

i-Tour

intelligent mobility in an urban context

i-Tour project overview

Project acronym: i-Tour

Project full title: *intelligent Transport system for Optimized URban trips*

Grant agreement n°: 234239

Grant Agreement for: Collaborative Project – Small of medium-scale focused research project

Funding scheme: Seventh Framework Programme (FP7) – Activity code “SST.2000.3.1.2 Intelligent mobility systems and multi-modal interfaces for transport of passengers”

Duration: 36 months

Website: www.itourproject.com



Partners' competencies

Fondazione Graphitech	• Computer graphics, human-computer interaction, geo-visualisation, visual analytics
Eindhoven University of Technology	• Multimodal transport modelling, travel optimisation through user preference, dynamic re-scheduling
University College London	• Trust, virtual communities, recommender systems
PTV AG – Traffic Mobility Logistics	• Traffic, mobility, logistics
MAGMA / ULA	• Natural Language Interface for geographical systems
Formit Servizi SpA	• Consultancy in the field of ICT and public administrations, project management
Cadzow Communications Consulting Ltd.	• Security, privacy, TVRA (Threat, Vulnerability, and Risk Analysis)
ELASIS / FGA	• Mobility systems and road safety
FORMIT Foundation	• Business planning, exploitation, patenting and licencing, definition of business incubators

Project Stakeholders Board



i-Tour project overview



Main goals of i-Tour

- **Objective 1:** Reliable and secure data collection and access
- **Objective 2:** Modular infrastructure based on standard open technologies
- **Objective 3:** Personalised multi-modal transport information system
- **Objective 4:** User friendly personalised travel information systems
- **Objective 5:** Identification of new business models based on real-time personalised LBS



How to achieve these goals?

Thorough the development of Location Based Services (LBS)



What are Location Based Services?

- A **location-based service** (LBS) is an information and entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of the **geographical position** of the mobile device.
- LBS services include services to identify a **location** of a person or object, such as discovering the nearest banking cash machine or the whereabouts of a friend or employee.

