Business Process Improvement in Organizational Design of e-Government Services

Ömer Faruk Aydinli¹, Sjaak Brinkkemper² and Pascal Ravesteyn³
¹Logica, Public Sector, Arnhem, The Netherlands
²Institute of Information and Computer Sciences, University of Utrecht, The Netherlands
³Research Centre for Process Innovation, University of Applied Sciences Utrecht, The Netherlands
omer.aydinli@logica.com
S.Brinkkemper@cs.uu.nl
pascal.ravesteyn@hu.nl

Abstract: This paper describes a business process and organizational re-design and implementation project for an e-government service organization. In this project the initial process execution time of a Virtual Private Network (VPN) connection request has been reduced from some 60 days to two days. This has been achieved by the use of a new business process reengineering (BPR) implementation approach that was developed by the Utrecht University. The implementation approach is based on a combination of Enterprise Information Architecture (EIA), Business Process Modeling (BPM), Knowledge Management and Management Control methodologies and techniques. The method has been applied to improve the performance of a Dutch e-government service department (DeGSD). DeGSD is an e-government service department that supports and promotes electronic communication. It can be described as an electronic mail office for consumers that provides the ICT infrastructure to communicate with the government. The goal is to reduce administrative activities for both the government and consumers. Supporting technology and part of the process is outsourced. In our approach we used EIA as a starting point because it describes all relations and information exchange with all stakeholders. This is different compared to more traditional approaches which tend to have a main focus on the internal processes (when it comes to automation) whereas our approach aligns the processes and systems across different participants, such as suppliers and customers, in the supply chain. Also included in the implementation approach are management control design mechanisms to ensure that the organizations strategy is in sync with its processes and activities that are performed by the employees. Management control is crucial in enabling the continuous measuring and improving of the organizational performance. Although the proposed BPR implementation approach worked in the project at DeGSD, further validation is necessary. Therefore we suggest that more case studies are performed at both government and profit organizations.

Keywords: business process improvement, organizational (re-)design, business process reengineering, enterprise information architecture, knowledge management, e-government services

1. Process design for e-government service departments

During the past decade we have seen that more and more governments in the world are providing their services via information and communication technology (ICT). Governments wish to improve the services they provide to citizens and companies by using the options offered by ICT. In this paper we use the following definition for Electronic government (e-government) services:

“Government activities that take place by digital processes over a computer network, usually the Internet, between the government and members of the public and parties in the private sector, in particular governmental organizations. These activities generally involve the electronic exchange of information to acquire or provide products or services, to place or receive orders, to provide or obtain information, or to complete financial transactions” (MoMS 2004).

E-government services reduce operating costs and provide direct communications between citizens, companies and governmental organizations. To provide these ICT services new governmental departments are being set up. They are responsible for the communication between governmental organizations and both citizens and companies in a secure way. These departments have a portal function. They are providing digital signatures to citizens for authentication and they set up VPN connections between companies and governmental systems to enable exchanging information in a secure way.
DeGSD is such an e-government service department that supports and promotes electronic communication. It can be described as an electronic mail office for consumers that provide the ICT infrastructure to communicate with the government. The goal is to reduce administrative activities for both the government and consumers.

The department has been set up in 2005. In the first year several pilot projects were set up for service delivery. During these projects the organization discovered that connecting to other companies turned out to be very problematic. This was caused by a lack of process governance, bad communication with the customer and non-controlled knowledge transfer from the initial system developers to the operational staff. Therefore it was decided to redesign the process. This decision was based on recent research in the government domain (Martin and Montagna 2006), which suggests that before implementing an e-government strategy the back office processes should first be changed with the help of BPR.

Ever since the start of the business process reengineering movement (Davenport and Short 1990; Hammer and Champy 2001) the success has been debated (Zairi 1997; Teng, Jeong and Grover 1998). Many implementation methods or principles have been proposed (Harrington 1995; Armistead 1996; Burton 2001; Chang 2006) in which the essence stays the same (Kettinger, Teng and Guha 1997). All proposed methodologies have an envision phase in which management should acknowledge the need for change. This is followed by the initiation of a project that starts with diagnosing or analyzing the existing processes after which suggestions for redesign are made. Finally the changed processes should be implemented and evaluated against a set of performance measurements. So to help solve the problems facing the e-government service department DeGSD in the implementation phase of their e-strategy a new approach was developed consisting of the following six phases:

- Map the EIA the department by using Enterprise Architecture Modelling (EAM)
- Choose a strategy discipline
- Define the primary processes of the department by using business process modelling (Primary processes have to be in line with the chosen strategy discipline)
- Optimize processes
- Choose a knowledge management strategy and implement a tool and procedures that are in line with the chosen strategy
- Define and implement controlling mechanisms for the all departments that are involved

The remainder of the article is as follows: in section 2 a detailed description of the project phases is given, then in section 3 the improvement project executed at DeGSD is elaborated upon after which conclusions will be drawn and discussed in section 4.

2. Organizational designing of e-government services

The developed approach as described earlier consists of six phases that are described further in the following subsections.

2.1 EIA

Decisions made by managers have an important effect on the communication processes between citizens and the government. Wrong decisions can have a big impact on the functioning of the government. Regulations and security issues are also very important.

To provide proper information to politicians and managers who are responsible for the e-government services, enterprise information architecture is a useful tool, because the main benefit of enterprise information architecture lies in its holistic approach of all aspects of the enterprise. (Koning, Bos and Brinkkemper 2008) This includes the ICT infrastructure and procedures, the business related issues, like business process or business excellence and the internal and external information exchanges. EIA deals with the documentation, communication, legal aspects and decision making of the complete information infrastructure of an enterprise.

With regard to this subject, the information which is the most critical for managers to decide includes 1) Mission, vision and strategy 2) Enterprise context 3) Enterprise functions 4) Information and
communication systems and 5) IT infrastructure (Koning, Bos and Brinkkemper 2008). EAM is a method for creating enterprise information architectures. The process of creating an information architecture by using the EAM modeling technique consists of the following steps: (Koning, Bos and Brinkkemper 2008)

- Create a supply chain diagram (SCD)
- Create an enterprise function diagram (EFD)
- Create application and scenario overlays
- Create a system infrastructure diagram

2.2 Strategy discipline

A strategy discipline defines the main focus of an enterprise and therefore influences design decisions when developing a business process. In this project the company chose the value discipline model of Treacy and Wiersma (1995) as strategic discipline, but other disciplines can be chosen as well. This depends on the environment and situational factors of the enterprise. The value discipline model can make the direction of the organization clear to employees so that they can act in line with the wishes of the organization. Treacy and Wiersma describe three generic value disciplines. Any organization can choose one of these value disciplines and consistently act upon it. The primary processes of an organization have to be in line with the chosen value discipline. The three value disciplines according to Treacy and Wiersma (1995) are:

- Operational excellence: Company excels in superb operations and executions. The focus is often on providing products and services with a reasonable quality at a low price. There is a task-oriented vision towards staff. The main focus is on efficiency, streamlined operations, supply chain management and high volume. There is a limited variation in product sets.

- Product Leadership: Company excels in innovation and brand marketing. The focus is on development, innovation, design, time to market and high margins.

- Customer Intimacy: Company excels in customer attention and customer service. It tailors its products and services to individual customers. There is a large variation in products and services. The main focus is on customer relationship management.

2.3 Defining primary processes

BPM is the discipline of defining and outlining business practices, processes, information flows, data stores and systems. (Sparx 2007) BPM is an important part of understanding and (re-)structuring the activities and information flows within an organization. The emphasis of BPM is on how the work is done within an organization. It is an important tool in understanding the activities an organization undertakes and the kind of information it needs to successfully engage in those activities (Sparx 2007). There are numerous business process modeling techniques developed in the last decade. Some examples of these techniques are Petri Nets, Event-driven Process Chains, Workflow Nets, Unified Modeling Language (UML) and Business Process Modeling Notation (Weske 2007). These techniques are based on different views on processes. Some aim at modeling processes from an IT perspective (such as UML), while others are based on a business perspective. In the project we used elements from both UML and Testbed (Telematica Institute) to satisfy both the IT and business stakeholders involved in this project. One of the main goals of modeling the business processes is to create transparency in how the work is currently done (as-is situation) within an organization. This is also the basis for the process analysis in the optimization phase.

Based on the analysis the e-government service department can define a set of standard processes that describes how to perform the departments’ services in the future (to-be situation). These standard processes are used to establish consistency across the organization. The chosen value discipline is an important factor when (re-)designing the primary processes. For example, if an organization chooses product leadership instead of the operational excellence discipline there will probably be more quality control mechanisms required in the primary processes.
2.4 Optimize processes

Optimization is the use of specific techniques to determine the most cost effective and efficient solution to a problem or a process. Process optimization is the practice of making changes or adjustments to a process to get better results. (Ranjit 2001) Although process optimization is part of BPM and has therefore received much attention in industrial engineering and management literature, there is not much known on how to use these concepts in the public sector. Gulledge and Sommer (2002) have done research on how to implement BPM in the public sector and state that among the most important activities are documenting the existing processes, managing the process (measuring and optimizing performance) and improving the process to optimize the product/service quality. This is also in accordance with the ‘streamlining the process’ and ‘continuous improvement’ phases of the Process Breakthrough Methodology that is developed by Harrington (1995). In these phases processes are continuously optimized by redesigning them, for this purpose it is important to benchmark processes, perform risk analysis and measure improvements in terms of costs and time.

The main goal of process optimization is to resolve complex challenges and improve product, service, process and business performance and this is supported by Bhatt and Troutt (2005), who have found that business process improvement initiatives directly affect customer responsiveness and product/service innovation.

e-Government services that choose the operational excellence value discipline have to optimize their processes to serve customers in an efficient and cost effective way.

In order to achieve the major goals of business process improvement, managers need to fully understand the cost, time, and quality of activities performed by employees throughout an entire organization. A method for understanding the costs structure of processes is Activity Based Costing (ABC). After defining the primary processes, the most costly parts can be identified by the ABC method. Then these parts can be improved by eliminating redundant or irrelevant activities or automation.

2.5 Knowledge management

Michael JD Sutton (2003) defined a list of reasons why an organization should implement knowledge management to gain advantage. Stan Garfield (2006) described a set of goals and benefits in order to create added value with knowledge management. Some examples of these benefits are:

- Avoid redundant effort by using knowledge management systems.
- Make it easy for employees to find the necessary information and resources to do their jobs.
- Communicate important information widely and quickly in the organization.
- Capture key information on all work performed so that everyone will know what others have done and who to contact for further details.
- Provide and create methods, tools, templates, examples and data to streamline business and services.

In sections 2.1 and 2.3 we described the business processes where knowledge creation takes place. By identifying these business processes and understanding them, we can describe information architectures, business process models and working procedures. It also enables us to describe the roles and functions of the employees including the knowledge and experience needed to execute these. This knowledge and experience has to be shared and (re-)applied within the organization to provide services in an efficient and controlled way. Furthermore the knowledge and experience has to be evaluated periodically and adapted if necessary. Knowledge management is a continuous process (Weggeman 1997) that needs to be managed. This can be done via a knowledge management strategy (KMS). There are two types of KMS described by Jashapara (2004). First there is codification, which is based on technology and use databases to codify and store knowledge. It is heavily based on codifying explicit knowledge. Second is personalization, which is less about technology and more about people. It is heavily based on tacit knowledge.

For small organizations often one KMS can be selected. Before an organization chooses a KMS the properties of the organization have to be identified. Hansen, Nohria and Tierney (1999) provide a list of questions to help guide an organization in establishing a KMS. By answering these questions the
various properties of the organization will be established. Thus enabling the organization to formulate or choose a better KMS based upon these properties. The questions are:

1) Do we offer standardized or customized products/services? E-government services are standardized. They are not customized for a special group.

2) Do we have mature or innovative product/services? E-government services are mature.

3) Do our employees rely on explicit or tacit knowledge to solve problems? In most situations employees of an e-government service organization use explicit knowledge to solve problems or provide services. This kind of knowledge can also be codified.

Because of the properties of the service that is provided by the e-government services, a codification strategy seems right. Therefore the e-government services have to develop or buy an electronic document system that codifies, stores, disseminates, and allows reuse of knowledge. (Hansen et.al. 1999). They of course also have to develop and implement associating working procedures.

2.6 Controlling mechanisms

In organizations management control is one of the most critical functions; it involves managers taking steps to help ensure that the employees do their work according to the best interests of the organization. "Management controls are necessary to guard against the possibilities that people will do something the organization does not want them to do or fail to do something they should do" (Merchant and van der Stede 2003). Besides this the management control issue has also become more important because of various scandals like Enron, WorldCom and Ahold. These scandals triggered governments and institutions to create laws and rules concerning corporate governance.

The laws and rules that have been designed and implemented requires organizations to improve the alignment between governance, risk management and compliance (Brown and Nasuti 2005; Drew 2007; Elgar 2006).

