S1000D and its Correlation with Other ILS Elements

S1000D User Forum 2013
Vienna, 2013-09-16/19

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Agenda

- Terms and definitions
- The ILS process & supporting specifications
- History and status of S1003X
- Overview of S1003X
- Data mapping
- Use case examples
- S1000D improvement suggestions
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- Summary and way ahead
- Abbreviations

Terms and definitions

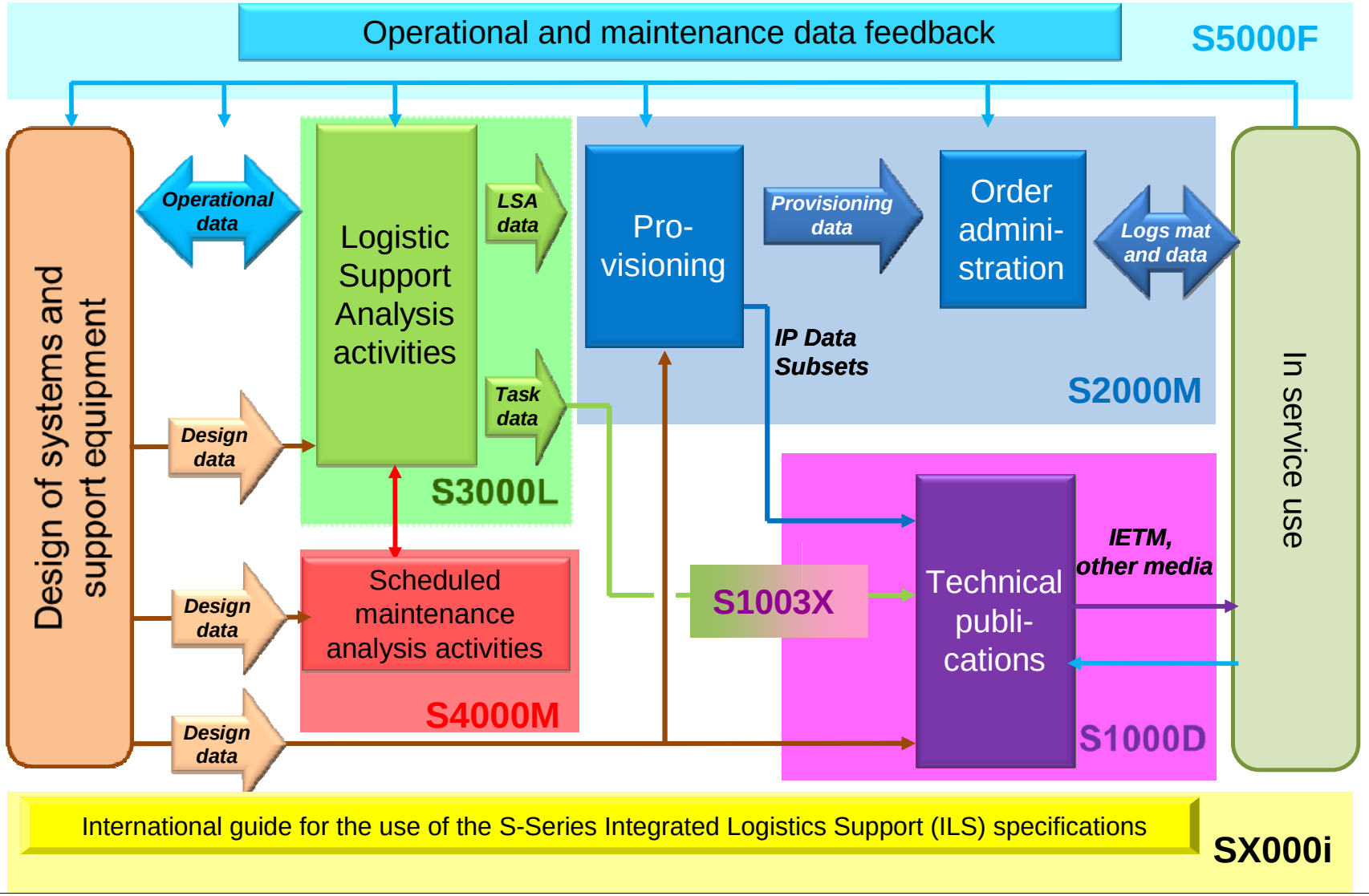
- Integrated Logistic Support (**ILS**) is a management method to integrate and manage the elements of logistic support through product life

