

# The Changing World of Standardization: Trends, Opportunities and Challenges



**STANDARDS SERVICES SEMINAR**  
**SEPT. 20, 2012**

**AJIT JILLAVENKATESA**  
**SENIOR STANDARDS POLICY ADVISOR**  
**STANDARDS COORDINATION OFFICE**

# Highlights



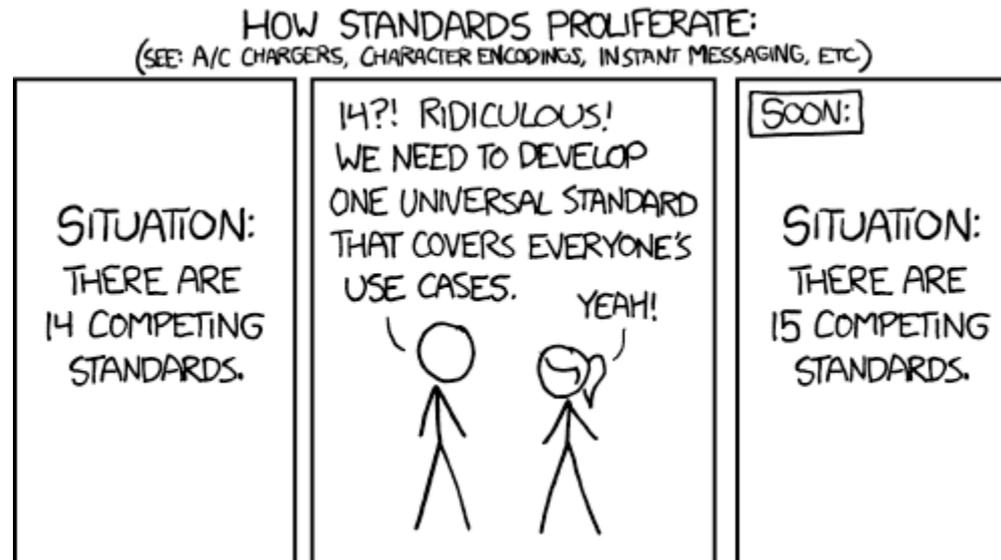
- Some data to help set the stage for the discussion
- Why should we care?
- Discussion of trends
  - Geographical – USA, China, EU
  - Evolution of non-traditional standards contributors
  - Industry participation
  - Standards setting organizations (SDOs, consortia, others)
  - Societal and policy issues
- How could this impact us?
- Where are the opportunities?
- Open discussion

# A Few Caveats



- **NIST participants in this seminar have some familiarity with standards and participate in different types of standards setting activities**
- **This discussion is about documentary standards AND NOT about measurement standards**
- **Documentary standards activities and the organizations in which these standards are developed vary broadly and no two organizations are exactly the same**
- **Examples described here are generalizations and not every trend described here applies to every standards organization.**

# Something We Can All Relate To...



**Courtesy:** [HTTP://XKCD.COM/927/](http://xkcd.com/927/)

# ...Or, As Happens More Often



Courtesy: [http://nighthacks.com/roller/jag/entry/xkcd\\_on\\_standards](http://nighthacks.com/roller/jag/entry/xkcd_on_standards)

# Why Should We Care



- **NIST mission relating to standards**
  - Standards as a tool for disseminating NIST developed knowledge/skill
  - Emphasis or interest to participate in standards activities
  - NIST's role per legislation or administrative mandates
  - Staff participation in standards development activities

# Some Contextual Data



<b>Measure</b>	<b>Count</b>
Number of SDOs with DOC Participation	137
Number of Committee Activities with NIST Participation	1058
Number of NIST Committee Members	387
Number of NIST Committee Memberships	1469
Number of NIST Committee Chairs	169

Source: Standards Committee Participation Database\*\*

<http://standards-i.nist.gov/scp/internal/index.cfm?fuseaction=statistics.SCPCounters>

# Where Do We Participate



SDO	Count
ASTM International (ASTM)	127
International Organization for Standardization (ISO)	64
American National Standards Institute (ANSI)	41
Institute of Electrical and Electronic Engineers (IEEE)	40
InterNational Committee for Information Technology Standards (INCITS)	32
International Committee for Weights and Measures (CIPM)	32
International Electrotechnical Commission (IEC)	23
ASME International (ASME)	21
National Institute of Standards and Technology, U.S. (NIST)	18
American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)	17
International Organization of Legal Metrology (OIML)	12
Internet Engineering Task Force (IETF)	12

