GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT 2024

Validation Strategies for Enterprise Use of 3D Model Data

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About the Presenters

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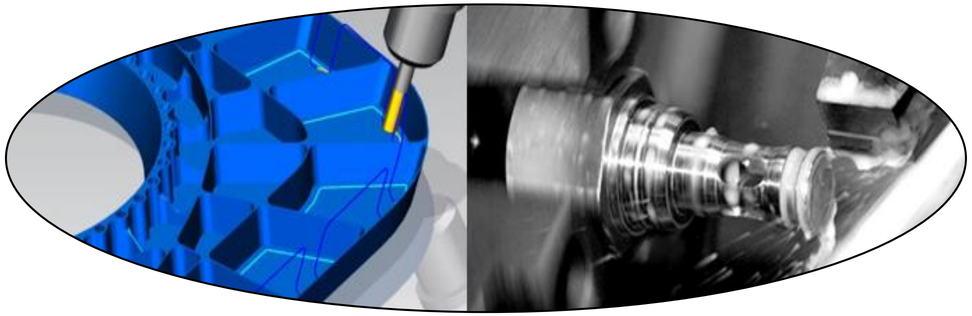
Session Objectives

- **What is driving enterprise 3D model validation?**
- **Validating JT at NGC**
- **Technical challenges for scalable validation**
- **PLM integration challenges and opportunities**
- **Strategies to get started**
- **Q/A**

Business Requirements Driving Enterprise Validation

- **Model Authority for Production**

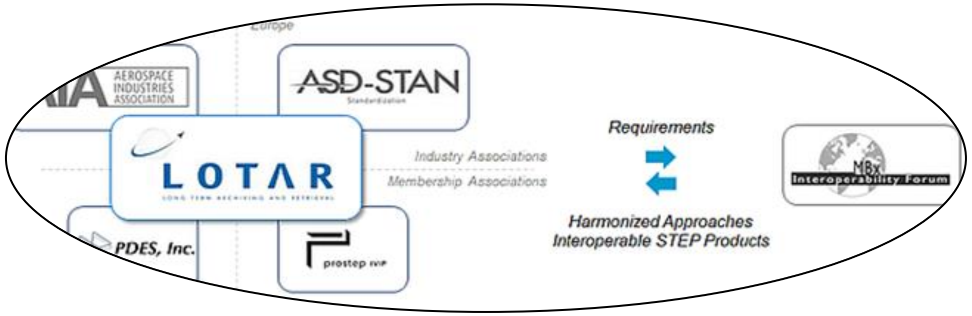


- **Industry Requirements**
  - **MIL-STD-31000 B**
  - **DoD 5000.97**
  - **FAA Type Certification**

DoD Instruction 5000.97

Digital Engineering

- **Standards Adoption and Data Archiving**
  - **ISO 10303-242 (STEP)**
  - **ISO 14306:2017 (JT)**
  - **EN/NAS 9300 (LOTAR)**

