



“Weights and measures may be ranked among the necessities of life to every individual of human society ... The knowledge of them, as in established use, is among the first elements of education, and is often learned by those who learn nothing else, not even to read or write. This knowledge is riveted in the memory by the habitual application of it to the employments of men throughout life.”

- John Quincy Adams, 1821

Standards – What are they?

- **Webster**
 - “... something established for use as a rule or basis of comparison ...”
 - “... type, model, or example commonly or generally adhered to ...”
- **ISO**
 - “... rules, guidelines or characteristics for activities or for their results ...”
- **OMB**
 - “... common and repeated use of rules, conditions, guidelines or characteristics for products or related processes ...”
 - “... the definition of terms, classification of components, etc, etc ...”
 - Does NOT include “professional standards of personal conduct, or institutional codes of ethics”
- **USP, AAMI, CLSI, IHTSDO, HIBCC, HPS, VC ...?**

Standards – What are they?

- **A prominent individual’s view -**
 - All standards are fundamentally about interoperability.
 - If I want to pick up something and use it somewhere else, that’s interoperability.
 - Sometimes writ small, but interoperability nonetheless

- Dr Katherine Morse, SISO ExCom Chair
- **And another’s –**
 - Standards represent common agreements that enable communications, directly or ...indirectly

- Ken Krechmer, International Center for Standards Research
- **Parochial views – minimize impact of standards on**
 - Safety
 - Criteria for acceptability
 - Trade and Commerce

Standards – What are they?

- **Other names for Standards**
 - Guides / Guidelines
 - Best practices
 - Request For Comment (RFC) – IETF
 - Recommendations – ITU
 - Specifications
 - Code Sets
 - Terminologies / Ontologies
 - Classification
 - Test Method

... and I’m sure there’s more!!

Standards Provenance

Where do these things come from?

- **De Facto**
 - Achieve dominant position by public acceptance or market forces
 - VHS vs. Beta; men’s vs. women’s buttons; MS Word “DOC”
- **Voluntary**
 - Formally proposed and accepted by a community of interest
 - TCP/IP; steel beam dimensions; key furniture dimensions
- **De Jure**
 - Mandated by law
 - Residential building codes; MIL-STDs

Standards Organizations

- International
 - Regional
 - National
- Governmental
 - Quasi-governmental
 - Non-governmental
- Treaty
 - Non-Treaty



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International

- **ISO – the International Organization for Standards**
 - Non-treaty; founded in 1947
 - Members are National Standards Bodies; one per economy
- **IEC – the International Electrotechnical Commission**
 - Non-treaty; founded 1906
 - Members are “National Committees”, often the NSB
- **ITU – the International Telecommunication Union**
 - Treaty, founded 1865
- **Codex Alimentarius**
 - Treaty, founded 1963
- **Universal Postal Union**
 - Treaty, founded 1874



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Regional

- **CEN – European Committee for Standardization**
- **CENELAC – European Committee for Electrotechnical Standardization**
- **ETSI – European Telecommunications Standards Institute**
 - Only standards recognized as “European Standards” in EU
- **PASC - Pacific Area Standards Congress**
- **COPANT - Pan American Standards Commission**
- **ARSO – African Organization for Standardization**
- **AIDMO – Arab Industrial Development and Mining Organization**
- *And more ...*



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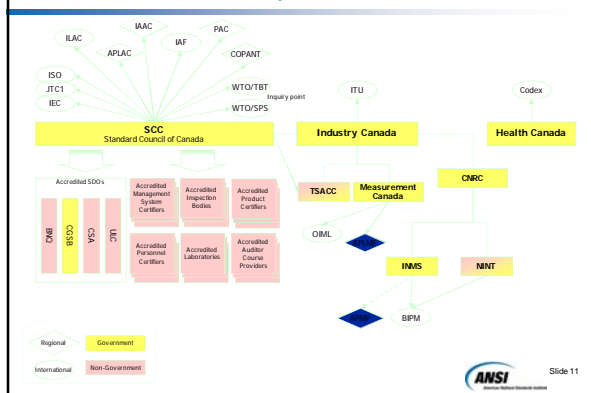
National Standards Bodies (NSB)

