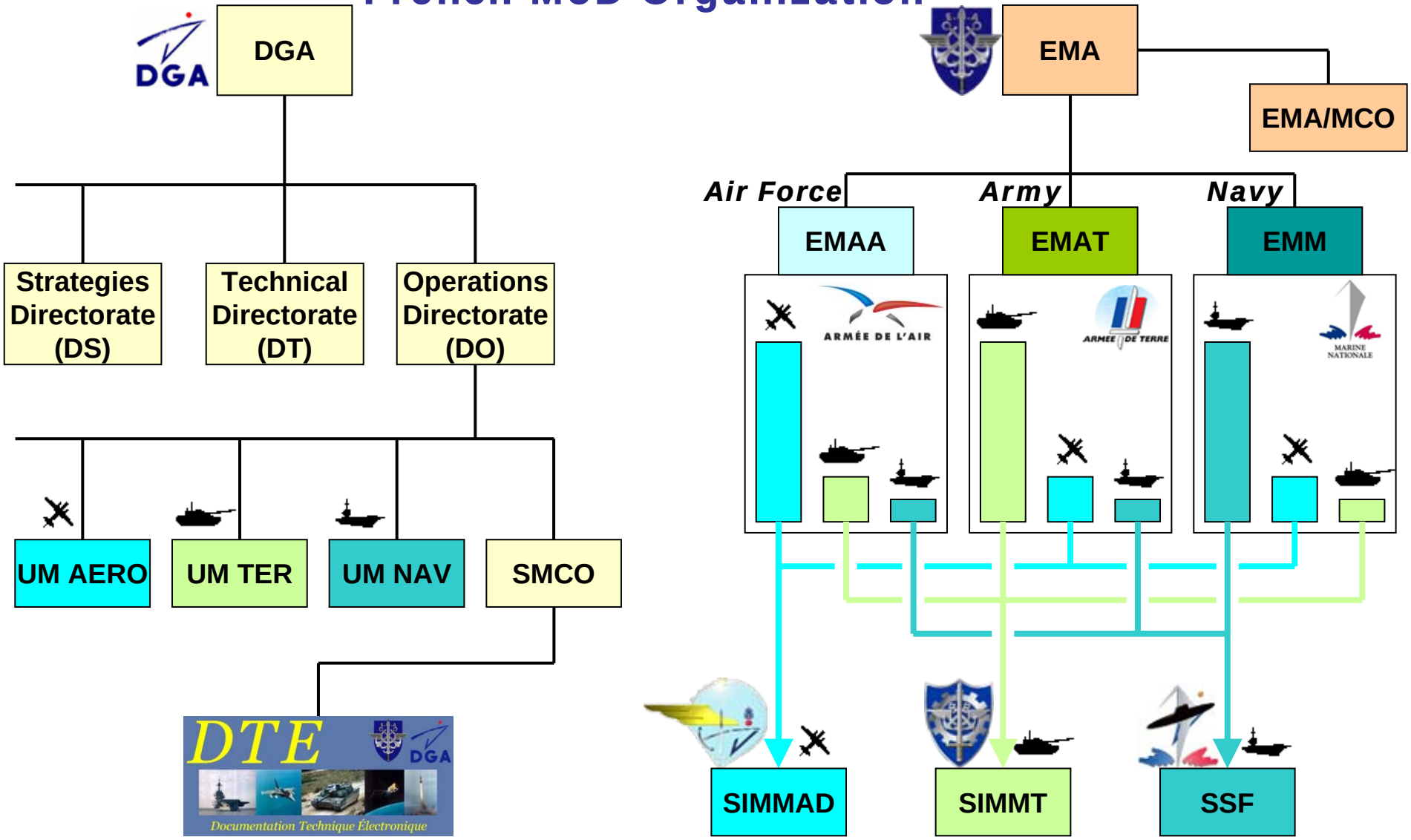
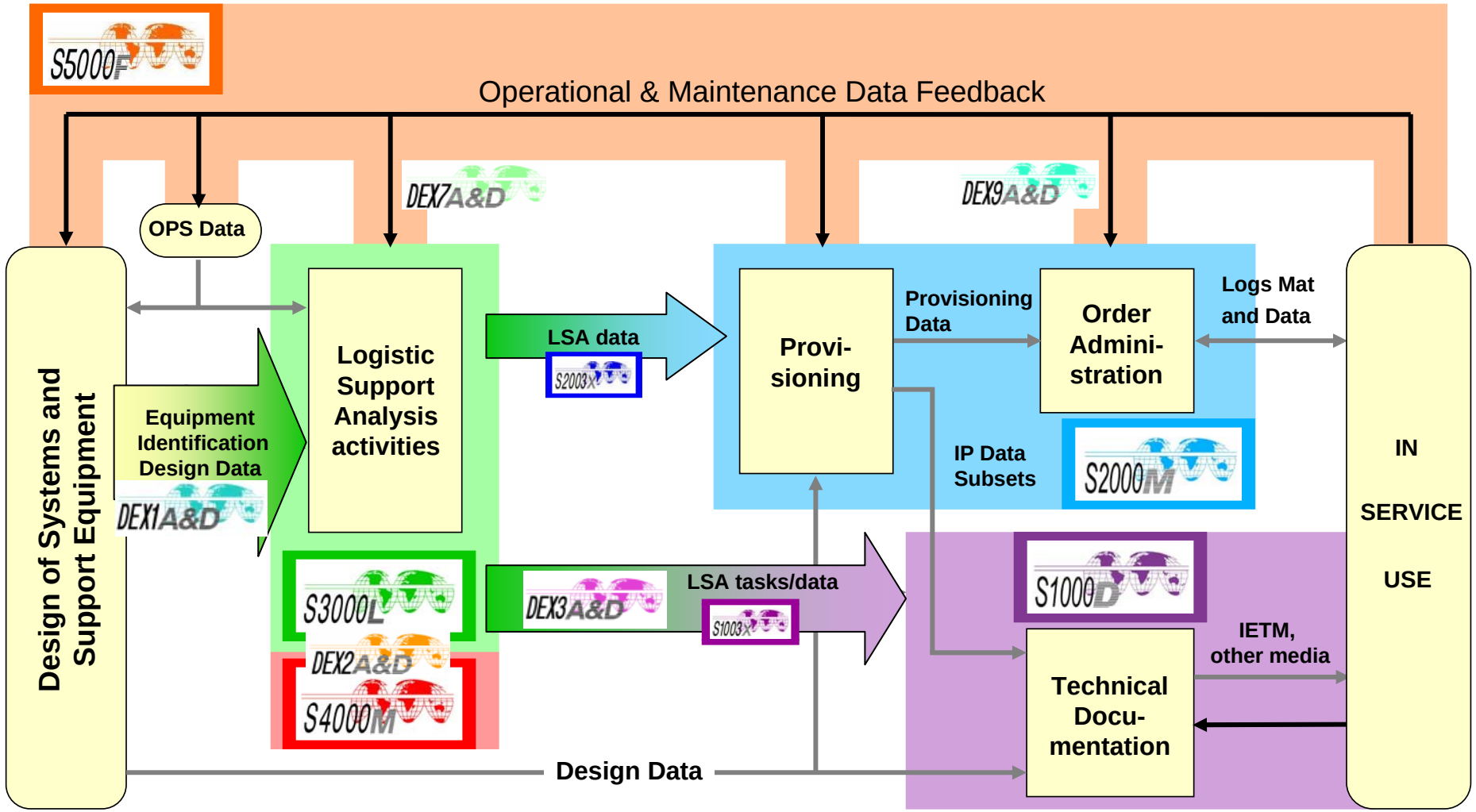
PLCS for data sharing between French MoD and Industry

Ratification, Experimentation and Implementations

French MoD Organization



Activities of DTE Focal point



Acquisition Logistics Management - NATO (1993)

