



TC 91 WG 15

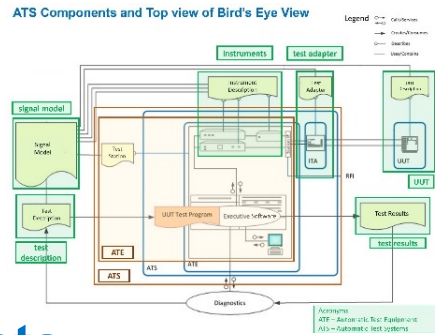
The Bird's Eye-View of ATS Standards (BVAS)

2022-5-18

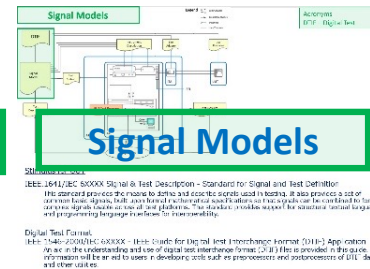
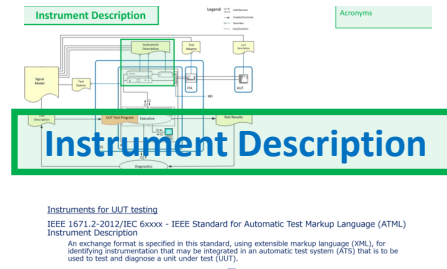
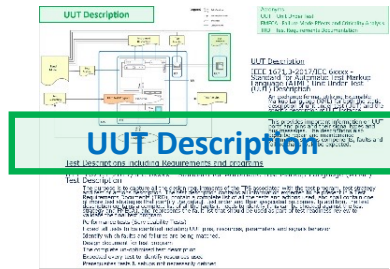
Hiromi Yamashita

Bird's Eye-View of ATS Standards STRUCTURE

TOP Layer Top view of Bird's Eye View



2nd Layer : components



3rd Layer : wrk samples

coming soon

coming soon

coming soon

4th Layer : reference others

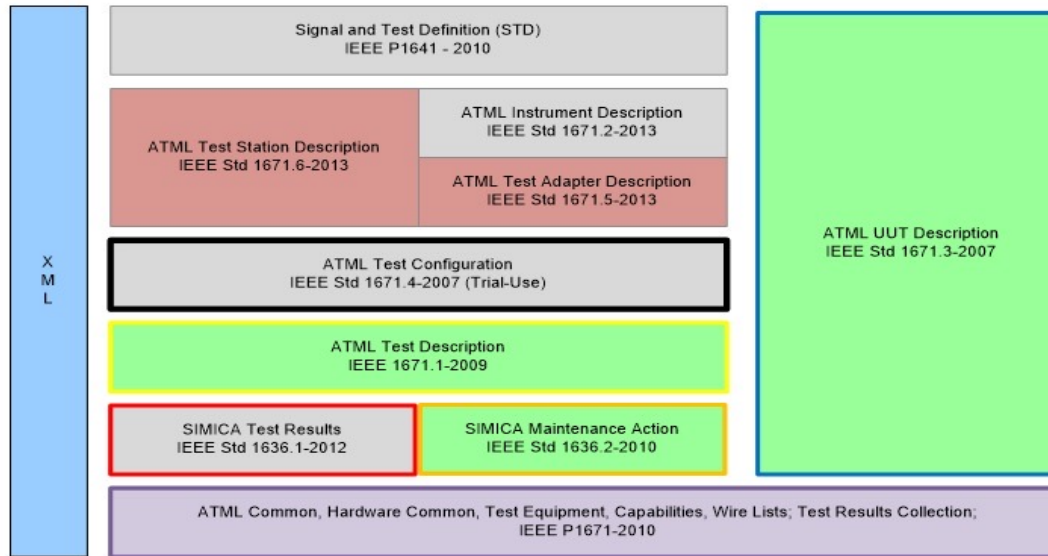
Organizations producing relevant standards

