Smart Cities Conference
4th Edition
Bucharest, December 8-9, 2016

SNSPA

The National University
of Political Studies
and Public Administration
Faculty of Public Administration
The „Development and Urban Planning"
research working group

Smart City Concept Standardization

BRK SYSTEMS

ASRO

Dipl. Eng. Valentin-Nicolae BERCĂ
President of TC 345

Motto:

"Există o diferenţă în limba română între inteligenţă şi deşteptăciune.
Eu îi ador pe inteligenţi".

Constantin Brancuşi

Definition:

The smart city concept essentially means efficiency, but efficiency based on the intelligent management and integrated ICTs, and active citizen participation.
Gildo Seisdedos Dominguez

Gildo Seisdedos Dominguez, (May 14, 1967), is a Spanish economist and lawyer specialized in city marketing and smart cities, who manages international forums on urban planning.

CONTENTS

EU Politics

Top SMART CITY

SMART CITY Politics

IEC -ISO -ITU

CEN -CENELEC -ETSI

EU Politics – Europe 2020

Brussels, 3.3.2010 - COM(2010) 2020 final
COMMUNICATION FROM THE COMMISSION
EUROPE 2020 - A strategy for smart, sustainable and inclusive growth

Europe 2020 puts forward three mutually reinforcing priorities:
– Smart growth: developing an economy based on knowledge and innovation.
– Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
– Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

3% of the EU's GDP should be invested in R&D!
The "20/20/20" climate/energy targets should be met!

EU Politics – Europe 2020

Flagship Initiative: "A Digital Agenda for Europe"
-**To promote deployment and usage of modern accessible online services (e.g. e-government, online health, smart home, digital skills, security).**
Flagship Initiative: "Resource efficient Europe"
-**To develop smart, upgraded and fully interconnected transport and energy infrastructures and make full use of ICT;**
-**To focus on the urban dimension of transport where much of the congestion and emissions are generated;**
**Flagship Initiative: "An Agenda for new skills and jobs"**
-**To develop partnerships between the worlds of education/training and work, in particular by involving social partners in the planning of education and training provision.**

EU Politics – Europe 2020

Digital skills and ICT sector

The information and communication technology (ICT) sector is dynamic and competitive. The ICT sector's share of Romania's GDP is 6 %, one of the highest in the EU (Graph 3.1.2).

Graph 3.1.2: **ICT share of GDP**

% GDP

Source: European Commission
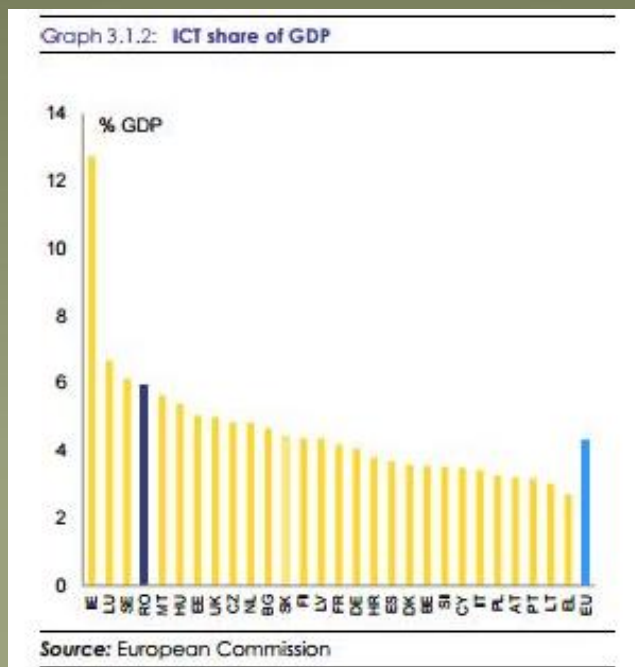
Analysis of Romania's economy in the country report 2016

SMART CITY Politics

C(2012) 4701 final
Smart Cities and Communities - European Innovation Partnership
The Smart Cities and Communities EIP (SCC) is a partnership across the areas of energy, transport and information and communication with the objective to catalyse progress in areas where energy production, distribution and use; mobility and transport; and information and communication technologies (ICT) are intimately linked and offer new interdisciplinary opportunities to improve services while reducing energy and resource consumption and greenhouse gas (GHG) and other polluting emissions.
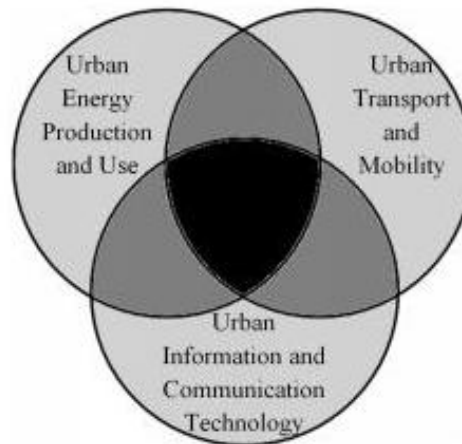

Figure 1. The SCC focusses on the intersection between energy, transport and ICT

SMART CITY Politics

European Innovation Partnership on Smart Cities and Communities
Strategic Implementation Plan

