

# SINERGI

Lisbon April 14th-16th 2015

**Urban Digital Tools:  
Empower Citizens or Not, that is the Question**

Pedro Ferraz de Abreu

LabTec-TS.net

Laboratories of Technology & Society  
(e-Planning: Engineering with Hard & Social Sciences)

*A Network of Living Labs*

**e-Planning Lab**



Consortium e-Planning

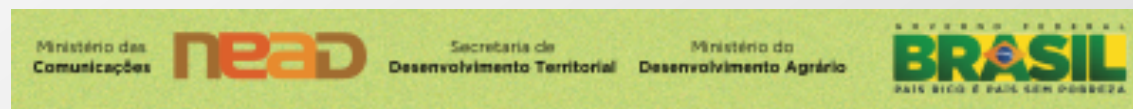
*Building Capacity to Help Communities*

*Helping Communities to Build Capacity*

## • Urban Tools - and the Rural?

There is no urban empowerment  
with rural disempowerment

### Project "Digital Territories" (Brasil)



The Digital Territories project installed “digital homes” in rural communities. Using satellite was key to provide access.

Besides access to a new pool of resources and information, this allowed also sharing experiences with other rural communities, a major factor in sustainable development in the rural world.

O BRASIL RURAL  
**Conectado**



**Inclusão social a partir da inclusão digital**

Melhorar as condições de vida da população rural com a ajuda da tecnologia: esse é o desafio do projeto Territórios Digitais, criado em 2008 pelo Ministério do Desenvolvimento Agrário (MDA).

## • Urban Tools - and the Rural?

There is no urban empowerment  
with rural disempowerment

### Research "Factors of sustainability of Digital Territories" (Brasil)



**TERRITÓRIOS  
DIGITAIS**

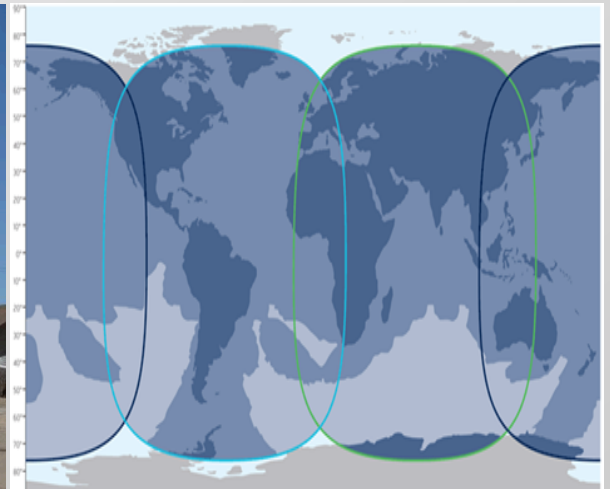
Given the huge impact of the Ceará (Brasil) project "Territórios Digitais", it is important to study which are the factors of sustainability, identifying determinants of successes and failures in the experience of rural communities, with the support of local and state institutions, using a research-and-action methodology.



## • Urban Tools - and the Rural?

There is no urban empowerment  
with rural disempowerment

### Project “Use of new Ka band satellites for Digital Inclusion within CPLP space”



The new generation of Ka-band satellites (*High Throughput Satellite*), present a capacity many times superior to the current satellites (C and Ku band). With the new technology, data links will have much greater capacity at a lower price compared to current available satellite data services. The reach of the new band can be amplified combining with wireless connections (Wi-Fi) as well with smaller cells from mobile telephones, bringing internet access and mobile applications to the most remote communities, and enabling new economic and civic activities and initiatives.

- **Empowerment Dimensions**

- economy, market "equalizing"
- inclusion, cohesion

Even simple tools can have significant impact"

*What about sophisticated tools?*

- **Empowerment Dimensions**

-- space allocation, housing for low-income

Urban Planning Process troubles:

Project  
layout  
variables

Infrastructure  
Design  
Standards

Financial  
Variables

## • Bertaud Model (World Bank)

### Project layout variables:

$$\begin{array}{lcl} \text{Number of households} & & 10\,000 - \text{circulation space/ha(m}^2\text{)} - \text{open space/ha(m}^2\text{)} \\ \text{per hectare} & = & \text{plot size(m}^2\text{)} + \text{additional space per plot for community facilities} \end{array}$$

(link variable: gross residential density)

### Design standards and unit costs:

$$\begin{array}{lcl} \text{Capital affordable per} & \text{Cost of land and infrastructure per hectare} & \\ \text{household} & = \frac{\text{No. of households per hectare (density)}}{\text{No. of households per hectare (density)}} + & \text{On-plot development costs} \\ & & \text{(superstructure)} \end{array}$$

(links: capital affordable per household, gross residential density [persons/hectare])

### Financial variables:

$$\begin{array}{lcl} \text{Capital affordable per} & \text{Monthly payment} & \\ \text{household} & = \frac{\text{Capital recovery factor}}{\text{Capital recovery factor}} + & \text{Down payment} \end{array}$$

(link variable: capital affordable per household)

- **let's not forget what power is**

- Decisions
- Means to enforce decisions
- Ability to sustain decisions
- Institutions for such purpose

- **citizen empowerment tools**

Example: urban digital tools to  
support public participation in decision-making

Example:

Public Consultation in Environmental Impact Assessments

## **Problems in EIA and Role of Information Technologies:**

### **1. Transmitting and accumulating experience**

- Metadata
- Multimedia Knowledge Base
- Expert Systems
- Rule-based models
- Case-based models, with FAQ ("Frequently Asked Questions")

