



MANAGING RISK

PLCS-S1000D data exchange demonstration



Project briefing

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- Project motivation
- PLCS
- Project overview
 - Background and schedule
 - Business scenarios
 - System environment
 - DEX development
 - S1000D DEX
 - WO concepts
- Summary

Information integration between standards

- Product data
 - Design data is often managed by PDM systems, Product configurations are managed in a different system, etc.
 - The product data is evolving over the entire lifecycle of a product (from design to disposal)
 - Product data needs to be exchanged across systems and organizations
 - PLCS provides a model and platform to capture product data model in its different usage contexts
- Technical documentation
 - Today: Input from Logistics Support Analysis (LSA), Maintenance Planning, Product Configuration Management, Provisioning, System design/engineering
 - S1000D is built around a product structure
 - S1000D contains product data
- PLCS and S1000D overlap and complement each other ...
- Common goal: provide up-to-date information necessary to operate, service, repair and support equipment throughout its lifetime

PLCS

- A standard for exchange of product support information **MANAGING RISK**



- **PLCS: Product Life Cycle Support**
- International standard ISO10303–239
- AP 239
 - Extends the STEP standard from the design and manufacturing domains into the product support domain over the lifecycle

The design of the in-service support system,
providing and sustaining the support infrastructure

Covers buying, storing, packing, movement,
issue and disposal of products and
support elements



- A generic data model designed to hold data for product support
- Defined in EXPRESS to facilitate integration with other product data
 - Maps to multiple representation formats
 - EXPRESS-G graphical representation
- 153 Modules, ~500 Entities, ~1200 attributes
- Can be extended using classification based on reference data, stored in external libraries (RDL)
 - Built around OWL
- Standardized exchange formats
 - P21 ASCII based exchange format
 - P28 XML-based exchange format

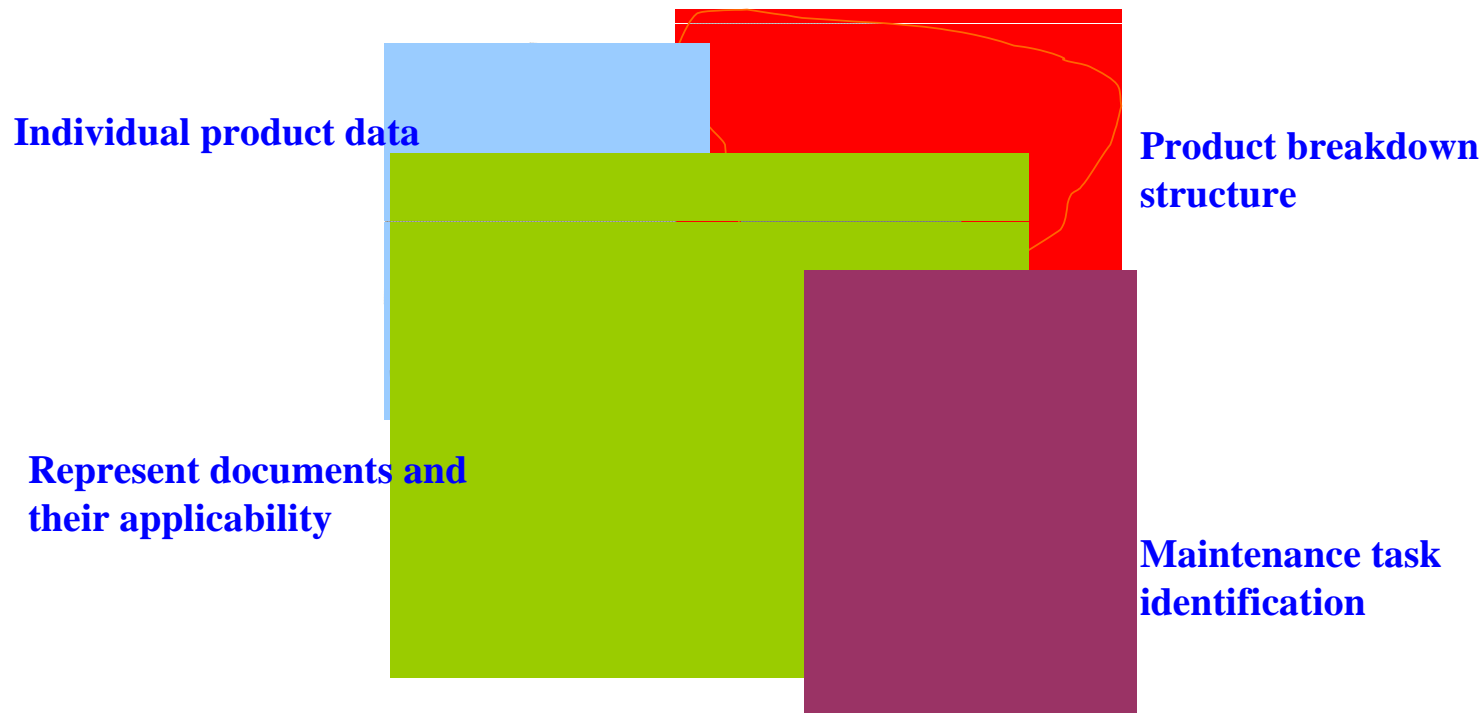
The PLCS information model holds through life data for:

- **Product breakdown**
- Materiel/**parts**
- Configuration items
- Individual items
- Product states
- Product configuration
- **Versions**
- Properties
- Associations
- Contexts
- Requirements
- **Documents and files**
- **Tasks**
- **Activities**
- Roles
- Organizations
- **Persons**
- Time
- Locations
- Events
- And more.....



What is a PLCS DEX?

- A DEX (Data EXchange set) is a selected subset of the PLCS Integrated Data Model formed to support efficient exchange of information between IT systems or organizations
- The DEXs are defined to support specific business processes.
- Used for instantiating a part of the PLCS model
- DEXs partly overlap



Active development

- Aviation maintenance DEX
- Generic Task DEX
- Business Task DEX

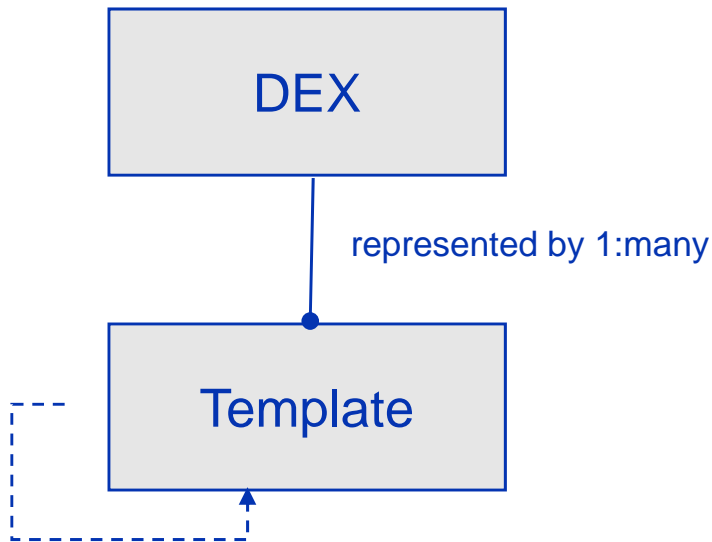
Published on Dexlib not standardized

- *Product breakdown for support*
- *Product as individual*
- *Fault states*
- *Task set*
- *Maintenance plan*
- *Work package definition*
- *Work package report*
- *Operational feedback*




The DEX information models

- DEX information models are defined using EXPRESS
- With the use of templates defined by OASIS –
 - a grouping mechanism to reduce the complexity of information models
- The DEX definitions in this project are based on the OASIS definitions



- **Background and schedule**
- **Business scenarios**
- **System environment**
- **DEX development**
 - **S1000D DEX (first draft status/review started)**
 - **WO concepts**
- **Test data development**
- **Development**

