S1000D User Forum 2010

”Application of S1000D within a state-of-the-art Integrated Logistic Support environment”

September 27 - September 30, 2010
Aerostar Hotel, Moscow, Russia

Product Life Cycle Standards
Kjell.Bengtsson@jotne.com
Jotne

Jotne EPM Technology

World leaders in Industrial Data Management using ISO standards

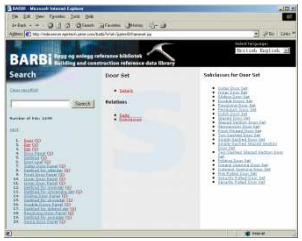
Data modeling
Create your own data models, or use for viewing and documentation (ISO)

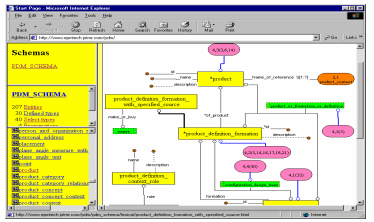
Database management
The ideal tool for data integration and application development projects

Rule engine
Validate your data sets, using your own business, knowledge rules or any other sets of rules

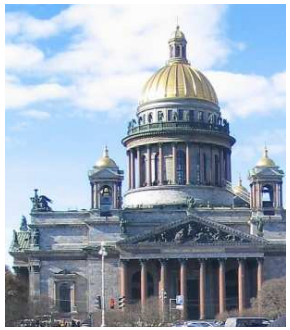
Web services
For use in web server applications (thin clients)

EXPRESS Data Manager™





Universal Solutions for Interoperability and Sharing of Product Data



Офис Jotne EPM Technology в Санкт-Петербурге приветствует вас!

AIA,ASD MOU on ILS Specifications

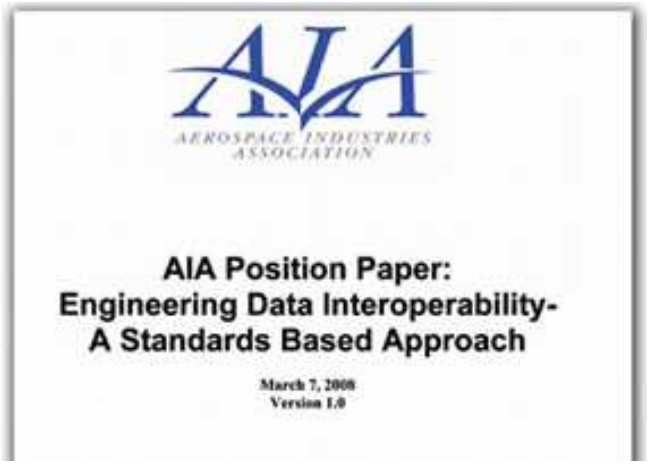
Industry leaders from Europe and the United States signed a memorandum of understanding at the Farnborough Airshow that formalizes their working relationship to develop and maintain an entire suite of Integrated Logistics Support specifications

These specifications are designed to afford users a common, interoperable framework of Support Specifications in the aerospace and defense industries of Europe and the United States

ASD's François Gayet
AIA's Marion C. Blakey

http://www.aia-aerospace.org/newsroom/publications/aia_eupdate/august_2010_eupdate/aia_asd_sign_mou_on_ils_specifications/

AIA support
Two documents available



2008: “ EDIG recommends that AIA members and companies transition to standards-based interoperability solutions based on the Product Lifecycle Support Standard (PLCS) and its associated DEXs”

2009: "best-practice guidelines to help organizations develop their own business cases for transitioning to standards-based data exchange and optimizing their business processes."

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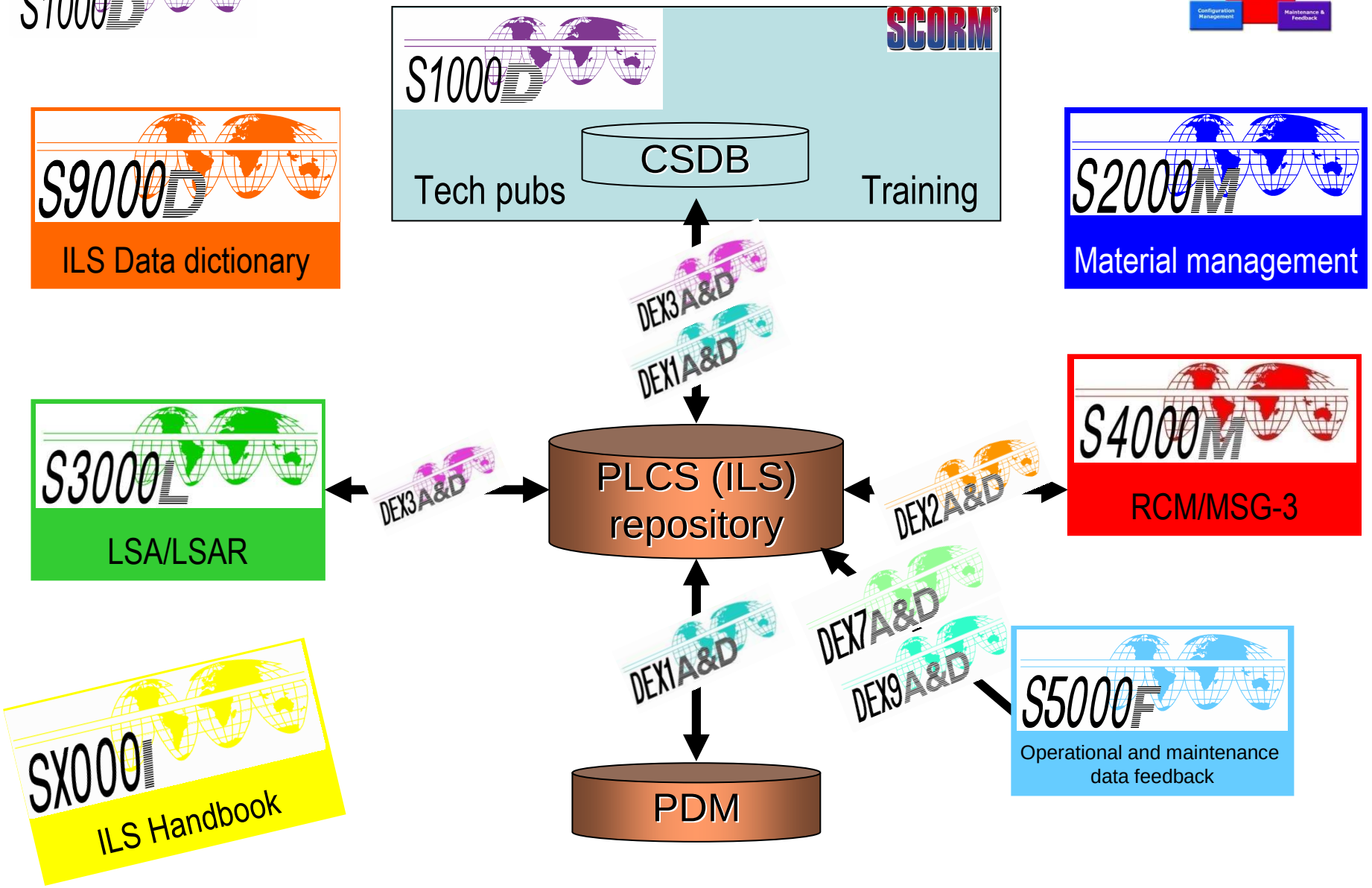
Using PLCS within aerospace companies in accordance with the published AIA best practices guidelines is now becoming widely accepted

ASD Suite of standards supported by PLCS



Source: EADS - Saab

Why PLCS?
(ISO 10303-239)

PLCS can be seen as the standards glue that allows PLM, ILS and other specifications to communicate effectively without the high development and software support costs of custom integrations.

