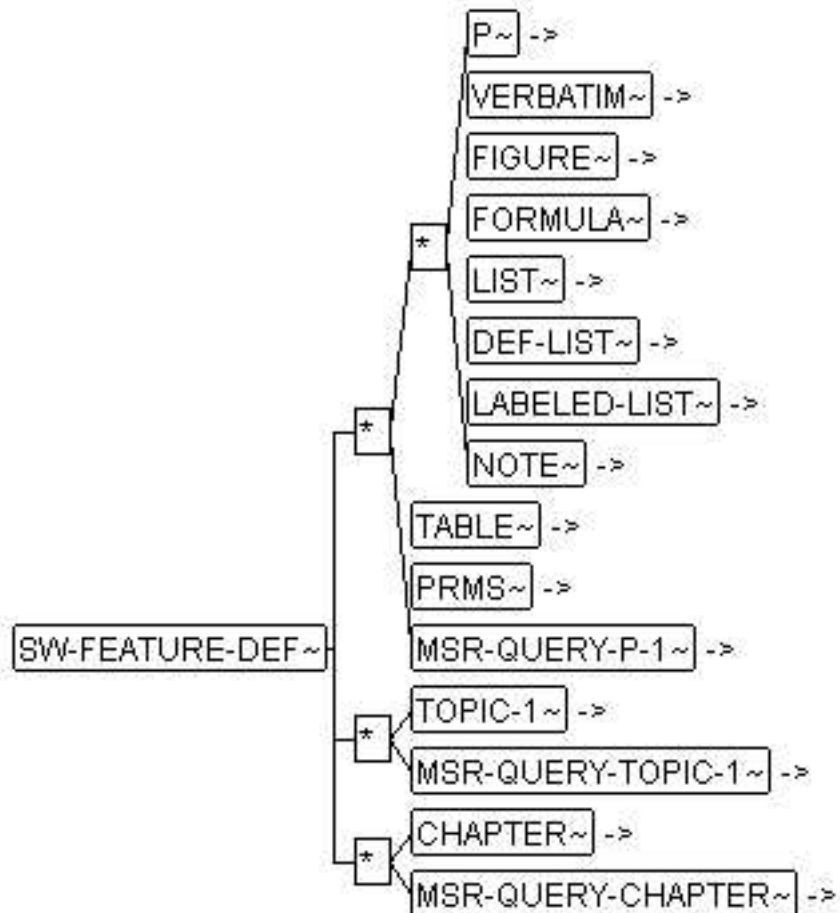
This element contains the textual definition of a software function **<SW-FEATURE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-FEATURE-DEF.PNG

2.457 SW-FEATURE-DESC

Beschreibung

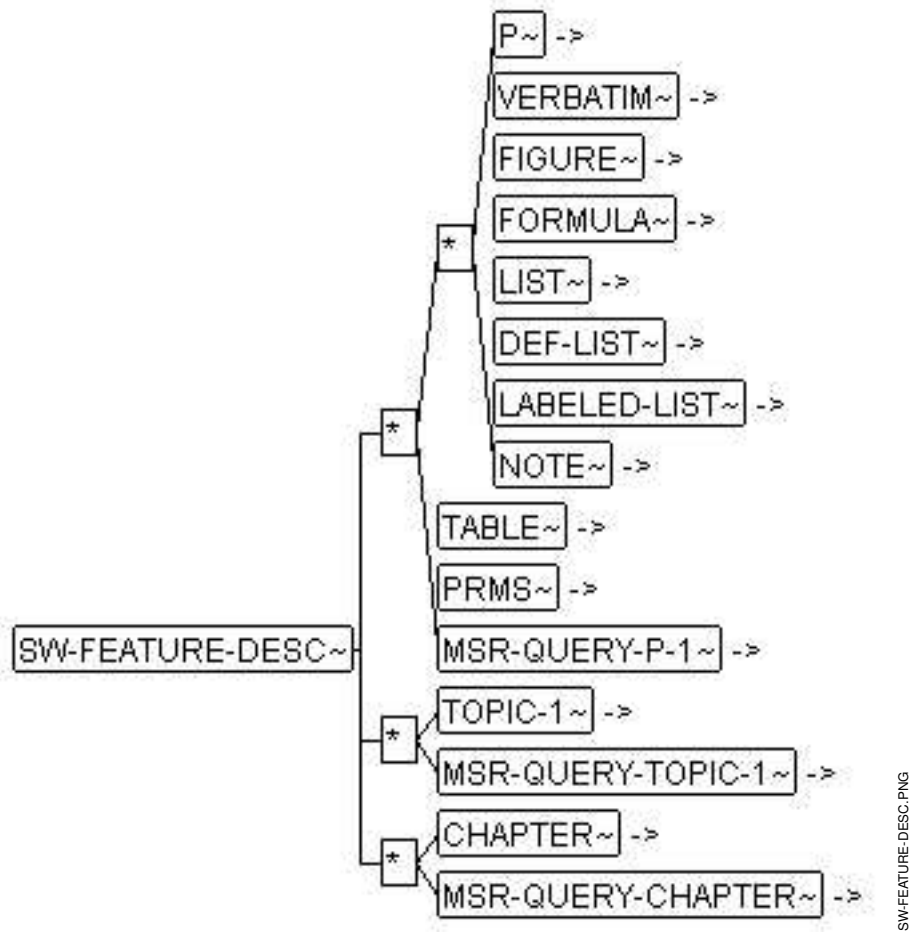
This element contains the textual description of a software function **<SW-FEATURE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



2.458 SW-FEATURE-DESIGN-DATA

Beschreibung

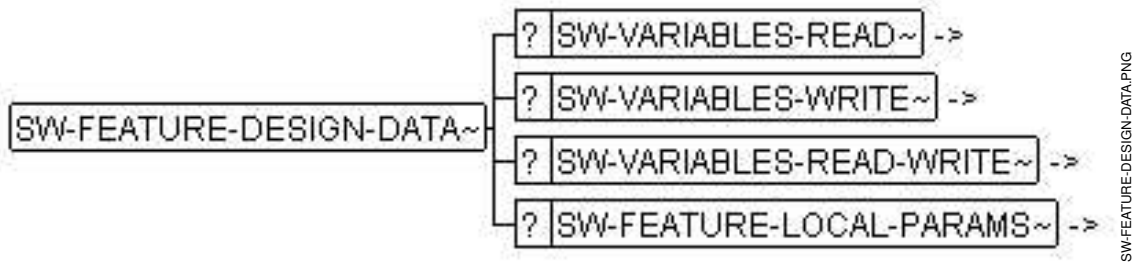
At the time of software system development, although the variables and calibration parameters are known, the implementation details and system distribution are not. (i.e. which characteristic variables are to be declared where, which are to be exported or imported). It is therefore possible to describe the logical information flow **<SW-FEATURE-DESIGN-DATA>**, without taking the distribution of declarations into account. This element is therefore intended for use in the initial software design phase, later becoming obsolete as a result of **<SW-FEATURE-VARIABLES>**, **<SW-FEATURE-CALPRMS>** and **<SW-FEATURE-CLASS-INSTANCES>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-VARIABLES-READ](#) p. 575, [SW-VARIABLES-WRITE](#) p. 576, [SW-VARIABLES-READ](#) p. 576, [SW-FEATURE-LOCAL-PARAMS](#) p. 403



SW-FEATURE-DESIGN-DATA.PNG

2.459 SW-FEATURE-ELEMENTS

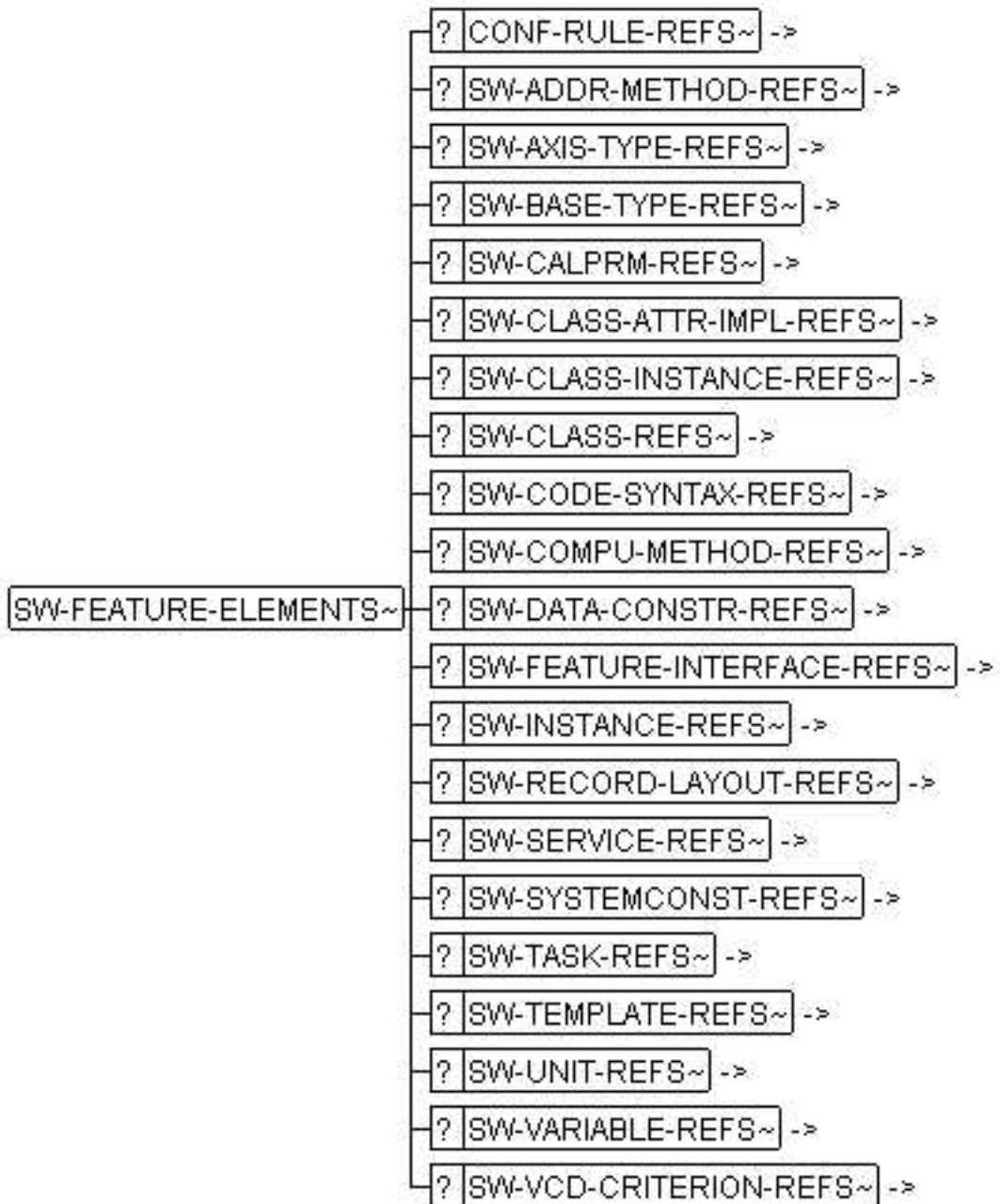
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-OWNED-ELEMENT-SET](#) p. 405, [SW-FEATURE-OWNED-ELEMENTS](#) p. 406, [SW-INTERFACE-EXPORT](#) p. 432, [SW-INTERFACE-IMPORT](#) p. 434

Ist Kontext für: [CONF-RULE-REFS](#) p. 67, [SW-ADDR-METHOD-REFS](#) p. 233, [SW-AXIS-TYPE-REFS](#) p. 249, [SW-BASE-TYPE-REFS](#) p. 254, [SW-CALPRM-REFS](#) p. 273, [SW-CLASS-ATTR-IMPL-REFS](#) p. 298, [SW-CLASS-INSTANCE-REFS](#) p. 304, [SW-CLASS-REFS](#) p. 310, [SW-CODE-SYNTAX-REFS](#) p. 316, [SW-COMPU-METHOD-REFS](#) p. 340, [SW-DATA-CONSTR-REFS](#) p. 365, [SW-FEATURE-INTERFACE-REFS](#) p. 402, [SW-INSTANCE-REFS](#) p. 427, [SW-RECORD-LAYOUT-REFS](#) p. 492, [SW-SERVICE-REFS](#) p. 509, [SW-SYSTEMCONST-REFS](#) p. 530, [SW-TASK-REFS](#) p. 537, [SW-TEMPLATE-REFS](#) p. 542, [SW-UNIT-REFS](#) p. 550, [SW-VARIABLE-REFS](#) p. 574, [SW-VCD-CRITERION-REFS](#) p. 581



2.460 SW-FEATURE-EXPORT-CALPRMS

Beschreibung

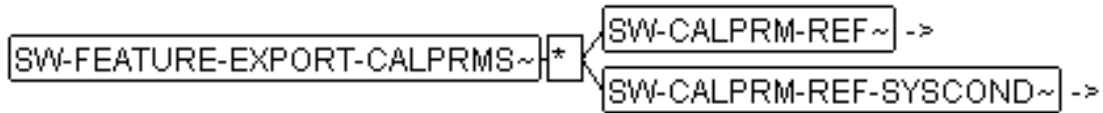
Parameters generated by a function and also made available in other functions, if required.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-PARAMS](#) p. 407

Ist Kontext für: [SW-CALPRM-REF p. 270](#), [SW-CALPRM-REF-SYSCOND p. 272](#)



SW-FEATURE-EXPORT-CALPRMS.PNG

2.461

SW-FEATURE-EXPORT-CLASS-INSTANCES

Beschreibung

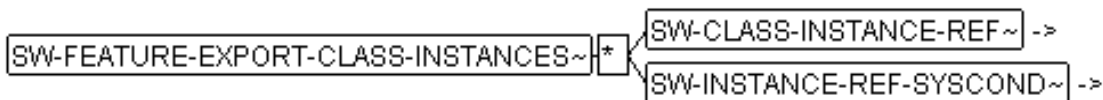
Class instances generated by a function and also made available in other functions, if required.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-CLASS-INSTANCES p. 390](#)

Ist Kontext für: [SW-CLASS-INSTANCE-REF p. 301](#), [SW-INSTANCE-REF-SYSCOND p. 426](#)



SW-FEATURE-EXPORT-CLASS-INSTANCES.PNG

2.462

SW-FEATURE-EXPORT-SERVICES

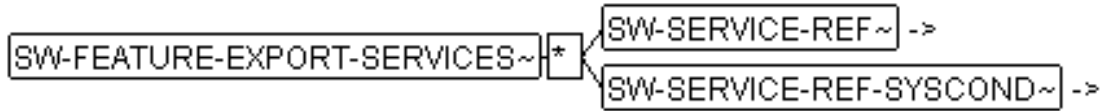
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-SERVICES p. 410](#)

Ist Kontext für: [SW-SERVICE-REF p. 508](#), [SW-SERVICE-REF-SYSCOND p. 508](#)



SW-FEATURE-EXPORT-SERVICES.PNG

2.463

SW-FEATURE-EXPORT-VARIABLES

Beschreibung

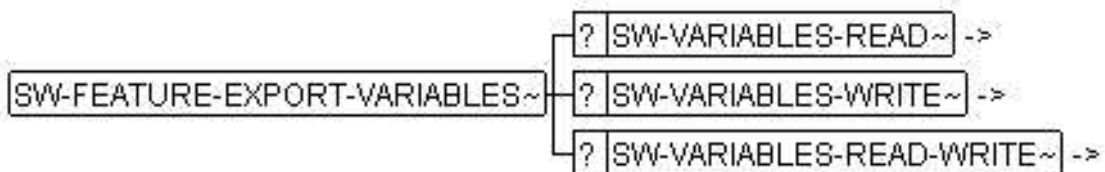
Output RAM variables, applied in the current function and available in other functions as input variables.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-VARIABLES](#) p. 410

Ist Kontext für: [SW-VARIABLES-READ](#) p. 575, [SW-VARIABLES-WRITE](#) p. 576, [SW-VARIABLES-READ](#) p. 576



SW-FEATURE-EXPORT-VARIABLES.PNG

2.464

SW-FEATURE-IMPORT-CALPRMS

Beschreibung

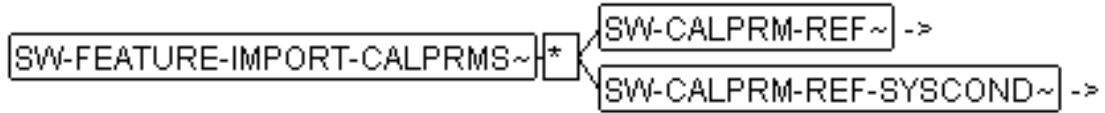
Parameters generated by a different function and used by the current function.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-PARAMS](#) p. 407

Ist Kontext für: [SW-CALPRM-REF](#) p. 270, [SW-CALPRM-REF-SYSCOND](#) p. 272



SW-FEATURE-IMPORT-CALPRMS.PNG

2.465

SW-FEATURE-IMPORT-CLASS-INSTANCES

Beschreibung

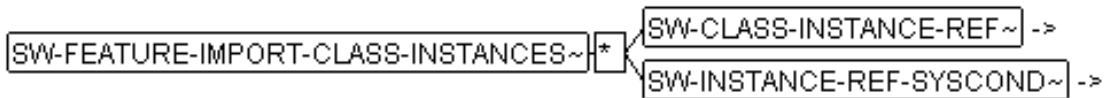
Class instances generated by a different function and used by the current function.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-CLASS-INSTANCES](#) p. 390

Ist Kontext für: [SW-CLASS-INSTANCE-REF](#) p. 301, [SW-INSTANCE-REF-SYSCOND](#) p. 426



SW-FEATURE-IMPORT-CLASS-INSTANCES.PNG

2.466

SW-FEATURE-IMPORT-SERVICES

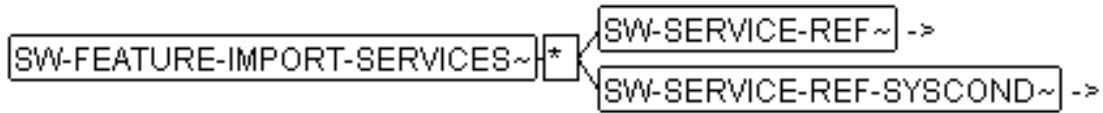
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-SERVICES](#) p. 410

Ist Kontext für: [SW-SERVICE-REF](#) p. 508, [SW-SERVICE-REF-SYSCOND](#) p. 508



SW-FEATURE-IMPORT-SERVICES.PNG

2.467 SW-FEATURE-IMPORT-VARIABLES

Beschreibung

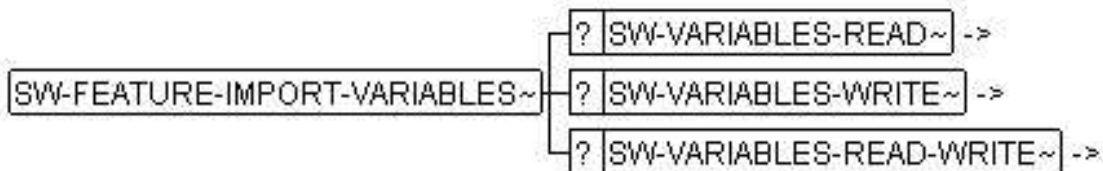
RAM variables generated by a different function and made available as an output.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-VARIABLES](#) p. 410

Ist Kontext für: [SW-VARIABLES-READ](#) p. 575, [SW-VARIABLES-WRITE](#) p. 576, [SW-VARIABLES-READ](#) p. 576



SW-FEATURE-IMPORT-VARIABLES.PNG

2.468 SW-FEATURE-INTERFACE

Beschreibung

A **<SW-FEATURE-INTERFACE>** is used to describe an interface of a software component (**<SW-FEATURE>**). It may contain up to 3 different kinds of interfaces: An export interface **<SW-INTERFACE-EXPORTS>**, an import interface **<SW-INTERFACE-IMPORT>** and an access interface **<SW-INTERFACE-ACCESSED-ELEMENT-SETS>**.

Beispiel

The following example shows two interfaces, one containing an export interface and one containing two import interfaces.

If these two interfaces belong to a software component (**<SW-FEATURE>**) called Emil, Emil exports a function (**<SW-SERVICE>**) called Emil_Func and a variable (**<SW-VARIABLE>**) called EMIL_Var1. These exported elements are visible in his parent component and their descendants, due to the scope level *PARENT*. To fulfill its task the component Emil needs (imports) the variables Max_Var1, Moritz_Var3 and Max_Var2.

```

<SW-FEATURE-INTERFACE>
  <SHORT-NAME>Emil_Export</SHORT-NAME>
  <CATEGORY>EXPORT</CATEGORY>
  <SW-INTERFACE-EXPORTS>
  
```

```

<SW-INTERFACE-EXPORT>
  <SW-INTERFACE-EXPORT-SCOPE>
    <SW-INTERFACE-EXPORT-LEVEL>PARENT</SW-INTERFACE-EXPORT-LEVEL>
  </SW-INTERFACE-EXPORT-SCOPE>
  <SW-FEATURE-ELEMENTS>
    <SW-SERVICE-REFS>
      <SW-SERVICE-REF>Emil_Func</SW-SERVICE-REF>
    </SW-SERVICE-REFS>
    <SW-VARIABLE-REFS>
      <SW-VARIABLE-REF>Emil_Var1</SW-VARIABLE-REF>
    </SW-VARIABLE-REFS>
  </SW-FEATURE-ELEMENTS>
</SW-INTERFACE-EXPORT>
</SW-INTERFACE-EXPORTS>
</SW-FEATURE-INTERFACE>

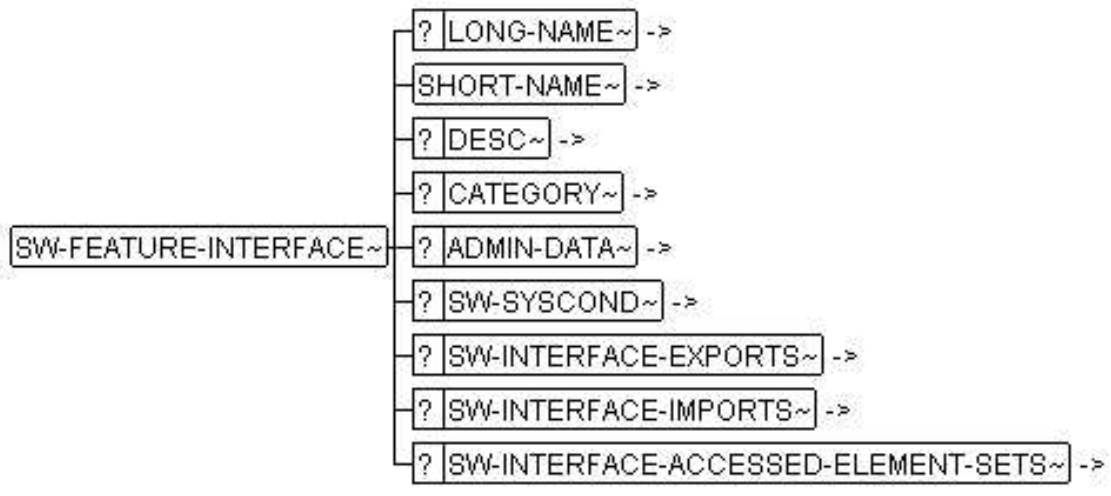
<SW-FEATURE-INTERFACE>
  <SHORT-NAME>Emil_Import</SHORT-NAME>
  <CATEGORY>IMPORT</CATEGORY>
  <SW-INTERFACE-IMPORTS>
    <SW-INTERFACE-IMPORT>
      <SW-FEATURE-ELEMENTS>
        <SW-VARIABLE-REFS>
          <SW-VARIABLE-REF>Max_Var1</SW-VARIABLE-REF>
          <SW-VARIABLE-REF>Moritz_Var3</SW-VARIABLE-REF>
        </SW-VARIABLE-REFS>
      </SW-FEATURE-ELEMENTS>
    </SW-INTERFACE-IMPORT>
  <SW-INTERFACE-IMPORT>
    <SW-FEATURE-ELEMENTS>
      <SW-VARIABLE-REFS>
        <SW-VARIABLE-REF>Max_Var2</SW-VARIABLE-REF>
      </SW-VARIABLE-REFS>
    </SW-FEATURE-ELEMENTS>
  </SW-INTERFACE-IMPORT>
</SW-INTERFACE-IMPORTS>
</SW-FEATURE-INTERFACE>

```

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACES](#) p. 402

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-SYSCOND](#) p. 511, [SW-INTERFACE-EXPORTS](#) p. 433, [SW-INTERFACE-IMPORTS](#) p. 434, [SW-INTERFACE-ACCESSED-ELEMENT-SETS](#) p. 431



SW-FEATURE-INTERFACE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE- INTERFACE	

2.469 SW-FEATURE-INTERFACE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACE-REF-SYSCOND](#) p. 401, [SW-FEATURE-INTERFACE-REFS](#) p. 402, [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431

Ist Kontext für: Text

`SW-FEATURE-INTERFACE-REF~`—#PCDATA

SW-FEATURE-INTERFACE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE- INTERFACE	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.470 SW-FEATURE-INTERFACE-REF-SYSCOND

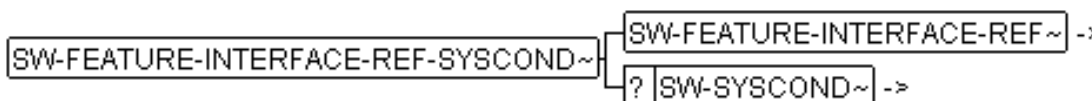
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACE-REFS](#) p. 402

Ist Kontext für: [SW-FEATURE-INTERFACE-REF](#) p. 401, [SW-SYSCOND](#) p. 511



SW-FEATURE-INTERFACE-REF-SYSCOND.PNG

2.471 SW-FEATURE-INTERFACE-REFS

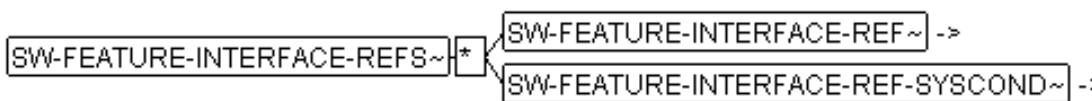
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-FEATURE-INTERFACE-REF](#) p. 401, [SW-FEATURE-INTERFACE-REF-SYSCOND](#) p. 401



SW-FEATURE-INTERFACE-REFS.PNG

2.472 SW-FEATURE-INTERFACES

Beschreibung

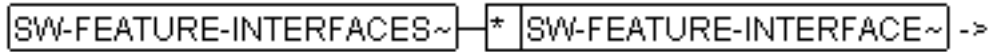
Container element for <SW-FEATURE-INTERFACE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-FEATURE-INTERFACE](#) p. 399



SW-FEATURE-INTERFACES.PNG

2.473

SW-FEATURE-LOCAL-CLASS-INSTANCES

Beschreibung

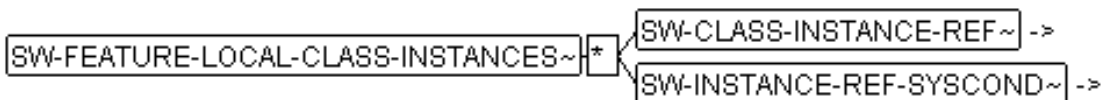
Class instances generated in the current function, which cannot be used in other functions.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-CLASS-INSTANCES](#) p. 390

Ist Kontext für: [SW-CLASS-INSTANCE-REF](#) p. 301, [SW-INSTANCE-REF-SYSCOND](#) p. 426



SW-FEATURE-LOCAL-CLASS-INSTANCES.PNG

2.474

SW-FEATURE-LOCAL-PARAMS

Beschreibung

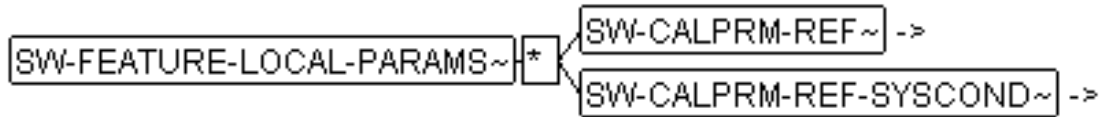
Parameters applied in the current function, which cannot be used in other functions.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-DESIGN-DATA](#) p. 393, [SW-FEATURE-PARAMS](#) p. 407

Ist Kontext für: [SW-CALPRM-REF](#) p. 270, [SW-CALPRM-REF-SYSCOND](#) p. 272



SW-FEATURE-LOCAL-PARAMS.PNG

2.475 SW-FEATURE-LOCAL-SERVICES

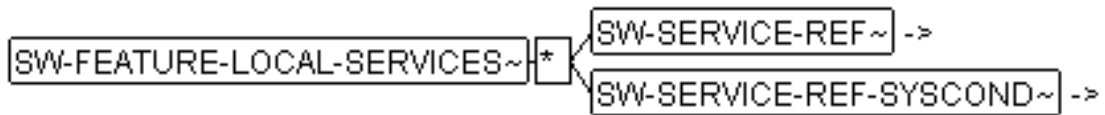
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-SERVICES](#) p. 410

Ist Kontext für: [SW-SERVICE-REF](#) p. 508, [SW-SERVICE-REF-SYSCOND](#) p. 508



SW-FEATURE-LOCAL-SERVICES.PNG

2.476 SW-FEATURE-LOCAL-VARIABLES

Beschreibung

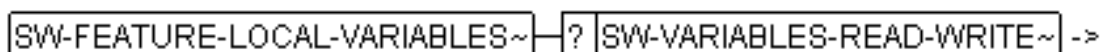
Variables applied in the current function, which cannot be used in other functions.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-VARIABLES](#) p. 410

Ist Kontext für: [SW-VARIABLES-READ-WRITE](#) p. 576



SW-FEATURE-LOCAL-VARIABLES.PNG

2.477 SW-FEATURE-MODEL-ONLY-VARIABLES

Beschreibung

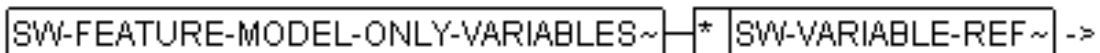
This element describes variables that only exist in simulation models and do not exist in a real ECU. This usually involves virtual variables (i.e. with **<SW-IS-VIRTUAL>**).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-VARIABLES](#) p. 410

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572



SW-FEATURE-MODEL-ONLY-VARIABLES.PNG

2.478 SW-FEATURE-OWNED-ELEMENT-SET

Beschreibung

This element specifies a set of elements being "owned" by a particular software component (represented as **<SW-FEATURE>**). This feature is responsible e.g. for allocation of memory (of e.g. variables) or for the definition of the computation method etc. Elements owned by a particular components are usually imported by other components in order to access resp. to use it.

There might be sets of owned elements which are dependant on **<SW-SYSCOND>** . Therefore within one component there might be multiple sets.

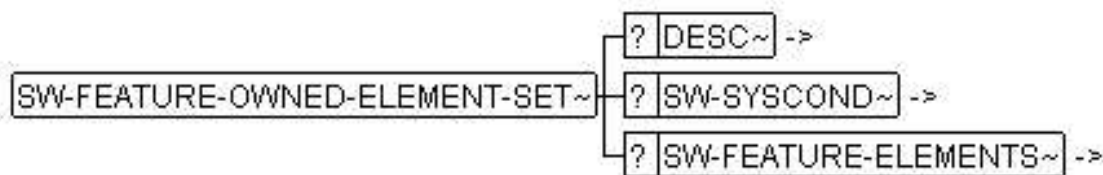
This element replaces the deprecated SW-FEATURE-OWNED-ELEMENTS which did not have the option to created sets of **<SW-SYSCOND>** dependant owned elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-OWNED-ELEMENT-SETS](#) p. 406

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-FEATURE-ELEMENTS](#) p. 394



SW-FEATURE-OWNED-ELEMENT-SET.PNG

2.479 SW-FEATURE-OWNED-ELEMENT-SETS

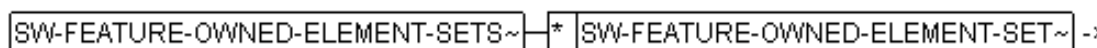
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS p. 276](#), [SW-FEATURE p. 386](#)

Ist Kontext für: [SW-FEATURE-OWNED-ELEMENT-SET p. 405](#)



SW-FEATURE-OWNED-ELEMENT-SETS.PNG

2.480 SW-FEATURE-OWNED-ELEMENTS

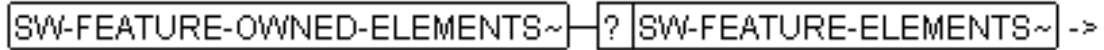
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS p. 276](#), [SW-FEATURE p. 386](#)

Ist Kontext für: [SW-FEATURE-ELEMENTS p. 394](#)



SW-FEATURE-OWNED-ELEMENTS.PNG

2.481 SW-FEATURE-PARAMS

Beschreibung

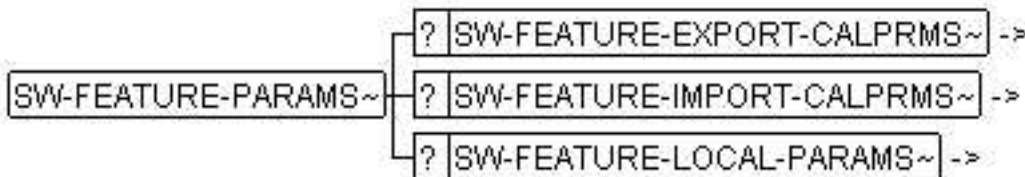
This element declares parameters generated by a different function **<SW-FEATURE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS p. 276](#), [SW-FEATURE p. 386](#)

Ist Kontext für: [SW-FEATURE-EXPORT-CALPRMS p. 395](#), [SW-FEATURE-IMPORT-CALPRMS p. 397](#), [SW-FEATURE-LOCAL-PARAMS p. 403](#)



SW-FEATURE-PARAMS.PNG

2.482 SW-FEATURE-REF

Beschreibung

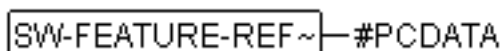
This element references a SW-function **<SW-FEATURE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCE p. 68](#), [SW-AR-RELATION p. 235](#), [SW-FEATURE-REF-SYSCOND p. 409](#), [SW-FEATURE-REFS p. 409](#), [SW-INSTANCE p. 420](#), [SW-INSTANCE-TREE p. 428](#), [SW-ROOT-FEATURES p. 497](#), [SW-SUBCOMPONENT p. 511](#)

Ist Kontext für: Text



SW-FEATURE-REF.PNG



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.483 SW-FEATURE-REF-SYSCOND

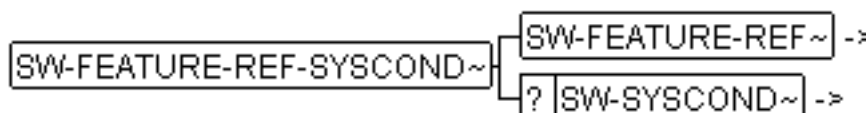
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-REFS](#) p. 409

Ist Kontext für: [SW-FEATURE-REF](#) p. 407, [SW-SYSCOND](#) p. 511



SW-FEATURE-REF-SYSCOND.PNG

2.484 SW-FEATURE-REFS

Beschreibung

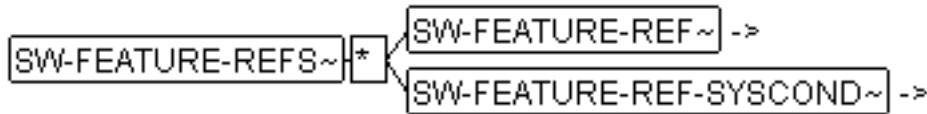
Container element for <SW-FEATURE-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-INTERFACE-EXPORT-SCOPE](#) p. 433

Ist Kontext für: [SW-FEATURE-REF](#) p. 407, [SW-FEATURE-REF-SYSCOND](#) p. 409



SW-FEATURE-REFS.PNG

2.485 SW-FEATURE-SERVICES

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-FEATURE-EXPORT-SERVICES](#) p. 396, [SW-FEATURE-IMPORT-SERVICES](#) p. 398, [SW-FEATURE-LOCAL-SERVICES](#) p. 404



SW-FEATURE-SERVICES.PNG

2.486 SW-FEATURE-VARIABLES

Beschreibung

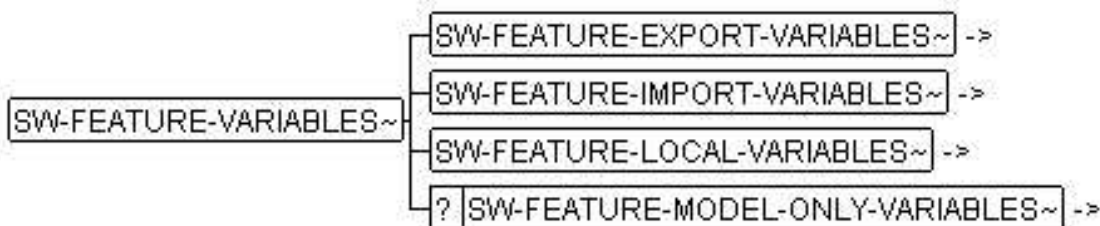
This element declares variables generated by a different function **<SW-FEATURE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-FEATURE-EXPORT-VARIABLES](#) p. 397, [SW-FEATURE-IMPORT-VARIABLES](#) p. 399, [SW-FEATURE-LOCAL-VARIABLES](#) p. 404, [SW-FEATURE-MODEL-ONLY-VARIABLES](#) p. 404



SW-FEATURE-VARIABLES.PNG

2.487 SW-FEATURE-VARIANT

Beschreibung

Das Tag **<SW-FEATURE-VARIANT>** enthält Informationen um Varianten von SW-Komponenten eindeutig zu identifizieren. Mit dem **<SHORT-NAME>** in diesem Tag lässt sich eine Variante einer SW-Komponente eindeutig identifizieren (unique name). Dies wird benötigt da alle Varianten einer SW-Komponente denselben **<SHORT-NAME>** unter **<SW-FEATURE>** haben (common name).

The unique name of a SW-Component is the case sensitive unique identifier of a SW-Component in the name space of the software system. If the SW-Component is not a variant, then unique name and common name of this SW-Component are identical.

Beispiel

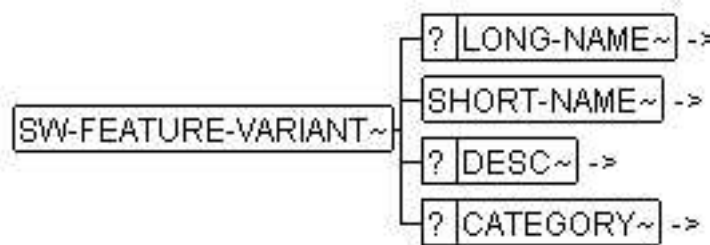
```
<SW-FEATURE>
<SHORT-NAME>Engine</SHORT-NAME>
<CATEGORY>FCT</CATEGORY>
  <SW-FEATURE-VARIANT>
    <SHORT-NAME>Engine_Diesel</SHORT-NAME>
  </SW-FEATURE-VARIANT>
```

This example defines a sw component with a unique name **Engine_Diesel** which is a variant of the sw component with the common name **Engine**.

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42



SW-FEATURE-VARIANT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE-VARIANT	
[F-NAMESPACE] (fixed)	nmtoken	SW-FEATURE-VARIANT	

2.488 SW-FEATURE-VARIANT-OF

Beschreibung

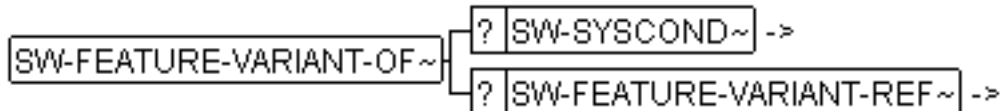
This element serves as a reference to the unique label of a SW-Component variant, namely to the `<SW-FEATURE>/<SW-FEATURE-VARIANT>/<SHORT-NAME>`. More information can be found in the use case specification for ArComp.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE](#) p. 386

Ist Kontext für: [SW-SYSCOND](#) p. 511, [SW-FEATURE-VARIANT-REF](#) p. 412



SW-FEATURE-VARIANT-OF.PNG

2.489 SW-FEATURE-VARIANT-REF

Beschreibung

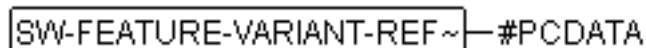
Is part of `<SW-FEATURE-VARIANT-OF >`. Please look at description there.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AR-RELATION](#) p. 235, [SW-FEATURE-VARIANT-OF](#) p. 411, [SW-SUBCOMPONENT](#) p. 511

Ist Kontext für: Text



SW-FEATURE-VARIANTREF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-FEATURE-VARIANT	

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.490 SW-FILL-CHARACTER

Beschreibung

Filler character for text parameter to pad up to the maximum length `<SW-CALPRM-MAX-TEXT-SIZE>` in the parent element `<SW-CALPRM-TEXT>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CALPRM-TEXT p. 274](#)

Ist Kontext für: Text

```
SW-FILL-CHARACTER~|#PCDATA
```

SW-FILL-CHARACTER.PNG

2.491 SW-FULFILS

Beschreibung

With this element, references are specified to the requirements fulfilled with the existing feature. Here, there are two possibilities:

- `<FUNCTION-REF>` on the behaviour of system functions in *MSRSYS.DTD* -instances
- References to requirements via `<REQUIREMENT-REF>` , which occur in the same MSRSW-instance, but which can also be described in an external document.

Beispiel

See [Chapter 2.482 SW-FEATURE-REF p. 407](#)

Formale Beschreibung

Hat als Kontext: [SW-CLASS p. 276](#), [SW-FEATURE p. 386](#)

Ist Kontext für: [FUNCTION-REF p. 105](#), [REQUIREMENT-REF p. 193](#)



SW-FULFILS.PNG

2.492 SW-GENERIC-AXIS-DESC

Beschreibung

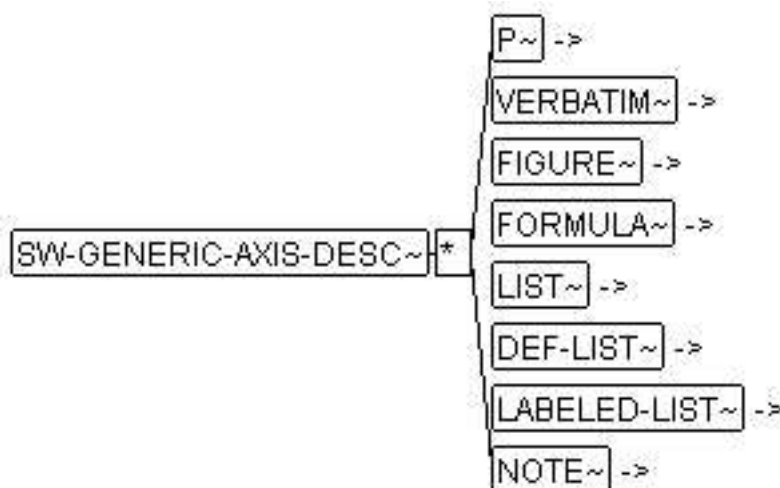
This element contains an axis description in text form for a **<SW-AXIS-TYPE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-TYPE](#) p. 245

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166



SW-GENERIC-AXIS-DESC.PNG

2.493 SW-GENERIC-AXIS-PARAM

Beschreibung

This element describes a specific parameter of a generic axis. For this parameter, the following must be specified:

- The name of the parameter; implemented here through a reference (**<SW-GENERIC-AXIS-PARAM-TYPE-REF>**) to a parameter defined on a corresponding axis type. This is contained in the sister element **<SW-AXIS-TYPE-REF>** of the corresponding **<SW-GENERIC-AXIS-PARAMS>** element.

Caution:

References can only be made to axis parameters, defined within the referenced axis type.

