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Software Interface for Maintenance Information Collection and Analysis (SIMICA) – Part 2: Exchanging Maintenance Action Information via the Extensible Markup Language (XML)

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SOFTWARE INTERFACE FOR MAINTENANCE INFORMATION COLLECTION AND ANALYSIS (SIMICA) –

Part 2: Exchanging Maintenance Action Information via the Extensible Markup Language (XML)

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The text of this International Standard is based on the following documents:

IEEE Std	FDIS	Report on voting
1636.2 (2018)	91/1815/FDIS	91/1826/RVD

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IEEE Standard for Software Interface for Maintenance Information Collection and Analysis (SIMICA): Exchanging Maintenance Action Information via the Extensible Markup Language (XML)

Sponsor

IEEE Standards Coordinating Committee 20 on Test and Diagnosis for Electronic Systems

Approved 27 September 2018

IEEE-SA Standards Board

Abstract: Promoting and facilitating interoperability components of automatic test systems where actions taken during maintenance need to be shared is addressed in this standard. The standard thus facilitates the capture of maintenance action information data in storage devices and databases, facilitating online and offline analysis. The maintenance action information schema becomes a class of information that can be used within the SIMICA family of standards. The exchange format is expressed in both the OWL and XML formats.

Keywords: automated test system (ATS), extensible markup language (XML), IEEE 1636.2™, maintenance action information (MAI), OWL ontology, Software Interface for Maintenance Information Collection and Analysis (SIMICA), XML schema

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Introduction

This introduction is not part of IEEE Std 1636.2-2018, IEEE Standard for Software Interface for Maintenance Information Collection and Alalysis (SIMICA): Exchanging Maintenance Action Information via the Extensible Markup Language (XML).

Maintainers of complex systems require the ability to capture and share maintenance action information in a way that supports such activities as performance analysis, post production product improvement, maintenance process improvement, and diagnostic maturation. Principal stakeholders of this project include but are not limited to maintenance organizations within various Departments/Ministries of Defense, the commercial airlines, the automotive industry, and the telecommunications industry. This standard is being developed as a component of the IEEE Std 1636™ Software Interface for Maintenance Information Collection and Analysis (SIMICA) project. SIMICA's purpose is to specify a software interface for access, exchange, and analysis of product diagnostic and maintenance information. Maintenance action information provides a subset of the data needed to satisfy SIMICIA requirements.

This document provides the description of the maintenance action information elements.

IEEE Standards downloads and executable files

Files are available in the IEEE Std 1636.2-2018 directory located at: https://standards.ieee.org/downloads.

IEEE Standard for Software Interface for Maintenance Information Collection and Analysis (SIMICA): Exchanging Maintenance Action Information via the Extensible Markup Language (XML)

1. Overview

1.1 General

Software Interface for Maintenance Information Collection and Analysis (SIMICA) is a family of IEEE standards, associated web ontologies (OWL), and extensible markup language (XML) schemas which allow automatic test system (ATS), test result and session information, and maintenance action information to be exchanged in a common format adhering to the OWL and XML standards.

The SIMICA family of standards has been developed and is being maintained under the guidance of IEEE Standards Coordinating Committee 20 (SCC20) to serve as a comprehensive environment for integrating test results, test session information, and maintenance action information, while allowing this unit under test (UUT) related data to be interchanged between heterogeneous systems.

The SIMICA family of standards is organized as a base Standard (IEEE Std 1636™) and two (2) 'dot' standards:

— Test Results and Session Information (IEEE Std 1636.1™)

— Maintenance Action Information (IEEE Std 1636.2™)

The SIMICA base document and its relationship to this document is depicted in Figure 1.

