IEEE SCC20 24-1 Minutes

Name	Company	Plenary	JSON	2848	SysML	Steering
Anand Jain	NI	✓	✓	✓	✓	
Brent Puffer	Lockheed Martin				✓	
Chris Gorringe	Spherea	✓	✓	✓	✓	✓
Chris Walds	USAF	✓	✓	✓	✓	✓
Damien Willemet	MBDA France	✓	✓	✓	✓	✓
Eric Gould	DSI Int		✓	✓	✓	
Gilberto Garcia	US Navy	✓	✓	✓	✓	✓
Gokul Subramanian	Lockheed Martin		✓	✓	✓	
Greg Brown	NI				✓	
Ion Neag	Reston Software	✓	✓	✓	✓	✓
Jack Schuster	Teradyne	✓	✓	✓	✓	✓
Jared Boyden	Lockheed Martin RMS				✓	
Jean-Christophe Hertzog	MBDA France	✓	✓	✓	✓	✓
Jordan Geeson	Lockheed Martin		✓	✓	✓	
Karen Yip	Teradyne	✓				
Larry Adams	USAF	✓	✓	✓	✓	✓
Malcolm Brown	UK MoD	✓				
Markus Andres	Hensoldt				✓	
Mike Seavey	Retired	✓	✓	✓	✓	✓
MJ McGrory	RTX	✓				
Paul McKenna	Lockheed Martin				✓	
Raymond Beshears	Raytheon				✓	
Ron Knight	Collins Aerospace		✓		✓	
Ron Taylor						✓
Scott Stephenson	Lockheed Martin				✓	
Steve Meisenheimer	Peregrine Services				✓	
Sylwester Sobolewski	USAF	✓	✓	✓	✓	✓
Teresa Lopes	Teradyne	✓	✓	✓	✓	✓
Yan Rodriguez	Lockheed Martin				✓	

Note: Meeting minutes generated with the help of Microsoft Copilot

MAY 1, 2024

1:00 PM – 3:00 PM   **| Plenary | Mike Seavey**

See IEEE SCC20 24-1 Meeting Chairs Report.pdf

Call to Order

Meeting called to order at 1:03 PM

Discussion

The secretary informed participants that the meeting was being recorded, there were no objections.

After introductions, the chair reviewed the agenda for the next few days.

IEEE patent slides were presented. Chair reminded attendees to contact the IEEE or the chair if there are any potential patent claims. Chair also reminded attendees that everything brought into the committee is owned by the IEEE and to not discusses licensing, terms and conditions, etc.

Two study groups have been created. Each study group has a life of six months, and the outcome of the study group is a recommendation for a PAR or to dissolve.

Chair talked about the IEEE Standards Association requesting every standards committee to start addressing cybersecurity and resiliency.

IEEE has asked us to revalidate IEEE 488.1 and 488.2 standards

In the discussion of future meetings, both DECA and MBDA attendees expressed a desire for the spring meeting to be held in Europe, either in the UK or France.

Upcoming meetings

- Electronic steering meeting – Summer 2024 to address PARs
  - 1232 PAR
  - SysML Study Group
- 24-2 Meeting
  - Thursday/Friday immediately after AUTOTESTCON in Reston, VA
- 25-1 Meeting
  - France or UK (perhaps in conjunction with CATS4D)
- 25-2 Meeting
  - In conjunction with AUTOTESTCON 2025

Working Group Plans

P1871.3

Update on different JSON formats and the tooling that works with those formats

Discuss mapping between JSON and XML

P2848

Draft standard on PHM. Review the current design from an ATML standpoint. Presentation that provides an introduction and functional questions that need to be reviewed.

Working group is trying to stabilize the design and then transition to writing the specification.

P1671

Work has started. Not planning on reviewing 1800 pages, the body of the standard is coming from what has been published in 2006 and revised in 2010. Placeholders for figures and schema.

Discuss where we'll store the documents under development. GitHub seems promising. USN can access GitHub.

Study Group Plans

ATML-Compatible Representation in SysML of Test Requirements Information for Electronic Systems

Proposal developed by Ion, Chris and Eric Gould to encode information from SysML in ATML. Being done informally today.

