ESPRESSO -

A syst**E**mic **S**tandardisation ap**PR**oach to **E**mpower **S**mart citie**S** and c**O**mmunties

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European Commission

Intro

- The idea of the Smart City is relatively new and evolving, and the concept is very broad: every city is unique.
- A Smart City (SC) integrates physical, digital and human systems to deliver a sustainable, prosperous and inclusive future for its citizens.
- The evolution of the SC concept is shaped by **technology, social and economic factors, governance arrangements, policy and business drivers**.
- **Standards for Smart Cities** can support cities, research and industrial partners alike in removing some obstacles and lowering barriers.

THE PRESENT-DAY CITIZEN IS HIGH TECHNOLGIZED.

The contemporary urban spaces are enriched and contaminated by the flow of information coming from cyberspace, as space of the internet, but even from information/experiences of observers/citizens/city users situated in distant places!

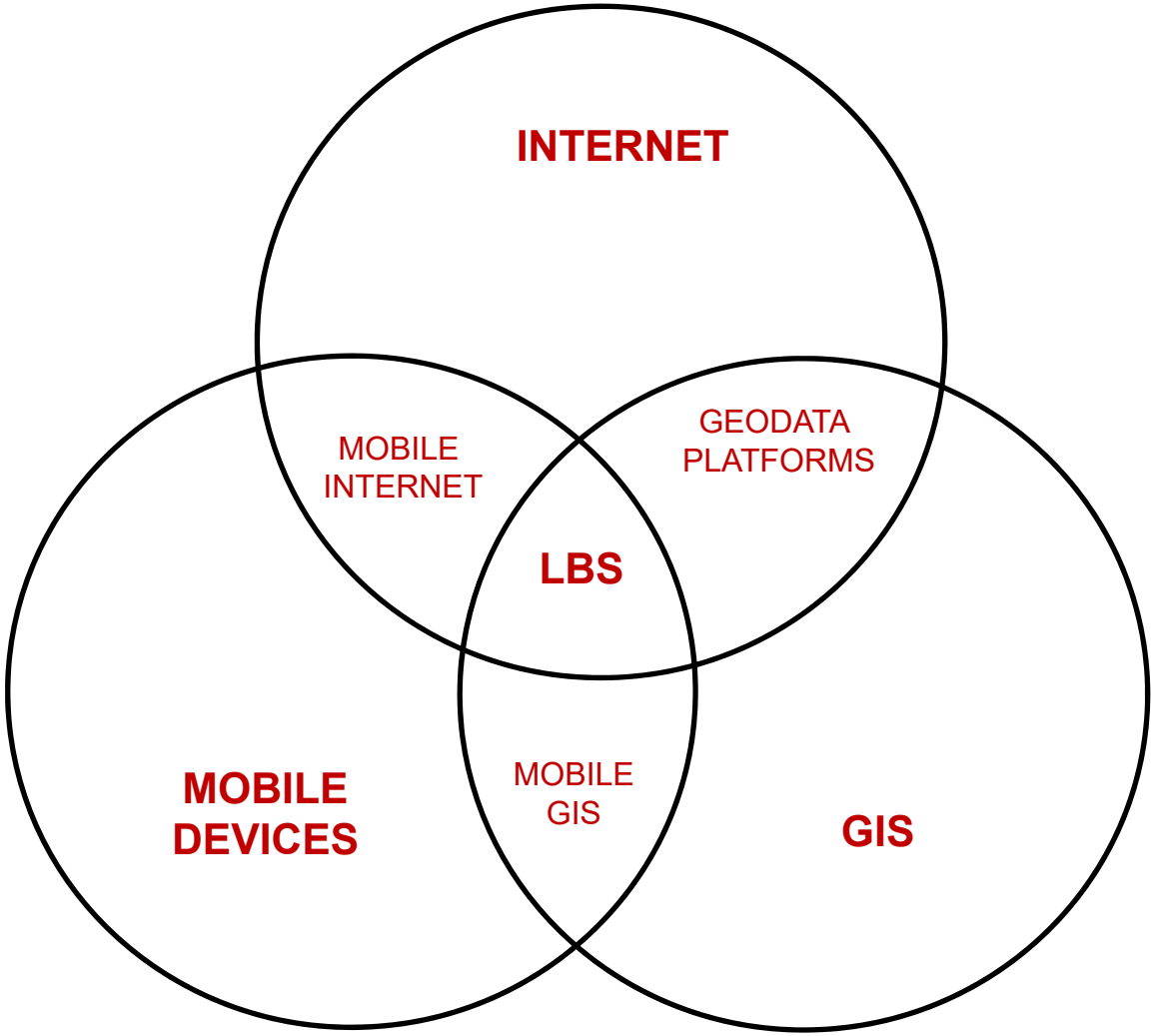
Contemporary cities are composed by HYPER INFORMATED PLACES → THEY DEFINE AN HYPERLOCAL, THAT IS, A HYPERLOCATION