These eleven inter-dependent priority areas are considered to be the most important concerning Smart Cities and Communities, and the intersection with the areas of energy, transport and ICT.
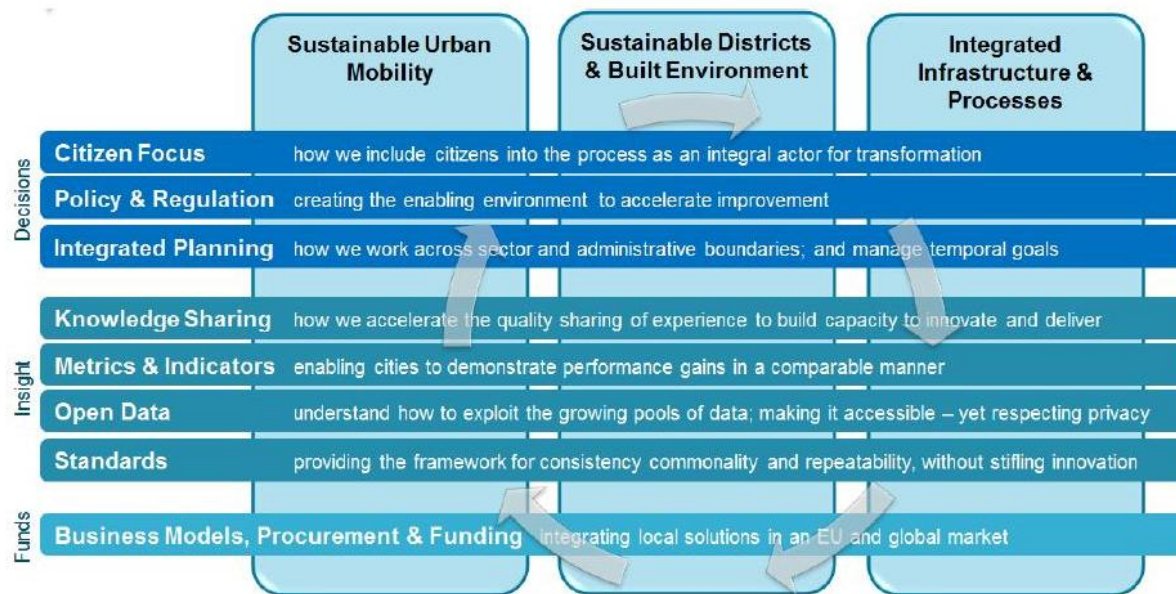
	Sustainable Urban Mobility	Sustainable Districts & Built Environment	Integrated Infrastructure & Processes
Decisions			
Citizen Focus	how we include citizens into the process as an integral actor for transformation		
Policy & Regulation	creating the enabling environment to accelerate improvement		
Integrated Planning	how we work across sector and administrative boundaries; and manage temporal goals		
Insight			
Knowledge Sharing	how we accelerate the quality sharing of experience to build capacity to innovate and deliver		
Metrics & Indicators	enabling cities to demonstrate performance gains in a comparable manner		
Open Data	understand how to exploit the growing pools of data; making it accessible – yet respecting privacy		
Standards	providing the framework for consistency commonality and repeatability, without stifling innovation		
Funds			
Business Models, Procurement & Funding	integrating local solutions in an EU and global market		

Figure 3: Priority areas

http://ec.europa.eu/eip/smartcities/files/sip_final_en.pdf

SMART CITY Politics

European Innovation Partnership on Smart Cities and Communities
Operational Implementation Plan

1 Priority Area "Sustainable Urban Mobility"
2 Priority Area "Districts and Built Environment"
3 Priority Area "Integrated Infrastructures"
4 Priority Area "Citizen Focus"
5 Priority Area "Policy and Regulation"
6 Priority Area "Integrated Planning and Management"
7 Priority Area "Knowledge Sharing"
8 Priority Area "Baselines, Performance Indicators and Metrics"
9 Priority Area "Open Data"
10 Priority Area "Standards"
11 Priority Area "Business Models, Finance and Procurement"

http://ec.europa.eu/eip/smartcities/files/operational-implementation-plan-oip-v2_en.pdf

SMART CITY Politics

European Innovation Partnership on Smart Cities and Communities
Operational Implementation Plan

10. Priority Area "Standards"

Potential Action 1
Development of an interoperability framework for smart city standards
Potential Action 2
Standards for City Information Platforms
Potential Action 3
Standards for M2M Data Exchange
Potential Action 4
Standards to support city level energy management and trading systems
Potential Action 5
Promotion of the use of Standards for Smart Cities

