Applying Open Standards for PLM System Interoperability

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Purpose

- Present the application of open PLM standards in the implementation of open interoperability solution.
  - Case Study: Volvo
  - Case Study: US Army's Falcon program
- Presentation
  - PLM, PLCS, & Open Standards
  - Share-A-space
  - Volvo
  - Falcon
  - Summary & Conclusions

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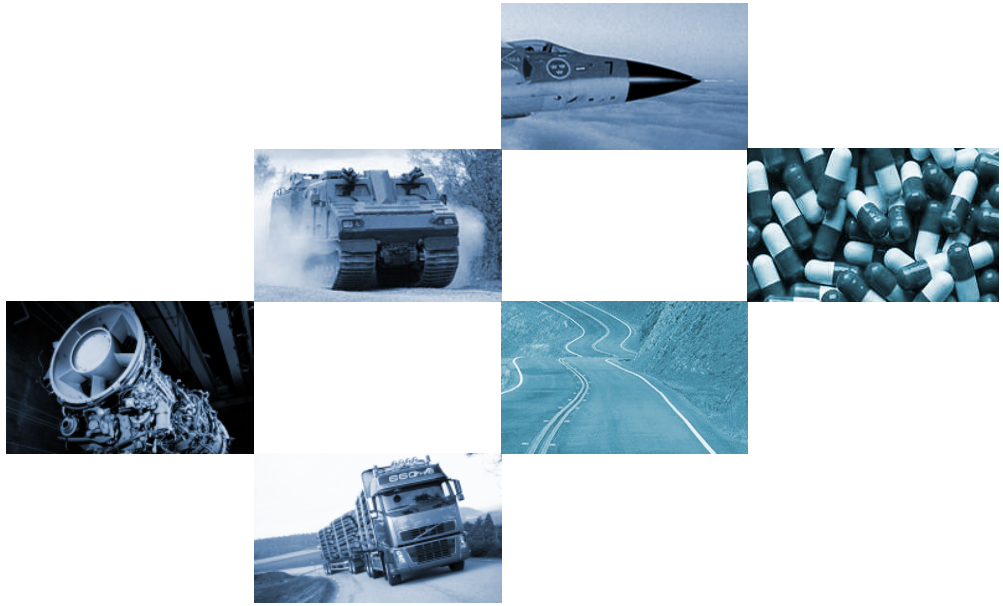
PLM, PLCS, & Open Standards



ISO 10303-239 (PLCS)

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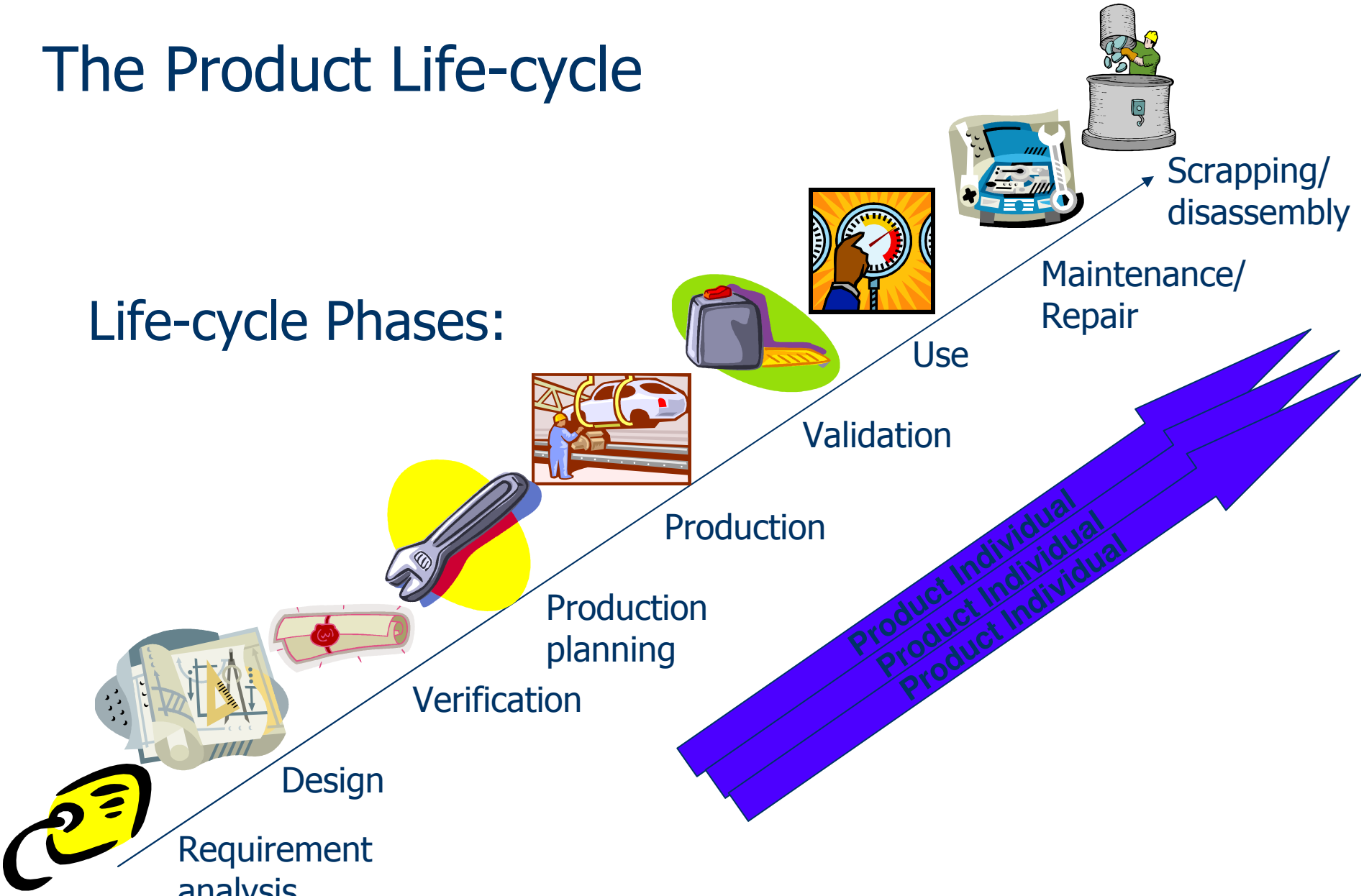
The Product Life-cycle

Life-cycle Phases:



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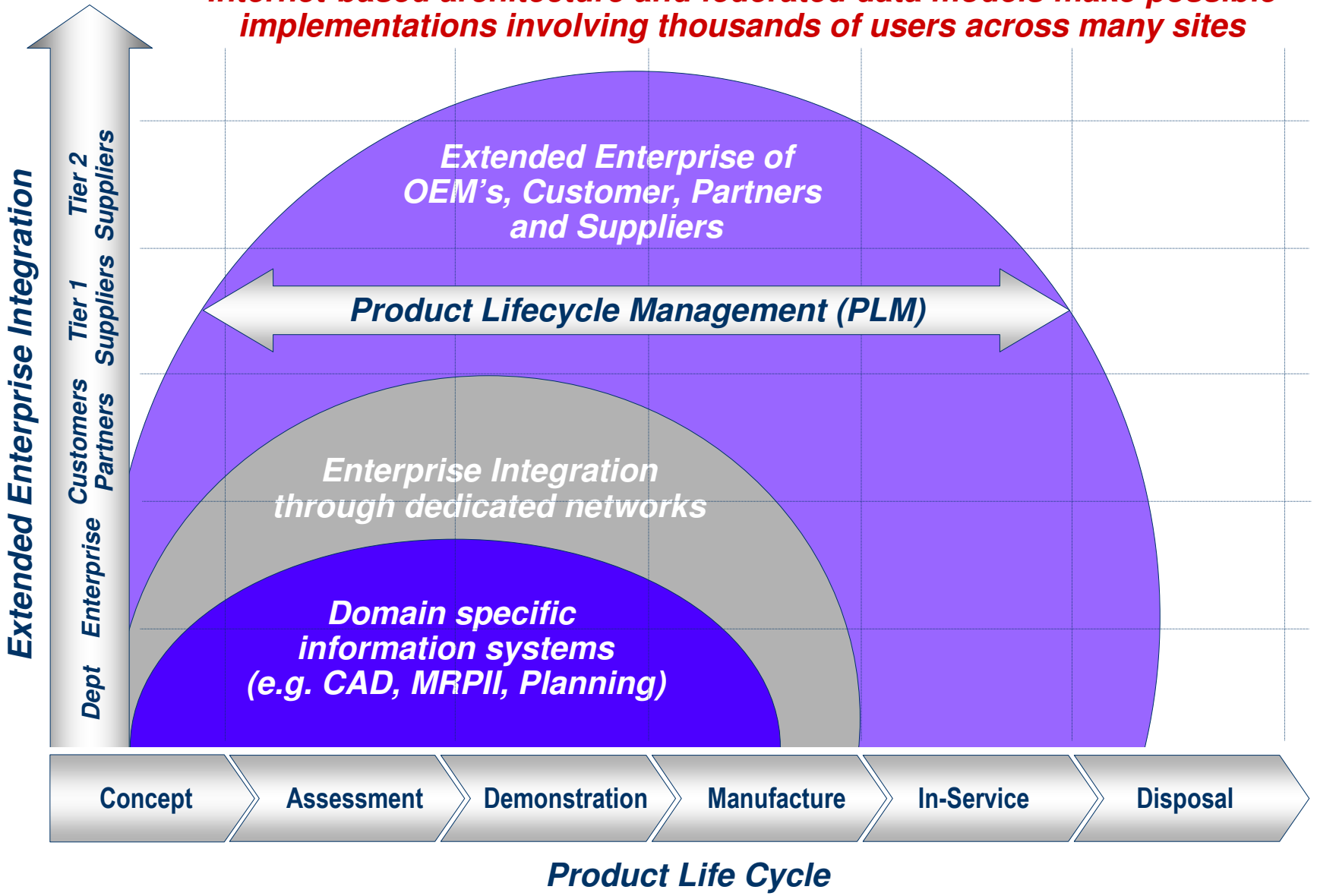
PLCS: *Extended Enterprise enabled by Internet technology*

