



LOTAR – Parts 120, 121, 125, etc (Rick Zuray – AIA/Jean-Yves Delaunay – ASD)

Potential areas of future collaboration – functional requirements for next 5 years

- MBSE (Peter Pan – AIA) including MoSSEC (Adrian Murton)
- Geometric Dimensioning and Tolerancing (Jean-Yves Delaunay – ASD)
- **New STEP capabilities – target requirements (Jean-Yves Delaunay – ASD)**
- XML strategy for transactions (Evelyn Thompson – AIA/Samy Scemama – ASD)
- Visualisation – 14306, PRC, 3D-PDF, X3D (Jean Brange – Global view + ASD)
- Linked data eg OSLC – (Nicolas Figay - ASD)

Other tasks – please advise in advance

- Adoption strategies – vendor, business
- Status of existing Implementer Forums: CAX-IF, PDM-IF, ...(Jean-Yves – ASD)
- Requirements for Implementer Forums (All)



## Table

- Introduction – context
- Recommendations of the AIA – ASD joined workshop at Gaithersburg (6 - 7 Mar 2014)
- Architecture framework for Product & Process information interoperability
- Overview of the suite of STEP standards of interest for the A&D industries
  - Prep. of ISO STEP AP209 ed3 New Work Item “Multi Disciplinary analysis and design”
  - Dev. of STEP AP238 ed2 in progress “Model based integrated manufacturing”
- Overview of New STEP capabilities : target requirements
  - Draft roadmap of ISO STEP standards to support the LOTAR project
- Summary – next actions



The logo for E-Business SSG (Strategic Systems Group) features the text 'E-Business' in a blue, sans-serif font above the text 'SSG' in a larger, bold, blue, sans-serif font. A blue arrow points upwards and to the right, passing through the text.

## Introduction - context

- **Objective**

**“Definition of a suite of consistent ISO standards to support A&D product information interoperability**

- To cover the **full product life cycle**  
and the **main technical A&D disciplines / technologies**
- Links with ISO / IEC standards defining processes and methods
- Taken into account of the different product data interoperability needs:
  - exchange, migration, aggregation, sharing, linked data, visualization, quality control, LT archiving, etc

- **Context:**

- AIA – ASD meeting organized in March 2014  
**“Explore STEP information models & formats for the A&D industry for PLM interoperability and archival, and propose recommendations for future development and implementation”**

# Recommendations of the AIA – ASD joined workshop at Gaithersburg ( 6 - 7 March 2014)



6 – 7 March 2014 workshop for A&D Recommendations on STEP information models & formats for PLM interoperability and LOTAR

## Workshop “Explore STEP information models & formats for the A&D industry for PLM interoperability and archival, and propose recommendations for future development and implementation”

Summary - proposed recommendations

March 6 & 7, 2014  
Gaithersburg MD, USA

Version 1.0



6 – 7 March 2014 workshop for A&D Recommendations on STEP information models & formats for PLM interoperability and LOTAR

## Proposal to set up a AIA – ASD PLM interoperability council, meeting at least once a year

- Proposed name: AIA – ASD PLM interoperability council
- Benefits: to ensure the governance and maintenance of the PLM interoperability standards used by the American and European A&D industries, and their appropriate implementation by the PLM editors.
- Meeting at least one time per year, in conjunction with other key events of the A&D industries (E.g. LOTAR, ISO /TC 184/SC 4...)
- Mission: to ensure the consistency of all the PLM interoperability standardization activities from the view point of the aerospace & defence industries
  - Development of standards (ISO, OMG, OASIS, LOTAR, ...)
  - Dev. of associated recommended practices and, when appropriate, prioritization of use cases implementation via the associated implementer forums
  - Way of working similar to the AIA – ASD ILS council
    - Participation of members of the AIA – ASD ILS council in the AIA – ASD PLM interoperability council / AIA – ASD DME WG





