



A planning roadmap for intelligent cities: case study on revitalizing a commercial district

Kakderi, Christina

Komninos, Nicos

Tsarchopoulos, Panagiotis

Intelligent cities

Cyber cities, from cyberspace, cybernetics, governance and control spaces based on information feedback, city governance; but also meaning the negative / dark sides of cyberspace, cybercrime, tracking, identification, military control over cities.

Digital cities, from digital representation of cities, virtual cities, digital metaphor of cities, cities of avatars, second life cities, simulation (sim) city.

Intelligent cities, from the new intelligence of cities, collective intelligence of citizens, distributed intelligence, crowdsourcing, online collaboration, broadband for innovation, social capital of cities, collaborative learning and innovation, people-driven innovation.

Smart cities, from smart phones, mobile devices, sensors, embedded systems, smart environments, smart meters, and instrumentation sustaining the intelligence of cities.

Schaffers et al. (2011)

How can we achieve this???

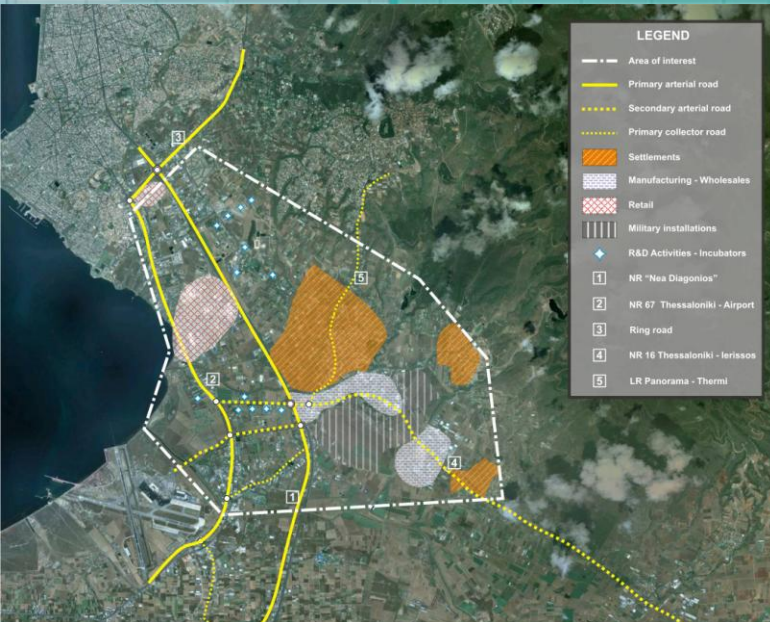
Strategies for planning an intelligent city

1. Differences in the notion of intelligent cities
2. New cities vs. existing cities with persistent complex urban problems
3. Focus on architecture and components
4. It is no one-way – custom made solutions

Critical elements for a planning strategy

- Context and problem definition
- People, stakeholders, local communities' engagement
- Co-creation/ crowdsourcing.co-development
- Technology base and infrastructure
- Sustainability
- Monitoring and evaluation

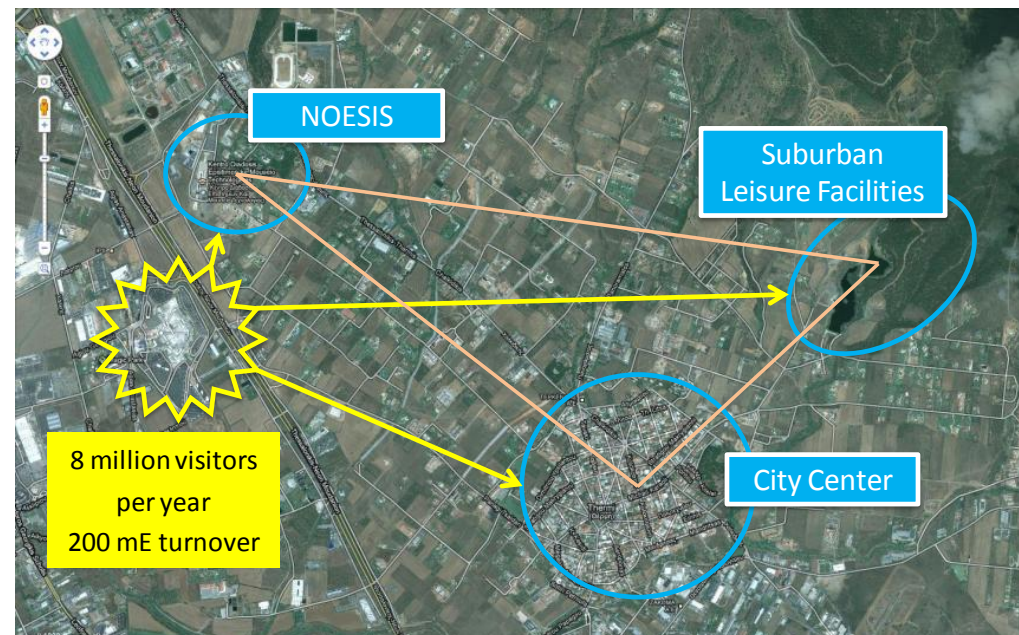
Current situation and problem to address



PEOPLE Project (CIP ICT PSP)
Thermi, Thessaloniki Agglomeration area

31.570 km²

53,070 in 2011



The innovation ecosystem and the open innovation approach

Preparation Cycle

Preliminary Identification of Stakeholders per Pilot

Interest & motivation. Strategy for active engagement, specific action plan.

Preliminary gathering of feedback about services to be developed

Strategy for gathering feedback. Meetings, surveys, interviews, etc.

Identification of stakeholders per service

Once identified the services to be deployed during the 1st Innovation Cycle. Identification of stakeholders (users, providers, potential exploiters, traders and distributors, administrators, enablers) per service.

1st Innovation Cycle

On end users

Identification of at least three different groups per service to be deployed during the cycle. Segmentation of the groups considering people with risk of exclusion.

Open Innovation Communities

Identification of Open Innovation Communities per service (taking in mind the stakeholders already identified and Open source communities) Definition of the strategy for its involvement.

