

# S1000D for NH90

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24-09-2019

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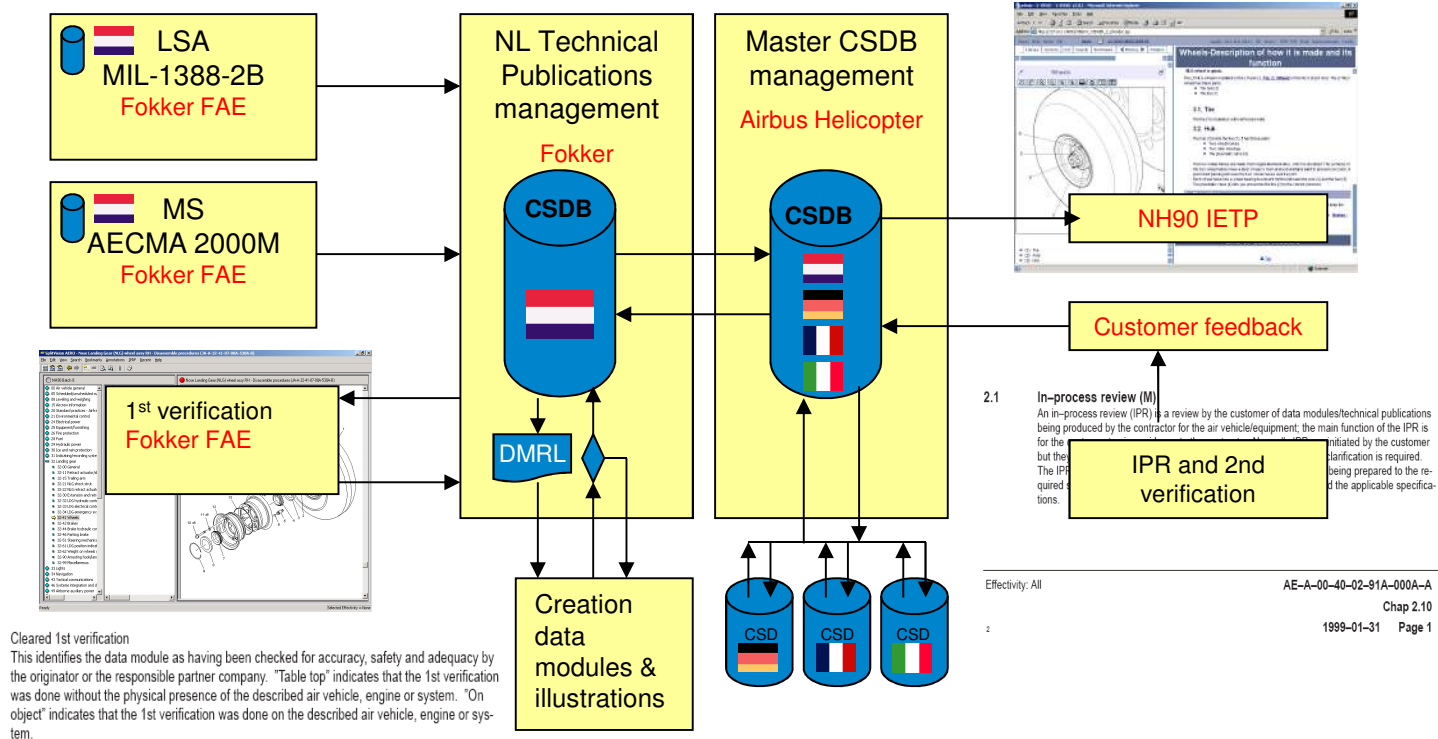
# Introduction

- Used for the creation of NH90 S1000D Documentation.
- The old system was installed on a stand alone Notebook, import and export of the DM's was a manual process and fault sensitive.
- In 2016 the existing Acquired system was replaced.
- Within the old system, there was no workflow and “user-defined” checks.

