



# Practical Experiences Gained Through BREX Application in German Military Projects

Montreal, 08.06.2011

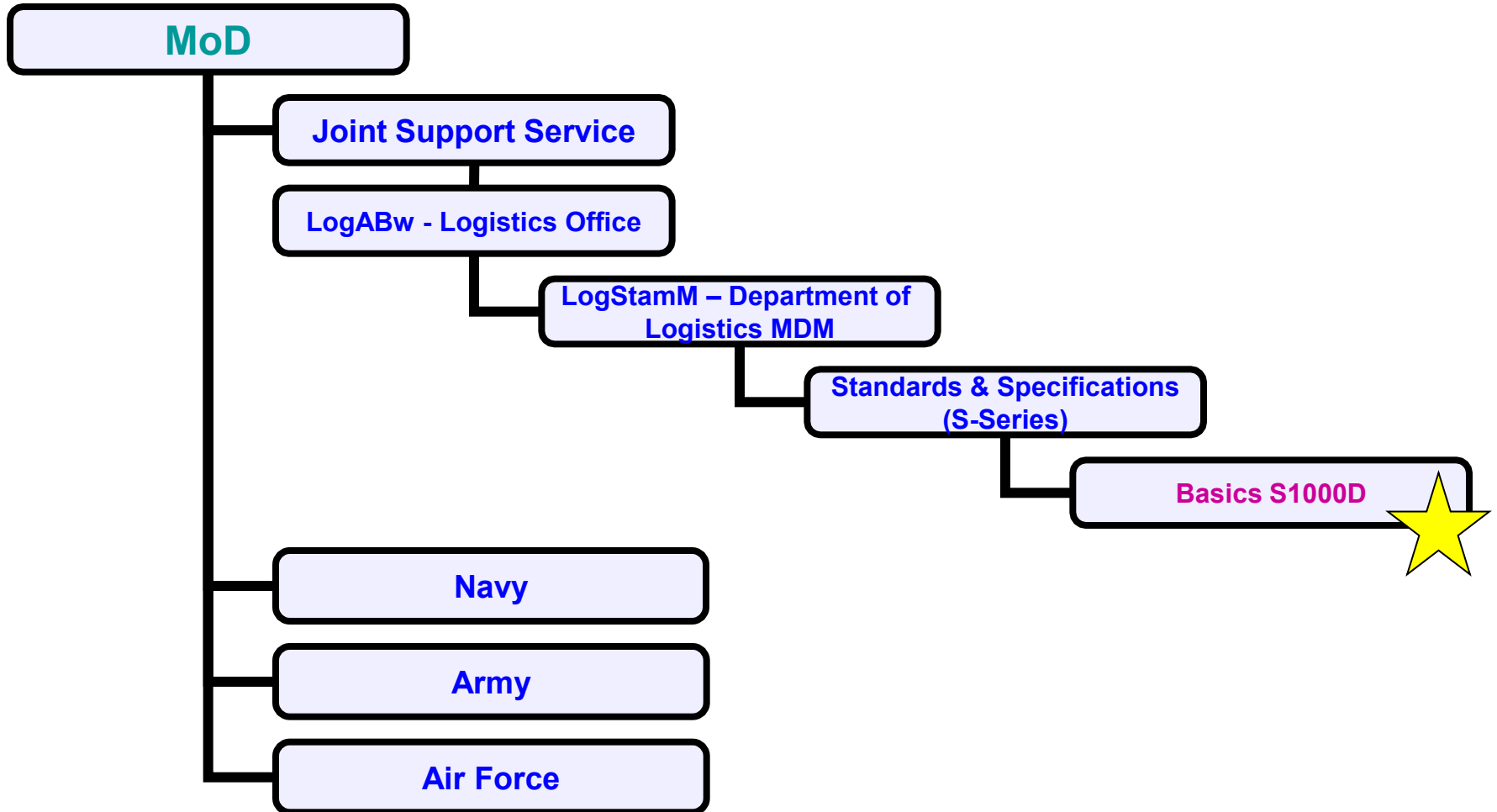
Nicole Ndenge

Department Of Logistics MDM (LogStamM 2.1)

# Agenda

- Introduction
- What it is about
- “Bundeswehr” Business Rules Definition
- “Bundeswehr” BREX Data Module
- Business Rules Checker
- German Contribution to the Specification S1000D
- Conclusion