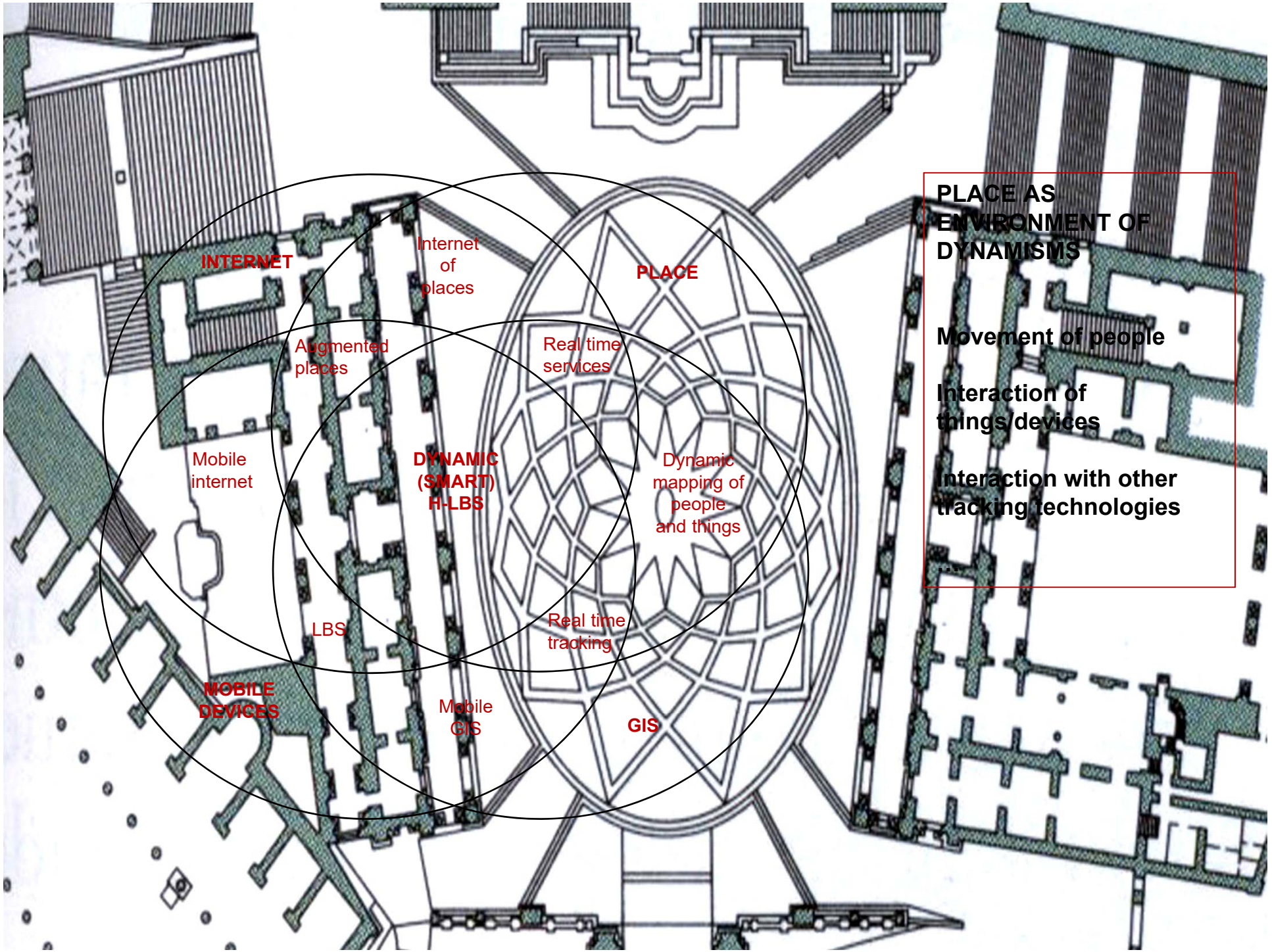
http://en.wikipedia.org/wiki/Hyperlocal

The key problem

- Most innovative solutions are ICT-based (using ubiquitous computing, networking, Open Data, Big Data, GIS systems, cloud computing, e-government, IoT…).
- However, sophisticated information and communication services require a systematic approach to interoperate, using standards.

