S1000D User Forum
S1000D Introduction

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- What is it?

- Vision/mission

- Brief history

- How the specification is organized

- Major concepts within S1000D

- How the specification is maintained

- Benefits of using S1000D

- **What is it?**

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S1000D is an "international specification for the production of technical publications using a common source database".

- **Data re-use**
- **Reduces cost**
- **It's free!**
  (visit http://s1000d.org/Pages/Home.aspx)

- **It's big** (3,500+ pages; 51.8MB)

- **It uses XML to structure the data**

Agenda

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Vision

To be the most globally adopted specification for efficient interoperable technical information in the product support life cycle.

Mission

To provide a forward-looking, modular, platform-neutral specification utilizing standardized data structures and business rules to enable the global user community to optimize reuse and interoperability of technical information.
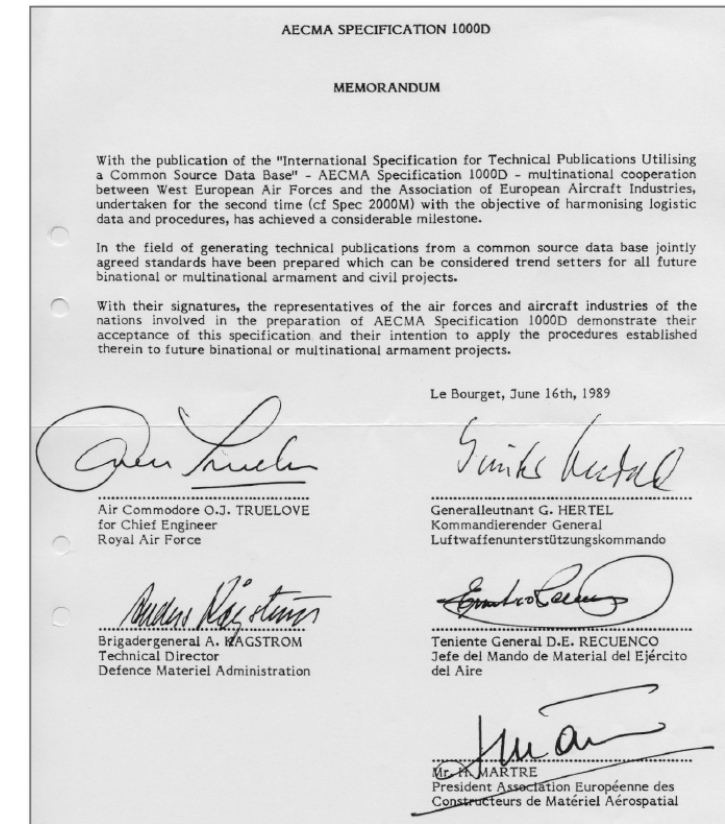
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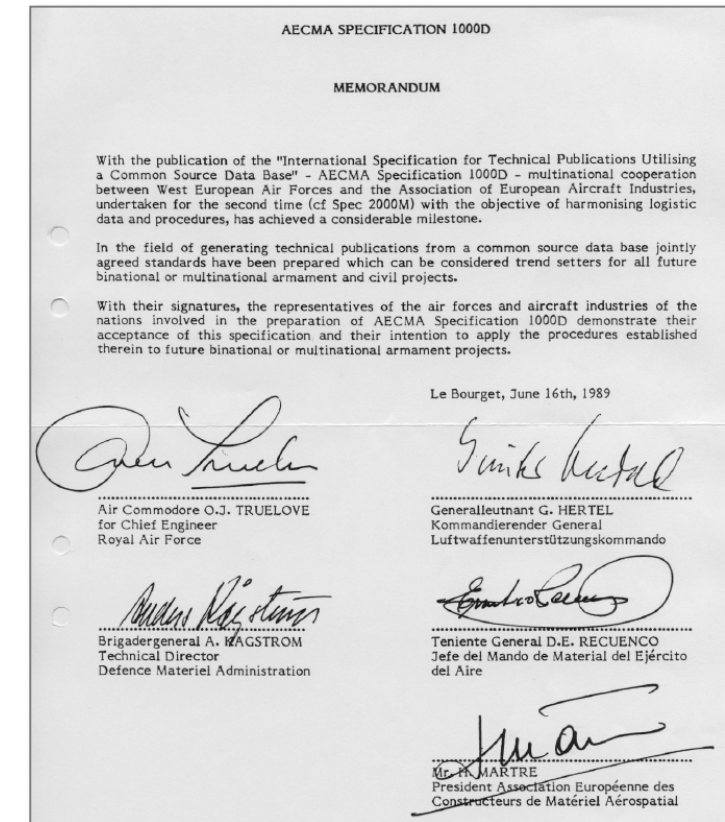
- Benefits of using S1000D