PLCS can free organizations from legacy approaches to product lifecycle support and enable the type of dynamic technical and business needs that are required in the aerospace world today.

PLCS will support your team to Release, Distribute and Archive your PLM and Integrated Logistics Information

CIMdata®

Using PLCS to Harmonize Product Development and Support Environments

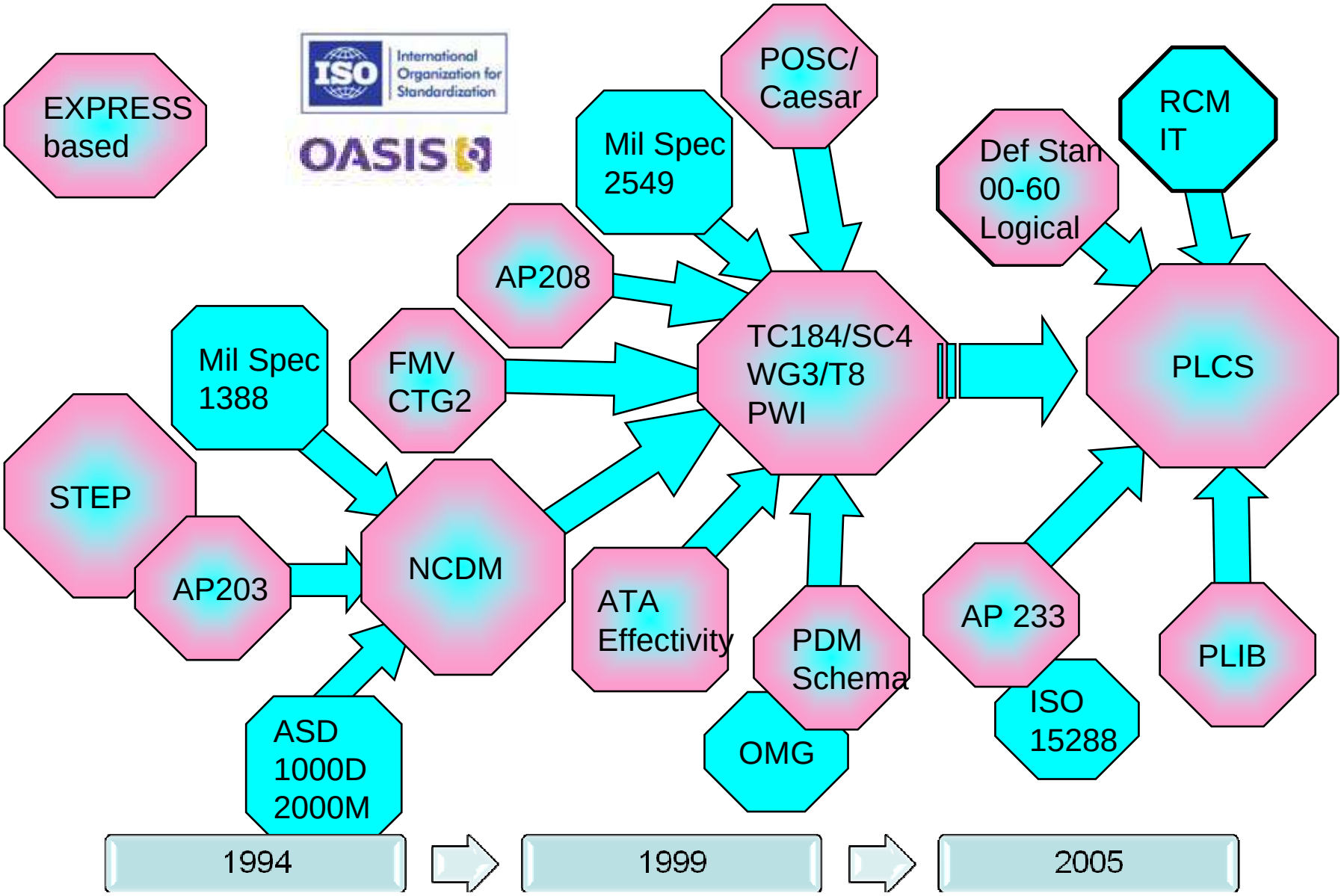
CIMdata Commentary

Establishing a unified PLCS repository built upon open international standards facilities long-term information independency and enables integration and management of diverse product data and processes.

The common baseline can then be used to support baseline comparison and reconciliation throughout the product's lifecycle and across the product states.

- *Reducing the cost of developing and maintaining interfaces across the supply network*
- *Enabling customers, partners, and suppliers to work together while using the different development applications that each has chosen for the individual business*
- *Establishing a common terminology used throughout the product lifecycle*

PLCS - the result from many standardization efforts



PLCS capabilities

Require-ments

Change Management

- Work request
- Approval
- Work order

Provide Support

- Operational feedback
- Activity
- Resource_as_realized
- Planning
- Activity_feedback
- Resource management
- Project

Product Data

- Products
- Versions
- Serialized items
- Document
- Breakdown
- Effectivity
- Configuration

Support Engineering

- Personell
- Organization
- Position
- Qualification
- Resources (Required)
- Condition
- Task
- Location
- Facilities
- Task_method/step

