

IEEE Standard for Software Interface for Maintenance Information Collection and Analysis (SIMICA): Exchanging Test Results and Session Information via the eXtensible Markup Language (XML)

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**IEEE Standard for Software Interface
for Maintenance Information Collection
and Analysis (SIMICA):
Exchanging Test Results and Session
Information via the eXtensible Markup
Language (XML)**

Sponsor

**IEEE Standards Coordinating Committees of
Test and Diagnosis for Electronic Systems (SCC20)**

Approved 23 August 2013

IEEE-SA Standards Board

Abstract: This standard is intended to promote and facilitate interoperability between components of automatic test systems where test results need to be shared. The standard thus facilitates the capture of test results data in storage devices and databases, facilitating online and offline analysis. The test results schema becomes a class of information that can be used within the SIMICA family of standards. The exchange format utilizes the XML formats.

Keywords: automated test system (ATS), eXtensible markup language (XML), IEEE 1636.1™, session information, Software Interface for Maintenance Information Collection and Analysis (SIMICA), test results, XML schema

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

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PDF: ISBN 978-0-7381-8560-6 STD98329
Print: ISBN 978-0-7381-8561-3 STDPD98329

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Introduction

This introduction is not part of IEEE Std 1636.1™-2013, IEEE Standard for Software Interface for Maintenance Information Collection and Analysis (SIMICA): Exchanging Test Results and Session Information via the eXtensible Markup Language (XML).

Maintainers of complex systems require the ability to capture and share test result 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 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. Clause 4, Test results and session information, provides a subset of the data needed to satisfy SIMICA requirements.

The use of formal information models will facilitate exchanging historical test results between information systems and analysis tools. The models will facilitate creating open system software architectures for maturing system diagnostics.

The XML schema described in this standard where appropriate utilizes and references components of the IEEE Std 1671™ schema set.

It is anticipated that these schemas will be used throughout industries that utilize diagnostic and maintenance data as an exchange format that can be understood by humans or machines. In order to ensure wide acceptance throughout the user community, the schemas have been designed to encompass a broad range of use cases. To accommodate use cases beyond the released design, the schemas provide means for user extensibility.

It is anticipated that the IEEE Std 1636.1 schema will be used throughout the automatic test equipment (ATE) industry as an exchange format that can be understood by humans or machines. In order to ensure wide acceptance throughout the user community, the schemas have been designed to encompass a broad range of use cases.

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1. Overview

The XML schema and EXPRESS model described in this document are intended for the recording of the history of the execution and observations from a test or test session. This information includes results data directly generated by test equipment or by the test equipment operating software. The combination of this information will aid in the improvement of the test process.

The XML schema associated with this standard is based on World Wide Web Consortium (W3C)¹ XML eXtensible Markup Language (XML) 1.0 Proposed Edited Recommendation [B1].²

The EXPRESS model associated with this standard is based on ISO 10303-11:1994 [B9].

¹ W3C is a registered trademark of the World Wide Web Consortium.

² Information on references can be found in Annex C.

1.1 Scope

The scope of this standard is the definition of an exchange format, utilizing XML, for exchanging data resulting from executing tests of a unit under test (UUT) via a test program in an automatic test environment. The standard uses the information models of IEEE Std 1636TM-2009³ as a foundation.

1.2 Purpose

The purpose of this standard is to specify a software interface for access, exchange, and analysis of test result information. The standard enables the capture of test results data, facilitating data analysis to assess the effectiveness of test and diagnostic processes applied to complex systems. The test results information model and XML schema define the semantics and exchange format for information to be used among applications implementing the SIMICA family of standards.

1.3 Application

1.3.1 Of this document

This document provides formal specifications of the information required for the development of shared maintenance data and the results of testing. These are applicable to both the SIMICA family of standards and the ATML family of standards.

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 system maintainers
- g) Test instrument developers

1.3.2 Of this document's annexes

This document includes three annexes. Of these three, two are normative (Annex A and Annex B).

Annex A contains the description of each of the XML schema elements and types.

Annex B contains the description of the EXPRESS and EXPRESS-G model elements.

Annex C is informative, and thus are provided strictly as information, for both users and maintainers of this document.

³ Information on references can be found in Clause 2.