### **2. Integrating multi-disciplinary and multi-organism processes**

- Virtual office
- Multiple-domain Knowledge Representation
- Shared inference engine

### **3. Satisfying a wide range of audiences**

- Hypermedia reports
- Multi-level information trails

### **4. Limitations of current "Fora" for dialog and interactive analysis**

- "Blackboard" vs. "Star" process
- Network (WWW) based tools

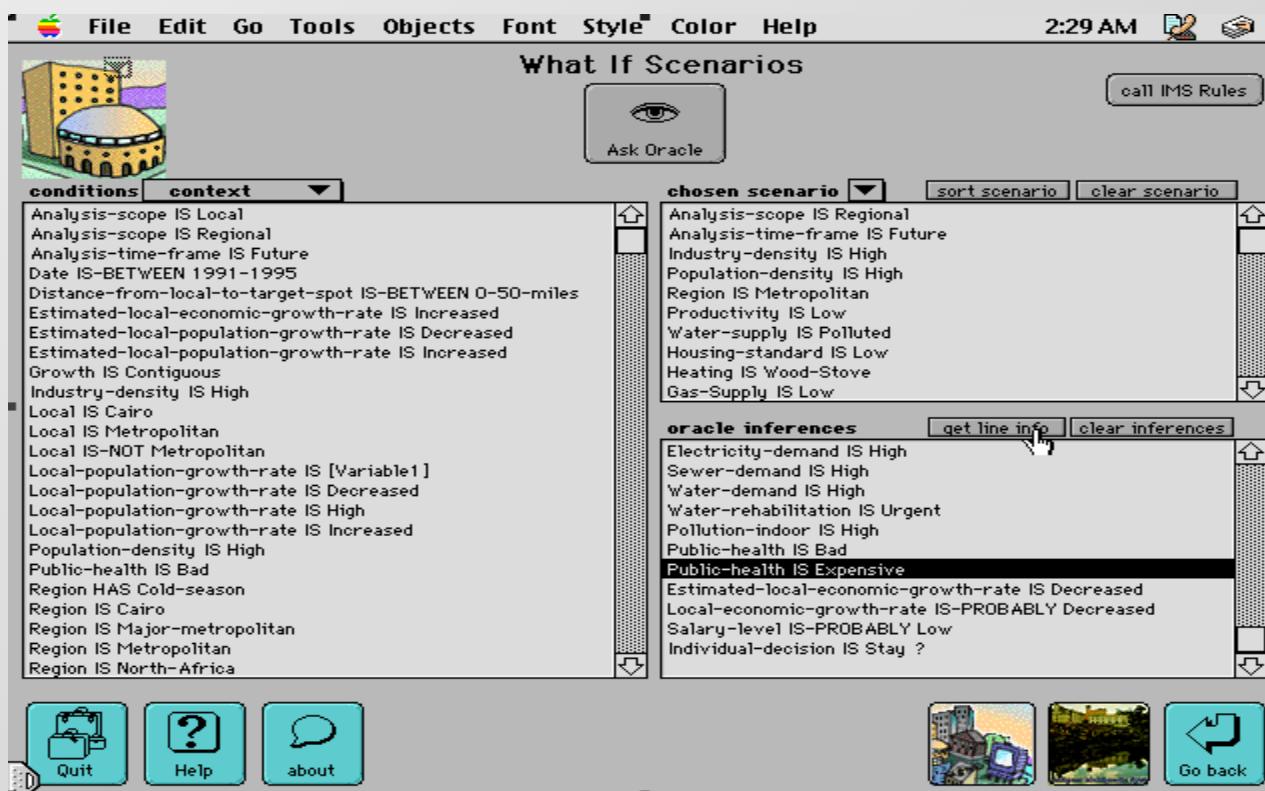
## • Project IMS



[www.citidep.net/ims/](http://www.citidep.net/ims/)

Expert multimedia system for urban solid waste

- **Project IMS**  
(Intelligent Multimedia System)
- *Expert Multimedia Knowledge Base* in support of Public Participation in **Environmental Impact Assessment**