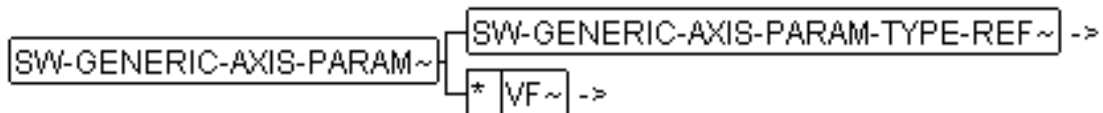
- The value of the parameter, specified in the element **<VF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-GENERIC-AXIS-PARAMS](#) p. 418

Ist Kontext für: [SW-GENERIC-AXIS-PARAM-TYPE-REF](#) p. 416, [VF](#) p. 628



SW-GENERIC-AXIS-PARAM.PNG

2.494

SW-GENERIC-AXIS-PARAM-TYPE

Beschreibung

This element describes a generic axis type which contains:

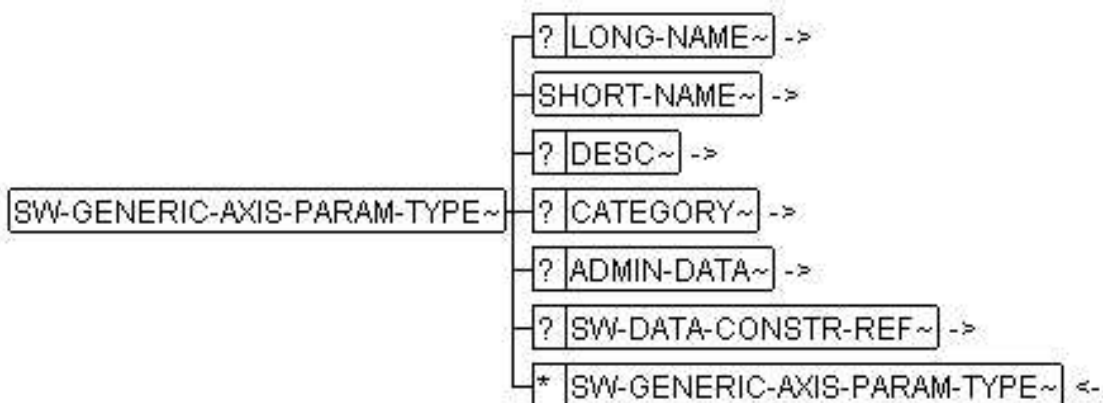
- Plausibility checks can be specified ([<SW-DATA-CONSTR-REF>](#)).
- Textual description ([<DESC>](#)), as a formal description is not of any use, due to the large variety of possibilities.
- If this parameter contains structures, these can be simulated through the recursive use of [<SW-GENERIC-AXIS-PARAM-TYPES>](#) .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-GENERIC-AXIS-PARAM-TYPE](#) p. 415, [SW-GENERIC-AXIS-PARAM-TYPES](#) p. 418

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-DATA-CONSTR-REF](#) p. 362, [SW-GENERIC-AXIS-PARAM-TYPE](#) p. 415



SW-GENERIC-AXIS-PARAM-TYPE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-GENERIC-AXIS-PARAM-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.495 SW-GENERIC-AXIS-PARAM-TYPE-REF

Beschreibung

This element references <SW-GENERIC-AXIS-PARAM-TYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-GENERIC-AXIS-PARAM](#) p. 414, [SW-RECORD-LAYOUT-GROUP](#) p. 486, [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-GENERIC-AXIS-PARAM-TYPE-REF ~ #PCDATA



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-GENERIC-AXIS-PARAM-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.496 SW-GENERIC-AXIS-PARAM-TYPES

Beschreibung

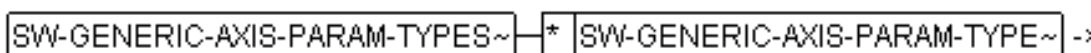
Container element for <SW-GENERIC-AXIS-PARAM-TYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-TYPE](#) p. 245

Ist Kontext für: [SW-GENERIC-AXIS-PARAM-TYPE](#) p. 415



SW-GENERIC-AXIS-PARAM-TYPES.PNG

2.497 SW-GENERIC-AXIS-PARAMS

Beschreibung

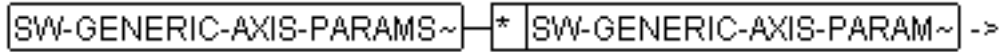
Container element for <SW-GENERIC-AXIS-PARAM> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-GENERIC](#) p. 241

Ist Kontext für: [SW-GENERIC-AXIS-PARAM](#) p. 414



2.498 SW-GLOSSARY

Beschreibung

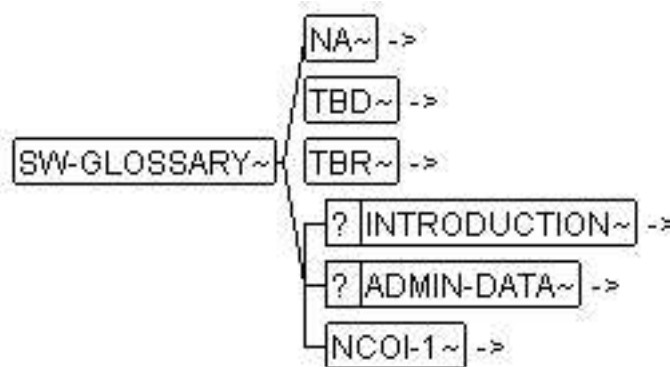
The function of this element is to compile a glossary. This is in the context of inputting a fixed chapter in the ECU documentation, which appears in a glossary.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [NA p. 159](#), [TBD p. 595](#), [TBR p. 597](#), [INTRODUCTION p. 124](#), [ADMIN-DATA p. 30](#), [NCOI-1 p. 162](#)



2.499 SW-HOST-VARIABLE

Beschreibung

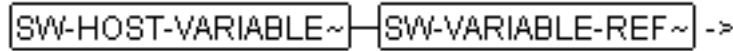
This element contains a reference **<SW-VARIABLE-REF>** to a variable, which serves as a host-variable for a bit variable **<SW-BIT-REPRESENTATION>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: [SW-VARIABLE-REF p. 572](#)



2.500 SW-IMPL-POLICY

Beschreibung

<SW-IMPL-POLICY> enables the specification of an implementation strategy. In this way, the direction of the implementation to come, can be specified in advance in an earlier phase. The contents of the element comprise of a key word which is to be declared in the process. Examples of possible values are

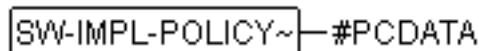
- MEMORY_OPTIMIZED
- CPU-OPTIMIZED
- INPLACE
- SINGLE-INSTANCE
- MULTI-INSTANCE

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#), [SW-SERVICE-PROPS p. 504](#)

Ist Kontext für: Text



2.501 SW-INSTANCE

Beschreibung

A <SW-INSTANCE> indicates instance-specific information. If a variable or scalar parameter is specified, the subelement <SHORT-NAME> has to be populated, if a parameter array is specified, the <SW-ARRAY-INDEX> has to be populated.

<SW-INSTANCE> represents one particular calibration item and therefore corresponds to *CAL-ITEM* in CDF.

Beispiel

<SW-INSTANCE>

```
<LONG-NAME>faule Bären aus München (Viktualienmarkt)</LONG-NAME>
<SHORT-NAME>FBAM_V</SHORT-NAME>
<CATEGORY>curve_individual</CATEGORY>
<SW-INSTANCE-PROPS-VARIANTS>
  <SW-INSTANCE-PROPS-VARIANT>
    <SW-AXIS-CONTS>
      <SW-AXIS-CONT>
        <SW-UNIT-REF>grad_040C</SW-UNIT-REF>
```

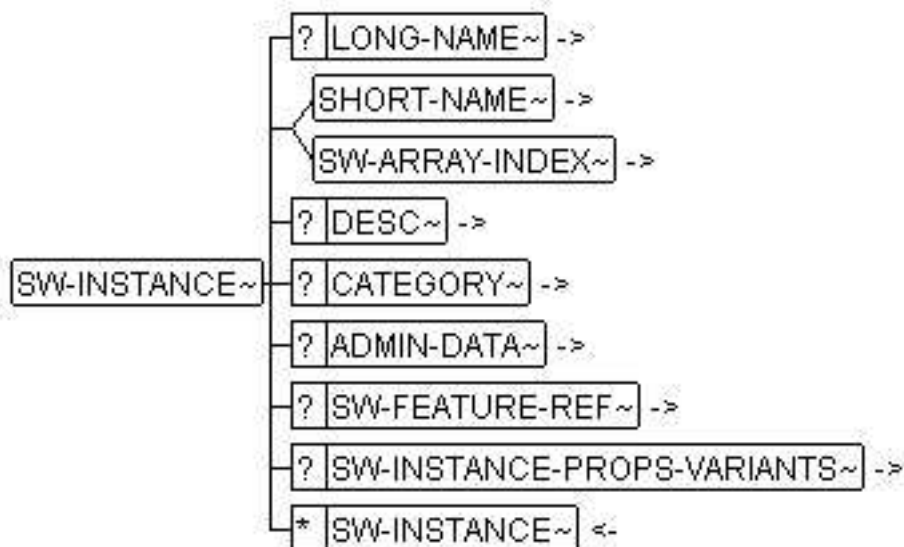


```
<SW-AXIS-INDEXT>1</SW-AXIS-INDEXT>
<SW-VALUES-PHYS>
  <V>-35.6</V>
  <V>-32.0</V>
  <V>-24.9</V>
  <V>-21.3</V>
  <V>-18.4</V>
  <V>-15.5</V>
  <V>-14.1</V>
  <V>3.9</V>
  <V>21.8</V>
  <V>39.8</V>
</SW-VALUES-PHYS>
</SW-AXIS-CONT>
<SW-AXIS-CONT>
  <SW-UNIT-REF>km_pro_h</SW-UNIT-REF>
  <SW-AXIS-INDEXT>0</SW-AXIS-INDEXT>
  <SW-VALUES-PHYS>
    <V>0.00</V>
    <V>3.63</V>
    <V>3.75</V>
    <V>3.88</V>
    <V>3.94</V>
    <V>4.06</V>
    <V>4.13</V>
    <V>4.25</V>
    <V>4.69</V>
    <V>5.25</V>
  </SW-VALUES-PHYS>
</SW-AXIS-CONT>
</SW-AXIS-CONTS>
<SW-CS-HISTORY>
  <SW-CS-ENTRY>
    <SW-CS-STATE>calibrated</SW-CS-STATE>
    <SW-CS-CONTEXT>development of demo version</SW-CS-CONTEXT>
    <SW-CS-PROJECT-INFO>Demo-Project CDF / ASAM-MCD-2D</SW-CS-PROJECT-INFO>
    <SW-CS-TARGET-VARIANT>automatic gear</SW-CS-TARGET-VARIANT>
    <SW-CS-TEST-OBJECT>Vehicle: S-Nn-4455</SW-CS-TEST-OBJECT>
    <SW-CS-PROGRAM-IDENTIFIER>67985</SW-CS-PROGRAM-IDENTIFIER>
    <SW-CS-DATA-IDENTIFIER>67985:123.4</SW-CS-DATA-IDENTIFIER>
    <SW-CS-PERFORMED-BY>Weichel</SW-CS-PERFORMED-BY>
    <REMARK>
      <P>Note that we did not really calibrate this. The current structure is for de
    </P>
    </REMARK>
    <DATE>18.05.2001T13.23</DATE>
    <SW-CS-FIELD SI="feeling">We did feel good while doing this stuff.</SW-CS-FIELD>
  </SW-CS-ENTRY>
</SW-CS-HISTORY>
</SW-INSTANCE-PROPS-VARIANT>
</SW-INSTANCE-PROPS-VARIANTS>
</SW-INSTANCE>
```

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE](#) p. 420, [SW-INSTANCE-TREE](#) p. 428

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [SW-ARRAY-INDEX](#) p. 237, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-FEATURE-REF](#) p. 407, [SW-INSTANCE-PROPS-VARIANTS](#) p. 424, [SW-INSTANCE](#) p. 420



SW-INSTANCE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-INSTANCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtoken	SW-INSTANCE	Fixed Namespace. This attribute is placed on elements which define a namespace for linkable objects. The attribute contains a list of elements for which the element carrying the attribute is a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names of the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.502 SW-INSTANCE-PROPS-VARIANT

Beschreibung

<SW-INSTANCE-PROPS-VARIANT> describes one particular variant of the current calibration item. Since *CDF* did not request this, there is one and only one variant per calibration item which can be specified.

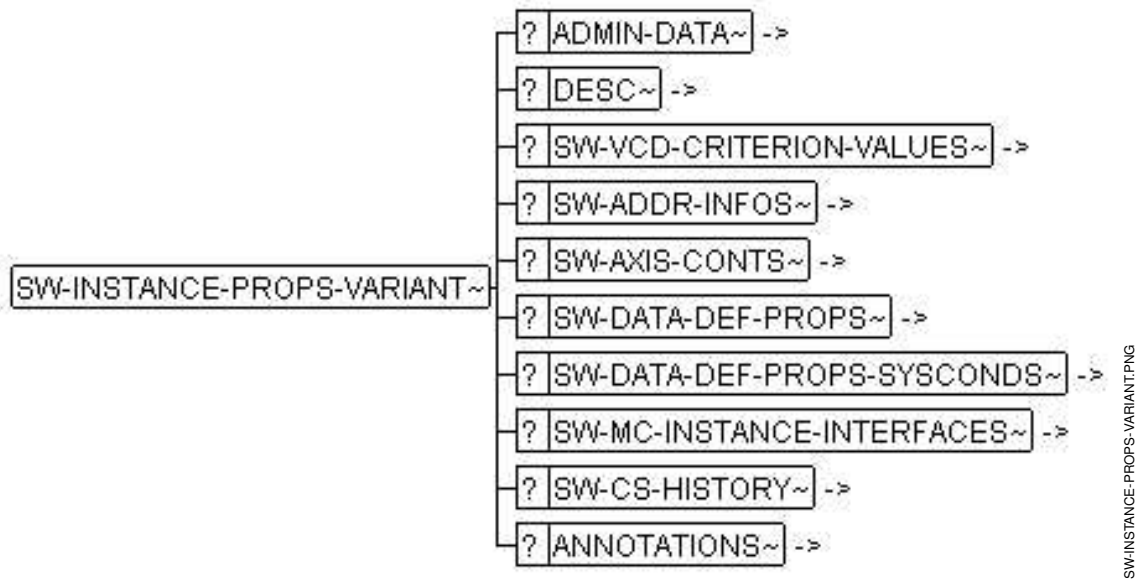
Beispiel

For an example, see [Chapter 2.411 SW-CS-HISTORY p. 356](#) [Chapter 2.331 SW-CLASS p. 276](#).

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-PROPS-VARIANTS p. 424](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [DESC p. 83](#), [SW-VCD-CRITERION-VALUES p. 582](#), [SW-ADDR-INFOS p. 227](#), [SW-AXIS-CONTS p. 241](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-DATA-DEF-PROPS-SYSCONDS p. 368](#), [SW-MC-INSTANCE-INTERFACES p. 450](#), [SW-CS-HISTORY p. 356](#), [ANNOTATIONS p. 34](#)



2.503 SW-INSTANCE-PROPS-VARIANTS

Beschreibung

<SW-INSTANCE-PROPS-VARIANTS> is the container which takes all variants of one particular calibration item.

Beispiel

For an example, see [Chapter 2.501 SW-INSTANCE](#) p. 420 [Chapter 2.331 SW-CLASS](#) p. 276 .

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE](#) p. 420

Ist Kontext für: [SW-INSTANCE-PROPS-VARIANT](#) p. 423



2.504 SW-INSTANCE-REF

Beschreibung

This element references <SW-INSTANCE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-DEFAULT-VALUE](#) p. 58, [CONF-ITEM](#) p. 59, [CONF-PRO-VALUE](#) p. 63, [SW-INSTANCE-REF-SYSCOND](#) p. 426, [SW-INSTANCE-REFS](#) p. 427, [SW-MC-BLOB-ECU-DEPOSIT](#) p. 444, [SW-VALUES-CODED](#) p. 560, [SW-VALUES-CODED-HEX](#) p. 560, [SW-VALUES-GENERIC](#) p. 561, [SW-VALUES-PHYS](#) p. 562, [VG](#) p. 629

Ist Kontext für: Text

SW-INSTANCE-REF~—#PCDATA

SW-INSTANCE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-INSTANCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.505 SW-INSTANCE-REF-SYSCOND

Beschreibung

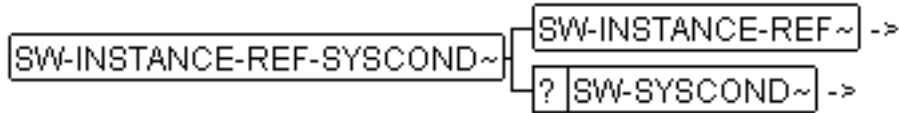
This element is a conditional reference to a class instance. It is used to ensure that the assignment of class instances to functions is dependent on the settings of system constants. For this reason, the element exists parallel to <SW-INSTANCE-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-EXPORT-CLASS-INSTANCES](#) p. 396, [SW-FEATURE-IMPORT-CLASS-INSTANCES](#) p. 398, [SW-FEATURE-LOCAL-CLASS-INSTANCES](#) p. 403, [SW-INSTANCE-REFS](#) p. 427

Ist Kontext für: [SW-INSTANCE-REF](#) p. 424, [SW-SYSCOND](#) p. 511



2.506 SW-INSTANCE-REFS

Beschreibung

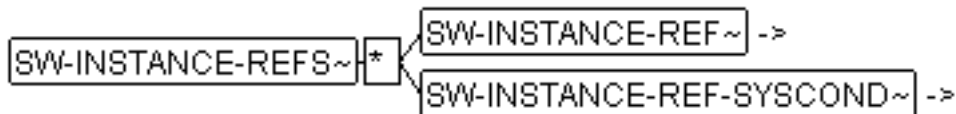
Container element for [<SW-INSTANCE-REF>](#) .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-INSTANCE-REF](#) p. 424, [SW-INSTANCE-REF-SYSCOND](#) p. 426



2.507 SW-INSTANCE-SPEC

Beschreibung

[<SW-INSTANCE-SPEC>](#) is the section within a [<SW-SYSTEM>](#) which gathers any information on the instances of data items within the ECU, in particular the calibration items.

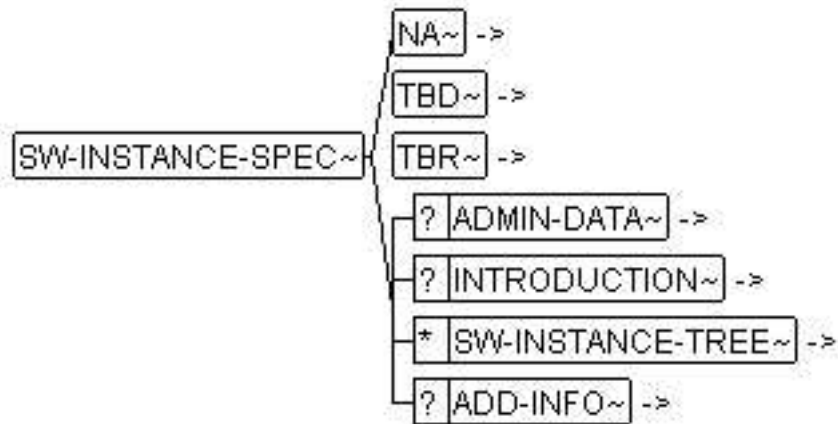
As [<SW-SYSTEM>](#) does not allow a note or introduction to be placed, the [<INTRODUCTION>](#) of [<SW-INSTANCE-SPEC>](#) corresponds to *NOTE* in *CAL-LIST* specified by *CDF* .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-INSTANCE-TREE](#) p. 428, [ADD-INFO](#) p. 26



SW-INSTANCE-SPEC.PNG

2.508 SW-INSTANCE-TREE

Beschreibung

The instance tree contains all "real existing" instances, i.e. variables and parameters, that are part of the ECU software. The structure takes the form of a tree (in contrast to ASAM-MCD- 2MC V1.3 where only a flat list is possible) to reflect the natural (e.g. function resp. feature) structure.

<SW-INSTANCE-TREE> receives one particular set of calibration items. Therefore it corresponds to *CAL-LIST* within the *CDF* specification.

Beispiel

```

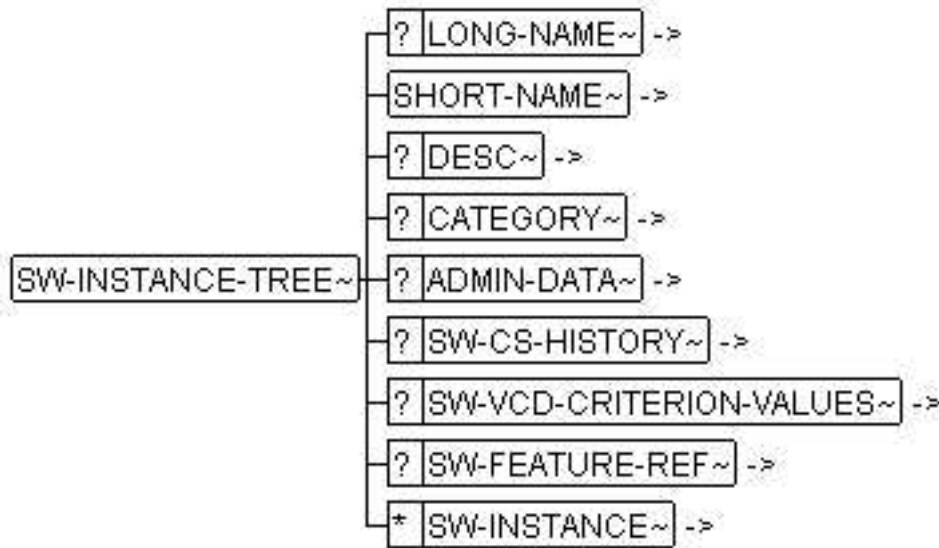
<SW-INSTANCE-SPEC>
  <INTRODUCTION>
    <P>This is the system to demonstrate, how CDF should work.</P>
  </INTRODUCTION>
  <SW-INSTANCE-TREE>
    <SHORT-NAME>Summertest</SHORT-NAME>
    <SW-INSTANCE>
      <LONG-NAME>faule Bären aus München (Viktualienmarkt)</LONG-NAME>
      <SHORT-NAME>FBAM_V</SHORT-NAME> ... </SW-INSTANCE>
    </SW-INSTANCE-TREE>

    <SW-INSTANCE-TREE>
      <SHORT-NAME>Wintertest</SHORT-NAME>
      <SW-INSTANCE>
        <LONG-NAME>faule Bären aus München (Viktualienmarkt)</LONG-NAME>
        <SHORT-NAME>FBAM_V</SHORT-NAME> ... </SW-INSTANCE>
      </SW-INSTANCE-TREE>
    </SW-INSTANCE-SPEC>
  
```

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-SPEC](#) p. 427

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CS-HISTORY](#) p. 356, [SW-VCD-CRITERION-VALUES](#) p. 582, [SW-FEATURE-REF](#) p. 407, [SW-INSTANCE](#) p. 420



SW-INSTANCE-TREE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-INSTANCE-TREE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtoken	SW-INSTANCE	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.509 SW-INTENDED-RESOLUTION

Beschreibung

The purpose of this element is to describe the requested quantization of data objects early on in the design process. The resolution ultimately occurs via the conversion formula present (**<SW-COMPU-METHOD>**), which specifies the transition from the physical world to the standardized world (and vice-versa) (here, "the slope per bit" is present implicitly in the conversion formula). In the case of a development phase without a fixed conversion formula, a pre-specification can occur through **<SW-INTENDED-RESOLUTION>**. If however, a conversion formula is present, this can be checked for plausibility against **<SW-INTENDED-RESOLUTION>** .

Beispiel

```
<SW-VARIABLE>
  <LONG-NAME>Drehzahl</LONG-NAME>
  <SHORT-NAME>N</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-INTENDED-RESOLUTION>40</SW-INTENDED-RESOLUTION>
    <SW-UNIT-REF>upm</SW-UNIT-REF>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE>
```

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

SW-INTENDED-RESOLUTION~|#PCDATA

2.510 SW-INTERFACE-ACCESSED-ELEMENT-SET

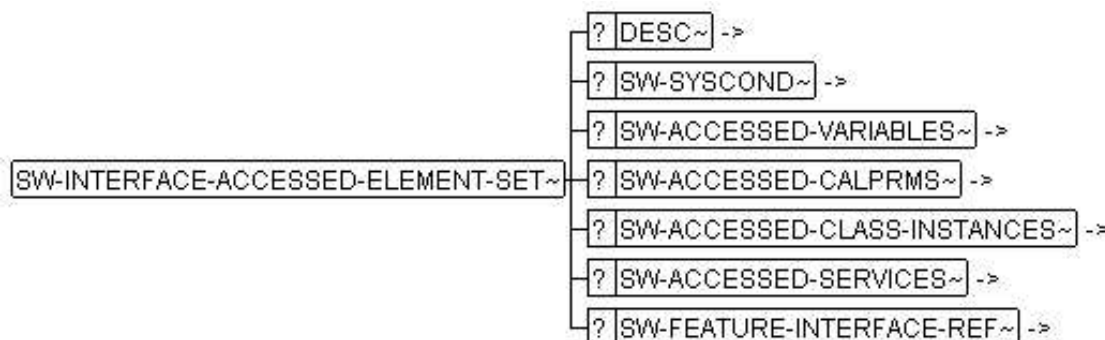
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-ACCESSED-ELEMENT-SETS](#) p. 431

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-ACCESSED-VARIABLES](#) p. 226, [SW-ACCESSED-CALPRMS](#) p. 223, [SW-ACCESSED-CLASS-INSTANCES](#) p. 224, [SW-ACCESSED-SERVICES](#) p. 225, [SW-FEATURE-INTERFACE-REF](#) p. 401



2.511 SW-INTERFACE-ACCESSED-ELEMENT-SETS

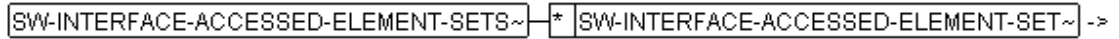
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACE](#) p. 399

Ist Kontext für: [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431



2.512 SW-INTERFACE-EXPORT

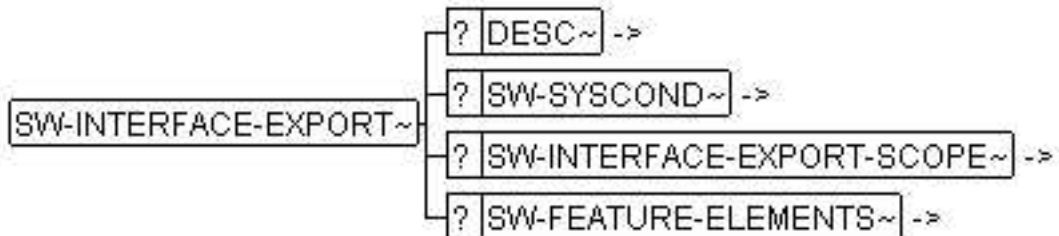
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-EXPORTS](#) p. 433

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-INTERFACE-EXPORT-SCOPE](#) p. 433, [SW-FEATURE-ELEMENTS](#) p. 394



2.513 SW-INTERFACE-EXPORT-LEVEL

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-EXPORT-SCOPE](#) p. 433

Ist Kontext für: Text

`SW-INTERFACE-EXPORT-LEVEL~` - #PCDATA

2.514 SW-INTERFACE-EXPORT-SCOPE

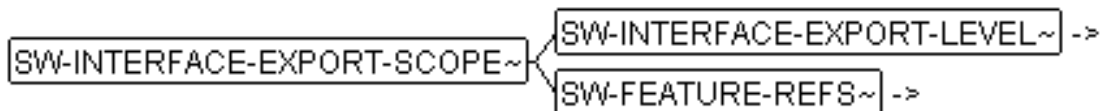
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-SOURCES-OPTIONAL](#) p. 70, [CONF-SOURCES-PROHIBITED](#) p. 70, [CONF-SOURCES-REQUIRED](#) p. 70, [SW-INTERFACE-EXPORT](#) p. 432

Ist Kontext für: [SW-INTERFACE-EXPORT-LEVEL](#) p. 432, [SW-FEATURE-REFS](#) p. 409



2.515 SW-INTERFACE-EXPORTS

Beschreibung

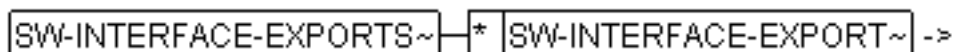
Container element for <SW-INTERFACE-EXPORT> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACE](#) p. 399

Ist Kontext für: [SW-INTERFACE-EXPORT](#) p. 432



2.516 SW-INTERFACE-IMPORT

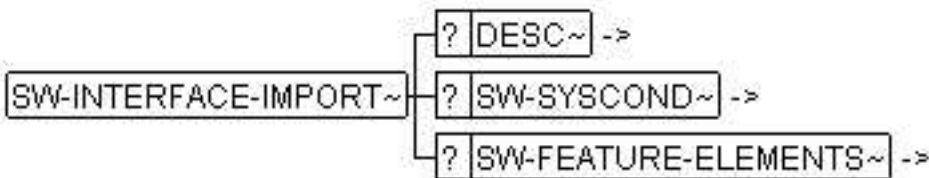
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERFACE-IMPORTS](#) p. 434

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-FEATURE-ELEMENTS](#) p. 394



SW-INTERFACE-IMPORT.PNG

2.517 SW-INTERFACE-IMPORTS

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-INTERFACE](#) p. 399

Ist Kontext für: [SW-INTERFACE-IMPORT](#) p. 434



SW-INTERFACE-IMPORTS.PNG

2.518 SW-INTERNAL-CONSTRS

Beschreibung

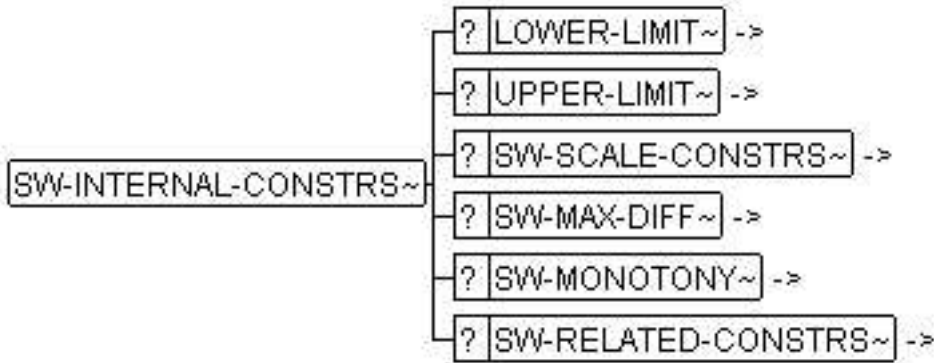
Describes the limitations valid for the standardized values of variables or calibration parameters (as opposed to **<SW-PHYS-CONSTRS>**).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR-RULE](#) p. 365

Ist Kontext für: [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616, [SW-SCALE-CONSTRS](#) p. 498, [SW-MAX-DIFF](#) p. 438, [SW-MONOTONY](#) p. 469, [SW-RELATED-CONSTRS](#) p. 497



SW-INTERNAL-CONSTRS.PNG

2.519 SW-INTERNAL-CONSTRS-1

Beschreibung

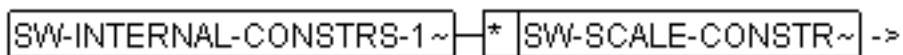
This element restricts `<SW-INTERNAL-CONSTRS>`, to such an extent that only ranges of values can be defined.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD](#) p. 336

Ist Kontext für: [SW-SCALE-CONSTR](#) p. 498



SW-INTERNAL-CONSTRS-1.PNG

2.520 SW-INTERPOLATION-METHOD

Beschreibung

This element provides a textual description of the mathematic interpolation method that is to be used.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

`SW-INTERPOLATION-METHOD~`—#PCDATA

SW-INTERPOLATION-METHOD.PNG

2.521

SW-IS-VIRTUAL

Beschreibung

This element distinguishes virtual objects. Virtual objects do not appear in the memory, their derivation is much more dependent on other objects and hence they must have a **<SW-DATA-DEPENDENCY>** .

Hint:

The contents of the element must always be set to the value "yes". More recent versions can also admit other values. The element is given contents to prevent the occurrence of empty elements which are problematic in SGML.

Beispiel

See [Chapter 2.428 SW-DATA-DEPENDENCY](#) p. 369

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

`SW-IS-VIRTUAL~`—#PCDATA

SW-IS-VIRTUAL.PNG

2.522

SW-MAINTENANCE-NOTES

Beschreibung

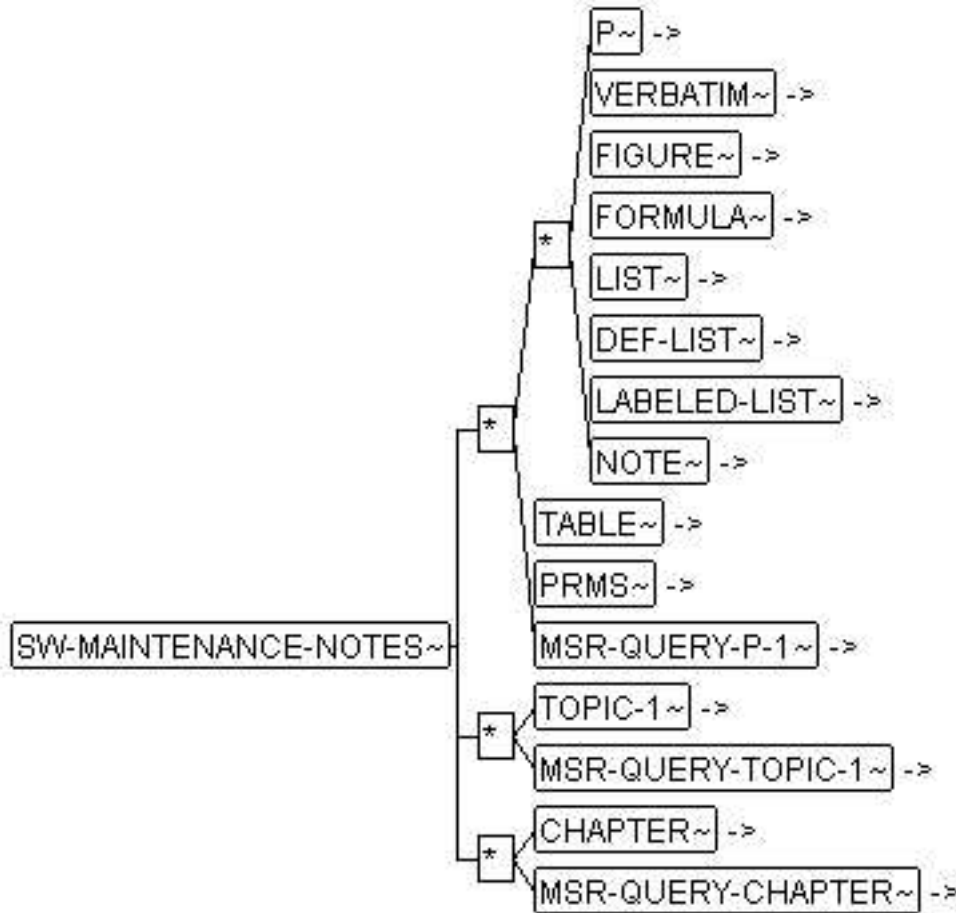
This element describes the absolute value which is provided by the respective function or class, for the generation of the customer service documents.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-MAINTENANCE-NOTES.PNG

2.523 SW-MAX-AXIS-POINTS

Beschreibung

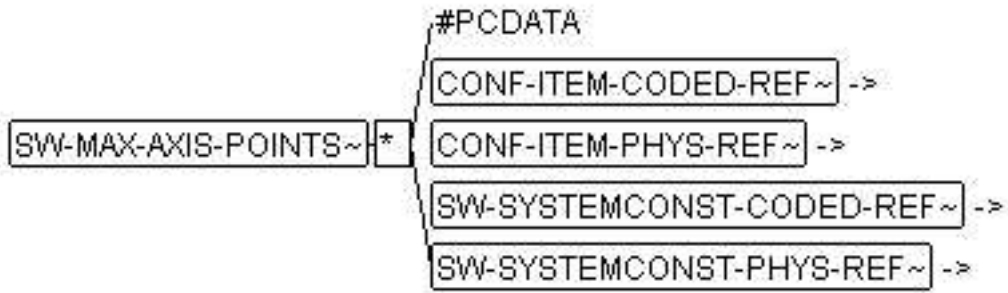
Maximum number of base points contained in the axis of a map or curve.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL](#) p. 244

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-MAX-AXIS-POINTS.PNG

2.524 SW-MAX-DIFF

Beschreibung

Maximum difference that is permitted between two consecutive axis values. .

Hint:

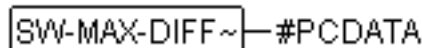
These can be used both for value and for input axes. However in the case of input axes, the marginal condition is only given for **<SW-AXIS-INDIVIDUAL>** . Where group axes are concerned, the restriction is specified at the axis itself, and not at the reference.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERNAL-CONSTRS](#) p. 434, [SW-PHYS-CONSTRS](#) p. 472

Ist Kontext für: Text



SW-MAX-DIFF.PNG

2.525 SW-MAX-GRADIENT

Beschreibung

This element specifies the maximum slope that may be used in maps and curves.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR-RULE](#) p. 365

Ist Kontext für: Text

`SW-MAX-GRADIENT~|#PCDATA`

SW-MAX-GRADIENT.PNG

2.526 SW-MC-ADDR-MAPPED-SIZE

Beschreibung

Size of a remapped address space of the ECU to an access address.

Beispiel

See [Chapter 2.527 SW-MC-ADDR-MAPPING](#) p. 439 .

Formale Beschreibung

Hat als Kontext: [SW-MC-ADDR-MAPPING](#) p. 439

Ist Kontext für: Text

`SW-MC-ADDR-MAPPED-SIZE~|#PCDATA`

SW-MC-ADDR-MAPPED-SIZE.PNG

2.527 SW-MC-ADDR-MAPPING

Beschreibung

Remapping of the address space of the ECU to an access address. This is necessary for special application methods (for example, special address calculation is needed in KWP2000, where only 24 bit addresses are available.)

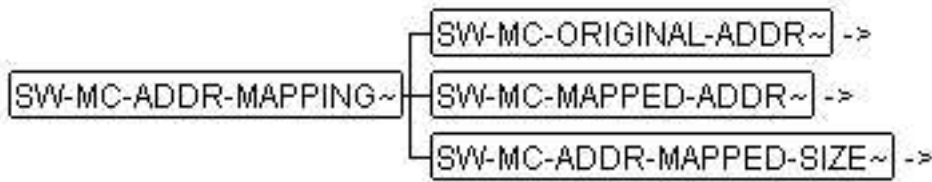
Beispiel

```
<SW-MC-ADDR-MAPPING>  
  <SW-MC-ORIGINAL-ADDR>0x4000</SW-MC-ORIGINAL-ADDR>  
  <SW-MC-MAPPED-ADDR>0x8000</SW-MC-MAPPED-ADDR>  
  <SW-MC-ADDR-MAPPED-SIZE>0x0200</SW-MC-ADDR-MAPPED-SIZE>  
</SW-MC-ADDR-MAPPING>
```

Formale Beschreibung

Hat als Kontext: [SW-MC-ADDR-MAPPINGS](#) p. 440

Ist Kontext für: [SW-MC-ORIGINAL-ADDR](#) p. 462, [SW-MC-MAPPED-ADDR](#) p. 461,
[SW-MC-ADDR-MAPPED-SIZE](#) p. 439



SW-MC-ADDR-MAPPING.PNG

2.528 SW-MC-ADDR-MAPPINGS

Beschreibung

Container element for **<SW-MC-ADDR-MAPPING>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: [SW-MC-ADDR-MAPPING](#) p. 439



SW-MC-ADDR-MAPPINGS.PNG

2.529 SW-MC-BASE-TYPE

Beschreibung

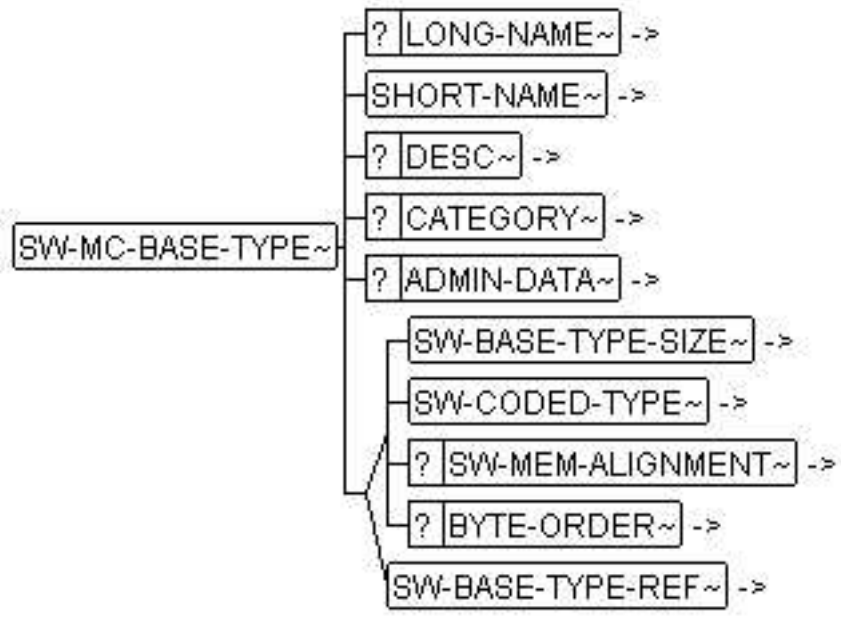
<SW-MC-BASE-TYPE> follows the approach of **<SW-BASE-TYPE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BASE-TYPES](#) p. 443

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-BASE-TYPE-SIZE](#) p. 254, [SW-CODED-TYPE](#) p. 317, [SW-MEM-ALIGNMENT](#) p. 465, [BYTE-ORDER](#) p. 40, [SW-BASE-TYPE-REF](#) p. 251



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-MC-BASE-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.530 SW-MC-BASE-TYPE-REF

Beschreibung

This element references <SW-MC-BASE-TYPE> .



Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

SW-MC-BASE-TYPE-REF~—#PCDATA

SW-MC-BASE-TYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-MC-BASE-TYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.531 SW-MC-BASE-TYPES

Beschreibung

Container element for <SW-MC-BASE-TYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-COMMUNICATION-SPEC](#) p. 445

Ist Kontext für: [SW-MC-BASE-TYPE](#) p. 440



SW-MC-BASE-TYPES.PNG

2.532 SW-MC-BLOB-ECU-DEPOSIT

Beschreibung

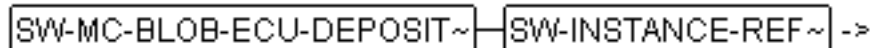
<SW-MC-BLOB-ECU-DEPOSIT> is the alternative to <SW-MC-BLOB-VALUE> in the parent element, providing the blob is given as the instance of a calibration parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-QP-BLOB-CONTS](#) p. 463, [SW-MC-TP-BLOB-CONTS](#) p. 464

Ist Kontext für: [SW-INSTANCE-REF](#) p. 424



SW-MC-BLOB-ECU-DEPOSIT.PNG

2.533 SW-MC-BLOB-LAYOUTS

Beschreibung

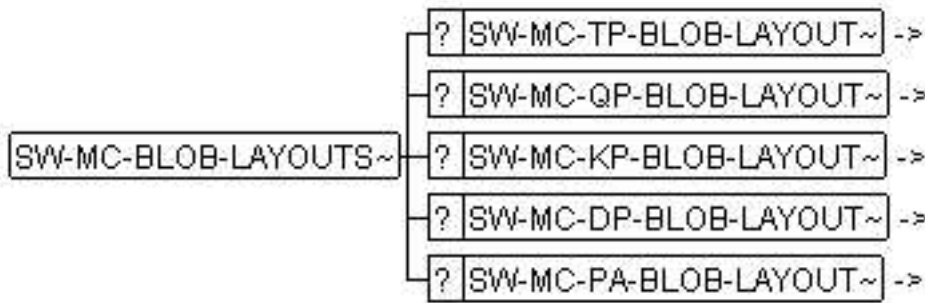
Container element for <SW-MC-TP-BLOB-LAYOUT>, <SW-MC-QP-BLOB-LAYOUT>, <SW-MC-KP-BLOB-LAYOUT>, <SW-MC-DP-BLOB-LAYOUT>, <SW-MC-PA-BLOB-LAYOUT> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE](#) p. 451

Ist Kontext für: [SW-MC-TP-BLOB-LAYOUT](#) p. 465, [SW-MC-QP-BLOB-LAYOUT](#) p. 463,
[SW-MC-KP-BLOB-LAYOUT](#) p. 461, [SW-MC-DP-BLOB-LAYOUT](#) p. 446,
[SW-MC-PA-BLOB-LAYOUT](#) p. 462



SW-MC-BLOB-LAYOUTS.PNG

2.534 SW-MC-BLOB-VALUE

Beschreibung

<SW-MC-BLOB-VALUE> is the value of the blob given in A2L microsyntax. <SW-MC-BLOB-ECU-DEPOSIT> is the alternative in the parent element, if the blob is given as the instance of a calibration parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-QP-BLOB-CONTS](#) p. 463, [SW-MC-TP-BLOB-CONTS](#) p. 464

Ist Kontext für: Text

SW-MC-BLOB-VALUE~ #PCDATA

SW-MC-BLOB-VALUE.PNG

2.535 SW-MC-COMMUNICATION-SPEC

Beschreibung

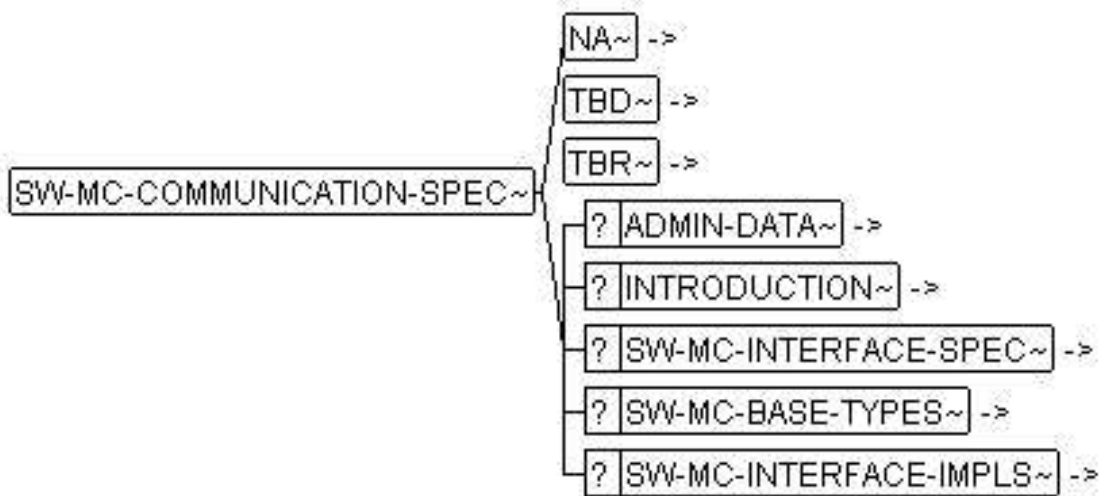
This corresponds to the BLOB definition of the A2ML part. It merely comprises of a formal definition of datatypes <SW-MC-SYSTEM-BASE-TYPES> and <SW-MC-INTERFACE-SPEC> specifying BLOB layouts <SW-MC-BLOB-LAYOUTS> . This element is introduced so that the complete information on the interfaces of a module can be assigned to it. In the first step, ASAP 1b compliant MC-Interfaces are assigned. In the future however, other interfaces to the outside world could be modelled here.

Beispiel

Formale Beschreibung

Hat als Kontext: [MSRSW](#) p. 155

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-MC-INTERFACE-SPEC](#) p. 460, [SW-MC-BASE-TYPES](#) p. 443, [SW-MC-INTERFACE-IMPLS](#) p. 454



SW-MC-COMMUNICATION-SPEC.PNG

2.536 SW-MC-DP-BLOB-CONTS

Beschreibung

Data parameter **B**lob - (BLOB: binary large ob-ject): an interface specific description for accessing a calibration parameter. Any object for which a DP-BLOB exists, can be uploaded and downloaded. It exists for each respective parameter instance. It is a runtime blob.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: Text

SW-MC-DP-BLOB-CONTS~ #PCDATA

SW-MC-DP-BLOB-CONTS.PNG

2.537 SW-MC-DP-BLOB-LAYOUT

Beschreibung

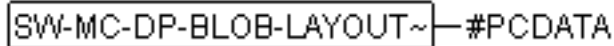
This element provides a description in ASAP syntax, of the information relevant for an adjustment system of a data-parameter BLOB layout. This equips the adjustment system with the ability to interpret **<SW-MC-DP-BLOB-VALUE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BLOB-LAYOUTS](#) p. 444

Ist Kontext für: Text



SW-MC-DP-BLOB-LAYOUT.PNG

2.538 SW-MC-FRAME

Beschreibung

This element represents message frames and associate messages. It is located in the subtree of SW-MC-INTERFACE-IMPL as it is regarded as being interface-specific.