Standard	Name	Comments
ANSI	American National Standards Institute	Manufactures other standards
AVCNC	Aeronautical Council of the UK	Commercial Aviation Standards
ASTM	American Society for Testing and Materials	
CEC	California Electronic Council	Connectors (and many others)
IEEE	Institute of Electrical and Electronics Engineers	IEEE 1500 (in use for UUTs)
IEC	International Electrotechnical Commission	
ILT	Internal Engineering Task Force	
ISO	International Organization for Standardization	
IV FutureBIT	International Vehicle Electronics Foundation, Inc	IVI specifications
PCADCA	Personal Computer Memory Card International Association	
SAE	Society of Automotive Engineers	
TIA	Telecommunications Industry Association	
USB IF	USB Implementers Forum, Inc	USB specifications
VITA	Vehicle Electronics Trade Association	VITA-ANSDV Taskwork
VITA's Consortium	VITA's Consortium, Inc	Various specifications
PIAA	Printed Circuit Board Association	PCBA specifications
PCMA	Printed Circuit Manufacturers Group	Connector specifications
IEC Commission	IEC Commission, Inc	IEC Standard

ATS related standards 1/2

Standard	Name	Comments
IEEE 1500	IEEE 1500-2005	IEEE 1500-2005
IEEE 1611	IEEE 1611-2007	IEEE 1611-2007
IEEE 1621	IEEE 1621-2007	IEEE 1621-2007
IEEE 1631	IEEE 1631-2007	IEEE 1631-2007
IEEE 1641	IEEE 1641-2007	IEEE 1641-2007
IEEE 1651	IEEE 1651-2007	IEEE 1651-2007
IEEE 1661	IEEE 1661-2007	IEEE 1661-2007
IEEE 1671	IEEE 1671-2007	IEEE 1671-2007
IEEE 1681	IEEE 1681-2007	IEEE 1681-2007
IEEE 1691	IEEE 1691-2007	IEEE 1691-2007
IEEE 1701	IEEE 1701-2007	IEEE 1701-2007
IEEE 1711	IEEE 1711-2007	IEEE 1711-2007
IEEE 1721	IEEE 1721-2007	IEEE 1721-2007
IEEE 1731	IEEE 1731-2007	IEEE 1731-2007
IEEE 1741	IEEE 1741-2007	IEEE 1741-2007
IEEE 1751	IEEE 1751-2007	IEEE 1751-2007
IEEE 1761	IEEE 1761-2007	IEEE 1761-2007
IEEE 1771	IEEE 1771-2007	IEEE 1771-2007
IEEE 1781	IEEE 1781-2007	IEEE 1781-2007
IEEE 1791	IEEE 1791-2007	IEEE 1791-2007
IEEE 1801	IEEE 1801-2007	IEEE 1801-2007
IEEE 1811	IEEE 1811-2007	IEEE 1811-2007
IEEE 1821	IEEE 1821-2007	IEEE 1821-2007
IEEE 1831	IEEE 1831-2007	IEEE 1831-2007
IEEE 1841	IEEE 1841-2007	IEEE 1841-2007
IEEE 1851	IEEE 1851-2007	IEEE 1851-2007
IEEE 1861	IEEE 1861-2007	IEEE 1861-2007
IEEE 1871	IEEE 1871-2007	IEEE 1871-2007
IEEE 1881	IEEE 1881-2007	IEEE 1881-2007
IEEE 1891	IEEE 1891-2007	IEEE 1891-2007
IEEE 1901	IEEE 1901-2007	IEEE 1901-2007
IEEE 1911	IEEE 1911-2007	IEEE 1911-2007
IEEE 1921	IEEE 1921-2007	IEEE 1921-2007
IEEE 1931	IEEE 1931-2007	IEEE 1931-2007
IEEE 1941	IEEE 1941-2007	IEEE 1941-2007
IEEE 1951	IEEE 1951-2007	IEEE 1951-2007
IEEE 1961	IEEE 1961-2007	IEEE 1961-2007
IEEE 1971	IEEE 1971-2007	IEEE 1971-2007
IEEE 1981	IEEE 1981-2007	IEEE 1981-2007
IEEE 1991	IEEE 1991-2007	IEEE 1991-2007
IEEE 2001	IEEE 2001-2007	IEEE 2001-2007
IEEE 2011	IEEE 2011-2007	IEEE 2011-2007
IEEE 2021	IEEE 2021-2007	IEEE 2021-2007
IEEE 2031	IEEE 2031-2007	IEEE 2031-2007
IEEE 2041	IEEE 2041-2007	IEEE 2041-2007
IEEE 2051	IEEE 2051-2007	IEEE 2051-2007
IEEE 2061	IEEE 2061-2007	IEEE 2061-2007
IEEE 2071	IEEE 2071-2007	IEEE 2071-2007
IEEE 2081	IEEE 2081-2007	IEEE 2081-2007
IEEE 2091	IEEE 2091-2007	IEEE 2091-2007
