Standards and Societies

Standard Definition - ISO

* A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose. ISO has published over 21000 International Standards.

Standard Definition - IEC

* A **standard** is 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.

Aims of standardization

Fitness for purpose

Better communication and understanding

Variety reduction

Environmental protection

Compatibility

Guarding against factors that affect the health and safety of consumers

Better utilization of resources

Transfer of technology

Removal of trade barrier

The Importance of Standards

* Standards provide people and organizations with a basis for mutual understanding, and are used as tools to facilitate **communication**, **measurement**, **commerce** and **manufacturing**.
* Standards are everywhere and play an important role in the economy, by:
  - facilitating business interaction
  - enabling companies to comply with relevant laws and regulations
  - speeding up the introduction of innovative products to market
  - providing interoperability between new and existing products, services and processes.

Benefits of Standards

* Standards, in general, are the backbone of society, ensuring the safety and quality of products and services, facilitating international trade and improving the environment in which we live in.
* Conformity to International Standards helps reassure consumers that products, systems and organizations are safe, reliable and good for the environment.

benefits of standards (Economic)

* Numerous studies have shown that standards boost business and economies. In the UK, for example, standards account for an $8.2bn annual growth in GDP, while in Canada, the use of standards has injected over $91bn into the economy since 1981.

benefits of standards (For business)

* International Standards are strategic tools and guidelines to help companies tackle some of the most demanding challenges of modern business. They ensure that business operations are as efficient as possible, increase productivity and help companies access new markets.
* International standards help businesses to:
  - **Cut costs**, through improved systems and processes
  - Increase **customer satisfaction**, through improved safety, quality and processes
  - **Access new markets**, through ensuring the compatibility of products and services
  - Reduce their impact on the **environment**.

benefits of standards (For Consumers)

* When products and services conform to International Standards, consumers can have confidence that they are safe, reliable and of good quality. For example, international standards on road safety, toy safety and secure medical packaging are just a selection of those that help make the world a safer place.
* International Standards on air, water and soil quality, on emissions of gases and radiation and environmental aspects of products contribute to efforts to preserve the environment and the health of citizens.

benefits of standards (for Governments)

* Standards draw on international expertise and experience and are therefore a vital resource for governments when developing public policy.
* National governments can use International standards to support public policy, which has a number of benefits, including:
* **Getting expert opinion** - By integrating an International standard into national regulation, governments can benefit from the opinion of experts without having to call on their services directly.
* **Opening up world trade** - International standards are adopted by many governments, so integrating them into national regulation ensures that requirements for imports and exports are the same the world over, therefore facilitating the movement of goods, services and technologies from country to country.
* International standards can also remove barriers to trade by providing the technical basis on which political trade agreements can be put into practice, whether they are at the regional or international level.

Standards Developing Organizations

* a) National Standards Organizations
* b) Regional Standards Organizations
* c) International Standardization Organizations

National Standardization Organizations

* **National Standards Organization(bodies)**
* In general, each country or economy has a single recognized National Standards Body (NSB). Examples include, , AFNOR, ANSI, BSI, , DIN, , JISC, KATS, , SCC and INSO which may be either public or private sector organizations, or combinations of the two.

Regional standards organizations

* Regional standards bodies also exist, such as the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), the European Telecommunications Standards Institute (ETSI), and the Institute for Reference Materials and Measurements (IRMM) in Europe, the Pacific Area Standards Congress (PASC), the Pan American Standards Commission (COPANT), the African Organization for Standardization (ARSO), the Arabic industrial development and mining organization (AIDMO), and others.