# Our Organization



# Our Mission

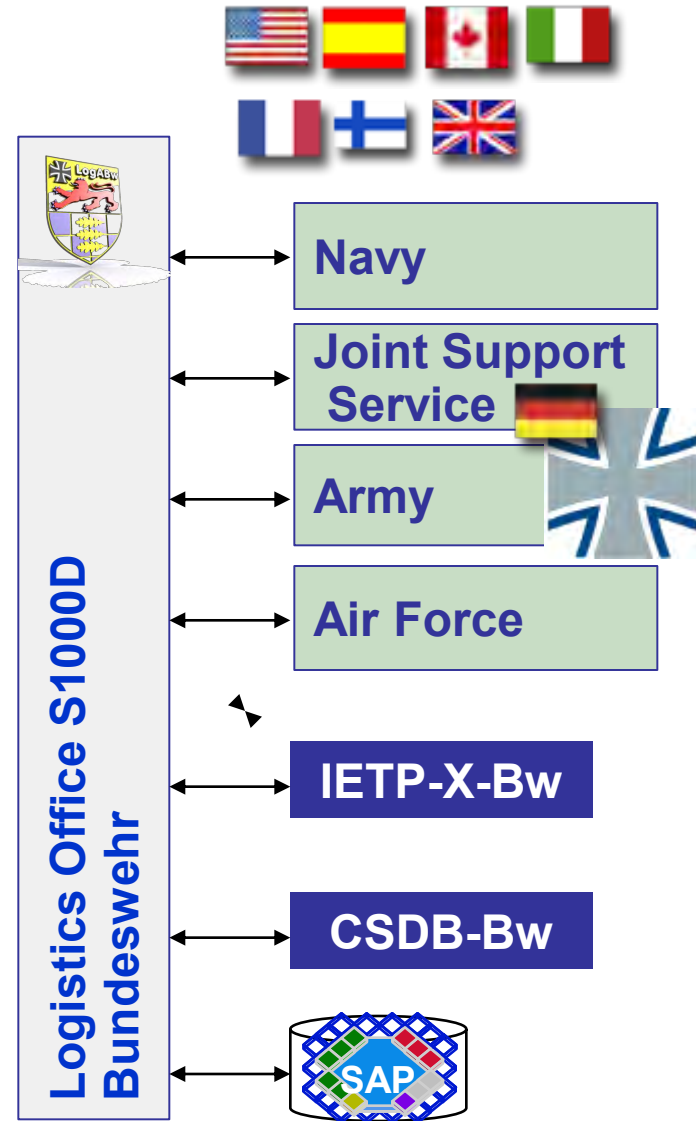
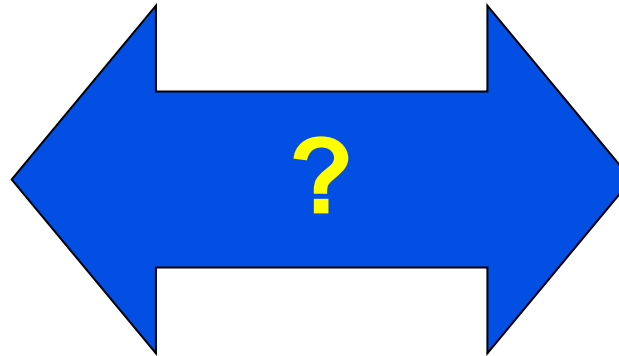
**Participation in  
International  
Working Groups –  
Contributions with  
respect to National  
Requirements**

**Consulting in the  
application of S1000D  
within military projects**



**Management and  
Publication of our  
Business Rules**



# The Challenge



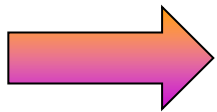
# Our Strategy

- Standardization  NSG Bw
- Industry  Military
- Share National Experience internationally
- Ensure Business Rules Evolution in a Unified Sense

*NSG Bw = National Style Guide “Bundeswehr”  
(the Business Rules Document of the German MoD)*

# “Bundeswehr” Business Rules Definition

1. A “Business-Rule-Specification” machine
  - generates the National Style Guide
2. A “Business-Rule-Specification” machine
  - generates the BREX data module



Ensures conformance in the management of German National Requirements

3. Business Rules Checker for automated quality assurance

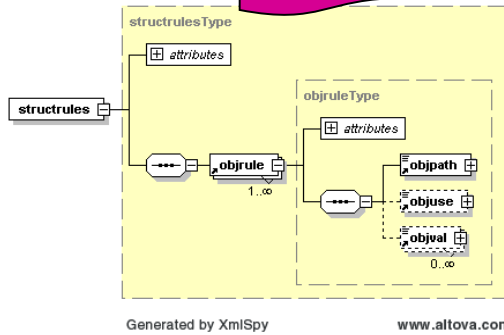
# 1 – 2 – 3 To The Goal!

