

## Summary of the LOTAR International Workshop 21 – 24 September 2021 – On-Line

### **Summary:**

The September 2021 LOTAR workshop was well attended by more than 50 participants in total, including several new team members. Below are the highlights of the meeting.

### **Project management:**

- The LOTAR budget plan was reviewed and consolidated with the planned contracts to service providers for 2021.
- The LOTAR 2022 project and budget plans proposal were reviewed and finalized, with efforts under way to maintain the existing list of participants
- Overview of the new version 3 of the OAIS reference model planned to be released by ISO in 2022 (<https://cwe.ccsds.org/fm/Lists/Projects/AllItems.aspx>), and of its technical extensions “OAIS interoperability framework” to prepare systems for federated architectures, requesting the involvement of ICT specialists (Access to links in federated archives). LOTAR actions to update the related NAS/EN9300 parts as needed following publication.
- Regarding the status of standardization projects with close dependencies with the development of LOTAR parts:
  - 1) Development of information model and format standards:
    - status of preparation of AP242 ed3 New Work Item project; expected start of the project in Q1 2022,
    - status of [AP239 ed3](#) PLCS (“Product Life Cycle Support”) with an expected DIS ballot in Q1 2022, and of part 4000 “Core model”;
    - Planned publication of [AP243 ed1](#) MoSSEC as international standard in Q4 2021, with increasing need to integrate with the existing interoperability forums and the future MBSE IF.
    - 3D PDF DTS ballot ([ISO DTS 24064](#)) closed and the comments will be discussed in the Q4 2021 meeting of TC 171/SC2 WG7. Going forward the 3D PDF interoperability forum work is moving from the 3D PDF Consortium to the PDF Association.
  - 2) Organization of Interoperability Forums, running test rounds between PLM solutions:
    - Signature end of Aug. 2021 by PDES Inc, AFNeT and prostep ivip of of the Memorandum of Understanding for the MBx Interoperability Forums,
    - PDM-IF: status of testing the visual issue management use case and the “as designed – as planned product structures” use case.
    - [CAX-IF](#) and [EWIS IF](#): see summary in page 3. Meeting organized in parallel of the LOTAR meeting
- The LOTAR meeting schedule for 2022 was confirmed with a plan for 2 online meetings and 2 face-to-face meetings, one in Europe and one in the USA, and the coordination with the CAX-IF and EWIS-IF
- Need to plan the update of the LOTAR 5 years roadmap in order to take into account the future requirements to support the deployment of digital twins in the A&D. Expected LOTAR updated roadmap planned for end of 2021, input to be provided by of each LOTAR WG.
- The next LOTAR workshop will also be held online, 30 Nov. – 2 December 2021.

### **WG “LOTAR Mechanical and PMI” (Parts 1XX)**

- The Mechanical WG continues the review of the Part 100 and update the fundamentals about: - the tool generation, - Dependency of CAD essential information on use case, - and company risk management,
- The Mechanical WG launches the P132 Pilot #2 Assembly with fastener (based on user defined properties/feature).

## **WG “LOTAR Product Data Management” (Parts 2XX)**

- The team has refined two Use Cases with the PDM-IF:
  - “As-Designed to As-Built” (multi-Bill of Materials). Waiting on the PDM-IF test round report from the User Group in order to discuss evolutions of LOTAR multi-views use cases.
  - “Alternate and substitute parts”. To be proposed for the next test round.
- Advanced drafts of parts 210 and 230. Update definitions to align with ISO 10303 P4000 “core model” and AP242 ed2 draft (In Work). Statement of Work to be accepted for validation.
- Assessing part 200-1/205 Product Structure Validation against OASIS PDI (Preservation Descriptive Information) categories, to see if development is in parallel
- Proposal to capture domain-specific metadata requirements within domain parts themselves in appendices and to coordinate with Part 21 on the common metadata requirements.
- Developed proposal of what could be standard content across LOTAR domain parts (e.g. Appendix for Metadata, In-scope/Out-of-scope sections)
- Development of test datasets (toy airplane, Model Based Engineering demonstrator) with “as design - as planned” with effectivity and configuration management.
- Test environments needed in different PDM systems, such as Teamcentre, Windchill, 3DEXperience, with the support of member companies.
- Definition of the way of working to manage evolution of datasets for use cases (e.g. Github).

