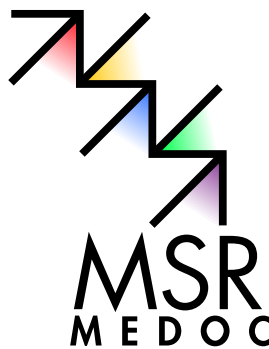
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SGML as integral part of the engineering process



MSR-MEDOC, Bernhard Weichel



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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			

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1 Presentation

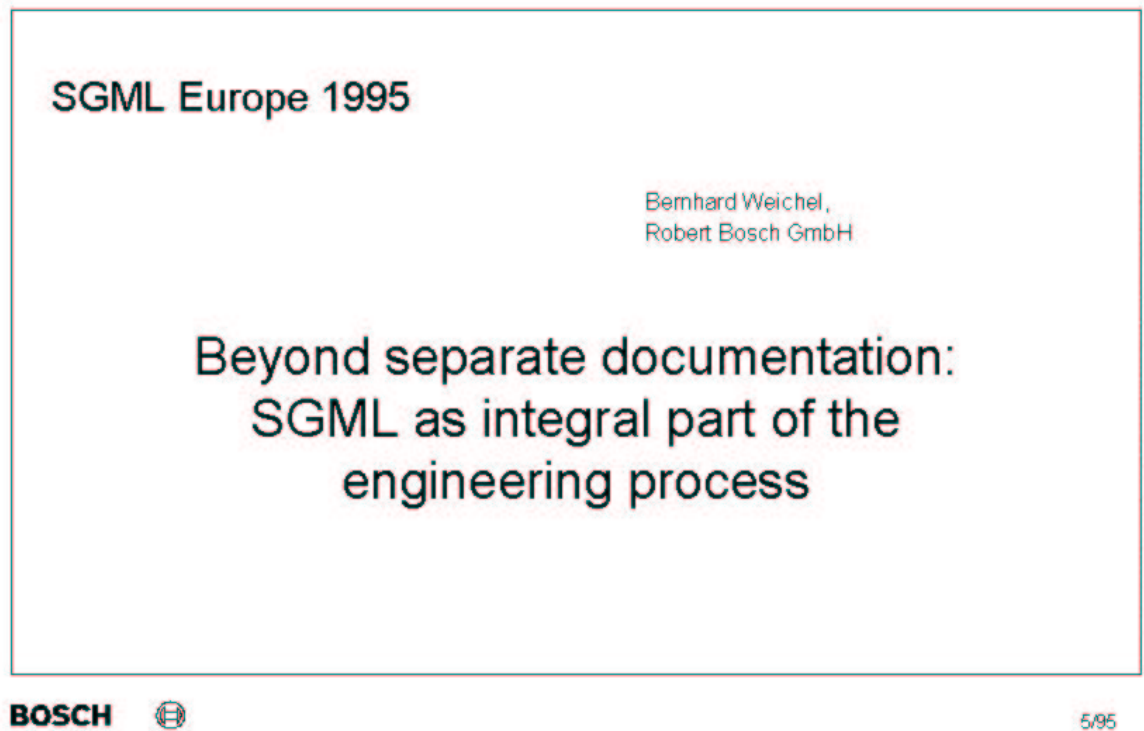



Figure 1: Folie 1

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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