CEN – CENELEC - ETSI

Brussels, 12 March 2009 - M441 (Directives: 2006/32/EC ; 2004/22/EC)
Standardisation Mandate to CEN, CENELEC and ETSI in the Field of Measuring Instruments for the Development of an Open Architecture for Utility Meters Involving Communication Protocols Enabling Interoperability
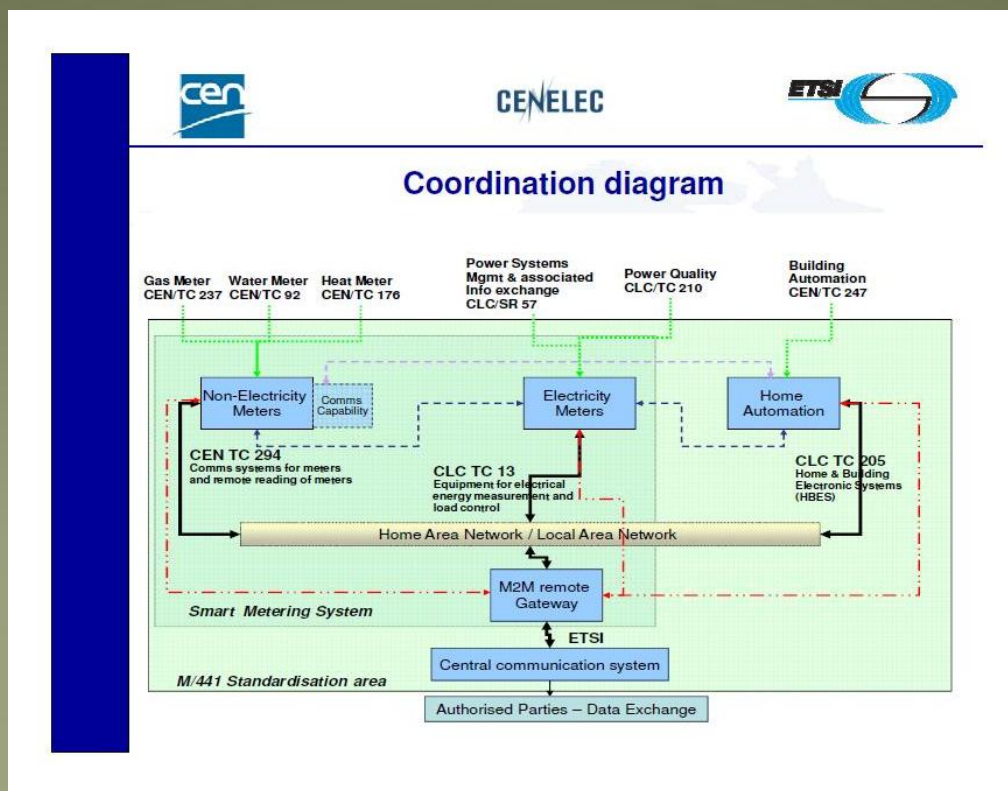
CEN – CENELEC – ETSI

"Smart and Sustainable Cities and Communities" Coordination Group - (SSCC-CG) Final Report – January 2015

The value of standards for smart and sustainable cities and communities Standards can provide the following benefits to smart and sustainable cities and communities.

1) Enabling integration between systems

2) Enabling integration between the physical and the digital

3) Underpinning common understanding

4) Helping to obtain funding

5) Helping to prevent vendor lock-in

6) Enabling scale

ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Fields/SmartLiving/City/SSCC-CG_Final_Report-recommendations_Jan_2015.pdf

CEN – CENELEC – ETSI

Standardization activities in Germany

Figure 3 – the structure of DIN/DKE work on smart cities

CEN – CENELEC – ETSI

BSI Smart cities standards work portfolio
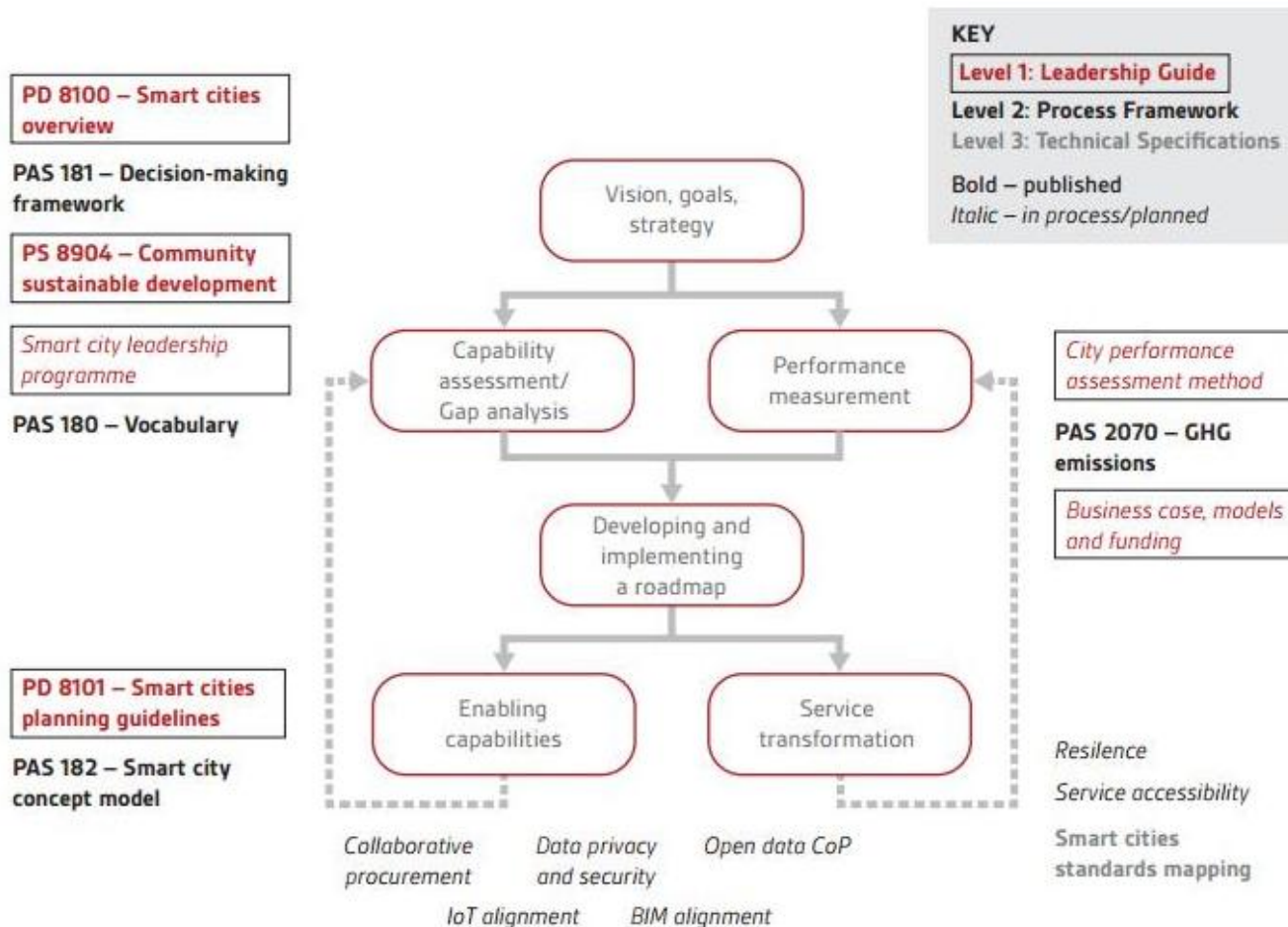
CEN – CENELEC – ETSI

