



LOTAR

LONG TERM ARCHIVING AND RETRIEVAL

Overview of the LOTAR International project and of the NAS 9300 / EN9300 standard

Conference on Long Term Archiving
organized by the GALIA - GIFAS and GFUC associations
on the 25th of January 2011 (Paris)

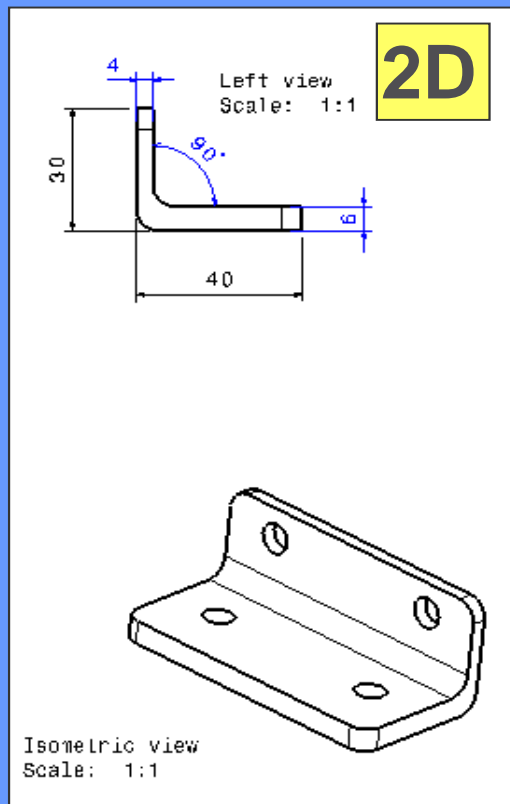
Presented by Jean-Yves Delaunay
LOTAR International co-project leader
(EADS Airbus)

- The challenge
- The LOTAR International project organization
- Overview of NAS 9300 / EN9300
- LOTAR International web site
- Links of the LOTAR project with other standardization projects
- Summary – next actions

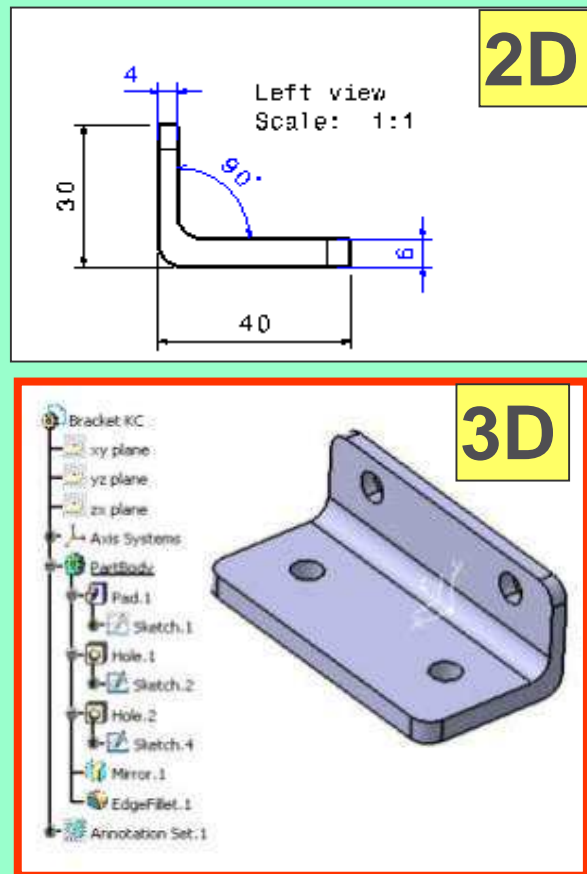
Source of the challenge

New design based on 3D models with PMI

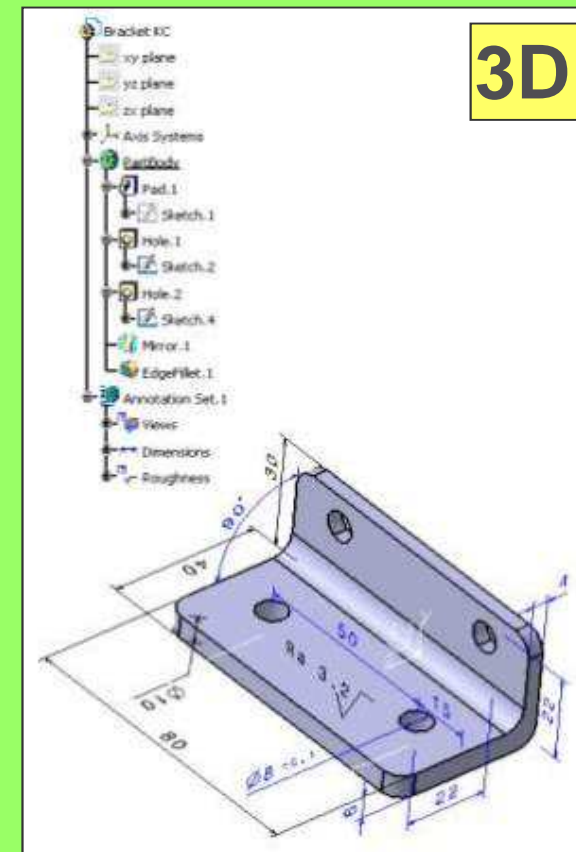
Method **Generation 1** (2D drawing only)



Method **Generation 2** (2D & 3D)

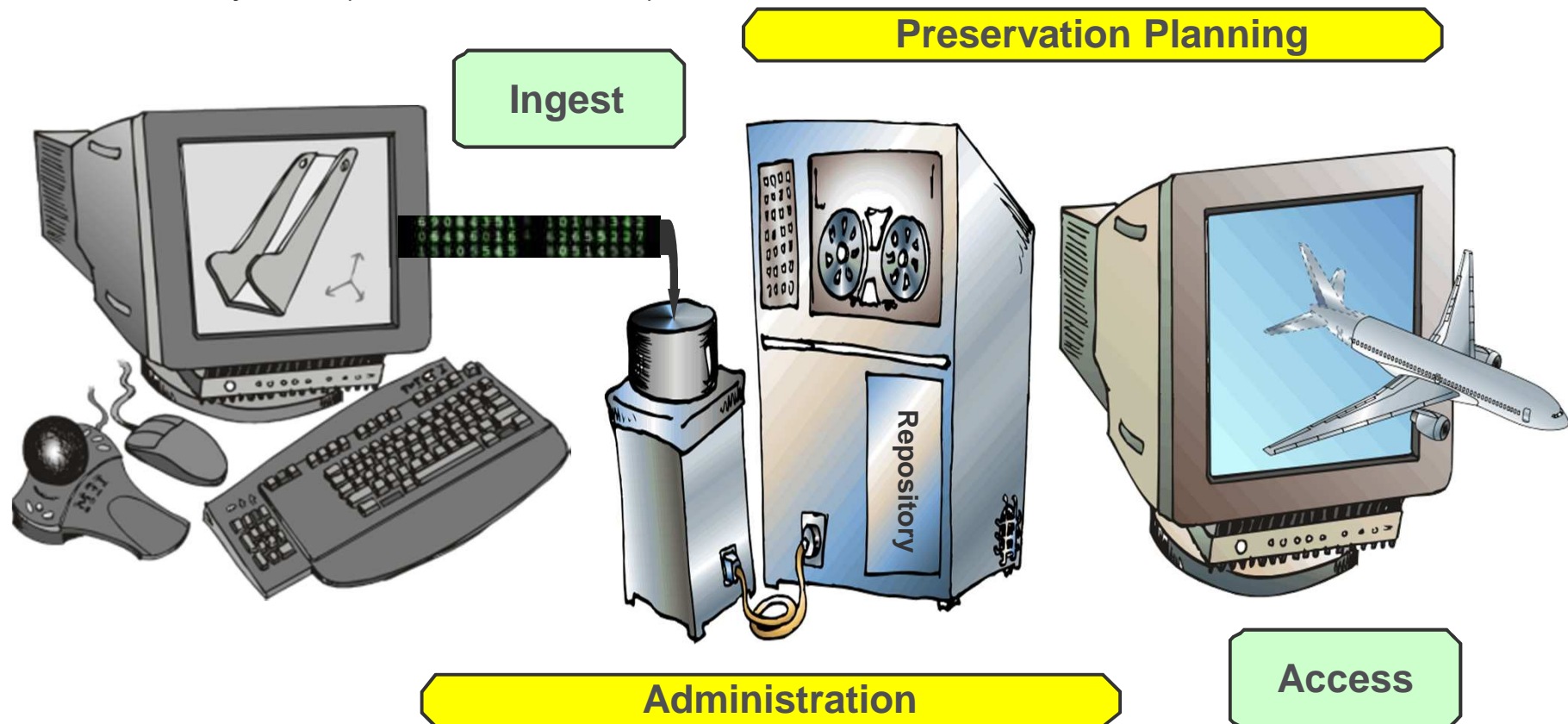


Method **Generation 3** (3D with PMI as master)



Lifecycle Information Planning

- CAD S/W versions change every **6 to 12 months**, CAD generations change every **10 years**.
- Aircraft lifecycle of **70+ years**
- The Lifecycle of software & hardware is short compared to the lifecycle of an aircraft or a defence system (nuclear missile, ...)



