Technology Standards: What they are, why they matter, and what Congress can do

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Organized by the American National Standards Institute (ANSI)

Agenda

- Technology Standards 101
  Alissa Cooper, Cisco
- Case Study: Artificial Intelligence (AI) Standards
  Rohit Israni, Intel
- Promoting U.S. Standards Leadership
  Mary Saunders, ANSI
- Q&A

Why Should Congress Care?

- The **health and resilience of the economy** is directly related to investment by public and private sectors in the development of standards.
- A **standards-literate workforce** with demonstrated competencies is better prepared to compete for skilled job opportunities as they emerge.
- The national interest in emerging areas of standardization demands that public- and private-sector stakeholders **work together** to address national priorities.

Technology Standards 101

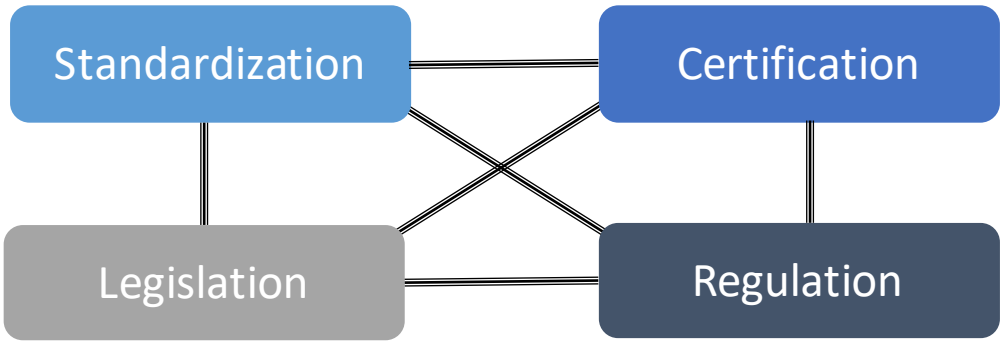
When you type “https://www.congress.gov” into your web browser …

Standards used for:	Examples	Standards organizations
Connecting to your local network	Wi-Fi, Ethernet	IEEE, Wi-Fi Alliance, Ethernet Alliance
Connecting to the global network	4G/5G, DOCSIS, xDSL	3GPP, O-RAN Alliance, CableLabs, ITU-T
Navigating the network	IP	IETF
Fetching the content	HTTP	IETF
Presenting the content	HTML, CSS, MP4, JPEG	W3C, ISO/IEC JTC 1

… and hundreds more!

What is a technology standard?

- A document that describes requirements, specifications, guidelines, or characteristics of a technology, process, or practice
- Precise and detailed – implementers can determine if their implementations meet the standard
- Voluntarily adopted



What do standards enable?

