USE-ME.GOV
USability-drivEn open platform for MobilE GOVernment

USE-ME.GOV consortium (www.usemegov.org)

Project Summary

This workshop contribution provides an overview of the USE-ME.GOV project, its objectives and R&D challenges as well as answers to the questionnaire provided by the EC for this workshop.

1. Project Overview

The USE-ME.GOV project is funded under the 6thFP, IST – 1, Networked Businesses and Governments (2.3.1.9). The project started in January 2004 and will terminate after 26 months in early 2006. The main goal of the project is to support and encourage public administrations to provide access to new e-government services at any time and anywhere through the use of mobile communications technologies and a Next-Generation Open Service Platform for mobile users that can be shared by networked authorities and institutions (e.g. on a regional scale) in terms of technical infrastructure, information as well as a framework for commercial exploitation.

This contribution is seen as a promising approach to harmonise the quality of public services and to overcome related *divide phenomena* (the tendency towards the "technological" divisions of modern society). On the other hand, platform sharing explored on the basis of attractive business models would also provide the conditions for cost-efficient mobile services namely in geographical areas with lower Internet penetration. The open service platform has been designed in order to comply with high-level requirements that impact positively on the overall cost of deployment, such as sharing of content, independence from commercial off-the-shelf software, interoperability and scalability.

2. Contributions of the Project to Research under e-Government

2.1. Needs and Benefits for Public Mobile Services

The project team performed a detailed analysis of the particular needs and expectations from each of the authorities involved in the project. It was found that public authorities follow a variety of operational, economical as well as political and IST strategic goals. Despite the existence of common needs and interests, the number of identified potential candidates for the mobile services was quite impressive (about 25) and also demonstrated the diversity of possible benefits that can be extracted from public mobile services. The following table provides a summary of general goals and objectives and the associated key benefits:

Goals	Key Benefits
Mobile services are seen as new and/or complementary dissemination channel and means of access to public information. Public information is of various nature: general public information time-critical information (emergencies, traffic) notifications according to user specific interests	Service Efficiency Dissemination of information to a larger number of people (mobile access) at a very short time Citizen-authority relationship enlarged accessibility, transparency, citizen satisfaction Public Image improved image of town, city …
Mobile services as communication channel between the authority and the citizen (as well as businesses). The most evident application of this concept relates to the context of particular cases and processes (e.g. requests for certificates) where some part of the process and corresponding (notifications on the status of a process) could be done through mobile means.	Service Efficiency reduction of average service processing time, mainly for correspondence concerning simple notifications ubiquitous and instant contact Service Economy reduction of costs Service Quality more time freed and spent on particular cases Citizen-authority Relationship satisfaction of citizen and private users
Mobile services can particularly stimulate the participation of the citizen in local community matters and be applied as channel for the submission of complaints, suggestions etc., accessible to the public.	Problem Awareness early detection of problems reported by the citizens Authority-citizen relationship enlarged accessibility

Goals	Key Benefits
This kind of service also encompasses the communication between the authority and the citizen during the follow-up of the complaint/suggestion.	transparency increased participation of citizen in community matters citizen satisfaction Service Efficiency ubiquitous and instant contact
Within the context of general public information services, mobile services can also be used as vehicle for promotion at local (cultural, fairs) events. The promotional effect would be particularly useful for local businesses with limited financial and organisational capabilities to otherwise announce their presence at a timely and geographically limited event such as a local fair.	Service Efficiency Dissemination of information to a larger number of people (mobile access) at a very short time Service Economy reduction of costs contribution to sustainability Economical Development promotional support to local businesses Public Image improved image of city, town, region, …

2.2. Usability-driven Approach

The concept of sharing between networked organisations drives in turn the needs for particular technological capabilities of the platform itself, explaining the specific R&D objectives that the consortium has set out for this project. For the design of the open service platform and pilot services, the project team follows a usability-driven approach, as also indicated by the name of the project. The concept of usability is many-fold and encompasses the following fields of research and application:

- *Enlarged access to public information services*
  In order to ensure broad access by a significant part of the population, the platform has to provide openness and interoperability with regard to the interconnection with different networks, the integration of external content providers and public authorities providing their services and must further consider diverging mobile device characteristics and capabilities.
- *Intuitive and user-friendly mobile interfaces*
  Services are designed taking into account heterogeneous user characteristics, addressing the common needs of the citizens with different educational or even cultural background, age and interests, allowing for easy access to and search of information considering location, context and user interests.
- *Deployment of services*
  The concept of usability also implies that mobile services must be easy to deploy for the authorities, not depending on expensive software-hardware products or demanding technological skills for their configuration, maintenance and continuous update of service content.
- *Economical sustainability*
  The participation in the platform is thought to be open to all interested providers of public mobile information services including small authorities and organisations that have limited financial capabilities to deploy mobile services on an individual basis. The framework for exploitation takes into account the diverse needs and interests of public and private providers of services and information.