1. Elements of context

2. Ratification & Experimentation of PLCS

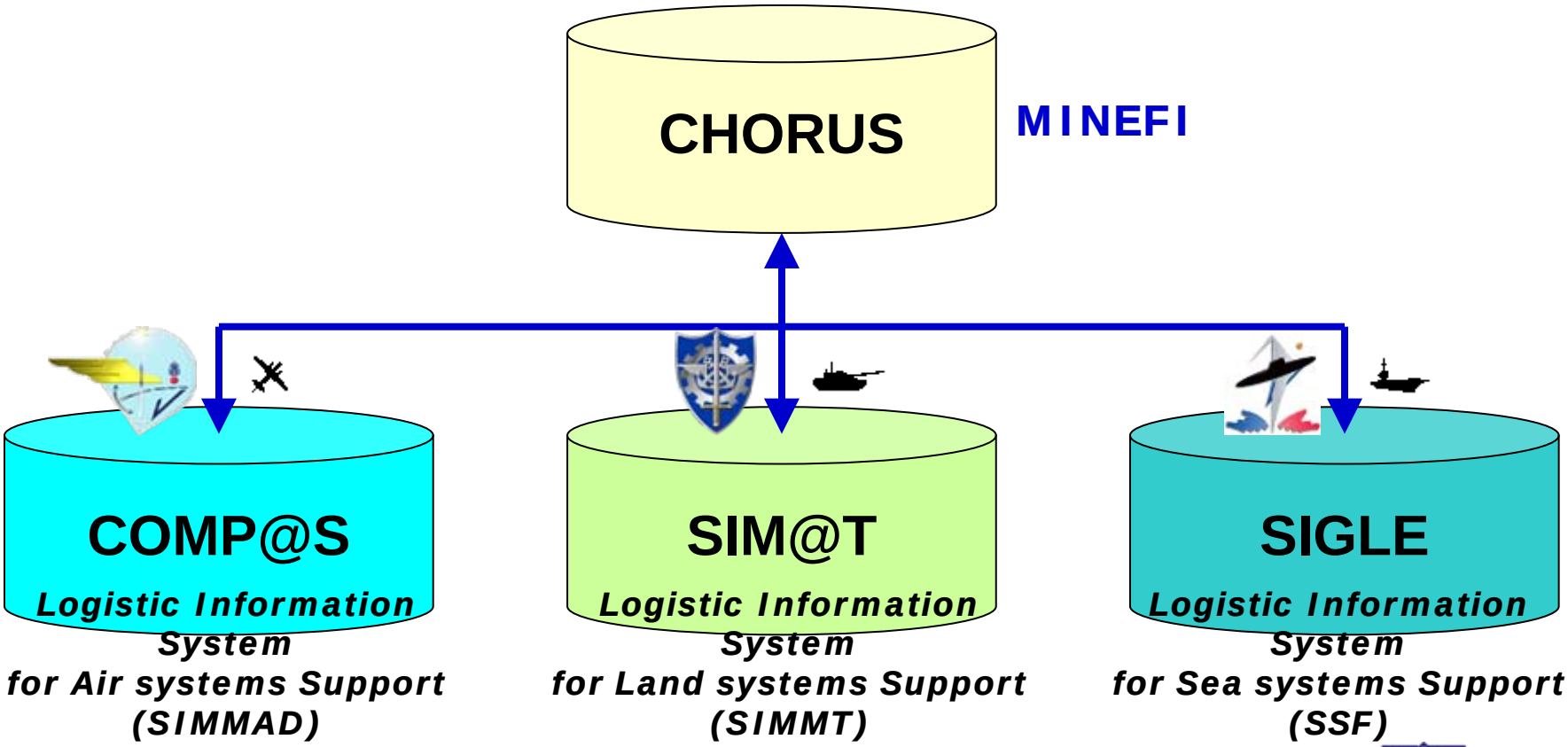
3. Implementations of PLCS

4. Prospects

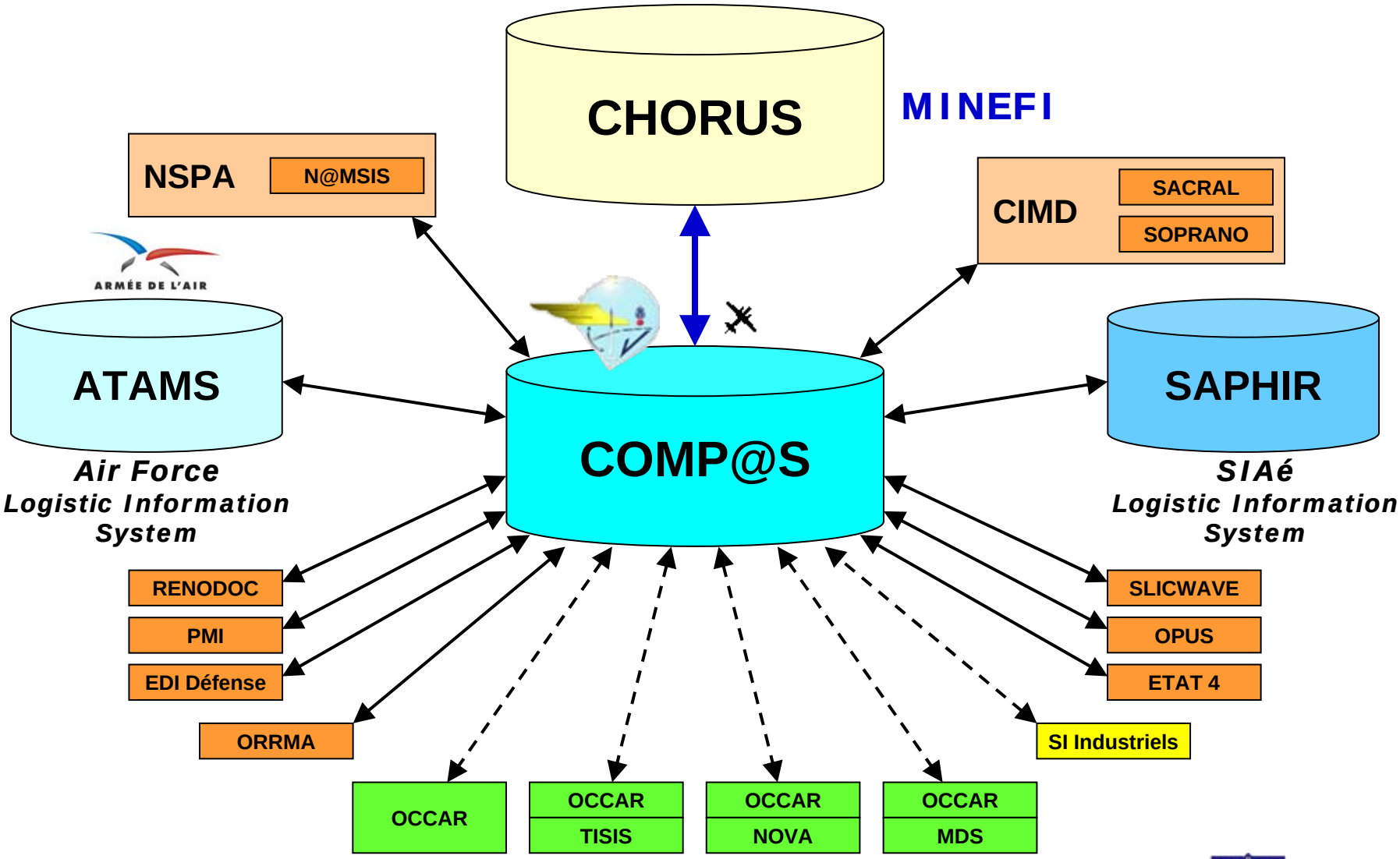
Convergence of French MoD's Logistic Information Systems

Objectives of CCF LOG (Comité de Cohérence Fonctionnelle de la zone LOGistique) :

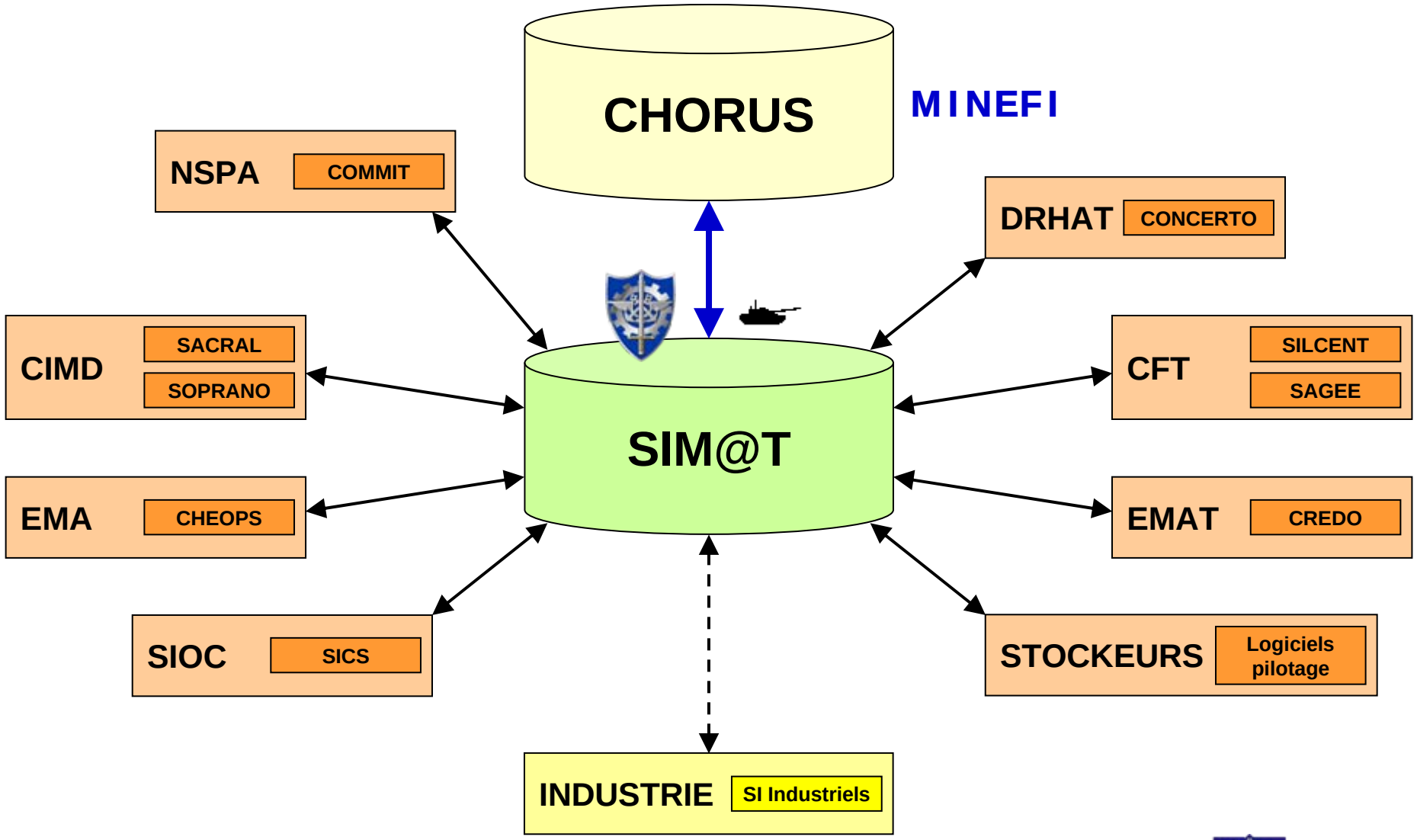
- To have one central LIS for each environment (Air / Land / Sea)
- To interface each LIS with CHORUS



COMP@S : Planned interfaces



SIM@T : Planned interfaces



1. Elements of context

2. Ratification & Experimentation of PLCS

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Solution : Interface based on PLCS standard

- **PLCS (Product Life Cycle Support) = ISO 10303-239 standard = AP239**
  - Application Protocol 239 of ISO 10303 standard or STEP (STandard for the Exchange of Product model data)
  - Encapsulated in STANAG 4661

- ***January 12, 2010* - STANAG 4661 ratified by France without enforcement**
  - France agrees with concepts presented in PLCS standard
  - However, France wants to experiment the standard on a concrete case in order to amend or confirm the choice made about ratification

- **Where does PLCS come from ?**
  - Reminder of the CALS initiative (Continuous Acquisition & Life cycle Support)

STANAG 4661 - Ratification without enforcement

ISO 10303 : STEP (STandard for the Exchange of Product model data)

AP201

AP214

STANAG 4661

AP239 : PLCS (Product Life Cycle Support)

Manage information to support a product	Generate support solution	Commission support system	Provide support
Manage configuration change	Manage support engineering programme	Develop commissioning schedule	D004 Work Package Definition
D001 Product Breakdown for support D012 Item Identification	D002 Faults related to product structures D010 System requirements	Analyze commissioning data	D009 Work Package Report
	Establish requirements for support solution	Certify support system	D009 Work Package Report
D001 Product Breakdown for support D008 Product as Individual D012 Item Identification	Assess support performance		D007 Operational Feedback D009 Work Package Report D011 Aviation maintenance
	D005 Maintenance plan D003 Task Set		

SIM@T

DEX SIM@T

DEX1A&D

Product breakdown for support

DEX3A&D

Task specification

S3000L

Experimentation of PLCS by French MoD

- **Duration : 3 months (from *sept.* to *dec. 2011*)**

  DGA/SIMMT/Eurostep collaboration

- **Composition :**
  - Task 1 - Achievement of µ-DEX for SIM@T (*LIS for Land systems Support*)

    Limited scope (Maintenance plan data) with VHM data (PLCS data at HAGGLUNDS)
  - Task 2 - Study of potential gains for SIM@T

    Expansion of µ-DEX for all functions of SIM@T
  - Task 3 - Study of potential gains for SIGLE (*LIS for Sea systems Support*)

- **Expectations :**
  - Task 1 → Real data exchange with µ-DEX achieved
  - Task 2 and 3 → Technical and financial recommendations for implementation of PLCS with development of DEXs

Task 2 - Recommendations for realization of DEX SIM@T

Define the WHAT ?

Requirements for data exchange described by the Handbook « SIM@T et les marchés innovants »

- History
  - Feedback Handbook of november 2005 (GICAT/DGA/DCMAT)
  - Different modes of contracting
- Content : 3 Data streams identified
  - Data stream 1 → LSAR data : 60 DED of 1388-2B
  - Data stream 2 → Provisioning data : 50 TEI of S2000M
  - Data stream 3 → In-Service Support data : 100 feedback data

Answer to the HOW ?

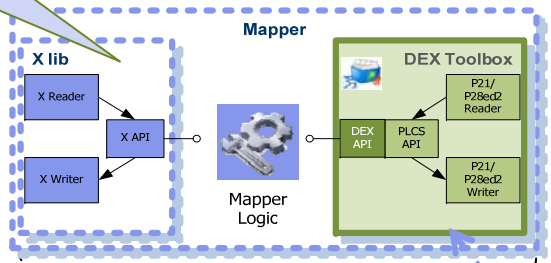
Implement the recommendations to extend µ-DEX SIM@T in order to develop DEX SIM@T interface

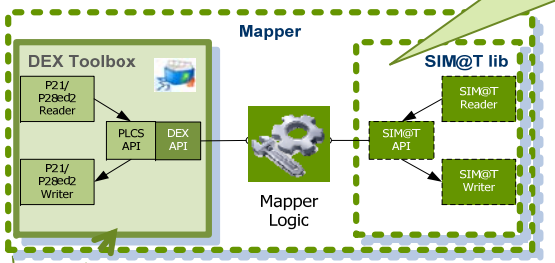
- Data streams 1 and 2 : Already standardized exchanges via .txt files
- Data stream 3 : No standardized exchange → DEX SIM@T contains primarily In-Service Support data

Implementation of DEX SIM@T (1/2) : Who makes what ?

