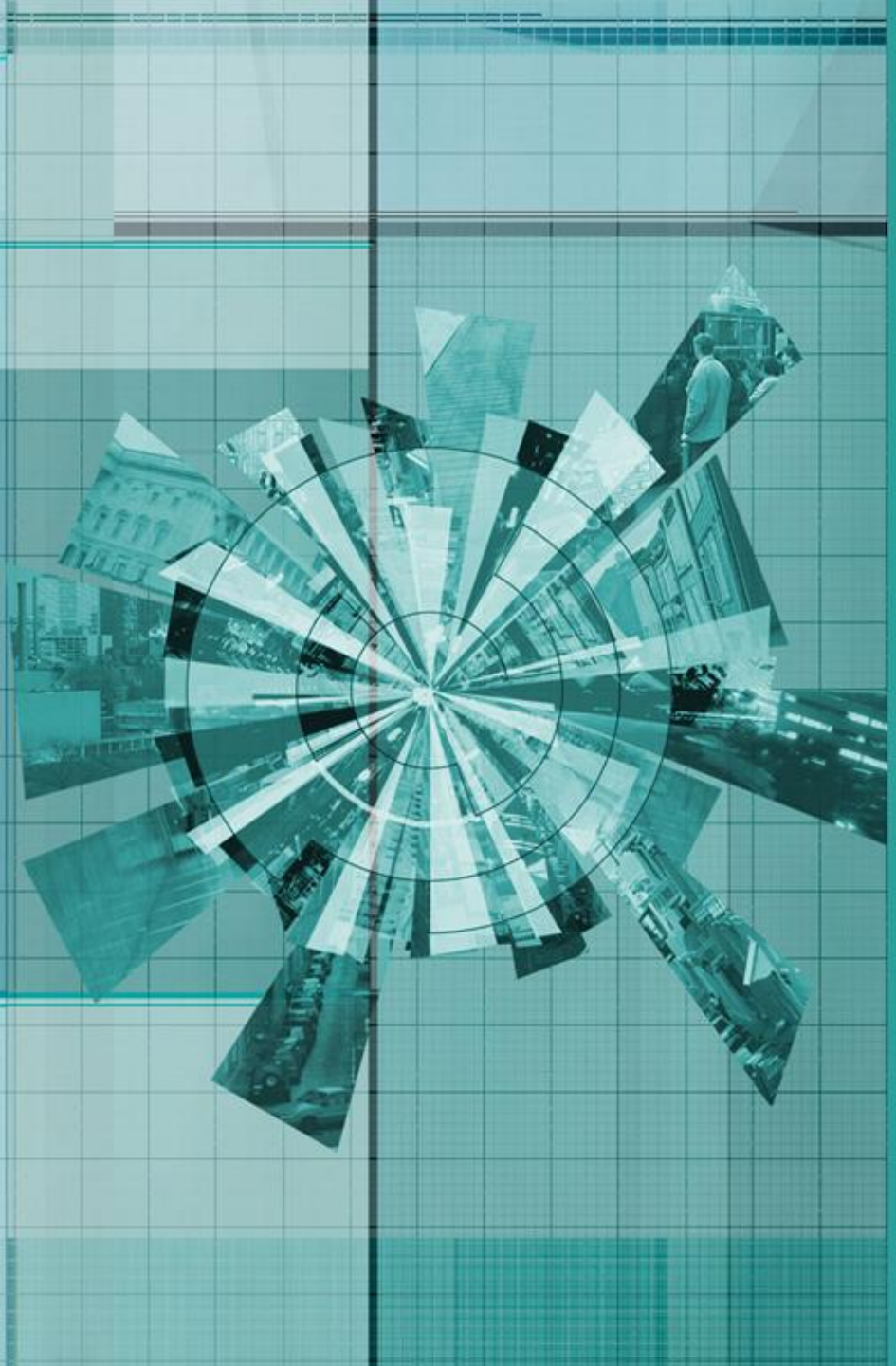


A planning roadmap for intelligent cities: case study on revitalizing a commercial district

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???

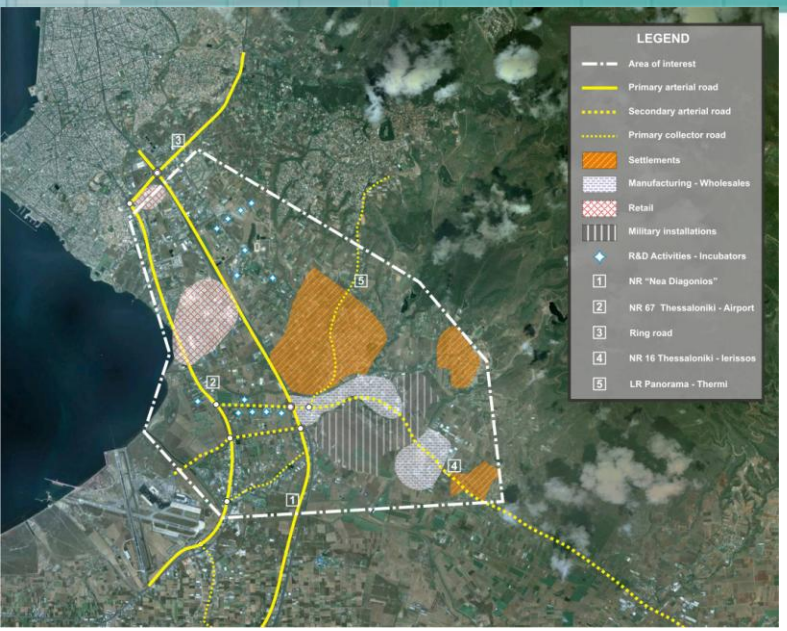
Strategies for planning an intelligent city

