Towards Ambient Assisted Cities and Citizens

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DeustoTech - Deusto Institute of Technology, University of Deusto
PITSaC 2013, Barcelona, Spain

MORE lab
envisioning future internet

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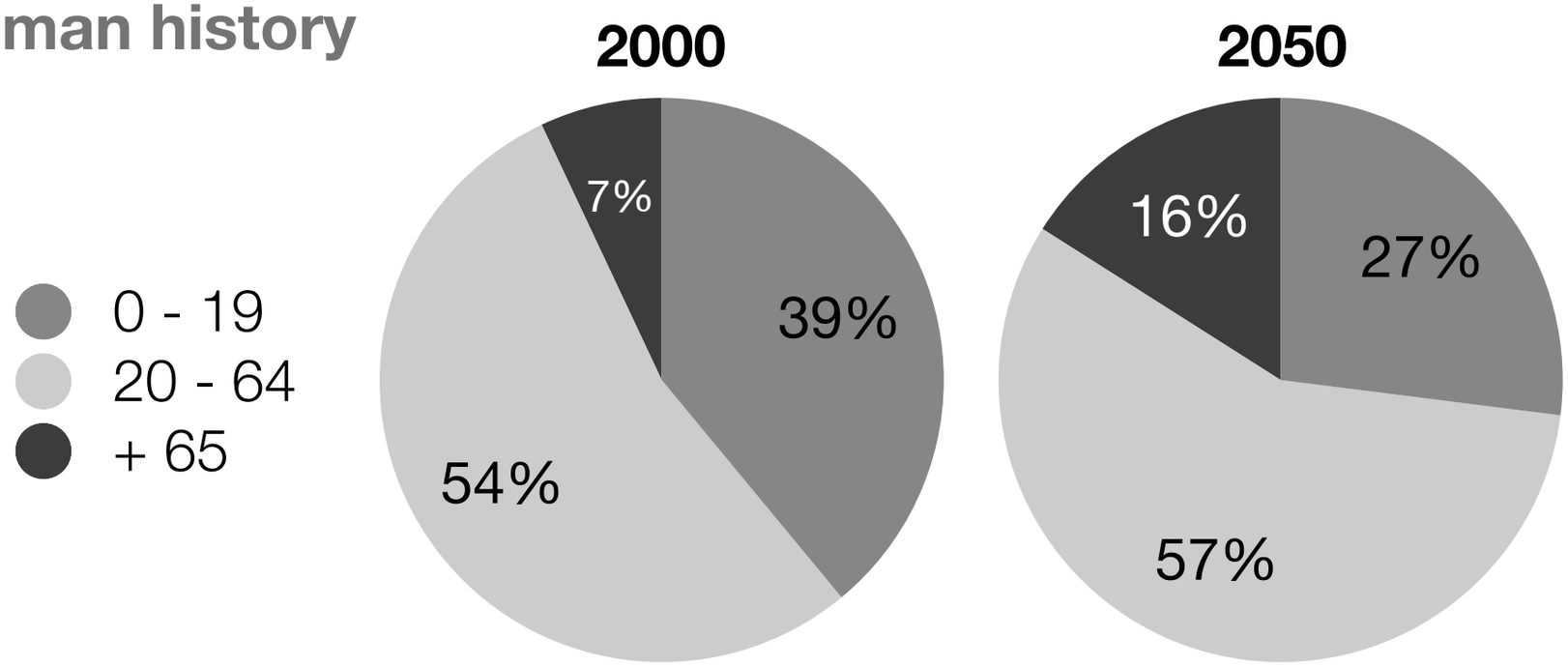
Outline

- Introduction
- Related work
- Some efforts towards more accessible cities
- Ambient assisted cities
- Conclusions

Society estimations by 2050

- Urban populations will grow by 2.3 billion
- 70% of world's population will live in cities
- People with disabilities make up about 15% (≃ 1 billion people), according to the Wold Health Organization
- People over the age of 60 is expected to **triple**, outnumbering children under 15 for **the first time in human history**



What is a *Smart* City?

- A means of making available all the services and applications enabled by ICT to citizens, companies and authorities that are part of a city's system.

- Smart cities should **not only** enable more efficient and effective management of the city resources. The aim is to **increase comfort and satisfaction** from all population sectors, without neglecting elderly and disabled people.

