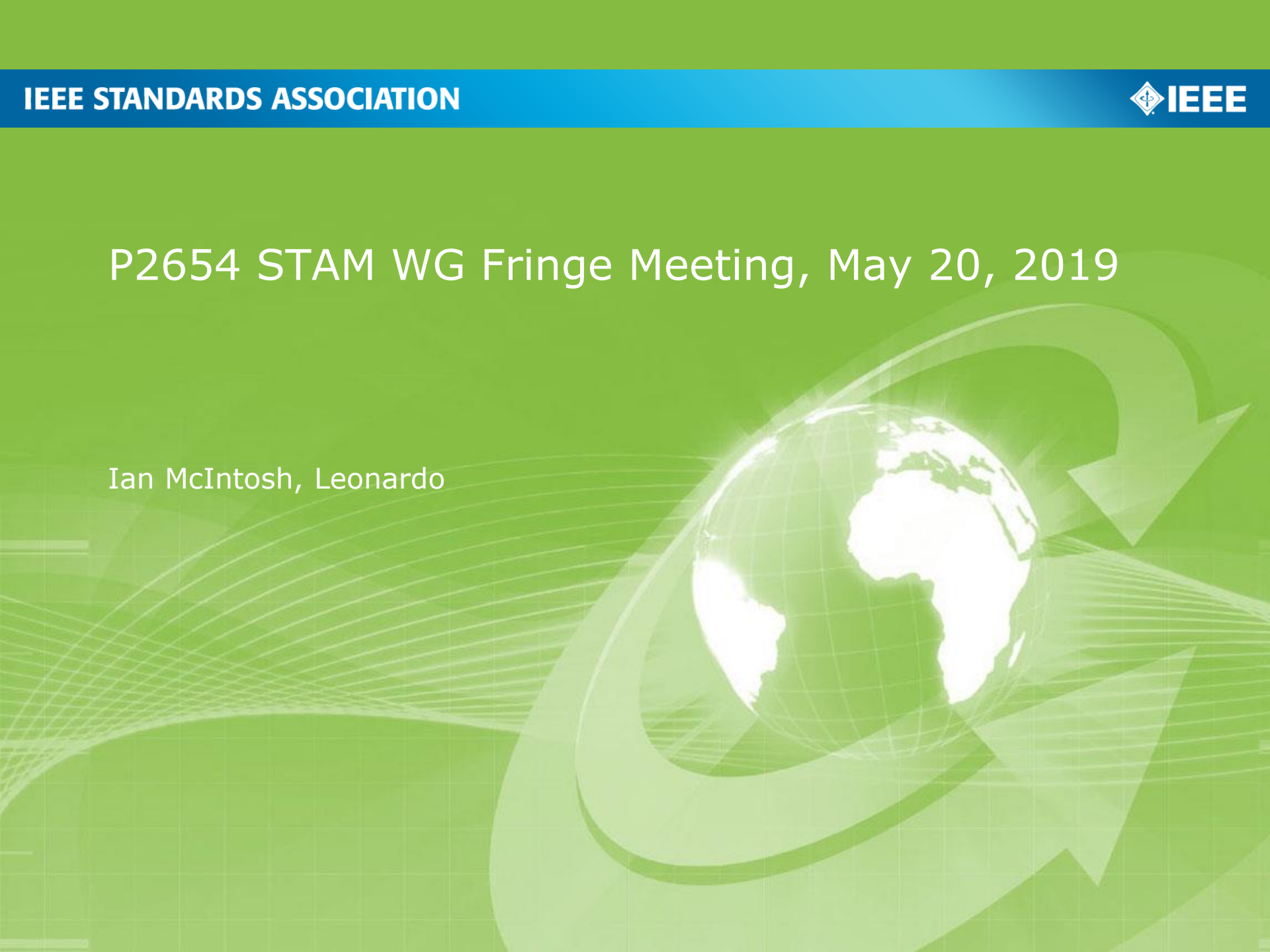


P2654 STAM WG Fringe Meeting, May 20, 2019

Ian McIntosh, Leonardo



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IEEE P2654
System Test Access Management
Ian McIntosh (interim chair)

Working Group Meeting (Fringe Meeting, May 20, 2019)

Date: 2019-05-20

Author(s):

Name	Affiliation	Phone [optional]	Email [optional]
Ian McIntosh	Leonardo		

2. Agenda

1. Roll Call – *Meeting opened by Eric Cormack at 11:05 Eastern Time (US).*
2. Agenda
3. IEEE Patent Slides
- ~~4. Review and approve previous minutes: May 13~~
- ~~5. Review open action items~~
6. Discussion Topics:
 - AutoTestCon paper
 - ITC Poster outline
- ~~7. Any other business~~
8. Key Takeaways from today's meeting
9. Glossary terms from this meeting
10. Schedule next meeting
- ~~11. Topic for next meeting~~
- ~~12. Reminders~~
- ~~13. List new action items~~
14. Adjourn

Instructions for the WG Chair

The IEEE-SA strongly recommends that at each WG meeting the chair or a designee:

- Show slides #1 through #4 of this presentation
- Advise the WG attendees that:
 - IEEE's patent policy is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;
 - Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
 - There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.
- Instruct the WG Secretary to record in the minutes of the relevant WG meeting:
 - That the foregoing information was provided and that slides 1 through 4 (and this slide 0, if applicable) were shown;
 - That the chair or designee provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard
 - Any responses that were given, specifically the patent claim(s)/patent application claim(s) and/or the holder of the patent claim(s)/patent application claim(s) that were identified (if any) and by whom.
- The WG Chair shall ensure that a request is made to any identified holders of potential essential patent claim(s) to complete and submit a Letter of Assurance.
- It is recommended that the WG Chair review the guidance in *IEEE-SA Standards Board Operations Manual* 6.3.5 and in FAQs 14 and 15 on inclusion of potential Essential Patent Claims by incorporation or by reference.