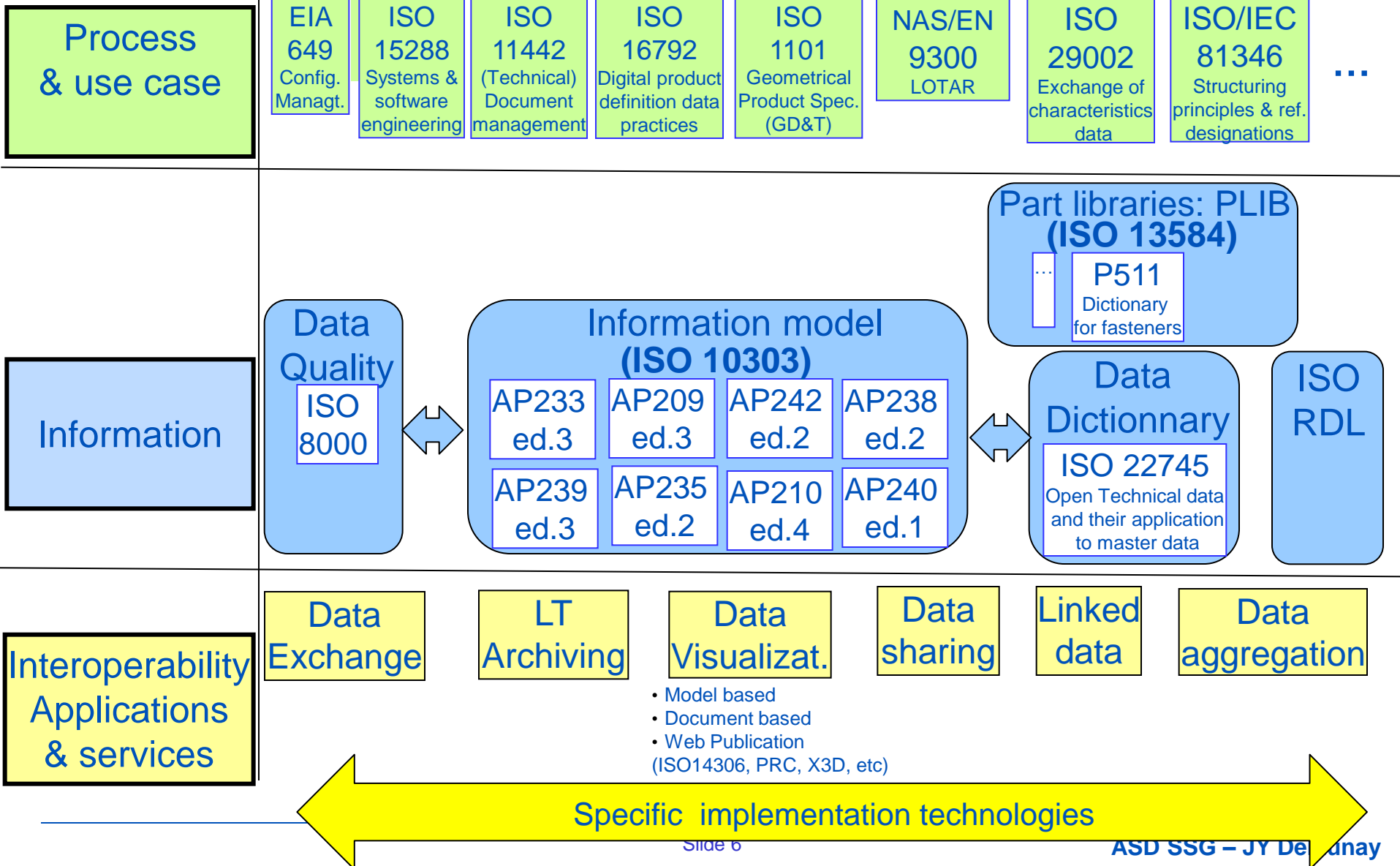
## Recommendations of the AIA – ASD joined workshop at Gaithersburg ( 6 - 7 March 2014)

