

# PLM Harmonization Center



**EADS SSC**  
**(“Strategic Standardization Committee”)**

**STEP – JT standards comparison  
for CAD 3D interoperability  
(in the context of EADS)**

**Executive summary  
for external communication**

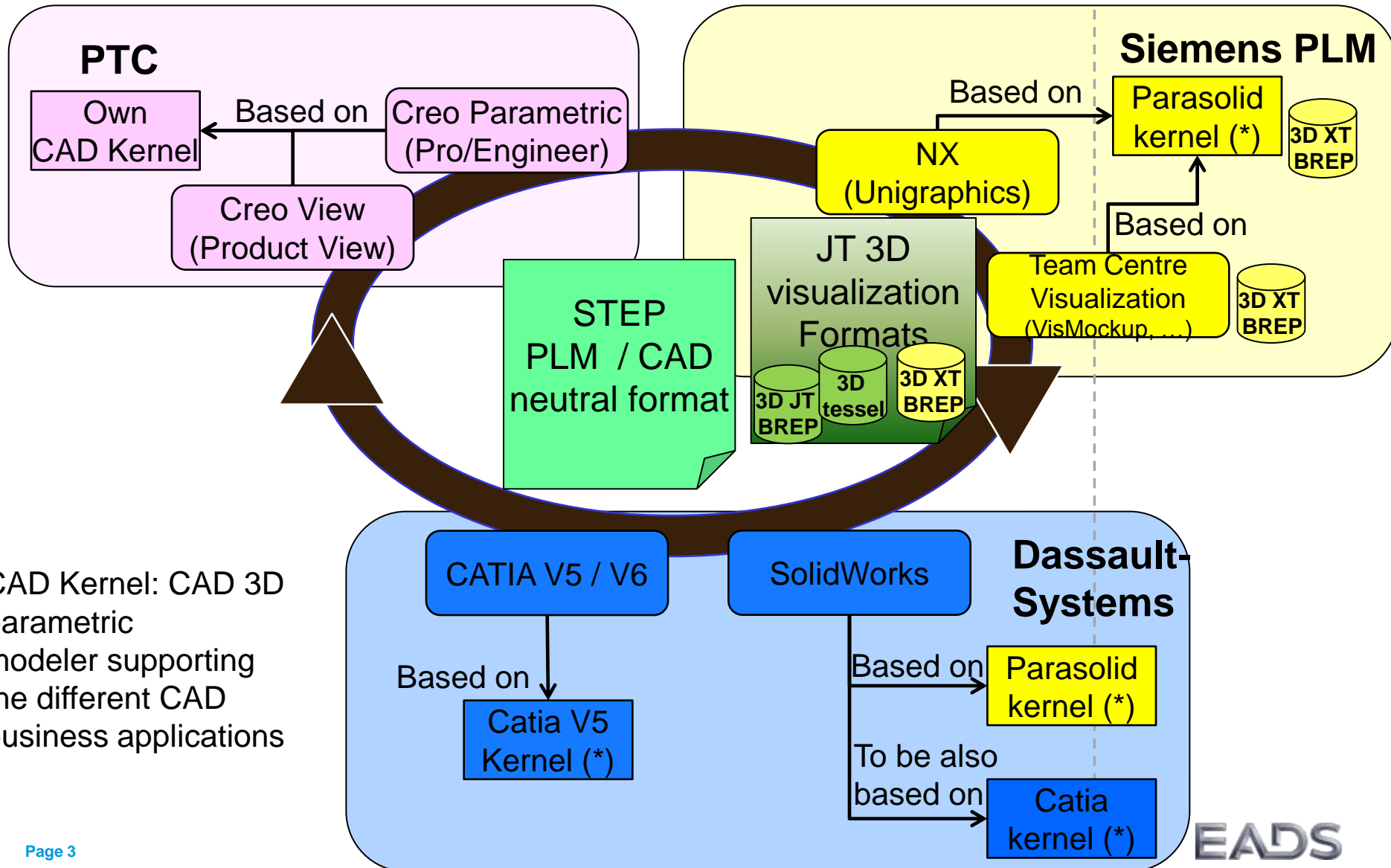
**June 2012**

# Introduction



- In the frame of the EADS PLM Harmonization Center (PHC), launch of a project coordinated by the EADS Strategic Standardization Committee (SSC), aiming at defining the EADS recommendations for the use of the ISO STEP and JT standards for CAD 3D interoperability.
- The recommendations are organized according to 4 families of use cases :
  - 3D Visualization/Consultation
  - Complex CAD 3D Exchange
  - DMU/CAD 3D Light Exchange
  - Long Term Archiving and Migration of CAD/PDM data