This aspect is very important for e-government service departments. Mistakes made by employees during execution of processes or activities can have large impact on the reliable functioning of the government. Therefore e-government service departments have to minimize the chances that mistakes can occur. There are three types of control described by Merchant and van der Stede (2003). The first is result control; this involves rewarding individuals for generating good results, while bad results are penalized. Result control influences the actions of employees because they motivate employees to be concerned about the consequences of the activities they perform. “The organization does not dictate to employees what actions they should take; instead employees are empowered to take those actions of which they believe that it will produce the desired result” (Merchant and van der Stede 2003).

Results should be measured precisely and objectively in order to be able to control and improve activities and actions of employees. A second type of control is action control. This “control ensures that employees perform (or do not perform) certain actions known to be beneficial (or harmful) to the organization. It is important to define what actions are acceptable or unacceptable, to communicate those definitions to employees and to observe or otherwise track what happens and reward good actions and punish those that deviate from the standard set” (Merchant and van der Stede 2003). The last control is personnel control which builds on employee’s natural expectancy to be controlled and motivated in an organizational environment. Three major methods of implementing personnel controls are: selection and placement of employees, training and job design.

3. Project execution at DeGSD

In the first year after the set-up of DeGSD, several pilot projects for electronic service delivery were initiated. The development of technical facilities was outsourced to specialized ICT companies. The main function of the DeGSD department was managing the outsourcing and implementation processes and after implementation providing the service to the public. A year later when some pilot projects were finished and the government decided to make them operational some organizational problems occurred:

- The operational environment and scale differed significantly from the pilot projects.
The technical ICT product can be innovative and well engineered, but if the organizational structure is poorly designed (no working procedures, staff not well trained, etc.), then the resulting service to the end-user will be very problematic.

and because of these operational problems, citizens and companies were reluctant to use the new electronic services.

The aim of the improvement project was to analyze and understand these operational issues and to propose and implement possible solutions, based on the new BPR method as discussed in the section 2. One of the pilot projects was the set-up of VPN connections between companies, governmental institutes and DeGSD. The way in which VPN connections are setup is illustrated in figure 1.

Figure 1: Communication model DeGSD

The first message is sent by the requesting company via a VPN connection to the server of DeGSD and then DeGSD forwards it to the addressed governmental institute. By sending messages to the DeGSD server, the company will be authenticated automatically. If it is an unknown company or the company has no permission to communicate with the governmental organization, the message will not be forwarded. There are special requirements for the format type of the message. The mail-server software of the company has to generate and support this format.

The steps in the connection process are as follows:

- A company (customer) sends a requests for connection to DeGSD.
- DeGSD requests to their outsourcing partner (KPN an incumbent Telco) to set up a VPN connection between the server of DeGSD and the server of the customer. To do this KPN contacts the customer and sets up a VPN connection.
- DeGSD and the customer will test the connection.
- The governmental organization and the customer will test the message mark-up and format.
- The customer runs the first production (e.g. information exchange).

The outsourcing and implementation process of this VPN connection project was successfully finished. But when management decided to go live, too many requests for connection came from companies and governmental institutes and DeGSD discovered that the organization was not designed well enough to handle these numbers of requests in an efficient way. The major problems were:

- The process on how to set up a VPN connection with DeGSD was not described in detail. The technical criteria were vaguely formulated. The helpdesk received many questions and problems when companies where trying to set up VPN connections.
The functional administrators who were responsible for the connection process were not well trained.

It was not clear to employees who was responsible for what (governance problem).

The registration process for functional administrators was very inefficient. The time spent in registration was sometimes more than in connecting companies.

ICT specialists and consultants who were hired in the outsourcing and development phase left the organization. The knowledge transfer from them to functional administrators was not managed well.

It was not clear to employees and managers what the direction and strategy of the organization was.

It sometimes took 2 months for companies to set up a VPN connection, which obviously caused a lot of frustration.

The cooperation with DeGSD and governmental organizations was not optimal. There was disappointment because of the connection problems.

There was a need for formal procedures between DeGSD and the governmental organizations.

To solve the different problems it was decided to redesign the business process. The first phase in the developed BPR approach was to develop an EIA for the organization. The goal was to:

- Identify all parties the organization has relations with.
- Identify the type of information exchange between external and internal parties.
- Identify who is responsible for which processes.
- Identify all applications and tools used in the organization.

The SCD of the organization identifies all parties with whom the organization has a relation and it visualizes the kind of information exchange between the different parties (see figure 2).

**Figure 2:** Supply chain diagram DeGSD

Then an EFD was developed to identify the responsibilities pertaining to the various parts of the connection process. The hierarchical ordering of EFD shows managers the departments and activities
under their supervision. By applying an application overlay it is possible to identify all applications and tools used in an organization. Based on the application overlay it was detected that some applications and tools had the same function, so management decided to remove redundant applications.

The EIA was used to visualize how the organization was functioning and to address the responsibility problem in the organization.

The next phase was choosing a strategy discipline to get a clear sense of direction within the organization. As stated before DeGSD used the value disciplines model of Treacy and Wiersma. The best value discipline in this model for e-government service departments is operational excellence. The service that e-government organizations provide is not tailored but standardized and the main focus is on efficiency, also the volume of provided services is high.

The EIA and the decision for operational excellence were explained to employees by means of presentations to make clear in which direction the organization would go and how the organization was going to function. By having a clear strategy and involving employees there was already a slight improvement in performance, mostly because employees came with suggestions on how to improve processes to achieve the operational excellence strategy. Although EIA and the chosen value discipline already improved the performance of the processes, the connection time was still 6 weeks and it was still not clear for companies how the connection process worked. There was a need for a detailed process description. In phase 3 of the BPR approach the connection process and what is needed to setup a VPN connection was described and visualized in detail by using business process modeling techniques. When a new request for a VPN connection was received, the functional administrators sent the requesting company first the diagrams in which the connection process was explained. Questions about the connection process from companies promptly decreased. In figure 3 the initial situation (before optimization) of the connection process is depicted.

Figure 3: Business process model DeGSD before optimization

Once the as-is connection processes were described it was clear that it had to be optimized. There were steps in the process that were needed in the pilot phase to test the applications but which were no longer needed in the operational phase. Other processes were still done manually although they could be automated. Management decided to automate and optimize the most costly parts of the processes based on the information that was visualized by the developed model. The costs per phase were determined by using the ABC method. It turned out that the two test phases were the most expensive part of the connection process. A test-robot was developed to enable customers testing the connection process and message format in an automated way. Also new outsourcing agreements
were made with KPN to setup VPN connections in a faster way. After the optimization the connection time was decreased to two days. Figure 4 shows the new process that consists of less phases, sub processes and activities.

The knowledge that was created by developing the EIA, process models and descriptions had to be shared and applied throughout the organization. In phase 5 of the BPR approach management chose for the codification knowledge management strategy. Based on this decision the process models and descriptions were stored in a logical way. All employees have access to this information while authorized employees can also make modifications and changes. The final phase in the BPR approach is to create a management control system for the organization. For every sub department within the e-government services a control mechanism or a combination of control mechanisms should be implemented. It is very important to choose the control mechanism that is in line with the nature of the function. Wrong control mechanisms can jeopardize the performance of the organization. For example, applying result control to help desk personal is risky because they have to perform their job with ITIL standards. They don’t have the freedom to take those actions they believe will be best to produce the desired result. The actions they have to take are formally described in work instructions. There are standard procedures to establish consistency across the organization. Otherwise customers will be served in different ways for the same request. Action control is more in line with the nature of this function. It was decided not to choose one control strategy for the whole organization. Every department will be controlled with the control strategy that is in line with the nature of the functions that are provided by the department. For the help-desk the action control strategy was chosen while the functional administration is controlled by a combination of result and action control mechanisms. For the project management department the result control mechanism was implemented.

**Figure 4:** Business process model DeGSD after optimization

### 4. Conclusions

Modern governments have some innovative challenges. They have to keep in pace with the growing demands of their customers for more efficient service delivery. This can be realized by offering ways of interacting with the government via ICT. However in most government organizations this will mean that the back-office processes need to be redesigned.

The business improvement project at DeGSD has demonstrated that the developed BPR approach consisting of EIA, BPM, Management Control and Knowledge Management techniques can be used
in a very successful way to analyze and understand operational business problems in an ICT environment. In our approach we used EIA as a starting point because it describes all relations and information exchange with all stakeholders. This is different compared to more traditional approaches which (when it comes to automation) tend to have a main focus on the internal processes whereas our approach aligns the processes and systems across different participants in the supply chain. Besides, our approach also includes management control mechanisms to ensure that the organizations strategy is in sync with its processes and activities performed by the employee’s. Management control is crucial in enabling the continuous measuring and improving of the organizational performance and to realize governance. In the DeGSD case, the process execution time to set up a VPN connection with companies has been reduced from some 60 days to 2 days.

5. Discussion and future research

This research can be labeled as explorative and the BPR approach is applied to improve the primary processes of a single organization. Therefore, we should be careful to generalize the results and findings of this investigation. Although the proposed BPR implementation approach worked in the DeGSD case further validation is necessary. Therefore we suggest that more case studies should be done. Future experiences from the application of this approach in different case studies in different parts of the public sector will be included into the BPR method. Also the developed method might be used to improve business processes in organizations in the commercial sector.

Furthermore the organization in which the method is applied is relatively small so the scalability of the developed BPR method should be researched. Another interesting research project is to determine whether all phases in the approach are equally important, in the described project no distinction in importance between the project phases was made or found, however this could be different in other situations.

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Public Service Reform through e-Government: a Case Study of ‘e-Tax’ in Japan

Akemi Takeoka Chatfield
University of Wollongong, New South Wales, Australia
akemi@uow.edu.au

Abstract: There is a growing interest in the debate over whether or not e-government has a transformational impact on government performance, governance, and public service, as we addressed this very issue at the 2007 ECEG. However, e-government research results on the transformational impact are mixed. This may be an apt reflection of either the early stages of e-government development or the newness of e-government research field or both. Our research goal as scholars of e-government must be to penetrate appearances to ascertain whatever lessons and meanings might lie beneath. This paper is an initial attempt toward achieving this goal. The main objective of this paper is to examine the relationship between public service reform through e-government and actual government performance. We achieve this objective through a multi-method approach, including a case study of Japan’s National Tax Agency (NTA)’s sophisticated e-government initiative: an integrated “e-Tax” system networking the NTA with local tax offices throughout Japan. The “E-Tax” provides a citizen-centric, online income and other tax returns filing and payment services for individuals and corporations. A preliminary case analysis provides evidence in support of the transformational impact of e-Tax on NTA performance. This paper makes an important contribution to the growing e-government research literature on the transformational impact of e-government particularly on service process reform.

Keywords: transformational impact of e-government, public service reform, electronic tax filing, case study, National Tax Agency, Japan

1. Introduction

e-Government refers to the use of information and communication technologies, particularly the Internet, to deliver government information and services (ANOA 2006). National governments worldwide are engaged in public service reform initiatives and e-government initiatives. The two initiatives may run in parallel in some governments with very little overlap or coordination. Alternatively, in others e-government initiatives are means for implementing public service reform policy goals. Japan’s “E-Government Establishment Plan” (CIO Council 2003) is an example. There is a growing interest in the debate on whether or not e-government has the transformational impact on government performance, governance, and public services, as we addressed this very issue at the 2007 ECEG. Here the term “transformational” is used to convey radical change in strategic direction, in contrast to incremental change in day-to-day operational routines. The radical and strategic nature of organizational transformation has been referred to as “the third kind of game change” (Flamholtz and Randle 1998) in change management and “the second-order organizational transformation” (Scholl 2005) in e-government. According to Flamholtz et al., transformational change requires a complete change in strategic direction. The organization fundamentally changes the basic concept of its core business. Similarly, Scholl (2005) defines the second-order organizational transformation as “a discontinuous, radical organizational change involving a paradigmatic shift” by drawing on the work of Levy and Merry (1986). The new concepts of “transformational government” (UK HM Government 2007; Irani et al. 2007) may signal the emergence of this discontinuous, radical transformational change intent of public administrations to move, from bureaucracies and the traditional government-centric public service “silos” that are often ineffective and inefficient in creating new value (Bannister 2001), towards citizen-centric public services and policy outcomes through the transformational impact of e-government to meet the demands of continually changing, globalized society.