- Logistic Support Analysis (**LSA**) is a process to analyze all elements of a complex technical system to guarantee optimal logistic support during in service. The LSA process is the central management tool to meet the target of ILS

- The ISO 10303-239 standard “Product Life Cycle Support” (**PLCS**) specifies a generic information model that defines what information can be represented and exchanged to support a product through life

- A Data EXchange specification (**DEX**) identifies and documents a subset of the PLCS information model required for a specific business purpose

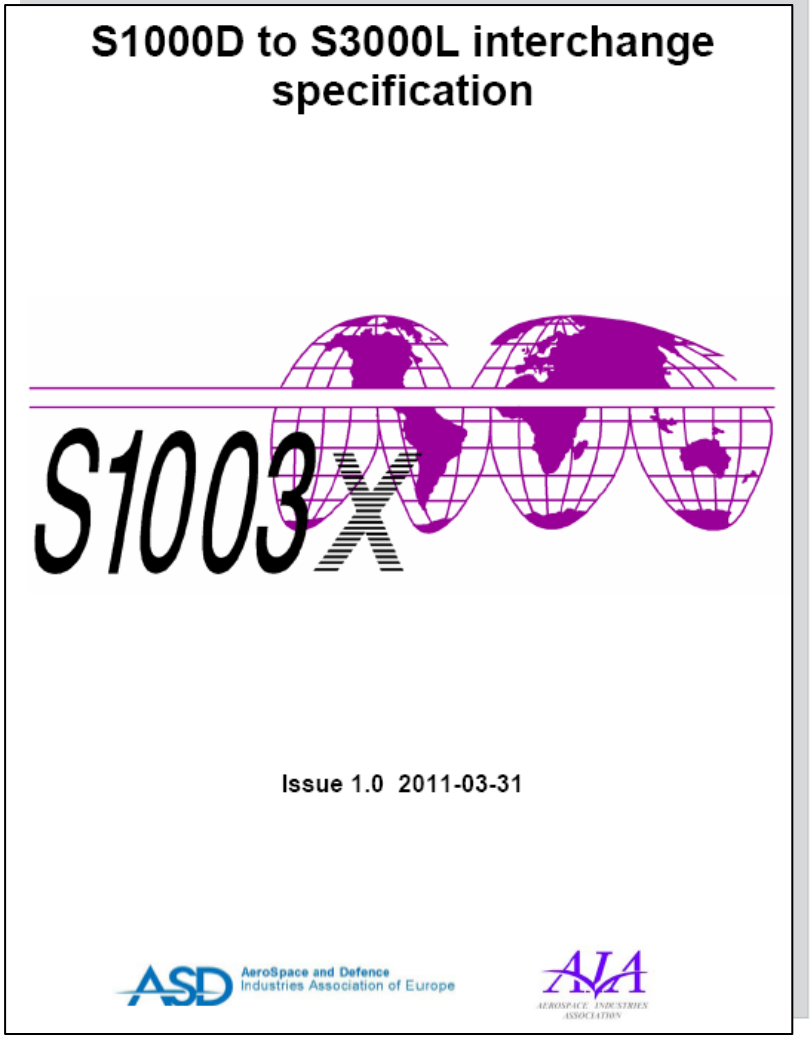
The ILS process & supporting specs



History and status of S1003X

- Joint development by ASD and AIA
- Participating companies/organizations:

SAAB, LOGSA, ONEIL, DASSAULT AVIATION, EADS, BOEING



- Kick-off meeting: 2007-11-13
- Draft issue 0.1 date: 2009-06-08
- Final issue 1.0 date: 2011-03-31
- Download link:
  http://public.s1000d.org/Downloads/Documents/S10003X/S1003X%20Issue%201.0%202011-03-31_Distr.pdf

Overview of S1003X (1)

General

- S1003X is an interface specification between S1000D 4.0 and S3000L 1.0
- S1003X defines data required to populate S1000D maintenance planning and procedural data modules from LSA activities
- S1003X has been developed by the S1000D Maintenance Task Data Task Team (MTDTT) in close co-operation with the S3000L working group
- S1003X closes the interoperability gap between the two logistic disciplines support engineering and technical documentation
- S1003X is one of the building blocks of ILS
- S1003X contains mapping tables for data elements and attributes required for product type acceptance and product maintenance
- S1003X connects the PLCS-based data model of S3000L with the XML Schema-based data model of S1000D
- S1003X is the basis for developing import interface specifications from other ILS elements, such as S2000M for illustrated parts data, to S1000D

Overview of S1003X (2)

DEX1A&D and DEX3A&D

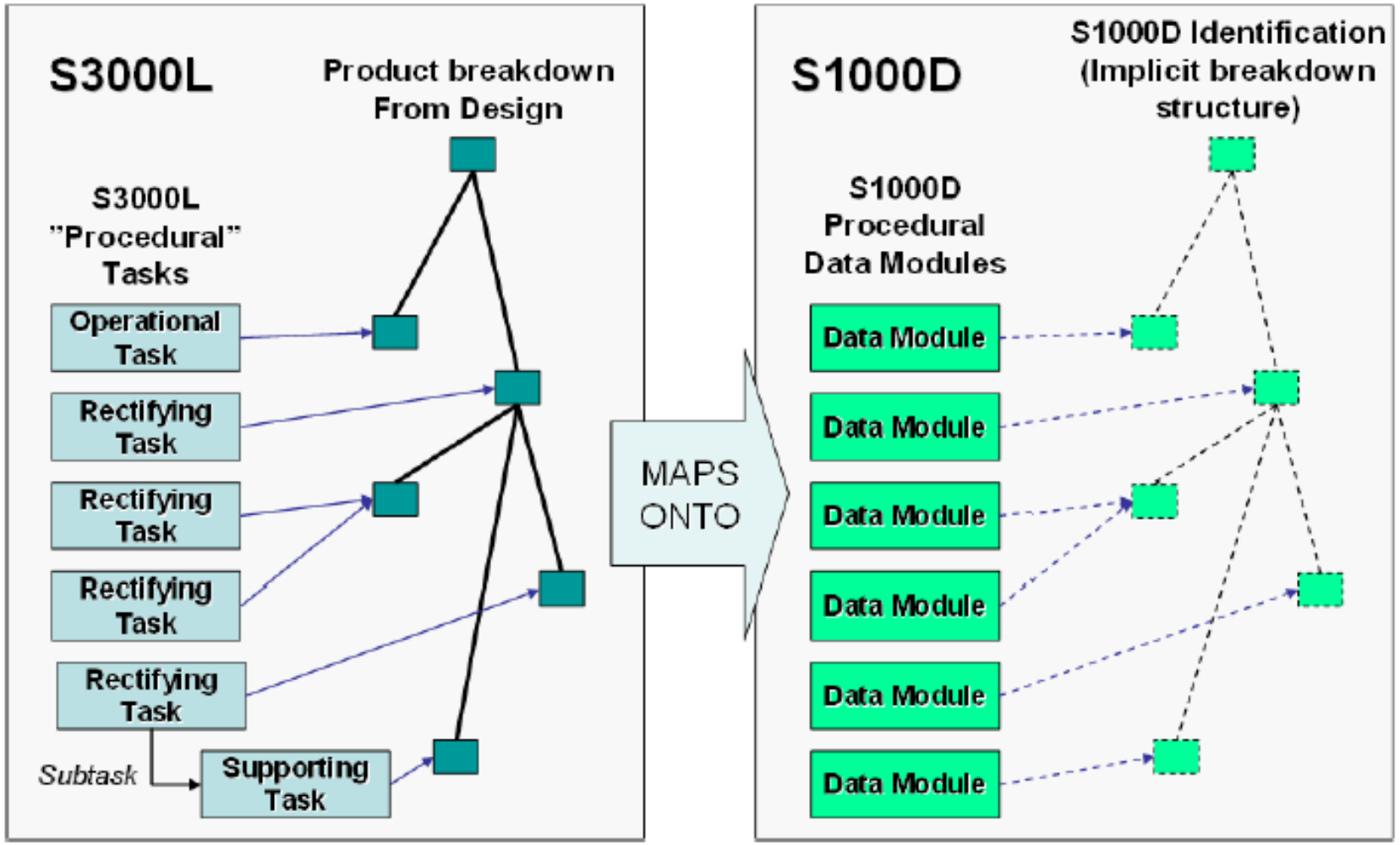
- S1003X uses a subset of the PLCS-based Aerospace & Defense (A&D) business Data EXchange (DEX) specifications
  - DEX1A&D Product breakdown for support and
  - DEX3A&D Maintenance task specification