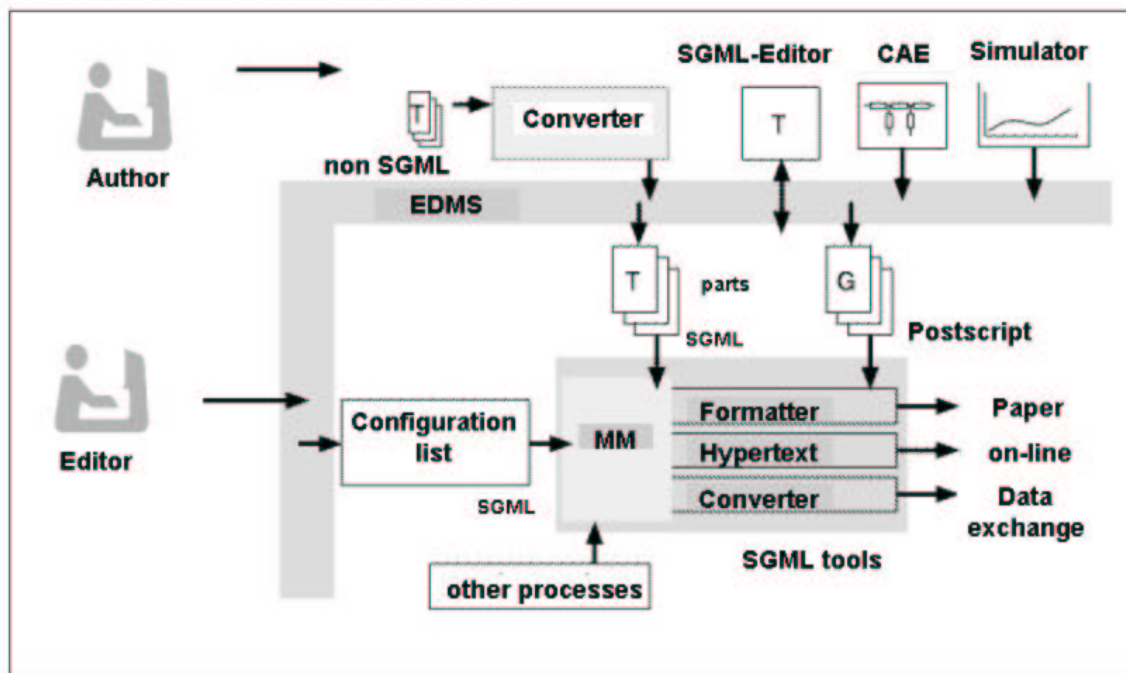
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Figure 2: Folie 2

SGML95_Folie2.JPG

The process environment



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Figure 3: Folie 3

SGML95_Folie3.JPG

Example

```

<ORG>
  <PROJECTINFO>
    <PROJECTNAME>this is the demoproject</PROJECTNAME>
    <PROJECTNR>y3857345</PROJECTNR>
  </PROJECTINFO>
</ORG>

<DATAVERSION>
  <DTITLE>The final release</DTITLE>
  <DDATE>05-may-97</DDATE>
</DATAVERSION>

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

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

```

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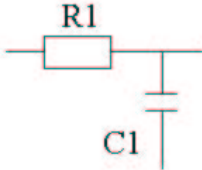
Figure 4: Folie 4

SGML95_Folie4.JPG


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.

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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


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SGML95_Folie6.JPG

Figure 6: Folie 6

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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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SGML95_Folie7.JPG

Figure 7: Folie 7

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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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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

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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SGML95_Folie11.JPG

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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SGML95_Folie12.JPG

Figure 12: Folie 12

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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?

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SGML95_Folie13.JPG

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



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Figure 14: Folie 14

SGML95_Folie14.JPG

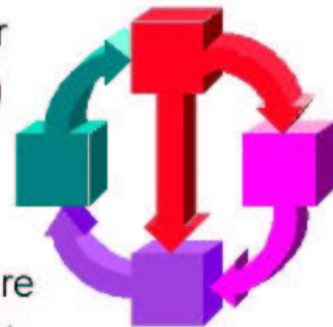
I have another dream

SGML object

- Content dependant formatting
- Provide SGML as a string to the caller
- Knows the environment (entitites etc.)

The embedding System knows the overall structure

- generate the overal document structure
- control the production of the entire instance
- allows to backannotate SGML (read the entire instance and put the pieces into the right place)