Standardization activities in Spain - AEN/CTN 178 National Committee on "Smart Cities"

- PNE 178101 Smart Cities. Infrastructures. Metrics for Public Services Networks
- PNE 178102 Smart Cities. Infrastructures. Multiservice local networks
- PNE 178103 Smart Cities. Infrastructures. Convergence of Management and Control Systems in a Smart City
- PNE 178104 Smart Cities. Infrastructures. Comprehensive systems for a Smart City
- PNE 178105 Smart Cities. Infrastructures. Universal access, urban and land use planning
- PNE 178106 Smart Cities. Infrastructures. Specification Guidelines for Public Buildings
- PNE 178201 Smart Cities. Definition, requirements and indicators
- PNE 178301 Smart Cities. Open Data
- PNE 178303 Smart Cities. Management of the city's assets. Specifications
- PNE 178302 Smart Cities. Interoperability of charging stations. Minimum requirements for the interoperability of electric vehicles recharging infrastructures
- PNE 178401 Smart Cities. Street lighting. Telecontrol typology according to zoning
- PNE 178501 Management systems for smart tourist destinations. Requirements
- PNE 178502 Indicators of smart tourist destinations

The Technical Standardization Committee on Smart Cities (AEN/CTN 178) is an initiative of the Secretary of State for Telecommunications and the Information Society in the Ministry of Industry, Energy and Tourism.

CEN – CENELEC – ETSI

CEN/CENELEC/ETSI Coordination Groups

• **CEN-CLC-ETSI Smart Grid Coordination Group (M/490)**
- SGCG/M490/G_Smart Grid Set of Standards
- SG-CG/ M490/F_ Overview of SG-CG Methodologies
- SG-CG/M490/I_Smart Grid Interoperability
-SG-CG/M490/H_ Smart Grid Information Security

• **CEN-CLC-ETSI Smart Meters Coordination Group (M/441)**
- CEN-CLC-ETSI TR 50572:2011 "Functional reference architecture for communications in smart metering systems"
- Smart Meters Co-ordination Group - Privacy and Security approach – part I, II, III, IV
-The Smart Meters Co-ordination Group – Minimum Security Requirements for smart metering
• **CEN-CLC-ETSI Coordination Group on Green Data Centres**
Energy Management and Environmental Viability of Data Centres

CEN – CENELEC – ETSI

CEN/CENELEC/ETSI Coordination Groups

• **CEN-CENELEC e-Mobility Coordination Group (M/468)**
- Standardization for road vehicles and associated infrastructure
-A work programme and a list of relevant standards for the charging of electric vehicles

• **CEN-CENELEC e-Mobility Coordination Group (M/533)**
EU Clean Fuel Strategy
Directive 2014/94/EU on the deployment of alternative fuels infrastructure in Europe

• **CEN-CENELEC Eco-design Coordination Group (Eco-CG)**
• **CEN-CLC-ETSI Cyber-security Coordination Group**

ETSI

ETSI TR 103 290 (Technical Report)
Machine-to-Machine communications (M2M); Impact of Smart City Activity on IoT Environment
Framework required to build a Smart City
• IoT Infrastructure for Smart Cities
• Machine to Machine Communication
• Smart Cities Service integration
ETSI TR 118 501
oneM2M Use Case collection
ETSI TS 103 264
SmartM2M; Smart Appliances; Reference Ontology and oneM2M Mapping
ETSI TS 103 267
SmartM2M; Smart Appliances; Communication Framework
ETSI TR 102 966
Machine-to-Machine communications (M2M); Interworking between the M2M Architecture and M2M Area Network technologies
ETSI TR 102 962
Intelligent Transport Systems (ITS); Framework for Public Mobile Networks in Cooperative ITS (C-ITS)