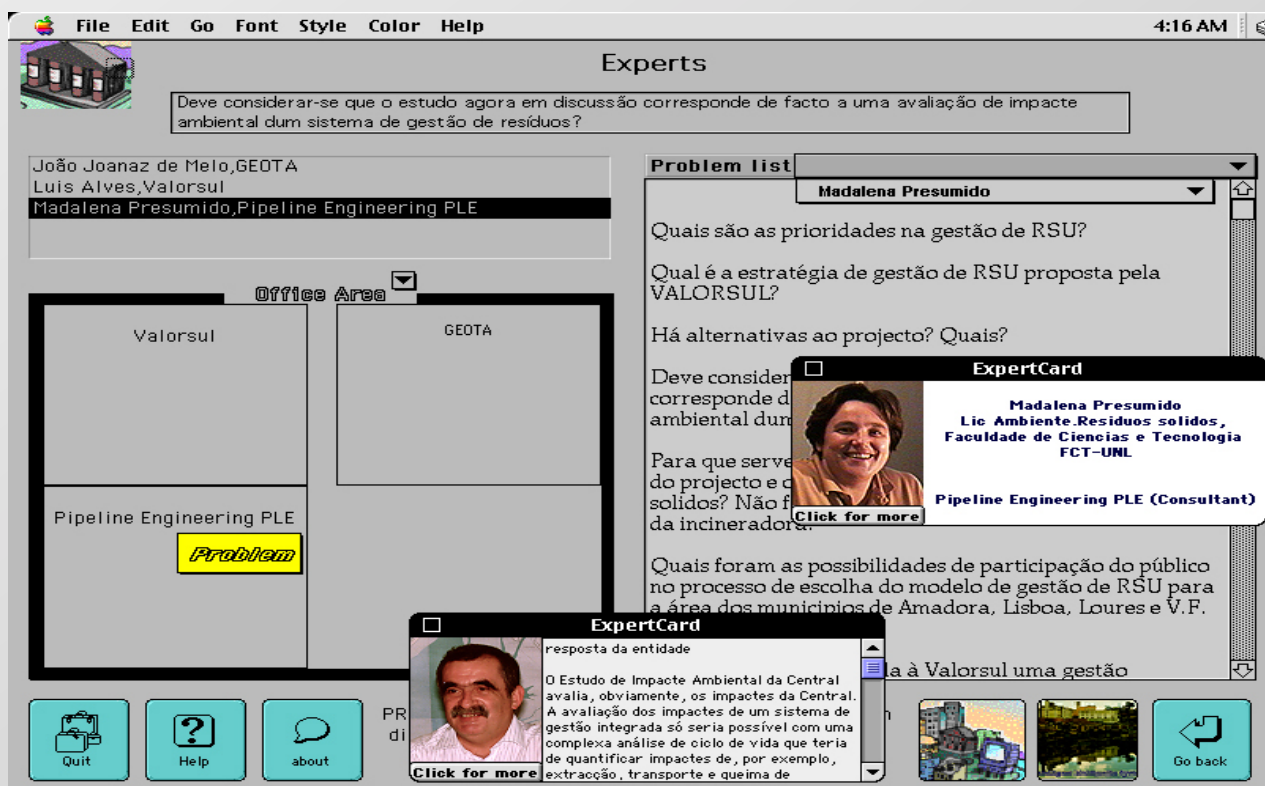
## • Project IMS



[www.citidep.net/ims/](http://www.citidep.net/ims/)

Collaborative multimedia system for urban solid waste

- **Project IMS  
(Intelligent  
Multimedia System)**
- *Expert Multimedia  
Knowledge Base* in  
support of Public  
Participation in  
**Environmental  
Impact Assessment**



# • Project IMS



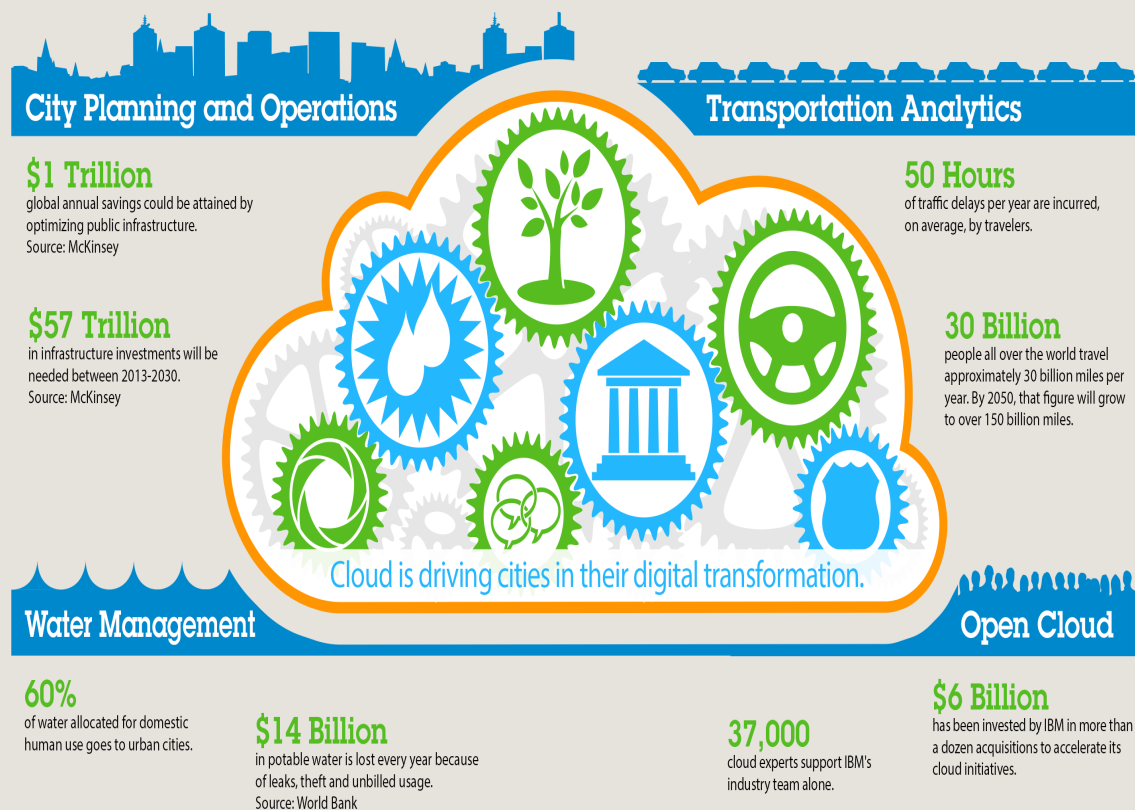
**Table 5.13.4.-1 - Knowledge Test grade results**

	Environmental students Average grade	Psychology students Average grade	GRADE GAP Environmental - Psychology
Before using IMS	39.2	28.2	11
After using IMS	43.7	35.7	8
GRADE JUMP	4.5	7.5	