- **Issue 1.0 was published in 1989 by ASD to resolve problems they had experienced with distributed work share programs**
  - Based on ATA 100, but put greater emphasis on <u>granularity</u> and <u>interchangeability</u> of information

- **US military/industry realized they were using too many specifications, and there was no consistency between (or within) branches of the military**
  - AIA signed an MOU with ASD in 2003 to harmonize US and European guidance related to technical publications

- **Civil Aviation was moving toward SGML, but also wanted to support the exchange of information and to move toward the emerging technology of XML**
  - ATA signed an MOU with ASD and AIA in 2005 to work together on the joint development and maintenance of S1000D
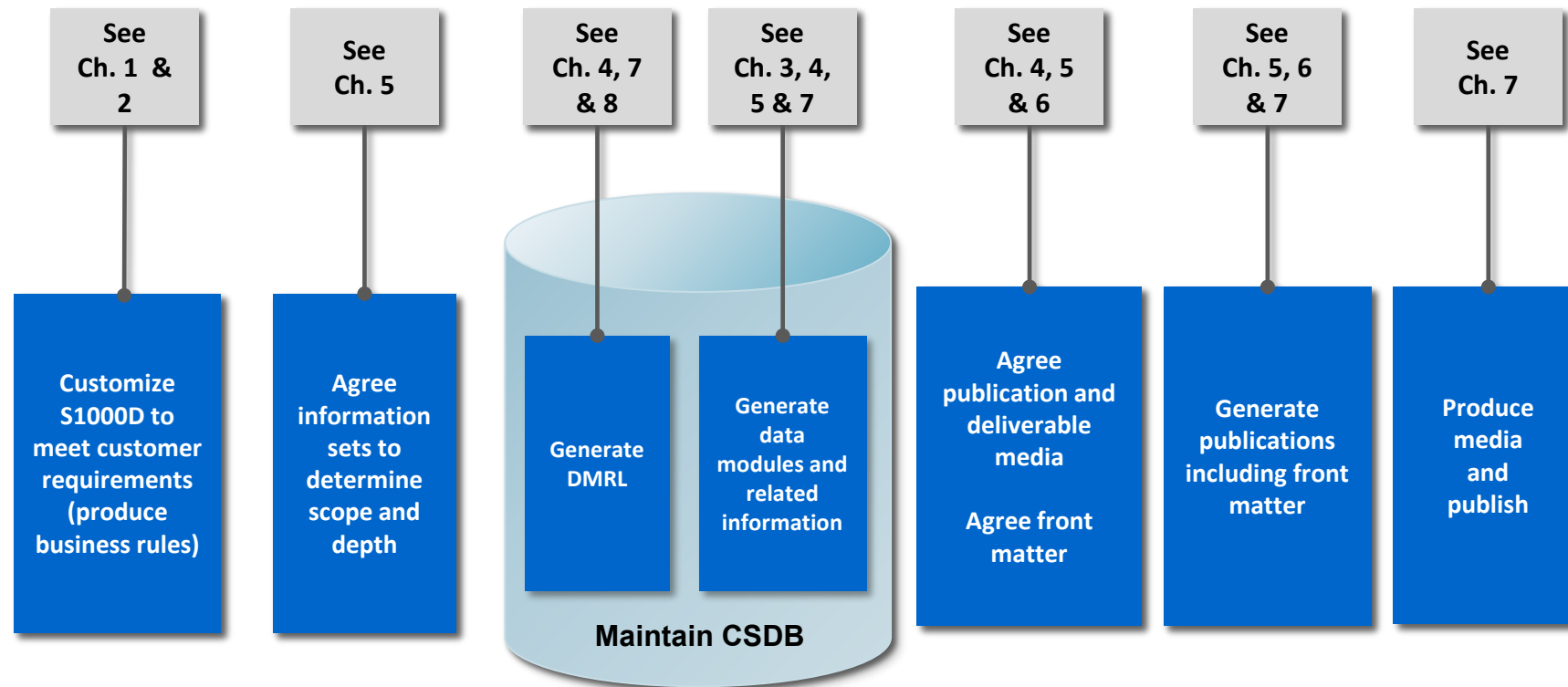

