e-Government beyond e-Administration. The Evolution of Municipal Area Environments could establish a Digital Framework of Confidence for Citizens

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Abstract
Current e-Government applications focus on means and procedures that deliver public services to citizens, in order to improve the quality of public services and minimize expenditures in public transactions. In this paper we examine how digital means offer the proper environment for the Administration to become a Trusted Partner for citizens in all everyday situations. We are inspired by a case study in Greece where a Digital City is under development in the town of Trikala, central Greece. A Digital City could develop links among Public Administration, Businesses and directly to citizens through portable or home devices. This new architecture could lead to the next generation of e-Government, where citizens don’t need to apply for public services, and where automatic record updates could even obviate the need for certificates.

1. Introduction

There are many definitions of e-Government (OECD 1999) (Traunmüller, Wimmer 2000). It usually refers to the installation of Information and Telecommunications Technology (ICT)-based infrastructures, in order to deliver digital public services to citizens and enterprises. Another definition refers to the global re-designation of public administration based on ICT applications. Re-designation is necessary since digital service delivery demands different product lines for Public Administration, the cancellation of some steps/parts of public services and generally the modernization of public transactions based on different methodology.

E-government is one of the key objectives laid out in the e-Europe 2005 Action Plan (European Commission, 2002) (European Commission, Information Society DG 2004) to boost the information society in the EU. The overarching aim is to bring administrations closer to citizens and businesses by providing online public services by 2005 - mainly through high-speed Internet connections (broadband). E-government is expected to improve and accelerate administrative efficiency in order to reach the EU’s Lisbon targets of sustainable economic growth and competitiveness. At EU level, the Commission is encouraging member-state actions by financing projects and securing the technical interoperability of e-government services across Europe.

E-government refers to the provision of online public services to citizens and businesses. Services for citizens include registration with government services such as health care, education or employment benefits. For businesses, e-government services can take the form of online alerts for public procurements or funding opportunities as well as information and support on applicable legislation in a given sector. E-government is widely viewed as an extraordinary opportunity for administrations to cut their costs, speed up procedures and therefore increase their efficiency and reactivity. In the EU context, e-government could have positive implications for cross-border mobility and the internal market and is seen by many as a way to achieve the EU’s Lisbon target of becoming the world’s most competitive knowledge-based economy.

Within the public sector, public administrations are facing the challenge of improving the efficiency, productivity and quality of their services. All these challenges, however, have to be met with unchanged or even reduced budgets. Information and Communication Technologies (ICT) can help public administrations to cope with the many challenges. However, the focus should not be on ICT itself. Instead it should be on the use of ICT combined with organisational change and new skills in order to improve public services, democratic processes and public policies. This is what eGovernment is about (Commission of the European Communities, 2003).
The main target for Governments is the improvement of public services and the minimization of operating costs for service delivery. Another critical target is the development of a citizen-centric Public Administration, where special needs are important, transactions must be simplified and based on record updating. Furthermore, social participation in policy- and decision-making processes will be enabled via digital boards or communication channels.

In this paper we present a different view of e-Government, where its role goes far beyond the provision of digital services and social participation. Huge investments in ICT, basically based on Strategic Plans, can provide an intelligent environment where Government “belongs” to citizen everyday life, offering much more than basic services. This new consideration is the outcome of a Digital City which is under development in Greece. The implementation of this Digital City involves Government in all citizen and local society needs.

2. The Digital City Project

We define Digital City as a municipal area environment where a number of ICT based applications are installed, focused on the special needs of this area. These applications aim at the improvement of the everyday life by simplifying public transactions, reducing telecommunication costs and by delivering new services related to the local way of life. Moreover, these ICT applications offer new ways and methods that could enable citizens to participate in policy-making, while in parallel establishing local Government and Public Authorities as guarantors of local society's effective operation.

Every medium-sized city has its own particular physiognomy, due to social, economic, geographic or political characteristics. For this reason the digital city could be differentiated from region to region, so that ICT applications fit special local needs.

The development of a Digital City aims at the achievement of specific milestones that are defined by the Municipality or a local Administration. When all ICT based infrastructures are installed, the Digital City will become a new virtual organization that synchronizes work flow in or between local agencies, municipal authorities, enterprises and citizens. This new organization can use ICT to improve resource planning, service delivery and citizen satisfaction in the local society and generate the next step for e-Government.