New Business

AI-ESTATE

- Revisit and map to XML
- Standard has been inactive
- EXPRESS modeling is obsolete, shift to XML
- Trying to understand what is missing from the models that can be described in Test Description
  - Test Description tried to stay compatible
    - Hierarchy and names are compatible
  - AI-ESTATE has additional models
  - Don't want to duplicate what is already there, just extend / add
- EXPRESS model has errors, so need to make sure that those can be addressed as part of this plan
- Timeframe
  - Before August would address the PAR for a revision to AI-ESTATE
- Some things that EXPRESS does can not be expressed in the XML Schema
  - Needs to be described in the words

Adjourn

Meeting adjourned at 2:15 PM

MAY 2, 2024

10:00 AM – 11:00 AM | P1871.3 Working Group | Anand Jain

See P1871.3 WG 24-2_Final.pdf

- *Anand Jain (NI) talked about RFC 8259, the unifying JSON standard, and investigated tools that support the RFC standard. He also discussed incompatibilities when transforming XML to JSON and looked at different recommendations for solving those issues.*
  - *Anand Jain (NI) led the 1871.3 working groups meeting. The agenda included discussing tools that support the RFC 8259 standard and incompatibilities when transforming XML to JSON.*
  - *Anand Jain found some conversion issues with the STDTSF XML file, which had multiple namespaces with the same URL but different prefix.*
  - *He confirmed that the JSON generated by XML Spy can be read by other libraries like C Sharp. He also found that the defaults from the schema reflect back in the JSON generated from the XML.*
- *Anand Jain (NI) discussed the JSON standard and its various formats. They concluded that they should stick with the core JSON standard, which is 8259.*
  - *Anand Jain (NI) discussed the experiment on generating files and parsers. Anand Jain (NI) intends to expand the parsers to include C, Java, and Python. The initial results look promising for the Python parsers.*
  - *Ion - OK to drop comments since the style guide says we should not use comments in XML for important information.*
- *Agenda for next meeting on June 18, 2024*
  - ***Continue analysis of generated and transformed files***
  - ***Continue discussion about incompatibilities/mapping***

- ***XML->JSON***

Follow-up tasks:
- ***XML to JSON conversion:*** *Send more XML files to Anand for testing (Chris, Teresa, Ron and others)*
- ***XML to JSON conversion:*** *Finish the round-trip experiments and compare the results (Anand)*
- ***XML to JSON conversion:*** *Look at the ATML style guide for the use of defaults and namespaces (Anand)*
- ***XML to JSON conversion:*** *Assess the impact of defaults on the capability schema (Anand)*

11:00 AM - Noon | P2848 Working Group | Ion Neag

See SCC20 Meeting 2024.05.02 AM - P2848.pdf

See IEEE P2848 Review 2024-05-01.pdf

See IEEE P2848 - using ATML and SIMICA Rev_D.pdf

See IEEE Standards Supporting ATE-Based Prognostics - High-level Concept Diagram Rev_G.pdf

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1:30 PM – 3:30 PM | SysML & ATML Study Group | Ion Neag

See Study Group Proposal – Final.pdf

Discussion

Ion: The study group is tentatively titled "ATML compatible representation in SysML of test requirement information for electronic systems".

Ion clarifies terminology in the title (which does not have to be the name of the standard, but could be)

- Test requirements: information that's typically provided by the OEM in TRDs.
- Electronic systems: because that's in the name of our SCC 20 committee, but the scope is not limited to electronics. Trying to differentiate this from any existing standards for software testing.
- ATML: included in the title because we believe that ATML compatibility is essential for this proposal

Ion Neag describes how IEEE study groups work. See slide presentation. The maximum duration of a study group is 6 months. The aim is to perform the study work from now until the next SCC20 meeting, to be held in conjunction with Autotestcon, at the end of August. Hold virtual meetings as needed. Meet again in person at the SCC20 meeting and make a decision on whether we proceed with a standard or not.

Ion presents a proposal developed jointly by Raymond Beshears, Eric Gould, Chris Gorringe, and Ion Neag. See attached slides.

Ion Neag: the plan is to solicit similar inputs from everyone in the study group. Anyone who's interested in providing some input through presentations or written document please send them to Ion and then we will follow the virtual meetings as needed.