LOTAR Charter , way of working




Charter LOTAR International Version 1.2

Date: 2010-07-26

Table

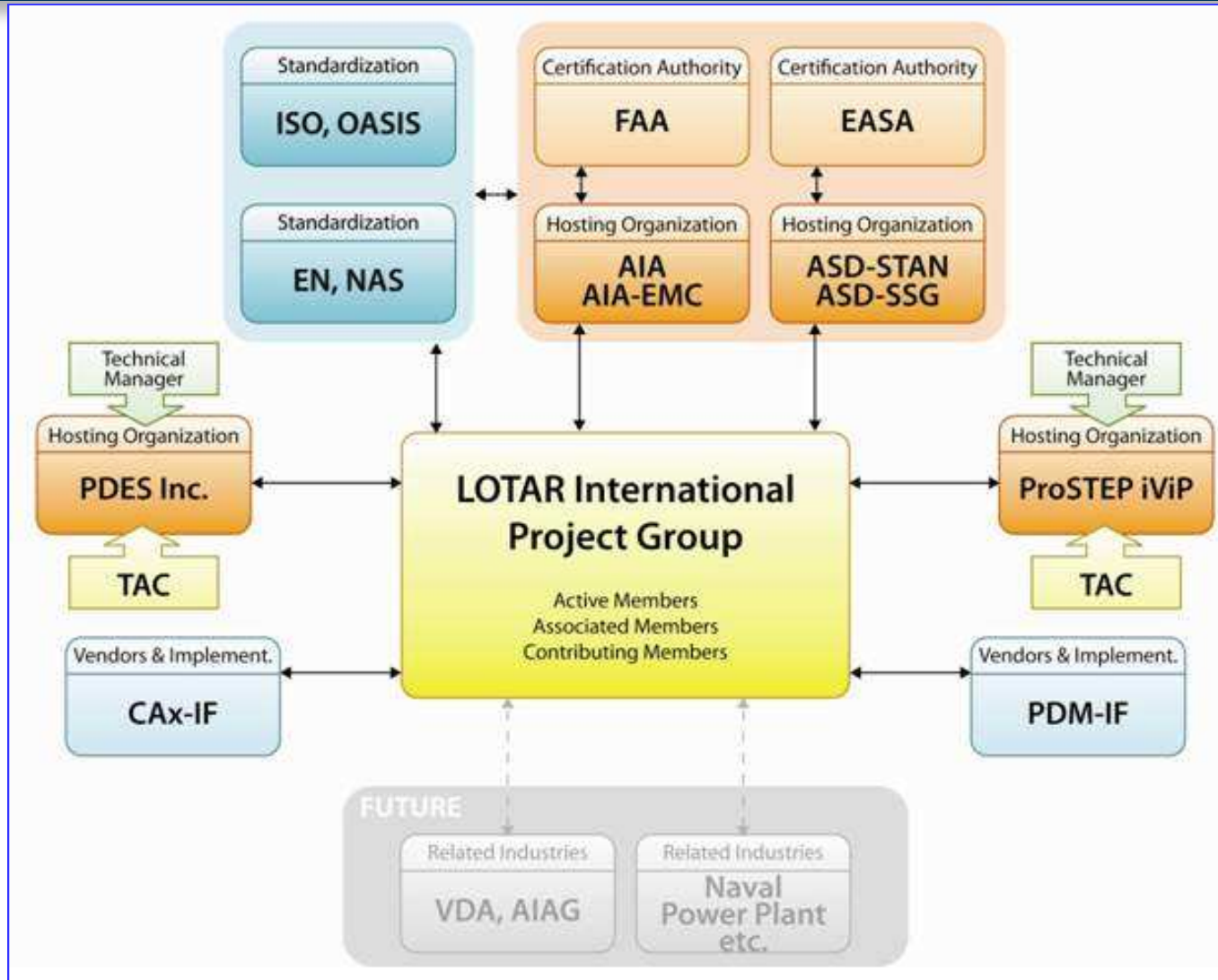
- 1 Mission statement, objectives and scope
- 2 The LOTAR International Project Organization
- 3 Membership
- 4 Roles and Responsibilities
- 5 Ways of Collaboration
- 6 Appendix

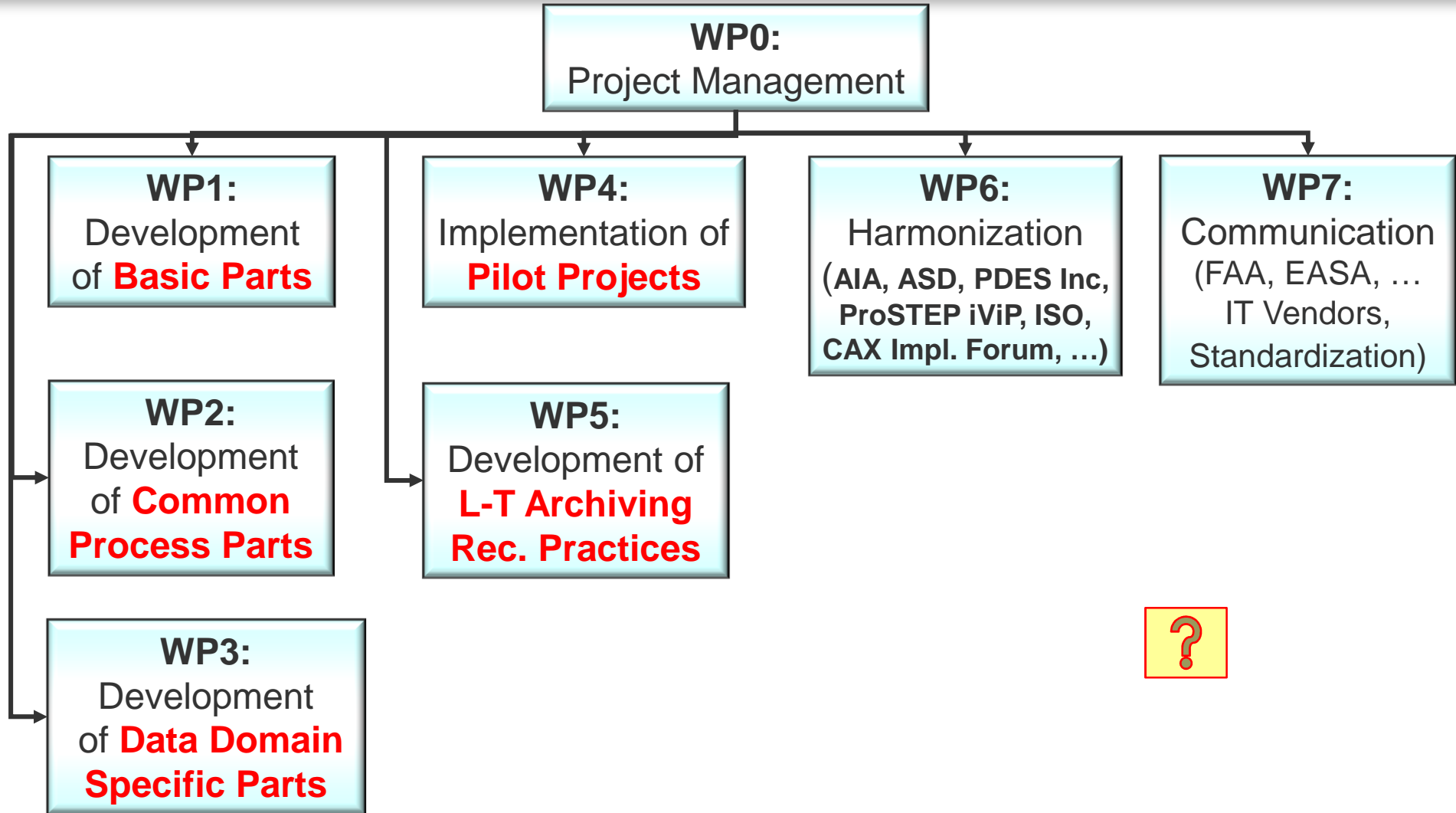
Figures:

- External relationships (next slide)
- Internal relationships 

LOTAR International Charter

External relationships





Planned 2011 LOTAR active members and associated budgets



ASD Stan LOTAR

2011 active members & fees

Airbus	: 20 K€
Dassault-Aviation	: 20 K€
EADS MAS	: 20 K€
Eurocopter	: 20 K€
Israel Aerospace Industry	: 20 K€
ProSTEP iViP	: 15 K€
Safran/Snecma	: 20 K€ (TBC)
Total	: 135 K€

Expression of interest
Atomic Weapons Establishment

AIA – PDES Inc. LOTAR

2011 active members & fees

Boeing	: 25 K\$
BAE	: 25 K\$
General Dynamics (GAC)	: 25 K\$
General Electric	: 25 K\$
Goodrich	: 25 K\$
Honeywell	: 25 K\$
Lockheed Martin	: 25 K\$
Sandia Labs	: 25 K\$
Spirit Aero	: 25 K\$
Carry over	: 40 K\$
Total	: 265 K\$

Expression of interest
Bombardier

Planned workshops and teleconferences for 2011



- 4 international workshops:
 - 21 - 26 Mar 2011 USA, PDES Inc (parallel to the PDES Offsite)
 - 7 - 9 June 2011 Europe, Toulouse, Airbus
 - Mid Sept. 2011 USA, PDES Inc (parallel to the PDES Offsite)
 - 6 - 8 Dec 2011 Europe, Darmsrad, ProSTEP iViP

- Regular teleconferences per WGs:
 - PDM WG : 1 hour, every Monday afternoon
 - CAD 3D PMI / visualization : 1 hour, every Tuesday afternoon
 - CAD 3D composite : 1 hour, every 2 weeks
 - Coordination team : 1 hour, every Wednesday afternoon

LOTAR 2011 Planned Activities









- Project Management
- Public Relations
- Development of Basic and Common Parts
 - Functional Architecture (Part 006) → internal draft
 - Terms & References (Part 007) → public ballot document
 - Security (Part 008) → to be decided; if yes: internal draft
 - Certification (Part 009) → internal draft
 - Governance and Planning (Part 020) → public ballot document
- Development of Data Specific Parts
 - **3D CAD with PMI** (Part 120) → public ballot (v1), internal draft & pilots (v2)
 - **3D Light Visualization** (Part or Guideline) → Preparation of internal draft
 - **PDM** (Part Family 2xx) → internal draft (200, 210) & pilots
 - **3D Composite Design** (Part Family 3xx) → internal draft (300, 310) & pilots
 - **3D Electrical Design** (Part Family 4xx) TBC → ; prep. of internal draft (400, 410)
- Harmonization with the CAX-IF and the STEP AP242 projects
- Communication
 - Legal authorities (EASA, FAA)
 - Aerospace and Defense medium and small companies



LOTAR
2011 – 2013
overall
workplan

Fundamental concepts of the LOTAR project

- Use of ISO OAIS (Open Archive Information Model) 
- L-T Preservation based on international open standards 
- Methods:
 - requirements, 
 - Business processes and uses cases, 
 - essential information
 - Validation properties and verification rules 
 - Implementation pilots
- ISO TC/184 SC/4 “STEP” as the suite of standards covering the full product life cycle and different technical disciplines 
 - E.g.: LOTAR involvement in the STEP AP 242 project
 - Additional ISO standards planned (3D visualization: JT, U3D/PRC, ...)