2.3. Platform Design

The main goal of the platform is to stay open and interoperable both among the already designed components and possible future enhancements in terms of platform functionality, being open to all stakeholders that jointly participate in the exploitation framework. Research and innovation therefore considered existing and evolving standards for open and interoperable solutions design as well as sharing and re-utilization of platform components (i.e. over any organisational or geographical boundary), with positive impact on deployment and maintenance costs for the participating organisations.

However, the most innovative aspect of the platform design is actually a functional one: the platform is designed to be multi-operator and multi-service due to the use of common open standards (OSA Parlay) and Web Services. Until now most, if not all, services, whether directly incrusted in the operators systems or physically located elsewhere, have been designed to work directly with one operator. In USE-ME.GOV one of the main goals is to make public services independent of the operators, only using the operators for certain specific services (e.g. localization) and as a communications channel. This has important "political" implications

for the authority in that, when offering a service or a series of services to its citizens, the authority doesn't have to associate these services to any particular operator. Each operator is on the same level as the others in their relationship with the authority.

- *Service Oriented Architecture (SOA)*
  To ensure broad accessibility of the platform, architecture needs to be extensible and new entities must be enabled to join the platform. Web services were found to support most appropriately our SOA approach allowing for sharing of resources and platform functionality. Moreover, the selection of pilot services followed the need to consider the largest possible set of functional platform capabilities.
- *OSA/Parlay*
  Interoperability with mobile operators is considered a key issue. The platform hence supports OSA/Parlay, however it was found that the support (by the operators) for this standard is still limited.
- *Open standards*
  Openness is ensured by the utilization of open standards, namely with regard to W3C that is regarded as the leading organization for open standards provisioning.
    - HTTP, XML for transmission and message encoding
    - WSDL, SOAP and XML for message representation, transport and resources representation
    - RDF, OWL and OWL-S for service description
    - OWL DL reasoner for simple inference rules
    - UAProf for representation of terminal capabilities and preferences
    - XACML for provisioning of authorisation rules
- *Service semantics*
  For services to be properly discovered and provisioned, an appropriate unambiguous and coherent service description must be provided. Platform design therefore included the development of an OWL-S model to which several extensions were added in an iterative process. The final model serves as a backbone for advances service discovery protocols and is believed to have general applicability.
- *Usability-driven approach*
  Platform design was performed in parallel with usability research for mobile interfaces and the specification of the pilot services that in turn impacted on the definition of platform capabilities. This ensured the proper consideration of required needs for interactivity (user with the mobile service interface), consideration of user context and automatic discovery of services.

2.4. Usability-driven Design for Mobile Application Interfaces

Mobile applications design faces many challenges, one of them being the achievement of intuitive and efficient user interfaces for very heterogeneous use conditions. The project results obtained so far have shown that such properties rely on four major requirements:

- A comprehensive user requirements analysis, which is critical in order to create useful and efficient services that fit user characteristics, needs and conditions of use.
- An iterative and multi-disciplinary design process: design iterations are basically required since user requirements cannot be fully established at the beginning; making a service more concrete, through scenarios, mock-ups and prototypes achievement, is necessary to enrich the initial user requirement analysis and find the best solutions. The user participation to the design process, in particular through usability test, is also required since knowledge in the field of mobile user interfaces is still incomplete to correctly predict users' behaviour and opinions.
- Simplicity of the service, a major requirement to create easy-to-understand and easy-to-use services on mobile devices. This requirement is mainly due to three factors that should be applied to many citizen mobile services: (1) infrequent use, which means that users always need to be appropriately guided through the service, (2) input and output constraints (e.g., reduced screen size, few keys), (3) mobile use conditions, which are typically less convenient that at the office or home and far more distractive.
- Contextual adaptability, made possible by multimodal interfaces and context-awareness capabilities. Such a requirement accounts for the users' need to adapt their use to various devices and various contexts and improve user interaction (e.g. alleviating text input tasks).