	Recommendatons	Status
1	To set up a AIA-ASD PLM interoperability council (name and scope to be agreed),	
2	To identify and monitor the actions of consistency between the relevant PLM standards,	
3	To prepare an A&D recommendation confirming the STEP modular architecture as the cornerstone information models for PLM interoperability,	
4	To define a midterm / long term roadmap of STEP Application Protocols from A&D perspective,	
5	To consolidate the use of the PDM STEP standard by the American and European A&D industries through the full product life cycle,	
6	To prepare a White paper “state of STEP AP modularity” - Requirements for the STEP future architecture,	
7	AIA and ASD to seek to strengthen the liaisons between the different standardization organizations,	
8	To require and support the development of recommended practices for the STEP AP's of interest to A&D Industries,	

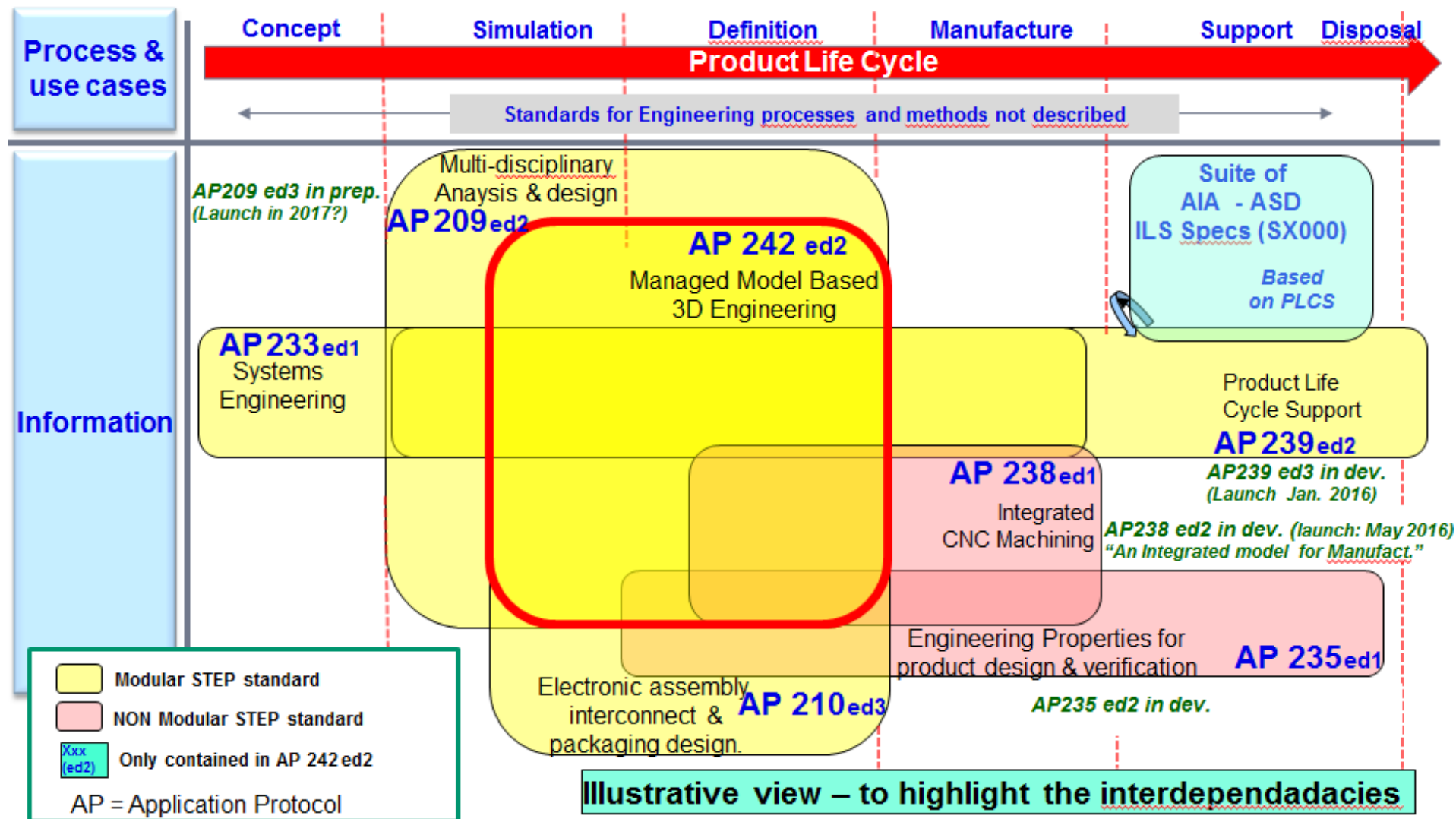
Potential areas of future collaboration : New STEP capabilities

