IEC SyC Smart Cities

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Systems Committee

Many types of Standards bodies

- **Industry consortia** – developing open standards that meet industry concerns and **Professional member organisations** – developing standards for their members to use

- **National standards bodies** – recognised by all local and national stakeholders

- **International standards bodies** – recognised by all international stakeholders

Industry and professional member organisations

3GPP

W3C

Fiware

OGC

OASC

IEEE

One M2M

TM Forum

National Standards Development Organisations

International Standards Development Organisations
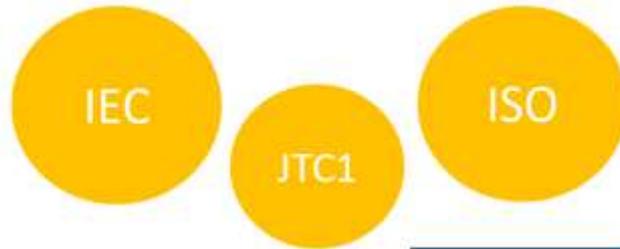
IEC — Founded 1906, Electrical and Electronics

JTC1 — Founded 1987, ICT, 2,776 standards

ISO — Founded 1947, Everything else! 19,500 standards

ITU — Founded 1865, Standards is only a part, Area of work, Telecommunications, UN body

Members are national standards bodies

Members are countries, private sector and universities

How international standards are made

International Electrotechnical Commission

The IEC (International Electrotechnical Commission) is the world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies.

It is ISO's older sister, and we follow almost identical processes

Along with ITU, is one of the three WTO recognised International Standards Organisations

# The International Electrotechnical Commission

We represent National Standards Bodies in 88 countries

We have 212 Technical Committees and Subcommittees

Around 20,000 active participants in standardisation

Around 8,500 standards in force

There are many IEC standards vital to cities
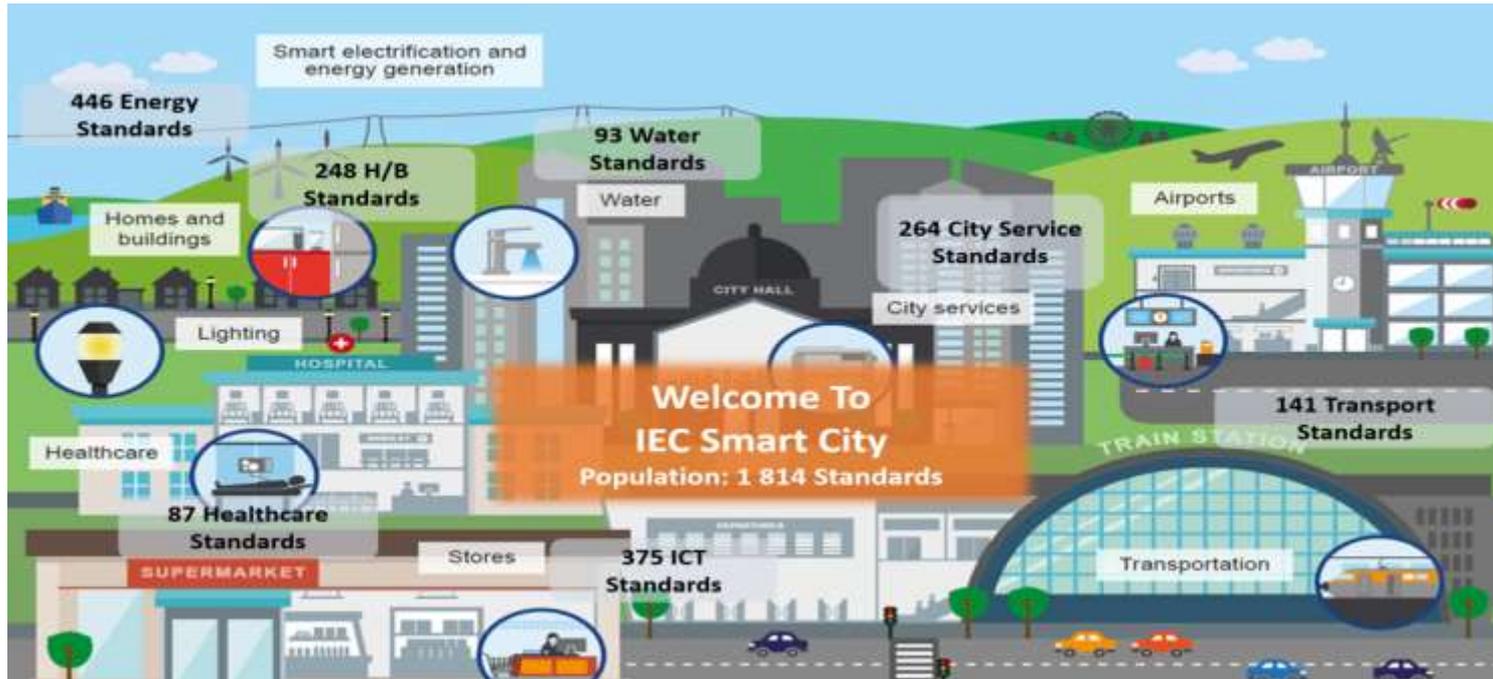
Developing standards for complex systems requires a systems approach