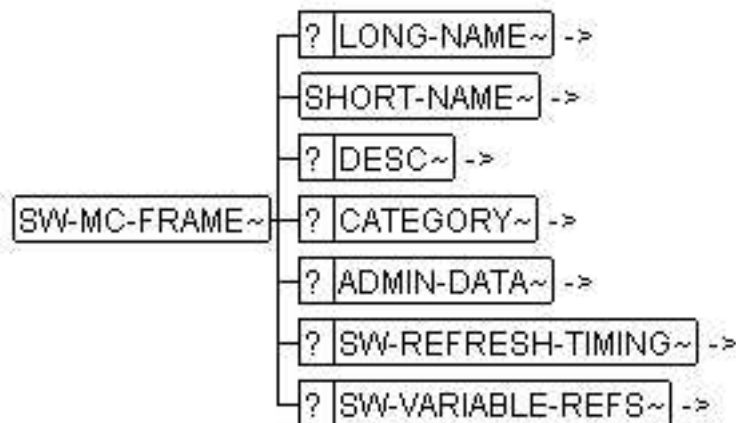
A frame establishes a group of variable references which can be accessed in one step in the MCD system. This group is called "frame" within ASAP.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-FRAMES](#) p. 448

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-REFRESH-TIMING](#) p. 496, [SW-VARIABLE-REFS](#) p. 574



SW-MC-FRAME.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	cdata	SW-MC-FRAME	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.539 SW-MC-FRAMES

Beschreibung

Container element for <SW-MC-FRAME> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-IMPL](#) p. 453

Ist Kontext für: [SW-MC-FRAME](#) p. 447



SW-MC-FRAMES.PNG

2.540 SW-MC-GENERIC-INTERFACE

Beschreibung

In *ASAM-MCD 1.x* a specific configuration is generated for the interfaces to the adjustment system (<SW-MC-INSTANCE-INTERFACE>) for every variant of a variable or characteristic variable (i.e. for every <SW-INSTANCE>). Very often, information is encrypted in the resulting BLOBs, which is already present in the ASAM-MCD file. This information could perhaps be extracted directly, if more intelligent *MCD-System* s were to be used.

To support this approach, it is possible to specify in the **<SW-MC-GENERIC-INTERFACE>** rules, how the instant-specific BLOBS are to be calculated.

Hint:

The project participants must reach a consensus as to the use of this element. The presence of the element enables practical experience to be gathered. Particular outstanding factors include:

Is more than one generic interface description required per MCD interface? If so, in what way can they be distinguished from one another?

Does the generic interface description depend on the structure of the curve/variables?

What language is to be used for the specification of the expressions (e.g. Xpath, JavaScript, Perl ...)?

Beispiel

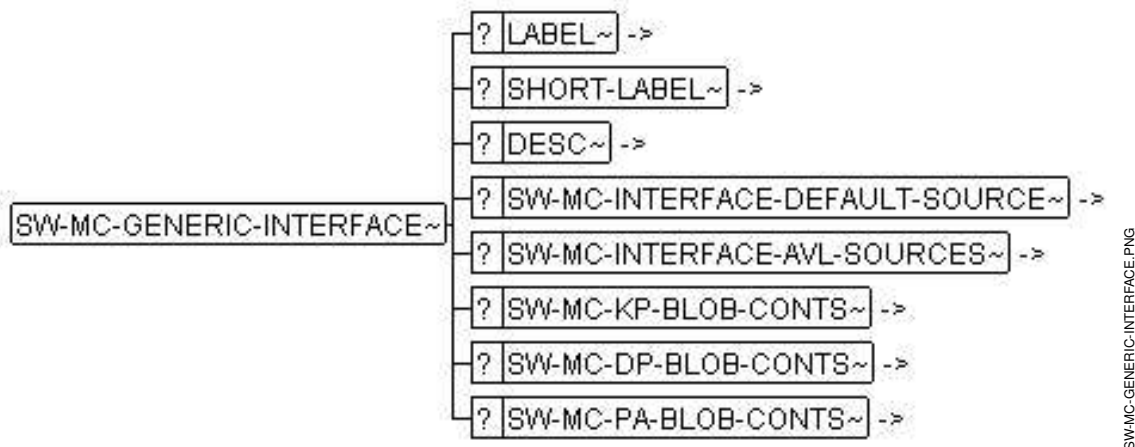
A generic XML processor could evaluate the information in **<SW-MC-GENERIC-INTERFACES>** and fill out the **<SW-MC-INSTANCE-INTERFACE>** in the instance-tree. The Xpath expressions are used in the following example, to calculate the BLOB entries from the basis of a **<SW-INSTANCE-PROPS-VARIANT>** .

```
<SW-MC-GENERIC-INTERFACE>
  <SW-MC-KP-BLOB-CONTS>
    xpath (SW-ADDR-INFOS/SW-ADDR-INFO/SW-BASE-ADDRESS/text ()) + xpath (SW-ADDR-INFOS/SW-ADDR-INFO
  </SW-MC-KP-BLOB-CONTS>
  <SW-MC-DP-BLOB-CONTS>
    xpath (SW-ADDR-INFOS/SW-ADDR-INFO/SW-BASE-ADDRESS/text ()) + count (SW-AXIS-CONTS1/SW-VALUES-F
  </SW-MC-DP-BLOB-CONTS>
</SW-MC-GENERIC-INTERFACE>
```

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACES](#) p. 449

Ist Kontext für: [LABEL](#) p. 128, [SHORT-LABEL](#) p. 211, [DESC](#) p. 83, [SW-MC-INTERFACE-DEFAULT-SOURCE](#) p. 452, [SW-MC-INTERFACE-AVL-SOURCES](#) p. 452, [SW-MC-KP-BLOB-CONTS](#) p. 460, [SW-MC-DP-BLOB-CONTS](#) p. 446, [SW-MC-PA-BLOB-CONTS](#) p. 462



2.541 SW-MC-GENERIC-INTERFACES

Beschreibung

Container element for **<SW-MC-GENERIC-INTERFACE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-IMPL](#) p. 453

Ist Kontext für: [SW-MC-GENERIC-INTERFACE](#) p. 448



SW-MC-GENERIC-INTERFACES.PNG

2.542

SW-MC-INSTANCE-INTERFACE

Beschreibung

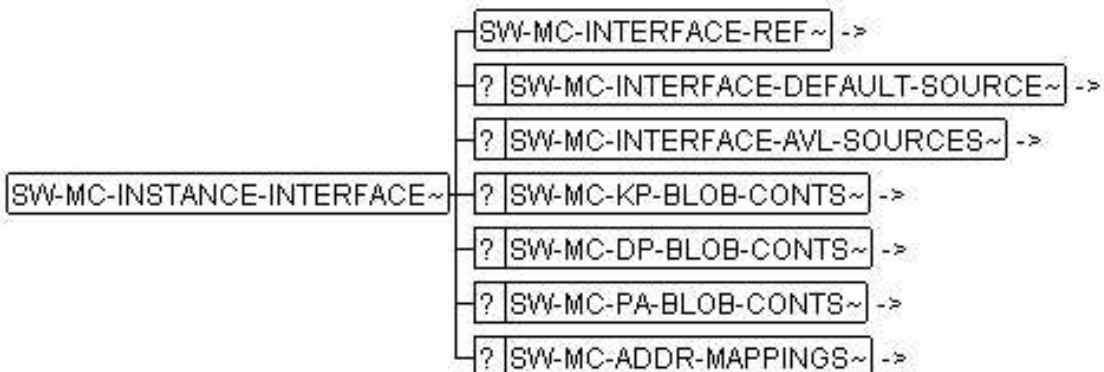
This element describes a data record for describing the interface-specific description data used at ASAP1b device. The parameters associated with this keyword are described in the ASAP2 metalanguage (in short A2ML) by the control unit supplier or the interface module supplier.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INSTANCE-INTERFACES](#) p. 450

Ist Kontext für: [SW-MC-INTERFACE-REF](#) p. 454, [SW-MC-INTERFACE-DEFAULT-SOURCE](#) p. 452, [SW-MC-INTERFACE-AVL-SOURCES](#) p. 452, [SW-MC-KP-BLOB-CONTS](#) p. 460, [SW-MC-DP-BLOB-CONTS](#) p. 446, [SW-MC-PA-BLOB-CONTS](#) p. 462, [SW-MC-ADDR-MAPPINGS](#) p. 440



SW-MC-INSTANCE-INTERFACE.PNG

2.543

SW-MC-INSTANCE-INTERFACES

Beschreibung

Container element for <SW-MC-INSTANCE-INTERFACES> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347, [SW-INSTANCE-PROPS-VARIANT](#) p. 423

Ist Kontext für: [SW-MC-INSTANCE-INTERFACE](#) p. 450



SW-MC-INSTANCE-INTERFACES.PNG

2.544

SW-MC-INTERFACE

Beschreibung

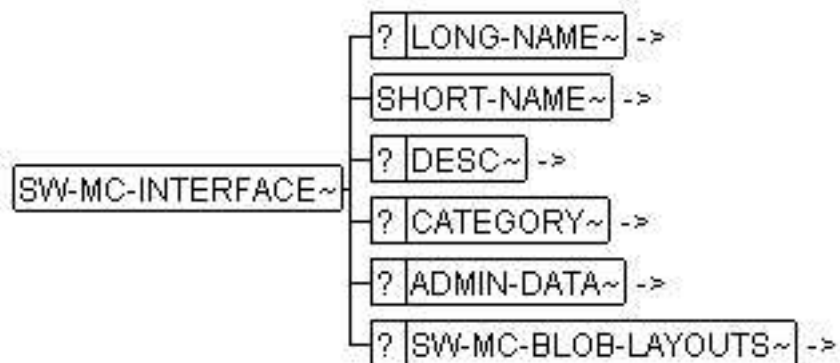
<SW-MC-INTERFACE> describes the structure of a specific interface between the ECU and the *MCD-System*. For the most part, this structure is described through the layout of the BLOBS used, i.e. through the layout of the information required for the configuration of the *MCD-Systems*, for the interface concerned.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-SPEC](#) p. 460

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-MC-BLOB-LAYOUTS](#) p. 444



SW-MC-INTERFACE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-MC-INTERFACE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.545 SW-MC-INTERFACE-AVL-SOURCES

Beschreibung

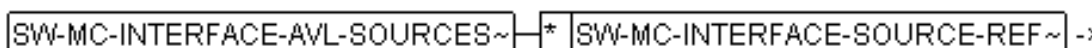
This element provides the available sources referenced by <SW-MC-INTERFACE-SOURCE-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: [SW-MC-INTERFACE-SOURCE-REF](#) p. 457



2.546 SW-MC-INTERFACE-DEFAULT-SOURCE

Beschreibung

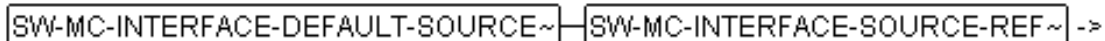
Interfaces to variables and parameters may have a default source specified in **<SW-MC-INTERFACE-DEFAULT-SOURCE>**. This must be one of the available sources specified in **<SW-MC-INTERFACE-AVL-SOURCES>**. This supports the fact that the user of an MCD system may change the source during runtime, if the variable or the parameter is submitted in multiple source communication. If this is carried out to its full extent, a large amount of data will be generated.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: [SW-MC-INTERFACE-SOURCE-REF](#) p. 457



SW-MC-INTERFACE-DEFAULT-SOURCE.PNG

2.547 SW-MC-INTERFACE-IMPL

Beschreibung

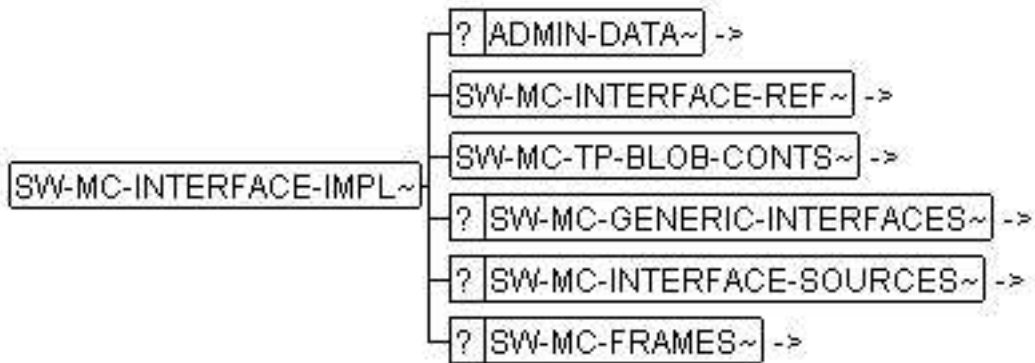
This element comprises of the actual blob data which represents the actual implementation of a particular interface. It consists of the driver-specific BLOB in **<SW-MC-TP-BLOB-CONTS>**. In addition to this, the sources provided by the interface are specified in **<SW-SYSTEM-MC-INTERFACE-SOURCES>**.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-IMPLS](#) p. 454

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-MC-INTERFACE-REF](#) p. 454, [SW-MC-TP-BLOB-CONTS](#) p. 464, [SW-MC-GENERIC-INTERFACES](#) p. 449, [SW-MC-INTERFACE-SOURCES](#) p. 459, [SW-MC-FRAMES](#) p. 448



SW-MC-INTERFACE-IMPL.PNG

2.548 SW-MC-INTERFACE-IMPLS

Beschreibung

Container element for **<SW-MC-INTERFACE-IMPL>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-COMMUNICATION-SPEC](#) p. 445

Ist Kontext für: [SW-MC-INTERFACE-IMPL](#) p. 453



SW-MC-INTERFACE-IMPLS.PNG

2.549 SW-MC-INTERFACE-REF

Beschreibung

This element references **<SW-MC-INTERFACE>** and designates the MCD interface, for which the information specified in the context element is valid.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INSTANCE-INTERFACE](#) p. 450, [SW-MC-INTERFACE-IMPL](#) p. 453

Ist Kontext für: Text



SW-MC-INTERFACE-REF~ - #PCDATA

SW-MC-INTERFACE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-MC-INTERFACE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.550 SW-MC-INTERFACE-SOURCE

Beschreibung

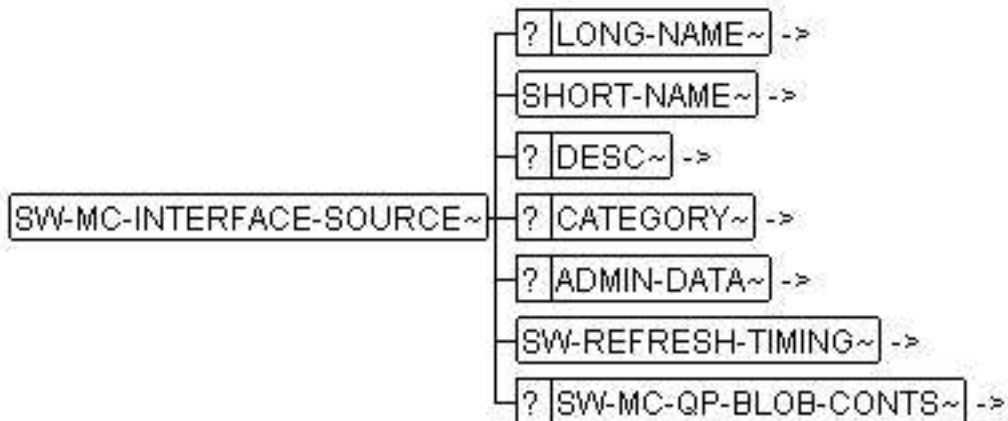
This source can be understood as being a channel which provides access to data within a certain time interval for that particular interface. It is possible for different sources to exist within different interfaces. A default source (**<SW-SYSTEM-MC-INTERFACE-DEFAULT-SOURCE>**) is available, which was not present in ASAM-MCD-2MC. This makes it easier for the user to specify a source each time he wishes to access specific data. **<REFRESH-TIMING>** describes the maximum update rate for different interface sources.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-SOURCES](#) p. 459

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-REFRESH-TIMING](#) p. 496, [SW-MC-QP-BLOB-CONTS](#) p. 463



SW-MC-INTERFACE-SOURCE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-MC-INTERFACE-SOURCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.551 SW-MC-INTERFACE-SOURCE-REF

Beschreibung

This element references <SW-MC-INTERFACE-SOURCE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-AVL-SOURCES](#) p. 452, [SW-MC-INTERFACE-DEFAULT-SOURCE](#) p. 452

Ist Kontext für: Text

SW-MC-INTERFACE-SOURCE-REF~ — #PCDATA

SW-MC-INTERFACE-SOURCE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-MC-INTERFACE-SOURCE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.552 SW-MC-INTERFACE-SOURCES

Beschreibung

Container element for <SW-MC-INTERFACE-SOURCE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-IMPL](#) p. 453

Ist Kontext für: [SW-MC-INTERFACE-SOURCE](#) p. 456



SW-MC-INTERFACE-SOURCES.PNG

2.553 SW-MC-INTERFACE-SPEC

Beschreibung

This element specifies interfaces to a *MCD-system* (Measurement, Calibration and Diagnostic systems) mainly in terms of

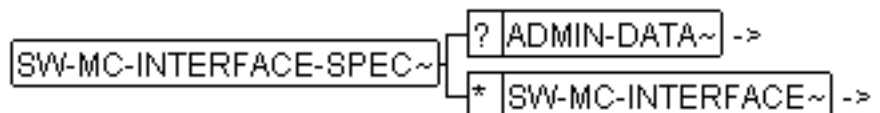
- basic data types for MCD communication (**<SW-MCD-BASE-TYPES>**)
- layout of the blobs (**<SW-MC-BLOB-LAYOUTS>**)
- data sources (SW-MC-)

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-COMMUNICATION-SPEC](#) p. 445

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-MC-INTERFACE](#) p. 451



SW-MC-INTERFACE-SPEC.PNG

2.554 SW-MC-KP-BLOB-CONTS

Beschreibung

Channel **P** arameter - an interface-specific description for accessing software variables. It exists for each variable instance. It is a runtime blob and is used to transfer individual channel parameters.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: Text

`SW-MC-KP-BLOB-CONTS~`—#PCDATA

SW-MC-KP-BLOB-CONTS.PNG

2.555 SW-MC-KP-BLOB-LAYOUT

Beschreibung

This element provides a description in ASAP syntax, of the information relevant for an adjustment system of a channel parameter BLOB layout. This equips the editing system with the ability to interpret `<SW-MC-KP-BLOB-VALUE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BLOB-LAYOUTS](#) p. 444

Ist Kontext für: Text

`SW-MC-KP-BLOB-LAYOUT~`—#PCDATA

SW-MC-KP-BLOB-LAYOUT.PNG

2.556 SW-MC-MAPPED-ADDR

Beschreibung

This specifies the remapped address of the ECU to an access address. This is required for special application methods (for example, special address calculation is needed in KWP2000, where only 24 bit addresses are available.)

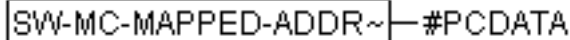
Beispiel

See [Chapter 2.527 SW-MC-ADDR-MAPPING](#) p. 439

Formale Beschreibung

Hat als Kontext: [SW-MC-ADDR-MAPPING](#) p. 439

Ist Kontext für: Text



SW-MC-MAPPED-ADDR.PNG

2.557 SW-MC-ORIGINAL-ADDR

Beschreibung

Original address of the ECU address space which was remapped to an access address. This is required for special application methods (for example, special address calculation is necessary in KWP2000, where only 24 bit addresses are available.)

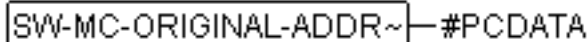
Beispiel

See [Chapter 2.527 SW-MC-ADDR-MAPPING](#) p. 439 .

Formale Beschreibung

Hat als Kontext: [SW-MC-ADDR-MAPPING](#) p. 439

Ist Kontext für: Text



SW-MC-ORIGINAL-ADDR.PNG

2.558 SW-MC-PA-BLOB-CONTS

Beschreibung

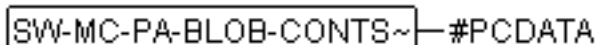
This element describes information in ASAP-Syntax for any special parameters that are required for this service. These are given in ASAP-Syntax.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-GENERIC-INTERFACE](#) p. 448, [SW-MC-INSTANCE-INTERFACE](#) p. 450

Ist Kontext für: Text



SW-MC-PA-BLOB-CONTS.PNG

2.559 SW-MC-PA-BLOB-LAYOUT

Beschreibung

This element provides a description in ASAP syntax, of the information relevant for an editing system of a parameter-accessor BLOB layout. This equips the editing system with the ability to interpret **<SW-MC-PA-BLOB-VALUE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BLOB-LAYOUTS](#) p. 444

Ist Kontext für: Text

```
SW-MC-PA-BLOB-LAYOUT~|#PCDATA
```

SW-MC-PA-BLOB-LAYOUT.PNG

2.560 SW-MC-QP-BLOB-CONTS

Beschreibung

Source **P** arameter - describes the different channels for the acquisition of data such as measurements in the MCD system. It exists exactly once per interval and is used at initialization.

<SW-MC-BLOB-VALUE> is the value of the blob given in A2L microsyntax. **<SW-MC-BLOB-ECU-DEPOSIT>** is the alternative, if the blob is given as the instance of a calibration parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-SOURCE](#) p. 456

Ist Kontext für: [SW-MC-BLOB-VALUE](#) p. 445, [SW-MC-BLOB-ECU-DEPOSIT](#) p. 444

```
SW-MC-QP-BLOB-CONTS~
├── SW-MC-BLOB-VALUE~ ->
└── SW-MC-BLOB-ECU-DEPOSIT~ ->
```

SW-MC-QP-BLOB-CONTS.PNG

2.561 SW-MC-QP-BLOB-LAYOUT

Beschreibung

This element provides a description of the information relevant for an editing system of a source-parameter BLOB layout. This equips the editing system with the ability to interpret **<SW-MC-QP-BLOB-VALUE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BLOB-LAYOUTS](#) p. 444

Ist Kontext für: Text

```
SW-MC-QP-BLOB-LAYOUT~|#PCDATA
```

SW-MC-QP-BLOB-LAYOUT.PNG

2.562 SW-MC-TP-BLOB-CONTS

Beschreibung

Driver **P** arameter - specifies driver specific information in the interface. Usually a TP-BLOB is available for each interface, present for each one supported by the ECU. This is used at initialization.

<SW-MC-BLOB-VALUE> is the value of the blob given in A2L microsyntax. **<SW-MC-BLOB-ECU-DEPOSIT>** is the alternative, if the blob is given as the instance of a calibration parameter.

As with any other blob contents, this comprises of a sequence of blob values (**<SW-MC-BLOB-VALUE>**) . The blob contents must match the **<SW-MC-TP-BLOB-LAYOUT>** .

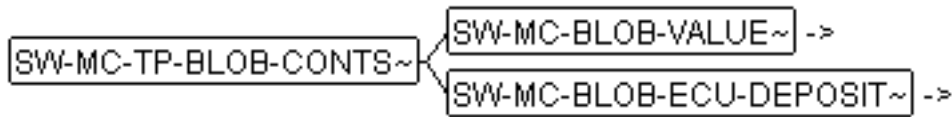
This element is used to transfer specific parameterization and preparation values, the contents of which are not known to the higher-ranking coordinator and which can only be passed on by the latter. BLOBs generally originate from ASAP2 and are generated by the application.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-INTERFACE-IMPL](#) p. 453

Ist Kontext für: [SW-MC-BLOB-VALUE](#) p. 445, [SW-MC-BLOB-ECU-DEPOSIT](#) p. 444



SW-MC-TP-BLOB-CONTS.PNG

2.563 SW-MC-TP-BLOB-LAYOUT

Beschreibung

This element provides a description in ASAP syntax, of the information relevant for an editing system of a driver-parameter BLOB layout. This equips the editing system with the ability to interpret **<SW-MC-TP-BLOB-VALUE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MC-BLOB-LAYOUTS](#) p. 444

Ist Kontext für: Text

`SW-MC-TP-BLOB-LAYOUT~`—#PCDATA

SW-MC-TP-BLOB-LAYOUT.PNG

2.564 SW-MEM-ALIGNMENT

Beschreibung

This element specifies the alignment of a memory object.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-BASE-TYPE](#) p. 250, [SW-CPU-SPEC](#) p. 352, [SW-MC-BASE-TYPE](#) p. 440

Ist Kontext für: Text

`SW-MEM-ALIGNMENT~`—#PCDATA

SW-MEM-ALIGNMENT.PNG

2.565 SW-MEM-ATTR

Beschreibung

This element describes attributes of the corresponding segment. Valid values are:

Table 6: <SW-MEM-ATTR>

Type	Description
<i>INTERN</i>	Internal segment
<i>EXTERN</i>	External segment

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: Text

`SW-MEM-ATTR~`—#PCDATA

SW-MEM-ATTR.PNG

2.566 SW-MEM-BASE-ADDR

Beschreibung

This element describes the initial address of the corresponding segment.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: Text

`SW-MEM-BASE-ADDR~`—#PCDATA

SW-MEM-BASE-ADDR.PNG

2.567 SW-MEM-OFFSET

Beschreibung

This element describes the offset address of mirrored segments.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-MEM-OFFSETS](#) p. 467

Ist Kontext für: Text

`SW-MEM-OFFSET~` - #PCDATA

SW-MEM-OFFSET.PNG

2.568 SW-MEM-OFFSETS

Beschreibung

Container element for `<SW-MEM-OFFSET>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: [SW-MEM-OFFSET](#) p. 466

`SW-MEM-OFFSETS~` * `SW-MEM-OFFSET~` ->

SW-MEM-OFFSETS.PNG

2.569 SW-MEM-PROGRAM-TYPE

Beschreibung

This element describes the type of data stored in the memory segment.

Table 7: `<SW-MEM-PROGRAM-TYPE>`

Type	Description
CODE	Program Code
DATA	Program data which can be used for online calibration.
OFFLINE-DATA	Program data which can only be used for offline calibration.
VARIABLES	Program variables
SERAM	Program data for serial emulation
RESERVED	Reserved segments
CALIBRATION_VARIABLES	Values which are available in the ECU but do not exist in the Hex-file. No upload is required to obtain access to the ECU data. The ECU will never be touched by the instrumentation tool with the exception of upload.
EXCLUDE_FROM_FLASH	Values existing in the ECU but not dropped down in the binary file. No upload should be needed to obtain access to the ECU data. The ECU will never be touched by the instrumentation tool, with the exception of upload.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: Text

`SW-MEM-PROGRAM-TYPE~`—#PCDATA

SW-MEM-PROGRAM-TYPE.PNG

2.570 SW-MEM-SIZE

Beschreibung

This element specifies the position of the corresponding memory segment.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: Text

`SW-MEM-SIZE~`—#PCDATA

SW-MEM-SIZE.PNG

2.571 SW-MEM-TYPE

Beschreibung

This element describes the memory type that was used, which belongs to the current memory segment. The following types are permitted:

Table 8: <SW-MEM-TYPE>

Type	Description
<i>RAM</i>	RAM segment
<i>EEPROM</i>	EEPROM segment
<i>EPROM</i>	EPROM segment
<i>ROM</i>	ROM segment
<i>REGISTER</i>	CPU Register Segment
<i>FLASH</i>	FLASH segment

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-MEM-SEG](#) p. 347

Ist Kontext für: Text



SW-MEM-TYPE.PNG

2.572 SW-MIN-AXIS-POINTS

Beschreibung

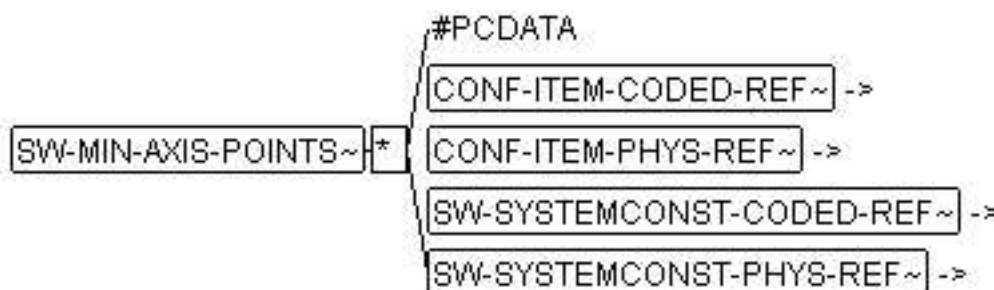
This element specifies the minimum number of base points on the current axis of a map or curve.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL](#) p. 244

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-MIN-AXIS-POINTS.PNG

2.573 SW-MONOTONY

Beschreibung

This element specifies the monotony characteristics of the current internal or physical limits. The following table shows the monotony characteristics which are to be filled through the corresponding values. If the element has no contents or if it is omitted, "no-monotony" is the default content.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERNAL-CONSTRS](#) p. 434, [SW-PHYS-CONSTRS](#) p. 472

Ist Kontext für: Text

SW-MONOTONY~ #PCDATA

SW-MONOTONY.PNG

2.574 SW-NUMBER-OF-AXIS-POINTS

Beschreibung

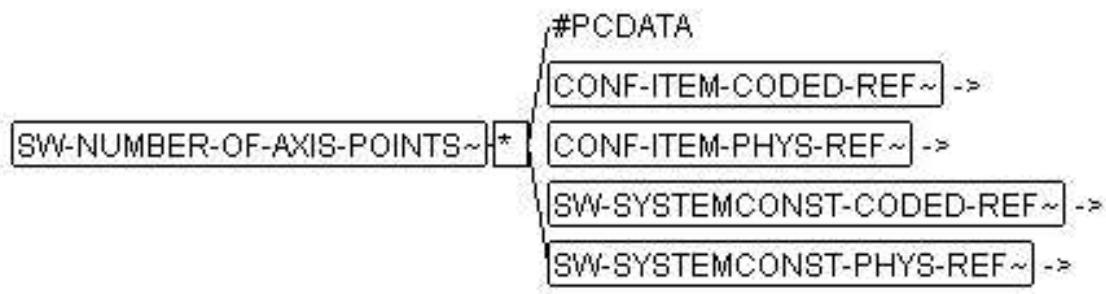
The number of base points to be calculated for the current axis is defined in **<SW-NUMER-OF-AXIS-POINTS>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-GENERIC](#) p. 241

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-NUMBER-OF-AXIS-POINTS.PNG

2.575 SW-OPER-MODE

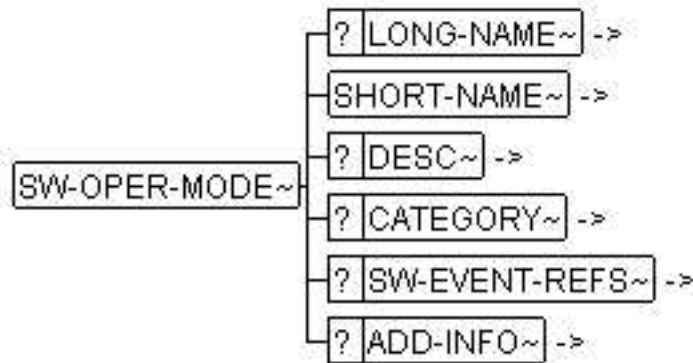
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-OPER-MODES](#) p. 472

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SW-EVENT-REFS](#) p. 382, [ADD-INFO](#) p. 26



SW-OPER-MODE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-OPER-MODE	

2.576 SW-OPER-MODE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-SERVICE](#) p. 224

Ist Kontext für: Text

SW-OPER-MODE-REF~ #PCDATA

SW-OPER-MODE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-OPER-MODE	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	

2.577 SW-OPER-MODE-SPEC

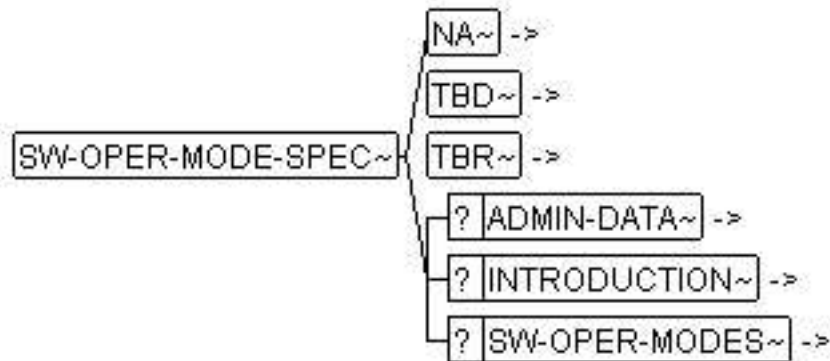
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SCHEDULING-SPEC](#) p. 499

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-OPER-MODES](#) p. 472



SW-OPER-MODE-SPEC.PNG

2.578 SW-OPER-MODES

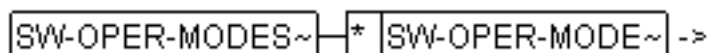
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-OPER-MODE-SPEC](#) p. 472

Ist Kontext für: [SW-OPER-MODE](#) p. 470



SW-OPER-MODES.PNG

2.579 SW-PHYS-CONSTRS

Beschreibung

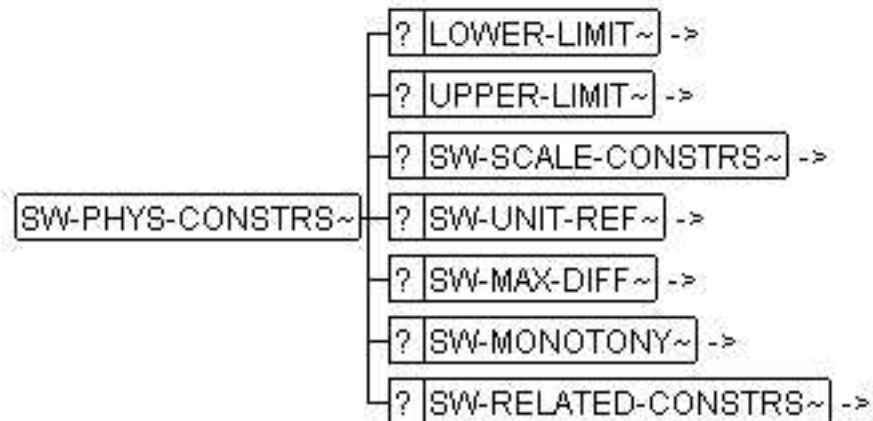
Describes the physical limits for variable or parameter values.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-CONSTR-RULE](#) p. 365

Ist Kontext für: [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616, [SW-SCALE-CONSTRS](#) p. 498, [SW-UNIT-REF](#) p. 548, [SW-MAX-DIFF](#) p. 438, [SW-MONOTONY](#) p. 469, [SW-RELATED-CONSTRS](#) p. 497



SW-PHYS-CONSTRS.PNG

2.580 SW-PHYS-CONSTRS-1

Beschreibung

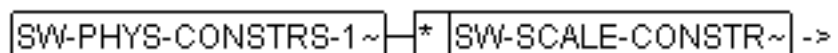
This element introduces such restrictions `<SW-PHYS-CONSTRS>`, that only ranges of values can be defined.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPU-METHOD](#) p. 336

Ist Kontext für: [SW-SCALE-CONSTR](#) p. 498



SW-PHYS-CONSTRS-1.PNG

2.581 SW-POINTER

Beschreibung

This element indicates, that the data object (which is specified by the parent element) is a reference to another data object. The properties of the referred data object are described in the **<SW-DATA-DEF-PROPS>** contained in the **<SW-POINTER>** .

Beispiel

```
<SW-CLASS>
  <LONG-NAME>type of pointer of pointer
    to a constant object of
    one_level_t</LONG-NAME>
  <SHORT-NAME>pointer_pointer_t</SHORT-NAME>
  <DESC>not visible in warmduscher mode</DESC>
  <CATEGORY>SIMPLE_TYPEDEF</CATEGORY>
  <SW-DATA-DEF-PROPS>
    <SW-POINTER>
      <SW-DATA-DEF-PROPS>
        <SW-POINTER>
          <SW-DATA-DEF-PROPS>
            <SW-CLASS-REF>one_level_t</SW-CLASS-REF>
          </SW-DATA-DEF-PROPS>
        </SW-POINTER>
      </SW-DATA-DEF-PROPS>
    </SW-POINTER>
  </SW-DATA-DEF-PROPS>
</SW-CLASS>
```

This example represents a type of **pointer of pointer** to a **constant object of one_level_t**

```
<SW-CLASS>
  <LONG-NAME>Variable taking a pointer to a service</LONG-NAME>
  <SHORT-NAME>pointer_service_t</SHORT-NAME>
  <CATEGORY>SIMPLE_TYPEDEF</CATEGORY>
  <SW-DATA-DEF-PROPS><SW-POINTER>
    <SW-DATA-DEF-PROPS>
      <SW-POINTER>
        <SW-DATA-DEF-PROPS>
          <SW-SERVICE-REF>null_function</SW-SERVICE-REF>
        </SW-DATA-DEF-PROPS>
      </SW-POINTER>
    </SW-DATA-DEF-PROPS>
  </SW-POINTER>
</SW-DATA-DEF-PROPS>
<ADD-INFO>
  <VERBATIM>typedef void (pointer_service_t *) (void);</VERBATIM>
</ADD-INFO>
</SW-CLASS>
```

This example shows how a reference to a function can be specified.

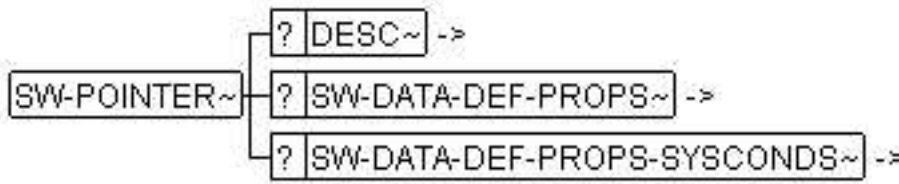
Hint:

The signature of the function is specified in the referenced function.

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS p. 72](#), [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: [DESC p. 83](#), [SW-DATA-DEF-PROPS p. 366](#), [SW-DATA-DEF-PROPS-SYSCONDS p. 368](#)



SW-POINTER.PNG

2.582 SW-PROCESS

Beschreibung

Processes are defined within **<SW-FEATURE-DECOMPOSITION>**. Here, allocations to the processes are also performed in the tasks. See also [Chapter 2.649 SW-TASK-SPEC p. 538](#) for further information on tasks and processes.

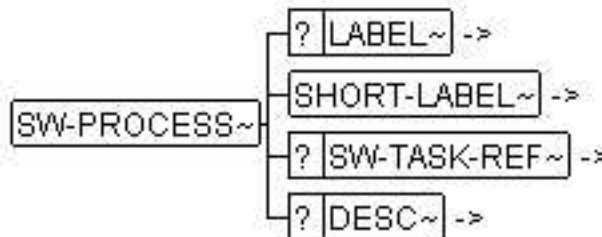
Beispiel

See [Chapter 2.455 SW-FEATURE-DECOMPOSITION p. 391](#)

Formale Beschreibung

Hat als Kontext: [SW-PROCESSES p. 476](#)

Ist Kontext für: [LABEL p. 128](#), [SHORT-LABEL p. 211](#), [SW-TASK-REF p. 535](#), [DESC p. 83](#)



SW-PROCESS.PNG

2.583 SW-PROCESS-LIST

Beschreibung

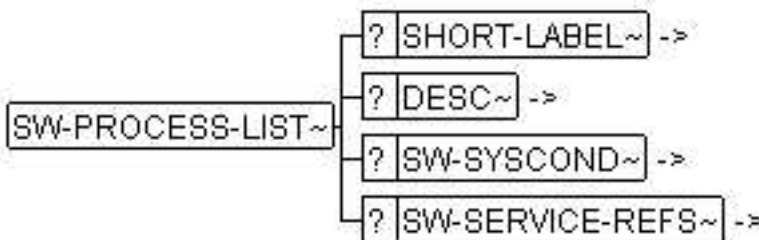
This element represents one particular segment of a process list. It contributes to the process list of a **<SW-TASK>** which denotes a set of process lists. The processes in the list are denoted as **<SW-SERVICE-REFS>**. The partial lists can also be dependant on **<SW-SYSCOND>**. It is depending on the development process or the particular step in the development process if the sequence of services is the intended or the actual process sequence within the task in question.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-PROCESS-LISTS p. 476](#)

Ist Kontext für: [SHORT-LABEL p. 211](#), [DESC p. 83](#), [SW-SYSCOND p. 511](#), [SW-SERVICE-REFS p. 509](#)



SW-PROCESS-LIST.PNG

2.584 SW-PROCESS-LISTS

Beschreibung

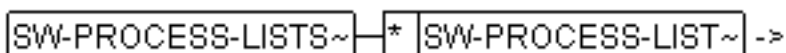
This element represents a segmented process list for one **<SW-TASK>** . Depending on the use case in question, the intended sequence of processes is given by the flattened set of process lists.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: [SW-PROCESS-LIST](#) p. 475



SW-PROCESS-LISTS.PNG

2.585 SW-PROCESSES

Beschreibung

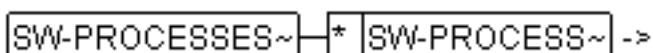
Container element for **<SW-PROCESS>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SUBCOMPONENT](#) p. 511

Ist Kontext für: [SW-PROCESS](#) p. 475



SW-PROCESSES.PNG



2.586 SW-RECORD-LAYOUT

Beschreibung

Defines how the data objects (variables, calibration parameters etc.) are to be stored in the ECU memory. As an example, this definition specifies the sequence of axis points in the ECU memory. Iterations through axis values are stored within the subelements **<SW-RECORD-LAYOUT-GROUP>**. These subelements might be stored embedded.