Major Processing Stages (Guidance) for authoring with respect to S1000D

National Style Guide



BREX



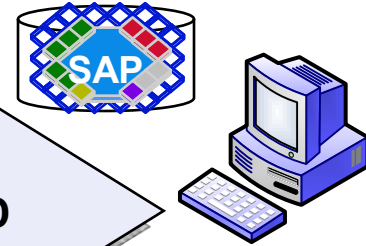
Generated by XmlSpy www.altova.com

Business Rules Checker



```
</objrule>
<objrule id="ALLG_013034R">
  <objpath id="ALLG_013034" objappl="0">age</objpath>
  <objuse>
    <refs>
      <refdm target="ALLG_013034P">
        <avee>
          <modelic>BWNSG</modelic>
          <sdic>C</sdic>
          <chapnum>01</chapnum>
          <section>0</section>
          <subject>0</subject>
          <subject>0001</subject>p
          <discdev>00</discdev>
          <discdev>A</discdev>
          <incdev>042</incdev>
          <incdev>A</incdev>
          <itemloc>D</itemloc>
        </avee>
        <language country="DE" language="de"/>
      </refdm>
    </refs>
  </objuse>
</objrule>
```

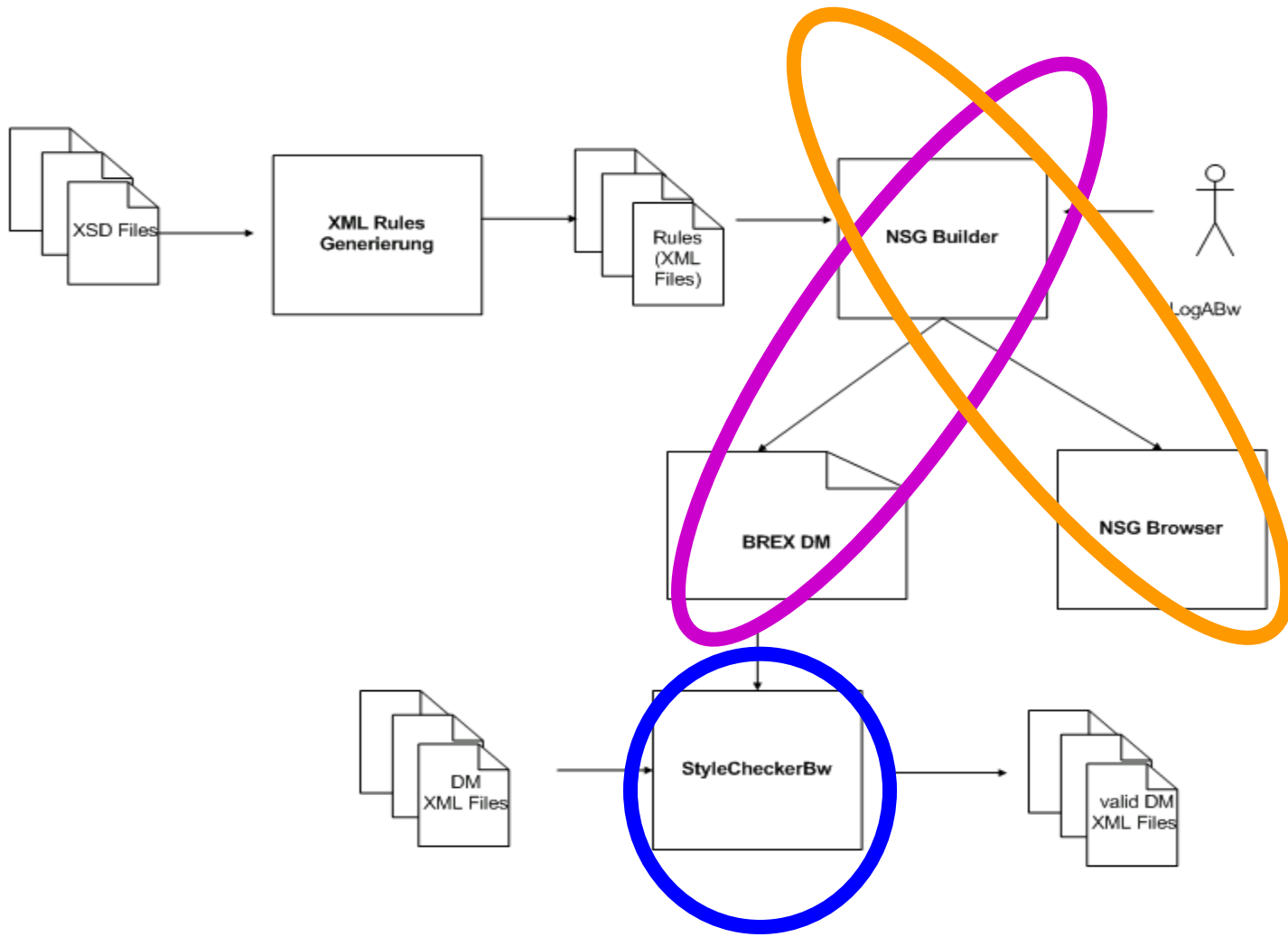
NSG BREX DM



IETP-X-Bw

CSDB-Bw

# A Proven Process



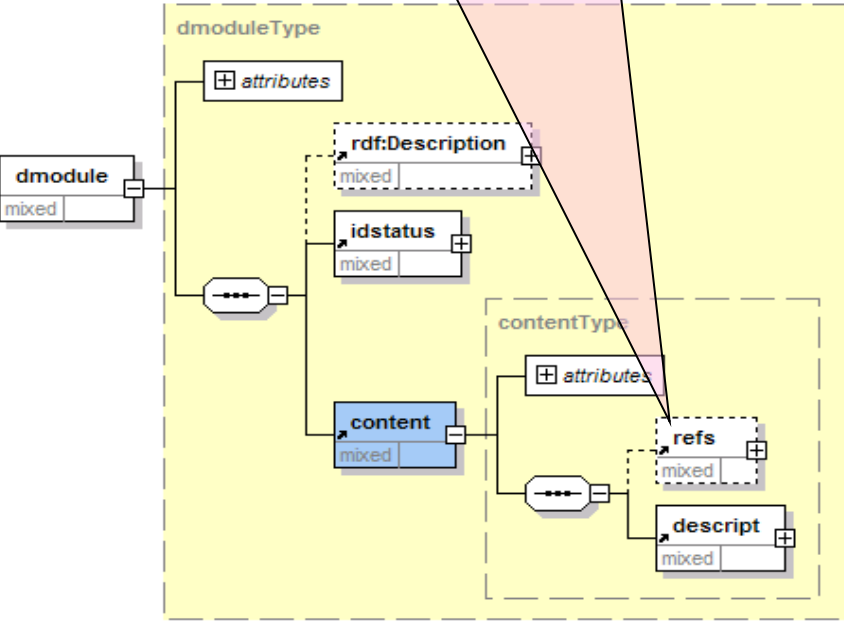
# NSG Rule Generation

```

<?xml version="1.0" encoding="ISO-8859-1" ?>
<!DOCTYPE objrule (View Source for full doctype...)
- <objrule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" id="ALLG_013220R":
  <!-- Status=[abgeschlossen] [20.11.2007, 15:21] -->
  <!-- SK 20.11.2007 -->
  <objpath id="ALLG_013220">refs</objpath>
- <objuse>
- <para0 id="ALLG_013220P">
  <title>Element <refs></title>
- <figure id="fig001_ALLG_013220">
  <title>Baumdarstellung <refs></title>
  <graphic boardno="ICN-BWNSG-C-01000001-0-DN712-00915-A-01-1" />