Extensions

- State
- Risk
- Observations
- Multi linguism

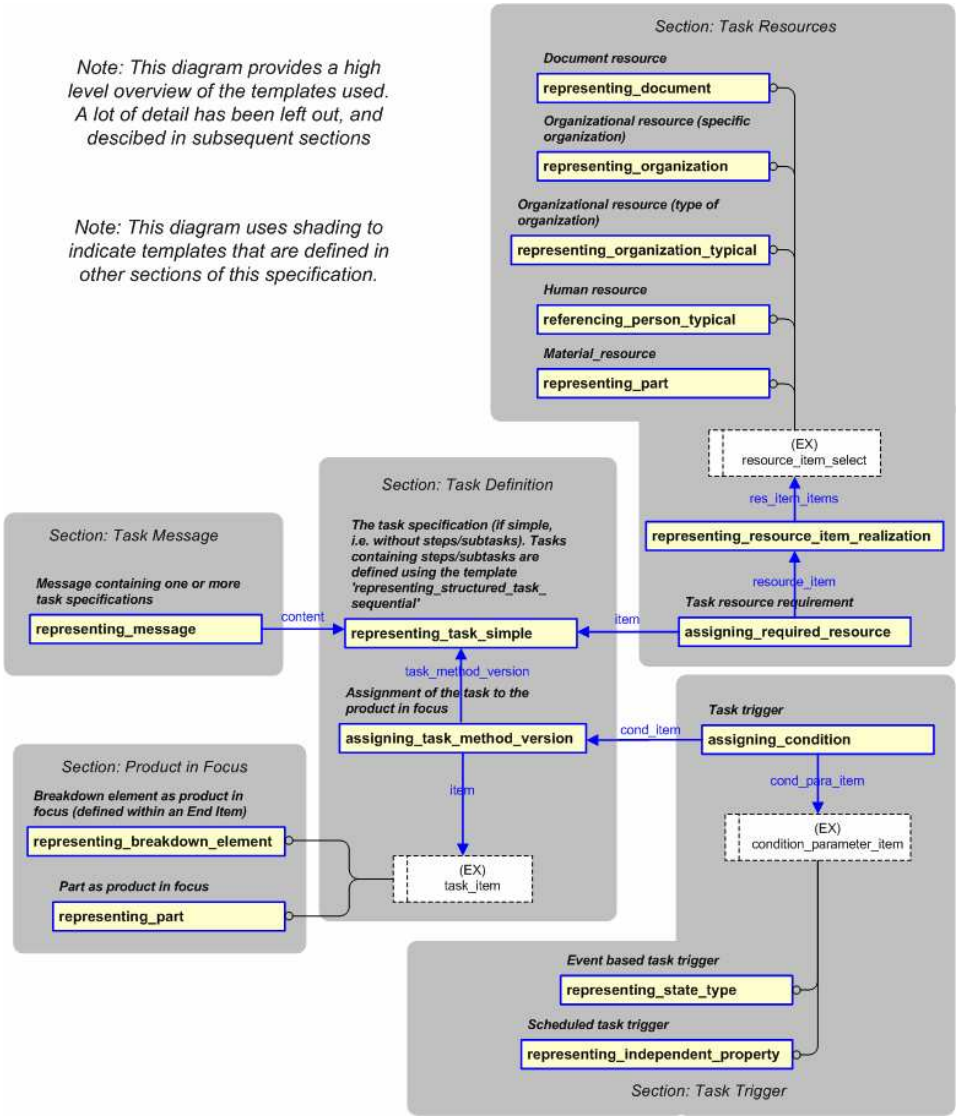
PLCS – Data Exchange Specifications

- DEXs are: (like DEX 1 and DEX 3)
  - Subsets of the AP239 Information model
  - Selected to meet a specific data exchange need
  - Built from relevant modules
  - Supported by usage guidance, capabilities, templates and reference data
  - Can be refined from other DEXs
- DEXs may be standardized at any level (work group, company, project, organization, national, international)
- DEXs enable
  - Consistent implementation of AP239
  - Data consolidation through time

DEX3: Task Specification Overview

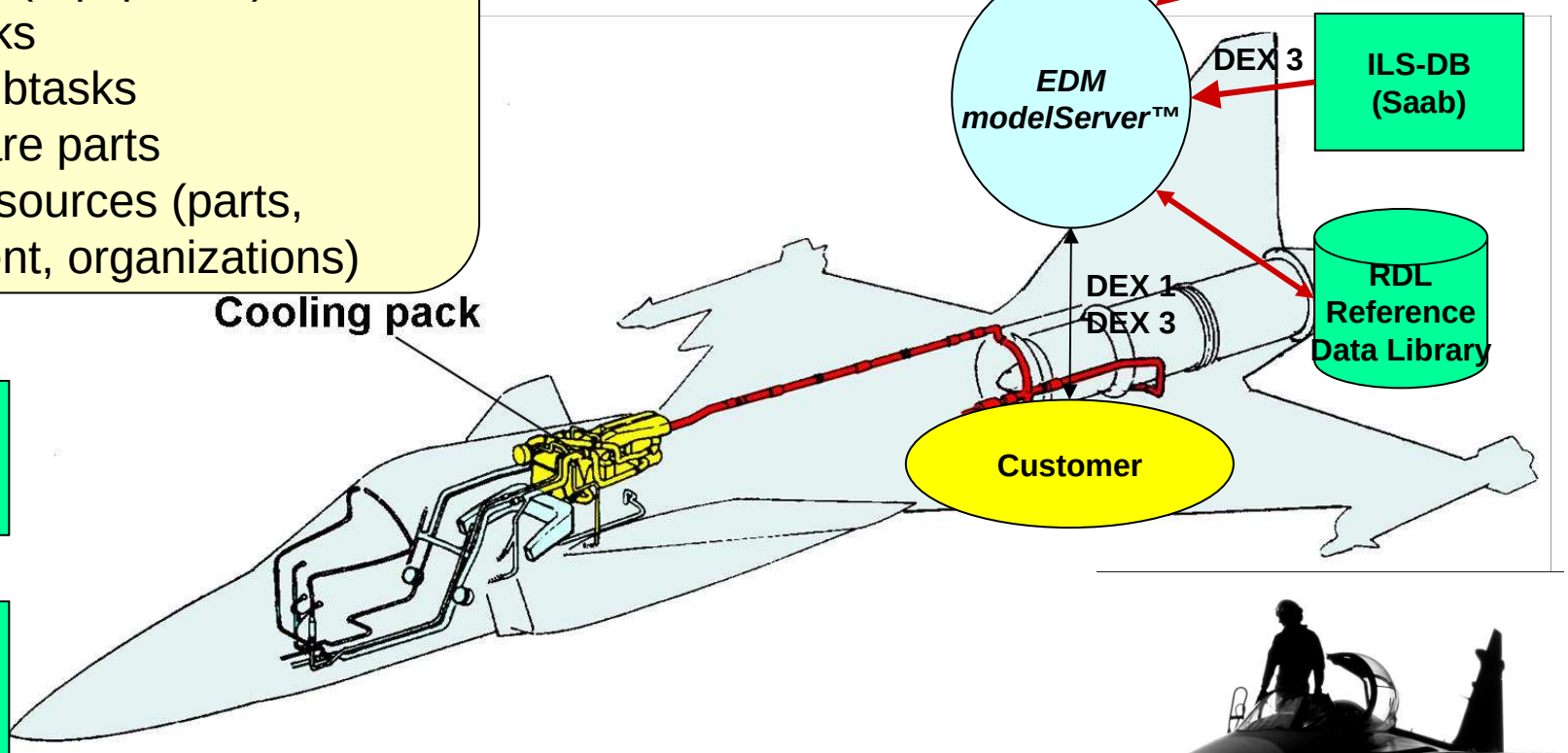
- Templates used to Configure DEX

Product in Focus;
Task definition;
Task resources;
Task trigger;
Task end item context;
Structured task;
Task effectivity;
Task compound conditions representation;
Task administrative information;
Task message;
Optional characterizations of templates;



