

M-Government for Digital Cities: Value Added Public Services

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Abstract: *The convergence of technologies and “new” mobile technologies arise as a serious response, so that the Information Society and the e-Government are a reality for citizens. The m-Government term hence appears as a powerful e-Government component to facilitate the delivery of more and better services for citizens, in a customized manner and by means of various devices. M-Government thus proposes catapulting the social impacts of local e-Government and Digital City strategies and projects.*

Keywords: Information Society, e-Government, m-Government, Digital Cities

1. Introduction

Who hasn't heard the terms “Information Society” and “Age of Knowledge”? Who isn't speaking about the power and popularity of information technologies and communications (ITC) and the Internet? (OECD, 2004). In the last few years, we have witnessed the popularity of these subjects, both in the media and in academic work, as well as in corporate, organizational and Government plans and work.

Notwithstanding the ubiquity of these matters in everyone's mind, we still do not understand their true impact on our society and on our personal lives. Moreover, for our country, the Information Society is first and foremost a point of reference and aspiration, rather than a notorious and distinguishable reality. If we were to argue that all Mexican citizens are part of the extremely famous Information Society by default, our profound “digital gap” would make us unprivileged members of said society.

If we believe that the popularity of the Internet as a powerful transformational force of society is deserved, but we are not able to leverage all this power in the daily life of our country, we need to better understand the nature of the Information Society and e-Government to propose alternatives that complement and enrich our public strategies and policies on the matter.

To this end, the convergence of technologies and “new” mobile technologies arise as a serious response so that Information Society and e-Government are a reality for all citizens.

2. Background Material

The Knowledge Society

Unlike the Industrial Revolution which created new social and economic institutions characterized by centralization, the verticality of organizations and the standardization of processes, the so-called Knowledge Society gives more weight to innovation and networking (Bell, 2000).

According to theory (Castells, 1996), (Castells, 2001), (Picardo, 2003), (Gartner 2004), (EU Commission, 2004), the use of ITCs creates new horizontal, democratic and collaborative relationships among the different players in society: individuals, companies, Government and organizations. These relationships foster learning, innovation and the accelerated and distributed dissemination of knowledge, with the obvious improvement in individual and organizational mobility, transformation and development opportunities.

We can define the Knowledge Society as that characterized by an acceleration without precedent in the speed of creation, accumulation and depreciation of knowledge, as well as by an increase in the intensity of scientific and technological progress, a vertiginous expansion of intangible capital in the economic plane and where innovation is the dominant activity (Castells, 2001), (OECD 2004). Before a phenomenon of this nature, domestic governments foster and boost the Knowledge Society by means of specific strategies and policies, such as e-Commerce, e-Government connectivity, among others.

Notwithstanding the importance and essential nature of said policies and strategies designed and handled by domestic governments, there is a role that governments and the various actors of the different municipalities and cities must play, as the true creation of the Knowledge Society and e-Government demands the consideration of more punctual and specific needs of society's participants and, apparently, this is better known at the local level.

The concept of Digital and Intelligent Cities has come about precisely as a result of this, understood as the set of IT and communications solutions and practices used to integrate all actors of a local Community in the Knowledge Society, where the e-Government plays an essential role.

From e-Government to m-Government

According to the OECD (OECD 2003) (OECD 2004), e-Government is the use of ITCs, particularly Internet, as tools for better Governance. Other common e-Government definitions consider that it is "the capacity to transform public administration through the use of ITC" or that it is the use of ITC in Government to provide services and perform processes" (Faya, 2001). In a general sense, it is accepted that the central purpose of e-Government is the citizen and the efficient satisfaction of its needs with regards to public goods and services.

