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NORMALISATION

ILNAS



ILNAS Breakfast Smart Cities Standardization

ILNAS - 15.12.2017



AGENDA



09:00 - 09:05 | Introduction

Dr. Jean-Philippe HUMBERT, ILNAS

09:05 - 09:10 | Standardization in Luxembourg

Mr. Jérôme HOEROLD, ILNAS (OLN - National Standards Body)

09:10 - 09:15 | New Standards Analysis of the ICT sector: how to identify standardization activities relevant to your business

Mr. Nicolas DOMENJOUR, ANEC GIE

09:15 - 09:40 | Smart Cities and Standardization – Overview of international activities

Mr. Nicolas DOMENJOUR, ANEC GIE

09:40 - 09:55 | IoT standardization and Smart Cities

Dr. Shyam WAGLE, ANEC GIE

09:55 - 10:30 | Open discussion



Welcome
Bienvenue
Willkommen

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PRESENTATION OF THE NATIONAL STANDARDS BODY

Breakfast meeting

Standardization and Smart cities

15/12/2017



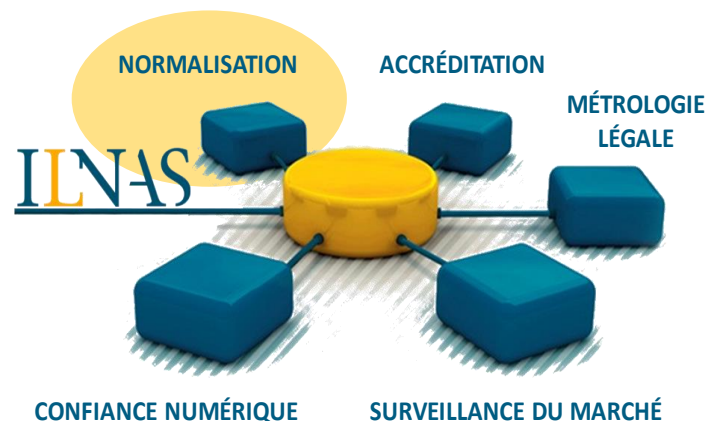
1. Presentation of ILNAS

ILNAS

- Public administration under the authority of the Minister of the Economy
- Created by the law dated July 14, 2014 (repealing the amended Law of May 20, 2008)
- Total staff: 43 (December 2017)

National standards body

- Composed of 5 persons
- Close collaboration with the G.I.E. ANEC-N (6 persons)



➤ Creation of national standards

- National Annexes of the Eurocodes
- National Annex concerning the Winter Diesel
- National standard about the living surface
- Creation of a national standards office in the field of construction (in collaboration with CRTI-B)
- National Annexes on concrete (ongoing work)
- National standard on building acoustics (ongoing work)

➤ Create a normative culture in Luxembourg

- University Certificate "Smart ICT for Business Innovation" at the University of Luxembourg
- Promotion in the field of standardization (Newsletter, portail-qualite.lu, LinkedIn, events, ...)
- Trainings and research in the field of standardization
- Awareness raising sessions in high schools

- 61 national standards
- 60.201 European Standards from CEN, CENELEC and ETSI
- 60.729 International Standards from ISO and IEC
- 46.104 DIN standards

ILNAS

Institut luxembourgeois de la normalisation,
de l'accréditation, de la sécurité et qualité
des produits et services



→ More than 160.000 normative documents at your disposal

- Format: electronic
- Language: French, German and English
- Competitive prices
- Free access to documents in public enquiry



WELCOME TO THE ILNAS E-SHOP!

National (ILNAS, DIN), European (EN) and International (ISO, IEC) standards are available: here!

ILNAS offers you the possibility to search and purchase National, European and International Standards, prepared and adopted by the Standardization Organizations such as ILNAS, DIN, CEN, CENELEC, ETSI, ISO and IEC. This online catalogue includes draft standards, adopted and published ones as well as historical deliverables.

A read-only access to standards is offered [for free at several locations](#) in Luxembourg.

Search a standard

Ratiified standards Draft standards Withdrawn standards Standards in public enquiry

Advanced search

How to search standards? | How to purchase standards? | How to get your standards?

Two ways are provided to you:

- A quick Search box allowing you to search by standard code (number) or keywords and phrases
- An Advanced Search which allows you to combine further search criteria such as:
 - Standard reference / wording
 - Standardization Body
 - Technical Committee
 - Domain (ICS Field: International Classification for Standards)
 - Directive
 - Edition date

News

Cloud Computing: renforcer la confiance grâce aux normes

En 2016, 19 % des entreprises luxembourgeoises utilisaient des services de Cloud Computing[1], soit une progression de 6 % depuis 2014. Cette technologie offre de nombreux avantages aux organisations qui l'adoptent (ex. : accessibilité, optimisation des coûts) cependant plusieurs facteurs, tels que les potentiels problèmes de sécurité ou de portabilité, limitent encore son usage. Dans ce cadre, les organisations internationales de normalisation travaillent activement à développer des normes répondant à ces problématiques afin de favoriser l'adoption du Cloud Computing par les organisations.

[Lire la suite](#)



3. Availability of standards

3.3 Free access on lecture stations

Availability of all EN (CEN,CENELEC et ETSI), ISO, IEC and ILNAS standards (despite DIN)

Location of the lecture stations:

1) **Université du Luxembourg**

Campus Kirchberg

2) **Chambre of Commerce**

House of Entrepreneurship

3) **Bibliothèque nationale de Luxembourg**

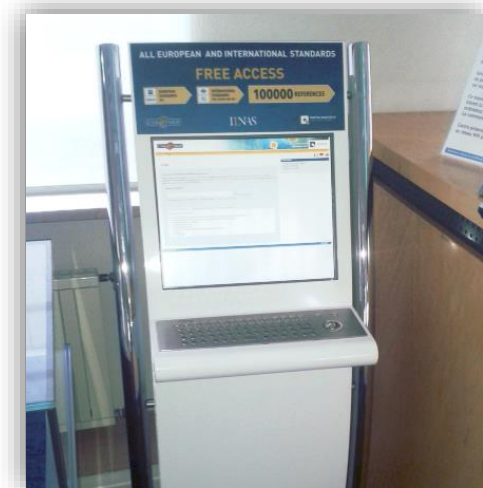
Luxembourg city-center

4) **ILNAS**

Esch-Belval

5) **LIST**

Esch-Belval (Maison de l'innovation) & Belvaux



4. Participation in standardization

4.1 National delegate in standardization

- **Who can participate ?**
 - Every socio-economic actor with a certain expertise
- **Cost of participation ?**
 - Free participation in Luxembourg
- **National experts register (November 2017)**
 - 257 persons registered
 - 735 registrations in technical committees

Registre national des délégués en normalisation - Novembre 2017

Nombre d'inscriptions aux comités techniques :

ILNAS/OLN	43
CEN	206
CENELEC	15
CEN/CENELEC	3
CEN/CENELEC/ETSI	2
ECISS	23
ISO/IEC	185
ISO	249
IEC	7
Total	735

Nombre de personnes inscrites : 257

1, av du Swing - L-4367 Belvaux - Tél. : (+352) 24 77 43 40 - Fax : (+352) 24 79 43 40 - Email : normalisation@ilnas.etat.lu - www.portail-qualite.lu

Portail qualité
www.portail-qualite.lu



ILNAS e-shop
ilnas.services-publics.lu



National Standards Body

Tel. : (+352) 247 743 40

Fax : (+352) 247 943 40

E-mail : normalisation@ilnas.etat.lu

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Smart Cities and Standardization

Overview of international activities

15.12.2017





- I Global overview of Smart Cities Standardization
- II Focus on ISO/TC 268 - Sustainable cities and communities
- III Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments
- VI Concluding remarks



- I **Global overview of Smart Cities Standardization**
- II Focus on ISO/TC 268 - Sustainable cities and communities
- III Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments
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CITIES TODAY

2 %

Surface occupied by today's cities on the earth's surface

70 %

Percent of global GDP generated

60 %

Amount of energy consumed by actual cities

70 %

Amount of waste and greenhouse gas emissions produced by cities

- BY 2050:

- World population is forecast to reach nearly **10 billion people**
- **80 %** of people are expected to be urbanized

I. Global overview of Smart Cities Standardization

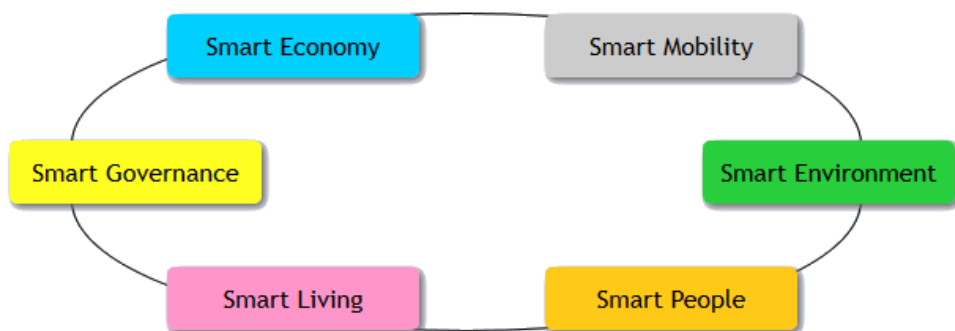
A. General Introduction

- **Many definitions of Smart Cities or Smart Communities:**
 - ISO/TC 268 (ISO/TS 37151:2015)
 - *“A community infrastructure with enhanced technological performance that is designed, operated, and maintained to contribute to sustainable development and resilience of the community.”*
 - ITU-T (Focus Group on Smart Sustainable Cities - 2014)
 - *“A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects.”*
 - ...