# Architecture framework for Product & Process information interoperability

Extract for illustration



# Overview of the suite of STEP standards of interest for the A&D industries





# Prep. of ISO STEP AP209 ed3 New Work Item “Multi Disciplinary analysis and design” (title may change)



ISO/TC 184/SC 4/WG 12 N9325  
2016-11-30

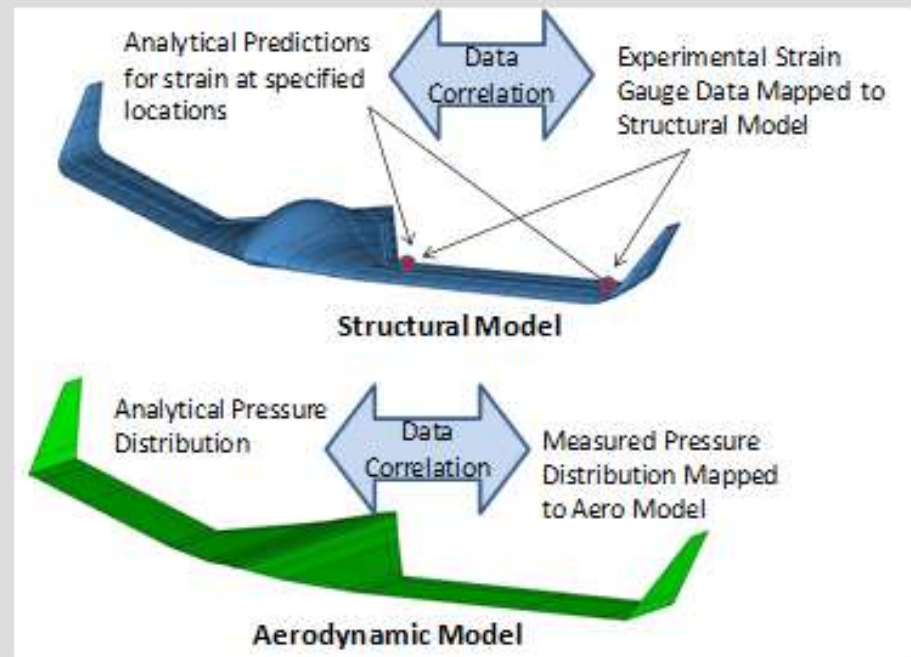
## CONTENTS

1. Introduction .....
2. AP209ed3 scope item proposals.....
  - 2.1 Structural testing.....
  - 2.2 Workflow instruction and feedback data .....
  - 2.3 Systems engineering and product data management context.....
  - 2.4 Isogeometric design and analysis .....
  - 2.5 Binary files implementation method .....
  - 2.6 Usage guidance / Recommended practices.....
  - 2.7 DEM.....
3. Target planning .....

