



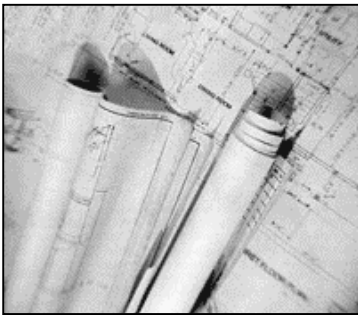
PDES, Inc. Pilot Plans for Long Term Data Retention

Open Technical Forum
Stockholm, Sweden
2002-06-10

STEP for Data Archival

Past

Future



Drawings



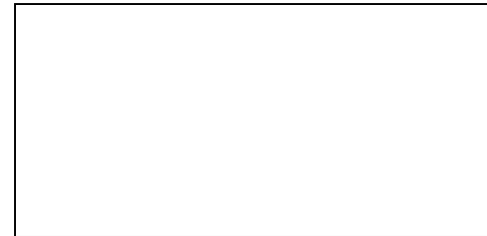
Warehouses



Tapes



Underground Mines



Background

- PDES, Inc. conducted a survey and workshop on Product Data Archival and STEP in 1995
 - Follow-on meetings that year provided additional requirements, but support for a project was insufficient to begin
- Recent meetings (Fall and Spring PDES, Inc. offsites) and workshops (Myrtle Beach ISO) provided additional requirements



1995 Survey Results

- All survey respondents archive product data in some form.
- Many different reasons and/or requirements exist for retaining product data. These include internal, customer, legal, FAA and historical requirements.
- Some respondents archive product data anywhere from 7 to 40 years and many do so indefinitely.
- Many types of product data are archived, including CAD, CAE, CAM, CAPP, and PDM.
- The amount of product data archived ranges from thousands of drawings and files to hundreds of gigabytes of data.



1995 Survey Results cont'd

- The most common archival media are tape, microfilm, and paper.
- Archived product data is generally in native CAD, proprietary, or paper formats.
- A conversion is sometimes necessary to make the archived data usable.
- About half of the respondents keep old versions of application systems to make use of the archived product data.
- Most of those that responded use a tiered mechanism for archiving product data, e.g., keeping data on-line for a certain period of time, then off-line, then off-site.



1995 Survey Results cont'd

- Almost all the surveys indicated that archiving product data in an international standard format would be practical and beneficial to their business.
- Many specific benefits to archiving product data in an international standard format were cited. Some of these benefits were:
 - sharing of data that is not platform independent;
 - greater availability of COTS software to access and use the data;
 - reduction in loss of data;
 - ability to restore files to any application;
 - reduction in time in accessing data; and
 - reliance on the value of the data.
- All but one of the survey respondents knew about STEP.



Refinement of Definitions

- Archiving

- Subset of data retention
- Implies years
- Not part of active processes (i.e., archiving is done when programs/processes become inactive)

- Data Retention

- Retaining product definition for later use (for reuse or to establish design authority for various requirements such as legal)
- Ability to read archived data



Four Top Issues from 1995 Workshop

- Completeness of the archived data. For data archival STEP should support the ability to maintain both STEP and non-STEP data, as well as handle company-specific data.
- The Business Case. The question here is where does support for data retention lie internally, as well as in the vendor community.
- Usability issues. What processes will be using the retained data, and what will be changing in STEP, and will it be upwardly compatible?
- Framework issues. There is a need for a reference model that include all of the mechanisms to support it.



Fundamental Assumptions

Fundamental Assumptions for using STEP for Long Term Data Retention

1. **STEP is not going to standardize all company data**
- 2.a **Archived data should be independent of specific application systems (archived data is separate from application software)**
3. **STEP file sizes are not going to be a limiting factor.**
4. **Retained data must include schema defining the data.**
5. **Archived data should be based on an open architecture (e.g., independent of hardware, operating systems, etc.)**
6. **Other standards will be required for long term retention of complete product data.**
7. **Everything in STEP (methodology, technology, EXPRESS, etc.) will evolve over time; technologies supporting other layers of the "framework" will also evolve and we need to be able to handle this.**





**PDES, Inc. Plan for Long
Term Data Retention
Pilot**

Pilot Projects LTDR

- Objective: Validate the use of STEP for retaining digital product data over long periods of time
- Scope:
 - Priority 1:
 - 3D Geometry and Product Structure (AP203 E1, E2, AP214)
 - 3D Tolerancing & Dimensions to replace the drawings for new generation of CAD systems, and FEM Analysis (AP203 E2, AP209, AP214)
 - Priority 2: Construction History for reusability, and business entities, such as composite, harness, etc. (using AP203 E2 for construction history, AP212 for electrical harness, AP209 for composites and analysis)



Pilot Expectations

- State broad requirements across aerospace, automotive, and shipbuilding industries and establish a pilot with PDES, Inc., GOSET, ProSTEP/LOTAR, and AIAG
- Move industry beyond drawings and native CAD
- Minimum capability: store standard, schema, and Point of Contact
- Evaluate need for AP232
- STEP upward compatibility should be addressed
- STEP must exceed capability of native for archiving (Goal is 50+ years)
- Evaluate use of mapping