2.5. Business Models and Sustainability of Mobile Services

One of the key objectives of the project is to develop business models for the particular USE-ME.GOV pilot services and to define a general exploitation framework that ensures joint access and sharing of the platform by networking authorities. It should be mentioned here that currently business models for mobility in the public sector are virtually unavailable. Requirements for these models encompass conciliation of the diverse interests of the business actors participating in the exploitation framework, including private entities (mobile operator, content provider), public organisations and of course the mobile user. On the other hand, this framework must consider general policies for the dissemination of public information and the need for sustainability of provided services at predictable costs. Research issues of interest for the research under e-Government are:

- how to plan and implement public private partnerships for sustainable operation of public services,
- how to plan and implement funding opportunities for such services (including sponsoring, advertising, national and EC funding),
- European, state and national regulations and policies including security, privacy, competition with the private market, and
- Identification of the needs and gaps in regulations and policies for successful exploitations of such public services.

2.6. Recommendations for Service Planning

Project results integrate the description of a service planning methodology with recommendations that can be used by different actors in the planning process, such as the manager for the IST strategic planning working for a regional or local governmental authority, the operational manager who is elaborating new service scenarios for his authority, the technical manager who has to understand the impact of technology choices and requirements for service integration and implementation as well as equivalent roles with regard to the mobile operator and other external providers of content, services and technology. The project team understands that these recommendations can be seen also from the perspective of usability: through the clear description of service planning (procedures, recommendations), the authorities can design, build and implement services more easily.

3. Challenges for Successful Deployment of Project Results

The main area for growth and the main challenge for USE-ME.GOV in the short term is the extension of its use to areas of public service that go beyond "government to citizen". This can be divided principally into two ideas:

- The first is to take advantage of the platform for internal services of the authorities. The platform would allow faster and cheaper development of wireless applications for PDA's or smartphones for public workers who work outside their offices (eg. social workers or health inspectors). The other area of growth would be in quasi-public services where the organization may not be strictly public but is offering a public service - for example in transportation or healthcare.
- Secondly, for USE-ME.GOV in particular and mobility in general, the main challenge and opportunity for the future is in the area of convergence between IT, telecommunications and media content. USE-ME.GOV can serve as the basis for the mobile leg of real multi-channel services. For example, the use of video streaming would allow the citizen to see a meeting in the town hall on his mobile phone (or his TV or his PC) at any time and place. Another example would be the mobile phone as "contactless smartcard" (but with far greater radius of action and greater convenience for the citizen) for automatic payments, access control, identification, etc.

<u>Technological Factors</u>

- In dependence of the particular characteristics of the service, the integration of content from the authority side requires structural changes to organisation, the administrative work process and/or IT infra-structure. For example, the automatic delivery of personalised notifications (e.g. confirmation that a certificate is ready) impacts quite significantly on the usually implemented work-flow.
- The integration of USE-ME.GOV services into multi-channel service provision.
- Services rich in interactivity require fairly advanced mobile phones. The co-existence of phones from several technological generations on the market, and related digital-divide phenomena, could still limit or at least retard the success of deployment.

<u>Social Factors</u>

- Digital-divide phenomena, e.g. by default diverging levels of user interest and acceptance for mobile services depending on social background, age and educational level.

Economic Factors

- Financial investment by the municipality is still required for implementation and deployment.

Regulatory Factors

- Public administrations may not be allowed to provide certain services that are also provided by private companies. As the integration of information provided by the administration and other content of public interest is concerned, regulatory barriers could reduce the potential for public-private partnerships.

Political Factors

- USE-ME.GOV builds on the concepts of networking and sharing and there is no doubt that the benefits of platform exploitation also depend on the degree to which this is achieved. Political engagement, for example with respect to the organisation of regional initiatives (regional programme, municipal association), is therefore required.

4. Suggestions for related Research needed for further Progress

USE-ME.GOV is about networked government and has the objective to provide a solution that enables ALL public organisations and authorities to integrate mobile services into their strategy for multi-channel service delivery, taking advantage of the intrinsic benefits of resources sharing whilst ensuring sustainability of service provision.

We have discussed the underlying concepts and ideas for our project, but also looked a little further and to related priorities. Taking into account the *e-gov* related thematic key objectives for the 6.FP, and on the other hand the fact that this programme has still a long way (= many projects) to go, we still come to the conclusion that some current fundamental key goals will stay valid and in one way or another find continuation in the 7.FP. The majority of the suggestions below is not entirely new however, we provide a brief reasoning for each area explaining why we consider these areas as of continued interest and which key objectives the future programme could eventually prioritize.