IEC – ISO – ITU-T

IEC SEG 1 Systems Evaluation Group - Smart Cities

SEG 1 Working Groups
WG 1 - City Service Continuity
WG 2 - Urban Planning and Simulation System
WG 3 - City Facilities Management (CFM)
WG 4 - Use Case – Smart Home
WG 5 - Use Case – Smart Education
WG 6 - Smart Cities Assessment
WG 7 - Standards Development for Smart Cities using the City of Johannesburg
WG 8 - Mobility and Logistics
WG TG 1 - Inventory of relevant existing standards
WG TG 2 - Reference architecture – Generic use cases
WG TG 3 – Roadmap

Chairman Advisory Group
CAG 9 - Chairman Advisory Group

IEC – ISO – ITU-T

IEC – ISO – ITU-T
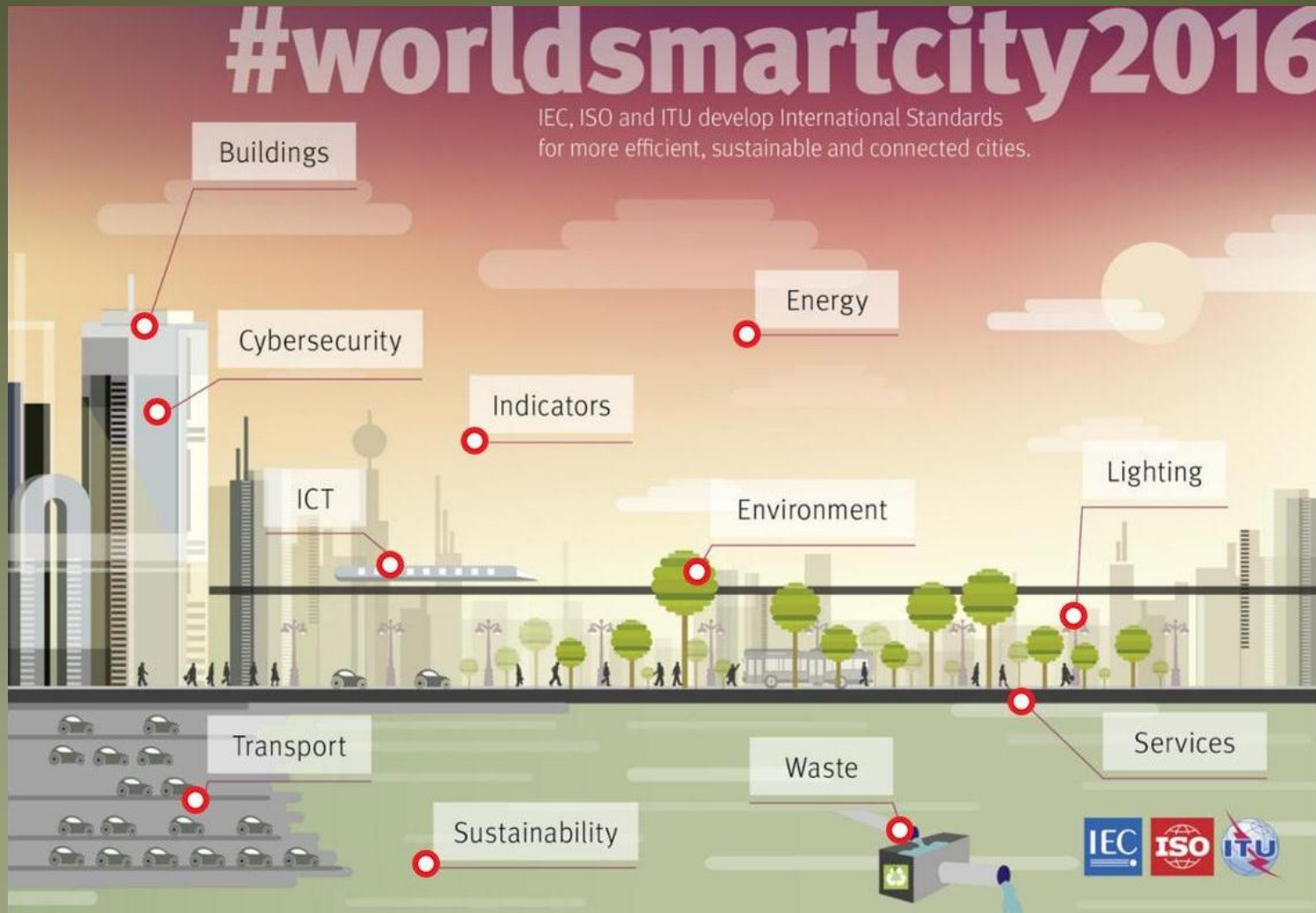
IEC – ISO – ITU-T

IEC – ISO – ITU-T

ISO/TC 268 - Sustainable development in communities
Working Groups:

ISO/TC 268/CAG 1 - Chairman Advisory Group
SO/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 - Vocabulary
ISO/TC 268/WG 4 - Strategies for smart cities and communities
ISO/TC 268/SC 1 - Smart community infrastructures
Subcommittees:

ISO/TC 268/SC 1/WG 1 - Infrastructure metrics
ISO/TC 268/SC 1/TG 1 – Roadmap
ISO/TC 268/SC 1/WG 2 - Integration and interaction framework for smart community infrastructures
ISO/TC 268/SC 1/AHG 3 - Data exchange and sharing for smart community infrastructures
ISO/TC 268/SC 1/WG 3 - Smart transportation

IEC – ISO – ITU-T

ISO/TC 268 Sustainable development in communities

ISO/TC 268

ISO 37101:2016
Sustainable development in communities -- Management system for sustainable development -- Requirements with guidance for use

• It establishes requirements for a management system for sustainable development in communities, including cities, using a holistic approach, with a view to ensuring consistency with the sustainable development policy of communities.