## **WG “LOTAR of Electrical Wiring Harness” (Parts 4XX)**

- The team has finalized 2 statements of work for services providers to develop the 2021 LOTAR electrical pilots based on AP242 ed2 for the use of Anchors in implementing External Element Reference from XML to Part 21 files.
- The team finalized a statement of work to develop a process to create schematron rules from AP242 ed2 Domain model, SysML, with a goal to provide a full xml validation beyond the capabilities of the Xml schema alone.
- Coordination with the EWIS IF for inputs to the preparation of Test round 4 (Sept. 2021 – March 2022), focused on AP242 ed2 electrical wiring harness Domain model XML with External Element reference to P21 3D or 2D geometry.
- The team has discussed the 2022 work plan of the LOTAR electrical WG.

## **WG “LOTAR of Model Based Systems Engineering” (Parts 5XX)**

- The MBSE team’s focus is the development of the Part 500 (General MBSE Archiving) and Part 520 (How to Archive Simulation / Analytical Models) documents. Actions assigned for next steps.
- Compiled a summary of needs, issues and potential projects impacting the formation of a MBSE Interoperability Forum. Next action is a coordination meeting of potential participants to explore collaboration options.
- Presentations by UC3M for Linking Requirements to Behavior Model, Modelon to Extend the FMI Archive Prototype, and Sanford Friedenthal, SST OMG, Moving Forward with SysML v2. The first two presentations were in response to new Use Cases defined to extend the FMI prototype produced in 2020. Completion scheduled for the end of 2021.
- The LOTAR MBSE Team is working with PDES MBSE Team to define a set of metadata requirements and templates applicable to the different model types, as an interim capability in preparation for future MoSSEC implementations.

## **Summary of the CAx IF on line meeting held on the 21 – 23 Sept. 2021**

- The CAx-IF Implementor Group held a number of highly productive technical sessions during the LOTAR Fall Meeting. Highlights include:
  - Review of Round 48J testing results and issues: Scope of testing included PMI, Assemblies in AP242 Domain Model XML, Composite Materials, Kinematics, Persistent Entity IDs, & User Defined Attributes
  - A special session was held with Subject Matter Experts to discuss Persistent IDs & UUIDs. The output of this session will be an update to the recommended practices and AP242 schema
- Joint CAx Implementor/User Group meeting covered progress on requirements and proposed extensions to AP242 and Recommended Practices documents,
  - in particular review of the requirement about the use defined parameters, saved views and composite.
  - The User Group presented the new requirement to the Implementor Group: Nutplate, Composite Rosette Guided by a curve 90°, Composite LLAI (Additional Geometries and Parameters, Splice Zones, No Drop Off Zone - Stay out Zone, Composite course starts point)
- Joint CAx-IF/EWIS-IF meeting to discuss common technical issues, primarily AP242 XML External Element References

## **Summary of the EWIS IF on line meeting held on the 22 – 23 Sept. 2021**

- The EWIS-IF User Group's prepared the scope and test data for the test rounds 4E (Sept. 2021 – March 2022), including Catia V5 files, STEP files, etc. Test round 4E will include Splices and Spare wires.
- The EWIS IF Implementer Group discussed specific technical issues identified during the running of the test round 3, including the need of formal quality control rules for AP242 ed2 XML files.
- Organization of two fruitful joint meetings of the EWIS IF User and Implementer Groups, including:
  - Presentation of the results of the test round 3 and the associated test suite documents by the Implementor Group,
  - Preparation of the test round 4E.

## **Summary of the MBx IF on line meeting held on the 24 Sept. 2021**

The MBx-IF User/Vendor Roundtable was very well attended. The following topics were covered:

- CAx-IF implementor group and user group progress and plans,
- EWIS-IF implementor group and user group advancements and future direction,
- NIST STEP File Analyzer recent updates near term plans,
- Vendor updates on their STEP development activities (Core Technologie, Datakit, Dassault Systems, Elysium, EPM Jotne, ITI, Kubotek, Siemens PLM).