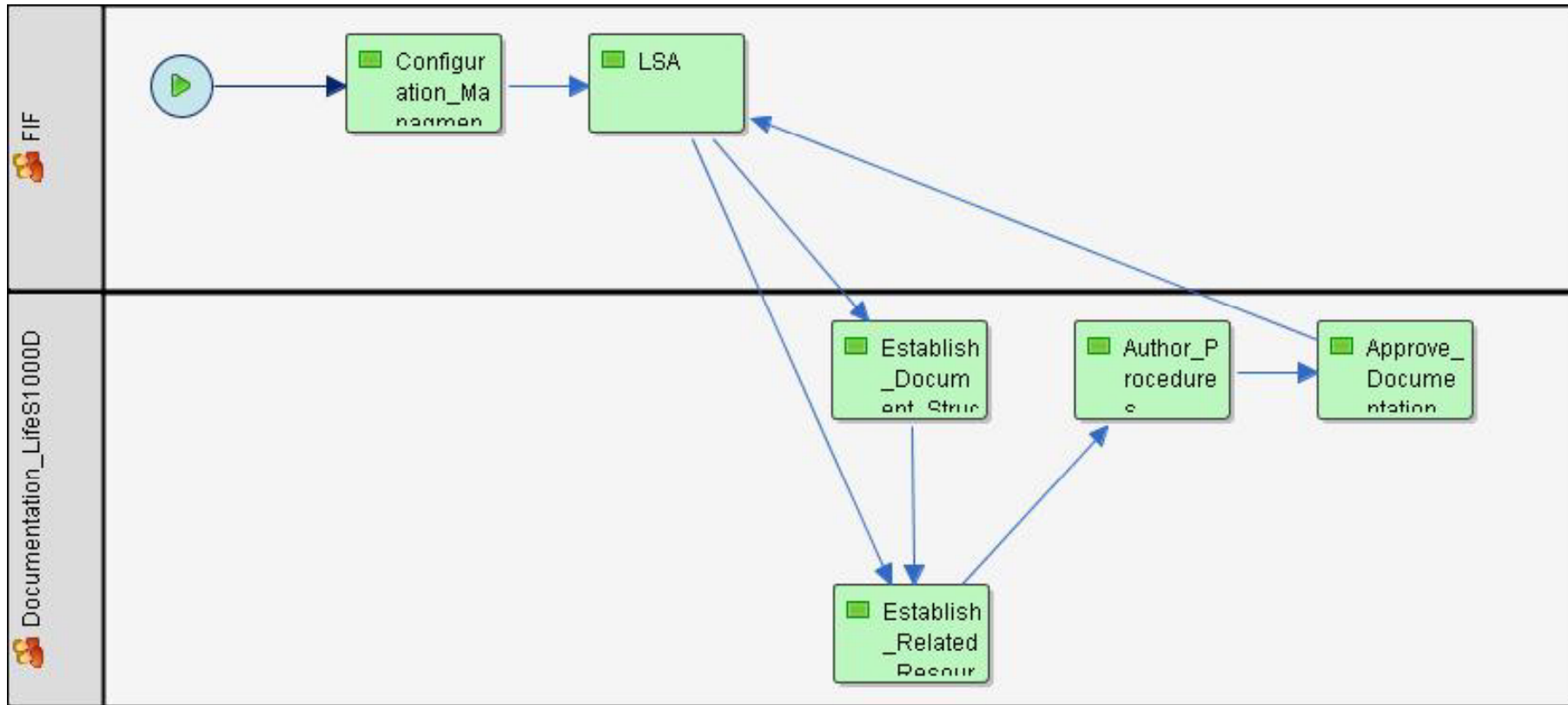
- Customer – Norwegian Defence Logistics Organization
 - A collaboration between
 - DNV (Project management)
 - Corena
 - EPM Technology
- 

The image shows three logos: CORENA (red text with a grey arrow), Jotne (teal text with a striped background), and EPM TECHNOLOGY (black text).
- First phase – **Sept-Dec 2006**
 - Study of PLCS and S1000D
 - Focus on the data exchange to establish a technical documentation
 - Second phase – **May-Dec 2007**
 - Extended focus in order to fit into a work order business scenario
 - Creation of PLCS data exchange sets
 - Development of test data
 - Development of a demonstration of data exchange between two commercial products (EDM/Life*S1000D)
 - **A sneak preview of work in progress ...**

- Establish the technical documentation based on the LSA analysis (represented in PLCS)
- Use information from the technical documentation in a work order context (up-to-date technical documentation)
- Represent a work order in S1000D and use an S1000D environment to generate a work order document
 - Interface for technician to perform the job
 - archive purposes

