

ESPRESSO -

A syst**E**mic **S**tandardisation ap**P**roach to **E**mpower **S**mart
citi**E**s and c**O**mmunities



Dr. Jan-Philipp Exner
TU Kaiserslautern, ISOCARP

Dr. Pietro Elisei
Urbasofia, ISOCARP

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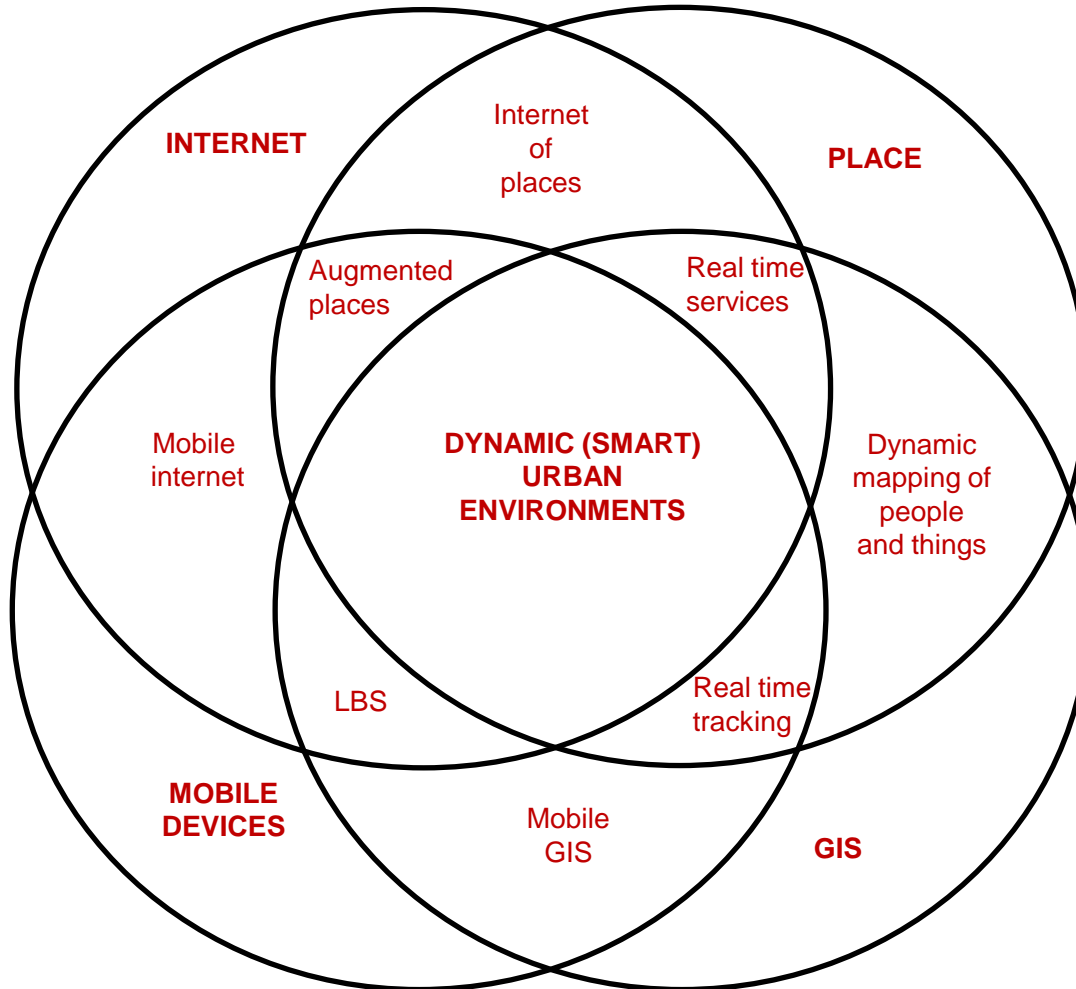


What is a Smart City?



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New faces of cities...



Places as environments of dynamism:

- Movement of people
- Interactions of things/devices
- Tracking technologies

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What is a Smart City?

...wired city...

...digital city...

...connected city...

...sustainable city...

...sentient city

...ubiquitous city...

...intelligent city...

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A Smart City is ...



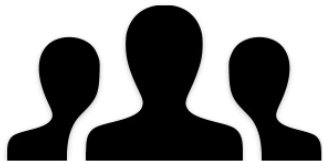
- „... a city in which ICT is merged with traditional infrastructures, coordinated and integrated using new technologies...“

Michael Batty



- „...a city, whose economy and governance is being driven by innovation, 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

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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.