**INTERNAL NIST STAFF USE ONLY**

# Participation by OU



OU	Count
68: Physical Measurement Laboratory (PML)	118
77: Information Technology Laboratory (ITL)	84
73: Engineering Laboratory (EL)	76
63: Material Measurement Laboratory (MML)	70
60: Associate Director Office	25
15: Office of Safety Health and Environment	5
47: Technology Innovation Program (TIP)	3
00: Chief of Staff	2
00: Executive Administration	1
18: Office of Information Systems Management	1
61: NIST Center for Neutron Research (NCNR)	1

# Participation By Division



Division	Count
773: Computer Security Division	29
685: Sensor Science Division	28
683: Semiconductor and Dimensional Metrology Division	27
732: Building Environment Division	20
774: Information Access Division	17
731: Materials and Construction Research Division	16
682: Radiation and Biomolecular Physics Division	14
690: Weights and Measures Division (WMD)	14
734: Manufacturing Systems Integration Division	14
772: Advanced Network Technologies Division	14
602: Special Programs Office	12
775: Software and Systems Division	12

**INTERNAL NIST STAFF USE ONLY**

# Why Should We Care



- **How can we be more effective in our standards activities**
  - Context for others' motives and actions
  - Ensuring that we are balanced, neutral and focused on the standardization issues
  - Impact
  - Who are we representing – issues such as US position, USG position, NIST position, Delegation position, etc.

# Trends



- **Standards as a policy tool:**
  - Governments around the world looking to see how standards can serve as a policy tool
  - Touches upon technology issues, international competitiveness, innovation, trade, etc.
  - Past 2-3 years have seen some significant developments
    - ✦ USA
    - ✦ China
    - ✦ European Commission
    - ✦ Other countries
  - Different drivers, different methodologies, different scope

# USA



- **US Government:**

- Administration's use of standards based tools for various priorities:
  - ✦ Smart Grid
  - ✦ Electronic Health Records
  - ✦ Financial Data Reporting
  - ✦ Education
  - ✦ Information technology & cybersecurity
  - ✦ Smart disclosure
- Extends USG role - from contributor/user to convener for national priorities
- NSTC Subcommittee on Standards – high level, agency leadership engagement in standards policy discussions

# USA



- **Implications for NIST**

- Higher profile
- Budgetary implications
- Strategic prioritization of standards engagement – what do we give up in order to take on new roles?
- Coordinating with other agencies – how to coordinate when agencies may have significantly different mission priorities

# China



- Aggressive use of standards to meet domestic policy goals and objectives
- Increasing participation in international standards development:
  - Recently became a permanent member of the ISO Technical Management Board
  - Increasingly assuming secretariat or leadership roles for committees and subcommittees being vacated by other countries
- Steady stream of work item proposals based on domestic standards or domestic projects

# China



- Standards strategy with goals and metrics pertaining to Chinese standards as the bases for international standards (2005-2020)
- Incentive and rewards system for technical experts participating in standards activities
- Role of academics
- Integral to elements of indigenous innovation policies
- Rapid transition up the learning curve
- Use of proxies

# European Commission



- Continued dependence on European Standards Organizations for some standards needs
- Recent reviews of European approach to standardization
  - EXPRESS study
  - ICT focused study
  - Contribution of standardization to innovation in Europe
- Regional standards bodies (CEN, CENELEC and ETSI) and their roles – particularly in supporting EC Directives; interface with the international system

# Non-Traditional Participants



- **Increasing participation from non-traditional standards contributors**
  - Transition of many economies from being primarily users of standards to developers of standards
  - Desire to shape standards to meet domestic objectives and needs
  - Driven by increasingly global economy – global trade and manufacturing in lower cost economies
  - Perceptions of status quo being unacceptable
  - Perception of “developed country” domination of standards and standards system

# Non-Traditional Participants



- **Increasing participation from non-traditional standards contributors**
  - Greater leadership from non-traditional countries
  - More varied standards work items
  - Different approaches to consensus, leadership and resolution of differences
  - Greater governmental and industry support
  - Programs for training and education
  - Active recruitment of experts to participate in standards development

