



LONG TERM ARCHIVING POC

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DAHER

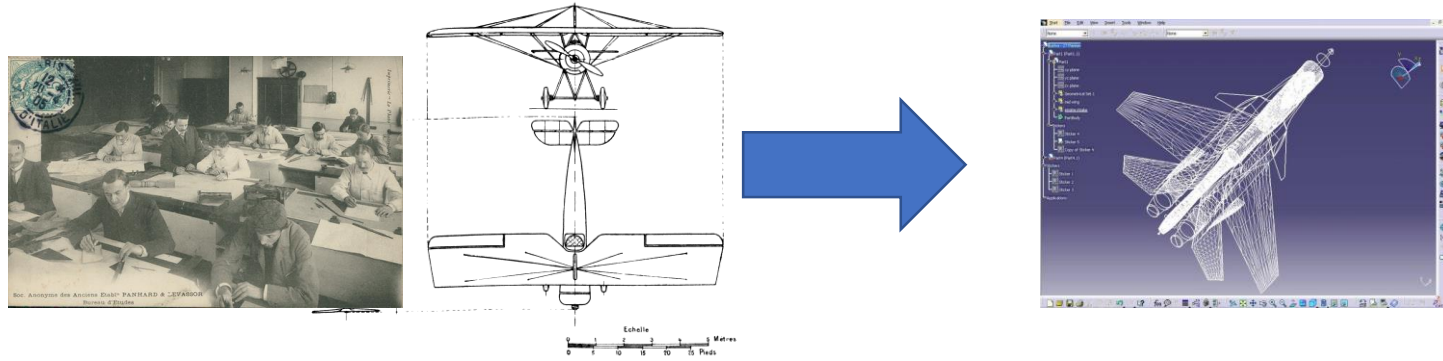
PLM Domain Leader

19 October 2021

AGENDA

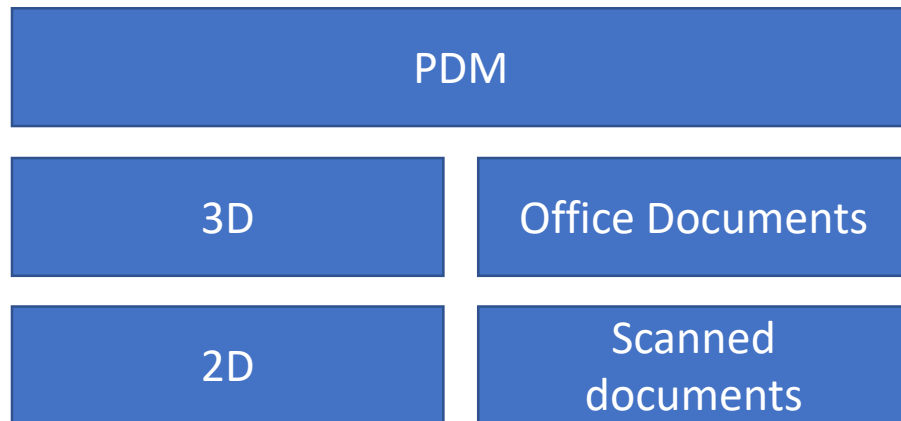
- LONG TERM ARCHIVING CHALLENGES
- LTA IDENTIFIED SCOPE
- POC (Lite LTA)
 - Geometrical data
 - Document data
 - PDM data
 - Storage issues / Analyzing archived data
 - Demo
- NEXT STEPS AND OPPORTUNITIES

LONG TERM ARCHIVING CHALLENGES



- Methodology and tools are changing
- Old process cannot be applied to new technology
- Certification needs still has to be completed
- Conserve long term information while technology and skills are in constant change

