PLANNING FOR INTELLIGENT CITIES

Integration and Spatial Intelligence

Nicos Komninos
URENIO Research, Aristotle University of Thessaloniki
www.urenio.org

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FIREBALL, a FP7 ICT project
Connecting smart city, open innovation, and future Internet communities

About FIREBALL

Introduction

FIREBALL establishes a coordination mechanism through which a network of Smart Cities across Europe engages in long term collaboration for adopting User Driven Open Innovation to explore the opportunities of the Future Internet. The coordination process will be grounded in exchange, dialogue and learning between Smart Cities, who are considered as key demand-side drivers of Future Internet innovation. It also will be grounded in bringing together the Future Internet, Living Labs and Smart Cities constituencies. Now that Future Internet driven network infrastructures and applications are in the pipeline, and which potentially

- Why collaboration of cities, open innovation, and future Internet is important?
- How it can be achieved?

The FIREBALL project is conceived as a response to a situation where different constituencies in the domain of Future Internet research of innovation are operating in a state of relative isolation and fragmentation, using their own practices, methodologies and assets (such as knowledge and facilities).

ntation (including test-beds and g Labs), and (3) City innovation environments (representing the demand side).

http://www.fireball4smartcities.eu/?page_id=2

FIREBALL Community

Community FIREBALL

FIREBALL Showcases

FIREBALL Barcelona Showcase

vimeo

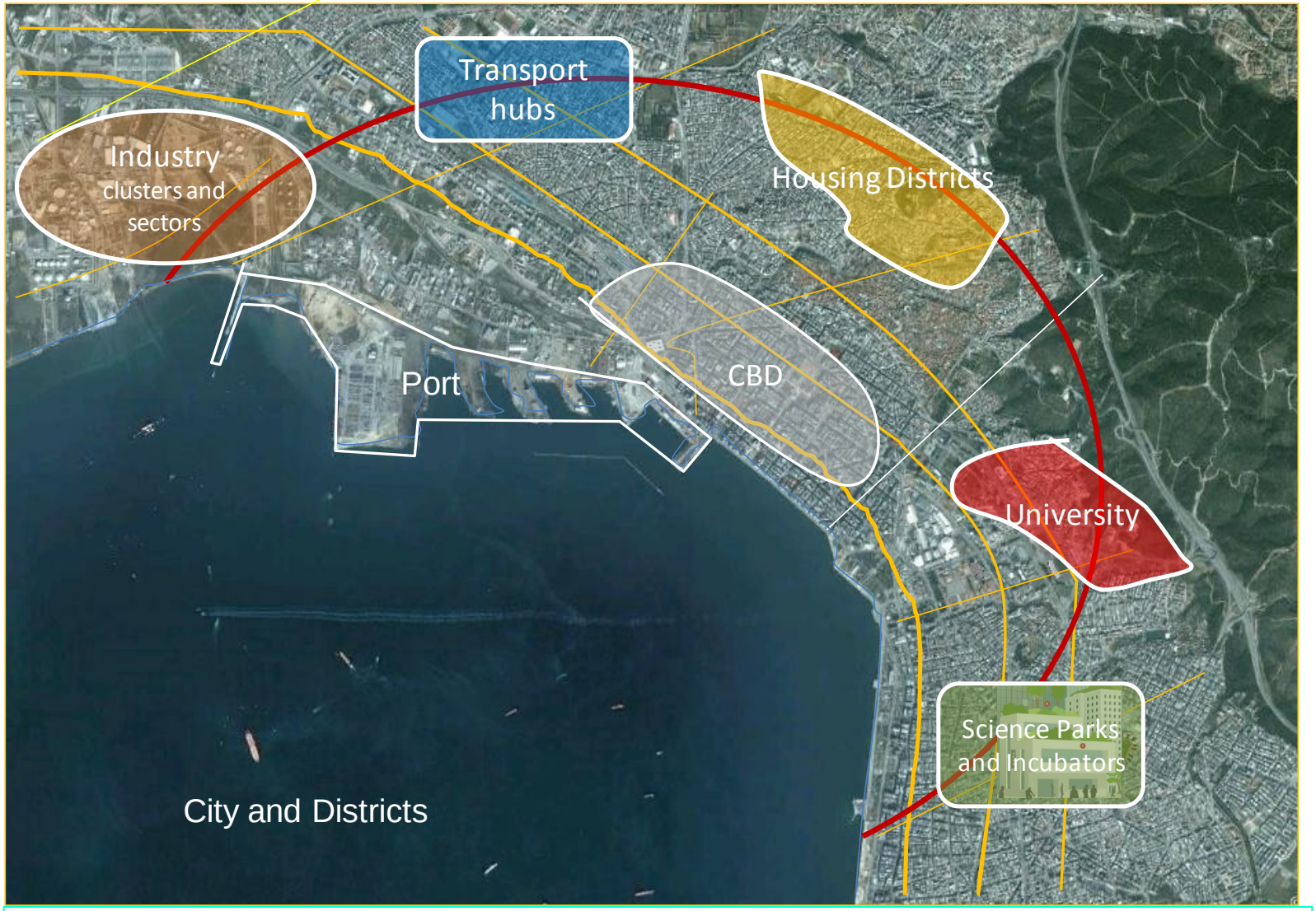
Contents

CONCEPTS:
A digital spatiality over cities / Multiple new concepts

- **Cities**: Spatial agglomeration of population and activities. Two driving dichotomies: (1) Physical space vs. institutional and socioeconomic space, (2) Market forces vs. government intervention and planning.
  Now, a digital spatiality over the cities has given birth to a series of new concepts:

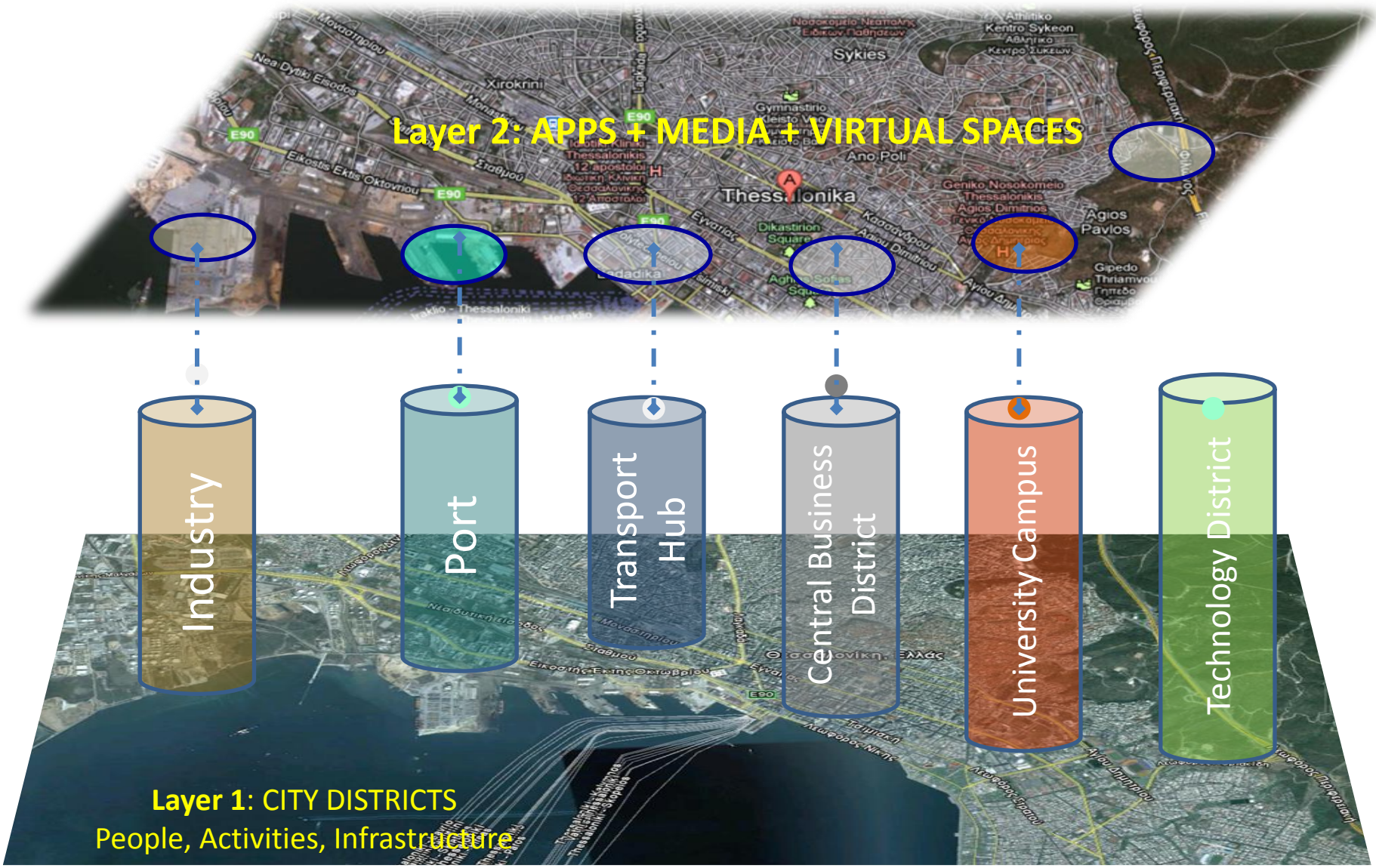
- **Digital cities**, referring to digital representation of cities, virtual cities, cities on media, cities of avatars, second life cities, simulation (sim) cities.
- **Intelligent cities**, referring to web-based communication and digital networks within the city sustaining innovation and human capabilities. Web spaces of collective intelligence; networks of distributed intelligence; crowdsourcing; citizens empowerment through IT.
- **Smart cities**, referring to smart environments, smart communication spaces, city-based sensor networks, embedded systems into buildings, smart meters, smart phones, and mobile devices. A spatial intelligence based on real-time interaction. Data and information-based innovation ecosystems.