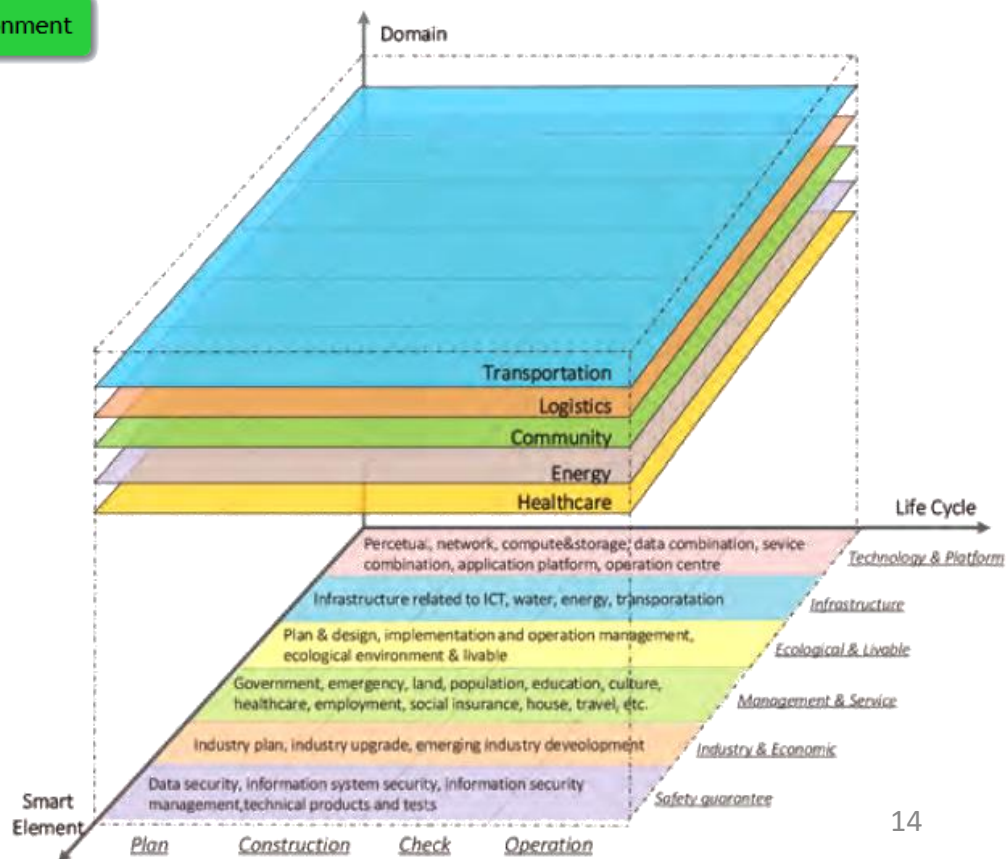
I. Global overview of Smart Cities Standardization

A. General Introduction

- Many Smart Cities models encompassing different components / categories



- o Ex.: europeansmartcities 4.0 (<http://www.smart-cities.eu/>)



- o Ex.: ISO/IEC JTC 1 Smart cities - Preliminary report 2014 (https://www.iso.org/files/live/sites/isoorg/files/dveloping_standards/docs/en/smart_cities_report-jtc1.pdf)

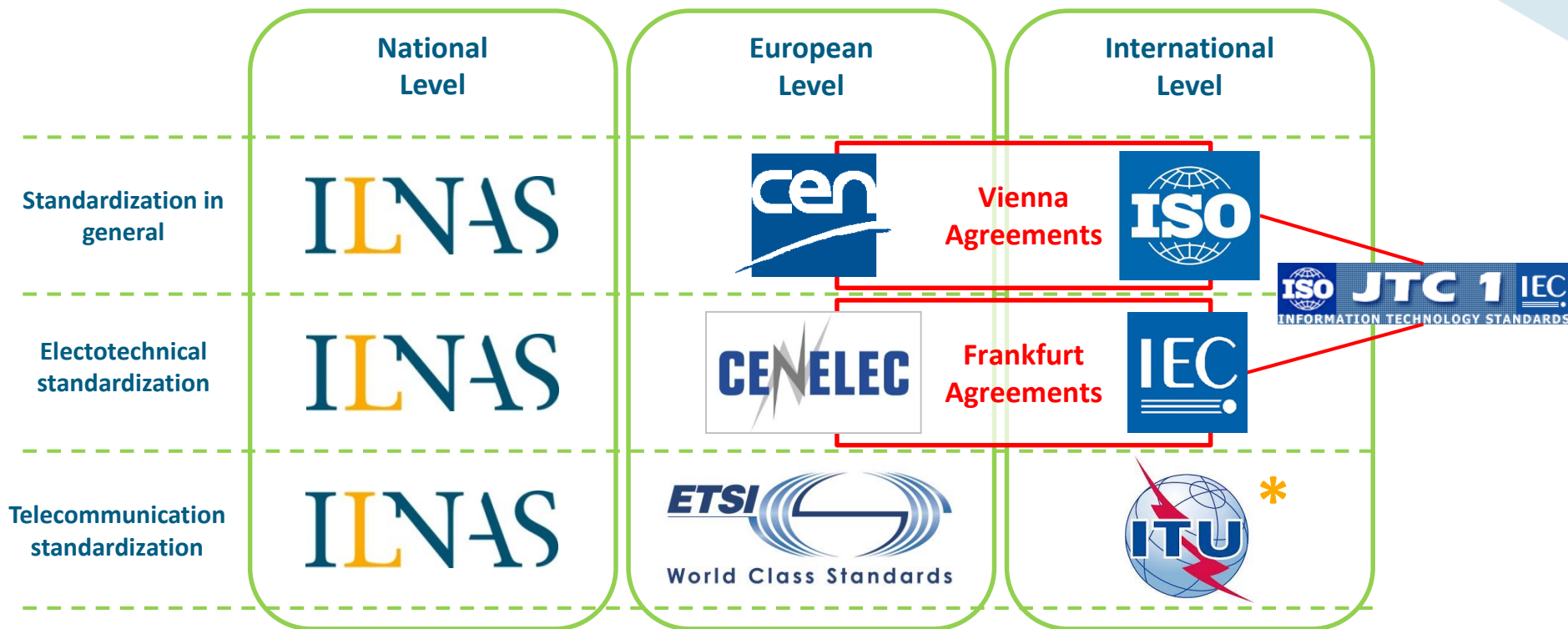
I. Global overview of Smart Cities Standardization

B. Standardization of Smart Cities

- **Some examples of challenges tackled by technical standardization**
 - Understanding and modelling Smart Cities in a consensual way to allow comparison between Smart Cities and sharing of best practices
 - Developing and managing a smart/sustainable strategy for a city or community
 - Ensuring accessibility for all citizens to physical and digital environments
 - Assessing the sustainability impact of the city/community and evaluate its sustainability performance
 - Developing a common data conceptual model to allow the interoperability of ICT applications developed and make them reusable in all Smart Cities
 - ...