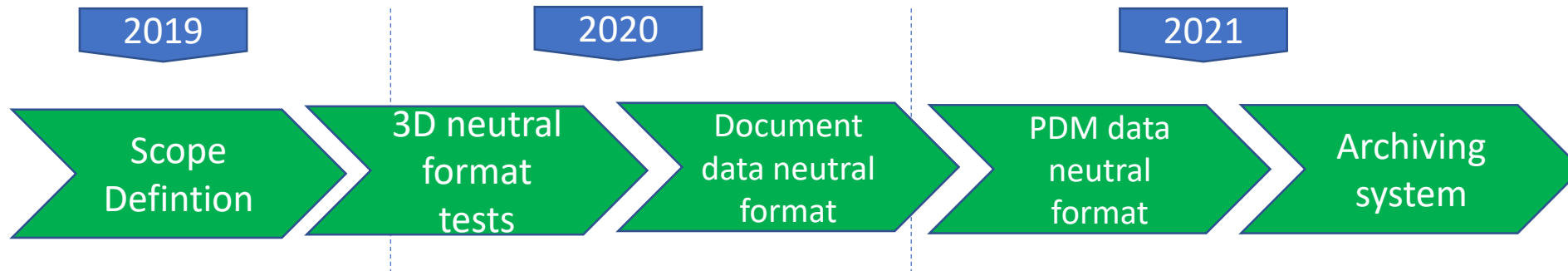
LTA IDENTIFIED SCOPE



- PLM Teamcenter 12
- 3D CATIAV5 with FTA
- 2D CATIAV5
- Office documents (word, excel, powerpoint)
- Scanned document (PDF)
- Priority need: define a lite LTA to fulfill minimum needs : to be able to access and to read data in 50 years and more

LITE LTA Proof Of Concept

- Target : identify the simplest process to perform long term archiving on PDM & 3D data
- Constraint:
 - Be Able to visualize Data in several years (50 and more)
 - Have an autonomous data consistency, not depending on archiving system
 - Limit integration effort in existing PLM system
 - Archive full PLM structure, not only 3D data.
- POC with T-System (COMPDM / Image Master) and Core Technology (3D Analyzer)



LITE LTA Proof Of Concept Geometrical data

➤ 2 alternative solutions tested:

- JT
- STEP AP242

➤ Difficulties:

- Composite data management
- Show/noshow management
- FTA/PMI management
- Parameters management for fasteners
- Interoperability

➤ Choice JT for the POC:

- Same data to visualize by production or quality operators than in the archive
- Less effort in conversion process : already done by Teamcenter
- Lack in STEP in CATIA parameters management with actual converter (CATIA V5-6 R2017 SP6 HF0 – pre-release)

Feature	Criteria	Sample file	Status JT	Status STEP	Commentary
Generation	ISO 10303	Apacher		All Export	
Interoperability	ISO 10303	Apacher		OK	
Complexity	DAHER	DAHER		OK	
Complexity	DAHER	DAHER		OK	

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Attributes	All the attributes are kept and linked to their property name It may contain special characters Attributes may differ depending on typology	T700P57250016100/A	OK	OK	
Material	CATMaterial applied	T700P57250016100/A	OK avec réserve	OK avec réserve	Need is answered by the DBOM report.
3D Geometry	Native and converted CAD geometries are equal Wet area (mm2) Volume (mm3) Center of gravity (mm,mm,mm) Avec une précision (E-3)	T700P57250016100/A T700P57500001000_CPD01/01 T700T53320001000_CPD01/B T700J53700005100/B	OK	OK avec réserve	JT file provide a better transcription of the CATIA conception tree. All geometrical sets are translated, even if they include only points and lines. The Step files provides a good translation but the entities are not organized as in CATIA. It is then difficult to sort them out in the model.
Space localization	Absolute axis information Orientation	T700P53130025100/02	OK	OK	
Multi-bodies	All the bodies are kept	T700P572400101/00	KO	OK	The Step file translates every CATIA Show/NoShow information in the JT format doesn't. A request has been made to Siemens to enhance the converter in order to take Show/NoShow infos in account.