This approach **must** promote the greatest possible reuse of existing open standards to accelerate SC deployment and **exploit the potential deriving from use of disparate interoperable technologies and from re-use of interoperable applications and services among cities.**


INTERNET
MOBILE INTERNET
GEODATA PLATFORMS
LBS
MOBILE DEVICES
MOBILE GIS
GIS


INTERNET
Internet of places
PLACE
Augmented places
Real time services
Mobile internet
DYNAMIC (SMART) H-LBS
Dynamic mapping of people and things
LBS
Real time tracking
MOBILE DEVICES
Mobile GIS
GIS
PLACE AS ENVIRONMENT OF DYNAMISMS
Movement of people
Interaction of things/devices
Interaction with other tracking technologies

What is a Smart City?

What is a Smart City?

…wired city…

…digital city…

…connected city…

…sustainable city…

…sentient city

…ubiqitous city…

…intelligent city…

“…Smart City…”

A Smart City is …

- „… a city in which ICT is merged with traditional infrastructures, coordinated and integrated using new technologies…“

Michael Batty

- „…a city, whose economy and governance is being driven by innovatio, creativity and entrepreneurship, enacted by smart people…“

Rob Kitchin

- „…is also an inclusive place, using technology and innovative solutions to increase social inclusion…“

Connected Smart City Network

Introduction to Smart Cities

- The evolution of the SC concept is shaped by **technology, social and economic factors, governance arrangements, policy and business drivers**.

- **Standards for Smart Cities** can support cities, research and industrial partners alike in removing some obstacles and lowering barriers.

Challenges,drivers & risks

- **Main technological drivers**
  - Ubiquitous computing, Sensors, IoT
  - Open Data, Big Data
  - E-government, Bottom-Up & Crowdplanning, Governance
  - ...
- **Main risks and challenges:**
  - Security, vulnerability
  - Privacy, data ownership
  - Required changes in work processes, national particularities, culture of innovation
  - ...
- **Systemic Solutions are needed**
  - Technological/Interoperability
  - Organisation for local authorities („Silos“)

The opportunities of Standards

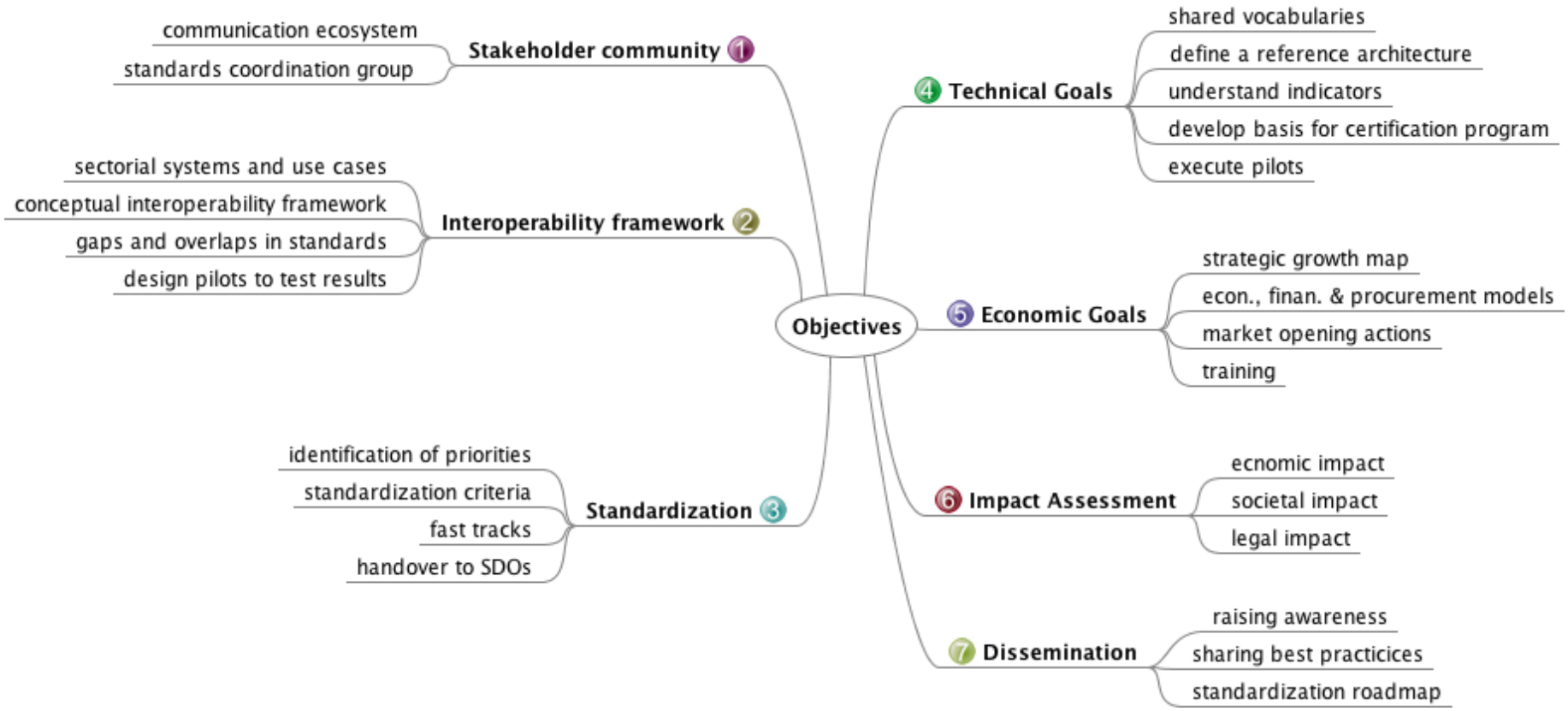
- Integrated solutions need, **a system approach for standards**
- Standards enable:
  - integration between systems
  - integration between the physical and digital objects
  - Preventing vendor lock-in
  - Enabling scaling solutions