Overview of NAS 9300 - EN 9300 standards

A architecture for extension according to business needs

Information Domain specific parts

CAD Mechanical 3D Geometry
with PMI and Assembly

Product Management Data

Composite design and
manufacturing

Electrical Harness
(Start planned for S2-2011)

Systems Engineering
(TBC)

Simulation
(TBC)

...

P1XX

P2XX

P3XX

P4XX

P5XX

P6XX

P7XX

Common Process Parts

(Common processes, Data preparation, Ingest, Archival Storage, Retrieval, ...)

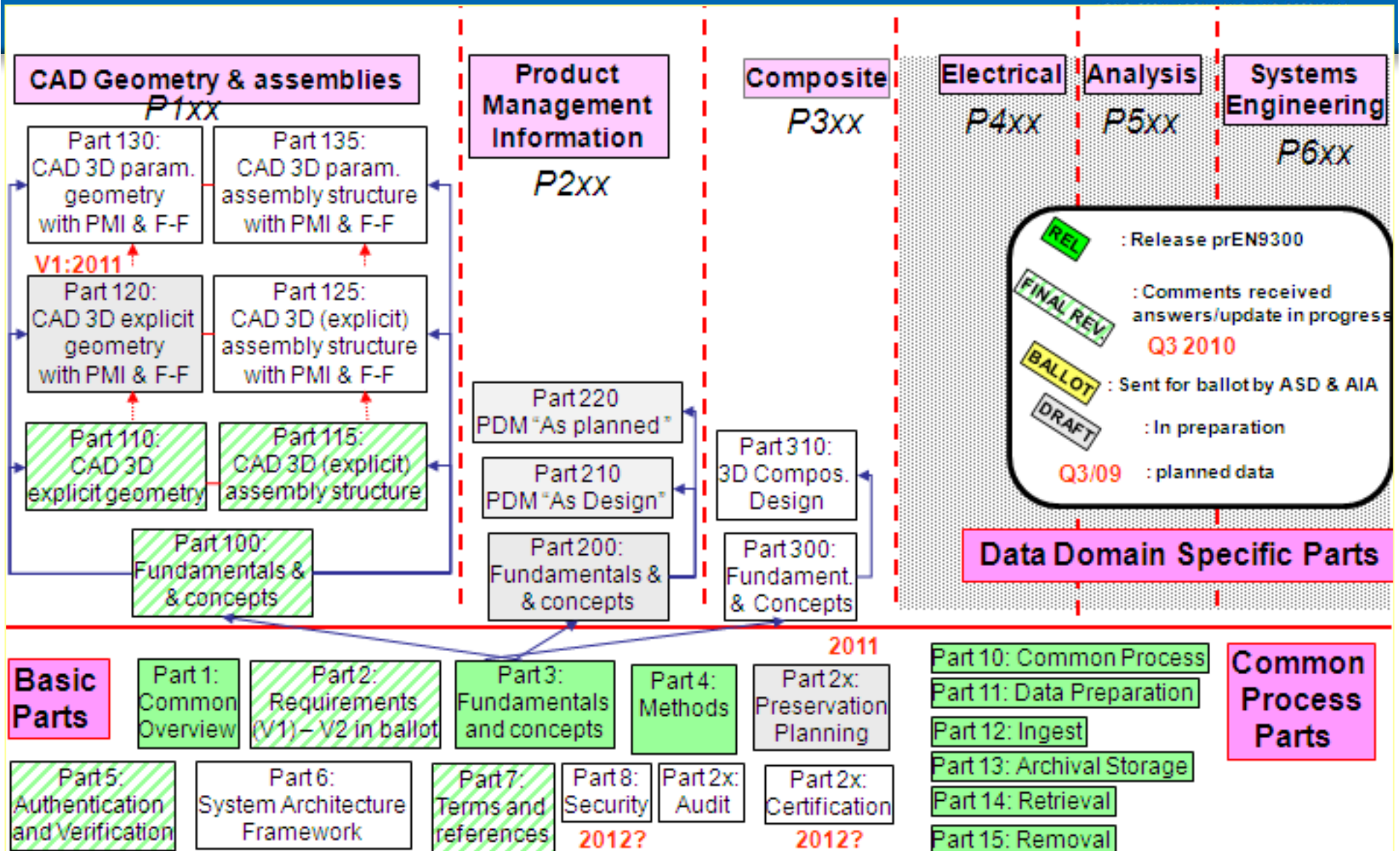
Basic parts

(Overview Requirements, Fundamental, Methods, ...)

Status of LOTAR document structure



LOTAR



Operational use of the NAS 9300/ EN9300 in the Aerospace & Defence industries




- Presentations of the **operational use** of the LOTAR standards by LOTAR members:
 - Dassault-Aviation : Falcon F7X
 - Snecma : new engine parts based on 3D with PMI
 - Gulfstream : Gulfstream G-650

- **Project in development** based on the LOTAR standard:
 - Airbus : categories of A350 parts
based on CAD 3D with PMI
 - Boeing : various components of B787
based on CAD 3D with PMI

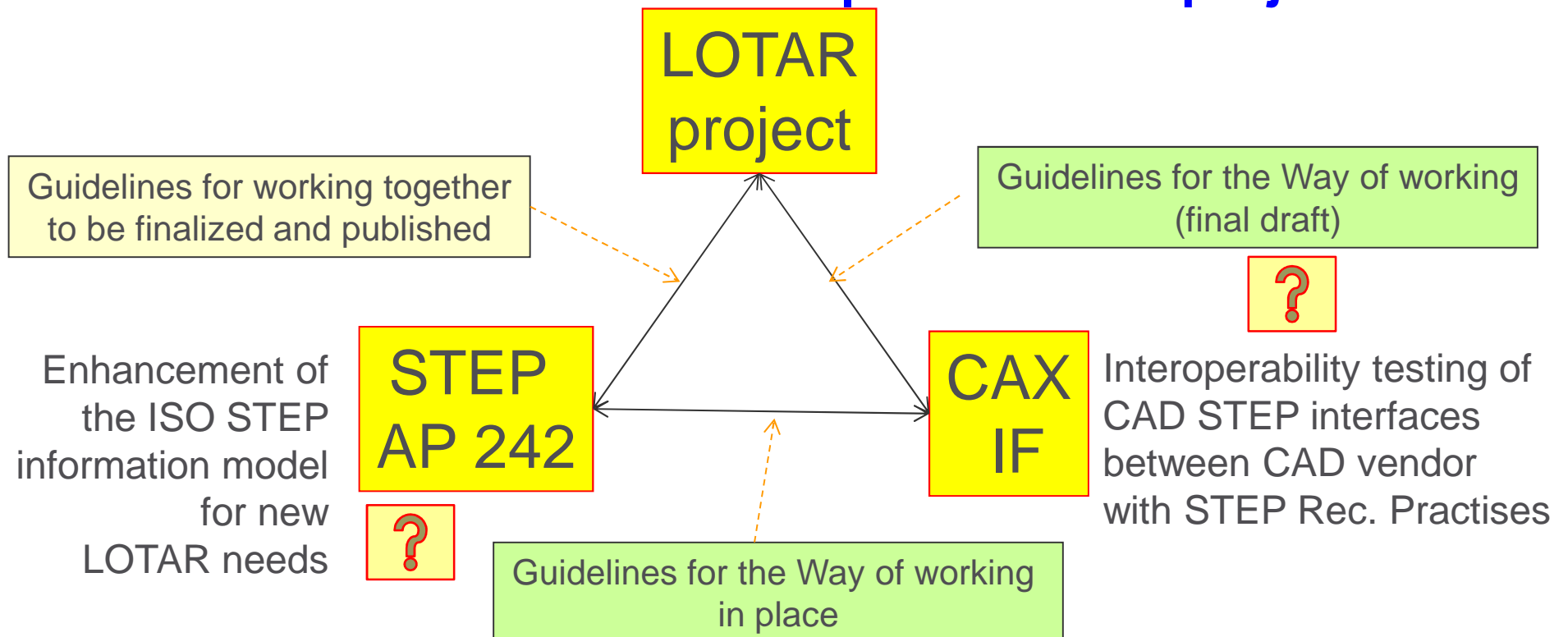
Overview of LOTAR harmonization activities with external projects



- LT Archiving is part of the general manufacturers requirements for **Product information interoperability**
- The LOTAR project reports to the US and European A&D organizations **in charge of the consistency of PLM standards**
 - USA : AIA EMC and EEIC, Europe: ASD SSG and ASD Stan 
- The LOTAR project works very closely with other standardization projects
 - Interdependencies between LOTAR, STEP AP 242 & CAX IF project

Close interdependencies between the LOTAR project, the STEP AP 242 project and the CAX IF

- The goal of the LOTAR project is to develop standards, in order to have **successful operational solutions** approved by the regulatory authorities (FAA, EASA)
- Need to have **formal relationships with other projects**