LITE LTA Proof Of Concept

Document data

➤ Chosen solution : PDF/A:

- Catdrawing
- Word
- Excel
- Powerpoint
- Scanned PDF

➤ Automatic workflow in PLM:

- Convert data in PDF/A
- Add page with workflow elements (workflow stakeholders, comment, date of validation)

DOCUMENT CHANGE NOTE		PROGRAM DEMO_FUILL_3D		
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ID	REV	STATUS	DESIGNATION	
TESTP05AFRA	A	Released	DES TEST	
APPROVALS IN TEAMCENTER				
TASK	NAME	COMMENTS	DATE	
Vérification Released	f.rochesaintandre		01/06/2021 09:24	
Approbation Released	f.rochesaintandre	OK, bon pour released	01/06/2021 09:25	
DESCRIPTION OF CHANGES				
REV.	DESCRIPTION	REV. STATUS	REV. STATUS DATE	

« Page générée automatiquement par Teamcenter, ne fait pas parti du document original – Validation par signature électronique conformément à la RG Aéro 0089 »

LITE LTA Proof Of Concept PDM Data

➤ Main ideas:

- For each PDM item, all PDM data must be stored in one file
- Archived file has to be autonomous and not depending on archiving system

➤ Chosen solution: of LOTAR standard STEP AP242 in XML in nested mode

➤ Attributes:

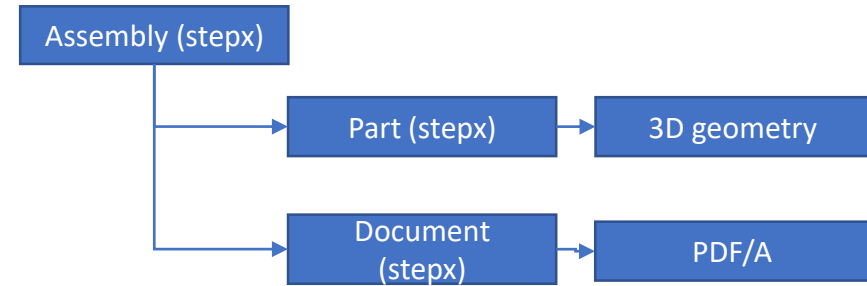
- All attributes in geometrical element
- Main attributes in BOM PDF/A report
- Mandatory attributes in STEP AP242

➤ Links:

- Link with geometry in STEP AP242
- Assembly / BOM links (incl. transformation matrix) in STEP AP242
- Documentation links in STEP AP242

➤ Workflow:

- Information stored in PDF/A reports



```

F3DXX000060-00_FLX001.stpx
1 <?xml version="1.0" encoding="utf-8"?>
2 <!-- bom: Dos xmlns:cmn="http://standards.iso.org/iso/10303/-3/2002/-ed-2/tech/xml-scheme/common" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:bom="http://stand
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```

- F3DXX000061-00.jt
- F3DXX000061-00.stpx
- F3DXX000061-00_BOM-ECN_C.pdf
- F3DXX000067-00_ASS.jt
- F3DXX000067-00_ASS.stpx
- F3DXX000067-00_ASS_BOM-ECN_A.pdf
- F3DXX000067-00_FLX001.jt
- F3DXX000067-00_FLX001.stpx

LITE LTA Proof Of Concept

Storage issues

➤ Retrieve data:

- Be able to retrieve data by search on mandatory attributes (reference, version, project, material, ...)
- Be able to retrieve data by visual analysis

➤ Follow the links:

- Possibility to view and follow links (BOM, documents)
- Possibility to perform where used analyse.

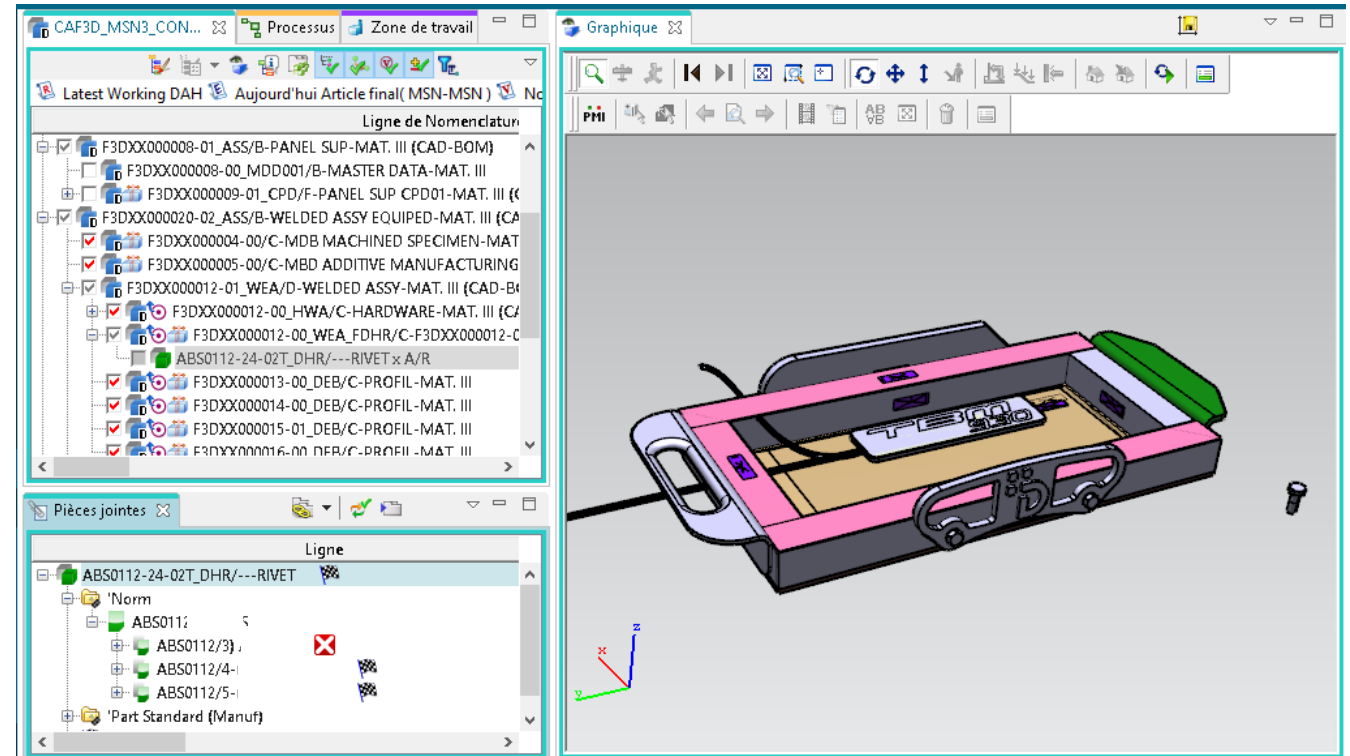
➤ Export:

- Possibility to export data to be able to access by external viewing tool

LITE LTA Proof Of Concept Demo

➤ Original data (Teamcenter):

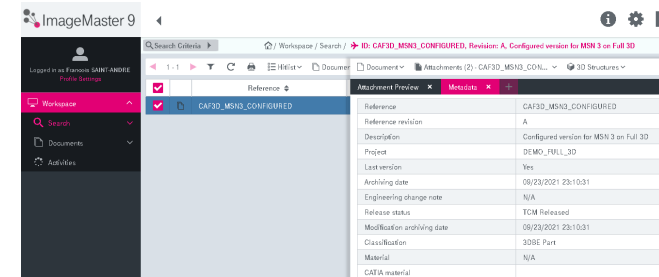
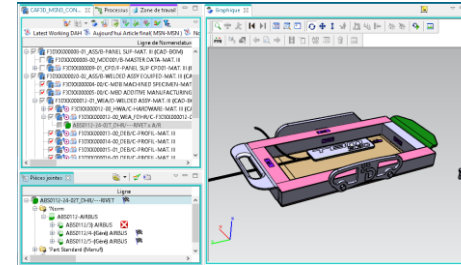
- Manufactured part (composit, sheet metal, machining, welded, additive manufacturing, electrical)
- Linked BOM report
- Linked documents (technical, norms, ...)
- Neutral format existing for 3D & office document



LITE LTA Proof Of Concept Demo

➤ Export/Import (COMPDM):

- Extraction of data from PLM
- STEP AP242 on the fly generation
- Import into archiving system



LITE LTA Proof Of Concept Demo

➤ Archiving usage (Image Master):

- Retrieve data by search
- Attribute / document access
- Links / where used analyse
- Document time signature check

ImageMaster 9 interface showing search results for 'CAF3D_MSN3_CONFIGURED'. The search criteria are: Workspace / Search / ID: CAF3D_MSN3_CONFIGURED, Revision: A, Configured version for MSN 3 on Full 3D.