Beispiel

```
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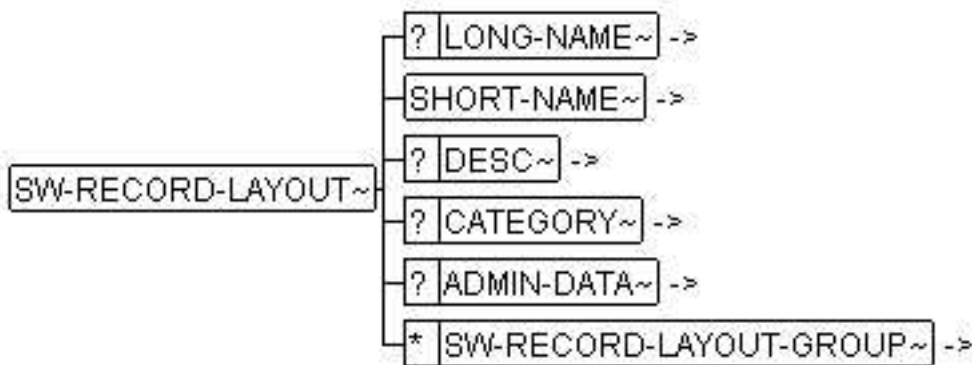
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  <SHORT-NAME>SstAUwSstUw</SHORT-NAME>
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Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUTS](#) p. 496

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-RECORD-LAYOUT-GROUP](#) p. 486



SW-RECORD-LAYOUT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-RECORD-LAYOUT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.587 SW-RECORD-LAYOUT-COMPONENT

Beschreibung

This element is used to denote the component to which the group in question applies. Thus, the record layout supports structured objects. This secures independence from the sequence of components, because they can be referred to via name.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

SW-RECORD-LAYOUT-COMPONENT~#PCDATA

2.588 SW-RECORD-LAYOUT-GROUP

Beschreibung

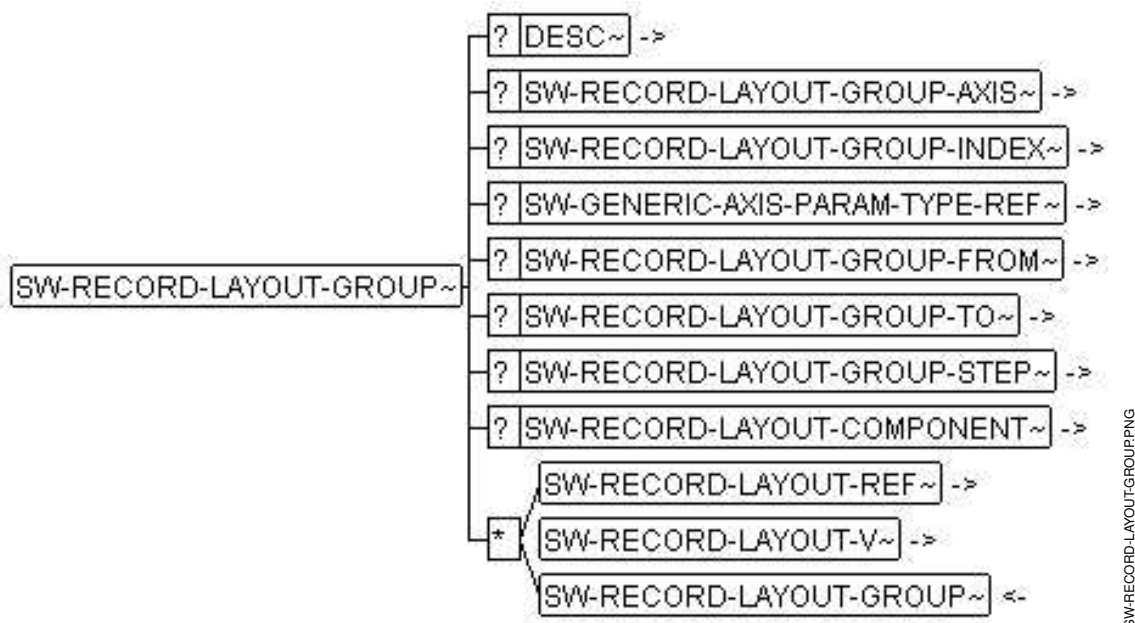
Specifies how a record layout is set up. Using **<SW-RECORD-LAYOUT-GROUP>**, it recursively models iterations through axis values. The subelement **<SW-RECORD-LAYOUT-REF>** may reference other **<SW-RECORD-LAYOUT>**s. **The order of the subelements <SW-RECORD-LAYOUT-REF>, <SW-RECORD-LAYOUT-V> and <SW-RECORD-LAYOUT-GROUP> is relevant** for the modeled record layout.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT](#) p. 476, [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: [DESC](#) p. 83, [SW-RECORD-LAYOUT-GROUP-AXIS](#) p. 487, [SW-RECORD-LAYOUT-GROUP-INDEX](#) p. 488, [SW-GENERIC-AXIS-PARAM-TYPE-REF](#) p. 416, [SW-RECORD-LAYOUT-GROUP-TO](#) p. 489, [SW-RECORD-LAYOUT-GROUP-STEP](#) p. 489, [SW-RECORD-LAYOUT-COMPONENT](#) p. 486, [SW-RECORD-LAYOUT-REF](#) p. 490, [SW-RECORD-LAYOUT-V](#) p. 493, [SW-RECORD-LAYOUT-GROUP](#) p. 486



2.589 SW-RECORD-LAYOUT-GROUP-AXIS

Beschreibung

The contents of this element specifies the axis number within a record layout group **<SW-RECORD-LAYOUT-GROUP>**. The sister elements on the right-hand side of the tree next to **<SW-RECORD-LAYOUT-GROUP-AXIS>** refer exactly to this axis number.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

```
SW-RECORD-LAYOUT-GROUP-AXIS~|#PCDATA
```

SW-RECORD-LAYOUT-GROUP-AXIS.PNG

2.590

SW-RECORD-LAYOUT-GROUP-FROM

Beschreibung

This element specifies the iterator index for the point in the axis from which a record layout group **<SW-RECORD-LAYOUT-GROUP>** is commenced. Negative values are also possible, i.e. the value -4 counts from the fourth value from the end.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

```
SW-RECORD-LAYOUT-GROUP-FROM~|#PCDATA
```

SW-RECORD-LAYOUT-GROUP-FROM.PNG

2.591

SW-RECORD-LAYOUT-GROUP-INDEX

Beschreibung

This element attributes a symbolic name to the iterator of the superimposed record layout group **<SW-RECORD-LAYOUT-GROUP>**. This can be referenced as a loop index beneath superimposed or subsequent **<SW-RECORD-LAYOUT-V>** elements.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

`SW-RECORD-LAYOUT-GROUP-INDEX~|#PCDATA`

SW-RECORD-LAYOUT-GROUP-INDEX.PNG

2.592 SW-RECORD-LAYOUT-GROUP-STEP

Beschreibung

This element specifies the step width for the iterator index, which is used for a record layout group `<SW-RECORD-LAYOUT-GROUP>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

`SW-RECORD-LAYOUT-GROUP-STEP~|#PCDATA`

SW-RECORD-LAYOUT-GROUP-STEP.PNG

2.593 SW-RECORD-LAYOUT-GROUP-TO

Beschreibung

This element specifies the iterator index for a point in the axis up to which iteration for a record layout group takes place. Negative values are also possible, i.e. the value -4 counts up to the fourth value from the end.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: Text

SW-RECORD-LAYOUT-GROUP-TO~

 — #PCDATA

2.594 SW-RECORD-LAYOUT-REF

Beschreibung

This element references **<SW-RECORD-LAYOUT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CPU-STANDARD-RECORD-LAYOUT](#) p. 353, [SW-DATA-DEF-PROPS](#) p. 366, [SW-RECORD-LAYOUT-GROUP](#) p. 486, [SW-RECORD-LAYOUT-REF-SYSCOND](#) p. 492, [SW-RECORD-LAYOUT-REFS](#) p. 492, [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-RECORD-LAYOUT-REF~

 — #PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-RECORD-LAYOUT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.595 SW-RECORD-LAYOUT-REF-SYSCOND

Beschreibung

Use **<SW-RECORD-LAYOUT-REF-SYSCOND>** to create a **<SW-RECORD-LAYOUT-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-RECORD-LAYOUT-REF>** shall be used when system constant has a certain value.

Beispiel

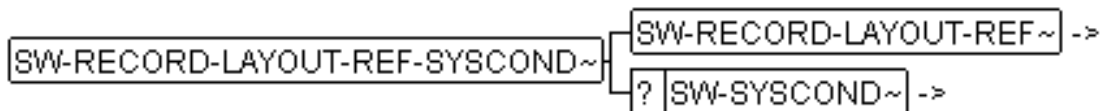
This Record Layout reference is used when LINA_Gear is less or equal to 4.

```
<SW-RECORD-LAYOUT-REF-SYSCOND>
  <SW-RECORD-LAYOUT-REF>rec_lay_Ref</SW-RECORD-LAYOUT-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-RECORD-LAYOUT-REF>
```

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-REFS p. 492](#)

Ist Kontext für: [SW-RECORD-LAYOUT-REF p. 490](#), [SW-SYSCOND p. 511](#)



SW-RECORD-LAYOUT-REF-SYSCOND.PNG

2.596 SW-RECORD-LAYOUT-REFS

Beschreibung

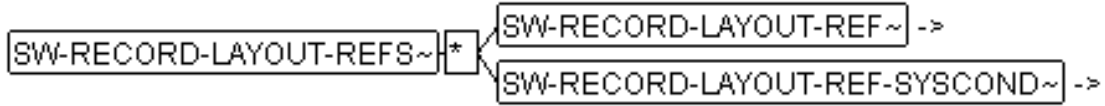
Container element for **<SW-RECORD-LAYOUT-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT p. 320](#), [SW-FEATURE-ELEMENTS p. 394](#)

Ist Kontext für: [SW-RECORD-LAYOUT-REF p. 490](#), [SW-RECORD-LAYOUT-REF-SYSCOND p. 492](#)



SW-RECORD-LAYOUT-REFS.PNG

2.597 SW-RECORD-LAYOUT-V

Beschreibung

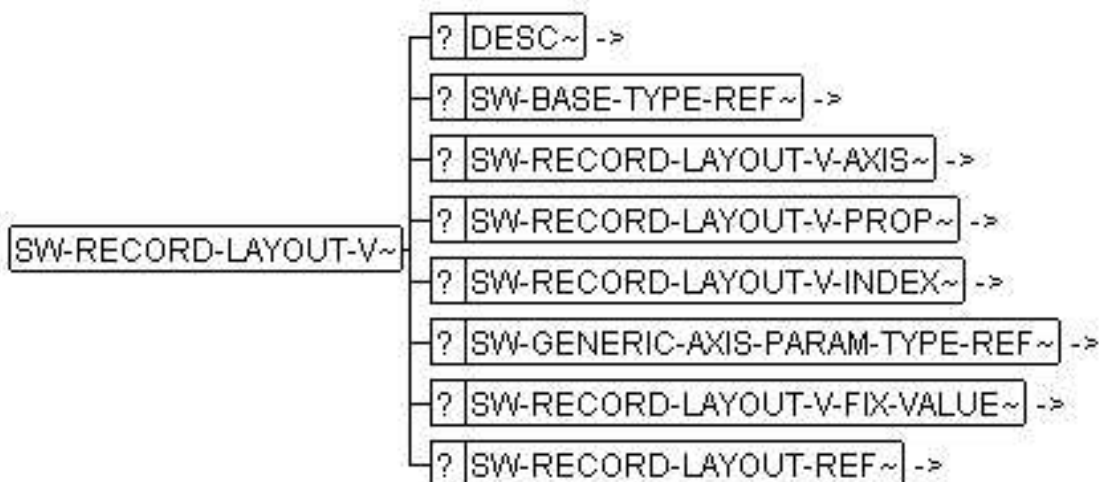
This element specifies which values are stored for the current **<SW-RECORD-LAYOUT-GROUP>**. If no **<SW-BASE-TYPE-REF>** is present, the **<SW-BASE-TYPE>** referenced initially in the father element **<SW-RECORD-LAYOUT-GROUP>** is valid. The specification of **<SW-RECORD-LAYOUT-V-AXIS>** gives the axis of the values to be stored in accordance with the current record layout **<SW-RECORD-LAYOUT-GROUP>**. In **<SW-RECORD-LAYOUT-V-PROP>** you are able to specify the type of values that are to be stored, e.g. number or value. Under **<SW-RECORD-V-INDEX>**, the symbolic values of the axes can be given, for which the value given under **<SW-RECORD-LAYOUT-V-PROP>** is iterated. These symbolic values relate to the values given in **<SW-RECORD-LAYOUT-GROUP-INDEX>**.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-GROUP](#) p. 486

Ist Kontext für: [DESC](#) p. 83, [SW-BASE-TYPE-REF](#) p. 251, [SW-RECORD-LAYOUT-V-AXIS](#) p. 493, [SW-RECORD-LAYOUT-V-PROP](#) p. 495, [SW-RECORD-LAYOUT-V-INDEX](#) p. 494, [SW-GENERIC-AXIS-PARAM-TYPE-REF](#) p. 416, [SW-RECORD-LAYOUT-V-FIX-VALUE](#) p. 494, [SW-RECORD-LAYOUT-REF](#) p. 490



SW-RECORD-LAYOUT-V.PNG

2.598 SW-RECORD-LAYOUT-V-AXIS

Beschreibung

This element specifies the number of axes with values that are stored in the ECU. Refer to <SW-RECORD-LAYOUT-V> for further details.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-RECORD-LAYOUT-V-AXIS~|#PCDATA

SW-RECORD-LAYOUT-V-AXIS.PNG

2.599 SW-RECORD-LAYOUT-V-FIX-VALUE

Beschreibung

This element specifies the filler character for the current record layout, in the form of hex digits. The element present parallel to this <SW-RECORD-LAYOUT-V-PROP> must therefore have the contents FILL.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-RECORD-LAYOUT-V-FIX-VALUE~|#PCDATA

SW-RECORD-LAYOUT-V-FIX-VALUE.PNG

2.600 SW-RECORD-LAYOUT-V-INDEX

Beschreibung

The symbolic value for iteration, or the symbolic values separated by white-spaces, refer to the symbolic values given in **<SW-RECORD-LAYOUT-GROUP-INDEX>**. The iterators are processed from left to right, in such a manner that they symbolize the loop index from the outside to the inside.

An error has occurred if a parameter references a record layout which contains a **<SW-RECORD-LAYOUT-V-INDEX>** with more components than the number of parameter axes.

```

//*****
//übung: dieses in XPath tun :-)

((*prm:=this).null,
 \ref(child[?sw-record-layout-ref].data)
 [
   ?descendant[?sw-record-layout-v-index
     [
       count(data.split(" ")) ^=
       count(*prm.descendant[?sw-calprm-axis])
     ]
   ]
 ]
 )

```

Figure 4: Example of a corresponding error check in MetaMorphosis

Beispiel

See [Chapter 2.586 SW-RECORD-LAYOUT](#) p. 476

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-RECORD-LAYOUT-V-INDEX~—#PCDATA

SW-RECORD-LAYOUT-V-INDEX.PNG

2.601 SW-RECORD-LAYOUT-V-PROP

Beschreibung

The contents of this element describes the type of values to be stored. The following are permitted:

<i>VALUE</i>	The value of the axis
<i>COUNT</i>	The amount of values of the axis
<i>LEFTDIFF</i>	The difference to the previous value
<i>RIGHTDIFF</i>	The difference to the next value
<i>DIST</i>	The <distance> value of this axis (if introduced)
<i>SOURCE-ADR</i>	The address of the source of this axis

- RESULT-ADR* The address of the result for this axis (if introduced)
- ADDRESS* The address
- FILL* Fill with the hex value specified as contents of **<SW-RECORD-LAYOUT-FIX-VALUE>**
- FIXLEFTDIFF* Difference between this and a fixed left-hand value (normally 0)
- FIXRIGHTDIFF* Difference between this and a fixed right-hand value (e.g. 255)
- ... Further values must be worked out.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-RECORD-LAYOUT-V](#) p. 493

Ist Kontext für: Text

SW-RECORD-LAYOUT-V-PROP~

 — #PCDATA

SW-RECORD-LAYOUT-V-PROP.PNG

2.602 SW-RECORD-LAYOUTS

Beschreibung

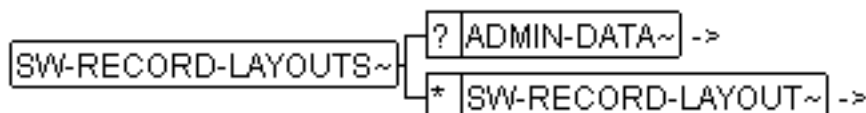
Container element for **<SW-RECORD-LAYOUT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-RECORD-LAYOUT](#) p. 476



SW-RECORD-LAYOUTS.PNG

2.603 SW-REFRESH-TIMING

Beschreibung

This element specifies the frequency in which the object involved is called or calculated.

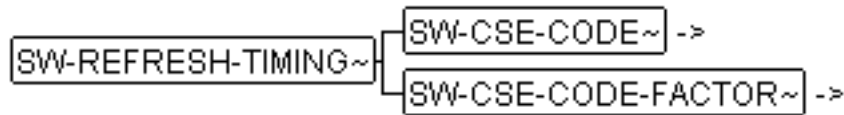
Beispiel

```
<SW-VARIABLE>
  <LONG-NAME>Drehzahl</LONG-NAME>
  <SHORT-NAME>N</SHORT-NAME>
  <SW-DATA-DEF-PROPS>
    <SW-INTENDED-RESOLUTION>40</SW-INTENDED-RESOLUTION>
    <SW-REFRESH-TIMING>
      <SW-CSE-CODE>101</SW-CSE-CODE>
      <SW-CSE-CODE-FACTOR>1</SW-CSE-CODE-FACTOR>
    </SW-REFRESH-TIMING>
    <SW-UNIT-REF>upm</SW-UNIT-REF>
  </SW-DATA-DEF-PROPS>
</SW-VARIABLE>
```

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#), [SW-MC-FRAME p. 447](#), [SW-MC-INTERFACE-SOURCE p. 456](#), [SW-TASK p. 531](#)

Ist Kontext für: [SW-CSE-CODE p. 360](#), [SW-CSE-CODE-FACTOR p. 361](#)



SW-REFRESH-TIMING.PNG

2.604 SW-RELATED-CONSTRS

Beschreibung

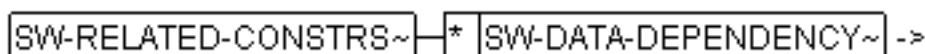
This element describes plausibility rules that go beyond the individual data object. E.g. the overrun shut-off engine speed must not be higher than the maximum engine speed. This plausibility rule is defined in exactly the same way as the contexts and dependencies of virtual characteristic variables and variables.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERNAL-CONSTRS p. 434](#), [SW-PHYS-CONSTRS p. 472](#)

Ist Kontext für: [SW-DATA-DEPENDENCY p. 369](#)



SW-RELATED-CONSTRS.PNG

2.605 SW-ROOT-FEATURES

Beschreibung

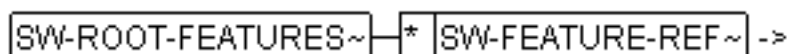
This element is the root element of the hierarchy, given implicitly through the decomposition of the function.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COMPONENT-SPEC](#) p. 330

Ist Kontext für: [SW-FEATURE-REF](#) p. 407



SW-ROOTFEATURES.PNG

2.606 SW-SCALE-CONSTR

Beschreibung

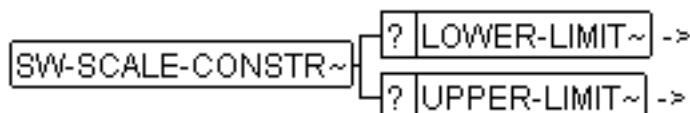
Describes the section-by-section definition of the upper and lower limits of internal and physical restrictions.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERNAL-CONSTRS-1](#) p. 435, [SW-PHYS-CONSTRS-1](#) p. 473, [SW-SCALE-CONSTRS](#) p. 498

Ist Kontext für: [LOWER-LIMIT](#) p. 136, [UPPER-LIMIT](#) p. 616



SW-SCALE-CONSTR.PNG

2.607 SW-SCALE-CONSTRS

Beschreibung

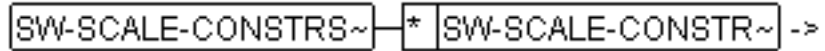
Container element for <SW-SCALE-CONSTR> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INTERNAL-CONSTRS](#) p. 434, [SW-PHYS-CONSTRS](#) p. 472

Ist Kontext für: [SW-SCALE-CONSTR](#) p. 498



2.608 SW-SCHEDULING-SPEC

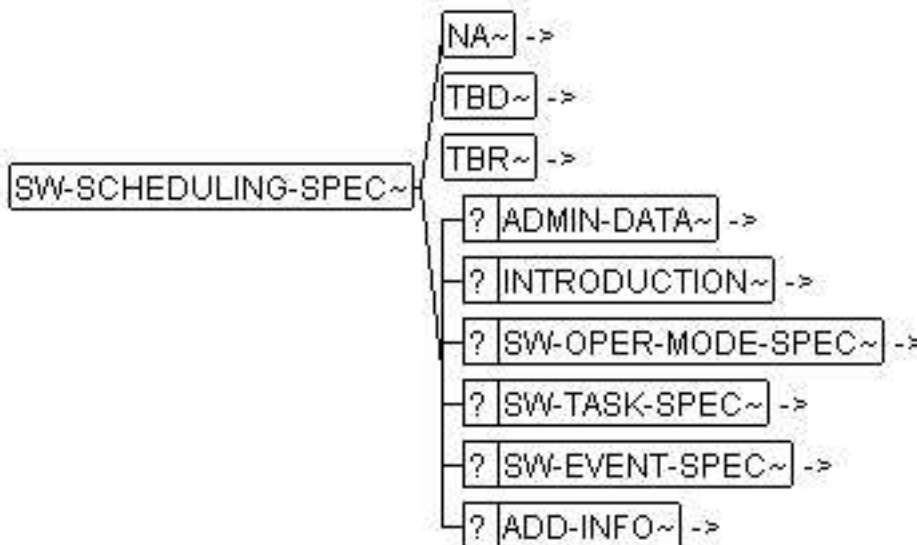
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-OPER-MODE-SPEC](#) p. 472, [SW-TASK-SPEC](#) p. 538, [SW-EVENT-SPEC](#) p. 384, [ADD-INFO](#) p. 26



2.609 SW-SEMAPHORE

Beschreibung

This element denotes a variable which servers as a semaphore variable for a particular resource which is specified in the surrounding **<SW-DATA-DEF-PROPS>**

Beispiel

```
<SW-VARIABLE>
  <LONG-NAME>Measurement Point</LONG-NAME>
  <SHORT-NAME>TST_varSimple_mp</SHORT-NAME>
  <CATEGORY>VALUE</CATEGORY>
  <SW-DATA-DEF-PROPS>
    <SW-ADDR-METHOD-REF>extRam</SW-ADDR-METHOD-REF>
```

```
<SW-BASE-TYPE-REF > sint16 </SW-BASE-TYPE-REF>
<SW-CALIBRATION-ACCESS> READ-ONLY </SW-CALIBRATION-ACCESS>
<SW-CODE-SYNTAX-REF> Mp_s16 </SW-CODE-SYNTAX-REF>
<SW-COMPU-METHOD-REF> Compu_1 </SW-COMPU-METHOD-REF>
<SW-IMPL-POLICY> MEASUREMENT-POINT </SW-IMPL-POLICY>
<SW-SEMAPHORE>
  <SW-VARIABLE-REF > TST_varSimple_mp_sema </SW-VARIABLE-REF> <
</SW-SEMAPHORE>
</SW-DATA-DEF-PROPS>
</SW-VARIABLE>
```

This example shows a variable named **TST_varSimple_mp** of which the access is controlled by the semaphore variable **TST_varSimple_mp_sema**.

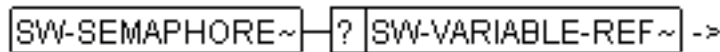
Hint:

The same semaphore variable can be used for more than one resource.

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572



SW-SEMAPHORE.PNG

2.610 SW-SERVICE

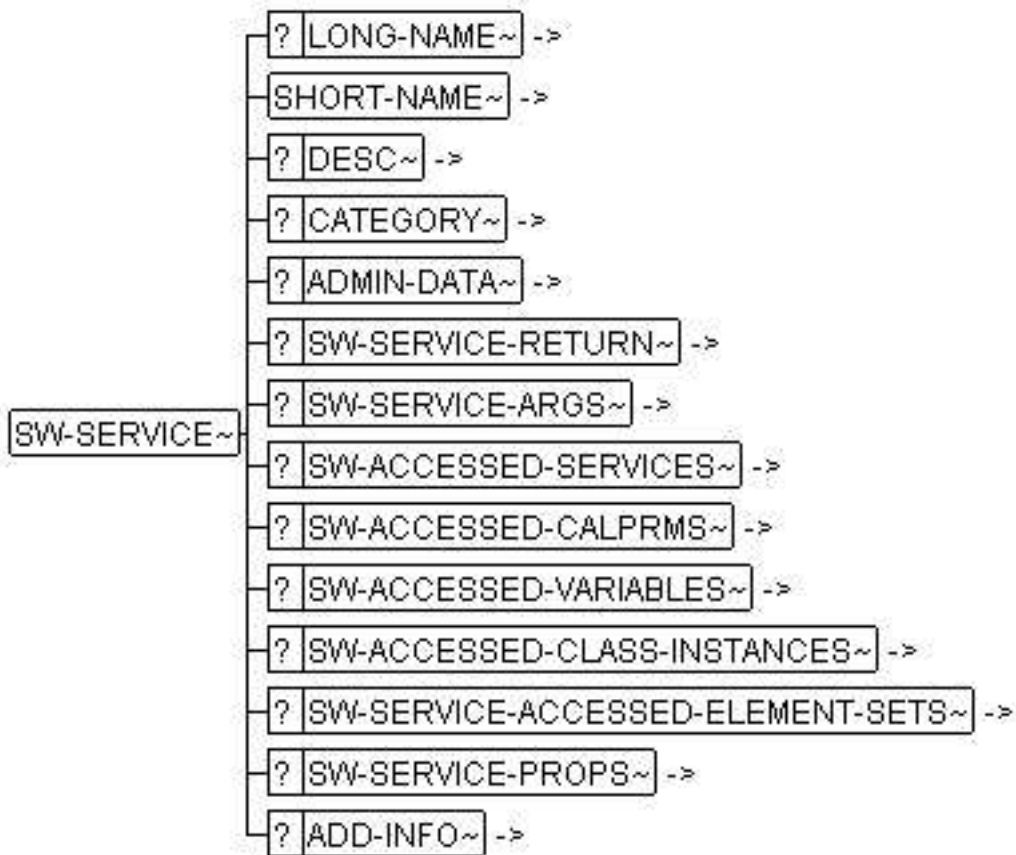
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICES](#) p. 510

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-SERVICE-RETURN](#) p. 509, [SW-SERVICE-ARGS](#) p. 503, [SW-ACCESSED-SERVICES](#) p. 225, [SW-ACCESSED-CALPRMS](#) p. 223, [SW-ACCESSED-VARIABLES](#) p. 226, [SW-ACCESSED-CLASS-INSTANCES](#) p. 224, [SW-SERVICE-ACCESSED-ELEMENT-SETS](#) p. 502, [SW-SERVICE-PROPS](#) p. 504, [ADD-INFO](#) p. 26



SW-SERVICE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-SERVICE	
[F-NAMESPACE] (fixed)	nmtokens	SW-SERVICE- ARG SW-SERVICE- RETURN	

2.611

SW-SERVICE-ACCESSED-ELEMENT-SET

Beschreibung

This element is similar to **<SW-INTERFACE-ACCESSED-ELEMENT-SET>** but applies to **<SW-SERVICE>**. To some extent it is now possible to express the access to interface elements

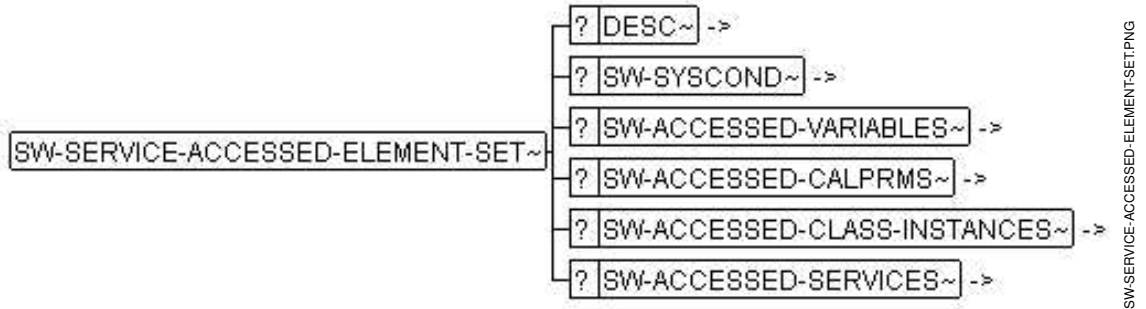
- within a software component represented by (**<SW-FEATURE>**), which is the mainly a functional view
- within a process represented by **<SW-SERVICE>**, which is more the dynamic view. These processes are part of components (represented by ownership and imports, which makes it possible to retrieve the functional view from the dynamic view (but **not** vice versa).

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-ACCESSED-ELEMENT-SETS](#) p. 502

Ist Kontext für: [DESC](#) p. 83, [SW-SYSCOND](#) p. 511, [SW-ACCESSED-VARIABLES](#) p. 226, [SW-ACCESSED-CALPRMS](#) p. 223, [SW-ACCESSED-CLASS-INSTANCES](#) p. 224, [SW-ACCESSED-SERVICES](#) p. 225



2.612 SW-SERVICE-ACCESSED-ELEMENT-SETS

Beschreibung

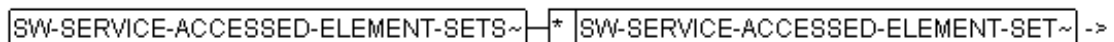
This is a wrapper for <SW-SERVICE-ACCESSED-ELEMENT-SET> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE](#) p. 500

Ist Kontext für: [SW-SERVICE-ACCESSED-ELEMENT-SET](#) p. 501



2.613 SW-SERVICE-ARG

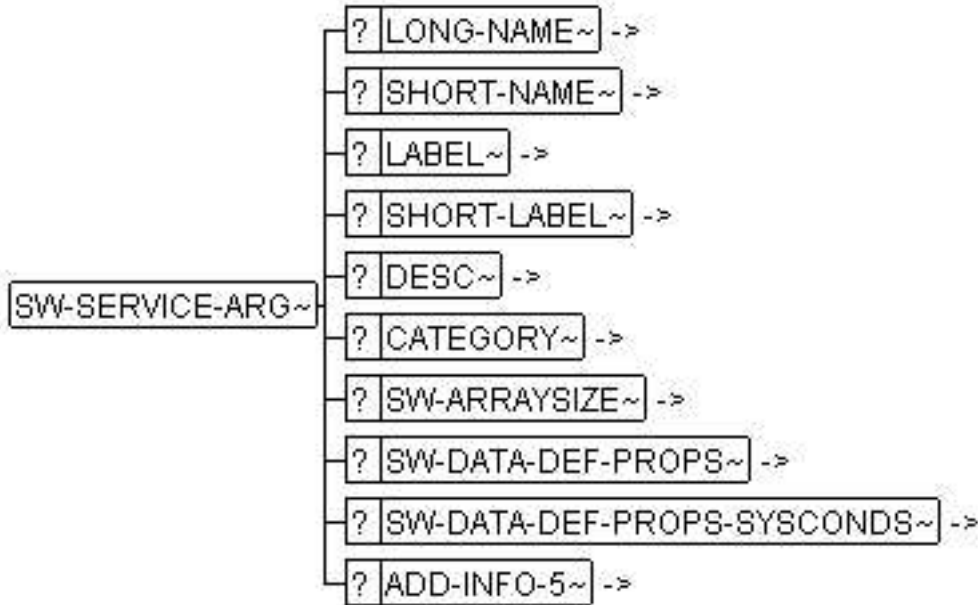
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-ARGS](#) p. 503

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [LABEL](#) p. 128, [SHORT-LABEL](#) p. 211, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SW-ARRAYSIZE](#) p. 239, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [ADD-INFO-5](#) p. 28



SW-SERVICE-ARG.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-SERVICE-ARG	

2.614 SW-SERVICE-ARGS

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE](#) p. 500, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [SW-SERVICE-ARG](#) p. 502



SW-SERVICE-ARGS.PNG

2.615 SW-SERVICE-IMPL

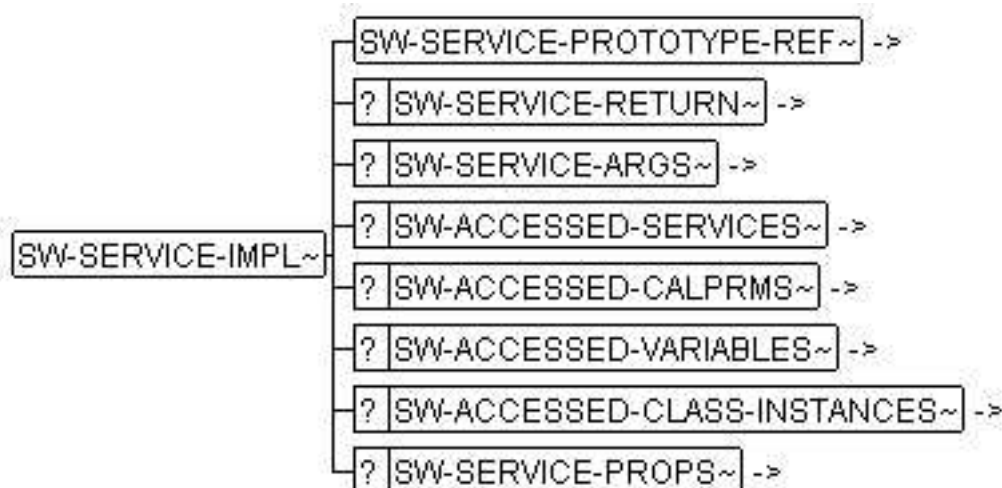
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-IMPLS](#) p. 504

Ist Kontext für: [SW-SERVICE-PROTOTYPE-REF](#) p. 506, [SW-SERVICE-RETURN](#) p. 509, [SW-SERVICE-ARGS](#) p. 503, [SW-ACCESSED-SERVICES](#) p. 225, [SW-ACCESSED-CALPRMS](#) p. 223, [SW-ACCESSED-VARIABLES](#) p. 226, [SW-ACCESSED-CLASS-INSTANCES](#) p. 224, [SW-SERVICE-PROPS](#) p. 504



SW-SERVICE-IMPL.PNG

2.616 SW-SERVICE-IMPLS

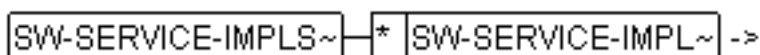
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL](#) p. 294

Ist Kontext für: [SW-SERVICE-IMPL](#) p. 503



SW-SERVICE-IMPLS.PNG

2.617 SW-SERVICE-PROPS

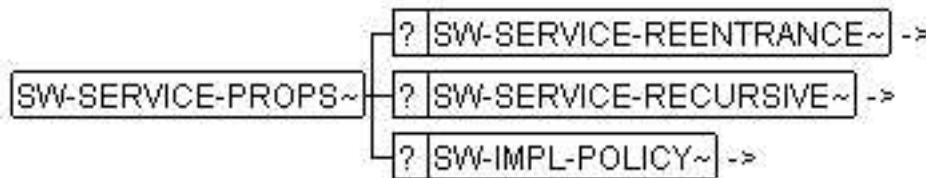
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE](#) p. 500, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [SW-SERVICE-REENTRANCE](#) p. 507, [SW-SERVICE-RECURSIVE](#) p. 507, [SW-IMPL-POLICY](#) p. 420



SW-SERVICE-PROPS.PNG

2.618 SW-SERVICE-PROTOTYPE

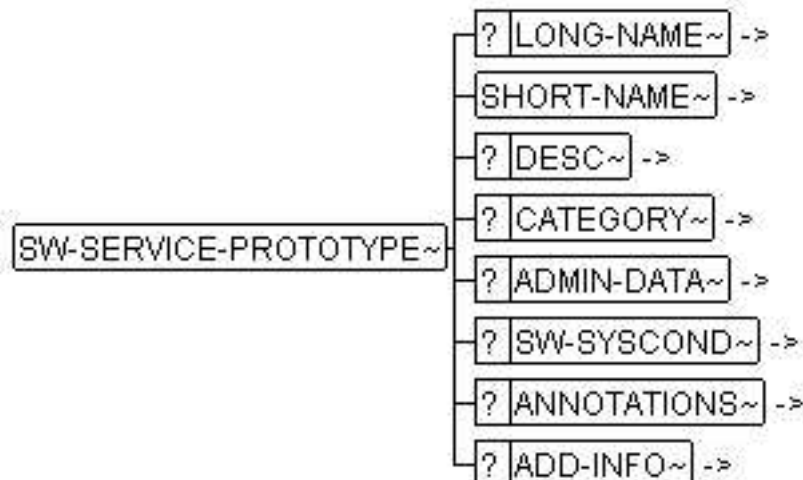
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-PROTOTYPES](#) p. 506

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-SYSCOND](#) p. 511, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



SW-SERVICE-PROTOTYPE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	cdata	SW-SERVICE-PROTOTYPE	

2.619 SW-SERVICE-PROTOTYPE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: Text

SW-SERVICE-PROTOTYPE-REF~

 — #PCDATA

SW-SERVICE-PROTOTYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-SERVICE-PROTOTYPE	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.620 SW-SERVICE-PROTOTYPES

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR](#) p. 293

Ist Kontext für: [SW-SERVICE-PROTOTYPE](#) p. 505

```
SW-SERVICE-PROTOTYPES~ * SW-SERVICE-PROTOTYPE~ ->
```

SW-SERVICE-PROTOTYPES.PNG

2.621 SW-SERVICE-RECURSIVE

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-PROPS](#) p. 504

Ist Kontext für: Text

```
SW-SERVICE-RECURSIVE~ #PCDATA
```

SW-SERVICE-RECURSIVE.PNG

2.622 SW-SERVICE-REENTRANCE

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE-PROPS](#) p. 504

Ist Kontext für: Text

SW-SERVICE-REENTRANCE~

 — #PCDATA

2.623 SW-SERVICE-REF

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-SERVICE](#) p. 224, [SW-DATA-DEF-PROPS](#) p. 366, [SW-FEATURE-EXPORT-SERVICES](#) p. 396, [SW-FEATURE-IMPORT-SERVICES](#) p. 398, [SW-FEATURE-LOCAL-SERVICES](#) p. 404, [SW-SERVICE-REF-SYSCOND](#) p. 508, [SW-SERVICE-REFS](#) p. 509

Ist Kontext für: Text

SW-SERVICE-REF~

 — #PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		
[F-ID-CLASS] (fixed)	nmtoken	SW-SERVICE	
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	
[HYTIME] (fixed)	nmtoken	CLINK	

2.624 SW-SERVICE-REF-SYSCOND

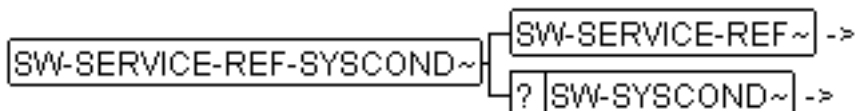
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-EXPORT-SERVICES](#) p. 396, [SW-FEATURE-IMPORT-SERVICES](#) p. 398, [SW-FEATURE-LOCAL-SERVICES](#) p. 404, [SW-SERVICE-REFS](#) p. 509

Ist Kontext für: [SW-SERVICE-REF](#) p. 508, [SW-SYSCOND](#) p. 511



SW-SERVICE-REF-SYSCOND.PNG

2.625 SW-SERVICE-REFS

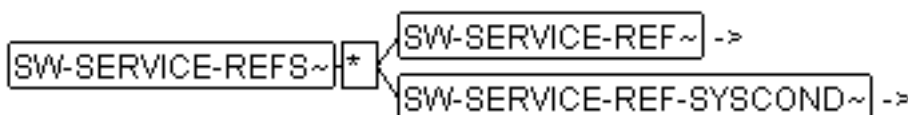
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394, [SW-PROCESS-LIST](#) p. 475, [SW-TASK](#) p. 531

Ist Kontext für: [SW-SERVICE-REF](#) p. 508, [SW-SERVICE-REF-SYSCOND](#) p. 508



SW-SERVICE-REFS.PNG

2.626 SW-SERVICE-RETURN

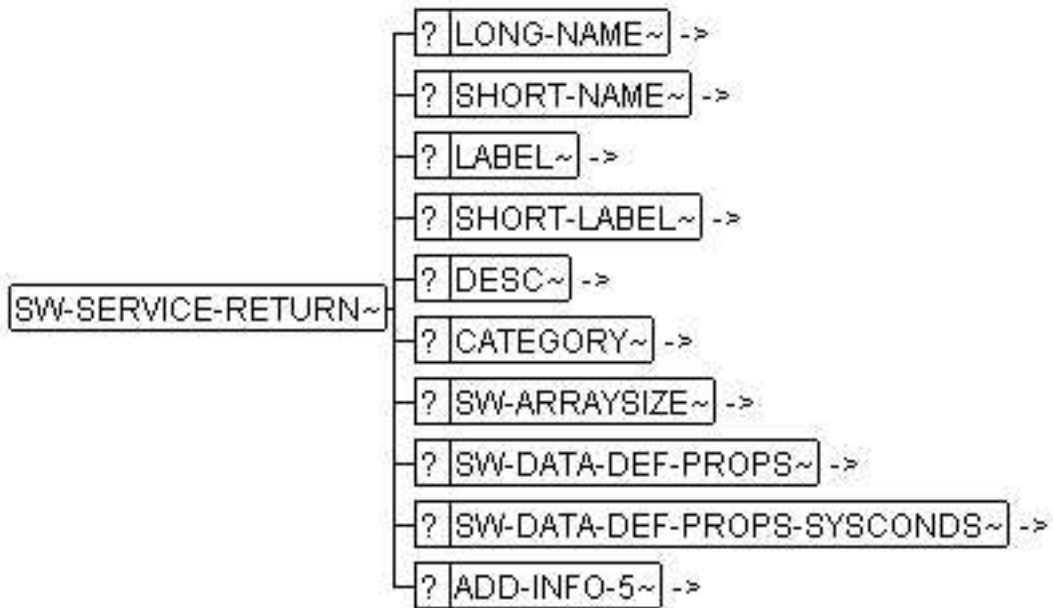
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SERVICE](#) p. 500, [SW-SERVICE-IMPL](#) p. 503

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [LABEL](#) p. 128, [SHORT-LABEL](#) p. 211, [DESC](#) p. 83, [CATEGORY](#) p. 42, [SW-ARRAYSIZE](#) p. 239, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [ADD-INFO-5](#) p. 28



SW-SERVICE-RETURN.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SW-SERVICE-RETURN	

2.627 SW-SERVICES

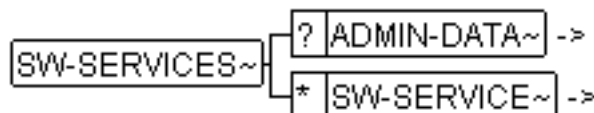
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC p. 372](#)

Ist Kontext für: [ADMIN-DATA p. 30](#), [SW-SERVICE p. 500](#)



SW-SERVICES.PNG

2.628 SW-SIZEOF-INSTANCE

Beschreibung

This element specifies the size of a memory object **in bytes** . This is required for the recalculation of the individual component addresses, on temporary storage of the structures.

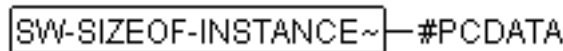
Beispiel

See [Chapter 2.270 SW-ADDR-INFO](#) p. 227

Formale Beschreibung

Hat als Kontext: [SW-ADDR-INFO](#) p. 227

Ist Kontext für: Text



SW-SIZEOF-INSTANCE.PNG

2.629 SW-SUBCOMPONENT

Beschreibung

This element describes a sub-component within the functional decomposition of a feature. A process sequence can also be specified in this composition (see **<SW-FEATURE-DECOMPOSITION>**).

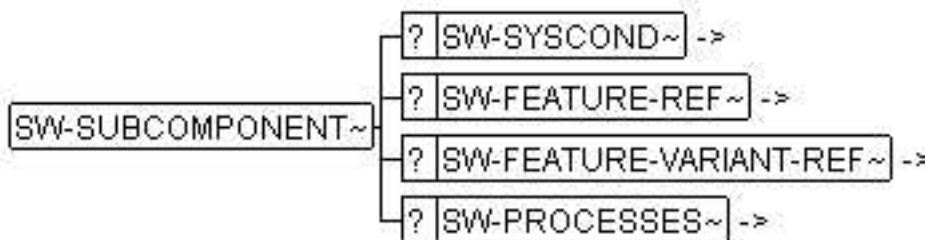
Beispiel

See [Chapter 2.455 SW-FEATURE-DECOMPOSITION](#) p. 391

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-DECOMPOSITION](#) p. 391

Ist Kontext für: [SW-SYSCOND](#) p. 511, [SW-FEATURE-REF](#) p. 407, [SW-FEATURE-VARIANT-REF](#) p. 412, [SW-PROCESSES](#) p. 476



SW-SUBCOMPONENT.PNG

2.630 SW-SYSCOND

Beschreibung

This element is used to denote, that the existence of its parent element is treated to be conditional. This means, that the parent element is processed only, if the evaluation of the content of **<SW-SYSCOND>** evaluates to "1".

This element specifies an expression that is to be calculated, in which system constants, referenced through **<SW-SYSTEMCONST-CODED-REF>** and **<SW-SYSTEMCONST-PHYS-REF>**, are substituted.

The contents of this element is an arithmetic expression with the features as follows:

- Zulässige Operanden: Integer-Zahlen (vorzeichenlos oder mit Vorzeichen), Gleitpunktzahlen, Verweise auf Systemkonstanten
- Zulässige Operatoren: [Table 9 Operatoren in arithmetischen Ausdrücken p. 512!](#)
- Es dürfen Klammern (auch geschachtelt) enthalten sein.
- Es wird zwischen Integer- und Gleitpunktarithmetik unterschieden.
- Im Objektspeicher sind arithmetische Ausdrücke in runde Klammern eingefasst abgespeichert.
- In der KGS-Datei bestehen keine syntaktischen Besonderheiten (keine Einfassung in Klammern etc. nötig)
- Arithmetische Ausdrücke dürfen auch über mehrere Zeilen gehen.

Folgende Operatoren sind unterstützt. Dabei entspricht die Reihenfolge der Nennung der Berechnungsreihenfolge (Operatorenpräzedenz) - angelehnt an die Programmiersprache "C".

Instruction:

Im Fehlerfall (Ausdruck falsch formuliert) muss die betreffende Anwendung eine hochpriorie Fehlermeldung werfen, und das ergebnis als *false* (0) annehmen.

Instruction:

Es hängt von der jeweiligen Prozess-Strategie ab, wie auf einen **undefinierte Operanden** reagiert wird. Drei Strategien sind denkbar:

konservativ - **<SW-SYSCOND>** wird als falsch interpretiert, d.h. das betroffene Element wird rausgelöscht. Damit wird auf jeden Fall die Verarbeitung unzutreffender Information vermieden.

iterativ - **<SW-SYSCOND>** wird nicht interpretiert, d.h. das betroffene Element wird inklusive seiner Systembedingung weitergereicht, um in einem nächsten Lauf wieder ausgewertet zu werden. Damit kann man eine auf mehrere Iterationen verteilte Auswertung realisieren.

progressiv - **<SW-SYSCOND>** wird als wahr interpretiert, d.h. das betroffene Element wird behalten, aber **<SW-SYSCOND>** wird entfernt. Damit wird auf jeden Fall Informationsverlust vermieden.

Table 9: Operatoren in arithmetischen Ausdrücken

Zeichen	Operator
!, ~	Negation (bool'sch, bitweise)
**	Potenzierung
*, /	Multiplikation, Division
+, -	Addition, Subtraktion
«, »	bitweises Schieben (links, rechts)
<, <=, >, >=	Vergleich: kleiner, kleiner oder gleich, größer, größer oder gleich
==, !=	Vergleich: gleich, ungleich
&	bitweises UND
^	bitweises XOR
	bitweises ODER
&&	bool'sches UND
	bool'sches ODER

Die Berechnung von Ausdrücken mit bool'schem UND oder ODER wird abgebrochen, wenn bereits aus dem ersten Operanden das Ergebnis feststeht (wie in C). Zum Tragen kommt dieses Verhalten bei einem Ausdruck wie:

```
defined (SY_COUNT) && SY_COUNT > 1
```

da hier, falls *SY_COUNT* nicht definiert ist, die Abprüfung auf "*> 1*" nicht durchgeführt wird und somit eine ungewollte Fehlermeldung vermieden wird.

Folgende mathematische Funktionen sind unterstützt:

Table 10: mathematische Funktionen in arithmetischen Ausdrücken

Funktion	Anzahl Parameter	Ergebnis-Typ	Bedeutung
IROUND	1	integer oder unsigned integer	rundet positive und negative Zahlen auf die nächstgelegene ganze Zahl
ICEIL	1	integer oder unsigned integer	rundet positive und negative Zahlen auf auf die nächste darüber liegende ganze Zahl
IFLOOR	1	integer oder unsigned integer	rundet positive und negative Zahlen ab auf die nächste darunter liegende ganze Zahl
UROUND	1	unsigned integer	rundet positive und negative Zahlen auf die nächstgelegene ganze, vorzeichenlose Zahl
UCEIL	1	unsigned integer	rundet positive und negative Zahlen auf auf die nächste darüber liegende ganze, vorzeichenlose Zahl
UFLOOR	1	unsigned integer	rundet positive und negative Zahlen ab auf die nächste darunter liegende ganze, vorzeichenlose Zahl
ABS	1	wie Operand	Absolutbetrag
LN	1	float	natürlicher Logarithmus (zur Basis e)
EXP	1	float	Exponentialbildung (Basis e)
DEFINED	1	0 oder 1	Prüfung, ob alle zur Berechnung des Operanden notwendigen Systemkonstanten definiert sind.
MAX	2	abhängig von Operanden	Maximalwertbildung
MIN	2	abhängig von Operanden	Minimalwertbildung

Beispiele für korrekte arithmetische Ausdrücke sind:

```
1
2.0
1.5E5
2.0 * (1 + 2)
SY_ZYLZA
SY_ZYLZA + SY_TURBO
defined (SY_ZYLZA)
1 / SY_ZYLZA
```

Bei letztem Beispiel ist zu beachten, dass hier mit Integer-Arithmetik gerechnet wird (also das Ergebnis gleich 0 sein wird), wenn die Zylinderzahl SY_ZYLZA ebenfalls als Integerzahl definiert wurde.