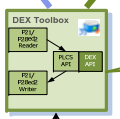
Réalise la toolbox X
Intègre la toolbox DEX
Réalise le mapper DEX-X

Réalise la toolbox SIM@T
Intègre la toolbox DEX
Réalise le mapper DEX-SIM@T





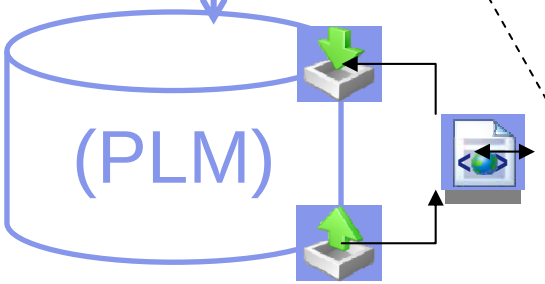
Participe à la définition du DEX

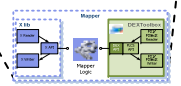


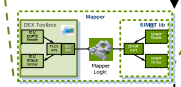
Fournit la toolbox DEX

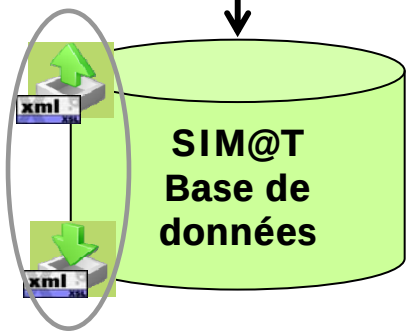
Pilote, réalise et publie le DEX

DEX







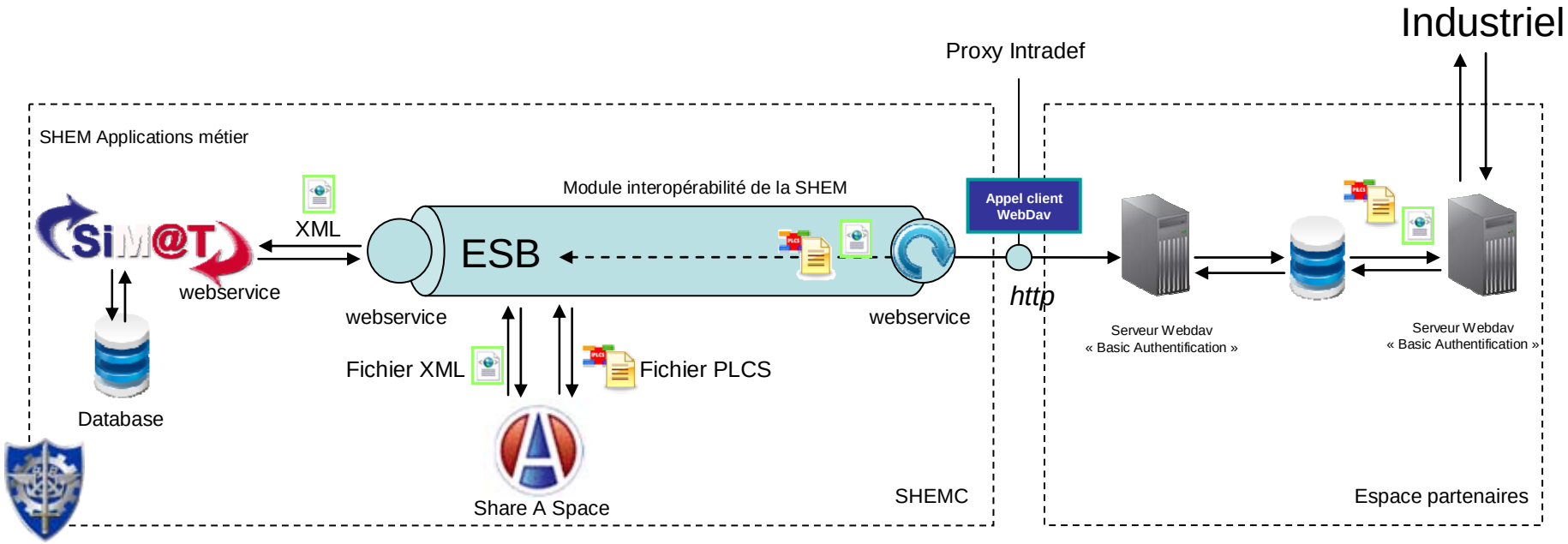


CEDIMAT

Implementation of DEX SIM@T (2/2) : Use of Partners Area

Network architecture used

- Administration network separated from the Internet network
- Connection between manufacturers Logistic Information System and SIM@T via Partners Area = secure ENX connection



Suites of experimentation

- ***December 6, 2011* - Experimentation results presented to DC SIMMT**

  → Decision to launch realization of DEX SIM@T

  - To replace LIS OASIS (NEXTER) in *june 2013*
  - To interface future programs with SIM@T (for example, SCORPION operation)

- **Many communications activities to :**
  - Programs Directions (part of Administration)
  - Defence industries
    - Land vehicles manufacturers : NEXTER, RTD (Renault Trucks Defence), SAGEM, THALES, GICAT (Groupement des Industriels Constructeurs de l'Armée de Terre)
    - Aircraft manufacturers : Mirror group France S3000L (DAHER-SOCATA, DASSAULT AVIATION, EUROCOPTER, MBDA)
  - IT companies
    - LASCOM, ISS
    - AXWAY, LBC (Logica Business Consulting), LGM, PTC

1. Elements of context

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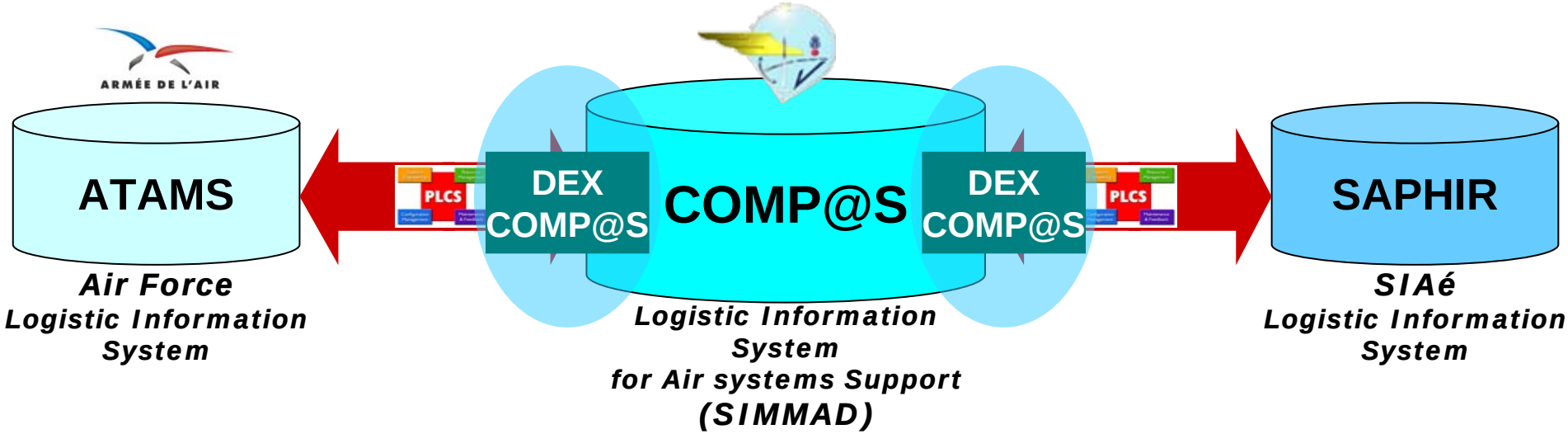
First implementation of PLCS by French MoD
DEX COMP@S (1/2) : PLCS interface for Air systems Support



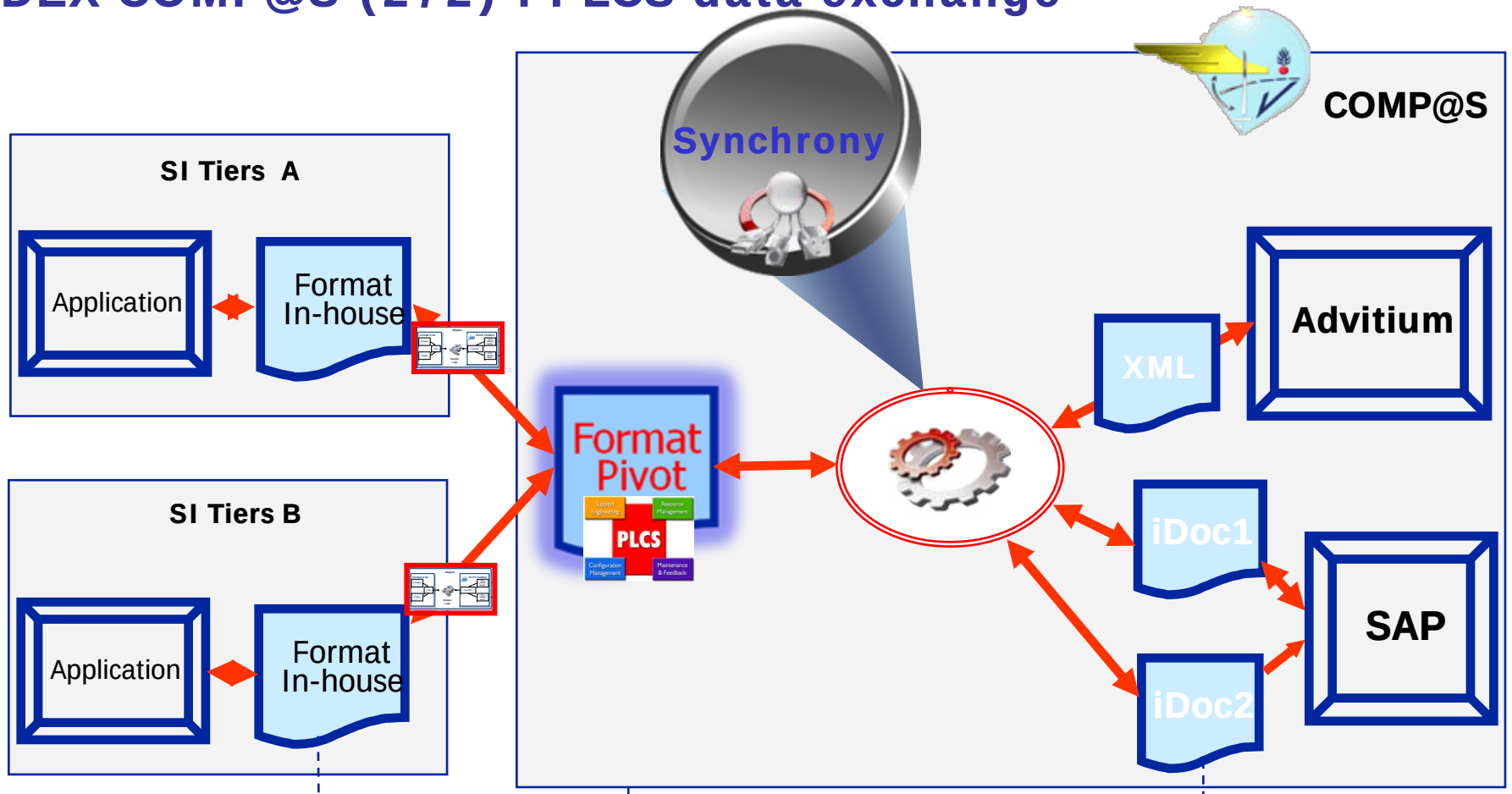
Functional scope of DEX COMP@S :

- Technical event
- Initial Provisioning Data (according to ASD S2000M specification)
- Product configuration As Delivered

  → Applicable product breakdown and interchangeabilities
- Support data and AMP (Approved Maintenance Plan) management
- Product configuration As Used