While the radical and strategic kind of organizational transformation holds the promise of the highest-level return (Flamholtz and Randle 1998), achieving organizational transformation of bureaucracy through e-government is highly risky and complex because of internal stakeholder buy-in and commitment required from policy makers, management, and public servants. In the case of tax administration reform through e-government, the level of risk and complexity further increases because of the imperative of gaining external stakeholder trust in government and ensuring voluntary adoption of the Internet channel and effective use of new software tools before the public administration can achieve the potential transformational impact of e-government and realize the desired policy outcomes. Given the high-level risk and complexity involved in realizing public service
reform through e-government, therefore, it is not surprising to find that e-government research results on the transformational impact are mixed (Scholl 2005). However, this may be an apt reflection of either the early stages of e-government development or the newness of e-government research field or both. Our research goal as scholars of e-government must be to penetrate appearances to ascertain whatever lessons and meanings might lie beneath. This paper is an initial attempt towards achieving this goal. The main objective of this paper is to examine the relationship between public service reform through e-government and actual government performance. Our research strategy for achieving this objective includes a case study of Japan’s National Tax Agency (NTA) and its core e-government initiative: “e-Tax” – an online income tax returns filing and payment services for individuals and corporations. Like other nations’ e-tax filing systems, Japan’s “e-Tax” is an add-on self-service option through the Internet channel. This new channel choice is made available to citizens and corporations, not as a substitute, but as a complement to extant ways of fulfilling national tax law compliance. By offering this channel choice, NTA intended to transform the bureaucratic tax public administration into a modern, citizen-centric “service” organization, regain citizen trust, and achieve the policy outcomes – better tax law compliance in the globalized industrial nation of ageing population (NTA 2007). Since “e-Tax” adoption is voluntary and also requires considerable switching costs (e.g. obtaining digital signature for taxpayer authentication and learning new software tools), citizen adoption of “e-Tax” can be viewed as evidence that citizens perceive “e-Tax” channel choice as superior, with respect to extracting value from NTA, to the traditional (e.g. paper-based tax filing and face-to-face and phone consultation) tax services. A preliminary case analysis provides evidence in support of the transformational impact of “e-Tax” on NTA performance and public services. This paper makes an important contribution to the growing e-government research literature on the transformational impact of e-government particularly on service process reform.

The remainder of this paper is organized as follows. Section 2 presents a literature review of e-government research on the transformational impact of e-government. Section 3 describes the case study background on Japan’s National Tax Agency (NTA) and tax administration reforms. Section 4 discusses the agency’s tax service reform through “e-Tax”. Section 5 discusses transformational impacts of “e-Tax” on agency performance and public service delivery. Section 6 presents the conclusion on the transformational impact of e-government and future research directions.

2. Transformational impact of e-government

While the concepts of public administration reform are not new at all in government research and practice (e.g., Light 2006), the new ideas such as public service quality and government responsiveness to the public (Teicher et al. 2002) and IT-enabled public service reform are relatively new and emerging in government policy and multi-disciplinary research.

2.1 Mixed research findings on the transformational impact of e-government

Against the explicit transformational intent articulated in the US “E-Government Strategy” (Executive office of the President of the United States 2002) and the UK “Transformational Government enabled by Technology” (Cabinet Office 2005; UK HM Government 2007), extant research findings on the transformational impact of e-government are mixed. Scholl (2005, p. 1) concludes: “While one group of e-Gov researchers emphasizes the transformational impact of e-Gov on the business of government, others have squarely questioned this assertion.”

On the one hand, positive research findings support the transformational impact of e-government. Sophisticated e-government services such as IRS’s eFiling and Ireland’s Revenue Online Service initiatives produced the positive impacts on improving public service quality (Bird and Oldman 2000; O’Donnell et al. 2003) and restoring public trust (Moon 2003). Similarly, advanced functionalities of e-government such as transaction, transparency, and interactivity directly impacted perceived public satisfaction with e-government service and indirectly impacted public trust (Welch et al. 2004). In his review of the literature on the transformational impact of e-government, Scholl (2005, p. 1) concluded: “e-Gov, at least in the short term, has the capacity to transform the business of government in mode rather than in nature.” On the other hand, research results failed to find evidence for the transformational impact of e-government. West (2004, p. 24) concludes that “evidence from this research is consistent with incremental rather than transformational change”. Based on the two local e-government surveys in the U.S., Norris and Moon (2005) also reported very few transformational impacts at the local government level. Despite their seemingly negative conclusions, however, the authors suggest future conditions under which the transformational impact of e-government may be
plausible. For example, West concludes (p. 24): “Few government Web sites have progressed to the fully integrated and executable online service delivery or interactive democracy stages. ... For government agencies to realize the transformational power of the Internet, officials need to rely on models that emphasize integration, functionality and democracy enhancement.” Similarly, Norris and Moon (2005, p. 64) conclude that “the movement toward integrated and transactional e-government is progressing much more slowly” in comparison to the progress made by local governments so far in providing less sophisticated and largely informational e-government. Their conclusion on the slow progress of sophisticated e-government still remains valid in light of 2007 global e-government survey findings. In the survey of 1,687 government websites in 198 different nations, only 28 percent of government websites provide transactional capabilities, which did not change much from the previous year (West 2007).

One plausible reason for the mixed findings is the general lack of sophisticated e-government developments for new and different ways to provide improved public services that make a difference to the public and hence create value from e-government investments. This suggests the urgent need for e-government research on exploring transformational impact from sophisticated e-government development initiatives that offer advanced capabilities such as transaction, transparency, and interactivity.

2.2 Research questions

According to West (2004), public buy-in of the transformational impact of e-government requires evidence of:

- Major improvements in government performance
- Information technology (IT) use in government is responsible for the improvement.

This research aims to address the transformational impact of e-government by exploring links between public service reform through e-government and actual government performance. In this research paper we raise two questions:

- 1. What are major transformational improvements in government performance?
- 2. To what extent is e-government responsible for the transformational change?

To address these questions we adopt a multi-method approach which is necessary to understand the complexity of the social and political processes (Scholl 2005): a case study of Japan’s tax administration service reform through e-government, a website analysis, and a content analysis of government policy statements and central Government meeting minutes (in Japanese) which were collected through Japan’s e-government portal: “www.e-gov.go.jp”.

3. National Tax Agency and tax administration reforms

The central Government’s push for e-government has seen many e-government initiatives being launched by the Japanese Government Ministries and Agencies. This section describes Japan’s National Tax Agency (NTA) and its historical tax service reforms. The next section 4 discusses the NTA’s e-government initiative, “e-Tax”.

3.1 Background

As part of the post-war structural reform of government, NTA was founded in 1949 as the Ministry of Finance’s operating agency for centralized management and control of national tax administration. A 2003 NTA planning document outlines standards and guidelines on NTA’s tax administrative tasks and performance evaluation (NTA 2004). According to this document, the NTA needs to create “favourable environments for taxpayers” that promote effective and efficient tax administration. The NTA performance depends on creating the favourable tax environments which are defined by the following organizational capabilities to:

- Provide taxpayers with accurate information of the laws and administrative procedures related to filing self-assessment tax returns and paying taxes;
- Answer promptly and consistently taxpayers’ inquiries;
- Obtain broad cooperation and participation of the public in fulfilling their tax compliance.
The organizational structure of NTA consisted of the head office, 11 regional taxation bureaus and 497 local tax offices at the inception. Over the years, this structure remains unchanged, except a slight increase of local tax offices to 518 (NTA 2007). However, the number of the NTA employees has been sharply reduced from Fiscal 2004 to Fiscal 2006, which is due to the central Government’s 2001 reform policy including government downsizing. Figure 1 shows this downsizing trend of NTA.

![Figure 1: Recent trend for NTA downsizing](image)

**3.2 Historical tax service reforms**

At the inception, the NTA was required to introduce a radical tax administration reform to control the rapid inflation in the after-war Japan. The adoption of a US style self-assessment system, however, created an unexpected level of confusion among small and medium-sized enterprises which lacked sufficient knowledge of accounting and taxation. In consequence, about 70 per cent of taxpayers were subjected to correction or determination for non-filing or under-filing of income tax returns (Usui 2002). The bureaucratic and inefficient responses in handling the public confusion and administrative problems further contributed to taxpayers’ distrust of the tax administration agency.

The NTA decided to introduce a new “tax consultation” method, which remains in use until recently (NTA 2007). This new method was intended to provide a platform for the consultation services necessary for taxpayers to file their returns voluntarily and correctly. The typical procedures based on the new method involve the following steps: 1) Tax officers request business income earners to visit a NTA office at an appointed date and time; 2) Tax officers answer taxpayers’ questions about accounting procedure or tax laws. The latter visit the office with their accounting books and records to calculate their income; 3) If taxpayers ask, tax officers instruct them on how to fill in the return form or fill in the form on their behalf (Usui 2002). The idea behind this new tax consultation method was to eliminate government influence and taxpayer dependence on the NTA by encouraging taxpayer self-service in filing income tax returns. While the new tax consultation method was intended to increase self-service, it required taxpayers to visit the NTA local offices for consultation, often multiple visits, to file their national income tax returns. Because the new tax consultation method is time-consuming and taxpayers are required to wait in a long queue, taxpayer compliance costs are considerable, particularly for business owners of small and medium size enterprises which dominate the Japanese private sector economy. In consequence, as the number of income tax returns filings and other tax forms filings increased with the economic growth over the years, the NTA tax administration efficiency was increasingly challenged.
3.3 Increasing tax administration workload

In Fiscal 2007, the NTA collected ¥53.5 trillion in national tax revenue, which represents 64.5% of Japan’s ¥82.9 trillion national revenue, (NTA 2007). This contrasts to ¥43.8 trillion in national tax revenue in Fiscal 2002 (NTA 2002). With the increased national tax revenue collection, the number of income tax returns filed by individuals and corporations increased. The total number of returns continues to rise from 11 million in 1978, nearly 18 million at the beginning of the 1990s, 20.4 million in 2000, and 24.49 million in 2007 (Usui 2002; Okada 2002; NTA 2007). This increasing tax administration workload problem was made worse with the recent NTA downsizing trend discussed earlier in Section 3.1.

The problem of the increasing tax administration workload was particularly serious in suburban tax offices adjacent to large cities. With the growing number of taxpayers visiting local tax offices for consultation, taxpayers frequently had to wait for hours to receive the services. With the increasing number of income tax returns filed in the first half of the 1990s, there was considerable concern among senior administrators about “an explosion of taxpayer complaints concerning this congestion”. In consequence, addressing this central problem became the most critical issue of income tax administration (Usui 2002, p. 18). This concern led to a comprehensive review of administrative reform to tax consultation. The initial solution was to replace the individual “face-to-face” method with the “group consultation” method for tax consultation. Most recently, however, the concern led to e-government development: an integrated online self-service tax return filings and payment through the Internet channel. Hence, “e-Tax” was launched in 2004 nationwide.

4. e-Tax

The NTA’s transactional website through “e-Tax” is a prime example of the Japanese public service reform efforts through e-government. Its software development outsourcing cost government ¥50 billion (NTA 2007). “E-Tax” is intended to radically improve tax administration efficiency in both back office tax record management and front-line tax consultation and to significantly reduce the public’s tax compliance costs: the dual benefits for both internal (NTA tax administrators and front-line tax consultants) and external stakeholders (taxpayers). Jiro Makino, the NTA Commissioner, presents the case for e-government-enabled tax service reform in his 2007 report to taxpayers (NTA 2007, p. 29): “In order to provide more convenient services for the public and manage administrative operations in more simplified, efficient, advanced and transparent manners by utilizing IT in the civil services and reviewing administrative operations and systems, the “E-Government Establishment Plan” was determined in July 2003. Since then, the Japanese Government as a whole has been working on IT-based civil service reforms to provide better and more convenient civil services.”

4.1 NTA’s transactional website

The central Government operates the whole-of-government web portal (www.e-gov.go.jp) as the primary, convenient, one-stop entry point to government online information and services to the public. According to the UN 2008 survey of global national e-governments, Japan ranks 11th in global “e-readiness” among a total of 192 member nations (United Nations 2008). This recent global rank signals a marked improvement in the Japanese Government’s IT use in providing sophisticated e-government services across many Ministries and Agencies. Taxpayers can access the NTA home page (Figure 2) from the central Government web portal with one mouse click (or one page down from the portal). On the left-hand side of Figure 2 there is a column of main menus including “e-Tax” (the last menu choice and highlighted in a different shade). In the middle of the home page, there is a list of several tax news and topics. On the right-hand side, the public can access the NTA performance audit reports, annual reports, public comments, agency information and statistics as well as national tax laws and new e-government laws.
The public can access the “e-Tax” page (Figure 3) which is one page down from the NTA home page (Figure 2). Through “e-Tax” the public can access online transactional functions: registering “e-Tax” use, preparing individual and corporate income tax returns online, obtaining map-based property valuation online through a geographical information system (GIS), and paying all types of taxes online through direct links to taxpayers’ online banks. The NTA’s transactional website with advanced “e-Tax” functions is meant that taxpayers can fulfill their national tax obligations anywhere and anytime at their convenience without visiting and waiting in a long queue at a NTA local office. For those who do not have their own computer, the NTA provides PCs and touch screens at local tax offices.
4.2 Online “e-Tax” returns filing and payment workflow

National tax data contain sensitive personal and financial information. Any security breach will have negative impacts on the credibility of tax administration and public information privacy rights. So the NTA requires taxpayers to comply the NTA security standards, including the purchase of a taxpayer authentication system (cost about ¥3,000) and digital signature (see “prior procedures” in Figure 4 below). In consequence, taxpayers without sufficient computer literacy and Internet efficacy find it intimidating to start using “e-Tax”. Moreover, there is a not-so-trivial learning curve in getting used to the use of “e-Tax” software. Hence, switching costs – costs incurred a taxpayer from switching from the traditional ways of fulfilling tax laws compliance to this new Internet-enabled tax filing and payment method – are considerably high for many taxpayers. In fact, despite the central Government push for “e-Tax” adoption and diffusion, only 15 of the 144 Diet members (policy makers) used “e-Tax” in their personal income tax returns filing and payment (The Japan Times 2007). Figure 5 shows the online e-Tax returns filing workflow among the “e-Tax” user, NTA employees, and Financial Institutions over the Internet.