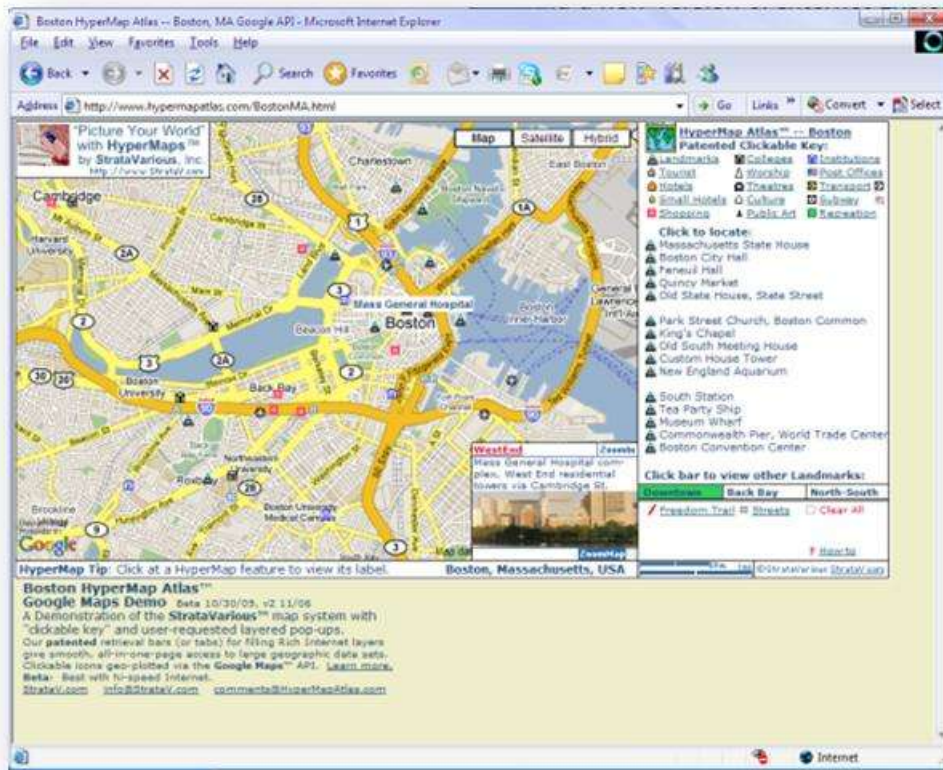


Location Based Services Social Networks

The importance of local Knowledge



Web 2.0 and geospatial technology convergence



i-Tour project overview

i-Tour features

- Open Source
- For Mobile Use
- Private and Public Transit Option
- Interfacing Databases of Transport Service Providers
- Integrated Multimodal Option
- Navigator / Routing Features
- GPS Locator / Location Based Service
- Real-time Updates
- Recommender System on Routing Choices
- Routing Options Comparison (price, traffic, weather, etc.)
- POI Information
- User Feedback
- Serious-game interface
- Natural Language Interface
- Environmental Consciousness
- Rewarding of Eco-Friendly Behaviour



Scenario analysis

	Open Source	Private and Public For Mobile Use	Interfacing Databases of Providers	Integrated Multimodal Transport Option	GPS Locator / Routing Features	Recommender System on Real-time Updates	Routing Options Comparison (price, traffic, weather, etc.)	POI Information	User Feedback	Serious-game interface	Natural Language Interface	Environmental Consciousness	Rewarding of Eco-Friendly Behaviour
Garmin Phone			•			•	•	•		•		•	
NAVEne			•	•	•	•	•	•	•	•		•	
Google Maps for Mobile			•	•	•	•	•	•	•	•		•	
Google Transit			•	•	•	•	•	•	•	•		•	
Google Maps 6.0 for Android devices			•	•	•	•	•	•	•	•		•	
OpenRouteService	•		•			•	•	•	•	•			•
Infoblu			•	•			•	•			•		
Tom Tom			•			•	•	•	•	•	•	•	•
In Citta			•	•			•			•			
ViaMichelin			•	•		•	•	•	•	•		•	
MyCityWay			•	•	•	•	•	•		•	•	•	
MOOVIT			•	•	•	•	•	•	•			•	
City Advisor			•							•			
foursquare			•				•			•	•	•	
waze			•			•	•	•	•	•	•	•	
Siri			•			•	•	•		•		•	
SMARTFREIGHT	•			•			•	•					•
ECOMOVE		•					•	•			•		•
WISETRIP	•	•	•	•	•		•	•	•		•		
VIAJEO	•		•	•	•	•	•	•					•
I-TRAVEL			•			•	•	•					
SMART-WAY			•	•	•	•	•	•					
OPTI-TRANS			•	•	•	•	•	•	•	•			
Mobinet			•			•	•					•	
i-Tour	•	•	•	•	•	•	•	•	•	•	•	•	•