I. Global overview of Smart Cities Standardization

B. Standardization of Smart Cities

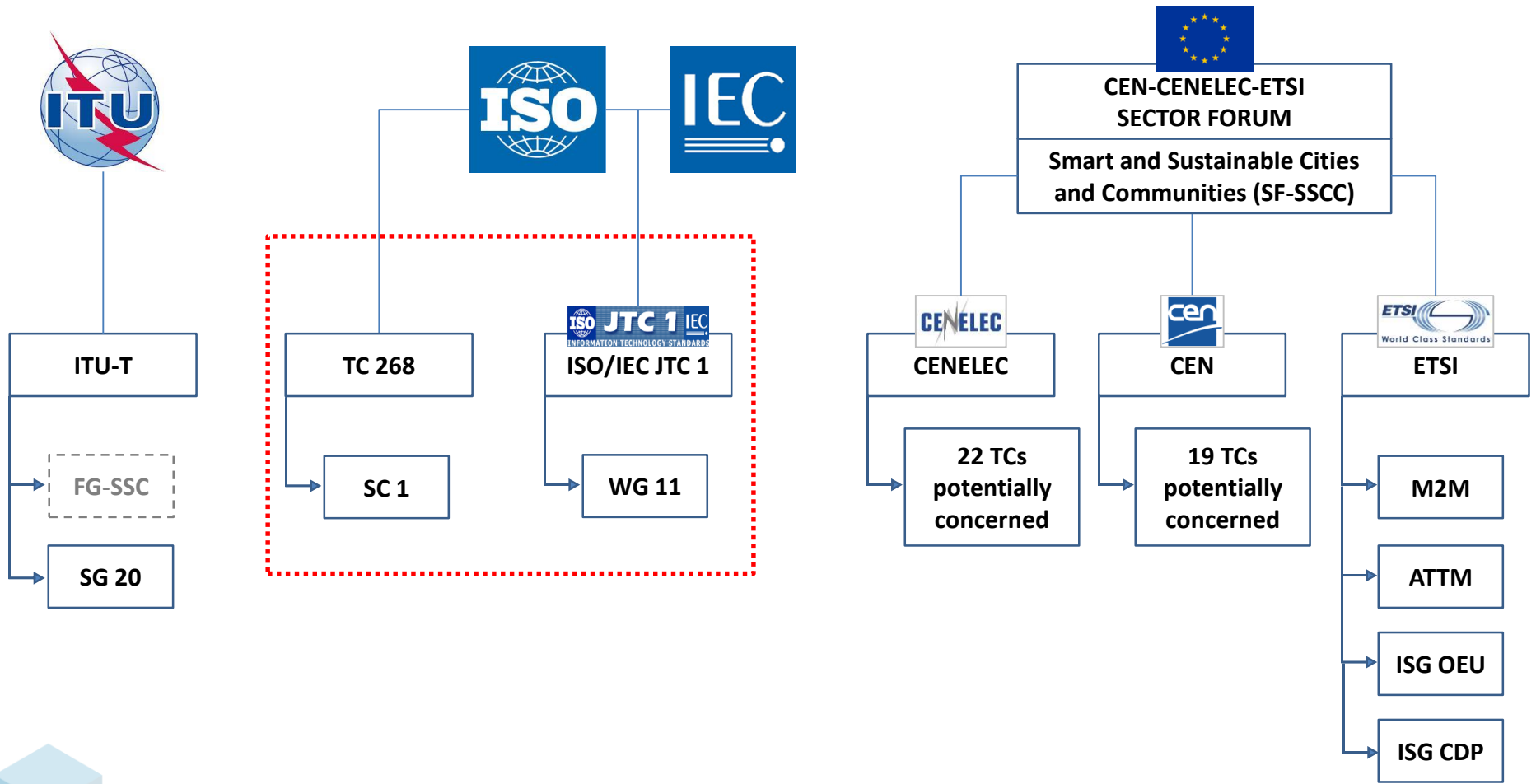


* ITU-T

Fora & Consortia

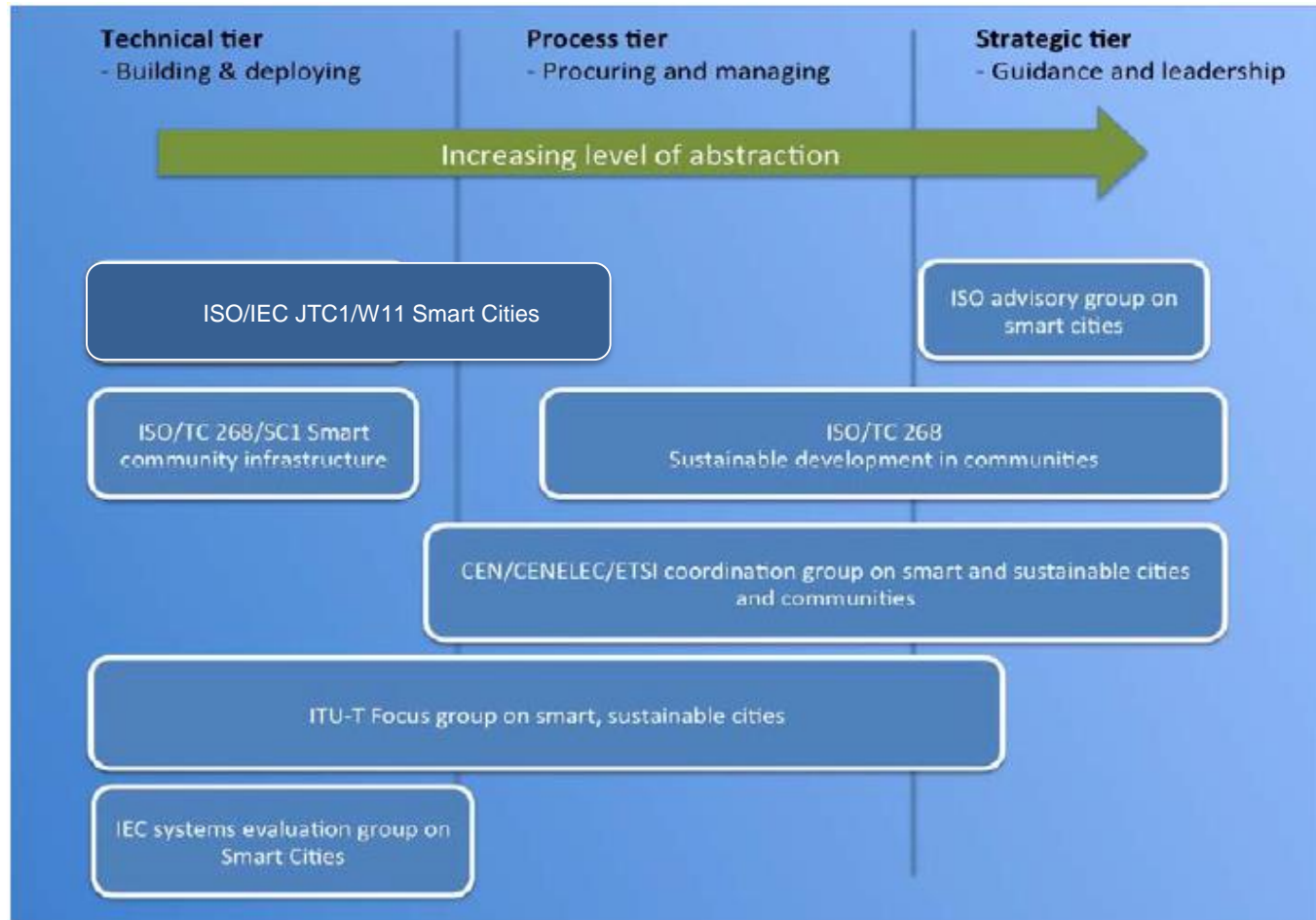
I. Global overview of Smart Cities Standardization

B. Standardization of Smart Cities



I. Global overview of Smart Cities Standardization

B. Standardization of Smart Cities





- I Global overview of Smart Cities Standardization
- II Focus on ISO/TC 268 - Sustainable cities and communities**
- III Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments
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II. Focus on ISO/TC 268 - Sustainable cities and communities

A. General information

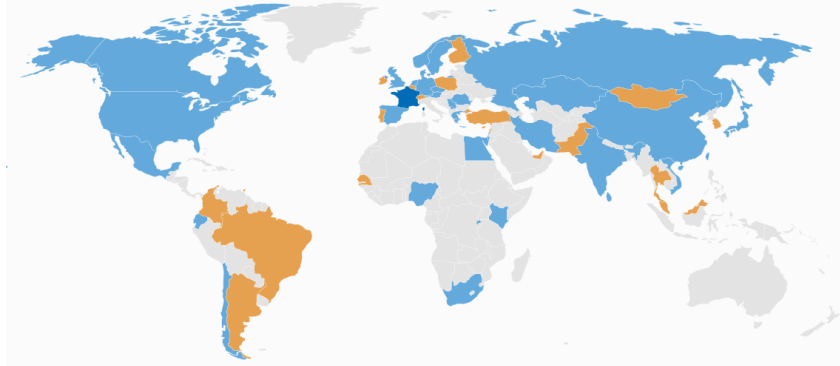
- **Date of creation:** 2012

- **Scope:**
 - Standardization in the field of Sustainable Development in Communities will include **requirements, guidance and supporting techniques and tools to help all kind of communities**, their related subdivisions and interested and concerned parties **become more resilient and sustainable and demonstrate achievements in that regard**. The proposed series of International Standards will thus **encourage the development and implementation of holistic, cross-sector and area-based approaches to sustainable development in communities**. As appears in the program of work, it will **include Management System Requirement, Guidance and Related standards**

- **Structure:**
 - ISO/TC 268/CAG 1 Chairman Advisory Group
 - ISO/TC 268/TG 1 Awareness-raising, communication and promotion
 - ISO/TC 268/WG 1 Management System Standards
 - ISO/TC 268/WG 2 City indicators
 - ISO/TC 268/WG 3 City anatomy and sustainability terms
 - ISO/TC 268/WG 4 Strategies for smart cities and communities
 - ISO/TC 268/SC 1 Smart community infrastructures

II. Focus on ISO/TC 268 - Sustainable cities and communities

A. General information



- **Participating countries (34):**
 - Austria; Barbados; Canada; Chile; China; Czech Republic; Denmark; Ecuador; Egypt; France; Germany; Greece; India; Islamic Republic of Iran; Israel; Japan; Kazakhstan; Kenya; Mauritius; Mexico; Netherlands; Nigeria; Norway; Romania; Russian Federation; Rwanda; Serbia; South Africa; Spain; Sri Lanka; Sweden; United Kingdom; United States; Viet Nam

- **Observing countries (23):**
 - Argentina; Belgium; Brazil; Colombia; Cyprus; Finland; Ireland; Republic of Korea; Lebanon; **Luxembourg**; Macao; Malaysia; Mongolia; Pakistan; Poland; Portugal; Senegal; Singapore; Switzerland; Thailand; Trinidad and Tobago; Turkey; United Arab Emirates

- **Secretariat:** France

- **Luxembourg's involvement:**
 - Ms. Sahra REZGUI Sustain S.A.
 - Mr. Falk FERNBACH Sustain S.A.

II. Focus on ISO/TC 268 - Sustainable cities and communities

B. Standards and projects under ISO/TC 268 responsibility

- **Published Standards (4):**

- ISO 37100:2016, Sustainable cities and communities -- Vocabulary
- ISO 37101:2016, Sustainable development in communities -- Management system for sustainable development -- Requirements with guidance for use
- ISO 37120:2014, Sustainable development of communities -- Indicators for city services and quality of life
- ISO/TR 37121:2017, Sustainable development in communities -- Inventory of existing guidelines and approaches on sustainable development and resilience in cities

- **Standards under development (7):**

- ISO/IEC AWI TS 17021-8, Conformity assessment -- Requirements for bodies providing audit and certification of management systems -- Part 8: Competence requirements for auditing and certification of management systems for sustainable development in communities
- ISO/CD 37104, Sustainable development in communities -- Guidance for practical implementation in cities
- ISO/CD 37105, Sustainable development in communities -- Descriptive framework for cities and communities
- ISO/FDIS 37106, Sustainable cities and communities -- Guide to establishing strategies for smart cities and communities
- ISO/FDIS 37120 (revision)
- ISO/CD 37122, Sustainable development in communities -- Indicators for Smart Cities
- ISO/NP 37123, Sustainable Development in Communities -- Indicators for Resilient Cities

II. Focus on ISO/TC 268 - Sustainable cities and communities

C. Standards and projects under ISO/TC 268/SC 1 responsibility

- **Published Standards (5):**

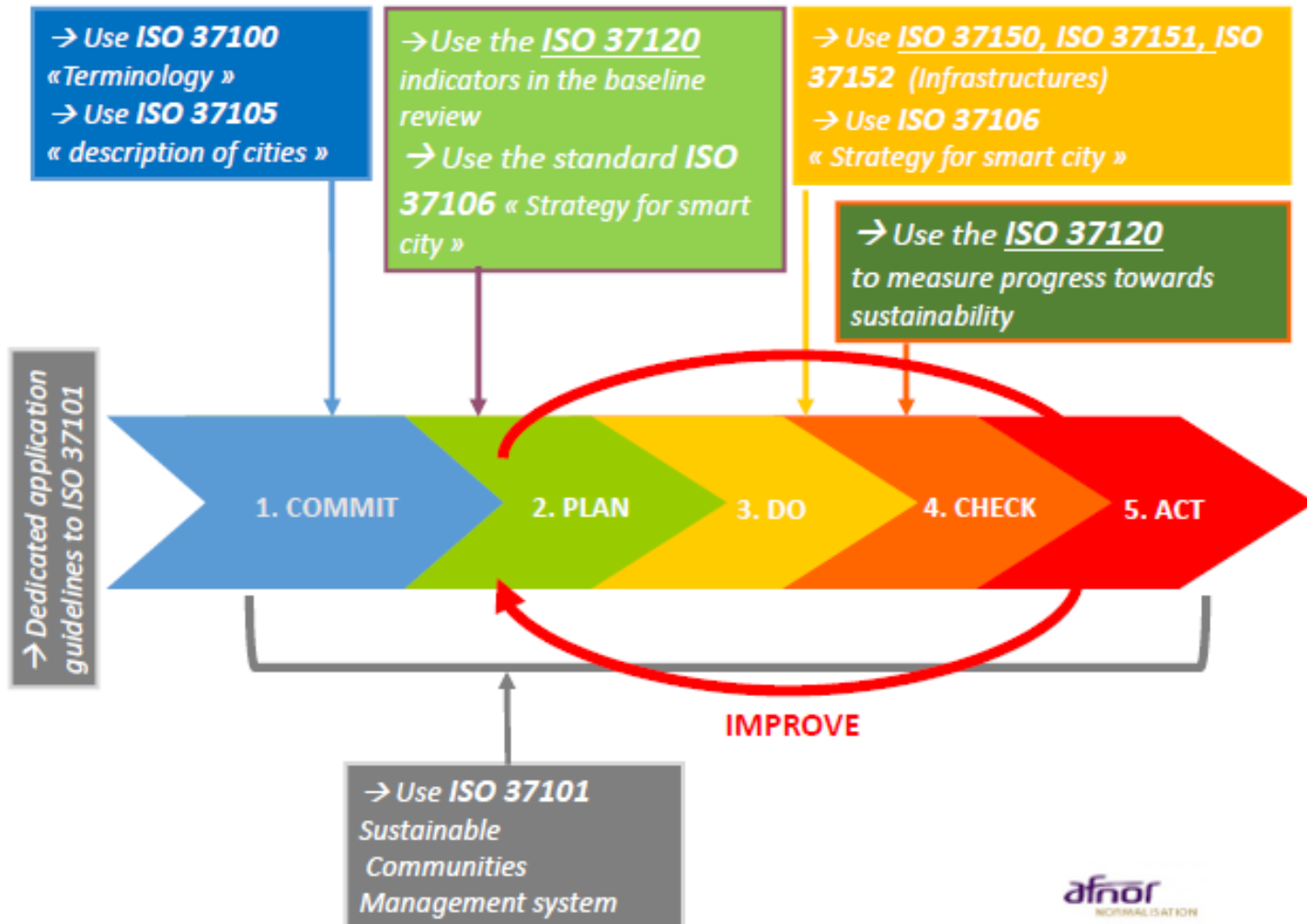
- ISO/TR 37150:2014, Smart community infrastructures -- Review of existing activities relevant to metrics
- ISO/TS 37151:2015, Smart community infrastructures -- Principles and requirements for performance metrics
- ISO/TR 37152:2016, Smart community infrastructures -- Common framework for development and operation
- ISO 37153:2017, Smart community infrastructures -- Maturity model for assessment and improvement
- ISO 37154:2017, Smart community infrastructures -- Best practice guidelines for transportation