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

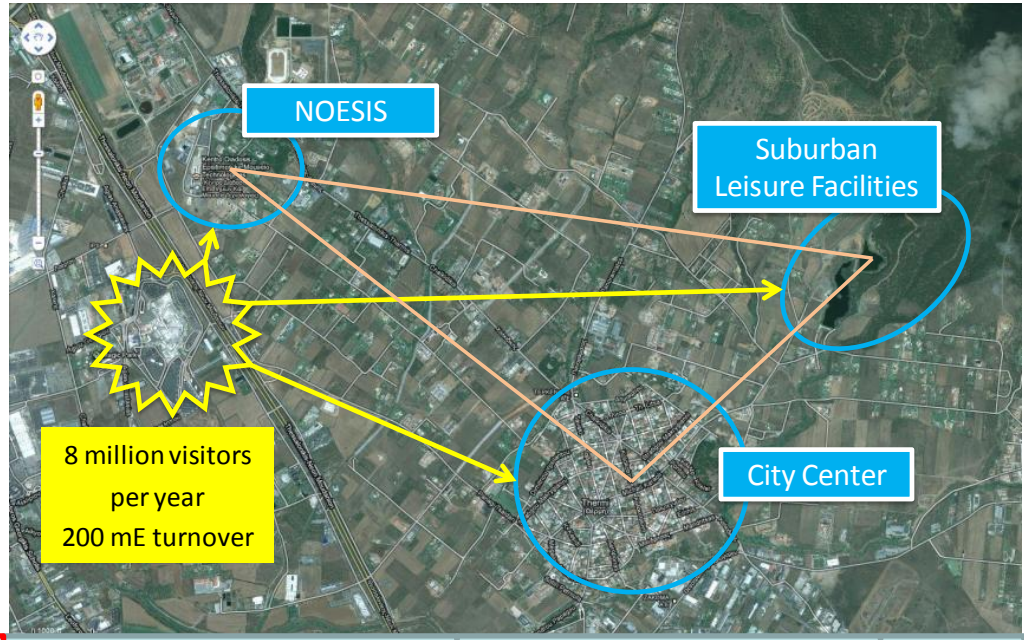


PEOPLE Project (CIP ICT PSP)

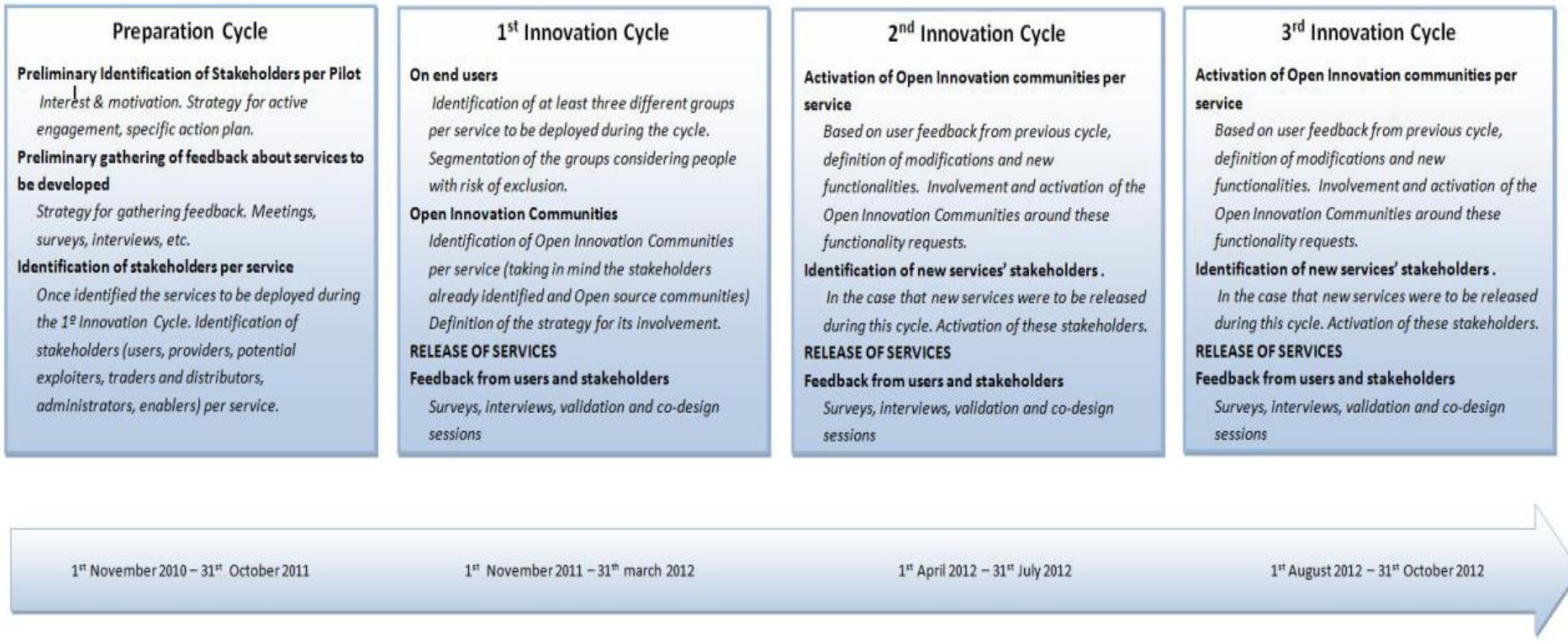
Thermi, Thessaloniki Agglomeration area

31.570 km^2

53,070 in 2011



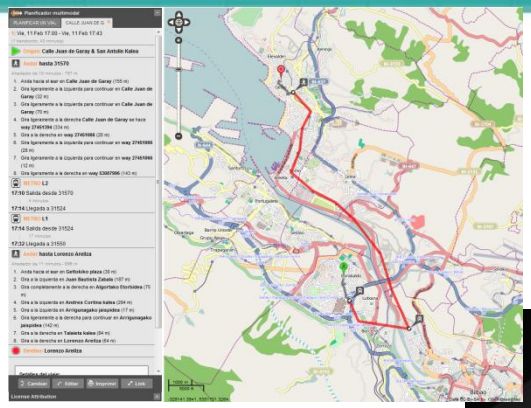
The innovation ecosystem and the open innovation approach