➢ **understand how / if existing standards meet city needs**

➢ **ensure gaps are filled**

➢ **develop guidance for cities on requirements for implementation**

ESPRESSO Objectives



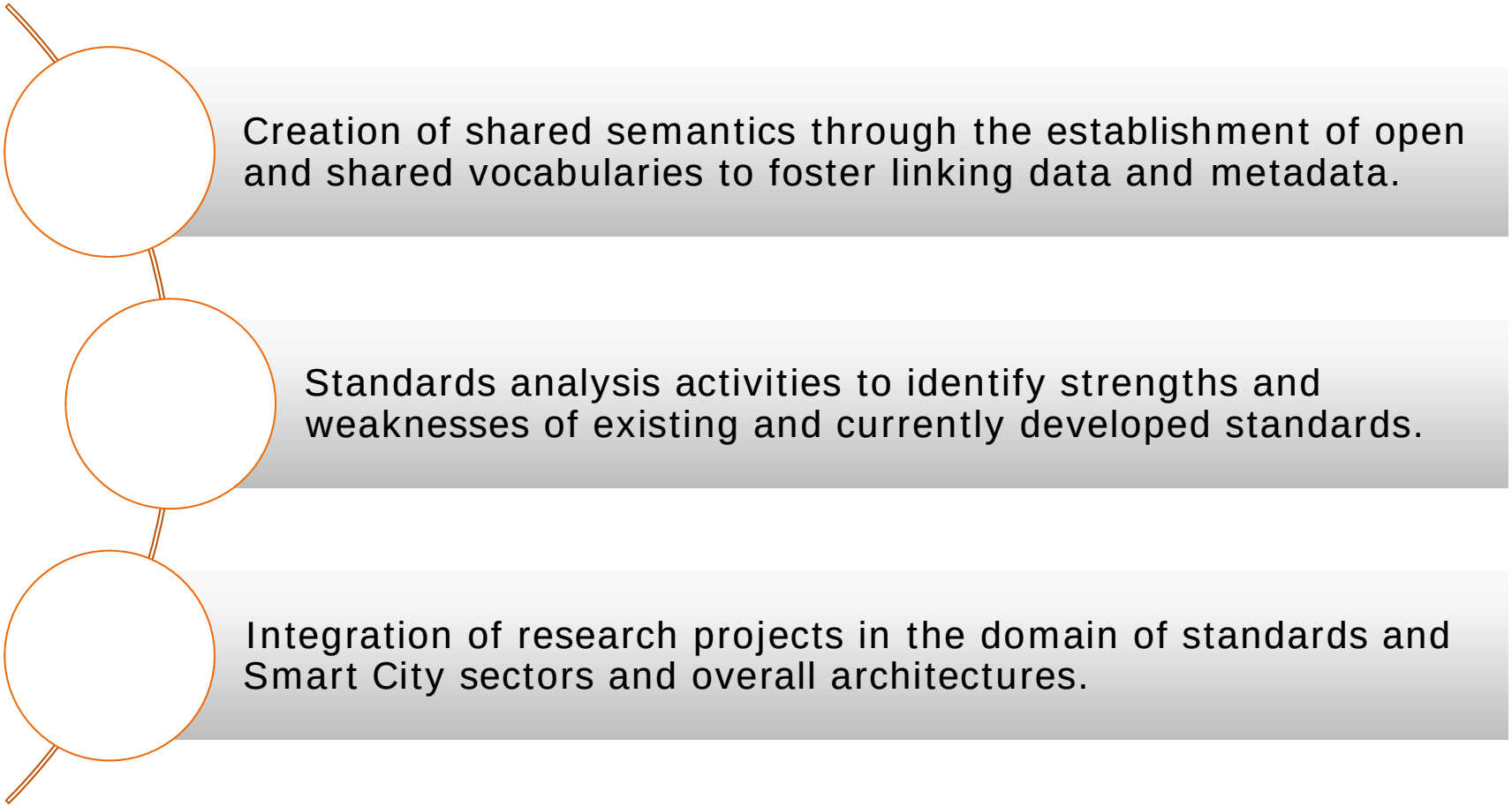
Main objectives 1

A case study-based approach to define key requirements for Smart Cities = baseline for further standard analysis activities Creation of the SmaCStak

The development of a conceptual Smart City Information Framework.

A communication ecosystem and dialog platform to allow tight interaction between all participants in Smart City initiatives

Main objectives 2



Key questions

- How do we manage integration of Smart City solutions?
- How can we make sure we speak the same language across Europe?
- How do we monitor and improve the solutions we offer the citizens?

The ESPRESSO Project

ESPRESSO will develop a **conceptual Smart City Information Framework** based on open standards.

This will consist of:

- Concept for a Smart City platform
- a number of data provision and processing services to integrate relevant data, workflows, and processes.

ESPRESSO to the rescue

- In an effort to leverage the promise of a system approach, **ESPRESSO** will focus on the development of a conceptual Smart City Information Framework based on open standards.
- This framework will consist of a **Smart City platform** and a number of data provision and processing services to integrate relevant data, workflows, and processes.
- The project will build this framework by **identifying relevant open standards, technologies, and information models**
- We will analyse **potential gaps and overlaps** among standards developed by the various standardisation organizations and **will provide guidelines & roadmaps**

The ESPRESSO Approach

- Collect and understand the various European Smart Cities and standards initiatives
  - Create a wide and interdiscplinary network of cities, industries, organizations and academic partners
  - “learning from each other“
- Build an framework by identifying relevant open standards, technologies, and information models
- analyse potential gaps and overlaps among standards and address those shortcomings
- By a forerunner in terms of Smart Cities and standards