IEEE 2101	IEEE 2101-2007	IEEE 2101-2007
IEEE 2111	IEEE 2111-2007	IEEE 2111-2007
IEEE 2121	IEEE 2121-2007	IEEE 2121-2007
IEEE 2131	IEEE 2131-2007	IEEE 2131-2007
IEEE 2141	IEEE 2141-2007	IEEE 2141-2007
IEEE 2151	IEEE 2151-2007	IEEE 2151-2007
IEEE 2161	IEEE 2161-2007	IEEE 2161-2007
IEEE 2171	IEEE 2171-2007	IEEE 2171-2007
IEEE 2181	IEEE 2181-2007	IEEE 2181-2007
IEEE 2191	IEEE 2191-2007	IEEE 2191-2007
IEEE 2201	IEEE 2201-2007	IEEE 2201-2007
IEEE 2211	IEEE 2211-2007	IEEE 2211-2007
IEEE 2221	IEEE 2221-2007	IEEE 2221-2007
IEEE 2231	IEEE 2231-2007	IEEE 2231-2007
IEEE 2241	IEEE 2241-2007	IEEE 2241-2007
IEEE 2251	IEEE 2251-2007	IEEE 2251-2007
IEEE 2261	IEEE 2261-2007	IEEE 2261-2007
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IEEE 2291	IEEE 2291-2007	IEEE 2291-2007
IEEE 2301	IEEE 2301-2007	IEEE 2301-2007
IEEE 2311	IEEE 2311-2007	IEEE 2311-2007
IEEE 2321	IEEE 2321-2007	IEEE 2321-2007
IEEE 2331	IEEE 2331-2007	IEEE 2331-2007
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IEEE 2351	IEEE 2351-2007	IEEE 2351-2007
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IEEE 2391	IEEE 2391-2007	IEEE 2391-2007
IEEE 2401	IEEE 2401-2007	IEEE 2401-2007
IEEE 2411	IEEE 2411-2007	IEEE 2411-2007
IEEE 2421	IEEE 2421-2007	IEEE 2421-2007
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IEEE 2441	IEEE 2441-2007	IEEE 2441-2007
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IEEE 2461	IEEE 2461-2007	IEEE 2461-2007
IEEE 2471	IEEE 2471-2007	IEEE 2471-2007
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IEEE 2561	IEEE 2561-2007	IEEE 2561-2007
IEEE 2571	IEEE 2571-2007	IEEE 2571-2007
IEEE 2581	IEEE 2581-2007	IEEE 2581-2007
IEEE 2591	IEEE 2591-2007	IEEE 2591-2007
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IEEE 2631	IEEE 2631-2007	IEEE 2631-2007
IEEE 2641	IEEE 2641-2007	IEEE 2641-2007
IEEE 2651	IEEE 2651-2007	IEEE 2651-2007
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IEEE 2701	IEEE 2701-2007	IEEE 2701-2007
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IEEE 2741	IEEE 2741-2007	IEEE 2741-2007
IEEE 2751	IEEE 2751-2007	IEEE 2751-2007
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IEEE 2771	IEEE 2771-2007	IEEE 2771-2007
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IEEE 2791	IEEE 2791-2007	IEEE 2791-2007
IEEE 2801	IEEE 2801-2007	IEEE 2801-2007
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IEEE 2841	IEEE 2841-2007	IEEE 2841-2007
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IEEE 2971	IEEE 2971-2007	IEEE 2971-2007
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IEEE 3011	IEEE 3011-2007	IEEE 3011-2007
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IEEE 3031	IEEE 3031-2007	IEEE 3031-2007
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IEEE 3481	IEEE 3481-2007	IEEE 3481-2007
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IEEE 3521	IEEE 3521-2007	IEEE 3521-2007
IEEE 3531	IEEE 3531-2007	IEEE 3531-2007
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IEEE 3591	IEEE 3591-2007	IEEE 3591-2007
IEEE 3601	IEEE 3601-2007	IEEE 3601-2007
IEEE 3611	IEEE 3611-2007	IEEE 3611-2007
IEEE 3621		