CITIES:
One-layer system

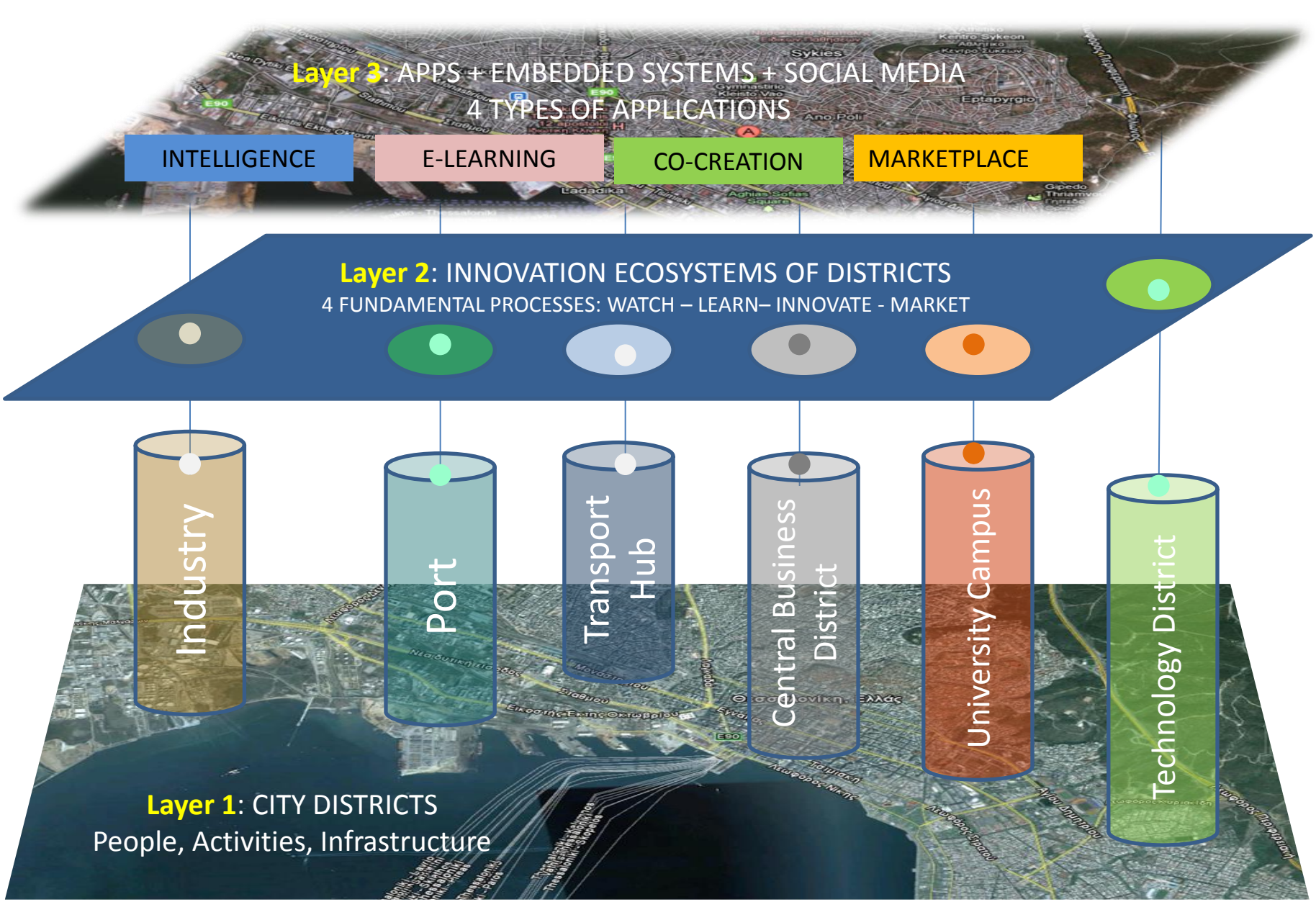


- Functional and government differentiation of urban space
- Planning at (1) city and (2) district levels

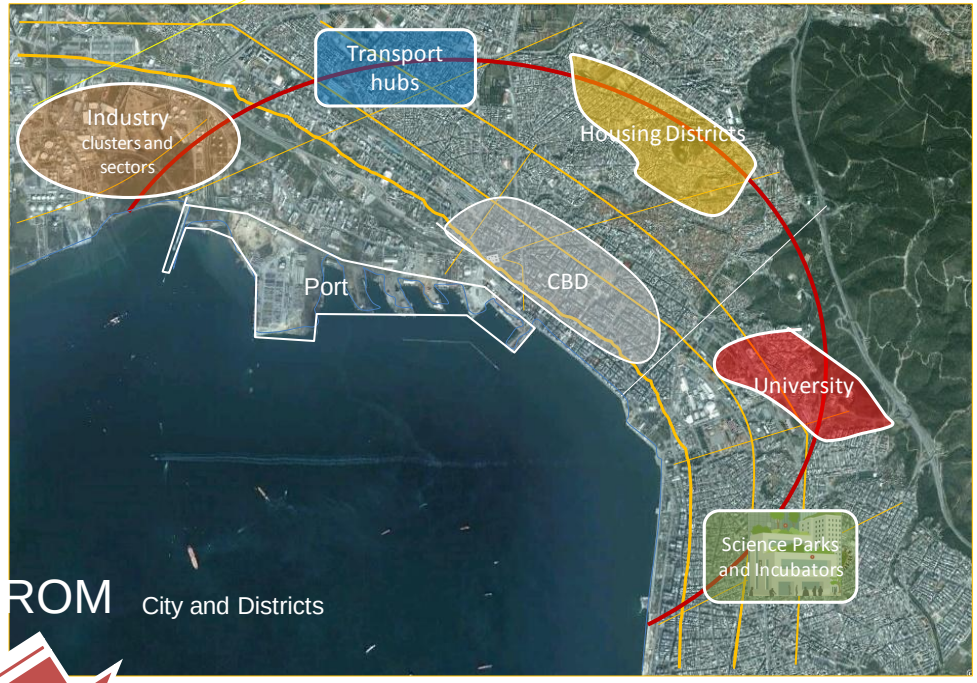
DIGITAL CITIES:
Two layers systems (physical – digital)



INTELLIGENT CITIES – SMART CITIES: Almost identical concepts
Three layers systems (physical – institutional – digital)



PLANNING INTELLIGENT CITIES
7 stages



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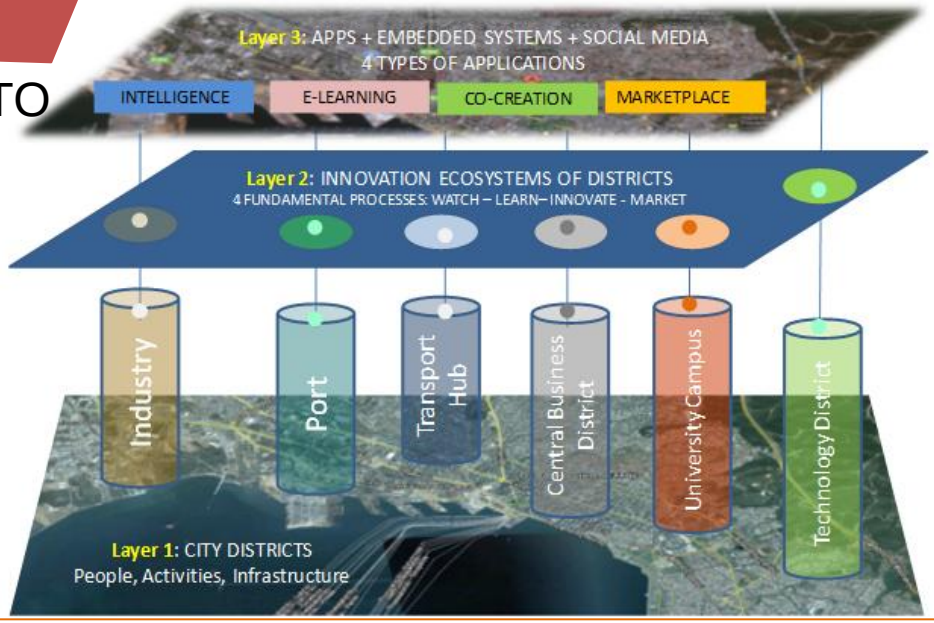


1. **L1- City:** Description of the city or district – CHALLENGES or PROBLEMS TO ADDRESS
2. **L2-Innovation ecosystem**: Analysis of knowledge creation and innovation PROCESSES and PRACTICES related to city districts and challenges
3. **L3- Digital spaces, smart spaces**: Selection of SOFTWARE, web 2.0, social media, crowdsourcing tools, sensor networks, cloud, mobile apps suitable for L1 challenges and L2 practices
4. **Smart city strategy: L1-L2-L3 integration**: Knowledge functions on P-I-D space. Spatial intelligence. Solutions to city challenges
5. **Solutions and services development**
6. **Business models** for new services sustainability
7. **Measurement**: KP Indicators - Scoreboards

PLANNING INTELLIGENT CITIES:
Integration a key issue of spatial intelligence of cities

Components / Layers

1. The city: Defining challenges

2. Innovation ecosystem(s): Institutions and processes addressing the challenges

3. **Digital space**: Technologies and solutions for smart environments

Strategy Development

4. Integration and spatial intelligence

Knowledge functions at physical – institutional - digital spaces

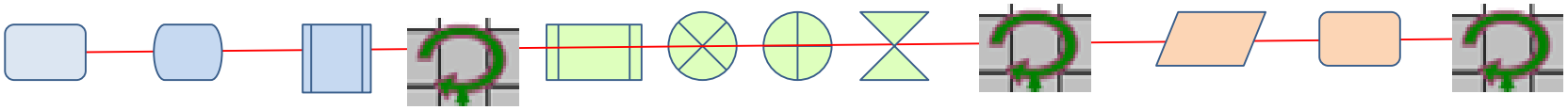
- Collective intelligence
- Learning networks
- Collaborative Innovation
- Dissemination

Implementation

5. **Solutions and services development** for districts, utilities, government.

6. **Business models** for sustainability of services

7. **Measurement index:** Documentation of impact, innovation, intelligence



Start of process

Multiple input

Subroutine

Subroutine

And /Or

Junction

Outcome / Export

End of cycle

2. Planning Intelligent Cities at URENIO: Integration solutions

THE INTEGRATION PROBLEM: Platforms connecting L1-L2-L3 and targeting on Information – Learning – Innovation - Dissemination

Home | Strategic Intelligence | Technology Dissemination | Collaborative Innovation | New Company Incubation | Virtual Tour & e-Market

Intelligent City Platforms

URENIO
URBAN & REGIONAL INNOVATION
Research Unit

Intelligent cities are **systems of innovation** combining innovative clusters, technology learning institutions, and digital innovation spaces. The platforms enable the creation of digital spaces facilitating five key innovation processes.

Intelligent City Platforms

- **Strategic intelligence,** allowing to gather, analyze and disseminate information about technologies, markets, and competitors;
- **Technology dissemination,** allowing to acquire and adapt existing knowledge;
- **Collaborative innovation,** for creating networks of product design and new product development;
- **New company creation;** and
- **Online marketing** of products, promotion and delivery of services.

Strategic intelligence

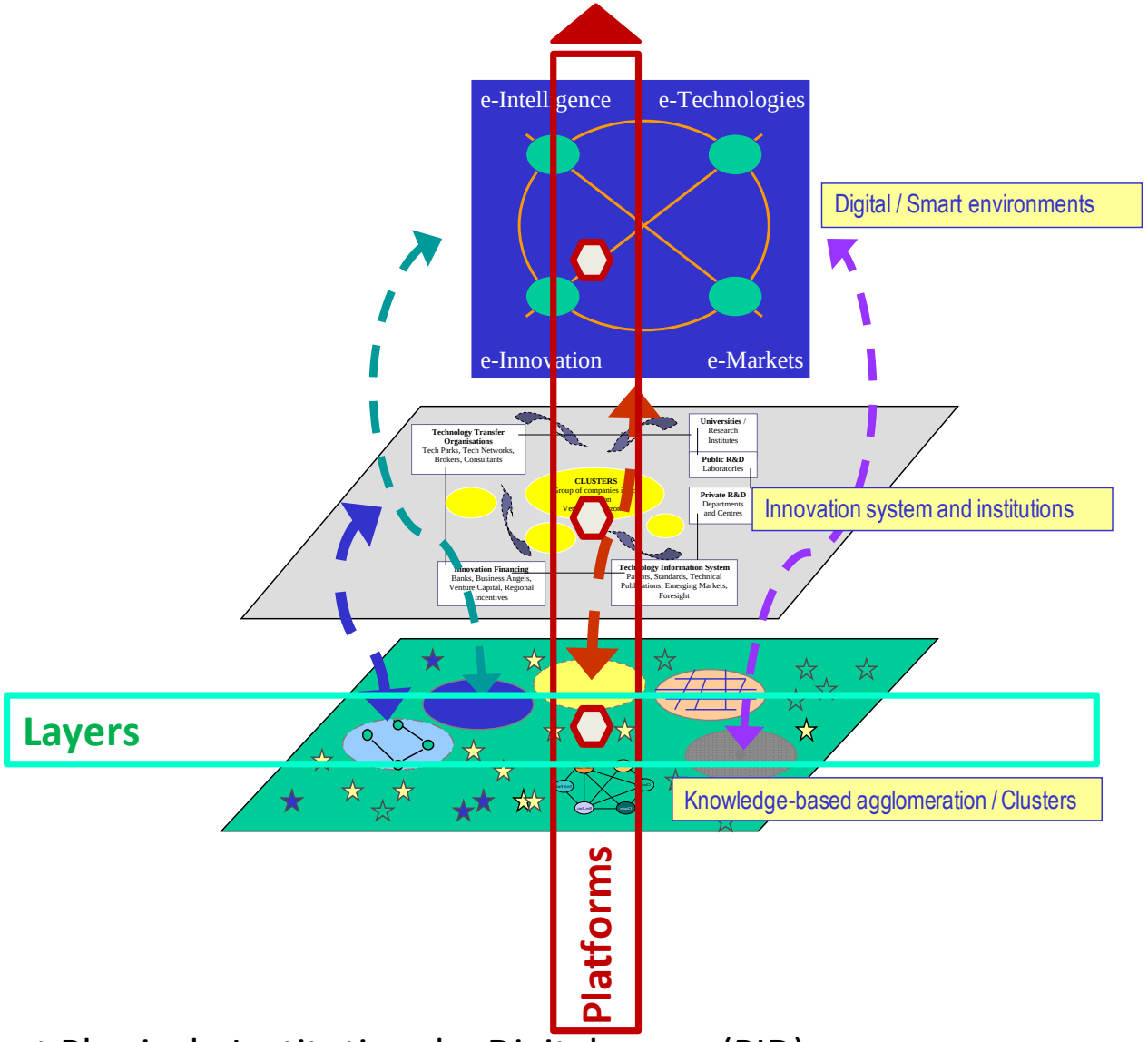
Technology Dissemination

Collaborative Innovation

New Company Incubation

Virtual Tour & e-Market

THE INTEGRATION PROBLEM: Platforms enabling Strategic Information – Learning – Innovation - Dissemination



