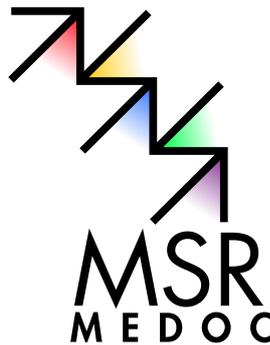




SGML as integral part of the engineering process



MSR-MEDOC, Bernhard Weichel

Table of Contents

	Table of Contents	2
	List of Figures	3
	Introduction	4
1	Presentation	5
	Documentadministration	38

List of Figures

Figure 1	Folie 1	5
Figure 2	Folie 2	6
Figure 3	Folie 3	7
Figure 4	Folie 4	8
Figure 5	Folie 5	9
Figure 6	Folie 6	10
Figure 7	Folie 7	11
Figure 8	Folie 8	12
Figure 9	Folie 9	13
Figure 10	Folie 10	14
Figure 11	Folie 11	15
Figure 12	Folie 12	16
Figure 13	Folie 13	17
Figure 14	Folie 14	18
Figure 15	Folie 15	19
Figure 16	Folie 16	20
Figure 17	Folie 17	21
Figure 18	Folie 18	22
Figure 19	Folie 19	23
Figure 20	Folie 20	24
Figure 21	Folie 21	25
Figure 22	Folie 22	26
Figure 23	Folie 23	27
Figure 24	Folie 24	28
Figure 25	Folie 25	29
Figure 26	Folie 26	30
Figure 27	Folie 27	31
Figure 28	Folie 28	32
Figure 29	Folie 29	33
Figure 30	Folie 30	34
Figure 31	Folie 31	35
Figure 32	Folie 32	36
Figure 33	Folie 33	37

Introduction

Companies **MSR-MEDOC [MEDOC]**

Name Roles	Departement	Address	Contact
Bernhard Weichel			

Version Information

Document Part	Editor			
	Company	Version	State	Remarks
1 RD 2002-11-03 For details refer to nr. 1, Page	Bernhard Weichel			
	MEDOC			

1 Presentation

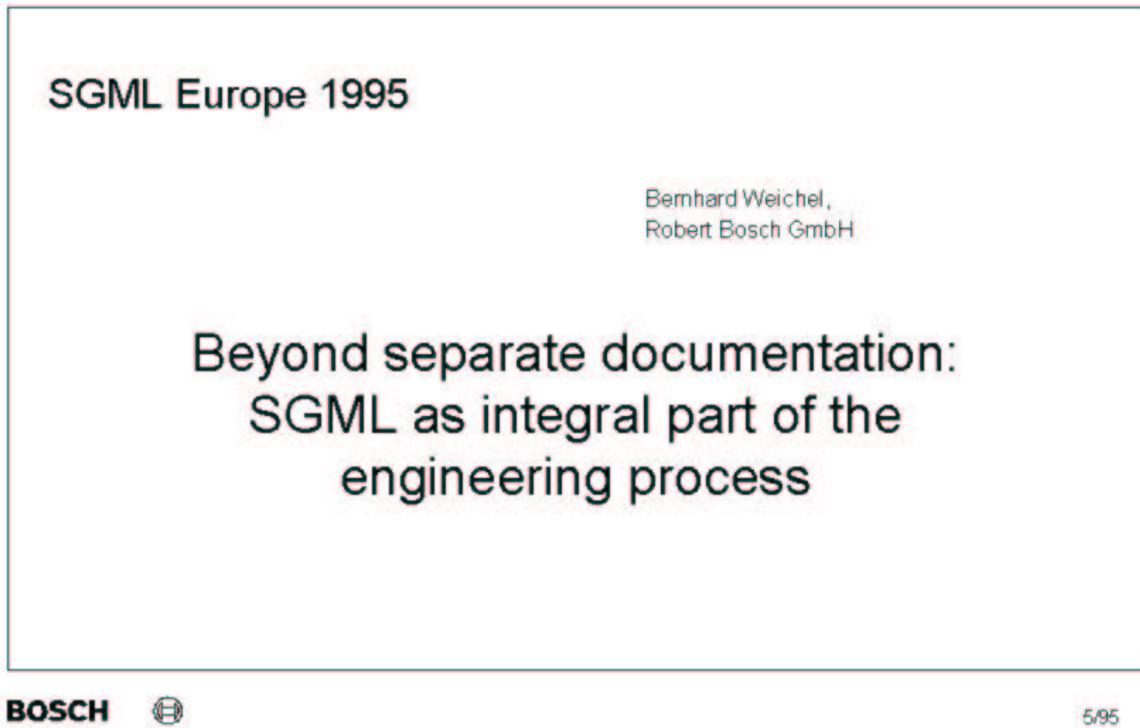


Figure 1: Folie 1

SGML95_Folie1.JPG

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 6/39 Date: 2002-11-03 State: RD</p>
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Introduction

- I am Bernhard Weichel, section manager for technical data processing at Bosch (automotive equipment supplier)
- I was asked to tell the user's perspective. I am doing this from a position which is between the endusers and the tool vendors
- Note that the statements are my personal ones, and represent no official statement of my employer