Internet-based architecture and federated data models make possible implementations involving thousands of users across many sites



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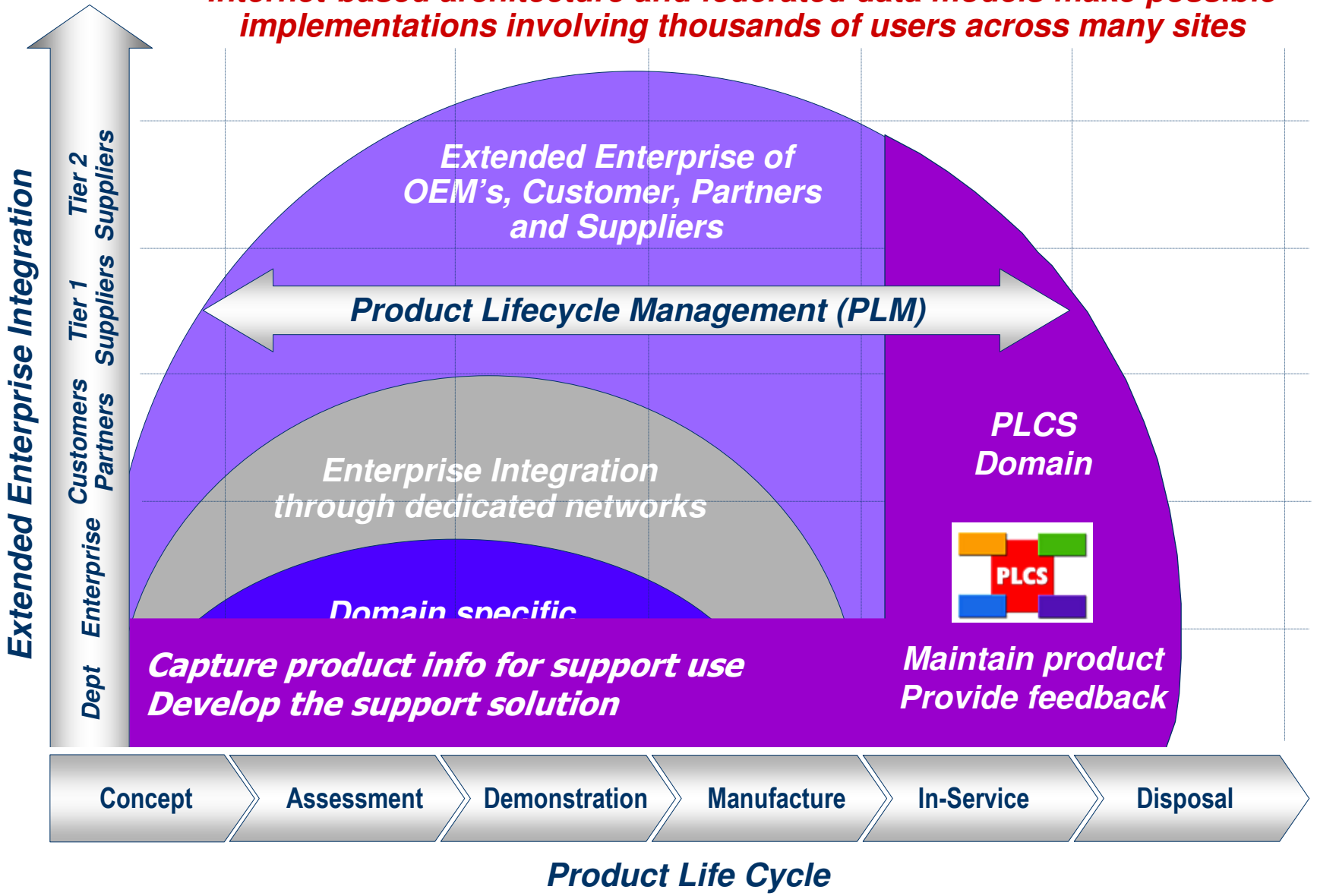
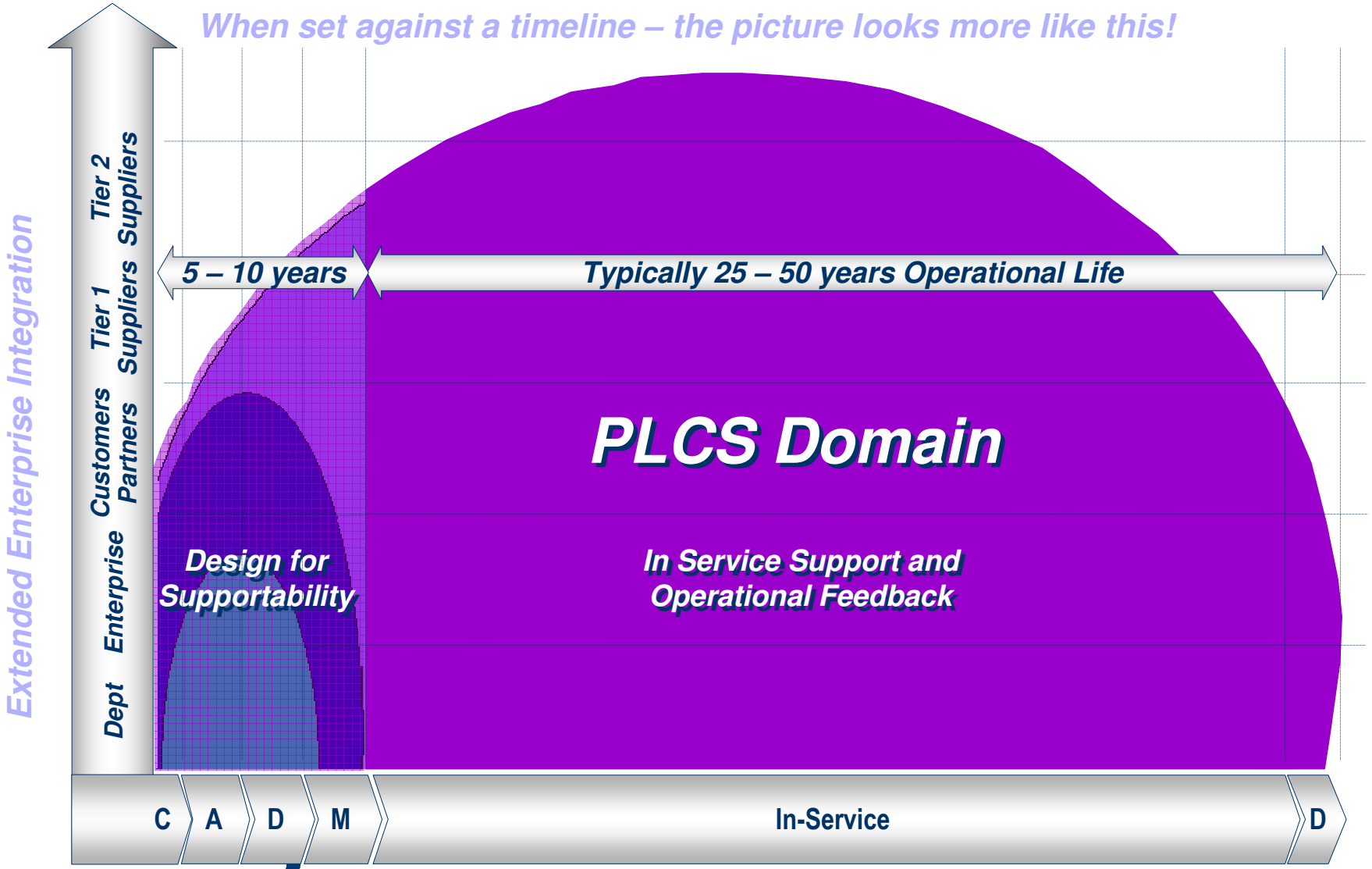


Product Life Cycle Support (PLCS)

Extended Enterprise – Importance of PLCS



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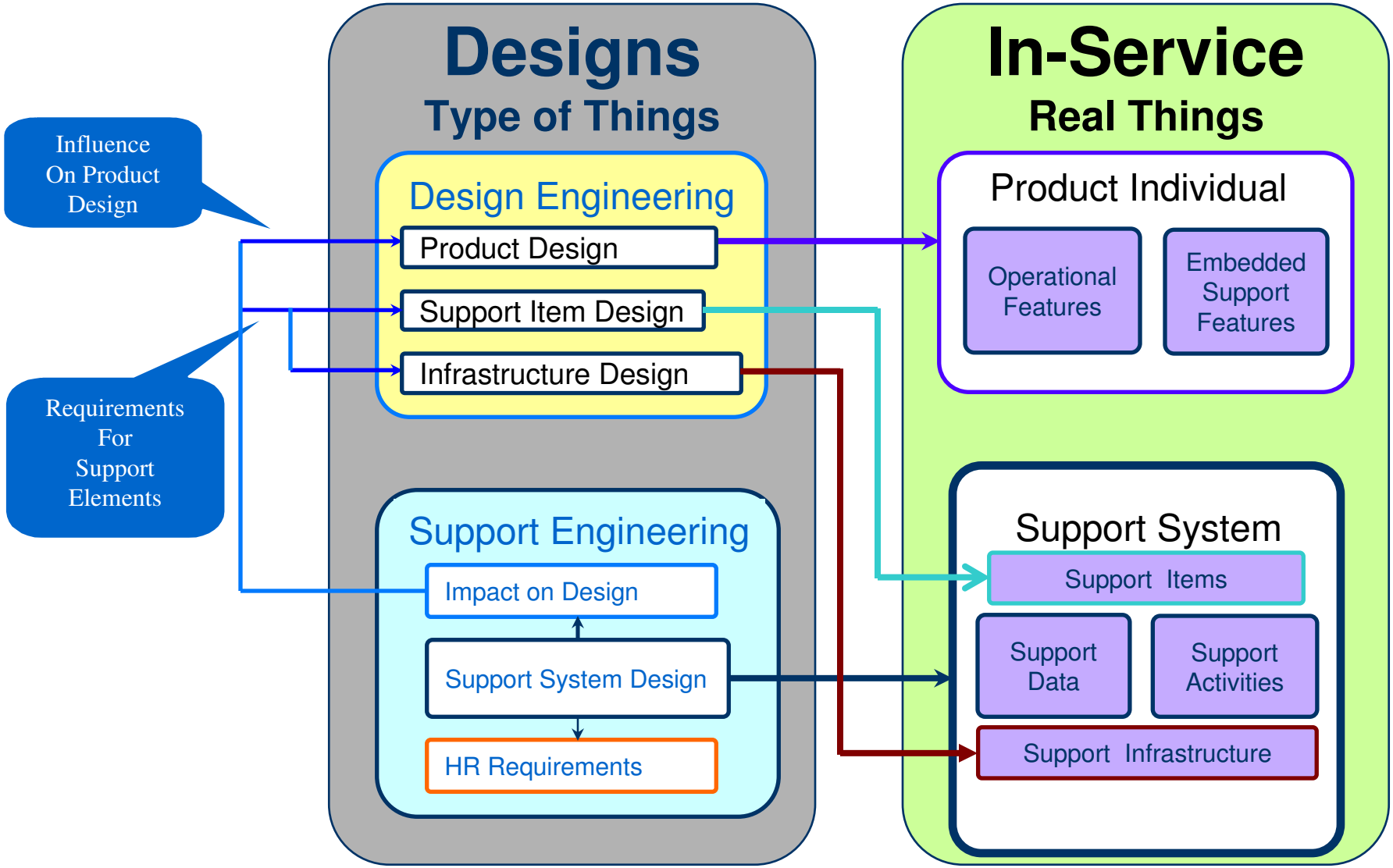
Kinds of Information and Interdependencies