RELEASE OF SERVICES

Feedback from users and stakeholders

Surveys, interviews, validation and co-design sessions

2nd Innovation Cycle

Activation of Open Innovation communities per service

Based on user feedback from previous cycle, definition of modifications and new functionalities. Involvement and activation of the Open Innovation Communities around these functionality requests.

Identification of new services' stakeholders .

In the case that new services were to be released during this cycle. Activation of these stakeholders.

RELEASE OF SERVICES

Feedback from users and stakeholders

Surveys, interviews, validation and co-design sessions

3rd Innovation Cycle

Activation of Open Innovation communities per service

Based on user feedback from previous cycle, definition of modifications and new functionalities. Involvement and activation of the Open Innovation Communities around these functionality requests.

Identification of new services' stakeholders .

In the case that new services were to be released during this cycle. Activation of these stakeholders.

RELEASE OF SERVICES

Feedback from users and stakeholders

Surveys, interviews, validation and co-design sessions

1st November 2010 – 31st October 2011

1st November 2011 – 31st march 2012

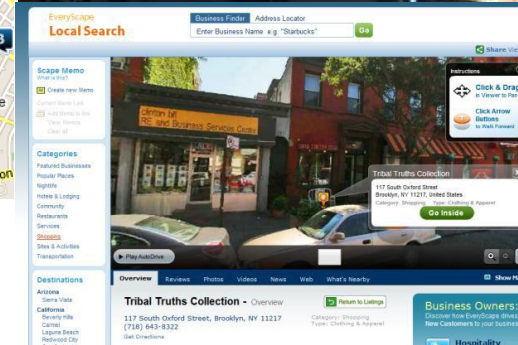
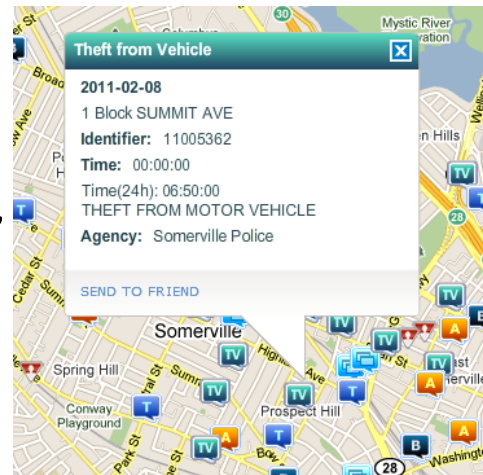
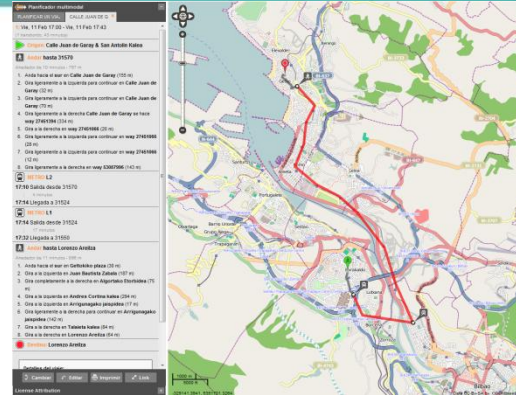
1st April 2012 – 31st July 2012

1st August 2012 – 31st October 2012

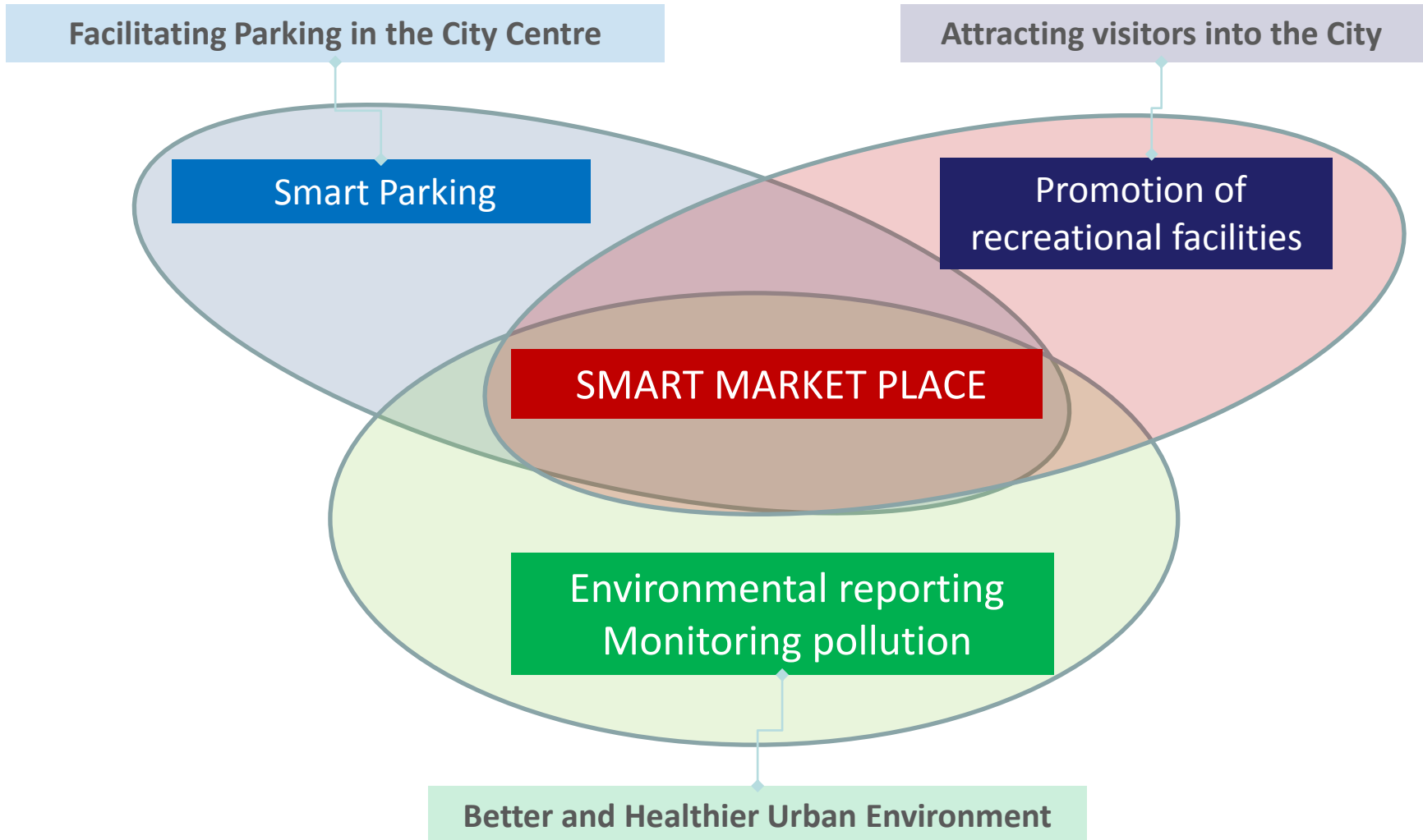
Available technologies for smart commercial districts