In (Ferraz de Abreu) , 2002"New Information Technologies in Public Participation: A Challenge to Old Decision-making Institutional Frameworks"

## • Data is power

### Smarter Cities: Turning Big Data Into Insight

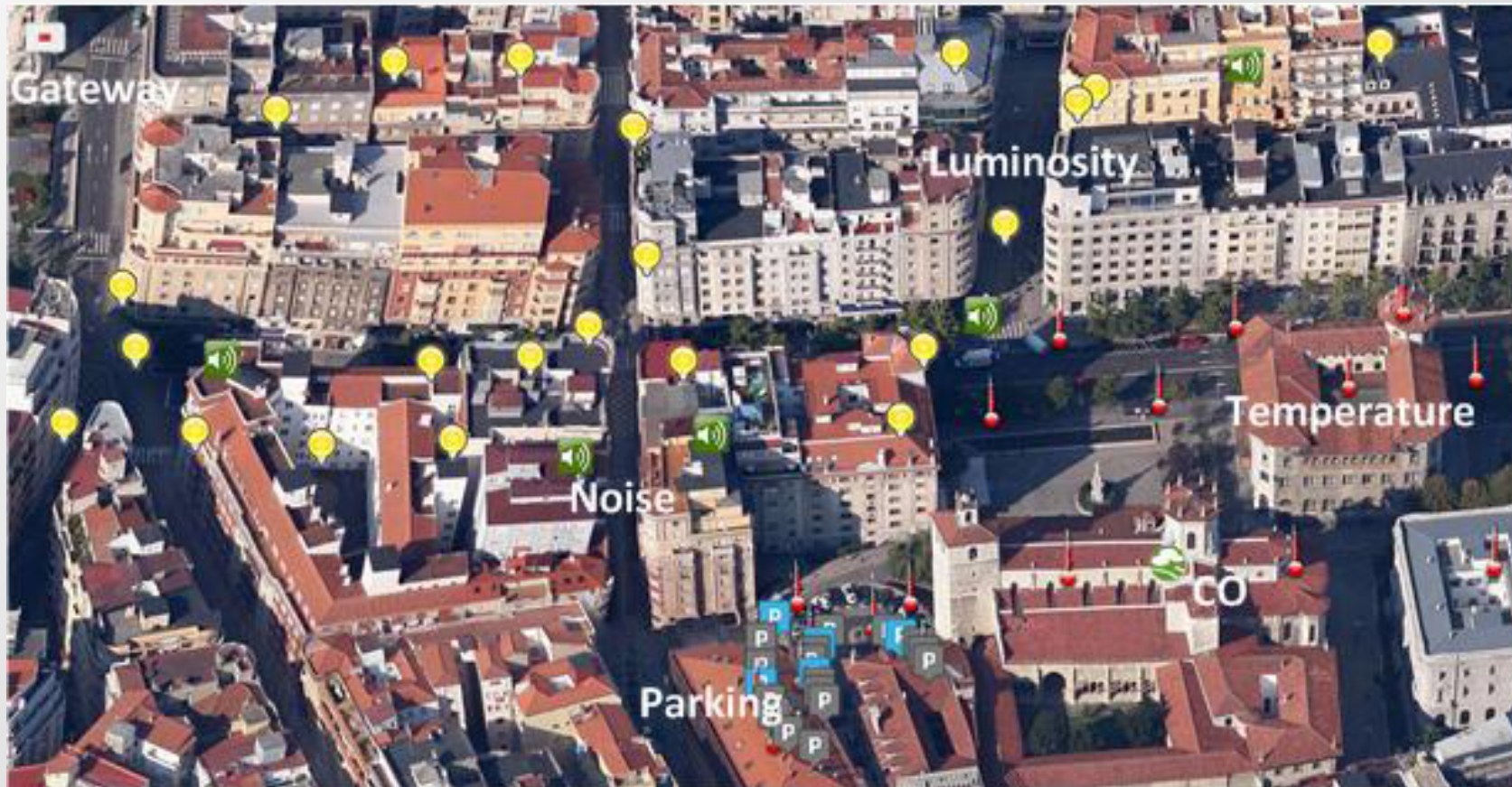


IBM Intelligent Operations software is designed with cities, for cities, to provide the tools to monitor, visualize and analyze vital city services such as water and wastewater systems, transportation, infrastructure planning, permit management and emergency response.



- **Data is power**

Integrated systems - sensors



- **Data is power**

Integrated systems - sensors



Santander – Espanha. 1200 sensors to monitor trafic, air quality, noise...

- Data is power

[www.eurolifenet.eu](http://www.eurolifenet.eu)

mobile sensor participatory science



Sensors, but with citizen participation...

The New York Times  
nytimes.com

June 12, 2007

PRINTER-FRIENDLY FORMAT  
SPONSORED BY

## Parents and Health Experts Try to Ease Italy's Pollution

By [ELISABETH ROSENTHAL](#)

MILAN — This part of northern [Italy](#) is renowned for fashion, food, Fiat. But now it has another, less welcome claim to fame: the cities here have the worst air pollution in Europe.

By mid-May, Milan had already exceeded [European Union](#) and [World Health Organization](#) limits for particle pollution in the air on 80 days. Last year was bad, too. By the end of March, Milan had 64 such days, Turin had 77, Bologna 51 and Venice 49.