  for data exchange

- DEXs are in general developed and published in the OASIS DEXlib repository
- DEXlib is the repository of information about PLCS, the OASIS PLCS DEXs and other related technology developed by the OASIS PLCS Technical Committee

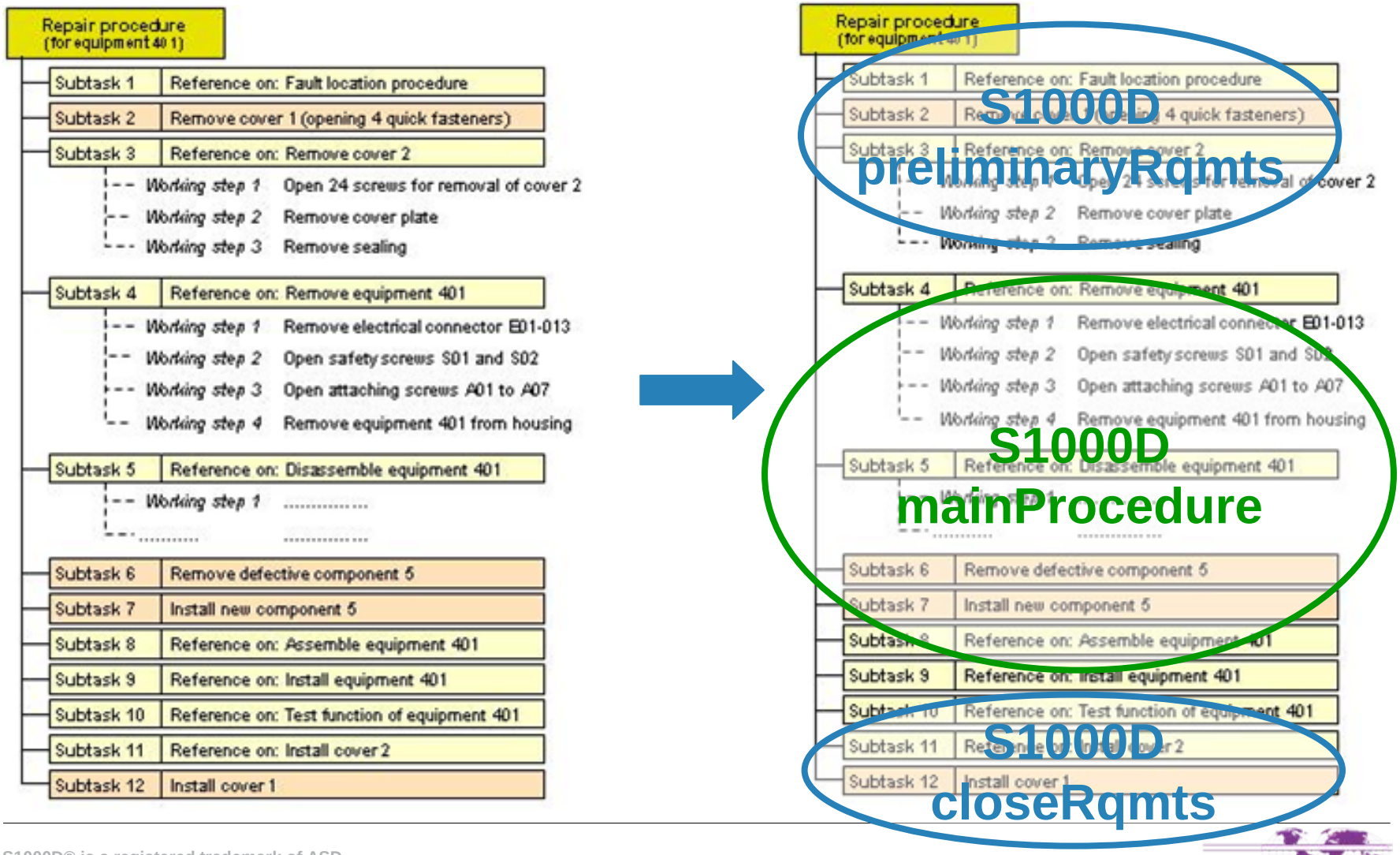
Data mapping (1)