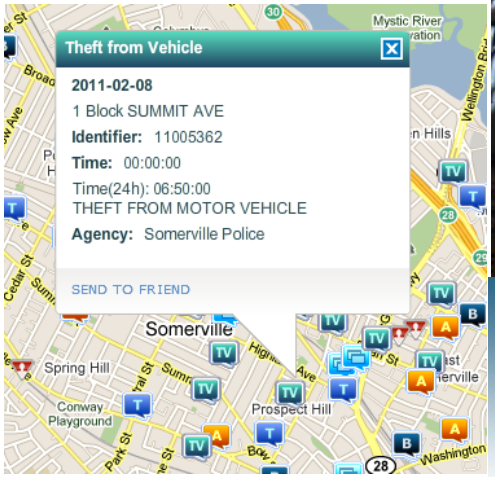


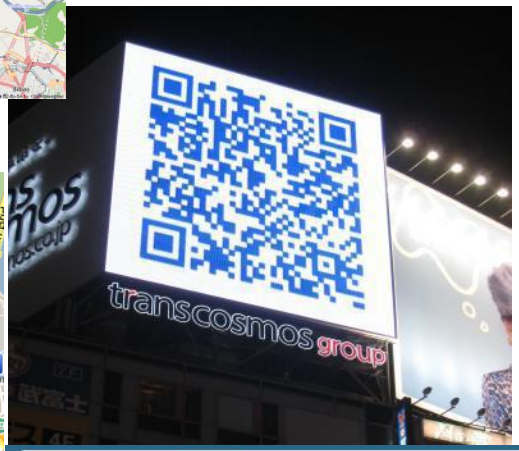
Available technologies for smart commercial districts

