Standards Training for New Hires, Grizzled Veterans, and their Management

SES Webinar

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Topics

- Training: why; who; what?
- Some definitions
- Some Standards 101
- Some IT Standards History
- How to be effective in standards
  - There are timeless and universal tactics for successful negotiation and leadership.
Why train?

• Each standards participant starts with some combination of knowledge, skills, and experience.
• To be successful, technical knowledge is necessary but not sufficient.
• Knowledge about standards processes, policies, best practices, etc. is necessary but not sufficient.
• Interpersonal skills are essential for successful negotiation.
Who needs standards training?

- New hires
  - Equip them to succeed
- Grizzled veterans
  - Break any bad habits
  - Share lessons learned
- Managers
  - Understand/appreciate what their employees are doing so that they can better support them
What?

- NIST ITL Standards Training Topics
  - Standards for Information Technology (IT)
  - IT Conformity Assessment
  - How to Draft a Good Voluntary Consensus IT Standard
  - How to be Effective in Voluntary Consensus Standards Development
- Above takes about 6 hours.
measurement standard (etalon)

- realization of the definition of a given quantity, with stated value and measurement uncertainty, used as a reference.

NOTES
1 The ‘realization of the definition of a given quantity’ can consist of a measuring system, a material measure, or a reference material.
2, 3, 4, 5, 6, 7

SOURCE: International Vocabulary of Metrology – Basic and General Concepts and Associated Terms (VIM 3rd edition)

- example: the NIST-F2 Atomic Clock -- measures the frequency of a particular transition in the cesium atom—which is 9,192,631,770 vibrations per second
(documentary) standard (norme)

- a document, established by consensus and approved by a recognized body, that provides for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

Note: Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.

voluntary consensus standard

- a documentary standard whose use is optional.
- The participants are not volunteers.
- They are stakeholders with diverse motivations for participating in the consensus negotiations.
Why standards?

NIST ITL Strategic Plan

“ITL’s strategic objective for standardization is driven by the understanding that technically sound measurements, testing, and standards are the basis for the advancements in innovation and commerce.”
Why standards?

- **Industry Perspective**
  - A Boeing standards executive has described an airplane as hundreds of standards flying in very close formation.
Standards Developing Organization (SDO)

- An SDO is any organization that develops and approves documentary standards using various methods to establish consensus among its participants.
Standards Developing Organization (SDO)

- SDOs may be:
  - accredited (e.g., ANSI-accredited INCITS or NIST ITL)
  - international treaty-based (e.g., ITU-T or ICAO)
  - international private-sector based (e.g., ISO/IEC or IEEE)
  - an international consortium (e.g., OASIS or IETF or W3C)
  - a government agency (e.g., DoD or DHS or NIST)
- SDOs may have open (e.g., IETF) or closed (e.g., ICAO) membership.
Consensus among participants in various SDOs to approve standards usually requires more than a majority but less than unanimity.

Often this is determined by formal voting.

Where there is voting to establish consensus, it may be voting by:

- all participants;
- organization (e.g., company, agency);
- national body; or
- weighted organizational voting.
The U.S. Standards System

• The U.S. standards system is a bottom-up, stakeholder driven process.
  • Industry, consumers, academia, government, etc.

• This differs significantly from the government-driven, centrally-coordinated, bottom-down standards systems common in many other countries.

• Within the United States, there are hundreds of SDOs, which are overwhelmingly private sector organizations, providing the infrastructure for the preparation of standards documents.
American National Standards Institute (ANSI)

- A US private sector federation that facilitates voluntary consensus standards and conformity assessment systems.
  - ANSI doesn’t develop standards.
- Over 200 SDOs are presently accredited by ANSI.
  - There are over 600 SDOs in the US.
American National Standards Institute (ANSI)

- Official US representative to the International Organization for Standardization (ISO).
- Via the US National Committee, official U.S. representative to the International Electrotechnical Commission (IEC).
- A Memorandum of Understanding between NIST and ANSI recognizes ANSI’s national & international roles.
  - Revised September 24, 1998
Information Technology (IT)

- The art and applied sciences that deal with data and information. Examples are capture, representation, processing, security, transfer, interchange, presentation, management, organization, storage, and retrieval of data and information.

SOURCE: American National Standard Dictionary of Information Technology (ANSDIT)
National Cooperative Research Act of 1984

- In the United States, the National Cooperative Research Act of 1984 opened a new era where organizations could collaborate to carry out joint research and development ventures and not be deemed illegal per se under Federal antitrust laws or similar State laws.
The IT Standards Ecosystem Gets Bigger

- National Cooperative Research Act of 1984 provided coverage for joint research and development, which included developing standards.