Thus, one of the main challenges for e-Government is to achieve that citizens have greater access, and that they use, leverage and are benefited by improved public services. To this end, multi-channel strategies for the delivery of electronic government services and service customization appear as indispensable (OCDE, 2004). These strategies have as their purpose to provide a single interface between the citizen and the Government, have an impact on governance structures (budget, organizational structure, technology, standards, are multidimensional), there are several channels and parties responsible for the rendering of services, for example, the private sector, federal and local government), and have as their tendency the development of a common platform for back-office processes, the migration of front-

office services towards the Web, the use of mobile and customization technologies, as well as their convergence.

The m-Government thus appears as a powerful component of e-Government to facilitate the delivery of more and better services to citizens, in a customized manner and through several devices. The concept of m-Government, "mobile Government," stands for the use of mobile wireless communication technology within government administration and in its delivery of services and information to citizens and firms (Östberg, 2003). Mobile Government is (Kwon, 2004): a) Future Government that provides for citizens, companies and government to deliver personalized government services through wireless network, b) Multi-channel Government that overcomes current limitation of e-Government and supports mobility and accessibility and, c) Wired-Wireless Convergence Network that can access government service anytime and anywhere.

The goals of m-Government are: a) Advancing the e-Government services by adding mobile value (mobile value: convenience, timeliness, personalization, location-based etc.) and b) Implementing the e-Government services over the wired and wireless Internet in an Integrated way (offer the seamless e-Government services to the public any time, any where and create high-value interoperable mobile services in public sector). From a citizen perspective, mobile Government stands for new front-end access to public services that have been made available specifically for mobile devices or adapted from existing e-Government applications (Kwon, 2004).

M-Government can be applied to four main purposes in the public sector (Zálešák, 2003):

- **m-Communication:** improving communication between government and citizens (G2C, C2G). Providing information to the public is not a trivial activity. It is the foundation of citizen empowerment. Without relevant information citizens are unable to form intelligent opinions and, thereby, are unable to act on the issues before them meaningfully. Information is also needed not only to promote transparency but also accountability. Mobile devices provide an important access channel for governments to reach citizens (G2C).
- **m-Services:** m-Transactions and m-Payments. Mobile devices not only provide a channel of communication between citizens and government, they also enable government-to-citizen transactions.
- **m-Democracy:** m-Voting and the use of mobile devices for citizen input to political decision-making is an m-Government application with tremendous potential to enhance democratic participation.
- **m-Administration:** Improving Internal Public Sector Operations. M-Government also provides opportunities to improve the internal operation of public agencies.

Despite its infancy, mobile Government is a growing and important set of complex strategies and tools that will change completely the roles and functioning of traditional governance (Zálešák, 2003). In advocating the existence and importance of mobile Government, there are two basic facts to be considered: a) There are more people who do not have access to PCs than there are people who do not have a cell phone or other wireless device, which will make government and services available more to mobile customers as a group than to PC users, even as m-Government is considered a subset of e-Government, and b) Computers generally do not travel with citizens, but information and public services can: m-Government provides for instant availability of services and information, helping frequent

travellers and people on the move to access government. When travelling overseas, citizens will not have to rely on unsafe internet cafes, as mobile coverage exists in vast majority of countries globally. Mobile Government also means that a citizen does not have to go and search for kiosks, or even get a connection to the house. People now carry a mobile Government access terminal with them wherever they go.

Concepts of m-Government (Roh, 2004)

1. Mobile Government

- Free mobile access to provided services and information from any place, at any time.
- Settings : 3G + mobile terminal + Wi-Fi networks .

2. Misconception: pure information provision via mobile phone from Gov. to citizens

- Complex strategy for efficient utilization of all wireless devices with maximal added value to all involved parties such as Gov., citizens, and business and reasonable & favorable ROI, justifying extra spending on new tech and mobilized process.

3. Advantage/disadvantage

- Same as e-Government function.
- IT literacy : must master mobile devices.
- Pertinent redundancies for central/local Government employees.
- To achieve more efficient Government operation.
- Desired status : efficient Government and democratic societies without digital divide.