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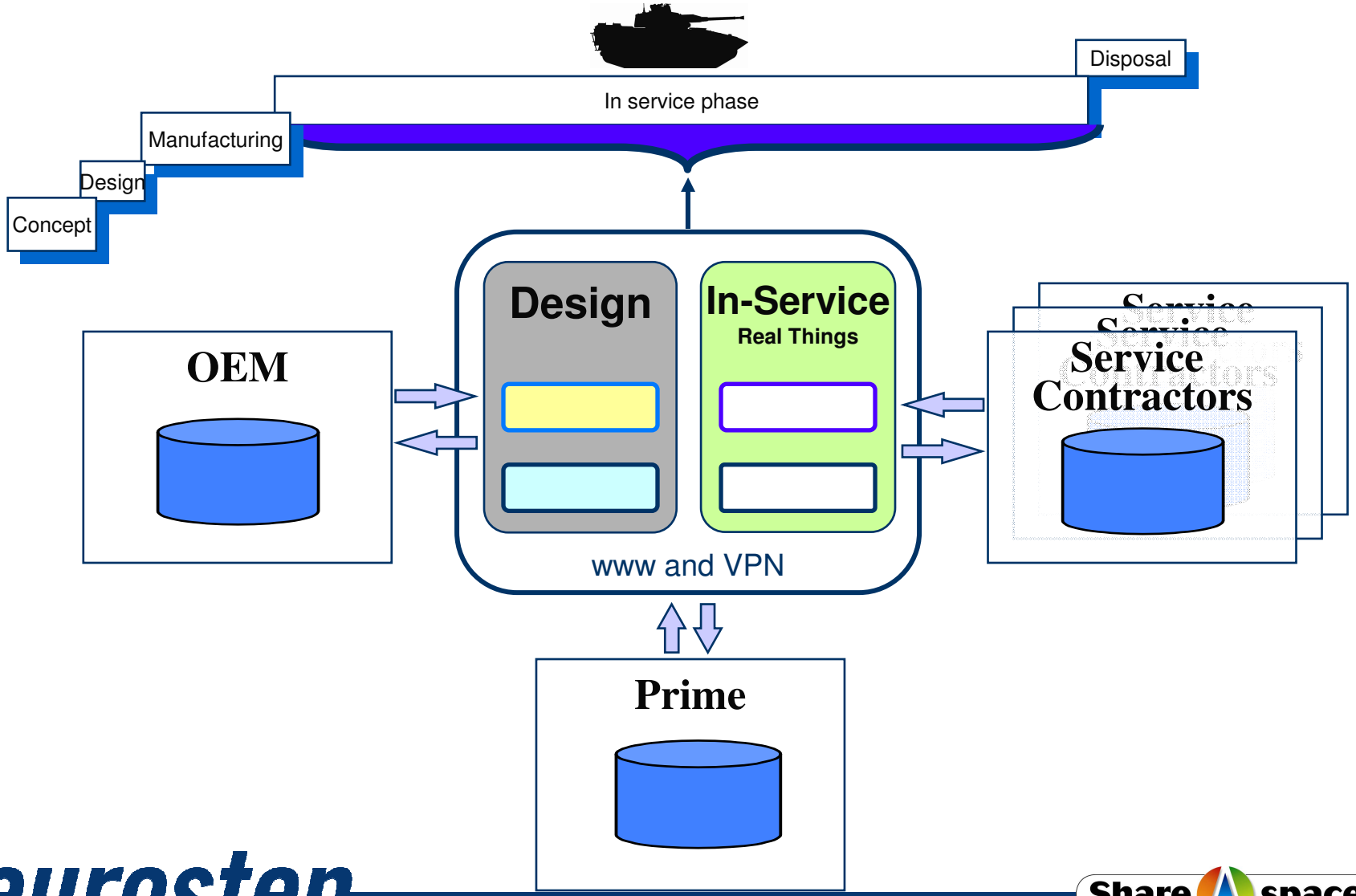
Interoperability in Product Support



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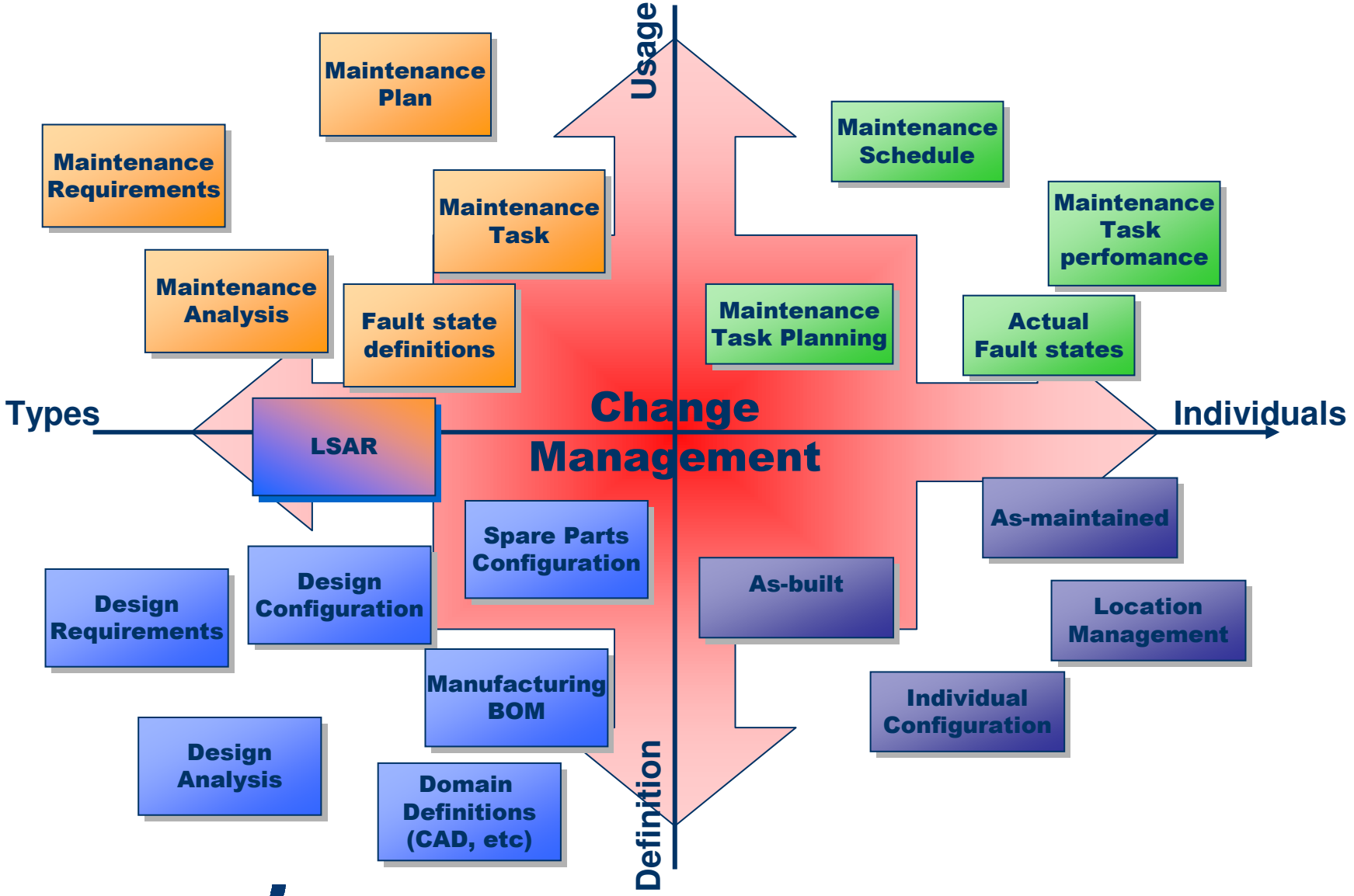
Life-cycle Change Management



