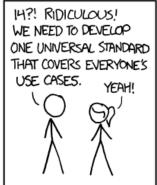# PHM Standards Panel
How do we track the standards world?

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC)

SITUATION: THERE ARE 14 COMPETING STANDARDS.

14?! RIDICULOUS! WE NEED TO DEVELOP ONE UNIVERSAL STANDARD THAT COVERS EVERYONE'S USE CASES. YEAH!

SOON:

SITUATION: THERE ARE 15 COMPETING STANDARDS.

xkcd, 2013

Aria A&B

1045- 1055: Introduction and Objectives

1055- 1145: Four 11 minute talks

1145- 1200: Open discussion

1200- 1210: Prioritization of issues

1210- 1215: Wrap-up and way forward: PHM Standards Interest group

Facilitators

Jeff Bird, Ravi Rajamani

Panel Sessions Sponsored by

UTC Aerospace Systems

PHM Society Standards Committee

Jeff Bird, Kai Goebel, Ravi Rajamani

10th Anniversary Review

Standards review, users' perspective, innovation debate, adaptation, manufacturing, standards and education:

https://www.phmsociety.org/events/conference/phm/12/phm_standards

http://www.phmsociety.org/node/1529

http://www.phmsociety.org/node/1562

http://www.phmsociety.org/node/2208

http://www.phmsociety.org/forum/592

Highest: Promoting awareness and adoption of standards, Define technical processes – Guidebooks, Define Career Field Competencies

Medium: Leverage of practical, industry experience to complement theory based education; Recruiting new members to Standard Committees to ensure continuity; Move beyond Certification to and Qualification

Low: Avoidance of duplication between standards organisations, especially inconsistent guidance; Recognition of implementation challenges in educational projects; Link Assessments to Competencies and Courseware; Identify Principles and Applications for Importance/application of standards based on statutory and regulatory requirements

Panel Objectives and Scope

- Update the community on the PHM standards activities.
- Identify gaps and development needs: Internet of Things, Digital Threads, e.g. accessing, staying current and contributing .
- Introduce a *PHM Standards Portal* and *PHM-ISO connect*.
- Prioritize actions for the PHM Society via its Standards Committee.

SCOPE

Generation, availability and renewal of the bodies of PHM knowledge with proprietary, commercial, supply chain realities

- Conventional standards organizations
- Industry
- Academia

Introductions

Panelists

- ASME- Donnie Alonzo

- SAE International- Logen Johnson

- ISA- Ian Verhappen

- PHM Society- Jeff Bird

- Facilitators

  - Jeff Bird, Ravi Rajamni

PHM Society Role?

Society Objectives

1. Free access to PHM knowledge,
2. Interdisciplinary and international collaboration
3. Advance the engineering discipline

Observations

1. Diverse body of PHM knowledge is out there: Standards, lessons learned, information, few case studies
2. Multi-disciplinary awareness and engagement is lacking: Many entrants come from single specialities
3. Wide continuing standards participation is difficult: Small companies, long time frame for development
4. To mature knowledge from theory to practice is challenging: Knowing about relevant standards across disciplines to apply to systems, Developing Body Of Knowledge to complement academic training
5. Data and information sharing protocols are essential but problematic: Proprietary and sector specific information

PHM Society Activities

Traditional to be activated

1. Panels
2. Special issues of journal and tutorials- subjects?
3. Program updates and on-line forum
4. Connections among PHMers currently connected

New initiatives

1. Standards Interest Group
2. *PHM Standards Portal*
3. Standards Review Portal: *PHM- ISO Connect*

PHM Standards Portal

One stop entry point for PHM Standards on the Society website

Organization Links: ASME, DAU, IEC, IEEE, ISA, ISO, RTCA, SAE, …

With summary of scope and activity, briefings like those today

Background: PHM tutorials,

Publications: PHM Society Journal and special issues

https://www.phmsociety.org/journal/special-issue/Standards

Other journals

Interaction: PHM Society Forum

http://www.phmsociety.org/forum/592

ISO document review

PHM-ISO Connection

PHM Society is a paying member of the USA Technical Advisory Group for ISO 108 that covers diagnostics and prognostics internationally

We have access to all evolving documents for review through the USA TAG

How to engage the PHM community to benefit ISO AND Us?

Proposed approach- *PHM-ISO Connect*:

1. Identify to the community evolving standards
2. Coordinate reviews of key evolving standards by qualified reviewers through our OJS
    1. Qualify reviewers and review managers
    2. Review through OJS: review managers + reviewers + reviews
    3. Provide high value feedback to US TAG and ISO

Way Forward

- IJPHM papers and Communications
  - Submit an abstract
  - Submit an abstract for the Standards Special Issue
- Updates on standards in progress
  - *PHM Standards Portal* – what else would be useful there?
  - Forum discussions
- ISO TC 108 Standards Review Process
  - *PHM-ISO connect:* want to help?
- Standards forum with email list?
- What else would be useful?

PHM17 Plenary Challenges

1. Define Career Field Competencies
2. Define Certification Requirements
3. Identify Principles and Applications for Importance/application of standards based on statutory and regulatory requirements
4. Define technical processes – Guidebooks
5. Link Assessments to Competencies and Courseware
6. Move beyond Certification to and Qualification
7. Developing practical standards at a pace that meets industry need
8. Recruiting new members to Standard Committees to ensure continuity
9. Promoting awareness and adoption of standards
10. Avoidance of duplication between standards organisations, especially inconsistent guidance
11. Leverage of practical, industry experience to complement theory based education
12. Recognition of implementation challenges in educational projects

Priorities
- What standards challenges need to be addressed now?
- What standards challenges CAN be addressed now?
- What standards challenges have to wait and WHY?

Sample PHM Standards Activities

- ASME

- IEEE P1856 PHM for Electronics Systems

- International Standards Organization- TC 108 SC4 and 5

- Radio Technical Commission for Aeronautics – DO-178C Software Certification

- SAE International: JA6268 Health ready components, ARP5897 Maintenance credits for Engines, ARP6803 IVHM overview

- MIL-Handbook-61A Configuration Management Guidebook

- www.DAU.mil