i-Tour project overview

Objective 1: Reliable and secure data collection and access



- From transport operators
- From users
- From other channels

Naples test site



Provincia di Napoli



Alilauro



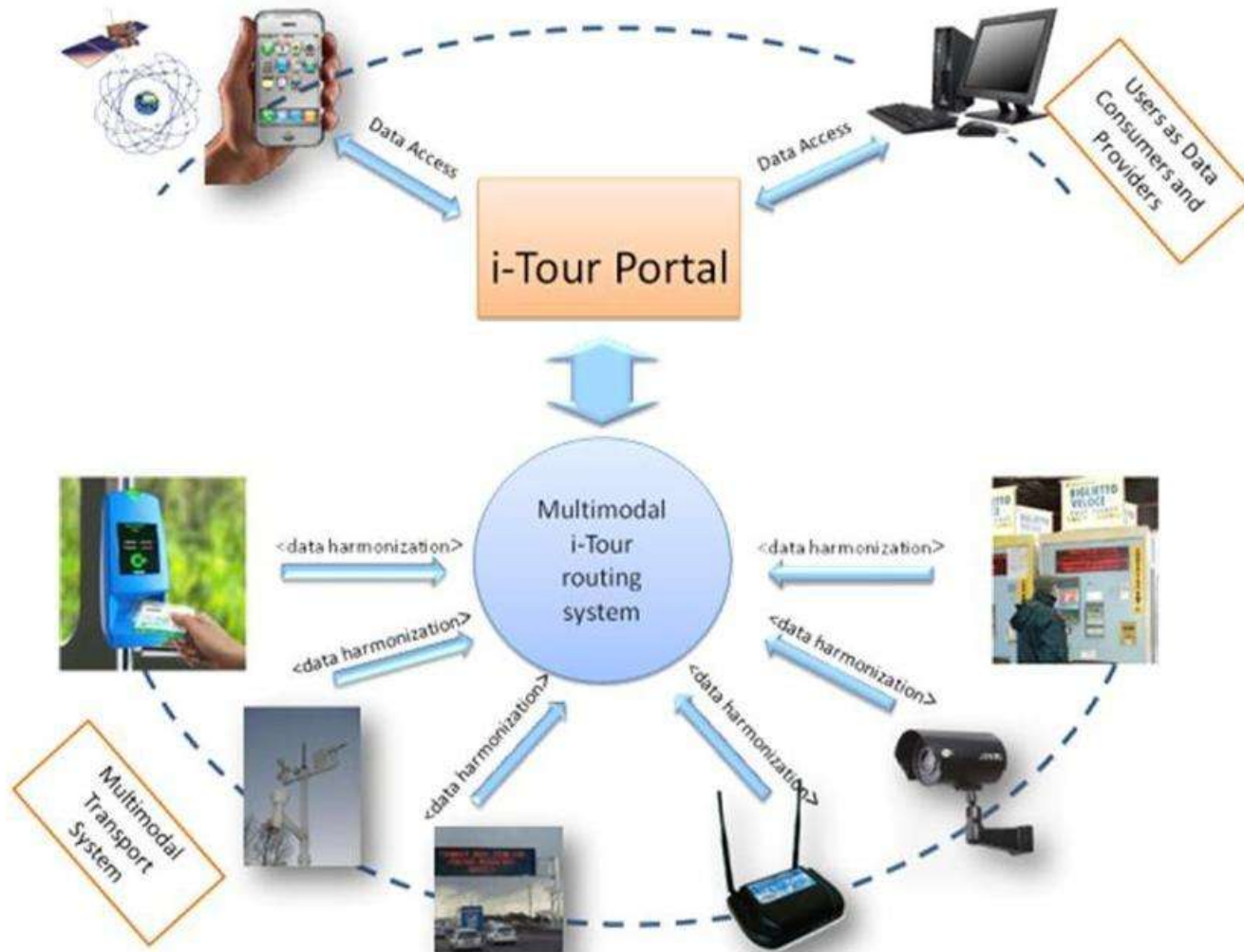
Autostrade Meridionali



Circumvesuviana



Goal: ensuring harmonised access



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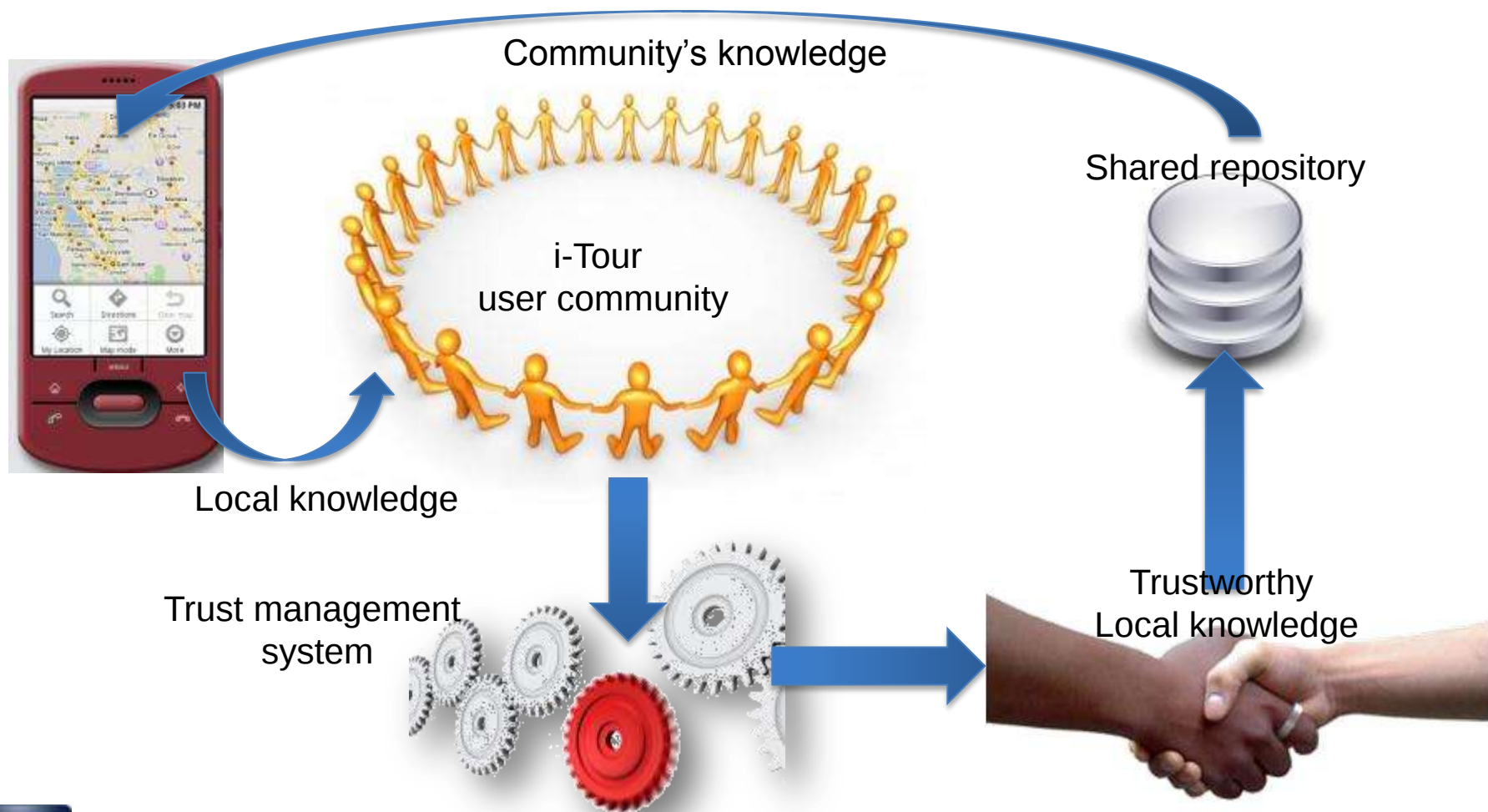
Advanced data collection techniques

- Transport load prediction systems using cameras, to be installed at designated train platforms from Circumvesuviana, to automatically detect **crowding levels**.



Advanced data collection techniques

From consumers to prosumers of information



i-Tour project overview

Security and privacy

- Approach similar to other social networks e.g. Wikipedia
- Huge problems of security and **privacy**:
 - Time
 - Position of the user
 - Personal preferences