- **Generally, each country has a single recognized NSB**
- **May be public or private sector organizations, or a combination of both**
 - DGN – General Bureau of Standards – a Mexican government agency
 - ANSI – American National Standards Institute – a non-profit corporation
 - SCC – Standards Council of Canada – a Canadian Crown Corporation
- **ANSI**
 - Collaborates with NIST – National Institute of Standards and Technology, the US Governments official standards agency – under a MOU to produce the USSS (United States Standards Strategy)
 - US representative to ISO, IEC
 - Accredits US SDOs (Standard Development Organizations)



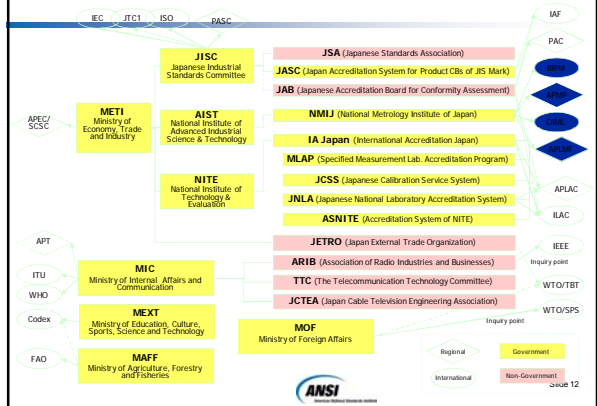
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Standards and Conformity Assessment Bodies - Canada

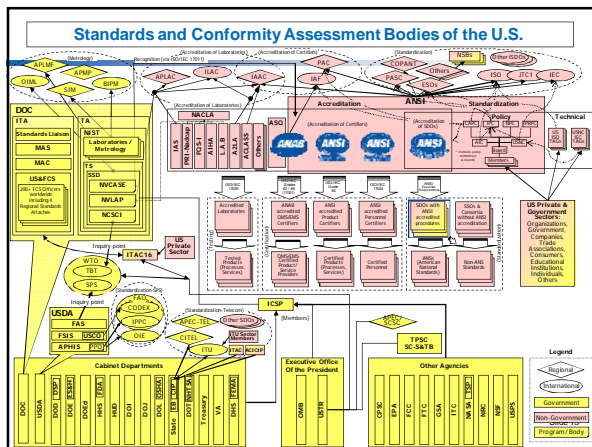
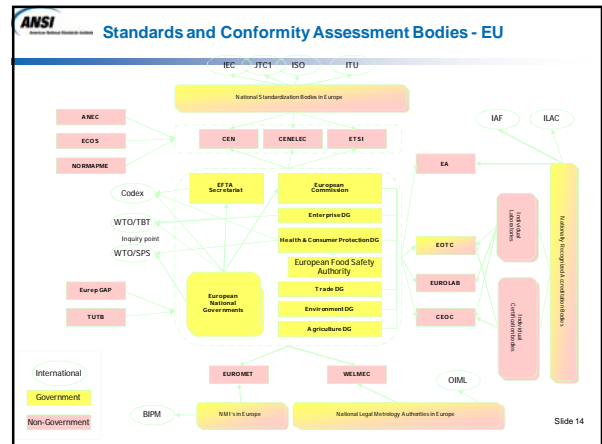
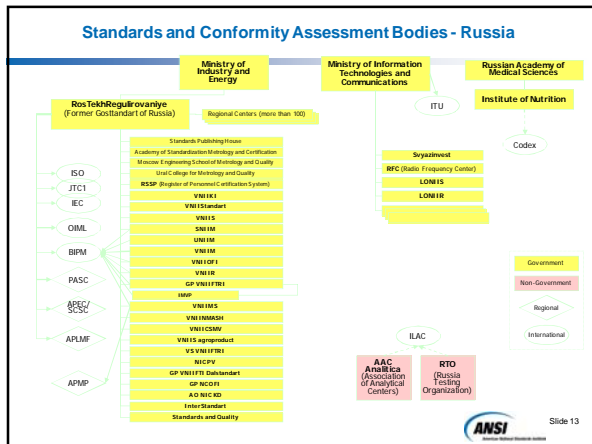


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Standards and Conformity Assessment Bodies - Japan



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VCSOs

Voluntary Consensus Standards Organizations

Voluntary - The term "voluntary" distinguishes the standards development process from governmental or regulatory processes. All interested stakeholders participate, including producers, users, consumers, and representatives of government and academia.