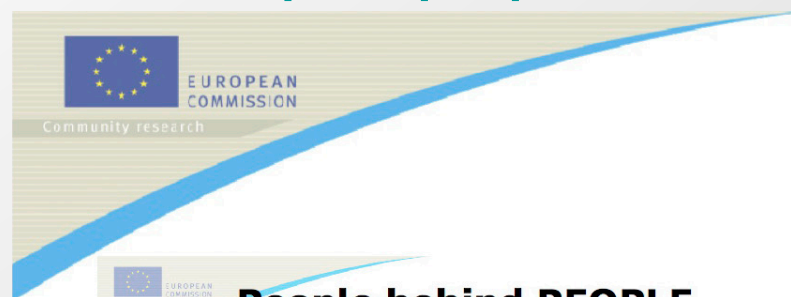
Particulate pollution is tied to heart disease and respiratory ailments like asthma, and poor lung development in children.



## • Data is power

LabTec TS Team has experience in science research within large european (EU) teams

[www.citidep.net/people/](http://www.citidep.net/people/)



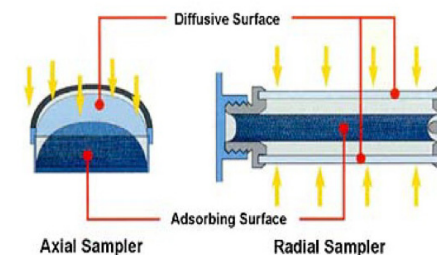
### People behind PEOPLE

- P. Pérez Ballesta, E. De Saeger, R. Field, A. Baeza, I. Nikolova, R. Connolly, R., N. Cao, M. Gerboles, D. Buzica **for the Joint Research Centre**
- R. Fernandez-Patier, D. Galán D, S. Garcia Dos Santos, J. Santamaria Ballesteros **for Madrid**
- Pascal DeMulder and Sandrine Bladt **for Brussels**
- Ana Cabral, Pedro Ferraz de Abreu, Francisco Ferreira, Hugo Tente, Luisa Nogueira **for Lisbon**
- Matej Gregoric and Peter Otorepec **for Ljubljana**
- Emilia Niciu **for Bucharest**
- Martin Fitzpatrick, Anne Marie McCarten and Pat Goodman **for Dublin**

## PEOPLE Project Population Exposure to Air Pollutants in Europe

Pascual Pérez Ballesta  
Institute for Environment and Sustainability  
DG Joint Research Centre  
European Commission

The PEOPLE project (2002-2005) is coordinated by the Joint Research Centre with the aim of assessing the exposure of citizens to air pollutants in different European cities



## • Data is power

LabTec TS Team has experience gathering large scale air quality indicators with citizens

[www.citidep.net/people/](http://www.citidep.net/people/)



