

# IEEE Recommended Practice for Using IEEE 1671.2™ Instrument Description Templates for Describing Synthetic Instrumentation for Classes of Instruments such as Waveform Generators, Digitizers, External Oscillators, and Up and Down Converters

IEEE Standards Coordinating Committee 20

Sponsored by the

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



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Test and Diagnosis for Electronic Systems**

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**IEEE-SA Standards Board**

**Abstract:** Instrument Description templates, compliant with IEEE Std 1671.2-2012, that providers of synthetic instruments should use to describe waveform generators, digitizers, external local oscillators, and up and down converters are provided in this recommended practice. These synthetic instruments may be integrated in an automatic test system (ATS) that is to be used to test and diagnose a unit under test (UUT).

**Keywords:** ATML instance document, ATS, automatic test equipment (ATE), Automatic Test Markup Language (ATML), automatic test system, IEEE 1671.2™, IEEE 1871.1™, instrument, instrumentation, synthetic instrument, XML schema

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## Participants

At the time this IEEE recommended practice was completed, the 1871.1 Working Group had the following membership:

**Mike Seavey, *Chair***

Chris Gorringer  
Chatwin Landsdowne

Teresa Lopes  
Scott Mischa  
Ion Neag

John Sheppard  
John Stabler

The following members of the individual balloting committee voted on this recommended practice. Balloters may have voted for approval, disapproval, or abstention.

Malcom Brown  
Keith Chow  
David Droste  
William Frank  
Chris Gorringer  
Randall Groves  
Werner Hoelzl

Anand Jain  
Yuri Khersonsky  
Teresa Lopes  
Edward McCall  
Mukund Modi  
Ion Neag

Michael Newman  
Leslie Orlidge  
Bartien Sayogo  
Mike Seavey  
Joseph Stanco  
Walter Struppler  
Daidi Zhong

When the IEEE-SA Standards Board approved this recommended practice on 10 December 2014, it had the following membership:

**John Kulick**, *Chair*  
**Jon Walter Rosdahl**, *Vice Chair*  
**Richard H. Hulett**, *Past Chair*  
**Konstantinos Karachalios**, *Secretary*

Peter Balma  
Farooq Bari  
Ted Burse  
Clint Chaplin  
Stephen Dukes  
Jean-Philippe Faure  
Gary Hoffman

Michael Janezic  
Jeffrey Katz  
Joseph L. Koepfinger\*  
David J. Law  
Hung Ling  
Oleg Logvinov  
T. W. Olsen  
Glenn Parsons

Ron Petersen  
Adrian Stephens  
Peter Sutherland  
Yatin Trivedi  
Phil Winston  
Don Wright  
Yu Yuan

\*Member Emeritus

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Richard DeBlasio, *DOE Representative*  
Michael Janezic, *NIST Representative*

Don Messina  
*IEEE-SA Content Production and Management*

Patricia Gerdon  
*IEEE-SA Technical Program Operations*

## Introduction

This introduction is not part of IEEE Std 1871.1™-2014, IEEE Recommended Practice for Using IEEE 1671.2™ Instrument Description Templates for Describing Synthetic Instrumentation for Classes of Instruments such as Waveform Generators, Digitizers, External Oscillators, and Up and Down Converters.

The Synthetic Instrument Working Group (SIWG) was formed, at Department of Defense request, to define synthetic instrumentation and its attributes. The SIWG also developed a framework that balances user and supplier objectives, facilitates rapid technology advancements and adaption throughout the test life cycle, and complements/supports other relevant test and measurement industry activities.

The goals or desired effects of the SIWG activities were to:

- a) Reduce the total cost of ownership of the automatic test system (ATS).
- b) Reduce time to develop and field new or upgraded ATS's.
- c) Provide greater flexibility to the war fighter through the U.S. and coalition partner's interoperable ATS's.
- d) Reduce the ATS's logistics footprint.
- e) Reduce the ATS's physical footprint.
- f) Improve the quality of test.

The SIWG addressed the reductions from the test and measurement perspective. The SIWG efforts resulted in both the definition of synthetic instruments and the specifications of their respective attributes.

Synthetic instruments were originally part of IEEE Std 1671.2-2008, as both an example of *InstrumentDescription* instances as well as to provide a definition of the necessary parameters/attributes to document a synthetic instrument as defined by the SIWG.

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## 1. Overview

### 1.1 Scope

This recommended practice provides Instrument Description templates, compliant with IEEE 1671.2, that providers of synthetic instruments should use to describe waveform generators, digitizers, external local oscillators, and up and down converter.