PLCS for data sharing between French MoD and Industry

What’s new for the last two years?
1. Introduction

2. PLCS for Land systems Support: PENCIL (Plateforme d’Echange Normalisée et Centralisée d’Information Logistique)
   ➢ Presentation
   ➢ Demonstration

3. MAPS Study (Marchés avec Achat de Prestations de Soutien)

4. Prospects
The ILS (Integrated Logistic Support) process

Operational & Maintenance Data Feedback

- Acquisition Logistics Management - NATO (1993)

Design of Systems and Support Equipment

- Equipment Identification Design Data

Logistic Support Analysis activities

- LSA data

Provisioning

- Provisioning Data

Order Administration

- IP Data Subsets

- Logs Mat and Data

IN SERVICE

- Technical Documentation

USE

- IETM, other media

Acquisition Logistics Management - NATO (1993)
# Suite of ILS specifications

**ASD/AIA/ATA**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Applicability</th>
<th>Origin</th>
<th>Issue</th>
<th>Date</th>
<th>Domain</th>
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<td>ASD/AIA/ATA</td>
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<td>31/12/12</td>
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<td>01/07/14</td>
<td>Logistics Support Analysis (LSA)</td>
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<td>Feedback</td>
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**Data exchange based on DEXs (= subset of PLCS)**

---

**ASD** : AeroSpace and Defence industries association of Europe  
**AIA** : Aerospace Industries Association of America  
**ATA** : Air Transport Association of America
Before CALS

- Design Data Base
  - Interface 3
  - MIL-STD 1388-1A
  - LSAR MIL-STD 1388-2B
- Provisioning Data Base
  - Interface 1
  - Interface 2
  - Interface 4
  - Interface 5
- Documentation Data Base
  - Interface 6

1996: NATO CALS

- Design Data Base
- Provisioning Data Base
- NCDM
- MIL-STD 1388-1A
- LSAR MIL-STD 1388-2B

½ interface
¼ interface
¼ interface

Documentation Data Base
ASD specifications and PLCS

Before CALS

- Design Data Base
  - Interface 1
  - MIL-STD 1388-1A
  - LSAR MIL-STD 1388-2B

- Provisioning Data Base
  - Interface 2
  - Interface 6

Today

- Design Data Base
- Provisioning Data Base
- LSA Data Base
- Documentation Data Base

1996: NATO CALS

- Design Data Base
  - Interface 1
  - Interface 6

- Provisioning Data Base
  - Interface 3
  - Interface 4
  - Interface 5

MIL-STD 1388-2B

LSAR Design Data Base
Before CALS

1996: NATO CALS

ASD specifications and PLCS

Design Data Base

Provisioning Data Base

LSAR

MIL-STD 1388-1A

MIL-STD 1388-2B

Provisioning Data Base

Design Data Base

½ interface

½ interface

½ interface

½ interface

½ interface

½ interface

½ interface

½ interface

½ interface

½ interface

Today

Documentation Data Base

NCDM
**PLCS standard - PLCS DEX - Business DEX**

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

**STANAG 4661**

**AP239 : PLCS (Product Life Cycle Support)**

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

**DEX1A&D**

Product breakdown for support

**DEX3A&D**

Task specification

**AP201**

**AP214**
PLCS standard - PLCS DEX - Business DEX

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

AP201

Product designs
- Individual Products
- Product Breakdown
- Product Descriptions
- States
- Activity Specifications
- Activity History
- Product Environment
- Management Process
- Details

AP214

Plan & control
- support delivery
- Arrange support
- element provision
- Execute authorized task
- Collect data
- & provide feedback
- Provide support

Manage
- configuration change
- Manage identification
- Manage information to support a product
- Manage support engineering programme
- Define support context
- Establish requirements for support solution
- Assess support performance
- Design support solution
- Generate support solution
- Develop commissioning schedule
- Analyze commissioning data
- Certify support system
- Commission support system

DEF1A&D
Product breakdown for support

DEF3A&D
Task specification

S3000L
1. Introduction

2. PLCS for Land systems Support : PENCIL
   (Plateforme d’Echange Normalisée et Centralisée d’Information Logistique)
   ➢ Presentation
   ➢ Demonstration