</figure>
<!-- ***** REFERENZEN *****
- <subpara1 cpttype="Referenzen">
  <title>Referenzen</title>
  <para>S1000D, Chapter 3.9.5.2.1.2</para>
</subpara1>
<!-- ***** EINORDNUNG *****
- <subpara1 cpttype="Einordnung">
  <title>Einordnung</title>
- <para>
  <!-- Liste der Vater Elemente -->
- <randlist>
  <title>Wird verwendet unterhalb von:</title>
- <item>
  Element <
  <xref xrefid="ALLG_013028">accpn1</xref>
  >
</item>
</randlist>
</subpara1>
  
```

**XML File**

- Id** -> to be unique
- objappl** -> Application (optional, required, according to S1000D, forbidden, special rule for BRChecker, ...)
- objpath** -> Xpath (refs)



**NSG Descriptive DM (ALLG\_013220.xml)**

**XML Schema**

# Information Generation

Regel	objrule mit id ALLG_013220R im brex-dm BWNSG-C-01-00-0000-00A-022A-D
Kontext:	<a href="#">allgemeine Regeln, Anteil qualitativ</a>
XPath:	refs
Verwendung:	gemäß S1000D
Beschreibung	para0 mit id ALLG_013220P im brex-dm BWNSG-C-01-00-0001-00A-042A-D
<b>Referenzen</b>	

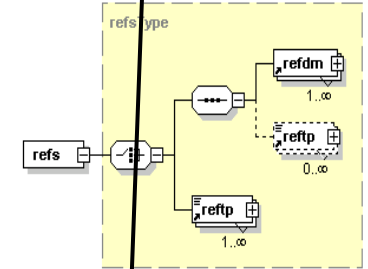
**NSG Browser**

S1000D, Chapter 3.9.5.2.1.2

## Einordnung

Wird verwendet unterhalb von:

- Element < accpnl >
- Element < accpnlinfo >
- Element < afref >
- Element < assy >
- Element < cb >
- Element < cbinfo >
- Element < con >
- Element < conitem >
- Element < conitemalt >
- Element < consupply >
- Element < consupplyinfo >
- Element < container >
- Element < content >
- Element < deftask >
- Element < describe >