## List of Figures

- Figure 1: Scope of ISO 10303-209:2014.....
- Figure 2: Use Case Scenario for Correlation of Aero/Structural Analyses w

## Structural testing correlations



2016-05-25

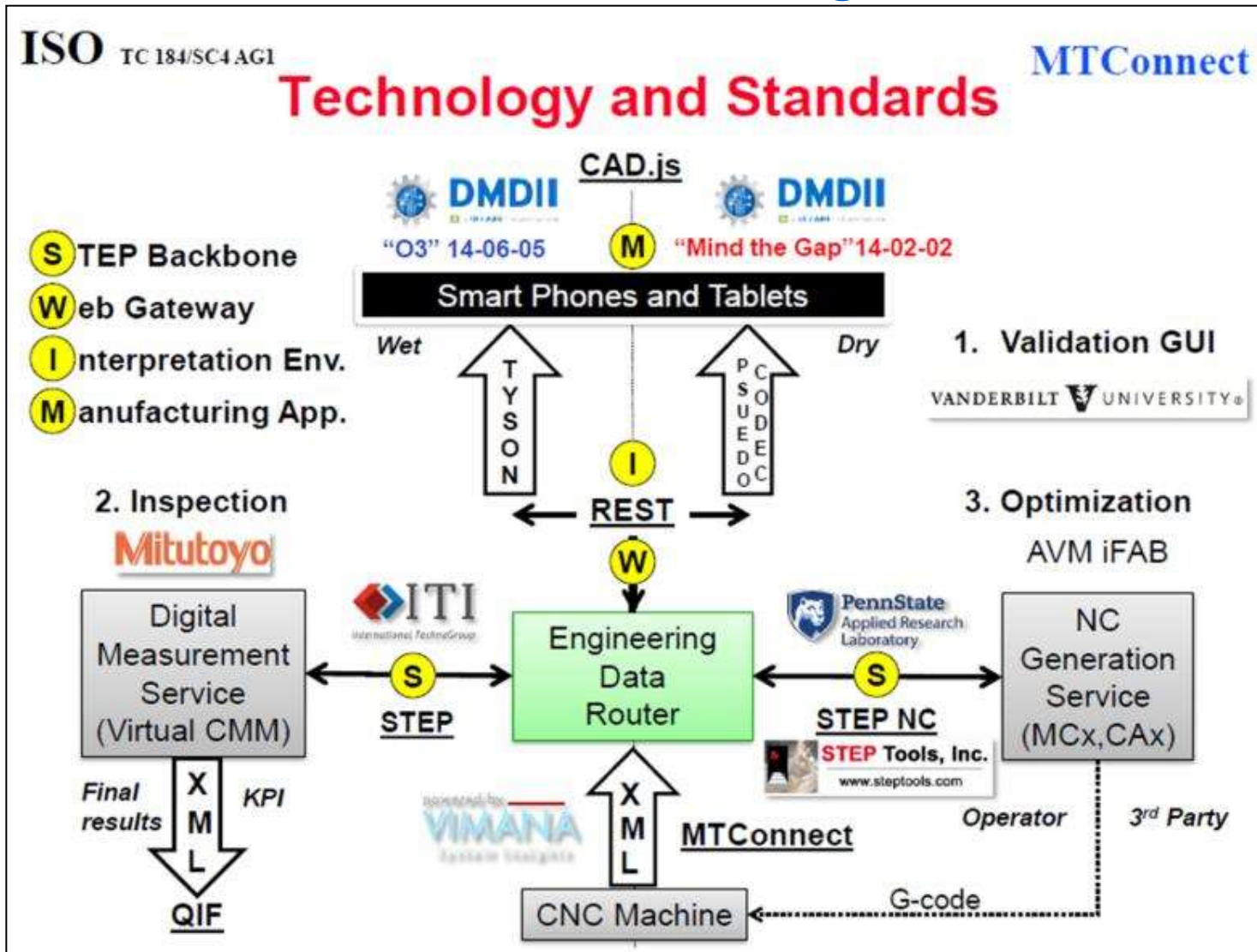


Support of GIFAS and AFNeT  
Airbus as contributor, and other EU A&D manufacturers as candidates



# Dev. of STEP AP238 ed2 in progress

## “Model based integrated manufacturing”



Contrib.  
to requirements  
for dev. and use  
of STEP AP238 e2

Links with

- NC machining : ISO 14649 "STEP-NC"
- and 3D NC metrology : QIF (under assess.)