3. MAPS Study (Marchés avec Achat de Prestations de Soutien)

4. Prospects
SIM@T : The LIS (Logistic Information System) for Land systems Support

Available parts

Financial property

Warehousing orders

Localization
Fleet optimization

Staff repository

Organization

Event report, Order
Life records update

Technical assistance

Available parts

NNO

Availability
Life records update

Reference data

Order
.dat

Event report, Order
Life records update

.PPT

Event report, Order
Life records update

Event report, Order
Life records update

Event report, Order
Life records update

Technical assistance

Technical assistance

Event report, Order
Life records update

Technical assistance

NSPA
COMMIT

CIMD
SACRAL
SOPRANO

EMA
CHEOPS

SIOC
SICS

LECLERC

VBCI

CAESAR

VHM

PPT

SOPRANO

SACSAL

NNO

SOPRANO

VBCI

SACSAL

VHM

PPT

SOPRANO

VBCI

SACSAL

VHM

PPT

SOPRANO

VBCI

SACSAL

VHM

PPT

SOPRANO

VBCI

SACSAL

VHM

PPT

SOPRANO

VBCI

SACSAL

VHM

PPT
SIM@T: The LIS (Logistic Information System) for Land systems Support
Benefits of PENCIL

- **On data to be exchanged**
  - Today
    - No global vision of exchanged data
    - Differences between visions (manufacturers / Administration)
  - PLCS:
    - Forces to define in a clarified way all exchanged data
    - Offers a generic and precise frame for data identification
    - Quickly allows to identify the missing data and to converge on a common definition for all the actors

- **On contracts**
  - Nowadays, every contract is specific
  - PLCS allows to manage programs uniformly:
    - By using generic business processes
    - By handling contracts specificities
Ratification of STANAG 4661 (PLCS) on 12 January 2010.

Decision: Priority application of PLCS (PENCIL) for data exchange between Administration and manufacturers on 27 November 2010.

Decision: Replace LIS OASIS (NEXTER) by a PLCS interface on 6 December 2010.

Experimentation of PLCS on 22 July 2011.

Meeting SIMMT - EMA - DGA about experimentation of PLCS on 29 January 2012.

Implementation of PENCIL for CAESAR program on 25 September 2012.

24 September 2012: Pencil 24 September 2012 PLM DAYS Conferences et ateliers pratiques.

19 June 2013: MAPS Study.

Operational use of PENCIL for CAESAR program on 15 October 2014.
Architecture of the project

**ADMINISTRATION**
- SHEM interoperability module
- ESB
- Webdav Server
- OK
- PEN CIL
- Business hosting structure (SHEM)

**MANUFACTURER**
- Administration Webdav Server
- OK
- Partners Area
- OK

**SEQUOIA**
- Manufacturer Webdav Server
- OK
Software components

**ADMINISTRATION**
- WebDav
  - IXARM
- Transactions handler
- Share A Space
- User HMI (Human Machine Interface)

**MANUFACTURER**
- WebDav
- Network
- Transactions handler
- Translator IN/OUT
- DEX SIMMT
- SEQUOIA
- PEN CIL
- JAVA

**MANUFACTURER**
- Translator IN/OUT
# DEX SIMMT, messages and associated workflow

<table>
<thead>
<tr>
<th>DEX</th>
<th>Message</th>
<th>OEM</th>
<th>SIMMT</th>
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<td>N°</td>
<td>Title</td>
<td>N°</td>
<td>Title</td>
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<tr>
<td>1</td>
<td>ProductConfigurationDelivery</td>
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<tr>
<td>2</td>
<td>InServiceProductStructureUpdate</td>
<td>1</td>
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<tr>
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<td>ProductLifeRecordUpdate</td>
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<td>OrderReceiptAcknowledgement</td>
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<td>MissionStockReturn</td>
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Composed by 5 messages
1. Introduction

2. PLCS for Land systems Support: PENCIL
   (Plateforme d’Echange Normalisée et Centralisée d’Information Logistique)
   ➢ Presentation
   ➢ Demonstration

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4. Prospects
DEX 1: Product Configuration Delivery - Associated workflow