ICN-BWNSG-C-01000001-0-DN712-00915-A-01-1

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<!DOCTYPE objrule (View Source for full doctype...)>
- <objrule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" id="ALLG_013220R" :
  <!-- Status=[abgeschlossen] [20.11.2007, 15:21] -->
  <!-- SK 20.11.2007 -->
  <objpath id="ALLG_013220">refs</objpath>
- <objuse>
- <para0 id="ALLG_013220P">
  <title>Element < refs ></title>
- <figure id="fig001_ALLG_013220">
  <title>Baumdarstellung < refs ></title>
  <graphic boardno="ICN-BWNSG-C-01000001-0-DN712-00915-A-01-1" />
</figure>
<!-- ***** REFERENZEN ***** -->
- <subpara1 cpttype="Referenzen">
  <title>Referenzen</title>
  <para>S1000D, Chapter 3.9.5.2.1.2</para>
</subpara1>
<!-- ***** EINORDNUNG ***** -->
- <subpara1 cpttype="Einordnung">
  <title>Einordnung</title>
- <para>
  <!-- Liste der Vater Elemente -->
- <randlist>
  <title>Wird verwendet unterhalb von:</title>
- <item>
  Element <
    <xref xrefid="ALLG_013028">accpnl</xref>
  >
</item>
</randlist>
```



**NSG Descriptive DM  
(ALLG\_013220.xml)**

```
<objrule id="ALLG_013220R">
  <!-- Status=[abgeschlossen] [20.11.2007, 15:21]-->
  <!-- SK 20.11.2007 -->
  <objpath id="ALLG_013220">refs</objpath>
  <objuse>
  <refs>
    <refdm target="ALLG_013220P">
      <avee>
        <modelic>BWNSG</modelic>
        <sdC>C</sdC>
        <chapnum>01</chapnum>
        <section>0</section>
        <subject>0</subject>
        <subject>0001</subject>
        <discodev>A</discodev>
        <incodv>042</incodv>
        <incodv>A</incodv>
        <itemloc>D</itemloc>
      </avee>
      <language country="DE" language="de"/>
    </refdm>
  </refs>
</objuse>
</objrule>
```

**NSG BREX  
DM**

# “Bundeswehr” BREX Data Module

- BREX data modules implements the National S1000D Requirements of the military - currently 2 issues supported:
  - issue 1.9
  - Issue 2.3
- Occurrence and use of elements/attributes/values in a data module is controlled by the value of attribute **@objappl**.
- Our “Bundeswehr” speciality – We enable/guarantee a complete check of all our deliverables (technical documents)
  - We accomplish this through **our specific extension** of @objappl values.

# Define the DM BREX.**extended**

ATTRIBUT @objappl

NSG BREX DM

S1000D 2.3 defines  
for @objappl the values 0, 1

We define for the NSG BREX  
More values identifying  
Special Rules  
for the Business Rule Checker  
„StyleChecker Bw“

2

3

4

5