# Industry Participation



- **Industry's use of standardization as a strategic tool for competition**
  - Varying motivations and objectives: technology foundations, offensive objectives, defensive reasons
  - Changes in industry participation in standards development:
    - ✦ More selective participation
    - ✦ Fewer representatives
    - ✦ Turn over of leadership of standards activities
    - ✦ Organizational stove pipes and dynamics impacting organization's position (or the lack of it) at the standards table
  - Business case for investments in standards development
  - Strategic standards engagement a luxury vs. tactical engagement as a necessity

# Industry Participation



- **US companies or global companies?**
  - Multi-national companies with global presence
  - Many participate in multiple national delegations
  - What positions/interests are they championing?
  - How do USG/NIST representatives interpret industry positions?
  - Standards engagement for market competitiveness reasons may conflict with other standards engagement objectives

# Standards Organizations



- **Standards Organizations:**
  - Multiple pressures and trends due to diverse reasons
  - Traditionally – clearly defined scopes of activities, and understanding of boundaries of scope
  - Convergence of technologies and emerging technologies stretching this traditional model
  - Technology convergence also leading to greater overlap of scope and potential for duplication
  - Real or perceived notions among some stakeholders and users about effectiveness and efficiency driving:
    - ✦ Growth of specialized standards or specification developing organizations
    - ✦ Scope creep in some organizations

# Standards Organizations



- **Standards Organizations:**
  - **Revenue stream pressures:**
    - ✦ Traditional models of revenue based significantly upon sales of standards
    - ✦ Multiple issues pressuring revenues:
      - Reduced standards participation
      - Electronic delivery and associated aspects
      - Pressure for free or reduced fee access as a condition of use
    - ✦ Search for new revenue streams
    - ✦ Some standardization activities in non-traditional areas or emerging technology areas
    - ✦ Competition among standards developers for experts and expertise

# Societal and Policy Aspects



- Societal and policy issues being addressed using standards
  - Traditional approach that standards address technical solutions and standards support policy needs
    - ✦ Distinction between role of standards and policy (e.g., regulation)
  - Increasing demand from some stakeholders for standards that can help address societal or policy issues:
    - ✦ E.g., Sustainability, social responsibility, “green”
    - ✦ Some underlying technological role in solution

# Social and Policy Aspects



- **Standards seen as a more acceptable solution than formal policy solutions**
  - “Softer” approaches
  - Consensus
  - Not perceived as top-down
  - Underlying data
  - Faster
- **Lack of institutional capacity to formulate or implement formal policy solutions**

# Impacts



- Traditional approaches to standards development are being challenged – different paradigms to standards development?
- As industry becomes more selective in standards development, greater pressure on NIST to step in to fill the vacuum
- Leadership in standards development activities is being challenged – BUT what does that really mean?

# Impacts



- More to do – technology areas, venues to cover, collaborations to build
- Resource implications:
  - Budgetary
  - Technical skill and expertise – where do we find the experts who can be effective at standards participation, how do we train them, would they want to participate in standards development
  - Impact on innovation

# Opportunities



- Despite seemingly challenging situation, many opportunities.
- Broader appreciation of the value of standardization
- Fewer experts available, able or willing to participate in standardization
- Leadership in standards activities can help establish professional credentials
- Tremendous support from standards organizations for experts willing to contribute and lead

# Opportunities



- **For NIST:**
  - Leadership in many emerging technologies
  - Build upon widely accepted credibility
  - Opportunity to grow future world-class leaders
  - Low cost, highly effective means of disseminating NIST products and services
  - Closer alignment with NIST customers – industry and government

# Resources



- **OU Standards Coordinators or other OU designated POCs**
- **Standards Coordination Office**
  - Staff
  - Standards Portal: [www.standards.gov](http://www.standards.gov)
  - Standards Services Group:  
<http://inet.nist.gov/adlp/services/standards-services-group.cfm>
  - Global Standards Information:  
<http://gsi.nist.gov/global/index.cfm/L1-1>
  - Standards Information Center (NCSCI):  
<http://www.nist.gov/director/sco/ncsci/>



# QUESTIONS AND DISCUSSION