Services Layer Specification

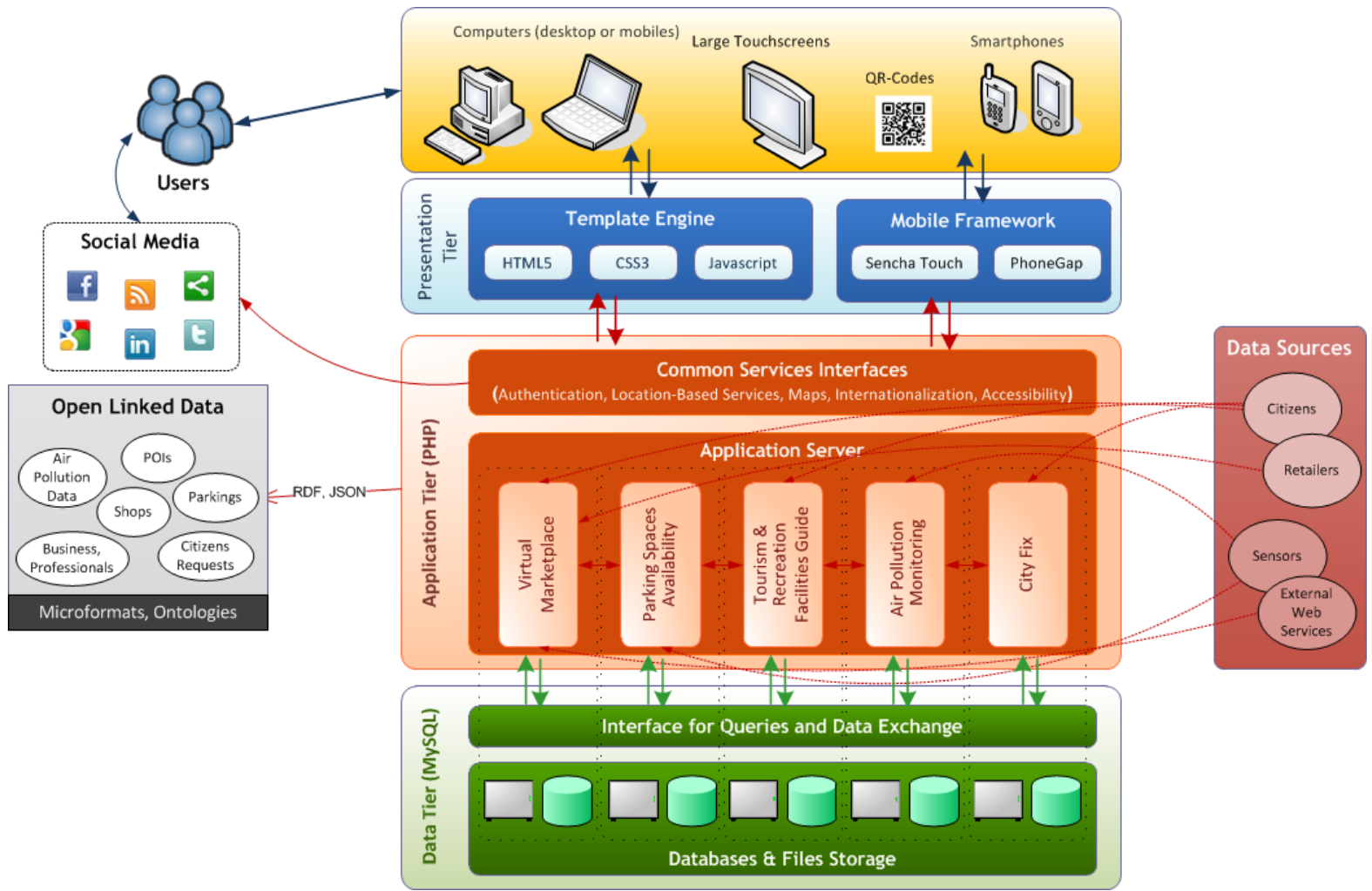
- Mobility apps: e.g. Google Transit, OpenTrip Planner, Parking Finder Tool, Bicycle sharing system
- Apps related to commerce: Price Watch System for Consumer Goods, Groupon, Local Shopping Offers & Discounts, Social shopping
- Applications related to tourism: Virtual City Tour, Mobile city Guides, Mobile Museum Tour
- Urban information management apps: QR Codes, Sensor network for environment protection