```
</objrule>
<objrule id="ALLG_013034R">
  <objpath id="ALLG_013034P" objappl="0" age</objpath>
  <objuse>
    <refs>
      <refdm target="ALLG_013034P">
        <avee>
          <modelic>BWNSG</modelic>
          <sdc>C</sdc>
          <chapnum>01</chapnum>
          <section>0</section>
          <subject>0</subject>
          <subject>0001</subject>p
          <discode>00</discode>
          <discodev>A</discodev>
          <incode>042</incode>
          <incodev>A</incodev>
          <itemloc>D</itemloc>
        </avee>
        <language country="DE" language="de"/>
      </refdm>
    </refs>
  </objuse>
</objrule>
```

2: No usage

4: Checking done by a Plugin

3: Wiring data

5: Multiple DM to check in one iteration

# Business Rules Checker

- “Bundeswehr” Business Rules are coded in machine readable form.
  - **Automated checking** of technical documents is hence possible!
- We have developed an Engine called “**StyleChecker Bw**” for this automation.
- The “StyleChecker Bw” **detects malformed, none standards-conform and wrong technical documents** in accordance with the S1000D and our National Requirements.

# BR Checking

`<para>Im Falle der Anzeige einer internen/externen St&#x00F6;rung konnte die genaue Ortung der St&#x00F6;rung mittels BIT des Twk-Rechners nicht vollst&#x00E4;ndig ermittelt werden. Um dem Nutzer eine genaue St&#x00F6;rungssuche (z.B. Externe St&#x00F6;rung zum Twk-Rechner) zu erm&#x00F6;glichen, wird das Pr&#x00FC;fger&#x00E4;t TA5004G002 (siehe=efdm>`

`<age>`

`<modelic>DEX02</modelic>`

`<supeqvc>A</supeqvc>`

`<ecscs>TA</ecscs>`

`<eidc>50</eidc>`

`<cidc>04</cidc>`

`<discode>00</discode>`

`<discodev>A</discodev>`

`<incode>066</incode>`

`<incodev>A</incodev>`

`<itemloc>B</itemloc>`

`</age>`

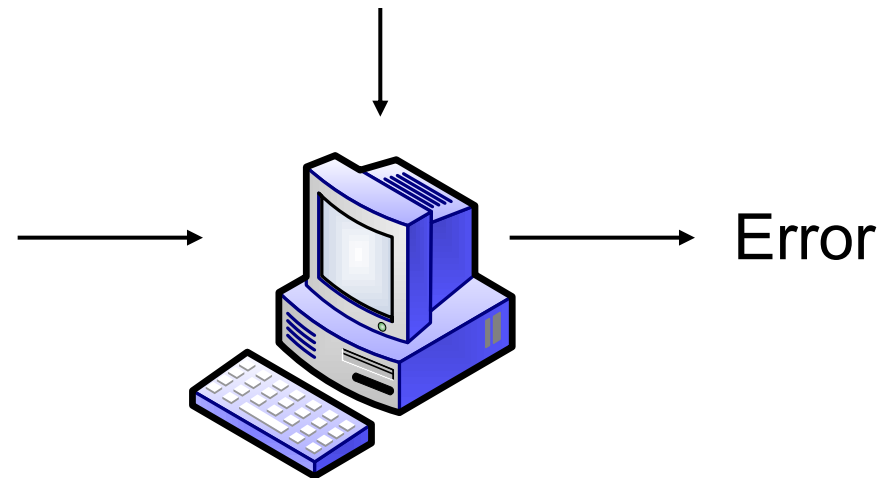
`</refdm>`

) verwendet. Dieses Pr&#x00FC;fger&#x00E4;t wird anstelle des Twk-Rechners an seiner DOD-Schnittstelle eingebaut und erm&#x00F6;glicht die Pr&#x00FC;fung der elektrischen Werte, der durch den BIT als fehlerhaft angezeigten Anlage. Falls die Anlage sich als fehlerfrei aufweist, ist die St&#x00F6;rung beim Twk-Rechner selbst zu suchen.</para>

**DM**

```
<objrule id="ALLG_013034R">
  <objpath id="ALLG_013034" objappl="0">age</objpath>
  <objuse>
    <refs>
      <refdm target="ALLG_013034P">
        <avee>
          <modelic>BWNSG</modelic>
          <sdc>C</sdc>
          <chapnum>01</chapnum>
          <section>0</section>
          <subject>0</subject>
          <subject>0001</subject>p
          <discode>00</discode>
          <discodev>A</discodev>
          <incode>042</incode>
          <incodev>A</incodev>
          <itemloc>D</itemloc>
        </avee>
      </refdm>
    </refs>
  </objuse>
</objrule>
```

**NSG BREX DM**



StyleChecker Bw

# “StyleChecker Bw” in Practice

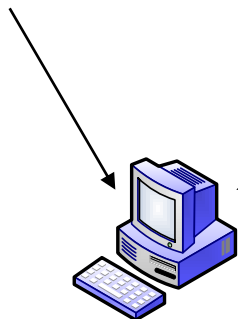
<b>Rule:</b>	Objrule with <b>id ALLG_9EDEFCA6E0R</b> in <b>BREX data module BWNSG-B-01-00-0000-00A-022A-D</b>
<b>Context:</b>	General Rules, Part cross-sectional
<b>XPath:</b>	incode   infoname
<b>Usage:</b>	Special rule for the Business Rules Checker (StyleChecker Bw) <code>&lt;objpath id="ALLG_9EDEFCA6E0" objappl="4"&gt;incode   infoname&lt;/objpath&gt;</code>
<b>Description:</b>	Para0 with <b>id ALLG_9EDEFCA6E0P</b> <b>Descript data module BWNSG-B-01-00-0000-00A-042A-D</b>

**Wrong:**

```
<techname>Maschinenpistole MP5</techname>  
<infoname>Hauptseite</infoname>
```

**Right:**