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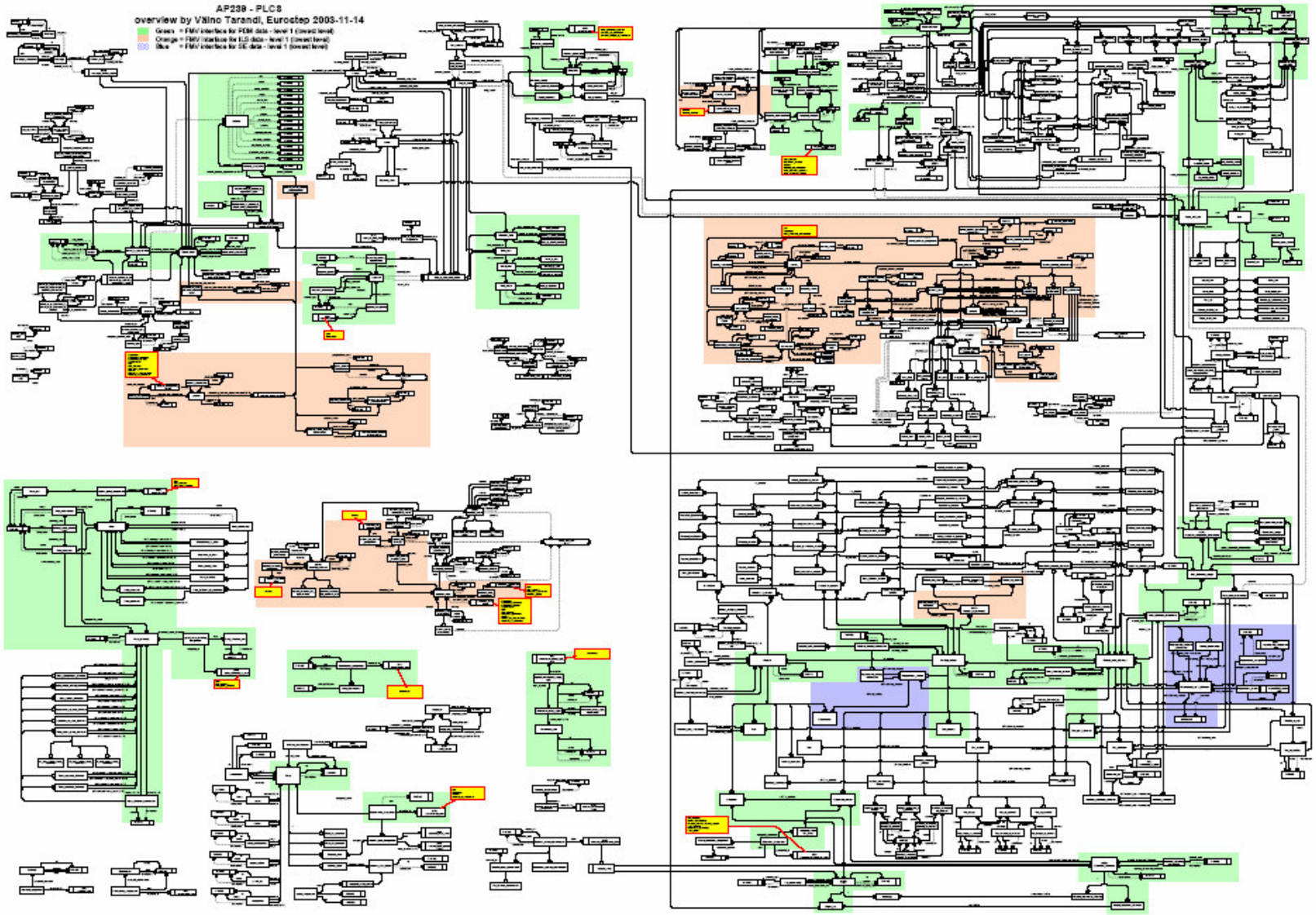
All PLCS – ISO 10303-239



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So what does full PLCS model cover?

- Requirements management
- Document and File management
- "Through life Configuration Management"
  - Configuration Management of Design of product
  - Configuration Management of individual products
- Definition of any kind of support task relating to a product
- Definition, location and quantification of support resources
- History of individual product configuration, use and state/condition
- History of work done and resources used
- Integration of the above over a complete life cycle
  ….with optional complexity to meet user needs

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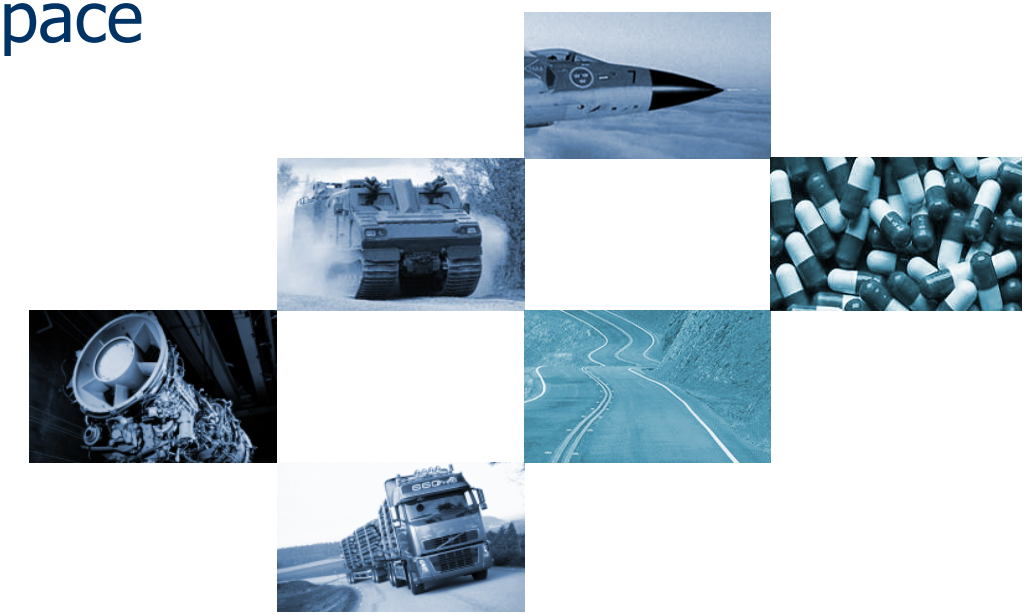
Implementing PLCS: Share-A-space



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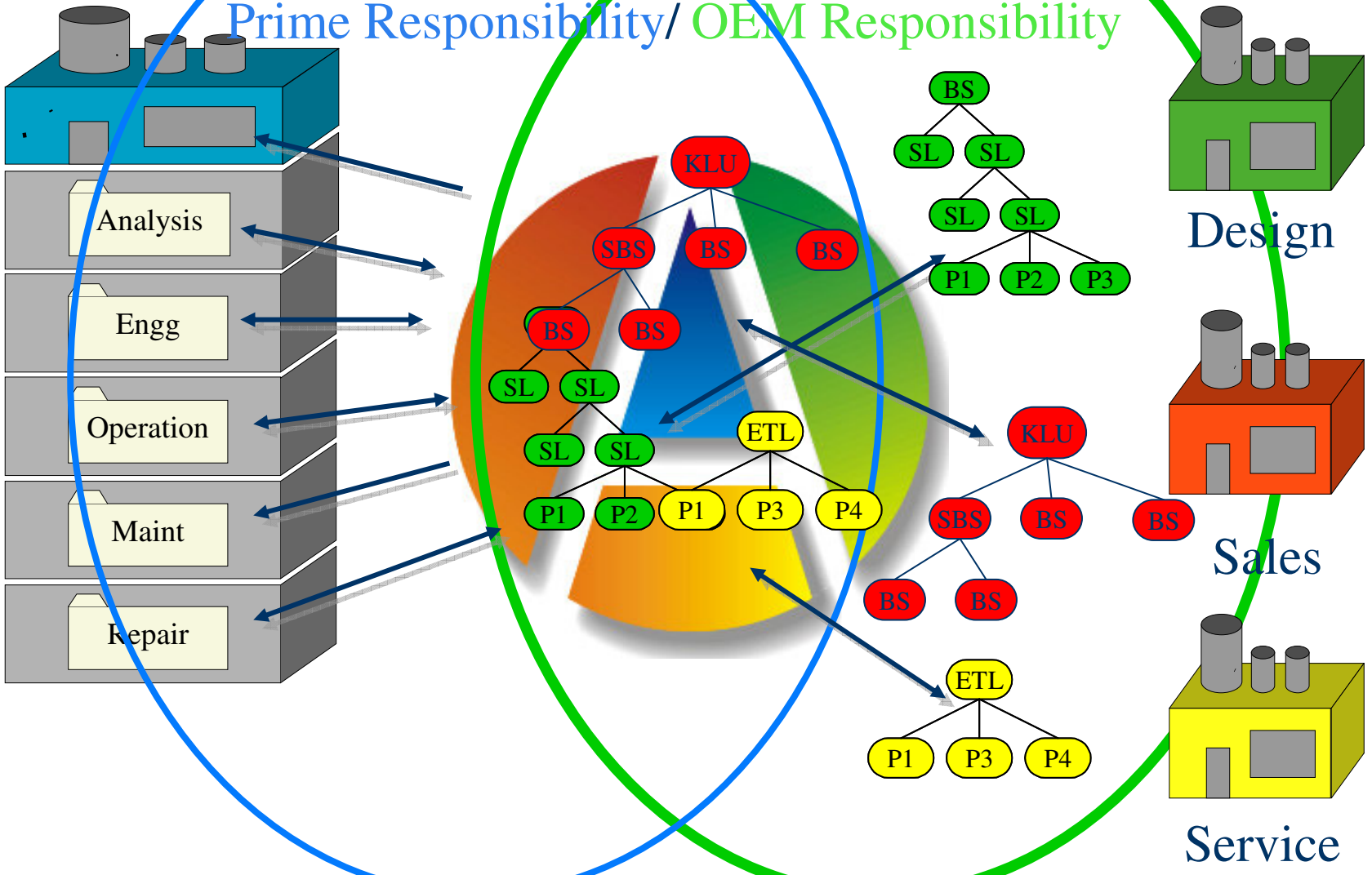
Interoperability Solutions