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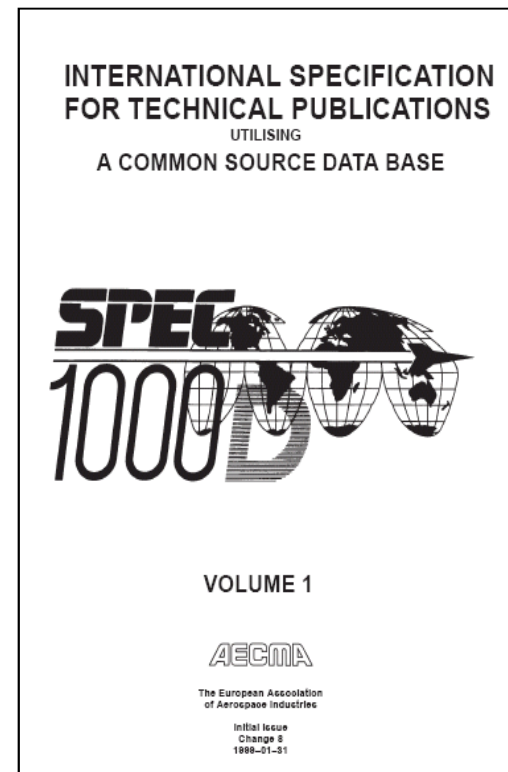
# Introduction



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# Introduction

- AECMA S1000D change 1.9
- Data modules in SGML format
- DTD's
  - Aircrew
  - Procedural
  - Descriptive
  - IPD
  - Maintenance Planning
  - Fault Isolation
- Information sets
- IETP



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# Introduction

## NH90 Program Tech Pub Standards:

- AECMA S1000D
- AECMA S2000M
- AECMA Simplified English
- ILS/LSA Standard MIL-STD 1388

## NH90 Program Tech Pub Guidelines:

- NH90 Guidance Document
- NH90 Style Guide
- IETP Specification
- CSDB Data Exchange Procedures
- IETP Verification and Release Procedures



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# Implementation of S1000D

- Define requirements
- Product selection
- Implementation
  - Project management plan
  - Risk assessment and mitigation
  - Project organisation
  - ICT support
- Start with a pilot
- Evaluation
- Implementation

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# Implementation of S1000D

## **Define requirements**

- Commercial off-the-shelf
- IETD suite for the creation of Technical Publications
- Web based - Server/client system
- AECMA S1000D version 1.8 and higher
- Editor for Data Module (DM) creation
- Process for (S2000M) IPL -> (S1000D) IPD data module creation
- Workflow management
- BREX (Business Rules Exchange) support
- Common source DataBase (CSDB) management
- Data Module List (DML) support
- DM transfer package management to NH90 integrator

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# Authoring and Management

## **HiCo IETD suite selected**

- IETD suite for the creation of Technical Publications
- Web based - Server/client system
- AECMA S1000D version 1.8 and higher
- Data Module (DM) creation using Arbortext Editor
- Automatic IPL -> IPD DM generation
- Workflow management
- History tracking
- Common source DataBase (CSDB) management
- DM transfer package management to NH90 integrator