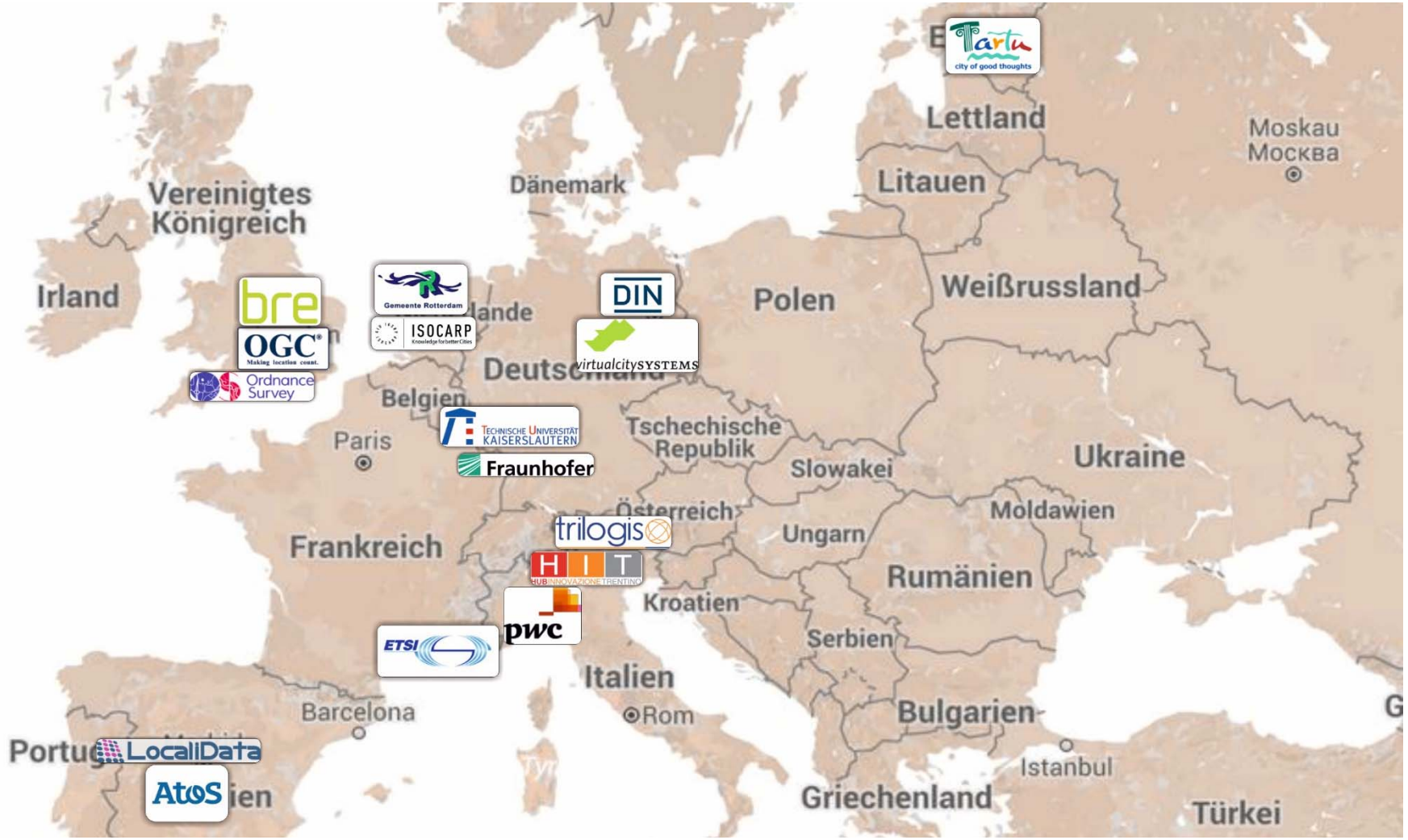
Benefits for cities

ESPRESSO approach emphasizes:

- Cost reduction
- Open market for many players
- Avoiding lock-in to proprietary solutions