Example data: Environmental control system

54 configuration items
66 parts (equipment)
340 tasks
5600 subtasks
200 spare parts
1350 resources (parts, document, organizations)



Objectives of OPDIM

Open Product Documentation and Information Management

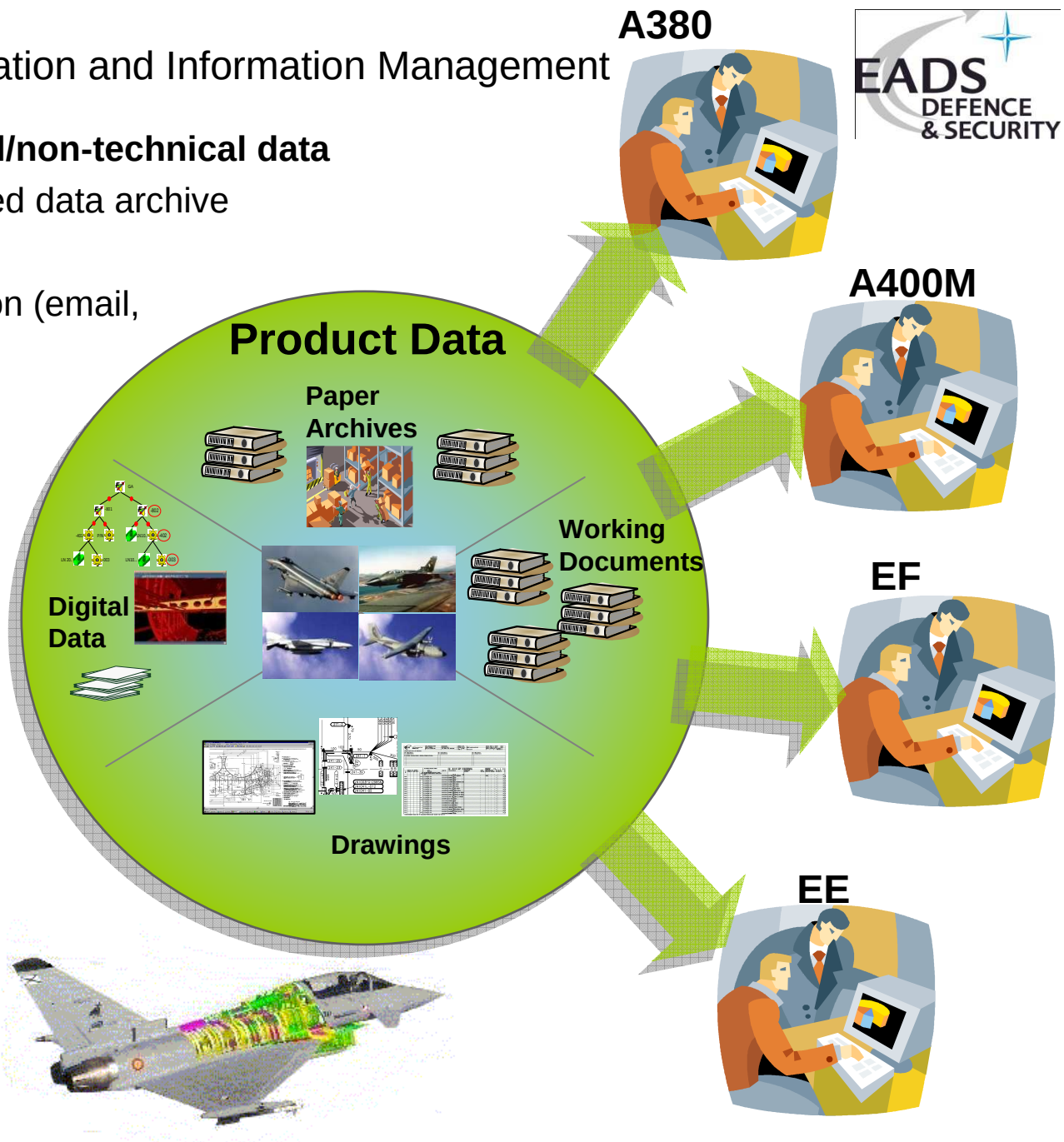
Harmonization of technical/non-technical data

- Redundance-free structured data archive
- One master document
- Harmonized communication (email, supplementary details)
- Individual Data Access
- Knowledge Mgmt
- Liability Proofs
- LTA
- Other LC Application (ISS)
- Maximize working archive
- enterprise wide knowledge/data sharing

…

Side Effects

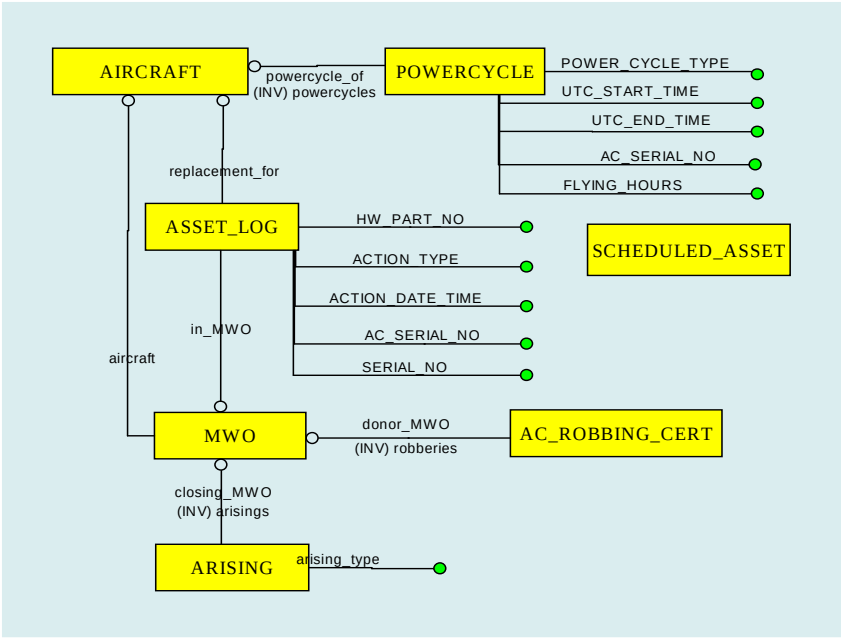
- Less paper archives
- Less harddisk space
- ...