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 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.*

The IEC Systems approach and systems committees

The IEC Systems Committees were set up because, while **electrical and electronics standards** are vitally important, they **are often only part of the solution to a system requirement.** In order to be sure that the IEC standard properly contributes to that system requirement, **it is important to start by studying the whole system**.

The role of a Systems Committee is to **analyse the system as a whole**, and **then provide relevant information to the IEC TCs** to enable them to develop the electrotechnical standards needed.

While the **focus** of a Systems Committee is **electrotechnical standards**, its **scope** is the **whole system** that it was set up to analyse.

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City needs don't match with scope of TCs

Cities Need

- comfortable and affordable housing
- Clean air
- Efficient transport systems
- Healthy citizens
- Economic prosperity

Standards

- Smart lighting
- IoT
- Stabilised power supplies
- Secondary cells and batteries
- Electronic displays
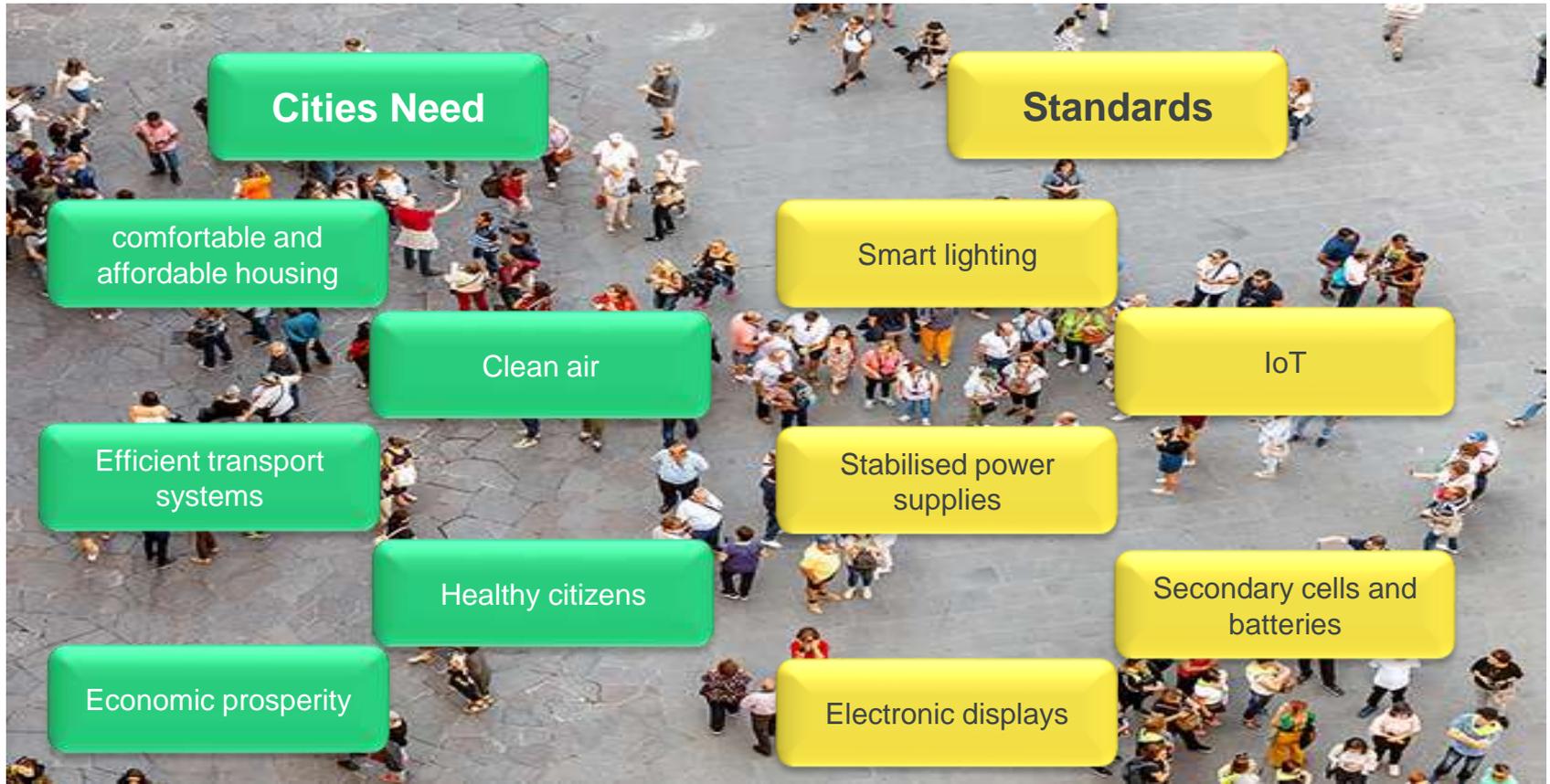
IEC Smart Cities Systems Committee