AECMA SPECIFICATION 1000D

MEMORANDUM

With the publication of the "International Specification for Technical Publications Utilising a Common Source Data Base" - AECMA Specification 1000D – multinational cooperation between West European Air Forces and the Association of European Aircraft Industries, undertaken for the second time (cf Spec 2000M) with the objective of harmonising logistic data and procedures, has achieved a considerable milestone.

In the field of generating technical publications from a common source data base jointly agreed standards have been prepared which can be considered trend setters for all future binational or multinational armament and civil projects.

With their signatures, the representatives of the air forces and aircraft industries of the nations involved in the preparation of AECMA Specification 1000D demonstrate their acceptance of this specification and their intention to apply the procedures established therein to future binational or multinational armament projects.

Le Bourget, June 16th, 1989

Air Commodore O.J. TRUELOVE
for Chief Engineer
Royal Air Force

Generalleutnant G. HERTEL
Kommandierender General
Luftwaffenunterstützungskommando

Brigadergeneral A. HAGSTROM
Technical Director
Defence Materiel Administration

Teniente General D.E. RECUENCO
Jefe del Mando de Material del Ejército del Aire

Mr H. MARTRE
President Association Européenne des
Constructeurs de Matériel Aérospatial

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S1000D addresses the <u>life cycle of information management</u>, not just the exchange.

See Ch. 1 & 2	See Ch. 5	See Ch. 4, 7 & 8	See Ch. 3, 4, 5 & 7	See Ch. 4, 5 & 6	See Ch. 5, 6 & 7	See Ch. 7
Customize S1000D to meet customer requirements (produce business rules)	Agree information sets to determine scope and depth	Generate DMRL	Generate data modules and related information	Agree publication and deliverable media Agree front matter	Generate publications including front matter	Produce media and publish

Maintain CSDB

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- **Major concepts within S1000D**
  - XML and schemas
  - Data modules
  - Data Module Codes (DMCs)
  - CSDB
  - Publication modules
  - Business rules/BRDPs
  - BREX

- **XML is a set of rules on how content should be <u>structured</u>**

- **The data structure is defined by a set of schemas**

- **Each schema defines the structure for a certain type of data** *(e.g. descriptive, procedural, fault, ipd, etc.)*

- **Any errors that violate the structure defined by a schema are easily caught and flagged by an authoring tool**

- **It is <u>not</u> a programming language. It is based on text, so it is human readable.**

- **Breaks traditional documents down into data modules** – *"the smallest self contained informational unit with a technical publication"*

- **Data modules can contain text, references to illustrations, multimedia, or other data modules**

- **Each data module consists of two parts:**

  - **Identification and status section –** includes all of the management information for that data module

  - **Content section –** includes the information that the user will see

- **Each data module is identified by a Data Module Code (DMC)**
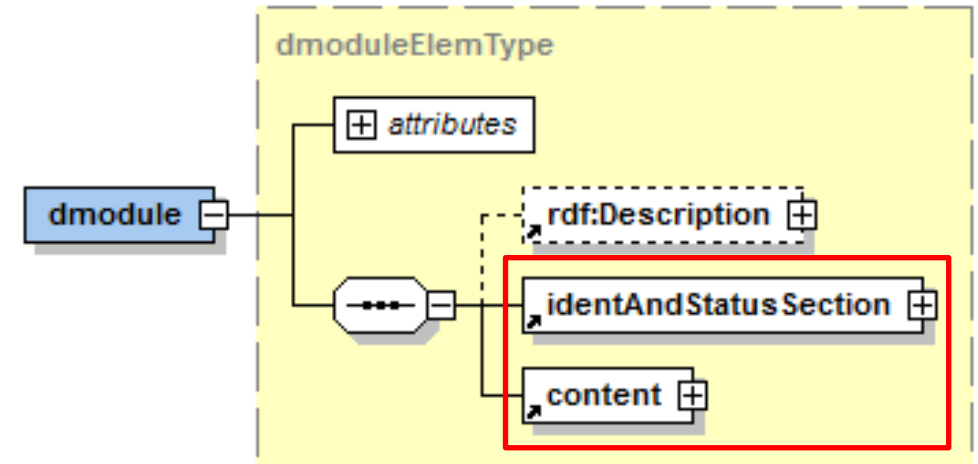
- **DMCs follow a standardized and structured method to identify each data module**