5/95

Figure 2: Folie 2

The process environment

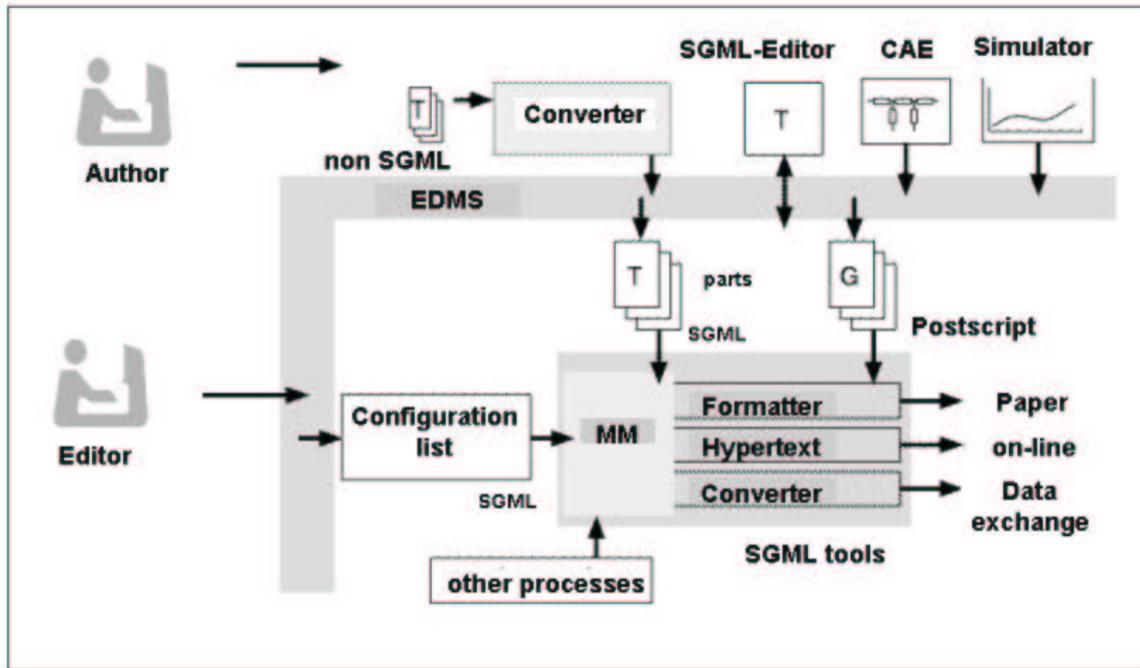


Figure 3: Folie 3



Example

```

<ORG>
  <PROJECTINFO> <PROJECTNAME> this is the demoproject </PROJECTNAME>
  <PROJECTNR> 3857345 </PROJECTNR>
</PROJECTINFO> </ORG>

<DATAVERSION> <DVTITLE> The final release </DVTITLE>
<DVDATE> 05-may-97 </DVDATE> </DATAVERSION>

<PARAMETERDUMP> Parameter square : <TITLE> Parameter </TITLE>

<LINEART>
  x      x^2
  -----
  1      1
  2      4
  3      9
</LINEART> </PARAMETERDUMP>

```

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Figure 4: Folie 4

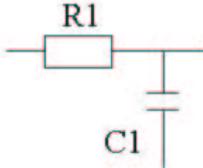
Integration of document, schematic and partlist

```

<drawing name="RC.GED">
<partlist>
<pos>R1</pos>
<val>50k</val>
<pos>C1</pos>
<val>0.1u</val>
</partlist>
<desc>
<p>this is an ordinary
RC filter with nothing
special</p>

```

Position	Wert
R1	10k
C1	0.1u



This is an ordinary RC filter with nothing special.

Figure 5: Folie 5

The compound document approach

I tried to build such systems using a proprietary compound document architecture ... and failed

- no sufficient structure support
- access limited by the proprietary tools
- very high implementation effort
- lack of standards
- our own knowledge
- ...

But I found it ... SGML

Figure 6: Folie 6

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 11/39 Date: 2002-11-03 State: RD</p>
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What do we do with SGML?

Documentation area

- Produce data for documentation
- Give documentation a standardized content
- Have the machine do the processing
 - Paper is the intermediate step between the ancient role and SGML

Other options

- transfer data
- create "databases" for multiple queries
- archive data
- synchronize engineering processes

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Figure 7: Folie 7

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 12/39 Date: 2002-11-03 State: RD</p>
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What is the situation of authors?

- they are capturing textual data
 - structured in paragraphs lists etc.
 - structured semantically


```

          <app-note>
          <p>ever use sgml where possible</ü>
          </appnote>
          
```
- they are referring to resp. incorporating other data
 - special data of CAx Systems
 - other instances
 - Multimedia
 - Database

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5/95

SGML95_Folie8.JPG

Figure 8: Folie 8

How do they refer to external data?

Special data (e.g. CAx Systems)

- some access methods using attributes
- the user has to know what to do

Other instances

- external entities

Multimedia

- same methods as special data

Database information

- SQL

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Figure 9: Folie 9

What happens then?

The data go out of authors influence!