![Diagram of e-Tax workflow](image)

**Figure 4:** e-Tax workflow adopted from NTA (2005)

The data transferred through “e-Tax” with digital signature are processed and managed by the NTA Comprehensive Information Management System (known as KSK system). This internal tax record processing system was introduced in some local offices in 1995, evolved into a vertically and horizontally integrated enterprise record management system, and was fully operational nationwide in 2001. The KSK system links all Regional Taxation Bureaus, Okinawa Regional Taxation Office and the NTA head office. It enables authorized front-line tax consultants to view taxpayers’ income tax returns and tax payment records online during tax consultation sessions as well as for the purpose of tax audit.

5. Transformational impacts of “e-Tax”

As discussed earlier in Section 2.2, the case for the transformational impact of e-government requires evidence of:

- Major improvements in government performance
- IT use in government is responsible for the improvement (West, 2004).

So in this section, we examine the transformational impact of “e-Tax” by evaluating case study data to determine whether or not such evidence exists.
5.1 Major improvements in NTA performance

As discussed earlier in this paper, the NTA’s performance depends on “creating the favourable tax environments”. The NTA tried to achieve this by launching “e-Tax”. With the “e-Tax” system use, the NTA aimed to simplify extant tax administration processes and make national tax laws compliance more convenient. The successful implementation of “e-Tax” produced two major benefits: (1) reduced tax administration costs and (2) reduced taxpayer compliance costs. Firstly, the launch of “e-Tax” enabled taxpayers to submit income tax returns and tax payment through the Internet as digital data, which are then transferred, processed and managed by the KSK knowledge management system. The technological integration between the web-based “e-Tax” system and the centralized internal information system enabled to network the NTA tax officers, front-line tax consultants, and taxpayers to share information through digital records rather than paper-based income and other tax forms. In consequence, the NTA could get things done more efficiently with less time. It is noteworthy that the increased pace of the NTA performance was realized in the challenging operational environment. The NTA could keep up with the increased workload with the radically downsized staff. The NTA workload increased over the years. The total number of tax returns filed rapidly increased from 7.3 million income tax returns in 1975 to 23.5 million in 2007. On the other hand, the total number of local tax office employees was downsized from 44,171 in 2004 to 43,870 in 2007. Secondly, the NTA’s operational efficiency gains benefitted taxpayers: they received quick response to their tax questions and more consistent tax consultation services across all the local tax offices distributed throughout Japan. The “e-Tax” channel option enabled to reduce the local tax office congestion problem and address the NTA’s central concern about the taxpayer dissatisfaction with the NTA tax services. This is a significant organizational transformation, given the public distrust of the NTA (Section 3.2) with respect to the bureaucracy and inefficiency in responding and engaging citizens (Section 3.3).

5.2 “e-Tax” is responsible for the improvements

Senior managers considered it difficult to achieve the major improvements in performance; namely efficiency gains in tax administration and a paradigmatic shift to the new citizen-centric tax services, without the launch of advanced transactional “e-Tax”, particularly under the adverse operational environment they faced. Besides the favourable perception of the NTA senior managers, internal stakeholders of the “e-Tax” initiative, is there other positive or negative evidence for us to conclude that “e-Tax” is or is not responsible for the major improvements in the NTA performance?

The NTA Commissioner, Jiro Makino, was considerably concerned with providing taxpayers with a more convenient tax law compliance environment (NTA 2007). By offering the “e-Tax” channel choice, the NTA intended to transform the bureaucratic tax public administration into a modern, citizen-centric “service” organization, regain citizen trust, and achieve the policy outcomes – better tax law compliance in the globalized industrial nation of ageing population (NTA 2007). Since “e-Tax” adoption is voluntary and also requires considerable switching costs (e.g. obtaining digital signature for taxpayer authentication and learning new software tools), citizen adoption of “e-Tax” can be viewed as evidence that citizens perceive the “e-Tax” channel choice and online self-service option as superior, with respect to extracting value from the NTA tax services, to the traditional tax services (e.g. paper-based tax filing and face-to-face and phone consultation). Therefore, we argue that the increased level of “e-Tax” adoption can be considered as positive evidence for the NTA performance improvement in achieving better tax laws compliance online through e-Tax. Furthermore, unlike the US, the UK, Ireland, and Australia, the NTA did not provide “e-Tax” users with any other incentives than convenience: neither fast track processing nor quick tax refund (Ministry of Finance, 2007). Hence, the voluntary citizen adoption of the “e-Tax” option is used in this paper to assess the role of e-government in achieving the transformational change in public administration performance. Figure 5 shows a trend in the “e-Tax” adoption data from 2003 to 2007, showing the number of income tax returns filed by “e-Tax” users. “E-Tax” was piloted in Nagoya city in 2004 and rolled out nationwide only three months of piloting. It was operational on the NTA home page since 2004. According to CIO and IT project teams, the initial “e-Tax” software system went through many continuous revisions and changes to reflect the user feedback and suggestions. The use of quality circles encouraged active engagement of the internal IT project teams as well as some power users. In 2006, less than two years since the launch of “e-Tax”, the number of tax returns filed through “e-Tax” was 1,057,153. In 2007, after three years since the launch, the number of “e-Tax” filings reached over 1.6 million. This initial stage of rapid diffusion compares favourably against the reported poor take-up of e-tax systems in advanced e-government nations such as the UK (Kablenet 2007). However, the NTA needs to promote take-up of “e-Tax” more effectively given the number of NTA website access has...
been steadily increasing, reaching almost 11 million visitors during the tax period (Figure 6) and far exceeds the number of “e-Tax” return filers (Figure 5).

![National e-Tax Diffusion](image1)

**Figure 5**: National e-Tax diffusion

![NTA Website Access Trend](image2)

**Figure 6**: NTA website access trend

Finally, to assess the overall transformational impact of e-government we examine time series of the number of final tax returns filed by individuals. Figure 7 below shows the number of final individual income tax returns and individual income tax plus consumption tax filed by individuals from 1967 to 2006. The longitudinal data do not separate income tax filed using “e-Tax” but instead include all means of tax filing available to the public: “e-Tax” through the NTA website, touch screens installed in local branch offices, telephones, mobile phone devices, and paper forms. The two line graphs in Figure 7 show some overall increases in both individual income tax and consumption tax filings (wide
line) and individual income tax filings (narrow line) from 1967 to 2004. However, after 2004 when e-Tax was first launched through the NTA website, a very sharp increase is observed in the number of final tax returns filed by individuals in 2004. This is true for individual income tax as well as for individual tax plus consumption tax. These sharp increases after 2004 provide evidence that the NTA’s e-government initiative through “e-Tax” had transformational impacts on organizational performance and improved taxpayer compliance in filing income tax returns and other tax obligations. In other words, “e-Tax” had a significant impact on the agency’s public service reform goal of “creating a favourable national tax administration environment” that makes tax filing and tax payment more convenient to the public.

![Figure 7: A trend of final tax returns by individuals](image)

6. Discussion and conclusion

This paper examined the transformational impact of e-government by exploring links between public service reform through e-government and actual government performance using the case study of “e-Tax” initiative launched in 2004 by Japan’s National Tax Agency. Though cautionary, this study concludes that “e-Tax” had the two major transformational impacts on the government agency performance. The NTA through “e-Tax” reduced tax administration costs internally and reduced tax laws compliance costs by providing the new, convenient, faster, and improved public services. We argue that it is difficult to achieve the observed major improvements in NTA performance without the successful implementation of the integrated, sophisticated “e-Tax” system and the high-level, voluntary citizen adoption of the “e-Tax” system.

In light of the findings of this study, we conclude that due to the relative newness of e-government research field we have paid insufficient attention to two necessary conditions that may explain the mixed findings on the transformational impact of e-government. The two conditions are: the need to focus more on sophisticated e-government and the need to give up our belief in the magical power of e-government.

6.1 Sophisticated e-government

Firstly, sophisticated e-government development is necessary for the transformational impact of e-government to occur. In other words, government will not transform public service quality and responsiveness with the current provision of informational government websites. In discussing the transformational power of e-government, West (2004, p. 24) concludes that “evidence from this research is consistent with incremental rather than transformational change”. However, the author
also concludes (p. 24): “Few government Web sites have progressed to the fully integrated and executable online service delivery or interactive democracy stages. ... For government agencies to realize the transformational power of the Internet, officials need to rely on models that emphasize integration, functionality and democracy enhancement.” Based on the two local e-government surveys in the U.S., Norris and Moon (2005) report very few transformational impacts of e-government at the local government level. However, they also conclude that “the movement toward integrated and transactional e-government is progressing much more slowly” (p. 64) in comparison to the progress made by local governments so far in providing less sophisticated and largely informational e-government. In this case study, we described the integrated, sophisticated “e-Tax” system which was designed as software tools for transforming the traditional national tax agency facing the challenging operational environment into a provider of citizen-centric tax administration services. The integrated, sophisticated e-government system enabled the transformation of the NTA as a networked information sharing organization linking all the front-line tax consultants and back office staff.

6.2 Giving up our belief in the magical power of e-government

Secondly, sophisticated e-government provision by itself is not sufficient to effect public service reform through the use of e-government. The transformational impact of e-government requires mobilizing internal resources particularly people to implement changes through e-government initiatives. Particularly, transformational change in contrast to incremental change requires effective leadership (Rainey and Thompson 2006). In the case of public service reform through e-government, what matters is top management team’s strategic intent to transform public services as well as strategic communication of that intent throughout the government organization. In the corporate strategy literature, strategic intent of a senior executive or top management team conveys a clear sense of new future direction to achieve success (Hamel and Prahalad 1989). What is implied here is that strategic intent is a key antecedent of empowering people who actually implement strategy at the grassroots level in the organization. A long-term, integrated, strategic approach to communicating with key stakeholders is another antecedent of empowering people to successfully implement strategic change in the organization (Argenti et al. 2005). Extant e-government research methodology is often limited to an analysis of government websites. However, government’s strategic intent to transform public service and strategic communication of strategic intent need an examination beyond the website and indeed require an in-depth analysis of public policies, official government meeting minutes, and leadership behaviours that may shed light on organizational operations, management, and performance. In this paper we adopted a multi-method approach which is necessary to understand the complexity of the social and political processes (Scholl 2005).

This second observation is consistent with the conclusion made by Lynne Markus and Robert Benjamin (1997). In their seminal paper, “The Magic Bullet Theory in IT-enabled Transformation”, they explored the difficult reality of realizing IT-enabled transformation within the organization. In their conclusion they underscored the imperative of giving up our blind trust in the magical power of IT in order to successfully implement transformational change. They also conclude: “The hard reality of IT-enabled transformation is that change is everyone’s job (p. 55).”

There are some limitations to this research which assessed the transformational impact of e-government on government performance and its public service reform. In this study, we have not addressed the transformational impact of e-government on taxpayers. For example, public satisfaction with “e-Tax” was not explicitly investigated, although the increasing “e-Tax” take-up from 2004 to 2007 can be considered as evidence of public approval for the NTA’s public service reform efforts through e-government. Future research is needed to address this limitation through a survey of “e-Tax” users and non-users.

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From Ottawa to Lausanne: Much Done but More to Do?

Tom Collins
University of Limerick, Ireland
tom.collins@ul.ie

Abstract: This mini-track on e-Tax and e-Revenue coincides with the 10th anniversary of the landmark Ottawa meeting. Most concerns then related to widespread tax base erosion due, inter alia, to the anonymity of Internet activity, the high mobility of e-business and the attraction of tax havens. Most, certainly not all, of these concerns have been allayed since but the debate as to what constitutes a Permanent Establishment (PE), and the level of attributable profits to such a PE, is ongoing. Using a case study scenario approach, I consider the tax issues which a typical MNC would encounter in seeking to reengineer its global activities. The conclusion highlights the need for more specific guidance in this area.

Keywords: e-business, e-commerce, e-tax, e-revenue, Permanent Establishment (PE), international tax strategy, transfer pricing

1. Introduction

This paper provides a review of the manner in which tax authorities and taxpayers have coped with the evolution of e-commerce from a direct tax perspective. This mini track on e-tax and e-revenue coincides with the 10th anniversary of the landmark ministerial meeting held in Ottawa in late 1998. I review here the manner in which regulatory provisions have evolved since 1998, both internationally and from an Irish tax perspective. Ireland has become an attractive location for foreign direct investment (FDI) with the advent of the 12.5% corporation tax rate since 2002 and its domestic tax legislation has matured to bring it in line with its principal trading partners. Its domestic tax laws make Ireland an ideal location as a hub for an e-commerce location.