- **Layers** are spatialities at Physical –Institutional – Digital space (PID)
- **Platforms** are knowledge facilitators at PID space: Concepts, methods, tools, apps

PLATFORM 1: Strategic intelligence

A system for strategic information / foresight inking (i) a community of users, (ii) rules for information management, and (iii) business intelligence tools

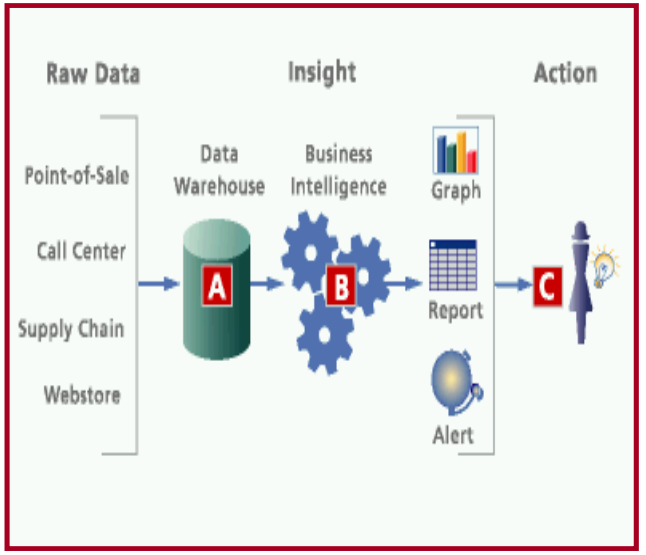
Community

- Population of the community
- Geographic area of reference / Physical space
- Social group of reference / type of cluster
- Human network of information gathering and elaboration
- Data from sensors
- Network-based information collection, dissemination , feed back

Routines - Agreements

- Sources of information and validation procedures
- Rules concerning the collection of information
- Rules concerning the community of dissemination
- Users' rights, access and privileges
- Information processing, analysis. Knowledge model
- Sustainability of information services

Digital space: BI tools



PLATFORM 2: Technology learning / absorption

A system for technology learning linking (i) a community of technology providers, (ii) institutions of technology transfer, και (iii) technology brokering and intellectual property management tools and e-services

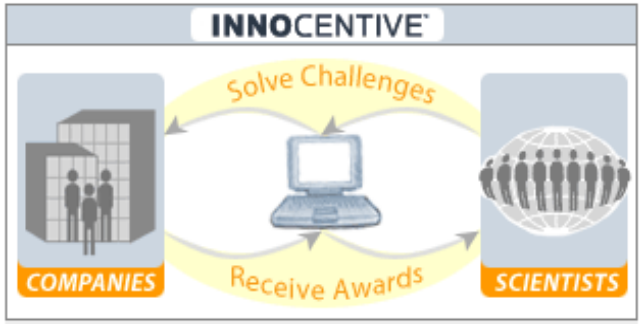
Community

- A community of technology providers
- University Labs
- Research fields
- Technology district
- Network of technology providers
- Network of technology recipients

Routines – Agreements

- IPR management rules
- Technology transfer / licensing agreements
- R&D valorization and commercialization agreements
- Spin-offs
- Technology dissemination rules
- Technology demonstration

Digital space: Brokering



PLATFORM 3: Collaborative innovation

A system for people-driven innovation based on (i) a community of users, (ii) institutions for collaborative innovation, and (iii) crowdsourcing applications and web-tools

Community

- Community of innovators
- Living Labs
- R&D and technology providers
- Innovation funding community
- Government institutions
- End users, citizens, stakeholders
- Real life environments

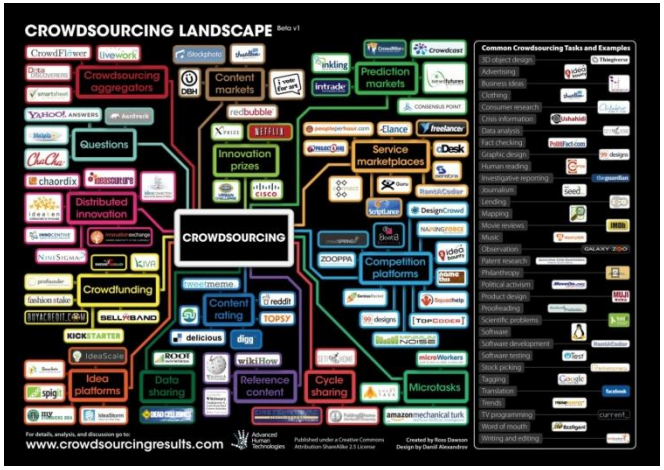
Routines - Agreements

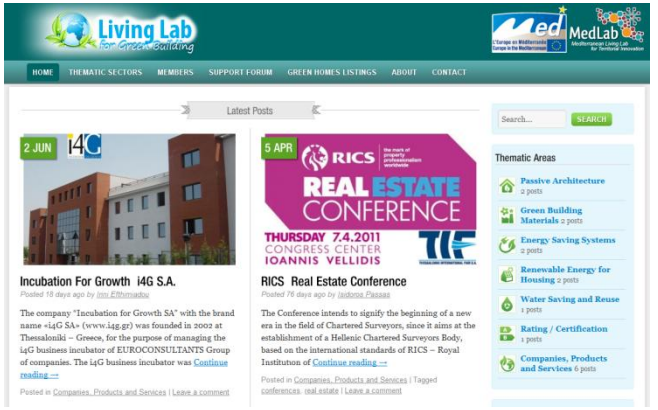
Ideas exploration:
Crowdsourcing for ideas, user evaluation of ideas

Product innovation:
- ***Co-creation*** by bringing together creative communities;
- ***Exploration*** by engaging users at the earlier stage of the co-creation process;
- ***Experimentation*** thought live scenarios and artfacts in real life situations

Co-funding though crowdfunding and investors alliances

Digital space: Crowdsourcing





PLATFORM 4: Dissemination / Promotion

A promotion / commercial system based on (i) physical spaces and a community of vendors, (ii) marketplace operation rules, and (iii) online marketplaces

Community

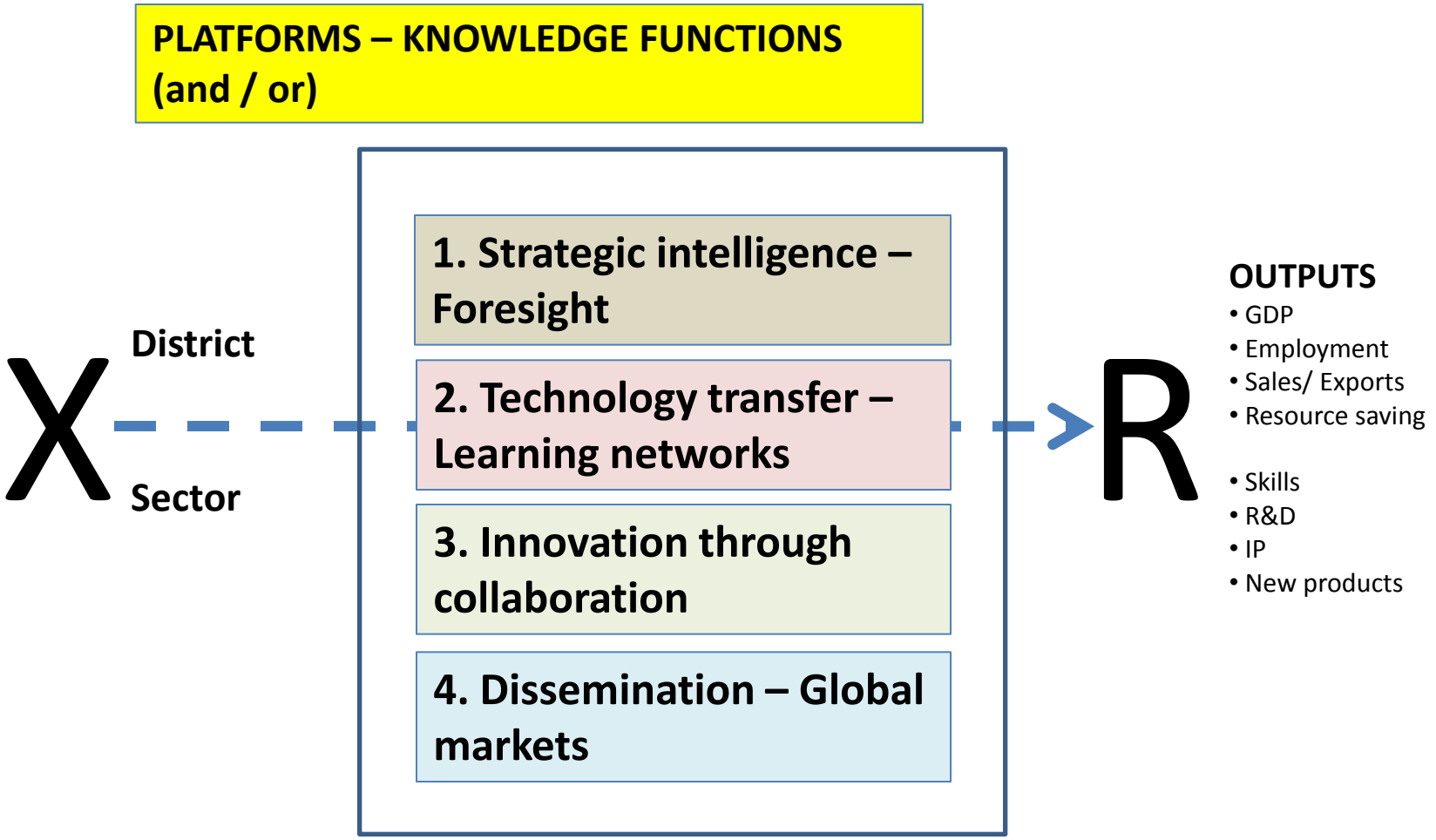
- Commercial community
- Local vendors
- CBD marketplaces
- Peripheral marketplaces
- End users / consumers
- Trade associations
- Citizens
- Accessibility facilities
- Environmental conditions

Routines - Agreements

- Information dissemination
- Promotion of products and services
- Promotion rules
- Marketing plans
- Marketing alliances
- Global supply chains
- Innovation diplomacy

Digital space: Marketplaces

Intelligent City Planning: Using Platforms at city districts / sectors



Measurement Scoreboard

3. The PEOPLE project: Planning a smart commercial district

PEOPLE: A CIP ICT-PSP project 2011-2012

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- The 2nd PEOPLE internal...
- The 1st PEOPLE internal...
- PEOPLE Kick-off meeting...