attack vectors

C3L

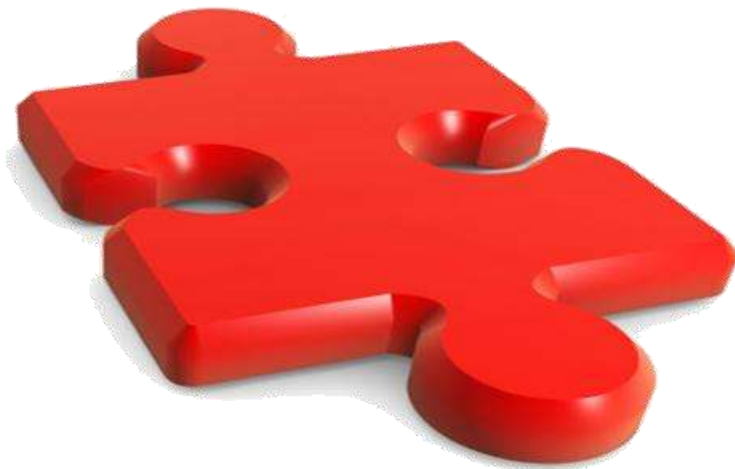
Privacy Threat Vulnerability and Risk Analysis

Novelty

- The i-Tour data model is a first example of definition of a unique process to treat different types of transport and traffic data in a **harmonised** manner.
- The application provides an **innovative solution** based on the use of video analysis systems.



