TC 91 WG 15

The Bird’s Eye-View of ATS Standards (BVAS)

2022-5-18

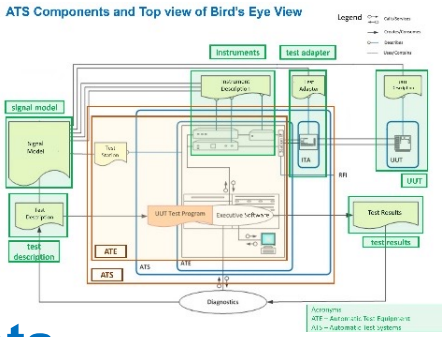
Hiromi Yamashita

Bird's Eye-View of ATS Standards

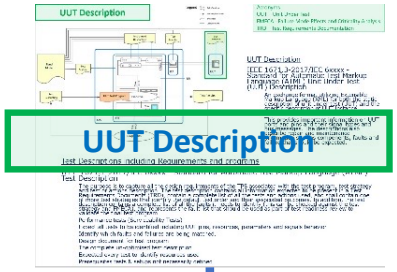
STRUCTURE

TOP Layer

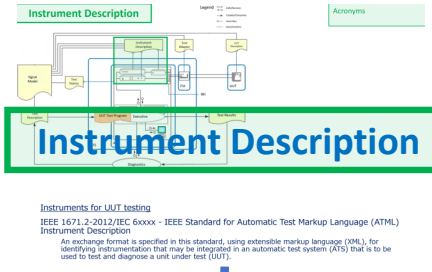
Top view of Bird's Eye View



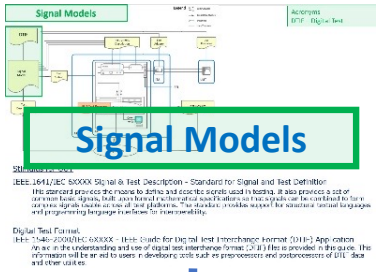
2nd Layer : components



UUT Description



Instrument Description



Signal Models

3rd Layer : work samples

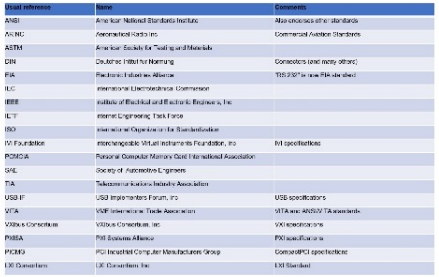
coming soon

coming soon

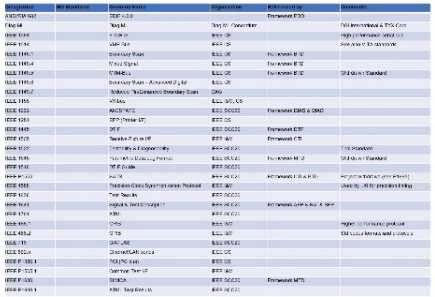
coming soon

4th Layer : reference others

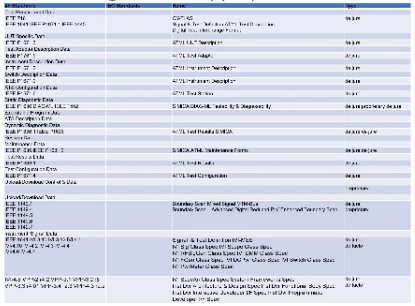
Organizations producing relevant standards