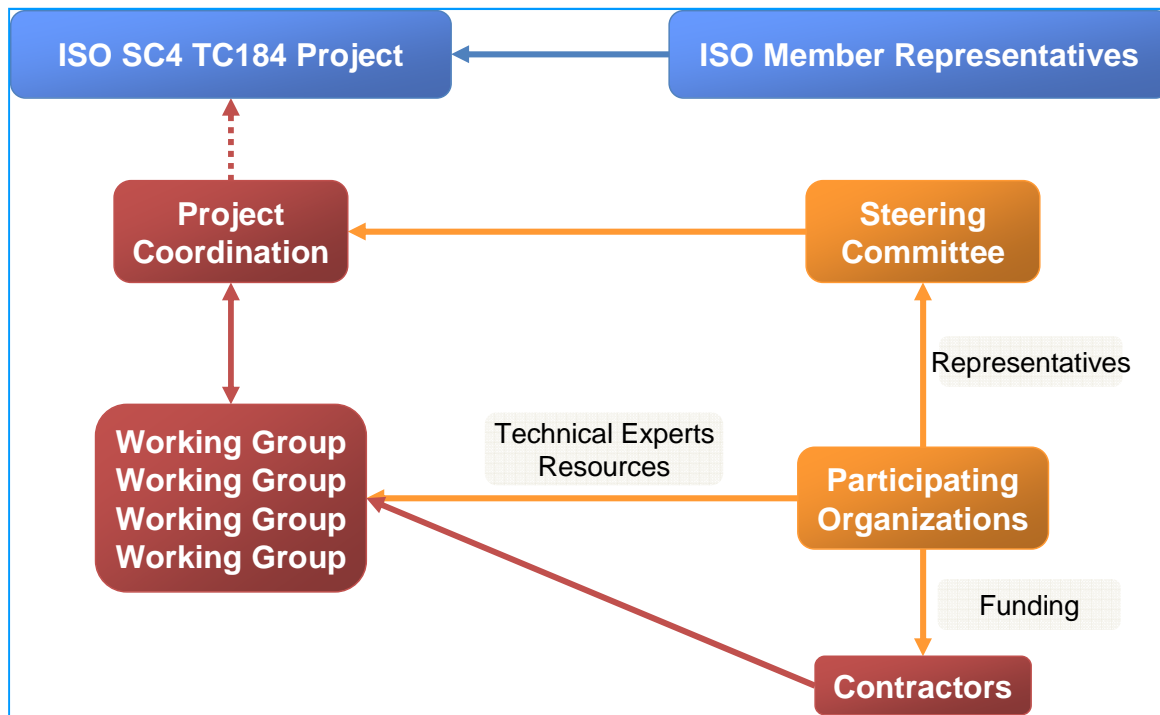
STEP AP 242 project

Project coordination & Steering Board



Project of
STEP AP 242
steered by

	US	International	Europe
Aerospace	AIA		ASD SSG
Automotive		SASIG	
General	PDES, Inc.		ProSTEP iViP



Project paying members

- USA:
 - PDES Inc and NIST
- Europe
 - Automotive:
 - VDA
 - ProSTEP iViP
 - Jama
 - Aerospace
 - EADS
 - BoostAerospace

Communication actions (LOTAR web site, ...)



- Current LOTAR web site
 - Hosted by ProSTEP iViP
 - <http://www.prostep.org/en/project-groups/long-term-archiving-lotar.html>
- Setting up of a new LOTAR website
 - Start planned for beg. of Febr 2011
 - <http://www.LOTAR-international.org>
- Planned communication for 2011
 - ProSTEP iViP LT Archiving workshop for the automotive
 - Galia / GIFAS / GFUC CAD 3D PMI LT Archiving workshop (Jan 2011)
 - ProSTEP iViP Symposium (5th – 6th of Apr. 2011)
 - CATIA Operator's Exchange 2011
 - ...

Summary – next actions



- The LOTAR project has a lot of interdependencies with other standardization projects
- Extension of the scope of the LOTAR project in 2011
 - 3D visualization
 - New WG planned in S2 for LT Archiving of CAD 3D electrical harness
- Opportunity for a closer coordination between the A&D and the Automotive industries:
 - National, regional & international levels
- Potential increasing participations:
 - STEP AP 242 ed1 (potential extension), prep. of STEP AP 242 ed2 scope
 - Implementor Forums: CAX IF, PDM IF, ... : interop. testing by PLM vendors
- Need to agree on a 5 years vision for PLM interoperability,

Back up slides

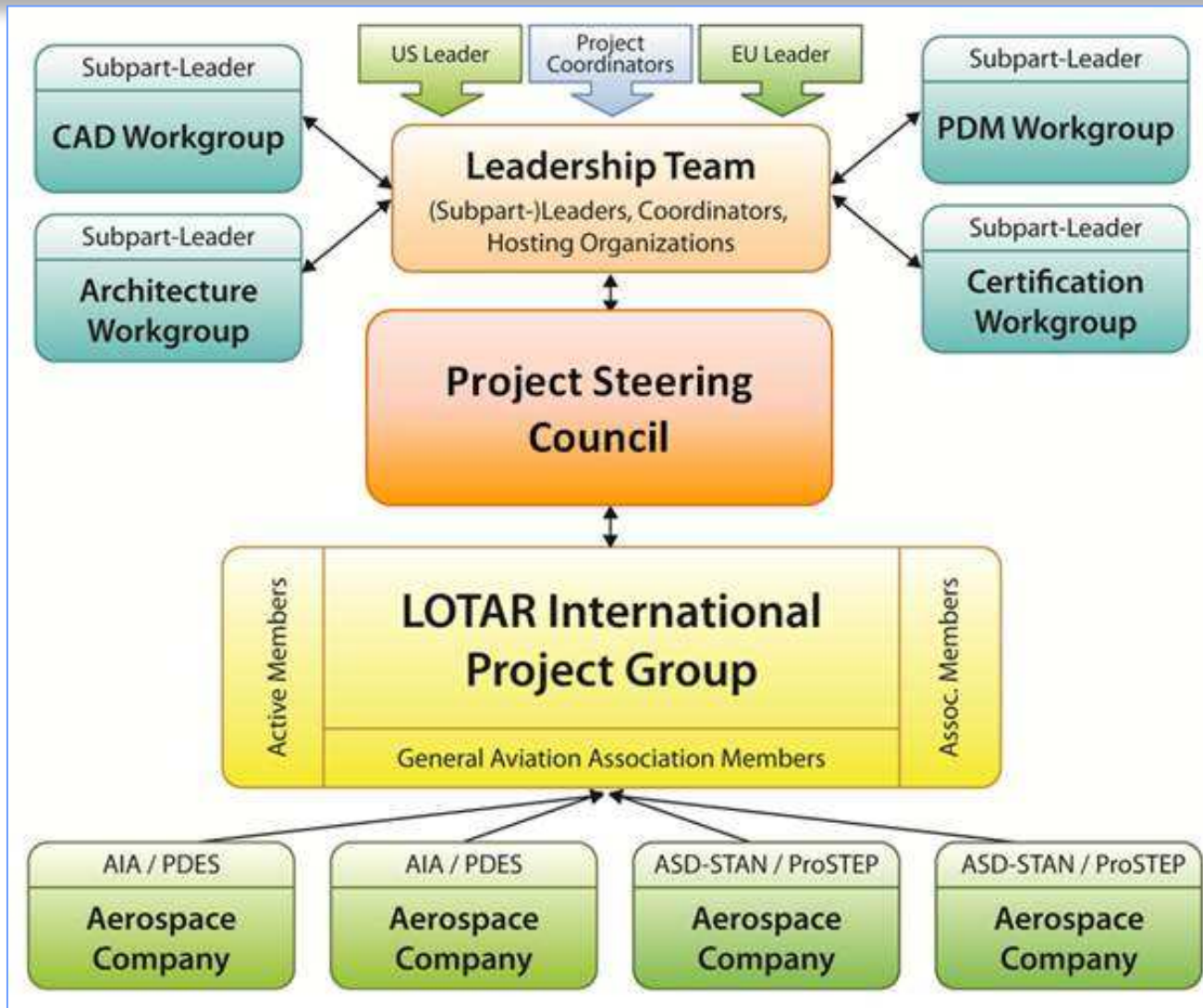
Short history of the LOTAR project



- Start of FAA requirements for LT Preservation of 3D type design data (1998)
- Creation of the PDES Inc LT Data Retention project (2001)
- Aérospatiale questionnaire to large French OEMs for LT Preservation of CAD-PDM information (2001)
- Creation of the ASD Stan LOTAR - ProSTEP iViP LOTAR project (2003)
- Coordination of the US and European LOTAR activities under IAQG (2005)
- MoU for LOTAR between AIA, ASD Stan, PDES Inc and ProSTEP iViP:2009
- Joint ballots of LOTAR parts as harmonized standards (NAS9300 / EN9300)
- Regular reporting of the ASD Stan LOTAR project to the ASD SSG
- Regular coordination with the automotive industry
 - Regular reporting of the LOTAR project to ProSTEP Technical Steering Committee
 - ASD Stan LOTAR – VDA MoU (resulting VDA Rec. Practises)
 - LOTAR – PDES Inc LTDR project (for non A&D companies), including AIAE

LOTAR International Charter

Internal relationships



■ BUSINESS REQUIREMENTS

- 6.2.1 ACCEPTANCE
- 6.2.2 LEGAL REQUIREMENT
- 6.2.3 SECURITY REQUIREMENT
- 6.2.4 CERTIFICATION



● FUNCTIONAL REQUIREMENTS

based on the OAI reference model

- ▶ Preparation
- ▶ Ingesting Product Definition into Repository/Archive
- ▶ Archive Storage
- ▶ Disaster Recovery:
- ▶ Data Management:
- ▶ Administration
- ▶ Preservation Planning:
- ▶ Access