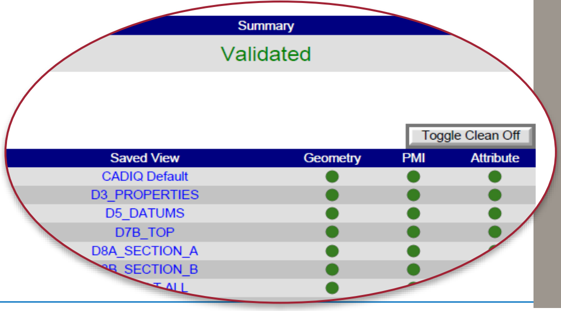


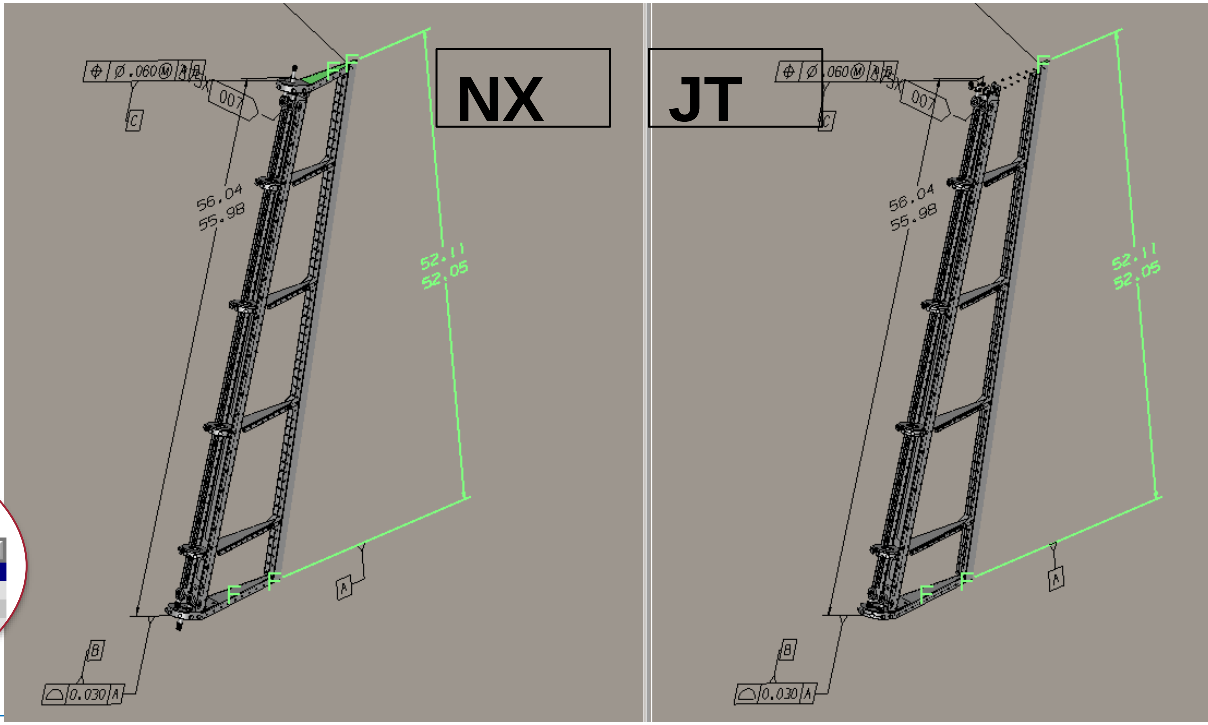
JT Validation at NGC

- **Why?**
  - **JT is heavily used in manufacturing with Siemens Easy Plan**
  - **Internal analysis averaged 2 hours+ per manual review per JT file**

- **How?**
  - **Identified issues related to assembly pmi and sidecar JTs**
  - **Modified templates for appropriate LOD**
  - **Integrated into Teamcenter Architecture**

- **Automated Validation Requirements**
  - **Handle large assemblies**
  - **Support JT assemblies with sidecar JTs**
  - **Check assembly structure, geometry and pmi**
  - **Minimum throughput targets**



