



IEC and Systems Work

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International
Electrotechnical
Commission

The IEC Organisation

Vision

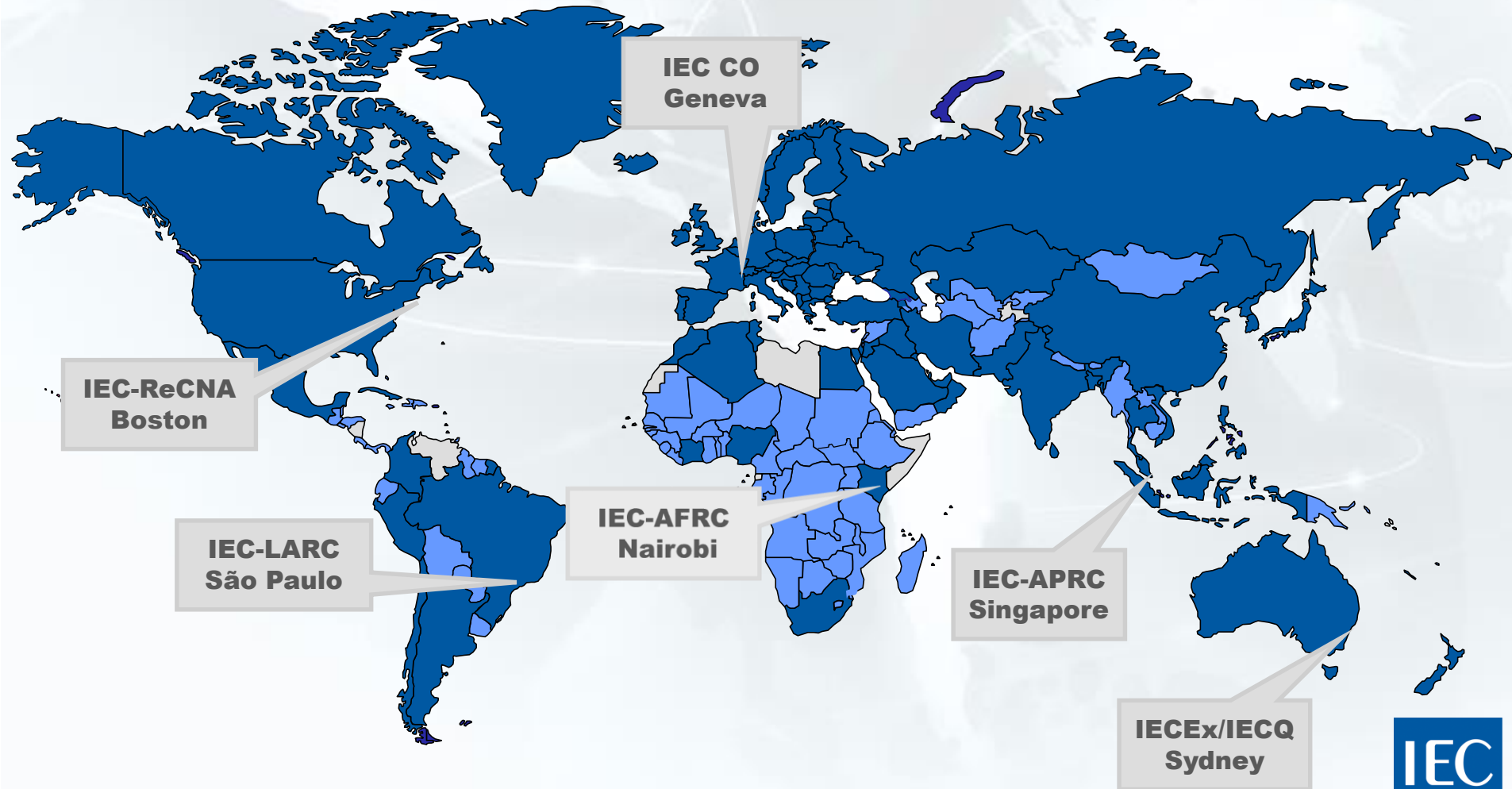
Mission



Global reach: 172 countries

86 Members

86 Affiliates



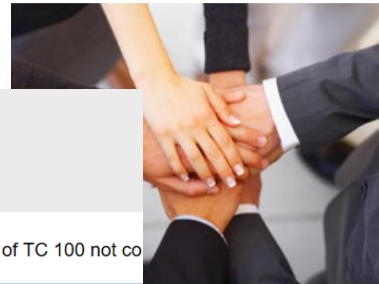
IEC Coverage

How we work Vision & mission

Management structure | **Technical Committees** | IEC Partners | Stakeholders | Processes and procedures