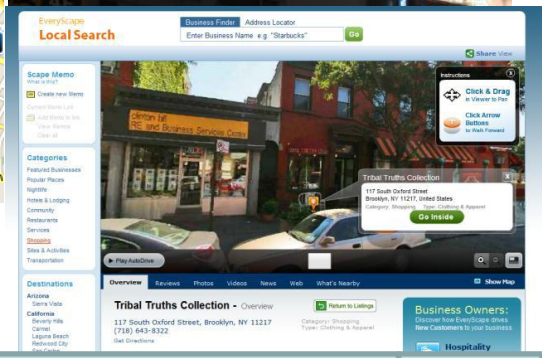
Services Layer Specification

- 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

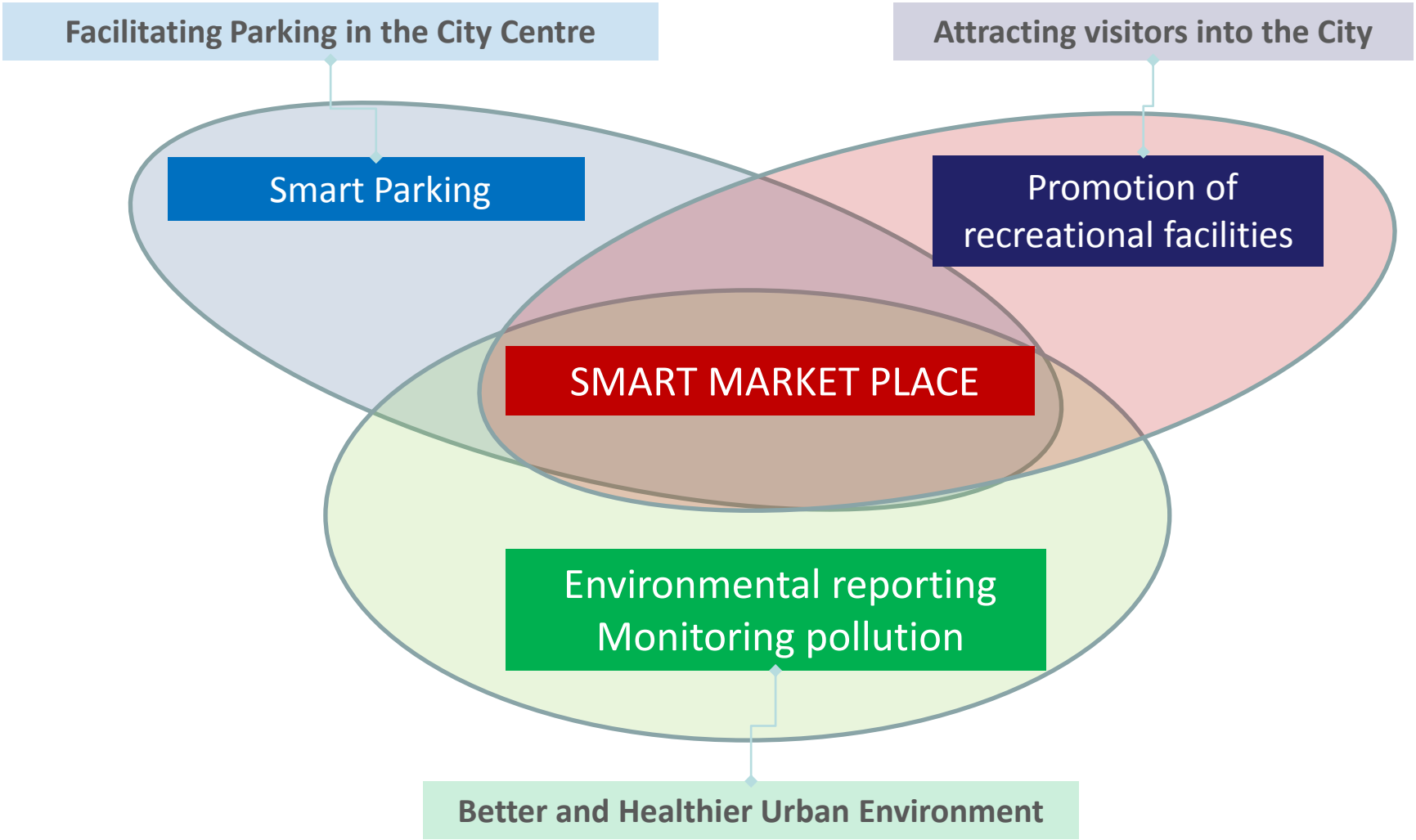




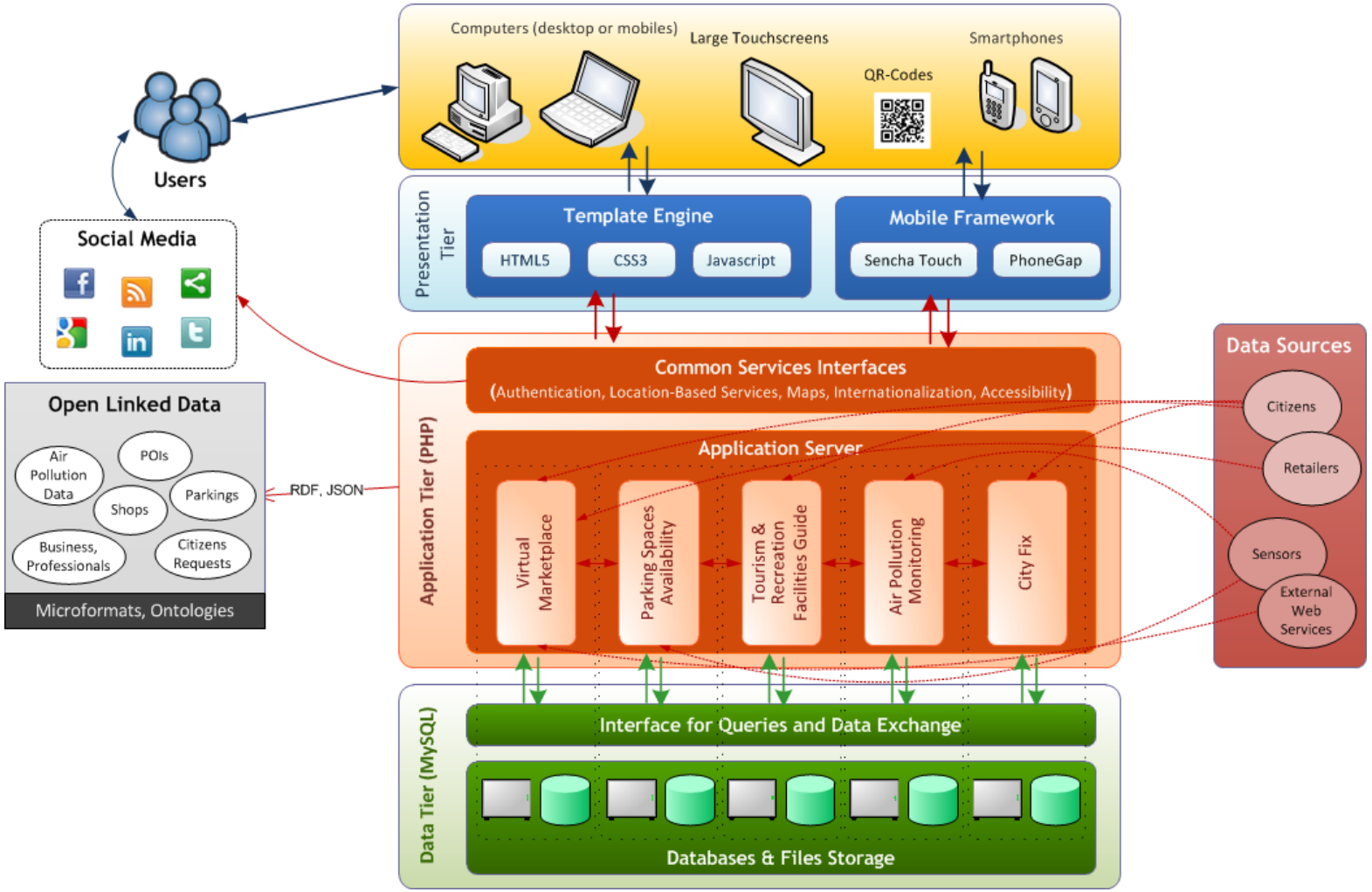




Scenario building: a smart commercial district in the City of Thermi



Development of applications and technical infrastructure



Sustainability of the proposed solution

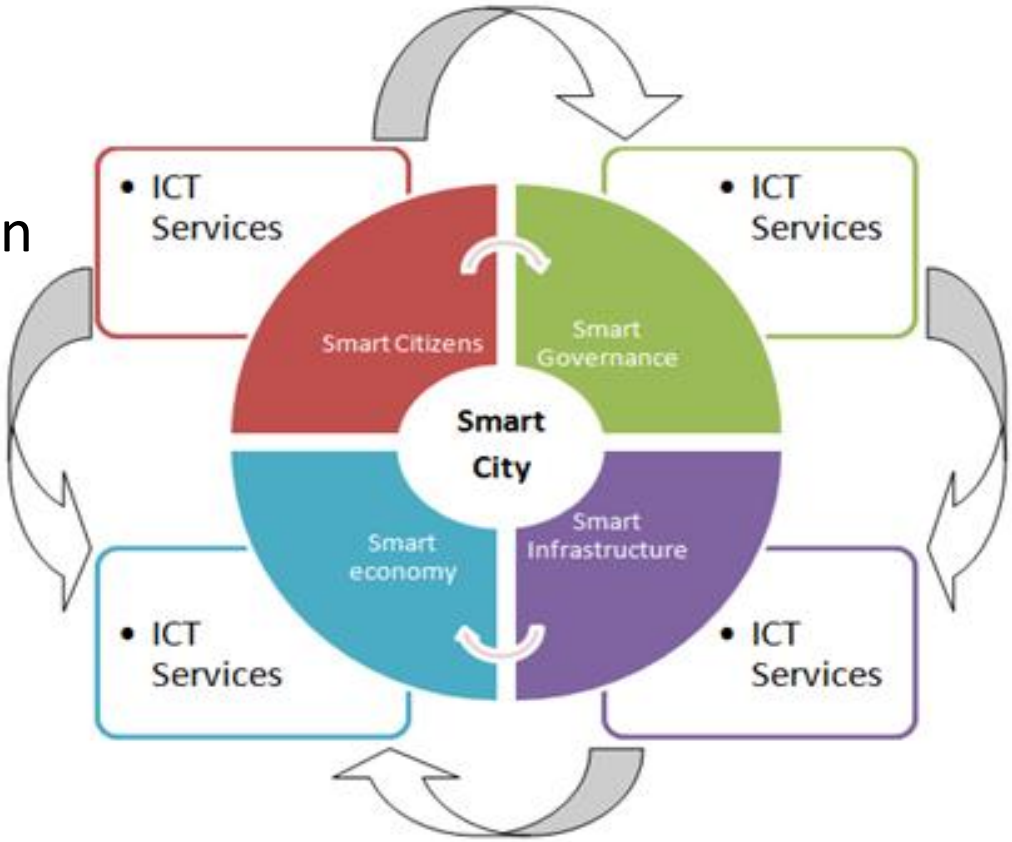
Two parts of selected business model

- 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

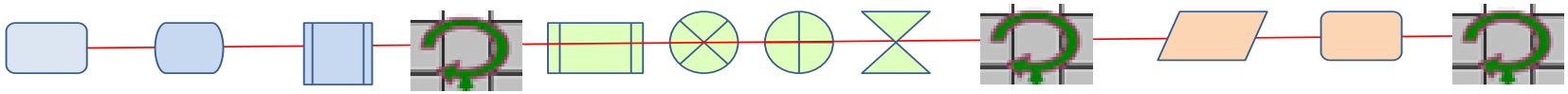
Evaluation indicators for the following categories