Multinational corporations (MNCs) have been forced to consider key tax issues in considering their global tax planning strategies. I review their approaches and the issues which they have encountered from a direct tax perspective. Ten years ago the biggest concerns from a tax authority perspective were concerns about widespread tax base erosion due, inter alia, to the anonymity of Internet activity, the high mobility of e-business and the attraction of tax havens. Most, certainly not all, of these concerns have been allayed in OECD and EU deliberations and by individual country tax authority guidance notes. Most business models utilised in e-commerce allow taxpayers much greater flexibility to transfer business functions from one entity or location to another compared to traditional bricks and mortar business structures. In fact, the flexibility inherent in many of these new operating structures is often one of the main factors that render these business models commercially viable and competitive in comparison to traditional structures. MNCs continue to redesign their operations to adapt to the new efficiencies offered by the medium.

Whilst the comments made by the OECD to date have been very helpful, the debate as to what constitutes a Permanent Establishment (PE) and the level of attributable profits to such a PE will continue until more specific guidance, and/or regulation, is provided. The absence of case law precedents for e-Commerce in this area adds to the uncertainty. Using a case study scenario approach, I consider here the tax issues which a typical MNC would encounter in seeking to reengineer its global activities. Ireland features as part of the overall strategy for very good tax reasons. The conclusion to the scenario presented highlights the need for more specific guidance in these areas.

2. Case scenario – Background facts

Global Software Engineering Corporation (GSECorp) is a publicly quoted US corporation. It develops and sells non-customised software packages to business and personal customers. Its products are distributed worldwide through the Internet. Up to now it has sold directly to both business and private customers in Europe via a server based in Ireland. The software which it has sold to date requires significant technological improvement to increase GSECorp’s market share. This will require significant capital investment in research and development (R&D) programmes.

GSECorp is profitable; however its combined US federal-state tax rate is 34% which is impacting on its earnings per share (EPS). GSECorp is exploring structures to earn future profits in Ireland and...
defer US tax until the profits are repatriated to the US. It is conscious that it needs to consider such a strategy to manage its worldwide effective tax rate, to bring it in line with its competitors in an increasingly competitive sector. GSECorp projects that its profits from European sales could reach 60% of total worldwide profits within two to three years and it wishes to fund its international expansion, preferably with pre-US tax dollars. Its extant and proposed models are now described.

In its existing business model GSECorp distributes its software (business software and computer games applications) to both business and private individual customers in the US and Europe using the medium of the Internet as its primary sales application. It now proposes a radical shift in strategy in a new model which proposes transferring part of its existing intellectual property rights in its software programmes to a newly incorporated subsidiary in Ireland (IRCo) under a cost sharing agreement. Under the agreement the US parent and Irish subsidiary are each treated as the economic owner of any intangible property developed and are each entitled to receive the income derived from the intangible in their respective markets. This remodelling would involve the following steps:

- It sets up a new Irish company (IRCo)
- IRCo and GSECorp enter into a Cost Sharing Arrangement (CSA) whereby existing intangibles would be transferred from the US to Ireland. This would be subject to a detailed transfer pricing study.
- Following the effective date of the CSA, IRCo will become the co-owner and co-developer of any new software developed. Future development activities in the short term may continue at the US facilities, which IRCo will reimburse under the CSA.
- IRCo will own the server through which all European sales will be processed.
- IRCo will act as the master distributor of the software and maintain a call centre for its after sales service.
- IRCo will provide warehousing support and inventory maintenance support for non US operations.
- IRCo will undertake and fund significant R&D activity in Ireland.
- IRCo will set up distribution companies in Europe to act as either commissionaires or limited risk distributors so as to ensure that the lion’s share of the European profits are derived by IRCo. Ireland offers a favourable tax regime for MNCs wishing to locate an intermediate holding company positioned between the European subsidiaries and the ultimate US parent.
- The US parent will need to consider its Sub part F position in relation to its European operations to ensure that the benefits of tax deferral are maintained. Sub Part F is the US form of Controlled Foreign Corporation legislation, which subject to US taxes on a current basis the income of certain foreign subsidiaries.

**Issues to be considered**

The issues facing GSECorp, based on this scenario are as follows:-

- Will a server located in Ireland constitute a permanent establishment (PE)?
- Planning the use of foreign tax credits.
- US tax implications of any outbound transfer of intangibles from the US.
- Addressing any withholding tax on licenses and service fee payments between group members.
- Avoiding complexities and costs associated with "buy-in" cost sharing payments.
- Establishing and supporting appropriate transfer pricing.
- Implications of Subpart F.

It is key that the tax planning process commences prior to any reengineering of the company’s business model.

**EXISTING MODEL: Does the US Company have a PE in Ireland?** Under general international tax provisions, the extent to which trading income may be regarded as taxable in any given jurisdiction will depend on whether that jurisdiction applies the *residence* or the *source* principle. The two concepts are not mutually exclusive and in practice, most taxing authorities apply some form of hybrid
of the two principles. Rules such as these inevitably lead to double taxation of income where
cOMPANIES operate in an international environment. Accordingly, such rules are modified by the
inclusion of a PE clause in bilateral double taxation agreements which is aimed at limiting the
taxability of income of non-residents. The term PE is a defined term in each bilateral tax treaty and
generally consists of a “fixed place of business through which the business of an enterprise is wholly
or partly carried on” (OECD Model Tax Convention, Article 5-1: OECD, 2005a). Where a PE does not
exist, bilateral agreements generally provide that the business profits of a non-resident cannot be
taxed in the source country.

The concept of PE can be traced back to the late 1800’s when European countries commenced the
process of negotiating bilateral tax treaties to govern the tax treatment of cross border economic
activity. The early versions of tax treaties emerged in the post World War 1 era, when countries were
concerned that the potential to suffer double taxation in cross border activity was inhibiting an
economic revival after the war. Skaar (1991) notes that the principal has undergone a significant
dilution during the late 20th century to cater for the evolving commercial practices. The concept of PE
is focused on a physical presence which in the world of e-commerce, where the physical nexus is not
as readily apparent, creates difficulties. A basic tenet in taxation law is that there is a broad distinction
between trading with a country and trading within a country – the latter giving rise to potential foreign
tax issues. The distinction was expressed by Lord Herschel as follows:-

Many merchants and manufacturers export their goods to all parts of the world, yet I do
not suppose any one would dream of saying that they exercise or carry out their trade in
every country in which their goods find customers. … If all that a merchant does in any
particular country is to solicit orders, I do not think that he can reasonably be said to
exercise or carry on his trade in that country [Grainger & Son v Gough, 1896, p. 467].

In determining whether a taxpayer is carrying on a trade within a country and thereby potentially
having a PE there, one would inter alia look to the following factors:-

- Place where the contract of sale or service is executed.
- Place where the sale takes place (i.e. title in the goods sold passes to the buyer) or service is
  rendered.
- Place where the sales invoice is raised.
- Place where the establishment is located to which the income can be attributed.
- Place where the sale proceeds are collected.
- Place where the cost of operations is incurred/charged.

The Internet provides an environment where automated functions are able to undertake a significant
level of business processes in a jurisdiction with little or no physical activity or participation in the
economic life or use of particular infrastructure. The concept of PE is challenged.

Commentators have argued in favour of taxing rights being based on sales in a jurisdiction. Vogel
(1998) argues that exertion of tax jurisdiction over significant sales into a source country can be
justified simply on the basis that the source country market presented opportunities for the profits to
be generated in the first place. McLure (2000) similarly argues the point on the basis that a source
country government provides the means to access the market by providing suitable infrastructure
facilities. At a more extreme level, Cordell (1997) argued in favour of a bit tax or a cyber tax believing
that if the new wealth of nations derived from networks, that logically it would be appropriate to
develop a turnover tax based on digital traffic. His logic, however sound, was discredited by the
OECD and major taxing authorities on the basis that it would not be consistent with the system of
taxation applied to conventional trade. Article 5 of the OECD (2005a) model convention defines a PE
as ‘a fixed place of business through which the business of an enterprise is wholly or partly carried on,
or a dependent agent who has, and habitually exercises, authority to conclude contracts in the name
of a non-resident.’

Tax treaties typically exclude activities that are regarded as merely preparatory or auxiliary in nature
such as the maintenance of a warehouse to store goods or an office used solely for the purpose of
advertising or supply of information (OECD, 2005a: Article 5-4). Early suggestions that a website may
constitute either a fixed place of business or a dependent agent were countered by arguments that
business over the Internet can be reduced to the concept of communicating and that in the absence
of a substantial amount of accompanying capital and human resources, a website would not constitute a PE (O'Halloran, 2005). Lubbock and Krosch (2000) argue that a website does not by itself constitute a PE on the basis that it is similar to a medium for the display of goods or an advertisement. They argued that this is the case even where the website facilitates the placing and accepting of orders. However, it is clear that this view should only be interpreted narrowly. A situation where a website or server goes beyond merely soliciting business and has capabilities of processing orders may indeed constitute a PE. SMART (System for Managing Agents in Real Time) agents may facilitate the downloading of order processing programs from a supplier's website, the acceptance and processing of any order received, and the collection and digitised deposit of fees. In these circumstances, the SMART agent may be regarded as carrying out the business and as such may constitute a PE (OECD, 2005a, para. 42-9). Conversely, Lambooji (2002) has challenged this interpretation – in his view a server is just a means of delivering product and therefore has only an auxiliary function.

Early consideration of the taxing of unmanned equipment being taxable in a source country was undertaken in the context of gaming and vending machines. OECD commentary suggests that the determining factor “depends on whether or not the enterprise carries on a business activity besides the initial setting up of the machines” (2005a, Art. 5 para.10). The OECD (2005b) considered whether or not the treaty rules (with regard to residence and source) for taxing business profits are appropriate for e-commerce activities and concluded that no fundamental changes to the existing rules were necessary. The clarifications offered by the OECD have been instrumental in resolving some, if not all, of the uncertainty. The OECD's final conclusions were published by the Committee on Fiscal Affairs in 2000 and were incorporated into the 2003 update to the Commentary on the OECD Model Tax Convention. Their main conclusions are now summarised.

**Conclusion 1** - A website cannot, in itself, constitute a PE The place of business concept is a physical concept. The OECD suggests that an Internet web site, which is a combination of software and electronic data, does not in itself constitute tangible property. It therefore does not have a physical place or location that can constitute a place of business as there is no facility such as premises or, in certain instances, machinery or equipment as far as the software and data constituting that web site is concerned. In other words, the website merely facilitates the conduct of electronic commerce. On the other hand, the server on which the web site is stored and through which it is accessible is a piece of equipment having a physical location and such a location may thus constitute a fixed place of business of the enterprise (OECD 2005a, para. 42.2, p. 103)

**Conclusion 2** - Website hosting arrangements typically do not result in a PE for the enterprise that carries on business through the hosted website. Fees paid to the ISP under such arrangements are generally based on the amount of disk space used to store the software and data required by the website. As these contracts typically do not result in the server and its location being at the disposal of the enterprise, even if the enterprise has been able to determine that its web site should be hosted on a particular server at a particular location, the OECD suggests that the enterprise does not have a place of business at that location since the web site is not tangible. However, if the enterprise carrying on business through a web site has the server at its own disposal, for example it owns (or leases) and operates the server on which the web site is stored and used, the place where that server is located could constitute a permanent establishment of the enterprise if the other requirements of the Article are met. The functions performed at that place must be significant and an essential or core part of the enterprise’s business activities to give rise to a PE.

**Conclusion 3** - Except in very unusual circumstances, an ISP will not constitute a PE for the enterprises to which it provides services A web server is only at the disposal of the enterprise if that enterprise sets up its own web server (i.e. if it owns or has a right of use through for instance a rental or lease agreement relating to a specific server). This criterion assumes that there is a specific identifiable physical asset, which is controlled by the enterprise (locally or from abroad). On this basis, a web site ran by a web hosting service provider on its systems does normally not create a PE, because there are no specific identifiable physical assets put at the disposal of the enterprise. In reality, web hosting contracts do not give the website owner any control over the technical assets on which the web site is hosted. The majority of the businesses that engage in e-commerce activities tend to outsource the web site hosting. The servers of the host are then not at their disposal, so that the issue of a PE does not then arise.
Conclusion 4 - A place where computer equipment, such as a server, is located may in certain circumstances constitute a PE. A server is considered to be a device upon which e-commerce applications may be sited or operated from, which allows e-commerce to take place and would usually include the computer hardware and its operating and basic application software. The OECD highlights that in the case of a server, what is relevant is not the possibility of the server being moved, but whether it is in fact moved. In order to constitute a fixed place of business, the commentary states that a server will need to be located at a certain place for a sufficient period of time so as to become fixed. The commentary does not however stipulate or provide guidelines as to what might be regarded as a ‘sufficient’ period of time. The second issue considered is whether the business of an enterprise could be regarded as being wholly or partly carried on at a location where the enterprise has equipment (in particular a server) at its disposal. The OECD commentary leaves it open to different tax jurisdictions to determine what might be regarded as a PE. The only guidance provided is whether by utilising such equipment the enterprise has facilities at its disposal where business functions of the enterprise are performed.