2.1 The Digital City Model

The Digital City follows a multi-tier architecture and consists of four discrete layers (Figure 1):

a) Infrastructures: necessary hardware and software components, which make the Digital City operational (eg. fiber optic or wireless public broadband networks, local area networks, servers, terminals and points of access, operation systems, databases etc).

b) Applications and services: software applications and public services that react to citizen needs, life events or business situations. For example:

Consider a citizen who wants to travel by bus from place A to place B in the area of a Digital City. This need is translated to the life event “Travel from place A to place B”, which refers to a service of providing information regarding the exact real-time of departure and arrival of the bus that covers this route. This particular electronic service will be offered via the “Intelligent Transport Systems” infrastructures and is delivered to the citizen via a web portal, an RDS system or through a digital board installed at the bus station.

Moreover,

Consider a citizen who wants to apply for a birth certificate from the Municipality. The related life event is “birth certificate”, which is translated to the production and delivery to the citizen of the birth certificate. This digital service will be offered by the infrastructures’ “e-Government system”, and will be “triggered” by a call to a 311-like phone number or via the Internet, will be executed by the Municipal Back-Office and the birth certificate will be posted to the citizen.
c) End-users: citizens, organised teams of citizens (e.g. students, Municipal Employees etc.), Authorities and enterprises (Public Authorities, Municipal Services and enterprises etc.) served by the Digital City. Each user or team of users will have a unique role of involvements and will be served by the Digital City.

d) The back-office: Public Authorities and Enterprises that produce and deliver information to the end-users or execute public services. Employees, who belong to Municipal Authorities for instance, will execute public services. Additionally, local enterprises will participate in local electronic marketplaces.

For the purposes of the e-Trikala Digital City project all above layers were analyzed and social needs were investigated and mapped to specific ICT infrastructures (Tsoukalas, Anthopoulos 2004), and they are presented in (Figure 1).

2.2 The e-Trikala project

In Trikala, Central Greece, the first Digital City – e-Trikala – is under development, funded by the Greek Information Society Framework Program (Ministry of Economy and Finance of Greece, 2002). The designation and implementation of e-Trikala puts citizens’ and local society’s needs at the center of the project and it aims at the improvement of everyday life. So the major principal of e-Trikala project is to implement a citizen-centered system and not a bureaucracy- or agency-centered system (Executive Office of the President of the United States, 2003). The e-Trikala project consists of a number of sub-projects, each delivering a specific solution. The first phase of the e-Trikala project will be completed by the end of 2006.
Under the first phase of the project a number of projects are being developed in order for the basic telecommunication infrastructures to be installed and the initial digital public services to be offered. The primary projects of e-Trikala are presented below:

a) Projects under development: these projects are focused on the familiarization of local society with the digital environment. Activities are being undertaken to present the benefits of broadband communication. Additionally, initial help desks are being installed in the municipal library, offering access to digital libraries and books, while in parallel local cultural heritage is being digitized so that it can be made accessible to the local community.

b) Projects that have already been designed: these projects aim at the installation of a Metropolitan Area Network (MAN), based on fibre optic cables, that interconnects all public buildings in the area of Trikala, while in parallel a wireless broadband network is planned to extend MAN over the area of Trikala city. These two networks will be interlinked with the Syzefxis (www.syzefxis.gr) public network and the Internet. Additionally, a number of primary public services will be offered to citizens, while a local e-Marketplace will interconnect local enterprises and promote local products over physical borders.

c) Projects that are in the design phase: a few innovation projects will be designed and implemented by the fist half of 2006. These projects will develop a collaboration environment for public executives who belong to different organizations. Additionally, a Metropolitan ERP system will be installed and offer a platform for business analysis of local public authorities. Furthermore, centers for tele-workers will operate under the responsibility of the Municipality and efforts will be made by municipal agencies to close the digital divide in the area of Trikala.

2.3 The new dimension of e-Government

The Digital City extends all past actions that were undertaken by local or state Governments (Moon 2002), (Tai-Kei 2002). The innovative characteristic is that the Digital City offers horizontal integration (Layne, Jungwoo 2001) among different organisations, belonging to different Authorities, citizens and enterprises, by putting the Municipality at the center of the ICT environment. Additionally, it offers vertical integration (Layne, Jungwoo 2001) among hierarchically different organizations.