4. Closing the digital divide

- Giving everyone access to internet and information via fixed or wireless devices.
- Anyone interested can have these devices and desired information easily accessible and available.

5. Strength

- Mobility and portability.
- Ubiquitous interaction.
- Personalization.
- Location awareness.
- Lower cost.

6. Weakness

- Security risks.
- Privacy threats.
- Low bandwidth.
- Unstable connectivity.
- Limited data processing and storing.
- Inconvenient user interface.
- Electric power consumption.

3. Main argument: the importance of a Digital and Intelligent City projects and M-Government

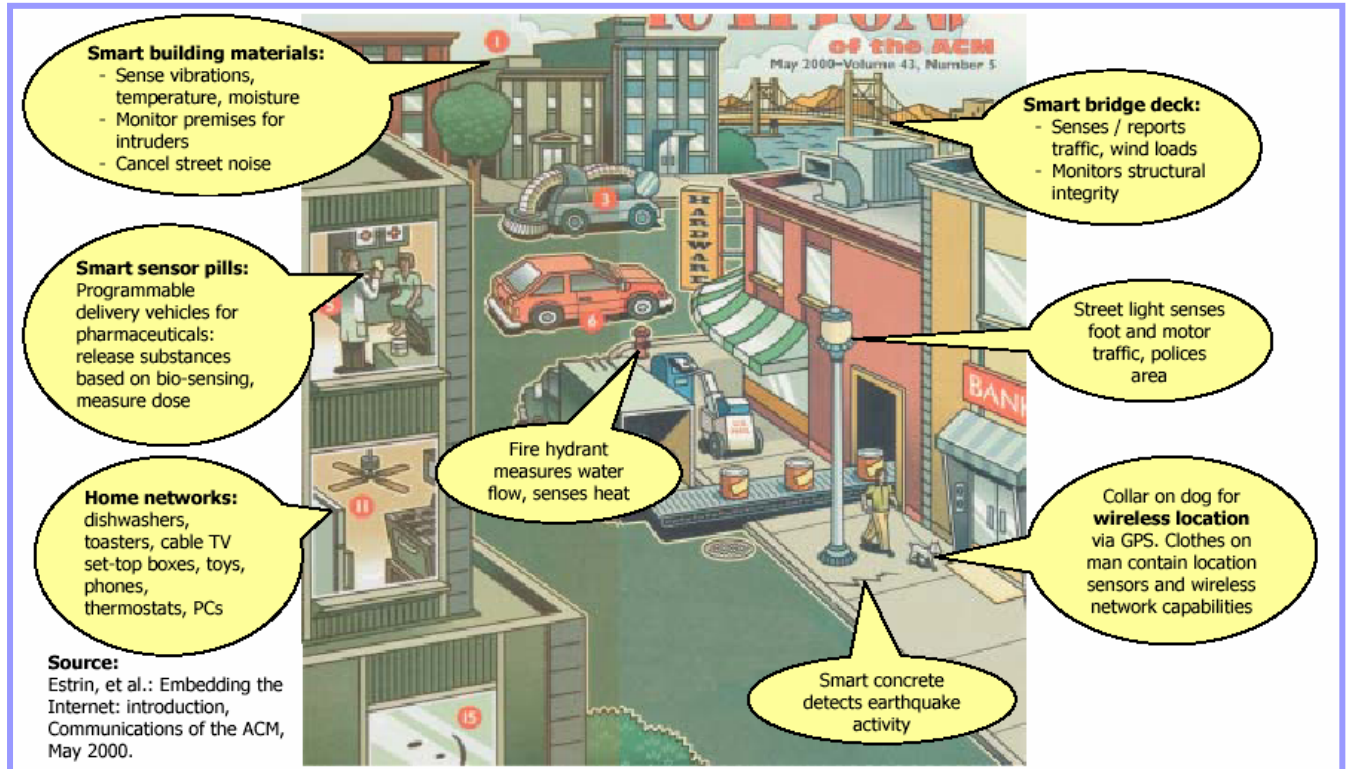
The notion of a Digital and Intelligent City may be understood as the collectiveness that has developed the means to generate and extract economic and social benefits from electronic collaboration networks made up by the actors of all sectors of a local community, through innovative services and applications that create new value and transform the manner in which the community lives, works, travels, governs, purchases, educates and entertains itself. In other words, a Digital and Intelligent City is a geographically defined community, whose members understand the potential use of ITCs and form alliances to work together and use the technology that will significantly transform their life (Government of Canada, 2002).