Stakeholders

It is essential that all of the interested parties in the value chain are represented



Typical stakeholders

The typical stakeholders active in the development of International Standards are:

- **Industry** covering utilities, manufacturers, installers, suppliers etc. either at the company level or via trade associations, consortia and fora etc.
- **Consumers** normally organized at the national, regional or international level;
- **Academia** – universities and research institutes;
- **Test laboratories**
- **Governments and regulators**

IEC TC/SCs List of IEC Technical Committees and Subcommittees

About TC/SCs | List of TC/SCs | **Disbanded TC/SCs**

Technical Committees 103 | Subcommittees 100 | Total 203 (TAs of TC 100 not co

Technical Committees & Subcommittees

Table search

Committee	Title
TC 1	Terminology
TC 2	Rotating machinery
TC 3	Information structures and elements, identification and marking principles, documentation and graphical symbols
SC 3C	Graphical symbols for use on equipment
SC 3D	Product properties and classes and their identification
TC 4	Hydraulic turbines
TC 5	Steam turbines
TC 7	Overhead electrical conductors
TC 8	Systems aspects of electrical energy supply
SC 8A	Grid Integration of Renewable Energy Generation
SC 8B	Decentralized Electrical Energy Systems
TC 9	Electrical equipment and systems for railways

of documents which are then by the National Committees. stakeholders in that country committee's consolidated position