Consensus - Represents a common viewpoint of those parties concerned with its provisions, namely producers, users, consumers and general interest groups. General agreement that involves seeking and taking into account the view of all parties concerned, and to reconciling any conflicting arguments. Consensus does *not* imply unanimity.

Diagrams courtesy of the IEEE Standards Glossary at www.ieee.org

VCSOs

Who are they?

International – Organizations including the ISO, IEC, ITU, Codex Alimentarius, and the Universal Postal Union. These organizations take their membership from National Standards Bodies or government agencies.

Regional – Represent the interests of specific geo-cultural regions. They include CEN, CENELAC, ETSI, PASC, COPANT, ARSO, AIDMO, and more.

National – Represent the interests of sovereign nations. The US vests this responsibility for non-treaty standards in ANSI, a Non Government Organization (NGO). Other nations use government agencies or NGOs.

Standards Development Organizations (SDOs) – the folks that actually produce the standards, if not one of the organizations above. These are often professional organizations that represent sectors of industry, business, health care, or other interests. Examples are the IEEE, UL, ASTM, ASHRAE, etc.

VCSOs

Who actually writes the standards?

Often the International, Regional, or National Standards Body – Through the formation of a committee or working group of the organizations own experts, commonly augmented with representatives from the field of endeavor the standard will apply to.

But not always – some standards bodies exist only to regulate and accredit the SDOs that actually produce the standards. These may be government agencies, such as the Standards Council of Canada (SCC), or NGOs such as ANSI in the US. The SCC draws from 4 accredited SDOs in Canada, while ANSI draws from over 200 SDOs it has accredited in the United States for its American National Standards.

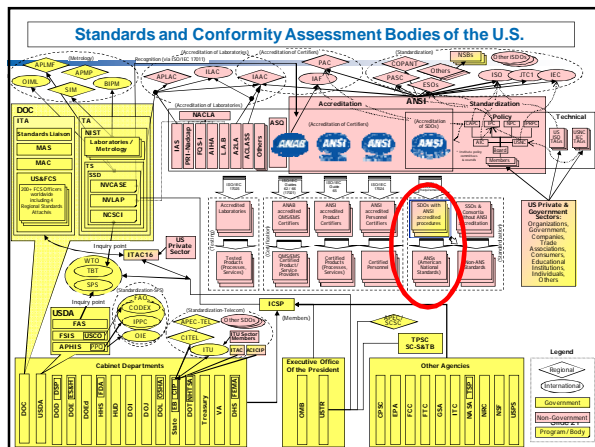
SDOs – may be accredited by the governing NSB, but not necessarily. While ANSI accounts for about 275 accredited SDOs, there are literally thousands that are not. Not being "accredited" by ANSI does not necessarily indicate lack of credibility – for example, SISO or OMG.

Standards Development Organizations (SDOs)

- **Organizations that actually develop and publish standards**
 - Literally thousands in the US
- **May be accredited by the NSB**
 - Approximately 275 (226) SDOs accredited by ANSI
 - Must be accredited to produce American National Standards
 - Audited Designators
- **Some are international in nature and may connect directly to international standards organizations without going thru an NSB**
 - Examples are the IEEE, ASTM International, or AES
- **Differentiated from SSOs (Standards Setting Organizations)**
 - SDOs may be accredited, but they may also be slow to respond to technological evolution
 - SSOs, or industry consortia, are a response to that lethargy
 - Examples are the W3C or the IETF

ANSI:

- Only accreditor of U.S. Standards Developers
- Only body that approves standards as American National Standards (ANS)
- Represents the US Internationally at ISO (International Organization for Standardization)
- Represents the US Internationally through its US National Committee at the IEC (International Electrotechnical Commission)
- Collaborates with NIST for public-private management of US standards strategy and policy



ANSI Accredited Standards Developing Organizations (SDOs)