• It is intended to help communities become more resilient, smart and sustainable, through the implementation of strategies, programs, projects, plans and services, and demonstrate and communicate their achievements.

• It is applicable to communities of all sizes, structures and types, in developed or developing countries, at local, regional or national levels, and in defined urban or rural areas, at their respective level of responsibility.

IEC – ISO – ITU-T

ISO/TC 268 Sustainable development in communities

ISO/TC 268

ISO 37120:2014
Sustainable development of communities -- Indicators for city services and quality of life

•It defines and establishes methodologies for a set of indicators to steer and measure the performance of city services and quality of life. It follows the principles set out and can be used in conjunction with ISO 37101:2016, Sustainable development in communities -- Management systems -- General principles and requirements, when published, and other strategic frameworks.

•It is applicable to any city, municipality or local government that undertakes to measure its performance in a comparable and verifiable manner, irrespective of size and location.

IEC – ISO – ITU-T

ISO 37120 – Benefits of standardized indicators:

- More effective governance and delivery of services
- International benchmarks and targets
- Local benchmarking and planning
- Informed decision making for policy makers and city managers
- Learning across cities
- Leverage for funding and recognition in international entities
- Leverage for funding by cities with senior levels of government
- Framework for sustainability planning
- Transparency and open data for investment attractiveness
- Data is moving fast – big data and the information explosion – ISO can help to give cities a reliable foundation of globally standardized data that will assist cities in building core knowledge for city decision-making, and enable comparative insight and global benchmarking

IEC – ISO – ITU-T

ISO/TC 268 Sustainable development in communities

ISO/TC 268/SC 1

ISO/TR 37150:2014
Smart community infrastructures -- Review of existing activities relevant to metrics

•**It provides a review of existing activities relevant to metrics for smart community infrastructures.**

•**It addresses community infrastructures such as energy, water, transportation, waste and information and communications technology (ICT). It focuses on the technical aspects of existing activities which have been published, implemented or discussed.**

IEC – ISO – ITU-T

ISO/TR 37150:2014
Smart community infrastructures -- Review of existing activities relevant to metrics

Strategic benefits

For buyers and infrastructure managers:

- Easier planning
- Easier infrastructure procurement
- Easier purchasing decisions
- Easier management of multiple providers

For infrastructure providers:

- Better understanding of buyer needs
- Potential increase in global sales
- More efficient and effective research and development

IEC – ISO – ITU-T

ISO/TC 268 Sustainable development in communities

ISO/TC 268/SC 1

ISO/TS 37151:2015
Smart community infrastructures -- Principles and requirements for performance metrics

It gives principles and specifies requirements for the
· definition, identification, optimization, and harmonization of community infrastructure performance metrics, and gives recommendations for analysis, including
· smartness, interoperability, synergy, resilience, safety, and security of community infrastructures.

Community infrastructures include, but are not limited to, energy, water, transportation, waste, and ICT.

IEC – ISO – ITU-T

ISO/TS 37151:2015 gives principles and specifies requirements for community infrastructure performance metrics and gives recommendations for analysis of community infrastructures.

It is expected that this Technical Specification will be useful to the following individuals/groups:

— national and local governments;
— regional organizations;
— community planners;
— developers;
— community infrastructure operators (e.g. in the field of energy, water, transportation, waste, ICT);
— community infrastructure vendors (e.g. constructors, engineering firms, system integrators or component manufacturers);
— non-governmental organizations (e.g. consumer groups).

IEC – ISO – ITU-T

ISO/TC 268 Sustainable development in communities

ISO/TC 268/SC 1

ISO/TR 37152:2016
Smart community infrastructures -- Common framework for development and operation

•It outlines the basic concept of a common framework for the development and operation of smart community infrastructures. The framework describes the planning, development, operation and maintenance methodology to facilitate the harmonization of each infrastructure as a part of a smart community and ensures that the interactions between multiple infrastructures are well orchestrated.

•The framework is applicable to all processes of smart community infrastructures' life cycle (from conceptual design through planning, development, operation, maintenance, redevelopment and feedback). The infrastructures to be covered are energy, water, transportation, waste management, ICT and others.

IEC – ISO – ITU-T

International Telecommunication Union
ITU-T
Focus Group on Smart Sustainable Cities

The FG-SSC acted as an open platform for smart-city stakeholders – such as municipalities; academic and research institutes; non-governmental organizations (NGOs); and ICT organizations, industry forums and consortia – to exchange knowledge in the interests of identifying the standardized frameworks needed to support the integration of ICT services in smart cities.