Reference	Attachment Preview	Metadata
CAF3D_MSN3_CONFIGURED		
Reference	CAF3D_MSN3_CONFIGURED	
Reference revision	A	
Description	Configured version for MSN 3 on Full 3D	
Project	DEMO_FULL_3D	
Last version	Yes	
Archiving date	09/23/2021 23:10:31	
Engineering change note	N/A	
Release status	TCM Released	
Modification archiving date	09/23/2021 23:10:31	
Classification	3DBE Part	
Material	N/A	
CATIA material		

Search Criteria panel showing search filters and results for 'CAF3D'.

Search Criteria: Search +

Document Type: 3D Model

Reference: CAF3D

Reference revision:

Description:

Project:

Last version:

Archiving date:

Engineering change note:

Release status:

Part References: ID: CAF3D_MSN3_CONFIGURED, Revision: A, Configured version for MSN 3 on Full 3D

Structure Where Used

- ID: CAF3D_MSN3_CONFIGURED, Revision: A, Configured version for MSN 3 on Full 3D
 - ID: F3DXX000020-02_ASS, Revision: B, WELDED ASSY EQUIPED
 - ID: F3DXX000005-00, Revision: C, MBD ADDITIVE MANUFACTURING SPECIMEN
 - ID: F3DXX000068-00_CPD, Revision: B, THERMOPLASTIC PLATE
 - ID: F3DXX000012-01_WEA, Revision: D, WELDED ASSY
 - ID: DPS216-01-1, Revision: 03, PEINTURE DES PIECES ELEMENTAIRES, SOUS-EN
 - ID: F3DXX000014-00_DEB, Revision: C, PROFIL
 - ID: NF-EN-ISO-10042, Revision: 06, AFNOR
 - ID: F3DXX000015-01_DEB, Revision: C, PROFIL
 - ID: DPS912-01-1, Revision: 00, OPERATION FABRICATION METAL
 - ID: F3DXX000016-00_DEB, Revision: C, PROFIL
 - ID: F3DXX000012-00_HWA, Revision: C, HARDWARE
 - ID: NAS1791A3-2_DHR-V5R18, Revision: -, ECROU A RIVER FLOTTANT DOUBL
 - ID: NAS1791, Revision: 6, AIA

Verification Overview

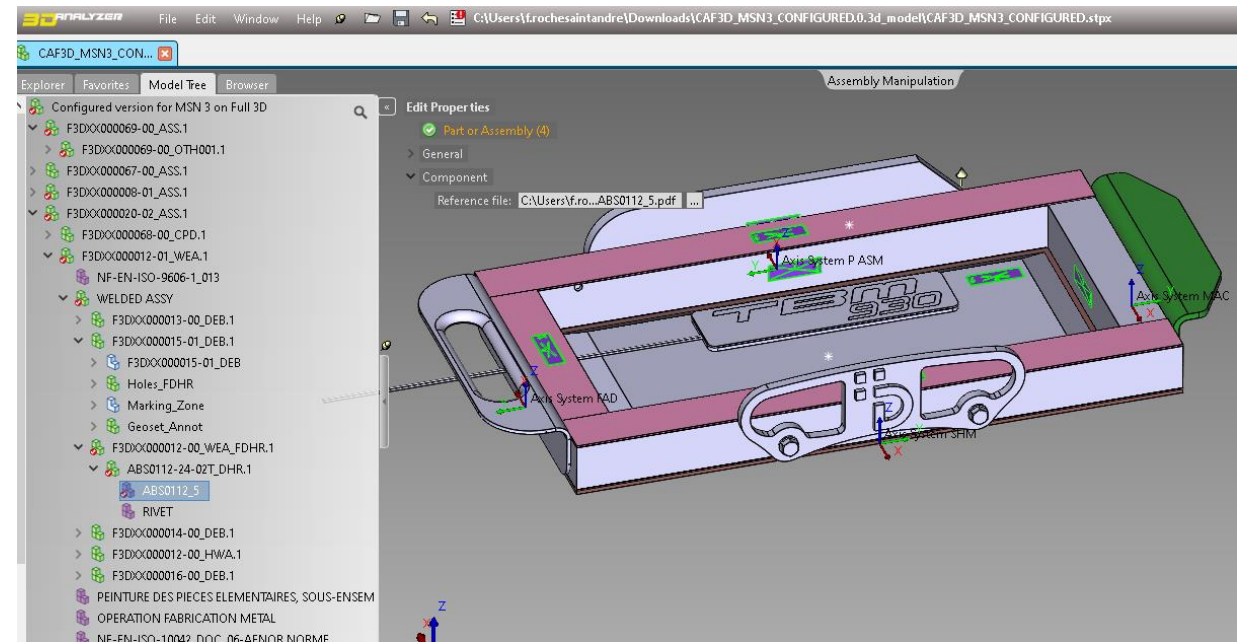
Verified
File is protected by checksum (hash digest)

Summary Report Detailed Reports Close

LITE LTA Proof Of Concept Demo

- Export and analyze archived data (3D Analyzer):
 - Export dataset from archiving system
 - Unpack in filesystem
 - Analyze with external viewer