# Draft roadmap of ISO STEP standards to support the LOTAR project



STEP APs Roadmap	2016				2017				2018				2019				2020			
<b>AP242 "Managed model based 3D Eng."</b>																				
Edition 1	IS																			
Edition 2							DIS			IS										
Edition 3 (anticipated)									NWI						CD				DIS	
<b>AP 210 "Electronic assembly, interconnect &amp; packaging design"</b>																				
Edition 3	IS																			
Edition 4 ?								CD		DIS										
<b>AP 209 "Multi-Disciplinary Analysis"</b>																				
Edition 2	IS																			
Edition 3 ( <i>preparation started</i> )			NWI				CD			DIS					IS					
<b>AP 239 "Product Life Cycle Support"</b>																				
Edition 2	IS																			
Edition 3							CD			DIS					IS					
<b>AP 238 "An integr. model for Manufact."</b>																				
Edition 1	IS																			
Edition 2 ( <i>planning indicative - TB conf.</i> )							CD			DIS					IS					

# AIA and ASD target requirements



*To be updated according to  
the results of the AIA - ASD Interoperability confcal*

Requirements for A&D product information interoperability	Target Standard	Status	Interests		Exchange	LT archiving	Sharing	Linked data	Visualization
			AIA	ASD					
<b>MoSSEC</b>	MoSSEC Ed.1	In dev.		Y					
- Edition 1 in development (Ed. 2 planned for future extensions)									
<b>Multi-disciplinary analysis and design</b>	AP209 Ed.3	NWI in prep. in Q1 2017		Y					
- Extension: Non linear structural analysis									
<b>3D Model Based definition (missing functionalities in AP242 ed2)</b>	AP242 Ed.3	Prep. of AP242 Ed.3 NWI		Y					
- Extension: tubing, sheet metal design									
- Enhancements: electricall schematic, 3D PMI semantic, Addit. Manuf., manufacturing features									
<b>Printed Circuit board design and assembly</b>	AP210 Ed.4	In dev. (Consistency with AP242)		Y?					
- Extension / enhancements:									
<b>NC machining of structural parts</b>	AP238 Ed.2	In dev.		Y?					
- Extension / enhancements:									
<b>3D NC Metrology</b>	QIF V2?	In dev.		Y?					
- Extension / enhancements:									
<b>Engineering properties for product design &amp; verification</b>	AP235 Ed.2	In dev.							
- Extension / enhancements:									
<b>Product Life Cycle Support for ILS and MBSE</b>	AP239 Ed.4	ed3. in dev.		Y					
- Extension: part of AP233 not covered by AP239 Ed3.?									
- Enhancements: to support AIA-ASD ILS and A4A eBusiness requirements?									

## Summary – next actions



- Recommendation to support the works of the “STEP New Architecture” project
  - Used for the dev. of AP242 Ed.2, AP239 Ed.3, MoSSEC V1, etc
- Confirmation of the priorities of AIA and ASD to support the development of ISO 10303 standards for product information interoperability:
  - AP242, AP239, AP209, AP238, AP235, AP210, MoSSEC, etc and the related projects coordination follow up.
- Review of the recommendations of the AIA –ASD March 2014 meeting
- Next action: assess the level of support / coordination between AIA and ASD for the associated ISO /TC 184 /SC 4 standards:
  - ISO 8000 “Data quality”
  - ISO 22745 “Open Technical data and their application to master data” (OTD)
  - ISO 13584 “Part librarie” (PLIB)
  - ISO 15531 “Industrial manufacturing management data” (MANDATE)
  - Etc.