Scenario

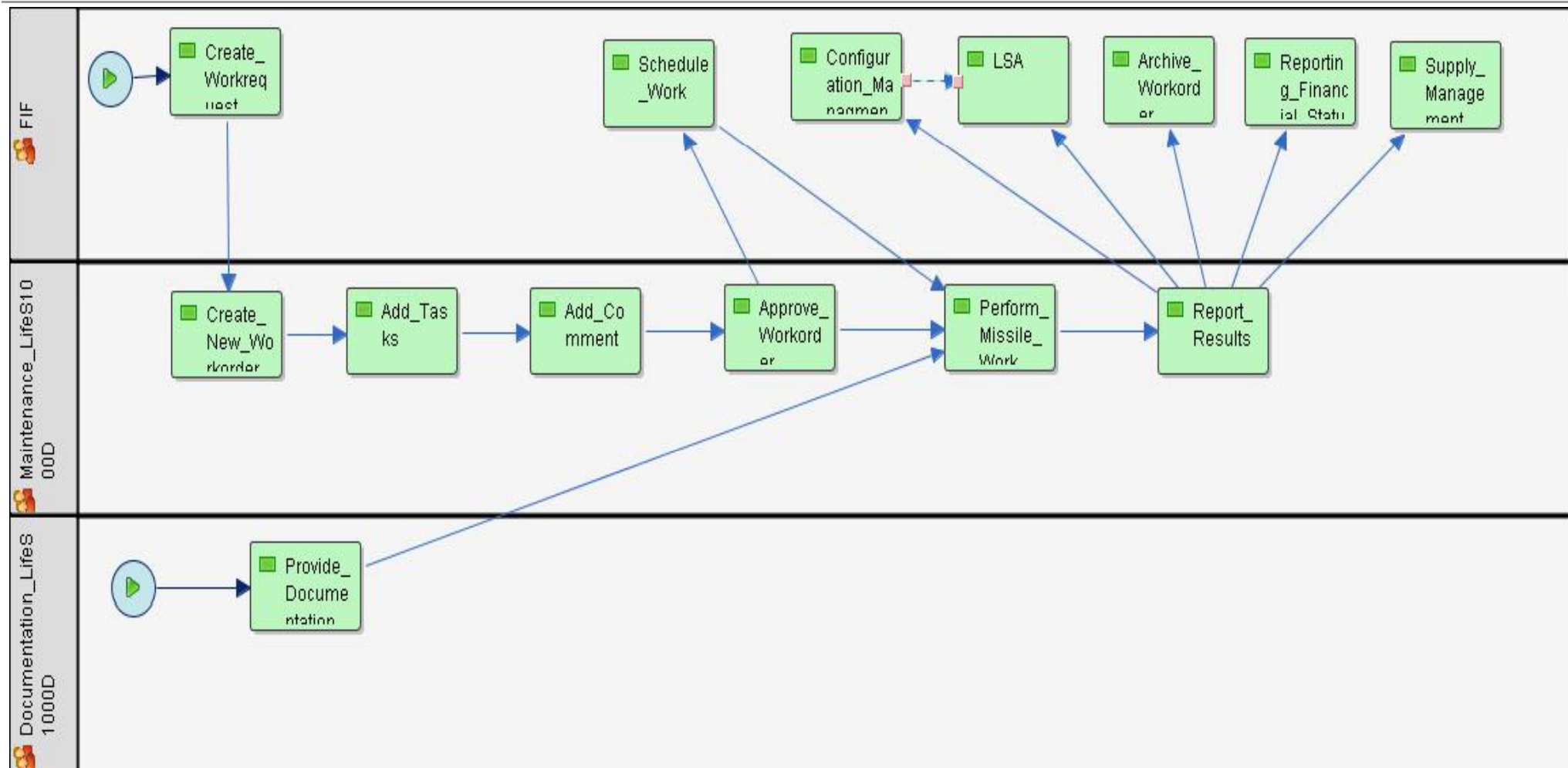
– Establish the technical documentation



- Based on the LSA analysis (represented in PLCS); S1000D procedural data model
- Business rules (exchange and agreement around information codes, ILC codes, ICN codes)
- Master data
 - PLCS (*breakdown structure*, task, resources)
 - S1000D (*breakdown structure*, procedural description (steps))
- Applicability
- Data exchange is handled using the S1000D DEX