Further, the commentary specifies that there is no requirement that the facility is actually manned to constitute a PE. It adds that “this conclusion applies to electronic commerce to the same extent that it applies with respect to other activities in which equipment operates automatically”. This appears to be a direct reference to the decision in the case of an unmanned pipeline in Germany (undisclosed plaintiff). In this case, the Federal Tax Court in Germany [Betriebs – Berater, 1996] held that the requirements for the existence of a PE are fulfilled in the case of an unmanned pipeline used for the transport of crude oil. The pipeline was owned by a Dutch corporation, running between two points in Germany and all maintenance and repairs were carried out by independent contractors in Germany. This decision was upheld despite the fact that the transport of crude oil through the pipeline was not brought about by employees, but by automatic control equipment located in another jurisdiction.

Opponents of the German case have drawn on the logic applied in the Berkholz case [Berkholz v Finanzant Hamburg – Mitta – Altstadt c-168/84]. In this case, the taxpayer installed gaming machines on board sea ferries operating between Germany and Denmark. Berkholz argued that their services were supplied from a fixed establishment on board the ships and as such fell outside the charge of VAT as the services were supplied in international waters. The ECJ overruled this argument stating that an establishment must contain a permanent presence of human and technical resources necessary to supply the service. In the end, the logic applied by the German pipeline case was adopted in the OECD commentary. The key is whether the presence satisfies a core function of the business, over and beyond that which would be regarded as auxiliary.

Conclusion 5 - The functions performed where the server is located must go beyond what is "preparatory or auxiliary". Under the model tax convention activities that are merely preparatory or auxiliary in nature are not regarded as giving rise to a PE (OECD 2005a, article 5-4e). One has to examine on a case-by-case basis having regard to the various functions performed by the enterprise through that equipment. The commentary provides examples of activities which would generally be regarded as preparatory or auxiliary including:- activities which merely provide a communications link – much like a telephone line – between suppliers and customers; advertising of goods or services; relaying information through a mirror server for security and efficiency purposes; gathering market data for the enterprise; and, supplying information.

The key issues to consider are:-

- Do the above type of functions form an essential and significant part of the business activity of the enterprise as a whole?
- Are other core functions of the enterprise carried on through the computer equipment, such that the activities as a whole would no longer be regarded as auxiliary in nature?

If the response to either or both of the above are positive, and provided the equipment utilised (e.g. fixed server) constituted a fixed place of business of the enterprise, there is a PE. What can be regarded as constituting the core functions of a particular enterprise clearly depends on the nature of the business carried on by that enterprise. For example, the commentary stipulates that in the case of an ISP, whose business is that of operating their own servers for the purpose of hosting web sites or other applications for other enterprises, these services are an essential part of their commercial activity and cannot be considered preparatory or auxiliary.
The position is fundamentally different, however, for an actual enterprise that carries on the business of selling products through the Internet. In that case, the enterprise is not in the business of operating servers and the mere fact that it may do so at a given location may not be enough to conclude that activities performed at that location are more than preparatory and auxiliary. What needs to be done in such a case is to examine the nature of the activities performed at that location in the context of the overall business carried on by the enterprise. It is a relative question how a specific part of a business relates to the business as a whole – there is a need to clearly define the business as a whole and then decide the extent to which the presence satisfies (beyond mere auxiliary) a function(s) of the business. If these activities are merely preparatory or auxiliary to the business of selling products on the Internet (for example, the location is used to operate a server that hosts a website which, as is often the case, is used exclusively for advertising, displaying a catalogue of products or providing information to potential customers), the auxiliary exclusion will apply and the location will not constitute a PE. If, however, the typical functions related to a sale are performed at that location (for example, the conclusion of the contract with the customer, the processing of the payment and the delivery of the products are performed automatically through the equipment located there), these activities cannot be considered to be merely preparatory or auxiliary. If the function is merely a post box, where customers can simply order goods on the web rather than sending in an order form or phoning a sales person, it is clear that the website is an alternative means of communication and therefore represents an ‘auxiliary’ function. Whilst the functionality may be more sophisticated and user-friendly, and may result in additional business arising, it is still satisfying an auxiliary function in lieu of the conventional catalogue or order form. Even if the customer buys digitised product stored on the local server, the storage function on the web server remains a storage function and therefore auxiliary to the selling of digitised goods.

As ICT develops enabling companies to have virtual existences, the distinction between ‘core’ and ‘auxiliary’ activities will become ever more difficult to distinguish. It is complex enough in the physical world. Some jurisdictions have been critical of the uncertainty arising from the requirement that the matter should be considered on a case by case basis and have proposed that the OECD should have been more forthright in their views and should have simply concluded that a server cannot, by itself, constitute a permanent establishment. The Inland Revenue in the United Kingdom has taken the view that in no circumstances do servers, by themselves or together with websites, constitute permanent establishments. Since the 2000 clarifications were incorporated into the 2003 update of the Commentary on the OECD Model Tax Convention, representatives of the business community have requested that some widely-accepted interpretations of the PE concept be expressly included in the Commentary. A study by the OECD (2005b), concluded that there is no actual evidence, contrary to earlier predictions, that the communications efficiencies of the Internet have caused any significant decrease to the tax revenues of capital importing countries. The report did not find in favour of any significant changes to the model tax convention definition of PE or its commentary save for some additional clarification as to what might be regarded as ‘preparatory or auxiliary’ functions and thus falling outside the scope of a PE.

3. Transfer pricing and profit – Back to GSECorp

In terms of transfer pricing and profit allocation, if a PE exists in the foreign location, then in determining what would be regarded as a proper allocation of profit to a PE will depend primarily on identifying the ‘functions’ carried out in the source country, the assets located in the source country creating the profits, and the risks that the local enterprise carries. For online services, the value normally lies in the software rather than the hardware. In most cases therefore, it is likely that a profit margin based on what a third party distributor would achieve should be justifiable. If the local entity has additional functions, assets and risks housed in the local enterprise then a much higher level of profit can be justified. This may present an opportunity for GSECorp to explore the possibility of transferring such assets/liabilities to a low tax jurisdiction, such as Ireland, as part of its restructuring. Prior to restructuring, GSECorp used a server owned by an independent third party ISP. Based on the above commentary, the categorisation of its activities in Europe from a direct tax perspective depends on whether the server and its associated functions could be regarded as a PE. In determining whether the server would be regarded as PE and the extent to which it earns profits would be influenced by the following:

- If the server is solely owned or leased by GSECorp and has been located in Ireland for a reasonable period of time, then this would point to a potential PE issue.
If the server has the capability to undertake the functions of business (negotiating and concluding sales contracts), this would suggest a PE.

The level of profit is arguably that which a third party distributor would earn for distributing the particular product in question.

The OECD business profits Technical Advisory Group (TAG) concludes that where the PE consists only of a server or servers hosting one or more web sites through which transactions take place, whether, on a proper analysis, the PE functions as a contract service provider or an independent service provider, the level of profit attributable to it is likely to be relatively low, subject to the potential need to reward the PE's use of e-commerce marketing intangibles and the assumption of credit and technology risks. The same is true where personnel are present in the PE but the hardware and software in use were not created by the PE. In the situation where it is assumed that development and construction of hardware and software assets have been undertaken by personnel in the PE, the TAG concludes that a higher profit level will be attributable to the PE commensurate with its creation and economic ownership of assets and assumption of associated risks.

Why restructure the business model? Regardless of whether GSECorp has a PE in Europe, given its expansion plans for Europe where it projects in excess of 60% of its profits will be created in the future, it should consider remodelling such that this proportion of its entire profit is subject to a lesser rate of corporation tax than currently applying in the US. Based on its existing model, even if it has a PE in Ireland only a modest level of profit would be subject to Irish tax at 12.5% and taxed currently under the existing structure in the US without the benefit of tax deferral (The Irish Revenue has confirmed that it does not foresee the mere presence in Ireland of a server of a foreign e-tailer constituting an Irish PE or branch of the foreign e-tailer). Even if the existing ISP arrangement created a PE, it is questionable whether any income of GSECorp could be subject to Irish tax as profit attributable to the PE under treaty rules. Under the separate enterprise principle, the profit attributed to a PE should be the profit it would have earned as a separate entity on an arm's length basis. The ISP will already be receiving arm's length compensation for its services from the e-commerce enterprise. If PE profit is determined on an arm's length basis, no additional profit should be subject to tax as profit attributable to a PE.

What GSECorp now needs to achieve is a situation where a newly created IRCo can justifiably earn a significantly higher level of profits and for the group as a whole to enjoy the benefit of a deferral of US taxes. Even if ultimately profits will be subject to US taxes, if it is possible to defer the payment of US taxes GSECorp will be empowered to utilise a greater level of pre US tax profits for expansion purposes into other markets and indeed to fund its additional R&D requirements in Ireland. In practice, from a transfer pricing perspective, it is better to operate in Ireland as a subsidiary rather than a branch. A subsidiary gives greater certainty because:

- the functions and risks of the server subsidiary, which drive the transfer pricing results, can largely be defined by contractual terms structured by the two parties; and
- the transfer pricing rules are generally better developed and more consistent from country to country in relation to separate legal entities than the rules or practices that apply to the taxation of PEs.

Since the announcement of the Irish 12.5% tax rate on trading profits, Ireland has featured on the international radar screen as an attractive location for overseas operations, including e-commerce operations. In contrast to the tax rate of 10%, which applied only to manufacturing and certain financial services operations, the 12.5% tax rate applies to all trading profit from 2003 onwards regardless of the industry sector (with certain minor exceptions) in which the profit is generated. The availability of the 12.5% rate makes Ireland a competitive location for new start-ups in Europe or the relocation of existing operations, provided any tax costs associated with relocation can be avoided. Prior to restructuring, regardless of whether GSECorp had a PE in Europe, all its profits were subject to a global effective tax rate of 34%. If it had an Irish tax liability on its Irish sourced profits, it would have been subject to Irish tax at 12.5% which would be creditable against its US taxes. Restructuring its business operations to ensure that 60% of its profits are now substantially subject to an effective tax rate of 12.5%, allows it to utilise pre US tax profits to fund its continuing expansion plans outside of the US. Of course there is a cost vs. benefit analysis required. GSECorp would have to weigh up the following:

**Costs**

- Value of foregone development tax deductions in the US.
Tax cost of possibly not securing a tax deduction for the cost of buy in payments.

The cost of any new withholding taxes resulting from the structure.

Implementation costs.

Benefits

- What level of profits will be derived from the European operation?
- Will the tax liability on the above be deferrable under the US Controlled Foreign Corporation legislation (sub Part F)?
- Differential in tax rates (Ireland and rest of Europe) vs. US.

GSECorp will need to conduct a transfer pricing analysis to identify the transactional forms and the related allocations of functions, assets and risks to determine the level of profit that can justified in Ireland. The benefits, in terms of taxation, outweigh the costs.

4. Conclusion

As this paper hopefully demonstrates, the issue of what is or is not a PE is no easy matter. In my view the tests in determining whether a PE exists in a foreign jurisdiction that have been applied for conventional commerce can still be applied to e-commerce. There is, however, a need for the definition to be constantly kept under review as newer technology develops. Such revisions will always need to keep in focus the general taxing principles that have stood the test of time. Tax authorities in high tax jurisdictions will always have to contend with the ease with which, in a global environment, companies can relocate activities to low tax jurisdictions which typically have little or no transfer pricing regimes in their domestic tax legislation. In my view the OECD has to insist that its members (particularly in low tax jurisdictions such as Ireland) apply an internationally accepted transfer pricing model for all enterprises over a certain size. This would ensure that profit allocations in different jurisdictions are in line with the particular enterprise functions performed, assets engaged and risks assumed. Corporations would be required to have their auditors sign off as part of the annual audit an opinion that the corporation has a proper transfer pricing programme in place in conformity with the transfer pricing standard. Until such an internationally accepted transfer pricing model is accepted, a risk will always remain that the level of profits accruing in the low tax jurisdiction will not reflect the true level of economic return expected.

Acknowledgements

I acknowledge the helpful suggestions from the anonymous reviewers, and from Margery Stapleton and David O’Donnell.