S3000L tasks to S1000D procedural data modules



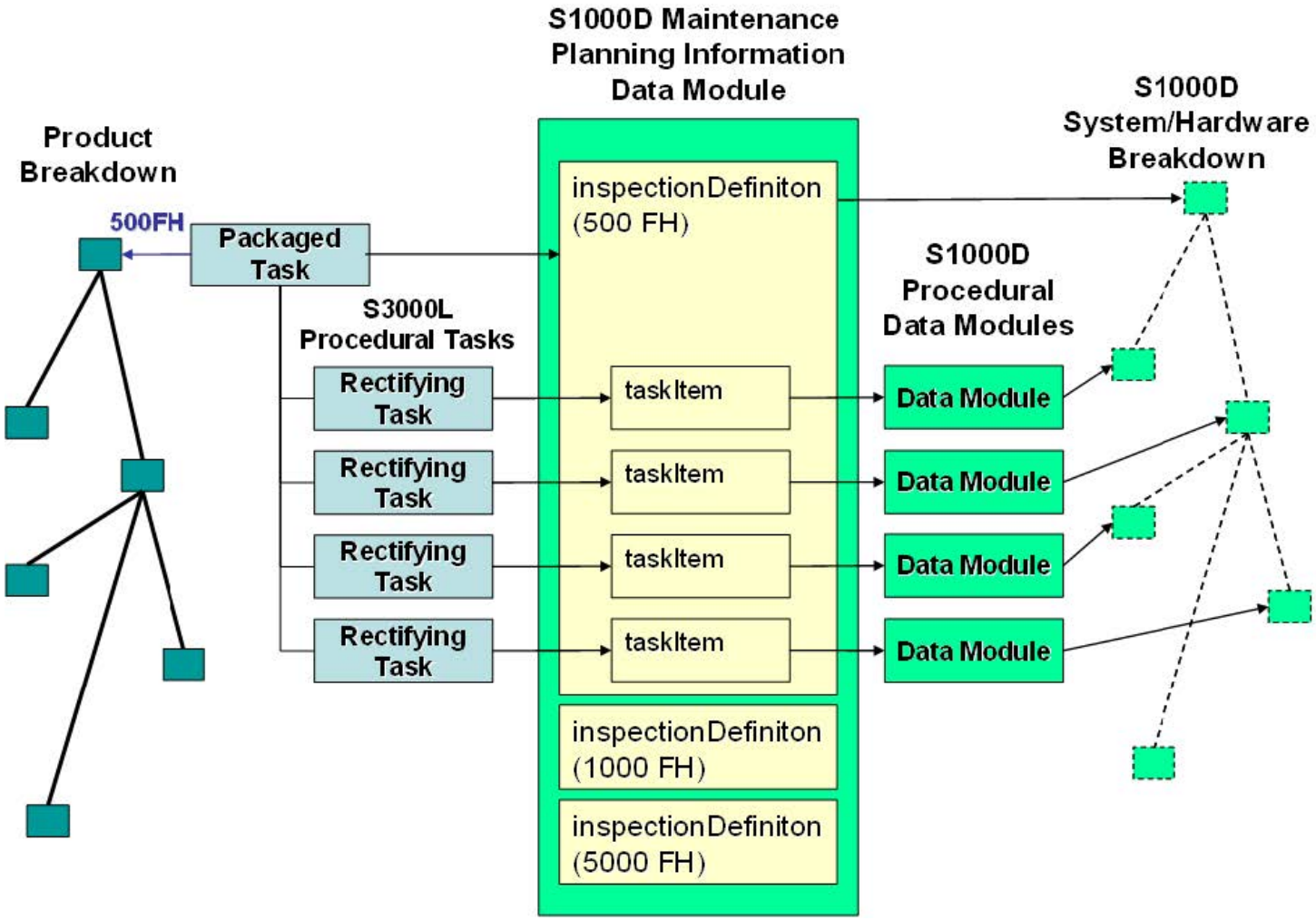
Data mapping (2)