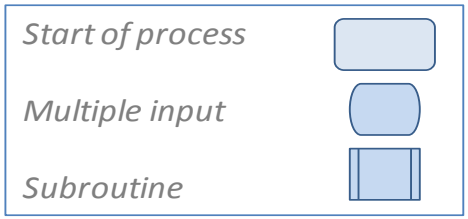
- Activation of stakeholders
- Activation of lead users
- ICT services
- Data models and information flows

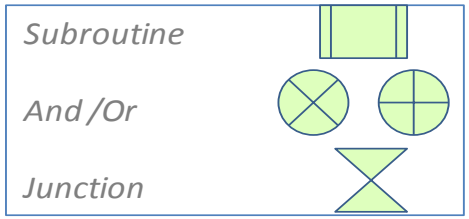


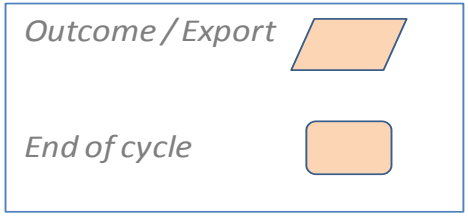
A planning roadmap towards intelligent cities

Components / Layers	Strategy Development	Implementation
1. The city: Defining challenges & communities **2. Innovation ecosystem:** Institutions and user-driven processes addressing challenges 3. **Digital space**: Technologies and solutions for smart environments	**4. Components integration and spatial intelligence** Knowledge functions at physical – institutional - digital spaces Collective intelligence Learning networks Collaborative Innovation Dissemination	5. **Development of applications and solutions** for districts, utilities, gov. 6. **Business models** for sustainability of e-services 7. **Measurement:** Documentation of impact, innovation, intelligence









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

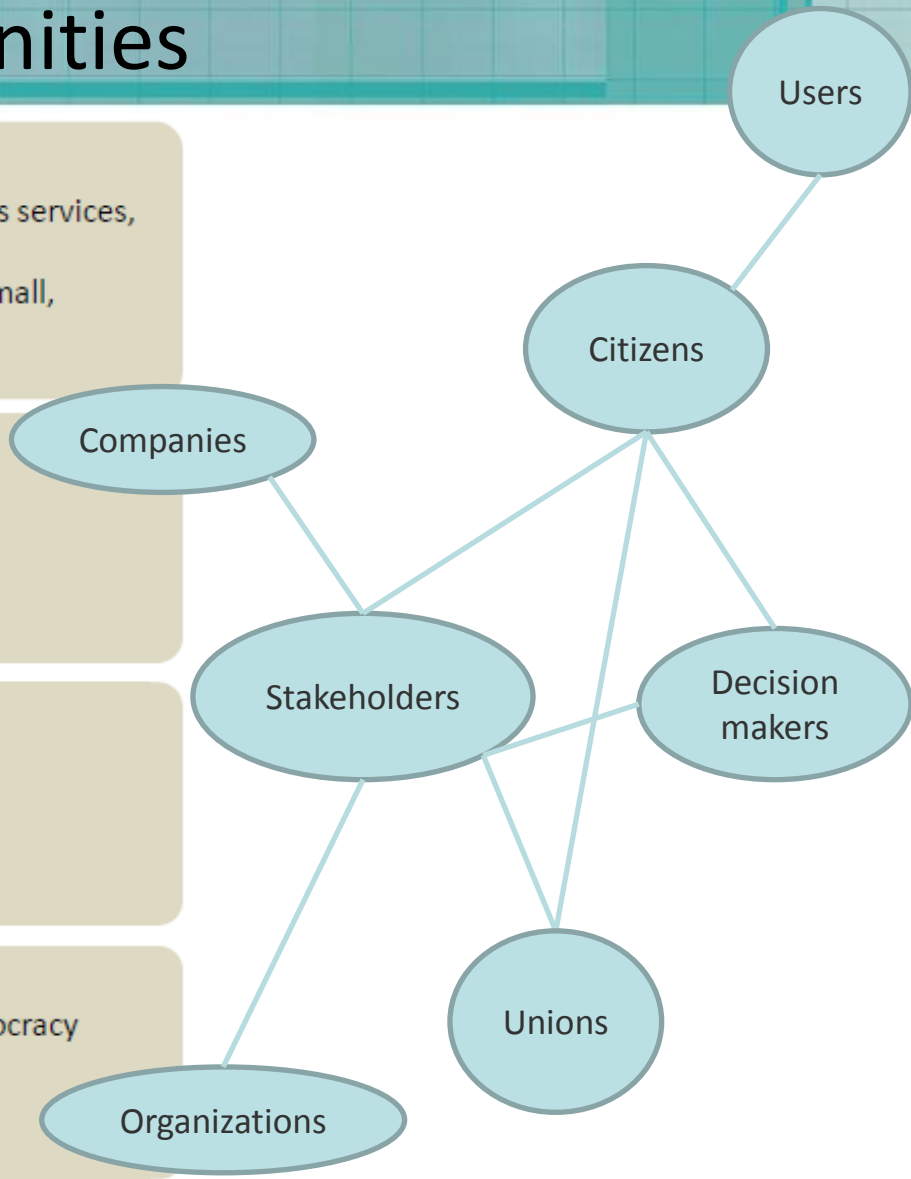
- 3 - Mobility, transport and parking
- 4 - Energy saving , smart grid
- 5 - Water management and saving
- 6 - Broadband, wired and wireless