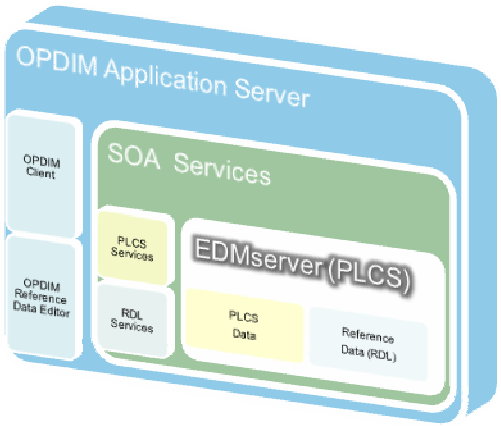


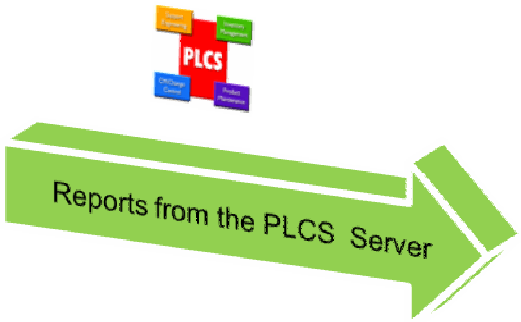
In Service System information : Key Performance Indicators (KPI) Populated in the PLCS repository using DEX 11

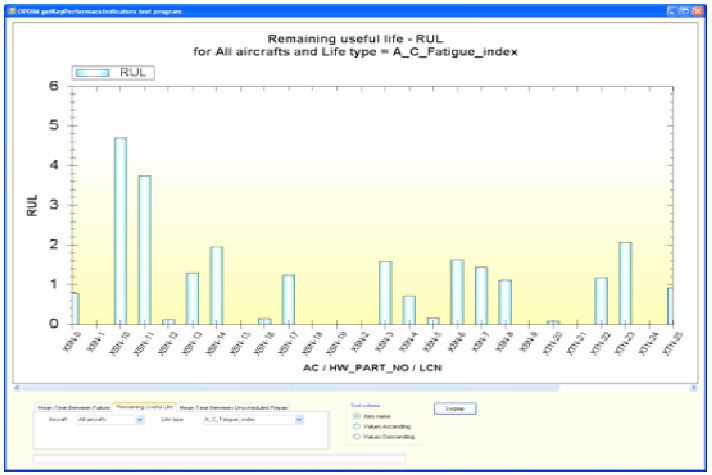
Indicator name
Aggregate level
From month
To month

Indicator name can have the following values:
MTBUR – mean time between unscheduled replacements
MTBF – mean time between failure
MMH/FH – maintenance man-hours pr. flying hours.
Aggregate level may have the following values:
LRI – line replaceable item
AC – aircraft
SQ – squadron
FLEET - the entire fleet









One Demo Case for S3000L
Saab Underwater Systems

Main Objectives for demo implementation:

- ***Minimise data transfer steps***
- ***Shorten data edit cycles***
- ***Integrated workflows supporting processes***
- ***Internal data consistency checks***
- ***Bi-Directional Information Exchange***
- ***Information Robustness***
- ***Lean Information Production***

