

**DIAGNOSTIC AND MAINTENANCE CONTROL SUBCOMMITTEE
11-A MEETING
Orlando, FL
February 8-10, 2011**

Proposed 11-A Agenda

- Call to Order
- Approval of Agenda
- Reports
 - Chair's report
 - Secretary's report
 - Liaison Reports (CS, I&M, AES, SAE)
 - Brief Presentations
 - Grey Scale Health – John Sheppard
- P1232.3 User's Guide
 - Discuss outline and way forward
- P1636 SIMICA
 - P1636 – final decision – initiate affirm or revise?
 - P1636.99
 - P1636.1
- Final Discussions on All Topics
- Review Old Action Items
- Review New Action Items
- Set Agenda for 11-B Meeting
- Adjourn

Minutes

Tuesday, 8 February

John Sheppard called the meeting to order approximately 10 AM.

Chair's Report

John Sheppard chairing this meeting. 1232 was approved in December, in editorial and publishing now. While a full SCC-20 meeting will be held in April, both Tim and John are unavailable at the set dates. John and Tim propose a separate WG meeting in early

May. Anand asked when Test Results would be ready – we hope to have documents ready for review and ballot prior to the 11-B meeting.

1636 SIMICA trail use period expires soon. WE have to decide whether to affirm or revise by April (a PAR to revise would keep the standard alive for the revision period). This will be discussed in this meeting.

1636.2 MAI was published – there was an error in the first publication, the information model was declared to be informative (should be normative). That error was fixed and the document was republished.

Secretary's Report

Liaison Reports

- CS, IM – none
- SAE – Tim W participating on SAE Technical committee. Intent is to support their standards work and ensure harmonization with IEEE and MIMOSA standards already in existence.

Brief Presentations

- None Tuesday

Test Results Discussions

The group began discussions of 1636.1 information model, and schema harmonization with the XML. A Webex was initiated by Tony Alwardt (participating virtually), and John Sheppard led the discussion and review of XML and EXPRESS changes made and proposed. The group reviewed all of the changes and questions generated by the information model work. Following those discussions, we reviewed Ion Neag's accumulated comments.

Refer to Log Item XXX (continuation of Tony's Denver notes that were used for Information model resolution between meetings) and Log XXX (Steve Wegener's notes for Tony) for resolution and results of discussions.

The meeting recessed at 525 PM.

Wednesday, 9 February

John called the meeting to order at 0815.

15-Minute Presentation

John presented an informal proposal for representing grey-scale health outcomes using basis functions. The proposal included suggestions for reasoning services to support prognostic approaches.

User's Guide

Simon Jessop and Darryl Busch joined via telecon. Simon led a discussion on the progress to date with the User's Guide.

Include both ATE and a non-ATE related examples. We reprised the discussion regarding delivery format. Do we want to use the traditional IEEE method as detailed in our PAR, or do we want to pursue alternative means? It was generally felt that we cannot use official IEEE meetings to discuss non-IEEE products – and since we have a PAR we are on the hook to produced an “official” user's guide.

The group discussed Simon's outline, how to derive and orient the content, and provided writing assignments and approaches for each section. Action items were assigned, and Tim will provide all participants with a copy of the output of the outline discussions.

We took a break from 10-15-1030. The meeting resumed with further discussion of Test Results issues, provided by Chris Gorringer:

Point 1 – Chris wants to know when a list of indictments is recorded, for one or more test, what does it mean? That is up to the test program that produces the result – the spec is silent on the logic that is represented in the indictments produced by the program. Yesterday, we added a top level diagnosis to the test result hierarchy that provides a way to interpret what the upper level test result is for a number of subordinate test results. We need to work the description of how these two representations of incitements work together to provide guidance. Chris is also providing Tony with suggested text to be included in that description.

Point 2 – Chris pointed out the need to map a test result to the test in Test Description that produced the result. This ID reference has already been addressed. In recent changes.

Point 3 – How can one map the faulty component related to an indictment between UUT Description, Test Description, and Test Results. Currently must be done using RefDes, Chris would like something more rigorous as the refdes approach is not consistent across standards (an issue outside the 1636.1 purview). Also want ot be able to map component failure modes across specs. We added the failure modes associated with an indicted component in recent changes, need to add a Failure Mode Reference ID attribute as well.

SIMICA Life Cycle Issues

SIMICA trial use period is expiring – so we want to affirm or revise? John called Mike S to see what the process is for affirmation, so the committee considered pros and cons of revision.