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# Authoring and Management

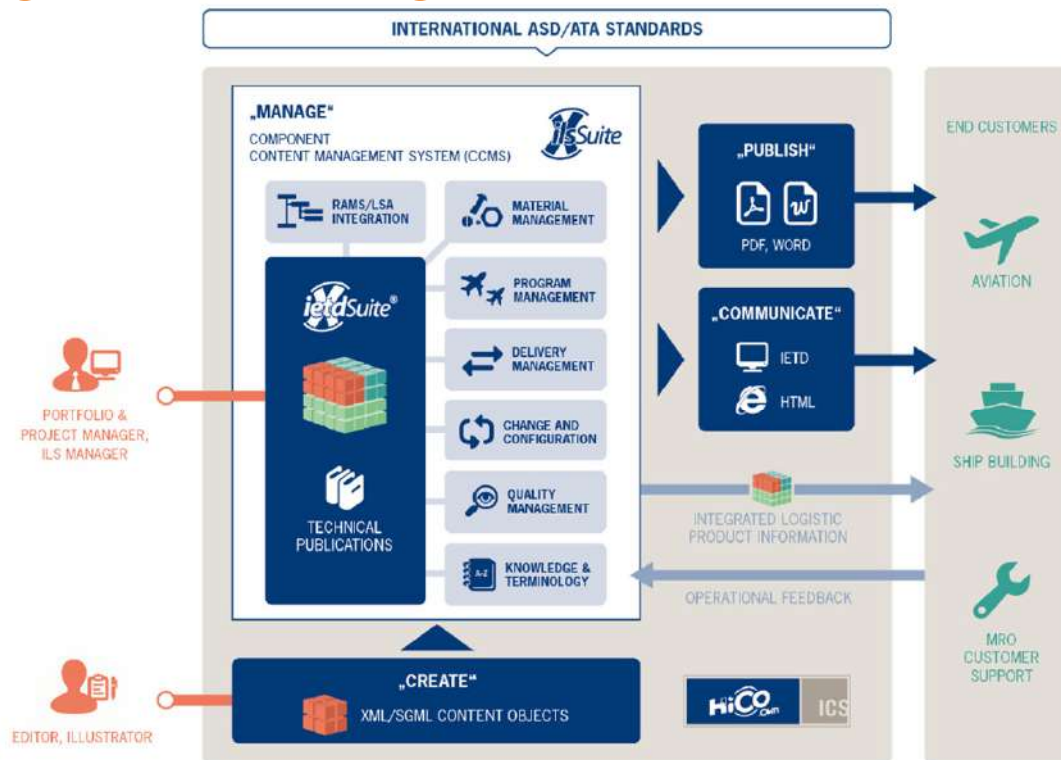
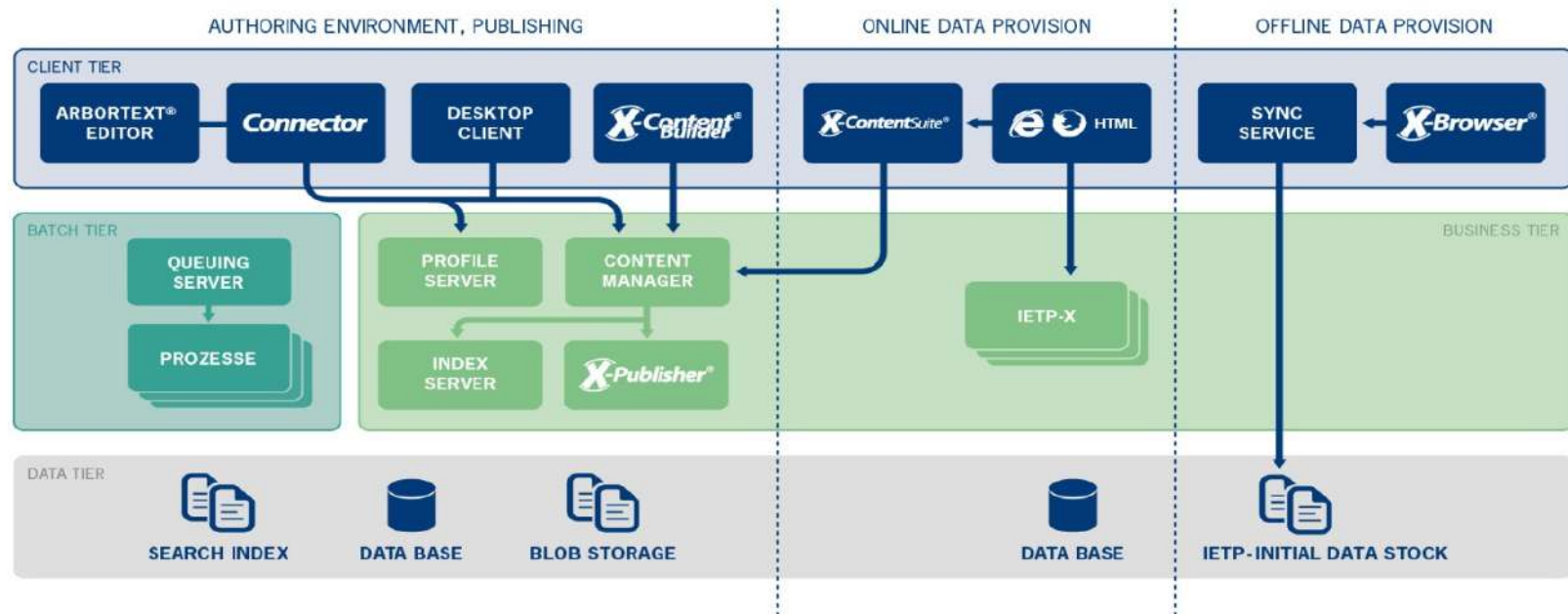


Figure 1 HiCo iLS.Suite™ with the HiCo ietdSuite® as a core system.