9
5
11
4
42
5
15
8



Total number
of requirements per category

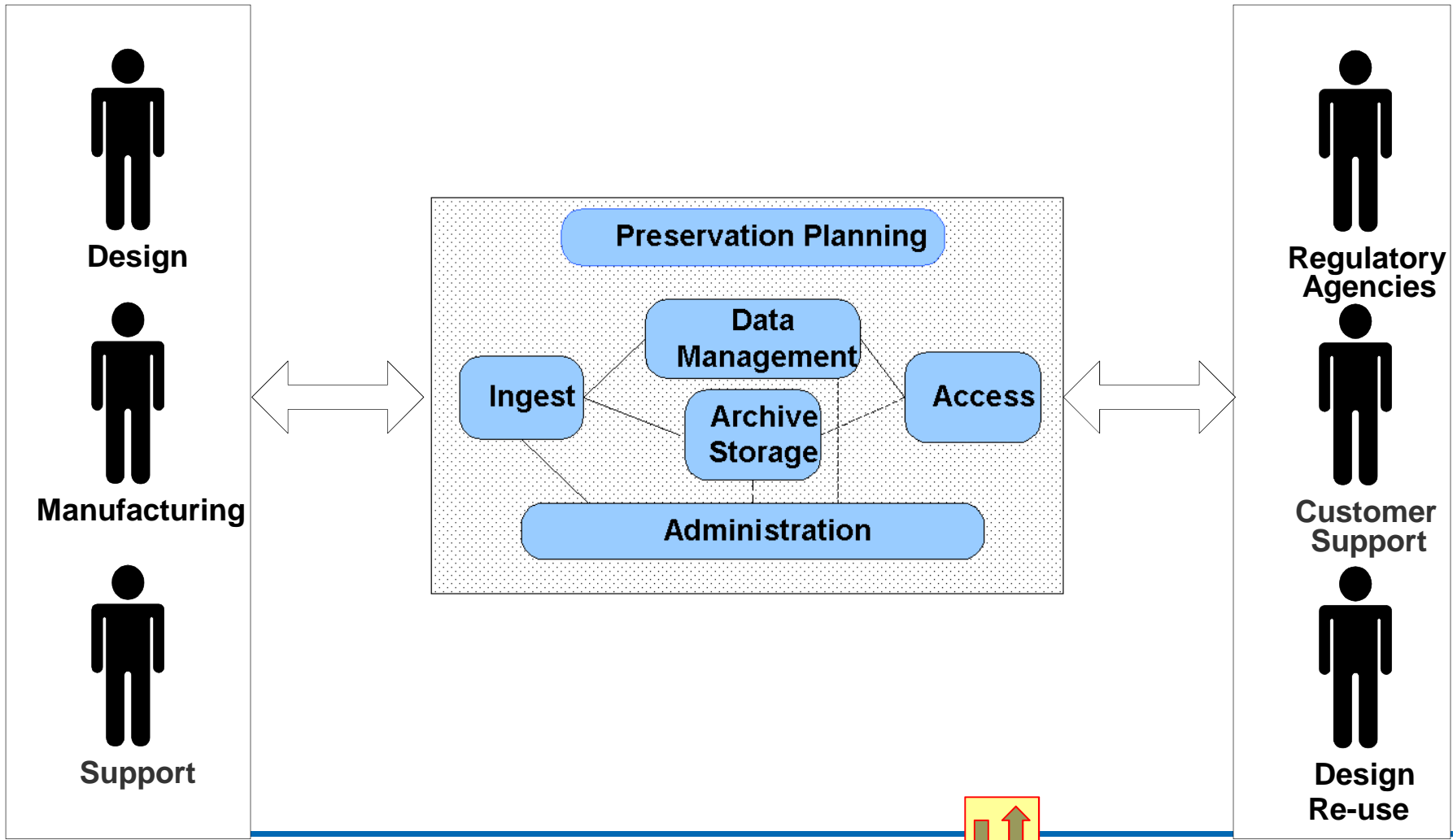


NAS 9300 / EN9300 fundamental N°1: use of ISO OAIIS (Open Archive Information Model)

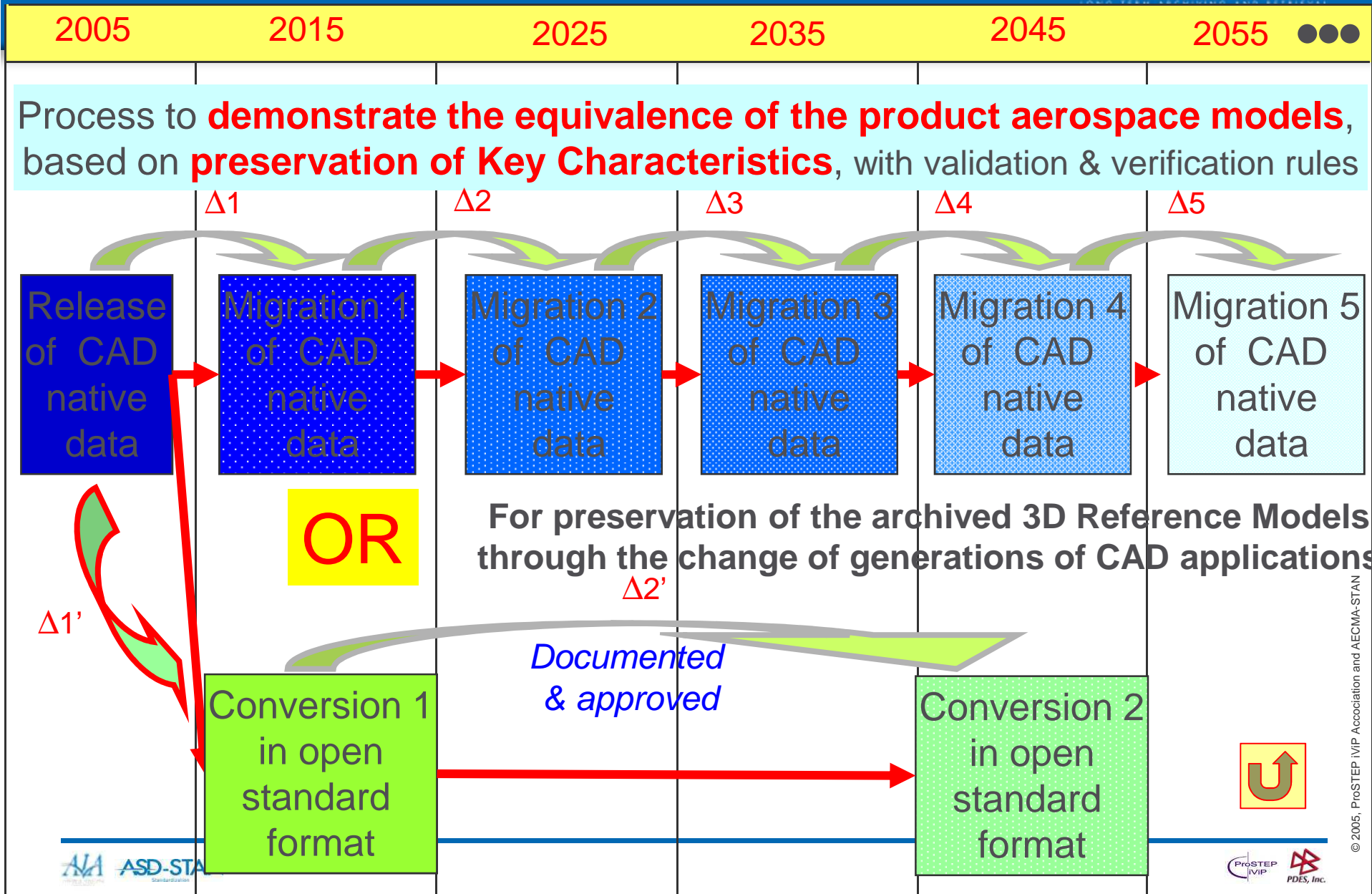


Producers

Consumers



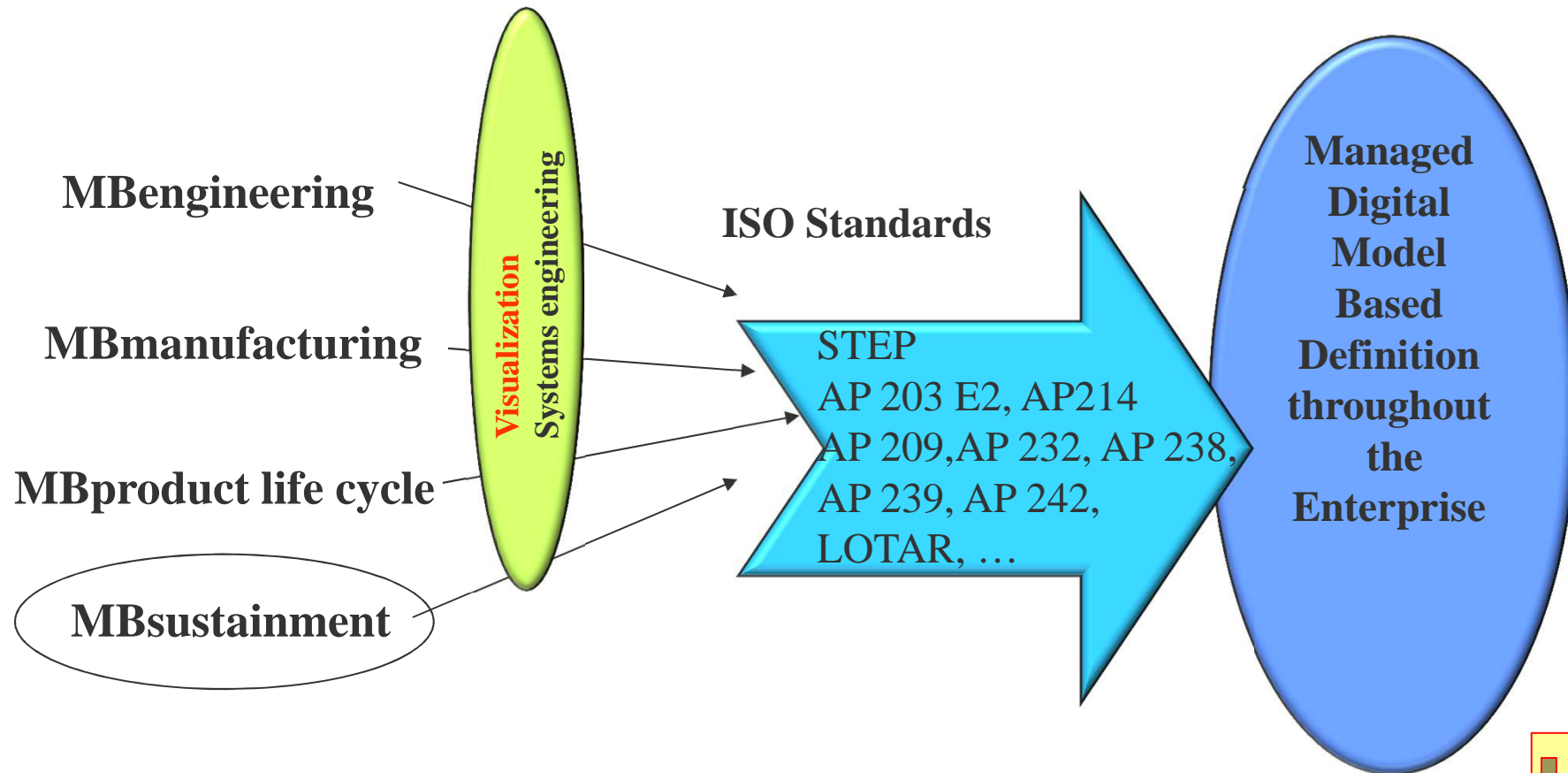
NAS 9300 / EN9300 fundamental N^o. L.-T. Preservation based on open standards