Task Relationships

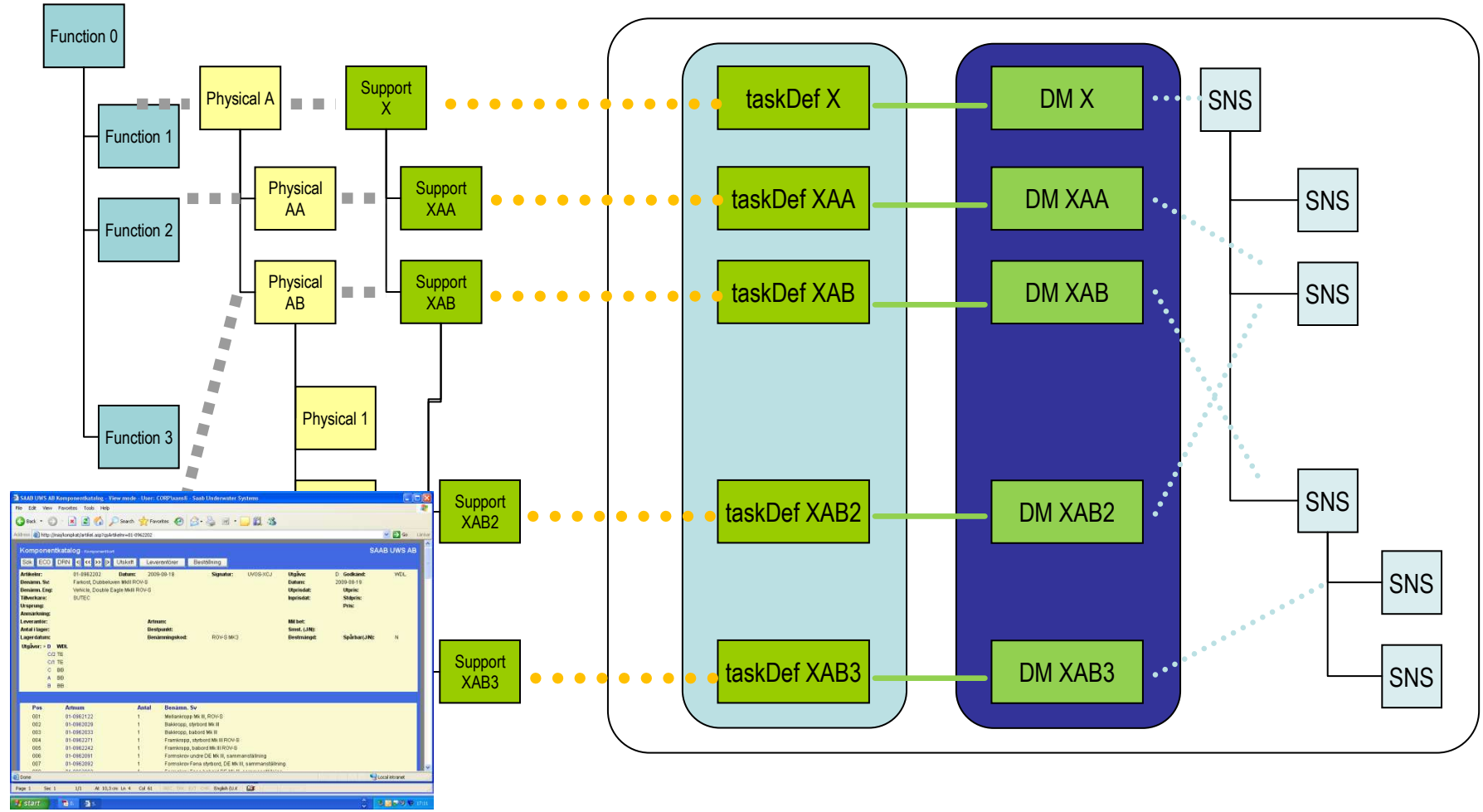
PLM PLCS S-series

Engineering Analyses - PLM/S3000L

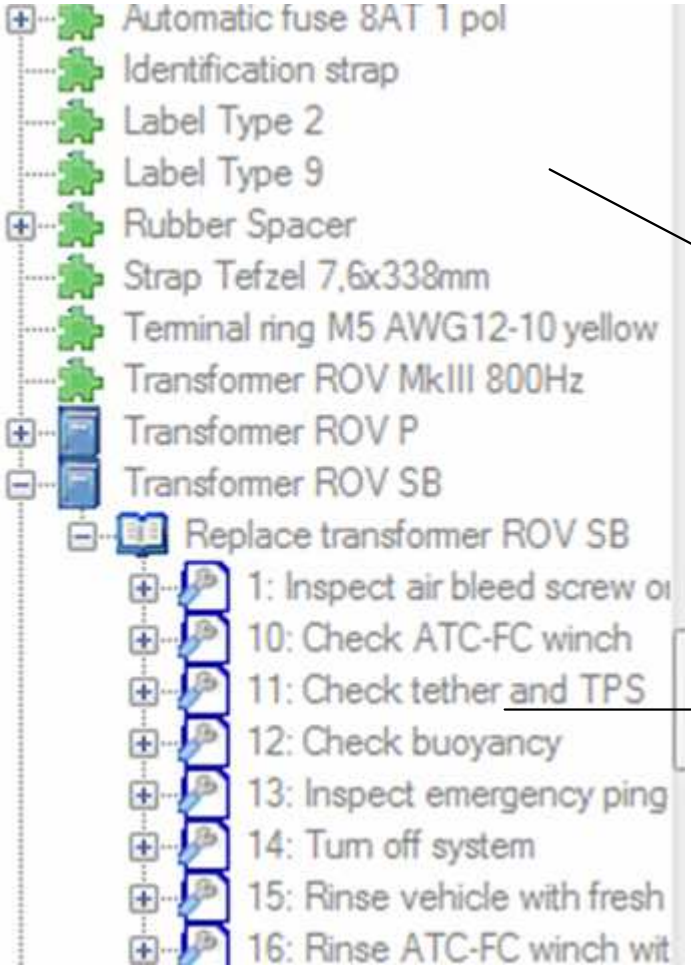
S3000L/S1000D Maintenance Tasks

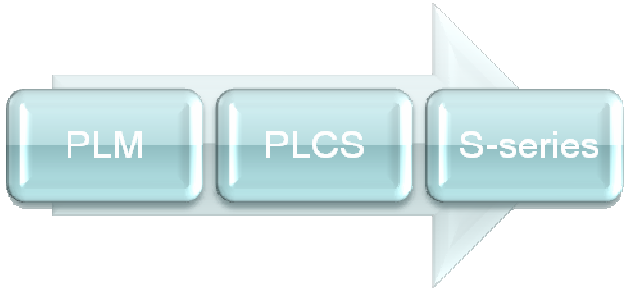
S1000D Data Modules

S1000D System/Hardware Breakdown



PLCS repository





Product Structure
In the PLCS Repository

Task Connceted to Product Structure in the same PLCS Repository

LSA Application

Arkiv Redigera Visa Infoga Format Poster Verktyg Fönster Hjälp

V7323 ; DE MkIII ROV-S ; 00 ; P
- V7323A ; Vehicle set ; 00 ; P
- V7323B ; On-board system ; 00 ; P

V7323 ; DE MkIII ROV-S ; 01 ;
- V7323B ; On-board system ; 01 ;
  - V7323B01 ; ATC-FC winch ;
  - V7323B07 ; SCU ; 01 ; P
  - V7323B11 ; Cradle ; 01 ; P
  - V7323B12 ; Launch and retri
  - V7323B14 ; Installation set c
  - V7323B15 ; TPS Launcher S
    - V7323B15A ; TPS Laun
      - V7323B15A01 ; Rail
        - V7323B15A01A
          - V7323B15A01A01 ; Tether wheel ; 01 ; P
          - V7323B15A01A02 ; Ball bearing, upper ; 01 ; P
          - V7323B15A01A03 ; Ball bearing, lower ; 01 ; P
          - V7323B15A01A04 ; Radial seal, up
          - V7323B15A01A05 ; Radial seal, low
      - V7323B15A02 ; Cradle ; 01 ; P
      - V7323B15A03 ; Trolley ; 01 ; P
      - V7323B15A04 ; Hydraulic system ; 01 ; P
    - V7323B15B ; TPS Head ; 01 ; P
    - V7323B15C ; Pulley wheel ; 01 ; P

Select project: ROV-S
Num. of levels: All

Part no: 01-0962202 Levels: 3

Part in.	Name	Part no.	Qty.	Description	Pno.	Level	Rev.
		01-0962202	1.00	Vehicle, Double Eagle MkIII ROV-S	0	0	D
01-0962202	001	01-0962122	1.00	Middle section Mk III, ROV-S	1	1	B/3
01-0962122	299 Sheet	01-0951484	12.00	Locking House, female	2	2	C

Failure Modes | Requirements

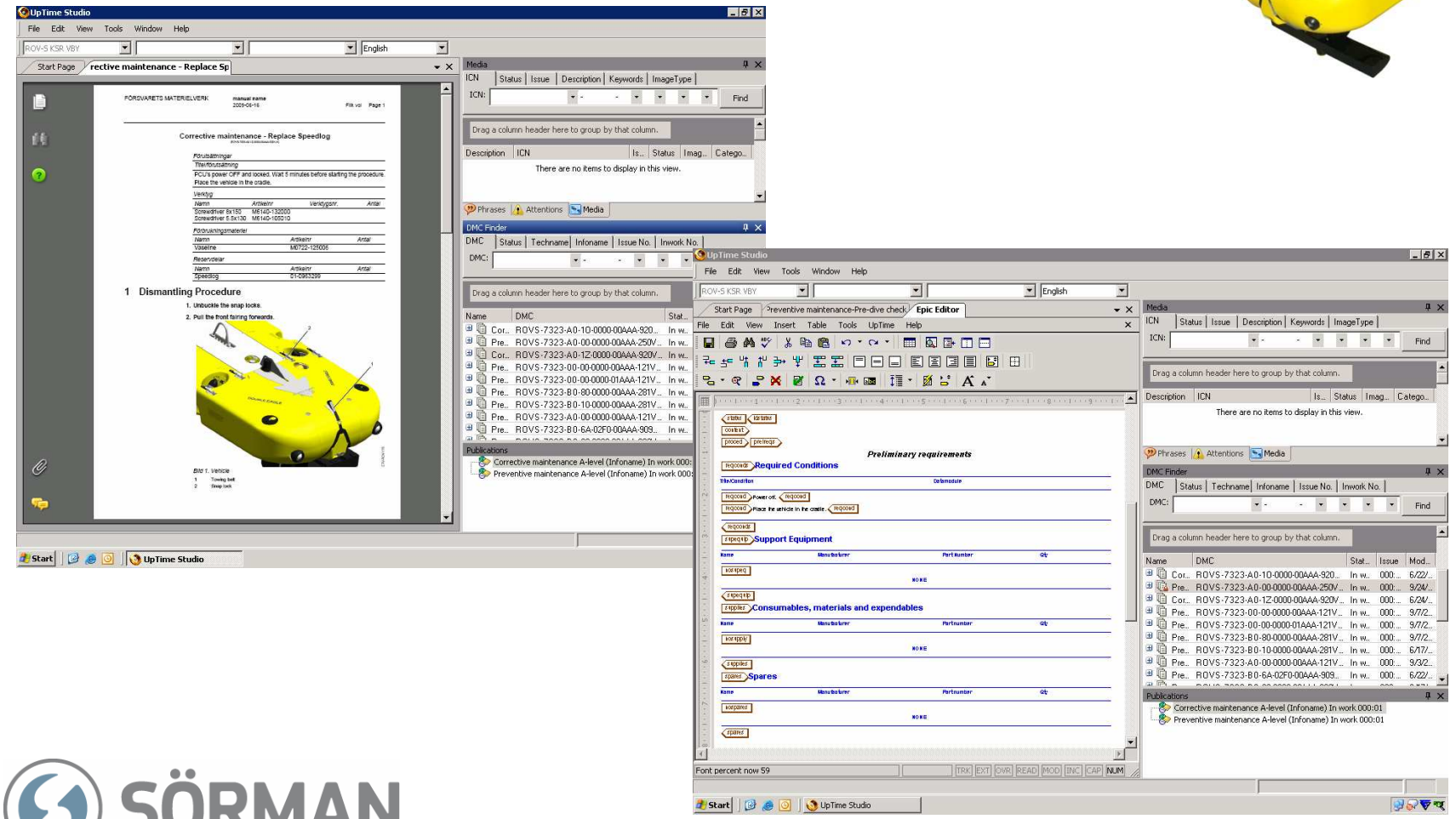
General | Sub Task Definition | Provisioned Items | S&TE | Facilities | Failure Modes | Failure dete