Scenario building: a smart commercial district in the City of Thermi



Development of applications and technical infrastructure



Sustainability of the proposed solution

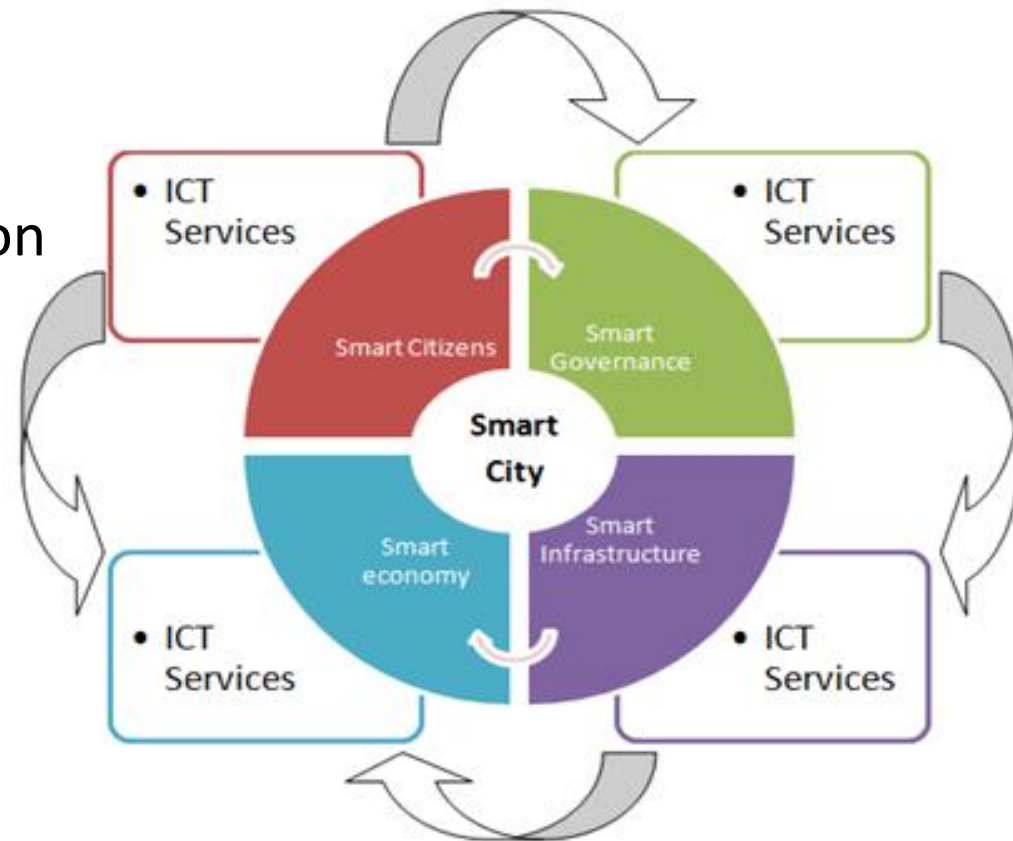
Two parts of selected business model

- Total Cost of Ownership: includes cost for use, maintenance, upgrades, support services, training, software scaling, customisation (change), and modification
- Open source approach. **The release of the applications under the GPL v3 open source license is the first step for the creation of an open source community that will develop services for smart / intelligent cities.** Within this community developers from all over the world will improve the existing services and also will develop new ones. The applications will be hosted on the cloud and they will be offered to municipalities or local communities for a using a subscription fee (monthly or annual).

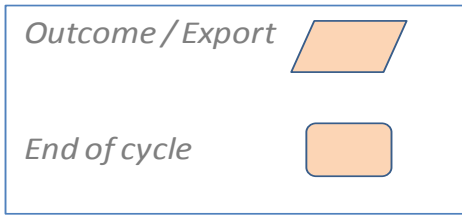
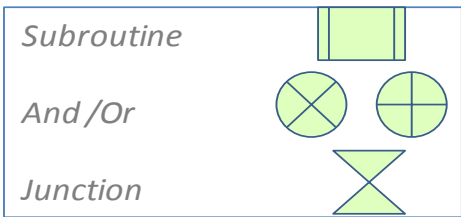
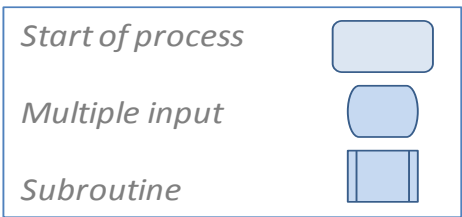
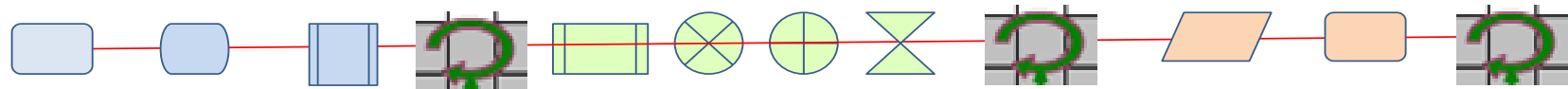
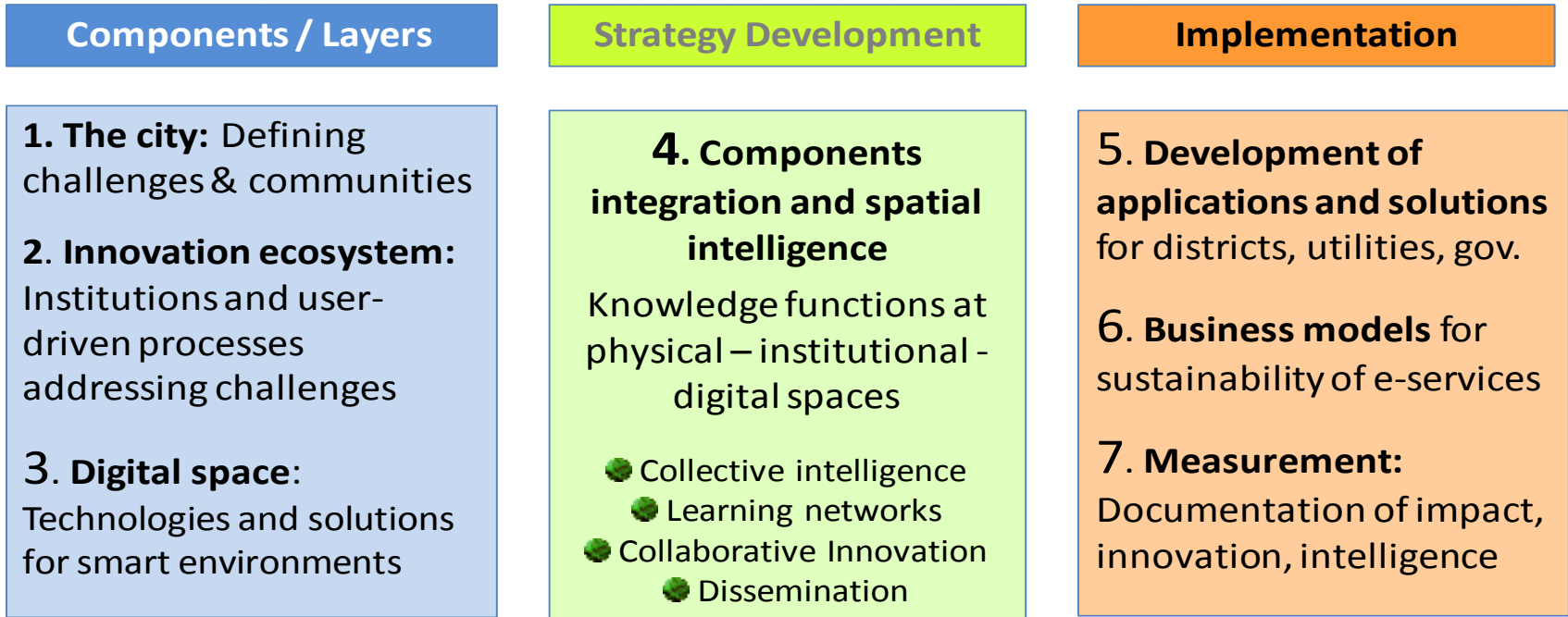
Monitoring and evaluation