Quality of life

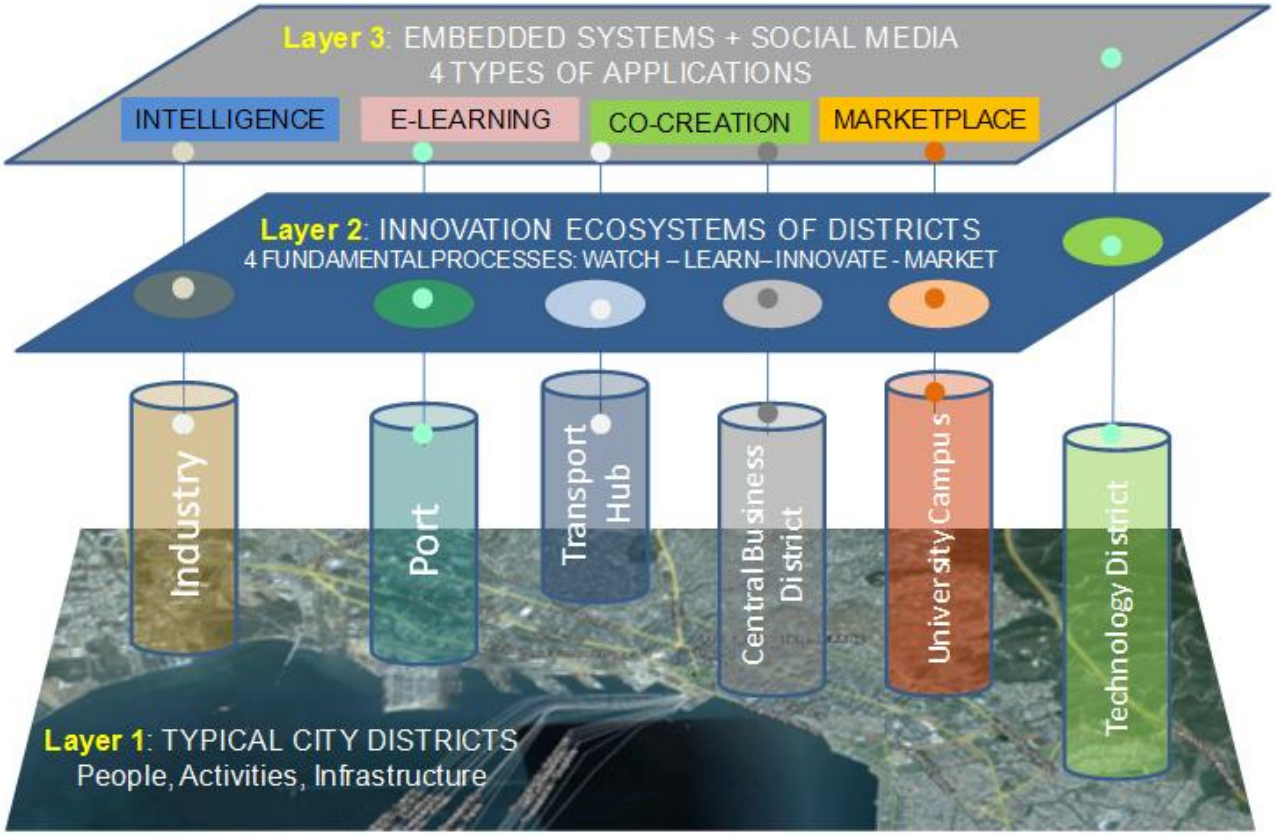
- 7 - Social and digital divides / Education
- 8 - Environment
- 9 - Social care services
- 10 - Safety and security in the public service

City Governance

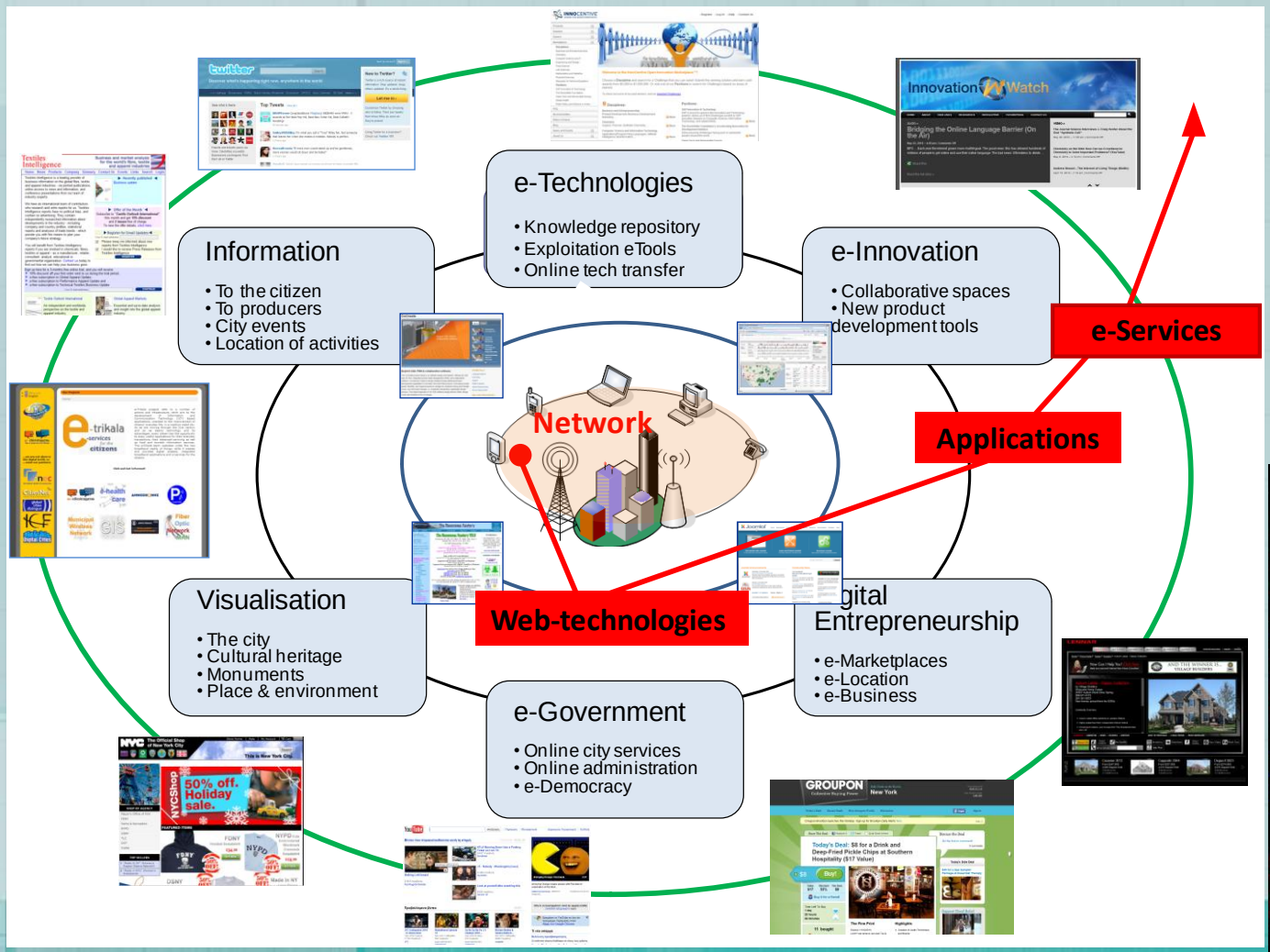
- 11 - Decision making / citizens participation / democracy
- 12 - Government services to citizens
- 13 - City planning and city management
- 14 - Monitoring and benchmarking