**Manufacturer**
- Deliver Product Configuration Data
- Deliver Materials

**PENCIL**
- Product Family
- Logistic Structure
- Part Catalog
- First In-Service Structure

**Supervisor**
- Manage Regiments
- Locations
- User Roles
- Maint. Contracts
- Missions

- Assign Materials To Regiment / Locations / Contracts / Missions
- Manage Life records to monitor per Contracts
### List of Materials

<table>
<thead>
<tr>
<th>Référence du Matériel</th>
<th>Libellé du Matériel</th>
<th>Contract</th>
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<tbody>
<tr>
<td>58938028</td>
<td>CAESAR 141 (CAESAR 72F)</td>
<td>Central MSS CAESAR EMAT</td>
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<td>CAESAR 117 (CAESAR 72F)</td>
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<td>CAESAR 164 (CAESAR 72F)</td>
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<td>CAESAR 158 (CAESAR 72F)</td>
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<td>51130003</td>
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<td>Central MSS CAESAR EMAT</td>
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### Life Records

**Kilométrage**
- Value: 4700 km
- Date: 2/11/2014 5:32:10 PM

**Nombre de coups tirés**
- Value: 70
- Date: 1/30/2014 9:29:26 AM

### Event Reports

**Event Reports**

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<tr>
<th>Numéro Événement</th>
<th>Libellé</th>
<th>Date de Création</th>
<th>Emis Par</th>
<th>Statut</th>
<th>Vises</th>
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<td>Vises</td>
<td>Accepté</td>
</tr>
</tbody>
</table>
DEX 5: TechnicalEvent - Associated workflow

Manufacturer

Event Report
Init + Monitored life
Record update

Approve Event Report

Feedback Analysis
+ Stock forecasts

Maintenance Activity Report
+ InService Structure Update

Event Report Closure

PENCIL

Event Report Approval

Maint. Ops

Create Event Report
On Material

Perform Maintenance Activity

Event Report Closure

Feedback Analysis
+ Stock forecasts

Maintenance Activity Report
+ InService Structure Update

Event Report Closure
### Event Report Screen

**Nouveau Rapport Événement/Initialisation**

**Initialisation:**
- **Matériel:** 61130003 — CAESAR 176 (CAESAR 72F)
- **Type Rapport Événement:** Préventif

**Relevé des Potentiels:**
- **Nom du Potentiel**
  - Heures moteur (heure): 
  - Nombre de coups tirés: 70
  - Kilométrage (km): 4700
- **Valeur**
- **Date de relevé**
  - 1/30/2014 9:29:25 AM
  - 2/11/2014 5:32:10 PM

**Conditions Environnementales:**
- **Température:** T < -25 °C
- **Météo:** Beau
- **Nature du Sol:** Sol Normal
- **Conditions d'utilisation:** À l’arrêt

**Update life records**

**Usage conditions**
(Temp, Weather, Ground, ...)

**Next**
DEX 4 : SparePartOrder - Associated workflow

Manufacturer
- Resource Order
- Order Acknowledgement and Plan delivery
  - Prepare Delivery (ies)
  - Send Delivery (ies)
  - Delivery Receipt

PENCIL
- ResourceOrder Ack. + Delivery Plans
- Delivery Slip(s)

Maint. Ops
- Order Resources
- View Delivery Plans
- Approve Delivery (ies)
Resource Order Line Items

Pick Parts from the Catalog
1. Introduction

2. PLCS for Land systems Support : PENCIL
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   ➢ Presentation
   ➢ Demonstration

3. MAPS Study (Marchés avec Achat de Prestations de Soutien)

4. Prospects
MAPS (Marchés avec Achat de Prestations de Soutien)

- **Definition**
  MAPS are procurement contracts for buying In-Service Support services. They consist of at least one service of *storage*, *distribution*, *maintenance* or *elimination* made by a manufacturer for the benefit of Administration.