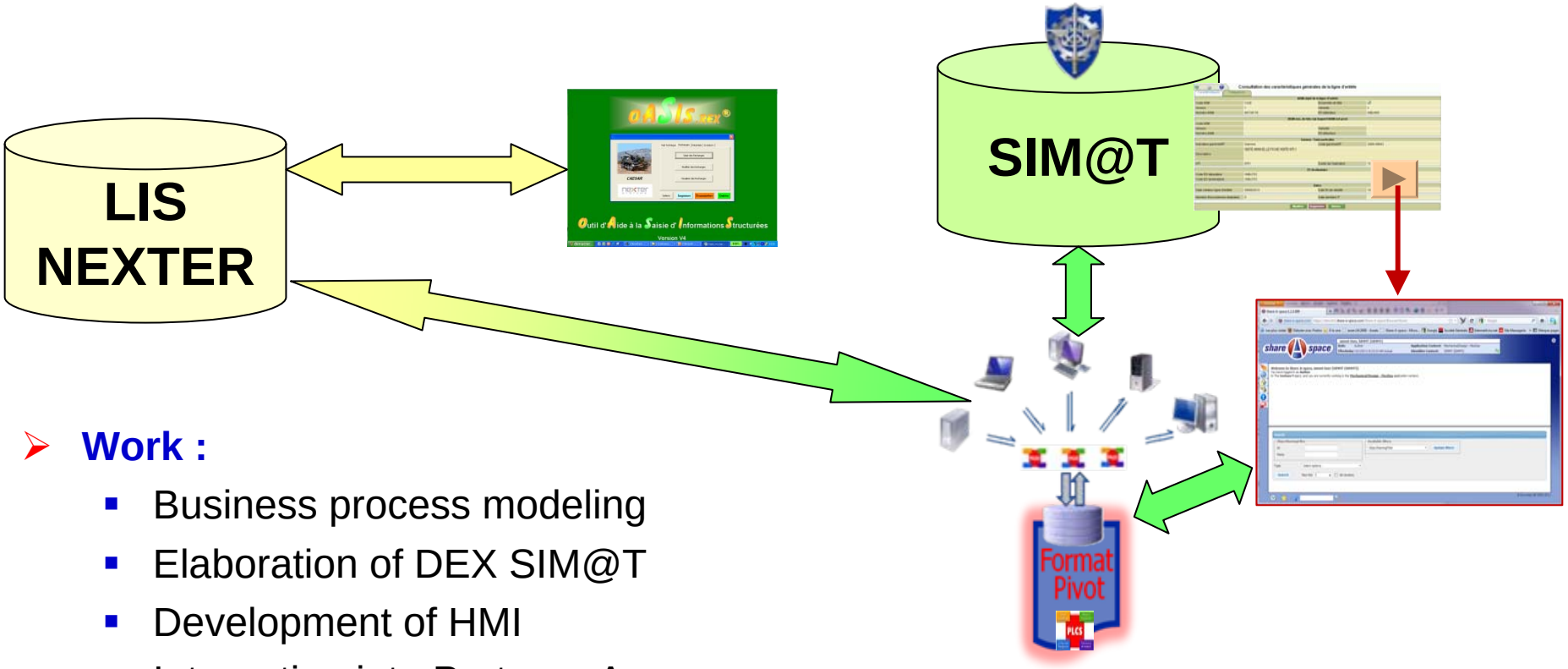
  → Applicated product breakdown and associated counters

First implementation of PLCS by French MoD
DEX COMP@S (2/2) : PLCS data exchange



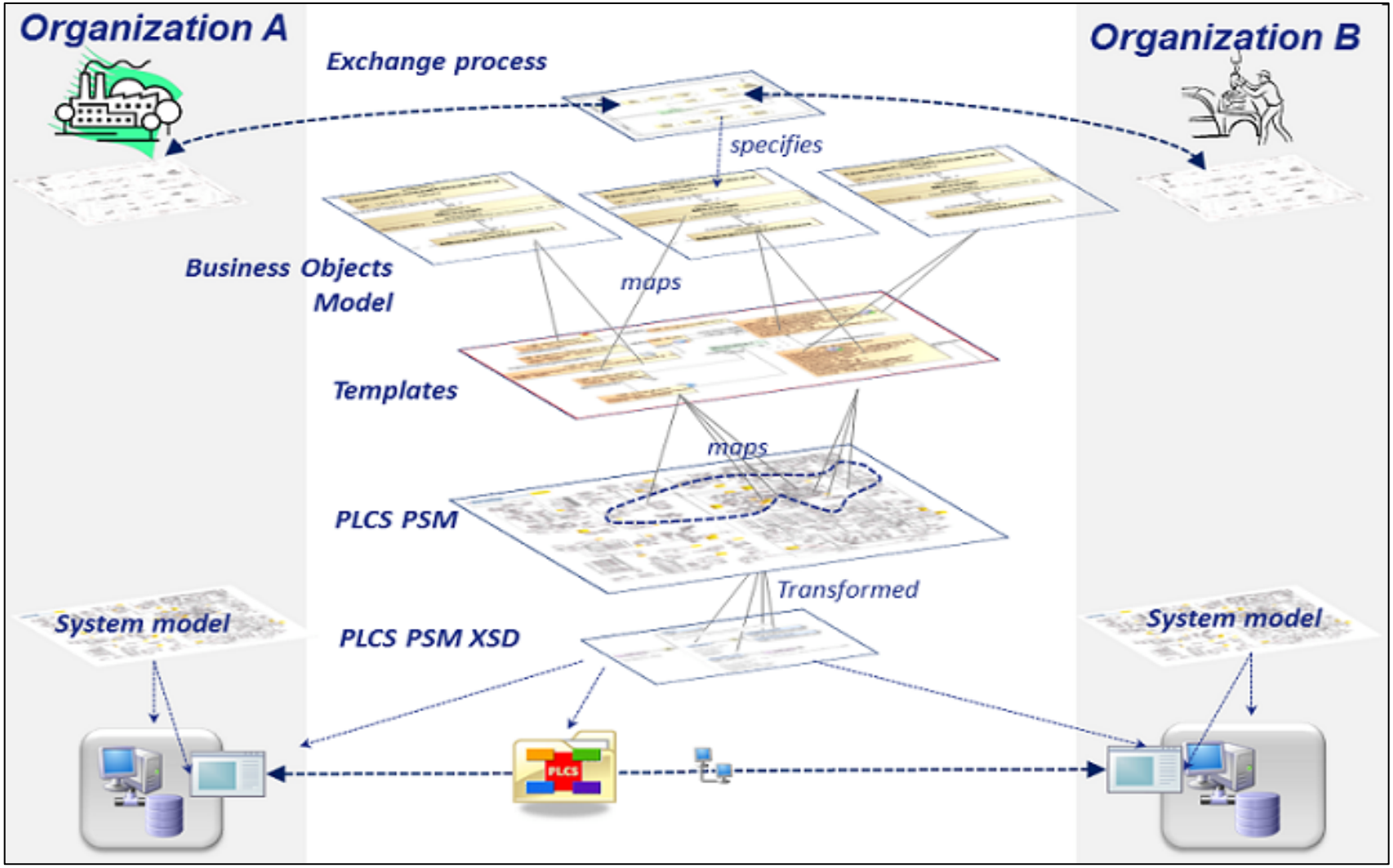
Second implementation of PLCS by French MoD
DEX SIM@T : PLCS interface for Land systems Support

- ***September 4, 2012* - Start of the realization of DEX SIM@T**
  - SIMMT/DGA + CAP GEMINI/Eurostep + participation of NEXTER
  - To replace LIS OASIS (NEXTER) on CAESAR program



- **Work :**
  - Business process modeling
  - Elaboration of DEX SIM@T
  - Development of HMI
  - Integration into Partners Area

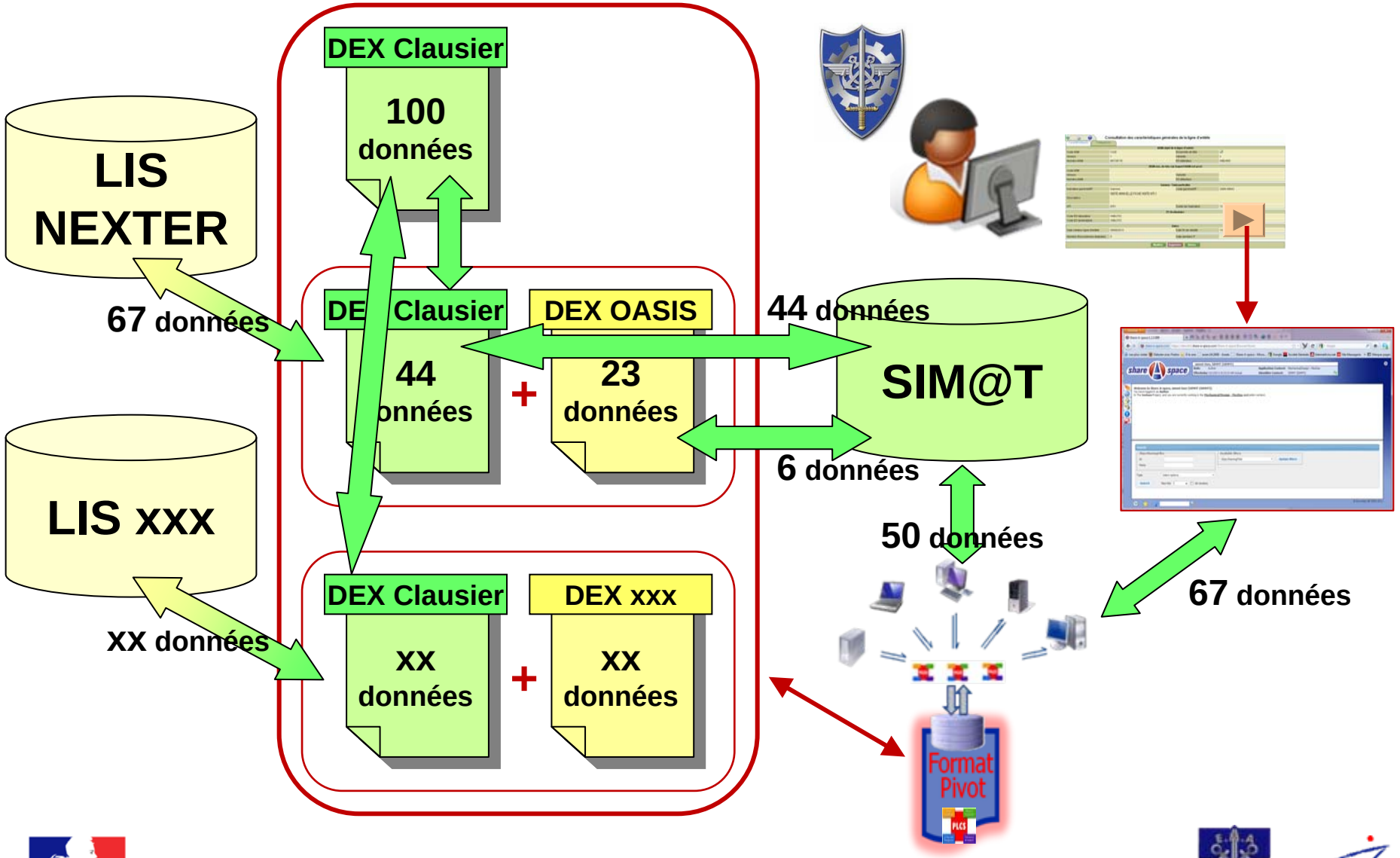
Business process modeling and Elaboration of DEX SIM@T