Evaluation indicators for the following categories

- Activation of stakeholders
- Activation of lead users
- ICT services
- Data models and information flows



A planning roadmap towards intelligent cities



Step 1. The city: Defining challenges and communities



Innovation Economy

- 1- City sectors: Manufacturing, commerce, business services, education, research, health, tourism
- 2- City districts: CBD, historic centre, techno park, mall, university campus, port area, airport city



City Infrastructure – Utilities

- 3 - Mobility, transport and parking
- 4 - Energy saving , smart grid
- 5 - Water management and saving
- 6 - Broadband, wired and wireless



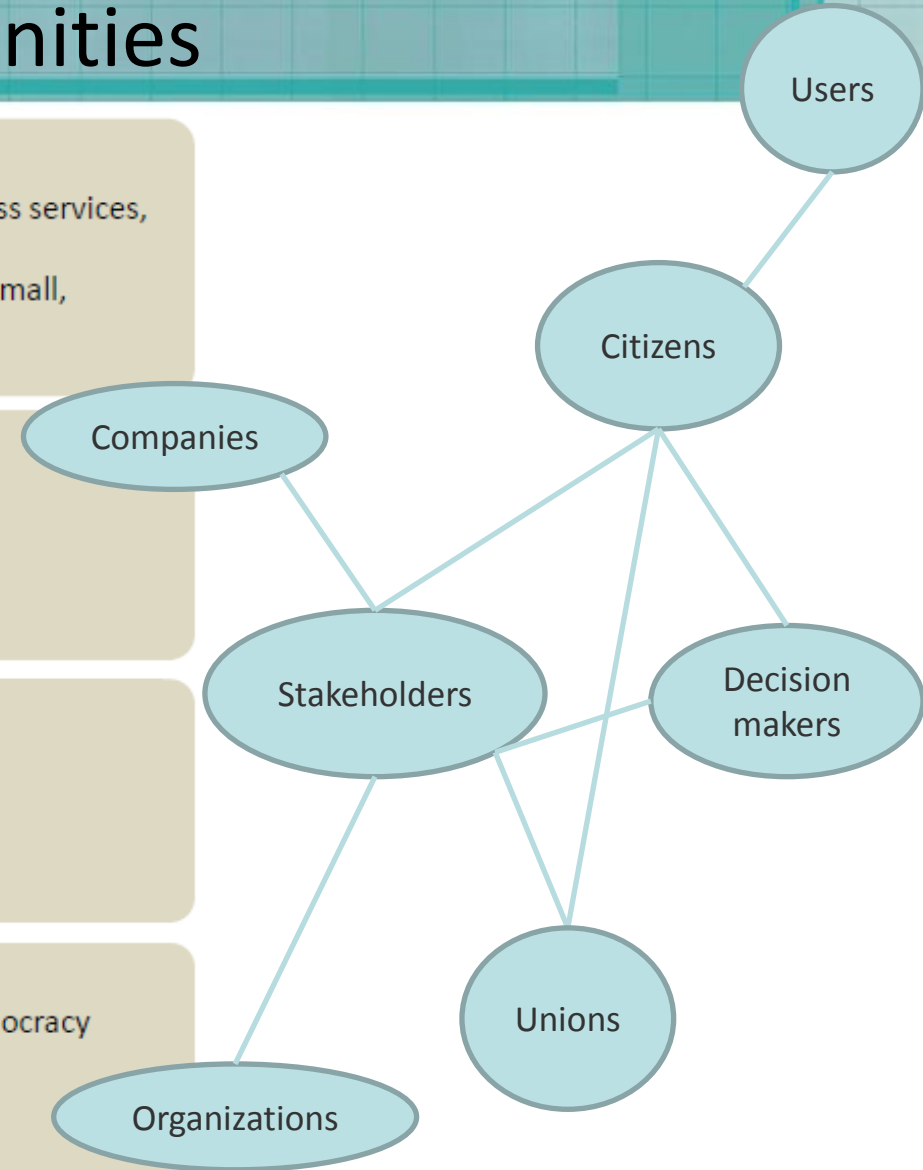
Quality of life

- 7 - Social and digital divides / Education
- 8 - Environment
- 9 - Social care services
- 10 - Safety and security in the public service