1-A	ASC	AS	ASA	ACCA	AMCA	ARI	ATIS	AA	AAMA	AMMA	ARMA	ARVC	ARMA	ACC	ACI	ADA	APPA	AGA
AGMA	AHMA	AHSA	AIAA	AISC	AITC	AISI	ALI	ANS	ANMA	API	ASNT	ASQ	ASAE	ASB	ASCE	A-SHIBL	ASME	
ASSE	AWMA	AWES	AWEA	ATA	ACMI	ASIS	A118	AMT	NPEI	AAMI	ACQE	AHAM	ARMA	ASTM	A1M	AGES	A1I	
BHMA	BICSI	BDMA	BIFMA	CCRA	CSRA	CAPA	CLSI	CFPB	CAF	CPA	CAGI	CSA	CAMB1	CEA	CSPA	CEMA	CTI	
CSA	DISA	DA-SMA	EIMA	EASA	EIA	ESTA	EIA	EOS/ESD	FCI	FM	ITEEM	GICC	GEIA	GEI	HPVA	HIBCC	HIT	
HPS	HFES	HI	HCMA	HTSD	HEE	HST	IIE	INMSP	12AMA	IAT	IAAAC	IAFMA	ICRA	ICC	ITI	META	ISA	
I1AR	IEEA	ISA	ISA-NFA	INCA	IPC	ISA	JCSE	ECMA	LIA	MSS	MHI	MBC	NACE	NAHBC	NAAMA	NBPPI	NFTAA	
NOMA	NCSL	NCPDR	NECA	NEMA	NFPA	NGA	NECMA	NISO	NIMS	NIST/ITL	NPPC	NCC	NSAA	NAOQA	NERC	NAESB	NA LFA	
NASPO	NF	NIRMA	DIA	DFCC	DEGSC	DFES	FIMM	PSA	PCA	PWMA	PMI	RPITA	RSTC	NVIA	RESNA	RIA	BWA	
SIA	SSFI	SIA	SMA	SPRI	SBS	SAK	SCTE	SMPE	SVIA	SAAMI	SES	SDI	SII	SSCI	TIA	TCATA	CI	
TMS	SPI	TCA	TDV-TA	TAPS	TCIA	TP1	USPD	UL	URMA	UAMA	UCC	VITA	WCA	WOMA	WCMA	WBMA		

(Partial List)

American National Standards

- **Standards developed by ANSI accredited SDOs**
 - Approximately 9500 currently
- **Indicates that SDOs procedures meet ANSI's requirements for:**
 - Openness
 - Balance
 - Consensus
 - Due Process
- **ANSs and accredited SDOs small part of pie**
 - 1996 report cited over 93,000 standards produced by over 700 organizations that specified standards development as an activity
 - Federal government largest single producer with 44,000 standards; that number has significantly dropped with reforms of the late 90's
 - Private sector collectively has about 49,000

VCSOs and "Due Process"

- **All standards developing and governing organizations have basic principles that guide their work. These are ANSI's:**
 - Openness
 - Lack of Dominance
 - Balance
 - Coordination and Harmonization
 - Notification of Standards Development
 - Consideration of Views and Objections
 - Consensus Vote
 - Appeals
 - Written Procedures
 - Compliance with Normative Policies and Procedures

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

VCSOs and “Due Process”

■ These are from the US Standards Strategy:

1. Transparency
2. Openness
3. Impartiality
4. Effectiveness and Relevance
5. Consensus
6. Performance Based
7. Coherence
8. Due Process
9. Technical Assistance
10. Flexible
11. Timely
12. Balanced

From United States Standards Strategy, 2005

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VCSOs and “Due Process”

■ Openness

- Participation shall be open to all persons who are directly and materially affected by the activity in question. There shall be no undue financial barriers to participation. Voting membership on the consensus body shall not be conditional upon membership in any organization, nor unreasonably restricted on the basis of technical qualifications or other such requirements.

From ANSI “ANSI Essential Requirements: Due Process Requirements for American National Standards” January 2010

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VCSOs and “Due Process”

■ Lack of Dominance

- The standards development process shall not be dominated by any single interest category, individual or organization. Dominance means a position or exercise of dominant authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints.

From ANSI “ANSI Essential Requirements: Due Process Requirements for American National Standards” January 2010

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VCSOs and “Due Process”

■ Balance

- The standards development process should have a balance of interests. Participants from diverse interest categories shall be sought with the objective of achieving balance.

From ANSI “ANSI Essential Requirements: Due Process Requirements for American National Standards” January 2010

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VCSOs and “Due Process”

■ Coordination and Harmonization

- Good faith efforts shall be made to resolve potential conflicts between and among existing American National Standards and candidate American National Standards.

From ANSI “ANSI Essential Requirements: Due Process Requirements for American National Standards” January 2010

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VCSOs and “Due Process”

■ Notification of Standards Development

- Notification of standards activity shall be announced in suitable media as appropriate to demonstrate an opportunity for participation by all directly and materially affected persons.