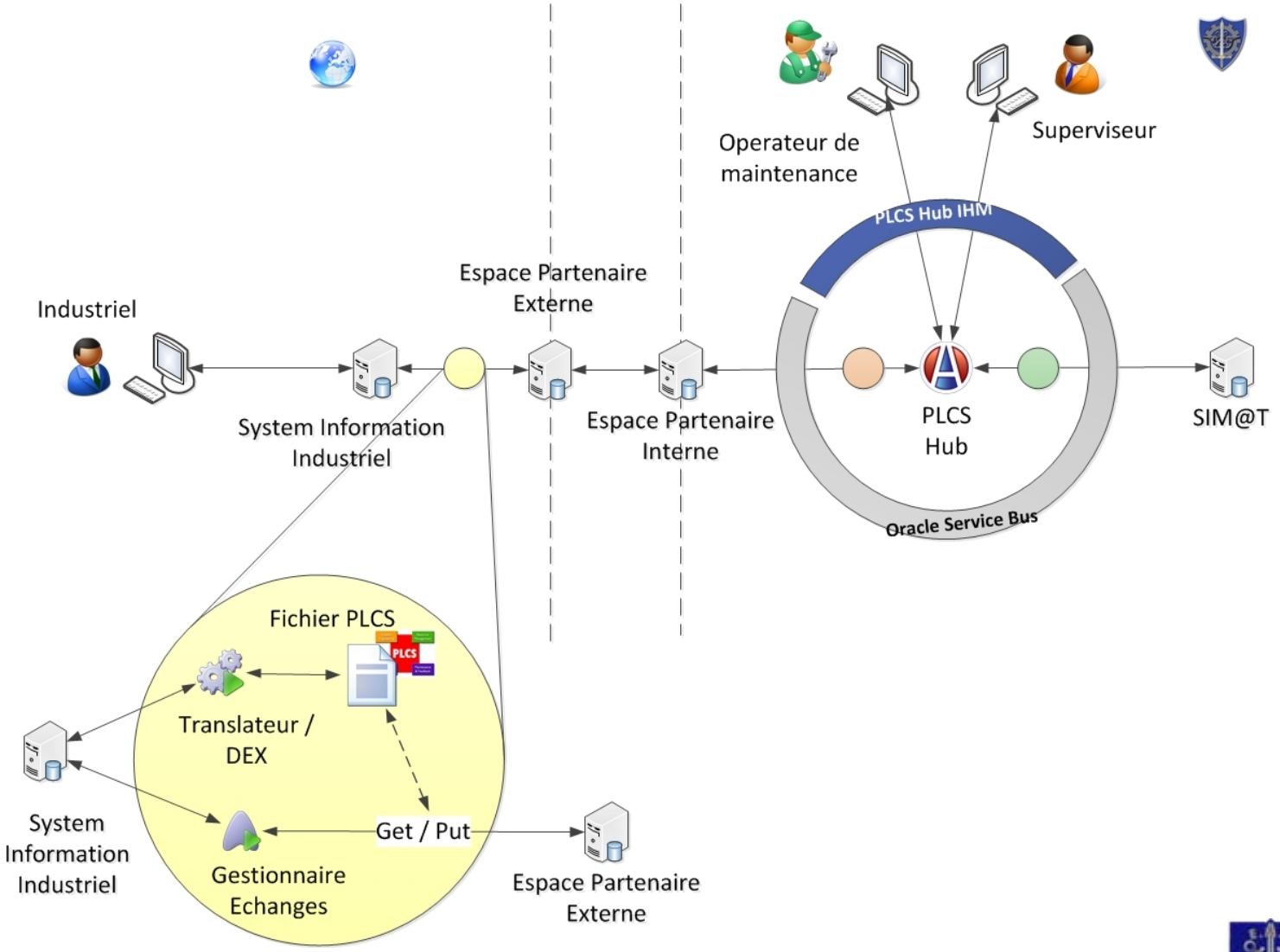
Functional scope and associated messages

DEX		Message		OEM	SIMMT
N°	Title	N°	Title		
1	ProductConfigurationDelivery	Composed by 5 messages		→	
2	InServiceProductStructureUpdate	1	InServiceProductStructureUpdate	←	→
3	ProductLifeRecordUpdate	1	LifeRecordUpdate	←	→
4	SparePartOrder	1	SparePartOrder	←	→
		2	OrderReceiptAcknowledgement	→	
		3	SparePartDeliverySlip	→	
		4	ProofOfDelivery	←	→
5	TechnicalEvent	1	TechnicalEventInit	←	→
		2	TechnicalEventUpdate	←	→
		3	TechnicalEventApproval	→	
		4	TechnicalEventClosure	←	→
6	MissionStock	1	MissionStockDelivery	→	
		2	MissionStockReturn	←	→

Data mapping : In-Service Support data in PLCS



Data exchange : Integration into Partners Area



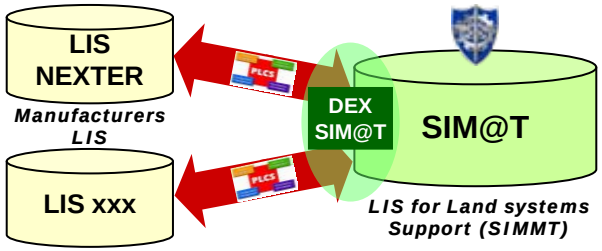
During development of DEX SIM@T

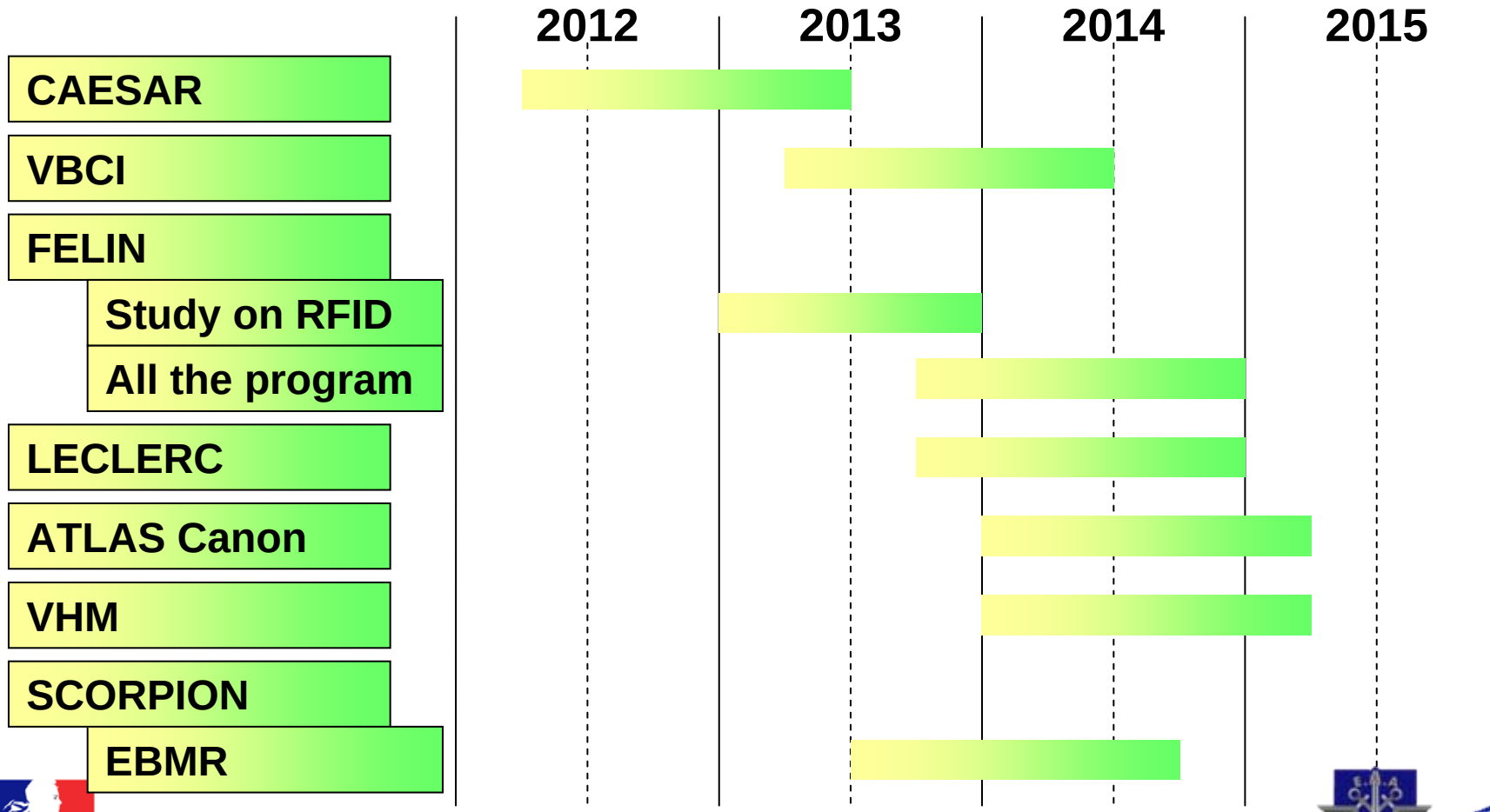
- **Communications activities**
  - *September 25, 2012* - Presentation at PDT Europe 2012 conference organized by Eurostep and CIM Data
  - Since *october 4, 2012* - Chairman of GICAT (Groupement des Industriels Constructeurs de l'Armée de Terre) "WG 3 - Data Exchange" composed by :
    - Land vehicles manufacturers : CASSIDIAN, RTD, SAGEM, THALES
    - IT companies : GL Conseil, LGM, SOPRA Group
  - *November 22, 2012* - Presentation of PLCS to GIFAS (Groupement des Industries Françaises Aéronautiques et Spatiales) in presence of :
    - Aircraft manufacturers : DASSAULT AVIATION, EADS, EUROCOPTER, LATECOERE, SAFT, SNECMA, THALES, ZODIAC Service Europe

- ***November 27, 2012* - Point of situation to DC SIMMT about implementation of PLCS → 2 decisions**
  - Priority application of PLCS standard in all data exchange contracts between Administration and manufacturers
  - New name for the project : DEX SIM@T replaced by PENCIL (Plateforme d'Echange Normalisée et Centralisée d'Information Logistique)

Next to be connected to SIM@T

In the future, DEX SIM@T (= PENCIL) will be the interface to exchange and share data between Manufacturers LIS and SIM@T





1. Elements of context

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Future implementation of new Data streams

➢ UID (Unique IDentification) data

- Traceability → UII (Unique Identification of Items) and different supports used (RFID, Data matrix)
- STANAG 2290 and AUIDP-1
- French participation into WG5 of AC/327 (LCMG)