Need:

Is the spec useful or superfluous? There are many parts of the model that are not fleshed out. Connections are provided for numerous lower level models (system design, diagnostic system design, ATML) for which there are no semantic models available. Is it worthwhile to maintain this model in hopes that this situation may change in the future?

Mike Bodkin opined that the pain is worth it – e and Tim agreed that if there were to be OWL versions of these semantic models, that SPARQL queries could be used that are qualified across the lower level models using the constructs caused by the union of the lower and upper level models. This would support data mining/KD work.

There may be a need for a context model. Tim is working on an aircraft context model for his day job, Mike Bodkin has a use case for ground vehicles, and ATE should benefit from context models as well. Additionally, the diagnostic design models could be linked through the 1232 CEM. And ATML has discussed the possibility of going to OWL (but the ROI for doing so has not yet been shown).

Another potential reason to revise would be to use SIMICA as the poster child for OWL – and use it to demonstrate the utility of linking the 1636 family and supporting data mining and KD.

The easiest thing to do is to choose to revise now, and to decide what to revise later.

Tim made a motion to revise SIMICA, and in doing so to delay submitting a PAR as long as practical due to manpower considerations. Mike Bodkin seconded the motion. No discussion – motion carried unanimously.

Note: It was discovered after the meeting that if no action is taken and no comments were received by IEEE, the standard would default to Full Use for its 3 year period. This suits the spirit of the motion, so we will let this process take its course unless we discover comments have been submitted.

The group reviewed the revised roadmap and agenda. Tim made a motion to approve the agenda, it was seconded by Larry and the motion carried. The meeting was adjourned at 1337.

1. Attendees

Name	Affiliation	Email	Day 1	Day 2	Day 3
Tim Wilmering	Boeing	Timothy.j.wilmering@boeing.com	X	X	
Dexter Kennedy	AMRDEC	Dexter.d.kennedy@us.army.mil	X	X	
Michael Bodkin	Lockheed Martin	Michael.a.bodkin@lmco.com	X	X	
Mike Rutledge	EADS NA	Mike.rutledge@ts.eads-na.com	X	X	
Larry Adams	USAF	William.adams@robins.af.mil	X	X	
Ion Neag	PIDESO	Ion.neag@pideso.com	X	X	
Steve Wegener	Boeing	Steven.a.wegener@boeing.com	X	X	
Anand Jain	National Instruments	Anand.jain@ni.com	X	X	
John Sheppard	Montana State University	John.sheppard@cs.montana.edu	X	X	
Teresa Lopes	Teradyne	Teresa.lopes@teradyne.com	X	X	
Chuck Reynolds	TSI	ctrynolds@tsieda.com	X	X	
David Sharone	Lockheed Martin	David.sharone@lmco.com	X	X	
David Ptacek	Rockwell Collins	deptacek@rockwellcollins.com	X		
Rob Spinner	ATTI	spinner@attinet.com	X	X	
Tony Alwardt	Boeing	Anthony.l.alwardt@boeing.com	X		
Chris Gorringe	EADS Test Engineering Services	Not provided	X	X	

Kent Shoemaker	USAF	Thomas.shoemaker@robins.af.mil	X	X	
David Droste	DRS TEM	ddroste@drs-tem.co	X	X	
Simon Jessop	Impact Tech			X	
Darryl Busch	Honeywell			X	

2. Action Item Summary

Old Action Items

- **10a-01: (Was Issue 08D-02)** Simon J., Alicia, Darryl, Tony A., John S., and (Dr.?) Steve B. to document problems, issues, concerns, and/or difficulties in using the AI-ESTATE standard. Information will be used in the development of the User's Guide document. While this item will be directed to the users guide some effort will be applied to "gaps" in the services or in the models where, for instance, a required model feature may not be needed for all users.

Status: Open

- **10A-02** John S. will provide the information on the MSU doorbell demo to Simon J. to develop the approach to the 1232 User's Guide.

Status: Closed

- **10A-03** Simon J to develop a strawman 1232 User's Guide initial document for the 10B meeting in Piscataway.

Status: OBE – see items 11A-1, 11A-2, & 3.

- **Action Item 08D-17:** John S. to examine the OASIS DEX on Aviation Maintenance as it relates to SIMICA (including operational context?).