Contact PEOPLE
Anova IT Consulting, S.L.
people@anovagroup.es

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6. FAQ-App for new students
7. Physical and Electronic Bulletin
8. Instant Message Service
9. Borrow books with NFC
10. NFC access control

Login Form
Username: urenio
Password: ••••••••
Login
Forgot your password?
Create an account

Newsletter
SubScribe to our newsletter!
Name
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search...
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cip competitiveness and innovation framework programme 2007-2013

ICT Policy Support Programme

Partners

Anova IT Consulting, S.L. (Coordinator – Bilbao Pilot Leader)
Avda. Punto Mobi 4 , 28805 Alcalá de Henares, Madrid
Tlf. +34 91 830 59 77, Fax. +34 91 830 59 28, e-mail: People@anovagroup.es

Ariadna Servicios Informaticos, S.L.
C/ Albasanz 76 1º, Madrid
Tel/ Fax no: +34 91 502 14 90 / +34 91 754 16 68, e-mail: lbourg@asi-soft.com

Université Paris XII – Val de Marne – LISSI (Vitry sur Seine Pilot Leader)
120-122 Rue Paul Armangot, 94400, Vitry-Sur-Seine
T.: +33 1 418 07, F.: + samer.mohammed@u-pec.fr

CityPassenger S.A.
1 avenue de l'Atlantique, Les Conquérants, Z.A. de Courtaboeuf, 91940 Les Ulis, FRANCE
T.: +33 (0) 1 60 13 85 90, e-mail: contact@citypassenger.com

LOGOTECH S.A. (Thermi Pilot Leader)
220, Kifissias Ave., GR 152 31, Halandri, Greece
T. +30 210 67 77 805, F. +30 210 6777231, e-mail: kaloumenou@logotech.gr

Municipality of Thermi
1, Dimokratias str., GR 57001, Thermi, Greece
Tel: +30 2313300777, Fax: +30 2313300711, e-mail: ipavlou@dimosthermis.gr, ipandelidou@dimosthermis.gr

Aristotle University of Thessaloniki – URENIO (Thermi Pilot Co-Leader)
54124 Thessaloniki, Greece, e-mail: patsar@auth.gr

Universitatet Bremen (Bremen Pilot Leader)
Hochschulring 20, D-28359 Bremen, Germany
T.: + 49(0)421/218-5547 , e-mail: sf@biba.uni-bremen.de

Cassidian SAS
Parc d'Affaires des Portes - BP 613, 27106 Val-de-Reuil Cedex – France
Tel/ Fax no : tel = +33 2 32 63 41 61, e-mail : marc.contat@cassidian.com

PEOPLE concept

PEOPLE consist of four Pilot Smart Open Innovation Urban Ecosystems (PEOPLE Pilots) created to become seeds towards sustainable smart cities based on ICT services.

The Pilots are structured in four layers:

FIGURE 1: Pilot Structure

1. **Basic layer**: Hold all necessary infrastructures for running the Pilots foreseen. People will build its results onto this layer.

CITIES AND PEOPLE

2. **Citizens Layer**: Methodology (processes, standards and indicators) for create and manage People smarts Urban Ecosystems based on a user-centric open innovation approach.

INNOVATION ECOSYSTEMS

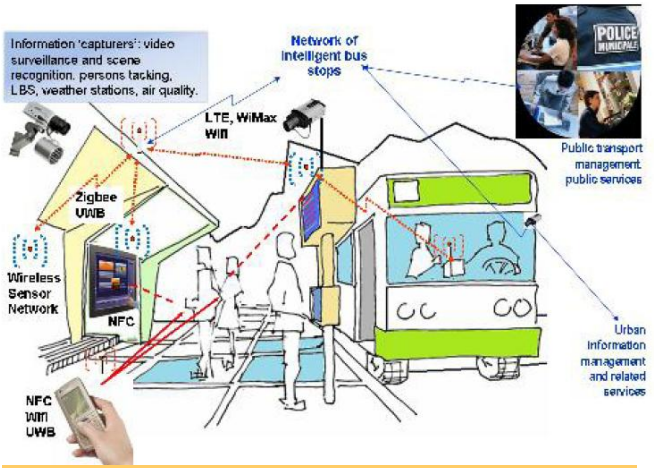
3. **Services Layer**: ICT Services portfolio really integrated, composed, adapted and/or deployed at each Pilot. This services answer to the actual interests and needs of the different stakeholders in the Pilot and are focused in Smart mobility and urban information management and Social integration.

DIGITAL SPACES

4. **Monitoring layer**: Statistical data from each Pilot will be analysed for carrying out modelling and simulation activities in order to appraise behaviours and user patterns that will allow for the identification of new service opportunities towards the future sustainability of the Pilots and the creation of new ones. The idea is that these models are global, and the result of the joint knowledge generated during the project.