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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“)

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Key problem

- Innovative **solutions are ICT-based**, sophisticated information and communication services require a **systematic approach** to interoperate, using **standards**.
- Many **different solutions** for European cities
- **Potential reuse** of existing standards is important



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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**

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 Approach

- Collect and understand the various European Smart Cities and standards initiatives
 - Wide and interdisciplinary network of cities, industries, organizations and academic partners
 - “learning from each other”
- Framework by identifying relevant open standards, technologies, and information models
- analyse potential gaps and overlaps among standards and address those shortcomings
- Forerunner in terms of Smart Cities and standards

The ESPRESSO Approach



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



- Concept for a Smart City platform
- Build a framework by identifying relevant open standards, technologies, and information models
- Analyse potential gaps and overlaps among standards and provide guidelines & roadmaps

Benefits for cities

ESPRESSO approach emphasizes:

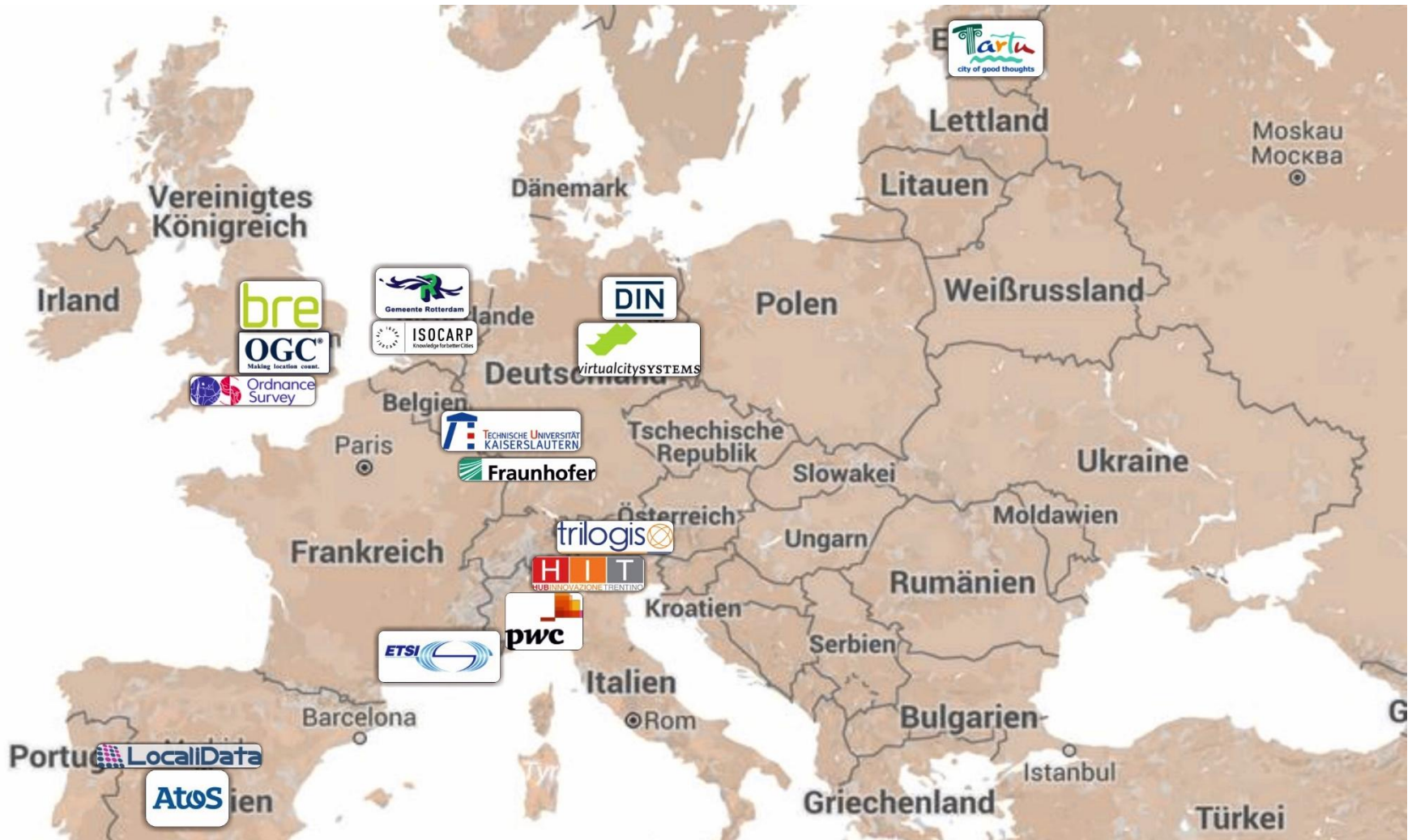
- Cost reduction
- Open market for many players
- Avoiding lock-in to proprietary solutions

