

Standards Survey 2020

- **The DoD ATS Framework IPT developed a survey to help assess open systems standards related to ATE**
- **The intention is to learn**
 - **how automatic test standards are currently being used**
 - **what improvements could be made to increase their usefulness**
 - **whether there are missing areas that should be considered**
- **Feedback will be provided to working groups such as the IEEE SCC20 and IVI**

Results of Standards Survey 2020

- **26 responses of which 20 are already participating in working groups or would like to**
- **About 90% have both used standards in the past and are currently using them**
- **Organization Types**
 - **A supplier of tools that use the standards ~ 75%**
 - **A user of standards to facilitate a solution ~ 85%**
 - **Developer of standards ~ 35%**
 - **Other (ATE developer for Defense and Mass transit) ~ 5%**

Standards Being Used

- **ATML Test Description (IEEE Std 1671.1) ~ 60%**
- **ATML Instrument Description (IEEE Std 1671.2) ~ 50%**
- **ATML UUT Description (IEEE Std 1671.3) ~ 45%**
- **ATML Test Configuration (IEEE Std 1671.4) ~ 45%**
- **ATML Test Adapter (IEEE Std 1671.5) ~ 40%**
- **ATML Test Station (IEEE Std 1671.6) ~ 55%**
- **Signal and Test Definition (IEEE Std 1641) ~ 60%**
- **SIMICA Test Results (IEEE Std 1636.1) ~ 25%**
- **SIMICA MAI (IEEE Std 1636.2) ~ 10%**
- **AI-ESTATE (IEEE Std 1232) ~ 10%**
- **DTIF (IEEE Std 1445) ~ 35%**

Standards Being Used (cont.)

- **Common Test Interface Pin Map (IEEE 1505.1) ~ 45%**
- **IVI ~ 60%**
- **VXI Plug & Play ~ 70%**
- **Other ~ 5%**
 - **MIL-HDBK-2165**
 - **VISA VXI**
 - **716-ATLAS**
 - **PXI Plug & Play**
 - **JTAG 1149.x**

Areas Standards are Used

- **Military components**
- **ATE development**
- **TPS development and migration**
- **Test and measurement instruments**
- **Measurement automation**
- **Power sectors**
- **Automobile**
- **Test interface design platforms**
- **Diagnostic and prognostic test capabilities**
- **Built-in Test or Power-on Self Test**
- **Mass Interface Panel**

Benefits of Standards

- **Compatibility**

- Commonality of code and transfer knowledge and tools between projects
- Interchangeability between vendors
- More consistency in diagnostic and prognostic system development methods and maintainability

- **Improved Business**

- Visibility of requirements (better separation of requirement and solution)
- Total cost reduction
- Sharing of use cases
- Development of tools (e.g. wiring diagram)

- **Identify failure-limiting or fail-safe modes for system safety engineering**

Limitations or Issues

- **Standards do not cover all options and drives need to develop work arounds**
 - Package/OS dependency, limitation in base capabilities, choice of programming language
 - Standards are always behind technology and extensions
 - Lack in modeling of serial communication and digital signals (e.g. 1641)
 - Missing key information to support “execution” of a test from the standards
 - Based on old technology (e.g. DTIF)
- **Learning curves**
 - Access to "experts" or "consultants" that are neutral or not tied to a specific company
 - Too many variations (e.g. 1641)
 - Too large (standards should be guidelines)

Limitations or Issues (cont.)

- **Inconsistent adoption and utilization**
 - Lack of overarching rulesets and enforcement of them
 - Lack of cost effective tools to support the standards
 - Designers often find other solutions due to the functional performance (non-prescriptive) nature of requirements
- **Does not cover full product lifecycle**
 - Maintenance, backward-compatibility over lengthy product-line life-cycles
 - Does not provide the requirements for consistency of the manufacturing requirements to produce a robust system

Suggestions for Improvement

- **Facilitate implementation of tools**
 - Create toolkit to use the output (e.g. 1636.1)
 - IVI driver automation tools
- **Communication with Users**
 - Address input on standards more fundamentally
 - Spread the advantages of using many standards to increase use within industry

Suggestions for Improvement (Cont.)

- **Incorporate new technology in standards**
- **Extensions**
- **Improved explanation of scoping and how to pass information around an xml document**
- **Standard implementation more universal**
- **Reduce complexity and size**

Next Steps

- **Socialize survey results to standards working groups**
- **Take action on suggestions for improvement**
- **Share successes with tool development and use of standards**
- **Consider development of standards to address new technologies**