Study group input: Provide input on the proposal for a standard on test information in SysML (All study group members).

Patent claims: Inform IEEE of any potential patent claims related to the subject of the standard (All working group members)

Scott Stephenson: I just wanted to mention that we have the team that I'm working with currently has been working on trying to translate between ATML and SysML as well as UTP. I would recommend reconsidering the idea of potentially using some aspects of UTP in conjunction with SysML not by itself, but along with SysML.

UTP compatibility: Reconsider the idea of using some aspects of UTP in conjunction with SysML (Scott)

Eric Gould: When you start developing a model for diagnostic process, you need to start with a set of tests, and the design engineers are the one that suggest that. This is done in freeform, typically supplied as descriptions of tests without any formalized parameters other than perhaps at the description. Possibly the test points. No formal parameters, at least in the preliminary descriptions. The problem with this is #1 it's free form, so you can't really automate it; #2 there's no check about completeness or accuracy; and #3 it's not referencing any of the design items that it actually applies to; #4 it's not so easy to do version control.

Ion Neag: Describing tests in SysML allows the specification of coverage, in terms of components and possibly failure modes, as well as the specification of test points and stimulus location; this references data items that are already represented in SysML.

Test requirements described in SysML could be traced to product requirements, commonly represented in SysML. This applies primarily to developmental testing.

Test description information can be automatically translated from SysML into ATML, then augmented as necessary and used to develop test programs.
Because SysML can be used to specify the integration of testing with UUT state management, it should be possible to auto-generate code (ex. bus commands) that manages the UUT state as required for UUT testing.

And the other benefit of the proposed standard is that it will bring the syntax and semantics of ATML into the SysML domain.

Ion Neag: In our view, this should not be about creating an alternative to the ATML standard. It is about enhancing the interoperability of ATML with the software environments used for product design. This will lower the adoption threshold - rather than ask the product designers to use ATML-specific software tools, allow them to input product test requirements directly in the SysML software they already use.

Compatibility of SysML test representation with ATML will bring two benefits. #1 it will facilitate the development of automated translators. #2 the existing ATML models have been proven at TRL 8-9 in applications.

Discussion regarding the ATML component standards to be considered.

- Test description – it is the object of this proposal.
- UUT Description – Most ATML elements already have SysML equivalents; an informative clause can recommend a mapping.
- Test station and instrument description: trying to determine if there is interest
- Test adapter: trying to determine if there is interest.

Chris Gorringe: You're talking here about the relationship to the 1671 standards. Have you thought about a relationship between SysML and 1641? Is there any desire to use 1641 to describe signals, or is there a signal modeling language that's been used?

Ion Neag: SysML has a concept of signals, but that is different from 1641-defined signals; it is what we would call events. We could specify in a profile the equivalent to the 1641 signals, as 1641 signals are basically a collection of attributes that have data types and have units. However, mapping gets more complicated when looking at quantities and units.

Chris Gorringe: we should look at existing SysML models / standards. Possibly used in the areas of physical simulation and HIL testing.

Signal modeling: Evaluate the feasibility and benefits of using 1641 or a similar language to describe signals in SysML (Chris and others)

JC Hertzog: It might be interesting to gain knowledge about how to change state for the UUT. This is normally part of UUT Description.

Add UUT Description & transfer of State information to the diagrams (Ion)

Eric Gould: should be also considering data supporting prognostics, related to the IEEE P2848 work?

Discussion on the distinction between developmental testing, which verifies design requirements, production testing, which verifies if the product manufactured correctly, and sustainment testing, which verifies nominal operation but also detects and isolates failures. All of these have different requirements that they need to match. They have different failure modes, and they have different outputs. The limits will tend to be different.

Ion Neag presents the slides with example use cases. Discussion.

Eric Gould: The tests proposed by diagnostic engineering are not always suitable for determining diagnostic conclusions. The diagnostic engineering effort is identifying tests that are more suitable. These could be pushed back to SysML. That might become part of the design loop, when we're doing design for testability.

Larry Adams: we are envisioning keeping the SysML dynamic throughout the product lifetime.

Raymond Beshears: I'm also a part of some DoD working groups in R&M and we are looking at areas for using SysML to represent RAM-T data. I think there's variability in in how this will be applied, but there are cases where SysML will have the source of truth in that domain.