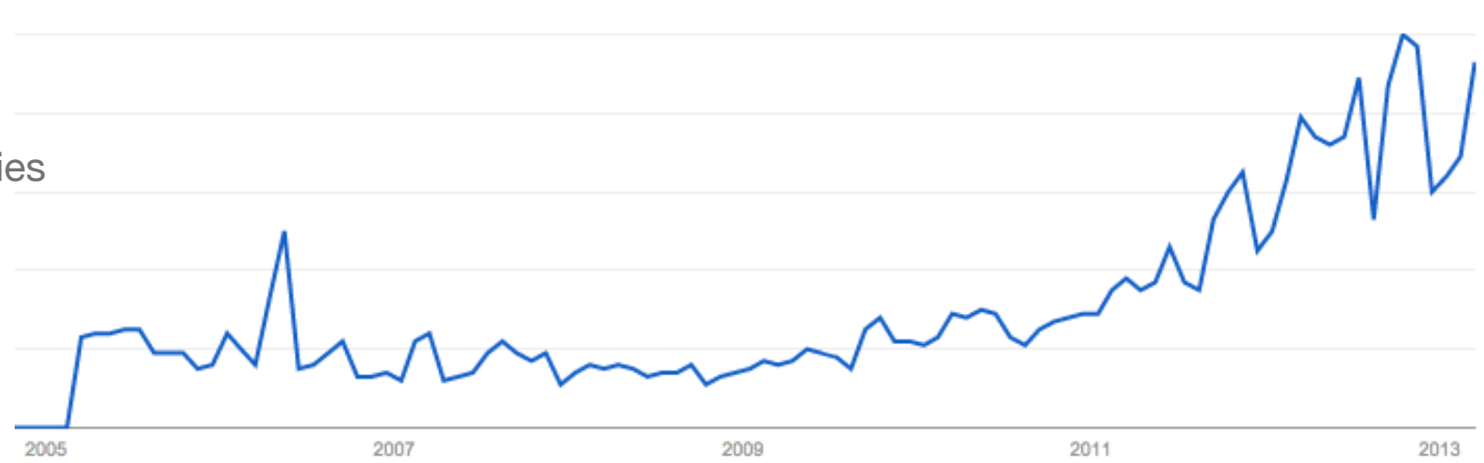
What is an *Ambient Assisted* City?

- A city **aware of the special needs of all its citizens**, particularly those with disabilities (physical, sensorial, intellectual...) or about to lose their autonomy (*young old*, *old* and *oldest old*)

- A both economical and technological **feasible** approach:
    - Leverage the open data initiatives
    - Use the extensive sensor networks already deployed
    - Benefit from the increasing number of smartphones among citizens

Growing interest in Smart Cities

- Academic efforts
  - MIT's Smart Cities Media Lab
- Major corporation efforts
  - IBM's Smarter City
  - SIEMENS mobility solution
  - CISCO smart+connected communities
  - Philips Livable City
- Apps for Smart Cities
  - New York City Apps, RunWithUs...
- Improve Smart Cities accessibility
  - AccessMyNYC, VIABLE project, LibreDeBarreras...



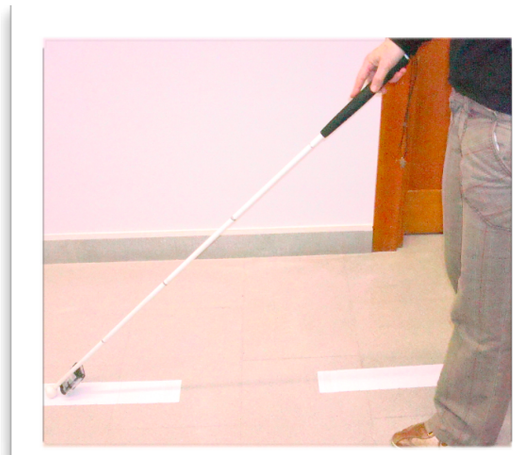
Requirements for more inclusive and accessible AAC

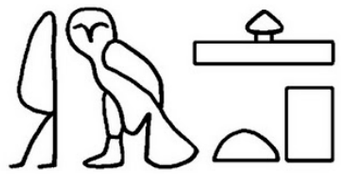
- Seamless, low-cost and feasible city instrumentation
- Accessible user interfaces for applications
- User participation and contribution
- Exploitation of currently existing ICT infrastructure within cities