Scenario

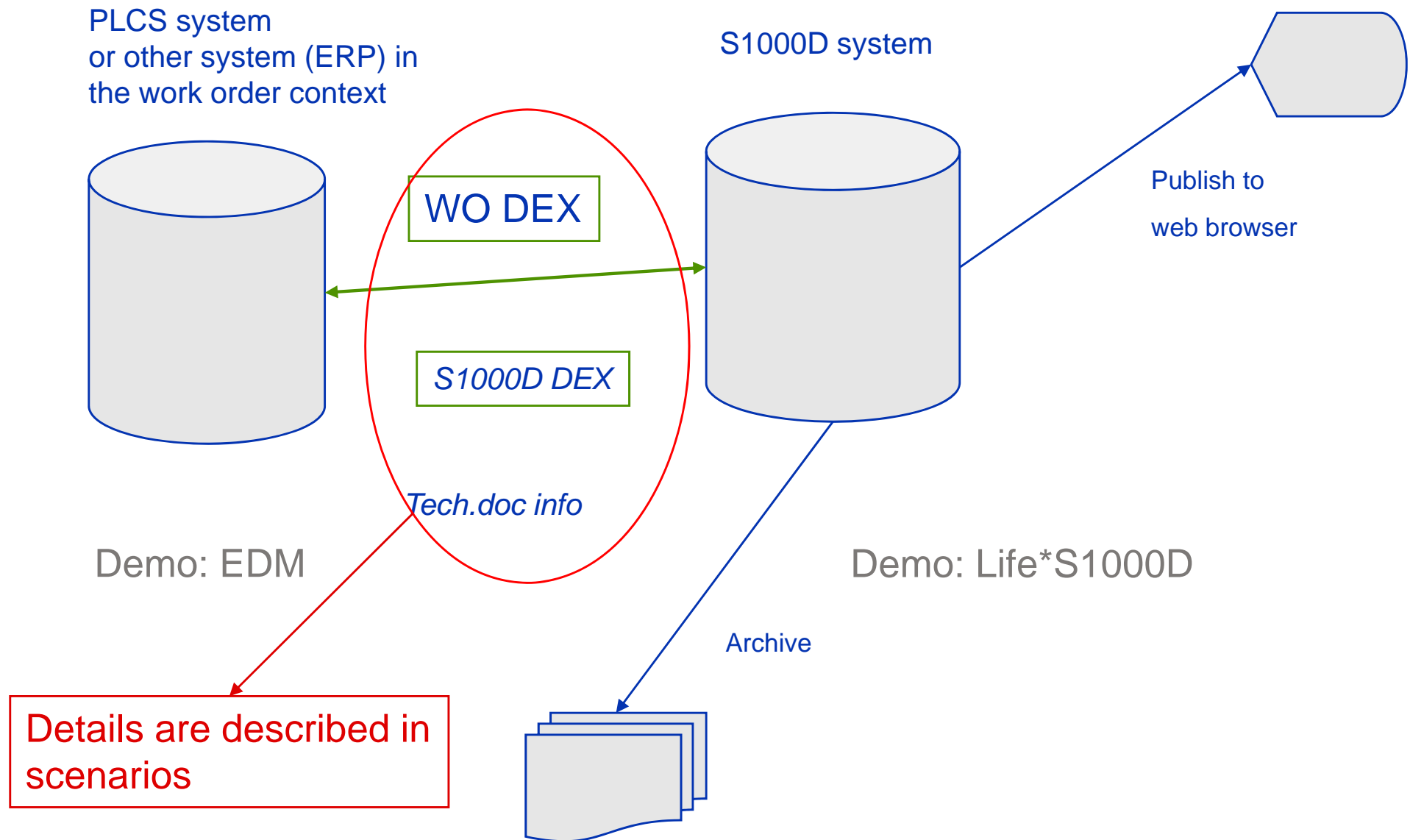
– Work Order



- Data exchange is handled by the work order DEX
- Integration of work order and technical documentation for archiving and publishing purposes