- As a consequence, where there was once about 25 SDOs involved in IT standardization in the 1970s, there are now over 200 SDOs worldwide developing IT standards.
  - CEN Survey of ICT Standards Fora and Consortia; July 12, 2010
Competition and Innovation

- Rapid innovation in IT drives competition among SDOs to undertake new work in “hot” areas of potentially great market relevance (e.g., mobile devices, cloud computing, big data, cybersecurity).
- This competitive environment has driven SDOs to streamline their consensus building processes in order to quickly develop and approve technically sound standards that meet current market needs.
- Rapid IT innovation makes IT standardization a challenge.
Some Key Cybersecurity SDOs

International

- ISO
- IEC
- IETF
- IEEE
- ISA
- 3GPP
- 3GPP2
- ATIS
- WiMAX
- OASIS
- W3C
- TCG
- OMG
- Open Group

ISO/IEC JTC 1 Information Technology

ISO TC 68 Banking, Securities and Other Financial Services

ISO/IEC JTC 1 Information Technology

- SC 2 Security management and general banking operations
- SC 6 Telecomm & info exchange
- SC 7 Software & systems engineering
- SC 17 Cards & personal identification
- SC 22 Programming languages
- SC 27 IT security techniques
- SC 37 Biometrics
- SC 38 Cloud Computing

PAS Submitters

US Counterparts

- ANSI (US Member -- ISO)
- IEEE Standards Association
- INCITS Executive Board (US TAG - ISO/IEC JTC 1)
- X9 (US TAG - ISO TC 68)
- X9F Data & Information Security (US TAG – TC 68/SC 2)
- IEEE JTC 1/SC 7 TAG
- B10 ID Cards & Related Devices (US TAG – JTC 1/SC 27)
- CS1 Cyber Security (US TAG – JTC 1/SC 27)
- Cloud38 Cloud Computing (US TAG – JTC 1/SC 38)
- M1 Biometrics (US TAG – JTC 1/SC 37)
- PL22 Programming languages (US TAG – JTC 1/SC 22)
- T3 ODP (US TAG – JTC 1/SC 6)

Department of State (US Member to ITU & ICAO)

Key:
PAS = Publicly Available Specification; TAG = Technical Advisory Group; grey = private sector, national member-based international standards body; yellow = UN agency, member state-based international standards body; green = private sector, international standards developer (e.g., consortium; industry association)
Some Axioms

- We will never get there.
  - IT products and services depend upon a mix of proprietary standards, voluntary consensus standards, and open source software*.

- Follow the money.
  - Over the last fifty years, the IT costs and IT profits have shifted from hardware to software to services (e.g., cloud computing).

* Open source software is software whose source code is available for modification or enhancement by anyone.
Some Axioms

- Darwinian competition.
  - Worldwide, there are more than 200 SDOs developing IT standards.
  - Competitive standards versus duplicative standards is often an issue.

- It’s a part-time job.
  - Working on voluntary consensus standards is usually just a part of your job description.
  - Part-time work progresses slower than full-time.
IT Consumers’ Standards Motivations - 1965

  - “To provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.”
  - “The Secretary of Commerce is authorized ... (2) to make appropriate recommendations to the President relating to the establishment of uniform Federal automatic data processing standards.”
IT Consumers’ Standards Motivations - 1965

- Voluntary consensus standards are good.
- They avoid lock-in to one provider and promote competition & price/performance improvements.
IT Providers’ Standards Motivations - 1965

- Voluntary consensus standards are *mostly bad*.
- Many business models depend upon proprietary standards to help lock-in customers and profits.
IT Consumers’ Standards Motivations – Now

- **IT consumers**
  - Voluntary consensus standards are *good*.
  - They avoid lock-in to one provider and promote competition & price/performance improvements.
  - *Same as in 1965!*
IT Providers’ Standards Motivations - Now

- Voluntary consensus standards are **bad**.
  - Those with successful proprietary markets may resist voluntary consensus IT standards.
  - *Same as in 1965!*

- Voluntary consensus standards are **good**.
  - Those seeking more market share may support voluntary consensus IT standards.
  - *New!*
Speed Factors - level of effort

  - ~two years

- DHS → Registered Traveler Interoperability Consortium (RTIC) Specification, 2006
  - ~ four months
Speed Factors – technical (and/or political) difficulty

- FIPS 197, Advanced Encryption Standard (AES), November 26, 2001
  - ~five years
  - ~ three years
Speed Factors – effective process

  - ~ five months
- The Industry Usability Reporting Project (IUSR) → INCITS 354-2001
  - ~ five months
Tactics for Success

- *Plus ça change, plus c'est la même chose.*
  - The more things change the more they stay the same.

- For example, created in 1757, the 28 “Rogers’ Rules of Ranging” are a listing of small unit combat tactics for mobile forces operating in hostile territory.
  - They form the basis of the [Standing Orders](#) taught to U.S. Army Rangers today.