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Singing from the Same Hymnsheet? The Impact of Internal Stakeholders on the Development of e-Democracy

Ailsa Kolsaker and Liz Lee-Kelley
University of Surrey, Guildford, UK
a.kolsaker@surrey.ac.uk
l.lee-kelley@surrey.ac.uk

Abstract: Early interest in e-government focused on technological convergence, system interoperability and data sharing. After a slow start, there are signs that provision is improving; 2006 figures show that across Europe 67.8% of basic G2B services and 36.8% of basic G2C public services are fully developed. As provision has improved, e-government ontologies have broadened, moving beyond information provision and service delivery to embrace facets of governance such as transparency, dialogue, shared decision-making, collaborative policy-formulation and partnership. Active citizenship has long been recognised as a key component of a healthy, functioning democracy and the both the European Commission and individual European nations are keen to exploit the networking opportunities presented by the Web to engage more closely with their citizens. Despite somewhat lofty ambitions, the European Commission itself has recently acknowledged that the Web is not yet operating as an effective facilitator of democratic inputs into policymaking, let alone the more ambitious mandates. The empirical research reported in this paper explores the reasons why. Our paper presents the findings of a study of the extent to which internal stakeholders of a local government authority (Borough Council) in the UK share a sense of purpose in developing an e-government portal as a vehicle for e-democracy. It addresses whether lack of progress is related to a mismatch between theorised and actual stakeholder motivations, preferences and behaviours. As well as the officials tasked to bring to fruition the concept of online services and e-democracy, politicians have a key role to play in promoting e-government development. Accordingly, two main groups of stakeholders are in focus; elected Councillors and Borough Council employees (or ‘officers’). It explores whether the political decision makers and those responsible for online delivery share a common sense of purpose and understanding of the potential value of Web-enabled participation both for the local authority and citizens. Finally, it evaluates whether a lack of shared vision may be hindering progress towards e-democracy. The findings expose a number of pertinent and long-standing issues and challenges. In general there is a lack of shared purpose and motivation and a view that the added value of Web-enabled participation may be theoretical rather than real. As such, the study is of interest not only to academic colleagues, but also to policy-makers and local authorities tasked with delivering public services online and engaging citizens more extensively in the processes of democracy.

Keywords: e-democracy, e-participation, engagement, UK, local e-government, internal stakeholders

1. Introduction

Early interest in e-government focused on technological convergence, inter-operability and data sharing. Recent reports indicate that European nations are making good progress in these areas (EC, 2007) with the European Commission stating, ‘eGovernment-based services are becoming more effective nationally and more interoperable at European level. At the same time we are delivering higher quality, saving billions of euros through efficiency gains, and increasing transparency and accountability of our administrations’ (2007). 67.8% of basic G2B services and 36.8% of basic G2C public services are now fully online (EC, 2007), offering potential benefits for the economic competitiveness of European nations. In the foreword to the most recent progress report, the European Commissioner in charge of Information Society and Media stated, ‘eGovernment-based services act as a benchmark for a competitive economy. Countries that score high on public-sector openness, efficiency and e-government delivery also top economic performance and competitiveness scoreboards, according to the World Economic Forum and measurements made by other international bodies.’ This statement indicates the importance assigned to e-government by the European Commission in terms of its fundamental centrality to national economic well-being.

As e-government provision improves and measurable benefits accrue to member states in terms of cost savings, efficiency, delivery quality and accessibility, the European agenda is moving beyond simply providing public services online to ambitions of a wired-up continent in which citizens and policy-makers engage to enhance democratic decision-making. E-government strategy and policy has broadened to embrace facilitative technological discourses of process and relationship re-engineering. The ‘i2010 eGovernment Action Plan’ (April 2006) includes explicit e-democracy and e-participation objectives in which citizens become active participants in political decision-making and
policy formulation. But in its review of e-government progress towards i2010 objectives, the European Commission notes that the Web is not yet operating as an effective facilitator of democratic inputs into policymaking (EC, 2007). In a robustly-worded analysis the report highlights a propensity for decision-makers to focus on technical and economic efficiency rather than deliberative strategies (EC, 2007). From a provider perspective the technological challenges are easier to face than the socio-political; they are less complex, easier to define, understand and communicate and potentially less controversial. Fewer people are involved offering the prospect of fewer conflicting objectives and less dissent; outcomes are more measurable and value for money relatively easy to demonstrate. Against this background, this paper queries whether lack of progress on e-democracy is related to divergent priorities amongst internal stakeholders making it difficult to achieve a shared sense of purpose. In exploring this the paper presents the findings of research into the extent to which elected councillors and officers of a local government authority in the UK share a sense of purpose in developing their e-government portal as a vehicle for e-democracy.

2. Background: The problem under investigation

The ‘i2010 eGovernment Action Plan’, agreed by all member states and published in April 2006 (EC, 2006) contains five key objectives: i) no citizen left behind, ii) making efficiency and effectiveness a reality, iii) implementing high impact key services for citizens and businesses, iv) putting key enablers in place to assure convenient, secure, interoperable services, and v) strengthening participation and democratic decision-making. Whilst i – iv have long been key components of the European e-government vision, the fifth objective denotes a broadening of ambition, role and purpose. The specific e-democracy objective is to achieve, by 2010, tools for effective public debate and participation in democratic decision-making (EC, 2006). The purpose is to enhance decision-making and to involve citizens more extensively in democracy in order to promote societal cohesion (EC 2006:10). This signifies a change in focus away from service delivery to governance, by which we mean ‘the use of information and communication technology to improve the quality and efficiency of all phases of the life cycle of legislation’ (Gordon, 2004). To this end member states are asked to test ICT tools that facilitate transparency and public involvement in democratic decision-making (EC 2006:11). The approach is supply-led and necessitates shared vision and commitment amongst those responsible for delivering e-government, including elected representatives, executive civil servants, web managers, administrators and content providers.

Earlier studies suggest that both elected representatives may need some re-educating; a UK-based study suggests that the majority of citizens feel ‘disconnected’ from political life (Coleman, 2005). Of those surveyed, 94% of those with no contact with their representative felt disconnected, compared to 61% overall. The study indicates a relationship between contact and citizens’ feelings of being connected (or not) to their elected representative, and political life. Whilst the web may have reduced the physical distance between the two groups, there is some evidence that politicians are uncomfortable in this newly mediated space (Coleman, 2005). Ekelin (2006) identifies an unwillingness by politicians and civil servants to take active part in electronic dialogue with citizens; difficulties emerging from a lack of strategy concerning how to deal with ‘informal’, e-enabled citizen input into ‘formal’ decision-making, and broader issues of appropriateness and legitimacy. A study of UK parliamentarians (Ward and Lusoli, 2005) found that most were using personal websites to ‘modernise’ established communication methods, rather than reinvigorating relations with constituents by employing web-based technology in new, interactive ways. In a recent study, Ward et al (2007) argue that an elected representative’s use of the web for citizen engagement is affected by various factors; some personal, some organisational and some political, such that practice varies widely. Citizens, for their part, may also need to be re-educated. Colman (2004) suggests that politicians and citizens need to acquire new types of communication skills and modes if web-based dialogue is to be successful. In a recent paper, we suggest that although citizens perceive moderate value in online service delivery, they see little value in using the web for democratic engagement (Kolsaker and Lee-Kelley, 2006).

Notwithstanding difficulties in making web-enabled representation a reality, across Europe various models of citizen engagement are being tested. Networking technologies have been identified as particularly useful for citizen engagement, including file-sharing, email, websites, navigating, chatting, message targeting and video-conferencing, including networking technologies (Snellen, 2002). In recent years state-sponsored e-governance activities have proliferated; in Holland citizens were invited to input directly on town redevelopment proposals (Moody, 2007); in Germany citizens debated traffic proposals via a discussion forum (Roeder et al, 2005); in Italy e-voting has been
trialled in provincial elections (Villafiorita and Fasanelli, 2006); Denmark and Estonia have also trialled e-voting (Biasiotti and Nannucci, 2004); in Scotland young people engage in debate and voting in a local youth parliament (Smith et al, 2006) and use engage in regional e-community council toolkits (Macintosh et al, 2004).

Despite these, and many other interesting e-participation experiments, it would be premature to conclude that e-governance has come of age. In the Dutch project, plans to have people vote for policy proposals failed even before they reached the city council in case they supported plans the city would not like to see realised (Moody, 2007); the German experience saw citizens expressing a wish for fast realisation of their proposals during the future planning process (Roeder et al, 2005). Generic problems of access, exclusion, and the maverick citizen remain unsolved. Psychological barriers to engagement also need to be addressed. In Ekelin’s Swedish study, ‘politicans and municipal officers …were more concerned with what the other parts were doing or not doing, than seeing the possibility of e-participation as a way to motivate each other in learning by participation (2006:117). These ongoing concerns are reflected in the European Commission Status Report on eGovernment (2007) in which it is observed, ‘at this stage, it is not certain that ICT encourages and assists citizens to participate and facilitate engagement’ (2007:10). The problem seems to be that, ‘there is a danger that ICT in the democratic process encourages populist participation, whereas it should instead ensure mature engagement and well-informed debate’ (2007a:10). Challenges are two-fold: to improve participation rates and to moderate debate such that it becomes truly facilitative and participative. The EC Status Report identifies the following as key to improving participation: transparency; supporting political activity and improving consultation; building democratic knowledge by enhancing deliberative space; and bridging social and political inequalities (EC 2007:71). The report identifies a need for process design and discourse rules, including ‘how deliberation is moderated, the space for dissent, how it is managed and the impact of deliberations upon decisions and on stakeholders’ perceptions and behaviour’ (EC 2007:10). This research seeks to ascertain the extent to which process design and discourse rules are developed and pursued in common by those responsible for engaging citizens in democratic decision-making – referred to as ‘stakeholders’ in this study.

For the purposes of the qualitative research reported in this paper the term ‘stakeholder’ is defined somewhat narrowly in that it is limited to those involved in developing and operating e-government in a local borough council in South-East England. The notion of a stakeholder refers to those with a direct interest in actions or decisions of an organisation or enterprise. In this paper we employ the term to apply to two distinct groups of people. The first group comprises local councillors who in the English system of local government are politicians elected to serve as executive decision-makers in the local borough council for a limited term. The second group comprises employees (or ‘officers’) of the local borough council who are civil servants working in functional departments with specific responsibility for developing the technological and operational functionality and content of e-government. In exploring convergence or divergence of views (whether stakeholders are ‘singing from the same hymn sheet’) the following research questions are posed:

- Do elected councillors and borough council officers share a common view of the purpose of the e-government website?
- Do they share a common view of the prospects for electronically-enabled, participatory governance?
- Finally, do they share a view of barriers to e-enabled participation and how might these be overcome?

3. Method

The study reported in this paper employs a qualitative methodology, specifically a series of interviews with local elected councillors and borough council officers to draw out the key issues of importance to each, the design is ex post facto, where the researcher simply observes and measures the situation as found. There is no attempt to manipulate or experiment, thus the study is designed simply to be a “snapshot” of the current state of affairs. The data analysis sought to expose themes; based upon experience content analysis software was not employed as it was considered more effective to trawl through the transcripts manually, identifying emergent themes, coding, reflecting, revisiting earlier codings; in essence employing a process of saturation (Herbert and Higgs, 2004). For our purposes saturation is defined as enabling the identification of phenomena, themes and issues which emerge from the various stages of data collection and which are either anchored in the literature or indeed,
The study was conducted in a borough in the county of Surrey, UK; selected because it is a relatively prosperous part of the country with computer ownership and Web access above the national average. The research population is divided into two distinct categories: providers and users. The category ‘providers’ is divided into two distinct sub-categories: i) elected councillors and ii) borough council officers involved with Web provision. ‘Users’ is defined as citizens living in the borough. The sampling frame of the provider group comprises key stakeholders involved in providing e-government to citizens, identified by the Web Manager employed by the borough council. With the Web Manager’s input, the sub-category ‘borough council officers’ was again divided into two distinct sub-categories: i) executive decision-makers, with responsibility for strategic planning and delivery of G2C; and ii) web administrators, with responsibility for updating the content of departmental webpages. All individuals in the sampling frame were contacted; with the exception of two key stakeholders (unavailable for time reasons), all others in the sampling frame were interviewed. Employing semi-structured interviewing techniques, the views, opinions, expectations and perspectives of a total of 10 key stakeholders were elicited on the purpose, objectives, role, state of development, progress, content, and prospects of the borough council website for two distinct purposes; eGovernment: delivery of services and eGovernance: engaging citizens in dialogue and decision-making. The interview schedule was divided into two: Part A, concerned with eGovernment, and Part B, concerned with eGovernance. Part A contained questions in five distinct categories: Objectives, Usage, Value, Integration (joined-up services) and Non-users; Part B contained four: Current Use, Objectives, Engagement and Prospects. Each section comprised a series of short, open-ended questions designed to allow participants maximum freedom to express their views. A classic canonical didactic format was employed, in which the interviewer simply posed a series of questions. The intention of the interviews was to elicit information, views and opinions and since the participants all had knowledge and experience of the e-government website, there was little need for much interviewer intervention in the form of supplementary information or direction. Questions were simple and open-ended, for example: Part A, Objectives: i) What is the overall objective of the website? ii) Who is it for? iii) What do you want them to do with it? The main role of the interviewer was to ensure that participants were at ease, that each contribution fitted logically with what went before, that the salient issues emerging from the literature were addressed, and that the sessions ran smoothly.