- used by other author
- used in entire systems
- used on other processes

SGML can produce anything

- Paperware
- Multimedia/Hypermedia
- SGML
- Datafiles
- Data in Databases
- Annotations in CAX Systems

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Figure 10: Folie 10

Authors look for WYSIWYG (WYSIWYWF)

This is a real problem, cause nobody knows what will be done with the data

The author must see if his data is correct

- see in another form
- see resolution and results of links
- see some processing results
- see the SGML Tags

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Figure 11: Folie 11

The problem with graphics

Various proprietary graphic formats

Standard graphic formats with vendor specific flavors

- Invoke the graphic tool from SGML
- influence the storage in appropriate forms
- get data into subelements and attributes

We need something really like SGML for graphics

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Figure 12: Folie 12

The objectives

SGML

- works across platforms/vendors/tools
- is long term predictable
- provide direct access to data in well known formats
- can be process in various thingners

OpenDoc/OLE

- integrates objects (tools)
- provide tool based access to data in unknown formats
- support final presentation formats
- be part of the operating systems

Do the objectives match?

Figure 13: Folie 13

I have a dream

Use the appropriate tool to capture

- Netlists in a schematic editor
- Math in a math editor
-

No compromise SGML

- DTD support in all phases
 - E.g. cell content in a table editor
 - Annotations in graphics
- Entities etca. in objects
- Use SGML tool if there is nothing else

Performance as if it were one system



Figure 14: Folie 14

I have another dream

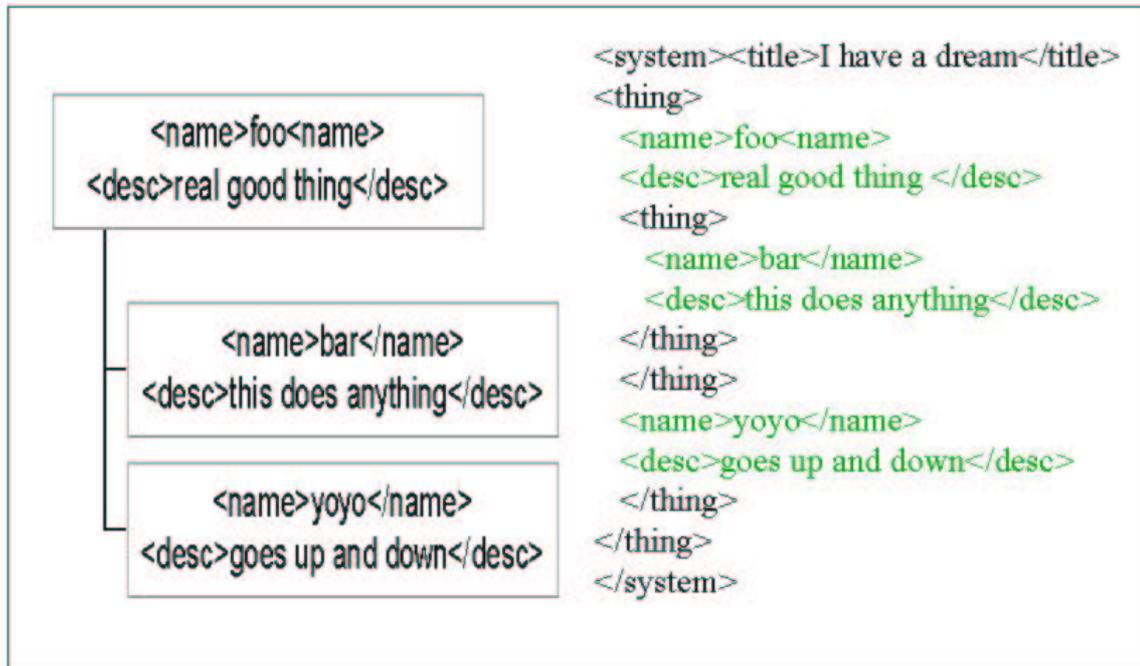


Figure 16: Folie 16

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 22/39 Date: 2002-11-03 State: RD</p>
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The MSR-DOC.DTD in the German automotive industry

Bernhard Weichel
Robert Bosch GmbH

BOSCH 

Contents of presentation see p. 55 - 61 in the proceedings

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SGML95_Folie18.JPG

Figure 18: Folie 18

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 23/39 Date: 2002-11-03 State: RD</p>
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The MSR Project in the German automotive industry

MSR (Messen Steuern Regeln)

MSR is a project in the German automotive industry

to define methodologies and description means to implement electronic control systems in the automotive domain under special consideration of a closely working together of car manufacturer and automotive equipment supplier.

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SGML95_Folie19.JPG

Figure 19: Folie 19



MSR - the participants

	
BMW AG Daimler Benz AG Porsche AG Volkswagen AG	Robert Bosch GmbH Hella KG Hueck & Co Siemens AG VDO Adolf Schindling AG

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SGML95_Folie20.JPG

Figure 20: Folie 20

MSR objectives

- creating a consistent process chain via standardized interfaces and pilot testing with industrial tools
- simultaneous/concurrent engineering
- enabling electronic management of all design data and automatic generation of design documentation
 - unified partly formalized forms of descriptions
 - avoid errors in early phases
 - reuse of data
- no depending on special tools or platforms