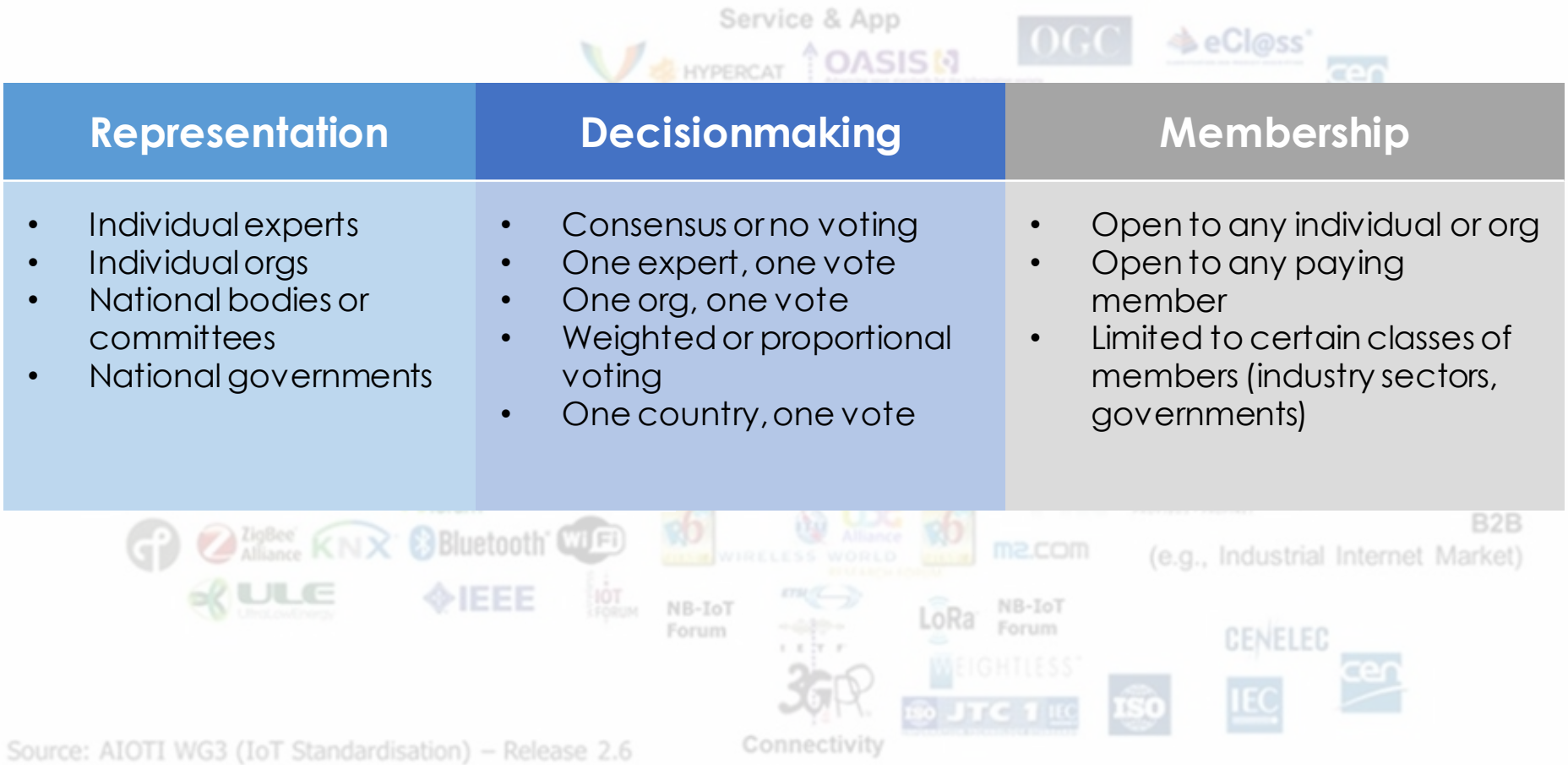
Interoperability	Define interfaces such that hardware, software, and systems produced by different entities can work together	Examples: Most standards produced by 3GPP, IEEE 802, IETF, Bluetooth SIG, USB-IF
Performance, Quality, and Process	Encapsulate established best practices; facilitate assurance that a product or service will behave predictably or at a certain level or threshold	Examples: ISO/IEC 27001, ISO 9001, ISO/IEC AI standards-in-progress
Measurement	Define how to measure parameters, enabling a consistent, repeatable approach for measurement of products and services from various companies and testing labs	Examples (computer server efficiency): ISO/IEC 21836, SERT suite

Diverse landscape of standards organizations

Example: Internet of Things standards orgs and alliances

Diverse landscape of standards organizations

Representation	Decisionmaking	Membership
• Individual experts • Individual orgs • National bodies or committees • National governments	• Consensus or no voting • One expert, one vote • One org, one vote • Weighted or proportional voting • One country, one vote	• Open to any individual or org • Open to any paying member • Limited to certain classes of members (industry sectors, governments)



The U.S. System is Unique

Most countries (top down)

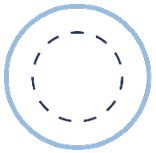
Standards development priorities driven by government or national standards bodies

U.S. system (bottom up)

Standards development priorities driven by users and markets

The Power of the Rules-Based Standards System

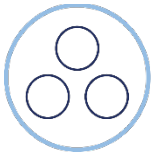
Globally recognized principles for technology standardization:



TRANSPARENCY

OPENNESS

CONSENSUS



IMPARTIALITY

DUE PROCESS

EFFECTIVENESS AND RELEVANCE

Artificial Intelligence (AI) Standards

Why AI Standards ?