IST as Driver for Modernisation and Organisational Innovation of Public Administration

E-government goes far beyond public (electronic) service delivery and encompasses re-organisation and structuring of public administrative processes. For decades, the driving forces behind the introduction and adoption of information technology in business organisations have been efficiency and productivity, better knowledge management, simply more and better information to support the business process as a whole, and finally – increased competitiveness. These processes have invariantly brought along significant impacts on the organisational structure and on all kinds of work-flows, processes and activities.

Whilst it is clear that public administration and private businesses follow quite distinct organisational objectives, the importance of information technology as driver and enabler for the modernisation of public administration processes is universally accepted, and has as such driven the evolution of e-government. It is true, however, that despite many progresses, modernisation of public administration processes and their efficiency continue having the highest priority for many years to come. Unfortunately, availability and access to information technology is in most cases not the principal adoption barrier, but actually the complexity that is intrinsic to existing administrative processes and consequently to re-organisation, whilst a series of political, social and regulatory impacts and barriers must be taken into account even for apparently small changes.

We therefore think that current priorities on organisational innovation should be pursued further, i.e. as pre-condition for the success of e-government in general. Taking up known objectives, particular focus could be placed on:

- new structures for joint service provision, collaboration and networking between administrations, mainly at the local and regional level (see below)
- organisational models and solutions for co-operation between administration, economical and social agents and public-private partnership
- increased efficiency and productivity through re-organisation and integration of administrative processes

Networked Administrations – closing the Divide between large and small Administrations

In very close relationship to the first objective, we believe that the concept of networked administrations deserves a high level of attention. It should be considered that the digital divide gap between large public administrations (e.g. national organisations, big cities) and small, local authorities is far from being closed, namely with respect to truly interactive services as opposed to public information dissemination. In several countries, national initiatives (governmental institutions) in particular have created successful electronic (high volume) services such as tax declarations, car licence registrations, electronic payment of services etc. This evolution is still not matched at the local level, and taking into account that citizens have to treat the vast majority of their personal cases and processes with local administrations, the need for an enlarged access to electronic public services is still significant.

Again, availability of information technology is by itself not the key problem, but limited resources and also skills of smaller municipalities. We hence believe that networking of administrations is the most promising approach to overcoming the main non-technological barriers. Whilst from the perspective of policy, small authorities could be considered by particular measures (similar to the equivalent support for SME's in the 6.FP); in addition to the required organisational innovation (see above), key objectives for networked government could be:

- integrated multi-municipal and inter-organisational (networked) information systems
- networked solutions allowing for increased economical sustainability for joint, multi-channel service delivery, exploring the concepts of sharing of resources (hardware, software, services)
- (demonstration of) successful combination and integration of all interoperability dimensions - application + semantic + organisational – in the context of networked government

e-Participation and Citizenship through interactive and personalised Services

As outlined above, in the current landscape of electronic public services pure (web-based) information dissemination still dominates over interactive electronic service delivery (where again the divide between smaller and larger organisation is easy to verify). Taking up existing priorities, future programmes should continue fostering the citizen-authority relationship and service interactivity:

- new services that stimulate the involvement of the citizen in community matters (e-Democracy)
- increased transparency and accountability of local authorities through services providing a high degree of interactivity and personalisation: the citizen as "customer" – new solutions for 'CRM' = citizen-relationship management
- for the mobile services dimension: pan-European service delivery and interactivity still require technological advance in ubiquitous computing, multimodal user interaction and intelligent (adaptive) services design

5. Related Projects and Potential for Synergies

We have pointed about above that service delivery must go hand in hand with work-flow integration with regard to e-administration and processes. This bridge will not be built by our project. On the other hand, particular application areas such as identity management, even though touched by our project, are not receiving attention as research area and are rather seen from the angle of functional integration.

From the current list of project, we believe some potential synergies can be identified. Inputs arriving along 2005 could be useful for our objective to develop recommendations for service planning. The following list contains the projects for which we feel exist potential for mutual synergies:

- TERREGOV: mobile services, networking practises
- INTELCITIES: mobile services delivery and user interaction (pilot services)
- EMAYOR: interaction with citizen though mobile channel
- COSPA: use of open standards
- GUIDE: identity management
- ONTOGOV: ontologies for public services