➢ S2000M data

S2000M
Material management

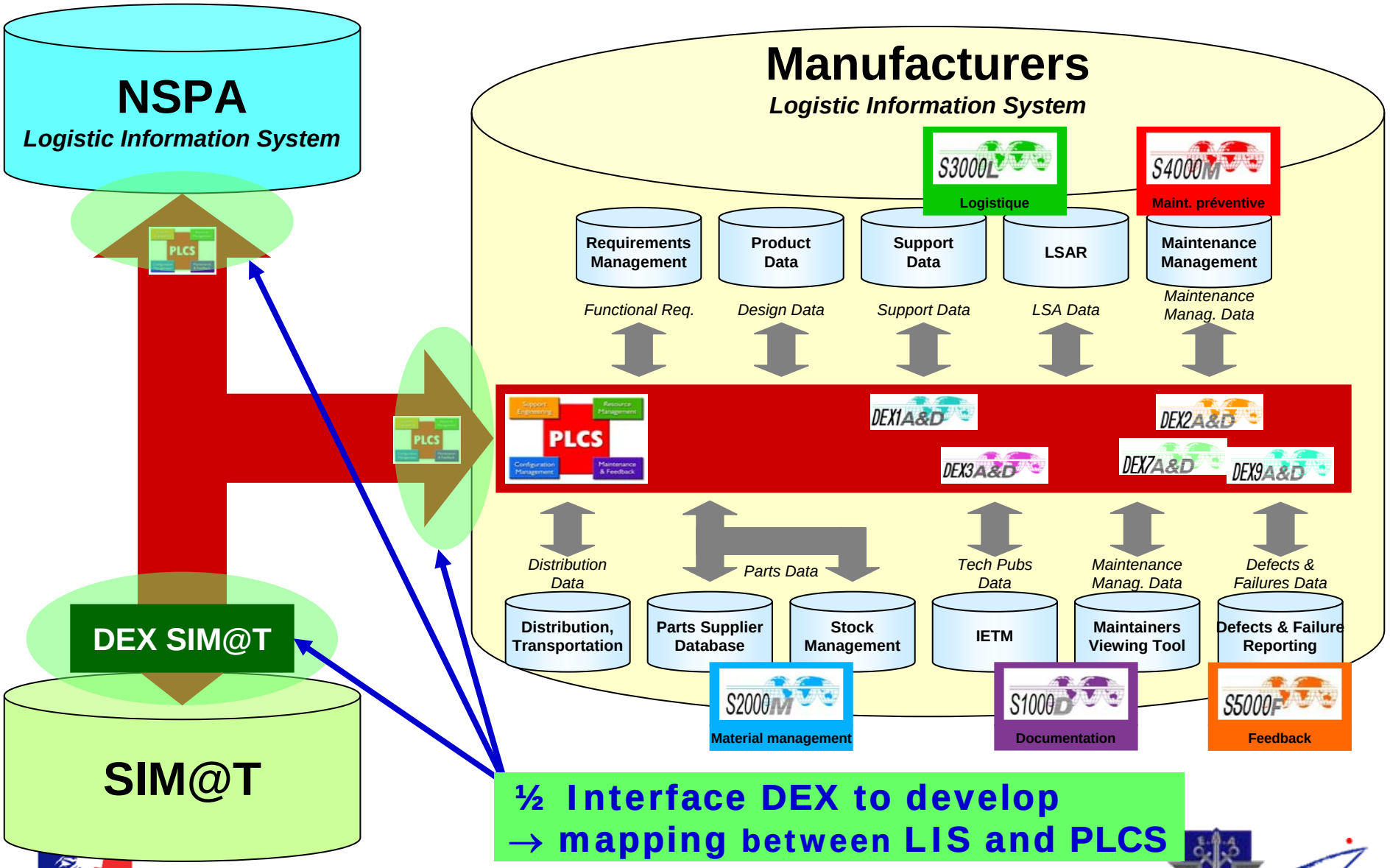
- Interface between S3000L and S2000M specifications
- PLCSTT (PLCS Task Team)

➢ S3000L specification and S3000L data

S3000L
Logistique

- Use of S3000L specification to replace MIL-STD 1388 1A / 2B
- S3000L data → Development of S3000L module for SlicWave software by ISS company

PLCS = Standard for Interoperability



½ Interface DEX to develop
→ mapping between LIS and PLCS

Why CALS ?

CALS in 3 dates

- *1985* - CALS (Computer-aided Acquisition & Logistic Support) initiative by US DoD
- *1990* - CALS France
- *1994* - CALS OTAN : 11 Administrations and NIAG (Nato Industrial Advisory Group)

Before CALS

Exchange paper documents

➡

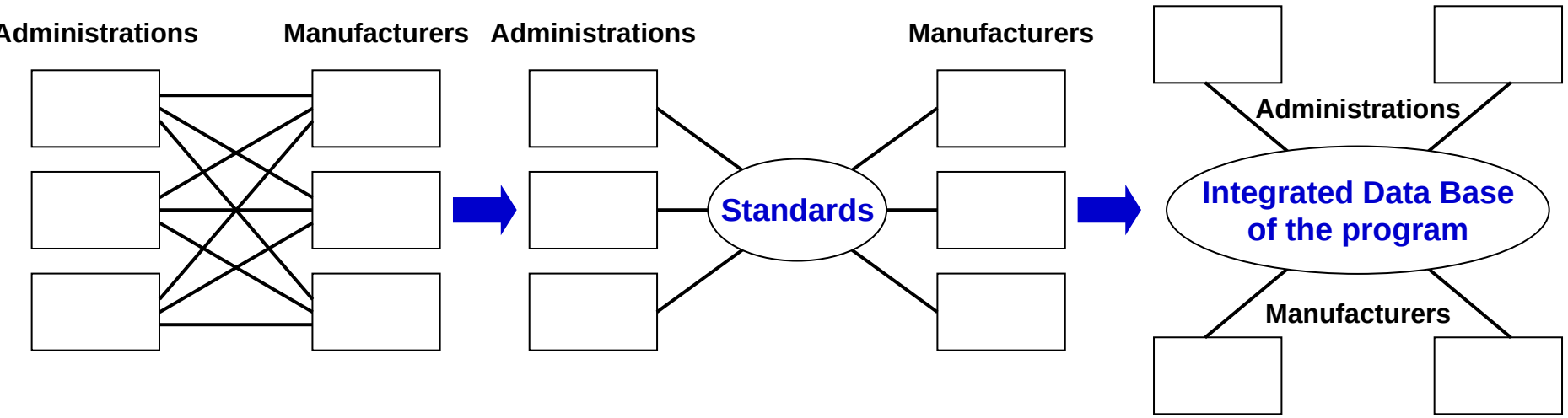
CALS Phase I

Exchange electronic documents

➡

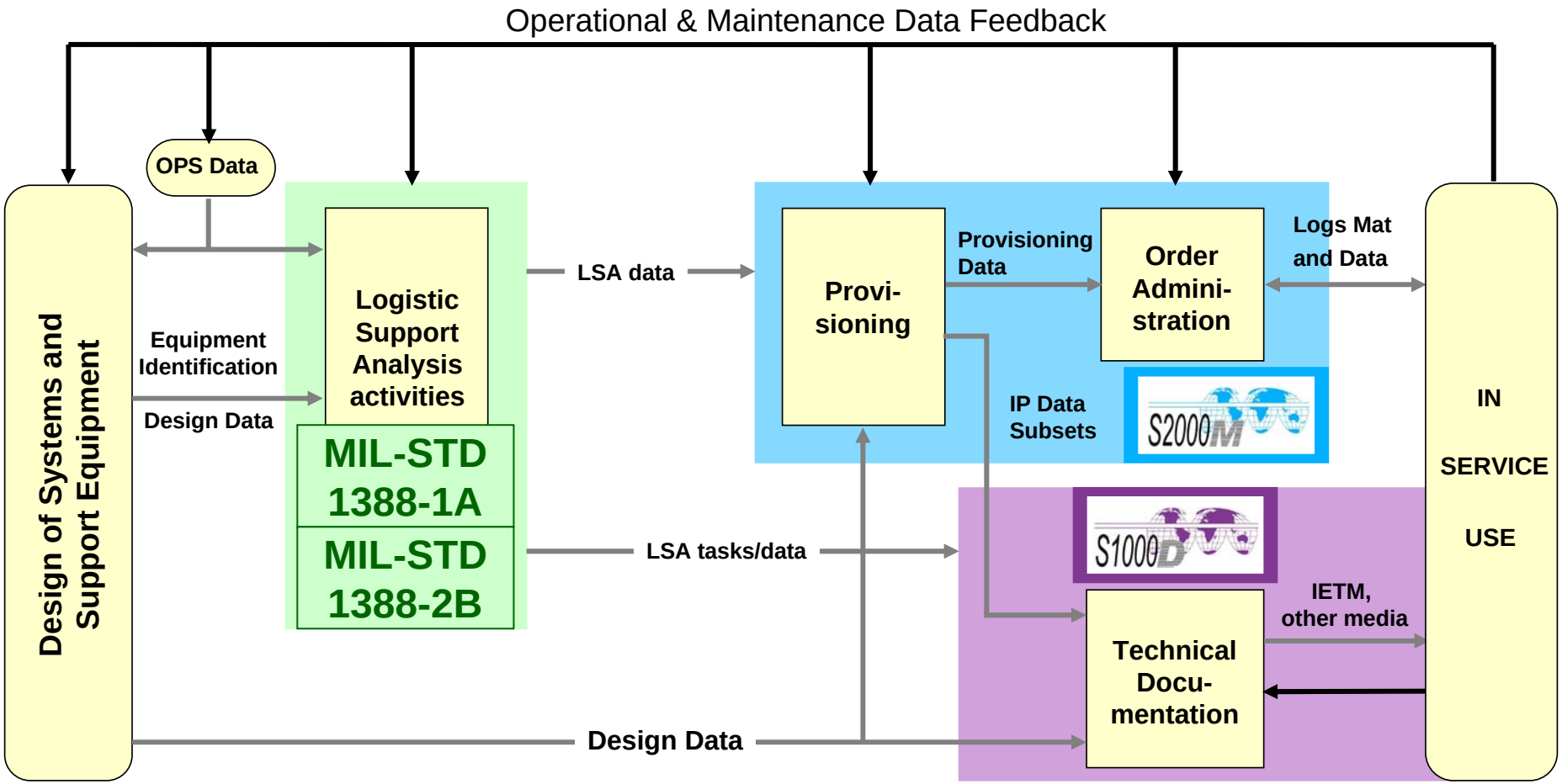
CALS Phase II

Integrated and shareable Data Base



Principal objective : Create product data one time and use many, without transformation, through all the product life cycle.

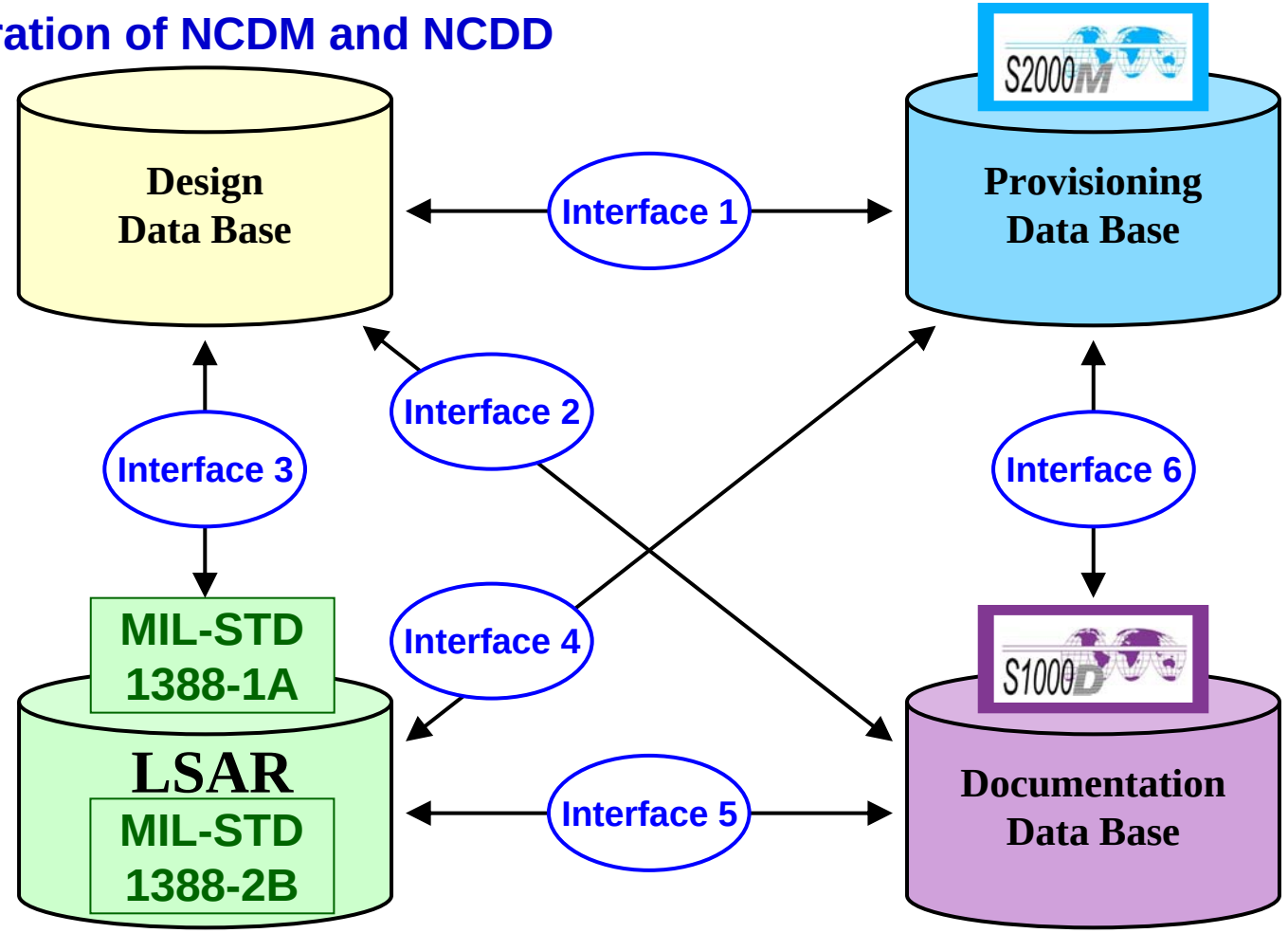
ALWS (Acquisition Logistics WorkShop) of NATO CALS



