EWIS Interoperability Forum
Test Round 02E

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Document History

Release	Date	Change
1.0	2020-09-09/11	Initial Release

1 Introduction

This document describes the suite of test cases to be used for the first round of testing in the Electrical Wire Harness Interconnect System (EWIS) Implementer Forum (IF). The EWIS-IF is a joint testing forum, organized and facilitated by AFNeT and PDES, Inc.. The test rounds of the EWIS-IF concentrate primarily on testing the interoperability and compliance of STEP processors based on AP242 Ed. 2, amendment (upcoming)

The test rounds in general combine testing of synthetic and production models. Production models will in most cases be provided by the member companies of the organizations AFNeT and PDES, Inc.. When production models are not available from the member companies, “production-like” models will be solicited from the various EWIS-IF participants.

This test round focuses on the AP242ed2 Domain Model XML format.

1.1 Functionality tested in this round

Functionality tested in this round relates to:

- **EWH_Assembly1** with the specific needs for
  - part categories:
    - discrete_part, raw_material_by_length
    - wire, cable, connector, lug
  - WiringHarnessAssemblyDesign, subtype of AssemblyDefinition
  - QuantifiedOccurrence, WireOccurrence, CableOccurrence
- **EWH_Topology1**
  - WiringHarnessAssemblyDesign with topology
  - EdgeBasedTopologicalRepresentationWithLengthConstraint, with EdgeBoundedCurveWithLength & BoundedCurveWithLength, Vertex-Point & Point, ConnectedEdgeSet
- **EWH_Topology2**
  - extension of EWH-Topology1 with simplified EWH-Assembly1
  - enhanced topology model with Path, SubEdge, PointOnCurve
  - GeometryToTopologyModelAssociation
- **EWH_Topology3**
  - extension of EWH-Topology2
  - external reference to complete p21 files for part geometry
  - external element reference into p21 files to select curves and axis_placements
  - TopologyToGeometryModelAssociation
- **EWH_Connectivity1**
  - basic connectivity between a simple connector, a terminal lug, a wire and a cable
  - PartTerminal, OccurrenceTerminal
  - WireIdentification & WireOccurrenceTerminal

  - CableOccurrenceTerminal & CableOccurrenceTerminalLocationGroup
  - electrical AssemblyShapeJoint & AssemblyShapeJointItemRelationship

- **EWH_Connectivity2**
  - extension of Connectivity1
  - ContactFeatureDefinition for cavity_profile and contact_profile with corresponding ContactFeatureDefinitionFitRelationship
  - PartContactFeature & OccurrenceContactFeature
  - mechanical AssemblyShapeJoint & AssemblyShapeJointItemRelationship

1.2 General testing instructions for this round

The general procedures for communication of models and statistics are outlined in a separate document, named ‘General Testing Instructions’ (to be provided at a later time).

All documents and public results of the EWIS-IF will be published on the web: https://www.cax-if.org/

1.3 Testing Schedule

The following schedule has been agreed on for Round 2:

2020-09-09/10	Training session and introduction for round2 distribution of this and related documents, including hand crafted XML examples
2020-10-13	IG conference call: review of materials and implementation status
2020-11-03	Release of initial EWIS recommended practices, derived from initial EWH tutorial
2020-12-xx	IG conference call: review of implementation status
2021-01-xx	IG conference call: review of implementation status
2021-02-xx	IG conference call: review of implementation status
2021-03-xx	LOTAR meeting, presentation of results

The EWIS-IF Round2E Review meeting will take place in conjunction with LOTAR workshop. In addition, conference calls and web sessions will be available for those not attending the meeting to dial in.

2 Document references

This test round is based on the following documents:

- STEP: ISO 10303 “Industrial automation systems and integration -- Product data representation and exchange”
  - AP242 ed2: ISO/IS 10303-242 (2020): Application protocol: Managed model-based 3D engineering” and the changes in the upcoming amendment
  - XSD of AP242 ed2 amendment for the Domain Model documented in SysML.
- Recommended Practices for AP242 Business Object Model XML Assembly Structure, Release 2.1; 2019-12-20 (https://www.cax-if.org/joint_testing_info.html#recpracs). Note: This document is based on AP242 ed1
- STEP AP 242 Electrical Harness XML Tutorial, Version: pre 1.2, Date: 2019-02-22
  - Example file: HarnessExample_v2-0.xml (hierarchical assembly)
  - Example file: HarnessExample_flat_v2-0.xml
- AP242 ed2 Electrical Wire Harness (EWS) Tutorial – Slides part 1 & part 2, both v2.0, 2020-09-09
- EWIS Interoperability Forum, Test Suite v2.0, 2020-09-09

3 Synthetic Test Case Specifications

The details for testing are documented in the EWIS-IF Test-Suite v1.0.

This round contains the following formal test cases (all):

- EWH-Assembly1
- EWH-Topology1
- EWH-Topology2
- EWH-Topology3
- EWH-Connectivity1
- EWH-Connectivity2

At of today these test cases are only suitable for preprocessor testing, as no example EWIS corresponding XML files are available yet. The responsible team is trying to make such files available as soon as possible.

In addition implementers are encouraged to try to import the provided XML files from the EWIS tutorial and to report about the results.