- **Standards under development (6):**

- ISO/AWI 37155, Framework for integration and operation of smart community infrastructures -- Part 1: Opportunities and challenges from interactions in smart community infrastructures from all aspects through the life-cycle
- ISO/AWI 37156, Smart community infrastructures -- Guidelines on Data Exchange and Sharing for Smart Community Infrastructures
- ISO/FDIS 37157, Smart community infrastructures -- Smart transportation for compact cities
- ISO/DIS 37158, Smart community infrastructures -- Smart transportation using battery-powered buses for public transportation systems to realize the city centers with zero-emission of greenhouse gases and small particles, the quiet environment and safe bus rides
- ISO/CD 37159, Smart community infrastructures -- Smart transportation for rapid transit in/between large city zones and the surrounding areas
- ISO/AWI 37160, Smart community infrastructure Electric power infrastructure -- Measurement method for quality of thermal power station infrastructure and requirement for plant operation and maintenance practice

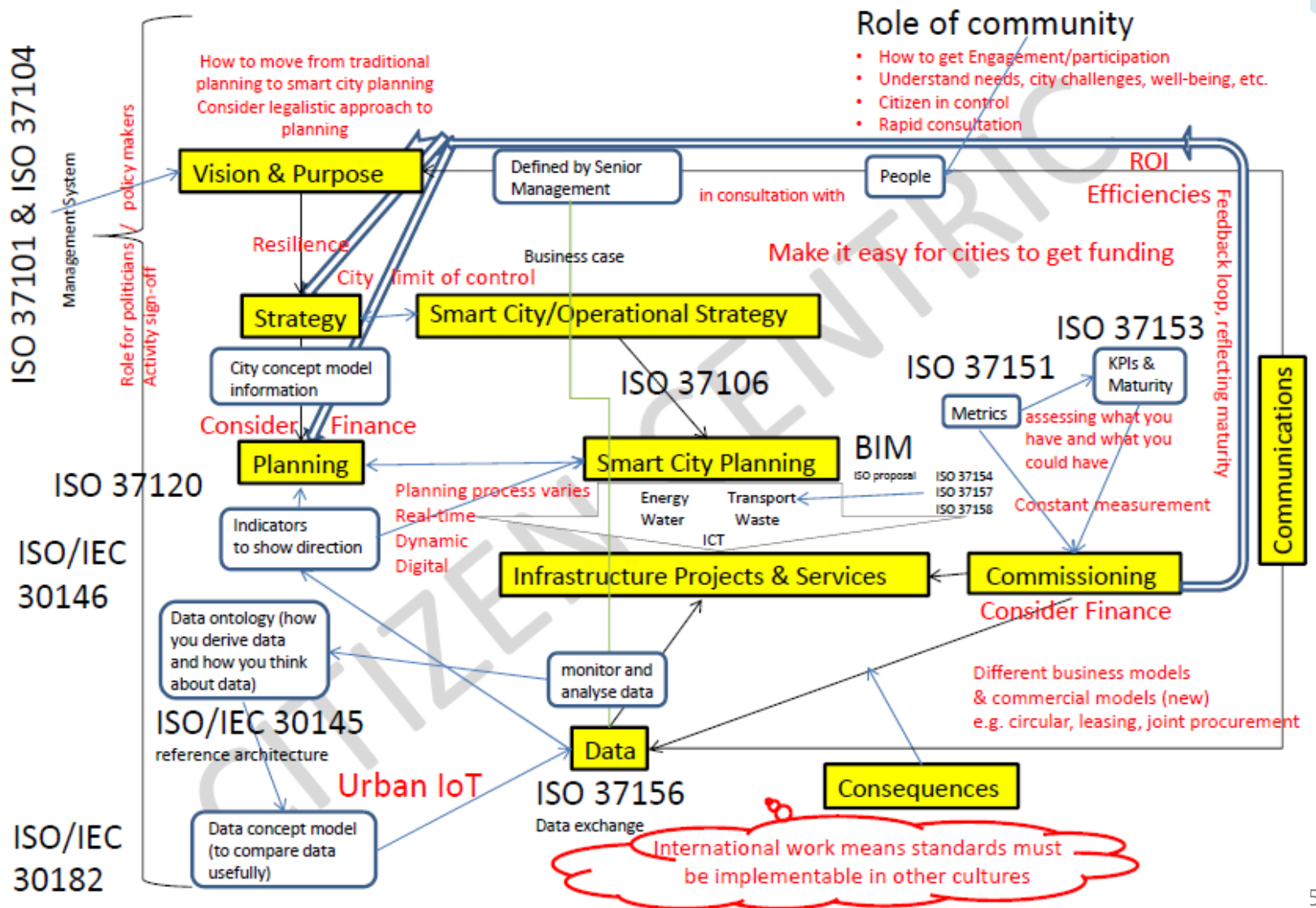
II. Focus on ISO/TC 268 - Sustainable cities and communities

D. Implement a PDCA approach to Smart Cities



II. Focus on ISO/TC 268 - Sustainable cities and communities

E. ISO/TC 268 Conceptual framework for standards





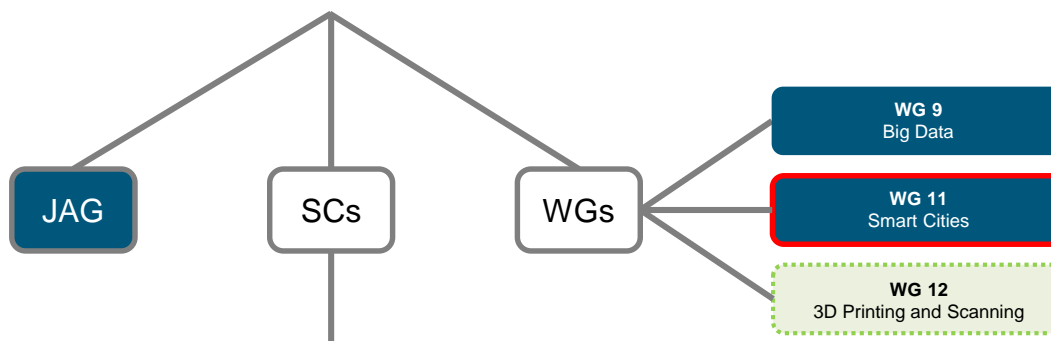
- I Global overview of Smart Cities Standardization
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A. General information

Presidency by ILNAS



- Newly created (JTC 1 plenary meeting – October 2017)
- ILNAS & ANEC Direct involvement
- Luxembourg's current involvement
- Not involved



SC 2 Coded Character Sets	SC 6 Telecommunications and information exchange between systems	SC 7 Software and Systems Engineering	SC 17 Cards & Personal Identification	SC 22 Programming Languages	SC 23 Digitally recorded media for information interchange and storage	SC 24 Computer graphics, image processing, and environmental data representation	SC 25 Interconnection of information technology equipment	SC 27 IT security techniques	SC 28 Office equipment	SC 29 Coding of audio, picture, multimedia and hypermedia information
SC 31 Automatic identification and data captures techniques	SC 32 Data management and interchange	SC 34 Document description and processing languages	SC 35 User interfaces	SC 36 Information technology for learning, education and training	SC 37 Biometrics	SC 38 Cloud Computing and Distributed Platforms	SC 39 Sustainability for and by information technology	SC 40 IT Service Management and IT Governance	SC 41 Internet of Things and related technologies	SC 42 Artificial Intelligence

III. Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments

A. General information

- **Date of creation** : 2016

- **Terms of Reference**:
 - Serve as the focus of and proponent for JTC 1's Smart Cities standardization program
 - Develop **foundational standards for the use of ICT in Smart Cities** - including the **Smart City ICT Reference Framework** and an **Upper Level Ontology for Smart Cities** - for guiding Smart Cities efforts throughout JTC 1 upon which other standards can be developed
 - Develop a **set of ICT related indicators for Smart Cities** in collaboration with ISO/TC 268;
 - Develop **additional Smart Cities' standards** and other deliverables that build on these foundational standards
 - Identify JTC 1 (and other organization) subgroups that are developing standards and related material that contribute to Smart Cities, and where appropriate, investigate ongoing and potential new work that contributes to Smart Cities
 - Develop and maintain liaisons with all relevant JTC 1 subgroups
 - Engage with the community outside of JTC 1 to grow the awareness of, and encourage engagement in, JTC 1 Smart Cities standardization efforts within JTC 1, forming liaisons as is needed
 - Ensure a strong relationship with Smart Cities activities in ISO and IEC

III. Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments

A. General information

- **Participating countries (25):**

- China; Australia; Austria; Canada; Finland; France; Germany; India; Italy; Israel; Japan; Republic of Korea; **Luxembourg**; Malaysia; Mexico; Netherlands; Russian Federation; Saudi Arabia; Singapore; Slovenia; South Africa; Spain; Sweden, United Kingdom, United States

- **Secretariat:** China

- **Luxembourg's involvement:**

- Mr. José GARCIA SAEZ Wizata S.A.
- Mr. Johnatan PECERO ANEC GIE
- Mr. Nicolas DOMENJOUR ANEC GIE
- Mr. Shyam WAGLE ANEC GIE

III. Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments

B. Standards and projects under ISO/IEC JTC 1/WG 11 responsibility

- **Published Standards (1):**
 - ISO/IEC 30182:2017, Smart city concept model -- Guidance for establishing a model for data interoperability