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

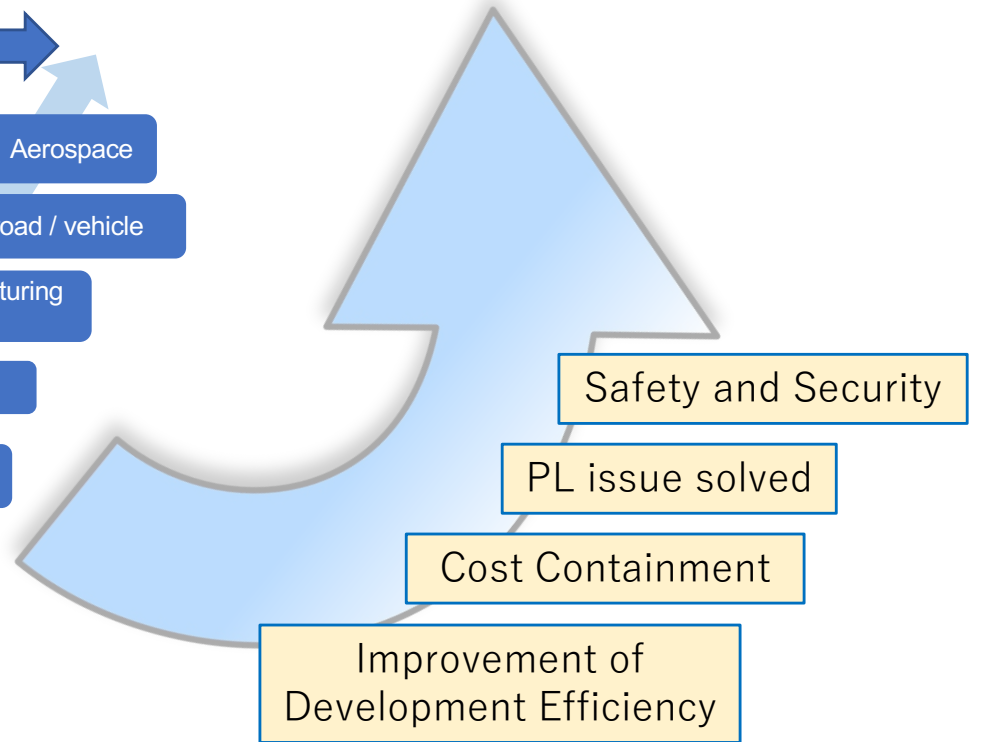
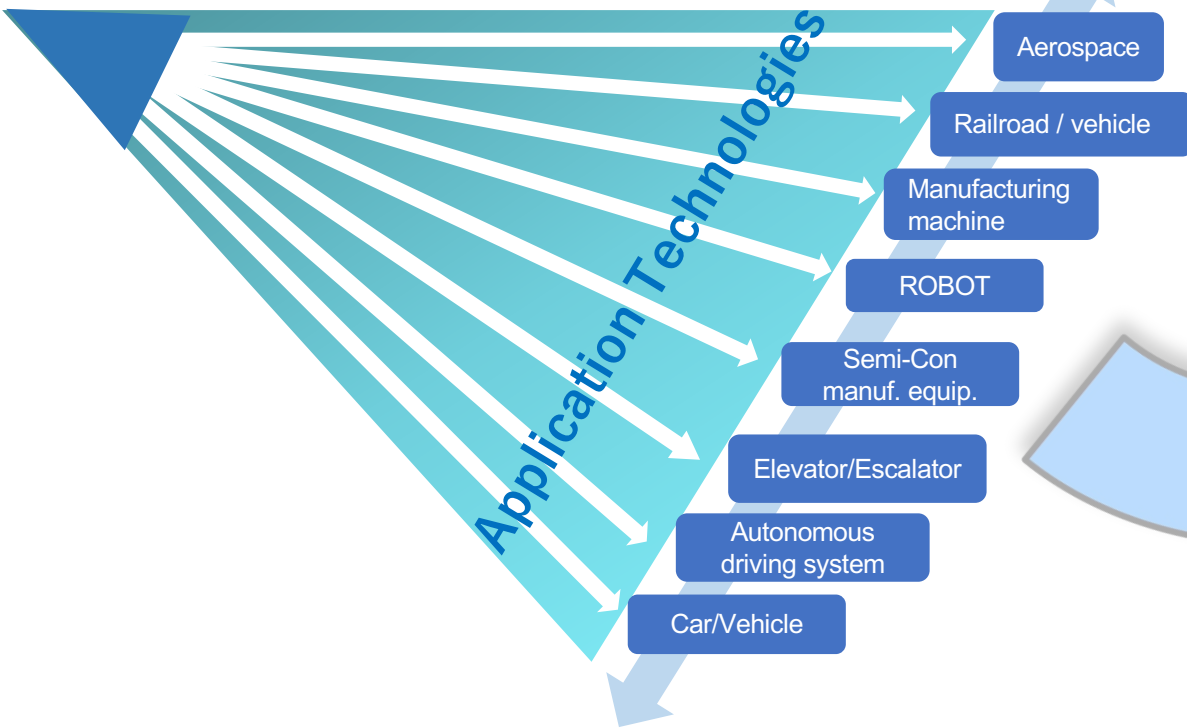
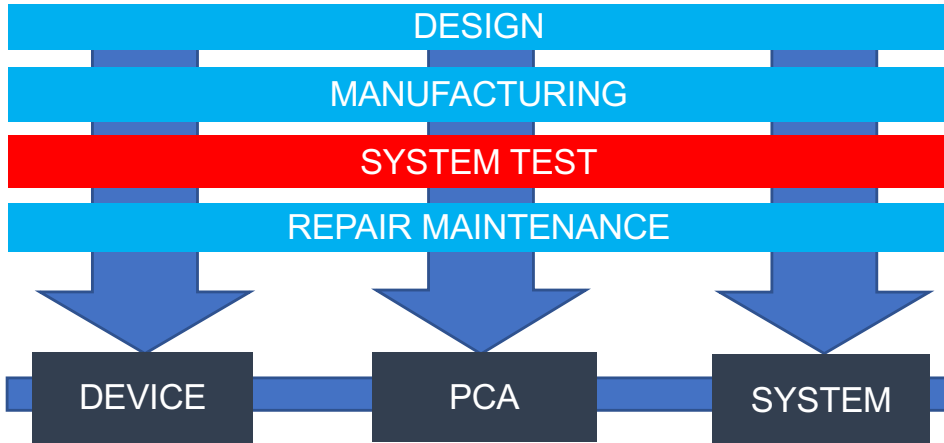
- DAWG of Japan, started the project for developing a new technical standard.
- The theme of this project is "High-level System Test Methodology & Test Language".
- The objectives include,
 - 1) Develop integrated test language which covers complex electronics and the mounted devices
 - 2) Keep up-ward 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.