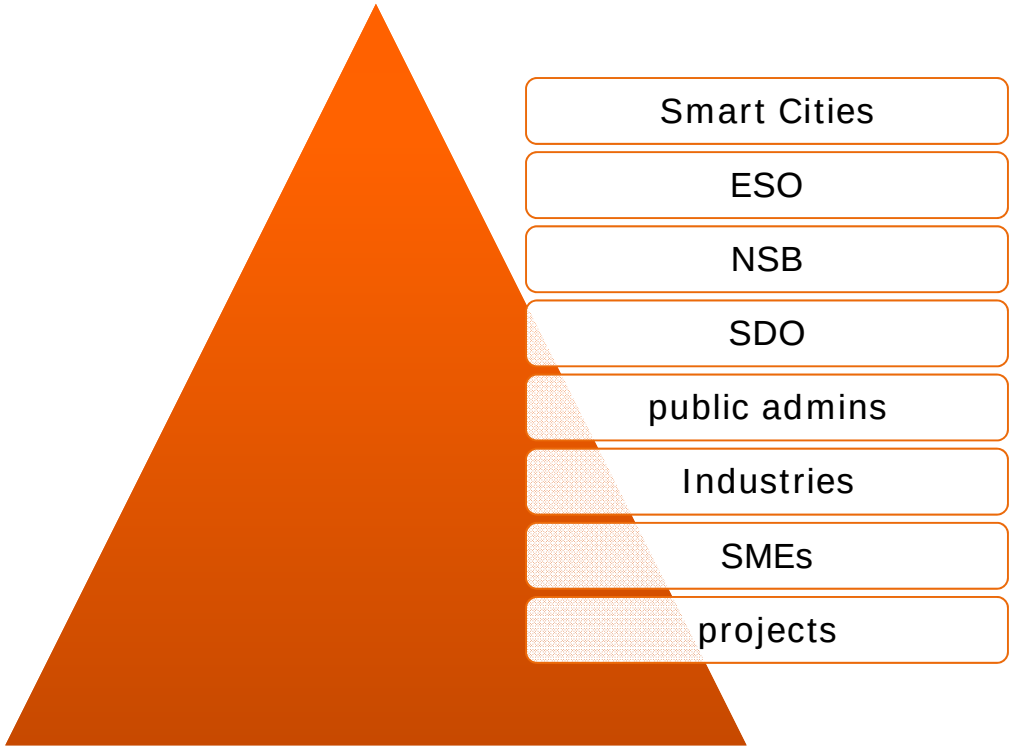
European Smart City solutions that adopt or will adopt these prescripts will be **raised to the forefront worldwide**.