Repair procedure example



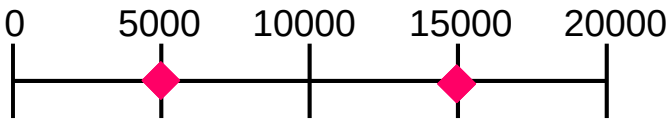
Data mapping (3)

S1000D inspectionDefinition correlation with S3000L tasks



Use case examples (1)

Threshold does not equal - Repeat



Threshold	Repeat
5000 FH	10000 FH

Perform at 5000 flight hours and repeat every 10000 flight hours thereafter

S1000D mapping

```
<limit limitTypeValue="po">
<threshold thresholdUnitOfMeasure="th01">
<thresholdValue>5000</thresholdValue>
</threshold>
</limit>

<limit limitTypeValue="pe">
<threshold thresholdUnitOfMeasure="th01">
<thresholdValue>10000</thresholdValue>
</threshold>
</limit>
```

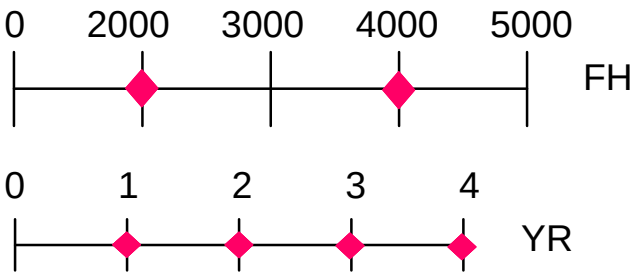
S3000L mapping

An instance of *Periodic_task_limit* with an instance of *initial_threshold* where the *Threshold_definition* is an instance of *Parameter_threshold* with the attribute *Threshold_value* set to the Value = "5000" and Unit = "Flight_hour" and

a repeat association with an associated instance of *Repeat_task_limit* which has a threshold where the *Threshold_definition* is an instance of *Parameter_threshold* with the attribute *Threshold_value* set to the Value = "10000" and Unit = "Flight_hour"

Use case examples (2)