# Overview of the main CAD Modeler kernels and their relationships with the STEP and JT standards

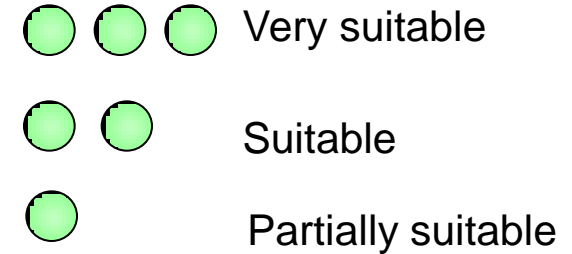


CAD Kernel: CAD 3D parametric modeler supporting the different CAD business applications

# EADS PHC recommendations for the use of STEP and JT standards for 3D interoperability



| Families of use cases for CAD 3D interoperability               | STEP 242 | JT |
|---|----------|----|
| 3D light visualisation /consultation                            |          |    |
| CAD complex 3D exchange (PMI, Mechanical, Composite, elec, ...) |          |    |
| DMU/CAD 3D light exchange: (Assy + 3D exact + 3D tessellated)   |          |    |
| LTA and Migration of CAD/PDM data                               |          |    |



- In the context of EADS products and of its current PLM applications, **the EADS SSC recommends to use:**
  - STEP AP 214 (2012 – 2013) and AP 242 (2013>)** as the **cornerstone for CAD 3D interoperability & long term preservation** of EADS full 3D definition dossier, covering the following families of use cases:
    - : 1) CAD 3D complex exchange, 2) DMU / CAD 3D light exchange, 2) LTA and migration of CAD/PDM data
  - The JT ISO specification for 3D light visualization, limited to the 3D tessellated geometry and the 3D “JT BREP” representations.**

NB: The EADS SSC has planned a study of the ISO PRC standard (part of PDF 3D) and of the JT ULP format in Q4 2012 and 2013, for a consolidated recommendation of the policy for 3D light visualization open standard