The Consortium

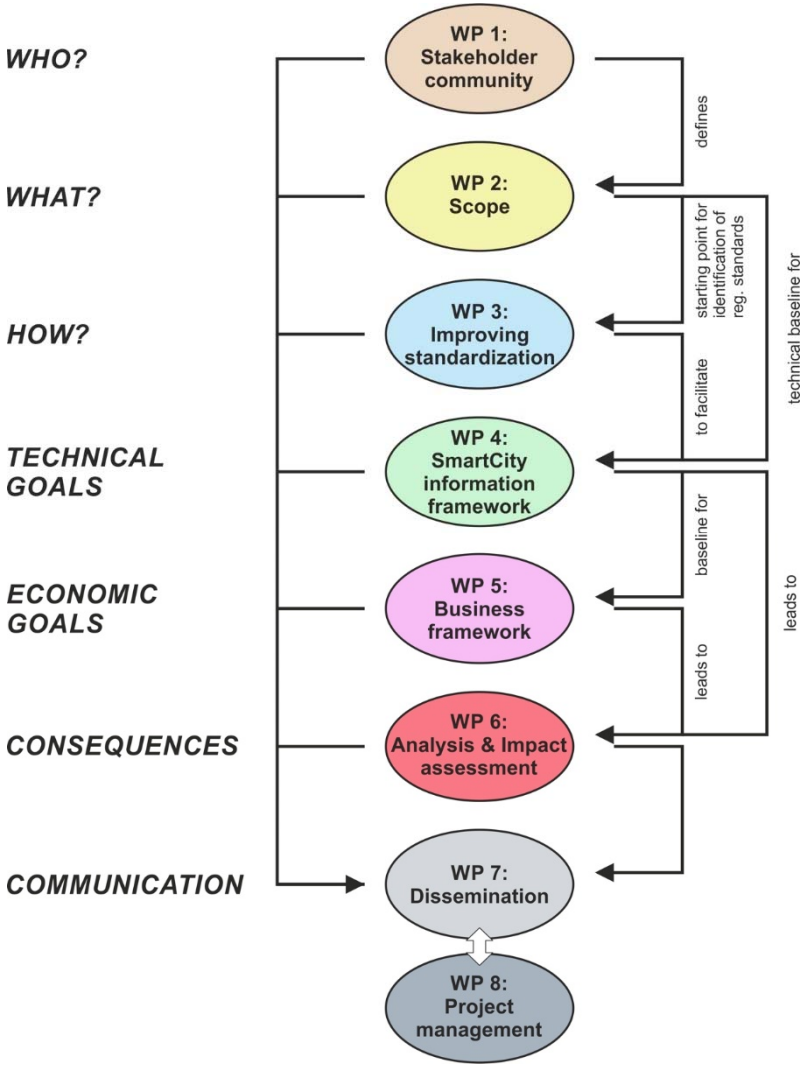


The ESPRESSO Project

"common denominator" solutions that can facilitate horizontal interoperability between the various sectors of a Smart City.



The ESPRESSO Approach



Pilot: Rotterdam, NL

City of Rotterdam

- Smart City 2014 award for its efforts to become the most sustainable port city in the world
- Climate Change Adaptation Strategy generated innovative approaches in water management and climate change mitigation;
- Frontrunner in Energy Planning: The Rotterdam Energy Approach and Planning incorporates CO2 and energy directly into the planning and development process;
- Highlight: Redevelopment of procurement of innovation strategies for Green Transport;