Objective 2: Modular infrastructure based on standard open technologies

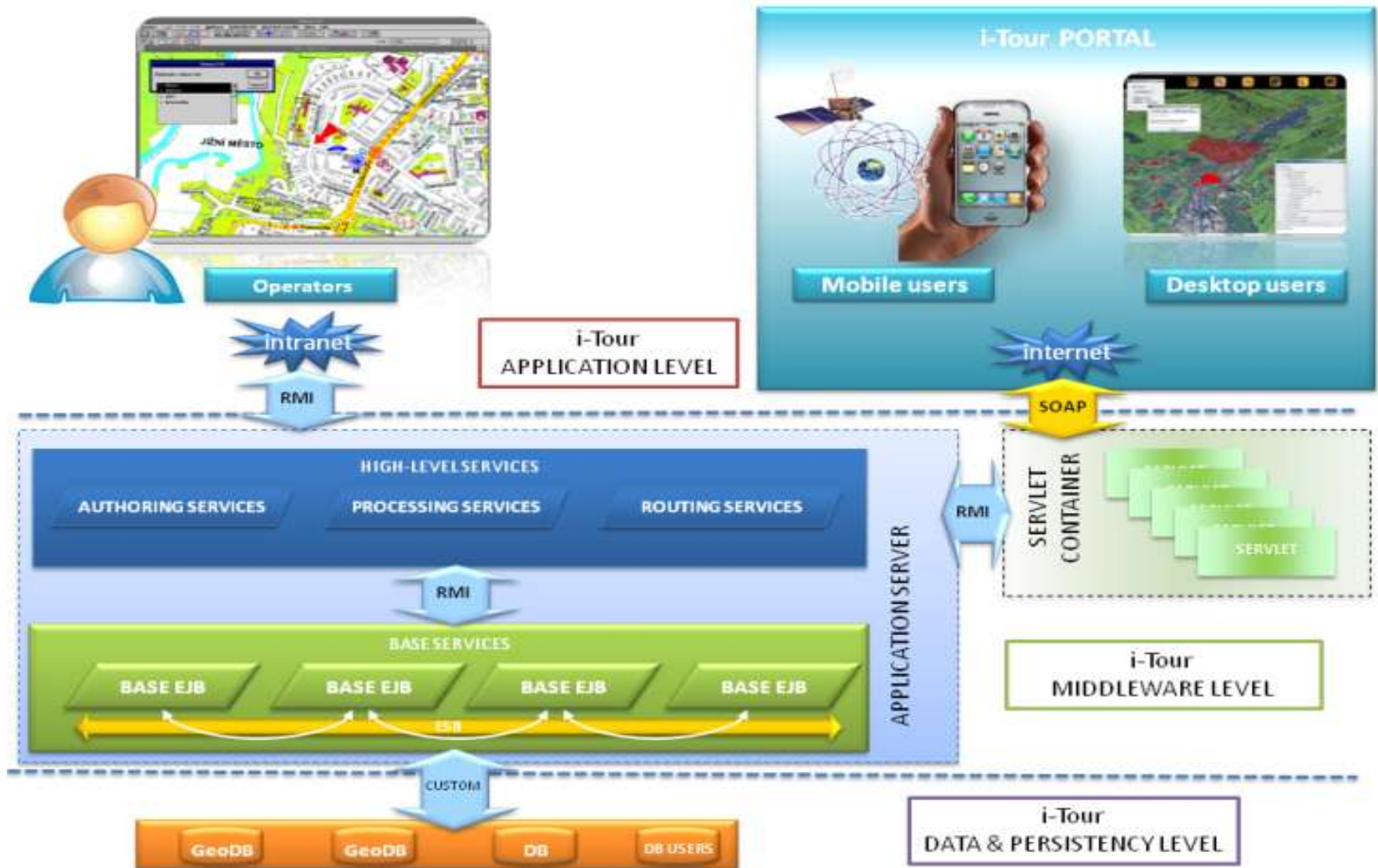


Main issue

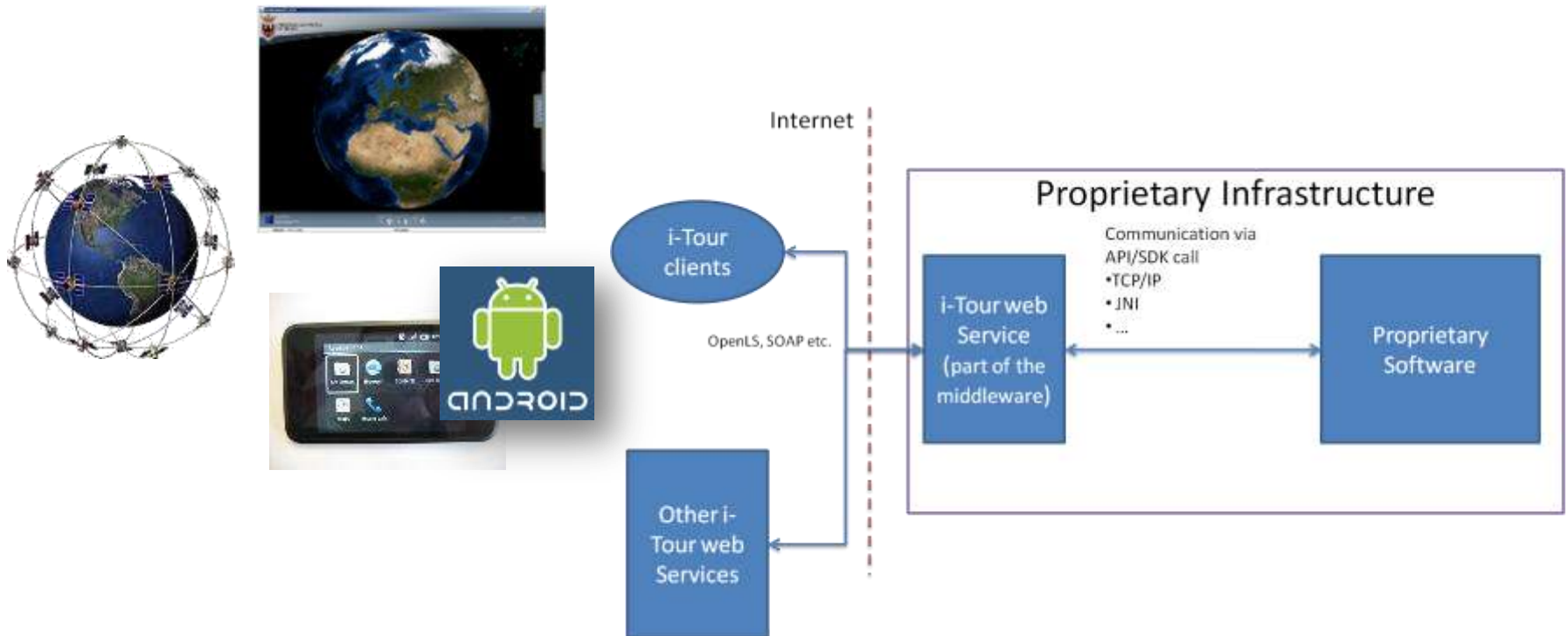
- Lack of interoperability in terms of:
 - Information (data structure)
 - Infrastructure (services)
 - Data Formats (protocols)