```
<expression> ::= (<expression>
                | <expression> <op> <expression>
                | <value>)
<value>      ::= UINTEGER | INTEGER | DOUBLE | IDENTIFIER | <function>
<function>   ::= <ufunc>(<expression>) | <bfunc>(<expression>,<expression>)
<ufunc>      ::= IROUND | ICEIL | IFLOOR | UROUND | UCEIL | UFLOOR | ABS | LN |
                EXP | DEFINED
<bfunc>      ::= MAX | MIN
<op>        ::= + | - | / | * | ** | & | ^ | | | ~ | « | » | && | || |
                == | != | ! = | ! | < | <= | > | >=
```

Figure 5: Grammar for an arithmetic expression

IDENTIFIER sind Referenzen auf Systemkonstanten (<SW-SYSTEM-CONST-CODED-REF> bzw. <SW-SYSTEM-CONST-PHYS-REF>), Features aus einer MSRFR-Instanz (<FR-FEATURE-REF>) oder Konfigurationseinstellungen (<CONF-ITEM-CODED-REF> bzw. <CONF-ITEM-PHYS-REF>).

Hint:

Es wird empfohlen in einem Editor folgende Ersatzdarstellungen für *IDENTIFIER* zu verwenden:



c(...) für <SW-SYSTEM-CONST-CODED-REF>

p(...) für <SW-SYSTEM-CONST-PHYS-REF>

fr(...) für <FR-FEATURE-REF>

cc(...) für <CONF-ITEM-CODED-REF>

cp(...) für <CONF-ITEM-PHYS-REF>

Diese Ersatzdarstellungen müssen auch verwendet werden, wenn die Bedingung in das Attribut **[SYSCOND]** eingetragen wird.

INTEGER, *UINTEGER* und *DOUBLE* sind wie in C angebar.

Hint: Implementierungshinweis

Es wird empfohlen, im Unterschied zu C positive Integer-Zahlen als unsigned integer zu behandeln (dadurch haben boolesche Ausdrücke den Typ *UINTEGER*). Die explizite Kennzeichnung eines *UINTEGER* mit Suffix *U* bzw. *UL* ist nicht mehr zwingend, ist aber nach wie vor akzeptiert. Wird ein ganzzahliger arithmetischer Ausdruck bzw. ein Zwischenergebnis negativ, so wird automatisch von Typ *UINTEGER* auf *INTEGER* umgewandelt. Damit dürfen Zwischenergebnisse während der Auswertung eines arithmetischen Ausdrucks den üblichen Wertebereich von signed integer überschreiten, ohne dass es sofort zu einem Fehler käme. Damit ist man in der Lage, z.B. Adressen größer als *0x7FFFFFFF* zu behandeln, ohne dass die erzeugenden Tools sich um das Suffix kümmern müssten.

Vorrang: Es gilt die allgemein übliche Vorrang-Regel Punkt vor Strich. Am stärksten bindet der Potenz-Operator (**).

Das unäre Minus bindet stärker als alle anderen Operatoren. Bsp: $-2**3$ wird zu $-8 = (-2)**3$ ausgewertet $-ln(2.718281828)**2$ entspricht $(-ln(2.718281828))**2$ und ist somit gleich $+1$.

Typ: Der Typ eines arithmetischen Ausdrucks ist entweder *ArithInteger* (intern abgebildet durch *long int*), *ArithUnsignedInteger* (intern abgebildet durch *unsigned long int*) oder *ArithDouble* (intern abgebildet durch *double*). Er wird bestimmt durch den Typ seiner einzelnen Bestandteile. Es gilt:

- der Typ von *INTEGER* ist *ArithInteger*
- der Typ von *UINTEGER* ist *ArithUnsignedInteger*
- der Typ von *DOUBLE* ist *ArithDouble*
- zum Ergebnistyp einer Funktion bzw. eines Operanden s. [Chapter 11 resultierende Typen von Operatoren und Funktionen p. 515](#)

Operator / Der Divisions-Operator angewandt auf zwei Ausdrücke vom Typ *INTEGER* oder *UINTEGER* verhält sich wie die Division in C für Integer (Ganzzahl-Division)

Funktionen *IROUND*, *ICEIL*, *IFLOOR*, *UROUND*, *>UCEIL* und *UFLOOR* Diese wirken als 'Integer-Cast' bzw. 'Unsigned Integer-Cast' mit Rundung. Man beachte, dass ab Version V1.15D positive Integer wie unsigned integer behandelt werden. Es ist somit z.B. *4* identisch mit *4UL*. Im einzelnen gilt:

IROUND

rundet positive und negative Zahlen auf die nächstgelegene ganze Zahl.

Bsp.: $IROUND(4.4) = 4$ $IROUND(-4.4) = -4$
 $IROUND(4.7) = 5$ $IROUND(-4.7) = -5$
 $IROUND(4.5) = 5$ $IROUND(-4.5) = -5$

IFLOOR

rundet positive und negative Zahlen ab auf die nächste darunter liegende ganze Zahl.

Bsp.: $IFLOOR(4.4) = 4$ $IFLOOR(-4.4) = -5$
 $IFLOOR(4.7) = 4$ $IFLOOR(-4.7) = -5$
 $IFLOOR(4.0) = 4$ $IFLOOR(-4.0) = -4$

ICEIL rundet positive und negative Zahlen auf auf die nächste darüber liegende ganze Zahl.

Bsp.: ICEIL(4.4) = 5 ICEIL(-4.4) = -4
ICEIL(4.7) = 5 ICEIL(-4.7) = -4
ICEIL(4.0) = 4 ICEIL(-4.0) = -4

UROUND, UCEIL, UFLOOR wirken wie ihre Entsprechungen IROUND, ICEIL und IFLOOR. Negative Zahlen werden immer auf 0 gerundet.

Bsp.: UCEIL(4.4) = 5UL UCEIL(-4.4) = 0UL
UCEIL(4.7) = 5UL UROUND(4.7) = 5UL
UCEIL(4.0) = 4UL UROUND(4.0) = 4UL
UROUND(4.5) = 5UL UROUND(4.4) = 4UL
UFLOOR(4.5) = 4UL UFLOOR(4.7) = 4UL

Funktion **DEFINED DEFINED** liefert 1, falls der als Parameter übergebene arithmetische Ausdruck auswertbar ist, d.h. alle darin vorkommenden Systemkonstanten definiert sind. Eine Systemkonstante ist genau dann 'definiert', falls sie als konstanter Ausdruck definiert ist oder alle in ihrem Ausdruck verwendeten Systemkonstanten wiederum 'definiert' sind.

Bsp.: es seien folgende Systemkonstanten definiert:

```
ZYL_ZA = 4
ZYLZA2 = ZYLZA+2
TURBO = (undefiniert)
TURBO2 = TURBO+2
dann gilt:
DEFINED(ZYL_ZA) = 1
DEFINED(ZYL_ZA2) = 1
DEFINED(TURBO) = 0
DEFINED(TURBO2) = 0 (TURBO2 ist mit Hilfe von TURBO definiert,
das wiederum undefiniert ist)
DEFINED(3*4-6) = 1
DEFINED(ZYL_ZA-TURBO2) = 0
```

Ein Ausdruck wie:

```
defined(SY_COUNT) && SY_COUNT > 1
```

ist zulässig, da hier, falls **SY_COUNT** nicht definiert ist, die Abprüfung auf "> 1" nicht durchgeführt wird und somit eine ungewollte Fehlermeldung vermieden wird.

Fehlerbehandlung Fehlermeldungen gibt es, wenn

- der arithmetische Ausdruck ist syntaktisch nicht korrekt
- es wird durch 0 dividiert
- der Definitionsbereich einer Funktion wird nicht beachtet
- der Funktionswert einer Funktion liegt außerhalb des darstellbaren Bereichs (dies ist z.B. auch für **IFLOOR(10E22)** der Fall)
- einer der Operanden ist nicht definiert

Keine Fehlermeldung gibt es, wenn bei Verwendung der Grundrechenoperatoren '-', '+', '*', '/' der Darstellungsbereich überschritten wird.

Table 11: resultierende Typen von Operatoren und Funktionen

Funktor / Operator	Typen der Parameter/Operanden	Ergebnistyp	Bemerkung
+, -, /, *	INTEGER; INTEGER	Ganzzahl	Dominanz: DOUBLE vor Ganzzahl. (Für Ganzzahl ist der Ergenistyp abhängig vom Ergebniswert: INTEGER, falls Ergebnis < 0 UIINTEGER, falls Ergebnis >= 0)
	INTEGER, UIINTEGER		
	UIINTEGER, UIINTEGER		
	DOUBLE, UIINTEGER	DOUBLE	
	DOUBLE, INTEGER		
DOUBLE, DOUBLE			

Table 11 (Cont.): resultierende Typen von Operatoren und Funktionen

Funktion / Operator	Typen der Parameter/Operanden	Ergebnistyp	Bemerkung
, &&, ==, <=, <, >, >=, !=	INTEGER, INTEGER	UINTEGER	Dominanz: der Ergebnistyp der booleschen Operatoren ist unabhängig vom Typ der Operanden immer UINTEGER Wie in C ist das Ergebnis entweder 0 oder 1
	INTEGER, UINTEGER		
	UINTEGER, UINTEGER		
	DOUBLE, UINTEGER		
	DOUBLE, INTEGER		
	DOUBLE, DOUBLE		
, &, ^, «, »	INTEGER, INTEGER	UINTEGER	Dominanz: der Ergebnistyp der bitweisen Operatoren ist unabhängig vom Typ der Operanden immer UINTEGER. Die Verwendung eines Operanden vom Typ DOUBLE führt zu einem fehlerhaften arithmetischen Ausdruck mit Fehlermeldung
	INTEGER, UINTEGER		
	UINTEGER, UINTEGER		
	DOUBLE, UINTEGER		
	DOUBLE, INTEGER	Fehler	
	DOUBLE, DOUBLE		
MIN	INTEGER, INTEGER	INTEGER	Dominanz: DOUBLE vor INTEGER vor UINTEGER Beachte: Die Dominanzen von MIN und MAX unterscheiden sich!
	INTEGER, UINTEGER	UINTEGER	
	UINTEGER, UINTEGER		
	DOUBLE, UINTEGER	DOUBLE	
	DOUBLE, INTEGER		
	DOUBLE, DOUBLE		
MAX	INTEGER, INTEGER	INTEGER	Dominanz: DOUBLE vor UINTEGER vor INTEGER Beachte: Die Dominanzen von MIN und MAX unterscheiden sich!
	INTEGER, UINTEGER	UINTEGER	
	UINTEGER, UINTEGER	DOUBLE	
	DOUBLE, UINTEGER		
	DOUBLE, INTEGER		
	DOUBLE, DOUBLE		
~	INTEGER	UINTEGER	Verwendung eines Operanden vom Typ DOUBLE führt zu einem fehlerhaften arithmetischen Ausdruck mit Fehlermeldung
	UINTEGER	Fehler	
	DOUBLE		
!, DEFINED	INTEGER	UINTEGER	Dominanz: Ergebnistyp ist immer UINTEGER Das Ergebnis ist entweder 0 oder 1
	UINTEGER		
	DOUBLE		
LN, EXP	INTEGER	DOUBLE	Dominanz: Ergebnistyp ist immer DOUBLE
	UINTEGER		
	DOUBLE		
ABS	INTEGER	UINTEGER	Für ganze Zahlen ist Ergebnistyp immer UINTEGER
	UINTEGER	DOUBLE	
	DOUBLE		
ICEIL, IFLOOR, IROUND	INTEGER	Ganzzahl	Dominanz: Ergebnistyp ist abhängig vom Ergebnis entweder INTEGER (Ergebnis < 0) oder UINTEGER (Ergebnis >= 0)
	UINTEGER		
	DOUBLE		
UCEIL, UFLOOR, UROUND	INTEGER	UINTEGER	Dominanz: Ergebnistyp ist immer UINTEGER Für negative Parameter wird 0 zurückgegeben
	UINTEGER		
	DOUBLE		

Beispiel

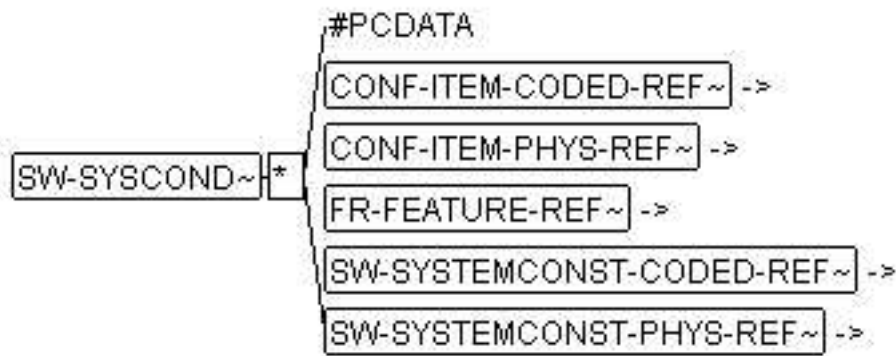


```
1
2.0
1.5E5
2.0 * (1 + 2)
<SW-SYSTEMCONST-CODED-REF>SY_ZYLZA</SW-SYSTEMCONST-CODED-REF>
<SW-SYSTEMCONST-CODED-REF>SY_ZYLZA</SW-SYSTEMCONST-CODED-REF>
  + <SW-SYSTEMCONST-CODED-REF>SY_TURBO</SW-SYSTEMCONST-CODED-REF>
defined (<SW-SYSTEMCONST-CODED-REF>SY_ZYLZA</SW-SYSTEMCONST-CODED-REF>)
1 / <SW-SYSTEMCONST-CODED-REF>SY_ZYLZA</SW-SYSTEMCONST-CODED-REF>
```

Formale Beschreibung

Hat als Kontext: [CONF-ITEM](#) p. 59, [CONF-RULE](#) p. 64, [CONF-RULE-REF-SYSCOND](#) p. 67, [CONF-VALUE-CONSTR](#) p. 71, [SW-ACCESSED-SERVICE](#) p. 224, [SW-ADDR-METHOD-REF-SYSCOND](#) p. 232, [SW-AR-RELATION](#) p. 235, [SW-AXIS-CONT](#) p. 240, [SW-AXIS-TYPE-REF-SYSCOND](#) p. 248, [SW-BASE-TYPE-REF-SYSCOND](#) p. 253, [SW-CALPRM-PROTOTYPE](#) p. 266, [SW-CALPRM-REF-SYSCOND](#) p. 272, [SW-CLASS-ATTR-IMPL-REF-SYSCOND](#) p. 297, [SW-CLASS-INSTANCE-REF-SYSCOND](#) p. 303, [SW-CLASS-PROTOTYPE](#) p. 305, [SW-CLASS-REF-SYSCOND](#) p. 310, [SW-CODE-SYNTAX-REF-SYSCOND](#) p. 316, [SW-COMPU-METHOD-REF-SYSCOND](#) p. 340, [SW-DATA-CONSTR-REF-SYSCOND](#) p. 364, [SW-DATA-DEF-PROPS](#) p. 366, [SW-EVENT-REF-SYSCOND](#) p. 381, [SW-FEATURE](#) p. 386, [SW-FEATURE-INTERFACE](#) p. 399, [SW-FEATURE-INTERFACE-P](#) p. 401, [SW-FEATURE-OWNED-ELEMENT-SET](#) p. 405, [SW-FEATURE-REF-SYSCOND](#) p. 409, [SW-FEATURE-VARIANT-OF](#) p. 411, [SW-INSTANCE-REF-SYSCOND](#) p. 426, [SW-INTERFACE-ACCESSED-ELEMENT-SET](#) p. 431, [SW-INTERFACE-EXPORT](#) p. 432, [SW-INTERFACE-IMPORT](#) p. 434, [SW-PROCESS-LIST](#) p. 475, [SW-RECORD-LAYOUT-REF-SYSCOND](#) p. 492, [SW-SERVICE-ACCESSED-ELEMENT-S](#) p. 501, [SW-SERVICE-PROTOTYPE](#) p. 505, [SW-SERVICE-REF-SYSCOND](#) p. 508, [SW-SUBCOMPONENT](#) p. 511, [SW-SYSTEMCONST-REF-SYSCOND](#) p. 529, [SW-TASK-REF-SYSCOND](#) p. 537, [SW-TEMPLATE-REF-SYSCOND](#) p. 542, [SW-UNIT-REF-SYSCOND](#) p. 550, [SW-VARIABLE-PROTOTYPE](#) p. 568, [SW-VARIABLE-REF-SYSCOND](#) p. 574, [SW-VCD-CRITERION-REF-SYSCOND](#) p. 581

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [FR-FEATURE-REF](#) p. 102, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



SW-SYSCOND.PNG

2.631 SW-SYSTEM

Beschreibung

<SW-SYSTEM> describes one particular system within the current file. This supports the transfer of calibration data of multi-ECU systems within one file.

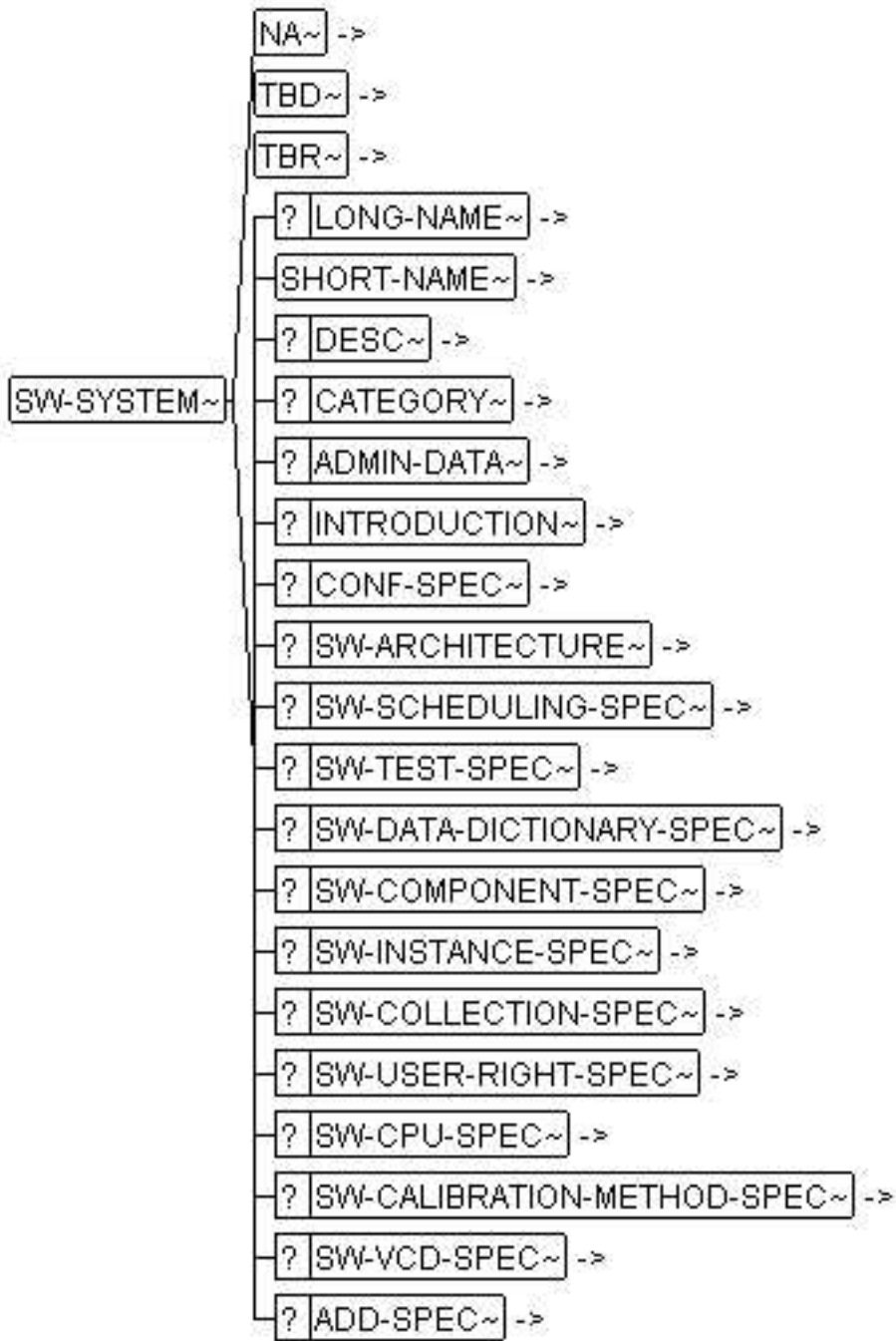
Beispiel

```
<SW-SYSTEM>
  <SHORT-NAME>DEMO</SHORT-NAME>
  <SW-INSTANCE-SPEC>
    <INTRODUCTION>
      <P>This is the system to demonstrate, how CDF should work.</P>
    </INTRODUCTION>
    <SW-INSTANCE-TREE>
      <SHORT-NAME>Summertest</SHORT-NAME>
      <SW-INSTANCE>
        <LONG-NAME>faule Bären aus München (Viktualienmarkt)</LONG-NAME>
        <SHORT-NAME>FBAM_V</SHORT-NAME> ... </SW-INSTANCE>
      </SW-INSTANCE-TREE>
    </SW-INSTANCE-SPEC>
  </SW-SYSTEM>
```

Formale Beschreibung

Hat als Kontext: [SW-SYSTEMS](#) p. 531

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [CONF-SPEC](#) p. 71, [SW-ARCHITECTURE](#) p. 237, [SW-SCHEDULING-SPEC](#) p. 499, [SW-TEST-SPEC](#) p. 544, [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-COMPONENT-SPEC](#) p. 330, [SW-INSTANCE-SPEC](#) p. 427, [SW-COLLECTION-SPEC](#) p. 327, [SW-USER-RIGHT-SPEC](#) p. 559, [SW-CPU-SPEC](#) p. 352, [SW-CALIBRATION-METHOD-SPEC](#) p. 258, [SW-VCD-SPEC](#) p. 583, [ADD-SPEC](#) p. 29



SW-SYSTEM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.



Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-SYSTEM	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.



Attribut	Typ	Wertebereich	Anmerkungen
[F-NAMESPACE] (fixed)	nmtokens	CHAPTER CONF- ITEM CONF-RULE DEF-ITEM FIG- URE FORMULA PRM SDG STD SW-ADDR-METHOD SW-AXIS-TYPE SW-BASE-TYPE SW-CALIBRATION- METHOD SW- CALPRM SW- CALPRM-PROTOTYPE SW-CLASS SW- CLASS-ATTR- IMPL SW-CLASS- INSTANCE SW- CLASS-PROTOTYPE SW-CODE-SYNTAX SW-COLLECTION SW-COMPU- METHOD SW-CPU- MEM-SEG SW-DATA- CONSTR SW-EVENT SW-EVENT-SOURCE SW-FEATURE SW-FEATURE- INTERFACE SW- FEATURE-VARIANT SW-GENERIC-AXIS- PARAM-TYPE SW- INSTANCE SW- INSTANCE-TREE SW- OPER-MODE SW- RECORD-LAYOUT SW-SERVICE SW- SERVICE-ARG SW-SERVICE- PROTOTYPE SW- SERVICE-RETURN SW-SYSTEMCONST SW-TASK SW- TEMPLATE SW- UNIT SW-USER- ACCESS-CASE SW-USER-GROUP SW-VARIABLE SW-VARIABLE- PROTOTYPE SW- VCD-CRITERION SYNOPSIS TABLE TOPIC XDOC XFILE XREF-TARGET	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.632 SW-SYSTEMCONST

Beschreibung

This element specifies a system constant. Normally, a system constant can be accessed during compilation time (not during runtime). A system constant can belong to a specific category **<CATEGORY>**. Physical values **<SW-VALUES-PHYS>** or internal values **<SW-VALUES-CODED>** can be specified. If the system constant is referenced in code, but has only been set physically, the converted value is applied in the place of the reference. Therefore, the references to system constants are literally replaced by the value of the referenced system constant (calculated where necessary).

Beispiel

<MSRSW>

```

<ADMIN-DATA>
  <LANGUAGE>EN</LANGUAGE>
</ADMIN-DATA>
<INTRODUCTION></INTRODUCTION>
<SW-SYSTEMS>
  <SW-SYSTEM>
    <LONG-NAME><?xm-replace_text {LONG-NAME}></LONG-NAME>
    <SHORT-NAME><?xm-replace_text {SHORT-NAME}></SHORT-NAME>
    <SW-DATA-DICTIONARY-SPEC>
      <SW-SYSTEMCONSTS>
        <SW-SYSTEMCONST>
          <LONG-NAME><?xm-replace_text {LONG-NAME}></LONG-NAME>
          <SHORT-NAME>sy_medium_temperature</SHORT-NAME>
          <CATEGORY>scaling</CATEGORY>
          <SW-VALUES-PHYS>
            <V>20</V>
          </SW-VALUES-PHYS>
          <DESC>This systemconstant describes the medium atmosphere temperature which i
          </SW-SYSTEMCONST>
        </SW-SYSTEMCONSTS>
      <SW-COMPU-METHODS>
        <SW-COMPU-METHOD>
          <SHORT-NAME>TEMP</SHORT-NAME>
          <SW-UNIT-REF>degC</SW-UNIT-REF>
          <SW-COMPU-PHYS-TO-INTERNAL>
            <SW-COMPU-SCALES>
              <SW-COMPU-SCALE>
                <LOWER-LIMIT>-30</LOWER-LIMIT>
                <UPPER-LIMIT>130</UPPER-LIMIT>
                <SW-COMPU-RATIONAL-COEFFS>
                  <SW-COMPU-NUMERATOR>
                    <V>60</V>
                    <V>2</V>
                  </SW-COMPU-NUMERATOR>
                  <SW-COMPU-DENOMINATOR>
                    <V>1</V>
                  </SW-COMPU-DENOMINATOR>
                </SW-COMPU-RATIONAL-COEFFS>
              </SW-COMPU-SCALE>
            </SW-COMPU-SCALES>
          </SW-COMPU-PHYS-TO-INTERNAL>
        </SW-COMPU-METHOD>
      </SW-COMPU-METHODS>
    </SW-DATA-DICTIONARY-SPEC>
  <SW-INSTANCE-SPEC>
    <SW-INSTANCE-TREE>
      <SHORT-NAME>sampladata</SHORT-NAME>
    <SW-INSTANCE>
      <SHORT-NAME>ClimaLimit</SHORT-NAME>
      <SW-INSTANCE-PROPS-VARIANTS>
        <SW-INSTANCE-PROPS-VARIANT>
          <SW-AXIS-CONTS>
            <SW-AXIS-CONT>
              <SW-VALUES-PHYS>
                <VF>
                  <SW-SYSTEMCONST-PHYS-REF>sy_medium_temperature</SW-SYSTEMCON
                </SW-VALUES-PHYS>
              <SW-VALUES-CODED>
                <VF>
                  <SW-SYSTEMCONST-CODED-REF>sy_medium_temperature</SW-SYSTEMCO
                </SW-VALUES-CODED>
            </SW-AXIS-CONT>
          </SW-AXIS-CONTS>
        </SW-INSTANCE-PROPS-VARIANT>
      </SW-INSTANCE-PROPS-VARIANTS>
    </SW-INSTANCE>
  </SW-INSTANCE-SPEC>
</SW-SYSTEM>
</SW-SYSTEMS>

```

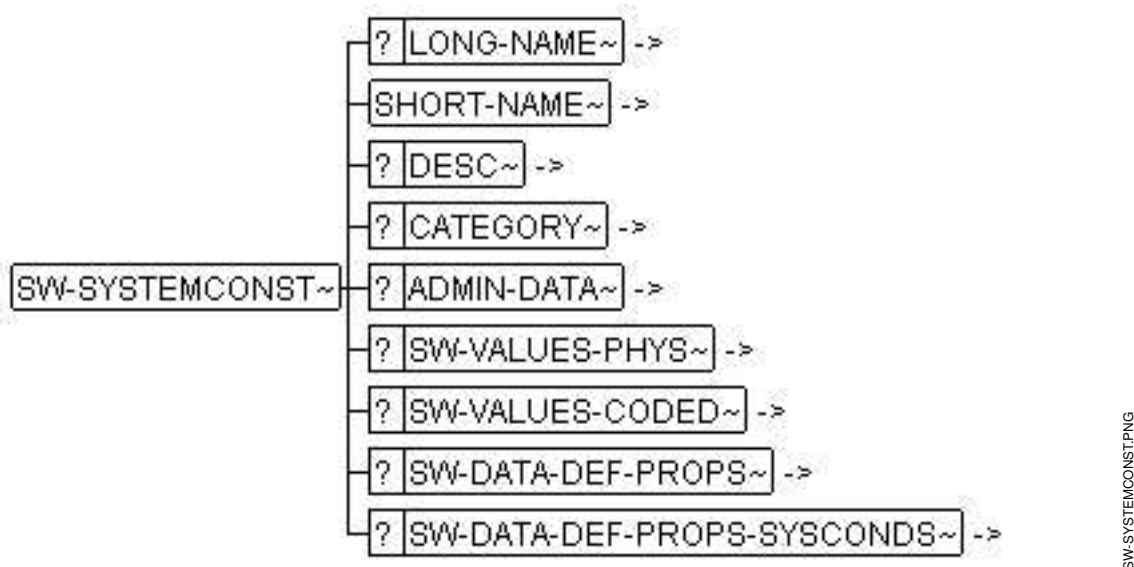
```

        </SW-AXIS-CONTS>
    </SW-INSTANCE-PROPS-VARIANT>
</SW-INSTANCE-PROPS-VARIANTS>
</SW-INSTANCE>
</SW-INSTANCE-TREE>
</SW-INSTANCE-SPEC>
</SW-SYSTEM>
</SW-SYSTEMS>
</MSRSW>
    
```

Formale Beschreibung

Hat als Kontext: [SW-SYSTEMCONSTS](#) p. 530

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-VALUES-PHYS](#) p. 562, [SW-VALUES-CODED](#) p. 560, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-SYSTEMCONST	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.633 SW-SYSTEMCONST-CODED-REF

Beschreibung

This element references **<SW-SYSTEMCONST>**, whereby in the case of **<SW-SYSTEMCONST>**, it concerns an internal system constant.

Beispiel

Formale Beschreibung

Hat als Kontext: [LOWER-LIMIT](#) p. 136, [MAX-TEXT-LENGTH](#) p. 141, [MIN-INCR-SIZE](#) p. 142, [MIN-TEXT-LENGTH](#) p. 142, [SW-CALPRM-MAX-TEXT-SIZE](#) p. 265, [SW-COMPU-GENERIC-MATH](#) p. 334, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-MAX-AXIS-POINTS](#) p. 437, [SW-MIN-AXIS-POINTS](#) p. 469, [SW-NUMBER-OF-AXIS-POINTS](#) p. 470, [SW-SYSCOND](#) p. 511, [UPPER-LIMIT](#) p. 616, [VF](#) p. 628

Ist Kontext für: Text

SW-SYSTEMCONST-CODED-REF~—#PCDATA

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-SYSTEMCONST	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.634 SW-SYSTEMCONST-PHYS-REF

Beschreibung

This element references **<SW-SYSTEMCONST>**, whereby in the case of **<SW-SYSTEMCONST>**, it concerns physical system constant.

Beispiel

Formale Beschreibung

Hat als Kontext: [LOWER-LIMIT](#) p. 136, [MAX-TEXT-LENGTH](#) p. 141, [MIN-INCR-SIZE](#) p. 142, [MIN-TEXT-LENGTH](#) p. 142, [SW-CALPRM-MAX-TEXT-SIZE](#) p. 265, [SW-COMPU-GENERIC-MATH](#) p. 334, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-MAX-AXIS-POINTS](#) p. 437, [SW-MIN-AXIS-POINTS](#) p. 469, [SW-NUMBER-OF-AXIS-POINTS](#) p. 470, [SW-SYSCOND](#) p. 511, [UPPER-LIMIT](#) p. 616, [VF](#) p. 628

Ist Kontext für: Text

`SW-SYSTEMCONST-PHYS-REF~|#PCDATA`

SW-SYSTEMCONST-PHYS-REFPNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-SYSTEMCONST	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.635 SW-SYSTEMCONST-REF

Beschreibung

This element references `<SW-SYSTEMCONST>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEMCONST-REF-SYSCOND](#) p. 529, [SW-SYSTEMCONST-REFS](#) p. 530

Ist Kontext für: Text

`SW-SYSTEMCONST-REF~`—#PCDATA

SW-SYSTEMCONSTREFPENG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-SYSTEMCONST	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.636 SW-SYSTEMCONST-REF-SYSCOND

Beschreibung

Use `<SW-SYSTEMCONST-REF-SYSCOND>` to create a `<SW-SYSTEMCONST-REF>` that will be valid only when the corresponding `<SW-SYSCOND>` expression evaluates to true. This is useful when a `<SW-SYSTEMCONST-REF>` shall be used when system constant has a certain value

Beispiel

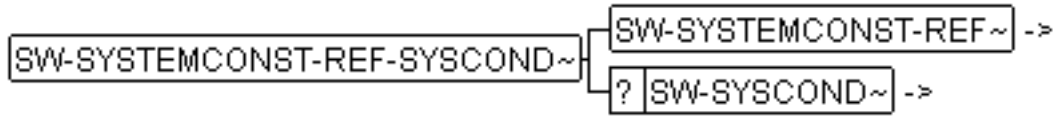
This Systemconstant reference is used when LINA_Gear is less or equal to 4.

```
<SW-SYSTEMCONST-REF-SYSCOND>
  <SW-SYSTEMCONST-REF>sysconst_Ref</SW-SYSTEMCONST-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-SYSTEMCONST-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-SYSTEMCONST-REFS](#) p. 530

Ist Kontext für: [SW-SYSTEMCONST-REF](#) p. 528, [SW-SYSCOND](#) p. 511



SW-SYSTEMCONST-REF-SYSCOND.PNG

2.637 SW-SYSTEMCONST-REFS

Beschreibung

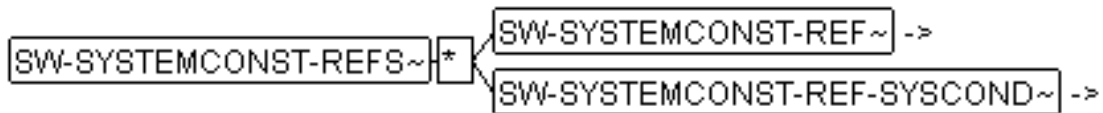
Container element for <SW-SYSTEMCONST-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE](#) p. 386, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-SYSTEMCONST-REF](#) p. 528, [SW-SYSTEMCONST-REF-SYSCOND](#) p. 529



SW-SYSTEMCONSTREFS.PNG

2.638 SW-SYSTEMCONSTS

Beschreibung

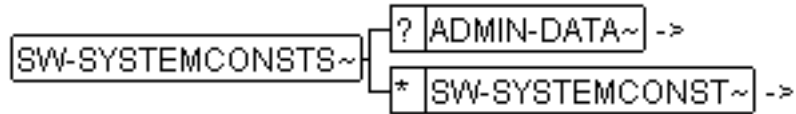
Container element for <SW-SYSTEMCONST> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-SYSTEMCONST](#) p. 521



2.639 SW-SYSTEMS

Beschreibung

Container element for **<SW-SYSTEM>** . The main contents of an MSRSW instance is located beneath SW-SYSTEM. This enables the support of several ECU systems, as well as of a system with more than one CPU.

Beispiel

```
<SW-SYSTEMS>
  <SW-SYSTEM>
    <SHORT-NAME>DEMO</SHORT-NAME>
    <SW-INSTANCE-SPEC>
      <INTRODUCTION>
        <P>This is the system to demonstrate, how CDF should work.</P>
      </INTRODUCTION>
      <SW-INSTANCE-TREE>
        <SHORT-NAME>Summertest</SHORT-NAME>
        <SW-INSTANCE>
          <LONG-NAME>faule Bären aus München (Viktualienmarkt)</LONG-NAME>
          <SHORT-NAME>FBAM_V</SHORT-NAME> ... </SW-INSTANCE>
        </SW-INSTANCE-TREE>
      </SW-INSTANCE-SPEC>
    </SW-SYSTEM>
  </SW-SYSTEMS>
```

Formale Beschreibung

Hat als Kontext: [MSRSW p. 155](#)

Ist Kontext für: [SW-SYSTEM p. 517](#)



2.640 SW-TASK

Beschreibung

This element describes a specific task. For further details, see [Chapter 2.649 SW-TASK-SPEC p. 538](#) .

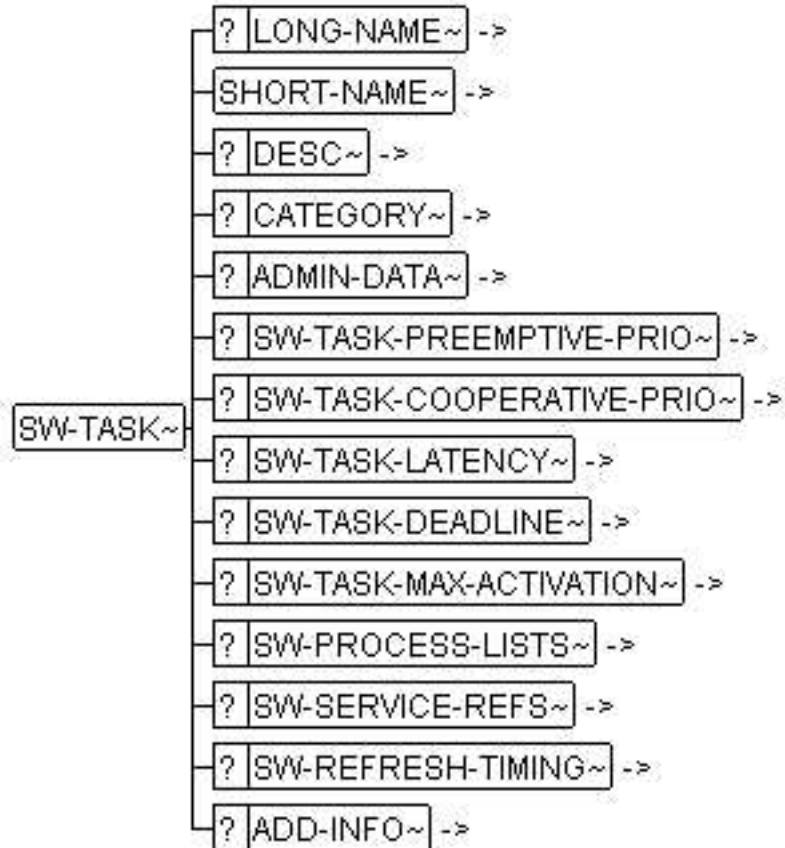
Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASKS p. 538](#)

Ist Kontext für: [LONG-NAME p. 134](#), [SHORT-NAME p. 212](#), [DESC p. 83](#), [CATEGORY p. 42](#), [ADMIN-DATA p. 30](#), [SW-TASK-PREEMPTIVE-PRIO p.](#)

535, SW-TASK-COOPERATIVE-PRIO p. 533, SW-TASK-LATENCY p. 534, SW-TASK-DEADLINE p. 533, SW-TASK-MAX-ACTIVATION p. 534, SW-PROCESS-LISTS p. 476, SW-SERVICE-REFS p. 509, SW-REFRESH-TIMING p. 496, ADD-INFO p. 26



SW-TASK.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-TASK	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.641 SW-TASK-COOPERATIVE-PRIO

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: Text

`SW-TASK-COOPERATIVE-PRIO~` — #PCDATA

SW-TASK-COOPERATIVE-PRIO.PNG

2.642 SW-TASK-DEADLINE

Beschreibung

This element represents the latest point (in time or in angle) when the task in question will be or shall be finished (depending on the usecase). It gives the maximum allowed amount of time til the result of the interrupt service routine is available. It is the sum of latency, worst case runtime and further interrupts.

Hint:

In demarcation to <SW-TASK-DEADLINE>, <SW-TASK-LATENCY> gives the duration between the event /interrupt and the beginning of task execution.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-TASK-DEADLINE.PNG

2.643 SW-TASK-LATENCY

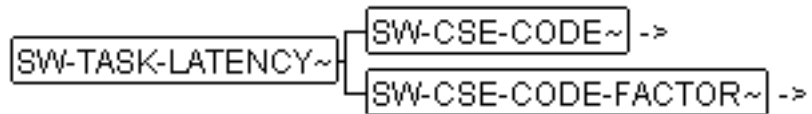
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: [SW-CSE-CODE](#) p. 360, [SW-CSE-CODE-FACTOR](#) p. 361



SW-TASK-LATENCY.PNG

2.644 SW-TASK-MAX-ACTIVATION

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: Text

```
SW-TASK-MAX-ACTIVATION~|#PCDATA
```

SW-TASK-MAX-ACTIVATION.PNG

2.645 SW-TASK-PREEMPTIVE-PRIO

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK](#) p. 531

Ist Kontext für: Text

```
SW-TASK-PREEMPTIVE-PRIO~|#PCDATA
```

SW-TASK-PREEMPTIVE-PRIO.PNG

2.646 SW-TASK-REF

Beschreibung

This element references **<SW-TASK>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-SERVICE](#) p. 224, [SW-DATA-DEF-PROPS](#) p. 366,
[SW-EVENT-TASK-TERMINATED](#) p. 385, [SW-PROCESS](#) p. 475, [SW-TASK-REF-SYSCO](#)
p. 537, [SW-TASK-REFS](#) p. 537

Ist Kontext für: Text

```
SW-TASK-REF~|#PCDATA
```

SW-TASK-REF.PNG



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-TASK	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.647 SW-TASK-REF-SYSCOND

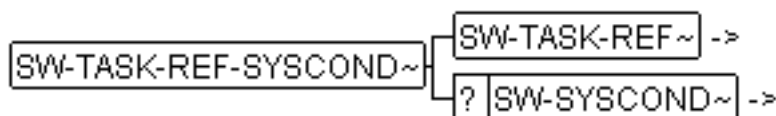
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK-REFS](#) p. 537

Ist Kontext für: [SW-TASK-REF](#) p. 535, [SW-SYSCOND](#) p. 511



SW-TASK-REF-SYSCOND.PNG

2.648 SW-TASK-REFS

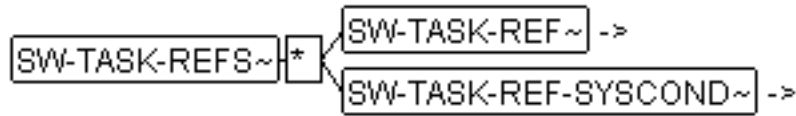
Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-EVENT](#) p. 377, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-TASK-REF](#) p. 535, [SW-TASK-REF-SYSCOND](#) p. 537



SW-TASK-REFS.PNG

2.649 SW-TASK-SPEC

Beschreibung

This element describes the task distribution in the ECU, which is provided through the operating system in the ECU. Here, tasks concerning time response are specified. The general model is:

- The operating system performs a number of tasks, e.g. an angle-synchronous task (synchronous to current crankshaft angle) and/or several time-synchronous tasks.
- The individual features establish processes which should run in a specific order, within the respective task.

This model is supported by:

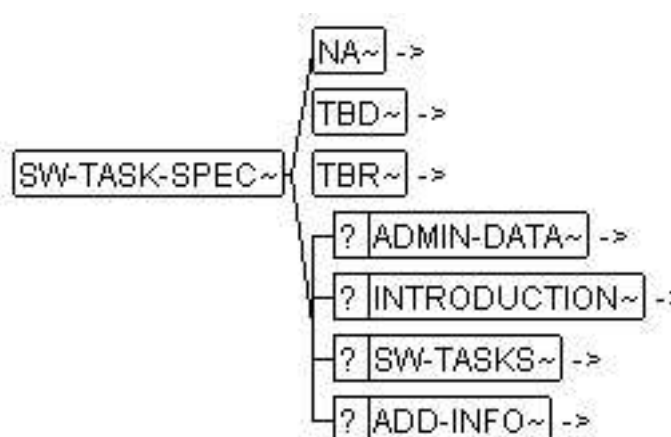
- Definition of tasks within **<SW-TASK-SPEC>**, once per system globally in **<SW-ARCHITECTURE>**
- Definition of processes within **<SW-FEATURE-DECOMPOSITION>**. Here, allocations to the processes are also performed in the tasks.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ARCHITECTURE](#) p. 237, [SW-SCHEDULING-SPEC](#) p. 499

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-TASKS](#) p. 538, [ADD-INFO](#) p. 26



SW-TASK-SPEC.PNG

2.650 SW-TASKS

Beschreibung

Container element for **<SW-TASK>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TASK-SPEC](#) p. 538

Ist Kontext für: [SW-TASK](#) p. 531



SW-TASKS.PNG

2.651 SW-TEMPLATE

Beschreibung

This element permits the anticipated definition of **<SW-DATA-DEF-PROPS>**, so that this can be reapplied at **<SW-VARIABLE>** or **<SW-CALPRM>**. In their conception, templates only serve to simplify writing. It is not intended that they find expression in the ECU.