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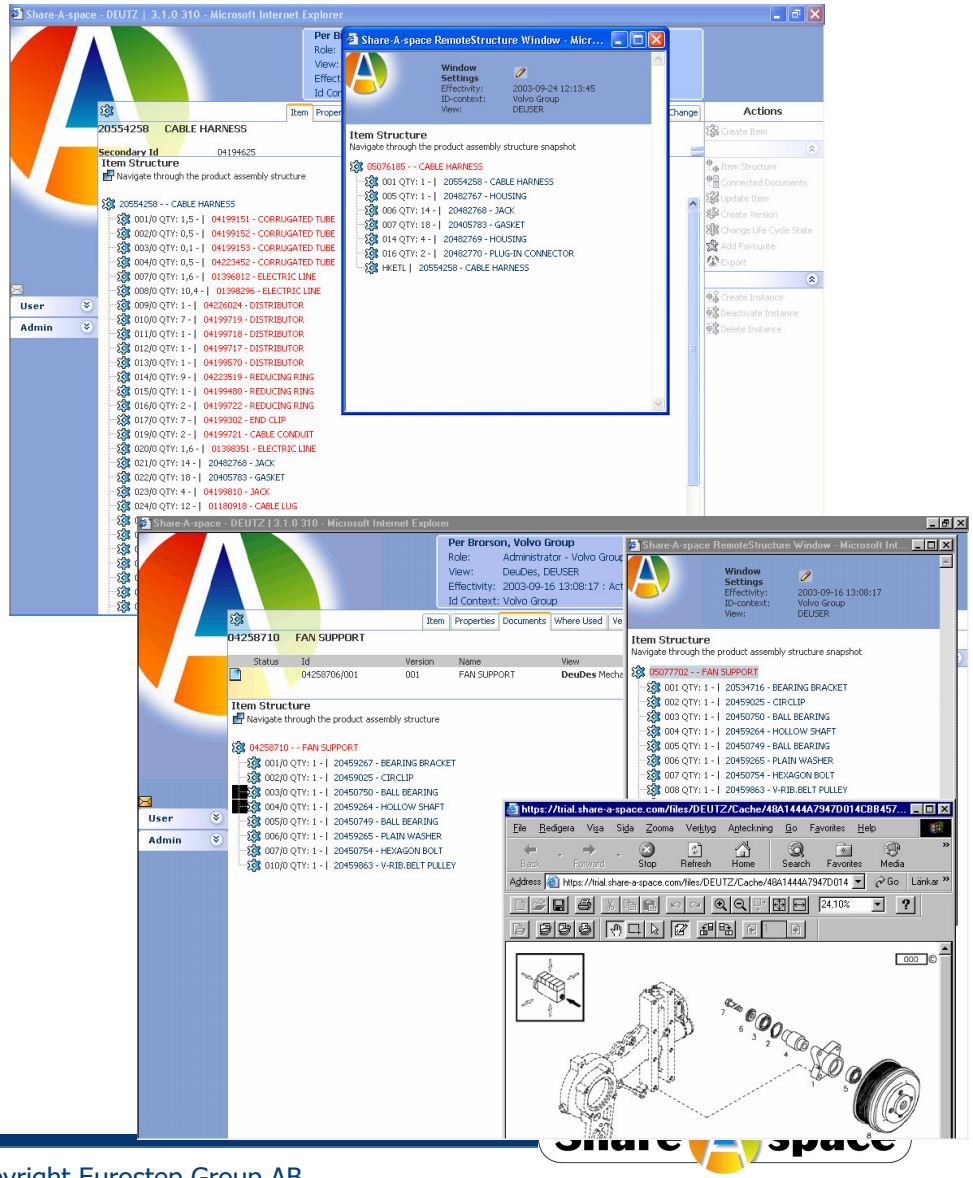
Share-A-space in short

- Share-A-space provides an out-of-the-box information integration tool using open standards
- Share-A-space provides an information value increase by information consolidation in heterogeneous system and organizational environments
- Share-A-space integrates product information across the product life cycle
- Share-A-space decouples information from business process



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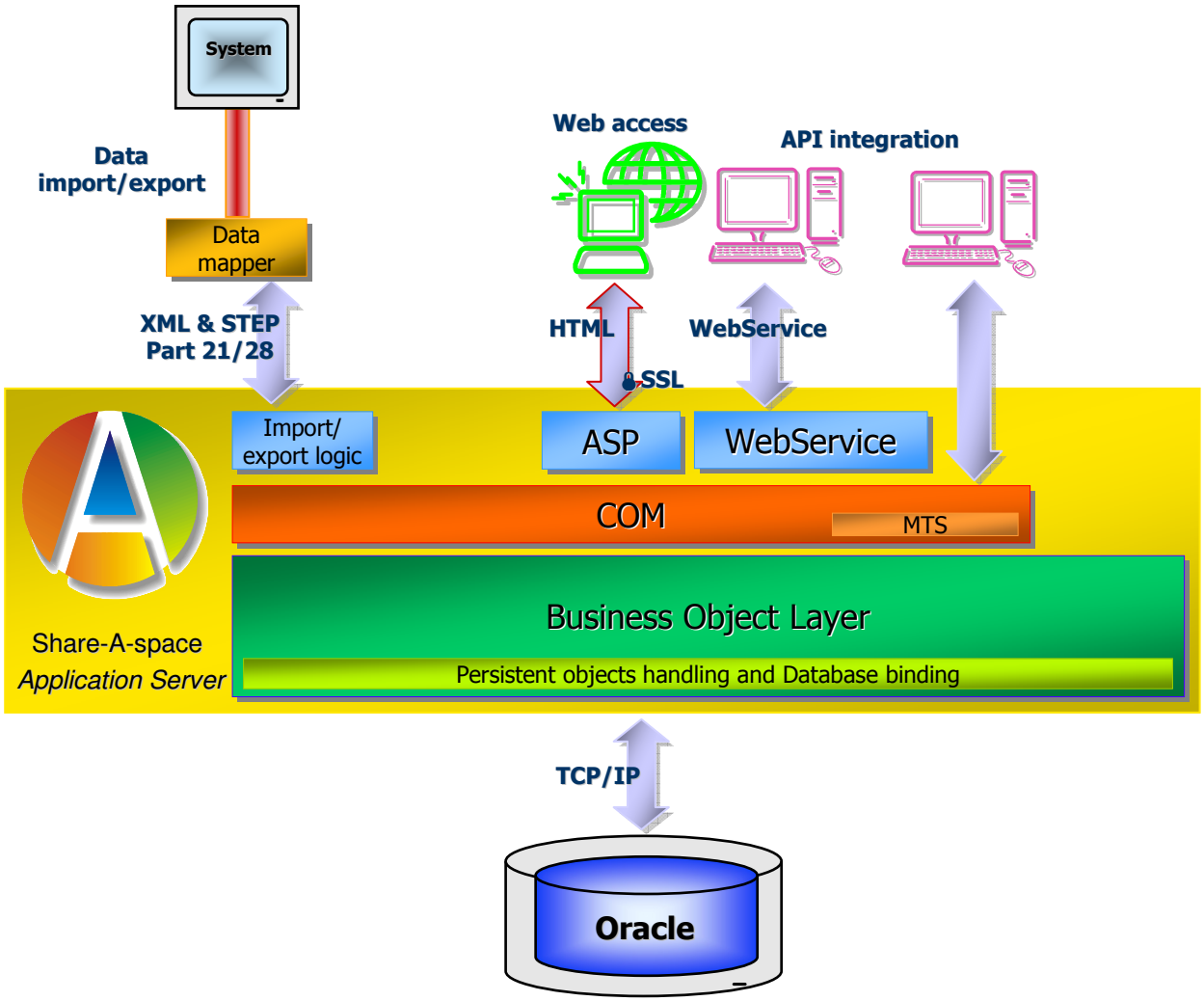
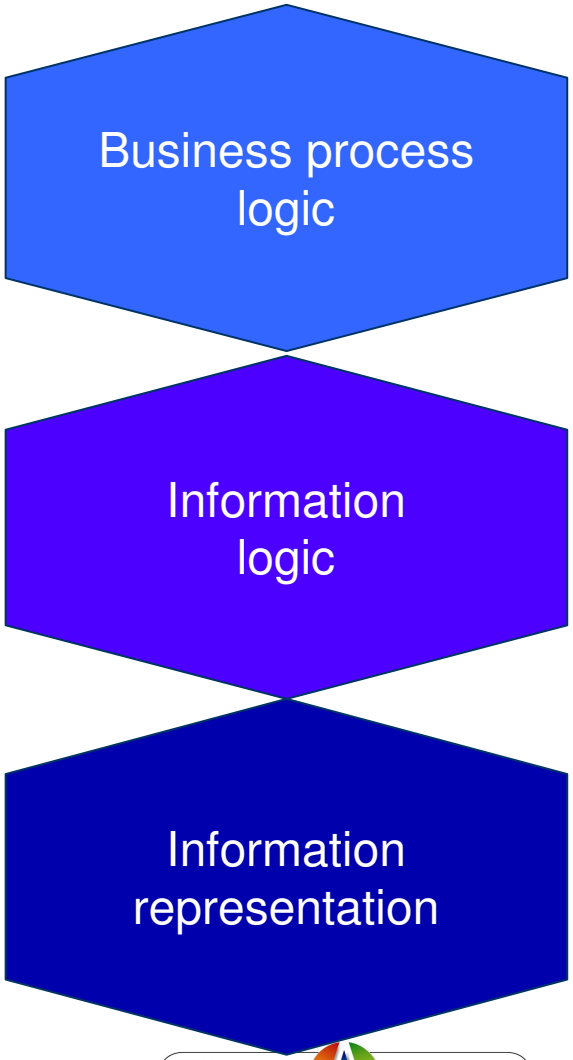
Share-A-space architecture