The multi-level architecture SDI of i-Tour



Each component of the infrastructure becomes a service



Novelty

- Full delegation through SOA
- Intrinsic **scalability** through support of OGC standards
- Extended OpenLS interface (to cater for Multimodal Trips & recommendations)



Objective 3: Personalised multi-modal transport information system



Multi-modal routing services

- Capable to **adapt to the user preferences**
 - Travelling style
 - Agenda & booking
 - Weather
- **Respond** adequately **to real-time events** through proper re-scheduling
 - unforeseen travel
 - a meeting went on longer than expected
 - bumping into a friend
- Capable to adapt to **real time** external **conditions**:
 - Public infrastructure load
 - Traffic condition
 - Transport network status



Novelty

- Routing system
 - **Multimodal** – private vehicle and public transport
 - **Multi-criteria**
 - **Personalized** advice
 - **Self-learning** of user preferences
- Activity scheduler
 - Integration of alert and recommendation function with routing system
- System consequences
 - More **sophisticated emission modelling**
 - Monitor of actual behaviour and feedback to the learning system



Objective 4: User friendly personalised travel information systems

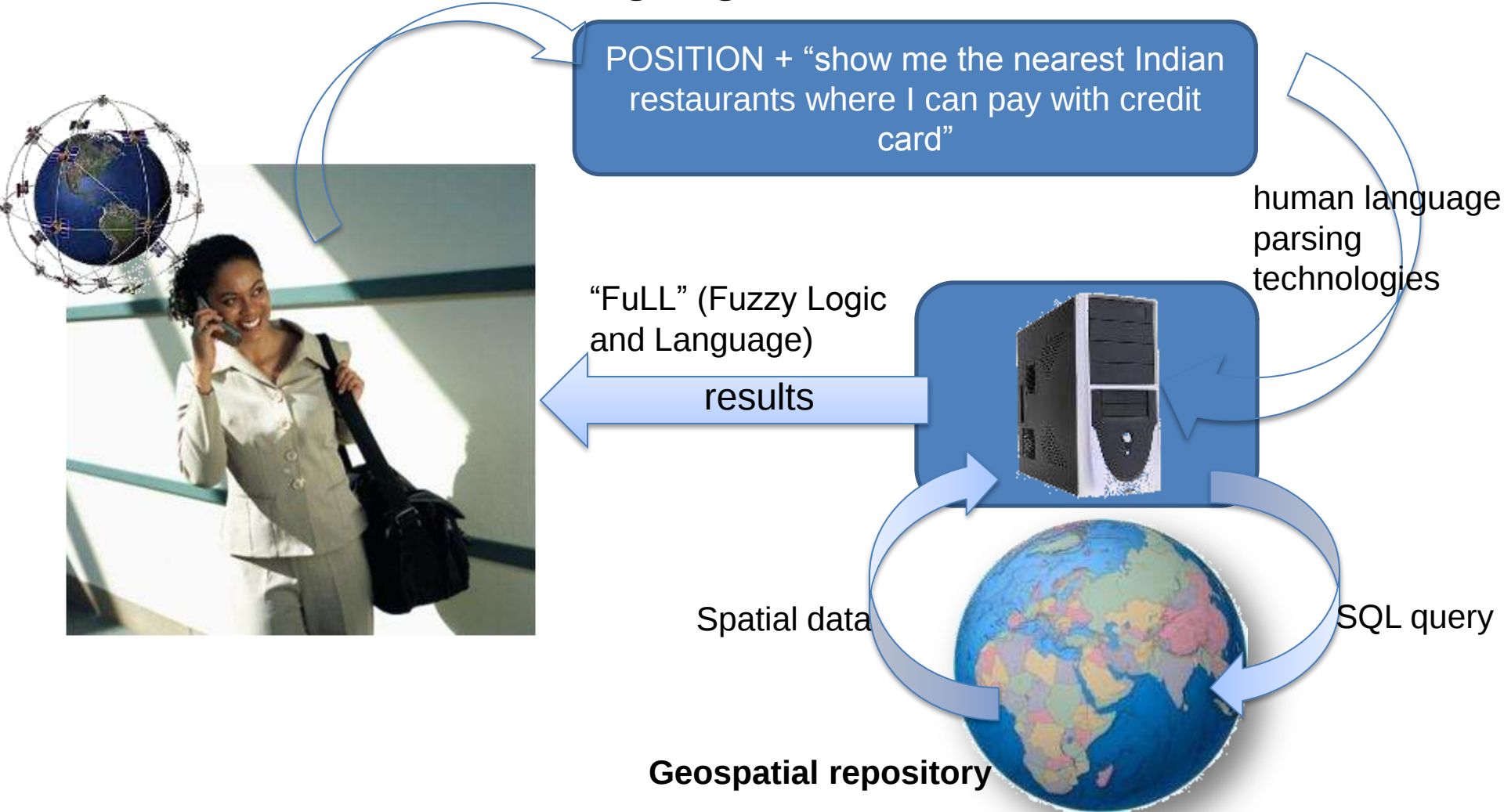


User-friendly mobility clients

- user-friendly mobility clients
 - public i-Tour portal
 - Smartphones or PDAs
- 3D client as Java WebStart
- Mobile client based on Android



LBS and natural language interaction



Promote rewarding mechanisms

- defining **rewarding mechanisms** for citizens opting for travel choices with positive impact on climate change
- by promoting forms of **incentives** that can raise the level of public awareness
- **informed of the Kg of CO²** or the amount of PM emission saved
- create reward schemas



Novelty

- Dialogue-based communication through **natural language**
- Interface adaptability through **ambient intelligence**
- Promotion of **sustainable** travel patterns through serious games as LBS
- Integration of ITS with **serious game engine** to **motivate** users towards sustainable travel patterns
- Recommender System