All local end users, together with the back-office as presented above, can be members of the Digital City. Participants host and create knowledge that in physical conditions is distributed (Traunmüller, Wimmer 2000) and delivered during work flow. Knowledge formats usually differ according to an organization’s needs. The new digital environment offers means to gather information from all involved participants, preserve interoperability among different platforms, and guarantee stability and reliability (Figure 2). Additionally, “sensitive” individual and organizational data can be hosted and kept in the Digital City according to specific ethical and operational rules.

Knowledge development and collection will be based on record selection, creation or updating, as is the case in a conventional organization that uses a CRM, ERP or MIS system for internal resource planning. Today, records kept in local agencies enable organizations to supervise transactions and internal workflow. Each agency uses different ICT means, according to their needs and part procurement methods. Furthermore, some others have not yet installed an ICT-based system to support the organization’s methodology and transactions.

Under a Digital City project, applications will be installed based on web service architecture, in order to enhance interoperability among different systems, while on the other hand it will provide ICT resources to host organizations’ information needs in the form of SLA methods. This methodology will establish interconnection of disparate agencies and enterprises under an ICT-based “umbrella”. The interconnection will facilitate information exchange and service delivery, which is a primary target of the Digital City.

Additionally, record selection and update methods will offer means that could eliminate the creation and use of public certificates. For instance, let’s consider the civil “marriage”. When a citizen needs to apply for a marriage authorisation certificate, he has to apply for five (5) different certificates, all provided by different municipal authorities. Each certificate provides information about the applicant: a birth certificate, a certificate of his current marital status and a certificate of his place of residency. The same certificates are necessary for his/her spouse. These three certificates will be delivered to the proper Municipal Authority which will generate the marriage authorization certificate. After he/she gets married, the citizen has to provide a document of marriage verification (provided by the church or the Municipality) to the same Municipal Agency in order to provide a new certificate of marital status.

By interconnecting all Agencies, the Digital City will replace intermediate Certificate creation with record creation and update methods. Records relevant to the applicant will be updated according to
the application form and no certificate creation will be necessary. On the other hand, when information on marital status is needed by a different public Agency (for instance by the Inland Revenue Service) a query will be submitted and the necessary information will be obtained from municipal databases. The same procedure can be followed for all public services executed in the Digital City environment.

Collaboration among different Agencies requires a proper framework (Dawes, Prefontaine, 2003). For this reason, the Digital City will play a pilot role, by involving the Municipality as the trusted party to encourage all different agencies. An initial trial of collaboration can be tested with the support of Central Government, and results will be used to define the proper framework for such collaboration. The Municipality will not be the data owner (Dawes, Prefontaine, 2003) but the "host" of information created during all transactions. Original Data will be kept locally in involved organizations, while versioning methods will be applied to transactions so that this target can be achieved.

Furthermore, the Digital City offers multiple services, far beyond dispatching transactions. Citizens – whether at home, in their cars, at school or at work – need legal protection, personal rights maintenance and someone to care of them. ICT platforms could inform citizens or automatically generate batch processes to handle personal needs. Insurance systems, for instance, might connect houses to Emergency Agencies, such as hospitals, the fire brigade and police stations. Calls in emergency situations could be submitted without manual commands, in order to achieve instant response. Similar concepts could be applied to all life situations.

In real life, Government “appears” in all civil services — Education, Health and Care, Labour Market, Transportation etc. Government plays a significant role in everyday life, by defining and supervising the legal framework. In e-Government, governments have shifted their real role due to the specific targets they have set and the e-Commerce concepts that they have applied. ICT evolution offers means that extend services beyond certificate production or issuing of permits.

This result can lead to differentiation between Administration and Government in the “e-Environment”. e-Administration could refer to digital public services and e-Government to Government’s presence in all aspects of civil life.

(Figure 2): a logical model of the Digital City. Municipal ICT-based infrastructures join multiple agencies and collect distributed knowledge

3. The role of Municipalities in e-Government

In the Digital City, all participate in, and all benefit from, ICT infrastructures. In the case of e-Trikala the Municipality had the overall supervision of social needs investigation, project design, the mobilisation of all Public Authorities and enterprises. The Municipality had to secure funding resources and to develop a strategic plan of Digital City maintenance. During the project’s design, the
Municipality inspired confidence in the local community: the Chamber of Commerce, individuals and Public Authorities offered their resources for the purposes of the project.