Pilot: Tartu, EE

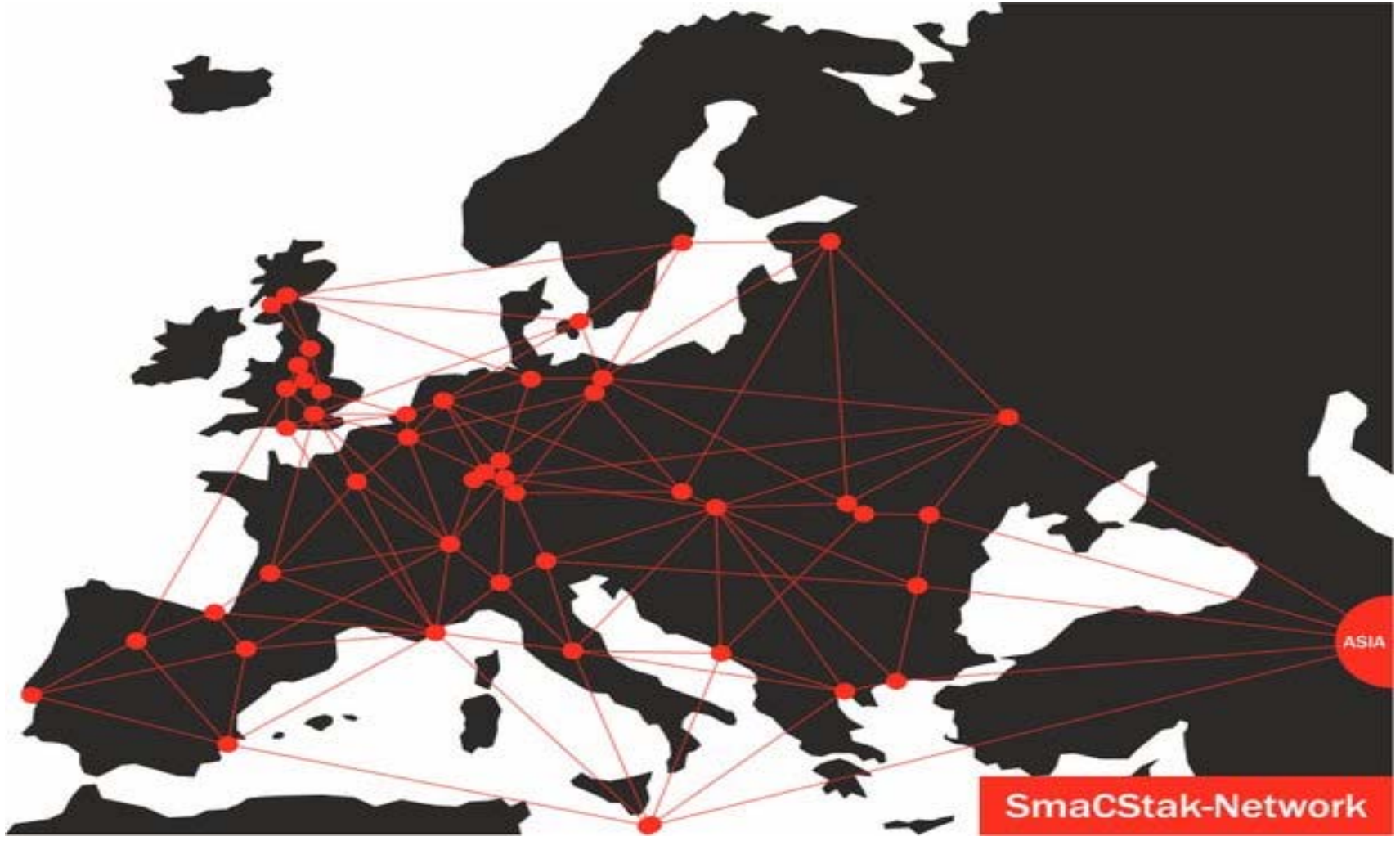
- Smart City Lab: triple helix collaboration initiative aiming at development, delivery and export of smart ICT and mobile based services and products in Transport, Energy and Environment, Tourism, Healthcare and Wellbeing, Governance and public services;
- First living lab in Estonia, linked with other 18 industrial clusters
- Highlights:
  - First city to enable mobile payment for street parking (2000),
  - Allows e-voting in local elections since 2005, after paperless government was implemented in 2003;
  - One of the pioneers for opening the budget designing process to citizens, experimenting with participatory budgeting (2013).

ESPRESSO's SmaCStak

- expert information and input from cities, commercial organisations, research institutions and public sector bodies across Europe.
- The Smart City Stakeholder Network (SmaCStak) wil create a permanent dialogue and collaboration platform
- SmaCStak-Coordination (SCG) group as "scientific committee" for virtual collaboratorium

smacstak.espresso-project.eu

ESPRESSO's SmaCStak



Impacts of Smart City standards

- Work with an interdiscplinary team of experts on an interdiscplinary topic
- Understand & develop a common “language“ regarding Smart Cities and Standards
- Not only positive aspects regarding
  - Legal effects
  - Economical effects
  - Social effects

Conclusion

- Smart Cities covers a very broad range of alternatives, contexts, patterns of participation and stages of development
- the right tools and a holisitic understanding of Smart Cities are important
- Standardization and interoperability are essential for the widespread adoption of tools and services

Conclusion

- Provide open and non-proprietary solutions

- Cities also need an adequate set of framework conditions in the field of policy and regulations
  - ➢ Capacities and knowledge from cities and planners!

- Develop a common “language“
  - ➢ Interdiscplinary cooperation projects!

- **Cities should have a deep understanding of their needs, drivers and stakeholder landscape to support transitioning towards Smart Cities**

Thank you for your attention !

@ESPRESSO_Prjct

http://bit.ly/1JBnKVs

www.espresso-project.eu

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