IEC – ISO – ITU-T

ITU-T Focus Group on Smart Sustainable Cities

TECHNICAL REPORTS AND SPECIFICATIONS

- TR on "An overview of smart sustainable cities and the role of information and communication technologies"
- TR on "Smart sustainable cities: an analysis of definitions"
- TR on "Smart sustainable cities: a guide for city leaders"
- TR on "Master plan for smart sustainable cities"
- TR on "Setting the stage for stakeholders' engagement in smart sustainable cities"
- TR on "Overview of smart sustainable cities infrastructure"
- TS on "Setting the framework for an ICT architecture of a smart sustainable city"
- TS on "Multi-service infrastructure for smart sustainable cities in new-development areas"
- TR on "Cyber-security, data protection and cyber resilience in smart sustainable cities"
- TR on "Intelligent sustainable buildings for smart sustainable cities"
- TR on "Smart water management in cities"

IEC – ISO – ITU-T

ITU-T Focus Group on Smart Sustainable Cities

TECHNICAL REPORTS AND SPECIFICATIONS

- TR on "Smart water management in cities"
- TR on "Information and communication technologies for climate change adaptation in cities"
- TR on "Electromagnetic field (EMF) considerations in smart sustainable cities"
- TR on "Integrated management for smart sustainable cities"
- TR on "Anonymization infrastructure and open data in smart sustainable cities"
- TS on "Overview of key performance indicators in smart sustainable cities"
- TS on "Key performance indicators related to the use of information and communication technology in smart sustainable cities"
- TS on "Key performance indicators related to the sustainability impacts of information and communication technology in smart sustainable cities"
- TR on "Key performance indicators definitions for smart sustainable cities"
- TR on "Standardization roadmap for smart sustainable cities"
- TR on "Standardization activities for smart sustainable cities"

IEC – ISO – ITU-T

In October 2015, ITU-T Study Group 5 agreed on the following definition of a Smart Sustainable City:

"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, environmental as well as cultural aspects".

This definition has been developed based on the work carried out by FG-SSC and UNECE (Economic Commission for Europe).

http://www.itu.int/en/ITU-T/focusgroups/ssc/Pages/default.aspx

TOP SMART CITY
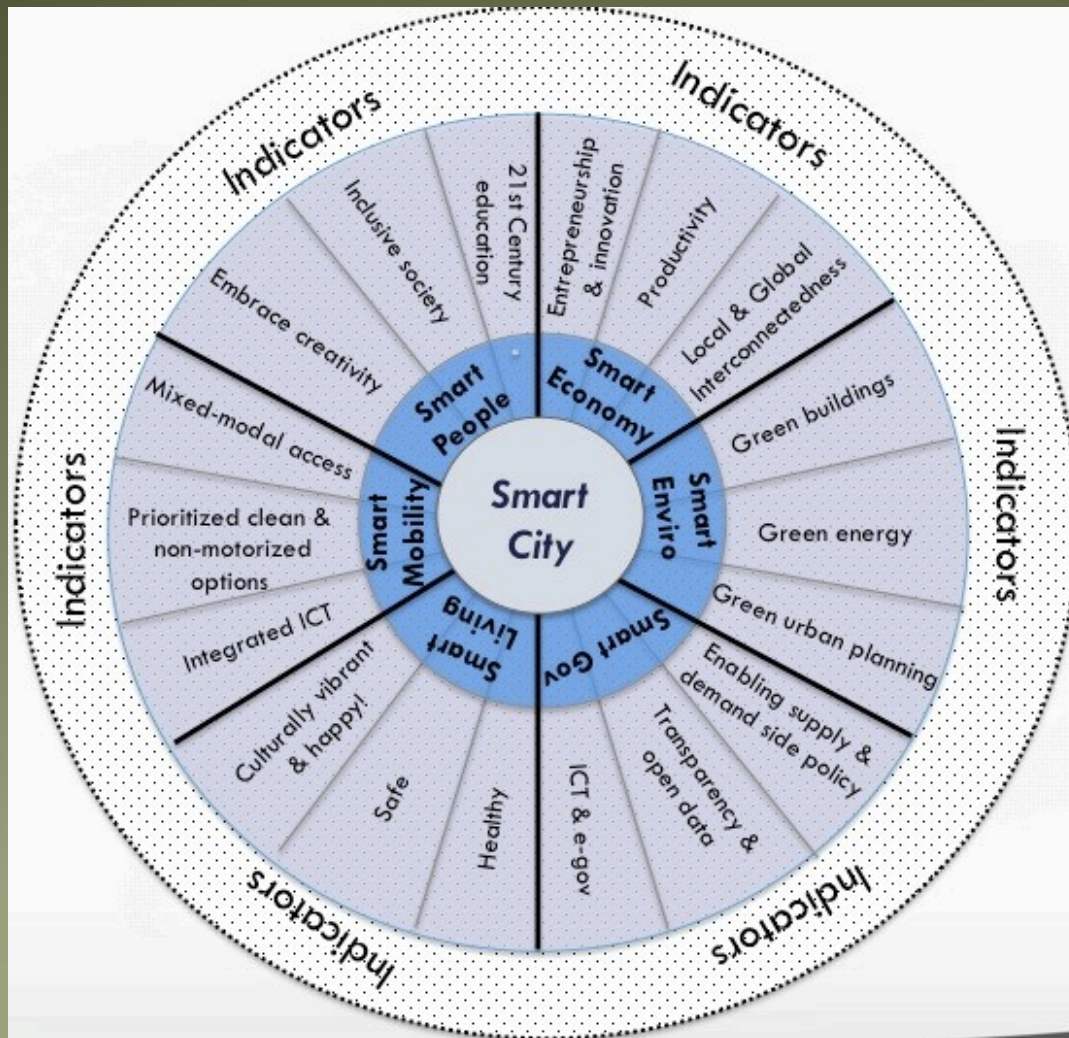
Smart Cities Wheel metric contains six key components of smart cities and three key drivers for each component.