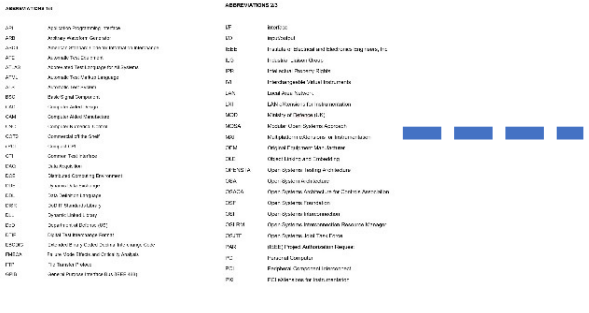


ATS related standards 1/2

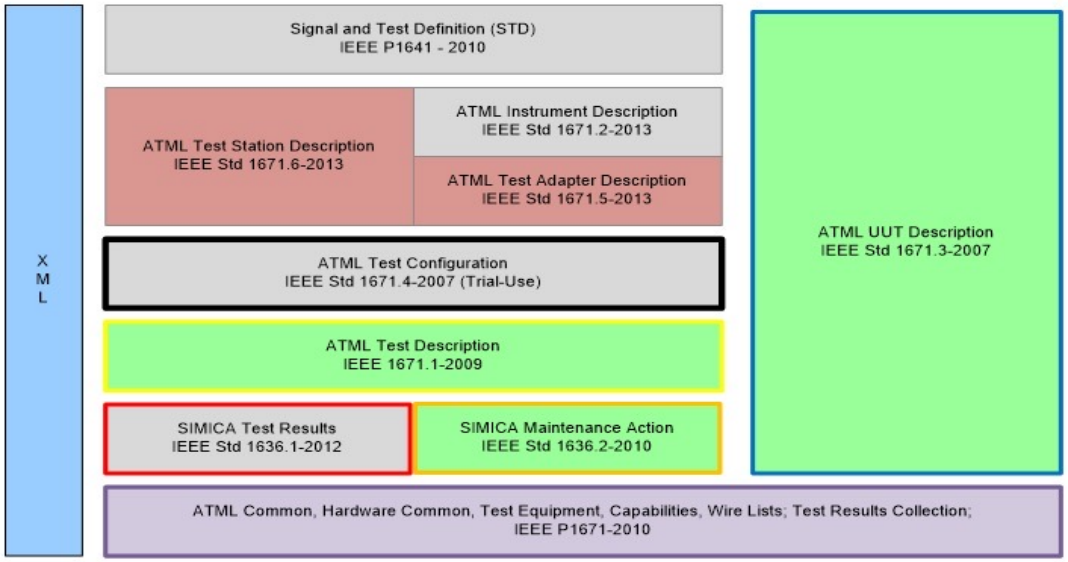


data and signals with appropriate standards





ATML family



What are ATML Standards

ATML – IEEE Std. 1671™ /IEC 61671 Ed 1.0

- Automatic Test Mark-up Language
- A suite of XML standards
- Supporting information interchange
- IEEE 1671 – ATML for exchanging Automatic Test Equipment and Test Information via XML
- IEEE 1671.1 – Test Description
- IEEE 1671.2 – Instrument Description
- IEEE 1671.3 – UUT Description
- IEEE 1671.4 – Test Configuration
- IEEE 1671.5 – Test Adaptor
- IEEE 1671.6 – Test Station

Signal Modelling IEEE Std.1641 (IEC 62529 Ed 2.0)

Test Results IEEE Std. 1636.1 (IEC 61636-1 Ed 1.0)

ABBREVIATIONs

ABBREVIATIONS 1/3

API	Application Programming Interface
ARB	Arbitrary Waveform Generator
ASCII	American Standard Code for Information Interchange
ATE	Automatic Test Equipment
ATLAS	Abbreviated Test Language for All Systems
ATML	Automatic Test Markup Language
ATS	Automatic Test System
BSC	Basic Signal Component
CAD	Computer Aided Design
CAM	Computer Aided Manufacture
CNC	Computer Numerical Control
COTS	Commercial off the Shelf
cPCI	Compact CPI
CTI	Common Test Interface
DAQ	Data Acquisition
DCE	Distributed Computing Environment
DDE	Dynamic Data Exchange
DDL	Data Definition Language
DISR	DoD IT Standards Library
DLL	Dynamic Linked Library
DoD	Department of Defense (US)
DTIF	Digital Test Interchange Format
EBCDIC	Extended Binary Coded Decimal Interchange Code
FMECA	Failure Mode Effects and Criticality Analysis
FTP	File Transfer Protocol
GPIB	General Purpose Interface Bus (IEEE 488)

ABBREVIATIONS 2/3

I/F	interface
I/O	input/output
IEEE	Institute of Electrical and Electronics Engineers, Inc
ILG	Industrial Liaison Group
IPR	Intellectual Property Rights
IVI	Interchangeable Virtual Instruments
LAN	Local Area Network
LXI	LAN eXtensions for Instrumentation
MOD	Ministry of Defence (UK)
MOSA	Modular Open Systems Approach
MXI	Multiplatform eXtensions for Instrumentation
OEM	Original Equipment Manufacturer
OLE	Object Linking and Embedding
OPENSTA	Open Systems Testing Architecture
OSA	Open System Architecture
OSACA	Open Systems Architecture for Controls Association
OSF	Open Systems Foundation
OSI	Open Systems Interconnection
OSI-RM	Open Systems Interconnection-Resource Manager
OSJTF	Open Systems Joint Task Force
PAR	(IEEE) Project Authorization Request
PC	Personal Computer
PCI	Peripheral Component Interconnect
PXI	PCI eXtensions for Instrumentation

ABBREVIATIONs

ABBREVIATIONS 3/3

RAI	Resource Adapter Interface
RF	Radio Frequency
RFI	Receiver Fixture Interface
RISC	Reduced Instruction Set Computer
SIWG	Synthetic Instruments Working Group
SLGAT	Standards Liaison Group for Automatic Test
STWGAT	Standards Technical Working Group for Automatic Test
TOGAF	The Open Group Architecture Framework
TPS	Test Program Set
TRD	Test Requirements Documentation
TSF	Test Signal Framework
USB	Universal Serial Bus
UUT	Unit Under Test
VXI	VMEbus eXtensions for Instrumentation
XML	eXtensible Markup Language