- **The DMC addresses the system, hardware or function, as well as the type of information contained in the data module. In newer issues of the specification, it also addresses the learn type.**

- **DMCs are used to manage the data modules in the CSDB**
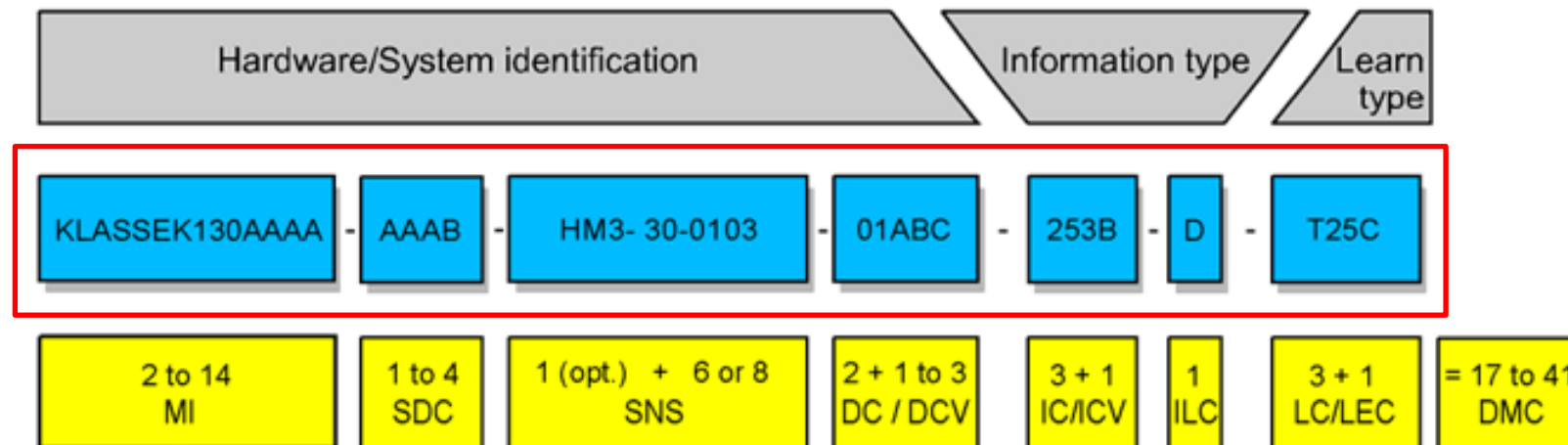
- **A CSDB is the database used to store all of the information objects that are used to create the technical publications for a project**
  - Data modules
  - Illustrations, multimedia, and other data associated with and called up by data modules
  - ICN metadata file
  - Data management lists
  - Comments
  - Publication modules
  - Data update file
  - Data dispatch notes

- **Major benefits of a CSDB include:**

  - Enables the production of platform-independent output in either page-oriented format or an IETP

  - Data managed within the CSDB is not duplicated, and it can be re-used in multiple publications

  - Data managed within the CSDB can be used for multiple projects

- **S1000D uses the concept of a publication module (PM) to build a publication from the data modules contained in the CSDB**

- **A PM contains a list of the data modules that are required in the publication, and they are listed in the order in which they appear.**

- **PMs can contain references to other PMs**

Rule:

*"A **rule** is a principle or condition that customarily governs behaviour"*

Business rule:

*"**Business** rules represent policies, procedures, and constraints regarding how an enterprise conducts its business"*

- **Attempt by S1000D practitioners to put guidance into the specification on what information is required when "doing" an S1000D program**