F3DX000012-00_WEA_FDHR	07/10/2021 12:26	Document DirectModel (.jt)	29 Ko
F3DX000012-00_WEA_FDHR.stpx	07/10/2021 12:26	Fichier STPX	23 Ko
F3DX000012-01_WEA	07/10/2021 12:26	Document DirectModel (.jt)	29 Ko
F3DX000012-01_WEA.stpx	07/10/2021 12:26	Fichier STPX	39 Ko
F3DX000012-01_WEA_BOM-ECN_C	07/10/2021 12:26	Microsoft Edge PDF Document	246 Ko
F3DX000013-00_DEB	07/10/2021 12:26	Document DirectModel (.jt)	215 Ko
F3DX000013-00_DEB.stpx	07/10/2021 12:26	Fichier STPX	20 Ko
F3DX000014-00_DEB	07/10/2021 12:26	Document DirectModel (.jt)	249 Ko
F3DX000014-00_DEB.stpx	07/10/2021 12:26	Fichier STPX	20 Ko
F3DX000015-01_DEB	07/10/2021 12:26	Document DirectModel (.jt)	233 Ko
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F3DX000016-00_DEB	07/10/2021 12:26	Document DirectModel (.jt)	188 Ko
F3DX000016-00_DEB.stpx	07/10/2021 12:26	Fichier STPX	20 Ko
F3DX000019-00_SHM	07/10/2021 12:26	Document DirectModel (.jt)	196 Ko
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F3DX000020-00_HWA	07/10/2021 12:26	Document DirectModel (.jt)	3 Ko
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F3DX000026-01_ASS	07/10/2021 12:26	Document DirectModel (.jt)	3 Ko
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F3DX000026-01_ASS_FDHR.stpx	07/10/2021 12:26	Fichier STPX	23 Ko
F3DX000027-00_ASS	07/10/2021 12:26	Document DirectModel (.jt)	3 Ko
F3DX000027-00_ASS.stpx	07/10/2021 12:26	Fichier STPX	23 Ko



NEXT STEP AND OPPORTUNITIES

- LTA POC successful: capacity to visualize in several years (as a paper archived) is validated.

- Next steps:
 - Manage interoperability
 - Advanced configuration and diversity management (not part of POC)

- Difficulties to find tools to view archived data with sufficient maturity
 - Nested stepx
 - Geometry at assembly level
 - Mixed STEP/Jt structure

- Neutral format & process not defined for all archiving purpose:
 - Embedded Software, ...

THANK YOU FOR YOUR ATTENTION !