 - **diversity of recommendations** (surprise users with new results each time)
 - **bootstrapping** (how to cater for new users for whom we know no preferences)
 - application of **recsys technique outside classic LBS** (for example, recommending what travel-card to purchase)
- Access control (**people as sensors**) use of crowd-sourcing
- Virtual community analysis



Objective 5: Identification of new business models based on real-time personalised LBS



Target market

Targets could, therefore, be identified among the following categories:

- *Information technology and web companies*, (e.g. Google, Nokia, Microsoft);
- *Application distribution platform* (e.g. Google Play, Appstore);
- *Telco operators* (e.g. Vodafone);
- *Local administrations and transportation management bodies*;
- *Central procurement bodies* (e.g. Consip in Italy);
- *IT outsourcing companies* (e.g. IBM);
- *Services providers via web* (e.g. transport info, road network, weather) (e.g. Viamichelin)

Business plan discussion

Marketing plan – three options

Institutional configurations Business strategies	a) A new company representing the present consortium so as to go to market maintaining capacity and opportunity to manage the innovation process	b) A strong partner (or more than one, per each European country or group of EU countries) for industrialisation, placement and assistance
1) Market the entire system (server + data exchange interfaces, and sell assistance for system use)	1a	1b
2) Market server access and interfaces configuration (exclusive and non-exclusive licence, on a territory base, and sell assistance for system use)	2a	2b
3) Market the system as an app (through application stores)	3a	3b

Project Stakeholders Board membership

We are interested in your opinion and we consider with the utmost attention new memberships.



Acknowledgments

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The authors are solely responsible for it and that it does not represent the opinion of the Community and that the Community is not responsible for any use that might be made of information contained therein.

Thank you for your attention!

i-Tour website

www.itourproject.com

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