Acquisition Logistics Management - NATO (1993)

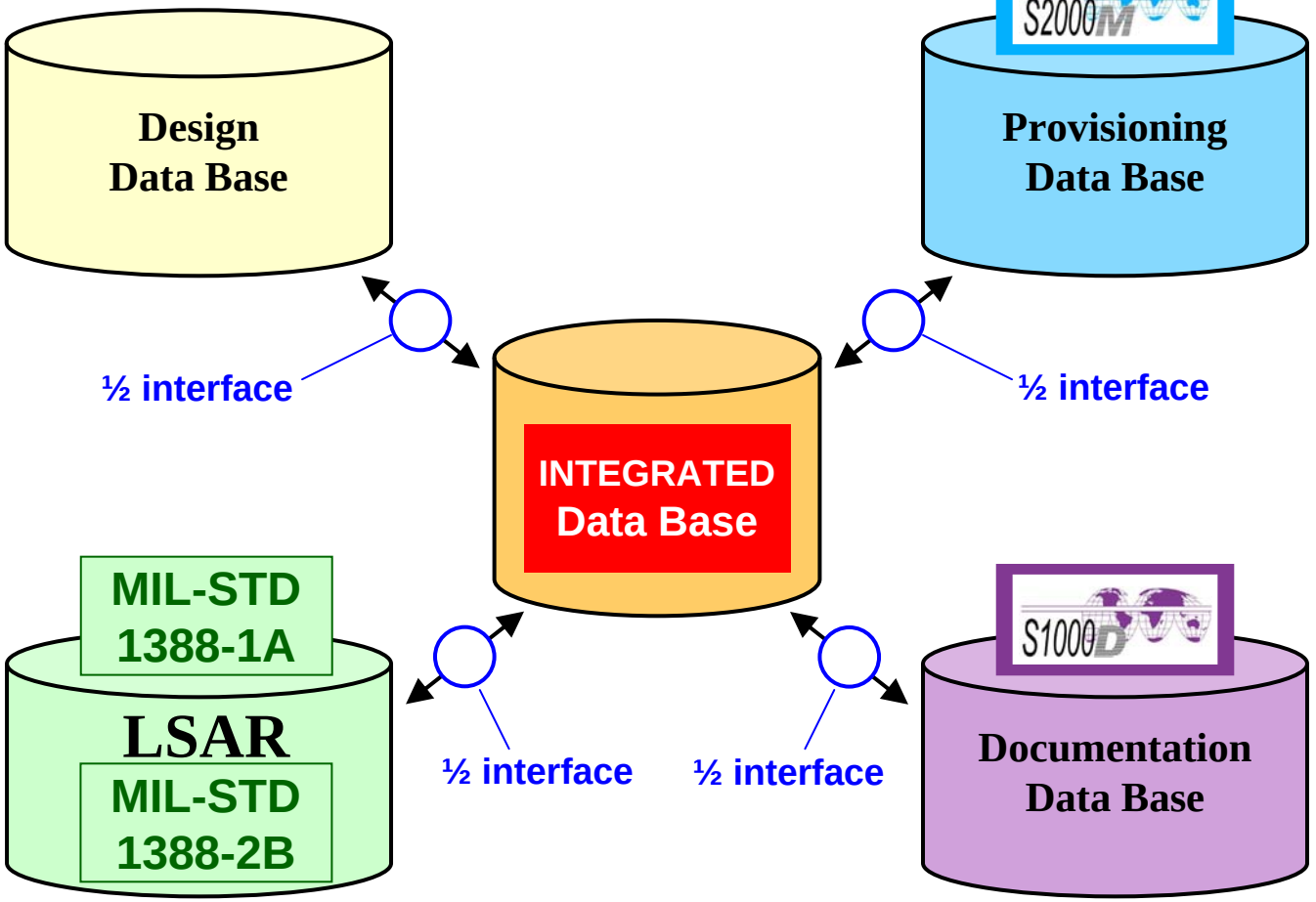
AWS (Acquisition WorkShop) of NATO CALS

Elaboration of NCDM and NCDD



AWS (Acquisition WorkShop) of NATO CALS

- **Elaboration of NCDM and NCDD**

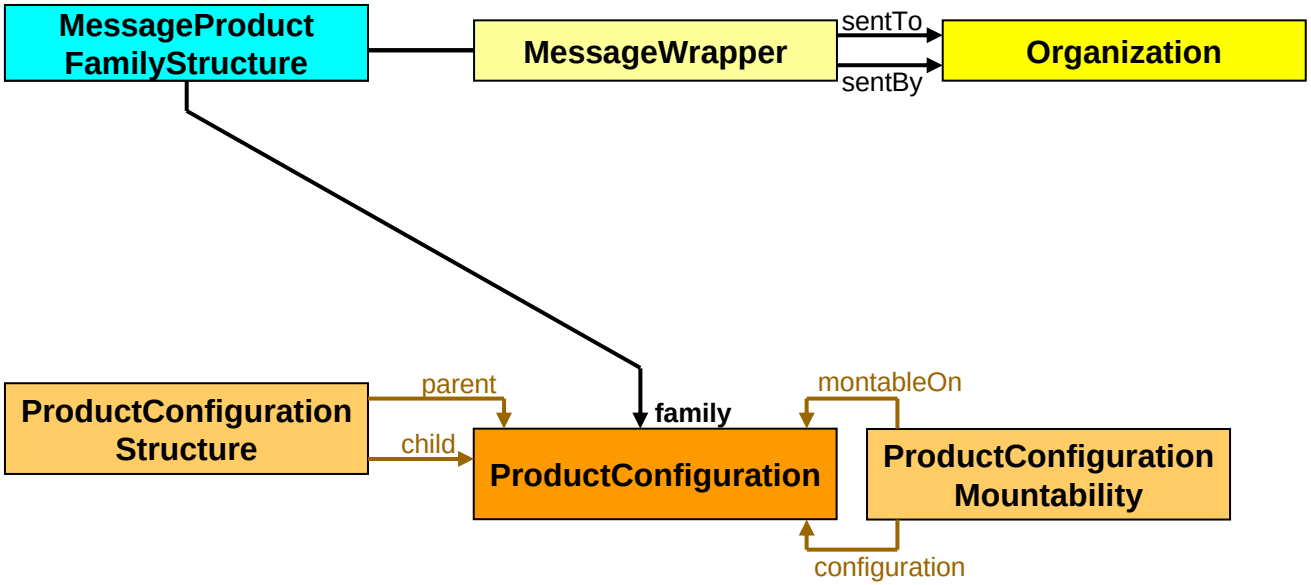


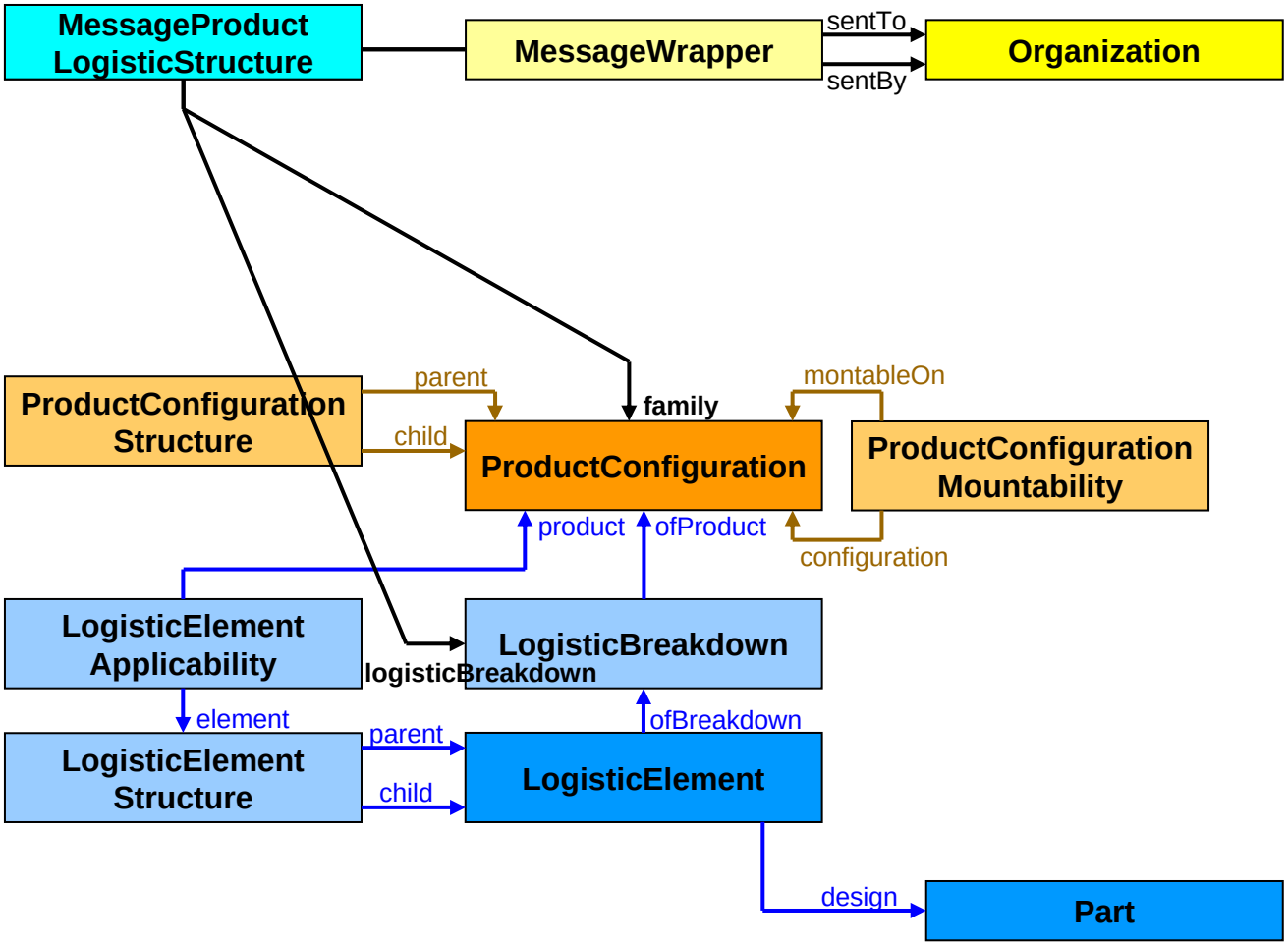
Back

- ***1996*** **- Experimentation of NCDM/NCDD : Develop a software demonstrator by using NH90 program data → ALIS (Acquisition Logistics Information System)**