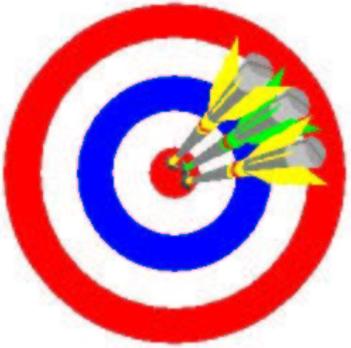


Figure 21: Folie 21

The MSR phase model

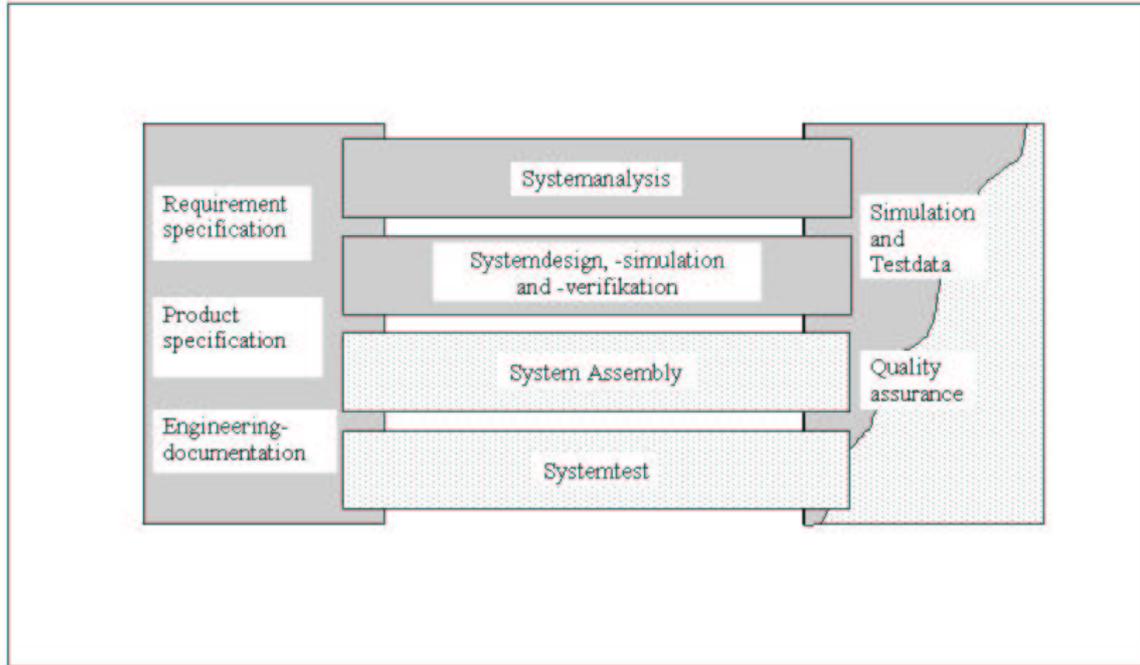


Figure 22: Folie 22

The MSR subprojects

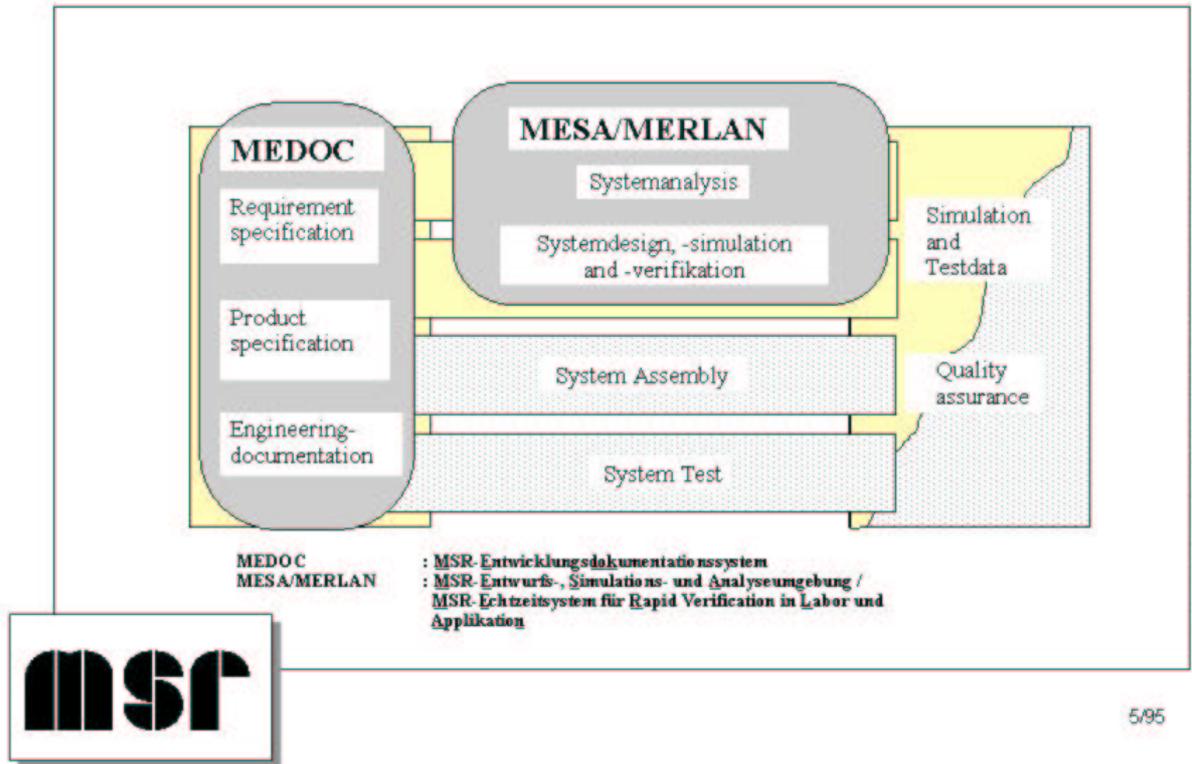
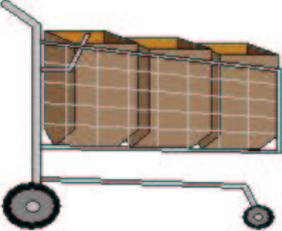