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# Authoring and Management



## HiCo – System Architecture

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# Authoring and Management

## Editorial work – Material and Warning Setter

The screenshot displays the Arbortext Editor interface with several windows open, illustrating the Material and Warning Setter workflow:

- Arbortext Editor - DMC-S1420BIKE-AAA-D00-00-00AAA-258A-A\_000-02\_EN-US.XML**: The main editor window showing XML content. A red box highlights the **Identification/Reference** section, which includes fields for **Name**, **Identification/Reference**, **ManufacturerCode**, **PartNumber**, **PartAndSerialNumber**, **IdentNumber**, **catalogSeqNumberRef**, **reqQuantity**, **unitOfMeasure**, **reqQuantity**, **reqSpares**, **reqSafety**, and **Safety/Rqmts**. A blue arrow points from the **Identification/Reference** section to the **MaterialSetter SPCs** window.
- MaterialSetter SPCs**: A window showing search parameters (Project: S1000D\_420 - Projects to S, Catalog: KZ9900001 - BICYCLE, List: D00-00-00-01A - Bicycle) and a table of items.
- MaterialSetter lists**: A window showing search parameters (Project: S1000D\_420 - Project to S10000 Standard v4.2.0, List: BIKE\_OIL - Bike Consumables List) and a table of items.
- WCN Setter**: A window showing search parameters (Type: Warnings, CIR: WARNINGS BIKE) and a table of warnings.

The **MaterialSetter SPCs** window displays a table with columns: Item, B/N, IND, Name, QNA. The table contains the following data:

| Item | B/N | IND | Name             | QNA |
|------|-----|-----|------------------|-----|
| 000  | 00A | 1   | Bicycle          | REP |
| 001  | 00A | 2   | Frame            | 1   |
| 002  | 00A | 3   | Saddle           | 1   |
| 003  | 00A | 3   | Cruise Saddle    | 1   |
| 004  | 00A | 3   | Steering System  | 1   |
| 005  | 00A | 3   | Antibiosystem    | 1   |
| 006  | 00A | 3   | Break sub-system | 1   |
| 007  | 00A | 3   | Light system     | 2   |
| 008  | 00A | 3   | Wheel, rear      | 1   |
| 009  | 00A | 3   | Computer         | 1   |

The **WCN Setter** window displays a table with columns: Code, Danger, Advanced, Issue, Status, Content. The table contains the following data:

| Code  | Danger | Advanced | Issue | Status | Content   |
|-------|--------|----------|-------|--------|---|
| WCN24 |        |          |       |        | Vorsicht: Stromversorgung 220V                            |
| 001   |        |          |       |        | Danger is used to highlight a statement or some other not |
| W01   |        |          |       |        | Warnings are used in data modules and technical publicat  |