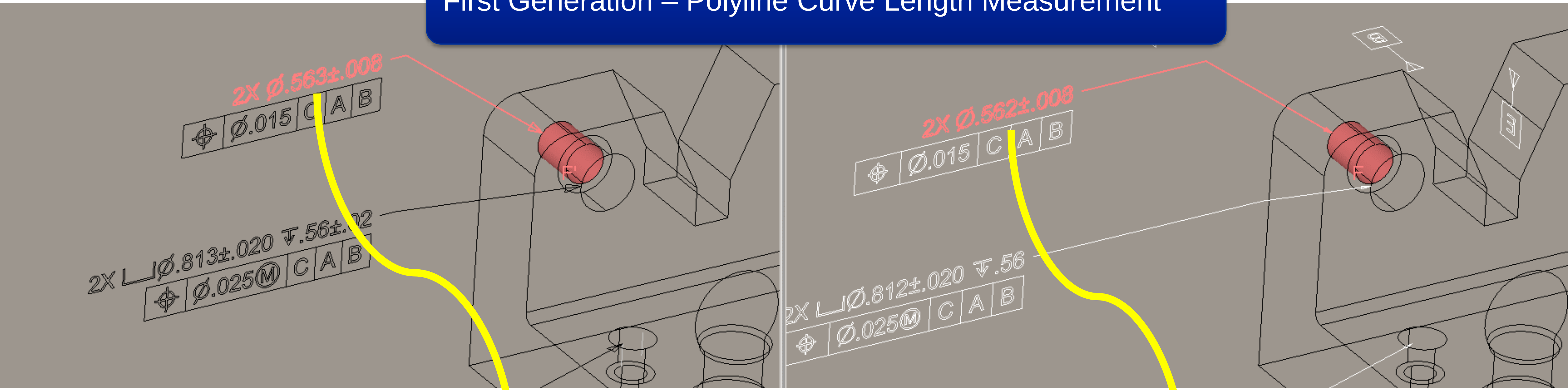


Technical Challenges to Scaling Validaiton

- **Advanced data loading/matching**
  - **Precise to Precise**
  - **Precise to Tesselated**
- **Flexibility handling legacy data structures**
- **Advanced processing of Graphical and Semantic PMI in Derivatives**
  - **Graphics and Semantic Content**
  - **Graphics with no Semantics**
  - **Semantics with no Graphics**
- **Workflow capable dispositioning**
- **Structured output for analytics**

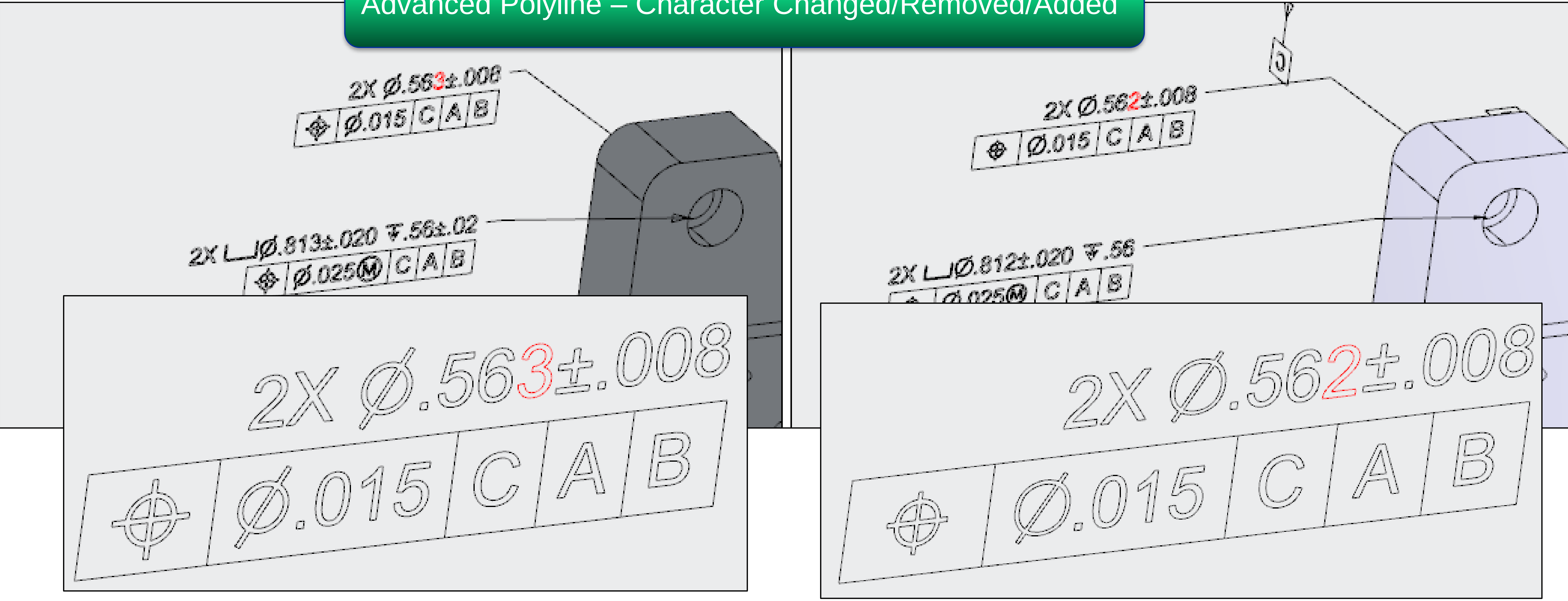
First Generation PMI Graphics Validation