- **Standards under development (5):**
 - ISO/IEC AWI 21972, Information technology - An upper level ontology for smart city indicators
 - ISO/IEC AWI 30145-1, Information technology - Smart city ICT reference framework - Part 1: Smart city business process framework
 - ISO/IEC AWI 30145-2, Information technology - Smart city ICT reference framework - Part 2: Smart city knowledge management framework
 - ISO/IEC AWI 30145-3, Information technology - Smart city ICT reference framework- Part 3: Smart city engineering framework
 - ISO/IEC AWI 30146, Information technology -- Smart city ICT indicators

III. Focus on ISO/IEC JTC 1/WG 11 and ICT standardization developments

C. Technology Trends and Enablers Driving Smart Cities and related standardization developments

- **Networking and communication (ex.: 5G, Low-Power Wide-Area Network)**
 - Ex.: ISO/IEC JTC 1/SC 6, Telecommunications and information exchange between systems

- **Cyber-physical systems and IoT**
 - Ex.: ISO/IEC JTC 1/SC 41, IoT and related technologies

- **Cloud Computing / Edge Computing**
 - Ex.: ISO/IEC JTC 1/SC 38, Cloud Computing and Distributed Platforms
 - Ex.: ISO/IEC JTC 1/SC 41

- **Big Data & Data Analytics**
 - Ex.: ISO/IEC JTC 1/WG 9, Big Data
 - Ex.: ISO/IEC JTC 1/SC 32, Data management and interchange



- I Global overview of Smart Cities Standardization
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- **Technical standardization offers solutions to implement, assess and improve Smart Cities and Communities**
- **Technical standardization offers a unique platform gathering experts in the field from all around the world and gives access to an extremely rich source of knowledge**
- **Technical standardization is continuously evolving according to market needs and represents a way to keep up to date on evolutions in the field as well as on best practices developed in other cities**



**Join now the
community and be
ready for the future!**



IV. Concluding remarks

University certificate Smart ICT for Business Innovation



More information: <http://smartict.uni.lu>

Registration:

[https://www.en.uni.lu/students/application_re_registration/inscriptions ue choix de la formation specifique ou continuation/certificate smart ict for business innovation professionnel](https://www.en.uni.lu/students/application_re_registration/inscriptions_ue_choix_de_la_formation_specifique_ou_continuation/certificate_smart_ict_for_business_innovation_professionnel)

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New Standards Analysis of the ICT sector: How to identify standardization activities relevant to your business?

15.12.2017



INFORM

about Smart ICT
standardization
developments

IDENTIFY

standardization
opportunities for the
national market

ENCOURAGE

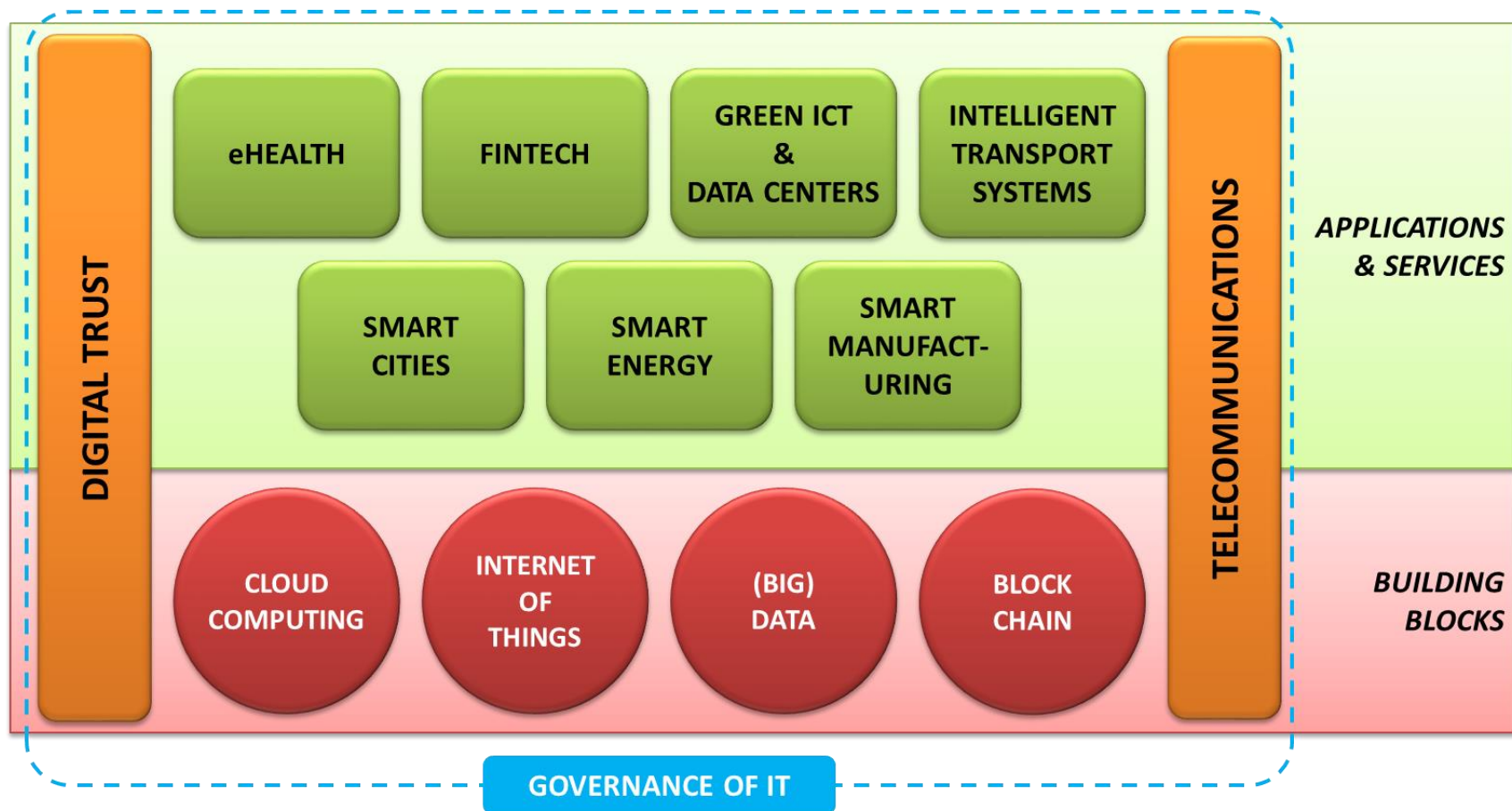
the involvement
in the standardization
process

DEVELOP

“standards-related”
skills and
collaborations

For the benefit of all national stakeholders

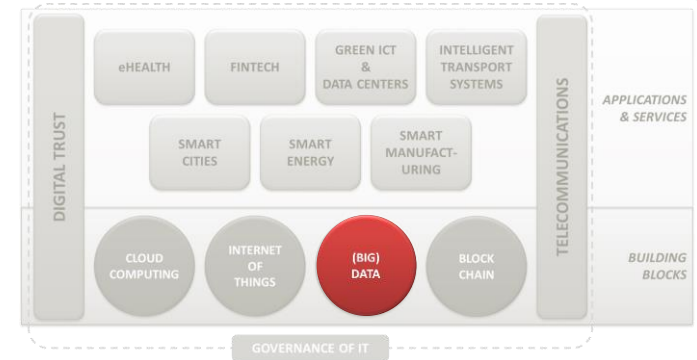
- Definition of 14 ICT “subsectors”
- In total 79 Technical Committees are mapped and described through this matrix



BIG DATA

The Big Data Preliminary Report published by ISO/IEC JTC 1 defines Big Data as “a data set(s) with characteristics (e.g. volume, velocity, variety, variability, veracity, etc.) that for a particular problem domain at a given point in time cannot be efficiently processed using current / existing / established / traditional technologies and techniques in order to extract value.”

In this standards analysis, the (Big) Data subsector encompasses the whole scope of data management, as defined by ISO/IEC TR 10032:2003: “the activities of defining, creating, storing, maintaining and providing access to data and associated processes in one or more information systems”



Selected Technical Committees

- ISO/IEC JTC 1/WG 9 Big Data
- ISO/IEC JTC 1/SC 2 Coded character sets
- ISO/IEC JTC 1/SC 23 Digitally Recorded Media for Information Interchange and Storage
- ISO/IEC JTC 1/SC 24 Computer graphics, image processing and environmental data representation
- ISO/IEC JTC 1/SC 29 Coding of audio, picture, multimedia and hypermedia information
- ISO/IEC JTC 1/SC 32 Data management and interchange
- ISO/IEC JTC 1/SC 34 Document description and processing languages
- ITU-T/SG 13 Future networks, with focus on IMT-2020, cloud computing and trusted network infrastructures

General information			
Committee	ISO/IEC JTC 1/WG 9	Title	Big Data
Creation date	2014	MEMBERS 	Participating countries (26): United States, Australia, Austria, Brazil, Canada, China, Finland, France, Germany, India, Ireland, Israel, Japan, Republic of Korea, Luxembourg, Mexico, Netherlands, Norway, Russian Federation, Saudi Arabia, Singapore, Slovenia, South Africa, Spain, Sweden, United Kingdom
Secretariat	United States (ANSI)		
Secretary	Ms. Sally Seitz		
Chairperson	Mr. Wo Chang		
Organizations in liaison	BDVA, IIC, ITU-T SG 13, OGC		
Web site	http://isotc.iso.org/livelink/livelink/open/itc1wg9		
Scope	<p>The ISO/IEC JTC 1/WG 9 has been established with the following Terms of Reference:</p> <ul style="list-style-type: none"> - Serve as the focus of and proponent for JTC 1's Big Data standardization program. - Develop foundational standards for Big Data—including reference architecture and vocabulary standards—for guiding Big Data efforts throughout JTC 1 upon which other standards can be developed. - Develop other Big Data standards that build on the foundational standards when relevant JTC 1 subgroups that could address these standards do not exist or are unable to develop them. - Identify gaps in Big Data standardization. - Develop and maintain liaisons with all relevant JTC 1 entities as well as with any other JTC 1 subgroup that may propose work related to Big Data in the future. - Identify JTC 1 (and other organization) entities that are developing standards and related material that contribute to Big Data, and where appropriate, investigate ongoing and potential new work that contributes to Big Data. - Engage with the community outside of JTC 1 to grow the awareness of and encourage engagement in JTC 1 Big Data standardization efforts within JTC 1, forming liaisons as is needed. 		
Structure	/		
Standardization work			
Published standards	Number of published ISO/IEC standards under the direct responsibility of JTC 1/WG 9 (number includes updates): 0		
Standards under development	5		