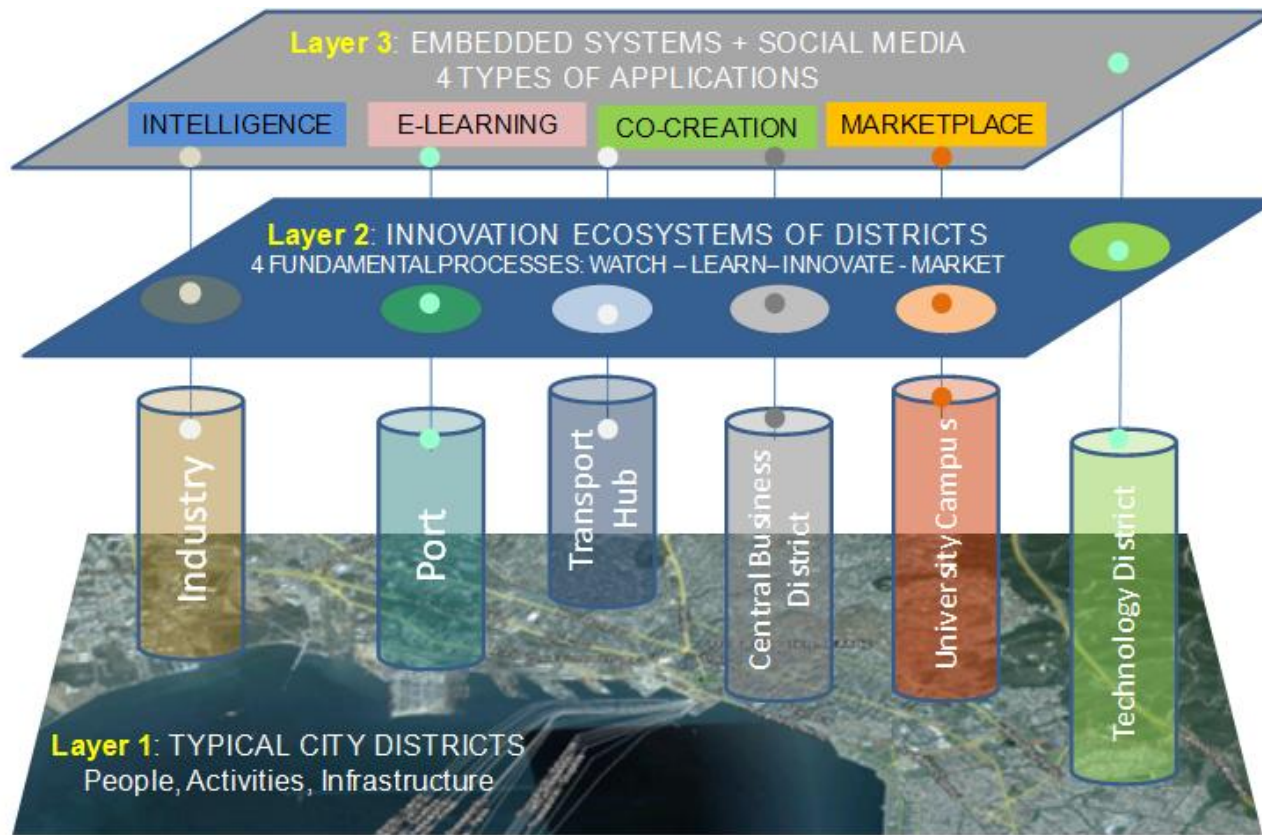


City Governance

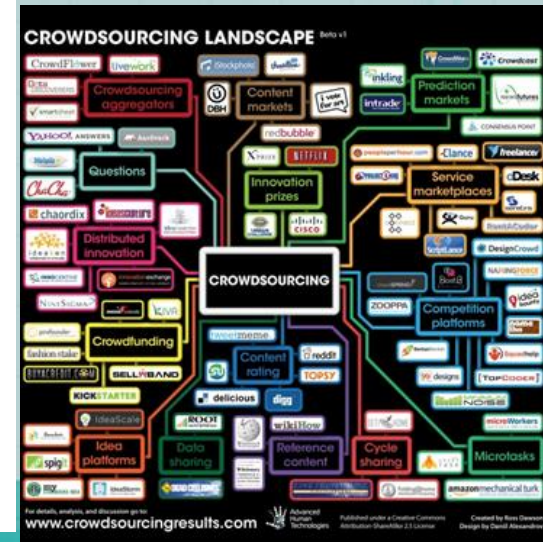
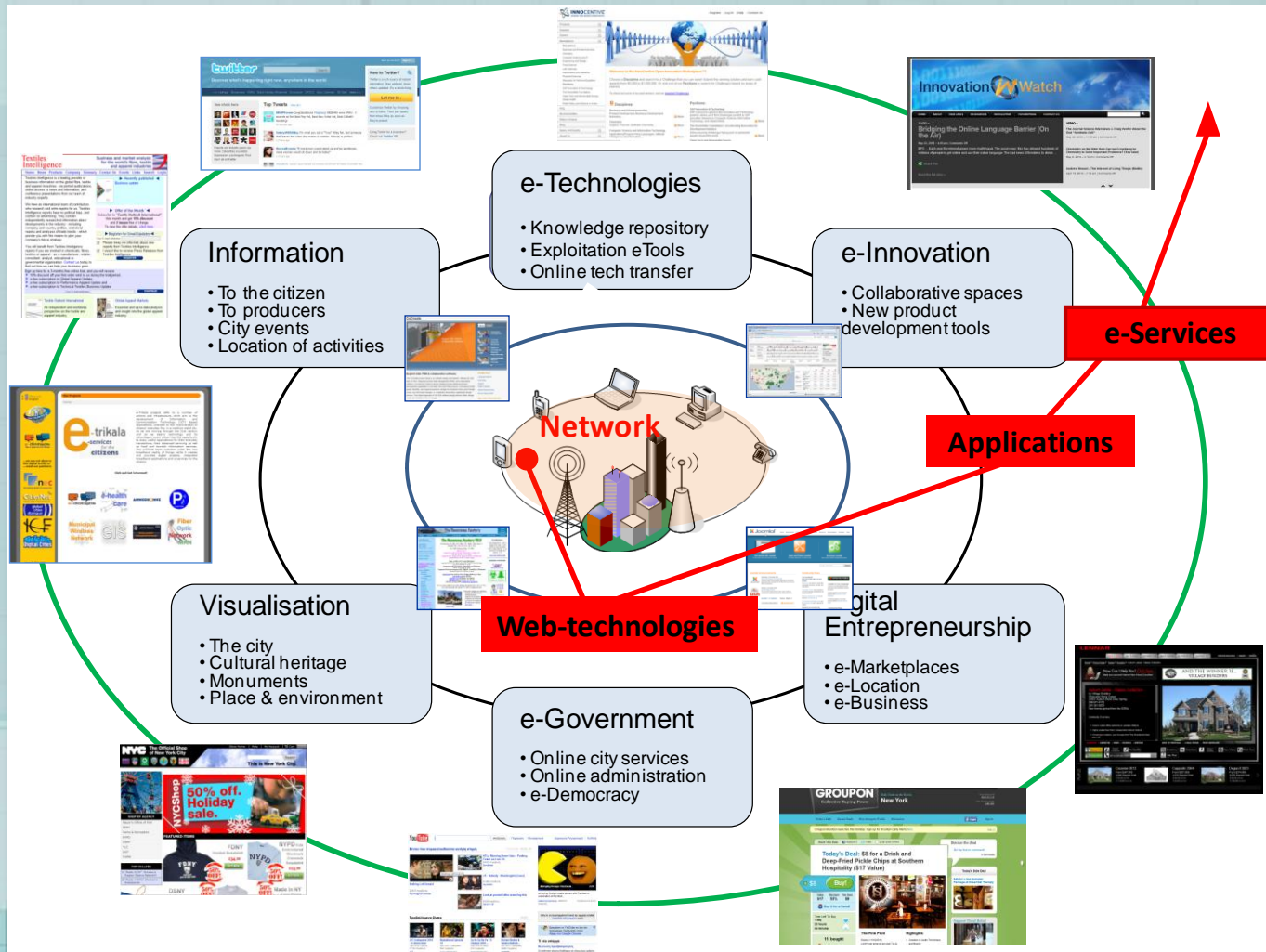
- 11 - Decision making / citizens participation / democracy
- 12 - Government services to citizens
- 13 - City planning and city management
- 14 - Monitoring and benchmarking