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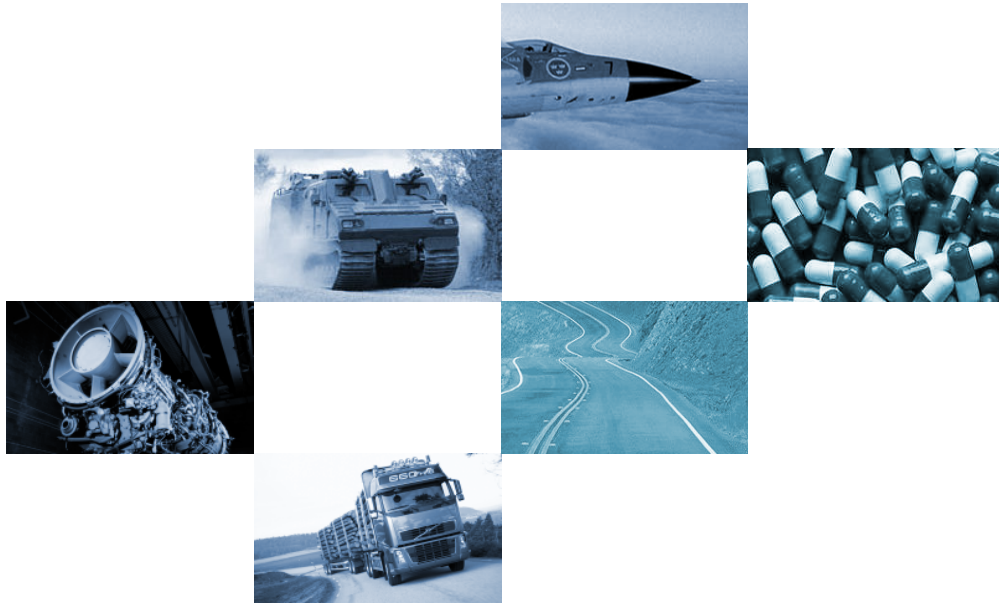
Case study: Volvo



Extended Enterprise & Consolidation of Information

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Volvo – sharing of engine product structure data

- Volvo often had outdated product data, leading to inefficient information management
  - Difficult and time consuming to get the right data
  - High percentage of the spare parts where erroneously returned
  - High risk of design errors due to outdated third party information
  - Time consuming to produce a correct parts catalogue

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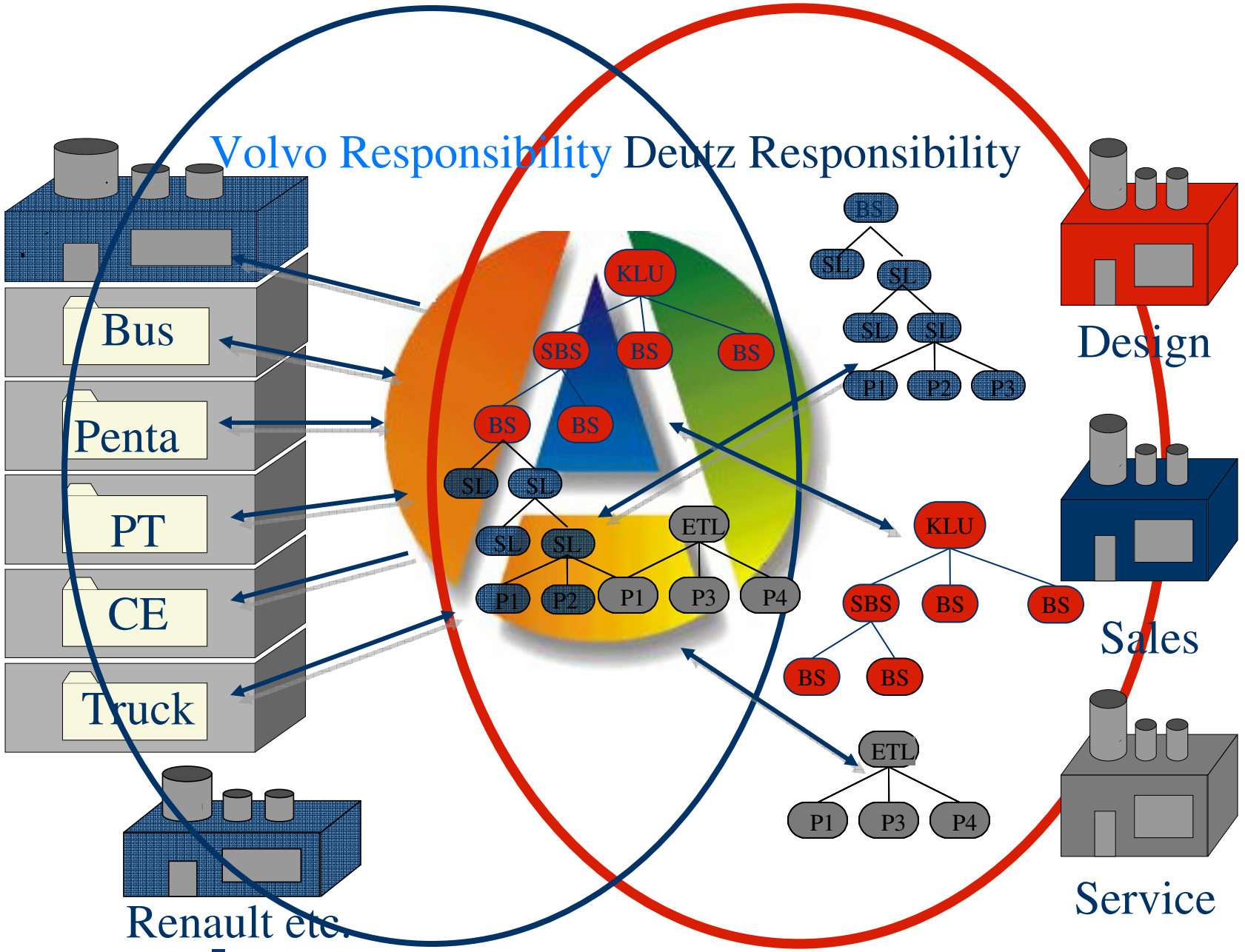

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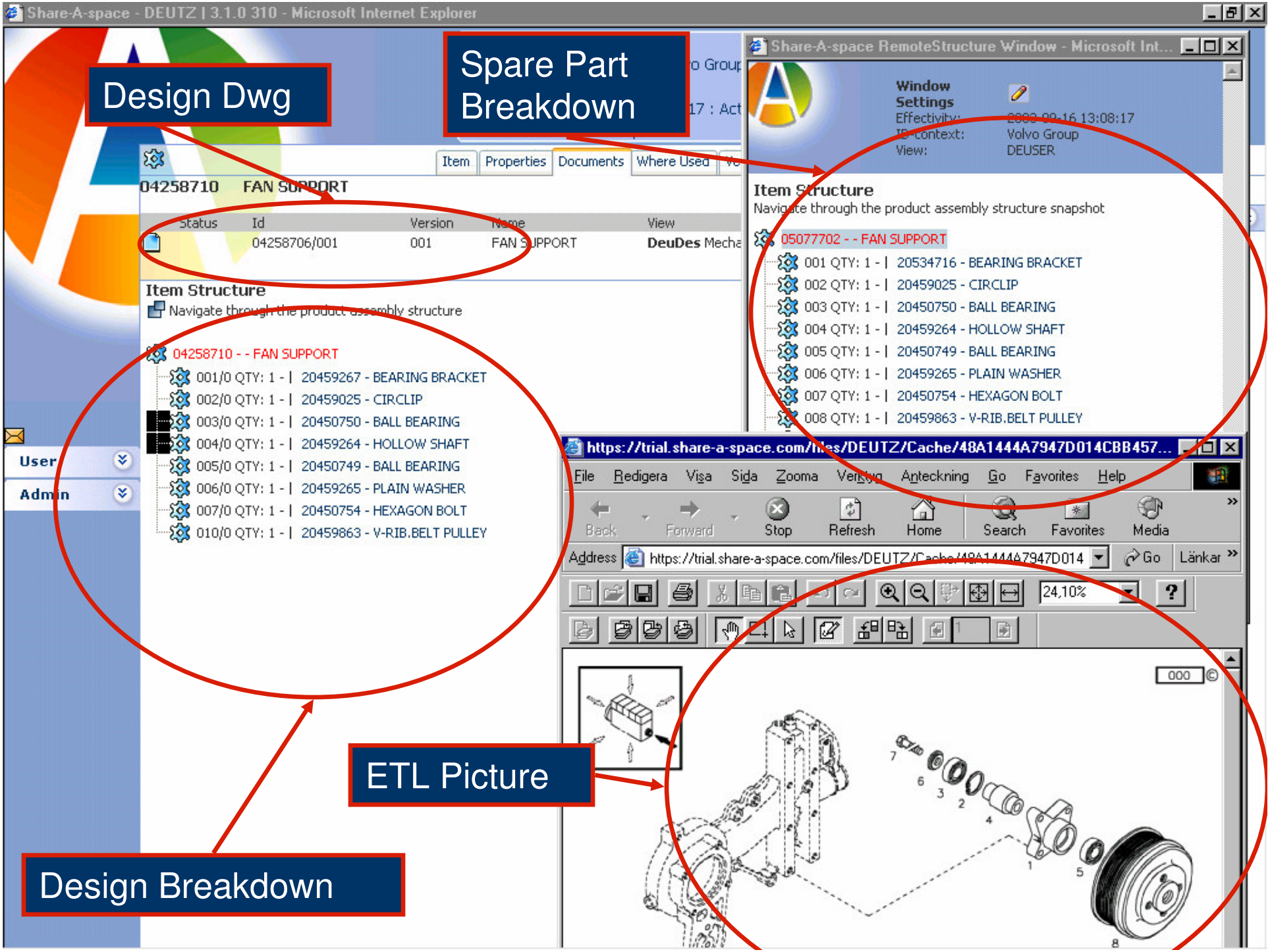
Share-A-space - DEUTZ | 3.1.0 310 - Microsoft Internet Explorer
Design Dwg
Spare Part Breakdown
Share-A-space RemoteStructure Window - Microsoft Int...
Window Settings
Effectivity:
ID-context: Volvo Group
View: DEUSER
Item
Properties
Documents
Where Used
04258710 FAN SUPPORT
Status
Id
Version
Name
View
04258706/001
001
FAN SUPPORT
DeuDes Mecha
Item Structure
Navigate through the product assembly structure
04258710 - - FAN SUPPORT
001/0 QTY: 1 - | 20459267 - BEARING BRACKET
002/0 QTY: 1 - | 20459025 - CIRCLIP
003/0 QTY: 1 - | 20450750 - BALL BEARING
004/0 QTY: 1 - | 20459264 - HOLLOW SHAFT
005/0 QTY: 1 - | 20450749 - BALL BEARING
006/0 QTY: 1 - | 20459265 - PLAIN WASHER
007/0 QTY: 1 - | 20450754 - HEXAGON BOLT
010/0 QTY: 1 - | 20459863 - V-RIB.BELT PULLEY
Item Structure
Navigate through the product assembly structure snapshot
05077702 - - FAN SUPPORT
001 QTY: 1 - | 20534716 - BEARING BRACKET
002 QTY: 1 - | 20459025 - CIRCLIP
003 QTY: 1 - | 20450750 - BALL BEARING
004 QTY: 1 - | 20459264 - HOLLOW SHAFT
005 QTY: 1 - | 20450749 - BALL BEARING
006 QTY: 1 - | 20459265 - PLAIN WASHER
007 QTY: 1 - | 20450754 - HEXAGON BOLT
008 QTY: 1 - | 20459863 - V-RIB.BELT PULLEY
User
Admin
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24,10%
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ETL Picture
Design Breakdown

