STEP usage for LT archiving & Retrieval

AFNeT – prostep ivip STEP AP242 day @ ZAL Hamburg

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Archiving - General Principles derived from external requirements

External obligations and requirements are asking Airbus for archiving:

**Governmental Authorities**
- Type and Manufacturer Certification
  - EASA
  - FAA
  - EASA Part-21 – Airworthiness Certification
  - EASA Part-145 - Continuing Airworthiness

**Quality System**
- EN9100
- Quality Management Systems
- EN9130
- Quality Systems – Record Retention

**Legal Requirements**
- Product liability, civil and financial law

- UNCHANGEABLE
- COMPLETE
- RETRIEVABLE
- READABLE & REPRODUCIBLE
- AUTHENTIC
- TRACEABLE

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Long-Term Archiving & Retrieval Project

The LOTAR team is an international project jointly hosted by ASD-Stan, AFNet, the ProSTEP iViP Associations in Europe, PDES Inc and AIA in the US.

Its aim is to develop a standard designed to provide the capability to archive digital product information in a standard neutral form that can be retrieved and reused throughout its lifecycle, independent of changes in the IT application environment originally used to create it.

The multi-part standard EN/NAS 9300 covers both the information content and the processes required to ingest, store, administer, manage and access the information.
In the context of requirements concerning the Archiving environment, EN 9300 references extensively to ISO 14721 "Open reference model for Archiving Information System" (OAIS).

OAIS is a framework which describes the ‘significant’ entities and relationships among entities in an archive environment. The OAIS ‘reference model’ details a conceptual design for an archive, including its primary components and their associated functions and relationships, to support these requirements.
LTA3D Implementation Strategy & Challenges

• History:
  – 2009 project launch for 3D Long Term Archiving solution with STEP format decided as the neutral standard

• Key challenges:
  – Completely new process introduction with Full 3D
  – Vague idea of PLM system impacts from LOTAR
  – No industrial benchmark solution available
  – 2009: only STEP AP214 and AP203 formats available

• Resulting decision:
  – Implementation of an auditable solution which is using both STEP AP214 & AP242
# LOTAR working groups

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Implementation summary - EN 9300 LOTAR

- Implementation started on Installation level (Capture the Design Intent)
- Implementation of Graphic PMI
- Implementation of automated check & conversion based on VP
- Implementation of Maintenance Organization
- Solution accepted by authorities
Solution Evolution

• Investigation of future CAD conversion and move to STEP AP242 ed1 in 2017
  – Still several issues encountered with STEP AP242 ed1 coverage for 3D MBD:
    ▪ Sheet metal design parameters
    ▪ Tubing additional information (ed3)
    ▪ 3D Electrical Wiring information (ed2)
    ▪ Semantic PMI / Annotation (ed2)
    ▪ Specific Composite features (ed2)

• Introduction of Regular Test Procedures to check Data quality and interpretation
• Move to STEP AP242 ed1
Focus on Beluga XL

• STEP AP242 defined as target format for 3D Design Data set archiving
• Re-use mostly processes, components & organization already developed for A350
• Limited amount of aircrafts

• Key Challenges
  – Archiving Workflow Management
  – Partly extension of Full3D definition & Archiving to Elementary Part Level
Return on Experience

- Conversion is mostly more strict than Design Checks → Take care on the Design Methods!

- Implement FAQ & Best Practises

- The less intrusive the solution the more Design Quality checks are needed as early as possible in the global process

- No solution is free of bugs also no conversion engine no matter the vendor
Thank You
LOTAR Technical Working Groups

- 3D Mechanical / PMI WG
- PDM – Conf. Management data WG
- Advanced Mfg. - Composite WG
- Electrical Wiring Systems WG
- 3D Visualization WG
- Meta data for archive packages
- Model Based System Engineering WG
- Engineering Analysis & Simulation WG

Description of a LOTAR WG web page

- Goals and Objectives
- Associated LOTAR use cases
- LOTAR Family of Standards
- Associated ISO 10303 Information Models
- Meetings & teleconferences
- Accomplishments
- Related standardization projects

http://www.lotar-international.org/lotar-workgroups.htm