Whichever comes first



Threshold	Repeat
2000 FH	2000 FH
1 YR	1 YR

Repeat at every 2000 flight hours or one year, whichever comes first

S1000D mapping

```
<limit limitTypeValue="pe">
<threshold
thresholdUnitOfMeasure="th01">
<thresholdValue>2000</thresholdValue>
</threshold>
<threshold
thresholdUnitOfMeasure="th05">
<thresholdValue>1</thresholdValue>
</threshold>
</limit>
```

S3000L mapping

An instance of *Periodic_task_limit* with no instance of *initial_threshold* and a repeat association with an associated instance of *Repeat_task_limit* which has two instances of threshold, ie, two associated instances of *Threshold_definition* where the first instance is an instance of *Parameter_threshold* with the attribute *Threshold_value* set to the Value = "2000" and Unit = "Flight_hour". The second instance is an instance of *Parameter_threshold* with the attribute *Threshold_value* set to the Value = "1" and Unit = "Year"

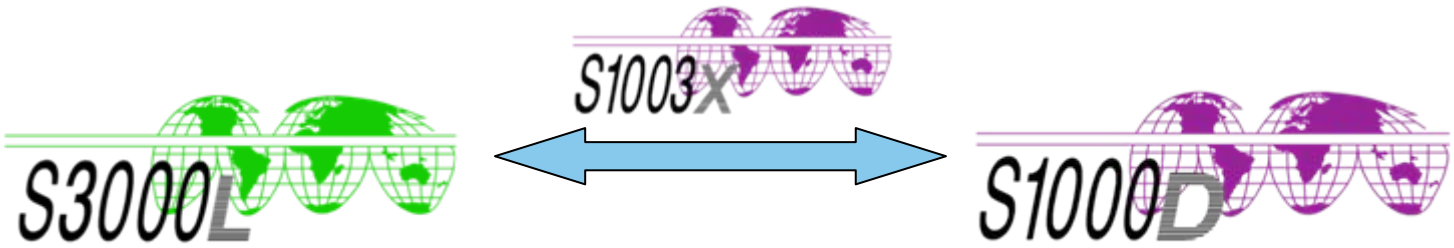
S1000D improvement suggestions

A number of CPFs are outstanding, which are:

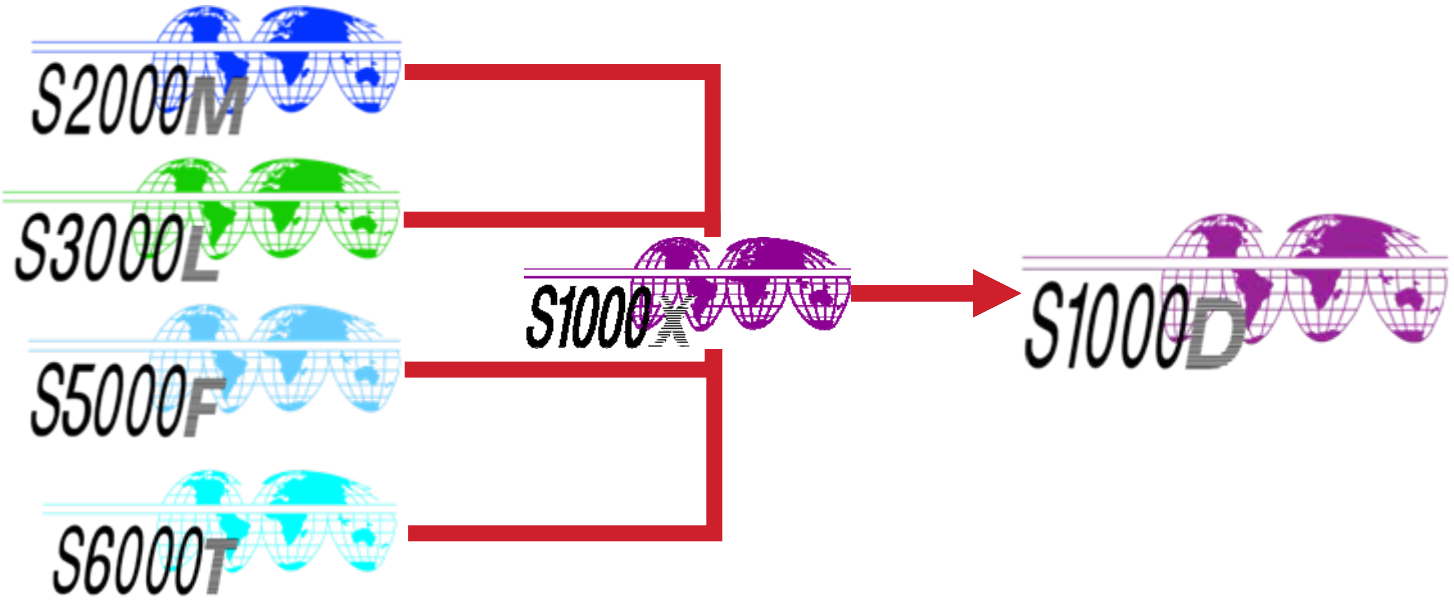
1. 2009-076MTDTT: Remove thresholdInterval from productionMaintData (Inwork)
2. 2009-077MTDTT: Introduce @applicRefId on inspectionDefinition and threshold (Inwork)
3. 2009-078MTDTT: Sampling attributes (Inwork)
4. 2009-079MTDTT: Redefine <limitRangeFrom> to become optional (Candidate)
5. 2009-080MTDTT: Update trigger definition by adding new attribute @triggerOccurrence (Candidate)
6. 2009-081MTDTT: Harmonize supervisor definitions @supervisorLevelCode vs @independentCheck (Candidate)
7. 2009-083MTDTT: Keep only componentAssyGroup under maintAllocation (Inwork)
8. 2009-084MTDTT: Delete attribute @reducedMaint (Inwork)
9. 2009-086MTDTT: Rename issueInfo on rqmtSource (Inwork)
10. 2009-087MTDTT: Amend @reqcondCategory value (Inwork)
11. 2009-137MTDTT: Reference to Taskident from inspectionDefinition (Inwork)
12. 2009-160MTDTT: Explanation of MAC in the info set (Candidate)
13. 2009-161MTDTT: Explanation use of top level prelreqs in schedules schema (New)

S1003X → S1000X development

- **Today:**



- **Tomorrow:**



Summary and way ahead

- **Summary**
  - S1003X defines data required to populate S1000D maintenance planning and procedural data modules from LSA activities
  - S1003X enables configuration-controlled generation of required information for through life maintenance of products based on the PLCS standard
- **Way ahead**
  - transfer S1003X into S1000X taking into account S3000L 1.1 and S1000D 4.1 (or 4.2)
  - enhance S1000X by an import interface from S2000M 6.0 to S1000D
  - define a common ILS use case based on an enhanced bike sample set
  - develop a prototype for connecting LSA, MatSupport and TechPubs
  - provide a proof of concept for the automated generation of data modules from S3000L and S2000M databases
  - implement the outstanding S1000D CPFs to improve the interface
  - manage the synchronization of S3000L, S2000M and S1000D updates
  - define an S1000D data model in support of a common ILS repository

Abbreviations

A&D	Aerospace and Defense
AIA	Aerospace Industries Association of America
AP	Application Protocol
ASD	AeroSpace and Defence Industries Association of Europe
CPF	Change Proposal Form
CSDB	Common Source Data Base
DEX	Data EXchange specification
ILS	Integrated Logistic Support
ISO	International Standards Organization
LSA	Logistic Support Analysis
MTDTT	Maintenance Task Data Task Team
OASIS	Organization for the Advancement of Structured Information Standards
PLCS	Product Life Cycle Support
TechPubs	Technical Publications
UML	Unified Modeling Language
UoF	Unit of Functionality

Thank you

for your attention!

Questions?

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