To **foster** the development of **standards** in the field of electrotechnology to help with the **integration, interoperability and effectiveness of city systems**.

This will be done:

- by promoting the **collaboration** and **systems thinking** between **IEC/TCs, the SyC and other SDOs** in relation to City systems standards,
- by undertaking **systems analysis** to understand the needs for standards and assess new work item proposals (NWIPs) related to city systems,
- by developing **systems standards** where needed and by providing **recommendations** to **existing SyCs, TCs/SCs and other SDOs**.

Note "Cities" refers to any geographically located population.

Demand and supply side

As a broad generalisation – the IEC Technical Committees are focused more on supply side issues – ie how to make the technology work.

However, **SyC Smart Cities**, along with some of the other SyCs, is focused more on **the demand side** – ie, in our case, what the city, and the city systems such as transport, water, waste, health etc require of the electrical and electronics standards in order to enable those systems to work effectively.

The IEC process

Sys Gaps
What are the standards that are missing in the system?

Sys Standards
What are the existing standards, SDOs and TCs that pertain to this system?

Sys Architecting
What is the reference architecture of the system and its boundaries?

Market/Industry Analysis 01

Gap Analysis 06

Stakeholders Analysis 02

Standards Analysis 05

Systems Approach

Use Case Analysis 03

Systems Architecting 04

Sys Market Analysis
Analyze and identify the the market/industry trends and needs?

Sys Stakeholders
Who are the key stakeholders of the system and what are their needs and objectives?

Sys Use Cases
What are the different use cases for the system and how do they interact with the system?