Organizations producing relevant standards

Usual reference	Name	Comments
ANSI	American National Standards Institute	Also endorses other standards
ARINC	Aeronautical Radio Inc	Commercial Aviation Standards
ASTM	American Society for Testing and Materials	
DIN	Deutches Intitut fur Normung	Connectors (and many others)
EIA	Electronic Industries Alliance	"RS 232" is now EIA standard
IEC	International Electrotechnical Commission	
IEEE	Institute of Electrical and Electronic Engineers, Inc	
IETF	Internet Engineering Task Force	
ISO	International Organization for Standardization	
IVI Foundation	Interchangeable Virtual Instruments Foundation, Inc	IVI specifications
PCMCIA	Personal Computer Memory Card International Association	
SAE	Society of Automotive Engineers	
TIA	Telecommunications Industry Association	
USB-IF	USB Implementers Forum, Inc	USB specifications
VITA	VME International Trade Association	VITA and ANSI/VITA standards
VXIbus Consortium	VXIbus Consortium, Inc	VXI specifications
PXISA	PXI Systems Alliance	PXI specifications
PICMG	PCI Industrial Computer Manufacturers Group	CompactPCI specifications
LXI Consortium	LXI Consortium, Inc	LXI Standard

Objective ;

The Bird’s-eye View of ATS Standards (BVAS)

The original plan ;

- first step, current bird's eye view
- second step, proposal of new standard
- third step, application to other industries

A new proposal ;

- first step, current bird's eye view
- second step, proposal of new standard
- third step, integration with a new project, and promotion of standardization.

TC 91 WG 15

High-level System Test Methodology & Test Language

2022-5-18

Hiromi Yamashita

What’s New in Japan TC91/WG15

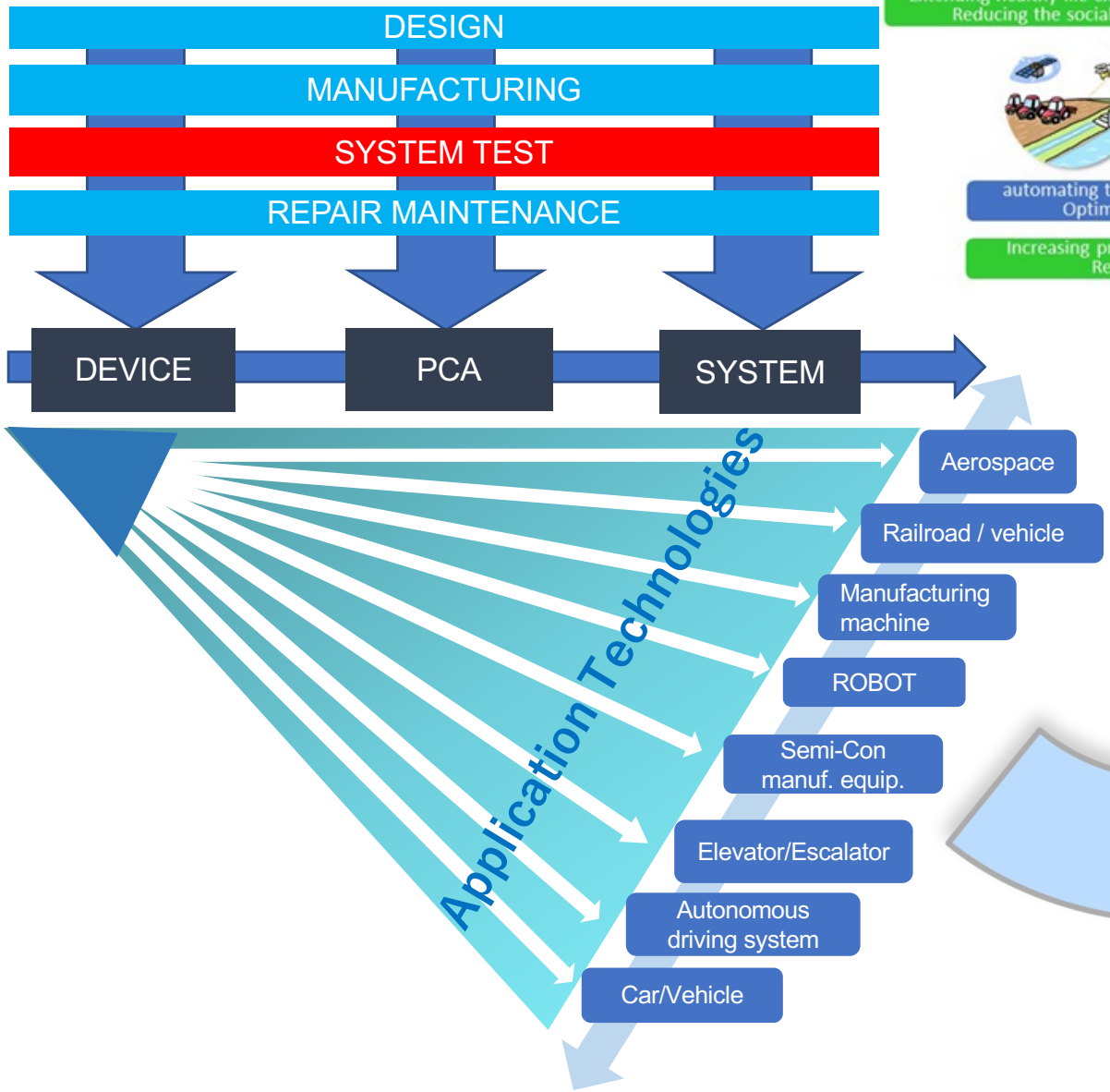
- DAWG of Japan, started the project for developing a new technical standard.
- The theme of this project is “High-level System Test Methodology & Test Language".
- The objectives include,
  1) Develop integrated test language which covers complex electronics and the mounted devices
  2) Keep up-ward compatibility with the current standards
  3) Design and develop real circuitry modules for evaluations and so on.
- This project was proposed in the process in which we examine BVAS in Japan, and recognize it as promotion of this being important..