Example:

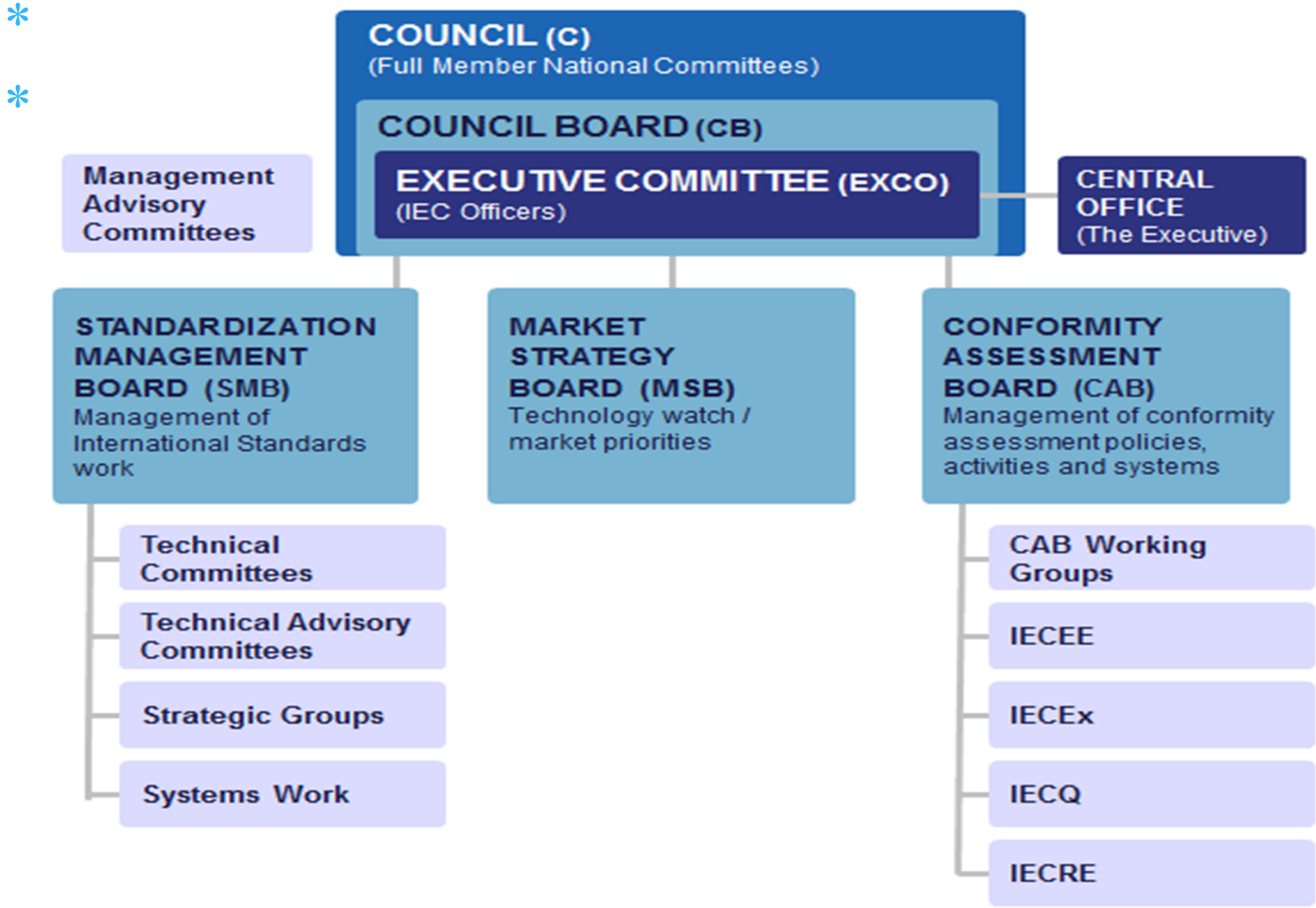
* In the European Union, only standards created by CEN, CENELEC, and ETSI are recognized as *European standards*, the standards are developed and agreed by the three officially recognized European Standardization Organizations: **the European Committee for Standardization (CEN)**, the **European Committee for Electrotechnical Standardization (CENELEC)** and **the European Telecommunications Standards Institute (ETSI).**
* CEN and CENELEC bring together the national standards agencies of 33 countries. More than 60,000 technical experts from industry, research, academia and other backgrounds are directly involved in standards development.