Note: **WG** includes Working Groups, Task Groups, and other standards-developing committees with a PAR approved by the IEEE-SA Standards Board.

Participants have a duty to inform the IEEE

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential
Essential Patent Claims is encouraged**

Ways to inform IEEE

- Cause an LOA to be submitted to the IEEE-SA (patcom@ieee.org); or
- Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

Other guidelines for IEEE WG meetings

- All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
 - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
 - Don't discuss specific license rates, terms, or conditions.
 - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
 - Technical considerations remain the primary focus
 - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
 - Don't discuss the status or substance of ongoing or threatened litigation.
 - Don't be silent if inappropriate topics are discussed ... do formally object.

For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE-SA Standards Board Bylaws***
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- ***IEEE-SA Standards Board Operations Manual***
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at

<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the IEEE-SA
Standards Board Patent Committee
Administrator at patcom@ieee.org**

4. ~~Review and approve minutes~~

Fringe Group Meeting, May 20

Notes circulated May 20.

Attendees:

Eric Cormack (DFT Solutions)
Bill Huynh (Marvell Inc.)
Erik Larsson (Lund University)
Jan Schat (NXP Semiconductors)
Naveen Srivastava (Nvidia)
Jon Stewart (Dell)
Brad Van Treuren (No affiliation)
Carl Walker (Cisco Systems)
Louis Ungar (A.T.E. Solutions)

5. ~~Review open action items~~

Action Item Register:

<http://files.sjtag.org/PostStudyGroup/ActionItemRegister.xlsx>

Format of action number is

[Meeting#.Action# within that meeting]

6. Discussion Topics

6.a AutoTestCon paper

See discussion notations -- slides 14–18 of this deck

6.b ITC Poster outline

Not discussed due to time imitations

- Draft abstract:
http://files.sjtag.org/ITC2019/STAM_abstract_ITC_2019_jsc_14_May.doc
- Draft poster:
http://files.sjtag.org/ITC2019/ITC_2019_IEEE2654_jsc_14_05.pub

Wrap-up items

7. ~~Any other business~~

8. Today's Key Takeaways

None

9. Glossary terms from this meeting

None

10. Schedule next meeting

May 27 – Informal? Memorial Day holiday US/UK. No meeting.

Next meeting scheduled 7/3

11. ~~Topic for next meeting~~

12. Reminders

13. ~~List new action items~~

14. Adjourn – 12:02 PM Eastern Time (US)

AutoTestCon Discussion notes

- Test of LRU, ALU, etc. to obtain faulty unit that should be removed.
- Identify (approx.) what set of boards are faulty (as tested with same ATE)
 - Shipped back to factory for repair
 - May need to test on location to repair locally due to no port available to dock to
- ATE is required to conform to the “service/branch” standard
 - US Navy – eCASS System (CASS – IEEE 488, eCASS - VXI)
 - USAF – VAST
 - US Army – Intermediate Family of Test Equipment (IFTE)
 - ATE needs to be viable for many years
 - MIL Std 1553 Serial Data Bus

AutoTestCon Discussion notes (cont.)

- Tests are rated based on reliability (likeliness of parts to fail)
- Cables are giving zero failure rate (however most likely to fail)
- NFF is a real issue
- Second NFF found is a “bad actor” and scrapped
- One case 450-500 units found with NFF
- STAM can provide better diagnostics in a system setting
 - Test in system before removal
 - Able to capture additional environmental condition information when failure occurs
 - Diagnostic coverage vs. Fault coverage
 - Gives insight into reliability of devices if one can identify failure down to a device instead of a set of devices
 - Automated diagnostics
 - Organization of tests and diagnostics improved
- \$23B spent on NFF issues every year for military (not including avionics)
- Commercial estimates \$100K per aircraft per year (See blog on Louis’ LinkedIn blog)

AutoTestCon Discussion notes (cont.)

- STAM can help organize the appropriate type of test to cover a particular type of defect (structural test better coverage instead of functional test as a test strategy)
 - Embedded JTAG testing provides finer granularity of diagnostics resolution
 - STAM can provide access to embedded instrumentation without adding stubs to high speed busses
 - How will STAM support security in the system (Design for Test vs. Design for Security trade-offs)
 - IDCODE provides insight whether the appropriate device was installed during repair
 - If too dangerous to bring TAP to system panel, could access be obtained via network or other interface to ensure security
 - IPMI Board Management Controller protocols are not very secure either. Treat STAM like IPMI is treated today for security.

AutoTestCon Discussion notes (cont.)

- How do we determine what to enable and what to block from field access regarding testability and diagnostic resolution required?
- Embedded JTAG is important to limit exposure via console interface
- Func Test shows failure on memory bus. Structural test identifies pin and net level diagnostics.
- Embedded JTAG able to access circuits not accessible from functional tests (e.g., DSP/Memory busses)
- Fault coverage vs. Diagnostic coverage (Look at Keysight Fault Detective as an example) (Aster – TestWay) (Teradyne – LASAR Simulation)
- SoCs are driving away need for structural test, but access to embedded instrumentation becomes more important

AutoTestCon Discussion notes (cont.)

- Fault Injection/Insertion via JTAG is becoming more popular in industry for DVT that can be disabled via security features.
 - NFF happens due to SW failures too
 - FI helps validate SW is handling failures properly