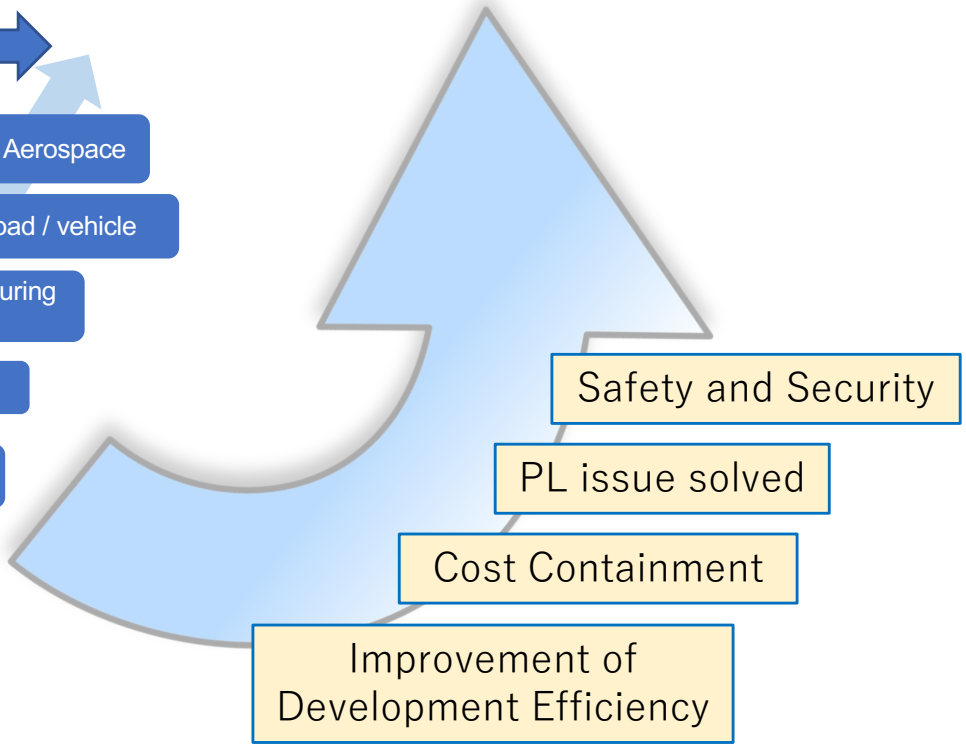
Background and Recognition

The construction of social systems composed of various devices such as high-performance semiconductors and multifunctional sensors is urgently needed.

It is not an easy task to confirm the safety of large-scale social systems like autonomous driving such as airplanes and railways, so it is difficult to simultaneously perform confirmation work related to system size and performance conditions and verification work on mounting status such as shape and weight, so each is carried out individually, and it is impossible to confirm the safety of the entire system.

Utilization of High-level System Test Methodology & Test Language





Main Objective of project

- IEC standard for high-level integrated system verification technology that defines program structure, procedural statements, control, statement element, data processing, signal-oriented statements, field and subfield definition, etc. necessary for the sophistication and automation of test verification of electrical and electronic equipment.
- Develop a draft (functional definition), and at the same time, effective usage and precautions when applying this technology will be provided as guidelines.