# Overall process / Use cases overview

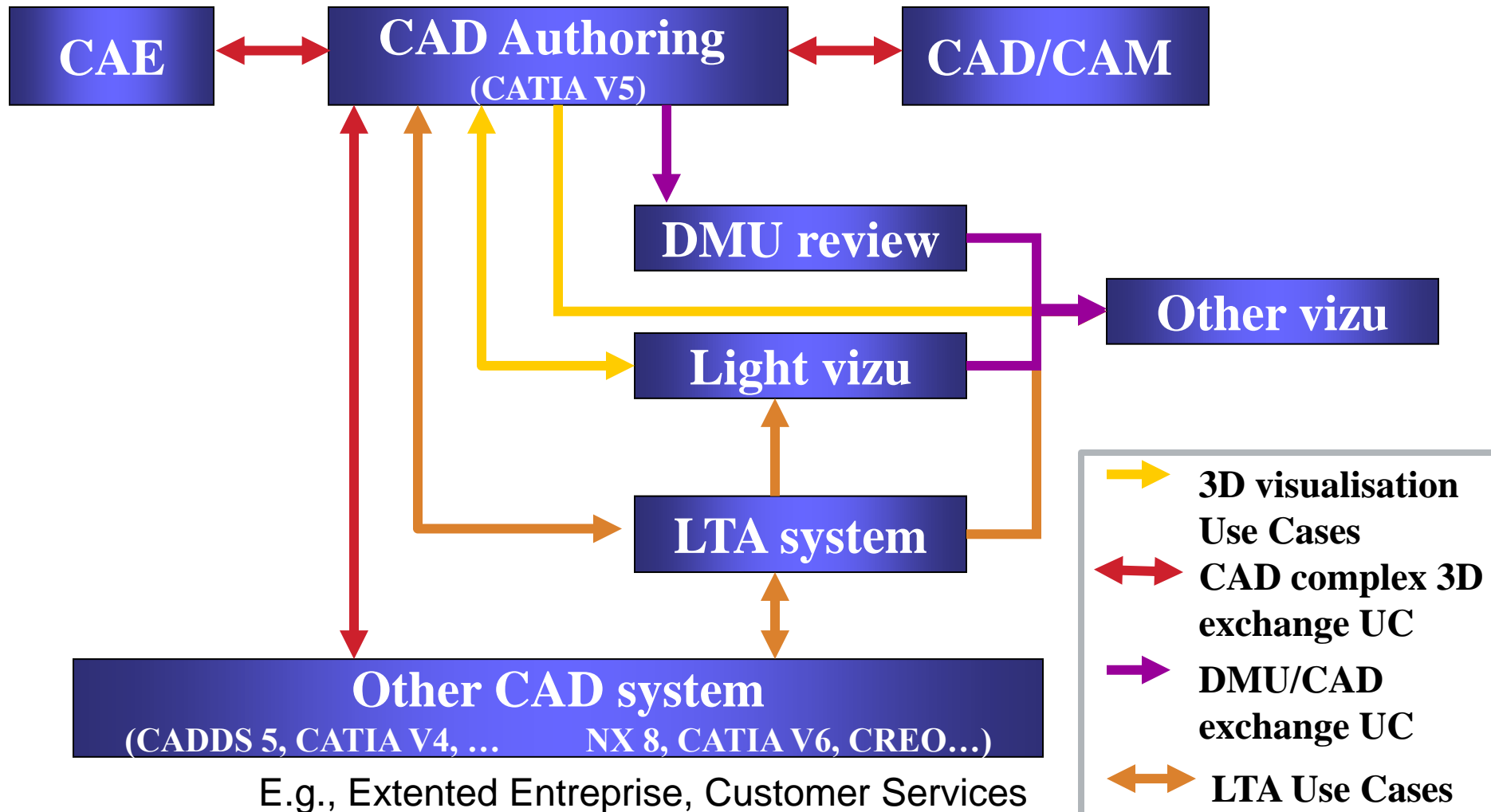


Pre-design

Engineering /supply chain

Manufacturing

Support



# Representative EADS test data



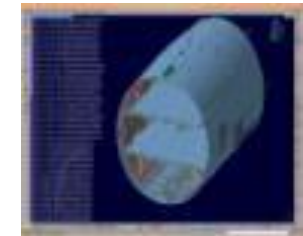
## Long Range Door

(app. 1200 Catia V4 & V5 3D models)  
with the assembly structure as CATproduct



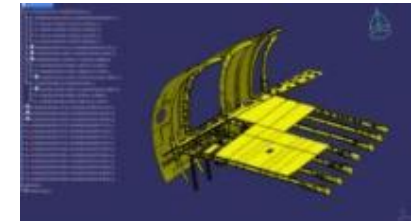
## A380 Section

Created in Airbus specific TreND application  
(2 levels of native details) Catia V5 CGR



## A350 full 3D for electrical harness installation

Assembly + 3D exact geometry + 3D tessellated + 3D PMI



## Catia V5 Basic test cases: 3D PMI

(Geometric Dimensions and Tolerancing)