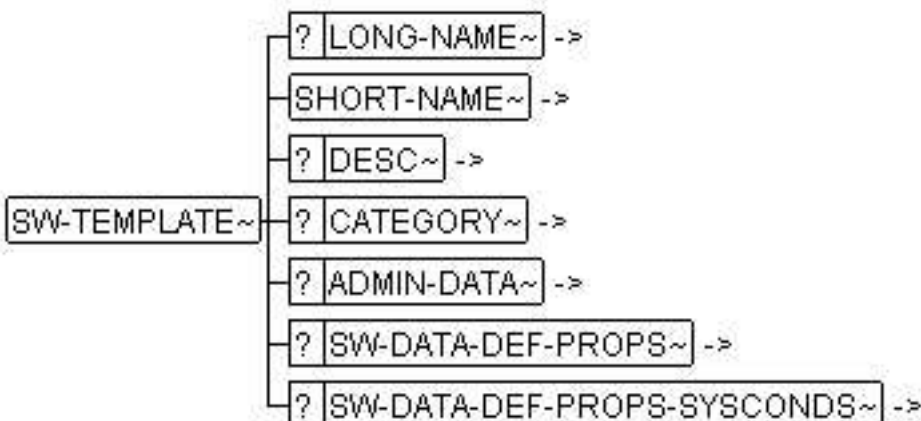
If, for example, a variable refers to a template and defines characteristics in **<SW-DATA-DEF-PROPS>** itself, these overwrite the "inherited" template characteristics.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-TEMPLATES](#) p. 543

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368



SW-TEMPLATE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-TEMPLATE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.652 SW-TEMPLATE-REF

Beschreibung

This element references <SW-TEMPLATE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366, [SW-TEMPLATE-REF-SYSCOND](#) p. 542, [SW-TEMPLATE-REFS](#) p. 542

Ist Kontext für: Text

```
SW-TEMPLATE-REF~|#PCDATA
```



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-TEMPLATE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.653 SW-TEMPLATE-REF-SYSCOND

Beschreibung

Use `<SW-TEMPLATE-REF-SYSCOND>` to create a `<SW-TEMPLATE-REF>` that will be valid only when the corresponding `<SW-SYSCOND>` expression evaluates to true. This is useful when a `<SW-TEMPLATE-REF>` shall be used when system constant has a certain value

Beispiel

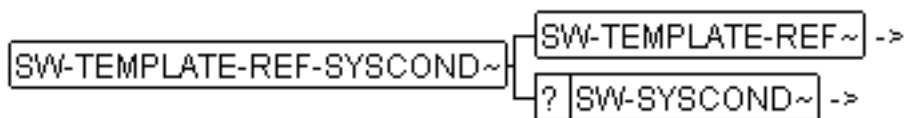
This Template reference is used when LINA_Gear is less or equal to 4.

```
<SW-TEMPLATE-REF-SYSCOND>
  <SW-TEMPLATE-REF>template_Ref</SW-TEMPLATE-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-TEMPLATE-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-TEMPLATE-REFS](#) p. 542

Ist Kontext für: [SW-TEMPLATE-REF](#) p. 540, [SW-SYSCOND](#) p. 511



SW-TEMPLATE-REF-SYSCOND.PNG

2.654 SW-TEMPLATE-REFS

Beschreibung

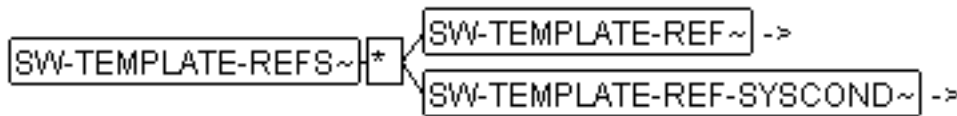
This is a container for `<SW-TEMPLATE-REF>`s.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-TEMPLATE-REF](#) p. 540, [SW-TEMPLATE-REF-SYSCOND](#) p. 542



SW-TEMPLATE-REFS.PNG

2.655 SW-TEMPLATES

Beschreibung

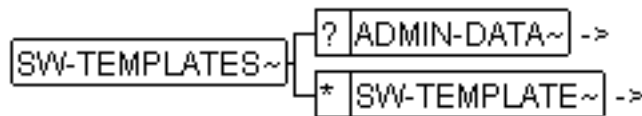
Container element for `<SW-TEMPLATE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-TEMPLATE](#) p. 539



SW-TEMPLATES.PNG

2.656 SW-TEST-DESC

Beschreibung

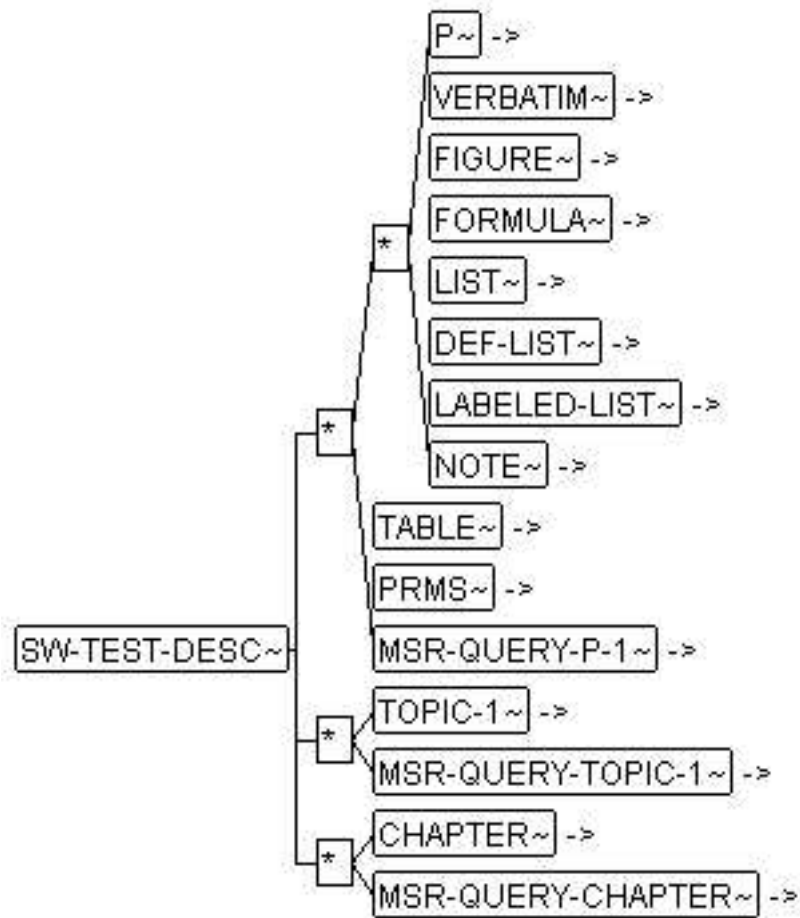
This element describes the scope of the test carried out on the current context, in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS](#) p. 276, [SW-FEATURE](#) p. 386

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



SW-TEST-DESC.PNG

2.657 SW-TEST-SPEC

Beschreibung

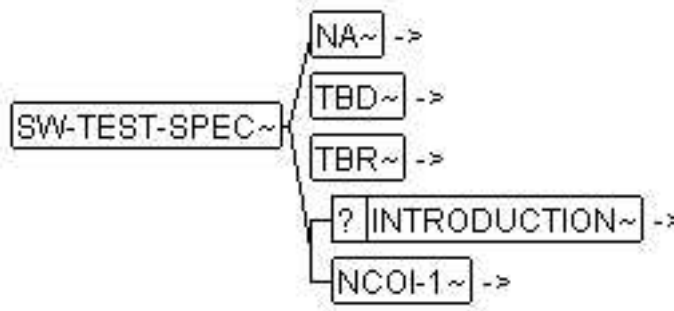
This element provides a textual definition of the test specification belonging to a software system <SW-SYSTEM> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



SW-TEST-SPEC.PNG

2.658 SW-UNIT

Beschreibung

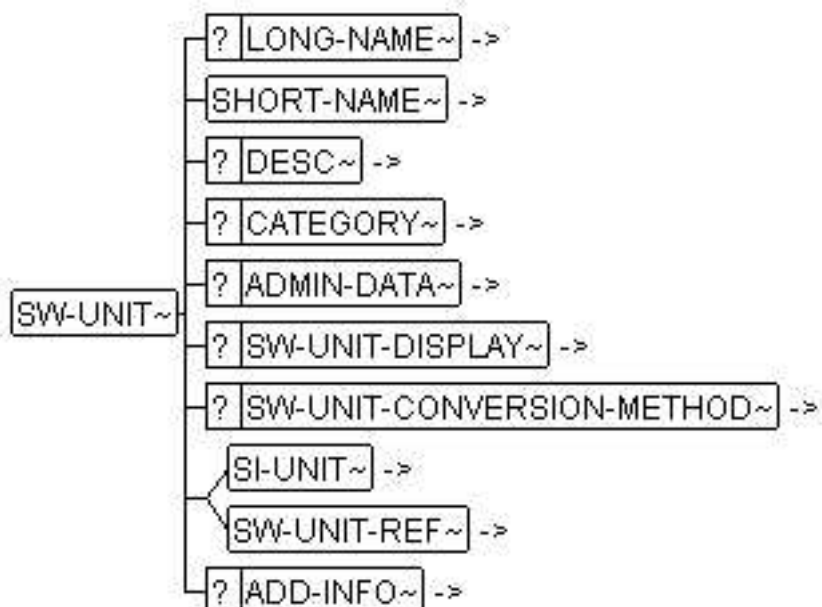
<SW-UNIT> describes a measurement unit. This may concern both a <SI-UNIT> and a unit of measurement, which references other <SI-UNIT> via <SW-UNIT-REF> and converts to the referenced <SI-UNIT> via <SW-UNIT-CONVERSION-METHOD> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-UNITS](#) p. 550

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-UNIT-DISPLAY](#) p. 546, [SW-UNIT-CONVERSION-METHOD](#) p. 546, [SI-UNIT](#) p. 213, [SW-UNIT-REF](#) p. 548, [ADD-INFO](#) p. 26



SW-UNIT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-UNIT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.659 SW-UNIT-CONVERSION-METHOD

Beschreibung

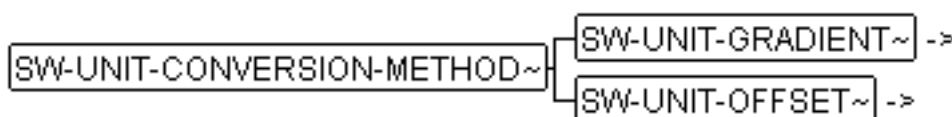
Describes the linear formula used to convert <SW-UNIT> into another <SW-UNIT>, which is specified in the parent element of <SW-UNIT-CONVERSION-METHOD> by means of the subelement <SW-UNIT-REF>. Refer to [Chapter 2.250 SI-UNIT p. 213](#) for an example.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-UNIT p. 545](#)

Ist Kontext für: [SW-UNIT-GRADIENT p. 547](#), [SW-UNIT-OFFSET p. 547](#)



2.660 SW-UNIT-DISPLAY

Beschreibung

Describes the textual representation of a measuring unit, that is specified in the parent element **<SW-UNIT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-UNIT](#) p. 545

Ist Kontext für: Text, [SUP](#) p. 221, [SUB](#) p. 220



SW-UNIT-DISPLAY.PNG

2.661 SW-UNIT-GRADIENT

Beschreibung

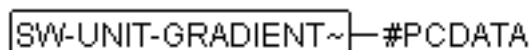
Describes the gradient (the slope) in the linear conversion formula of a **<SW-UNIT-CONVERSION-METHOD>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-UNIT-CONVERSION-METHOD](#) p. 546

Ist Kontext für: Text



SW-UNIT-GRADIENT.PNG

2.662 SW-UNIT-OFFSET

Beschreibung

Describes the Y-axis in the linear conversion formula of a **<SW-UNIT-CONVERSION-METHOD>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-UNIT-CONVERSION-METHOD](#) p. 546

Ist Kontext für: Text

`SW-UNIT-OFFSET~`—#PCDATA

SW-UNIT-OFFSET.PNG

2.663

SW-UNIT-REF

Beschreibung

<**SW-UNIT-REF**> is a formal reference to a measurement unit. Since this was not requested by *CDF*, the reference is treated as a measurement unit designator.

Caution:

The contents of <**SW-UNIT-REF**> must be in accordance with the <**SHORT-NAME**> restrictions. In particular, there must be no white-spaces and special characters.

Beispiel

For an example, see [Chapter 2.285 SW-ARRAY-INDEX](#) p. 237 [Chapter 2.501 SW-INSTANCE](#) p. 420 .

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS](#) p. 72, [SW-AXIS-CONT](#) p. 240, [SW-AXIS-INDIVIDUAL](#) p. 244, [SW-COMPU-METHOD](#) p. 336, [SW-DATA-DEF-PROPS](#) p. 366, [SW-PHYS-CONSTRS](#) p. 472, [SW-UNIT](#) p. 545, [SW-UNIT-REF-SYSCOND](#) p. 550, [SW-UNIT-REFS](#) p. 550, [SW-VARIABLE-PROTOTYPE](#) p. 568

Ist Kontext für: Text

`SW-UNIT-REF~`—#PCDATA

SW-UNIT-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-UNIT	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.664 SW-UNIT-REF-SYSCOND

Beschreibung

Use **<SW-UNIT-REF-SYSCOND>** to create a **<SW-UNIT-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-UNIT-REF>** shall be used when system constant has a certain value

Beispiel

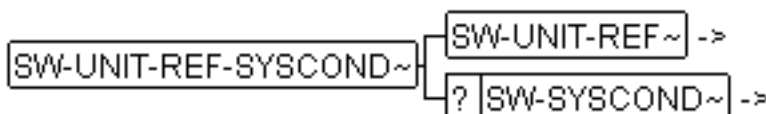
This Unit reference is used when LINA_Gear is less or equal to 4.

```
<SW-UNIT-REF-SYSCOND>
  <SW-UNIT-REF>Unit_Ref</SW-UNIT-REF>
</SW-SYSCOND>
  <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
</SW-SYSCOND>
</SW-UNIT-REF-SYSCOND>
```

Formale Beschreibung

Hat als Kontext: [SW-UNIT-REFS](#) p. 550

Ist Kontext für: [SW-UNIT-REF](#) p. 548, [SW-SYSCOND](#) p. 511



SW-UNIT-REF-SYSCOND.PNG

2.665 SW-UNIT-REFS

Beschreibung

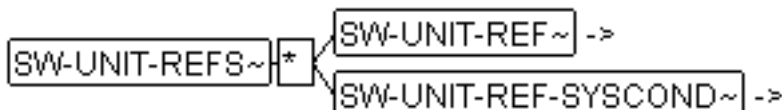
Container element for **<SW-UNIT-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-UNIT-REF](#) p. 548, [SW-UNIT-REF-SYSCOND](#) p. 550



SW-UNIT-REFS.PNG

2.666 SW-UNITS

Beschreibung

Container element for **<SW-UNIT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-UNIT](#) p. 545



SW-UNITS.PNG

2.667 SW-USER-ACCESS-CASE

Beschreibung

This element describes an access operation (e.g. read access), which is referenced in the access authorization table (in **<SW-ACCESS-DEFINITIONS>**).

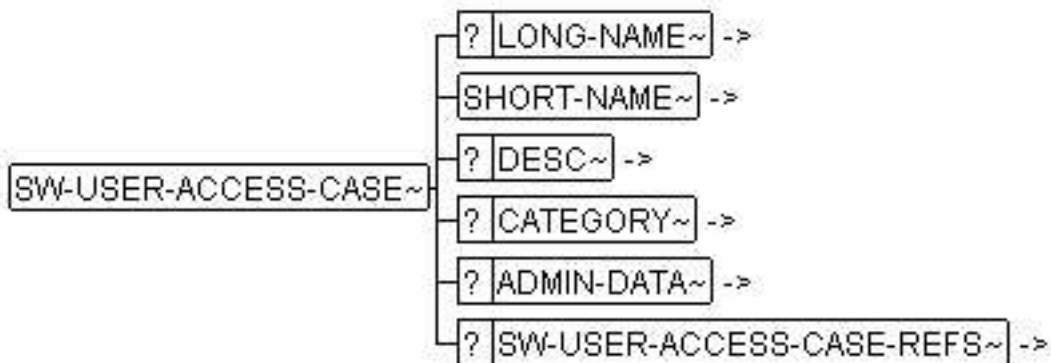
Beispiel

See [Chapter 2.262 SW-ACCESS-DEF](#) p. 221 .

Formale Beschreibung

Hat als Kontext: [SW-USER-ACCESS-CASES](#) p. 554

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-USER-ACCESS-CASE-REFS](#) p. 554



SW-USER-ACCESS-CASE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	cdata	SW-USER-ACCESS-CASE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.668 SW-USER-ACCESS-CASE-REF

Beschreibung

This element references <SW-USER-ACCESS-CASE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESS-DEF](#) p. 221, [SW-USER-ACCESS-CASE-REFS](#) p. 554

Ist Kontext für: Text

SW-USER-ACCESS-CASE-REF~ — #PCDATA



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-USER-ACCESS-CASE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.669 SW-USER-ACCESS-CASE-REFS

Beschreibung

Container element for <SW-USER-ACCESS-CASE-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-ACCESS-CASE](#) p. 551

Ist Kontext für: [SW-USER-ACCESS-CASE-REF](#) p. 552



SW-USER-ACCESS-CASE-REFS.PNG

2.670 SW-USER-ACCESS-CASES

Beschreibung

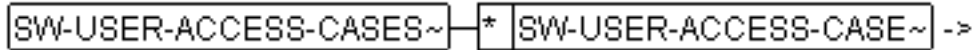
Container element for <SW-USER-ACCESS-CASE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-RIGHT-SPEC](#) p. 559

Ist Kontext für: [SW-USER-ACCESS-CASE](#) p. 551



2.671 SW-USER-ACCESS-DEFINTIONS

Beschreibung

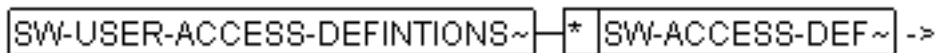
Container element for **<SW-ACCESS-DEF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-RIGHT-SPEC](#) p. 559

Ist Kontext für: [SW-ACCESS-DEF](#) p. 221



2.672 SW-USER-GROUP

Beschreibung

This element specifies a user group which can be referenced in the access authorization table (**<SW-ACCESS-DEFINITIONS>**). A **<SW-USER-GROUP>** consists of **<SYSTEM-USER>**s. In turn, a **<SW-USER-GROUP>** can reference other user groups (through **<SW-USER-GROUP-REFS>**) and **<TEAM-MEMBER-REFS>** .

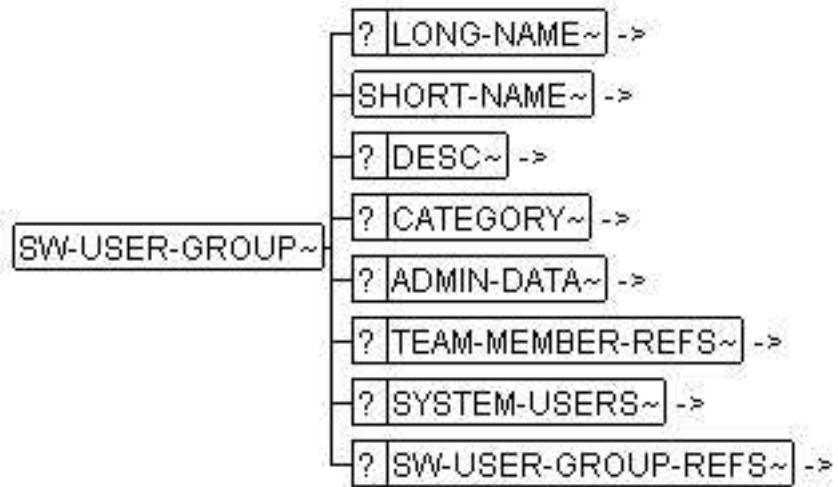
Beispiel

See [Chapter 2.262 SW-ACCESS-DEF](#) p. 221 .

Formale Beschreibung

Hat als Kontext: [SW-USER-GROUPS](#) p. 559

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [TEAM-MEMBER-REFS](#) p. 602, [SYSTEM-USERS](#) p. 592, [SW-USER-GROUP-REFS](#) p. 558



SW-USER-GROUP.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-USER-GROUP	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.673 SW-USER-GROUP-REF

Beschreibung

This element references <SW-USER-GROUP> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESS-DEF](#) p. 221, [SW-USER-GROUP-REFS](#) p. 558

Ist Kontext für: Text

SW-USER-GROUP-REF~—#PCDATA

SW-USER-GROUP-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-USER-GROUP	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.674 SW-USER-GROUP-REFS

Beschreibung

Container element for <SW-USER-GROUP-REF> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-GROUP](#) p. 555

Ist Kontext für: [SW-USER-GROUP-REF](#) p. 556



2.675 SW-USER-GROUPS

Beschreibung

Container element for **<SW-USER-GROUP>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-RIGHT-SPEC](#) p. 559

Ist Kontext für: [SW-USER-GROUP](#) p. 555



2.676 SW-USER-RIGHT-SPEC

Beschreibung

This element specifies the **<SW-USER-GROUPS>**, the access operations (**<SW-USER-ACCESS-CASES>**) and the actual access authorization table (**<SW-ACCESS-DEFINITIONS>**). Thus the following is specified in this element:

- For which persons access authorization should be considered
- The types of access available
- Which person has what type of access

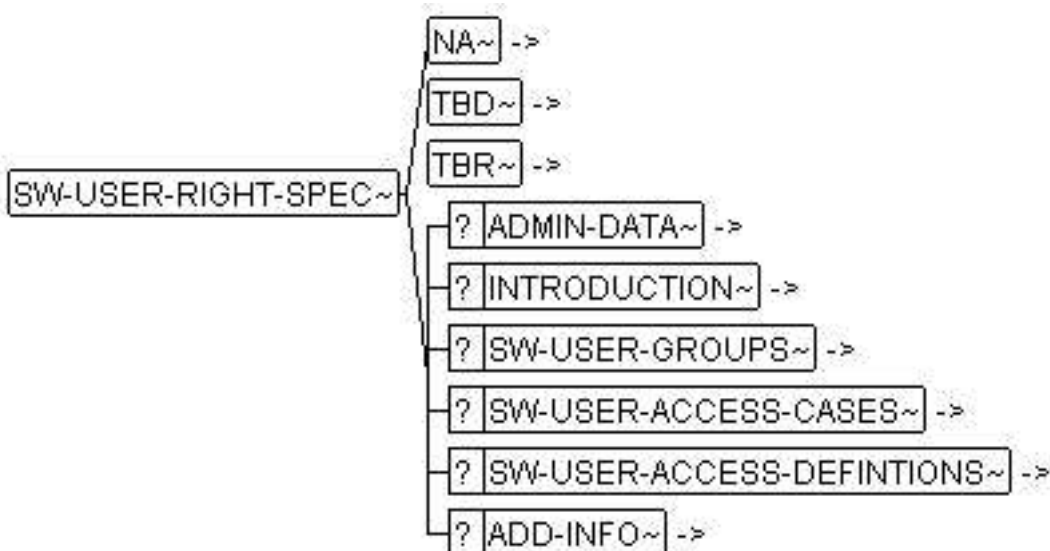
Beispiel

See [Chapter 2.262 SW-ACCESS-DEF](#) p. 221

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-USER-GROUPS](#) p. 559, [SW-USER-ACCESS-CASES](#) p. 554, [SW-USER-ACCESS-DEFINITIONS](#) p. 555, [ADD-INFO](#) p. 26



SW-USER-RIGHT-SPEC.PNG

2.677 SW-VALUES-CODED

Beschreibung

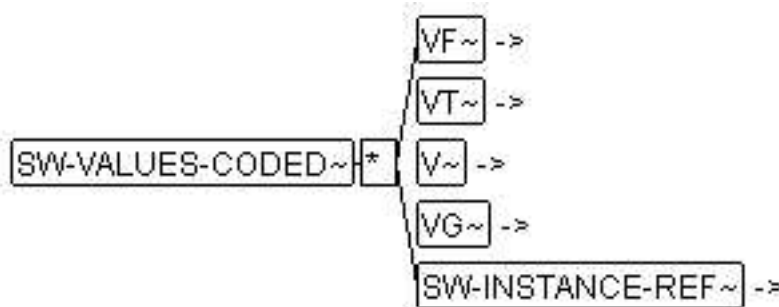
Describes internal values.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONT](#) p. 240, [SW-AXIS-GENERIC](#) p. 241, [SW-SYSTEMCONST](#) p. 521

Ist Kontext für: [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [VG](#) p. 629, [SW-INSTANCE-REF](#) p. 424



SW-VALUES-CODED.PNG

2.678 SW-VALUES-CODED-HEX

Beschreibung

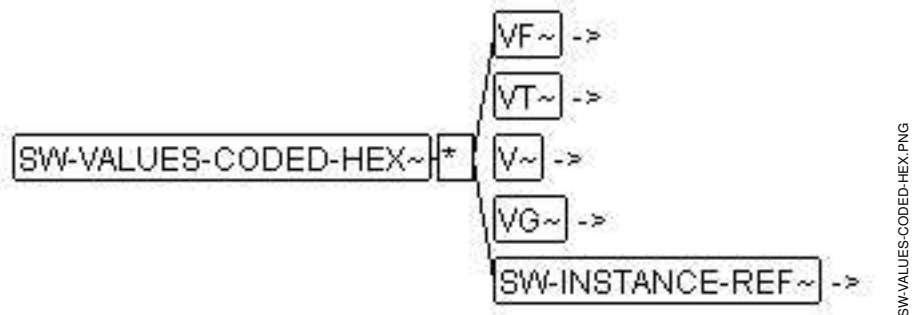
Describes internal values.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONT](#) p. 240

Ist Kontext für: [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [VG](#) p. 629, [SW-INSTANCE-REF](#) p. 424



2.679

SW-VALUES-GENERIC

Beschreibung

This element contains axis values in any format, which are specified via the attribute **[TYPE]**. The value of the attribute must be agreed upon amongst the process partners.

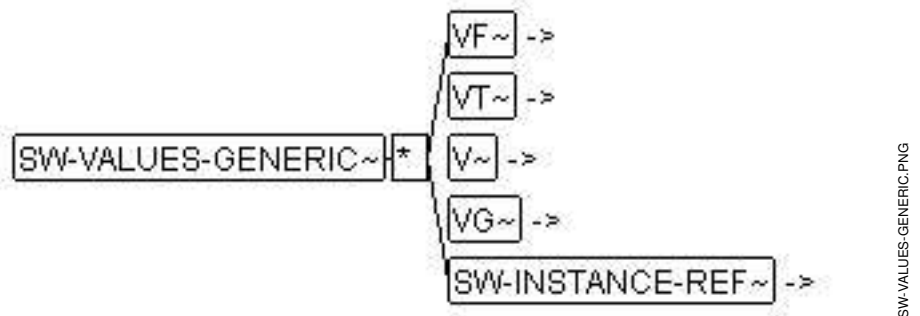
Beispiel

```
<SW-VALUES-GENERIC TYPE="octal">
  <VF>001</VF>
  <VF>003</VF>
  <VF>007</VF>
  <VF>013</VF>
  <VF>015</VF>
</SW-VALUES-GENERIC>
```

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONT](#) p. 240

Ist Kontext für: [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [VG](#) p. 629, [SW-INSTANCE-REF](#) p. 424



Attribut	Typ	Anmerkungen
[TYPE] (required)	nmtoken	Format in which the axis values are given.

2.680 SW-VALUES-PHYS

Beschreibung

<SW-VALUES-PHYS> receives the physical values of the calibration item. The values can either be numeric (<V>) or textual (<VT>) but not mixed.

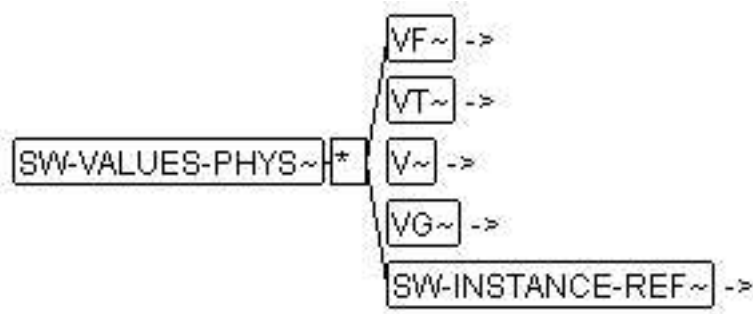
Beispiel

For an example, see [Chapter 2.285 SW-ARRAY-INDEX p. 237](#) [Chapter 2.501 SW-INSTANCE p. 420](#) .

Formale Beschreibung

Hat als Kontext: [SW-AXIS-CONT p. 240](#), [SW-AXIS-GENERIC p. 241](#), [SW-SYSTEMCONST p. 521](#)

Ist Kontext für: [VF p. 628](#), [VT p. 630](#), [V p. 619](#), [VG p. 629](#), [SW-INSTANCE-REF p. 424](#)



SW-VALUES-PHYS.PNG

2.681 SW-VAR-INIT-VALUE

Beschreibung

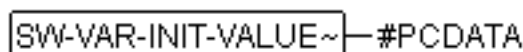
Describes initial values of the current variable or the current parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS p. 366](#)

Ist Kontext für: Text



SW-VAR-INIT-VALUE.PNG

2.682 SW-VAR-NOT-AVL-VALUE

Beschreibung

The internal value for "variable not available" is entered in this element **<SW-VAR-NOT-AVL-VALUE>** (Software Variable Not Available Value). This is the value assumed by the variable, if the corresponding external value is not available (either if it has not yet been recorded, or if an error has occurred). It is not possible to have an external value for not available, for the very reason that it is not available.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

`SW-VAR-NOT-AVL-VALUE~`—#PCDATA

SW-VAR-NOT-AVL-VALUE.PNG

2.683 SW-VARIABLE

Beschreibung

This element specifies the characteristics of variables (measurands) in the ECU. Variables are objects that are not adapted to the run time of the vehicle. Calibration parameters are quite the opposite (**<SW-CALPRM>** s), being objects that are manipulated during the run time of the software.

For the most part, variables consist of:

- Long and short labels (**<LONG-NAME>**, **<SHORT-NAME>**)
- Short description (**<DESC>**)
- Category (**<CATEGORY>**), describing the basic structure of the variables
- Field size (**<SW-ARRAYSIZE>**), in case the variable is executed as an array
- The technical characteristics (**<SW-DATA-DEF-PROPS>**)⁵
- Sub-structures simulated through the integration of **<SW-VARIABLES>** .
- Comments (**<ANNOTATIONS>**), enabling notes to be passed on from one stage to the next, throughout the development process.
- Additional information (**<ADD-INFO>**) in verbal form. Here, formal components can also be accommodated when **[SI]** -attributes are used.

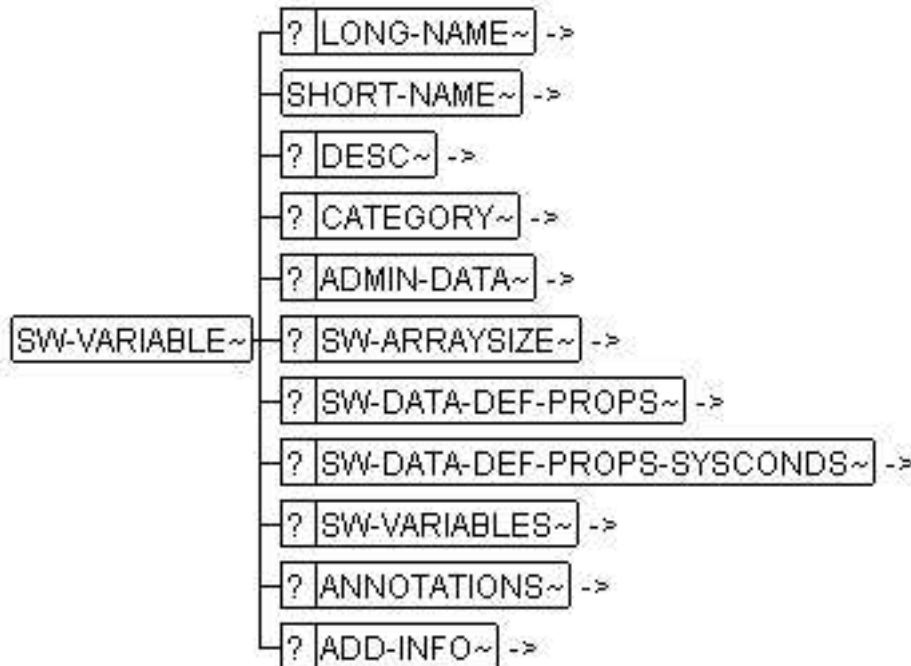
Beispiel

⁵ These are identical to the technical characteristics of parameters

Formale Beschreibung

Hat als Kontext: [SW-VARIABLES](#) p. 575

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368, [SW-VARIABLES](#) p. 575, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



SW-VARIABLE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[CALIBRATION] (default)	namedtokengroup	<ul style="list-style-type: none"> CALIBRATION NO-CALIBRATION NOT-IN-MC-SYSTEM 	CALIBRATION: the current variable can be applied. NO-CALIBRATION: the current variable cannot be applied. NOT-IN-MC-SYSTEM: the current variable is not available in the adjustment system
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-VARIABLE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[F-NAMESPACE] (fixed)	nmtokens	SW-VARIABLE	Fixed Namespace. This attribute is assigned to elements which define a namespace for linkable objects. The attribute contains a list of elements, where the element carrying the attribute serves as a namespace. This is used by processors which use the MSR natural linking mechanism. (Natural links address their link target with a sequence of short-names including the namespaces and the object itself e.g. '/test.xml/sw-system1/sw-var1')

2.684 SW-VARIABLE-ACCESS-IMPL

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225

Ist Kontext für: Text

```
SW-VARIABLE-ACCESS-IMPL~|#PCDATA
```

SW-VARIABLE-ACCESS-IMPL.PNG

2.685

SW-VARIABLE-ACCESS-IMPL-POLICY

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

```
SW-VARIABLE-ACCESS-IMPL-POLICY~|#PCDATA
```

SW-VARIABLE-ACCESS-IMPL-POLICY.PNG

2.686

SW-VARIABLE-ACCESS-SEQUENCE

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225

Ist Kontext für: Text

SW-VARIABLE-ACCESS-SEQUENCE~ — #PCDATA

SW-VARIABLE-ACCESS-SEQUENCE.PNG

2.687 SW-VARIABLE-IMPL

Beschreibung

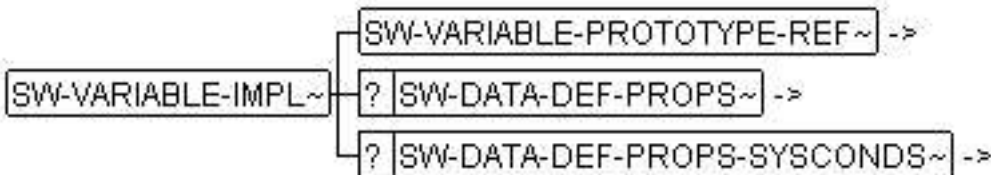
This element describes the implementation details of a class attribute which manifests itself as a variable.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VARIABLE-IMPLS](#) p. 567

Ist Kontext für: [SW-VARIABLE-PROTOTYPE-REF](#) p. 569, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCONDS](#) p. 368



SW-VARIABLE-IMPL.PNG

2.688 SW-VARIABLE-IMPLS

Beschreibung

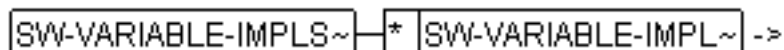
Container element for <SW-VARIABLE-IMPL> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR-IMPL](#) p. 294, [SW-CLASS-ATTR-INSTANCE-IMPL](#) p. 298

Ist Kontext für: [SW-VARIABLE-IMPL](#) p. 567



SW-VARIABLE-IMPLS.PNG

2.689 SW-VARIABLE-KIND

Beschreibung

This element describes the use of a variable with regards to organization.

Beispiel

```
<SW-VARIABLE-KIND>Control Flow</SW-VARIABLE-KIND>
```

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366

Ist Kontext für: Text

SW-VARIABLE-KIND~—#PCDATA

SW-VARIABLE-KIND.PNG

2.690 SW-VARIABLE-PROTOTYPE

Beschreibung

This element describes the prototype declaration of a class attribute, which appears in the form of a variable.

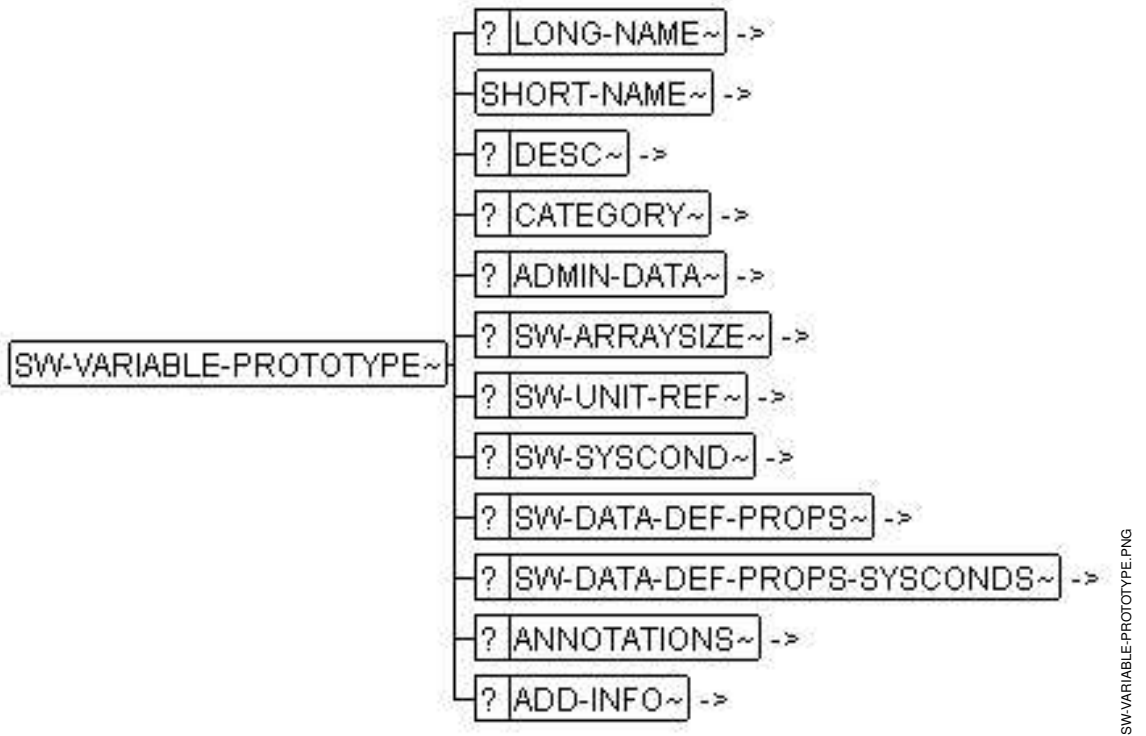
Beispiel

See [Chapter 2.331 SW-CLASS](#) p. 276

Formale Beschreibung

Hat als Kontext: [SW-VARIABLE-PROTOTYPES](#) p. 571

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-ARRAYSIZE](#) p. 239, [SW-UNIT-REF](#) p. 548, [SW-SYSCOND](#) p. 511, [SW-DATA-DEF-PROPS](#) p. 366, [SW-DATA-DEF-PROPS-SYSCON](#) p. 368, [ANNOTATIONS](#) p. 34, [ADD-INFO](#) p. 26



Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-VARIABLE-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.691 SW-VARIABLE-PROTOTYPE-REF

Beschreibung

This element references `<SW-VARIABLE-PROTOTYPE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VARIABLE-IMPL](#) p. 567

Ist Kontext für: Text

`SW-VARIABLE-PROTOTYPE-REF~#PCDATA`

SW-VARIABLE-PROTOTYPE-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-VARIABLE-PROTOTYPE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.692 SW-VARIABLE-PROTOTYPES

Beschreibung

Container element for <SW-VARIABLE-PROTOTYPE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-CLASS-ATTR](#) p. 293

Ist Kontext für: [SW-VARIABLE-PROTOTYPE](#) p. 568



2.693

SW-VARIABLE-REF

Beschreibung

This element references **<SW-VARIABLE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225, [SW-CALPRM-TARGET](#) p. 273, [SW-COMPARISON-VARIABLES](#) p. 329, [SW-CONSTR-OBJECTS](#) p. 345, [SW-DATA-DEPENDENCY-ARGS](#) p. 370, [SW-EFFECT-FLOW](#) p. 376, [SW-EFFECTING-VARIABLE](#) p. 377, [SW-EVENT-MESSAGE-RECEIVED](#) p. 380, [SW-FEATURE-MODEL-ONLY-VARIABLES](#) p. 404, [SW-HOST-VARIABLE](#) p. 419, [SW-SEMAPHORE](#) p. 499, [SW-VARIABLE-REF-SYSCOND](#) p. 574, [SW-VARIABLE-REFS](#) p. 574, [SW-VARIABLES-READ](#) p. 575, [SW-VARIABLES-READ-WRITE](#) p. 576, [SW-VARIABLES-WRITE](#) p. 576, [SW-VCD-CRITERION](#) p. 577

Ist Kontext für: Text



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	SW-VARIABLE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.694 SW-VARIABLE-REF-SYSCOND

Beschreibung

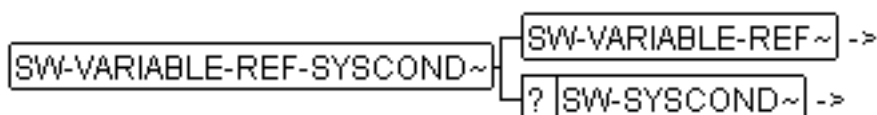
This element is a conditional reference to a variable. It is used to ensure that the assignment of variables to functions is dependent on the settings of system constants. For this reason, the element exists parallel to **<SW-VARIABLE-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225, [SW-VARIABLE-REFS](#) p. 574, [SW-VARIABLES-READ](#) p. 575, [SW-VARIABLES-READ-WRITE](#) p. 576, [SW-VARIABLES-WRITE](#) p. 576

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-SYSCOND](#) p. 511



SW-VARIABLE-REF-SYSCOND.PNG

2.695 SW-VARIABLE-REFS

Beschreibung

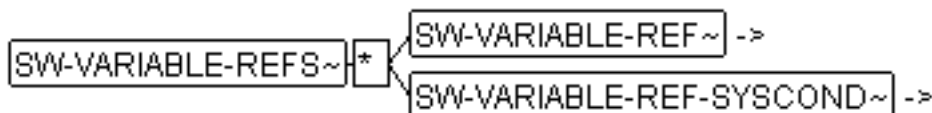
Container element for **<SW-VARIABLE-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-AXIS-INDIVIDUAL](#) p. 244, [SW-COLLECTION-CONT](#) p. 320, [SW-FEATURE-ELEMENT](#) p. 394, [SW-MC-FRAME](#) p. 447

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-VARIABLE-REF-SYSCOND](#) p. 574



SW-VARIABLE-REFS.PNG

2.696 SW-VARIABLE-USAGE

Beschreibung

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ACCESSED-VARIABLE](#) p. 225

Ist Kontext für: Text

```
SW-VARIABLE-USAGE~|#PCDATA
```

SW-VARIABLE-USAGE.PNG

2.697 SW-VARIABLES

Beschreibung

Container element for `<SW-VARIABLE>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-VARIABLE](#) p. 563

Ist Kontext für: [ADMIN-DATA](#) p. 30, [SW-VARIABLE](#) p. 563

```
SW-VARIABLES~{
  ? ADMIN-DATA~ ->
  * SW-VARIABLE~ ->
}
```

SW-VARIABLES.PNG

2.698 SW-VARIABLES-READ

Beschreibung

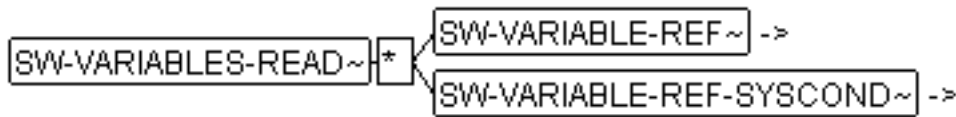
This element specifies variables restricted to read access only.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-DESIGN-DATA](#) p. 393, [SW-FEATURE-EXPORT-VARIABLES](#) p. 397, [SW-FEATURE-IMPORT-VARIABLES](#) p. 399

Ist Kontext für: [SW-VARIABLE-REF](#) p. 572, [SW-VARIABLE-REF-SYSCOND](#) p. 574



SW-VARIABLES-READ.PNG

2.699 SW-VARIABLES-READ-WRITE

Beschreibung

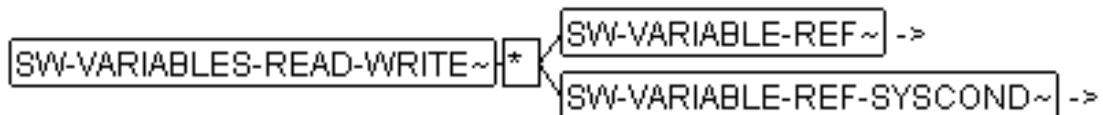
This element specifies variables with read and write access.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-DESIGN-DATA p. 393](#), [SW-FEATURE-EXPORT-VARIABLES p. 397](#), [SW-FEATURE-IMPORT-VARIABLES p. 399](#), [SW-FEATURE-LOCAL-VARIABLES p. 404](#)

Ist Kontext für: [SW-VARIABLE-REF p. 572](#), [SW-VARIABLE-REF-SYSCOND p. 574](#)



SW-VARIABLES-READ-WRITE.PNG

2.700 SW-VARIABLES-WRITE

Beschreibung

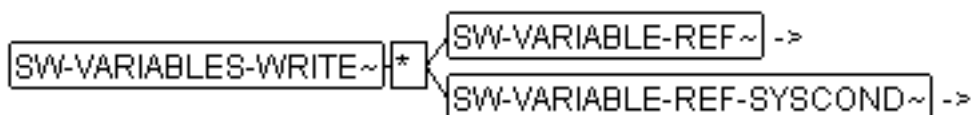
This element specifies variables restricted to write access only.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-FEATURE-DESIGN-DATA p. 393](#), [SW-FEATURE-EXPORT-VARIABLES p. 397](#), [SW-FEATURE-IMPORT-VARIABLES p. 399](#)

Ist Kontext für: [SW-VARIABLE-REF p. 572](#), [SW-VARIABLE-REF-SYSCOND p. 574](#)



SW-VARIABLES-WRITE.PNG

2.701 SW-VCD-CRITERIA

Beschreibung

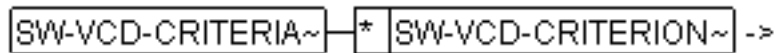
Container element for <SW-VCD-CRITERION> .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VCD-SPEC](#) p. 583

Ist Kontext für: [SW-VCD-CRITERION](#) p. 577



SW-VCD-CRITERIA.PNG

2.702 SW-VCD-CRITERION

Beschreibung

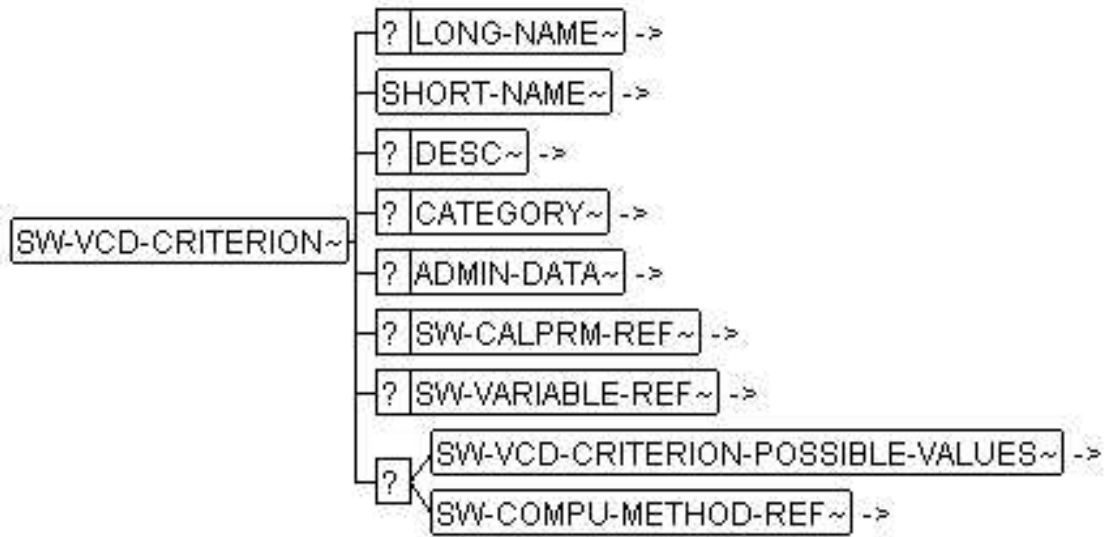
The variant criterion describes the switchover of variant encoded parameters. The value X over the SW-VARIABLE-REF referenced variable selects the criteria value. If the value X equals 0, the first criteria value is used, if it is 1, the second is used.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VCD-CRITERIA](#) p. 576

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42, [ADMIN-DATA](#) p. 30, [SW-CALPRM-REF](#) p. 270, [SW-VARIABLE-REF](#) p. 572, [SW-VCD-CRITERION-POSSIBLE-VALUES](#) p. 578, [SW-COMPU-METHOD-REF](#) p. 338



SW-VCD-CRITERION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	cdata	SW-VCD-CRITERION	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.703 SW-VCD-CRITERION-POSSIBLE-VALUES

Beschreibung

Possible values for variant encoding.

Beispiel

```
<SW-VCD-CRITERION>
  <SHORT-NAME>GETRIEBE</SHORT-NAME>
  <SW-VCD-POSSIBLE-VALUES>
    <VT>HAND</VT>
    <VT>AUTOMATIK</VT>
  </SW-VCD-POSSIBLE-VALUES>
</SW-VCD-CRITERION>
<SW-VCD-CRITERION>
  <SHORT-NAME>KAROSSERIE</SHORT-NAME>
  <SW-VCD-POSSIBLE-VALUES>
    <VT>CABRIO</VT>
    <VT>KOMBI</VT>
    <VT>LIMOUSINE</VT>
  </SW-VCD-POSSIBLE-VALUES>
</SW-VCD-CRITERION>
```

Formale Beschreibung

Hat als Kontext: [SW-VCD-CRITERION](#) p. 577

Ist Kontext für: [VT](#) p. 630

SW-VCD-CRITERION-POSSIBLE-VALUES~ * VT~ ->

SW-VCD-CRITERION-POSSIBLE-VALUES.PNG

2.704

SW-VCD-CRITERION-REF

Beschreibung

References the variant criterion **<SW-VCD-CRITERION>** of the parameter, which is specified in the **<SW-VCD-SPEC>** . This is therefore the current variant criterion that has been set for a parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VCD-CRITERION-REF-SYSCOND](#) p. 581, [SW-VCD-CRITERION-REFS](#) p. 581, [SW-VCD-CRITERION-VALUE](#) p. 582

Ist Kontext für: Text

SW-VCD-CRITERION-REF~ #PCDATA

SW-VCD-CRITERION-REF.PNG



Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	SW-VCD-CRITERION	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.

Attribut	Typ	Wertebereich	Anmerkungen
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.705 SW-VCD-CRITERION-REF-SYSCOND

Beschreibung

Use **<SW-VCD-CRITERION-REF-SYSCOND>** to create a **<SW-VCD-CRITERION-REF>** that will be valid only when the corresponding **<SW-SYSCOND>** expression evaluates to true. This is useful when a **<SW-VCD-CRITERION-REF>** shall be used when system constant has a certain value

Beispiel

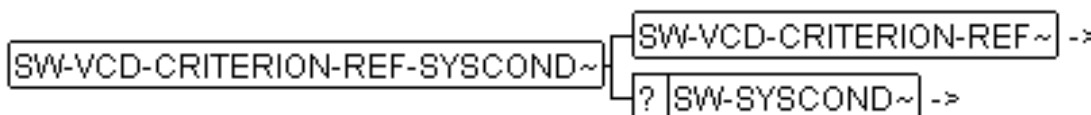
This VCD Criterion reference is used when LINA_Gear is less or equal to 4.