**Participating** ... time schedule

**PROJECT: SCHOOLS to 16)**

**SMOKING BAN**

**DUBLIN**

**IRISH PUBS**

**LISBON**

**ANGES**

**hering**

**topic**

**results**

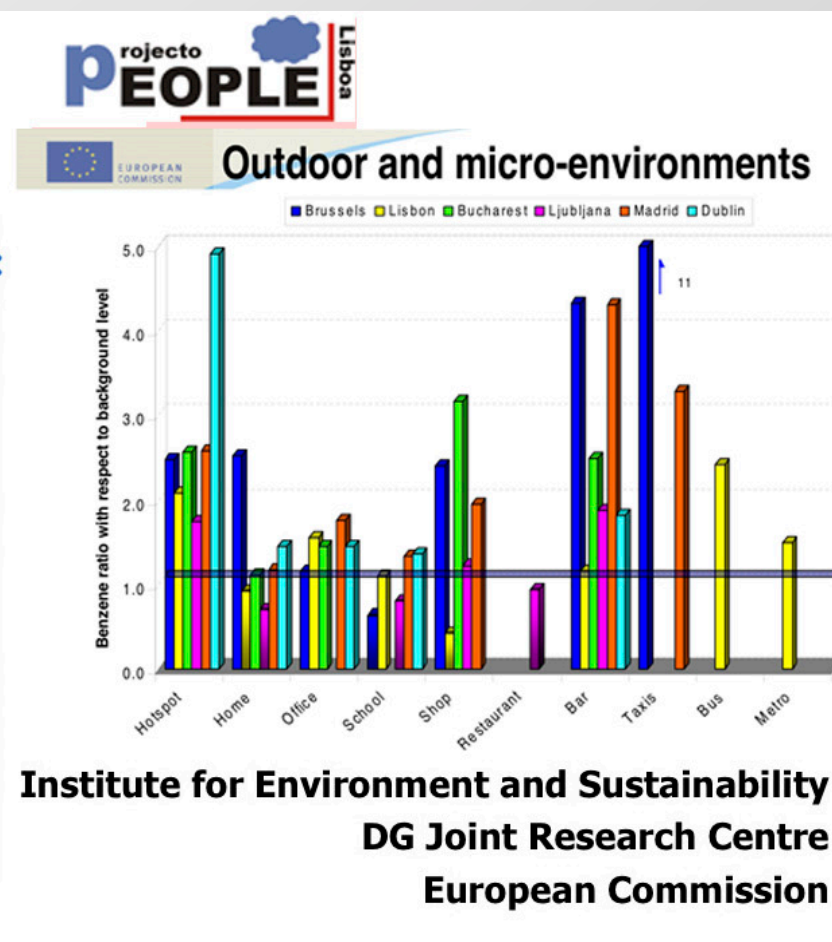
**ness**

**ising**

**itizens...**

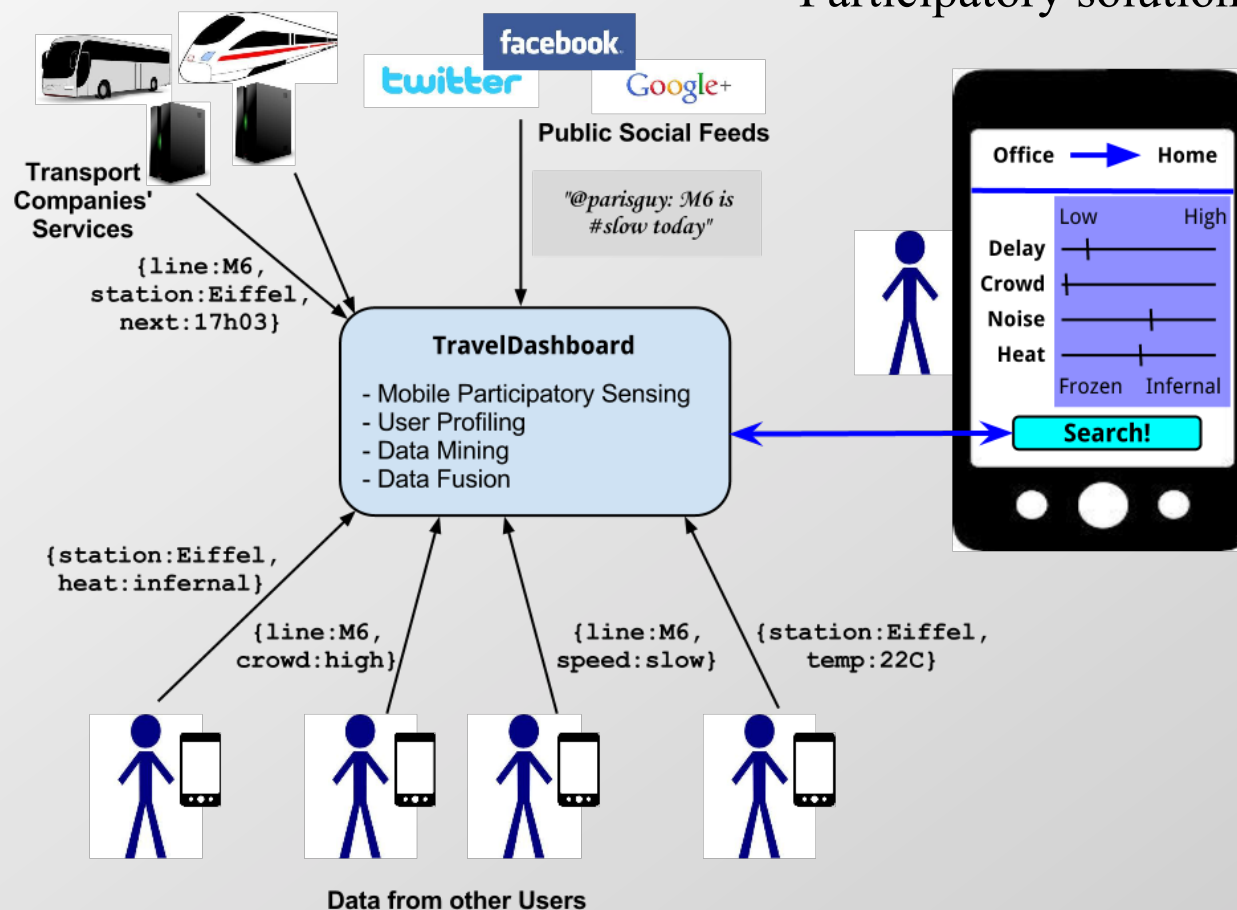
**SCHOC**

- Stude...
- Students study...
- Students join citizens deba...



## • Data is power

Participatory solutions are exploding...



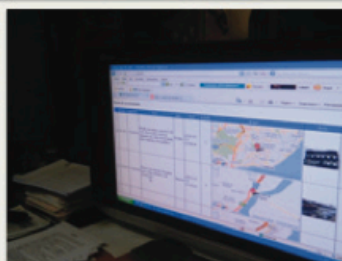
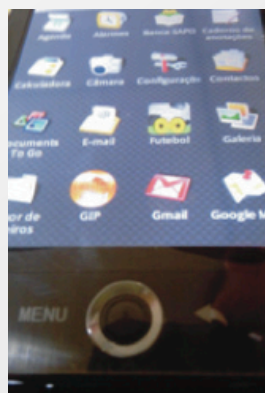
citizen participation brings empowerment

## • The Know-How

LabTec TS Team has experience with mobile participatory city management

### GIP - “Gestão Inclusiva Participada”

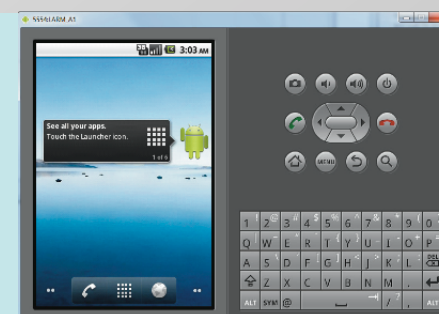
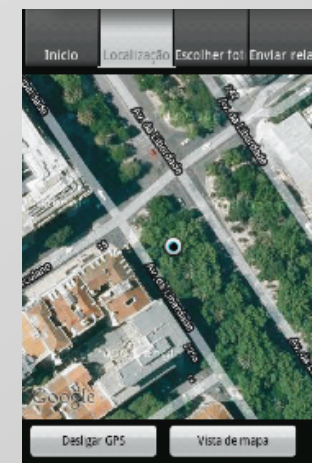
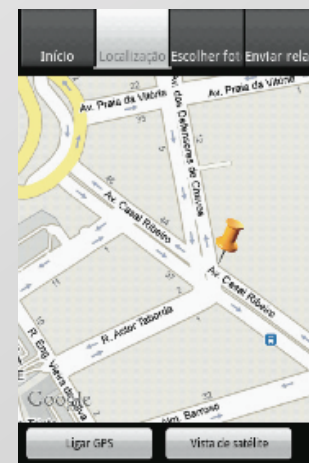
### Participatory municipal management