Figure 23: Folie 23

MSR design documentation (MEDOC)

- Started with a documentation system based on a relational database management system
 - no WYSIWYG at all
 - relational database not adequate
 - highly dependant on tools
- Focus now on SGML
 - SGML instances with their well defined structures (DTD) can be treated as database
 - totally tool and platform independent
 - no information loss during data exchange
 - quasi WYSIWYG⁺
 - long term stability



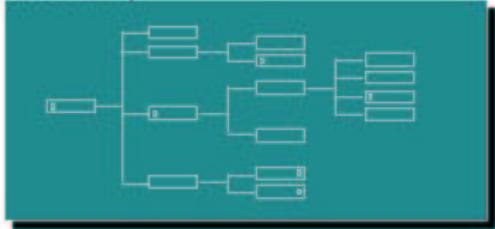


5/95

Figure 24: Folie 24

MSR-DOC.DTD - key features

- representation of the component structure
- detailed description of components
- interfaces, signals and connectivity
- component behavior
 - system behavior
 - environment behavior
- multiple views
 - requirements view
 - specification view
- administrative data
 - synchronize the process data management system (PDMS)



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Figure 25: Folie 25

MSR-DOC.DTD - representation of component structure

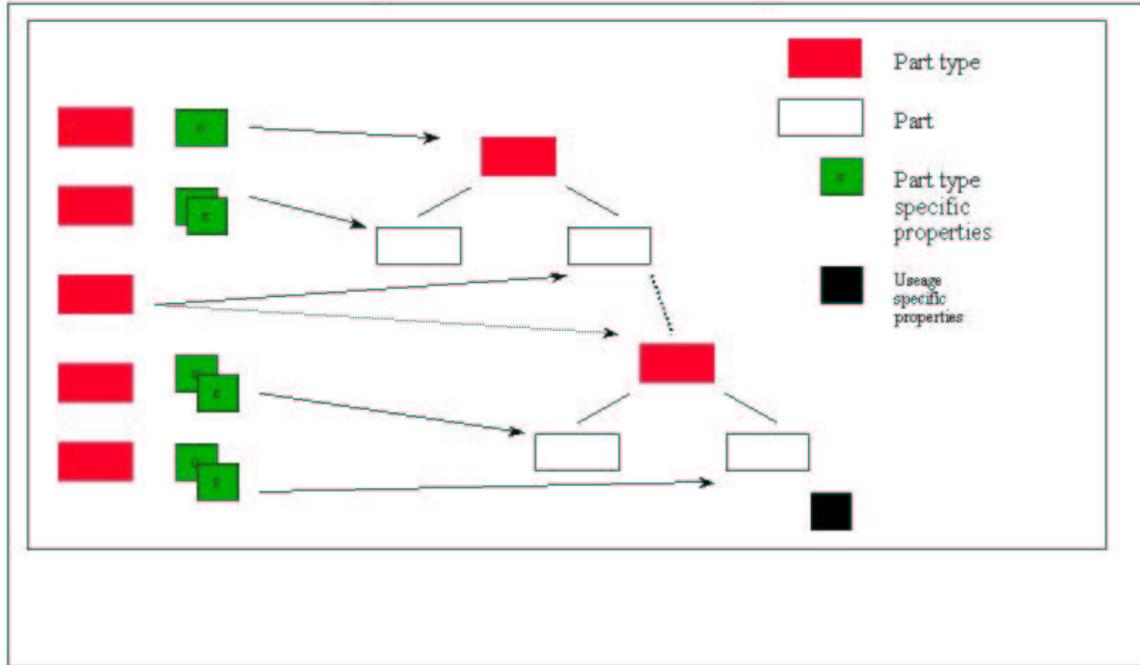


Figure 26: Folie 26

MSR-DOC.DTD description of component

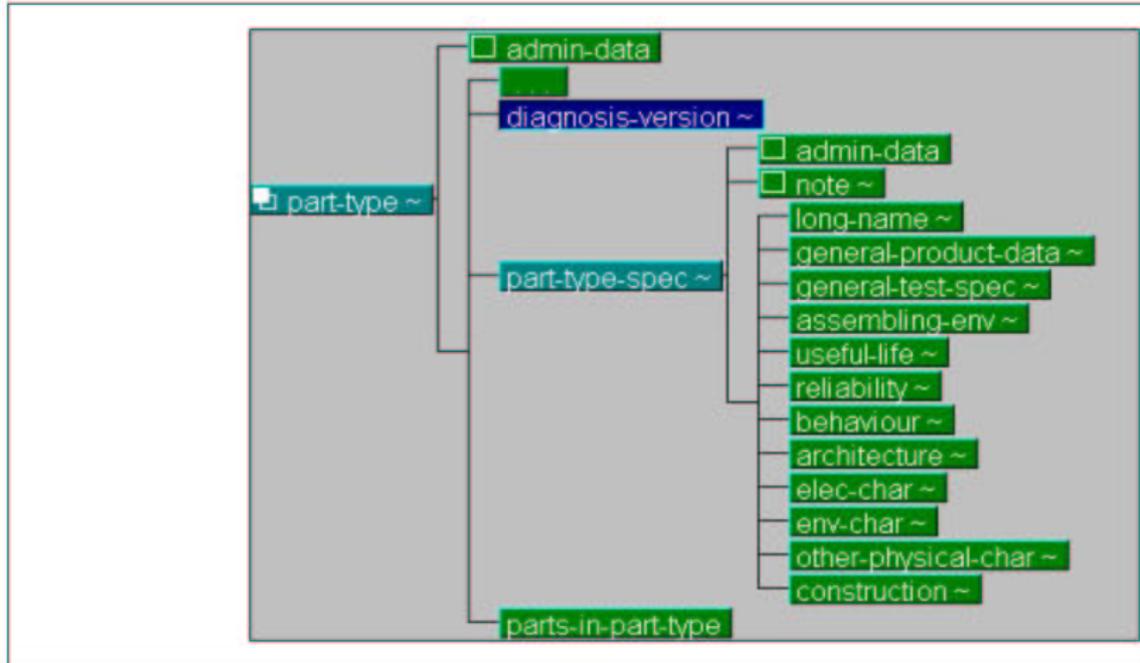


Figure 27: Folie 27



MSR-DOC.DTD interfaces signals and connectivity

```
<SIGNAL> Signal: Typ: DIGITAL Art: ELECTRIC <LONG-NAME> T_KAT </LONG-NAME>

<DESC> Definition | Digitales Signal zur Übermittlung der Katalysatortemperaturen und des
Fehlerbytes an die DME. Es werden ein Startbyte, bis zu 4 Katalysatortemperaturen und ein
Fehlerbyte im Zeitmultiplexverfahren übertragen. | </DESC>

<SIGNAL-PRM> Signalparameter

<PRM> Parameter: <LONG-NAME> Frequenz </LONG-NAME> <SHORT-NAME> {f} </SHORT-NAME>

<DESC> Definition [ ] </DESC>

<PRM-CHAR> <COND> Randbedingung: [ ] </COND>
<MIN> Min: [ 99 ] </MIN>
<TYP> Typ: [ 100 ] </TYP>
<MAX> Max: [ 101 ] </MAX>
<UNIT> Einheit: [ Hz ] </UNIT> </PRM-CHAR> </PRM>
```