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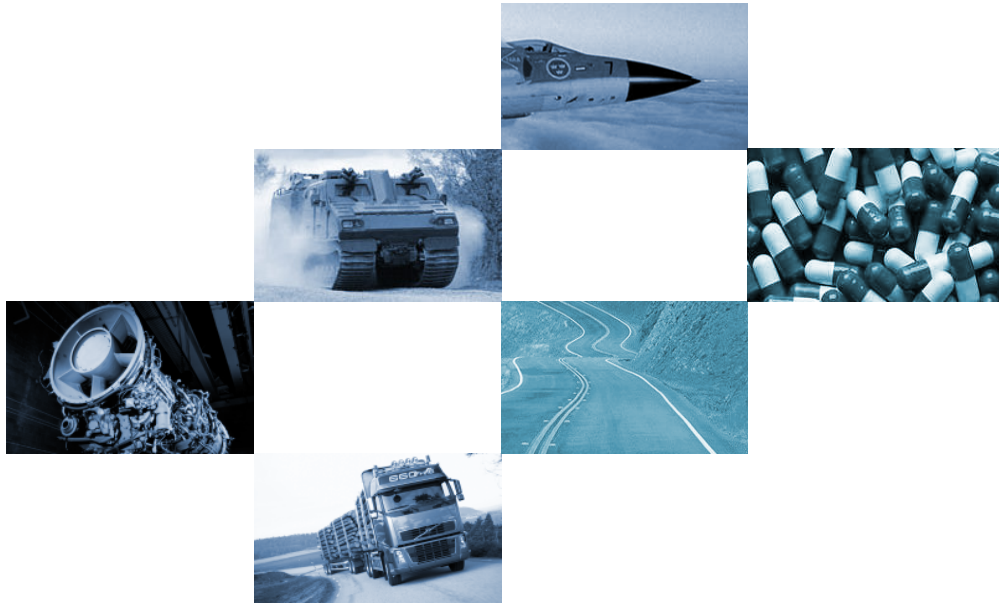
Case Study: FALCON



US Army **F**ederated **A**rmy **L**ifecycle **Co**llaborative e-**N**terprise

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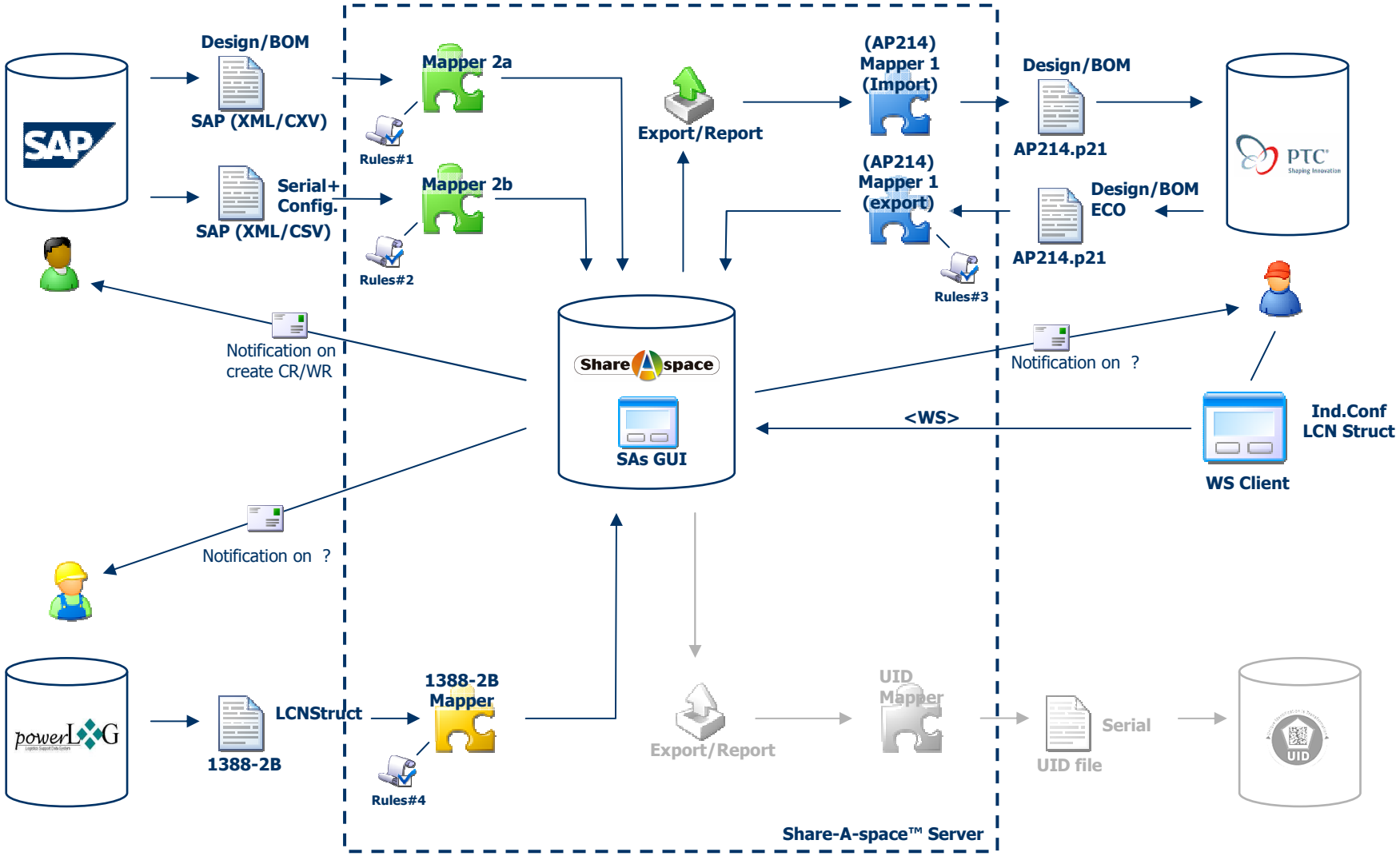
FALCON Architecture (Process-centric view)



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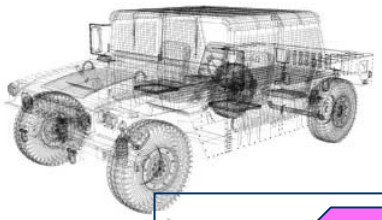
Scoped FALCON Architecture



AM General

TARDEC

UGS The PLM Company

3D Solid Models

AM General PLM

SAP

powerLOG Logistics Support Data System

TDP records

PTC Shaping Innovation

ACMS

PLCS Viewer

UID

UID Registry

Design

Change

Ser Part

5

Design

Change

7

PLCS Master Data Integrator (PLCS-MDI)

PLCS services

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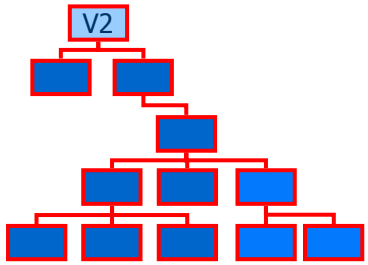
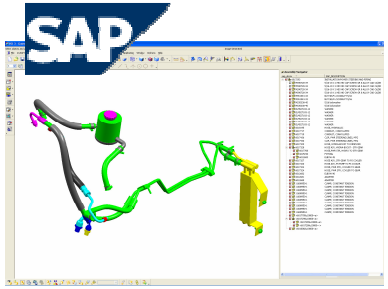
AMG SAP -> PLCS MDI -> TARDEC ACMS Windchill





AM General

"As Designed" Version Release

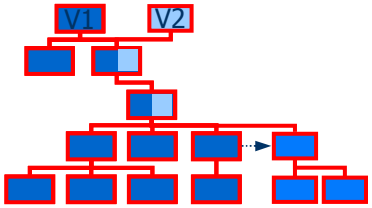
TARDEC

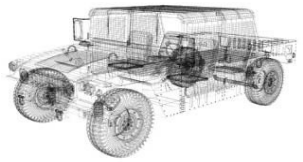
Share Aspace

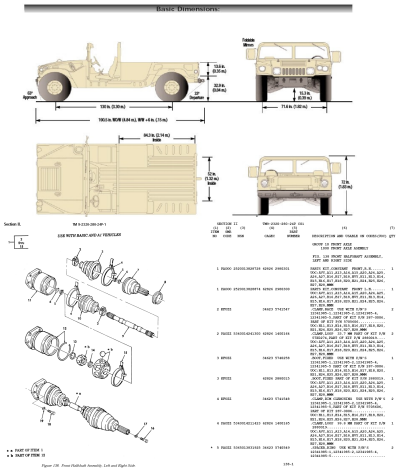
PTC
Shaping Innovation

PLCS MDI

Design Change Release

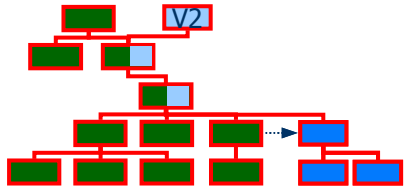






ACMS

US Army
Design View



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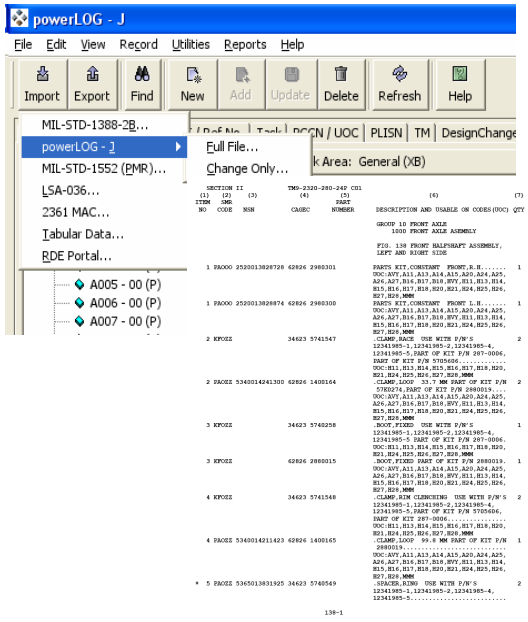
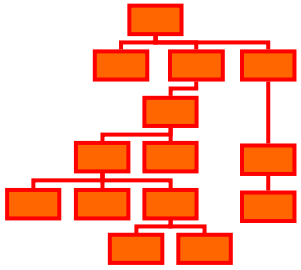
AM General powerLOG -> PLCS MDI