- **Everybody using the spec needs to understand these as they are fundamental to a good implementation**

- **Projects can falter/fail if all aspects are not understood**
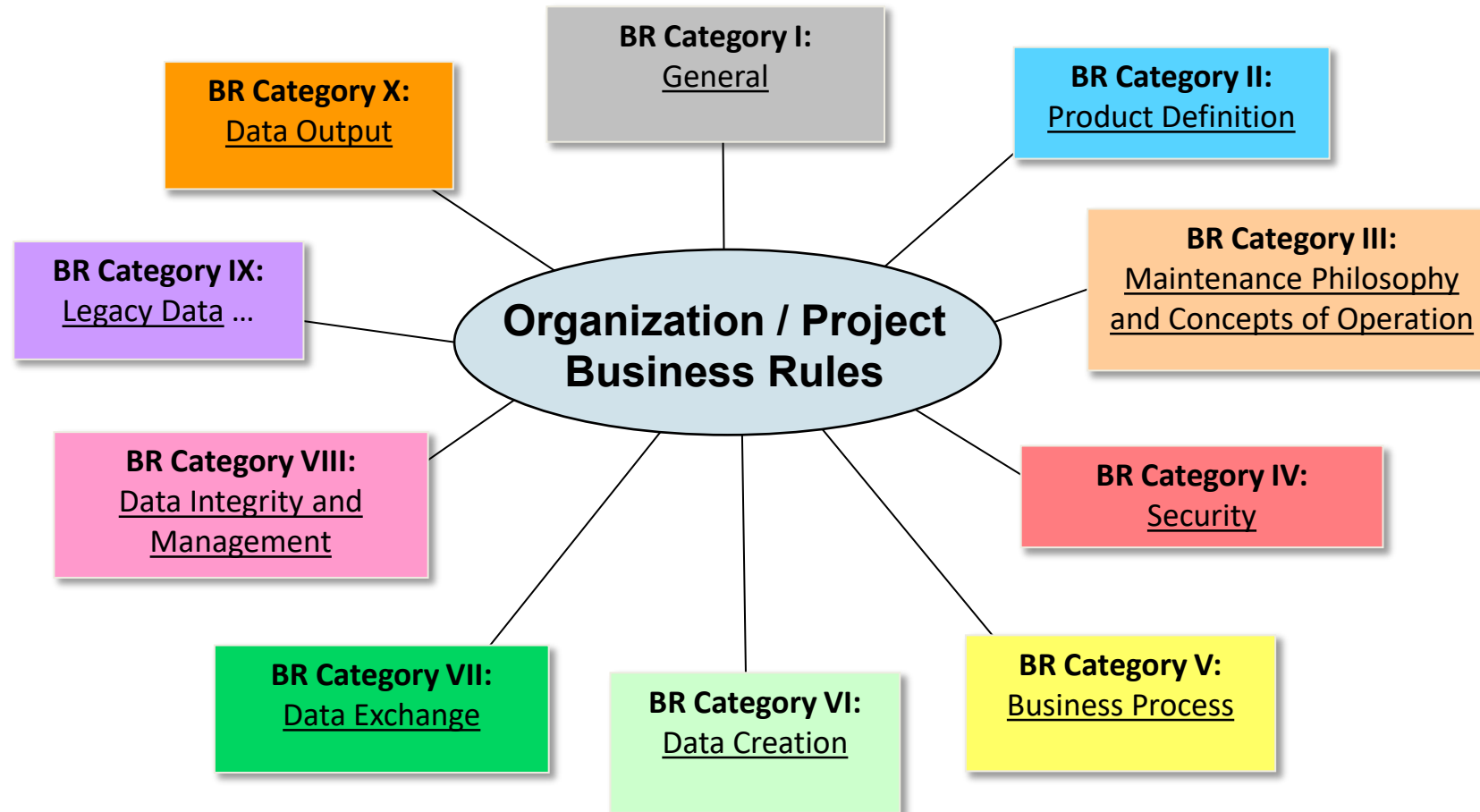
6.2 Permissible characters in codes and numbers

Throughout the S1000D the following definitions on permissible characters (alphas and numbers) when used in codes (eg, data module codes, publication module codes, learn codes, learn event codes, data management lists) and numbers (eg, issue numbers) are given below.