MONITORING

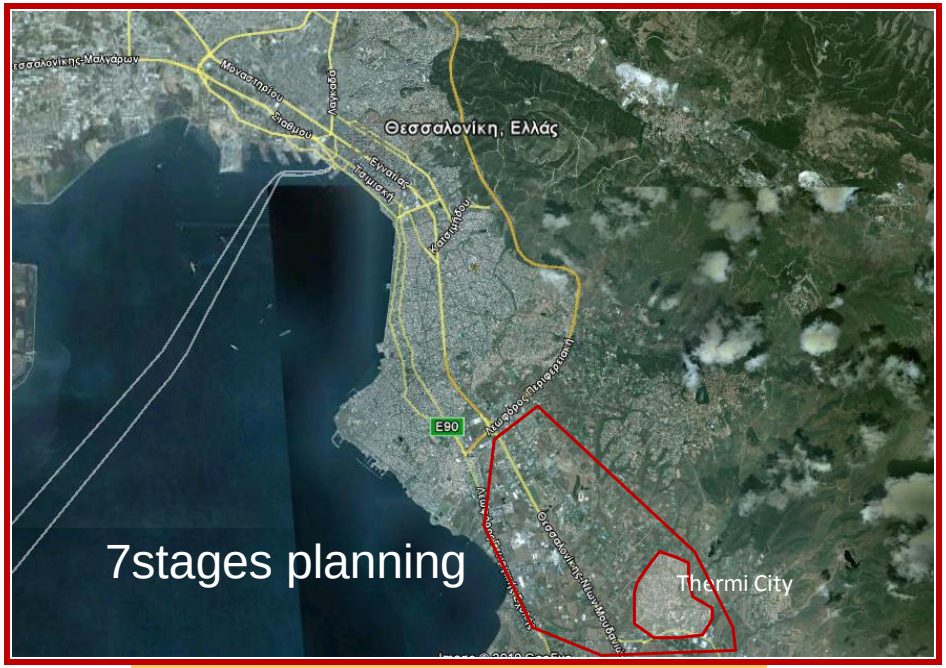
FOUR PILOTS



Vitry-sur-Seine, Paris, FR

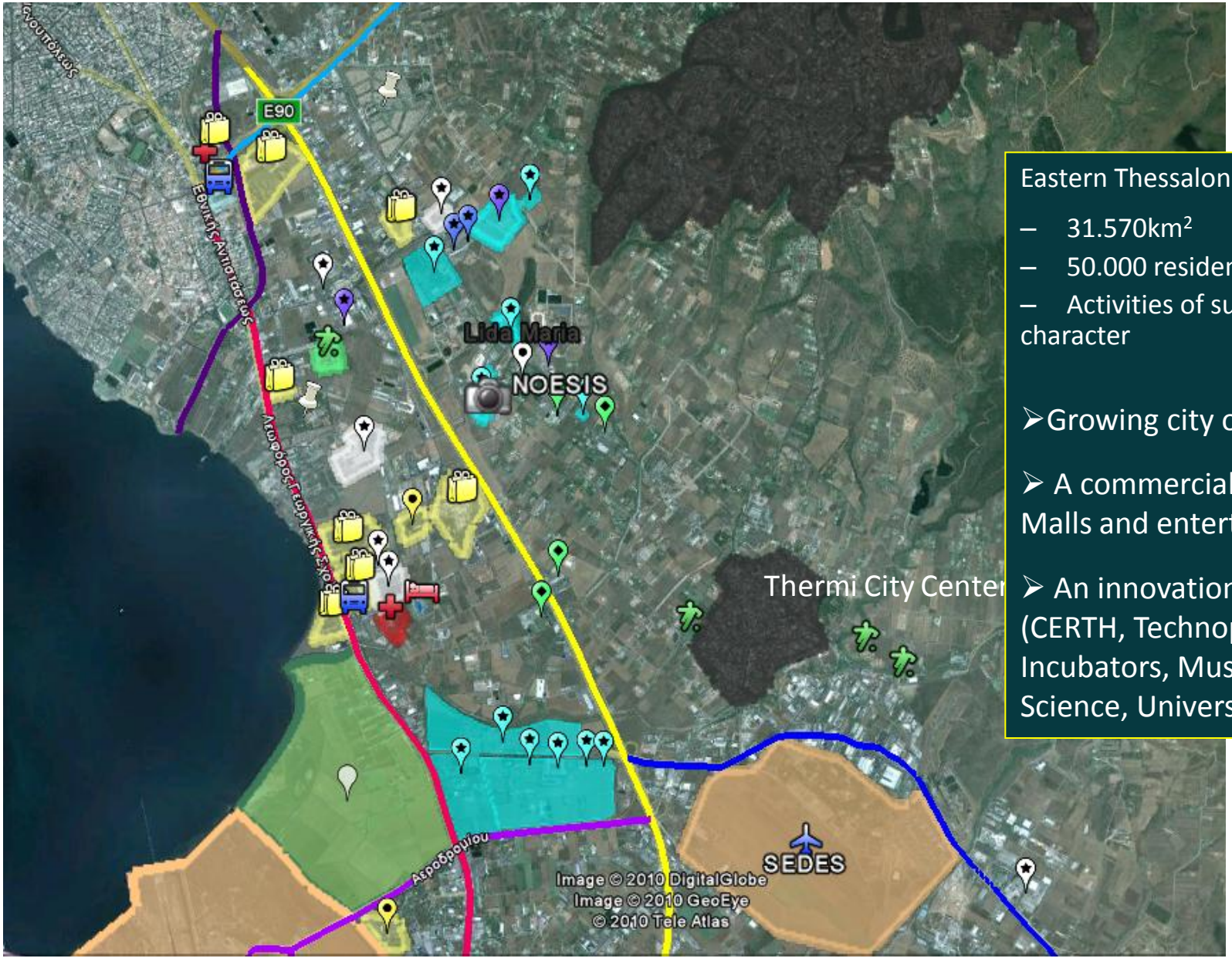
Abando District, Bilbao, ES

Technology Park University of Bremen, GE



City of Thermi, Thessaloniki, GR

1. L1: Describing the City and the Challenges (Eastern Thessaloniki)



Eastern Thessaloniki

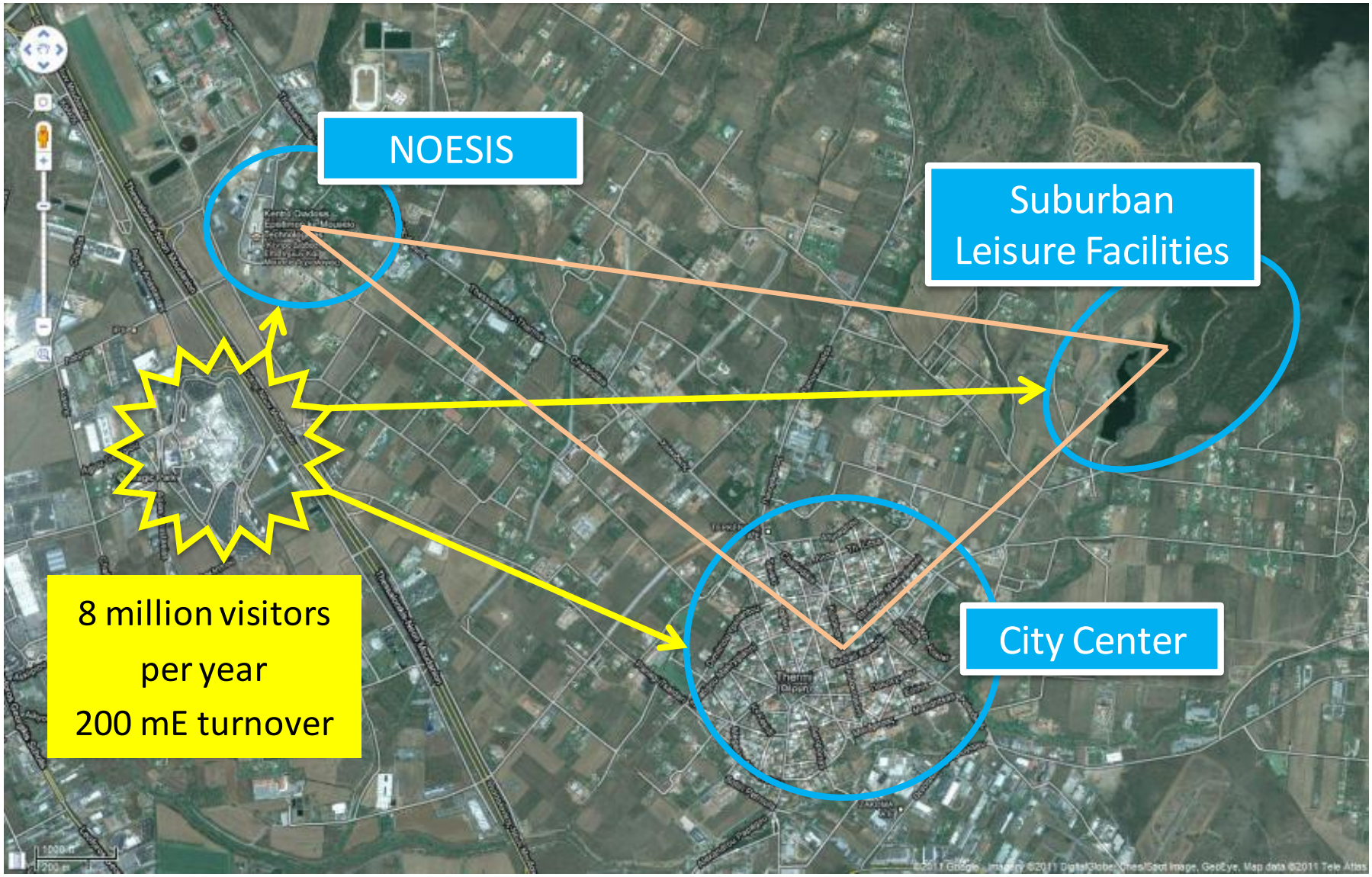
- 31.570km^2
- 50.000 residents
- Activities of supra-local character

➢Growing city of Thermi

➢ A commercial district / Malls and entertainment

➢ An innovation district (CERTH, Technopolis, Incubators, Museum of Science, Universities

2. L2: Defining the innovation ecosystem (a commercial ecosystem)



3. L3: Selecting digital spaces and smart applications

1. Objectives: Problem to solve

- **Create a platform for smart commercial / entertainment district**
- Increase the commercial hinterland of Thermi's CBD
- Take advantage of the huge commercial activity of MED COSMOS

2. Survey for solutions

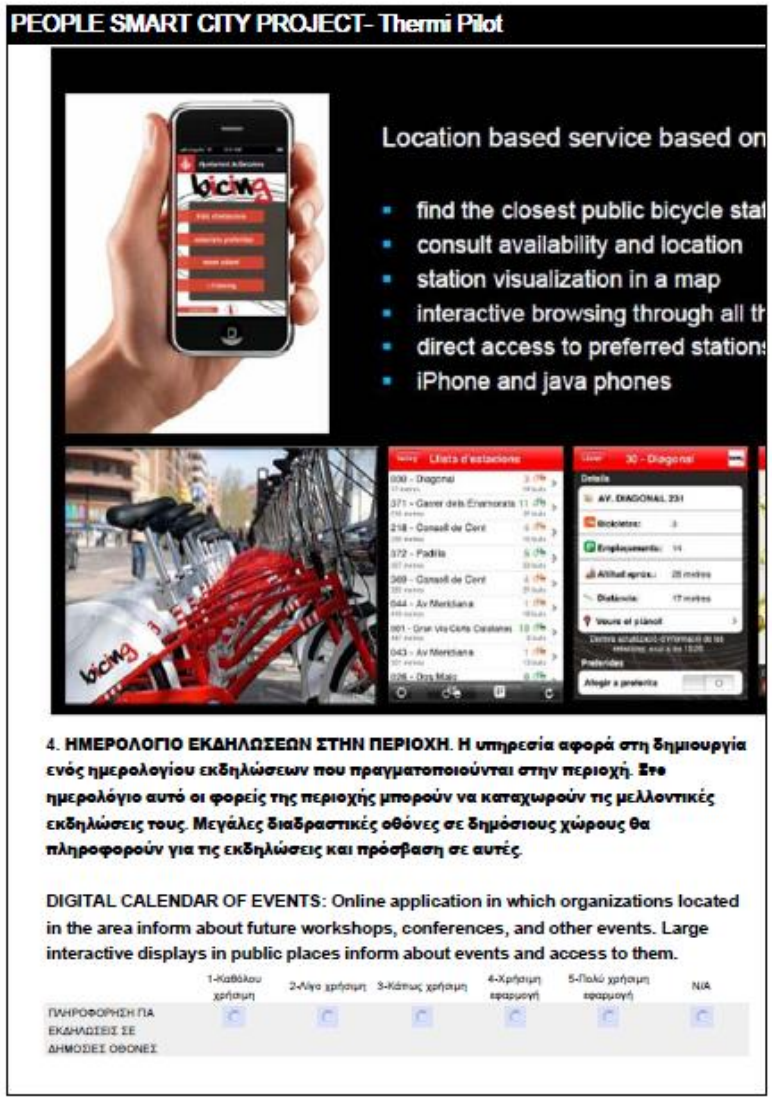
- Initial ideas in PEOPLE DoW
- **OPEN SOURCE SOLUT.**
- Literature review -20 solutions
- Meetings and proposals by stakeholders
- Data models for different solution

3. Constraints

- Estimation about achievable Process and Results indicators
- Applications development costs
- Data and content creation costs
- Business models for sustainability

4. Integration: Search for spatial intelligence

I. Connecting service providers and users: A public consultation


PEOPLE SMART CITY PROJECT- Thermi Pilot

Location based service based on

- find the closest public bicycle stat
- consult availability and location
- station visualization in a map
- interactive browsing through all th
- direct access to preferred station
- iPhone and java phones

4. **ΗΜΕΡΟΛΟΓΙΟ ΕΚΔΗΛΩΣΕΩΝ ΣΤΗΝ ΠΕΡΙΟΧΗ. Η υπηρεσία αφορά στη δημιουργία ενός ημερολογίου εκδηλώσεων που πραγματοποιούνται στην περιοχή. Στο ημερολόγιο αυτό οι φορείς της περιοχής μπορούν να καταχωρούν τις μελλοντικές εκδηλώσεις τους. Μεγάλες διαδραστικές οθόνες σε δημόσιους χώρους θα πληροφορούν για τις εκδηλώσεις και πρόσβαση σε αυτές.**

DIGITAL CALENDAR OF EVENTS: Online application in which organizations located in the area inform about future workshops, conferences, and other events. Large interactive displays in public places inform about events and access to them.

	1-Καθόλου χρήσιμη	2-Λίγο χρήσιμη	3-Κάπως χρήσιμη	4-Χρήσιμη εφαρμογή	5-Πολύ χρήσιμη εφαρμογή	N/A
ΠΛΗΡΟΦΟΡΗΣΗ ΓΙΑ ΕΚΔΗΛΩΣΕΙΣ ΣΕ ΔΗΜΟΣΙΕΣ ΟΘΟΝΕΣ						

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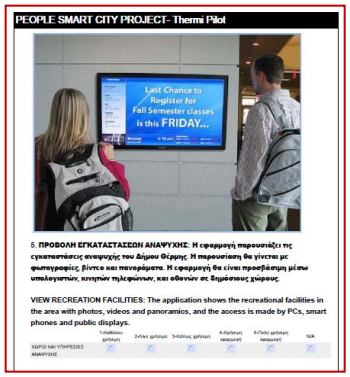
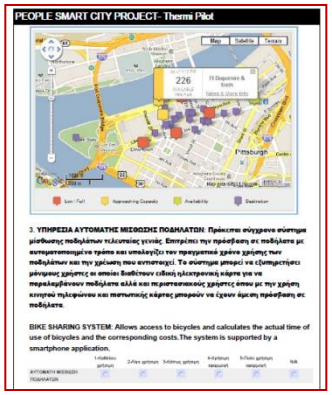

PEOPLE SMART CITY PROJECT- Thermi Pilot

5. **ΠΡΟΒΟΛΗ ΕΓΚΑΤΑΣΤΑΣΕΩΝ ΑΝΑΨΥΧΗΣ. Η εφαρμογή παρουσιάζει τις εγκαταστάσεις αναψυχής του Δήμου Θέρμης. Η παρουσίαση θα γίνεται με φωτογραφίες, βίντεο και πανοράματα. Η εφαρμογή θα είναι προσβάσιμη μέσω υπολογιστών, κινητών τηλεφώνων, και οθονών σε δημόσιους χώρους.**

VIEW RECREATION FACILITIES: The application shows the recreational facilities in the area with photos, videos and panoramics, and the access is made by PCs, smart phones and public displays.


PEOPLE SMART CITY PROJECT- Thermi Pilot

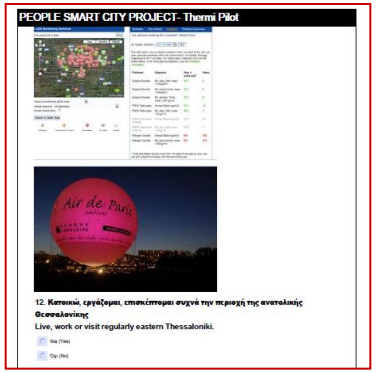
3. **ΥΠΗΡΕΣΙΑ ΑΥΤΟΜΑΤΗΣ ΜΙΣΘΩΣΗΣ ΠΟΔΗΛΑΤΩΝ. Πρόκειται σύγχρονα σύστημα μίσθωσης ποδηλάτων τελευταίας γενιάς. Επιτρέπει την πρόσβαση σε ποδήλατα με αυτοματοποιημένο τρόπο και υπολογίζει τον πραγματικό χρόνο χρήσης των ποδηλάτων και την χρέωση που αντιστοιχεί. Το σύστημα μπορεί να εξυπηρετήσει μόνιμους χρήστες οι οποίοι διαθέτουν ειδική ηλεκτρονική κάρτα για να παραλαμβάνουν ποδήλατα αλλά και περιστασιακούς χρήστες όπως με την χρήση κινητού τηλεφώνου και πιστωτικής κάρτας μπορούν να έχουν άμεση πρόσβαση σε ποδήλατα.**

BIKE SHARING SYSTEM: Allows access to bicycles and calculates the actual time of use of bicycles and the corresponding costs.The system is supported by a smartphone application.