Eric Gould: change "From Testability Analysis" to "From Diagnostic Engineering". Diagnostic Engineering is about more than just Testability Analysis.

Update diagram (Ion)

JC Hertzog: One of the things that we should not underestimate is the amount of knowledge that you pass from the design team to the test engineering team. It's a huge gain in term of learning effort, to learn how the UUT is supposed to work.

Process flow chart: Create or share a process flow chart that shows how the proposed standard fits in the overall test and diagnostic development process (Yan and others)

System-level test definitions: Send examples of test definitions from SysML to the study group (JC)

Test program development flow: Review the proposed use case for TPS acquisition and provide feedback (Study group members)

Ion Neag presents the slide on relationships to other standards. Discussion.

Scott Stephenson: The UML testing profile has been made available as a specification from OMG. The team that I support has been creating a CAMEO implementation of that profile. We have recently gone through our approval process to make it releasable publicly. However, we have not actually set up a website or anything like that to make it downloadable. I believe we've also ported it over to Rapsody, but I'm not sure what the current status of that particular version is, whether it's been approved for release as well or not.

Raymond Beshears: We do use the FMEA profile in certain cases. There are some challenges with it because it's not sufficiently customizable. We also have more customized profiles.

Ion Neag: This reinforces the idea that we should be flexible in terms of allowing references to external standards and that extensibility is critical. ATML has three different extension mechanics that we defined explicitly. Maybe the same approach should be taken here.

Related standards: Identify any other relevant standards that should be considered for the study group (Study group members)

SysML version: Evaluate the impact of SysML 2.0 on the study group and the possible standard development (Study group members)

3:30 PM – 4:00 PM | P1671 Working Group | Mike Seavey

Meeting started at 3:21 PM

Discussed PAR to revise the ATML standards. Creating 1 document that includes the base standard and all the "dot" standards. The process for creating the document has started using the latest template. Created the TOC

and pasted in the content from the approved standards. At the IEEE's request, we will be identifying differences to that people can see what changed from the last publication.

References to external documents are being updated as part of this process.

Comments have been received from both Ion and Chris on things that need to be addressed. If there are additional comments/items that anyone is aware of, send them to Mike.

MAY 3, 2024

10:00 AM – NOON |Steering | Mike Seavey

See <mark>IEEE SCC20 24-1 Meeting Steering Chairs Report.pdf</mark>

CALL TO ORDER   *Mike Seavey*

Meeting called to order at 10:02

QUORUM CHECK   *Teresa Lopes*

No, quorum, but nothing to vote on

✓	**Chair**	**Mike Seavey**
✓	Vice-Chair	Chris Gorringe
✓	Secretary	Teresa Lopes
	P1871.3 Working Group Chair	Anand Jain
	P2848 Working Group Chair	John Sheppard
	UK MoD Representative	Paul Grealis
	US DoD Representative	Bill Ross

Upcoming AUTOTESTCON Dates

2024 – 8/26 – 8/29

2025 9/15 – 9/19

2026 8/28 – 8/31

IEEE Volunteer Training   *Mike Seavey*

The Chair discussed training requirements for committee members and the consequences of not completing the training. Currently there is nothing in the policies and procedures regarding action to be taken if training is not completed.

IEEE Guidelines for the Use of AI

Current guidelines apply to technical papers but the IEEE is talking about applying the same guidelines to standards development and maintenance. If AI is used, need to identify what AI system was used and at what level.

Alternate Text

Going forward developing and maintaining standards

- Alternate text describing appearance or function of an image (table or figure)
- Recent European legislation requires that an Alternative Text be included in books in order to be sold in Europe beginning in 2025

ATS Cybersecurity / Resiliency

Discussed Executive Order 14028 on Improving the Nation's Cybersecurity and the National Institute of Standards and Technology's (NIST) role in developing new standards. The vulnerability of instruments and equipment in the field was also discussed.

Storage of SCC20 Material (Word Files, Figures, Schemas, Minutes, etc.)

Chair needs to know where the material is stored and needs to be provided access to that material. Group discussed using GitHub to store material associated with standards the committee develops and maintains.

Meeting adjourned at 11:13 AM