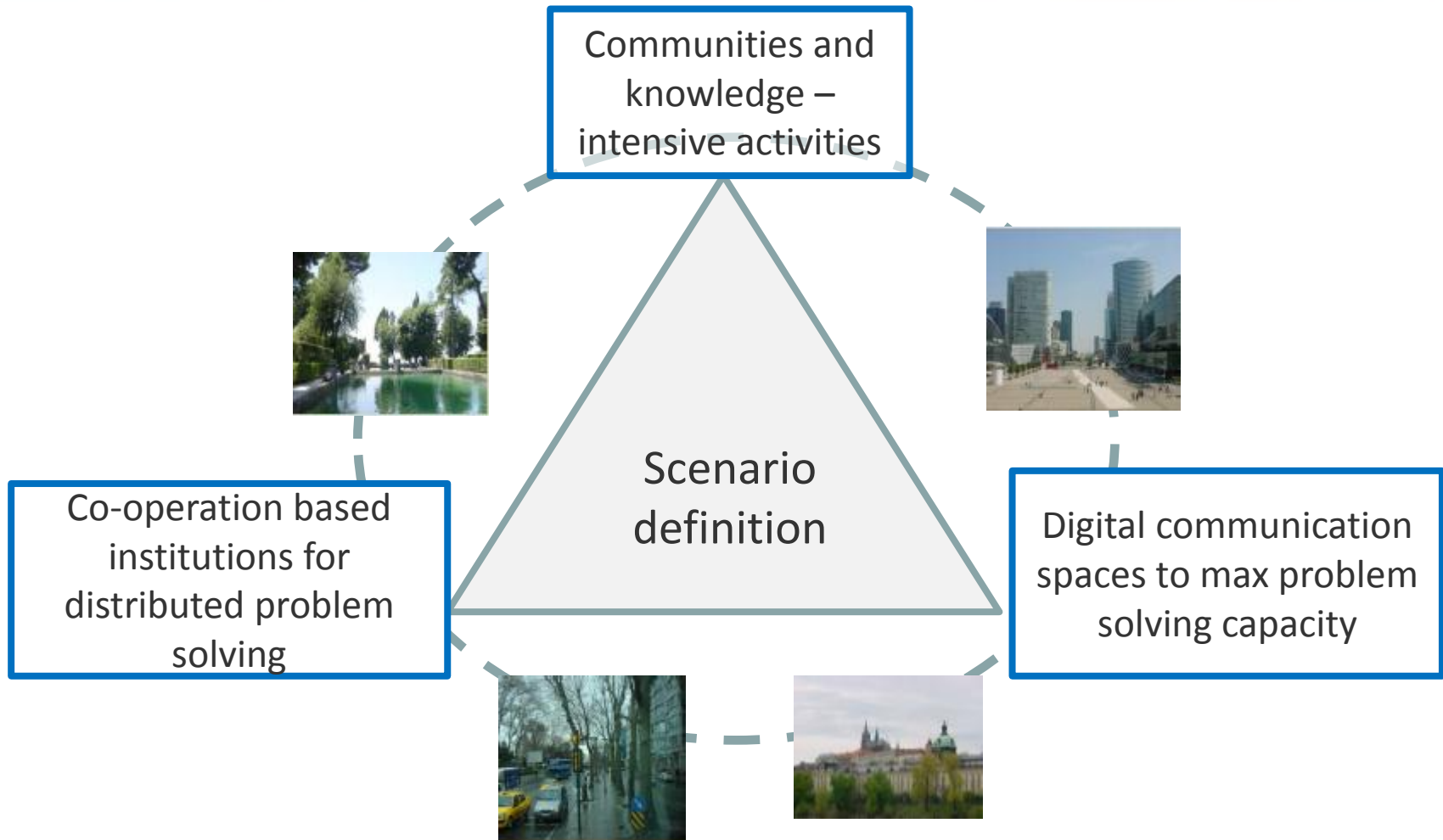
Step 2. Innovation ecosystem: Platforms and crowds addressing challenges



Step 3. Digital space: Horizon scan on technologies and solutions for smart environments



Step 4. Strategy: Integration of components and spatial intelligence



Step 5. Development of applications and solutions

Intelligent / Smart Cities Open Source Community

Home Applications About Participate Feedback Blog

Search

An Open Source Community for Intelligent / Smart Cities

ICOS website supports a community offering open source solutions in the field of intelligent cities / smart cities. The community will serve to showcase existing projects, provide a forum for discussing projects and processes, and guide developers' groups in open source creation, contribution, and release.

[+ Submit your Application](#) or stay informed   

Featured open source applications for:

Innovation Economy of Cities



Virtual City Market

Empowers the city local marketplace by bringing together customers and merchants.