BlindShopping

A platform that enables blind people to shop autonomously in a supermarket

- Motivations:
  - More than 70k blind people in Spain (ONCE, 2009)
  - Increasing computing, communication and sensing capabilities in smartphones
- Provides:
  - A navigation system (verbal interaction + RFID tags)
  - A product browsing mechanism



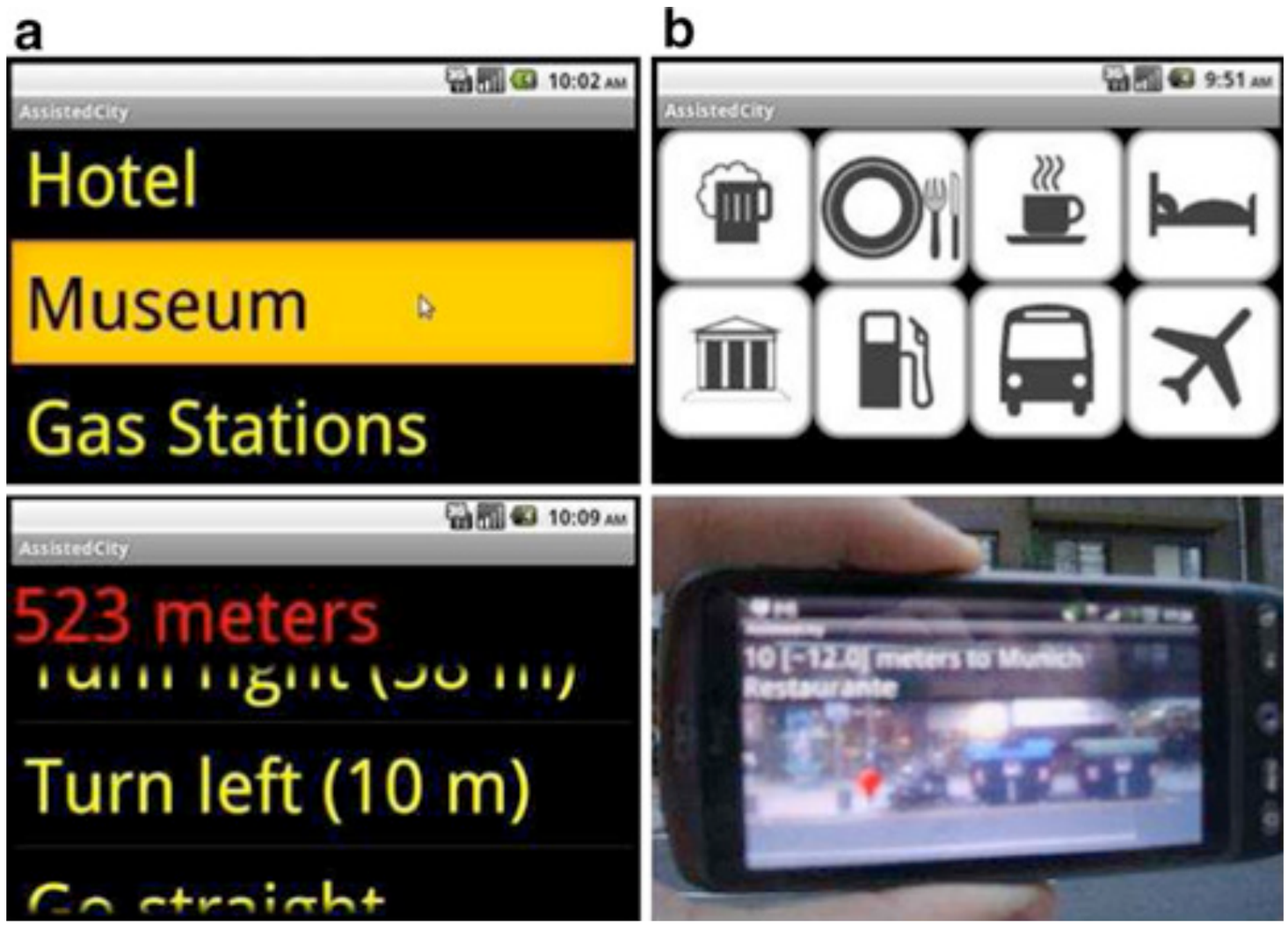
Imhotep 

User-conscious interface adaptation

- Motivations:
  - Increasing number of elderly and disabled people
  - Developers tend to ignore or neglect this user base
- Provides:
  - Framework that eases the development of adaptive, user-centric accessible mobile applications