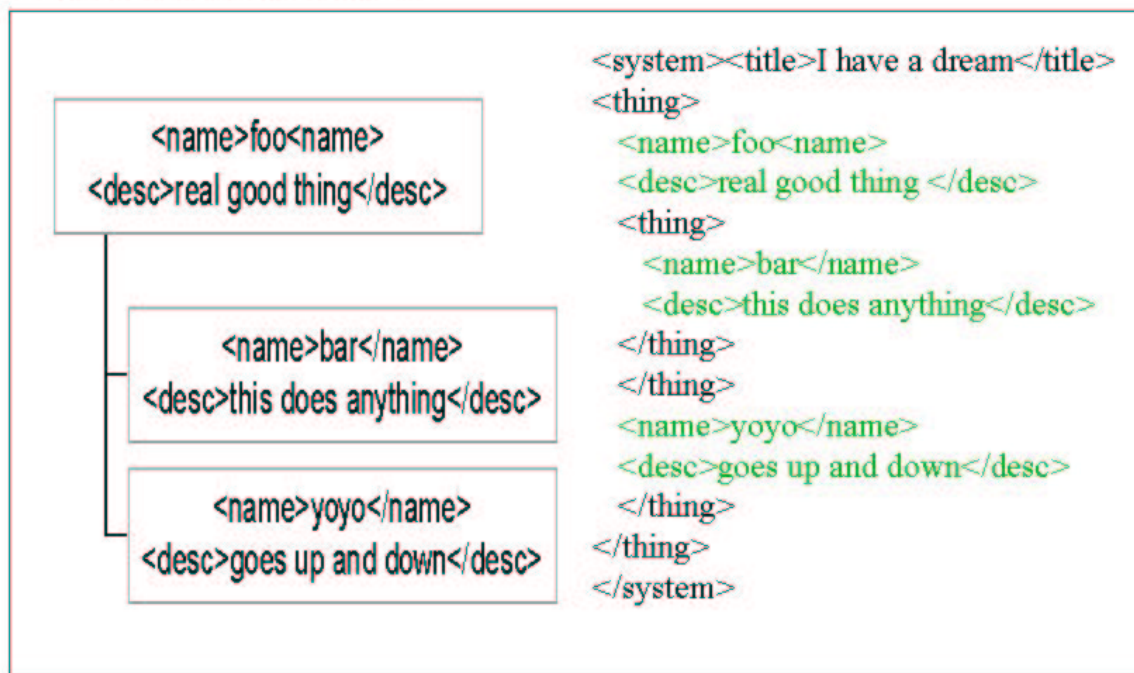
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Figure 15: Folie 15

SGML95_Folie15.JPG

I have another dream




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Figure 16: Folie 16

SGML95_Folie16.JPG

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The key questions to investigate

- What methods does an SGML object provide?
- What methods must be provided by an OpenDoc/OLE object provide to generate SGML?
- Can OpenDoc/OLE objects talk to each other to provide a common service
- How to we communicate the environment (DTD, entities etc)
- How do we get the required representations?
 - SGML
 - Layout
- No compromise in terms of portability, tool independance of data etc.


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SGML95_Folie17.JPG

Figure 17: Folie 17


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The MSR-DOC.DTD in the German automotive industry

Bernhard Weichel
Robert Bosch GmbH

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


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SGML95_Folie18.JPG

Figure 18: Folie 18


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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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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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Figure 20: Folie 20

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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



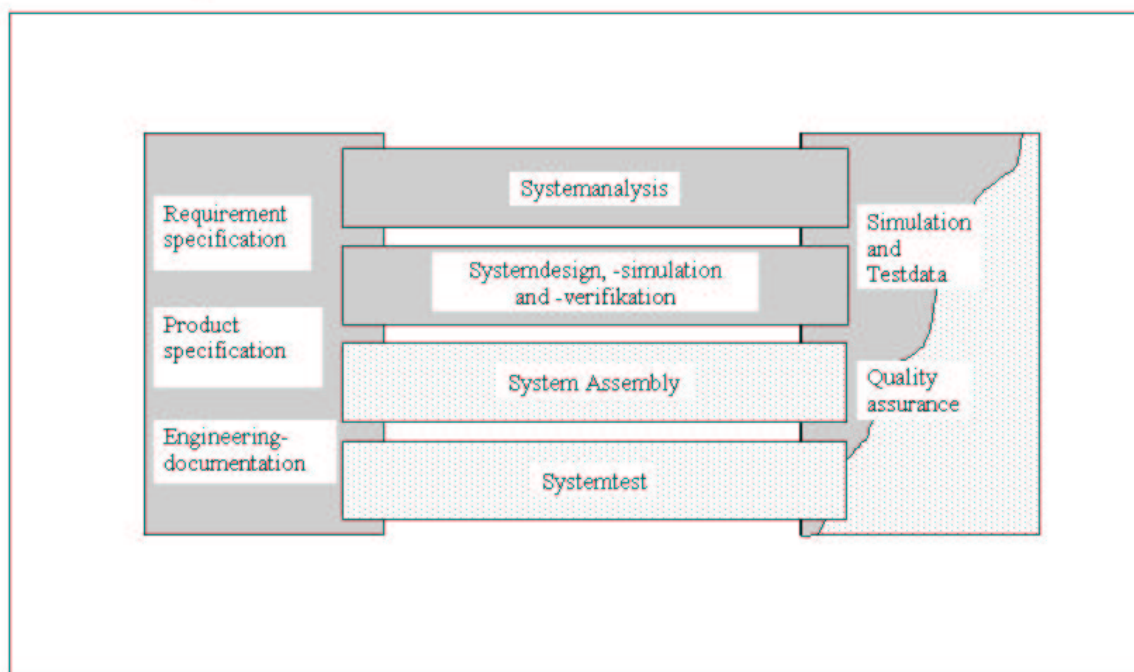
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Figure 21: Folie 21