Although Municipalities can supervise e-Government development, their real role is to motivate prospective participants to get involved. The installation of tele-care services requires someone to protect "sensitive" health-related data, not on the digital level, but at the administrative level. Municipalities could become the trusted party for all involved members. They could offer their human resources, their buildings and infrastructures to host ICT components, to store data, to apply rules that preserve privacy and to focus on social needs.

Finally, Municipalities could act as consultants to enterprises in order to motivate them to use digital means to transact with the Digital City. The initial benefit would be the installation of ICT solutions and their application in the business environment by individuals that do not feel their necessity. The overall impact is the closing of the digital divide.

4. Milestones for the successful implementation of the Digital City model

Building the total systems of the Digital City and planning the total projects, the Municipality needs to reinforce the e-government programme of the 'e-Europe 2005' action plan and focus more sharply on service quality and effectiveness. In particular, the Municipality of Trikala should seek to bring value both to citizens and to the local public authorities. This will be achieved through transforming how public services are delivered, including:

- encouraging greater use of electronic forms of access and service delivery, through streamlining the business practices underlying e-services, understanding the Government's customers and adopting relevant customer relationship management practices;
- breaking institutional silos and enabling "joined-up" public services across the Municipality, and providing services that bring value to citizens; and
- as far as possible, engaging private sector organizations to deliver the services. The Municipality of Trikala should use the private sector's business ideas and innovations to improve services to citizens.

Realizing the above vision successfully requires the Municipality of Trikala to put citizens at the center of public service delivery. This is the case with e-Trikala.

There are several milestones in the successful implementation of the Digital City model. Each milestone has equal priority, contributing to the cumulative attainment of the others. The most critical milestones cover the following issues:

- Integration and interoperability of the planning projects and actions that will take place in the Digital City of Trikala. The interoperability of local networks so that they can be linked to one another will offer seamless services to citizens. The citizen should know that he has access to services without having to know which department/public authority handles the service. Integration and interoperability will include cross-boundary operations, organizational structures, and information technology systems. Integration and interoperability is central to running either a business or a government in today's digital environment. The interoperability milestone will affect the interconnections among the implemented applications, creating a high impact on the quality of the provided services and privacy (Linauer Udo 2004).
- Global access for citizens. Facilitation of citizen access and participation through the availability of Public Internet Access Points – the bridging of the digital divide – should be handled by the Municipality. Access or "digital divide" issues are paramount issues in the implementation of the Digital City model. Infrastructure is perhaps the single most important factor in providing citizens with global access to the services of the Digital City. The development of high-speed infrastructure to access the Internet, mainly through broadband connections, but also through Wi-Fi (wireless, high-speed Internet) and other technologies, ensures easy and global access for all the citizens of the Digital City.
- Political endorsement of the legal framework that is needed for the implementation of the Digital City model. The main issues raised at this milestone are digital signatures, authentication, privacy, online privacy, public trust, taxation, and intellectual property rights.
- Local and national economic environment that includes small and medium-sized enterprises, high-tech industries and, most importantly, the ability of the local business to transform themselves into e-businesses. One critical aspect of this transformation is the fact that in the economic shift to e-business, small and medium-sized businesses lose customers to big, heavily-advertised Internet brands.

Collectively, these milestones require a common underlying management foundation and investment strategy, collaboration, governance structures, financial investment, human resources,
and partnerships. Without this leadership foundation, progress will be limited in overall impact and fragmented at best.

5. Human Resources Management in the Digital City model

Citizens are becoming used to ever faster response times and ever higher quality of products and services from the private sector. They expect the same performance from public administrations too. Obscure procedures, long queues, having to re-enter information that is already held by the administration and “one-size-fits-all” approaches are all practices that are increasingly criticised. Public service provision is expected to become more user-friendly and personalised, adapted to the needs of individuals. Public service generally needs to be inclusive; all citizens need to be served, regardless of their skills and capabilities, income, or geographical location. The public sector – unlike the private sector – cannot choose its clients. Nor can the public always choose whether or not to be clients of the public sector. The competitiveness of business is strongly influenced by the transaction costs incurred in dealing with administrations.