PEOPLE SMART CITY PROJECT- Thermi Pilot

7. **ΨΗΦΙΑΚΟΣ ΧΩΡΟΣ ΜΑΘΗΣΗΣ: Αφορά στη ανάπτυξη ενός ψηφιακού περιβάλλοντος μέσα στο οποίο οι χρήστες θα μπορούν να δημιουργούν ψηφιακό περιεχόμενο εκπαιδευτικού και επιμορφωτικού χαρακτήρα (video, παρουσιάσεις με αφήγηση, κείμενα, διαλέξεις, μαθήματα). Η μάθηση συνδέεται με ανταμοιβές εκπαιδευτικού χαρακτήρα.**

DIGITAL LEARNING SPACE: A digital environment in which users can create educational and learning digital content videos, presentations with narration, texts, lectures, courses), learning takes the form of game, and learning is associated with rewards of educational character.


PEOPLE SMART CITY PROJECT- Thermi Pilot

12. **Κατοικοι, εργάζομαι, επισκέπτομαι συχνά την περιοχή της ανατολικής Θεσσαλονίκης**
Live, work or visit regularly eastern Thessaloniki.


PEOPLE SMART CITY PROJECT- Thermi Pilot

9. **ΕΠΑΓΓΕΛΜΑΤΙΚΟΣ ΟΔΗΓΟΣ: Αφορά στη δημιουργία ψηφιακού καταλόγου που θα παρουσιάζει τα καταστήματα και τους επαγγελματίες της περιοχής, τοποθετημένα με τη μορφή θεματικού καταλόγου αλλά και πάνω στο χάρτη. Περίπου 400 καταστήματα λειτουργούν στο κέντρο της πόλης ενώ μεγάλος είναι και ο αριθμός των επαγγελματιών. Για την καλύτερη οργάνωση του υλικού η πληροφόρηση θα προσφέρεται σε κατηγορίες όπως π.χ. ξενοδοχεία, εστιατόρια, καταστήματα ένδυσης, μεσιτικά γραφεία, γιατροί, δικηγόροι, κλπ.**

ONLINE YELLOW PAGES: Concerns a digital inventory of services and professionals, about 400, which operate in the city center. Information is displayed by category and location, including hotels, restaurants, clothing stores, real estate, doctors, lawyers, etc.


PEOPLE SMART CITY PROJECT- Thermi Pilot

6. **ΕΚΘΕΣΕΙΣ ΤΟΥ ΜΟΥΣΕΙΟΥ ΝΟΗΣΙΣ ΣΕ ΚΙΝΗΤΑ ΤΗΛΕΦΩΝΑ: Πρόκειται εφαρμογές οι οποίες θα τρέχουν σε «έξυπνα» κινητά τηλέφωνα και θα παρουσιάζουν τις εκθέσεις, πληροφορίες και περιήγηση στα εκθέματα, καθώς και τις εκδηλώσεις του Κέντρου Διάδοσης Επιστημών & Μουσείου Τεχνολογίας – ΝΟΗΣΙΣ.**

EXHIBITIONS OF NOESIS MUSEUM IN MOBILE PHONES: A series of applications that present exhibitions and guide to exhibits of the Center for Science & Technology Museum on smartphones.

12. **Κατοικοι, εργάζομαι, επισκέπτομαι συχνά την περιοχή της ανατολικής Θεσσαλονίκης** Live, work or visit regularly eastern Thessaloniki.

	Response Percent	Response Count
Ναι (Yes)	93.2%	179
Όχι (No)	6.8%	13
answered question		192
skipped question		8

(cont)
Public consultation: Evaluation by 200 users + use cases by stakeholders

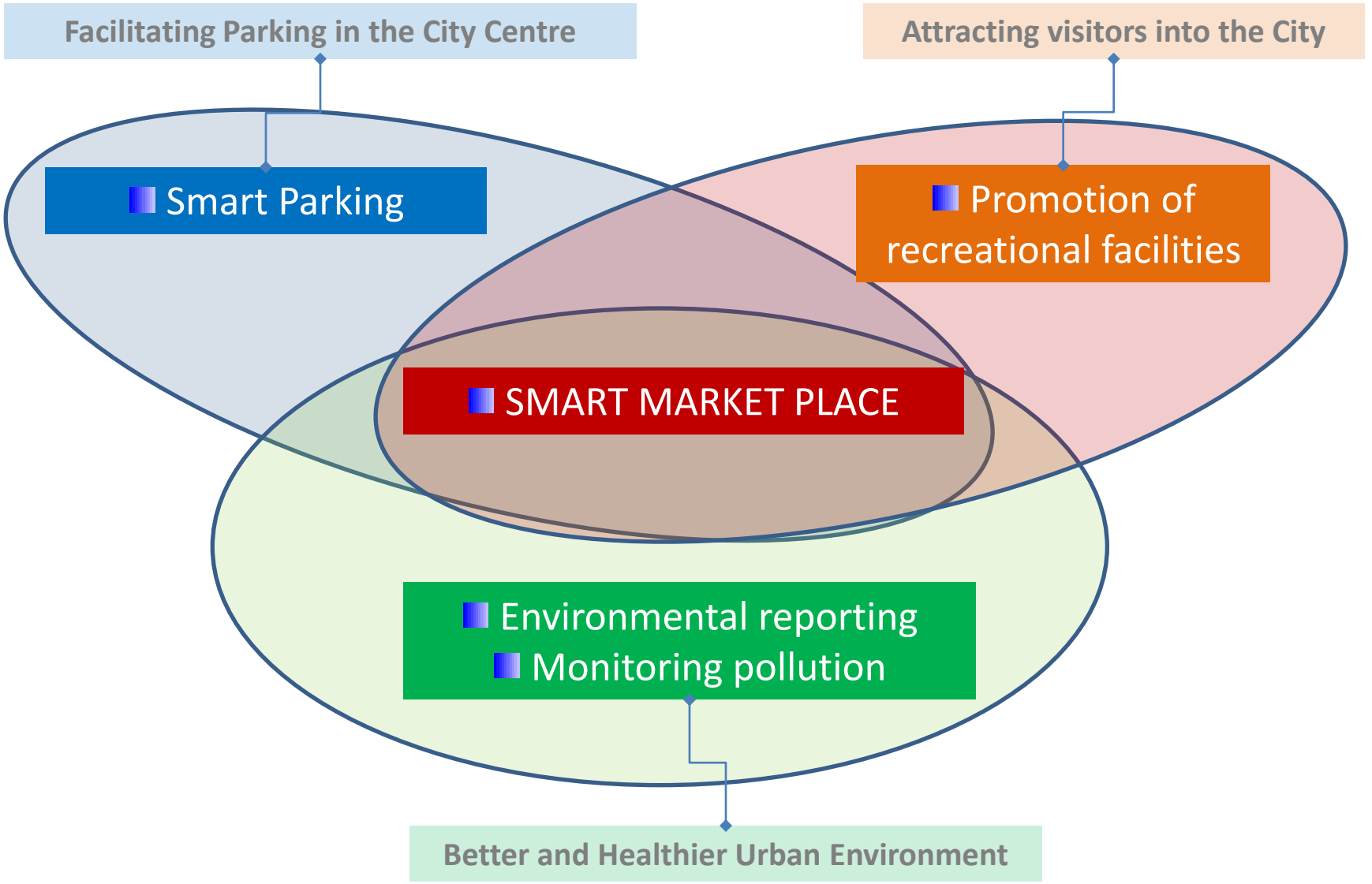
Table 1: **SELECTED APPS AND SERVICES**

198 responses

		SCORES (%)									
		1	2	3	4	5	na	Based on 5	Based on 4+5		Selected apps
1	BEST ROUTE PLANNER	0,50	4,70	11,40	31,10	**52,30**	0,00	2	83,40	2	
2	PARKING SPACES AVAILABILITY	0,50	1,00	7,70	19,60	**70,60**	0,50	1	90,20	1	1 web +cellphone
3	BIKE SHARING SYSTEM	0,50	6,20	17,40	32,80	**42,10**	1,00	3	74,90	3	2 web +cellphone
4	DIGITAL CALENDAR OF EVENTS	0,5	4,6	20	32,3	**41,5**	1	2	73,80	2	
5	RECREATION FACILITIES GUIDE	0	6,7	18,6	**43,3**	31,4	0	4	74,70	4	3 web +cellphone
6	MUSEUM IN MOBILE PHONES GUIDE	2,1	10,3	26,2	**37,4**	24,1	0		61,50		cell phone
7	DIGITAL LEARNING SPACE	1,6	6,3	19,9	34,6	**35,6**	2,1	3	70,20	3	
8	VIRTUAL MARKETPLACE	1	9,8	17,5	34	**37,1**	0,5	1	71,10	1	4 web + screens
9	ONLINE YELLOW PAGES	0,5	4,1	14,4	37,4	**43,6**	0		81,00		
10	CITIZENS REQUESTS	0	0,5	3,1	19,5	**75,4**	1,5	1	94,90	1	5 web +cellphone
11	WIRELES ATMOSPHERIC POLLUTION	1,5	4,1	17,9	33,7	**41,8**	1	2	75,50	2	6 web +cellphone

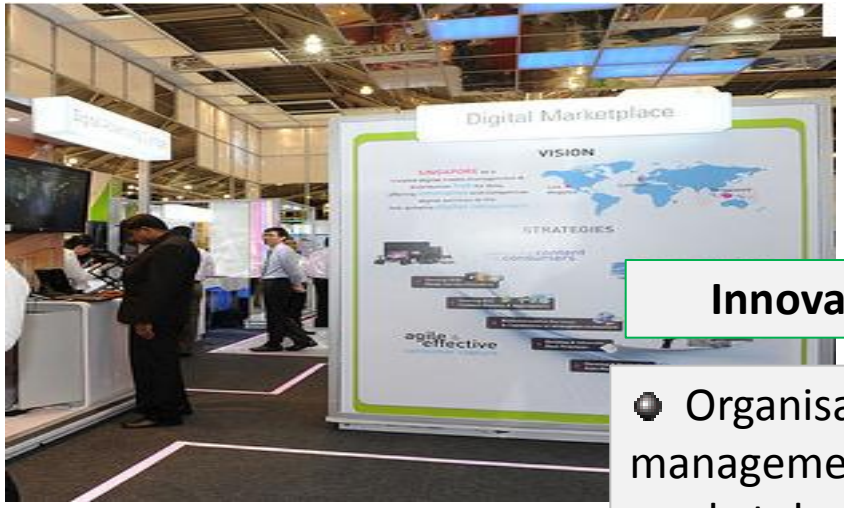
Integration

II. Connecting applications and e-services



Integration

III. Connecting communities–innovation ecosystems–smart marketplaces



Communities

- Commercial community
- Local vendors
- Larger marketplaces
- End users / consumers
- Citizens
- Local trade association