From ANSI “ANSI Essential Requirements: Due Process Requirements for American National Standards” January 2010

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VCSOs and “Due Process”

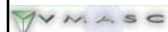
■ Consideration of Views and Objections

- Prompt consideration shall be given to the written views and objections of all participants, including those commenting on the PINS* announcement or public comment listing in *Standards Action*.

* *Project Initiation Notification System* - this announcement is then published in *Standards Action*.

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

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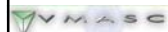
VCSOs and “Due Process”

■ Consensus Vote

- Evidence of consensus in accordance with these requirements and the accredited procedures of the standards developer shall be documented.

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

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VCSOs and “Due Process”

■ Appeals

- Written procedures of an ANSI-Accredited Standards Developer (ASD) shall contain an identifiable, realistic, and readily available appeals mechanism for the impartial handling of procedural appeals regarding any action or inaction. Procedural appeals include whether a technical issue was afforded due process.

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

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VCSOs and “Due Process”

■ Written Procedures

- Written procedures shall govern the methods used for standards development and shall be available to any interested person

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

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VCSOs and “Due Process”

■ Compliance With Normative Policies and Procedures

- All ANSI-Accredited Standards Developers (ASDs) are required to comply with the normative policies and administrative procedures established by the ANSI Executive Standards Council or its designee.

From ANSI "ANSI Essential Requirements: Due Process Requirements for American National Standards" January 2010

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Time Check!

*If we have a little time left
We can talk about*

Getting it Done!



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VCSOs and “Getting it Done”

■ How do they “get it done”?

While the details may differ, most standards writing organizations follow a process with these general characteristics:

- Proposal
- Acceptance
- Drafting
- Review
- Adoption by Consensus
- Publication

Depending on the organization and whether an “accelerated” process is adopted, this can take from a few weeks to 3 years or more ...



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Getting it done

■ Proposal

The need for a standard must be proposed to an SDO, usually to a standing working group or technical committee.

- Some organizations have strict rules about who may propose a new project
- Strictness often directly related to the loftiness of the agencies international stature
- Organizations adapting to real or perceived immobility on their part



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Getting it done



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Getting it done

■ Acceptance

Proposed work finds its way to the appropriate working group or technical committee, where it is either accepted as a project or rejected.

- If the proposed work must be accepted at a regularly scheduled committee meeting, this could be a 6 month delay
- Acceptance can have significant consequences. If CEN accepts a proposal for a European Standard, all national work within scope of the project is put on hold ...



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Getting it done

■ Drafting

Drafting is an iterative affair, often going through several stages than can span many months:

- Preparatory drafts, working drafts, committee drafts, enquiry drafts, etc
- Time span very dependent on how adept the organization is at virtual committee management
- If the proposal comes in with a high quality draft of the proposed standard, this is a point where an “accelerated process” may allow a committee to skip drafting and go directly to the review stage



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Getting it done

■ Review

Also referred to as *Enquiry, Comment Resolution, or Consultation*, this is where the concepts of Openness, Balance, and Consideration of Views and Objections really come into play:

- Audience for review must address all the communities of interest (producers, users, consumers, academics, government, etc). CEN notes that “420M European citizens have the opportunity to comment ...”.
- Incorporation of feedback must achieve consensus approval, but may or may not include some sort of ballot
- In some organizations, lack of negative comment is accepted as tacit approval



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Getting it done

■ Adoption by Consensus

Sometimes referred to as Adoption by Weighted Voice, indicating relative importance of members of the balloting group:

- Balloting group must address all the communities of interest (producers, users, consumers, academics, government, etc)
- Type of majority (simple, two thirds, 75%) varies by organization and regulatory or safety impact of standard.
- Some organizations (such as Codex Alimentarius) stress reaching consensus by any reasonable means, with voting as a last resort.



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Getting it done

■ Publication

More far reaching than simply printing or making available on the internet:

- For members of CEN, each nation must publish identically, and conflicting national standards must be withdrawn.
- Publication may be the role of the supporting SDO rather than the overseeing/regulation National Standards Body.
- For VCSOs, charging a nominal fee for standards is generally acceptable, but the emphasis is on cost recovery only and maximizing availability at "reasonable cost".



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Questions?

Subject to your

Questions

That concludes my brief.



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