The Digital Vision

2007

2015 +

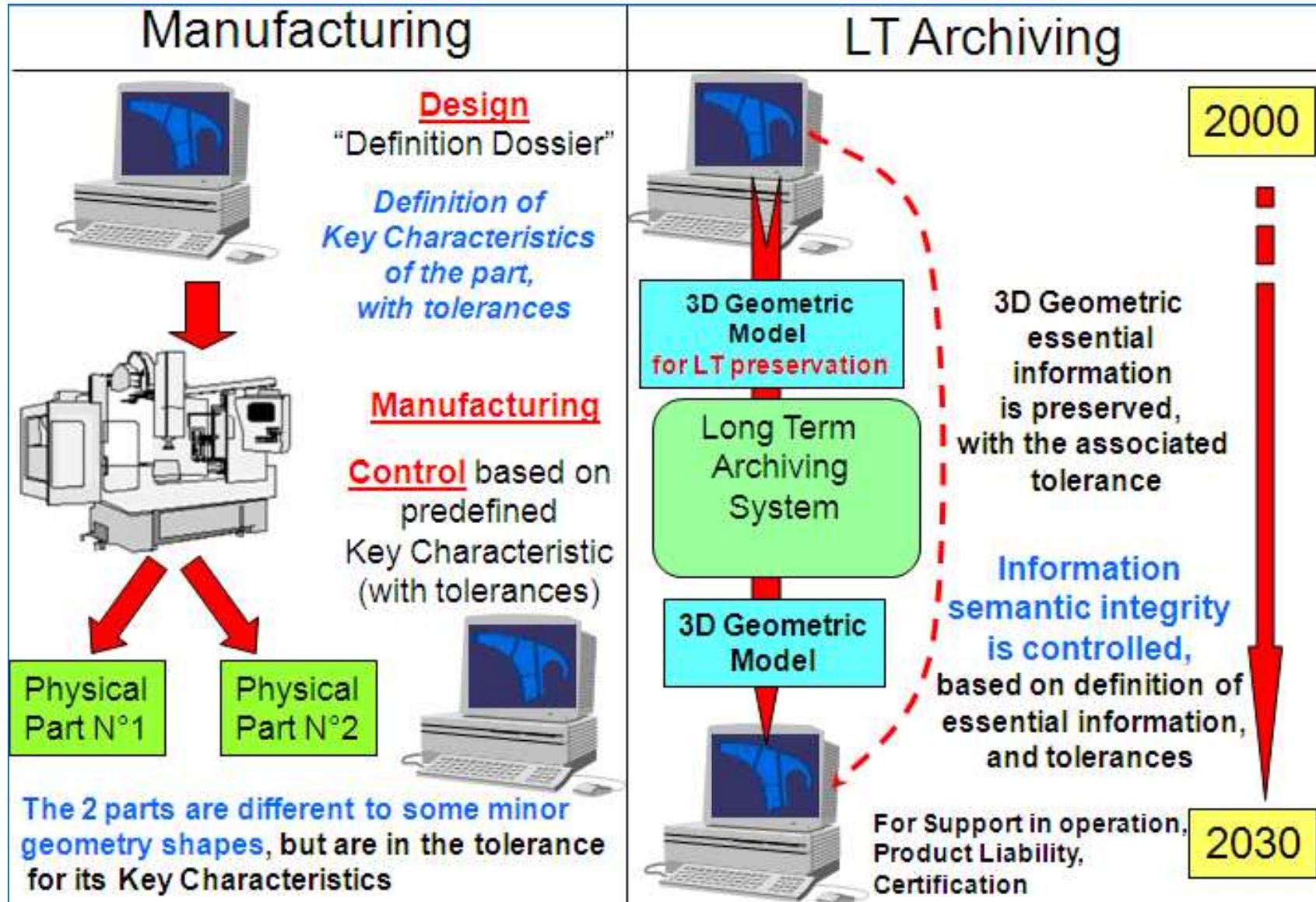


Common concepts for LT archiving & retrieval of CAD 3D mechanical information

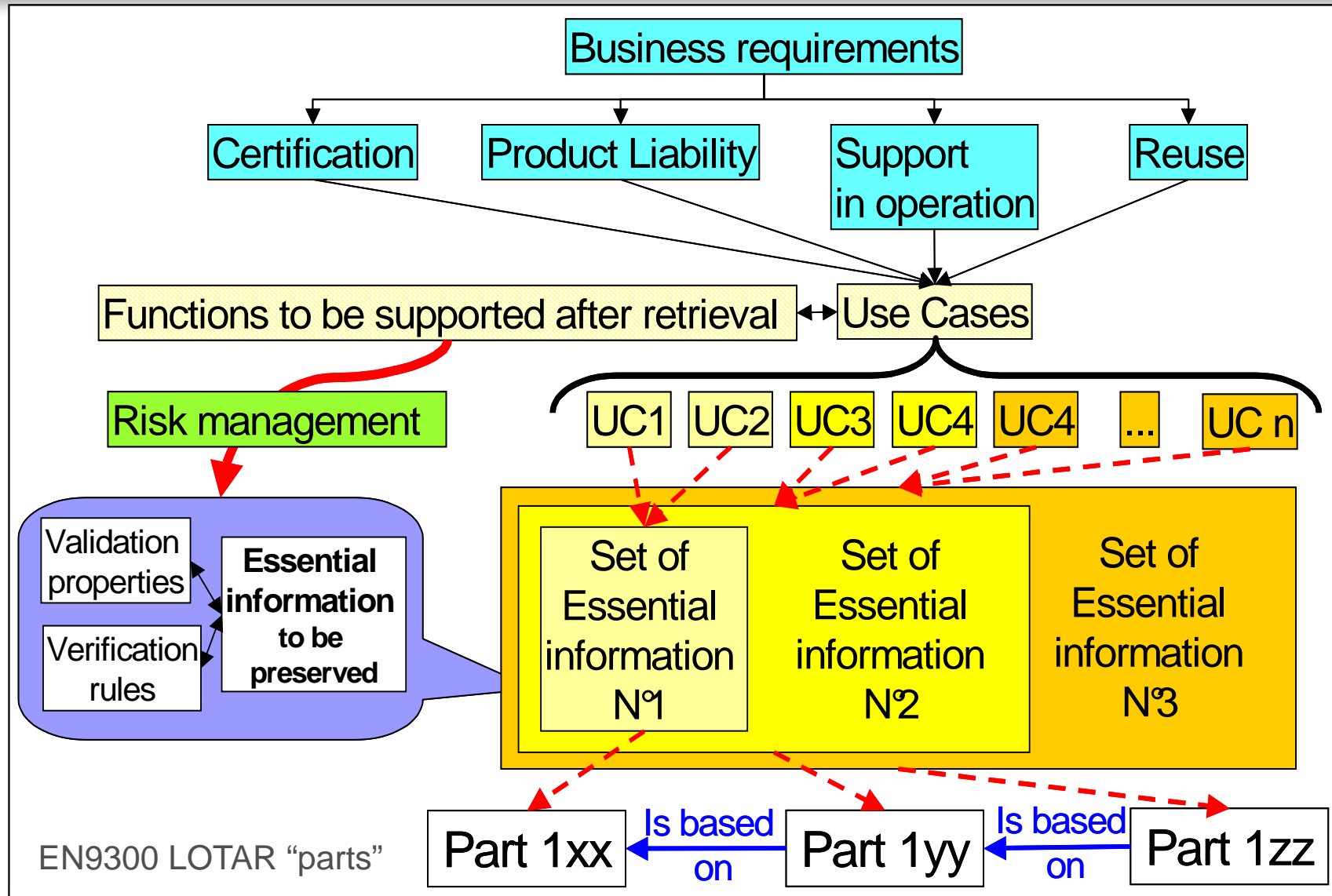
: Validation Properties for quality control



LOTAR
LONG TERM ARCHIVING AND RETRIEVAL



Common concepts for L-T archiving & retrieval of CAD 3D mechanical information : Business requirements & use cases



EN9300 LOTAR "parts"

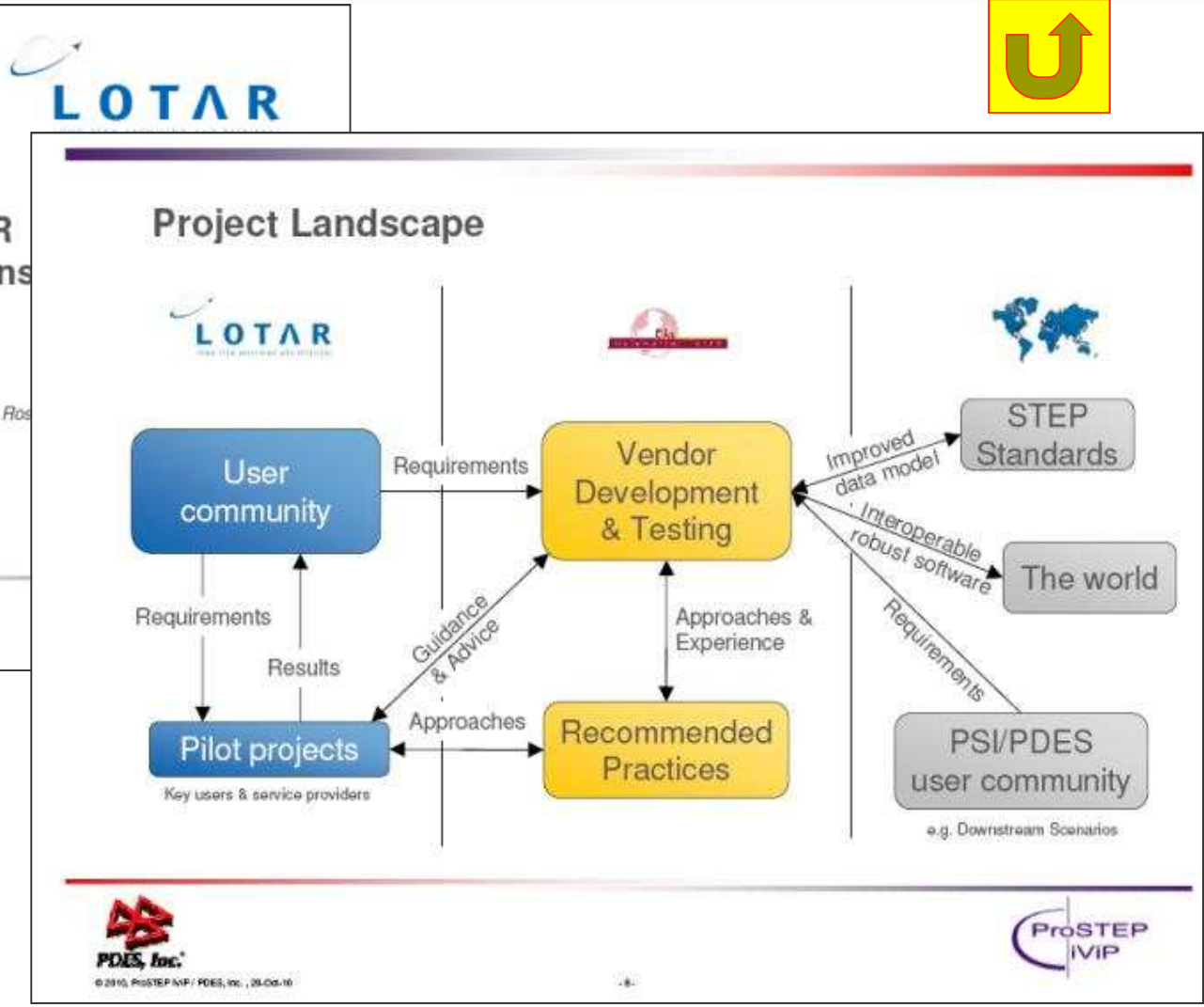
Definition of relationships between the LOTAR project and the CAX IF project (1)