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Figure 28: Folie 28

MEDOC Project Version 2.1

MSR-DOC.DTD multiple views

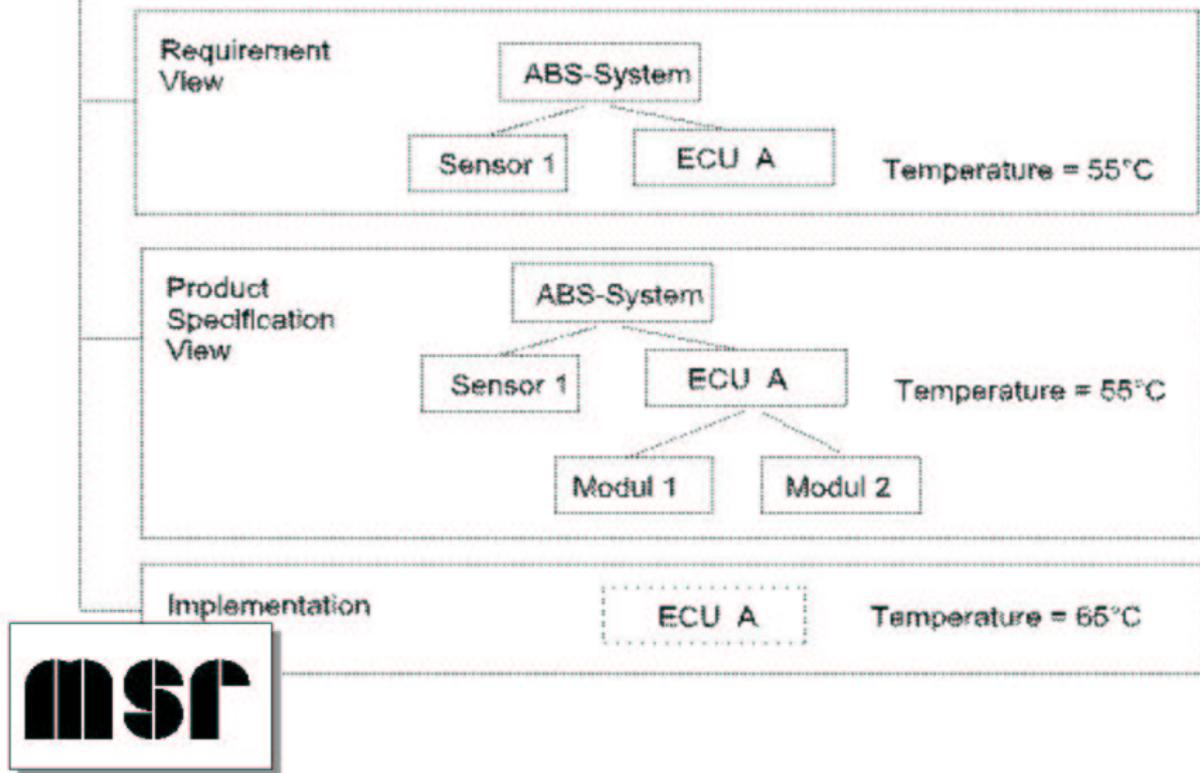


Figure 29: Folie 29

MSR-DOC.DTD - administrative data

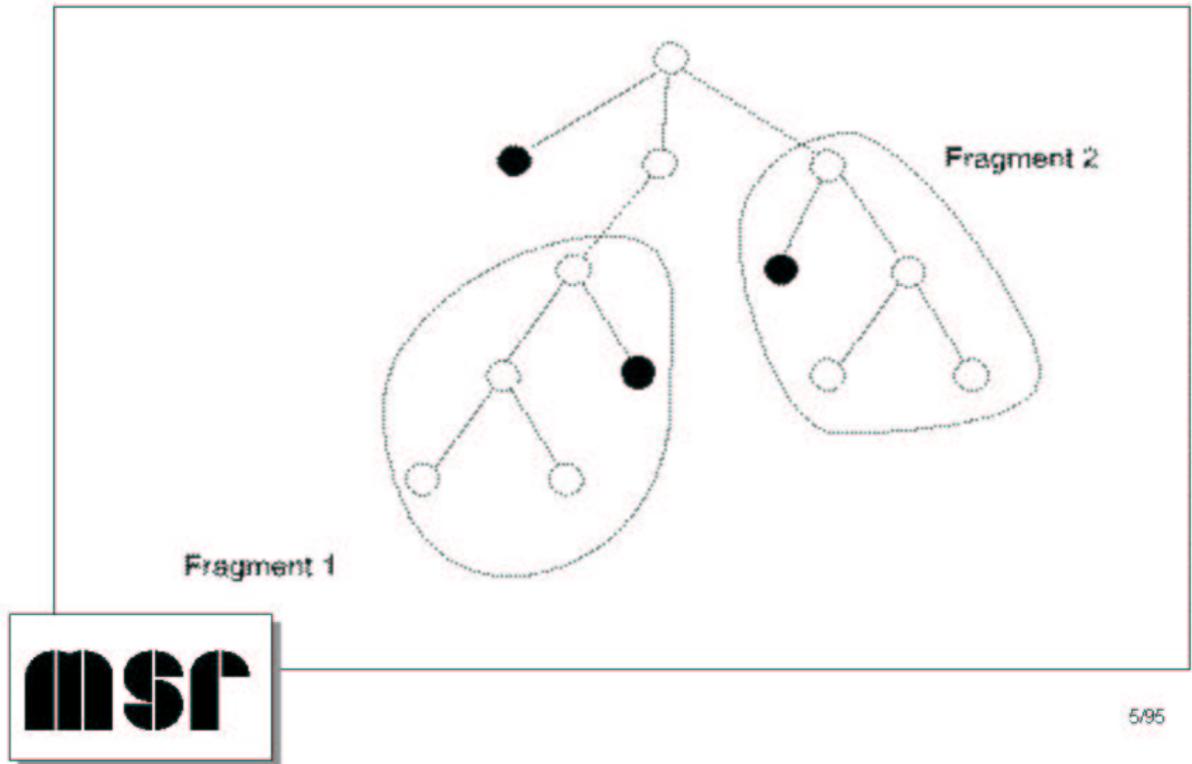


Figure 30: Folie 30

MSR-DOC.DTD ongoing data exchange

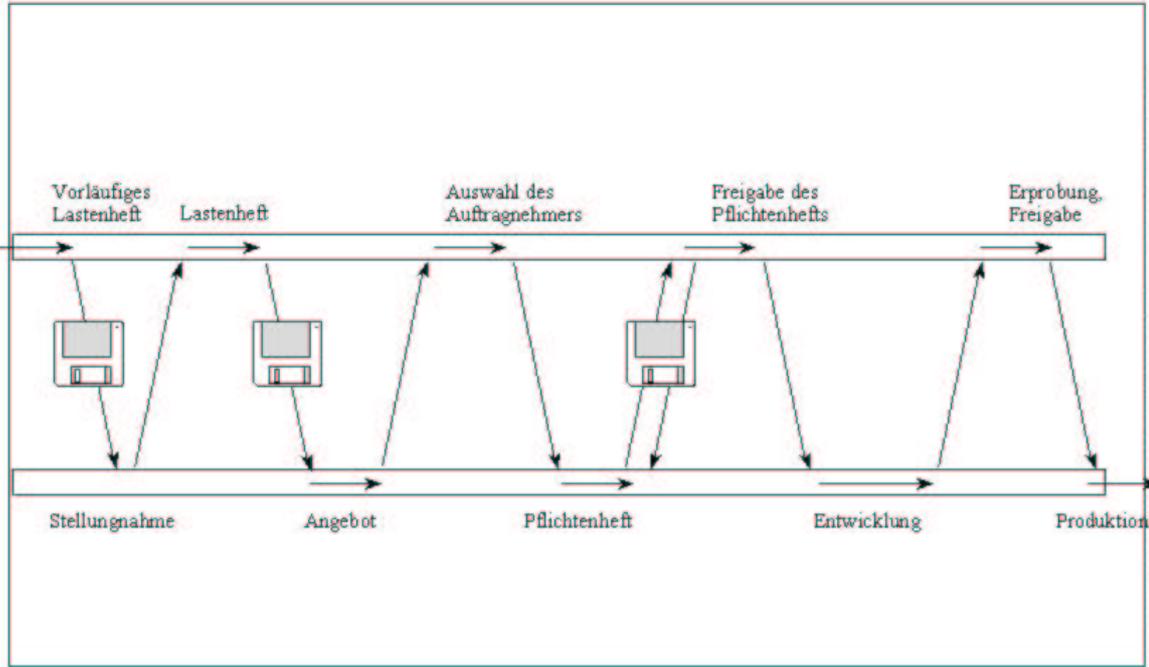


Figure 31: Folie 31

MSR-DOC.DTD across comanies

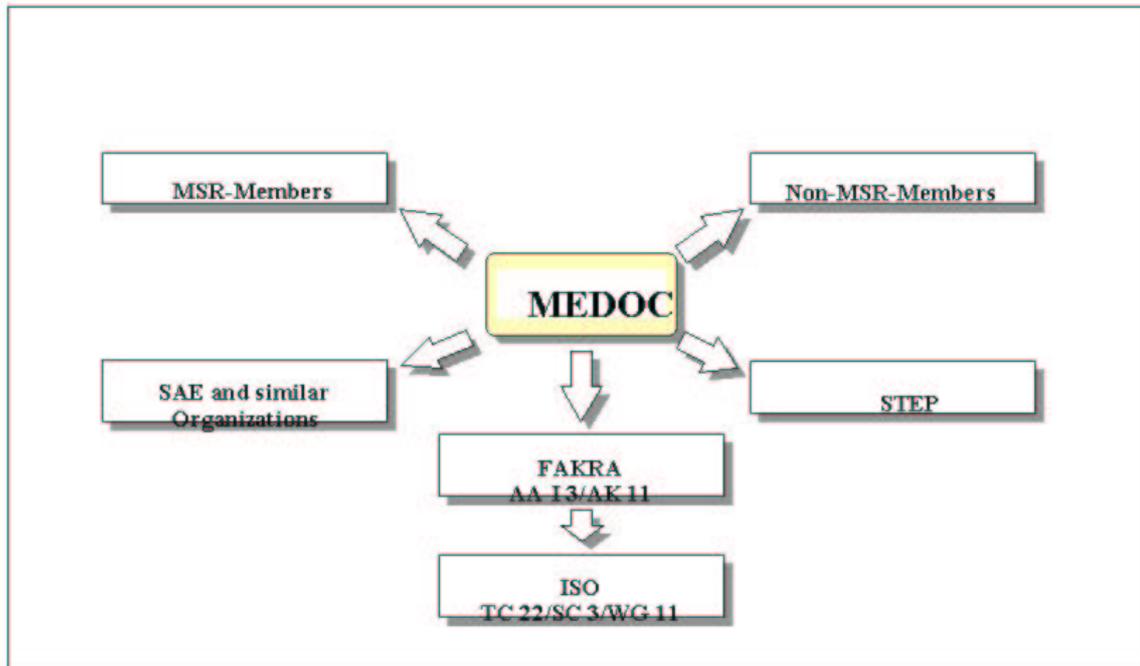


Figure 32: Folie 32

	<p>SGML as integral part of the engineering process SGML Europe 95</p> <p>Chapter: Presentation</p>	<p>Page: 37/39 Date: 2002-11-03 State: RD</p>
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MSR-DOC.DTD - status