Status: CLOSED (OBE)

- **Action Item 10C-11: Comment 464, Alicia to fix W3C trademark usage.**

Status: CLOSED

- **Action Item 10C-16:** Comment 633, Michelle to search document for acronyms and add to Acronym list.

Status: CLOSED

- **Action Item 10C-22:** Mike S. to prepare and maintain draft of P1636.1 and provide to DMC membership for review as drafts are completed.

Status: OPEN

- **Action Item 10C-26:** Darryl B. to forward Mike S. record of his correspondence of ISO regarding copyright. Mike to discuss this issue with IEEE.
Status: CLOSED
- **Action Item 10C-27:** Alicia and Michelle to format document for submittal.
Status: CLOSED
- **Action Item 10C-29:** Mike is preparing a Test Results revised document. Mike will send the document to Tony, Tim and John. Tony has agreed to take a look at it and bounce it against the models.
Status: CLOSED
- **Action Item 10D-2:** 1232 revision - delete the column “Type” in the Parameters table for each service. The column duplicates content that is found only an inch up in the page, so it doesn’t help the reader. It’s a source of potential errors for us. Deleting the column and using the saved space for the “Description” column would reduce page count, and make it less likely for table rows to break across pages.
Status: CLOSED
- **Action Item 10D-3:** ShowSessionTrace can currently be called from state E, when the DCM may not be consistent (not updated with latest assertions). The current behavior would append null information to the trace, creating a “valid” but incorrect trace. The consensus in the room is that this service should not be allowed to be called in state E – but we suspect that Darryl has a specific reason for wanting to do so. Contact Darryl to discuss resolution.
Status: CLOSED

New Action Items

- **Action Item 11A-1:** Simon to complete a strawman draft of sections 1-4 of the 1232 User Guide and forward to John and Ti by March 1.
Status: Open
- **Action Item 11A-2:** John and Tim to review and comment on Section 4 of the 1232 User’s Guide and complete prior to 11B meeting.
Status: Open
- **Action Item 11A-3:** Simon to complete a strawman draft of section 5 of the 1232 User’s Guide and complete prior to 11B meeting.
Status: Open
- **Action Item 11A-4:** Tony to revise 1636.1 XML schema based on 11-A input.
Status: Open
- **Action Item 11A-5:** John and Tim to complete 1636.1 information model based on 11A input.
Status: Open
- **Action Item 11A-6:** John and Tim to complete 1636.99 SIMICA Common Information Model based on 11-A input.

- **Action Item 11A-7:** Tony to create 1636.99 SIMICA Common XML schema based on information model and 11-A input.
Status: Open
- **Action Item 11A-8:** Tim and John to compare the 1636.1 XML Schema to the information model to ensure consistency.
Status: Open

3. Open Issues

- **Issue 07B-1:** The current order constraint in 1232-2002 is difficult to understand and, therefore, difficult to use. The DMC decided to “minimalize” the order constraint to focus only on preconditions and added actions to the model. It is recognized that this minimalist construct is at best suboptimal and possibly “broken.” Unfortunately, timing prevents a new construct being included in the model, and the DMC felt something needed to be there to address ordering. For the next revision, a more expressive and usable order constraint facility needs to be incorporated into the model, replacing the current minimalist construct. One proposal on hand is Log #451.

Status: OPEN Medium Priority

- **Issue 09B-01:** Post-2010 revision of AI-ESTATE to include constructs, facilities, and services to support PHM (especially prognostics). Specific examples that must be covered include gray-scale health and time-to-fail.

Status: OPEN Medium Priority

- **Issue 09C-01:** It is unclear that the subcommittee has the resources, knowledge, background, etc., necessary to standardize on “operational context” for either diagnostics or prognostics. For that matter, given that context is domain specific, we are not sure that it is even possible.

Status: OPEN Low Priority

- **Issue 10A-01** Deprecation issue -- there are elements such as hardwareitem in 2007 Test Results that are replaced by, for instance, c:hardwareinstance. These replacements will break existing applications if proper namespace management is not used. The old Test Results namespace for 2007 will be made available on the SCC20 website for some period of time to support deprecation. New applications should map to the 2009/2010 version of the namespace.

1232 uses the OID namespace management mechanism. Should 1636 standards use this for consistency, or should they follow ATML namespace conventions....???

Status: OPEN Medium Priority

- **Issue 10A-02** There is an issue of how to harmonize SIMICA Common and ATML Common.