EUROPEANSMARTCITIES 3.0 (2014)

Vienna University of Technology – European smart cities

http://www.smart-cities.eu/index.php?cid=-1&ver=3

EUROPEANSMARTCITIES 3.0 (2014)

European medium-sized cities
Cities from 100 000 to 500 000 inhabitants

https://en.wikipedia.org/wiki/Craiova

City-Profile: CRAIOVA (RO)

Key fields CRAIOVA (RO)

- Smart Economy
- Smart People
- Smart Governance
- Smart Mobility
- Smart Environment
- Smart Living
- Average

(axis: -2, -1.5, -1, -0.5, 0, 0.5, 1, 1.5, 2)

Population (2011 census)
- **City 269,506**
- **Density 2,994/km²**

Nicolae Romanescu Park — the largest and most well-known park in Craiova. Through the initiative of Nicolae P. Romanescu, the mayor of Craiova at that time, the park was designed by French architect Émile Rendont. Plans for the park were awarded the gold medal at the 1900 World Fair; work began in 1901 and was completed in 1903 (9,6Ha).

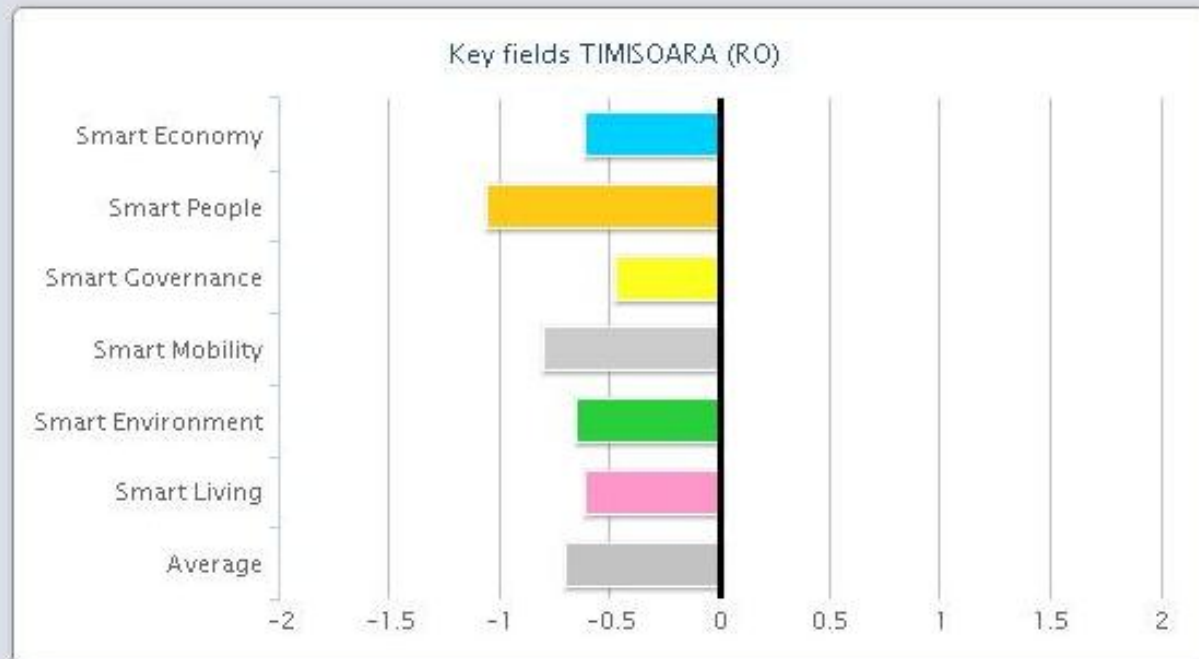# EUROPEANSMARTCITIES 3.0 (2014)

European medium-sized cities
Cities from 100 000 to 500 000 inhabitants   **https://en.wikipedia.org/wiki/Timişoara**

Population (2011 census)
● **City 319,279**
● **Density 2,446.58/km²**

City-Profile: TIMISOARA (RO)

Key fields TIMISOARA (RO)

Smart Economy
Smart People
Smart Governance
Smart Mobility
Smart Environment
Smart Living
Average

Timișoara was selected as the European Capital of Culture for the year 2021.

EUROPEANSMARTCITIES 3.0 (2014)

European medium-sized cities
Cities from 100 000 to 500 000 inhabitants

Population (2011 census)
- **City 147,245**
- **Density1,132/km²**

City-Profile: SIBIU (RO)

Key fields SIBIU (RO)

- Smart Economy
- Smart People
- Smart Governance
- Smart Mobility
- Smart Environment
- Smart Living
- Average

-2   -1.5   -1   -0.5   0   0.5   1   1.5   2

Sibiu is one of the most important cultural centres of Romania and was designated the European Capital of Culture for the year 2007.

Contact

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• President of Technical Committee of Romanian   Standardization Association CT 345 - Intelligent Transport Systems/Smart City - ASRO

Many thanks
for your kind attention!
Valentin Berca