- MSR DOC DTD V0.13 finished and reviewed
- Testphase ongoing
- MSR DOC DTD submitted to ISO TC 22/SC 3/WG 11
- Pilot useage starting
- External interest: SAE, PSA, Fiat, Renault, Valeo, ...

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5/95

SGML95_Folie33.JPG

Figure 33: Folie 33

Documentadministration

Versions Overview

Document Part	Date	Editor			
		Company	Version	State	Remarks
From page 4	1	Bernhard Weichel			
	RD 2002-11-03 Changes 1	MEDOC			



Configuration Parameters

Company (—company)

MEDOC

Language (—lang)

English

Treatment of content for Xrefs (—xrefcontent)

Xref classes are shown

Specifying 'See' for XRefs

'See' is to be inserted for xrefs

Treatment of filenames in graphics (—figname)

Filenames for graphics are shown

Treatment of width and height attributes of graphics (—figdimension)

Width and height of graphics is not considered

Titlepage Graphic (—graphic)

No title graphic specified

Logo Graphic (—head-logo)

MSR_cl_sm.eps

Fixtext File (—fixtext)

C:\Programme\medoc\Metapage\mmapps\msrrep\lib\msrrep_ft.xml

Output of Local Administrative Data (—admindata)

Local administrative data is output

Filename

D:\Projekte\1052\new_seite\download\Literature\SGML_Europe_95\xml\sgml95.xml

MetaMorphosis-Version

3.2

Form Version

2.0 (MetaPage)

Date

21/05/2002 07:08:55