```
001 | Title page | Titelseite
```



**StyleCheker Bw:**

**Error:**

no match found during checking  
list of incode-infoname combinations,  
see [ALLG\\_9EDEFCA6E0R](#)

# “StyleChecker Bw” in Practice

**Rule:** Objrule with **id SCD\_9E9B778F70R** in  
**BREX data module BWNSG-B-01-00-0000-00A-022A-D**

**Context:** **schedul; SAP; Master Data Management Migration from IETD to SAP**

**XPath:** `deftask/@taskid`  
Ensure the uniqueness of an **id** among multiple tasks

**Usage:** Special rule for the Business Rules Checker (StyleChecker Bw)  
`<objpath id="ALLG_9EDEFCA6E0" objappl="5">deftask/@taskid</objpath>`

**HTML:** Para0 with **id SCD\_9E9B778F70P**  
**Descript data module BWNSG-B-01-00-0009-00A-018A-D**

**Request:** Handled through a java program; Checks the following bindings.

1. Given a `@taskid` under `schedule/deftask/@taskid`
2. Ensure its unique occurrence in both branches `<deftask>` and `<definspec>` of `<schedule>`

# Master Data Migration to SAP



## Identifizierung redundanter Tasks über taskid



Schedule DM			
Definspec - F1	task 1	taskname „F1“	id=„100“
	task 2	taskname „F1“	id=„101“

Schedule DM			
Definspec - F2	task 1	taskname „F1“	id=„100“
	task 2	taskname „F1“	id=„101“
	task 3	taskname „F2“	id=„102“
	task 4	taskname „F2“	id=„103“

Schedule DM			
Definspec - F3	task 1	taskname „F1“	id=„100“
	task 2	taskname „F1“	id=„101“
	task 3	taskname „F2“	id=„102“
	task 4	taskname „F2“	id=„103“
	task 5	taskname „F3“	id=„104“
	task 6	taskname „F3“	id=„105“

Schedule DM			
Definspec - TMP	task 1	taskname „TMP“	id=„106“
	task 2	taskname „TMP“	id=„107“

Schedule DM
Deftask taskid=„100“

Schedule DM
Deftask taskid=„102“

Schedule DM
Deftask taskid=„103“

Schedule DM
Deftask taskid=„104“

Schedule DM
Deftask taskid=„109“

Schedule DM
Deftask taskid=„110“

Procedure adopted during the Migration of Maintenance data to SAP:

- first migrate all tasks contained in <definspec>
- then migrate only the complementary set of the tasks contained in <deftask>