Junta de freguesia  
Vila Franca de Xira



Android - smart-phone software for citizen participation, integrated with municipal management tools and procedures



- **Empowerment policies**

## A new dimension of urban planning

### **ICT change the rules for economy & planning**

- Value of data profiling and abuse of privacy
- Control of the infrastructure (ISP) and also of contents (& services):  
“Net Neutrality” issue
- Assimetric “broad” band (consumer vs citizen)

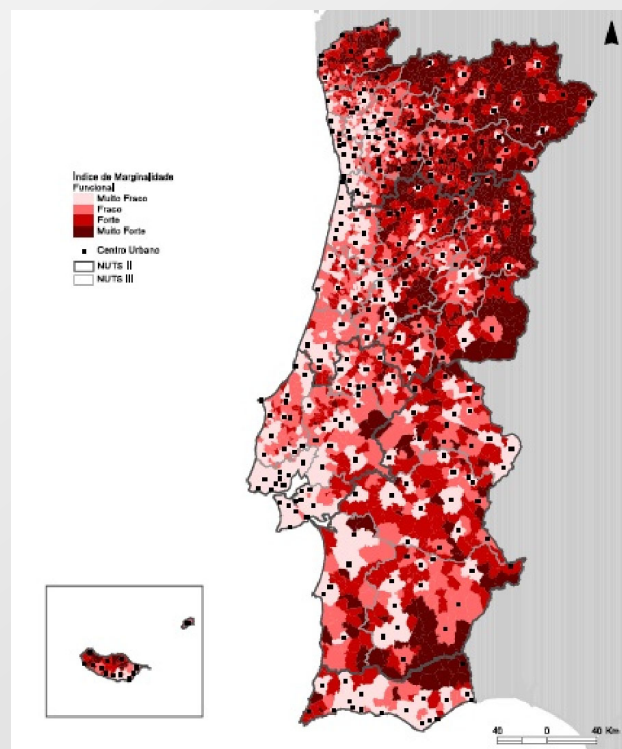
“It’s the Upload, Stupid”

## • The Know-How

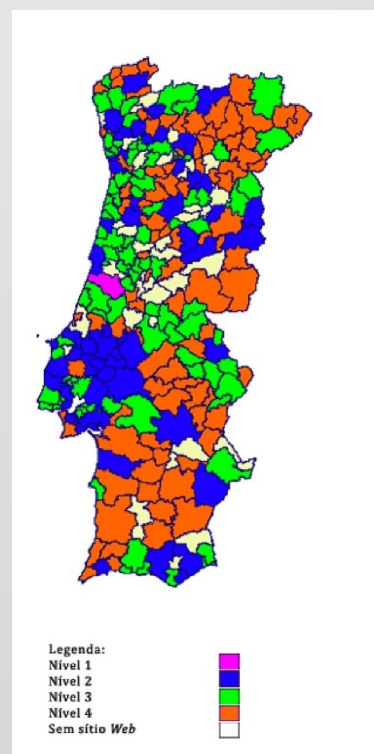
LabTec TS Team has experience with analysis of ICT impact in territorial cohesion