Innovation Routines

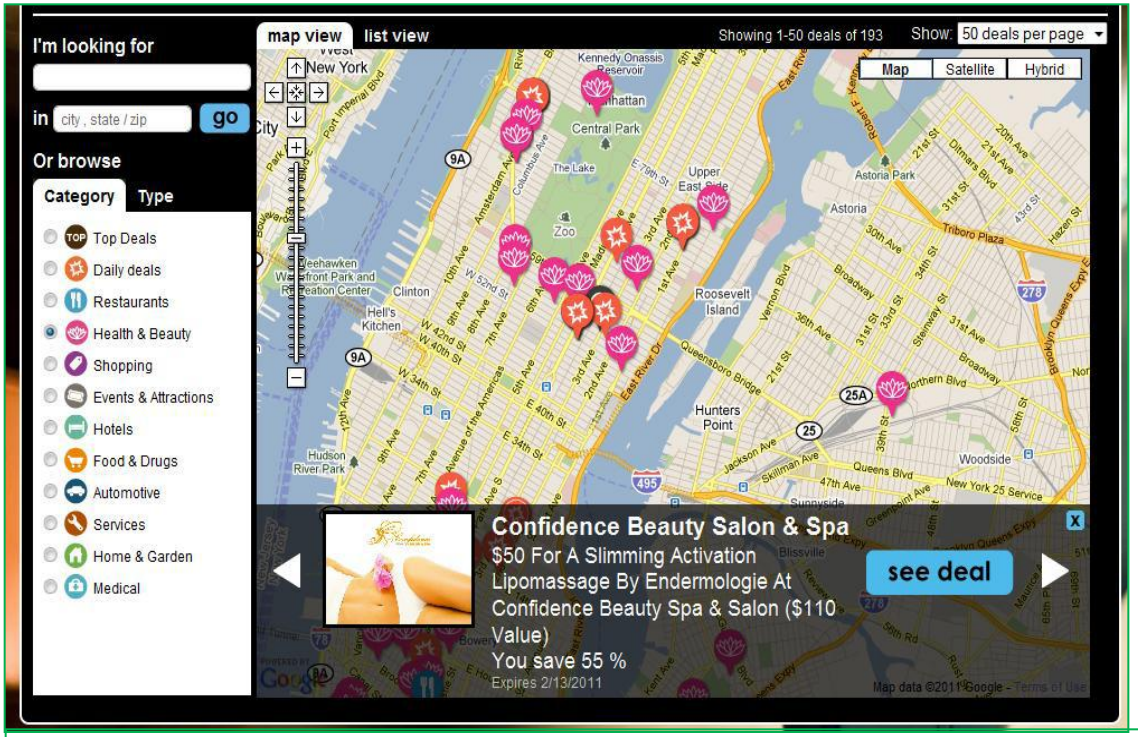
- Organisation and management of the digital marketplace
- Promotion of products and services rules
- Learning the art of digital marketing
- Marketing alliances
- Cooperative suppliers selections

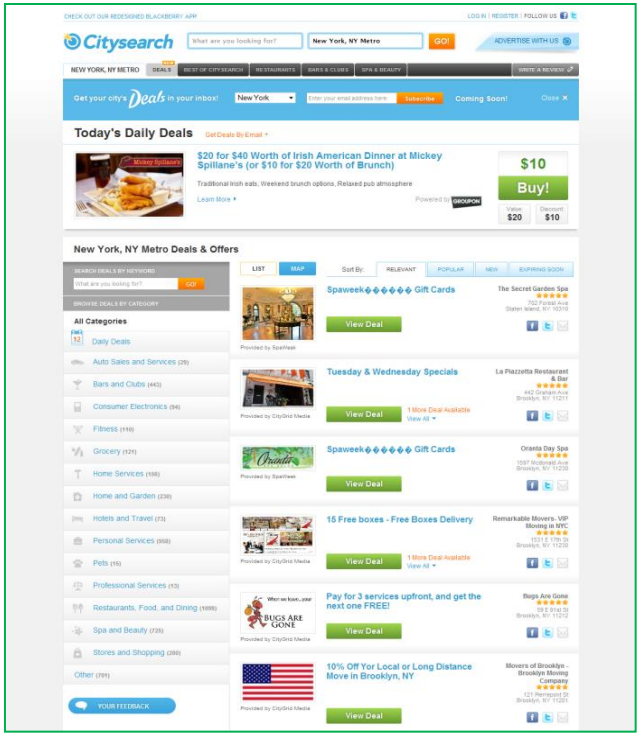
Digital Marketplace

- Business Directory
- Virtual marketplace
- Product / services offer
- Promotion coupons
- Find the best offer
- Recreation virtual guide
- Public screen access points
- Finding a parking place
- Environmental pollution visualization and alert
- Citizens environmental requests

5. Solutions and services development

Core service: SMART MARKETPLACE based on CROWSOURCING



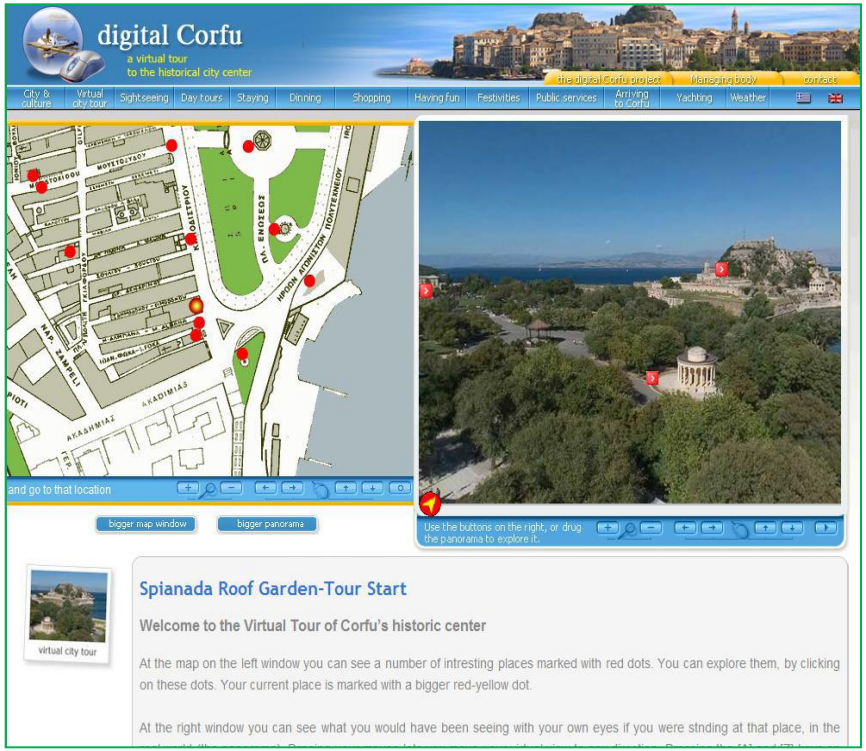


The service aim to sustain the local marketplace and local businesses. It will consist of five subsystems / applications:

- ***A business directory*** which will present the local businesses and professionals (about 400) on the city map.
- ***A virtual representation of the local marketplace and shops***.
- **A *coupon site containing promotional codes***, from local retailers and professionals, offering discounts to specific products and services.
- ***An Optimisation Engine*** - "Best buy" based on open data available from the relative price watch system
- ***A review engine*** that assists customers in gathering local shopping information, posting reviews, assessments and opinions of local shopping.

5. Solutions and services development

Core service: RECREATION MARKET - VIRTUAL GUIDE

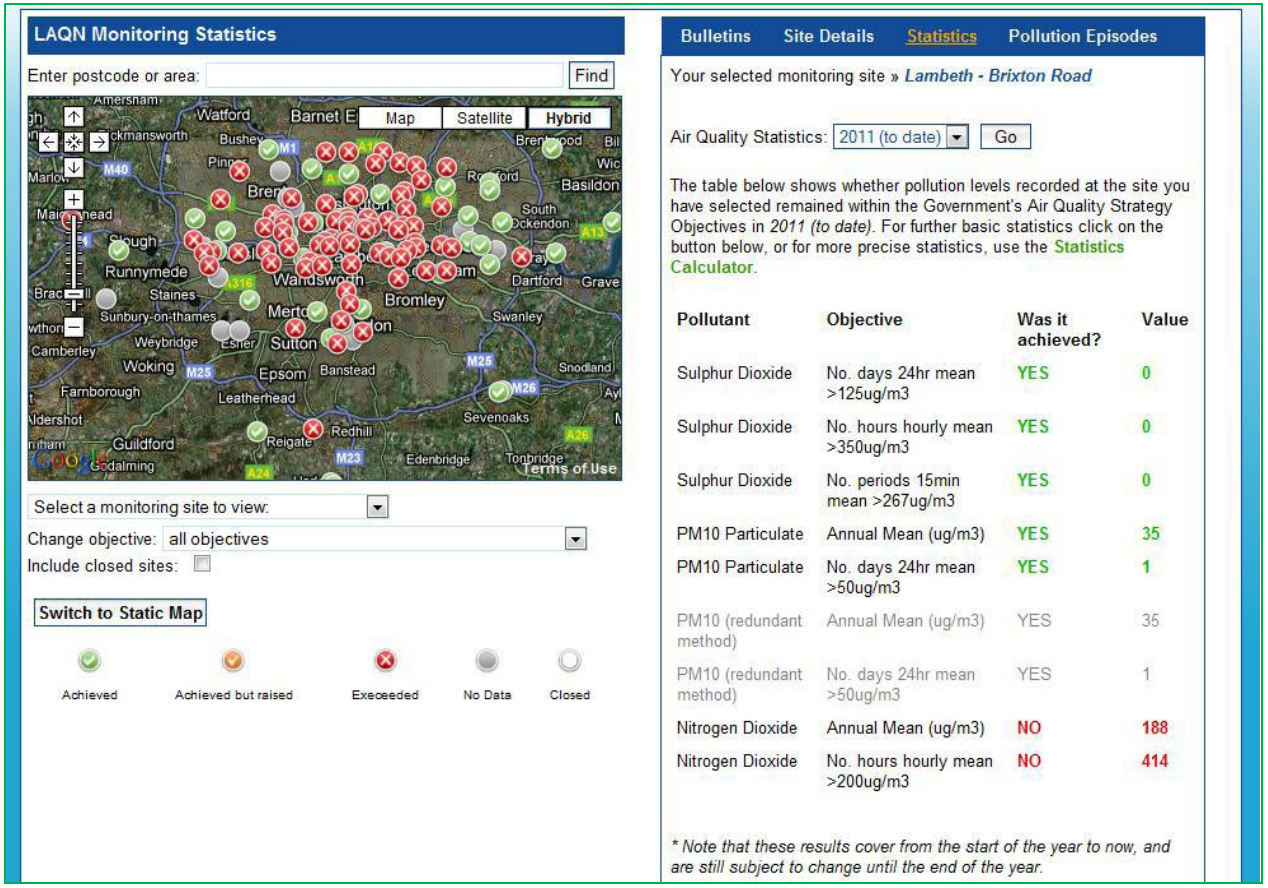


The service supports the creation of virtual tours of recreation facilities using interactive maps, 360o panoramas, video and three-dimensional images, and the access is made by PCs, smart phones and public displays. It can be complemented by a series of sub-applications that present exhibitions and guide to exhibits of the Center for Science & Technology Museum on smart phones. A free Wi-Fi networks is prerequisite.