Imhotep > Assisted City app

Imhotep powered app to search nearby interesting locations, adapted to the user requirements and capabilities



MUGGES

Mobile User Generated Geo Services

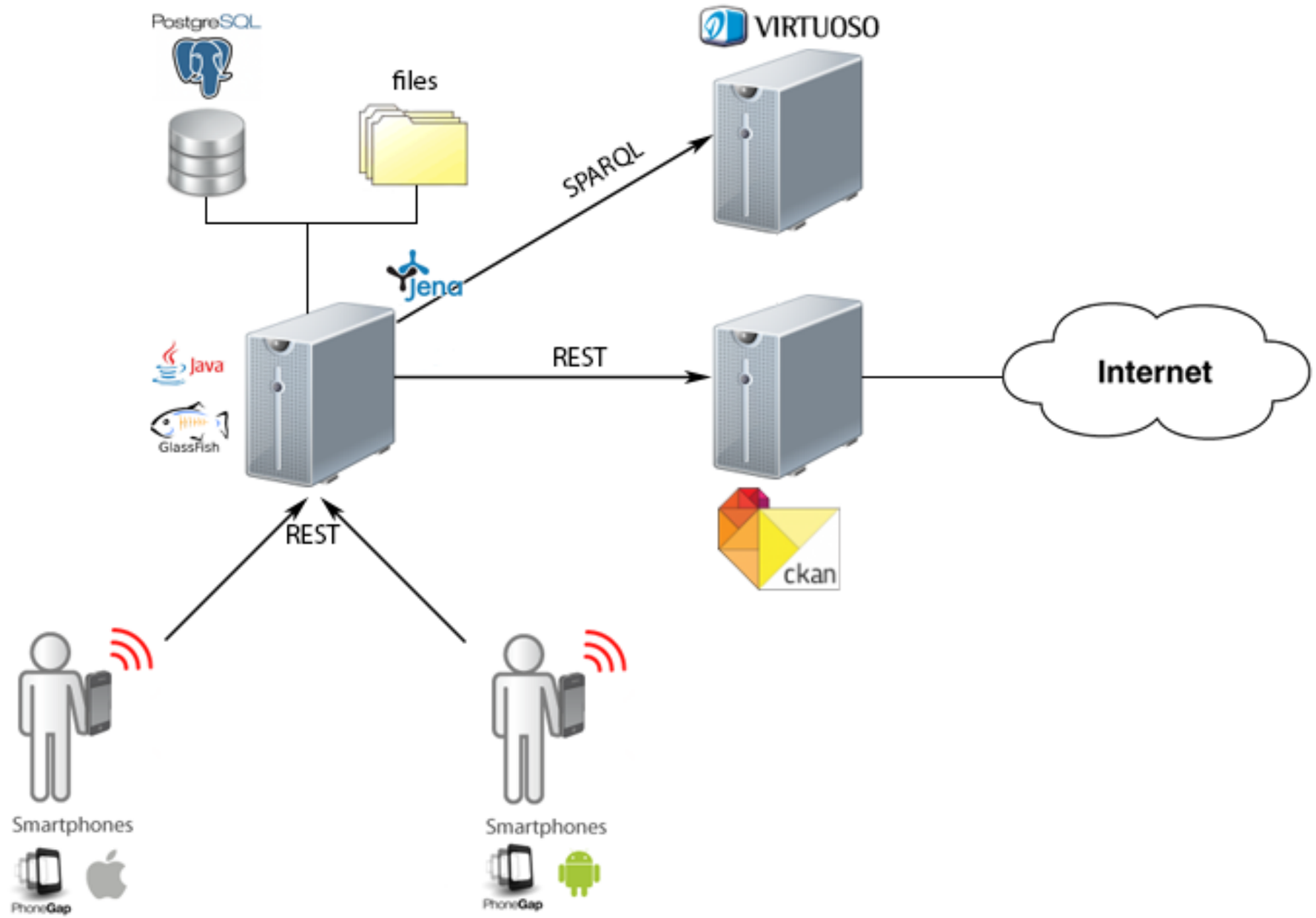
- Motivations:
  - Users can develop their own services
  - Evolution of paradigm: from ***consumer*** to ***prosumer***
- Provides:
  - Users can create their own contents (*mugglets)* and share them with others