Task Frequency: 0,0126 0000126 Calculate

	Measured			Predicted	
Mean Man-Hours:	2,43	00243	Calculate		
Mean Elapsed Time (Hours):	2,43	00243	Calculate		

These fields show the formatting according to 00-60

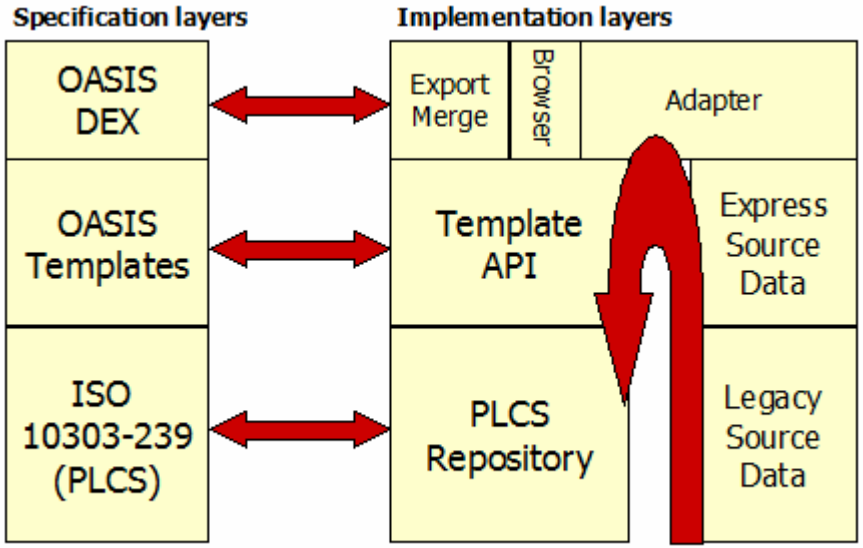
S1000D application - UpTime



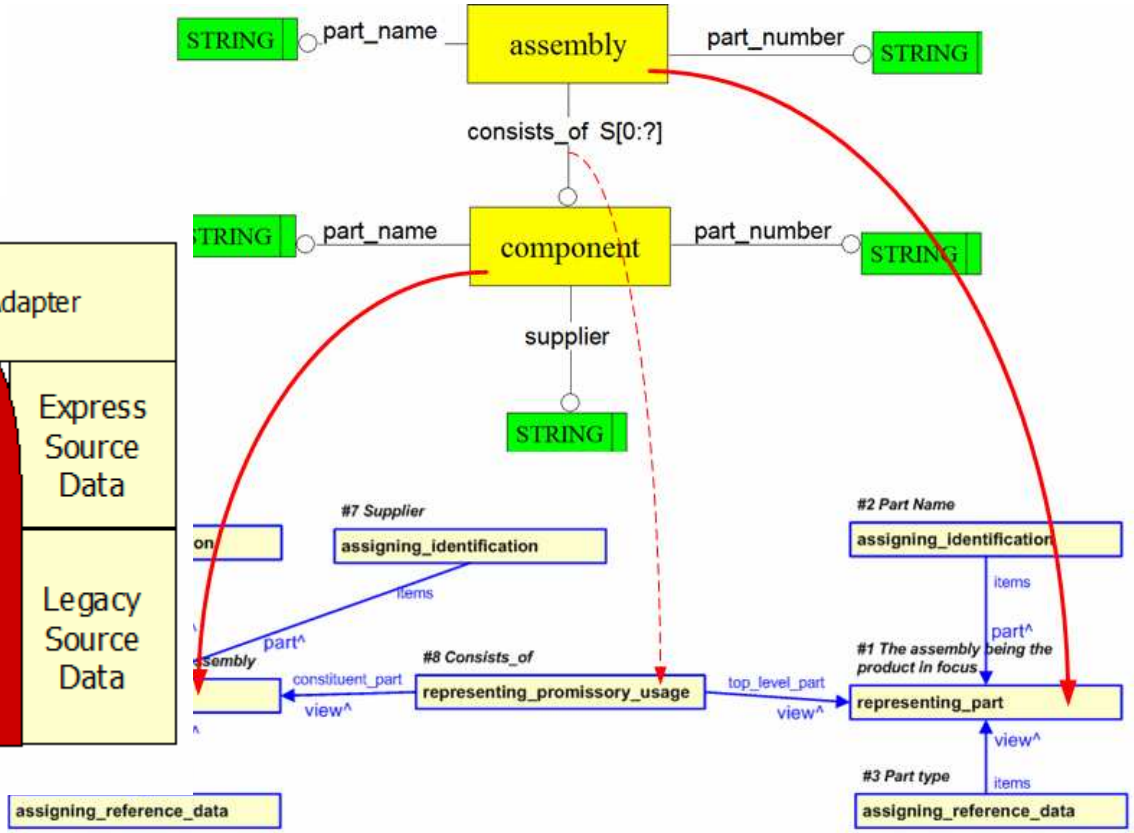
PLCS Implementations

With the right people, technology and processes a PLCS Adapter is about 200-400 hours

PLCS tools

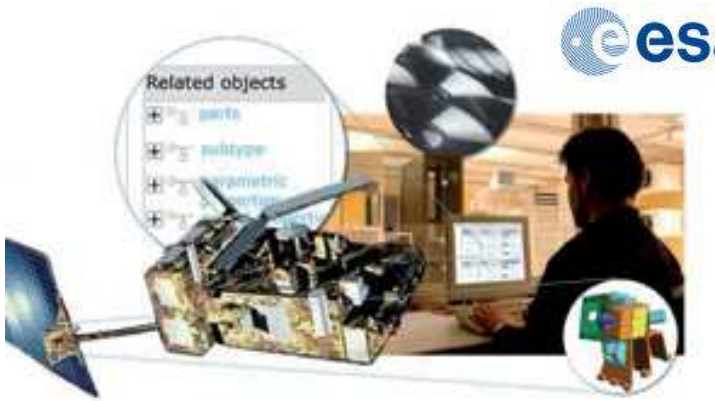


Mappings



Other PLCS take up

Requirements: The PM shall require the use of International Standards Organization (ISO) 10303, *Standard for Exchange of Product (STEP) Model Data, AP239, Product Life Cycle Support*, for engineering data.