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

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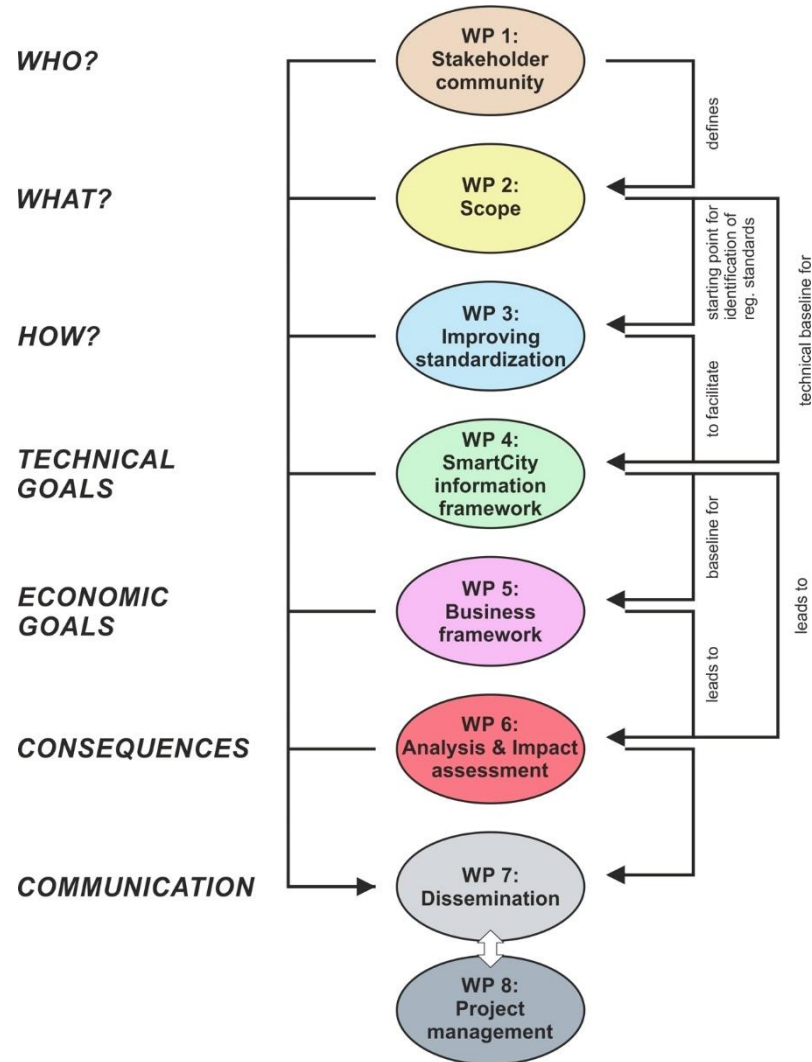
The Consortium



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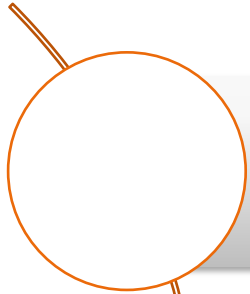


The ESPRESSO Approach

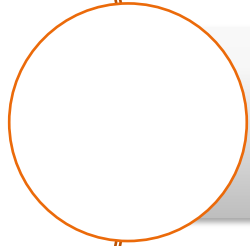


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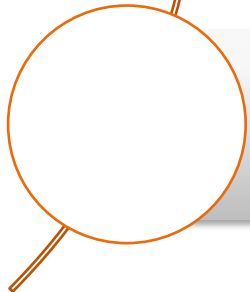
Main objectives 1



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



Creation of shared semantics through the establishment of open and shared vocabularies to foster linking data and metadata.

Standards analysis activities to identify strengths and weaknesses of existing and currently developed standards.

Integration of research projects in the domain of standards and Smart City sectors and overall architectures.