Involvement of Luxembourg	
	9 delegates
- Mrs. Natalia Cassagnes (SPOC)	ANEC G.I.E.
- Mr. Cyril Cassagnes	KPMG Luxembourg S.à r.l.
- Mr. Christophe Delogne	BGL BNP Paribas
- Mr. Laurent Dufosse	ADBA S.à r.l.
- Mrs. Aida Horaniet	Docler Holding S.à r.l.
- Mr. Emmanuel Kieffer	University of Luxembourg
- Mr. Andreas Kremer	ITTM
- Mr. Johnatan Pecero	ANEC G.I.E.
- Mr. Shyam Wagle	ANEC G.I.E.
Comments	
<p>The current WG 9 work program includes the development of two foundational International Standard:</p> <ul style="list-style-type: none"> - ISO/IEC CD 20546, Big Data – Definition and Vocabulary; - ISO/IEC 20547, which specifies the Big Data Reference Architecture (BDRA) and includes the Big Data roles, activities, and functional components and their relationships. It is composed of 5 parts: <ul style="list-style-type: none"> o ISO/IEC AWI TR 20547-1, Information technology – Big Data Reference Architecture – Part 1: Framework and Application Process; o ISO/IEC PRF TR 20547-2, Information technology – Big Data Reference Architecture – Part 2: Use Cases and Derived Requirements; o ISO/IEC CD 20547-3, Information technology – Big Data Reference Architecture – Part 3: Reference Architecture; o ISO/IEC AWI 20547-4, Information technology – Big Data Reference Architecture – Part 4: Security and Privacy Fabric (under the responsibility of JTC 1/SC 27); o ISO/IEC PRF TR 20547-5, Information technology – Big Data Reference Architecture – Part 5: Standards Roadmap. <p>It has to be noted that the 4th part of ISO/IEC 20547, dedicated to security and privacy aspects of the BDRA, is developed under the direct responsibility of ISO/IEC JTC 1/SC 27 (IT security techniques) in close collaboration with ISO/IEC JTC 1/WG 9.</p>	



INFORMATION ABOUT STANDARDIZATION

- National ICT workshops
- Awareness sessions
- Identification of most relevant technical committees through the ANS TIC
- Publications and disseminations
- Free consultation of the standards
- Smart ICT standardization research results



TRAINING IN STANDARDIZATION

- Trainings on ICT technical standardization
- University certificate Smart ICT for Business Innovation

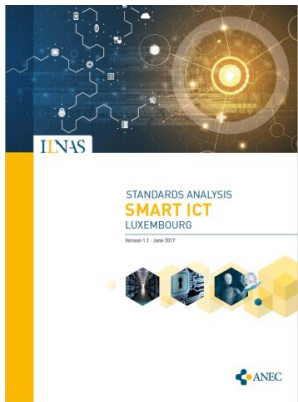


INVOLVEMENT IN STANDARDIZATION

- Become national delegate in standardization
- Comment standards under public enquiry
- Propose new standards projects
- Monitor the standardization work performed by the European Multi-Stakeholder Platform on ICT Standardization (MSP)



- Download the Standards Analysis of the ICT Sector V8.0 (November 2017)
 - <https://portail-qualite.public.lu/content/dam/qualite/publications/normalisation/2017/standards-analysis-ict-8-0.pdf>



- The Smart ICT Standards Analysis, going further on Smart ICT topics (Cloud Computing, IoT, Big Data and Digital Trust related standardization), is also available online:
 - <https://portail-qualite.public.lu/content/dam/qualite/publications/normalisation/2017/standards-analysis-smart-ict-1-1.pdf>
- Focused standards watch can be provided, on request, to help you identifying relevant technical standardization activities for a specific need

Welcome
Bienvenue
Willkommen

ACCREDITATION

CONFIANCE
NUMÉRIQUE

SURVEILLANCE
DU MARCHÉ

MÉTROLOGIE

NORMALISATION

ILNAS



IoT Standardization and Smart Cities

Dr. Shyam WAGLE

15/12/2017

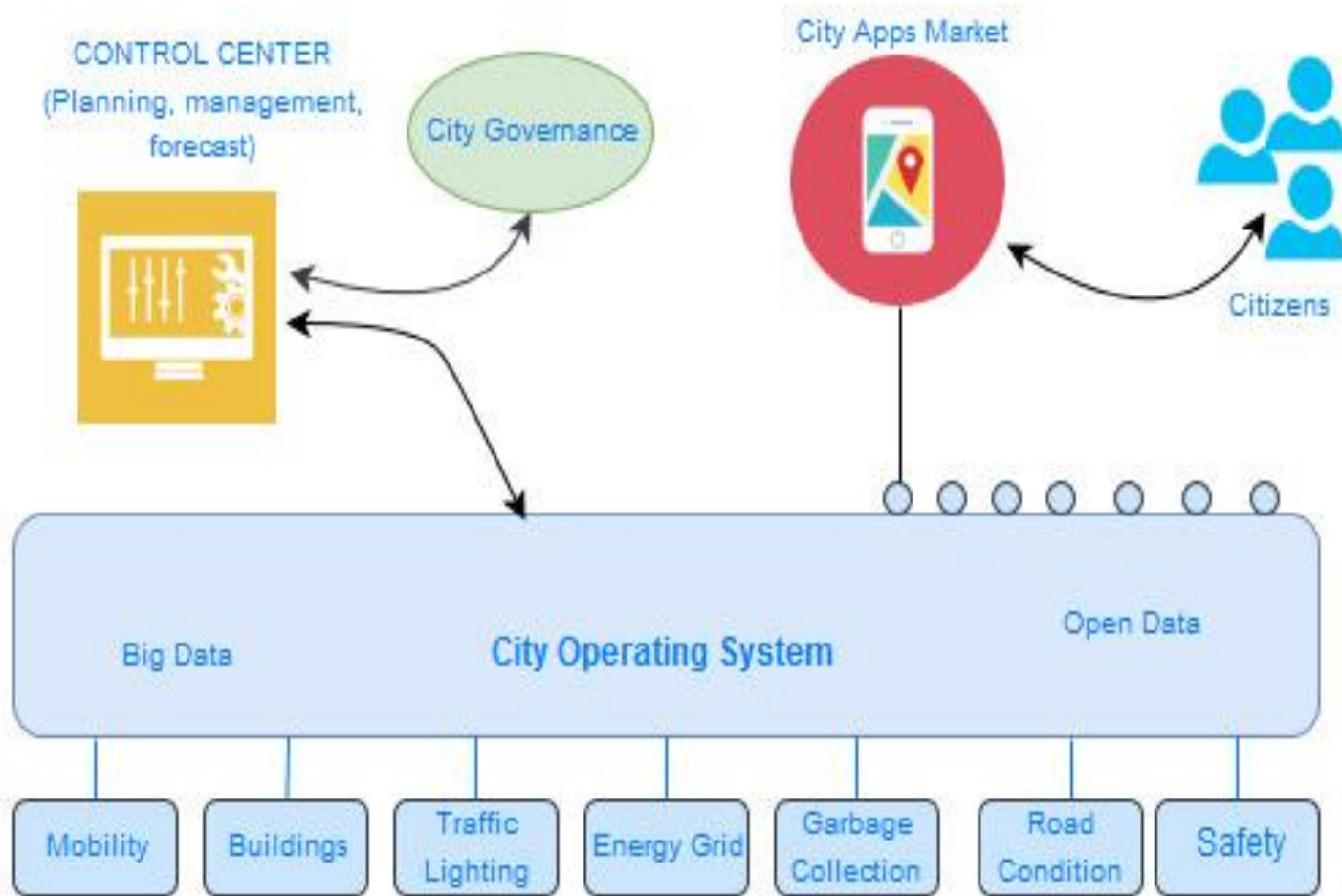


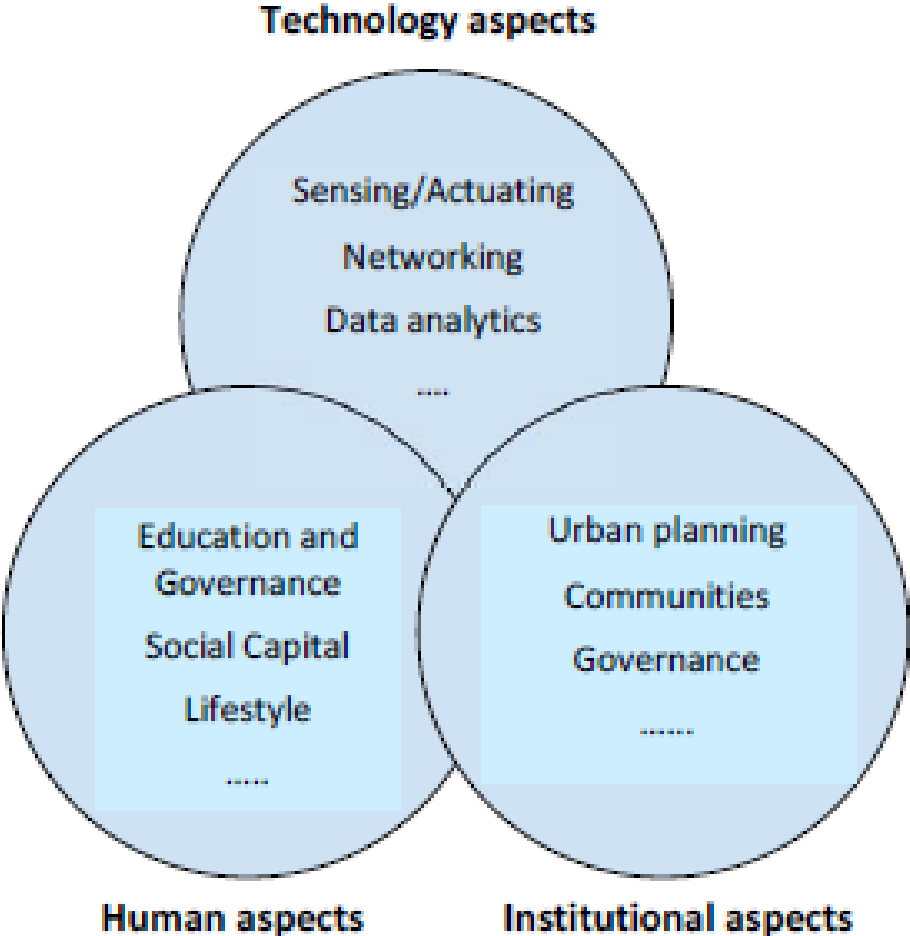
- **ISO/IEC JTC 1 preliminary report definition¹:**

- A new concept and a new model, which applies the new generation of information technologies, such as the internet of things, cloud computing, big data and space/geographical information integration, to facilitate the planning, construction, management and smart services of cities. Developing Smart Cities can benefit synchronized development, industrialization, informationization, urbanization and agricultural modernization and sustainability of cities development.