SGML95_Folie21.JPG

The MSR phase model



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Figure 22: Folie 22

SGML95_Folie22.JPG

The MSR subprojects

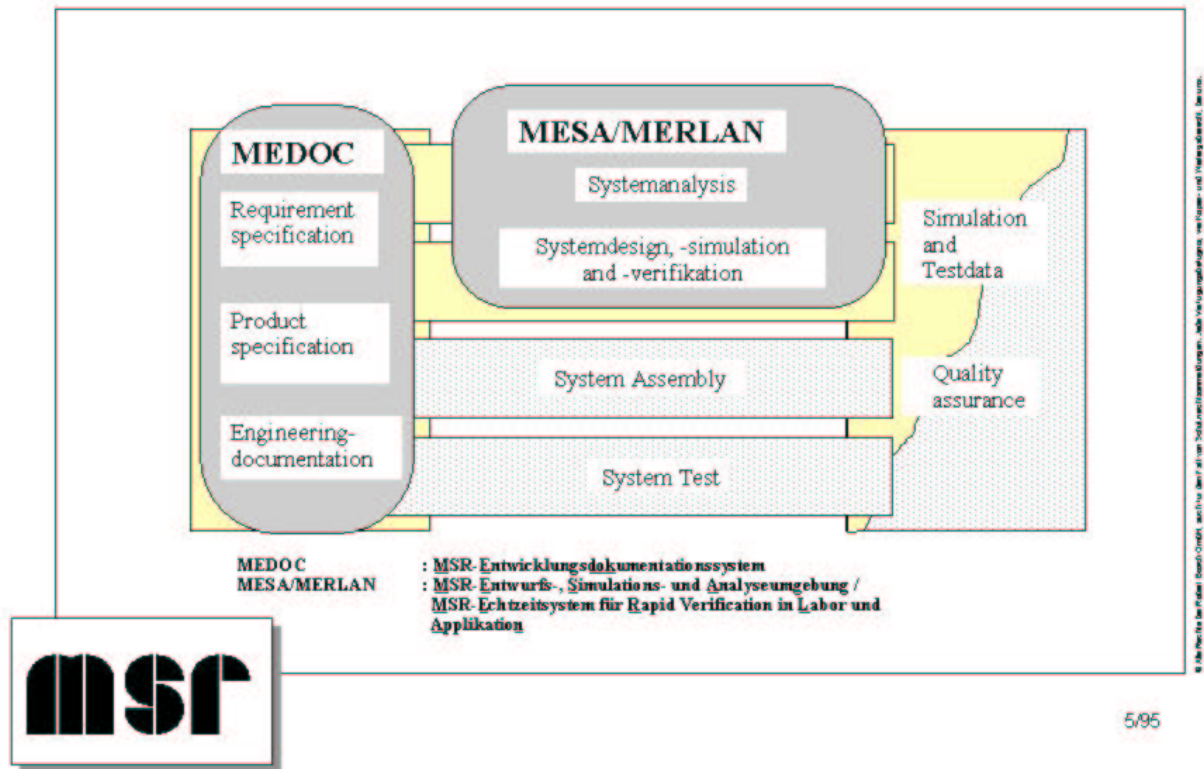

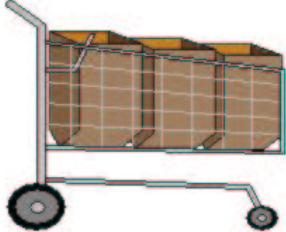



Figure 23: Folie 23

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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