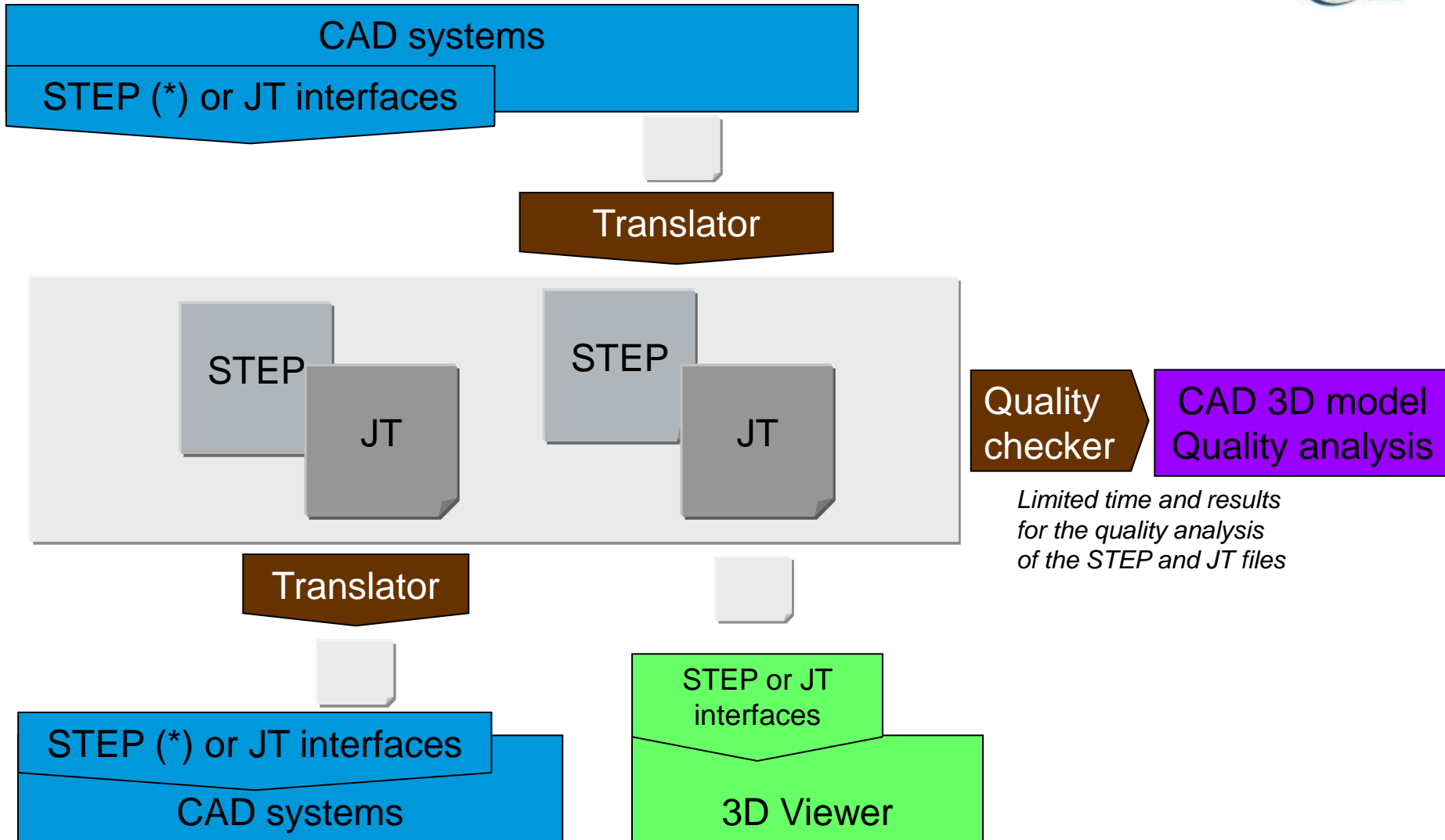


## NX V7.5 Equipment

(32 models of 3D exact geometry  
+ Assembly structure)



# Tools used during the EADS study (1/2)



(\*): end to end quality check  
based on CAD validation properties

# Tools used during the EADS study (2/2)



## DASSAULT SYSTEMES:



- CATIA V5 R21 SP3
  - STEP AP 214 and AP 242 (\*) interfaces



## SIEMENS



- Team Center Viz mock-up V8.3
  - JT (\*\*) interface
- NX V7.5
  - STEP AP 214 interface
  - JT (\*\*) interface
- CATIA ⇔ JT converter



## PTC



- Creo 2.0 View MCAD
  - STEP AP 214 interface
  - JT (\*\*) interface
- Creo 2.0 Parametric
  - STEP AP 214 interface
  - JT (\*\*) interface



## Theorem Solution

- CAD verter V14
  - NX 7.5 ⇔ STEP AP 214
  - NX 7.5 ⇔ AP 242 (\*) interfaces
  - NX 7.5 ⇔ JT (\*\*) interfaces

## Tech Soft 3D



- HOOPS V5.0.2
  - JT (\*\*) interface
  - STEP AP 214
  - STEP AP 242 (\*) interface

## Transcat

- Qspecter V1.7.1 for JT



## ITI



- CADIQ V7 for STEP and JT

(\*): STEP AP 242 prototype interface  
 (\*\*): JT ISO DIS (V9.5)

|                |                      |
|----------------|----------------------|
| <b>Legend:</b> | <b>CAD System</b>    |
|                | <b>Viewer</b>        |
|                | <b>Quality Check</b> |
|                | <b>Translator</b>    |