First Generation – Polyline Curve Length Measurement

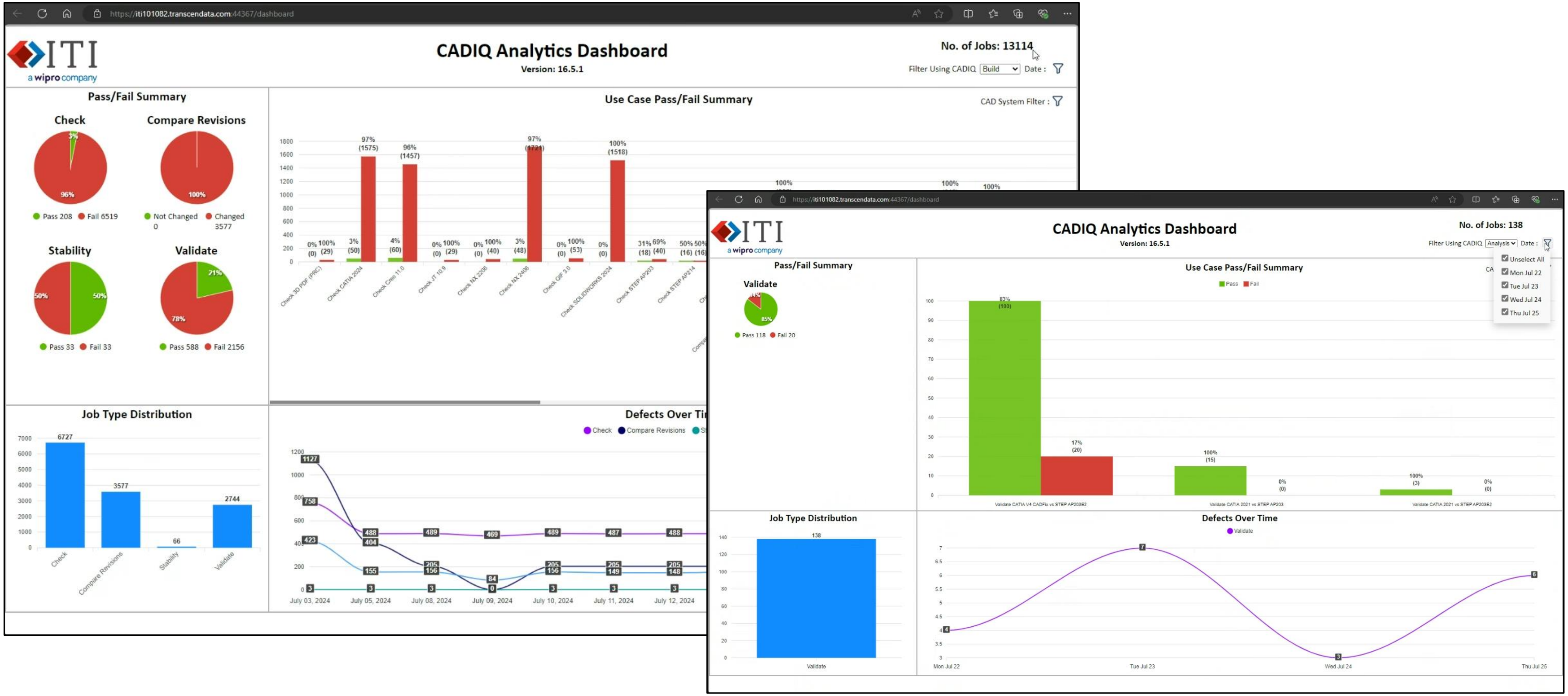


Advanced Polyline PMI Graphics Validation

Advanced Polyline – Character Changed/Removed/Added

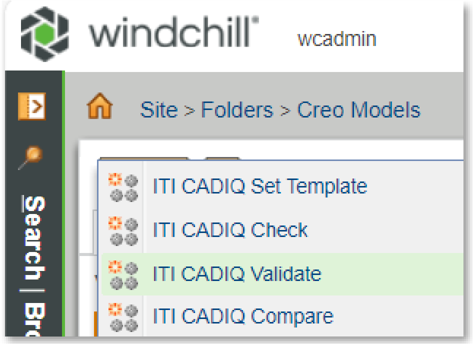


Administrative Tools for Analytics



CADIQ and PLM

Integration Purpose



- PLM/PDM is the de facto CAD / Engineering data repository
- Enables Engineering process digital thread (as opposed to Desktop)
- Results can reviewed, approved, and accessed by Enterprise users
- Integration into downstream system is possible

