PLCS for data sharing between French MoD and Industry

Ratification, Experimentation and Implementations
Activities of DTE Focal point

Operational & Maintenance Data Feedback

Design of Systems and Support Equipment

Equipment Identification Design Data

OPS Data

Logistic Support Analysis activities

LSA data

Provisioning

Order Administration

Provisioning Data

IP Data Subsets

Technical Documentation

Logs Mat and Data

IN SERVICE

USE

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

- NSPA
- N@MSIS
- ATAMS
  - Air Force Logistic Information System
- RENODOC
- PMI
- EDI Défense
- ORRMA
- OCCAR
- OCCAR TISIS
- OCCAR NOVA
- OCCAR MDS
- CIMD
  - SACRAL
  - SOPRANO
- MINEFI
- SAPHIR
  - SIAé Logistic Information System
- SI Industriels

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SIM@T: Planned interfaces
1. Elements of context

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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)

STANAG 4661

AP239 : PLCS (Product Life Cycle Support)

Manage information to support a product
- Manage configuration change
  - D001 Product Breakdown for support
  - D008 Product as Individual
  - D012 Item Identification

Generate support solution
- Manage support engineering programme
  - D002 Faults related to product structures
  - D003 System requirements
  - D010 Establish requirements for support solution
  - D005 Support context
  - D100 Task Set

Commission support system
- Develop commissioning schedule
  - D004 Work Package Definition
- Analyze commissioning data
  - D009 Work Package Report
- Certify support system
  - D007 Operational Feedback
  - D009 Work Package Report
  - D011 Aviation maintenance

Provide support
- D044 Work Package Definition
- D049 Work Package Report
- D007 Operational Feedback
- D009 Work Package Report
- D011 Aviation maintenance

Product breakdown for support
- SIM@T

Task specification
- DEX SIM@T

SIM@T

DEX SIM@T

DEX1A&D

Product Breakdown for support

DEX3A&D

Task Set

MINISTÈRE DE LA DÉFENSE

STANAG 4661 - Ratification without enforcement
ISO 10303 : STEP (STandard for the Exchange of Product model data)
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

- SI
- (PLM)
- (PLM)
- SIM@T
- Base de données
- CEDIMAT

- Participe à la définition du DEX
- Fournit la toolbox DEX
- Pilote, réalise et publie le DEX
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
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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

SI Tiers A
Application → Format In-house

SI Tiers B
Application → Format In-house

½ interface SI Tiers

½ interface COMP@S

Format Pivot

Synchrony

Advitium

SAP

iDoc1
iDoc2

XML

In-house

PLCS Toolbox
PLCS API
P21/P28ed2 Reader
P21/P28ed2 Writer

X lib

X API

X Reader

X Writer

Mapper

Logic
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

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</table>
Data mapping : In-Service Support data in PLCS

LIS NEXTER
- 100 données
- 67 données

LIS xxx
- XX données

DEX Clausier
- 44 données
- 23 données
- 50 données

DEX OASIS
- 23 données
- 6 données

SIM@T
- 44 données
- 6 données

Format Pivot
- 67 données
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

- CAESAR
- VBCI
- FELIN
- Study on RFID
- All the program
- LECLERC
- ATLAS Canon
- VHM
- SCORPION
- EBMR

2012

2013

2014

2015
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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**
  - Interface between S3000L and S2000M specifications
  - PLCSTT (PLCS Task Team)

- **S3000L specification and S3000L data**
  - Use of S3000L specification to replace MIL-STD 1388 1A / 2B
  - S3000L data → Development of S3000L module for SlicWave software by ISS company
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.
Operational & Maintenance Data Feedback

Design of Systems and Support Equipment

OPS Data

Equipment Identification

MIL-STD 1388-1A
MIL-STD 1388-2B

Logistic Support Analysis activities

Order Administration

Provisioning

Provisioning Data

IP Data Subsets

Logs Mat and Data

Technical Documentation

Design Data

Design Data

IN
SERVICE

USE

Acquisition Logistics Management - NATO (1993)
AWS (Acquisition WorkShop) of NATO CALS

Elaboration of NCDM and NCDD

Design Data Base

Provisioning Data Base

MIL-STD 1388-1A

LSAR

MIL-STD 1388-2B

Documentation Data Base

Interface 1

Interface 2

Interface 3

Interface 4

Interface 5

Interface 6
AWS (Acquisition WorkShop) of NATO CALS

Elaboration of NCDM and NCDD

- Design Data Base
- Provisioning Data Base
- INTEGRATED Data Base
- Provisioning Data Base
- Documentation Data Base

1/2 interface

MIL-STD 1388-1A
LSAR
MIL-STD 1388-2B

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