Some of the fundamental principles and pillars of a Digital and Intelligent City are the closing of the digital gap (Norris, 2001), the social inclusion, e-Democracy, network collaboration, intersectorial cooperation (private, social and government sectors), sustainable economic development, the generation and transfer of knowledge, social and technological innovation and, of course, good governance.

M-Government may then catapult the social impacts of e-Government strategies and projects at the local and Digital City level. How can this take place?

- Detecting and gathering the needs of citizens in a detailed manner and quickly, which in turn facilitates service customization.
- Providing the interoperability of Government technological systems and applications—between the different Government instrumentalities and levels—and the private and social sectors (offering horizontal and integral electronic procedures and services to citizens).
- Offering electronic services through multiple devices and channels in wireless and mobile Internet access (phones, PDAs, PC, Handheld PC, game console) geographically-defined areas.
- Fostering with it the leveraging of better services of all sectors of society in a particular town: Health (m-Health), Education (m-Government for Education), Security (m-Security), Democracy (m-Democracy and m-Voting), Culture (m-Culture), Business (m-Business), Work (m-Work), Tourism (m-Tourism), Police (m-Police), Parking lots (m-Parking), Taxes (m-Taxes), Communities (m-Communities), Transport (m-Government for Transportation), etc.
- Offering different types of services:
 - Information retrieval (Criminals investigation, weather information, car traffic, etc.).
 - Public online service (Process of request, retrieval of certificate, issue from citizen, notice of result).
 - Data gathering (Environment/pollution, census poll).
 - Disaster alert (Message services such as hurricane, earthquake, etc..).
 - G2B service (Government procurement and payment).
 - e-Tax (Payment of national tax, local tax, car tax, etc..).

Mobile IT Applications



An example: Digital Tlalpan Project

The Mexican project of intelligent city Digital Tlalpan proposes us a road map to continue for the construction of a digital city that incorporate in its vision the provision of electronic services through mobile technologies. This project of digital city began in January of 2005 and still is in process. The project is coordinated by INFOTEC, Public Center for e-Government and Information Society in Mexico, and the Electronic Government and IT Policy Unit, the e-Mexico National System, the Government of Tlalpan, universities, hospitals, the private sector and NGOs.

The objectives of Digital Tlalpan are:

- To develop an integral technological project, in order to get the execution of e-Government and Information Society, with the participation of the productive sector, the municipal government and the civil company and their organizations.
- To identify the specific needs of the diverse sectors to solve them with the use of IT in the local environment
- To build technological and social innovation (prototypes, tests of laboratory, technological innovation in new products)
- To promote the interoperability and convergence of technologies between the different levels of government and among the different sectors of the society
- To generate conditions and opportunities of business for the actors involved in the project