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Figure 24: Folie 24

SGML95_Folie24.JPG

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)

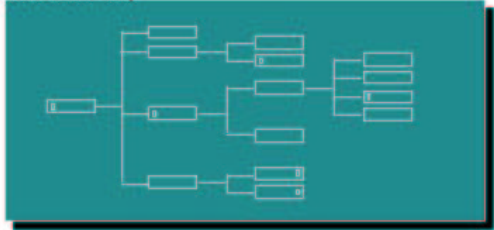
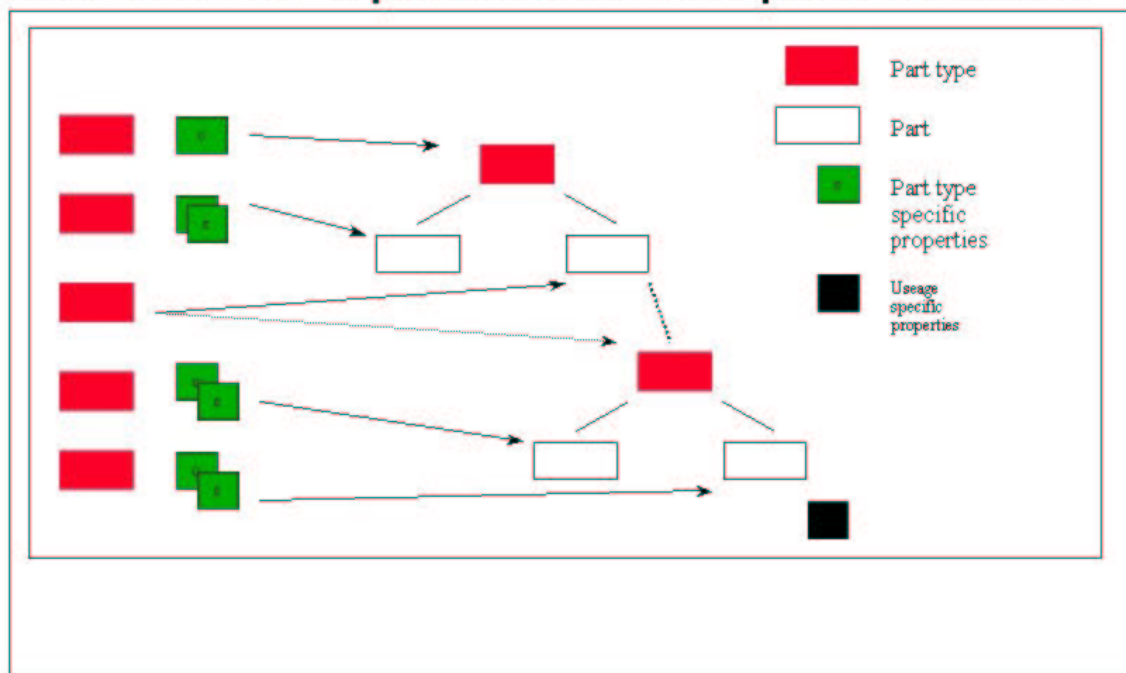