Pilot: Rotterdam, NL



- 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;



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Pilot: Tartu, EE



- Smart City Lab: triple helix collaboration, delivery and export of smart ICT and mobile based services and products. First living lab in Estonia
- 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 participatory budgeting (2013)



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ESPRESSO Workshops



Bucharest Workshop

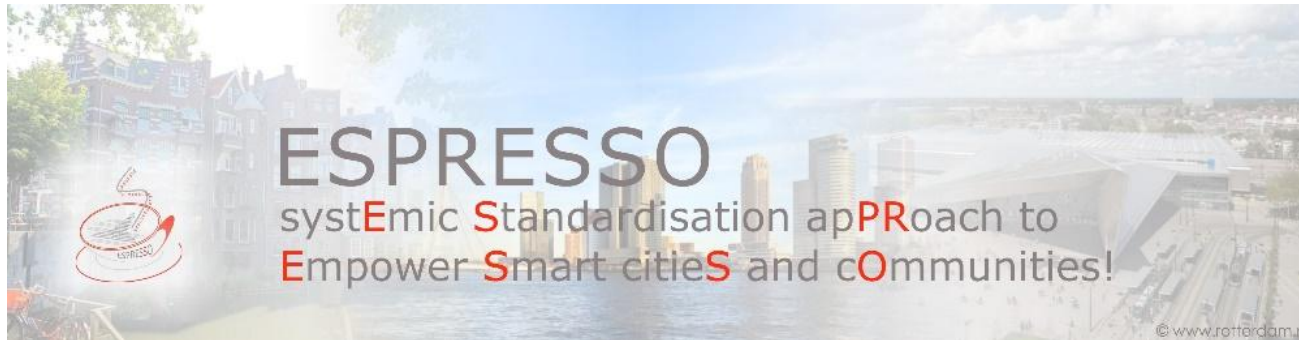
- April 2016, in Bucharest
- Develop a common understanding of a Smart City

Results Bucharest

- SC Definition: **Smart citizens and smart management** are underrepresented.
- Key issue: **integrated urban planning approach**: integration of databases, completion of land register, paperless planning, transborder integration;
- **Public authorities should be drivers** but are the weak link: historical silo thinking, resistance to restructuring, lack of know-how, lack of cooperation culture
- **Issue of trust** is a vulnerability of SC.
- Development of a smart city should be **community-centric, not technology-centric**. Pitfall of hypertechnologization is the loss of community sense, identity, culture and tradition

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ESPRESSO Workshops



Rotterdam Workshop

- Mai 2016 in Rotterdam
- Preparation of SC pilot in Rotterdam

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Results of the workshop

- Pre-existing initiatives: water flow management in the city, automatic parking control, light pool control with single backend system, etc.
- Key sectorial systems:
 1. Safe City concept (Rotterdam has a mixed population and aims at enhancing the intra-urban safety);
 2. Water and waste management (crucial);
 3. Mobility (integrated territorial planning);
 4. Education and youth, communication and participation
 5. Energy transition, housing, livable city.
 6. Facilitation and support of cooperation and trade economy.

Results of the workshop

- **Energy, ICT and mobility** in a Lighthouse proposal, potential use cases for standardization. Focus: redevelopment of Stadium area
- **Data marketplace:** capitalizing on the economy of scale of putting out data which is open. Challenges: usability, usefulness, quality, potential monetization, impact assessment (quantification of advantages). Data should be user friendly, and user trust needs to be sought (catalyst organization)
- **Asset management is key:** information-driven municipal work, capitalizing on building-level microdata
- Rotterdam has a main **Smart City Architecture**
- **Digital city project** will be the main use case

ESPRESSO's SmaCStak

- expert information and input from cities, commercial organisations, research institutions and public sector bodies across Europe ("Go-to-Place")
- The SmaCStak will create a permanent dialogue and collaboration platform
- SmaCStak-Coordination (SCG) group as "scientific committee" for virtual collaboratorium

smacstak.espresso-project.eu



Join our SmaCStak-Network

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ESPRESSO's SmaCStak



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Impacts of Smart City standards

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

Communication Approaches

- Relevant Workshops, Plenary Discussions...
- Relevant information to be published on our website
- Series of Webinars with respective focus topics
 - Content-transfer to an online collaboration-tool

Conclusion

- Smart Cities covers a very broad range of alternatives, contexts, patterns of participation and stages of development
- the right tools and a holistic understanding of Smart Cities are important
- Standardization and interoperability are essential for the widespread adoption of tools and services
- „Standards create markets“ – Cities should be in control

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

Wake up your city with a standard - ESPRESSO !



@ESPRESSO_Prjct



<http://bit.ly/1JBnKVs>



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