IES Cities

Internet Enabled Services for cities across Europe

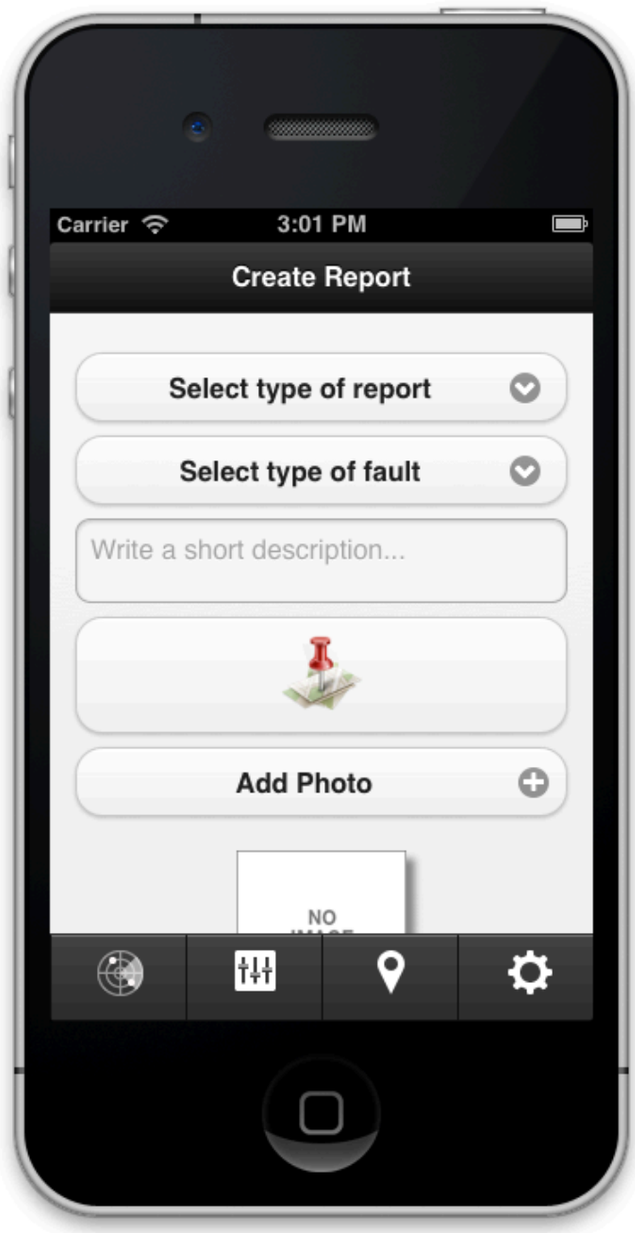
- Motivations:
    - **Citizens** must be **heard & empowered**
    - The **information** gathered and provided by both cities and citizens must be **linked and processed**
- Goals:
    - Create a multi-device dataset and application marketplace based on standard and accessible web technologies, exploiting data shared between citizens and councils, and providing and enhanced experience to municipalities.