```
<SW-VCD-CRITERION-REF-SYSCOND>
  <SW-VCD-CRITERION-REF>vcd_cr_Ref</SW-VCD-CRITERION-REF>
  <SW-SYSCOND>
    <SW-SYSTEMCONST-PHYS-REF>LINA_Gear</SW-SYSTEMCONST-PHYS-REF>&lt;=4
  </SW-SYSCOND>
</SW-VCD-CRITERION-REF>
```

Formale Beschreibung

Hat als Kontext: [SW-VCD-CRITERION-REFS](#) p. 581

Ist Kontext für: [SW-VCD-CRITERION-REF](#) p. 579, [SW-SYSCOND](#) p. 511



2.706 SW-VCD-CRITERION-REFS

Beschreibung

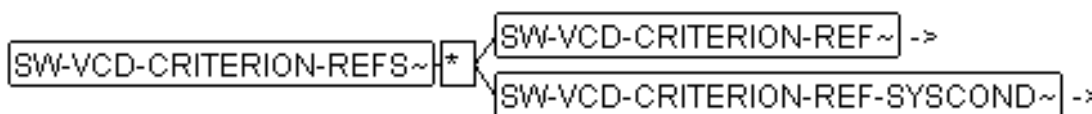
Container element for **<SW-VCD-CRITERION-REF>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-DATA-DEF-PROPS](#) p. 366, [SW-FEATURE-ELEMENTS](#) p. 394

Ist Kontext für: [SW-VCD-CRITERION-REF](#) p. 579, [SW-VCD-CRITERION-REF-SYSCOND](#) p. 581



SW-VCD-CRITERION-REFS.PNG

2.707 SW-VCD-CRITERION-VALUE

Beschreibung

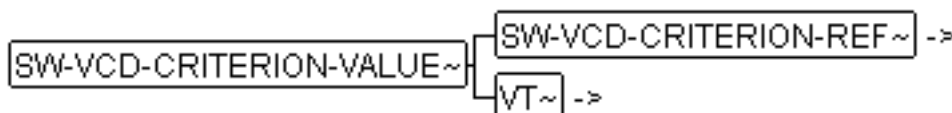
Defines the values for variant criteria. All of the values that are possible (see [Chapter 2.703 SW-VCD-CRITERION-POSSIBLE-VALUES](#) p. 578) are located in **<SW-VCD-CRITERION-POSSIBLE-VALUES>**. Die instantiated combinations in the instance tree, for which the variant criteria are currently valid, are formed by a combination of **<SW-VCD-CRITERION-REFS>** and **<SW-VCD-CRITERION-VALUES>**, which are both located in the sub-tree of **<SW-INSTANCE-PROPS-VARIANT>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VCD-CRITERION-VALUES](#) p. 582

Ist Kontext für: [SW-VCD-CRITERION-REF](#) p. 579, [VT](#) p. 630



SW-VCD-CRITERION-VALUE.PNG

2.708 SW-VCD-CRITERION-VALUES

Beschreibung

Container element for **<SW-VCD-CRITERION-VALUE>** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-INSTANCE-PROPS-VARIANT](#) p. 423, [SW-INSTANCE-TREE](#) p. 428

Ist Kontext für: [SW-VCD-CRITERION-VALUE](#) p. 582



SW-VCD-CRITERION-VALUES.PNG

2.709 SW-VCD-SPEC

Beschreibung

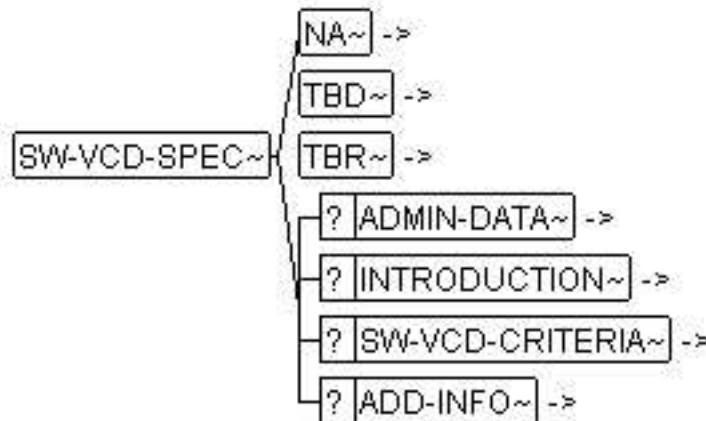
The existence of this object prescribes the implementation of variant coding. Furthermore, the object contains all the information relevant for the complete variant coding process.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-SYSTEM](#) p. 517

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [ADMIN-DATA](#) p. 30, [INTRODUCTION](#) p. 124, [SW-VCD-CRITERIA](#) p. 576, [ADD-INFO](#) p. 26



SW-VCD-SPEC.PNG

2.710 SYN-ARGUMENT

Beschreibung

This element describes one particular Argument within the current object synopsis. The name of the argument goes into <ITEM-LABEL>. The short description goes in to <DESC>. The detailed description goes into <ADD-INFO-5>.

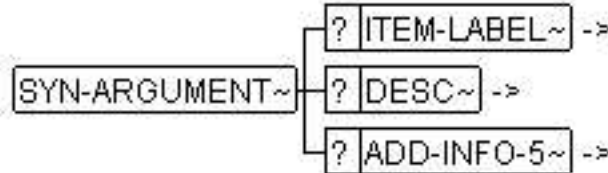
Beispiel

see [Chapter 2.713 SYN-EXAMPLE](#) p. 585

Formale Beschreibung

Hat als Kontext: [SYN-ARGUMENTS](#) p. 584

Ist Kontext für: [ITEM-LABEL](#) p. 127, [DESC](#) p. 83, [ADD-INFO-5](#) p. 28



SYN-ARGUMENT.PNG

2.711 SYN-ARGUMENTS

Beschreibung

This element takes all arguments of the objects described in the synopsis.

Beispiel

[Chapter 2.713 SYN-EXAMPLE](#) p. 585

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [SYN-ARGUMENT](#) p. 583



SYN-ARGUMENTS.PNG

2.712 SYN-CAPTION

Beschreibung

This serves to specify the caption of a particular synopsis similar to **<TABLE-CAPTION>**.

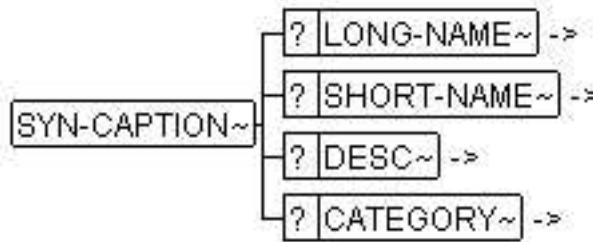
Beispiel

[Chapter 2.713 SYN-EXAMPLE](#) p. 585

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [DESC](#) p. 83, [CATEGORY](#) p. 42



SYN-CAPTION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		
[F-ID-CLASS] (fixed)	nmtoken	SYNOPSIS	
[F-NAMESPACE] (fixed)	nmtoken	SYNOPSIS	

2.713 SYN-EXAMPLE

Beschreibung

This element is used to give an example how to use the object the **<SYN-SYNOPSIS>** is given for.

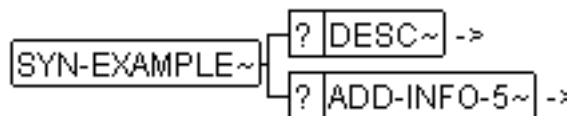
Beispiel

[Chapter 2.713 SYN-EXAMPLE p. 585](#)

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS p. 589](#)

Ist Kontext für: [DESC p. 83](#), [ADD-INFO-5 p. 28](#)



SYN-EXAMPLE.PNG

2.714 SYN-FORMAT

Beschreibung

This element specifies the format how the object for which the **<SYN-SYNOPSIS>** is given. Note that the target name of the target-format ist described in the **<P>**.

Beispiel

see [Chapter 2.713 SYN-EXAMPLE p. 585](#)

```
<SYN-FORMAT>
    <P>usage in C++</P>
    <VERBATIM>
```

```

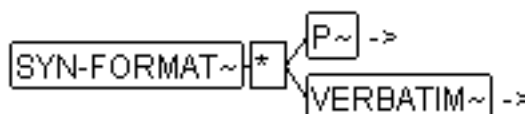
        x=mmx.execute("-S myfile.xml");
</VERBATIM>
<P>usage in Visual Basic</P>
<VERBATIM>
        let x=mmx.execute("-S myfile.xml");
</VERBATIM>
</SYN-FORMAT>

```

Formale Beschreibung

Hat als Kontext: [SYN-FORMATS](#) p. 586

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626



SYN-FORMAT.PNG

2.715 SYN-FORMATS

Beschreibung

This element is a container for all the possible formats in which the object described in **<SYN-SYNOPSIS>** can be used.

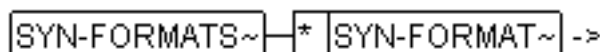
Beispiel

see [Chapter 2.713 SYN-EXAMPLE](#) p. 585

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [SYN-FORMAT](#) p. 585



SYN-FORMATS.PNG

2.716 SYN-INCLUDE

Beschreibung

This element denotes the required inclusions required by the objects for which a **<SYN-SYNOPSIS>** is given.

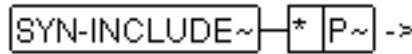
Beispiel

see [Chapter 2.716](#) p. 586

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [P](#) p. 172



2.717 SYN-OBJECT

Beschreibung

This element is used to denote an object which is described in the current synopsis. The name of the object is given as **<ITEM-LABEL>**. The **<P>** are used to give a short definition of the main purpose of the object.

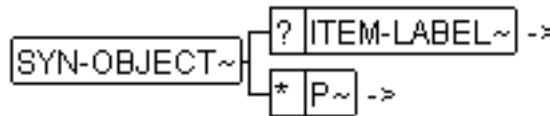
Beispiel

see [Chapter 2.722 p. 589](#)

Formale Beschreibung

Hat als Kontext: [SYN-OBJECTS p. 587](#)

Ist Kontext für: [ITEM-LABEL p. 127](#), [P p. 172](#)



2.718 SYN-OBJECTS

Beschreibung

This element serves as a container to keep all **<SYN-OBJECT>**s in the Synopsis.

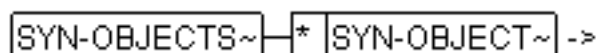
Beispiel

[Chapter 2.722 p. 589](#)

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS p. 589](#)

Ist Kontext für: [SYN-OBJECT p. 587](#)



2.719 SYN-RETURN-VALUE

Beschreibung

This element describes the return value of the object for which the synopsis is given. **<DESC>** takes a short description used for overviews. **<ADD-INFO-5>** is used to give a full blown specification.

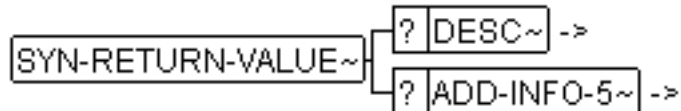
Beispiel

see [Chapter 2.722](#) p. 589

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [DESC](#) p. 83, [ADD-INFO-5](#) p. 28



SYN-RETURN-VALUE.PNG

2.720 SYN-SEE-ALSO

Beschreibung

This element is used to to give references to similar objects and additional reference material.

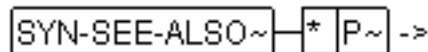
Beispiel

see [Chapter 2.722](#) p. 589

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [P](#) p. 172



SYN-SEE-ALSO.PNG

2.721 SYN-SEMANTICS

Beschreibung

This element is used to specify the particular semantics of the objects for which a synopsis is given. <DESC> takes an quick description intended for overview tables. <ADD-INFO-5> takes a full blown specification.

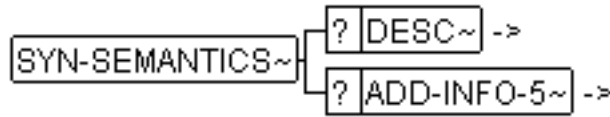
Beispiel

see [Chapter 2.722](#) p. 589

Formale Beschreibung

Hat als Kontext: [SYN-SYNOPSIS](#) p. 589

Ist Kontext für: [DESC](#) p. 83, [ADD-INFO-5](#) p. 28



2.722 SYN-SYNOPSIS

Beschreibung

This element serves as a semiformal description of the Synopsis of an application programming interface. This is mainly intended to be used for generating a programmer's reference manual in *MSRREP*. Although there is some overlap with **<SW-SERVICE>** in the *MSRSW*-Context, this Element can be useful to specify a required API. Therefore **<SYN-SYNOPSIS>** is located in free text elements on a paragraph level. **<SYN-SYNOPSIS>** is made such that it can be rendered similar to a **<LABELED-LIST>**. In this sense, **<SYN-SYNOPSIS>** can be considered as a specific form of a **<LABELED-LST>**.

Beispiel

This example shows the source code of a routine called forceerror which takes three arguments.

```
<SYN-SYNOPSIS>
<SYN-CAPTION ID="SYN.PROCEDURE.FORCEERROR">
  <LONG-NAME>forceerror</LONG-NAME>
</SYN-CAPTION>
<SYN-OBJECTS>

  <SYN-OBJECT>
    <ITEM-LABEL>forceerror
    <IE>procedure;forceerror</IE>

    <IE>forceerror</IE>
  </ITEM-LABEL>

  <P>force an error</P>
</SYN-OBJECT>
</SYN-OBJECTS>
<SYN-FORMATS>

<SYN-FORMAT>

  <P>
    <E TYPE="ITALIC">subject</E>.forceerror (
    <E TYPE="ITALIC">type</E>,
    <E TYPE="ITALIC">code</E>,
    <E TYPE="ITALIC">node</E>?)
  </P>
</SYN-FORMAT>
</SYN-FORMATS>
<SYN-ARGUMENTS>

<SYN-ARGUMENT>
  <ITEM-LABEL>subject</ITEM-LABEL>

  <DESC>string</DESC>
</SYN-ARGUMENT>

<SYN-ARGUMENT>
  <ITEM-LABEL>type</ITEM-LABEL>

  <DESC>single string</DESC>
</SYN-ARGUMENT>

<SYN-ARGUMENT>
  <ITEM-LABEL>code</ITEM-LABEL>

  <DESC>single string</DESC>
</SYN-ARGUMENT>

<SYN-ARGUMENT>
  <ITEM-LABEL>node</ITEM-LABEL>
```




```
<DESC>tree node</DESC>
</SYN-ARGUMENT>
</SYN-ARGUMENTS>

<SYN-RETURN-VALUE>

<DESC>>null</DESC>
<ADD-INFO-5/>
</SYN-RETURN-VALUE>
<SYN-SEMANTICS>

<DESC>forces a warning/error... to be issued;

<E TYPE="PLAIN" FONT="MONO" COLOR="blue">subject</E> (which must evaluate to a
string) is used as the message text;
<E TYPE="PLAIN" FONT="MONO" COLOR="blue">type</E> may be any string, e.g., "warning",
"error" etc.,
<E TYPE="PLAIN" FONT="MONO" COLOR="blue">code</E> is
used as the warning/error/... code, e.g., "illegal input" etc.;

<E TYPE="PLAIN" FONT="MONO" COLOR="blue">node</E> the object to which the error
node will be linked (the current target node if nothing is speci

</DESC>

<ADD-INFO-5/>
</SYN-SEMANTICS>
<SYN-EXAMPLE>
<ADD-INFO-5>

<VERBATIM>: i "Wrong.\n".forceerror("INFO","ILLEGAL INPUT");</VERBATIM>

<P>returns the following output on stderr:</P>

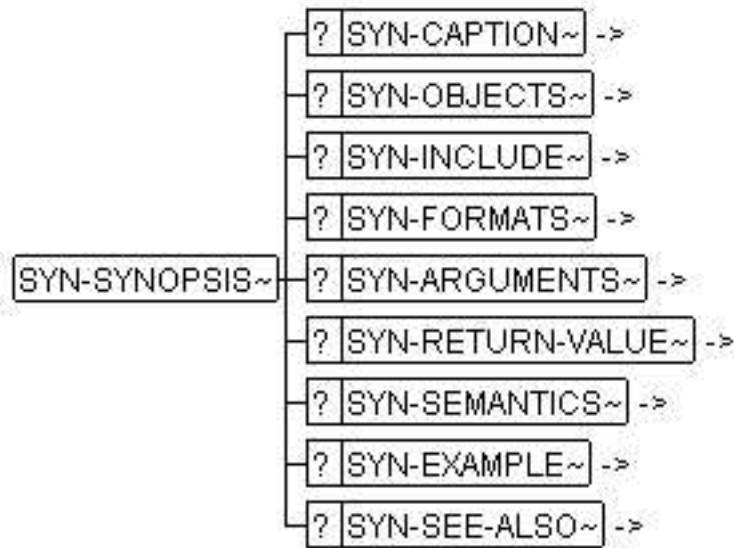
<VERBATIM>FORCED-INFO (ILLEGAL INPUT) :
Wrong.
null
:</VERBATIM>

</ADD-INFO-5>
</SYN-EXAMPLE>
</SYN-SYNOPSIS>
```

Formale Beschreibung

Hat als Kontext: [2.4 ADD-INFO p. 26](#), [ADD-INFO-5 p. 28](#), [CHAPTER p. 44](#), [MSR-QUERY-RESULT-P-1 p. 150](#), [TOPIC-1 p. 610](#)

Ist Kontext für: [SYN-CAPTION p. 584](#), [SYN-OBJECTS p. 587](#), [SYN-INCLUDE p. 586](#), [SYN-FORMATS p. 586](#), [SYN-ARGUMENTS p. 584](#), [SYN-RETURN-VALUE p. 587](#), [SYN-SEMANTICS p. 588](#), [SYN-EXAMPLE p. 585](#), [SYN-SEE-ALSO p. 588](#)



SYN-SYNOPSIS.PNG

2.723 SYSTEM-OVERVIEW

Beschreibung

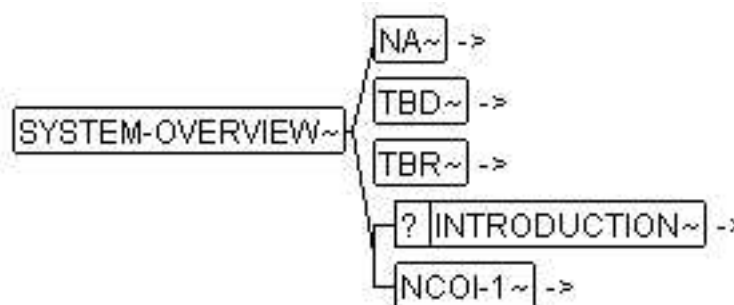
Use <SYSTEM-OVERVIEW> to enter the **system overview** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



SYSTEM-OVERVIEW.PNG

2.724 SYSTEM-USER

Beschreibung

This element specifies a system user that is logged-in to the operating system of the MCD system.

Beispiel

See [Chapter 2.262 SW-ACCESS-DEF](#) p. 221

Formale Beschreibung

Hat als Kontext: [SYSTEM-USERS](#) p. 592

Ist Kontext für: Text

`SYSTEM-USER~` — #PCDATA

SYSTEM-USER.PNG

2.725 SYSTEM-USERS

Beschreibung

Container element for `<SYSTEM-USER>` .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-GROUP](#) p. 555

Ist Kontext für: [SYSTEM-USER](#) p. 591

`SYSTEM-USERS~` * `SYSTEM-USER~` ->

SYSTEM-USERS.PNG

2.726 TABLE

Beschreibung

Use `<TABLE>` to create a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#)

p. 392, SW-MAINTENANCE-NOTES p. 436, SW-TEST-DESC p. 543,
TECHNICAL-ASPECTS p. 603, TOPIC-1 p. 610, TOPIC-2 p. 612

Ist Kontext für: TABLE-CAPTION p. 595, TGROUP p. 606

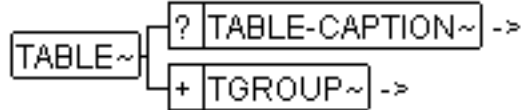


TABLE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[TOCENTRY] (default)	nmtoken	1	0 - no table heading <LONG-NAME> entered into the table directory. 0 - table heading <LONG-NAME> entered into the table directory.
[COLSEP] (implied)	nmtoken		At this point, you should determine whether the column guides of a cell are to be visible. You should enter 0 , if no column guides are to be displayed. You should enter 1 , if the column guides are to be displayed.
[FLOAT] (implied)	namedtokengroup	<ul style="list-style-type: none"> FLOAT NO-FLOAT 	Permits a check, in the case of a <TABLE> that cannot be broken up, to determine whether the <TABLE> can be shifted elsewhere, so that the page can be used to a greater advantage (compare to flat at TeX).
[FRAME] (implied)	namedtokengroup	<ul style="list-style-type: none"> TOP BOTTOM TOPBOT ALL SIDES NONE 	TOP - graphic limit at upper edge of table. BOTTOM - graphic limit at lower edge of table. TOPBOT - graphic limit at upper and lower edge of table. ALL - graphic limit of all table edges. SIDES - graphic limit of side edges of table. NONE - no graphic limits in table



Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none">• KEEP• NO-KEEP	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[ORIENT] (implied)	namedtokengroup	<ul style="list-style-type: none">• PORT• LAND	PORT - table contents is parallel to the paragraph elements. LAND - table contents is at orthogonal to the paragraph elements.
[PGWIDE] (implied)	nmtoken		0 - table width is the sum of the widths specified for the columns. 1 - table width corresponds to page width.
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the row guides of a cell are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.
[SHORTENTRY] (implied)	nmtoken		0 - a <SHORT-NAME> is not taken over into the table directory 0 - table directory is assigned a <SHORT-NAME> .

Attribut	Typ	Wertebereich	Anmerkungen
[TABSTYLE] (implied)	nmtoken		Identification of an external table style

2.727 TABLE-CAPTION

Beschreibung

This element specifies the table heading.

Beispiel

Formale Beschreibung

Hat als Kontext: [TABLE](#) p. 592

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212

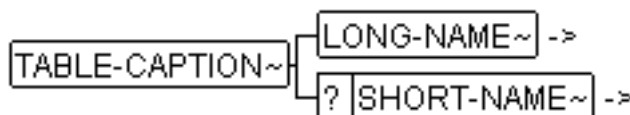


TABLE-CAPTION.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	TABLE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.



2.728 TBD

Beschreibung

Use <TBD> to enter the instruction **still to be processed!** .

Beispiel

Formale Beschreibung

Hat als Kontext: [ACCEPTANCE-COND](#) p. 25, [ADD-DESIGN-DOC](#) p. 26, [ADD-SPEC](#) p. 29, [BINARY-COMPATIBILITY](#) p. 39, [CALIBRATION](#) p. 42, [COMMUNICATION](#) p. 50, [COMMUNICATION-INTERFACE](#) p. 50, [COMPATIBILITY](#) p. 57, [CONTRACT-ASPECTS](#) p. 73, [DATA-DESC](#) p. 75, [DATA-REQUIREMENTS](#) p. 76, [DATA-STRUCTURES](#) p. 76, [DEMARICATION-OTHER-PROJECTS](#) p. 82, [DESIGN-REQUIREMENTS](#) p. 84, [DEVELOPMENT-PROCESS-SPEC](#) p. 85, [DIAGNOSIS](#) p. 86, [DIR-HAND-OVER-DOC-DATA](#) p. 86, [EXTENSIBILITY](#) p. 92, [FAIL-SAVE-CONCEPT](#) p. 93, [FAILURE-MANAGEMENT](#) p. 93, [FAILURE-MEM](#) p. 94, [FLASH-PROGRAMMING](#) p. 98, [FMEA](#) p. 98, [FUNCTION-OVERVIEW](#) p. 104, [FUNCTIONAL-REQUIREMENTS](#) p. 108, [GENERAL-COND](#) p. 108, [GENERAL-HARDWARE](#) p. 109, [GENERAL-INTERFACES](#) p. 109, [GENERAL-PRODUCT-DATA-1](#) p. 110, [GENERAL-PROJECT-DATA](#) p. 111, [GENERAL-REQUIREMENTS](#) p. 113, [GENERAL-SOFTWARE](#) p. 114, [GUARANTEE](#) p. 119, [HARDWARE-INTERFACE](#) p. 120, [INTEGRATION-CAPABILITY](#) p. 122, [INTERNAL-INTERFACES](#) p. 123, [INTERRUPT-SPEC](#) p. 123, [KEY-DATA](#) p. 128, [MAINTENANCE](#) p. 137, [MONITORING](#) p. 144, [NORMATIVE-REFERENCE](#) p. 165, [OBJECTIVES](#) p. 168, [OPERATING-ENV](#) p. 169, [OPERATIONAL-REQUIREMENTS](#) p. 170, [OVERVIEW](#) p. 171, [PARALLEL-DESIGNS](#) p. 173, [PRODUCT-DEMARICATION](#) p. 182, [PRODUCT-DESC](#) p. 182, [PROJECT-SCHEDULE](#) p. 184, [PROTOCOLS](#) p. 184, [PURCHASING-COND](#) p. 185, [QUALITY](#) p. 186, [REASON-ORDER](#) p. 188, [RELIABILITY](#) p. 188, [REPLACEMENT-VALUES](#) p. 190, [REQUIREMENT-SPEC](#) p. 195, [RESOURCE-ALLOCATION](#) p. 197, [RESTRICTIONS-BY-HARDWARE](#) p. 198, [RIGHTS](#) p. 200, [SAFETY](#) p. 203, [SAMPLE-SPEC](#) p. 207, [SELF-DIAGNOSIS](#) p. 211, [SIMILAR-PRODUCTS](#) p. 215, [STANDARD-SW-MODULES](#) p. 218, [SW-ARCHITECTURE](#) p. 237, [SW-CALIBRATION-METHOD-SPEC](#) p. 258, [SW-COLLECTION-SPEC](#) p. 327, [SW-COMPONENT-SPEC](#) p. 330, [SW-CPU-SPEC](#) p. 352, [SW-DATA-DICTIONARY-SPEC](#) p. 372, [SW-EVENT-SPEC](#) p. 384, [SW-GLOSSARY](#) p. 419, [SW-INSTANCE-SPEC](#) p. 427, [SW-MC-COMMUNICATION-SPEC](#) p. 445, [SW-OPER-MODE-SPEC](#) p. 472, [SW-SCHEDULING-SPEC](#) p. 499, [SW-SYSTEM](#) p. 517, [SW-TASK-SPEC](#) p. 538, [SW-TEST-SPEC](#) p. 544, [SW-USER-RIGHT-SPEC](#) p. 559, [SW-VCD-SPEC](#) p. 583, [SYSTEM-OVERVIEW](#) p. 591, [TIME-DEPENDENCY](#) p. 608, [USEFUL-LIFE](#) p. 617, [USER-INTERFACE](#) p. 618, [VARIANT-SPEC](#) p. 626

Ist Kontext für: [TEAM-MEMBER-REFS](#) p. 602, [SCHEDULE](#) p. 207, [DESC](#) p. 83



TBD.PNG

2.729 TBODY

Beschreibung

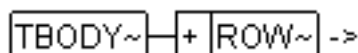
Use <TBODY> to generate all of the rows in a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [TGROUPO](#) p. 606

Ist Kontext für: [ROW](#) p. 202



TBODY.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[VALIGN] (default)	namedtokengroup	<ul style="list-style-type: none"> • TOP • MIDDLE • BOTTOM 	TOP - The contents of the table is aligned to the upper edge of the cell. BOTTOM - The contents of the table is aligned to the lower edge of the cell. MIDDLE - The contents of the table is centered to the vertical.

2.730 TBR

Beschreibung

Use <TBR> to enter **still to be moved from other document!** .

Beispiel

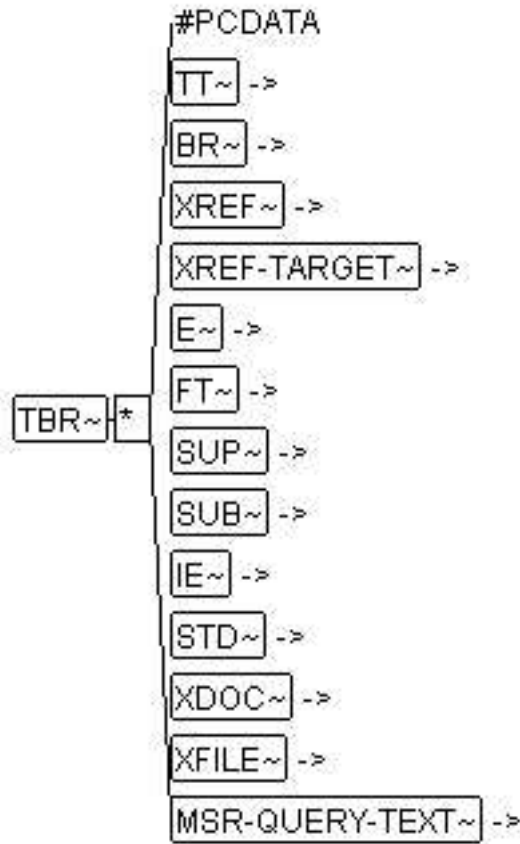
Formale Beschreibung

Hat als Kontext: [ACCEPTANCE-COND](#) p. 25, [ADD-DESIGN-DOC](#) p. 26, [ADD-SPEC](#) p. 29, [BINARY-COMPATIBILITY](#) p. 39, [CALIBRATION](#) p. 42, [COMMUNICATION](#) p. 50, [COMMUNICATION-INTERFACE](#) p. 50, [COMPATIBILITY](#) p. 57, [CONTRACT-ASPECTS](#) p. 73, [DATA-DESC](#) p. 75, [DATA-REQUIREMENTS](#) p. 76,



DATA-STRUCTURES p. 76, DEMARCATION-OTHER-PROJECTS p. 82, DESIGN-REQUIREMENTS p. 84, DEVELOPMENT-PROCESS-SPEC p. 85, DIAGNOSIS p. 86, DIR-HAND-OVER-DOC-DATA p. 86, EXTENSIBILITY p. 92, FAIL-SAVE-CONCEPT p. 93, FAILURE-MANAGEMENT p. 93, FAILURE-MEM p. 94, FLASH-PROGRAMMING p. 98, FMEA p. 98, FUNCTION-OVERVIEW p. 104, FUNCTIONAL-REQUIREMENTS p. 108, GENERAL-COND p. 108, GENERAL-HARDWARE p. 109, GENERAL-INTERFACES p. 109, GENERAL-PRODUCT-DATA-1 p. 110, GENERAL-PROJECT-DATA p. 111, GENERAL-REQUIREMENTS p. 113, GENERAL-SOFTWARE p. 114, GUARANTEE p. 119, HARDWARE-INTERFACE p. 120, INTEGRATION-CAPABILITY p. 122, INTERNAL-INTERFACES p. 123, INTERRUPT-SPEC p. 123, KEY-DATA p. 128, MAINTENANCE p. 137, MONITORING p. 144, NORMATIVE-REFERENCE p. 165, OBJECTIVES p. 168, OPERATING-ENV p. 169, OPERATIONAL-REQUIREMENTS p. 170, OVERVIEW p. 171, PARALLEL-DESIGNS p. 173, PRODUCT-DEMARCATION p. 182, PRODUCT-DESC p. 182, PROJECT-SCHEDULE p. 184, PROTOCOLS p. 184, PURCHASING-COND p. 185, QUALITY p. 186, REASON-ORDER p. 188, RELIABILITY p. 188, REPLACEMENT-VALUES p. 190, REQUIREMENT-SPEC p. 195, RESOURCE-ALLOCATION p. 197, RESTRICTIONS-BY-HARDWARE p. 198, RIGHTS p. 200, SAFETY p. 203, SAMPLE-SPEC p. 207, SELF-DIAGNOSIS p. 211, SIMILAR-PRODUCTS p. 215, STANDARD-SW-MODULES p. 218, SW-ARCHITECTURE p. 237, SW-CALIBRATION-METHOD-SPEC p. 258, SW-COLLECTION-SPEC p. 327, SW-COMPONENT-SPEC p. 330, SW-CPU-SPEC p. 352, SW-DATA-DICTIONARY-SPEC p. 372, SW-EVENT-SPEC p. 384, SW-GLOSSARY p. 419, SW-INSTANCE-SPEC p. 427, SW-MC-COMMUNICATION-SPEC p. 445, SW-OPER-MODE-SPEC p. 472, SW-SCHEDULING-SPEC p. 499, SW-SYSTEM p. 517, SW-TASK-SPEC p. 538, SW-TEST-SPEC p. 544, SW-USER-RIGHT-SPEC p. 559, SW-VCD-SPEC p. 583, SYSTEM-OVERVIEW p. 591, TIME-DEPENDENCY p. 608, USEFUL-LIFE p. 617, USER-INTERFACE p. 618, VARIANT-SPEC p. 626

Ist Kontext für: Text, TT p. 614, BR p. 40, XREF p. 633, XREF-TARGET p. 636, E p. 88, FT p. 104, SUP p. 221, SUB p. 220, IE p. 121, STD p. 219, XDOC p. 630, XFILE p. 632, MSR-QUERY-TEXT p. 153



TBR.PNG

2.731 TEAM-MEMBER

Beschreibung

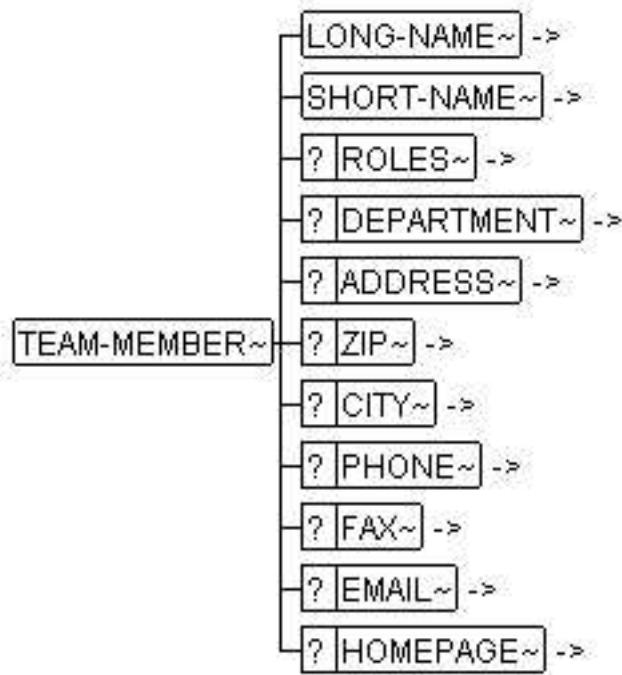
Use <TEAM-MEMBER> to enter data on a project participant from a specific company.

Beispiel

Formale Beschreibung

Hat als Kontext: [TEAM-MEMBERS](#) p. 603

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [ROLES](#) p. 201, [DEPARTMENT](#) p. 83, [ADDRESS](#) p. 30, [ZIP](#) p. 638, [CITY](#) p. 46, [PHONE](#) p. 174, [FAX](#) p. 95, [EMAIL](#) p. 89, [HOMEPAGE](#) p. 120



TEAM-MEMBER.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	TEAM-MEMBER	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.732 TEAM-MEMBER-REF

Beschreibung

<TEAM-MEMBER-REF> is the pointer to one particular team member. The content is the <SHORT-NAME> of the corresponding <TEAM-MEMBER> .

Beispiel

For an example, see [Chapter 2.8 ADMIN-DATA p. 30](#) [Chapter 2.8 ADMIN-DATA p. 30](#) .

Formale Beschreibung

Hat als Kontext: [COMPANY-DOC-INFO p. 53](#), [DOC-REVISION p. 87](#), [TEAM-MEMBER-REFS p. 602](#)

Ist Kontext für: Text

TEAM-MEMBER-REF~ — #PCDATA

TEAM-MEMBER-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.
[F-ID-CLASS] (fixed)	nmtoken	TEAM-MEMBER	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.733 TEAM-MEMBER-REFS

Beschreibung

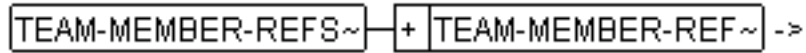
Use <TEAM-MEMBER-REFS> to enter the **references** .

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-USER-GROUP](#) p. 555, [TBD](#) p. 595

Ist Kontext für: [TEAM-MEMBER-REF](#) p. 600



TEAM-MEMBER-REFS.PNG

2.734 TEAM-MEMBERS

Beschreibung

Use <TEAM-MEMBERS> to enter data on all project participants from a specific company.

Beispiel

Formale Beschreibung

Hat als Kontext: [COMPANY](#) p. 51

Ist Kontext für: [TEAM-MEMBER](#) p. 599



TEAM-MEMBERS.PNG

2.735 TECHNICAL-ASPECTS

Beschreibung

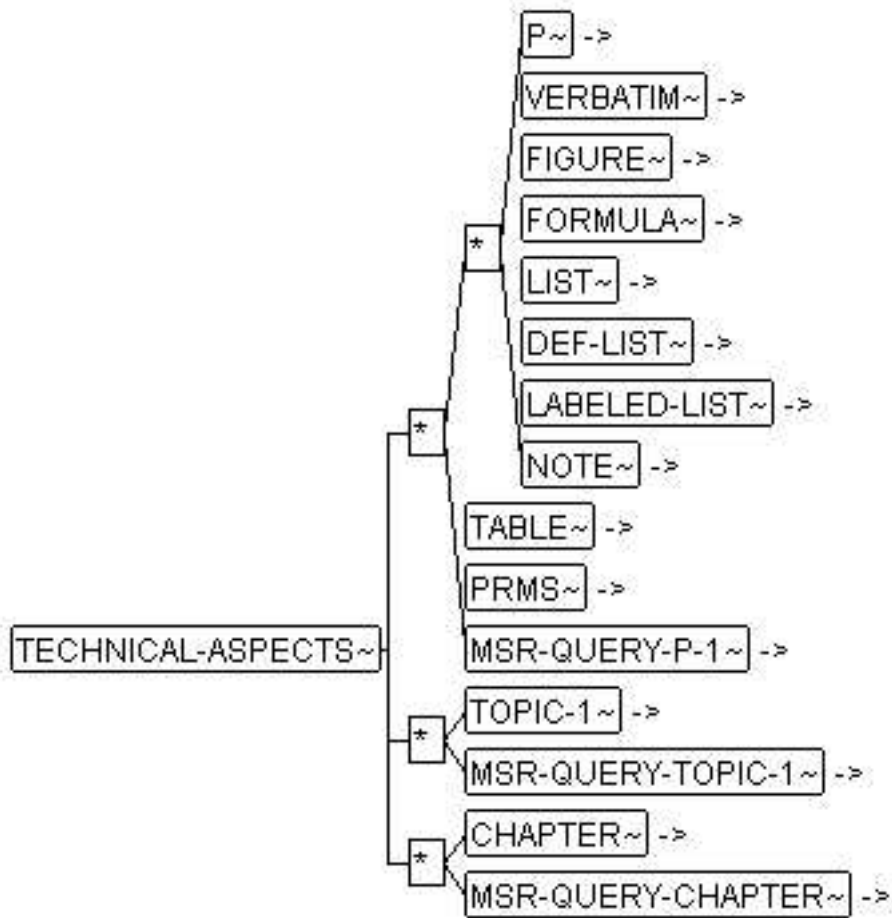
This element describes the technical aspects of a <REQUIREMENT> in text form.

Beispiel

Formale Beschreibung

Hat als Kontext: [REQUIREMENT](#) p. 190

Ist Kontext für: [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147, [TOPIC-1](#) p. 610, [MSR-QUERY-TOPIC-1](#) p. 153, [CHAPTER](#) p. 44, [MSR-QUERY-CHAPTER](#) p. 146



TECHNICAL-ASPECTS.PNG

2.736 TEX-MATH

Beschreibung

Use <TEX-MATH> to insert a TeX formula. A TeX formula can be processed by a TeX or a LaTeX processor.

Beispiel

Formale Beschreibung

Hat als Kontext: [FORMULA](#) p. 100

Ist Kontext für: Text

TEX-MATH~ — #PCDATA

TEX-MATH.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[xml:space] (default)	namedtokengroup	<ul style="list-style-type: none"> • default • preserve 	

2.737 TEXT

Beschreibung

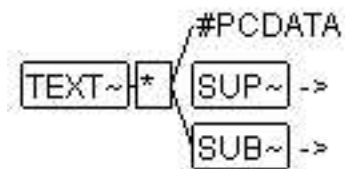
Use <TEXT> to enter descriptive text into the cell of a parameter table.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR p. 178](#)

Ist Kontext für: Text, [SUP p. 221](#), [SUB p. 220](#)



TEXT.PNG

2.738 TFOOT

Beschreibung

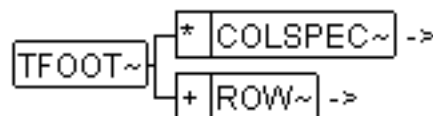
Use <TFOOT> to create a footnote for a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [TGROUP p. 606](#)

Ist Kontext für: [COLSPEC p. 47](#), [ROW p. 202](#)



TFOOT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[VALIGN] (default)	namedtokengroup	<ul style="list-style-type: none"> • TOP • MIDDLE • BOTTOM 	TOP - The contents of the table is aligned to the upper edge of the cell. BOTTOM - The contents of the table is aligned to the lower edge of the cell. MIDDLE - The contents of the table is centered to the vertical.

2.739 TGROUP

Beschreibung

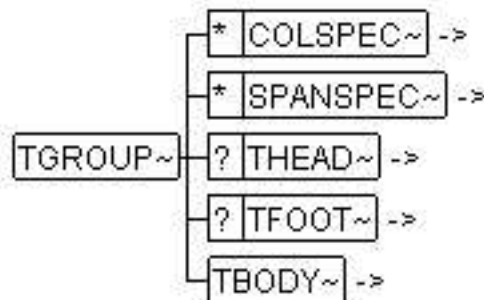
Use **<TGROUP>** to create a table group within a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [TABLE](#) p. 592

Ist Kontext für: [COLSPEC](#) p. 47, [SPANSPEC](#) p. 215, [THEAD](#) p. 608, [TFOOT](#) p. 605, [TBODY](#) p. 597



TGROUPPING

Attribut	Typ	Wertebereich	Anmerkungen
[COLS] (required)	nmtoken		Enter the number of columns in the table group.



Attribut	Typ	Wertebereich	Anmerkungen
[ALIGN] (default)	namedtokengroup	<ul style="list-style-type: none">• LEFT• RIGHT• CENTER• JUSTIFY• CHAR	LEFT - The table contents is justified left. RIGHT - The table contents is justified right. CENTER - The table contents is centered horizontally. JUSTIFY - The table contents is displayed with justified typesetting. There is an equal distance from the left and right-hand edges of the cell. CHAR - The alignment of the table contents is set by [CHAR] .
[CHAR] (default)	cdata		If [ALIGN] ="CHAR", this specifies the alignment sign e.g. "bzlw", as a decimal point separator from an existing value of [CHAR] . The sign cannot be a SDATA entity.
[CHAROFF] (default)	nmtoken	50	If [ALIGN] ="CHAR", this value indicates the percentage of the current column width to the left edge of the alignment sign in the [CHAR] -attribute. If there is no alignment sign in the element <ENTRY> , alignment is always horizontal right.
[COLSEP] (implied)	nmtoken		At this point, you should determine whether the column guides of a cell are to be visible. You should enter 0 , if no column guides are to be displayed. You should enter 1 , if the column guides are to be displayed.

Attribut	Typ	Wertebereich	Anmerkungen
[ROWSEP] (implied)	nmtoken		At this point, you should determine whether the row guides of a cell are to be visible. You should enter 0 , if no row guides are to be displayed. You should enter 1 , if the row guides are to be displayed.
[TGROUPSTYLE] (implied)	nmtoken		Identification of an external table group style

2.740 THEAD

Beschreibung

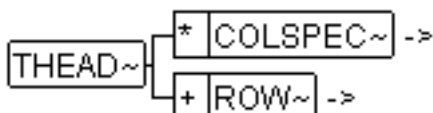
Use <THEAD> to create a heading for a table.

Beispiel

Formale Beschreibung

Hat als Kontext: [TGROUPE](#) p. 606

Ist Kontext für: [COLSPEC](#) p. 47, [ROW](#) p. 202



THEAD.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[VALIGN] (default)	namedtokengroup	<ul style="list-style-type: none"> • TOP • MIDDLE • BOTTOM 	TOP - The contents of the table is aligned to the upper edge of the cell. BOTTOM - The contents of the table is aligned to the lower edge of the cell. MIDDLE - The contents of the table is centered to the vertical.

2.741 TIME-DEPENDENCY

Beschreibung

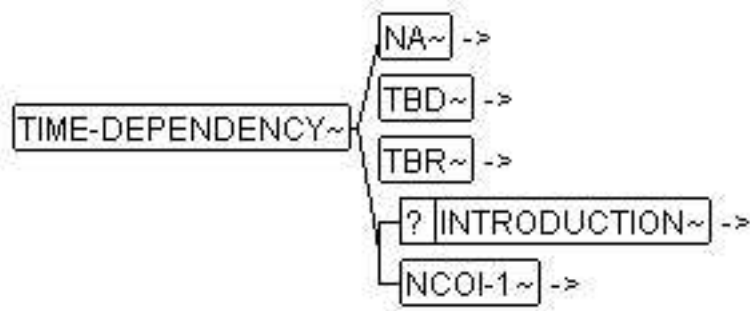
This element provides a verbal description of temporal dependencies within the software system, which can be defined on an architectural level.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-ARCHITECTURE](#) p. 237

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



TIME-DEPENDENCY.PNG

2.742 TOL

Beschreibung

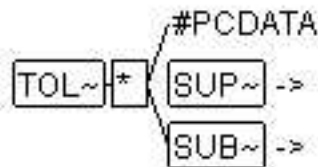
Use <TOL> to enter the tolerance values of a parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR](#) p. 178

Ist Kontext für: Text, [SUP](#) p. 221, [SUB](#) p. 220



TOL.PNG

2.743 TOOL

Beschreibung

This element describes the tool which was used to generate the corresponding <XFILE> .

Beispiel

Formale Beschreibung

Hat als Kontext: [XFILE](#) p. 632

Ist Kontext für: Text

TOOL~—#PCDATA

TOOL.PNG

2.744 TOOL-VERSION

Beschreibung

This element describes the tool version which was used to generate the corresponding **<XFILE>** .

Beispiel