- **ITU-T definition²:**

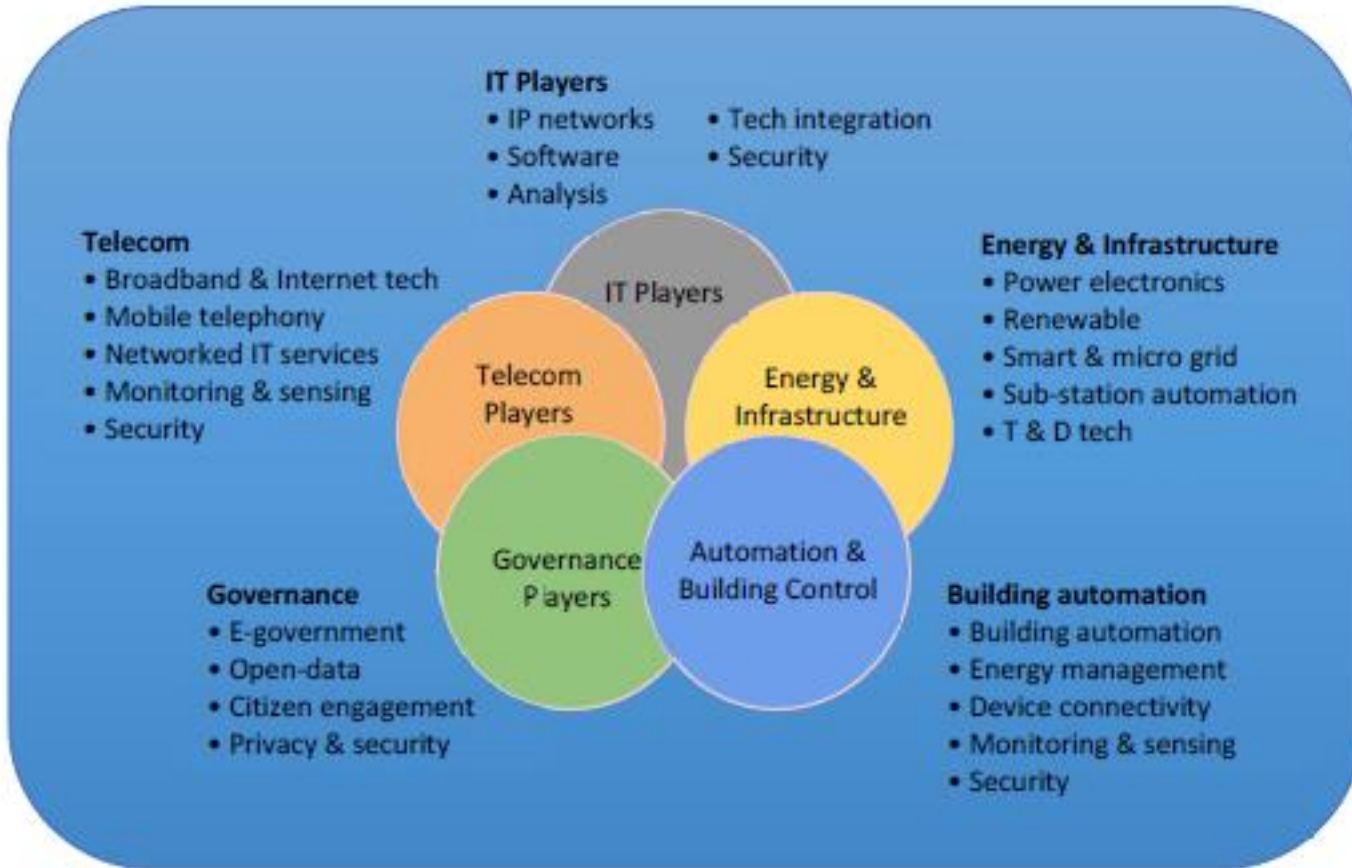
- A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects.



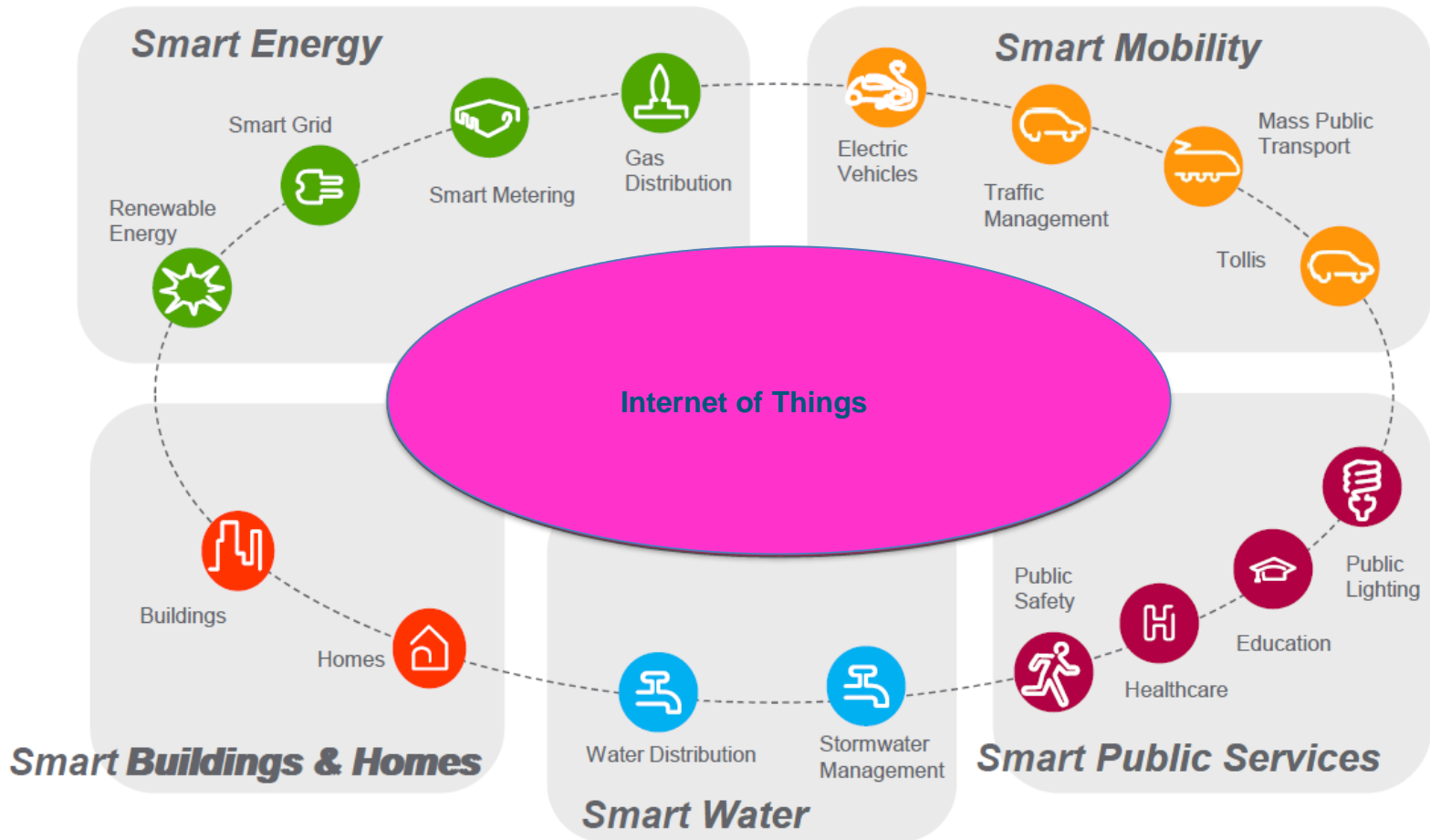


Source: Rodger Lea, "Smart Cities: An Overview of the Technology Trends Driving Smart Cities": https://www.ieee.org/publications_standards/.../ieee-smart-cities-trend-paper-2017.pdf

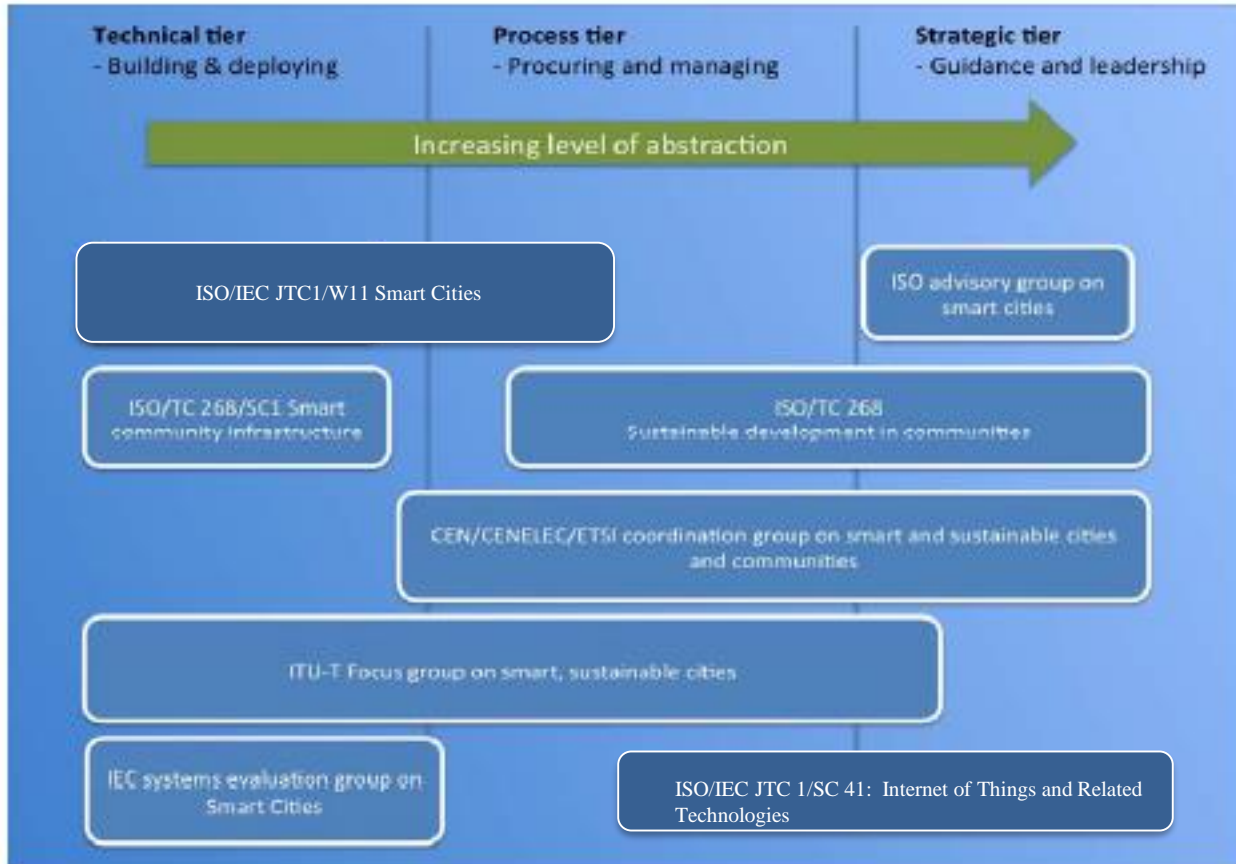
The technological ecosystem (players) in Smart Cities