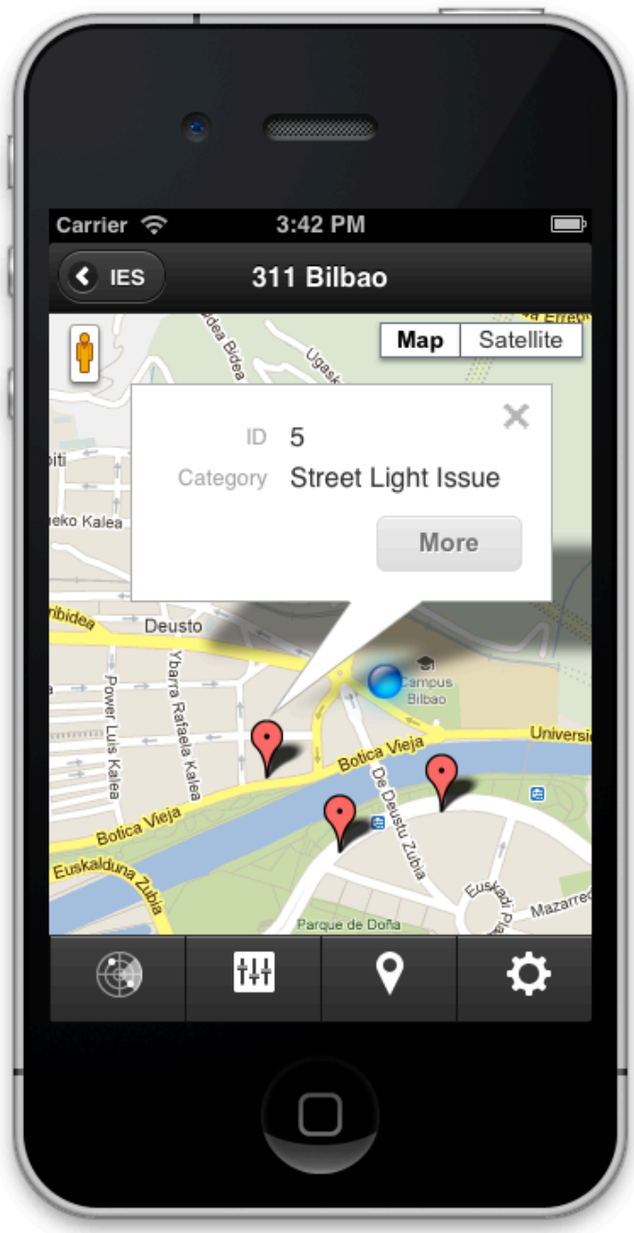
IES Cities proposed architecture

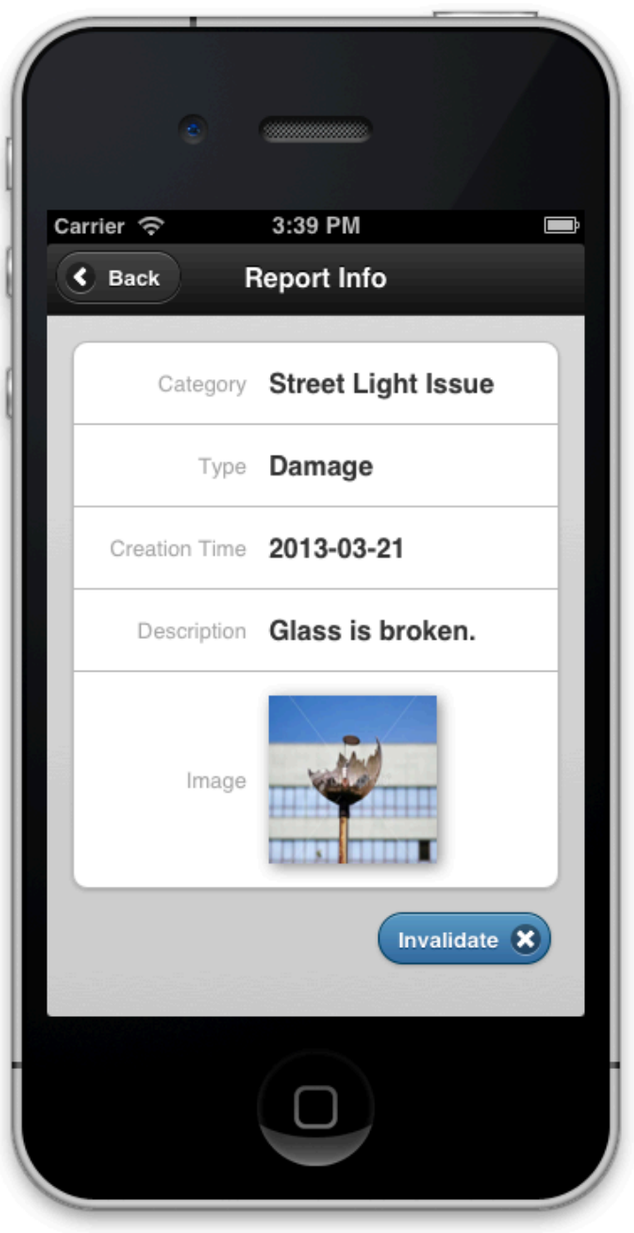


IES Cities > 311 App

Consuming & reporting of complaints concerning public infrastructures







Conclusions

- This work shows how Smart Cities can be turned into **more attractive and inclusive spaces**

- Earlier research efforts on **accessibility** infrastructure and **end-user participation**

- The ongoing **project IES Cities** as an example of bringing together the research and ideas shown before

Thank you

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