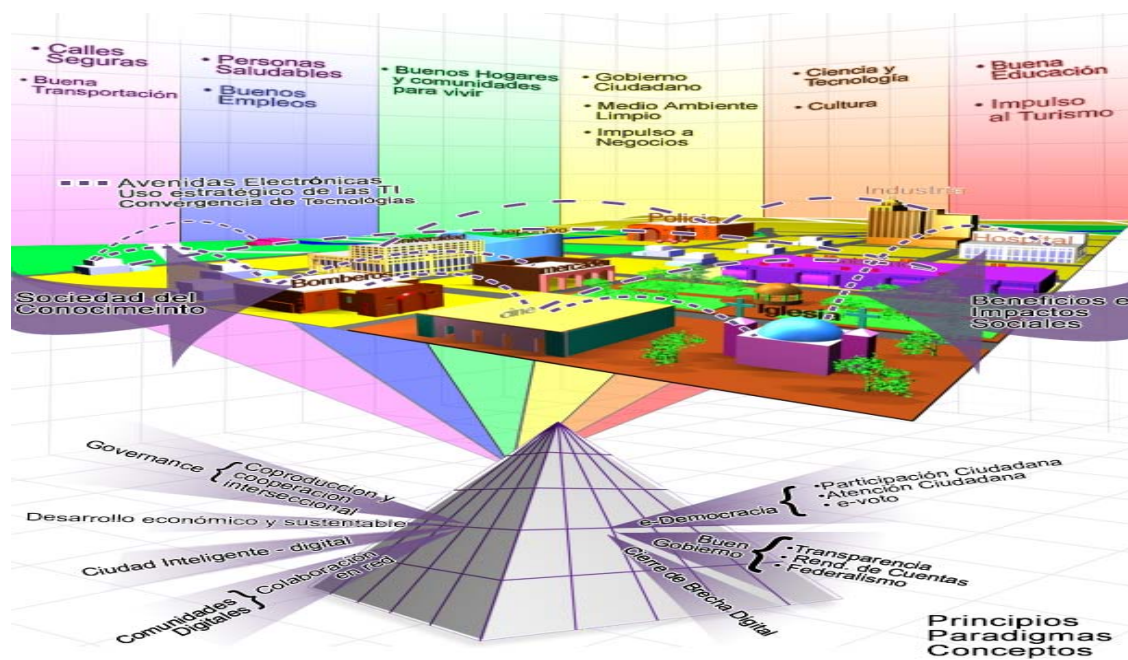
This project suggests the following methodology for its implementation:

1. To understand the concept of digital city
2. To identify and to organize the participants
3. To develop a vision
4. To determine the needs of the community
5. Technical studies and funds for the project
6. A strategic business plan
7. Organization
8. Operation of the project
9. Control and evaluation

The expected results for 2006 are:

- Wireless access of Internet in the central zone of the City and in two rural towns
- To close the digital divide through digital community centers
- Information Architecture of the City
- Interoperability of information, technological applications and electronic services of the Government (Federal, State and Municipal), the private sector and social sector
- To develop technological and social innovation applications in the sectors of education, health, government, commerce, rural, security, culture, tourism, democracy, etc.
- To deliver electronic services through mobile devices and through diverse channels (Digital Tlalpan Portal, Call Centers, Offices, etc.)

Digital Tlalpan Conceptual Model



4. Conclusions

The concept and international experiences of Digital and Intelligent Cities show us alternatives to successfully incorporate groups of people, companies and organizations in the Information Society and to resolve critical problems of society. In a Digital and Intelligent City, many of the elements of a national Information Society and e-Government come together in a pragmatic and efficient manner: promotion among citizens and companies of services available online (payments, purchases, procedures), an improvement in the competitiveness of companies through information and services for them, the delivery of information of interest to the city (maps, guides, culture, tourist and public safety information, etc.), the participation of citizens in public matters and decisions, the promotion of transparency, government management and quality, the enabling of technology to offer telemedicine and telework services, the fostering of online education and training, and the closing of the Digital Gap.

Due to its lower scale and more controlled space, and its greater proximity to citizens—which implies greater knowledge of their needs—Digital and Intelligent Cities are an effective alternative for social transformation by means of Information and Communications Technologies and to make the Knowledge Society a reality. The use of mobile technologies boosts this type of strategies. Mobile Government at the local level is a good starting point and an important support for the government sector for the achievement of the goals of a Digital City, which must eventually also adopt an integral mobile city strategy and, as a result, provide value-added public services.

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