



EWIS Interoperability Forum Test Round 03E

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Contacts

Lothar Klein	Sophie HERAIL	Daniel Ganser
Steinweg 1	CIMPA S.A.S.	Gulfstream Aerospace Corporation
36093 Künzell / Germany	Centreda 1	BTC
	4, Avenue Didier Daurat	171 Crossroads Parkway
	31700 Blagnac, France	Savannah, GA 31407, U.S.A.
	Subcontractor for AIRBUS	
	Operations SAS – IZMA	
lothar.klein@lksoft.com	sophie.herail@airbus.com	dan.ganser@gulfstream.com

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Document History

Release	Date	Change
1.0	2021-06-16	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
- **EWH_Connectivity3**
 - EWH design with coaxial connector assembly and cable cable
- **EWH_Connectivity4**
 - EWH design with a 2 core shielded cable, with connector with backshell, one of which is electrified while for the other a shield sleeve is used

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 3:

2021-05-xx	IG conference call: Presentation & training of draft test suite 3
2021-06-16	EWIS-IF: Presentation & training of test suite 3
2021-07-20	IG conference call: review of implementation status
2021-08-17	IG conference call: review of implementation status
2021-09-07	IG conference call: review of implementation status
2021-09-22/23	EWIS-IF meeting, presentation of results
2021-09-24	CAx/MBx/EWIS-IF Round table

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 2.99.03; 2021-03-24
https://www.cax-if.org/joint_testing_info.html#recpracs
- 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 v2.0, 2020-09-09
 - Slides part 2 v2.2, 2021-06-16
- EWIS Interoperability Forum, Test Suite v3.0, 2021-06-16

3 Synthetic Test Case Specifications

The details for testing are documented in the EWIS-IF Test-Suite v3.0.

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

- EWH-Assembly1
- EWH-Topology1
- EWH-Topology2
- EWH-Topology3
- EWH-Connectivity1
- EWH-Connectivity2
- EWH-Connectivity3
- EWH-Connectivity4

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.