Pilot Schedule and Participants

- **Schedule:**

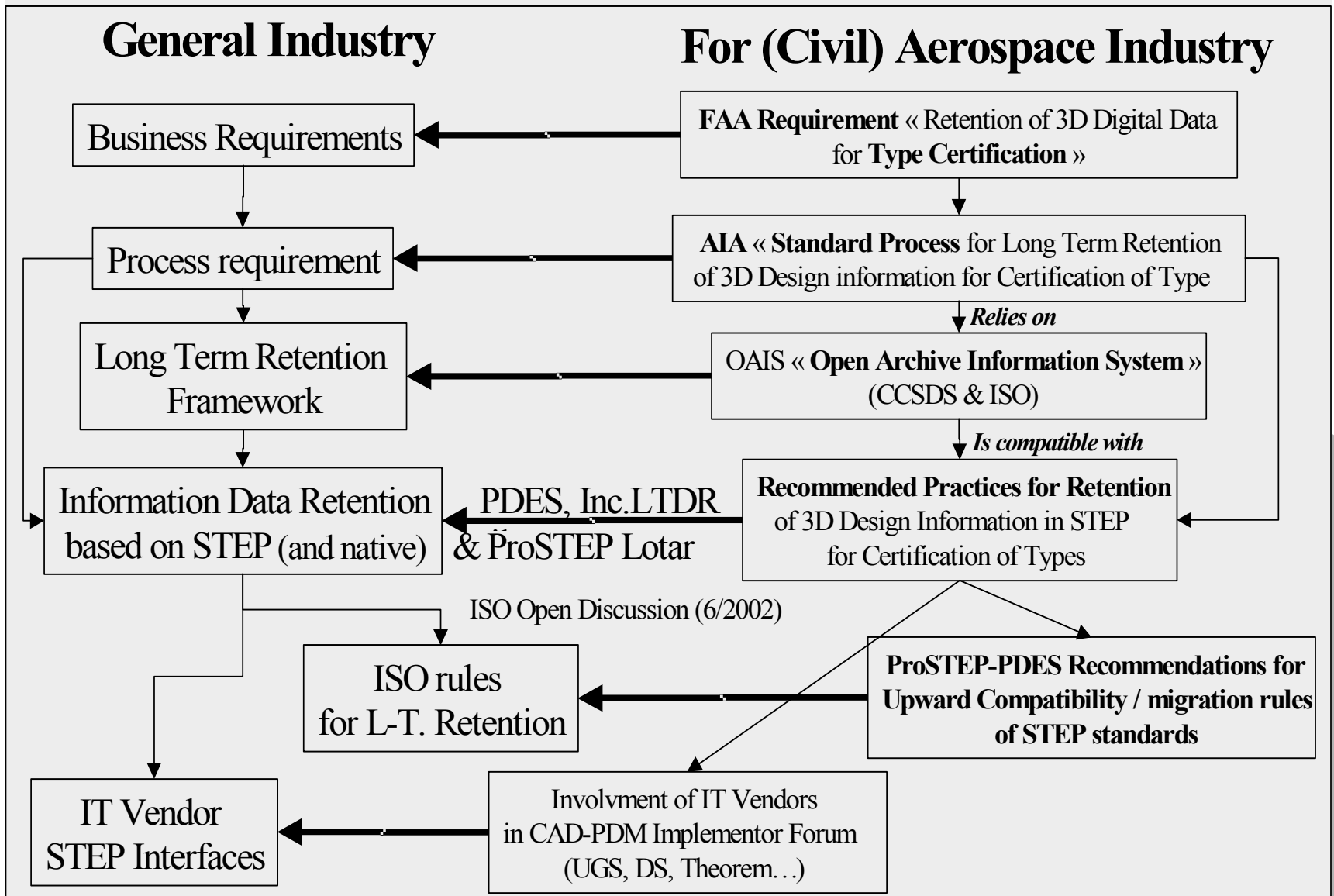
- Consolidated requirements document 4Q02
- Scope definition and use case scenarios 1Q03
- Test cases and files 1Q03
- Prototype implementations and demo 2Q03
- Year 2 demonstration 2Q04

- **Participants (anticipated):**

- AIRBUS, Boeing, BAE SYSTEMS, UTC P&W, Lockheed Martin, Electric Boat, EPM, other vendors
- Other participants: ProSTEP, Aerospace Industries Association (AIA), AIAG



Model of LTDR Relationships



Summary

- STEP brings important capability for Long Term Data Retention
- Industry is ready to validate the use of STEP for Long Term Data Retention through pilot projects
- The stability of STEP and the support for upward compatibility are essential for successful long term retention of product data





BACKUP

Four Top Issues

- Completeness of the archived data
 - Separate STEP and non-STEP data.
 - Need AP(s) that cover non-STEP data.
 - Scope to where STEP is today -- how much is going to be available and when.
 - STEP extensions (implementation of them) are more important to data retention than data exchange.
 - Make sure current APs are usable.
 - Technical Data Package is looking at "core" set of requirements for all relationships.
 - Need a short term plan focusing on AP203 (since it's available now) plus a migration/long term plan.
 - Need a pilot project focusing on data retention; look at current pilots or starting a new one.
 - Can AP203 be used for data retention? Workshop attendees should confirm this at their companies.
 - This group should provide the requirements for data retention.
 - Need to be able to handle company specific data



Four Top Issues cont'd

● Business Case

- Where does support for data retention lie? internally? with PDM vendors?
- What are the file sizes of native vs. STEP?
- Ask PDM vendors to work with users to develop the business case for data retention.



Four Top Issues cont'd

● Usability

- What are the metrics for usability? Need to look at accuracy retention.
- What processes use the retained data and what are their requirements/purpose?
- Downstream issues:
 - what has changed in the standard?
 - will we need a mapping?
 - is it upward compatible?
- Need to ask ISO to provide the mapping of extensions to STEP from one release to the next; if a change to the standard is being proposed, require that a mapping is made between the old and new versions and that an assessment is made of the impact of the change; coordinate this with STEP Centers, WG10, SEDS process (meeting in June); propose as an SC4 resolution in October.



Four Top Issues cont'd

● Framework

- Need a reference model including all the mechanisms we need (tiering).
- Identify areas we have to interface with.
- Build a picture of the retrieval process.
- Need to look at the current environment and also a notional view of what the “archival” environment will be like in 5 years