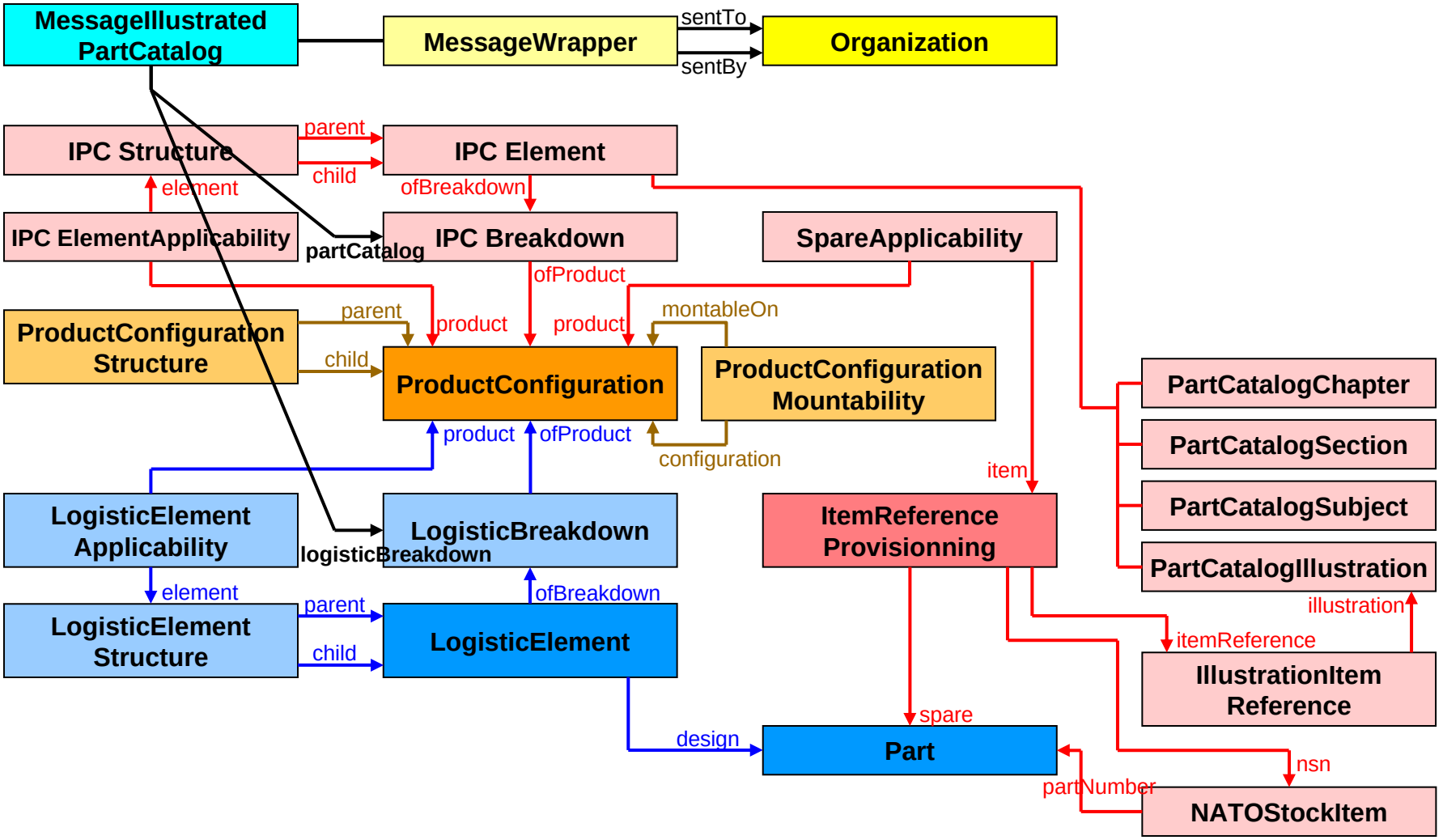
Common to all M (= Messages)

M1 - ProductFamilyStructure

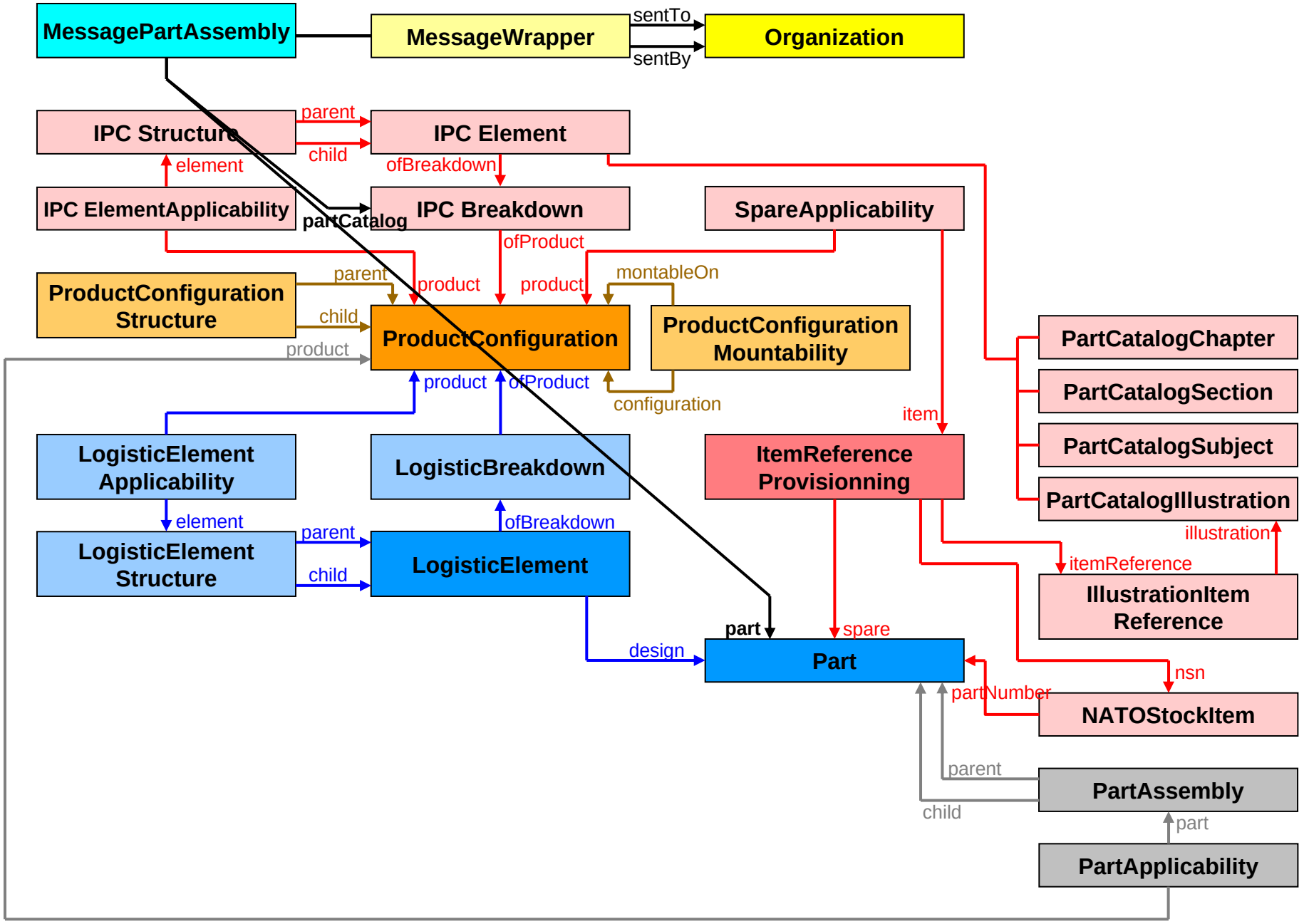



MessageProduct LogisticStructure
MessageWrapper
sentTo
sentBy
Organization
ProductConfiguration Structure
parent
child
family
ProductConfiguration
montableOn
ProductConfiguration Mountability
product
ofProduct
configuration
LogisticElement Applicability
logisticBreakdown
LogisticBreakdown
element
parent
child
ofBreakdown
LogisticElement Structure
LogisticElement
design
Part

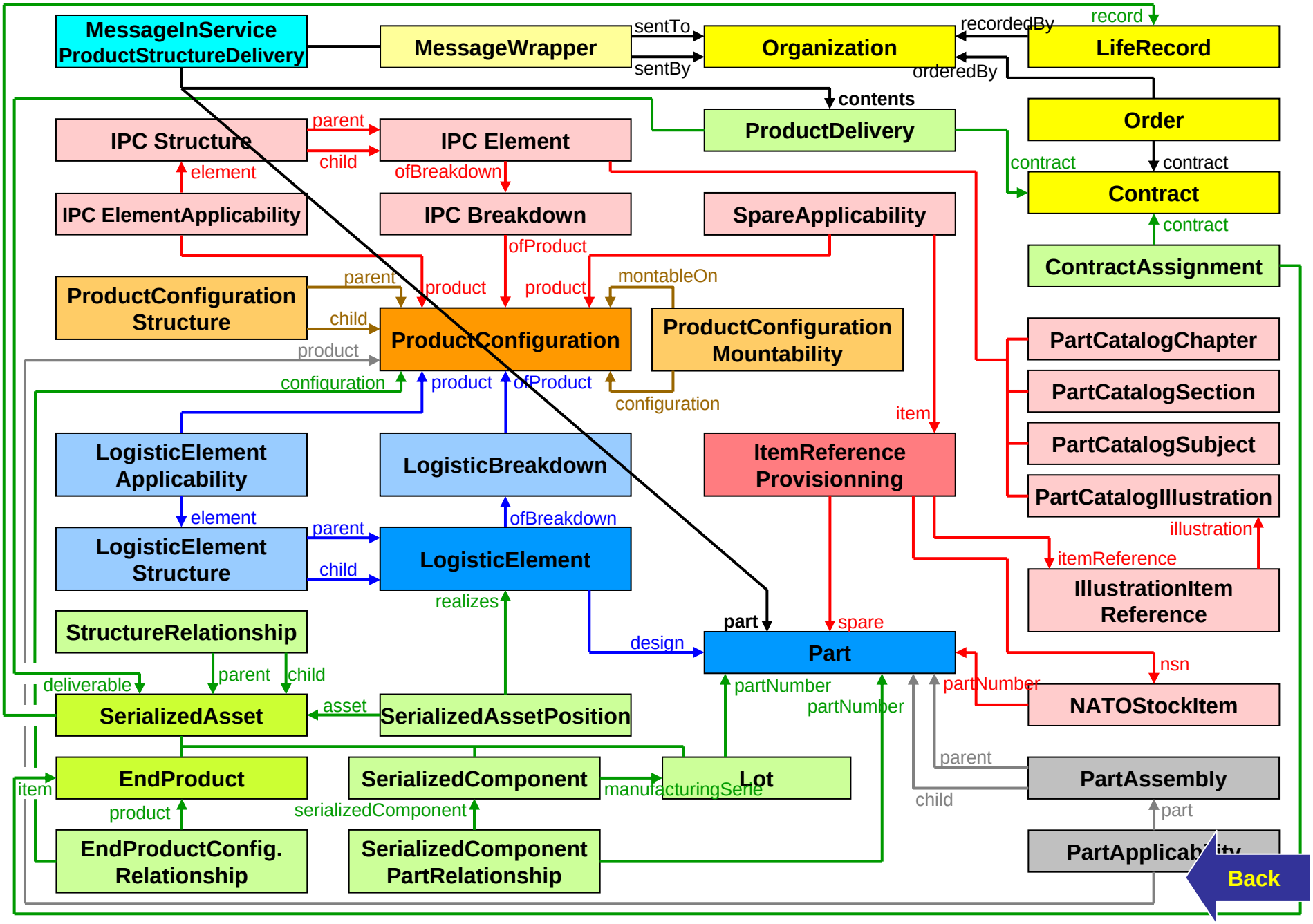
M3 - IllustratedPartCatalog



M4 - PartAssembly



M5 - InServiceProductStructureDelivery



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