### Research on “Impact of digital asymmetries in territorial cohesion”

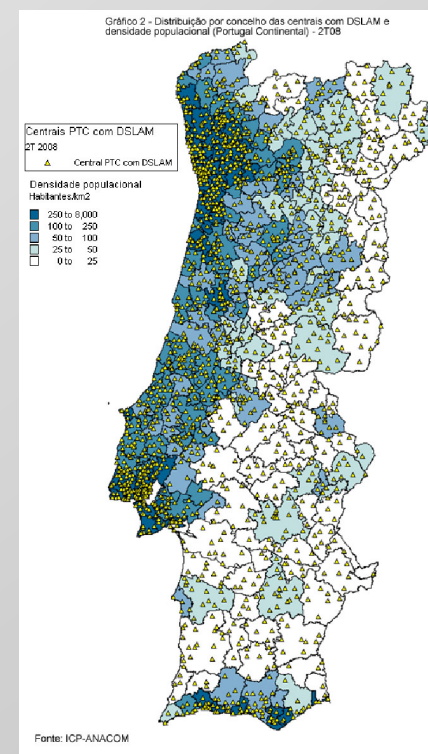
“Marginalidade Funcional” in Portugal



Digital ranking of Municipalities



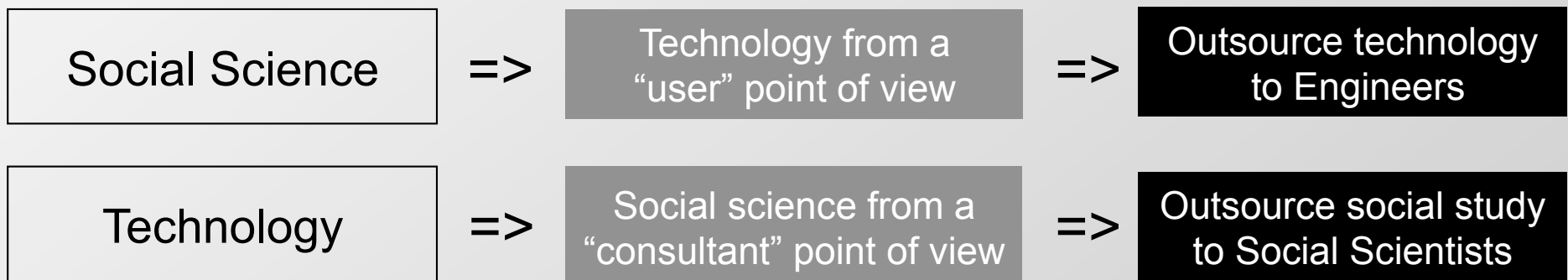
Broadband in Portugal



## • Literacy and teaching

**e-Planning** embodies a new paradigm  
of Technology with Social Sciences

*Going past the traditional “blackbox” disciplinary approach...*



*... the new **e-Planning** synoptical transdisciplinary approach:*



## • Literacy and teaching



LabTec TS Network became part of the ePlanning Consortium Agenda

[www.e-planning.org](http://www.e-planning.org)

2009>

*Joint PhD Program*

e-Planning Consortium

4 Universities  
UTL, UNL  
UL, UA

Network with  
MIT+CITIDEP

e-infrastructure	e-planning knowledge infrastructure
e-government	e-planning for the government of the future
e-governance	e-planning for a new governance
e-city & territory	e-planning for the city of the future
e-citizenship	e-planning for a new citizenship

## • Literacy and teaching



LabTec TS Network benefits from, and supports, e-Planning curricula

[www.e-planning.org](http://www.e-planning.org)

2016> *Joint Master Program*

e-Planning  
Consortium

FC/UL

+

FA/UTL

Network with  
MIT+CITIDEP

<b>e-infrastructure</b>	- Computer Aided Planning
<b>e-government</b>	
<b>e-governance</b>	- Smart Cities & Territorial Cohesion
<b>e-city &amp; territory</b>	
<b>e-citizenship</b>	- Networks, Social Capital & Entrepreneurship

## • The e-Planning Agenda

e-Planning Lab (LabTec TS) as a tool  
to empower and amplify existing programs

### Research Agenda:

*Starting point : Joint PhD Program (e-Planning Consortium)*

<b>e-Planning knowledge infrastructure</b>	<i>Mapping of the knowledge society. Mapping of the planning knowledge. Develop the new ICT infrastructures and strategic frameworks</i>
<b>e-Planning for the government of the future (e-government)</b>	<i>More efficient and responsive government, closer to citizens; better enabling role; better services; better adjustment to the challenge and new potential of digital implementation of administrative procedures, beyond raw automation; two-way G2G, G2C, G2B.</i>
<b>e-Planning for a new governance (e-governance)</b>	<i>Foster institutional culture towards the common good, more equity and less exclusion; build strategic institutional capacity within globalized world; better institutions; better regulation framework and handling of market failures; better balance of security &amp; efficiency vs. freedoms, liberty and accountability.</i>
<b>e-Planning for the city of the future (e-city) and territory</b>	<i>Build the cities of the future, as sustainable environments with new functionality that breed innovation; foster cities with better quality of life, more attractive and competitive; better spatial planning, promoting social and territorial cohesion, incorporating new structural impacts of ICTs.</i>
<b>e-Planning for a new citizenship (e-citizenship)</b>	<i>Enable a better informed and educated citizen, more participative, more critical, more responsible; better balance of technology challenges with ethics &amp; individual freedoms &amp; privacy.</i>

- The e-Planning Agenda

## Netiquette

### *Internet and Web - the Commons*

BCBK

*be courteous, be kind*

DNE

*do no evil*

BYOC

*bring your own contribution*

- no SPAM
- good net citizenship
- freedom & rights on the net
- privacy; PRIVACY
- transparency
- accessibility (special needs)
- intellectual virtual property
- preserve heritage
- no SPAM

## • The Foundations

CITIDEP became an international network active on e-Planning agenda

Tânia Fonseca	Açores
Timothy Sieber	USA
Luis Rionda	Mexico
Jorge Edison	Brasil
Clelia Guinazu	Argentina
Charlotte DeKock	Belgium
Valérie Aillaud	France
Laura Colini	Italy
Vesna Dolnicar	Slovenia
Pedro Ferraz de Abreu	Portugal



[www.citidep.pt](http://www.citidep.pt) • [www.citidep.net](http://www.citidep.net)

CITIDEP - Research Center on Information Technologies & Participatory Democracy, 1996-2014

## • The Know-How

LabTec TS Team represents the know-how of the e-Planning community in 10 countries

[www.labtec-ts.net](http://www.labtec-ts.net)



The LabTec TS e-Planning team has a rich portfolio of research and action projects, 1995-2014, around a core group initially at MIT and CITIDEP, with a sequence of partnerships with research units at different Universities, within an informal e-Planning Consortium.

Those projects, and corresponding research, were very different in size, social impact and research domain.

In this section, it is provided a few examples of the know-how acquired through some of these **projects and research lines** in the last 10 years.

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President



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Prof. Catedrático Convidado (Guest Full Professor)



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