…

6.2.5 Use of the alpha characters "I" and "O"

Business rule decision point BRDP-S1-00001 - Use of "I" and "O":

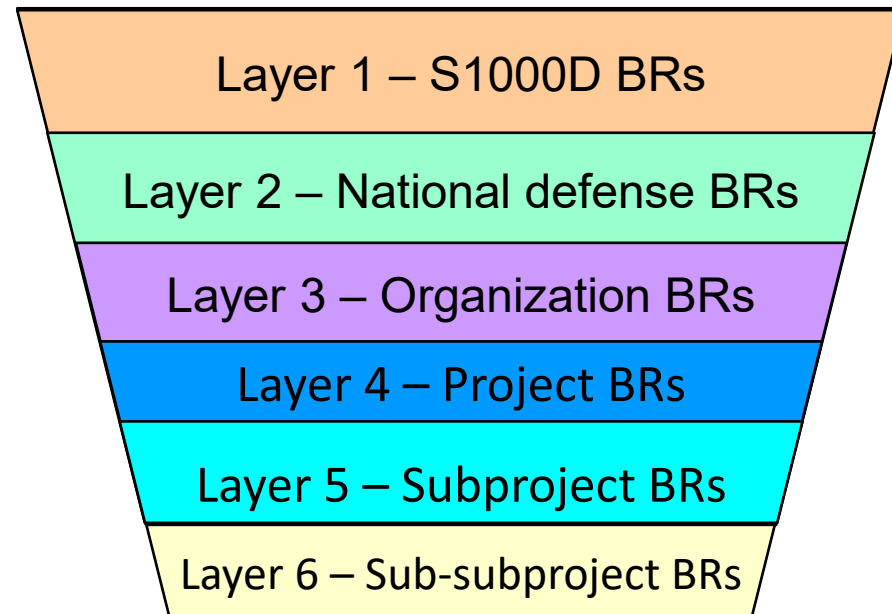– Decide whether and when to use the alpha characters "I" and "O".

…

Business rule decision point BRDP-S1-00151 - Use of the attribute `materialUsage` in the element `<supportEquipDescr>`, the element `<supplyDescr>` and the element `<spareDescr>` context:

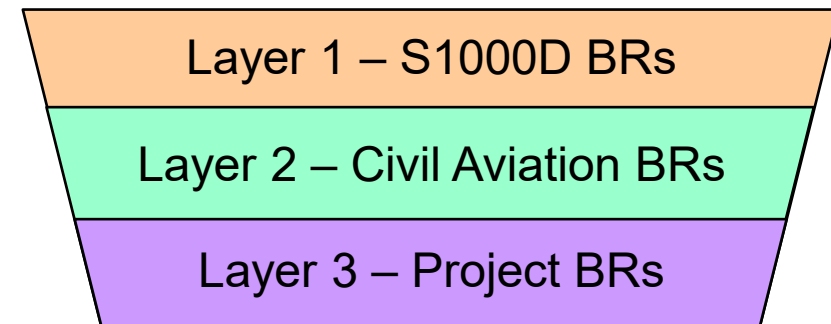– Decide whether to use the attribute `materialUsage` in the elements `<supportEquipDescr>`, `<supplyDescr>` and `<spareDescr>` context and what values to be used.

6-layered Defense Business Rules Model

- Layer 1 – S1000D BRs
- Layer 2 – National defense BRs
- Layer 3 – Organization BRs
- Layer 4 – Project BRs
- Layer 5 – Subproject BRs
- Layer 6 – Sub-subproject BRs

3-layered Civil Business Rules Model

- Layer 1 – S1000D BRs
- Layer 2 – Civil Aviation BRs
- Layer 3 – Project BRs

- **B**usiness **R**ules **Ex**change (BREX)

- **A BREX provides a mechanism to "exchange" business rules**

```
- <structureObjectRule id="SOR-4">
        <!-- <brDecisionRef brDecisionIdentNumber="BREX-TDWG-00034"/>-->
    <objectPath allowedObjectFlag="0">//caution[@cautionType]</objectPath>
    <objectUse>BREX-TDWG-00034: The attribute "cautionType" must not be used in
        cautions.</objectUse>
```