The critical issue in the Digital City is not ICT infrastructures, but the Human dynamic in participation. A pilot project that has been designed for e-Trikala focuses on the best use of available civil servants, belonging to all Public Authorities. The project ignores physical borders among different Agencies and offers a collaboration environment to public executives (Anthopoulos 2004), where they participate and execute custom and non-automated services.

e-Democracy platforms applied in organized teams of citizens could establish e-participation in decision making. For the purposes of e-Trikala, a web portal will soon be installed so that citizens can be invited to express their feelings regarding the new digital environment.

Furthermore, regional tele-work centres could be installed in the area of a Digital City in order to offer job opportunities to the unemployed.

The “Human Face” of Government could be preserved via digital solutions mainly focused on individual needs.

The key elements in the evolution of Human Resources Management in Public Administration, which match the objectives of the Digital City model, are those that ensure the general implementation of the e-Trikala project and offer great added-value services to the citizens. According to Andrea Tabladini, Giancarlo Capitani and Roberto Gatti (Tabladini, Capitani, Gatti 2003) these key elements include:

- databases and information systems used for managing human resource in Public Administrations. In the case of the e-Trikala project this role is undertaken by the Municipality
- level of penetration of information technology in the Municipality
- financial resources dedicated to the implementation of solutions using new technology
- skills needed for mastery of new functions and activities generated by the introduction and consolidation of new technologies in human resources management
- use of systems for knowledge and experience diffusion and sharing (e.g., Knowledge Management systems, Intranet etc.).

For the implementation of such a project in the e-government area, all the applicable human resources that will undertake one or more roles in the Digital City model should be organized effectively. Apart from the citizens, the human resources that will participate in this model are employees from the public authorities (independent of specialty), Information Technology specialists, Information Management specialists and managers. The Municipality of Trikala has already created the team for the implementation of the e-Trikala project. The critical skills of the people that are behind the Digital City model are related to the following issues (OECD 2003):

- Basic IT literacy
- Specialist IT skills
- Privacy protections
- Security
- ICT capabilities
- ICT strategy
- Organizational change
- Risk Management
- Co-operation and collaboration
- Public-private partnerships
6. Conclusions and the “day after” work plan

The Digital City promises to be an environment where different organizations are interconnected with citizens and enterprises. In contrast to current Miniature Town Halls, it establishes horizontal and vertical integration. Furthermore, it contains ICT solutions that involve different organizations that have never before been interconnected. For instance, an “intelligent transportation system” involves municipal agencies, local transportation enterprises, urban planning offices, taxi enterprises and telecommunication agencies. The Digital City focuses on the interconnection and collaboration target by involving different sectors in collaboration procedures. The proposed model (Digital City model) is based on the following seven (7) major targets:

- Improved public sector performance: changing the way of doing business within the borders of the Municipality of Trikala.
- Establishing of G2C, G2B, G2G transactions via a unique point of access and a common environment for the local society.
- Increased participation of citizens in the Municipality’s decision making processes and actions.
- Improved accountability of politicians and civil servants.
- Assured competitive environment for private businesses.
- The generation of a new virtual organization, under the responsibility of the Municipality or Local Government, that could become the trusted party for all participants.
- The development of the next generation of e-Government, focused more to the “Government” side, with the provision of intelligent digital services far beyond application dispatches.

Ethical aspects of interconnection, such as hosting of sensitive individual and organizational data, can be treated due to the confidence that local societies show in their Municipalities.

The e-Trikala Digital City project focused on only a few solutions, suited to the area of Trikala, central Greece. The Municipality of Trikala gained the confidence of the local community and persuaded local organizations to participate in ICT activities. This project presents a new face of e-Government, which extends beyond Administration and treats all local community needs.

The “day after” work plan will include the appropriate actions and synergies for the real exploitation of the overall e-Trikala project when the project has been completed. The next steps for the Municipality of Trikala aim at the adoption of a proactive, leadership approach to e-service development in and out of the Municipality’s borders for the development of a Business Plan for achieving the strategic goals of the e-Trikala approach. The “day after” scenario should:

- synchronize all involved members to achieve maximum output and sustain participants’ interest
- set the context for the further development and exploitation of e-services via a viable business model indicating the contribution of the e-government approach to the citizens and verifying the citizen-centered character of the overall project
- define the role of the government in leading and supporting agencies to develop citizen-centric e-service initiatives
- identify key resources available to support e-service development, and
- set measurable targets for progress towards achieving the overall e-government strategy
- discover new standards of cooperation in a municipal area

References