City Infrastructure – Quality



Improve my City

Improve my city allows citizens to report, vote and track non-emergency issues.

City Governance



OpenBlock

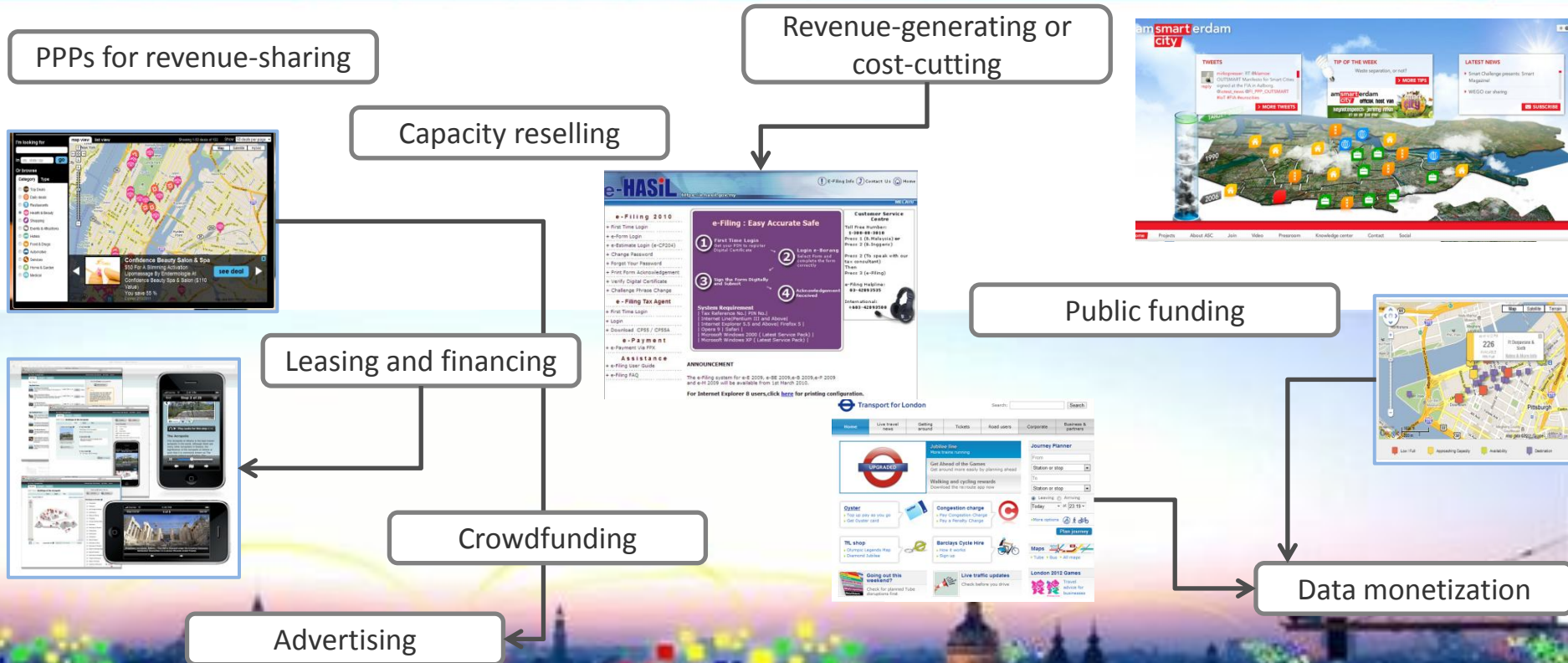
OpenBlock is a hyper-local news & data platform.

About The Intelligent Cities Open Source Community

Why and how to join

Who can participate ICOS is addressed to anyone interested on intelligent / smart cities development and looks for applications and solutions which have been successfully implemented in other cities, mainly open source applications. Learn more >	Benefits The continuous evolution of web technologies from the static Web to the Social Web, the Real-Time Web, the Semantic Web, and eventually the Intelligent Web in the future, has widened substantially the options for constructing the digital space of cities. Learn more >	How to contribute Developers can upload open source applications for intelligent cities using a simple web form. The applications are related to: 1) the Innovation Economy of Cities, 2) City Infrastructure / Utilities and 3) City Governance. Learn more >
--	---	---

Step 6. Selecting a business model of sustainability



Step 7. Measurement of spatial intelligence of cities

SMART ECONOMY (Competitiveness)	SMART PEOPLE (Social and Human Capital)
<ul style="list-style-type: none"> • Innovative spirit • Entrepreneurship • Economic image and trademarks • Productivity • Flexibility of labor markets • International embeddedness • Ability to transform 	<ul style="list-style-type: none"> • Level of qualification • Affinity of lifelong learning • Social and ethnic plurality • Flexibility • Creativity • Cosmopolitanism / Open-mindedness • Participation in public life
SMART GOVERNANCE (Participation)	SMART MOBILITY (Transport and ICT)
<ul style="list-style-type: none"> • Participation in decision-making • Public social services • Transparent governance • Political strategies and perspectives 	<ul style="list-style-type: none"> • Local accessibility • (Inter-)national accessibility • Availability of ICT infrastructure • Sustainable, innovative and safe transport systems
SMART ENVIRONMENT (Natural resources)	SMART LIVING (Quality of life)
<ul style="list-style-type: none"> • Attractivity of natural conditions • Pollution • Environmental protection • Sustainable resource management 	<ul style="list-style-type: none"> • Cultural facilities • Health conditions • Individual safety • Housing quality • Education facilities • Tourism attractivity • Social cohesion

Vienna Centre of Regional Science (2007)

Conclusion

The roadmap ensures balance between the three major components of intelligent/smart cities. It also achieves:

- The **targeting** of smart city environments, applications and e-services **on the real problems and challenges of cities**
- The **actualization of community's collective intelligence** through bottom-up participative processes engaging stakeholders, end-users, citizens, developers and organisations in the selection design and development of solutions and e-services
- The **interconnection** of smart environments and e-services with the physical space, social structure, infrastructures and functioning of cities





Thank you!

Contact details:
Kakderi Christina
christina@urenio.org
ckakderi@arch.auth.gr
www.urenio.org