The TruePLM application uses the PLCS standards to structure & exchange complex system data over the entire life of the project.

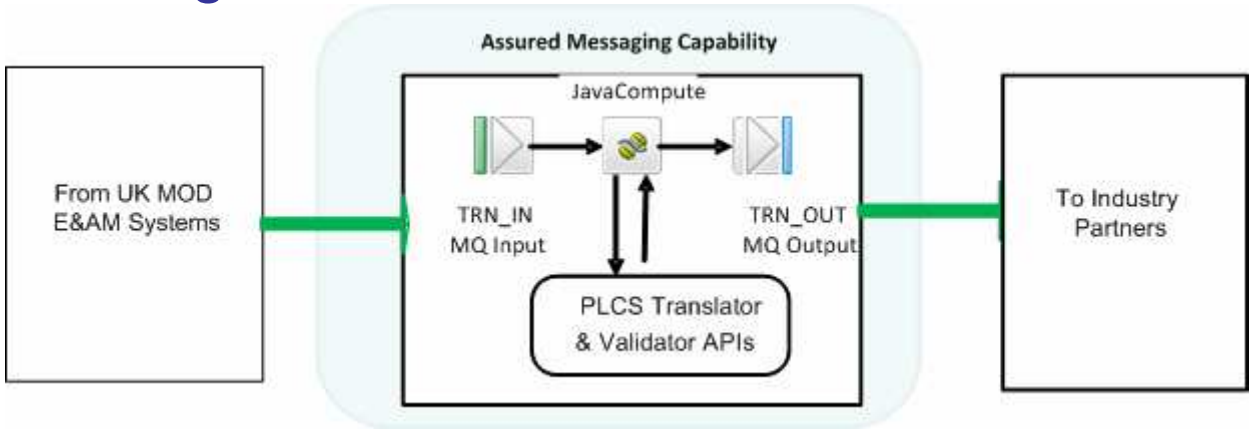
NORWEGIAN ARMED FORCES

The Norwegian Armed Forces planning to support PLCS in the new Logistics system. Also the “Form 5008” requires PLCS.

LOGSA Support to Specifications

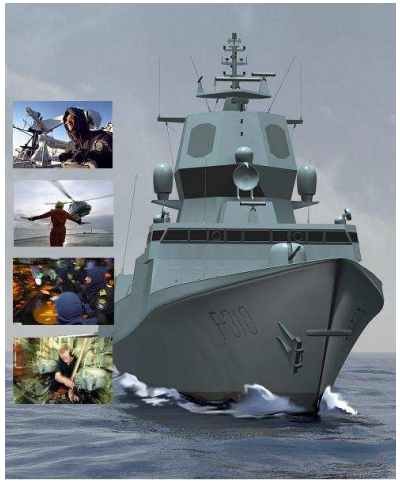
- **US Army Lead and S1000D User Group Co-Chair for S1000D**
- **US Army Lead in Developing the Mil-Std-3031 for Army/DoD Implementation of S1000D, Version 4**
- **US Army Member of S2000M PLCS Task Team (PLCSTT)**
- **US Army Member of S3000L Development Committee**
- **US Army Member of Maintenance Task Data Task Team (S3000L, S1000D)**
- **US Army Identifying participation in S5000F development and testing**
- **US Army Member of Pilot Programs Implementing Updated LOGSA PLCS 0007 DEXs**
- **US Army Member (Lead) in PLCS Implementers Forum (Planned)**

Logistic Information PLCS Translator



- provides Engineering & Asset Management data feed from UK MOD to Industry partners
  - part of the Assured Messaging Capability
  - target partners include Rolls-Royce & BAE Systems
- MOD pilot implementation successfully completed
  - UK MOD DE&S Log NEC LCIA team as customer
  - developed in 2010 by LSC Group
- built from UK_Defence PLCS DEX library (based on core PLCS DEXs and templates)
  - provides a thin, highly coupled defence logistics business layer
- translator features
  - data output in form of STEP P28 XML files
  - EXPRESS-X translator developed using EDM
  - EDMruntime deployed on an IBM Pseries AIX 5.3 platform
  - integrated into IBM Message Broker workflow

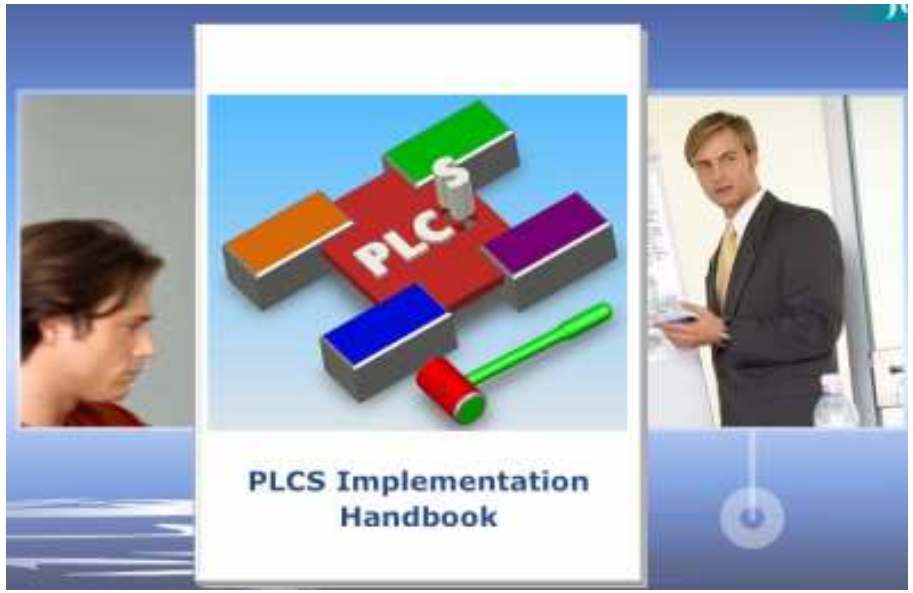
Other PLCS pilots



SIMBASE

esa

PLCS Implementation Handbook



The purpose of the PLCS implementation handbook is to provide practical guidelines to project managers, solution architects, data modelers and software developers for the development and implementation of Data Exchange mechanisms that use the Product Lifecycle Support standard (PLCS) within a business environment. The handbook is meant to be an introduction to the concepts and methodology for providing software solutions that support the PLCS standard.

PLCS Video

Jotne has created a short, concise video that will walk viewers through an explanation of how a typical company would go from defining the data model to creating a standards-based product data interoperability solution.

PLCS video is available at:
http://www.epmtech.jotne.com/see-the-plcs-video.4582923-109293.html