CAX-IF / LOTAR Project Relations

Input for Discussion
Prepared by:
Jochen Boy, Kevin Fischer, Phil Ros

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2010 year end document accomplishments

Review of the LOTAR project 2010 report summary



LOTAR 2010 Year End Report

LOTAR

The LOTAR International Project is a working group managed under the AIA, PDES Inc., ASD-STAN and ProSTEP iVIP consortium. The project goal is to develop, publish and maintain standards designed to provide the capability to archive and retrieve digital product and technical information, including 3D CAD and PDM data, in a standard neutral form that can be read and reused throughout the product lifecycle, independent of changes in the IT application environment originally used for creation. The multi-part standard covers both the information content and the processes required to ingest, store, administer, manage and access the information.

Tasks

Goals of the project include:

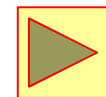
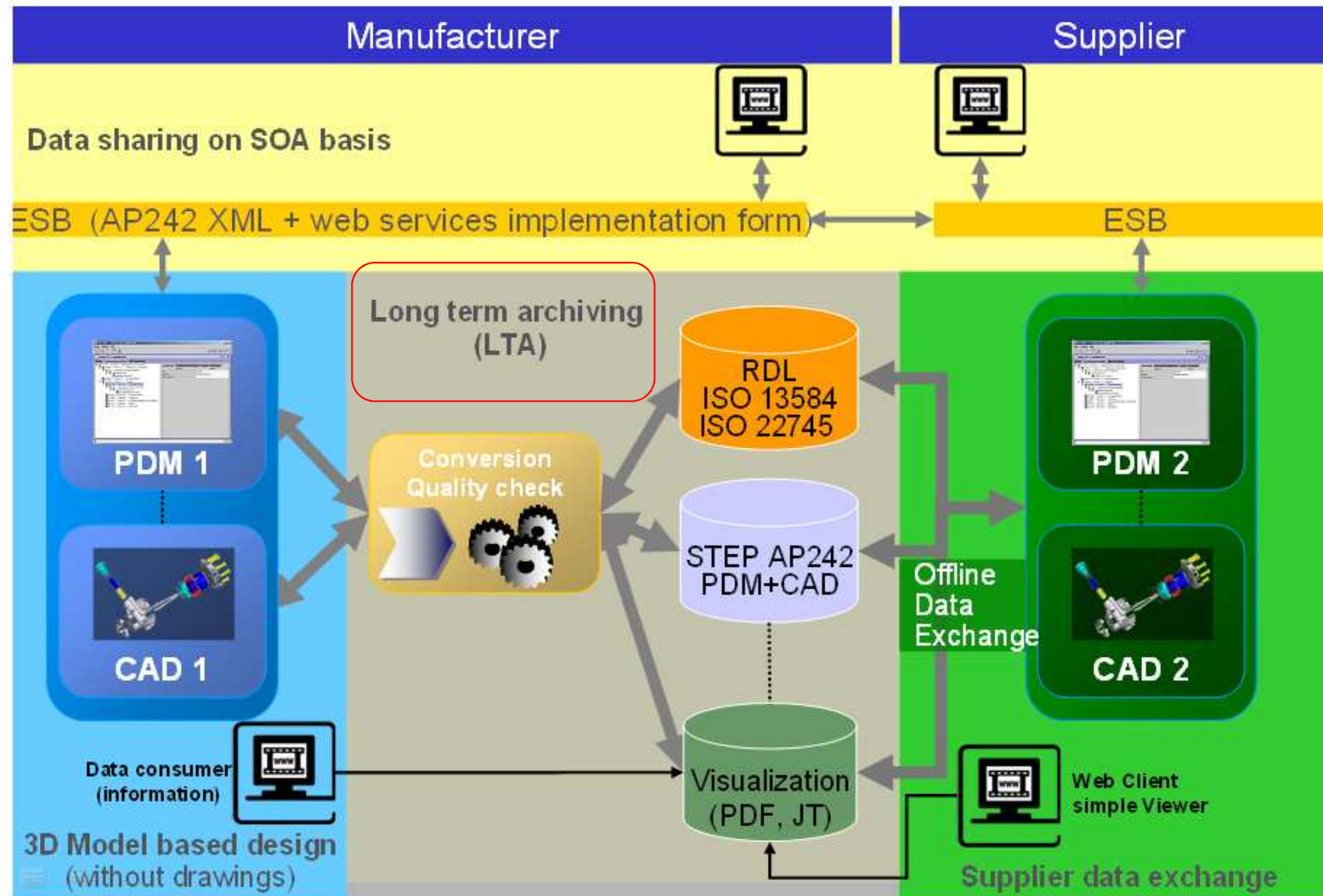
- Developing a standard series (EN/NAS 9300) for archiving and retrieval of product data
- Standardization of referred and needed methods, process modules and data models
- Providing methods, process modules and data model(s), to enable long-term archiving and retrieval of CAD and PDM data, but e.g. also for electrical, composite and other design data
- Development of recommendations for practical introduction of long-term archiving of relevant data at industry
- Advancement of commercial-off-the-shelf solutions based on user requirements by close cooperation with the CAx-IF and conjoined funded pilot projects

Table:

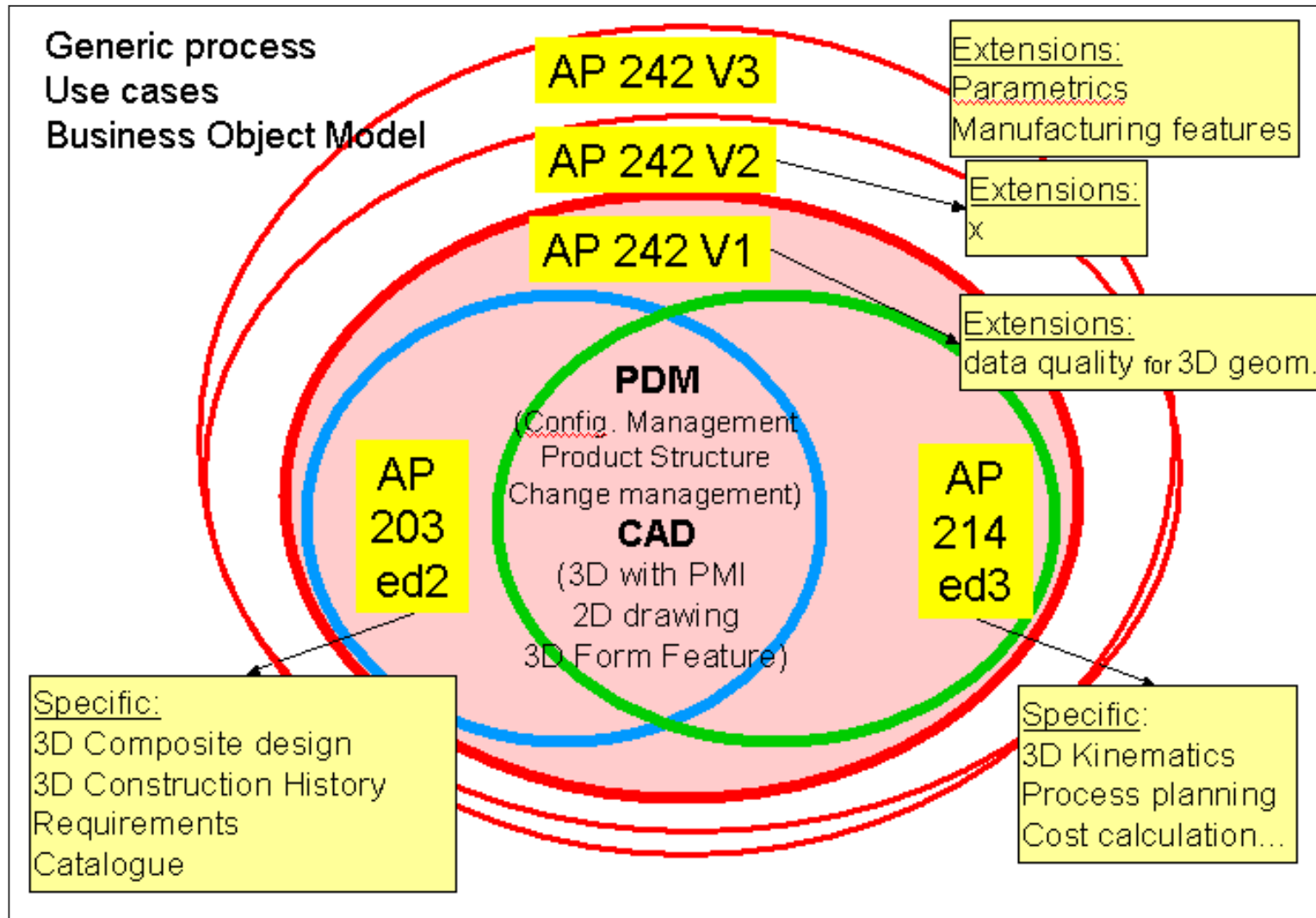
- Tasks
- Milestones 2010
- Outlook 2011
- Participants
- Chairmen / project coordinators