powerLOG LSAR



LCN Breakdown



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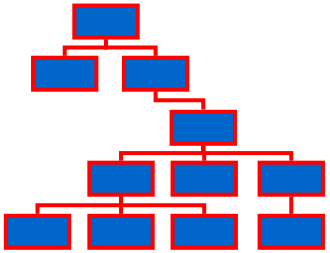
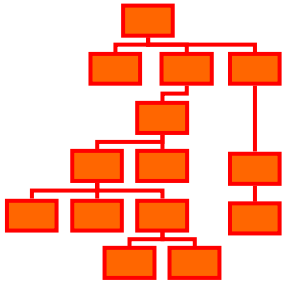
PLCS MDI

Design View



LCN Breakdown



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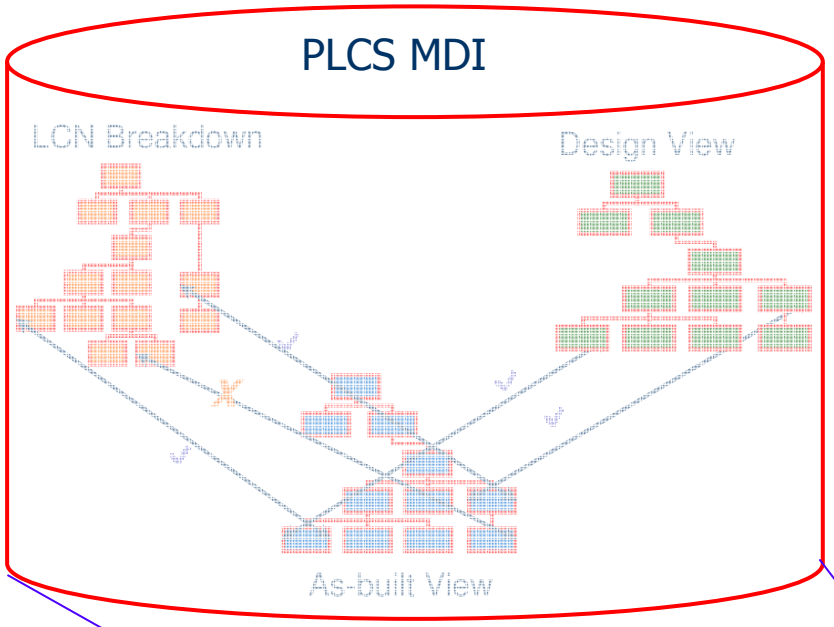
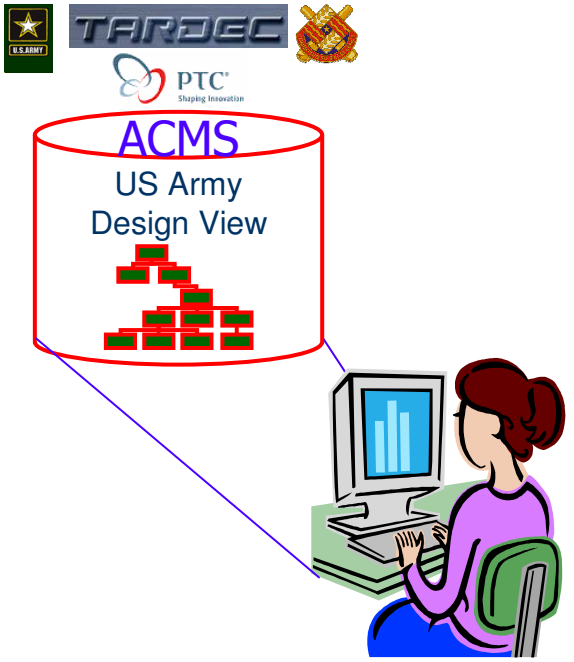
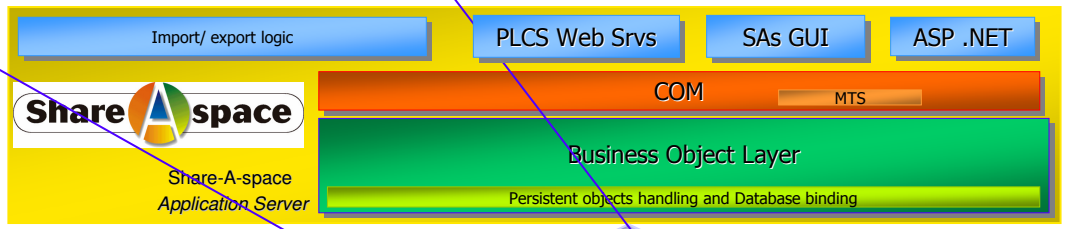
Plugin Structure Browser





PLCS Master Data Integrator
(PLCS-MDI)



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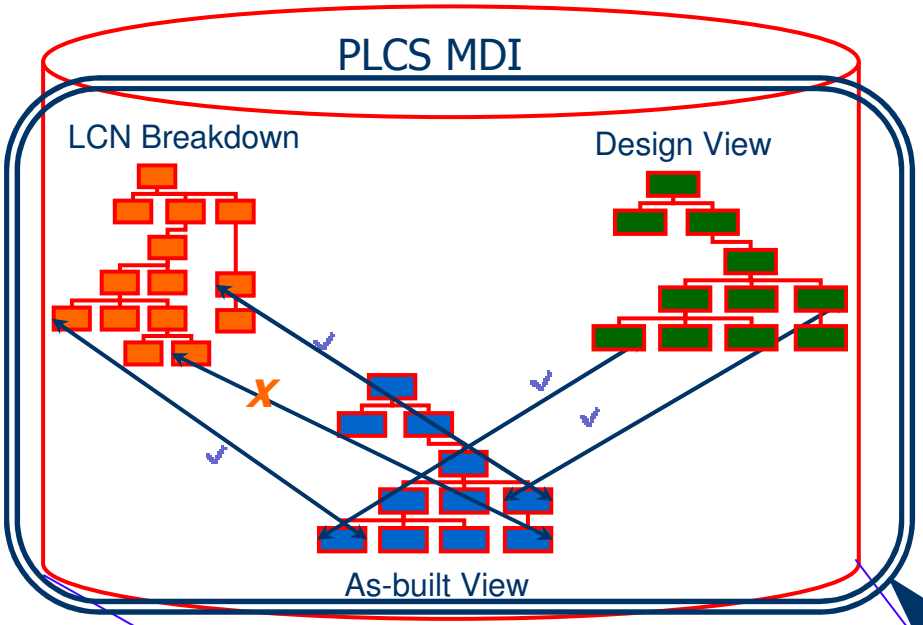

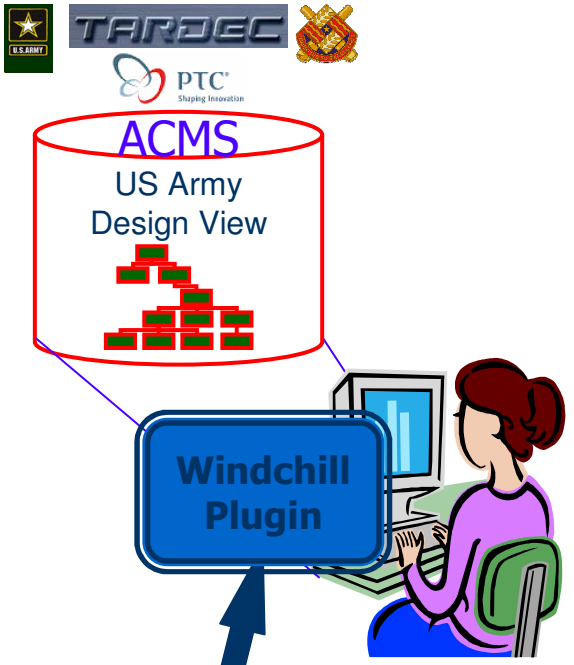

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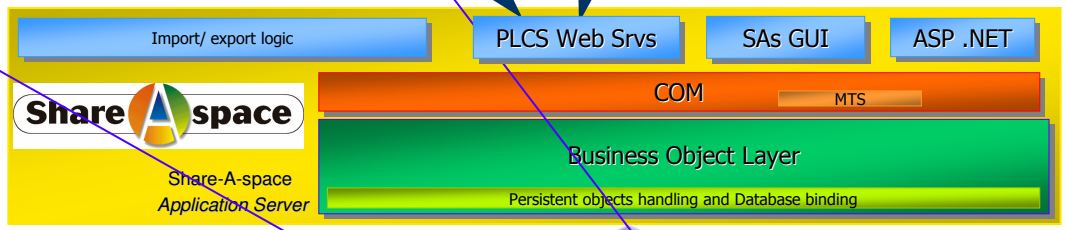

TCP/IP

Oracle

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Summary & Conclusions

- Use of PLCS (an open standard) as the mediation format provides:
  - Better system positioning for future system interoperability
  - Reconciliation of product data cross-application
  - Configuration control of lifecycle views
- Transparent interoperability services
- Systems are better positioned for improved product support

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