System environment

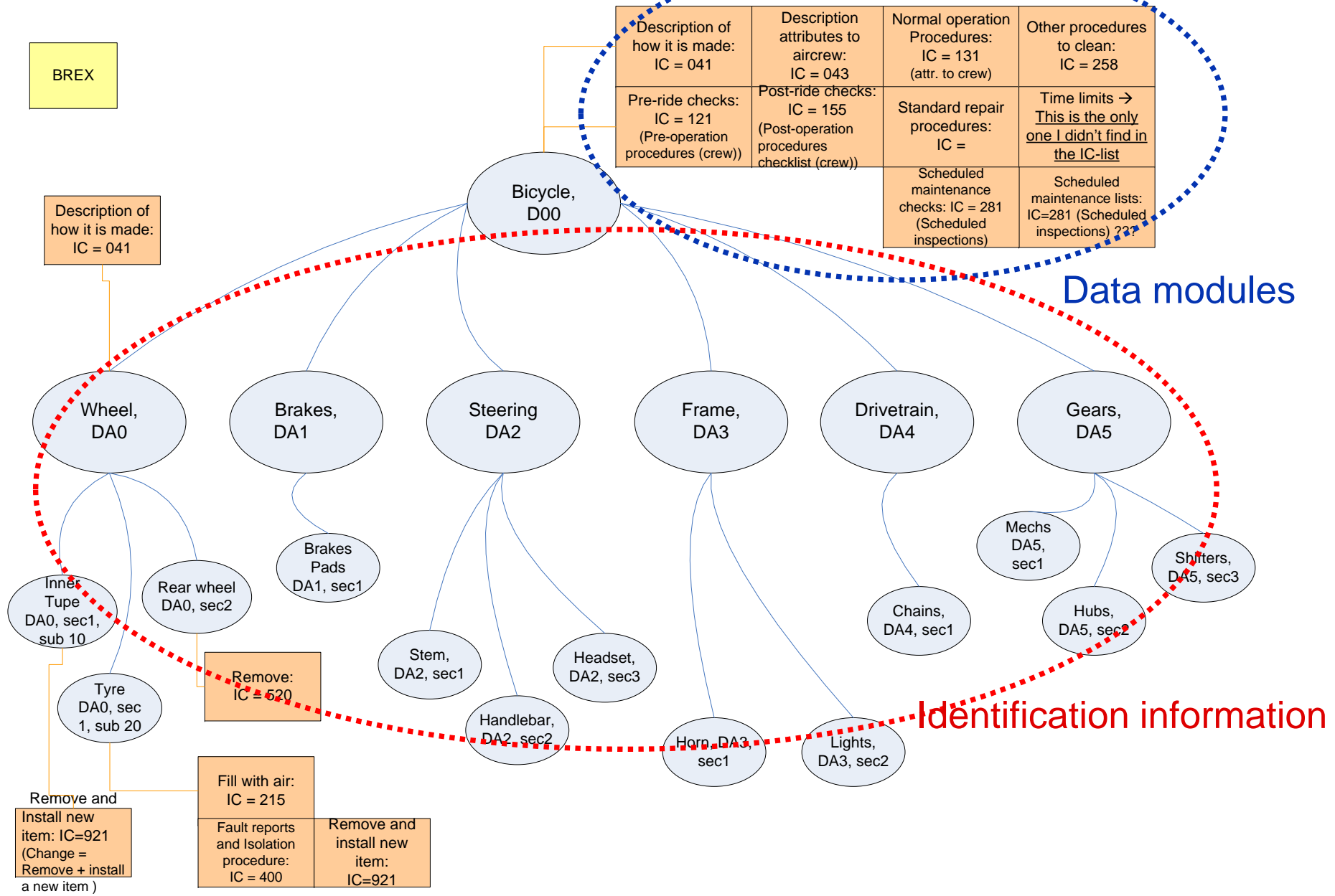
work order and pre-requ. techn.doc



S1000D DEX Concepts of importance

- Breakdown structure
- Tasks
- Parts
 - Design (types)
 - Individual parts (as realized)
- Resources
 - Spares
 - Tools
 - Skills
 - Supplies
 - Documents (graphics)

S1000D data module structure



Data modules

Identification information

- Data exchange between PLCS and S1000D needs to be planned
- Agreements are necessary, e.g.
 - related to the use of identifiers (SNS codes, Information codes, ICN codes etc.)
 - Master data (which data originates where?)
- P28 as an XML-based exchange format is hard! There is a need for more intuitive data exchange, e.g. using APIs, web services
- The S1000D DEX when finished in December 2007 may be input to the S1000D Maintenance Task Data Task Team (MTDTT) work
- There is a need for close collaboration between the standardization committees
 - Agreements around common use of identifiers (SNS codes, Information codes, ICN codes etc.)
 - Common test data set
 - General agreed conceptual method to describe the mapping
- The Work Order DEX and the S1000D representation of the work order concepts are a project necessity – do you need it as well? Give us feedback!



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