CAx-IF Round 40J Summary

The CAx-IF completed its 40th round of CAD testing at its meeting October 9-11, 2017 in Myrtle Beach, SC, USA. Some of the highlights of this round were:

AP242 Business Object Model Assembly Structure with External References
- The CAx-IF started migration to the AP242 Technical Corrigendum
- There were some "work in progress" issues with properties and assembly structure

Alternative Shapes – Sheet Metal Use Case – Folded and Unfolded Shape
- This was the second test of this functionality
- Product Manufacturing Information (PMI) on folded shape only
- Full set of validation properties on both shapes

PMI
- 11 NIST models tested based on further updates of the native CAD models
- Identified element visibility in Saved Views as dedicated work topic
- Validation performed by ITI's CADIQ

Numerous technical issues were discussed during the meeting, primarily in the areas of Alternative Shapes, PMI, Kinematics, and Persistent IDs.

For the coming Round 41J of CAD testing, the CAx-IF will test the following functionality:

Semantic PMI Representation
- Based on subset of NIST MBE PMI Validation Project native CAD Models (2017).
- Graphic Presentation, associated to Representation
- Semantic PMI Validation Properties
- Editable PMI text strings

PMI Tessellated Presentation
- Keep parallel test cases for Graphic Presentation
- Tessellated Part Geometry
- Focus on Saved Views, element visibility and cross-highlighting

STEP AP242 BO Model XML Assembly Structure
- Looking for more challenging test models
- Include User Defined Attributes and Assembly Validation Properties

AP242 BO Model XML Kinematics (New!)
- Recommended Practices and Schema available
- Test models in work; will be available by December
- CAx-IF will support both approaches; "Kinematic Motion" (initially) and "Kinematic Mechanism" (later)
- JT-IF will start its work on "Kinematic Mechanism" in parallel

Alternative Part Shapes

- Sheet Metal Use Case (folded / unfolded part)
- Include Validation Properties for both shapes
- Include PMI on both shapes (new)

Composites

- Include two test cases for new capabilities supported by AP242 Ed.2 DIS

The CAx-IF now comprises a dedicated workgroup for the Engineering Analysis and Simulation domain, called the CAE-IF. Its first round of testing was kicked off the end of September, and will wrap up at the December LOTAR/CAx-IF meeting in Darmstadt Germany.

4 basic test cases including the following functionality:

- Number of nodes
- Number of elements
- Material data
- Boundary conditions & Applied loads

Recent updates that NIST has made to the STEP File Analyzer (SFA) include:

- Visualize tessellated geometry for PMI and parts
- Repetitive hole dimensions, **2X** ∅25 ± 0.1
- Saved View PMI toggle switch and orientation
- annotation_placeholder, composites support
- Part 21 Edition 3 support
- Visualization Only output
- AP209 viewer
  - Remove interior faces for solid models
  - Planning support for boundary conditions, loads
- Associated geometry for dimensions, tolerances, datums
- Automatic PMI checking and color-coding

Some operational accomplishments during the past six months include:

- Multi domain support in the CAx-IF Evaluation Statistics And Results (CAESAR) and the Bug Reporting Utility (BRUTUS)
- Migrated the CAx-IF.org website to new host and server
- Added file sharing capability to the CAx-IF private web site
- Support for the CAE-IF on both the public and private CAx-IF web sites
- Multi-language toggle (English/French) on CAx-IF public pages