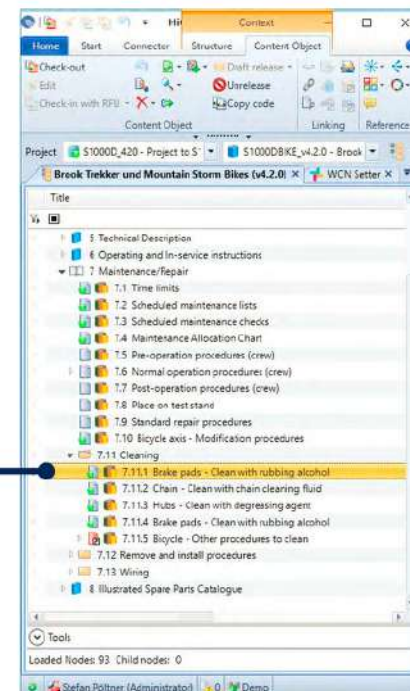
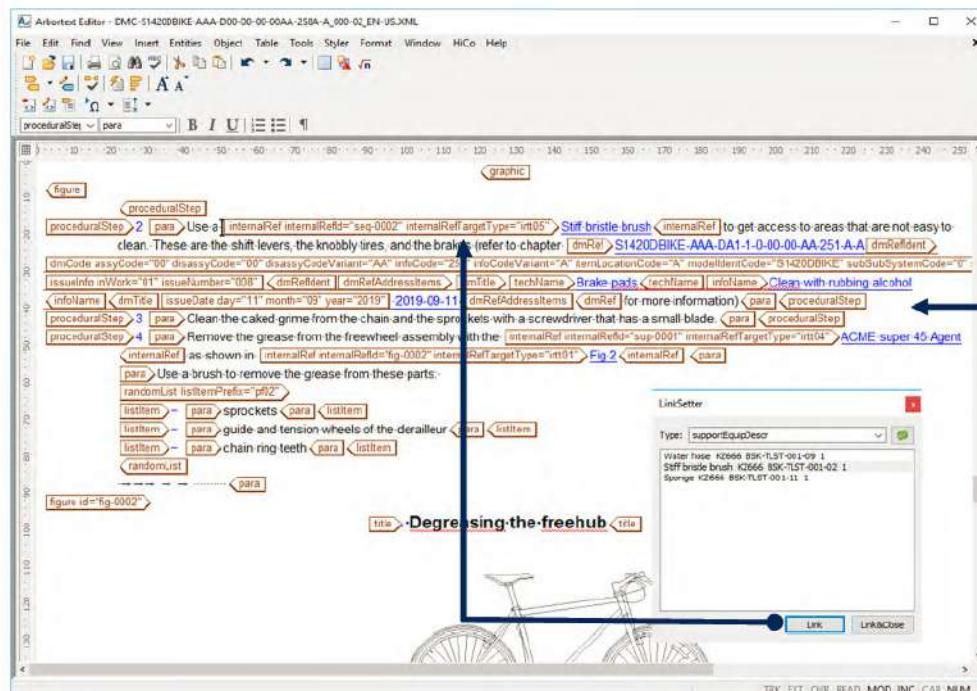
The **WCN Setter** window also shows a table with columns: Items, Total Items, Selected items. The table contains the following data:

| Items | Total Items | Selected items |
|-------|-------------|----------------|
| 1     | 3           | 1              |

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# Authoring and Management

## Editorial work – Link-setter and References



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# Authoring and Management

## Quality Assurance for Authors:

The following validations are available for authors:

### Single Content Object validations in AE

- Schema, Project, Schematron and BREX
- Arbortext Schematron Validation

### Schema Validation

|       |   |
|-------|---|
| Info  | Document DMC-S1420DBIKE-AAA-D00-00-00-00AA-002A-A_002-00_EN-US.XML is valid regarding schema validation.  |
| Error | Document DMC-S1420DBIKE-AAA-D00-00-00-00AA-004A-A_002-04_EN-US.XML is invalid regarding schema validation.  |
| Error | Validator message: The 'issueType' attribute is invalid - The value "" is invalid according to its datatype 'issueTypeAttType' - The empty string "" is not a valid name. (at DMC-S1420DBIKE-AAA-D00-00-00-00AA-004A-A_002-04_EN-US.XML:/dmodule[1]/identAndStatusSection[1]/dmStatus[1]/@issueType)                                  |
| Error | Validator message: The element 'listItemDefinition' has invalid child element 'dmRef'. List of possible elements expected: 'para' (at DMC-S1420DBIKE-AAA-D00-00-00-00AA-004A-A_002-04_EN-US.XML:/dmodule[1]/content[1]/description[1]/levelledPara[1]/para[1]/definitionList[1]/definitionListItem[4]/listItemDefinition[1]/dmRef[1]) |
| Error | Validator message: The element 'dmRef' has incomplete content. List of possible elements expected: 'dmRefIdent'. (at DMC-S1420DBIKE-AAA-D00-00-00-00AA-004A-A_002-04_EN-US.XML:/dmodule[1]/content[1]/description[1]/levelledPara[1]/para[1]/definitionList[1]/definitionListItem[5]/listItemDefinition[1]/para[1])                   |