Status: OPEN High Priority (*STATUS: PAR 1636.99 approved to work this issue*)

- **Issue 10C-01** Although ATML Common contains a WorkOrder complex type, the SimicaCommon.xsd still includes a WorkOrder complex type and it has different attributes. Our SIMICA Common information model matches the correct version in ATML Common. WorkOrder should be deleted from SIMICACommon.xsd and be replaced with a reference to WorkOrder in ATML Common.

Status: OPEN Medium Priority (*STATUS: Fix in work for 1636.1 revision*)

- **Issue 10C-03:** Need rules to enforce levels and mutual dependencies between RepairItem-FunctionItem-Failure-Fault mapping in 1232 CEM.

Status: OPEN Medium Priority

- **Issue 10C-04:** In AI-ESTATE the current semantics won't support representing multiple disjoint ambiguity groups.

Status: OPEN Medium Priority

- **Issue 10C-05:** 1232 FailureDistributions are currently expressed in terms of time, however some applications express FailureRates in terms of cycles. AI-ESTATE should support this.

Status: OPEN Medium Priority

- **Issue 10C-06:** AI-ESTATE DLM EXPRESS needs to be updated with constraints that limit easily identified nonsense rules.

Status: OPEN Medium Priority

- **Issue 10C-07:** AI-ESTATE FTM EXPRESS needs a rule to ensure the tree is acyclic.

Status: OPEN Medium Priority

- **Issue 10C-08:** AI-ESTATE CEM needs to be examined to determine role and use for FailureMechanism.

Status: OPEN Medium Priority

- **Issue 10D-01:** The current version of the DCM does not support recording multiple repeated outcomes for a test or action at a single step. Some reasoners may make use of this information, in which case we need to provide a way to track the history of those observations. Whether and how we want to record multiple observations will be addressed in a future revision.

Status: OPEN Medium Priority

- **Issue 10D-02:** The current version of the DCM does not support recording the number of resources utilized at a single step. Some reasoners may make use of this information, in which case we need to provide a way to track this value. Whether and how we want to record resource quantity will be addressed in a future revision.

Status: OPEN Medium Priority

- **Issue 10D-03** - Test Results and the ATML standards try to support too many use cases and therefore have numerous optional elements. .Mike Seavey suggests that for long term solution of reducing the number of elements we may need to subdivide the schema for different applications, each of which would appear in a different dot standard. Another solution would be to have a single standard with schemas to support subdomain application use cases. We need to think about this for Test Results and possibly MAI.

Status: OPEN High Priority

New Issues:

None

1. Items Logged at 11-A Meeting

- Log # 498 John Sheppard 1232 Grey Scale presentation
- Log # 499 11-A TestResults Information modeling notes
- Log # 500 11-A TestResults XML Schema notes

2. Standards Development Roadmap

Project	Task	Date Due
P1232.3 User's Guide (expires 12/31/13)	First Draft (Doorbell Problem)	May 2011
	Complete First Draft (Expanded case studies)	September 2011
	Final Draft	January 2012
	Ballot	February 2012
	Ballot Resolution	May 2012
	Commence Recirculation	June 2012

	Standards Board Approval	September 2012
P1636.1 (PAR expires 12/2013)	Complete information model	March 2011
	Complete XML schema	March 2011
	Draft document	April 2011
	Go to Ballot	May 2011
	Negative Ballot Resolution	July 2011
	Recirculation	August 2011
	Submit to Standards Board	September, 2011
	Standards Board Approval	December 2011
P1636.99 (PAR expires 12/2014)	Complete information model	March 2011
	Complete XML schema	March 2011
	Draft document	April 2011
	Go to Ballot	May 2011
	Negative Ballot Resolution	July 2011
	Recirculation	August 2011
	Submit to Standards Board	September, 2011
	Standards Board Approval	December 2011
1636 Revision (PAR TBD)	Develop PAR	May 2011 (or later)

Proposed 11-B Agenda (St. Louis?)

- Call to Order
- Approval of Agenda
- Reports
 - Chair's report
 - Secretary's report
 - Liaison Reports (CS, I&M, AES, SAE)
 - Brief Presentations
- P1232.3 User's Guide
 - Draft Review
- P1636 SIMICA
 - P1636 PAR discuss, prepare, or submit?
 - Revision content and strategy discussion
 - P1636.99
 - P1636.1
- Final Discussions on All Topics
- Review Old Action Items
- Review New Action Items
- Set Agenda for 11-C Meeting
- Adjourn