```
<XFILE ID="DC17723163279664">
  <LONG-NAME-1>Praesentation</LONG-NAME-1>
  <NOTATION>PowerPoint</NOTATION>
  <TOOL>Microsoft PowerPoint</TOOL>
  <TOOL-VERSION>2000</TOOL-VERSION>
</XFILE>
```

Formale Beschreibung

Hat als Kontext: [XFILE](#) p. 632

Ist Kontext für: Text

TOOL-VERSION~—#PCDATA

TOOL-VERSION.PNG

2.745 TOPIC-1

Beschreibung

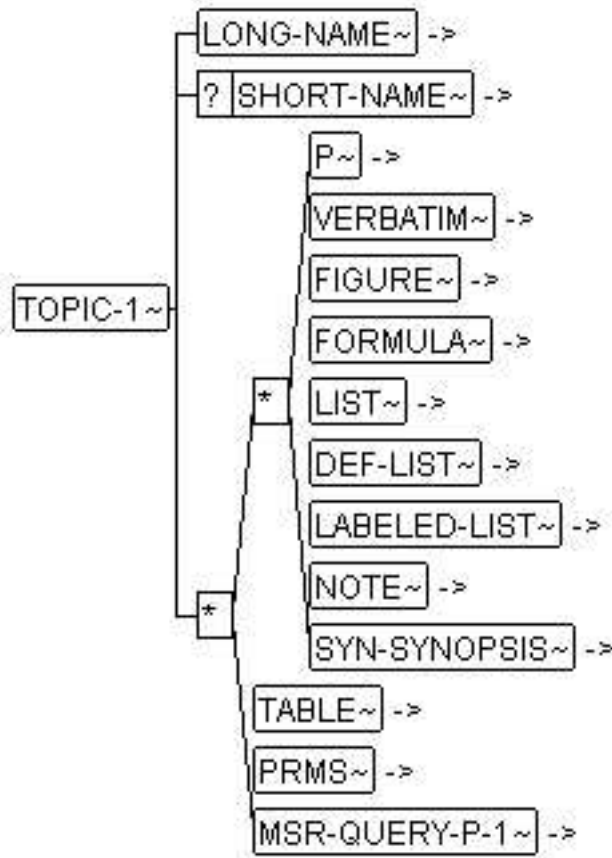
Use **<TOPIC-1>** to generate a closed sense unit within a documentation.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [FREE-INFO](#) p. 103, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-TOPIC-1](#) p. 152, [NCOI-1](#) p. 162, [REAL-TIME-REQUIREMENTS](#) p. 186, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [TECHNICAL-ASPECTS](#) p. 603

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [SYN-SYNOPSIS](#) p. 589, [TABLE](#) p. 592, [PRMS](#) p. 181, [MSR-QUERY-P-1](#) p. 147



TOPIC-1.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[F-ID-CLASS] (fixed)	nmtoken	TOPIC	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.746 TOPIC-2

Beschreibung

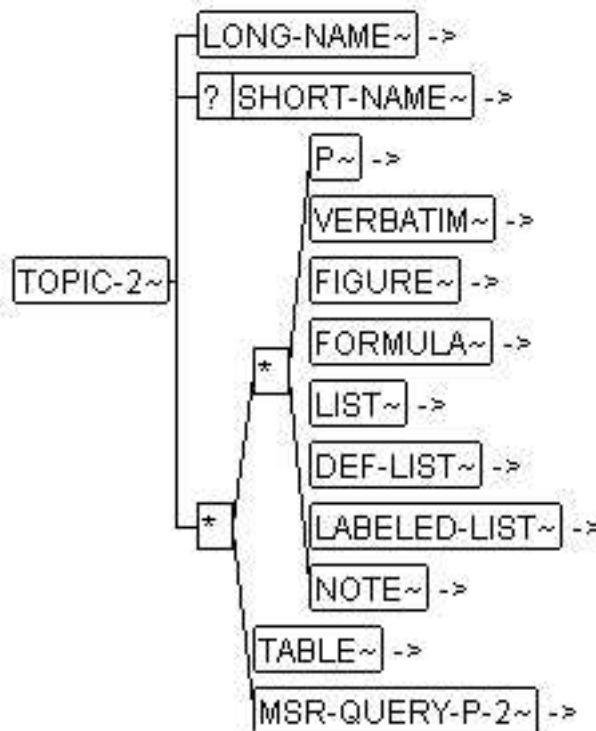
Use `<TOPIC-2>` to generate a closed sense unit within a documentation.

Beispiel

Formale Beschreibung

Hat als Kontext: [INTRODUCTION](#) p. 124, [MSR-QUERY-RESULT-TOPIC-2](#) p. 152, [NCOI-3](#) p. 163

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [P](#) p. 172, [VERBATIM](#) p. 626, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [LIST](#) p. 133, [DEF-LIST](#) p. 81, [LABELED-LIST](#) p. 130, [NOTE](#) p. 166, [TABLE](#) p. 592, [MSR-QUERY-P-2](#) p. 148



TOPIC-2.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	TOPIC	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.747

TT

Beschreibung

Use <TT> to format technical terms within the paragraph element.

Beispiel

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [FT](#) p. 104, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [LABEL](#) p. 128, [LONG-NAME](#) p. 134, [LONG-NAME-1](#) p. 135, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597

Ist Kontext für: Text

TT~ — #PCDATA

TT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (required)	namedtokengroup	<ul style="list-style-type: none"> • SGMLTAG • SGML-ATTRIBUTE • TOOL • PRODUCT • VARIABLE • STATE • PRM • MATERIAL • CONTROL-ELEMENT • CODE • ORGANISATION • OTHER 	Indicates a type of the respective element.
[USER-DEFINED-TYPE] (implied)	cdata		Allows user-specific TTs to be introduced.

2.748 TYP

Beschreibung

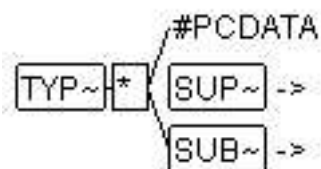
Use <TYP> to enter the typical values of a parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR p. 178](#)

Ist Kontext für: Text, [SUP p. 221](#), [SUB p. 220](#)



TYP.PNG

2.749 UNIT

Beschreibung

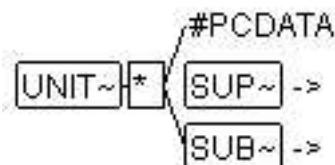
Use <UNIT> to enter the unit of a parameter.

Beispiel

Formale Beschreibung

Hat als Kontext: [PRM-CHAR](#) p. 178

Ist Kontext für: Text, [SUP](#) p. 221, [SUB](#) p. 220



UNIT.PNG

2.750 UPPER-LIMIT

Beschreibung

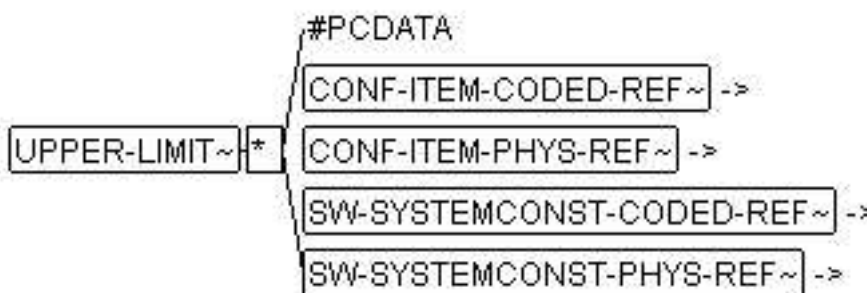
This element specifies the upper limit of a closed, half-open or open interval. It can also be set to infinity by setting the attribute INTERVAL-TYPE to INFINITE. No value has to be set in the case of an infinite interval.

Beispiel

Formale Beschreibung

Hat als Kontext: [CONF-KEY-COUNT](#) p. 62, [CONF-SOURCE-COUNT](#) p. 69, [CONF-VALUE-CONSTR](#) p. 71, [SW-COMPU-SCALE](#) p. 343, [SW-INTERNAL-CONSTRS](#) p. 434, [SW-PHYS-CONSTRS](#) p. 472, [SW-SCALE-CONSTR](#) p. 498

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



UPPER-LIMIT.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[INTERVAL-TYPE] (default)	namedtokengroup	<ul style="list-style-type: none"> OPEN CLOSED INFINITE 	OPEN: open interval CLOSED: closed interval INFINITE: infinite interval

2.751 URL

Beschreibung

This element specifies the Uniform Resource Locator (URL) of the context contained in the **<URL>** element.

Beispiel

See [Chapter 2.150 MATCHING-DCIS p. 140](#) [Chapter 2.149 MATCHING-DCI p. 139](#) .

Formale Beschreibung

Hat als Kontext: [MATCHING-DCI p. 139](#), [STD p. 219](#), [XDOC p. 630](#), [XFILE p. 632](#)

Ist Kontext für: Text

`URL~`—#PCDATA

URL.PNG

Attribut	Typ	Anmerkungen
[MIME-TYPE] (implied)	cdata	

2.752 USED-LANGUAGES

Beschreibung

Use **<USED-LANGUAGES>** to enter all other languages, in addition to the document language, which are used an a document or a section of a document.

Beispiel

Formale Beschreibung

Hat als Kontext: [ADMIN-DATA p. 30](#)

Ist Kontext für: Text

`USED-LANGUAGES~`—#PCDATA

USED-LANGUAGES.PNG

2.753 USEFUL-LIFE

Beschreibung

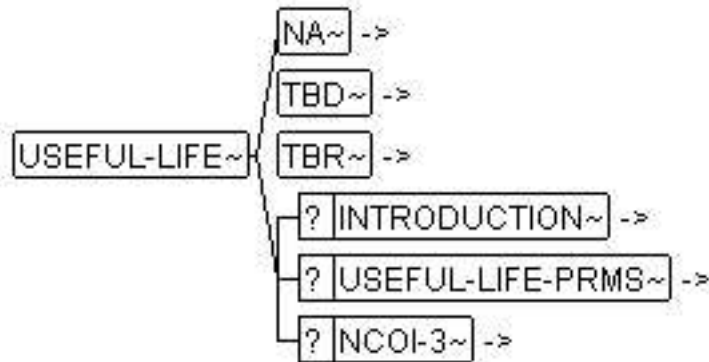
Use **<USEFUL-LIFE>** to enter the **duration of use** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-HARDWARE](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [USEFUL-LIFE-PRMS](#) p. 618, [NCOI-3](#) p. 163



USEFUL-LIFE.PNG

2.754 USEFUL-LIFE-PRMS

Beschreibung

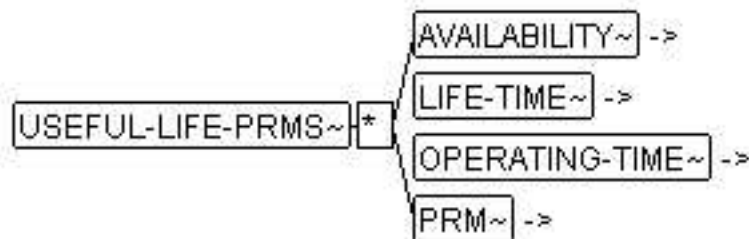
Use <USEFUL-LIFE-PRMS> to enter the **parameters** .

Beispiel

Formale Beschreibung

Hat als Kontext: [USEFUL-LIFE](#) p. 617

Ist Kontext für: [AVAILABILITY](#) p. 38, [LIFE-TIME](#) p. 132, [OPERATING-TIME](#) p. 169, [PRM](#) p. 177



USEFUL-LIFE-PRMS.PNG

2.755 USER-INTERFACE

Beschreibung

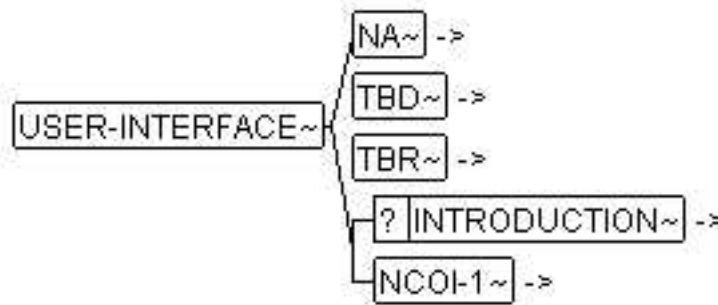
Use *USER-INTERFACE* to enter the **user interface** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-INTERFACES](#) p. 109

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [NCOI-1](#) p. 162



USER-INTERFACE.PNG

2.756

V

Beschreibung

Use <V> to enter a numerical value.

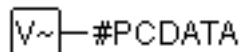
Beispiel

See [Chapter 2.285 SW-ARRAY-INDEX](#) p. 237 .

Formale Beschreibung

Hat als Kontext: [CONF-DEFAULT-VALUE](#) p. 58, [CONF-ITEM](#) p. 59, [CONF-PRO-VALUE](#) p. 63, [SW-COMPU-CONST](#) p. 332, [SW-COMPU-DENOMINATOR](#) p. 333, [SW-COMPU-INVERSE-VALUE](#) p. 335, [SW-COMPU-NUMERATOR](#) p. 341, [SW-VALUES-CODED](#) p. 560, [SW-VALUES-CODED-HEX](#) p. 560, [SW-VALUES-GENERIC](#) p. 561, [SW-VALUES-PHYS](#) p. 562, [VG](#) p. 629

Ist Kontext für: Text



VPNG

2.757

VALUE

Beschreibung

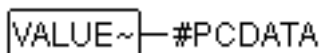
Use <VALUE>, to enter the **value** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHAR-VALUE](#) p. 624

Ist Kontext für: Text



VALUE.PNG

2.758

VARIANT-CHAR

Beschreibung

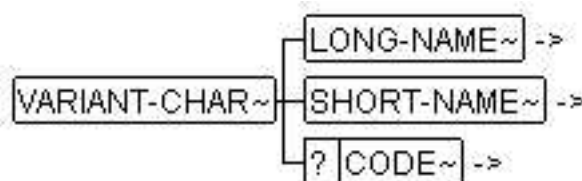
Use <VARIANT-CHAR> to enter the **variant characteristic** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHARS](#) p. 624

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [CODE](#) p. 47



VARIANT-CHAR.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[TYPE] (required)	namedtokengroup	<ul style="list-style-type: none"> NEW-PART-NUMBER NO-NEW-PART-NUMBER 	NEW-PART-NUMBER: new part number; NO-NEW-PART-NUMBER: no new part number.
[ID] (implied)	id		Unambiguous identifier of the element within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	VARIANT-CHAR	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.759 VARIANT-CHAR-ASSIGN

Beschreibung

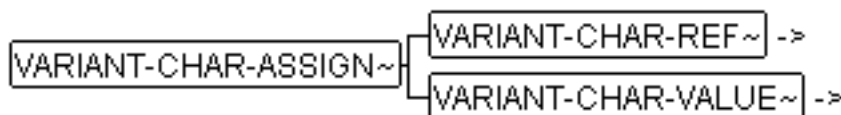
Use <VARIANT-CHAR-ASSIGN> to enter the **assignment** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHAR-ASSIGNS](#) p. 621

Ist Kontext für: [VARIANT-CHAR-REF](#) p. 622, [VARIANT-CHAR-VALUE](#) p. 624



VARIANT-CHAR-ASSIGN.PNG

2.760 VARIANT-CHAR-ASSIGNS

Beschreibung

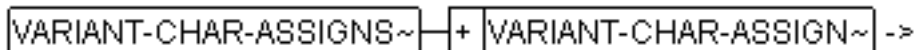
Use <VARIANT-CHAR-ASSIGNS>, to enter the **assignments** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-DEF](#) p. 624

Ist Kontext für: [VARIANT-CHAR-ASSIGN](#) p. 621



VARIANT-CHAR-ASSIGNS.PNG

2.761

VARIANT-CHAR-REF

Beschreibung

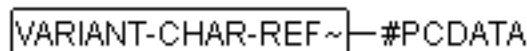
Use <VARIANT-CHAR-REF>, to enter the **reference** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHAR-ASSIGN](#) p. 621

Ist Kontext für: Text



VARIANT-CHAR-REF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[F-ID-CLASS] (fixed)	nmtoken	VARIANT-CHAR	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.762 VARIANT-CHAR-VALUE

Beschreibung

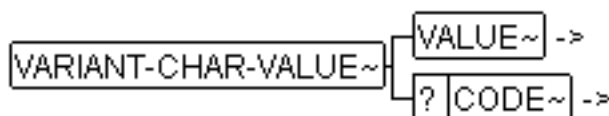
Use <VARIANT-CHAR-VALUE>, to enter the **value** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-CHAR-ASSIGN](#) p. 621

Ist Kontext für: [VALUE](#) p. 619, [CODE](#) p. 47



VARIANT-CHAR-VALUE.PNG

2.763 VARIANT-CHARS

Beschreibung

Container for <VARIANT-CHAR>s.

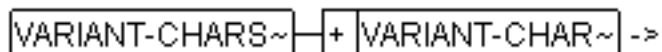
Beispiel

Fuzzy fuzzy

Formale Beschreibung

Hat als Kontext: [VARIANT-SPEC](#) p. 626

Ist Kontext für: [VARIANT-CHAR](#) p. 620



VARIANT-CHARS.PNG

2.764 VARIANT-DEF

Beschreibung

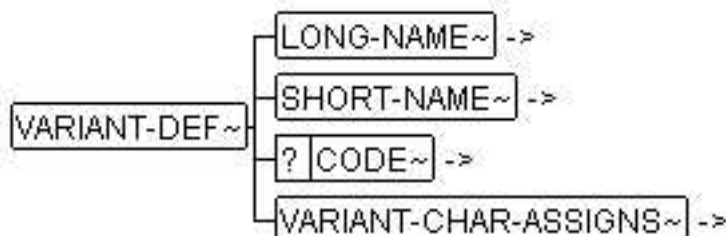
Use <VARIANT-DEF>, to enter the **variant identification** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-DEFS](#) p. 625

Ist Kontext für: [LONG-NAME](#) p. 134, [SHORT-NAME](#) p. 212, [CODE](#) p. 47, [VARIANT-CHAR-ASSIGNS](#) p. 621



VARIANT-DEF.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	VARIANT-DEF	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.765 VARIANT-DEFS

Beschreibung

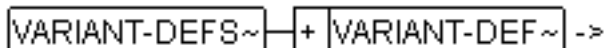
Use `<VARIANT-DEFS>`, to enter the **variant definitions** .

Beispiel

Formale Beschreibung

Hat als Kontext: [VARIANT-SPEC](#) p. 626

Ist Kontext für: [VARIANT-DEF](#) p. 624



VARIANT-DEFS.PNG

2.766 VARIANT-SPEC

Beschreibung

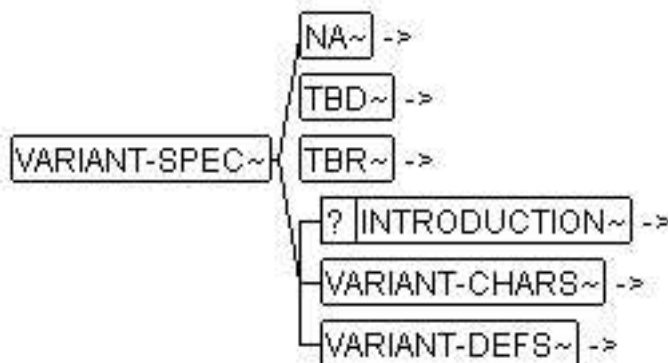
Use `<VARIANT-SPEC>`, to enter the **variant specifications** .

Beispiel

Formale Beschreibung

Hat als Kontext: [GENERAL-PROJECT-DATA](#) p. 111

Ist Kontext für: [NA](#) p. 159, [TBD](#) p. 595, [TBR](#) p. 597, [INTRODUCTION](#) p. 124, [VARIANT-CHARS](#) p. 624, [VARIANT-DEFS](#) p. 625



VARIANT-SPEC.PNG

2.767 VERBATIM

Beschreibung

`<VERBATIM>` is a paragraph in which white-space (in particular blanks and line feeds) is obeyed. This enables basic preformatting to be carried out, which can even be displayed on simple devices. Behavior is the same as PRE in *HTML* .

Beispiel

```

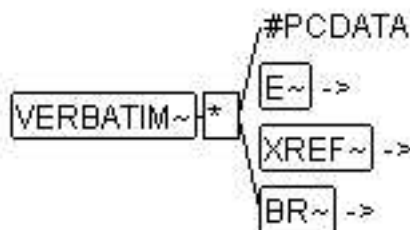
<VERBATIM>
    This is the system to demonstrate, how CDF should work.

    I make it in three lines to demonstrate, how VERBATIM works.
</VERBATIM>
  
```

Formale Beschreibung

Hat als Kontext: [ADD-INFO](#) p. 26, [ADD-INFO-5](#) p. 28, [ANNOTATION-TEXT](#) p. 33, [CHAPTER](#) p. 44, [CONF-RULE-DOC](#) p. 65, [CRITICAL-ASPECTS](#) p. 74, [ENTRY](#) p. 90, [FIGURE](#) p. 95, [FORMULA](#) p. 100, [FREE-INFO](#) p. 103, [INTRODUCTION](#) p. 124, [ITEM](#) p. 126, [LABELED-ITEM](#) p. 129, [MSR-PROCESSING-LOG](#) p. 144, [MSR-QUERY-RESULT-P-1](#) p. 150, [MSR-QUERY-RESULT-P-2](#) p. 150, [NCOI-1](#) p. 162, [NCOI-3](#) p. 163, [REALTIME-REQUIREMENTS](#) p. 186, [REMARK](#) p. 189, [REQUIREMENT-BODY](#) p. 192, [REQUIREMENTS-DEPENDENCY](#) p. 196, [RISKS](#) p. 200, [SW-ADDR-METHOD-DESC](#) p. 229, [SW-APPLICATION-NOTES](#) p. 234, [SW-CARB-DOC](#) p. 275, [SW-CODE-SYNTAX-DESC](#) p. 313, [SW-FEATURE-DEF](#) p. 391, [SW-FEATURE-DESC](#) p. 392, [SW-GENERIC-AXIS-DESC](#) p. 414, [SW-MAINTENANCE-NOTES](#) p. 436, [SW-TEST-DESC](#) p. 543, [SYN-FORMAT](#) p. 585, [TECHNICAL-ASPECTS](#) p. 603, [TOPIC-1](#) p. 610, [TOPIC-2](#) p. 612

Ist Kontext für: [Text](#), [E](#) p. 88, [XREF](#) p. 633, [BR](#) p. 40



VERBATIM.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ALLOW-BREAK] (default)	nmtoken	1	Checks whether page breaks may be included in a <VERBATIM> . NO-ALLOW-BREAK means that the user is responsible for confining the layout to a page.
[FLOAT] (implied)	namedtokengroup	<ul style="list-style-type: none"> FLOAT NO-FLOAT 	Permits a check, in the case of a <VERBATIM> that cannot be broken up, to determine whether the <VERBATIM> can be shifted elsewhere, so that the page can be used to a greater advantage (compare to flat at TeX).

Attribut	Typ	Wertebereich	Anmerkungen
[HELP-ENTRY] (implied)	cdata		Enables the help to be called by marking the father element. The syntax has its origins in the help system utilized. This is often used to calculate a widget name hierarchy from a widow system, which is then correlated with the help entries. For example:
[KEEP-WITH-PREVIOUS] (implied)	namedtokengroup	<ul style="list-style-type: none"> KEEP NO-KEEP 	This makes it compulsory for the current element to be formatted on the same page as the previous element, during page formatting (KEEP). If the value is NO-KEEP, the positioning of the element on the next page relates to the position of the previous element.
[PGWIDE] (implied)	namedtokengroup	<ul style="list-style-type: none"> PGWIDE NO-PGWIDE 	PGWIDE: enables the contents of the current element to be formatted using the entire width of the page. This for example, is beneficial in the case of code containing more than 80 characters per line.
[xml:space] (fixed)	namedtokengroup	<ul style="list-style-type: none"> preserve 	

2.768

VF

Beschreibung

Value calculated via a system constant. This element is included in every case, where parameters should be generated from numerical values during compile time (not runtime!). Thus for example, the influence of the cylinder number on conversion formulae, can be introduced in a repeatable manner.

Beispiel

The example below demonstrates the influence of the cylinder number on the ignition interval:

```
<VF>360/ <SW-SYSTEMCONST-CODED-REF>ZYLZA<SW-SYSTEMCONST-CODED-REF> </VF>
```

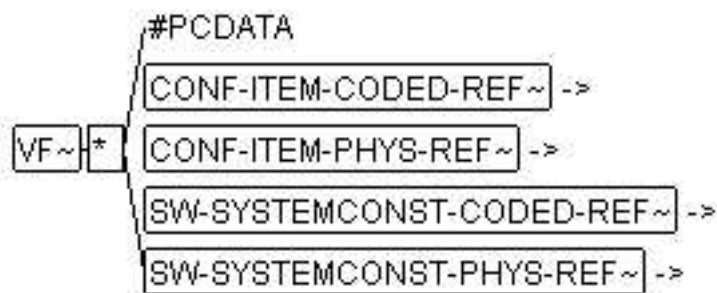
The following example shows the influence of the demanded maximum engine speed on the 8-bit engine speed quantization that results from it:

```
<VF><SW-SYSTEMCONST-PHYS-REF>MAXDRZ<SW-SYSTEMCONST-PHYS-REF>/256 </VF>
```

Formale Beschreibung

Hat als Kontext: [CONF-DEFAULT-VALUE](#) p. 58, [CONF-ITEM](#) p. 59, [CONF-PRO-VALUE](#) p. 63, [SW-ARRAYSIZE](#) p. 239, [SW-CALIBRATION-HANDLE](#) p. 256, [SW-COMPU-CONST](#) p. 332, [SW-COMPU-DENOMINATOR](#) p. 333, [SW-COMPU-INVERSE-VALUE](#) p. 335, [SW-COMPU-NUMERATOR](#) p. 341, [SW-GENERIC-AXIS-PARAM](#) p. 414, [SW-VALUES-CODED](#) p. 560, [SW-VALUES-CODED-HEX](#) p. 560, [SW-VALUES-GENERIC](#) p. 561, [SW-VALUES-PHYS](#) p. 562, [VG](#) p. 629

Ist Kontext für: Text, [CONF-ITEM-CODED-REF](#) p. 60, [CONF-ITEM-PHYS-REF](#) p. 61, [SW-SYSTEMCONST-CODED-REF](#) p. 524, [SW-SYSTEMCONST-PHYS-REF](#) p. 526



VF.PNG

2.769

VG

Beschreibung

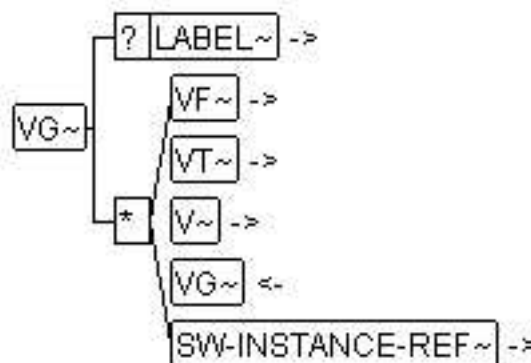
This element enables value parameters to be grouped. It can be used to perform row and column-orientated groupings, so that these can be output in grouped form, for example on the screen.

Beispiel

Formale Beschreibung

Hat als Kontext: [SW-VALUES-CODED](#) p. 560, [SW-VALUES-CODED-HEX](#) p. 560, [SW-VALUES-GENERIC](#) p. 561, [SW-VALUES-PHYS](#) p. 562, [VG](#) p. 629

Ist Kontext für: [LABEL](#) p. 128, [VF](#) p. 628, [VT](#) p. 630, [V](#) p. 619, [VG](#) p. 629, [SW-INSTANCE-REF](#) p. 424



VG.PNG

2.770 VT

Beschreibung

<VT> represents one particular textual value of the calibration item.

Beispiel

```
<SW-INSTANCE>
  <LONG-NAME>Stupid Messages</LONG-NAME>
  <SHORT-NAME>murph</SHORT-NAME>
  <SW-INSTANCE-PROPS-VARIANTS>
    <SW-INSTANCE-PROPS-VARIANT>
      <SW-AXIS-CONTS>
        <SW-AXIS-CONT>
          <SW-AXIS-INDEX>1</SW-AXIS-INDEX>
          <SW-VALUES-PHYS>
            <V>1</V>
            <V>2</V>
            <V>3</V>
            <V>4</V>
          </SW-VALUES-PHYS>
        </SW-AXIS-CONT>
      <SW-AXIS-CONT>
        <SW-AXIS-INDEX>0</SW-AXIS-INDEX>
        <SW-VALUES-PHYS>
          <VT>Things appear to be nearer than they are</VT>
          <VT>Shit happens</VT>
          <VT>Things will never be the same</VT>
          <VT>Stay tuned to see unexpected results</VT>
        </SW-VALUES-PHYS>
      </SW-AXIS-CONT>
    </SW-AXIS-CONTS>
  </SW-INSTANCE-PROPS-VARIANT>
</SW-INSTANCE-PROPS-VARIANTS>
</SW-INSTANCE>
```

Formale Beschreibung

Hat als Kontext: [CONF-DEFAULT-VALUE p. 58](#), [CONF-ITEM p. 59](#), [CONF-PRO-VALUE p. 63](#), [DCI-ENUM-ENTRY p. 78](#), [SW-COMPU-CONST p. 332](#), [SW-COMPU-INVERSE-VALUE p. 335](#), [SW-VALUES-CODED p. 560](#), [SW-VALUES-CODED-HEX p. 560](#), [SW-VALUES-GENERIC p. 561](#), [SW-VALUES-PHYS p. 562](#), [SW-VCD-CRITERION-POS p. 578](#), [SW-VCD-CRITERION-VALUE p. 582](#), [VG p. 629](#)

Ist Kontext für: Text

VT~—#PCDATA

VT.PNG

2.771 XDOC

Beschreibung

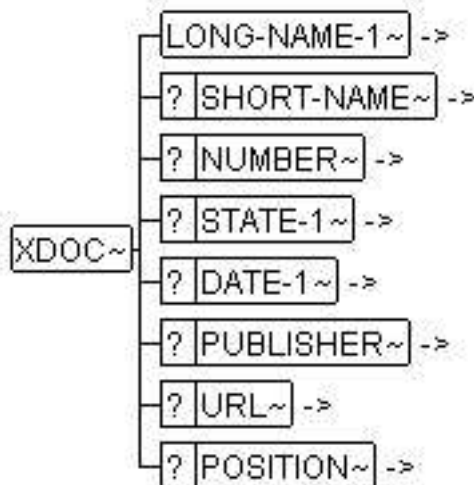
Use <XDOC> , to reference an external document.

Beispiel

Formale Beschreibung

Hat als Kontext: [P p. 172](#), [TBR p. 597](#)

Ist Kontext für: [LONG-NAME-1 p. 135](#), [SHORT-NAME p. 212](#), [NUMBER p. 167](#), [STATE-1 p. 218](#), [DATE-1 p. 77](#), [PUBLISHER p. 185](#), [URL p. 616](#), [POSITION p. 174](#)



XDOC.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	XDOC	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.772 XFILE

Beschreibung

Use <XFILE> , to reference an external file.

Beispiel

```

<P>Please refer to
  <XFILE>
  <LONG-NAME-1>Parameter Contents file</LONG-NAME-1>

```

```

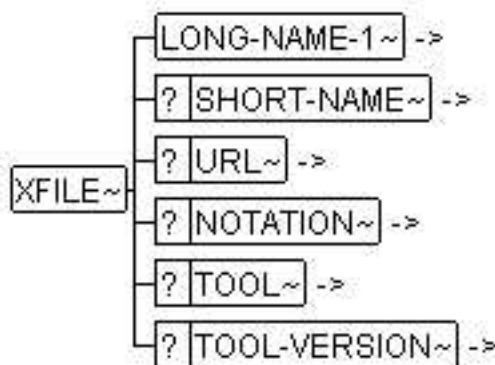
<SHORT-NAME>0711paco</SHORT-NAME>
<URL>../pacos/0711paco.xml</URL>
<NOTATION>PaCo</NOTATION>
<TOOL>DDCL</TOOL>
<TOOL-VERSION>1.3</TOOL-VERSION>
</XFILE>
</P>

```

Formale Beschreibung

Hat als Kontext: [P p. 172](#), [TBR p. 597](#)

Ist Kontext für: [LONG-NAME-1 p. 135](#), [SHORT-NAME p. 212](#), [URL p. 616](#), [NOTATION p. 166](#), [TOOL p. 609](#), [TOOL-VERSION p. 610](#)



XFILE.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	XFILE	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF> can only link to an object which is classified as "TEAM-MEMBER" e. g: <TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER>.

2.773 XREF

Beschreibung

Use `<XREF>` , to generate cross-references within the document.

Beispiel

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [MSR-QUERY-ARG](#) p. 145, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597, [VERBATIM](#) p. 626

Ist Kontext für: Text

`XREF~` — #PCDATA

XREFPING

Attribut	Typ	Wertebereich	Anmerkungen
[ID-CLASS] (required)	nmtoken		ID-CLASS. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><XREF IDREF="ID1" ID-CLASS="TEAM-MEMBER">...</XREF></code> can only link to an object which is classified as "TEAM-MEMBER" e.g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[SHOW-CONTENT] (default)	namedtokengroup	<ul style="list-style-type: none"> SHOW-CONTENT NO-SHOW-CONTENT 	CONTENT determines whether the contents of an element should be output
[SHOW-RESOURCE-LONG-NAME] (default)	namedtokengroup	<ul style="list-style-type: none"> SHOW-LONG-NAME NO-SHOW-LONG-NAME 	Select SHOW-LONG-NAME to display the paragraph label of the reference target.



Attribut	Typ	Wertebereich	Anmerkungen
[SHOW-RESOURCE-NUMBER] (default)	namedtokengroup	<ul style="list-style-type: none">• SHOW-NUMBER• NO-SHOW-NUMBER	Select SHOW-NUMBER to display the paragraph number of the reference target.
[SHOW-RESOURCE-PAGE] (default)	namedtokengroup	<ul style="list-style-type: none">• SHOW-PAGE• NO-SHOW-PAGE	Select SHOW-LONG-NAME to display the page number of the reference target.
[SHOW-RESOURCE-SHORT-NAME] (default)	namedtokengroup	<ul style="list-style-type: none">• SHOW-SHORT-NAME• NO-SHOW-SHORT-NAME	Select SHOW-LONG-NAME to display the abbreviation of the reference target.
[SHOW-RESOURCE-TYPE] (default)	namedtokengroup	<ul style="list-style-type: none">• SHOW-TYPE• NO-SHOW-TYPE	Select SHOW-TYPE to display the paragraph type of the reference target.
[SHOW-SEE] (default)	namedtokengroup	<ul style="list-style-type: none">• SHOW-SEE• NO-SHOW-SEE	Determines whether the fixed text "see" should be output.
[EXT-ID-CLASS] (implied)	cdata		External ID Class. The value of this attribute classifies links and external link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an external object which is classified as "TEAM-MEMBER" e.g. <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .
[ID-REF] (implied)	idref		Reference to an element made unambiguous through an ID attribute value within the document.

Attribut	Typ	Wertebereich	Anmerkungen
[HYNAMES] (fixed)	nmtokens	LINKEND ID-REF	HYNAMES is a mapping functionality defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). The names of the locator attributes (e.g. ID-REF), used to address the target of a hyperlink, can be mapped to names defined in the HYTIME standard, LINKEND. This enables the use of a generic architectural form processor for link processing and transition.
[HYTIME] (fixed)	nmtoken	CLINK	HYTIME is the standard attribute used to define a HYTIME architectural form. This functionality is defined in ISO 10744 HYTIME (Hypermedia/Time-based Structuring Language). It enables the use of a generic architectural form processor for link processing and transition.

2.774 XREF-TARGET

Beschreibung

This element specifies a reference target which can be scattered throughout the text.

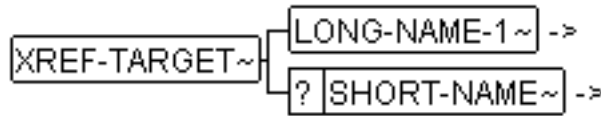
Beispiel

```
<P>Dieses Element spezifiziert ein <XREF-TARGET ID="DC92181212673206"><LONG-NAME-1>Verweisziel</LONG-NAME-1></XREF-TARGET>
welches in den Text eingestreut werden kann. </P>
```

Formale Beschreibung

Hat als Kontext: [CHANGE](#) p. 43, [DESC](#) p. 83, [INDENT-SAMPLE](#) p. 121, [ITEM-LABEL](#) p. 127, [MSR-QUERY-RESULT-TEXT](#) p. 151, [P](#) p. 172, [REASON](#) p. 187, [TBR](#) p. 597

Ist Kontext für: [LONG-NAME-1](#) p. 135, [SHORT-NAME](#) p. 212



XREF-TARGET.PNG

Attribut	Typ	Wertebereich	Anmerkungen
[ID] (implied)	id		Unambiguous identifier of the element within the document.
[F-ID-CLASS] (fixed)	nmtoken	XREF-TARGET	Fixed ID Class. The value of this attribute classifies links and link targets. This expresses the semantic constraint that a link can only link to an object of the same class. E.g. a link: <code><TEAM-MEMBER-REF IDREF="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER-REF></code> can only link to an object which is classified as "TEAM-MEMBER" e. g: <code><TEAM-MEMBER ID="ID1" F-ID-CLASS="TEAM-MEMBER">...</TEAM-MEMBER></code> .

2.775 XSD-PATTERN

Beschreibung

this element specifies a constraint on the value space of an element (e.ge. a **<CONF-VALUE>**) which is achieved by constraining the lexical spac to literals which match a specific pattern. The value of pattern must be a regular expression.

If in doubt, refer to *XML Schema Part 2: Datatypes* (<http://www.w3.org/TR/xmlschema-2>).

Beispiel

```
<XSD-PATTERN>[0-9]{5}(-[0-9]{4})?</XSD-PATTERN>
```

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-CONSTR](#) p. 71

Ist Kontext für: Text

XSD-PATTERN~|#PCDATA

XSD-PATTERN.PNG

2.776 XSD-WHITE-SPACE

Beschreibung

This element constrains the value space a **<CONF-VALUE>** such that the various behaviors specified in Attribute Value Normalization in [XML 1.0 (Second Edition)] are realized. The value of **<XSD-WHITE-SPACE>** must be one of *{preserve, replace, collapse}*.

Hint:

The notation #xA used here represents the Universal Character Set (UCS) code point hexadecimal A (line feed), which is denoted by U+000A. This notation is to be distinguished from, which is the XML character reference to that same UCS code point

preserve No normalization is done, the value is not changed (this is the behavior required by [XML 1.0 (Second Edition)] for element content)

replace All occurrences of #x9 (tab), #xA (line feed) and #xD (carriage return) are replaced with #x20 (space)

collapse After the processing implied by replace, contiguous sequences of #x20's are collapsed to a single #x20, and leading and trailing #x20's are removed.

For more details refer to *XML Schema Part 2: Datatypes* (<http://www.w3.org/TR/2001/REC-xmlschema-2-2001-07-12/datatypes.html>)

Beispiel

```
<XSD-WHITE-SPACE>preserve</XSD-WHITE-SPACE>
```

Formale Beschreibung

Hat als Kontext: [CONF-VALUE-PROPS](#) p. 72

Ist Kontext für: Text

XSD-WHITE-SPACE~|#PCDATA

XSD-WHITE-SPACE.PNG

2.777 ZIP

Beschreibung

Use **<ZIP>**, to enter the zip code of the company address, of a project participant.

Beispiel



Formale Beschreibung

Hat als Kontext: [TEAM-MEMBER](#) p. 599

Ist Kontext für: Text

ZIP~|#PCDATA

ZIPPING



Document Administration

Table : team members

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Table : version overview

Version	Date	Publisher	State
1.1	2005-05-31	Herbert Klein	Release
1.0	2005-02-16	Gottfried Frenzen	Draft

Table : modifications

Version	Change	Related to
1.1	Adapt document to MSRSW V2.3.0	Content

Table : modifications included

Date	Chapter	Change	Related to
Nr. 1, 2005-05-31	Gesamt	Adapt document to MSRSW V2.3.0	Content



References

Standards

Designation: [ISO-8601]: Representation of dates and times [7777](#)

External Documents

Designation: ASAM MCD 2 Harmonized Data Objects, Version 1.0-RC2 [210](#)

Designation: ASAM MCD 2 Harmonized Data Objects

Date: 2004/06/02

Publisher: ASAM e.V.

Relevant Position: Chapter 9 - compuMethods [337](#)

Designation: Codes for the Representation of Names of Languages [131](#)

URL: <http://www.loc.gov/standards/iso639-2/langcodes.html>

Designation: SRBG [89](#)

URL: <http://www.w3.org/Graphics/Color/sRGB>

Designation: XML Schema Part 2: Datatypes [638](#)

URL: <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/datatypes.html>

Designation: XML Schema Part 2: Datatypes [637](#)

URL: <http://www.w3.org/TR/xmlschema-2>



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