- **Since BREXes contain business rules, they follow the same layered approach and refer to each other using the <brexDmRef> element**

```
- <brexDmRef>
    - <dmRef>
        - <dmRefIdent>
            <dmCode itemLocationCode="D" infoCodeVariant="A" infoCode="022" disassyCodeVariant="A"
                disassyCode="00" assyCode="0000" subSubSystemCode="0" subSystemCode="0"
                systemCode="00" systemDiffCode="E" modelIdentCode="ATABREX"/>
        </dmRefIdent>
    </dmRef>
</brexDmRef>
```
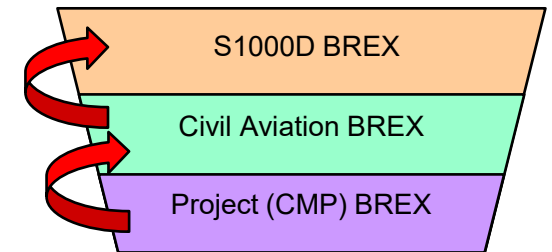
S1000D BREX

Civil Aviation BREX

Project (CMP) BREX

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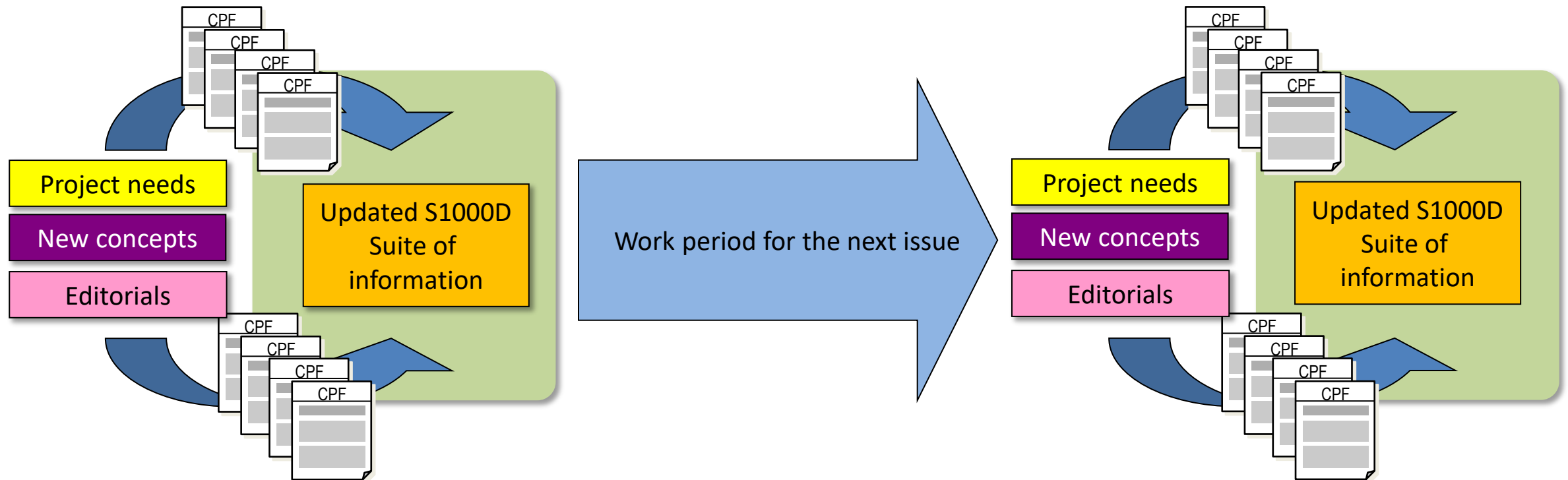
CPF = Change Proposal Form

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S1000D Benefits

- **Reduces the maintenance cost for technical information through re-use**

- **Prevents duplication of information**

- **Allows subsets of information to be generated to meet specific user needs**

- **Facilitates the transfer of information and electronic output between different systems**

- **Supports many different output formats**

- **Can be applied to legacy data**

- **International neutral standard**

- **Non-proprietary and based on open standards**

- **It's free!**

Thank you for your attention!

Questions?