We do make some standards

IEC 63152:2020

City service continuity against disasters - The role of the electrical supply
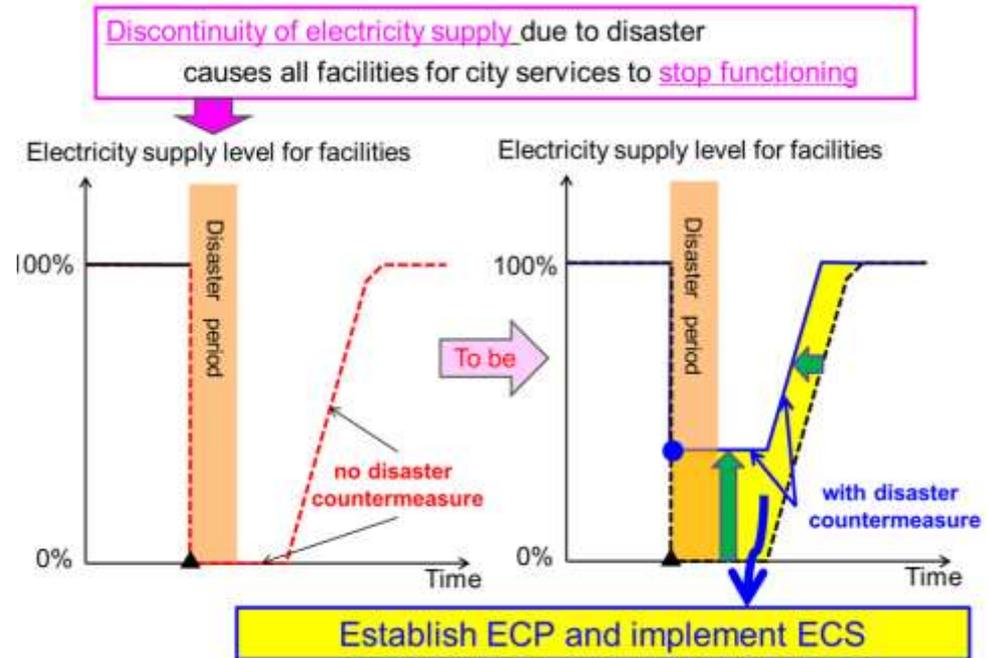
But that is not our main role

Our main role is to gain a deep understanding of cities and city systems by:

- identifying and analysing use cases, and

- developing tools such as a Smart Cities Reference Architecture

in order to make it easy for the IEC TCs to see how their focused standards work fits in with the wider requirements of Smart Cities.
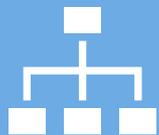
We also work closely with ISO, ITU-T, and other relevant Standards Development Organisations in order to ensure that the electrotechnical standards that are developed by IEC TCs form a consistent part of the family of international standards that are being developed to meet the needs of cities.
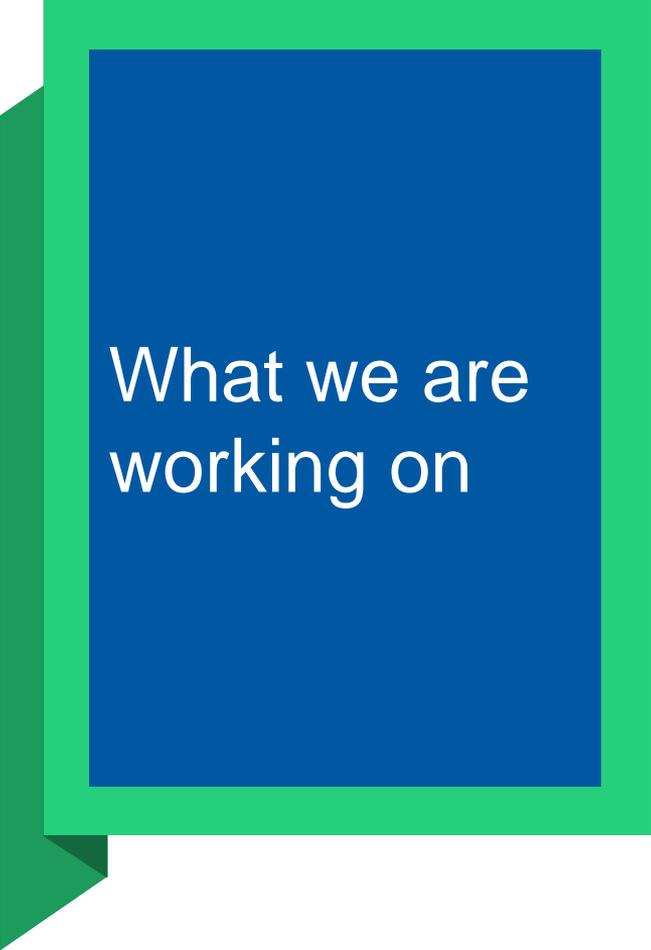
What we are working on