International standards organizations

* There are many international standards organizations. The five largest and most well-established such organizations are:
* International Electrotechnical Commission, IEC founded in 1907
* International Organization for Standardization,
* ISO founded in 1947
* International Telecommunication Union , ITU founded in 1965
* International Organization of Legal Metrology, OIML
* founded fin 1955
* Codex Alimentarius Commission.

Example:

IEC Management Structure



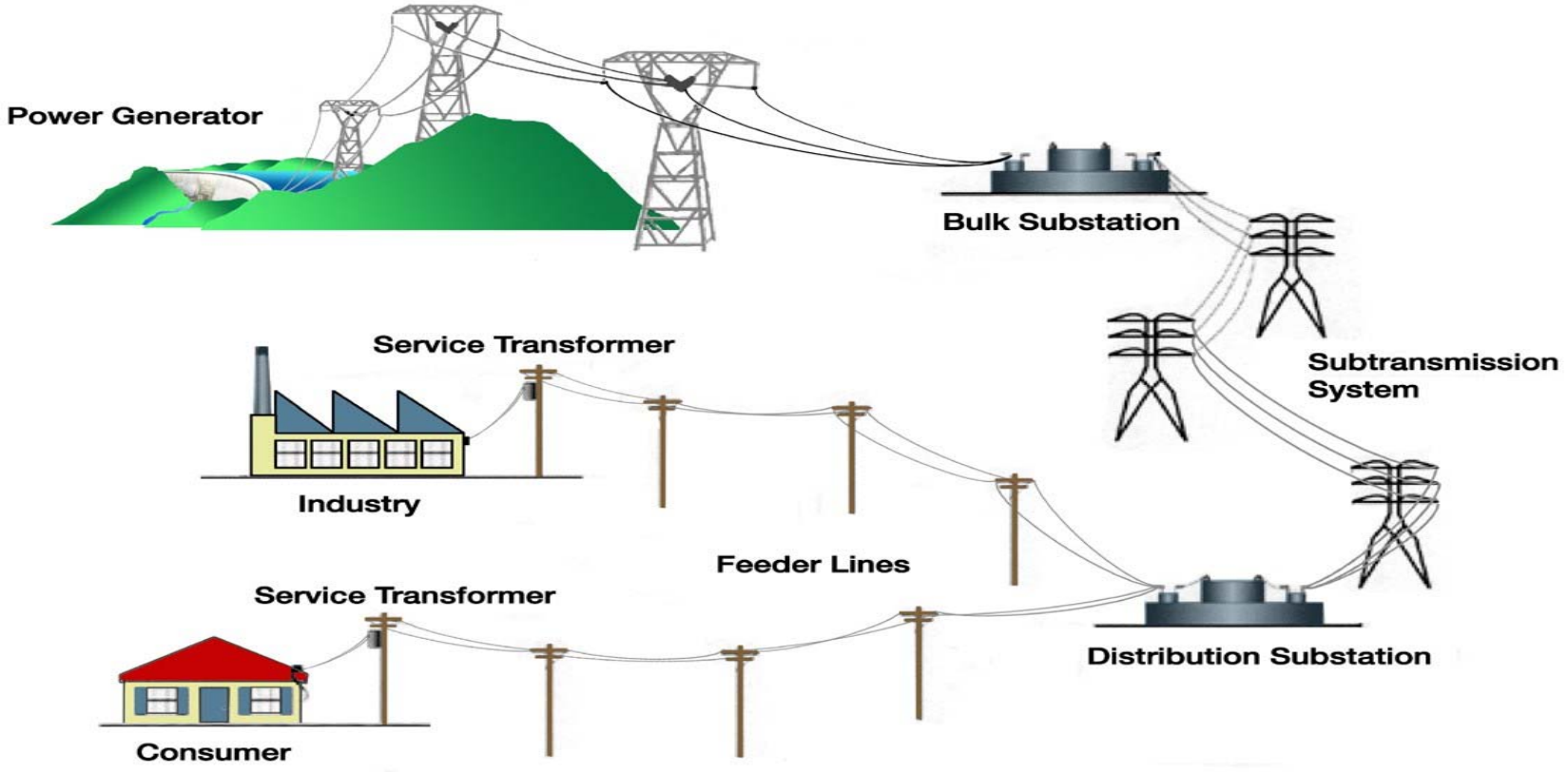
IEC Regional Centers

IEC Asia-Pacific Regional Centre (IEC-APRC) – Located in Singapore

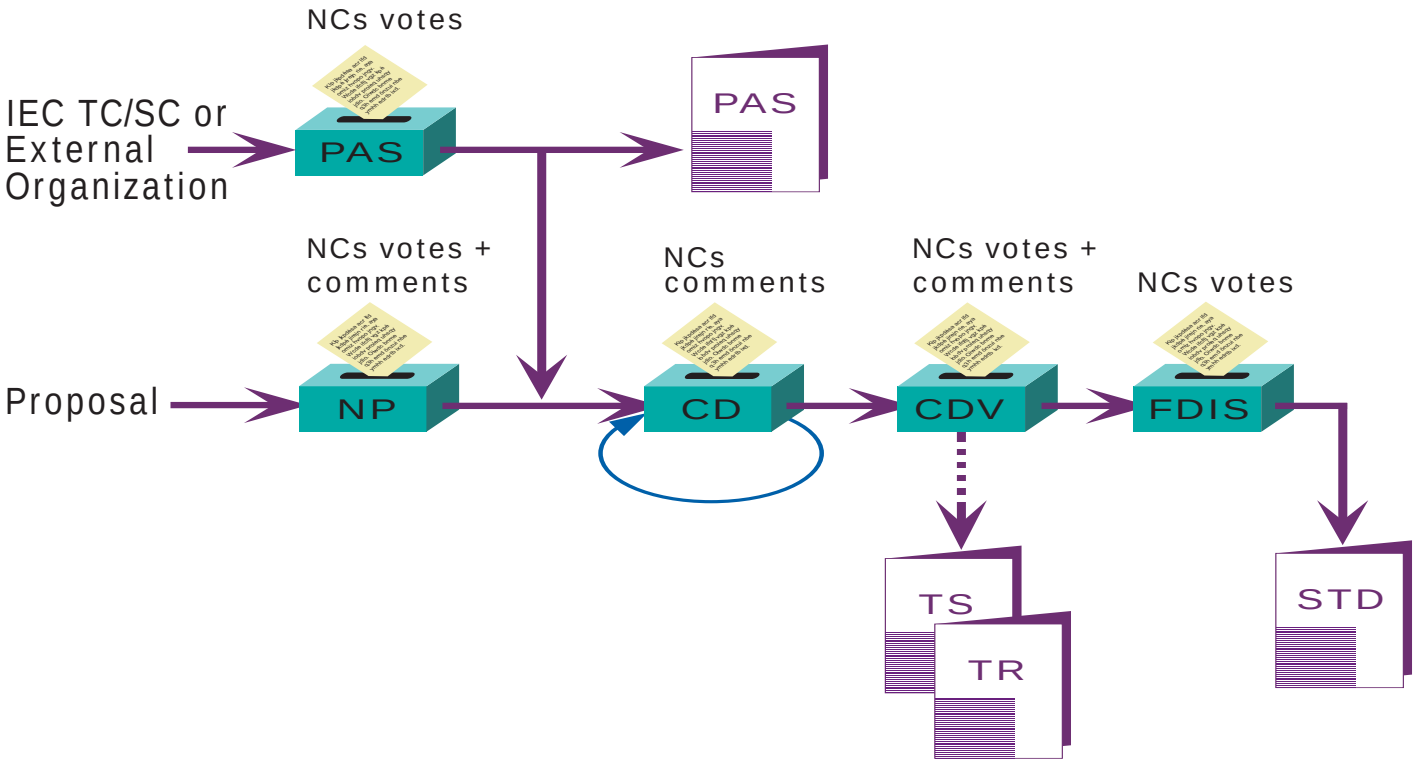
IEC Latin America Regional Centre (IEC-LARC) – Located in São Paulo, Brazil