Remind of the objectives of STEP AP 242 project

=> Core model of CAD-PDM information interoperability



Planned scope of STEP AP 242 (per versions – detailed scope to be confirmed)

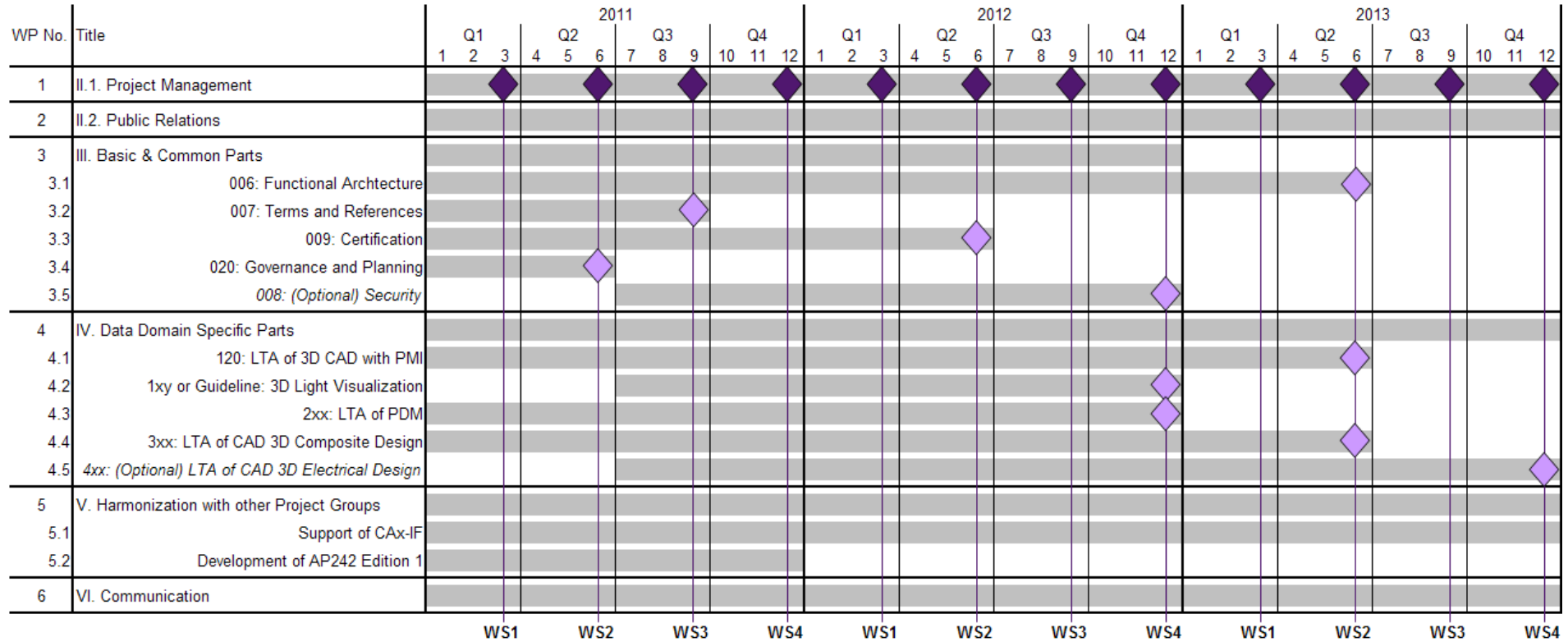


Start of identification of requirements for AP 242 ed2

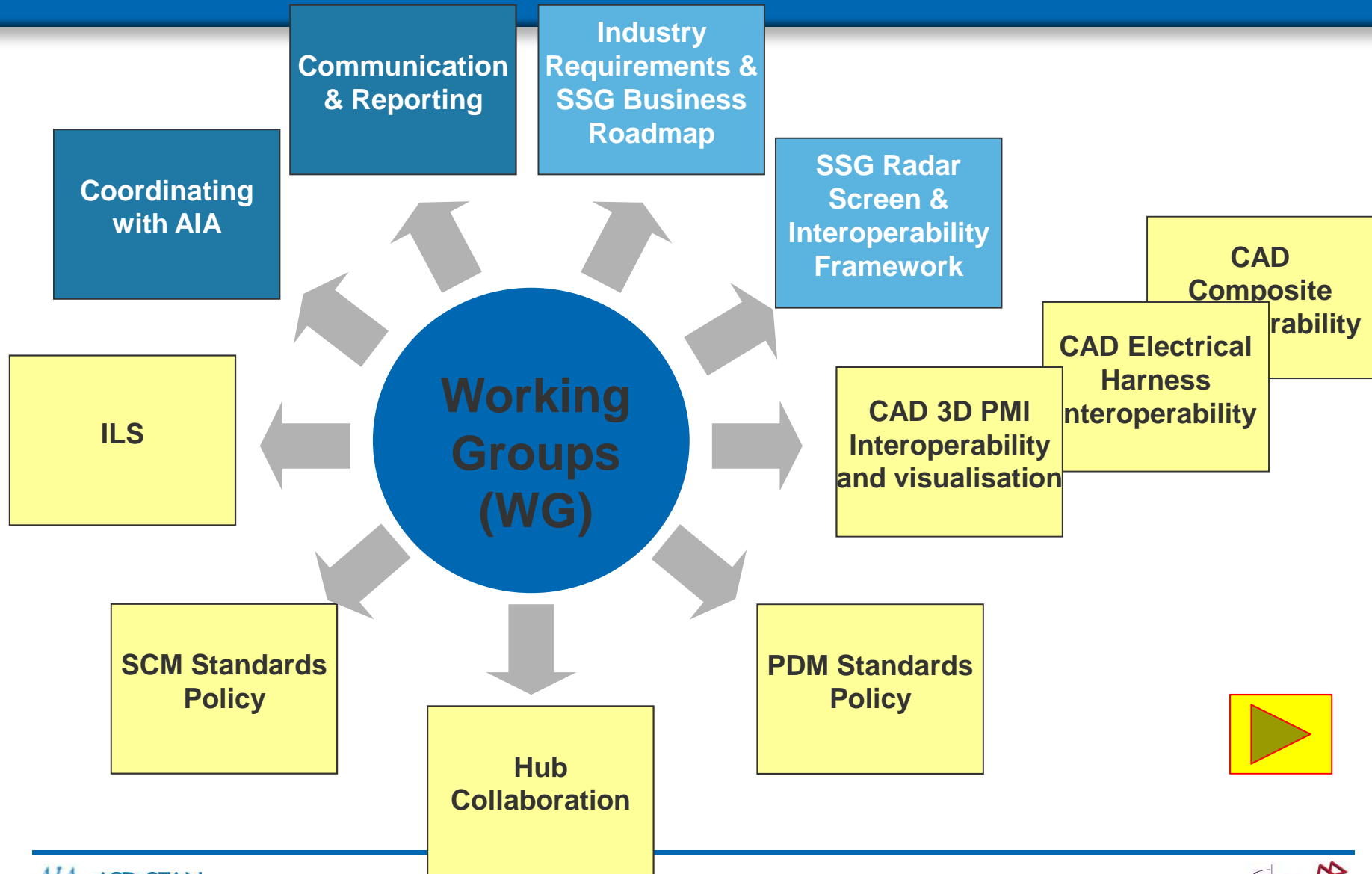
Example:
Extension to:
- 3D elec. harness
Extensions for:
- 3D PMI,
- 3D parametric



LOTAR Overall Project Plan 2011-2013

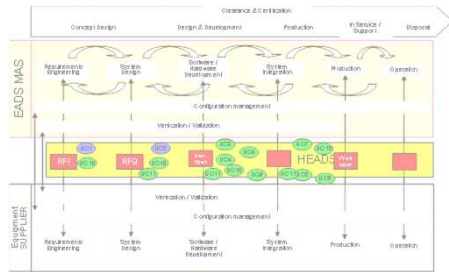


European context: ASD SSG Activities

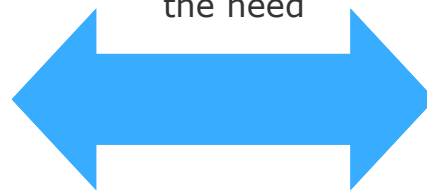


Interoperability framework: organizing the tools to master business requirements and consistency

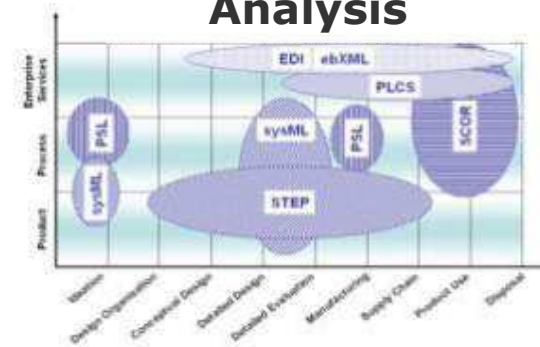
Business Scenario & Use Cases



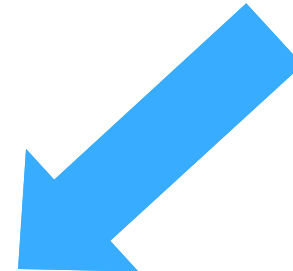
Identify & describe the need



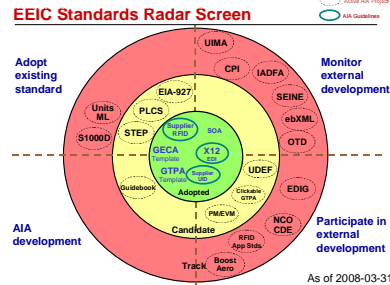
Life Cycle Gap Analysis



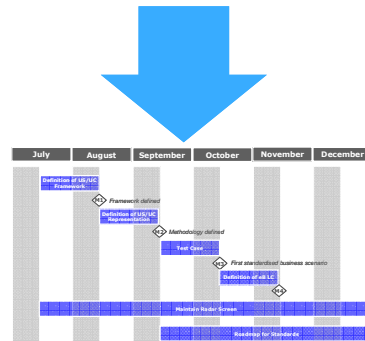
Address the need



Radar Screen



Roadmap



Develop standards & policies