- **Objectives**
  Improve the management of manufacturer services with SIM@T by centralizing informations.
  - Improve Administration technical control of materials
  - Implement automated data exchange with manufacturers
  - Feed SIM@T with necessary informations for monitoring services
  - Automate data exchange used to follow maintenance & configuration of equipments
  - Systematize resources order with SIM@T input for transferring automatically in manufacturers LIS (Logistic Information System)

→ MAPS = Generalization of PENCIL and integration in SIM@T
### Define the target: Business needs

#### Logistic Description of Markets (LDM)
- Automated data exchange with manufacturer

#### Maintenance
- Technical event transaction with manufacturer

#### Logistic Management
- Follow-up of Administration stock (stored at manufacturer)

#### Other repositories
- Equipment specifications exchange

#### Technical repositories
- ILS (Integrated Logistic Support) information exchange

#### Supply
- Automatical orientation of needs (manufacturer or Administration)
### Logistic Description of Markets (LDM)
- Data model modifications: **12**
- Use case: **32** in **4** processes
- Data integration: **3**

### Other repositories
- Data model modifications: **2**
- Use case: **22** in **3** processes
- Data integration: **2**

### Maintenance
- Data model modification: **0**
- Use case: **46** in **3** processes
- Data integration: **1**

### Technical repositories
- Data model modifications: **3**
- Use case: **35** in **3** processes
- Data integration: **5**

### Logistic Management
- Data model modification: **0**
- Use case: **64** in **4** processes
- Data integration: **2**

### Supply
- Data model modifications: **6**
- Use case: **70** in **6** processes
- Data integration: **1**

### Data flows
- **Data flow: 1**
- **Data flows: 9**
- **Data flows: 11**
- **Data flows: 4**
- **Data flows: 6**
- **Data flows: 5**

### SIM@T / PENCIL interfaces
- **33** data flows:
  - New flows: **18**
  - Modified PENCIL flows: **15**
  - Deleted flows: **3**
  - Business class model mapping SIM@T / PLCS

### DEX creation
- Development of **14** new DEX

### Implementation
- Extension of PENCIL for data hosting of **14** new DEX
MAPS Plan

2015
T1 T2 T3 T4
Base (LDM) 25%

2016
T1 T2 T3 T4
65% 60%

2017
T1 T2 T3
70% 50% 90%

Legend:
- Supply
- Maintenance
- Patrimonial Accounting

Part 1
- LDM Initialisation

Part 2
- PPB
- SCROME
- CAESAR
- VBCI
- FELIN

Part 3
- CAESAR
- VBCI
- RTD
- SSPP-XL
- FELIN

Part 4
- COHORTE
- FELIN
- T. Optro.
- AIRTEC
- GAD

Part 5
- All the MAPS

Rejection
IHM PENCIL

Supply

Maintenance

Patrimonial Accounting
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4. Prospects
2 requirements:
- Application of PLCS for In-Service Support data (6 DEX SIMMT)
- Application of S3000L for LSA (methodology and data)

Opportunity to develop an ILS Tool, based on Share-A-Space
- Common to the 3 manufacturers: NEXTER, RTD, THALES
- For implementation of 6 DEX SIMMT
- For implementation of S3000L:
  - by using 2 DEX ASD (DEX1A&D and DEX3A&D), OASIS and SIMMT templates
  - with HMI development to create and manage LSA Data Base content

→ This ILS Tool will be connected with PENCIL
SIM@T interfaces in the future

- **CHORUS**
  - Available parts
  - Financial property
- **MINÉFI**
  - Warehousing orders
  - Localization
  - Fleet optimization
  - Staff repository
  - Organization
- **STOCKEURS**
  - WMS
- **CIMD**
  - SACRAL
  - SOPRANO
- **EMA**
  - CHEOPS
- **SIOC**
  - SICS
- **NSPA**
  - COMMIT
- **CFT**
  - SILCENT
  - SAGEE
- **DRHAT**
  - CONCERTO
- **EMAT**
  - CREDO
- **LECLERC**
- **VBCI**
- **CAESAR**
- **ILS Tool**
- **EBMR**
- **VHM**
- **PEN**
- **CIL**
SIM@T: An extended functional scope...

- Manage resource
- Manage purchases
- Ensure maintenance
- Ensure mark function
- Manage complete materials
- Manage stocks
- Maintain accountings
- Ensure consistency of PARTS repository
- Ensure consistency of MANUFACTURERS repository
- Ensure consistency of STRUCTURES repository
- Ensure mark function
- Maintain accountings