1. Citywide guidance standards:
   a. A common reference architecture
      - To help identify commonalities between cities
   b. A common language – terms, definitions, frameworks
      - To ensure partners and suppliers have a common understanding
2. Cataloguing and mapping smart city related standards
   - To help city stakeholders and standards bodies easily find the standards they need
3. Scoping families of standards to help solve city needs
   - To tackle a city need or to define a smart solution, a whole family of different types of standards is required – management, electronics, data, IoT, communications … and they need to be designed to work together

IEC-ISO-ITU
JOINT SMART CITIES TASK FORCE

Potential roles re smart city standards
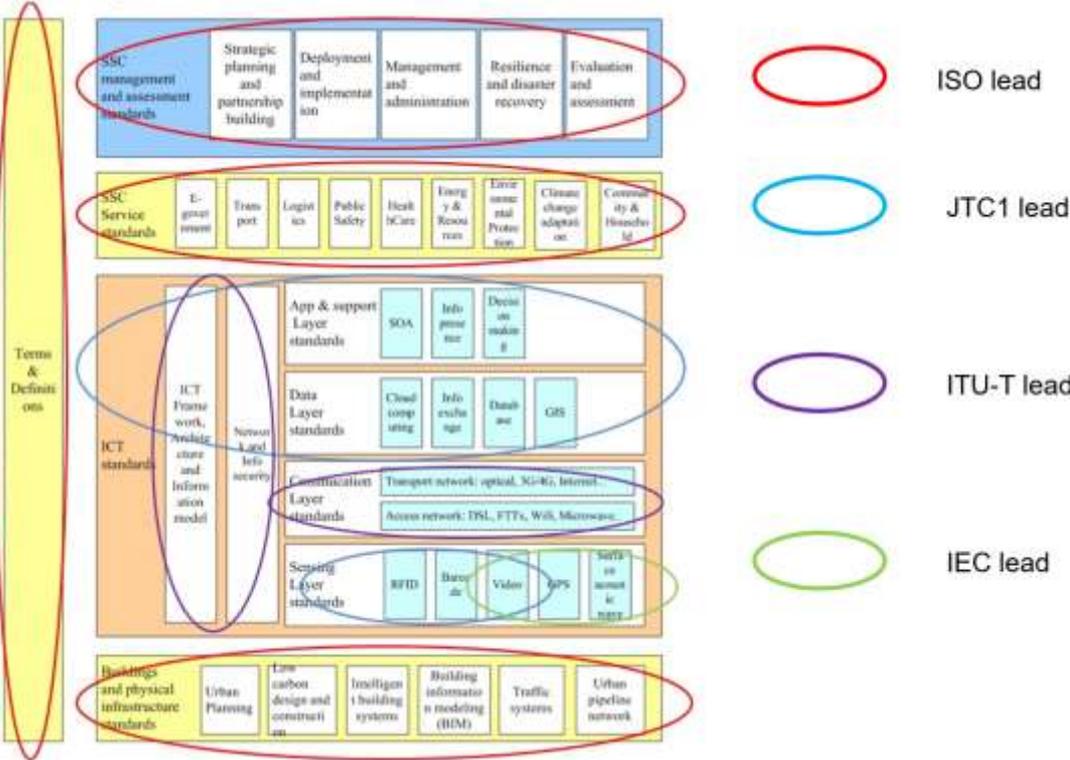
Membership

- Co-chaired by Chairs of IEC System Committee Smart Cities, ISO TC268, and ITU SG20

- Joint secretariat by IEC, ISO and ITU

- Membership of about 12 from each SDO

Meetings

- The start was delayed because of the pandemic.
- First meeting October 2020.
- Since then we have been meeting every three months
- Next meeting is next week

Key results so far

- We are defining a jointly agreed framework to describe and manage the work on smart cities between the three standards organisations

- We held a joint event on Digital Twins in Smart Cities last Autumn

- ISO TC 268 have just agreed a proposal from IEC SyC Smart Cities for a joint Working Group on Smart City Reference Architecture. This could be extended to ITU and JTC1.

- There is a lot of interest from ISO and ITU on the proposed Joint Working Group on City Information Modelling and Urban Digital Twins we are setting up with JTC1 SC41

- Generally we are becoming much more aware of each other's work. The Secretariat of the J-SCTF meets every week and the leadership at least once a month.