ESPRESSO -
A systEmic Standardisation apPRoach to Empower Smart cityES and cOmmunitieS

Dr. Jan-Philipp Exner
TU Kaiserslautern, ISOCARP

Dr. Pietro Elisei
Urbasofia, ISOCARP

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What is a Smart City?
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...
A Smart City is ...

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

- “...a city, whose economy and governance is being driven by innovation, creativity and entrepreneurship, enacted by smart people...“

- “...is also an inclusive place, using technology and innovative solutions to increase social inclusion...“
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“)
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
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*. 
The Consortium
The ESPRESSO Approach

WHO?

WP 1: Stakeholder community

WHAT?

WP 2: Scope

HOW?

WP 3: Improving standardization

TECHNICAL GOALS

WP 4: SmartCity information framework

ECONOMIC GOALS

WP 5: Business framework

CONSEQUENCES

WP 6: Analysis & Impact assessment

COMMUNICATION

WP 7: Dissemination

WP 8: Project management
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;
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)
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.
ESPERSSO Workshops

Rotterdam Workshop

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

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ESPRESSO’s SmaCStak
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!

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