Facilitate responsible AI development and widespread adoption and use of AI technologies

- Establish common vocabulary, best practices and guidelines for governance, risk management across stakeholders and regions
- Promote beneficial applications and help mitigate societal concerns such as bias, explainability, transparency, accountability, privacy, security and safety in AI systems
- Inform emerging legal and regulatory considerations

Voluntary adoption fosters market competitiveness and rapid pace of innovation

What's at Stake?

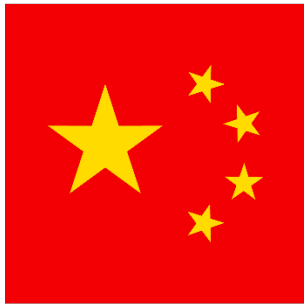
- AI's potential contribution to the global economy, estimated at $15.3 trillion by 2030 (PwC), is considered by many as the second industrial revolution.
- Rapid technology evolution: AI fueling innovation in AI, societal concerns increasing with applications of generative AI
- Legal complexities : Fast emerging regulations and frameworks in regions and countries, sometimes conceived too broadly, could hinder innovation and slow down global adoption
- Increasing need for harmonizing stakeholders' interests, governance of AI, *alignment AI* and for maintaining consumer confidence
- Competition among countries to lead in AI technologies and shape the emerging AI economy
- Unique national/ regional AI standards could lead to fragmentation and increase compliance costs

Global AI Standards Landscape

ISO/IEC JTC1/SC 42
Horizontal ICT AI Standards

Significant initiative on Ethics

Focus on telecom networks & some applications



Comprehensive national AI standards, participation in ISO/IEC, ITU

EU AI Act driving EU-specific standards, collaborating with ISO/IEC

US and ISO/IEC JTC 1/SC 42

- US is focused on developing international AI standards
- US stakeholders led the formation of international AI Standards committee ISO/IEC JTC 1 SC 42; US holds chair and committee management positions
- US companies, institutions and govt. agencies (including NIST, NSA, FDA) are participating actively in SC 42

JTC 1/ SC 42 work program examples

Published	Under development
• AI concepts and terminology • Governance implications on use of AI • Guidance on Risk Management • Overviews of trustworthiness, bias, ethical and societal concerns • Framework for machine learning systems • Assessments of robustness, ML classification performance	• AI Management System • Guidance for explainability, transparency, mitigating unwanted bias • Data quality management and governance • AI system testing, verification and validation, quality models, functional safety, lifecycle • Oversight of AI systems • AI applications, beneficial use cases • Environmental sustainability aspects

50 Countries

1 Country 1 Vote

26 Active Projects

11 Published

40+ Liaisons

Promoting U.S. Standards Leadership

Promoting U.S. Leadership in International Standards

- Allocate increased R&D funding for critical and emerging technologies
- Encourage the USG to broadly promote the voluntary, private sector led standards development model domestically and in dialogues and agreements with other countries
- Encourage greater participation by federal agency staff in mission-relevant international standards development activities

Promoting U.S. Leadership (cont.)

- Raise awareness of treaty organizations that engage in standards development activities and the role of the USG in ensuring that these activities are rules-based, open, transparent, and consensus-based
- Support efforts to grow a standards literate workforce
- Support more international standards development meetings taking place in the U.S.

Key Points to Remember

- Rules-based processes for international standards establish guard rails and create value
- Seeking to bar some participants from global standards processes will create fragmentation
- Diversity in standards venues is a feature (not a bug)
- Avoiding prescriptive legislative language in the area of technology policy and standards allows for rapid changes and innovation

Q&A

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