### Document Links Report

|  |  |   |
|--|--|---|
| Bicycle - Service Bulletin - Replacement of standard forward fork by telescopic fork   | DMC-S1420DBIKE-AAA-D00-00-01-00AA-930A-A_002-00_EN-US.XML  | InProject (S1000D_420)                            |
| Brake system - Manual test   | DMC-S1420DBRAKE-AAA-DA1-00-00-00AA-341A-A_002-00_EN-US.XML | Document InPackage (S1000DBIKE_v4.2.0)            |
| Missing Applicability: model 'Brook trekker/Mountain storm' (/dmodule/content/refs/dmRef[1]), Target SerialNo: '0111', model: 'SS-11'  |  |   |
| DMC-S1420DBIKE-AAA-D00-00-00-00AA-941A-A   | S1420DBIKE-AAA-D00-0-0-00-00-AA-941A-A                     | Document Missing (/dmodule/content/refs/dmRef[2]) |
| DMC-S1420DBIKE-AAA-D00-00-01-001A-933A-A   | S1420DBIKE-AAA-D00-0-0-01-00-1A-933A-A                     | Document Missing (/dmodule/content/refs/dmRef[3]) |
| Brake system - Manual test   | DMC-S1420DBRAKE-AAA-DA1-00-00-00AA-341A-A_002-00_EN-US.XML | Document InPackage (S1000DBIKE_v4.2.0)            |
| Missing Applicability: model 'Brook trekker/Mountain storm' (/dmodule/content/sb/sbPlanningInfo/sbTopic[11]/sbTopicContent/para[5]/dmRef), Target SerialNo: '0111', model: 'SS-11' |  |   |

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# Authoring and Management

## Quality Assurance for Authors:

### Source Status Report

| Code                        | Name                            | Last Issue         |          |      |       | Issue Date |
|-----------------------------|---------------------------------|--------------------|----------|------|-------|------------|
| BCI                         | Bicycle Controls and Indicators | 001.00 (Issue 001) |          |      |       | 06.11.2018 |
| Code                        | Name                            | Techname           | Infoname |      |       |            |
|                             | Resp. company                   | Exec. company      | Issue    | Type | Date  | Language   |
| ICN-C0419-S1420D0359-001-01 | Cleaning the bike               | 001.00             |          |      | en-US | 01         |

### Check Content Objects with Schematron (BREX)

Error Document 'DMC-S1420DBIKE-AAA-D00-00-00-00AA-002A-A 002-00 EN-US' is invalid regarding Schematron validation.

Warning Schematron Assert at 'dm:module/identAndStatusSection/dm:status/dataRestrictions/restrictionInfo/copyright' 'not(//copyright)' in '//copyright'. The Element 'copyright' is used.

Warning Schematron Assert at 'dm:module/identAndStatusSection/dm:status/dataRestrictions/restrictionInfo/copyright/copyrightPara[1]/emphasis' '//emphasis/@emphasisType=em01' in '//emphasis'. A different Emphasis type than 'em01' was used.

Warning Schematron Assert at 'dm:module/identAndStatusSection/dm:status/dataRestrictions/restrictionInfo/copyright/copyrightPara[1]/emphasis' '//emphasis/@emphasisType=em01' in '//emphasis'. A different Emphasis type than 'em01' was used.