- There are timeless tactics for being effective in voluntary consensus standards development.
The truth may be a minor advantage.

- “A man must be both stupid and uncharitable who believes there is no virtue or truth but on his own side.” - Joseph Addison
- "The opposite of a correct statement is a false statement. The opposite of a profound truth may well be another profound truth." - Niels Bohr
- “...man will occasionally stumble over the truth, but usually manages to pick himself up, walk over or around it, and carry on.” - Sir Winston Churchill
- "All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident." - Arthur Schopenhauer
Savoir, c'est pouvoir. (Knowledge is power.)

- Read the following guidance documents.
  - NISTIR 7854, Guidelines for NIST Staff Participating in Documentary Standards Developing Organizations’ Activities
  - SD-9: DoD Guidance on Participating in the Development and Use of Non-Government Standards
    - Table 1. Participants’ Responsibilities
  - ANSI Guide for U.S. Delegates to Meetings of the IEC and ISO
Savoir, c'est pouvoir.

- Effective negotiation in consensus standards development requires not just technical expertise, but a thorough knowledge of the SDO’s written standards development processes, policies, and drafting guidelines.
You should become familiar with and support the best practices of an SDO.

For example, to efficiently resolve comments on a document, use a comment template that lists all comments *by clause number* with columns for:

- the rationale for a change;
- the specific text/figure/etc. for the change; and
- the editor’s proposed disposition of the change.

*Savoir, c'est pouvoir.*
Savoir, c'est pouvoir.

- Awareness of the relevant markets and associated market politics is essential.
- This drives the motivations of the participants.
- For international fora, understanding of the cultures of the participants is especially important.
Continuity in participation is crucial to success.

- Participants have to obtain the respect of other participants through:
  - continuous attendance;
  - thoughtful participation; and
  - written contributions.
The power of the pen (keyboard)

- Make contributions!
- Make contributions by the required deadline.
- Especially for international meetings, speak slowly with clear pronunciation so that all participants can more easily follow your review of your contribution.
- You have the advantage when the participants are discussing your document.
  - When others are editing your document, the very good news is that they are editing your document!
Negotiating effectively

- Don’t assume that everyone has read your contribution.
- Never imply or state that you suspect someone has not read your contribution.
- Listen carefully to the arguments.
- Try to understand why something is important for other stakeholders.
Negotiating effectively

- It is important to understand and take advantage of the fact that negotiations occur before, after, during and in between the formal meeting sessions.
- Work with others, offline before the agenda topic, on a possible compromise.
- In light of the discussion, call for a meeting break to work with interested parties on a solution.
- If people agree with you, stop talking!
Practice serenity during meetings

- Appear attentive and calm/peaceful/untroubled.
- Be attentive and calm/peaceful/untroubled.
- Possible allies will change for each agenda item.
  - A professional and friendly demeanor at all times will help in finding allies.
  - “Do I not destroy my enemies when I make them my friends?” -- Abraham Lincoln
  - Always forgive your enemies; nothing annoys them so much.” -- Oscar Wilde
Effective leadership

- Effective leadership in SDOs promotes timely development of technically sound standards.
- Candidates for SDO leadership positions need the following attributes (same as participants):
  - technically knowledgeable;
  - know the market politics;
  - thoroughly familiar with the SDO’s written development processes, policies, and best practices;
  - real time talent for listening and summarizing the issues; and
  - represent the SDO, not their organization or country.
Presiding effectively at meetings

- Put a stop to circular discussions.
  - “I will now take comments from those who have not yet spoken one or more times on this topic.”
  - Seems to be no support: “Does anyone else support this position?”
  - Seems to be support: “Does anyone oppose this position?”
  - When there are two or more options being articulated, summarize the options and take a straw poll to see if there is consensus on the way forward.
- Presiding from the side of the table may be necessary.
On the job training
The good, the bad, and the ugly.

- Use your participation in consensus standards development to observe and learn.
- Consensus groups consist of a mixture of participants.
- Learn best practices from the effective participants.
- Learn what not to do from the less effective participants.
- Likewise for learning from those who preside.
Hogan’s Rules of Ranging

- The truth may be a minor advantage.
- Get all the guidance and training that you can.
- Learn from the good, the bad, and the ugly.
- Know the procedures, policies, drafting guidelines, and best practices.
- Know the market, market politics, and motivations.
- Make contributions.
- Seek allies.
- Negotiate before, during, after, and between sessions.
- Stop talking if you get your way.
- Always be professional and pleasant.
- A sense of humor helps.
Questions?

What society thinks I do

What my mom thinks I do

What my colleagues think I do

What my friends think I do

What I think I do

What I actually do