onal organizations along with participate via the various



EATON

PHILIPS

SHARP

Rockwell Automation

TOSHIBA

Gillette

THALES

ABB

MITSUBISHI ELECTRIC

DANONE

QUALCOMM



CORNING



Deloitte

Abbott



Canon

AIR LIQUIDE



NVIDIA

BOSCH

Electrolux

ARCOR

DEKRA

Nidec

Panasonic

BLACK & DECKER

SIEMENS



Schneider Electric



Expedia

Agilent Technologies

NOMURA



RENAULT

Hydro Québec

BOSE

Nintendo

KARCHER



Duke Energy

Fisher-Price

Energizer

SAMSUNG

Honeywell



国家电网公司 STATE GRID CORPORATION OF CHINA

Time Warner Cable



BUREAU VERITAS

ALCATEL

dyson

edf

TÜVRheinland

BRAUN

BT



BOEING

Disney

FUJITSU

SAP

SGS

intel

Intertek

Danfoss

AIRBUS AN EADS COMPANY



TOYOTA

Whirlpool

ALSTOM

DU PONT

Adobe

Haier

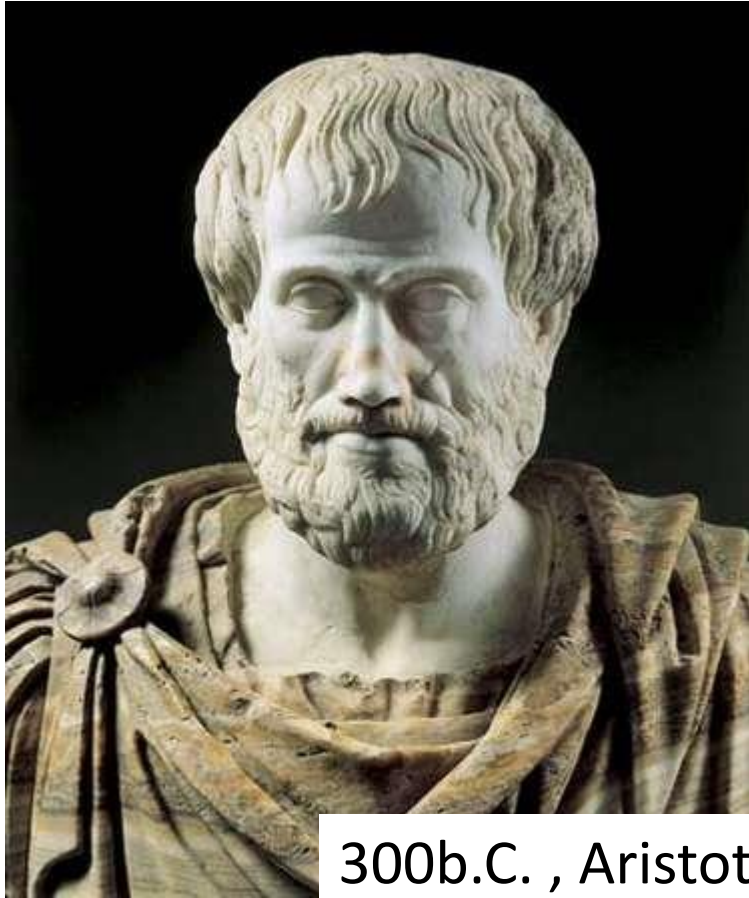
ORACLE

HUBBELL

Akamai

IEC

Systems Approach, Systems Work and Systems Committees at IEC



300b.C. , Aristotle

- Why?
- What?
- How?
- Who?

The Whole is Greater than the Sum of its Parts



Why?

Systems Approach - Why?

Products have become multifunctional

A phone years ago...

...you could just make calls with it!



A phone today

Music, photos, video, GPS, Internet...

2G, 3G, 4G, WIFI, Bluetooth, NFC...

Touch screen, battery, USB, HDMI...

Accelerometer, gyroscope, proximity sensor ...

... and you can still make a call with it!



Emergence of more, new, functions, with an ever increasing number of technologies and standards involved



What?

Systems and Systems Approach

System: *a group of interacting, interrelated, or interdependent elements forming a purposeful whole of a complexity that requires specific structures and work methods in order to support applications and services relevant to IEC stakeholders.*

Systems Approach: *a holistic, iterative, discovery process that helps first defining the right problem in complex situations and then in finding elegant, well-designed and working solutions. It incorporates not only engineering, but also logical human and social aspects.*

A (man-made) Systems is...



**Which property emerges
from the System?**

Systems Approach at IEC

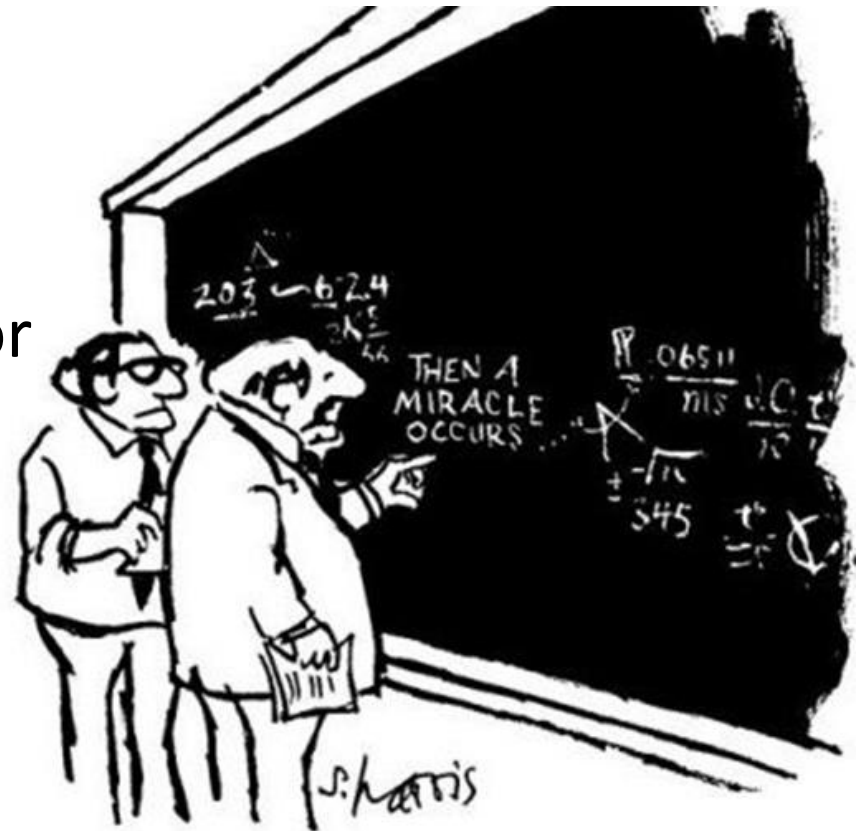
Systems Committees:

Explore “systems” domains for standardisation

SyC LVDC

Technical Committees

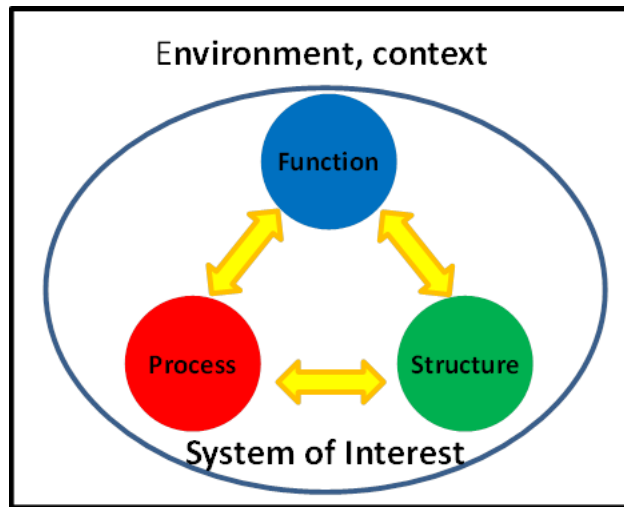
TC 8, TC 23, TC 64, TC 82...



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Complex Systems need a systems approach

Systems representation



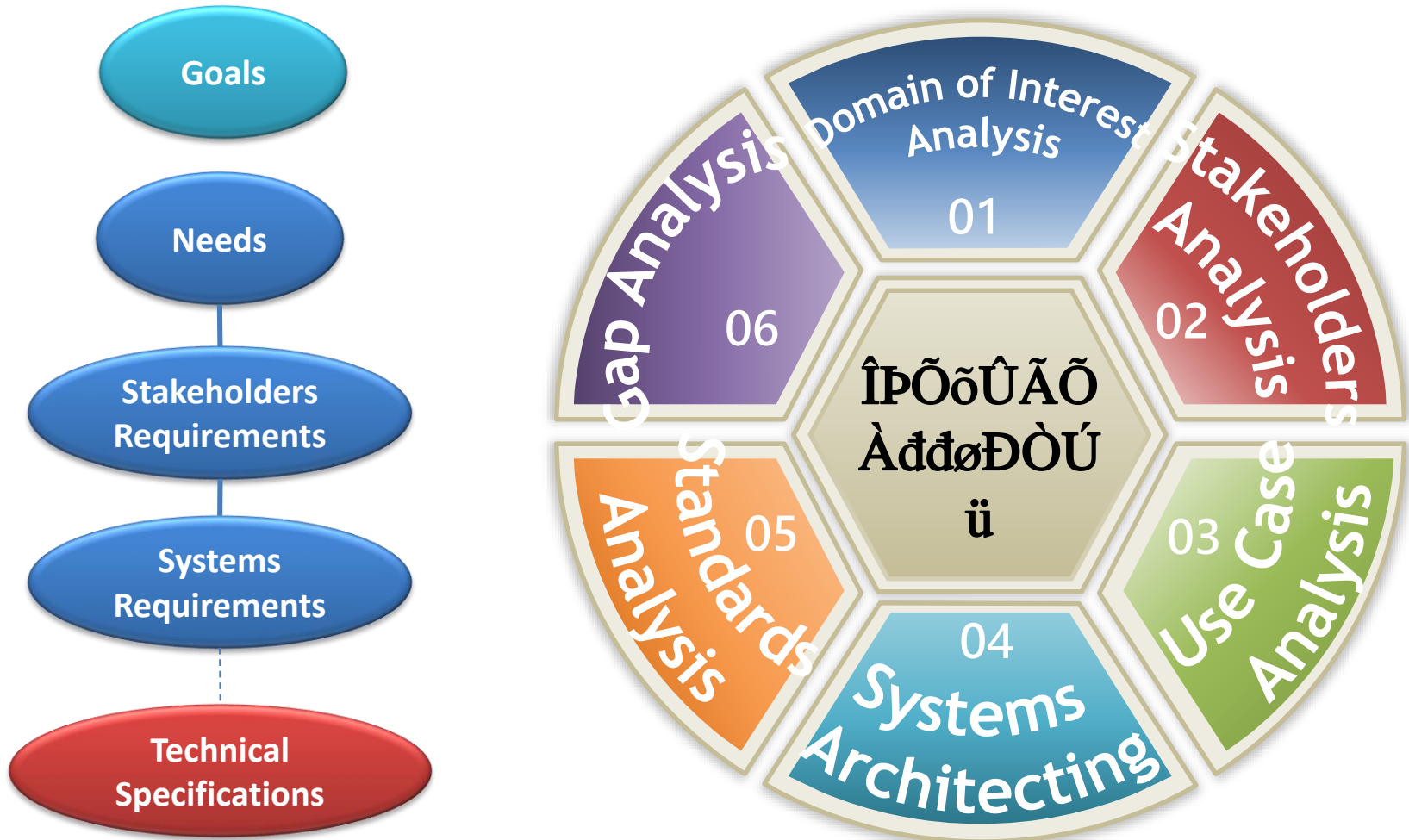
Simplified!!!