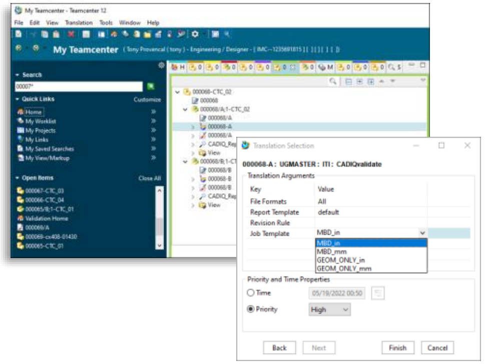
Features

- Trigger Validation or Compare in native mode within PLM
- Flexibility to understand PLM data model
- Plug in customer specific rendering software or translators
- Store results in PLM as a part of Item or Revision or Iteration

Supported PLM Systems

- Teamcenter
- Windchill
- Aras and DS (In works)
- Release schedule available to take advantage of CAD and PLM releases

Teamcenter Integration

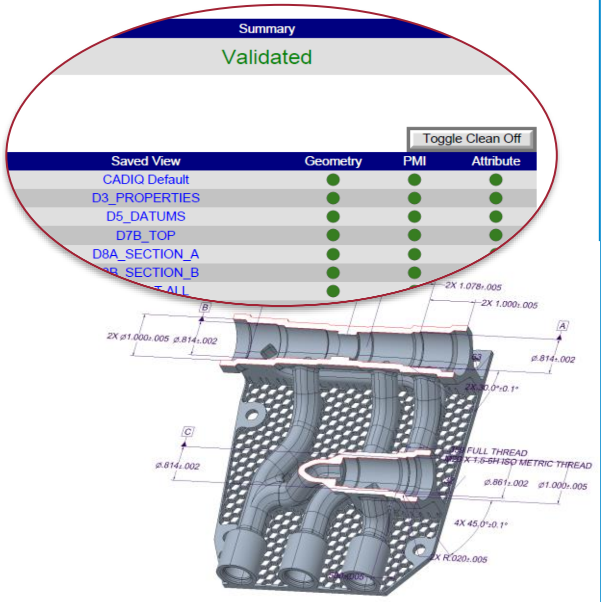


- Item Revision Compare
- JT Translation

CADIQ and PLM – Case Studies

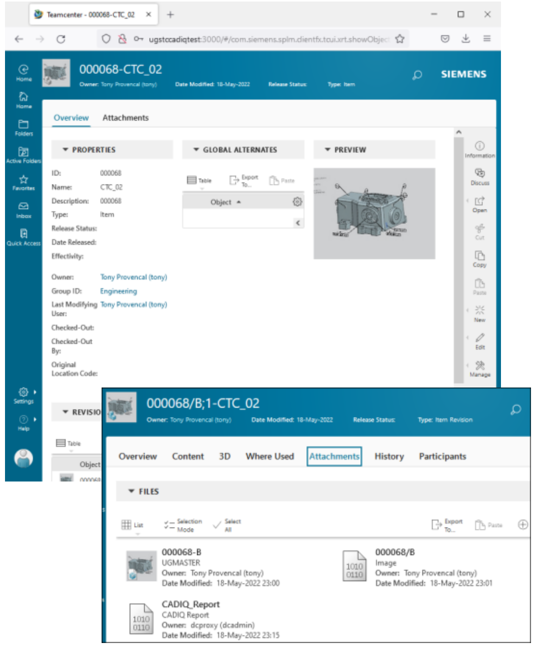
FA&D – Model Quality

- Check model quality for first generation MBD programs
- Trigger a workflow that has a pre-defined review and approval process before Part release
- Optional revision compare, and STEP validation available using UI
- Classification stamping and security marking on reports based on rules
- Configuration to store selected results
- Embedded dispositioning to approve/reject



Aerospace: 3D PDF Validation

- MBD definition in CATIA with validation of 3D PDF
- Use Teamcenter Dispatcher architecture to manage jobs and view status
- Attach reports to Item Revision
- Analyze XML reports for error type tracking



In partnership with Anark

Strategies to Get Started

- Identify primary and/or secondary validation use cases
  - Focus on reliable/mature data for initial automation
  - Don’t try to do everything all at once
- Identify desired LOD for validation results
  - Engineering feedback
  - Data Approval/Authorization
  - SME/Administrative analysis
  - Contract compliance
- Identify what is appropriate to manage in PLM, and when to start managing it
- Leverage Pilot Projects to Prove out Infrastructure and Data Model

Questions?