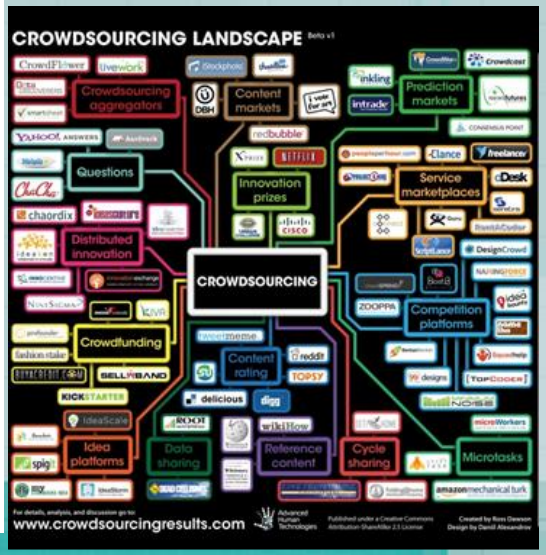


Step 2. Innovation ecosystem: Platforms and crowds addressing challenges

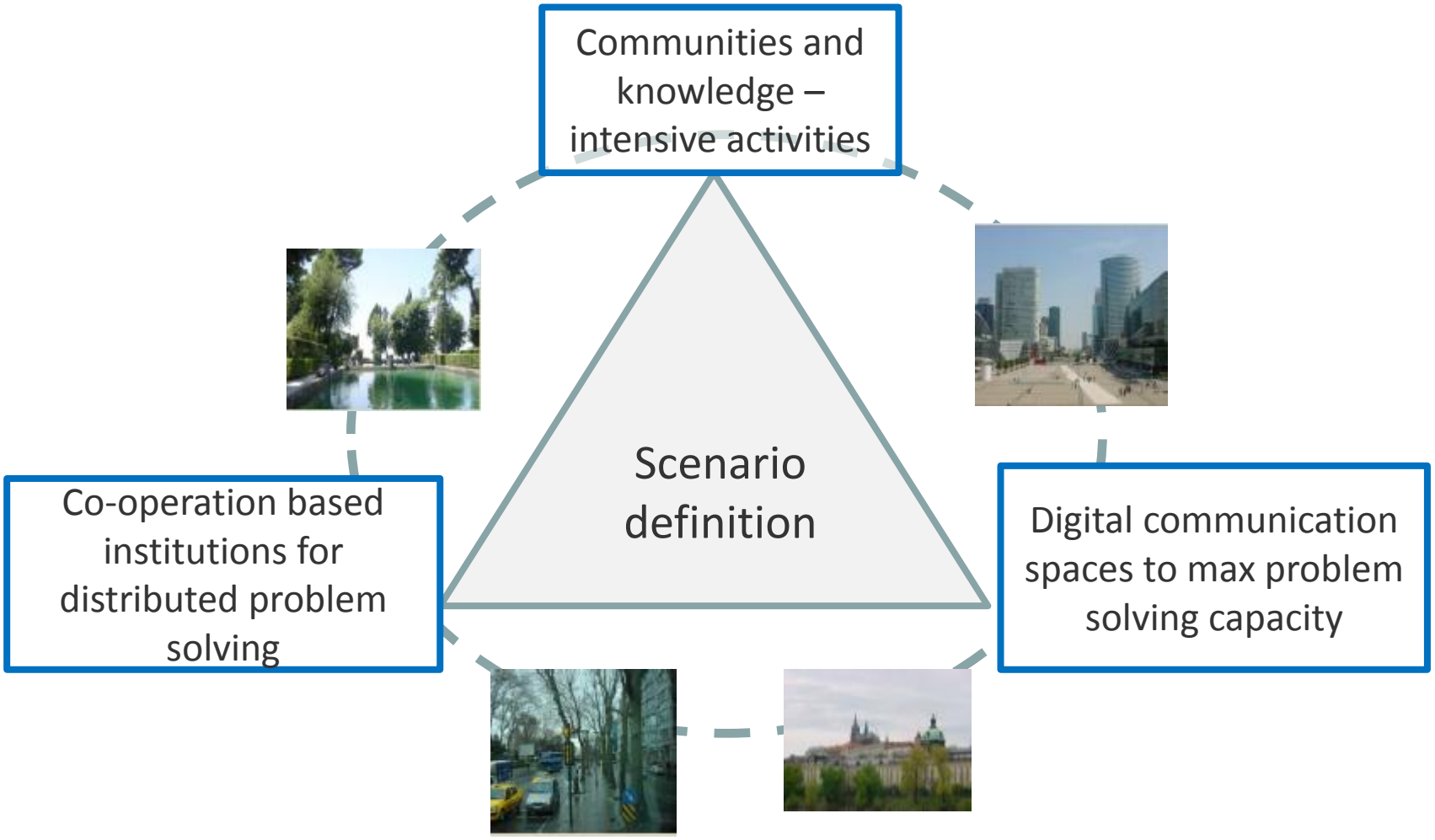


Step 3. Digital space: Horizon scan on technologies and solutions for smart environments