### Matrix Checks (Excel)

Error \*MECC Matrix 'Element-Vorkommen Language' rules: 1 failed, 0 success, 0 indeterminate and 0 not evaluated

Error \*\* Wert ist nicht gültig: X-Path '.reasonForUpdate' should be =1

Error \*MECC Matrix 'Element-Vorkommen Language (mit logischen Operatoren)' rules: 1 failed, 0 success, 0 indeterminate and 0 not evaluated

Error \*\* Wert ist nicht gültig: X-Path '.remarks' should be =1, X-Path '.reasonForUpdate' should be =1

|    |  |            |             |                |     |
|----|--|------------|-------------|----------------|-----|
| 7  | /dm:ident/dm:code/@modelIdentCode              | S1420DBIKE | S1420DBRAKE | S1420DLIGHTING |     |
| 8  | /dm:ident/dm:code/@disassyCode                 | +          | +           | +              |     |
| 9  | /dm:ident/dm:code/@disassyCodeVariant          | +          | +           | +              |     |
| 10 | /dm:ident/dm:code/@infoCode                    | +          | +           | +              |     |
| 11 | /dm:ident/dm:code/@infoCodeVariant             | +          | +           | +              |     |
| 12 | /dm:ident/dm:code/@itemLocationCode            | +          | +           | +              |     |
| 13 | /dm:ident/dm:code/@subSubSystemCode            | +          | +           | +              |     |
| 14 | /dm:ident/dm:code/@subSystemCode               | +          | +           | +              | AND |
| 15 | /dm:ident/dm:code/@systemCode                  | +          | +           | +              |     |
| 16 | /dm:ident/dm:code/@systemDiffCode              | +          | +           | +              |     |
| 17 | /dm:ident/dm:code/@learnCode                   | -          | 0           | -              |     |
| 18 | /dm:ident/dm:code/@learnEventCode              | -          | 0           | -              |     |
| 19 | /dm:ident/identExtension/@extensionCode        | -          | -           | -              |     |
| 20 | /dm:ident/identExtension/@extensionProductCode | -          | -           | -              |     |
| 21 |  | AND        |             |                |     |
| 22 | /dm:addressItems/dm:title/techName             | +          | +           | +              | OR  |
| 23 | /dm:addressItems/dm:title/infoName             | +          | +           | +              |     |

### File size Report

| Code                        | Techname | Infoname | Number | Type | Date | Library     | Language | Size   |
|-----------------------------|----------|----------|--------|------|------|-------------|----------|--------|
| ICN-2387N-S1420DBIKE-001-01 |          |          | 001.00 |      |      | S1000D_v420 | en-US    | 322 MB |

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# Authoring and Management

## Quality Assurance for Illustrators:

The following validations are available for Illustrators:

### Validate Hotspots/Legends (only for CGM/SVG)

Info Processing Content Object 'DMC-S1420DBIKE-AAA-D00-00-00-00AA-041A-A'.

Info \* Found 1 figures to validate

Info \* Validating Figure 'Complete bicycle'

Warning \*\* No Hotspot element exists for Illustration Hotspot 'hot001a' (1) in Illustration 'ICN-C0419-S1420D0360' (en-US).

Warning \*\* The Illustration 'ICN-C0419-S1420D0360' contains '17' hotspots, but the figure has no legend. (hot000/0, hot001/1, hot001a/1)

### Validate Illustrations (only for CGM/SVG)

Info Processing Content Object 'ICN-07GB6-BIKECI4201-001-01.CGM'.

Warning Schematron Assert at '/root[1]': '@desc:ProfileId = 'WebCGM' in '/root': Profile must be WebCGM 2.1 (but ProfileId is '')

Warning Schematron Assert at '/root[1]': '@desc:ProfileEd = '2.1' in '/root': Profile must be WebCGM 2.1 (but ProfileEd is '')

Warning Schematron Assert at '/root[1]': 'aps[@type = 'layer' and apsattribute[@name = 'layername' and text() = 'ICN']] in '/root': There is no ICN layer

### Invalid Media Containers Report

Warning 1 invalid Media Container references found in 'DMC-S1420DBIKE-AAA-D00-00-00-00AA-121A-A (en-US)'

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# Authoring and Management

## Quality Assurance for QA-Manager:

The following additional validations are available for QA-Manager:

### Validate IETD Transfer Packages

```
Info      * Processing Content Object 'DMC-S1420DBIKE-AAA-DA0-00-00AA-041A-A_009-00_EN-US'.
Info      * OK
Warning   TechName must be equal to the SNS node name of DMC. Expected value: 'Bicycle' - Found value: 'Wheels' (Line 25)
Warning   InfoName must be equal to the Project-Infocode name of DMC. Expected value: 'Description of how it is made' - Found value 'Description of how it is made: Knowledge Check' (Line 25)
Warning   IssueType must be filled out. (Line 25)
Warning   IssueType " " does not comply to the list of allowed values: deleted, changed, new, rinstat-changed, rinstat-status, rinstat-revised, status, revised. (Line 25)
```

### Compare data modules

```
Notice    Result for 'DMC-S1420DBIKE-AAA-DA0-30-00-00AA-720A-A_002-00_EN-US', differences: '3'
Notice    * XPath: '//displayText/simplePara' , differences: '1'
Notice    ** Source[0]: 'Mountain bicycle and (Mountain storm Mk1 or Brook trekker Mk9)' , Target[0]: 'Mountain bicycle and (Mountain storm Mk1 and Brook trekker Mk9)': The Applicability has been changed.
Notice    * XPath: '//manufacturerCode' , differences: '1'
Notice    ** Source[0]: 'KZ666' , Target[0]: 'KZ233': The Manufacturer has been changed.
Notice    * XPath: '//partNumber' , differences: '1'
Notice    ** Source[0]: 'BSK-TLST-001' , Target[0]: 'BSK-TLST-001A': The Part number has been changed.
```

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# Publication Process

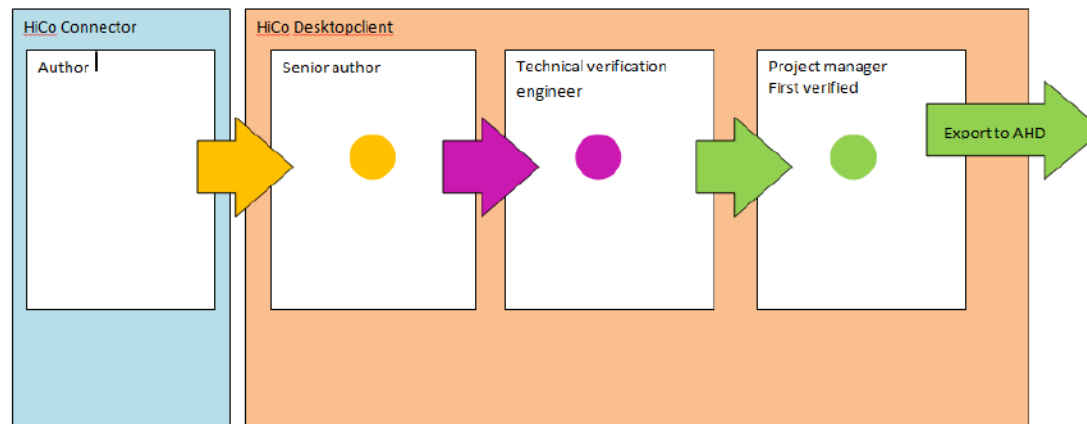
- Within the IETD suite met de module “X-Publisher®”
- Preview van DM's in PDF and/or HTML
- Publication of DM's and manuals in PDF, HTML and PDF.
- X-Publisher®, Designer module for creation and configuration of previews and publications.
- Design of title pages, frontmatter, headers and footers.
- For NH90 creation of Transfer Packages including Data Dispatch Note (DDN)

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# Introduction within our organization

- Training for authors, material support, project manager and administrator.
- On-line access for ILS-team, PDF and HTML view.
- Turn around time for incorporation of changes significantly reduced (CR, ECP, TNs and IPRF's)
- Define work-flow



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# Do's and don't

- Use a key-user and involve steak-holders
- Start with a pilot project
- Evaluation and lessons learned after pilot
- Training
- Make use of a dedicated test and production environment
- Devine workflow (Supported by DOM and workinstructions)
- Use BREX and Schematron for QA checks

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A young child, dressed in a brown leather flight jacket and a brown leather flight helmet with goggles, is holding a large, white, high-wing model airplane. The child is looking up at the plane with a smile. The background is a clear blue sky with some light clouds. The text "Thank you for Your attention" is overlaid in white, sans-serif font.

# Thank you for Your attention

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