IEC Regional Centre for North America (IEC-ReCNA) – Located in Boston, USA

How you might “see” the IEC



IEC Standards Development



IEC in Figures

* 166
* The IEC gathers 166 countries. 83 Members,
* 83 Affiliate Countries (developing countries
* who participate free of charge in the IEC
* Affiliate Country Program)
* 15 000
* experts from industry, test & research labs,
* government, academia and consumer
* groups
* > 170 Technical Committees
* 7 000
* International Standards in catalogue
* 1 million
* Conformity Assessment Certificates issued

IEC publications

* International Standards
* Technical Specifications (TS)
* Publicly Available Specifications (PAS)
* Amendments
* Technical Corrigenda
* Interpretation Sheets
* Technical Reports (TR)
* Guides

Young Professionals (YP) Program

The Young Professionals Program brings together the world's upcoming expert engineers, technicians and managers. It provides them with more opportunities to shape the future of international standardization and conformity assessment in the field of electrotechnology.

Benefits of participating

* Get your voice heard in the international arena and help shape the future of global standardization and conformity assessment.
* Enhance networking opportunities and help cultivate a long-term environment for the involvement of young people from all over the world in international standardization.
* Ensure the future of technology transfer.
* Develop awareness of the IEC's work and maximize benefits from being involved in international standardization.

ISO in figures

* DEVELOPMENT OF INTERNATIONAL STANDARDS
* 21133 International Standards and standards-type documents published to date

* MEMBERS
* 119 countries were full members
* 38 countries were correspondent members
* 5 countries were subscriber members

* TECHNICAL COMMITTEE STRUCTURE
* 238 technical committees
* 521 subcommittees
* 2 625 working groups

OIML

Organisation Internationale de Metrologi legale (OIML)
International Organization of Legal Metrology

* What is OIML
* “The mission of the OIML is to enable economies to put in place effective legal metrology infrastructures that are mutually compatible and internationally recognized, for all areas for which governments take responsibility, such as those which facilitate trade, establish mutual confidence and harmonize the level of consumer protection worldwide.” - OIML B 15:2011

What is Metrology?

* Metrology is defined as "the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology.
* International vocabulary of metrology (VIM) is maintained by a group made up of eight international organisations – BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, and ILAC

The eight International organizations

* International Bureau of Weights and Measures (BIPM),
* the International Electrotechnical Commission (IEC),
* the International Federation of Clinical Chemistry and Laboratory
* Medicine (IFCC),
* the International Organization for Standardization (ISO),
* the International Union of Pure and Applied Chemistry (IUPAC), the International Union of Pure and Applied Physics (IUPAP),
* the International Organization of Legal Metrology (OIML).
* the International Laboratory Accreditation Cooperation (ILAC)

Fields of Metrology

* Scientific or fundamental metrology(traceability to the International System of Units, or SI
* Applied, technical or industrial metrology(confidence in testing and measurement results via certification, standardization, accreditation and calibration
* Legal metrology (regulated measurements and measuring instruments)

legal Metrology?

* Legal metrology "concerns activities which result from statutory requirements and concern measurement, units of measurement, measuring instruments and methods of measurement and which are performed by competent bodies"

Scientific and fundamental metrology

* Scientific and fundamental metrology concerns the establishment of *quantity systems*, unit systems, *units of measurement*, the development of new measurement methods, realization of measurement standards, and the transfer of traceability from these standards to users in society

Industrial metrology

* Applied, technical or industrial metrology concerns the application of measurement science to manufacturing and other processes and their use in society, ensuring the suitability of measurement instruments, their calibration and quality control of measurements.
* *Although the emphasis in this area of metrology is on the measurements themselves, traceability of the calibration of the measurement devices is necessary to ensure confidence in the measurements.*

Thanks for your attention