5. Solutions and services development
Complementary service: PARKING SPACE AVAILABILITY

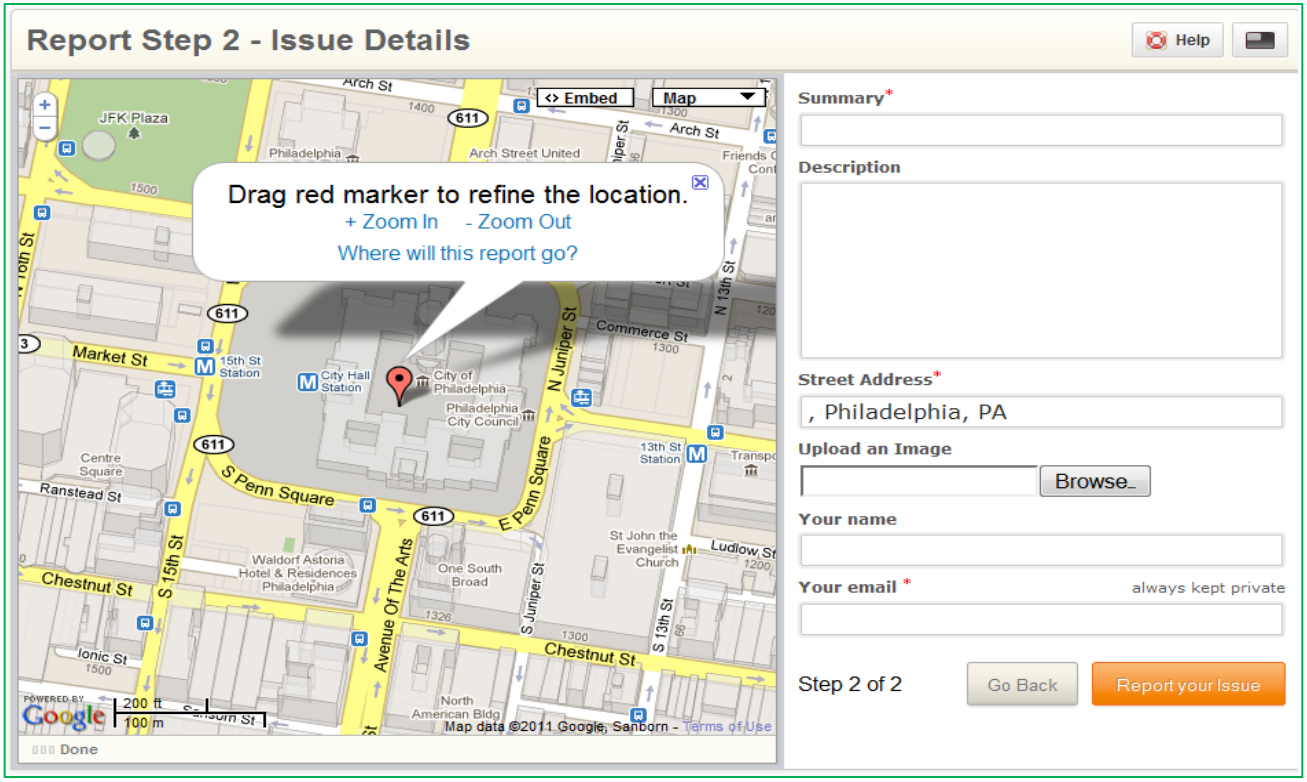
The service is based on Parking Finder Tool which provides real-time parking for garages in city's center. In the simplest form this application will inform about available parking places in the area (location, price etc), and in more advanced form will include dynamic real-time information **based on sensors** about parking at different places (e.g. on-street metered parking). The application can be accessed through the web or smart phones.

5. Solutions and services development
Complementary service: AIR POLUTION MONITORING



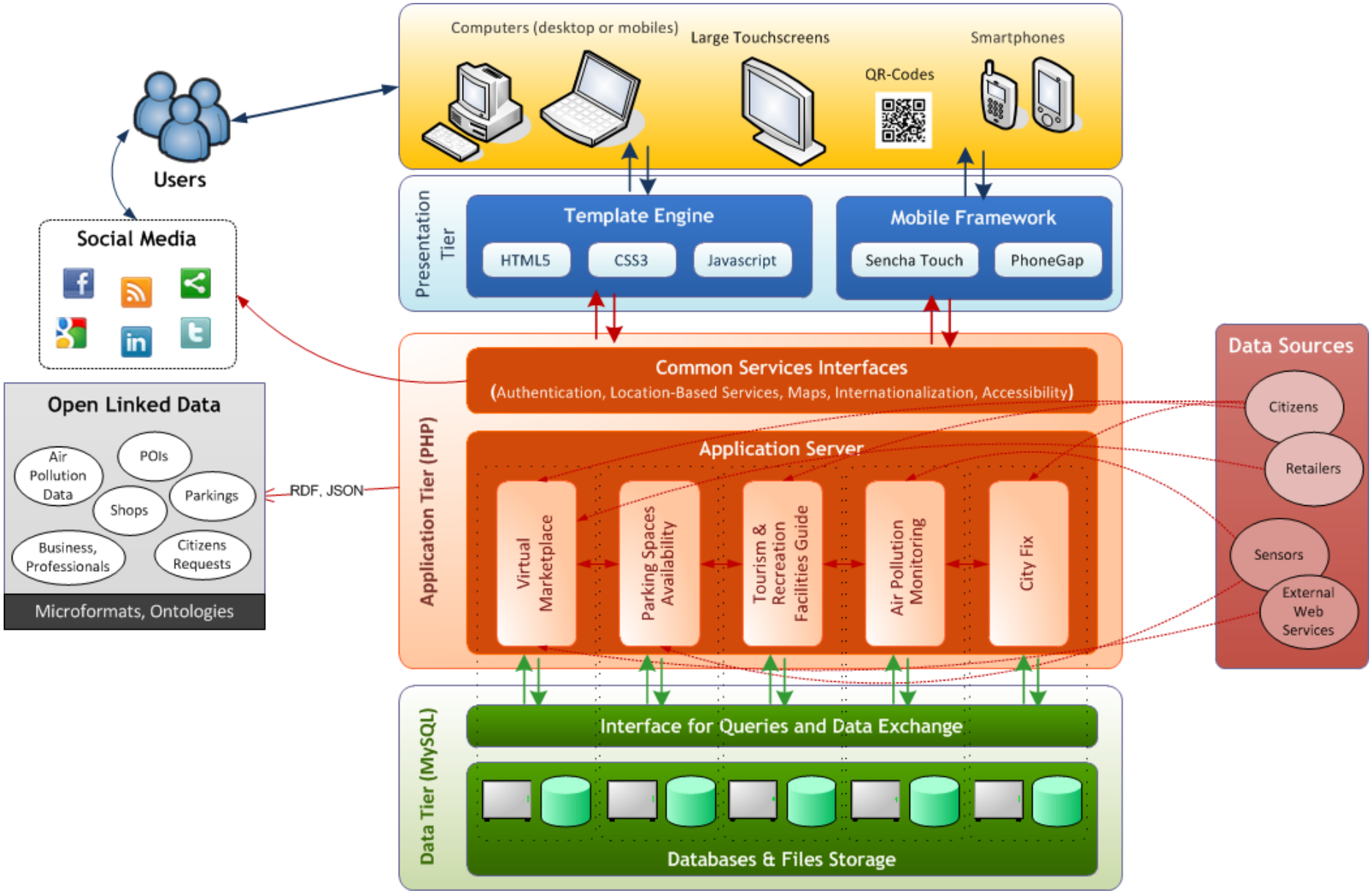
Information service based on a **network of wireless sensors** that measure air pollution (CO2, nitrogen oxides, microparticles, pollen) and send measurements to a central hub. Data are presented to citizens on digital and physical displays, screens and balloons at different locations.

5. Solutions and services development
Complementary service: CITIZENS ENVIRONMENTAL REQUESTS

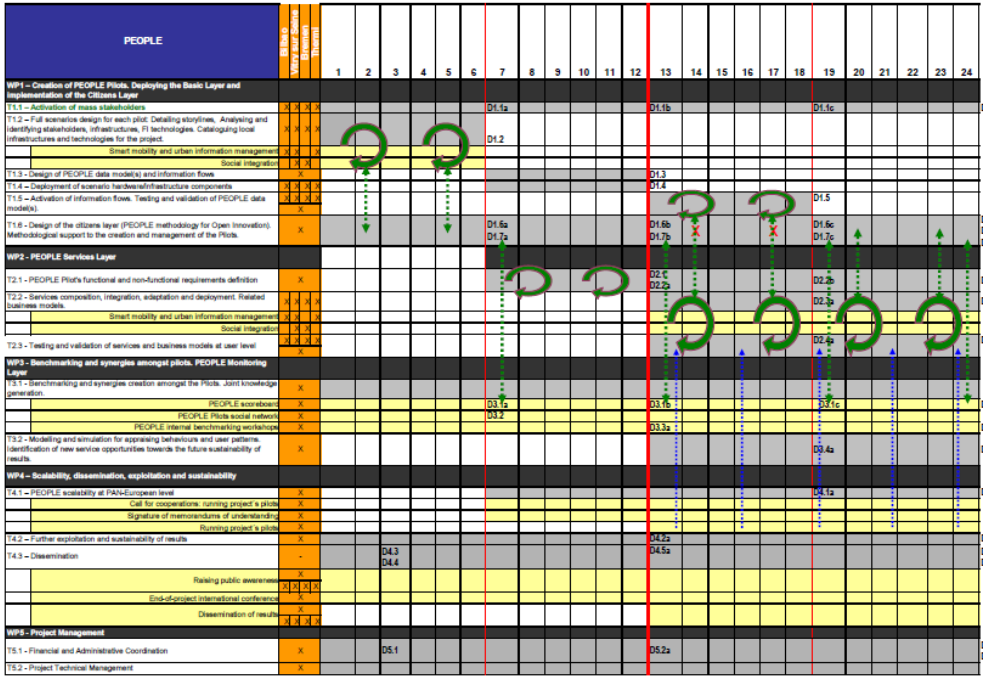


The service enables residents to report local problems. Users can also make suggestions for improving the environment of their neighborhood. With this form of community activism, residents are encouraged to become active citizens by reporting and improving aspects of the city's environment. Users may add comments, suggest solutions, or add video and pictures and they can be informed about the solving stage of the reported problem. E-mail alerts will be also available.

5. Solutions and services development
IT architecture



7. Monitoring and Improvement Cycles:
Measuring the impact of e-services on the commercial ecosystem



SMART ECONOMY

Indicator N°	Indicator	Relating to which project objective	Method of measurement
1	Commercial SMEs of Thermi adopting smart commerce practices	At the core of the Thermi pilot is the development of a SMART MARKETPLACE offering services of online product promotion, online professional services, best buy solutions, and social responsibility in entrepreneurship Increase the number of commercial SMEs adopting the Smart Marketplace application and online services	1.1 Number of SMEs adopting the smart marketplace application and its services 1.2 Number of users in the Smart Marketplace application 1.3 Number of visitors in the commercial centre of Thermi before and after the creation of the Smart Market place
2	Citizens of Thermi using smart commerce applications and tools	Increase the intelligence of citizens in finding the most profitable places for commerce	2.1 Number of citizens using the smart finder application within the Smart Marketplace
3	Professional located in Thermi using smart promotion applications and tools	Increase the number of professionals adopting the Smart Marketplace application and its services	3.1 Number of professional adopting the Smart Marketplace application 3.2 Number of users of this application

SMART INFRASTRUCTURES

Indicator N°	Indicator	Relating to which project objective	Method of measurement
4	Smart parking usage	A smart parking solution is accompanying the Smart Marketplace application. The objective is to facilitate the finding of parking places in the city of Thermi and reduce the time, traffic jams and pollution created from users looking a parking place	4.1 Number of users being informed from the smart parking solution 4.2 Gains in time for finding a parking place because of the operation of smart parking service

SMART GOVERNANCE

Indicator N°	Indicator	Relating to which project objective	Method of measurement
5	Citizens information	Increase the visibility of smart city solutions within the population of Thermi	5.1 Number of citizens using the combined smart city solutions in Thermi
6	Open data	Offer possibilities in the software development community for applications based on open data provided by the sensors networks and other applications of the pilot in Thermi	6.1 Number of software development companies being informed about open data available by the municipality of Thermi

QUALITY OF LIFE

Indicator N°	Indicator	Relating to which project objective	Method of measurement
7	Users and citizens using the quality of air application and e-service	Informing users and citizens about the quality of air in four areas of Thermi and inviting customers for business in areas of low pollution and high quality of environment.	7.1 Number of users being informed about air quality and air-pollutants in Thermi
8	Citizens participation in environmental improvement e-service	Involving citizens in participatory environmental alert and improvement	8.1 Number of citizens participating through different channels, giving feedback, requirements or suggestions regarding the quality of environment in Thermi. 8.2 Number of citizens request addressed to the municipality and satisfied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