in reality...



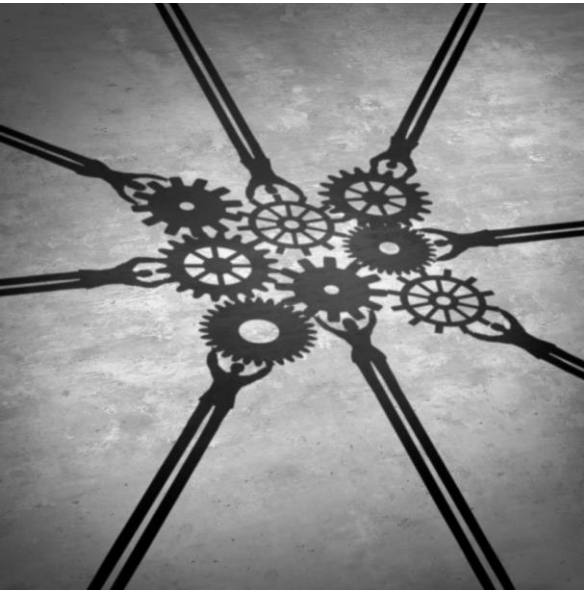
Resolution comes through an iterative process!

The Methodology*

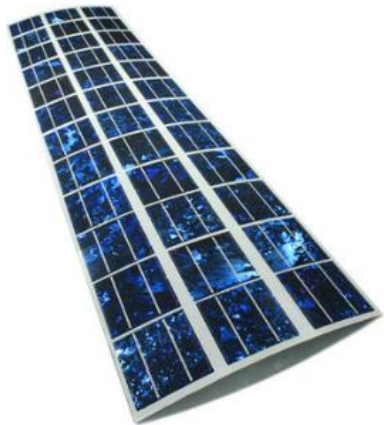


****There is no one-size-fits-all approach***

Systems approach in Standardisation



Goals
Values
Relevance
Priorities



The background of the slide is a light gray, semi-transparent image of several interlocking gears. The gears are rendered in a 3D style with soft shadows and highlights, giving them a metallic appearance. They are arranged in a way that they seem to be meshing together, creating a sense of mechanical complexity and interconnectedness.

who?

Systems Work @ IEC

Gathering Requirements

Systems Approach

Providing Guidance and Guidelines



1st Established-2014



2015



2016



2017



...since 2018



Thank you!

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**International
Electrotechnical
Commission**

The LVDC Zone

@ IEC

- IEC LVDC Zone (www.iec.ch/LVDC)
 - Includes content from past two conferences,
 - Downloads area (brochures, mnemonic, public content)
 - E-Tech articles on LVDC
- SyC LVDC, [LinkedIn Group](#)
- The [LVDC Technology Paper](#): LVDC: electricity for the 21st century



LinkedIn

IEC Technology Report
LVDC: electricity for the 21st century