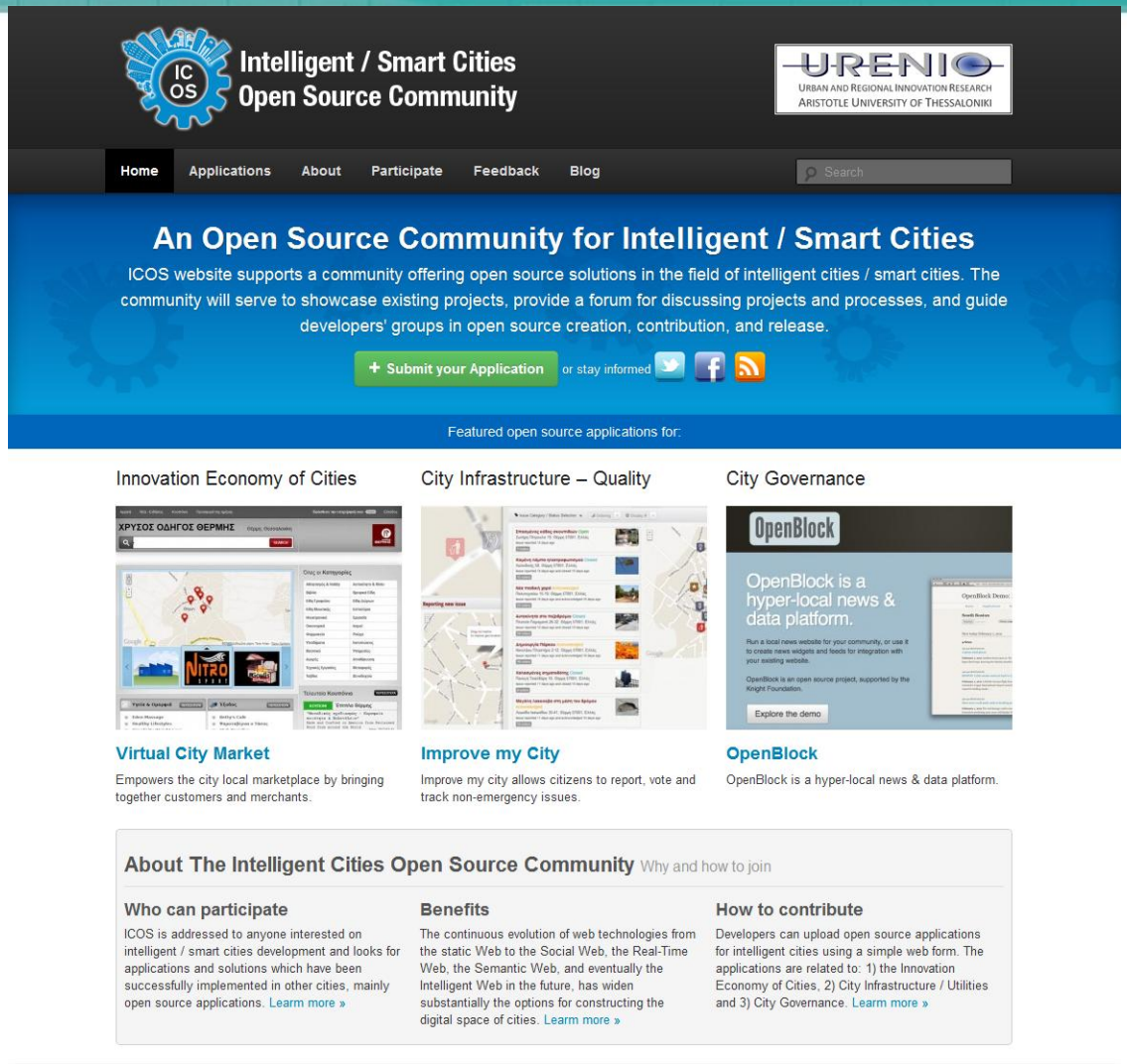




Step 4. Strategy: Integration of components and spatial intelligence



Step 5. Development of applications and solutions



Step 6. Selecting a business model of sustainability

PPPs for revenue-sharing

Revenue-generating or cost-cutting

Capacity reselling

Public funding

Leasing and financing

Crowdfunding

Data monetization

Advertising

Step 7. Measurement of spatial intelligence of cities

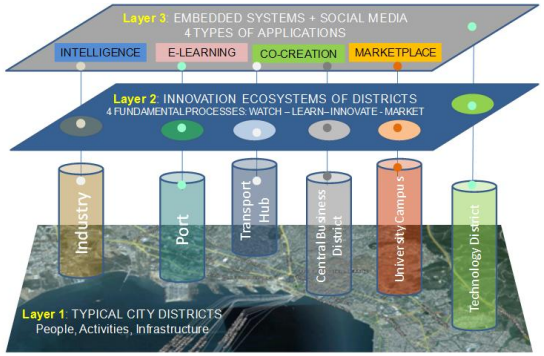
SMART ECONOMY (Competitiveness)	SMART PEOPLE (Social and Human Capital)
• Innovative spirit • Entrepreneurship • Economic image and trademarks • Productivity • Flexibility of labor markets • International embeddedness • Ability to transform	• Level of qualification • Affinity of lifelong learning • Social and ethnic plurality • Flexibility • Creativity • Cosmopolitanism / Open-mindedness • Participation in public life
SMART GOVERNANCE (Participation)	**SMART MOBILITY (Transport and ICT)**
• Participation in decision-making • Public social services • Transparent governance • Political strategies and perspectives	• Local accessibility • (Inter-)national accessibility • Availability of ICT infrastructure • Sustainable, innovative and safe transport systems
SMART ENVIRONMENT (Natural resources)	**SMART LIVING (Quality of life)**
• Attractivity of natural conditions • Pollution • Environmental protection • Sustainable resource management	• 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!

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