Source: Rodger Lea, "Smart Cities: An Overview of the Technology Trends Driving Smart Cities": https://www.ieee.org/publications_standards/.../ieee-smart-cities-trend-paper-2017.pdf

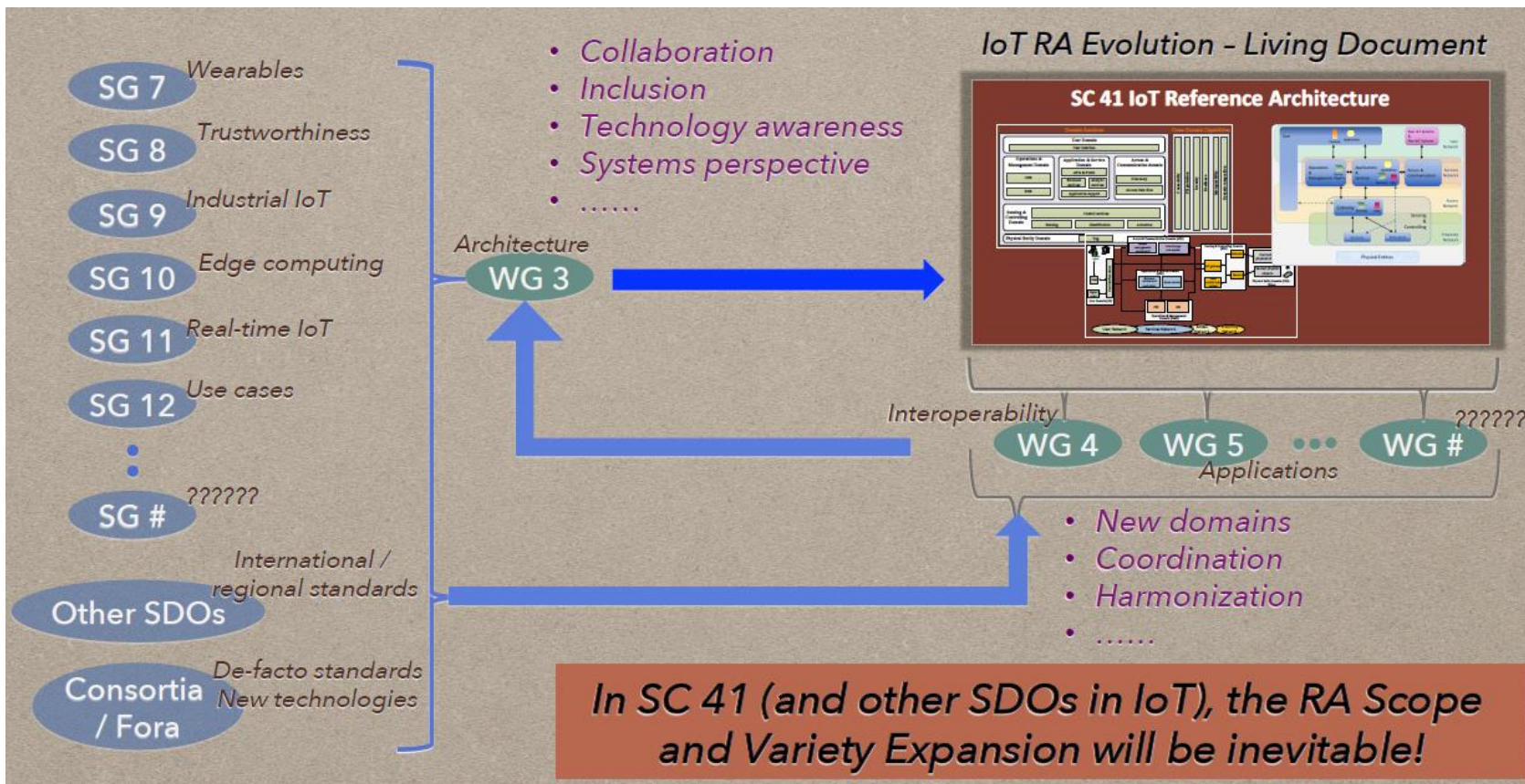


An overview of major SDOs activities in the Smart City domain



Source: Rodger Lea, "Smart Cities: An Overview of the Technology Trends Driving Smart Cities": https://www.ieee.org/publications_standards/.../ieee-smart-cities-trend-paper-2017.pdf

Standardization activities of ISO/IEC JTC1/ SC 41: Internet of Things and Related Technologies



- Its mandate is to provide standardization activities in the area of IoT vocabulary, architecture, and frameworks.

Assigned Standards:

- ISO/IEC 29182- part 1: General overview and requirements, part 2: Vocabulary, terminology, and part 3: Reference architecture views

Standards Under Development:

- ISO/IEC CD 20924, Information technology -- Internet of Things -- Definition and Vocabulary
- ISO/IEC CD 30141, Information technology -- Internet of Things -- Internet of Things Reference Architecture (IoT- RA) – **under ballot for DIS/CDV stage**

New work item

- Further to the ongoing work of its SG on Edge Computing, JTC 1/SC 41 approved the initiation for a Technical Report on Internet of Things (IoT)– Edge Computing with the following scope:
 - To provide guidelines on architectures, common concepts, terminologies, values, characteristics, challenges, use cases and main technologies (including data management, coordination, processing, network functionality, heterogeneous computing, security, hardware/software optimization) of Edge Computing for IoT and systems applications.

- Its mandate is to provide standardization activities in the area of IoT Interoperability, connectivity, conformance and testing.

Assigned Standards:

- ISO/IEC 19637, Information technology - Sensor network testing framework

Standards Under Development:

- ISO/IEC 21823-1 Internet of things (IoT) -- Interoperability for internet of things systems -- Part 1: Framework **under ballot for CD stage (Deadline: 2018-01-26)**
- ISO/IEC NP 21823-2, Information technology –Internet of Things (IoT) –Interoperability for Internet of Things Systems –Part 2: Transport (**Network**) Interoperability (**connectivity**)
 - JTC 1/SC 41/WG4 requests to change the name of project, ISO/IEC 21823-2 Interoperability for Internet of Things Systems – Part 2: **Network Connectivity**, to ISO/IEC 21823-2 Interoperability for Internet of Things Systems – Part 2: **Transport Interoperability**, to make it consistent with Part 1: Framework.
- ISO/IEC NP 21823-3, Information technology –Internet of Things (IoT) –Interoperability for Internet of Things Systems –Part 3: Semantic interoperability

Its mandate is to provide standardization activities in the area of IoT Applications, Use Cases, IoT Platforms, middleware, tools and implementation guidance

Assigned Standards:

- **ISO/IEC TR 22417 Information technology -- Internet of things (IoT) use cases (recently published)**
- ISO/IEC 29182-4 Information technology - Sensor networks: Sensor Network Reference Architecture (SNRA) - Part 4: Entity models
- ISO/IEC 29182-5 Information technology -- Sensor networks: Sensor Network Reference Architecture (SNRA) -- Part 5: Interface definitions
- ISO/IEC 29182-6 Information technology -- Sensor networks: Sensor Network Reference Architecture (SNRA) -- Part 6: Applications
- ISO/IEC 20005 Information technology - Sensor networks - Services and interfaces supporting collaborative information processing in intelligent sensor networks
- ISO/IEC 30101:2014 Information technology -- Sensor networks: Sensor network and its interfaces for smart grid system
- ISO/IEC 30128:2014 Information technology -- Sensor networks -- Generic Sensor Network Application Interface

Standards Under Development:

ISO/IEC TR 22560 Information technology -- Sensor networks -- Use cases of the aeronautics industry: Active Air-flow Control

ISO/IEC 30140-1 Information technology -- Underwater acoustic sensor network (UWASN) -- Part 1: Overview and requirements, Part 2: Reference architecture, Part 3: Entities and interface, Part 4: Interoperability.

Scenario (1)

- IoT Network Security
- IoT Security Threat Detection and management
- Remote Management of Large eqpt. In a plant
- Automated ICC Profile Discovery
- Tracking of Farm Products
- Warehouse Goods Monitoring
- Cooperation between Factories and Remote Applications
- Searching System for people with cognitive Impairment
- Sleep Monitoring System
- Smart Glasses
- IoT Endpoint (Sensors and Actuators) Monitoring Systems
- Intelligent Assistive Parking in Urban Areas

Context

- Global
- Transport infrastructure
- Home
- Public buildings
- Offices
- Factories
- Process Plants
- Agriculture
- Forestry
- Fishing
- Body and Personal
- Healthcare
- Vehicles
- **Smart Cities**

Scenario (2)

- Integrated Smart Pump Systems
- Remote Health Monitoring: AAL use case in IoT
- Connected Car Analytics
- Real Time Motor Monitor
- Smart Home Appliances
- Smart Home Insurance
- Machine Leasing
- IoT- based Energy Management system for industrial facilities
- Water Plant Management
- Smart Home Application
- Field Gateway Bridging IoT to Legacy Devices in Factories and Plants
- Production Monitoring of Textile Equipment
- Remote Management of Agricultural Greenhouses

- **IoT/SN technology-based integrated system platform for chattel asset & mortgage Management**
 - NWIP will be submitted as soon as possible in order for the NP to be handled in the next WG 5 Berlin meeting
- **Intelligent Wireless Sensor Network (i-WSN) System Supporting Electrical Power**
 - NWIP will be submitted before the end of November in order for the NP to be handled in the next WG 5 Berlin meeting
- **Underwater Acoustic Sensor Network (UWASN) – Part 5: Application Profiles**
 - NWIP will be submitted as soon as possible in order for the NP to be handled in the next WG 5 Berlin meeting
- **Underwater Acoustic Sensor Network (UWASN) – Part 6: Network management system overview and requirements**
 - NWIP will be submitted as soon as possible in order for the NP to be handled in the next WG 5 Berlin meeting
- **Wireless Gas Meters Application**
 - The first draft PDTR document will be submitted as soon as possible in order to be handled in the next WG 5 Berlin meeting
- **Wireless Gas Meters Networks**
 - This document will be discussed after the processing of PDTR on Wireless Gas Meters Application
- **Interworking IoT Platforms with Smart Grid**
 - The first draft PDTR document will be submitted for discussion in the next WG 5 Berlin meeting



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