# Major Tasks

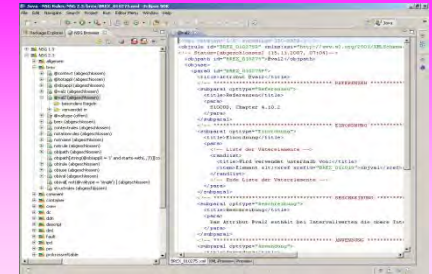
## The NSG Builder generates the NSG Browser

- Work out, co-ordinate requirements (AK BTD, Kavi, SC, ...)
- Guidelines to standardization (NSG-Browser)



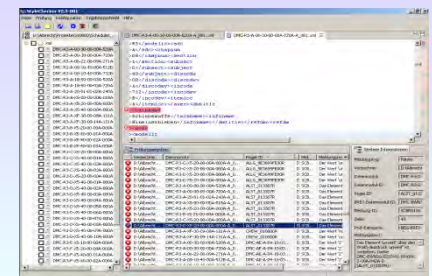
## The NSG Builder generates the BREX DM

- Minimal Redundancy by the development of BREX Rules
- Employs Wizards to avoid redundant content
- Provides assistance in the construction of coded information
- Enables exportation of S1000D compatible content

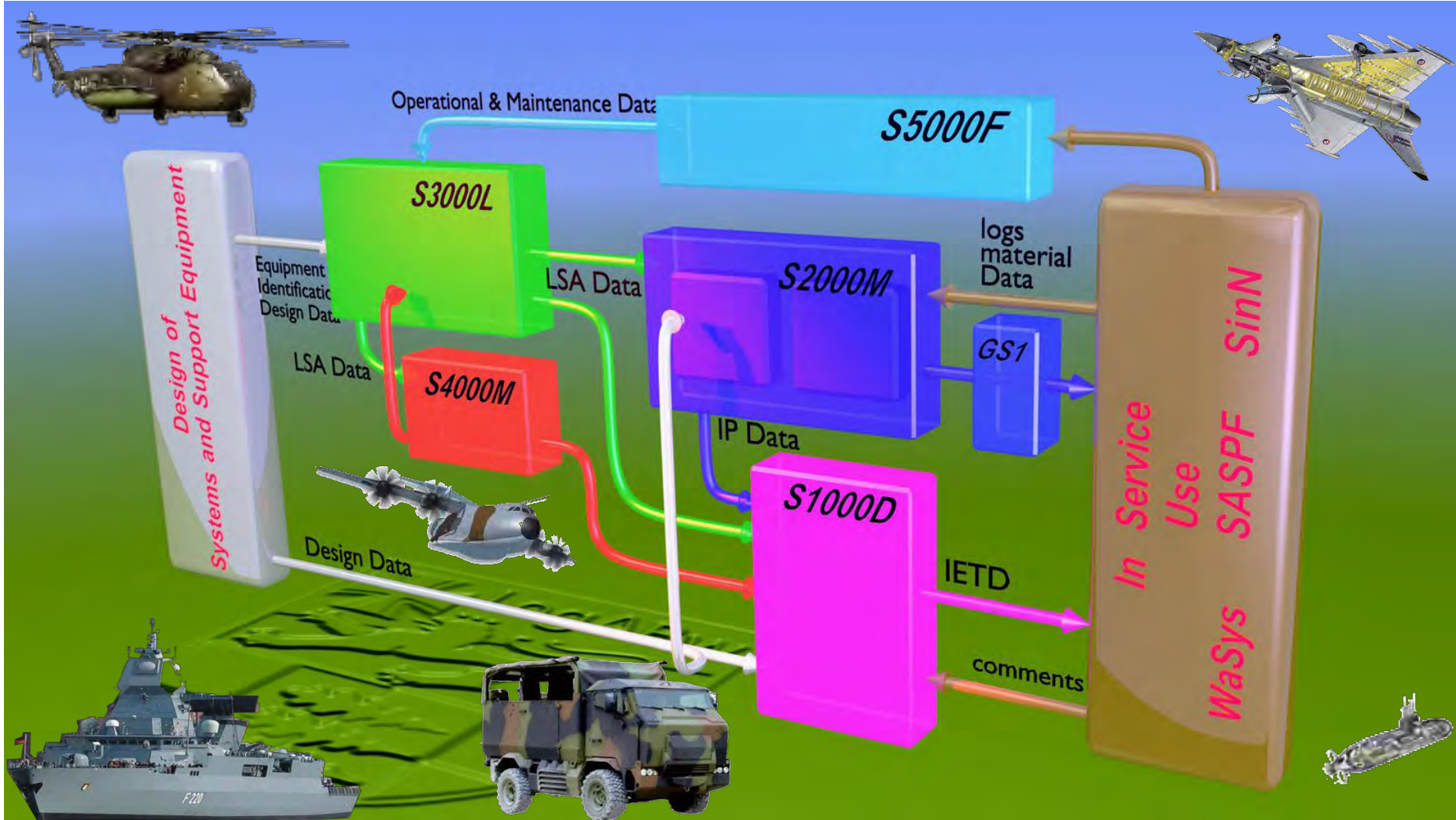


## The StyleChecker Bw (Business Rules Checker)

- Checking of S1000D Documents - NSG BREX Conformity
- GUI Usability, API and Batch Mode Capability
- Extensibility through User Defined Modules



# A Unified View



# German Contribution to the Specification

- We contribute to the development of the S1000D:
  - The experience gained through our practical use of Business Rules flows into its further development.
- Currently we have the following CPF-Projects:
  - **Extended Attribute Values for @objappl** – technical enhancements sought;
  - **Extension Functions** – dynamically binding user specific checks for consistency:
    - within a data module or
    - across multiple data modules in only one iteration of the check algorithm for improved efficiency;
  - **Categorization** – using identifiers for qualifying detected **errors**.

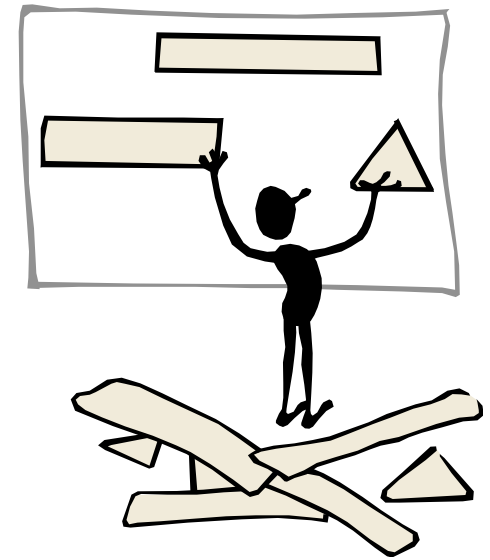
# Conclusion

Currently, the National Style Guide for the “Bundeswehr” is **more than a Business Rules Document** - it is a concept, a management tool, a strategy to follow in achieving the goal of standardization.

## ➤ Benefits:

- ✓ Management of Complexity
- ✓ Flexibility through extension
- ✓ Feasible, Costs Reduction
- ✓ Standardization
- ✓ Integrity
- ✓ Automation
- ✓ Service - Support
- ✓ Maintainable
- ✓ Extensible – Updates
- ✓ Assessable

[www.akbtd.de](http://www.akbtd.de)



Thanks for your attention!