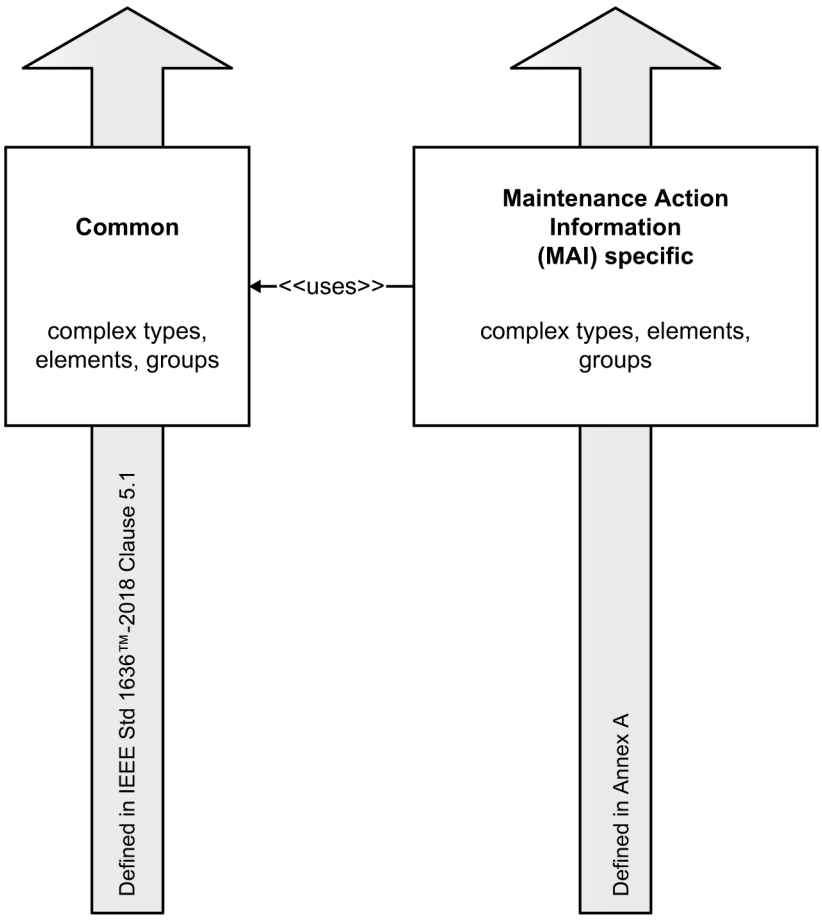

Figure 1—Relationship between this document and the SIMICA base document

1.2 Scope

The scope of this standard is the definition of an exchange format, utilizing XML, for exchanging maintenance action information (MAI) associated with the removal, repair, and replacement of system components to maintain/support an operational system.

1.3 Purpose

The purpose of this standard is to promote and facilitate interoperability between components of a test system and applications in a maintenance environment where MAI needs to be shared. The standard will facilitate the capture and exchange of unit under test (UUT) specific maintenance information, facilitating online and offline analysis of the maintenance process. The maintenance action schema defines a class of information to be used within the SIMICA family of standards.

1.4 Application

1.4.1 Of this document

This document provides formal specifications of the information required for the development of shared maintenance action data. Anticipated users of this standard include the following:

a) System developers
b) System maintainers
c) Test program set (TPS) developers
d) TPS maintainers
e) Automatic test equipment (ATE) system developers
f) ATE systems maintainers
g) Test instrument developers
h) Reliability, maintainability, and diagnostic analytical applications

1.4.2 Of this document's annexes

This document includes two annexes. Of these two, one is normative (Annex A).

Annex A contains descriptive information about each of the XML schema and OWL ontology elements and types.

Annex B contains the bibliography. This is informative, and thus is provided strictly as information, for both users and maintainers of this document.

1.5 Precedence

In the event of conflict between this document and a normatively referenced standard (see Clause 2), the normatively referenced standard, as it applies to the information being produced, shall take precedence.

In the event of conflict between this document and the SIMICA family base document (IEEE Std 1636-2018), the SIMICA family base document shall take precedence.

In the event of conflict between this document and another SIMICA family component standard, this document shall take precedence.

1.6 Conventions used in this document

1.6.1 General

All groups, complex types, simple types, and attribute groups are listed in Annex A; Descriptive information for each is provided.

Where there are references to a groups, complex types, simple types, and attribute groups within the associated XML schema or OWL ontology (MaintenanceActionInformation.xsd and MAI.owl), the convention of [name] at [element] is used to indicate where the user can locate the data within either the MaintenanceActionInformation.xsd or MAI.owl files.

Example: 1636.2-2018 download at: http://standards.ieee.org/downloads indicates that the user is to open the MaintenanceActionInformation.xsd at the location provided and find for the schema definition.

The namespace prefix "mai:" identifies that the type or attribute group associated with this document.

All specifications for OWL and XML within this document are given in the Courier type font and italicized.

1.6.2 Word usage

In this document, the word *shall* is used to indicate a mandatory requirement. The word *should* is used to indicate a recommendation. The word *may* is used to indicate a permissible action. The word *can* is used for statements of possibility and capability.

2. Normative references

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IEEE Std 1636™-2018, IEEE Standard for Software Interface for Maintenance Information Collection and Analysis (SIMICA).[1,2]

World Wide Web Consortium, (W3C) extensible Markup Language (XML), 1.0 (Fifth Edition) Proposed Edited Recommendation.[3]

World Wide Web Consortium, (W3C) OWL Web Ontology Language (OWL 2), W3C Recommendation.

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