Figure 25: Folie 25

MSR-DOC.DTD - representation of component structure



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Figure 26: Folie 26

SGML95_Folie26.JPG

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**

Figure 28: Folie 28

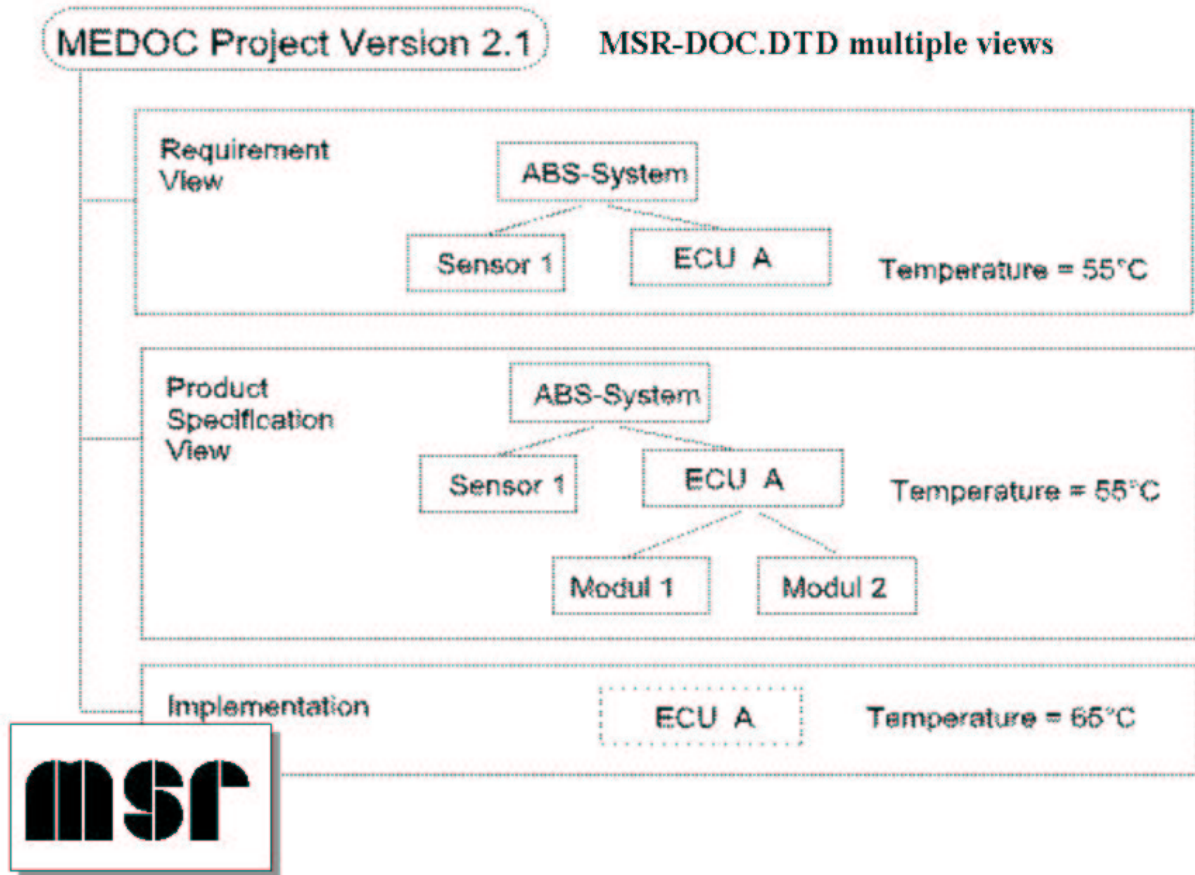


Figure 29: Folie 29

MSR-DOC.DTD ongoing data exchange

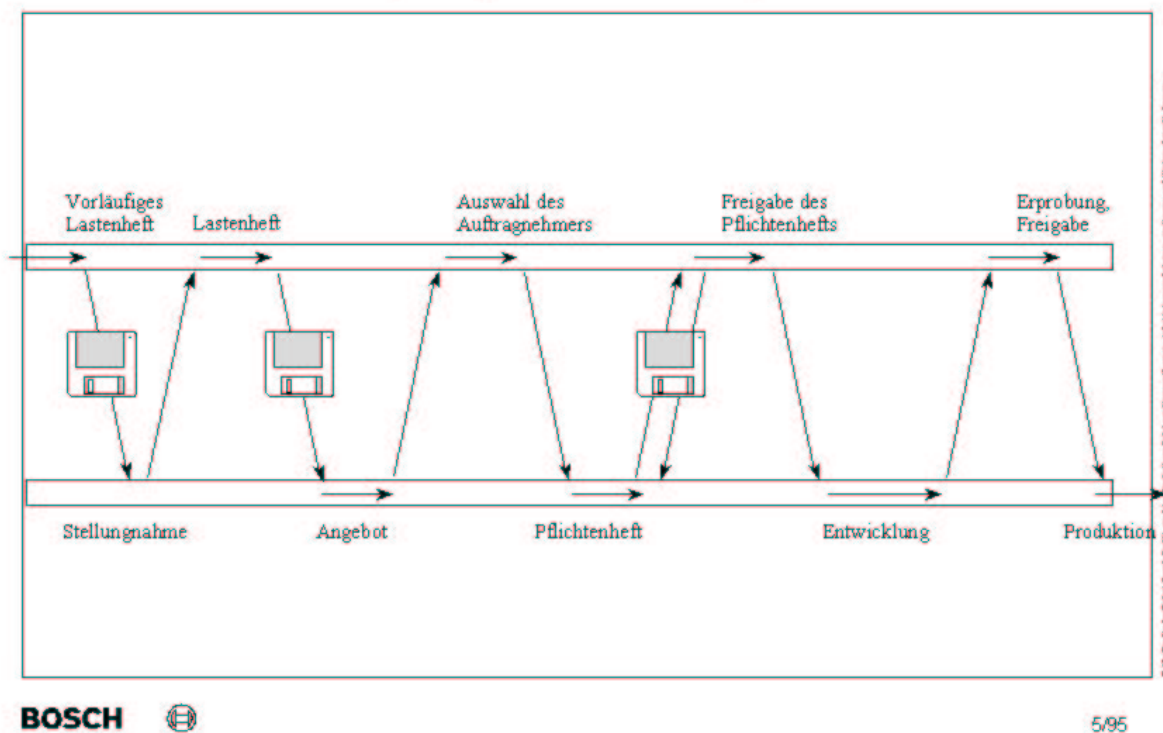
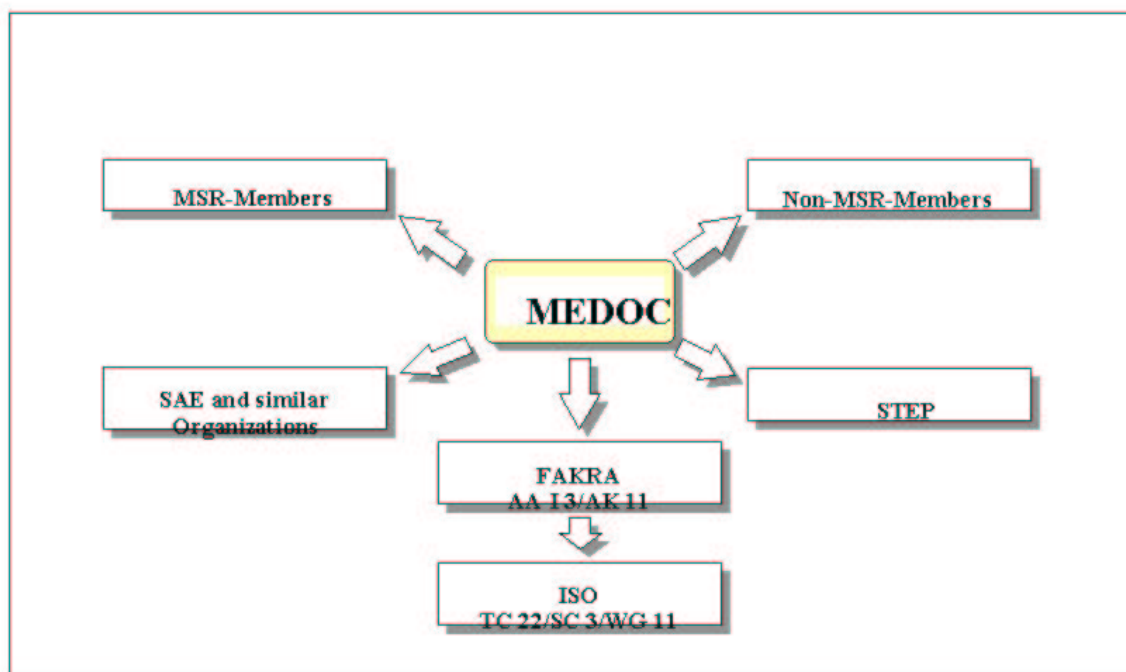


Figure 31: Folie 31

MSR-DOC.DTD across comanies




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SGML95_Folie32.JPG

Figure 32: Folie 32

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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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SGML95_Folie33.JPG


Figure 33: Folie 33

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Documentadministration

Versions Overview

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

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

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\wi1052\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