4. Findings

This section contains the findings from the qualitative data, considering each of the research questions in turn. In presenting a summary of participants’ views the responses are grouped according to the categories defined above: executive decision-makers, web administrators, and elected councillors.

4.1 Research question I: Do elected councillors and borough council officers share a common view of the purpose of the e-government website?

The executive decision-makers view the purpose of the website in terms of information provision, service delivery and efficiency savings. They mentioned specifically: improved access to useful, relevant information, enabling transactions, making efficiency savings, providing better services, improving service delivery, enabling the public to self-serve and thus relieving staff of telephone or face to face queries. Efficiency was a key theme; one of this group commented, ‘Queries...actually go to the right person just saving time and making us look like a slick kind of organisation.’ Only one of this group suggested that it might have a role to play in encouraging two-way dialogue between the Council and its citizens. The views of the web administrators overlapped some of these points. This group mentioned specifically: a means of signposting services, providing information, enabling easy access to services and relieving staff of dealing with face to face or telephone enquiries; ‘People can find things on the website without having to come in so it’s a lot easier for people, so it’s quite a good resource really’. In contrast to the executive group, none of the web administrators specifically identify service improvement as a purpose of the website. In contrast to both groups of civil servants, the elected representatives generally have a broader view. They regard the purpose of the website as: information provision, enabling communication, encouraging consultation with citizens and enabling
them to become better informed and more involved in local decisions. Economy and efficiency are important. ‘It’s providing information in a more modern and convenient fashion instead of just huge amounts of hard copy information. It’s an improvement both from a customer services point of view and it means we spend less time and money on producing things on paper.’ One councillor described the website as a way of enabling ‘the public to find out what the Council is up to.’ In sum, there is a broad consensus around the themes of information provision and efficiency. The two groups of council officers; executive decision-makers and web administrators, broadly share similar views that may be described as ‘inside-out’. Elected councillors seem to have a broader, more balanced ‘inside-out’/’outside-in’ perspective; the web enables greater citizen consultation and involvement and makes the Council more transparent. In relation to the first research question, we can conclude that opinions converge around information provision and efficiency, but diverge around organisational openness, citizen consultation and involvement.

4.2 Research question II: Do elected councillors and borough council officers share a common view of the prospects for electronically-enabled, participatory governance?

The executive group indicated that there is much potential for e-governance, but identified an urgent need for a clear focus and purpose. One member spoke of the existence of brief online consultations and a desire to expand into online forums, perhaps e-panels and ‘maybe even a blog or two ... something a bit more interactive that people can feed back to and kind of involve people a bit more.’ Another member of this group commented, ‘there’s a lot of room for development, but it is difficult because it becomes political.’ In general the executive group thought the prospects for e-enabled participation were generally good but as one member commented, ‘there has got to be a need – if you set up a slot on your website for this kind of function people are going to start trying to fill it with things and I think you’ve got to have a need. There’s got to be a purpose.’ In addition, the topics have to arouse public interest to the extent that they participate actively; earlier experiments with online forums had not been successful because the topics weren’t interesting enough and they weren’t promoted enough and the councillors felt they were spending too much time on them. Consequently the online forums were removed from the site. It was felt that if e-participation was to be encouraged, it would have to be led and supported by the senior management team and that currently priorities and resources were focused elsewhere.

The web administrators’ views tended to be parochial. They spoke of limited prospects for further citizen engagement in relation to the processes or functions in which they are involved. There had been an experiment to engage local school pupils with elected representatives, but little else. One of the web administrators commented, ‘of the citizens using the website possibly only 10% are even interested in participation, so the Council could spend a lot of money and effort trying to engage people who aren’t interested.’ Responding quickly to emails was viewed as a reasonable way of engaging with the public. The elected councillors were rather wary of the prospect of e-enabled participation. The general view was that the councillors’ individual pages (linked to the website) were little used. The vast majority of citizens use e-mail, letters or telephone to communicate with councillors. One of the participants had taken part in the young people’s forum mentioned by the web administrator and reported it to be very difficult to deal with in terms of i) typing ability (or lack thereof), ii) sticking to a regular pattern for going online, and iii) dealing with several contributors simultaneously. In general the councillors felt that e-mail and the traditional methods of communication were adequate and could not see any great advantage in exploiting the e-government platform for citizen engagement. In sum, there was a discernable divergence of view between the three groups. In general, members of the executive group were most positive; they could at least see some potential in online forums and blogs. The other two groups were less enthusiastic; neither could see how the web might be exploited to add clear value to citizen/state interactions.

4.3 Research question III: Do they share a view of barriers to e-enabled participation and how these might be overcome?

Considering potential barriers to e-enabled citizen participation, the executive group identified resistance from other stakeholders. One commented, ‘There is resistance to us spending the time on it and I’m not really sure how we get over that hurdle.’ Additionally, there is perceived to be a general lack of interest and support (political, managerial and financial) for proactively engaging the public via the web; one of the executive group commented, ‘I’m sure they (senior management) are aware of it and probably think well we’ll just be doing it somehow without it involving resource or money or time
or anything else.’ Lack of resources has prevented the production of a strategy document, ‘I wouldn’t like to have a document out there that wasn’t backed up by any kind of resource- that would be kind of pointless.’ There is a feeling that the Council will engage citizens when it is forced to ‘from above…. when further assessments from the Audit Commission will be the stick.’ The web administrators also identified resources as problematic, ‘the resources have not been put in behind it in order to deliver what we should have. The technology’s there but we don’t have the people to put it in place.’ Unlike the other two groups, the elected councillors viewed the barriers not in terms of resources or managerial support, but very simply in terms of their preferences for more traditional channels of communication both amongst their peers and citizens. The councillors remained unconvinced that the Web had much to offer over and above the communication channels they currently exploited and opined that citizens seemed happy enough to email, telephone or ‘clobber us in the street’.

In sum, there is a divergence of views between groups, with the executive group identifying numerous barriers including lack of managerial support, resistance from other stakeholders, resource constraints and a general lack of urgency. Members of this group regarded the support of senior management, availability of resources and culture change of culture as the only ways of overcoming barriers and making progress with e-participation. Echoing the executive group, the web administrators also identified resource issues as a major barrier, but considered senior management support and the need for a change of culture less critical to future success. As a group the web administrators focused more on current issues in their departments and were less concerned with the overall prospects of the website for citizen engagement than the executive group. For their part, the elected councillors expressed a preference for current methods of communication; they claimed also that citizens prefer these methods and would very possibly be unable to see the attraction of more extensive use of web-based tools such as online forums, consultations or blogs. The councillors could discern no obvious value proposition in exploiting the web to engage with citizens in their ward. Perceived barriers for this group included lack of obvious purpose, difficulties in engaging with numerous users simultaneously, and raising expectations beyond what could reasonably be delivered. In aggregate it may be concluded that the results of the empirical research reported in this paper indicate a divergence of views amongst all three groups of stakeholders in relation to each of the research questions. Table 1 provides a summative overview of the key issues and views expressed by the three groups:

<table>
<thead>
<tr>
<th>Table 1: Key issues and views identified by the three groups of stakeholders</th>
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<tbody>
<tr>
<td>Council Officers (executive)</td>
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<tr>
<td>Purpose of website:</td>
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<tr>
<td>Enabling transactions</td>
</tr>
<tr>
<td>Service improvement</td>
</tr>
<tr>
<td>Self-service</td>
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<tr>
<td>Efficiency</td>
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<tr>
<td>Prospects for eParticipation:</td>
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<tr>
<td>Online consultations</td>
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<tr>
<td>Online forums</td>
</tr>
<tr>
<td>Blogs</td>
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<tr>
<td>Generally costly: time &amp; money</td>
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<tr>
<td>Barriers to eParticipation:</td>
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<tr>
<td>Resistance from other internal stakeholders</td>
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<tr>
<td>Lack of interest &amp; support from above</td>
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<td>Lack of urgency</td>
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5. Discussion and conclusion

The findings suggest that the borough council involved in the research is not focusing on achieving the i2010 e-democracy objective of putting in place tools to support effective public debate and citizen participation. The primary aim of the website is to improve service delivery, facilitate self-service and release staff from the burden of telephone and over-the-counter enquiries. Interestingly, for the Planning Department the website has actually increased the volume of enquiries as citizens download information about local planning applications from the website then, armed with the information, visit the department to discuss the issues further. Uniquely, employees in the Planning Department have seen their workload increase as citizens self-serve via the web. At least one participant expressed the view that the council would be unlikely to put the necessary infrastructure in place for citizen participation unless it was forced to do by Government targets and audit.

Tentative forays into online consultations and forums have been made by the team responsible for website development. These have not been resourced however, and according to members of the executive decision-making group, have met with some resistance from elected representatives. It is perhaps not entirely surprising that councillors appear resistant; their response echoes Coleman’s (2004) findings that politicians may need to be re-educated to take full advantage of the dialogic features of the web. It is worth noting that the executive group felt that the councillors thought that too much time and effort was being spent on online forums; the councillors themselves expressed no such view in the interviews. On the contrary, in contrast to Ekelin’s (2006) study, the councillors appear willing to engage with citizens using electronic media; they are comfortable using e-mail, but simply see no particular need or any obvious value in exploiting Web-based dialogic tools. If these are the be developed successfully in line with the i2010 e-democracy objective, then councillors will have to be persuaded that these offer real value over and above the existing communication tools. Even then, a number of barriers need to be overcome. The councillors spoke of abandoning the traditional face to face ‘councillor surgery’ since nowadays few people have the time or inclination to visit a physical office at a set time. There is a sense in which discussion forums require a regular presence such that the parameters of the interaction are understood and agreed; they offer little value if updated infrequently or irregularly, and at least one of the councillors expressed a worry that an initial flurry of activity on a popular discussion forum might simply trigger unrealistic expectations about councillor availability. Councillors evaluate web-based dialogue in terms of opportunity cost and appear limited by a fear that it may be very time-consuming to maintain and may not actually reach many constituents.

In aggregate, the findings of this study indicate a lack of shared vision amongst key stakeholders responsible for implementing e-enabled participation. Whilst hesitating to generalise on the basis of one, relatively small case study, the interim results sound a note of caution. As one of the executive group commented, ‘What the Government thought it was setting out to achieve and what it actually achieved are two slightly different things to be honest. The aspirations were great but really all that it resulted in was a lot of box-ticking.’ Little surprise then that resources are lacking, or that those at the front-line (the elected councillors) have a number of concerns about the implications of e-democracy. To be successful Web-enabled engagement needs to have a clear purpose and be well-resourced. There also needs to be careful consideration of how dialogue is to be managed at a very practical, operational level. This case study suggests that the practical implications have not been comprehensively considered, nor the appropriate resources put in place. We need to consider how e-participation might work best in practice; there is little merit in developing ambitious strategies if councillors cannot be persuaded to exploit the opportunities presented. In this sense this case study suggests that little has been achieved since the UK Local Government e-democracy project (ended March 2006) concluded that elected representatives need to understand how to design tools and methods, and selecting tools that are fit for purpose; which tools to use in which context for which purpose. We need to understand better how to support our elected representatives in such a way that they see clear benefits in web-enabled participation for particular issues or contexts. Perhaps the optimal approach is organic growth; e-participation encouraged on an issue-by-issue, case-by-case basis to allow elected representatives and citizens alike to develop the skills, knowledge and confidence to use the web to communicate, debate and engage with each other.

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Developing Virtual Healthcare Systems in Complex Multi-Agency Service Settings: the OLDES Project

Gregory Maniatopoulos¹, Ian McLoughlin², Rob Wilson¹ and Mike Martin¹
¹Newcastle University, UK
²Monash University, Melbourne, Australia

Abstract: Recent developments in internet and digital technologies offer increasing possibilities for transforming the delivery of care by virtual means. However, the care of older people presents challenges and issues at many levels. The realities of the world of older people and of the multiple institutions and agencies that provide care services for them have to be better understood if virtual services are to be configured appropriately. This paper presents the results of an action research exploration of the complexity of needs found in care environments and the difficulties of configuring services when delivered in multi-agency settings (i.e. jointly across organizational, professional and occupational boundaries). The deployment of a computer-based graphical demonstrator is illustrated as one means through which, visualizations of different socio-technical scenarios can be generated. We suggest that this tool can support processes of shared sense making amongst care agencies and institutions. In so doing, it can provide the basis for facilitating more effective ‘user’ engagement with the design, development and implementation of virtual healthcare systems.

Keywords: socio-technical systems, healthcare, older people, virtual services, action research

1. Introduction

Current developments in information and communication technology (ICT), it is claimed, offer great opportunities for the use and development of telemedicine applications in a number of medical and related care domains. These developments, it is suggested, have the potential to transform the cost-effective delivery of medical practices. Apart from medicine, other health and social care provision could equally benefit from the application and use of ICT, such as services for disabled people, those discharged early from hospital, community healthcare services and particularly healthcare provision for older people (see e.g. Fitch 1999). As such both medical, healthcare and other care professions - as well as potential patients - are being encouraged to make more and better use of the opportunities offered by digital technologies to provide health and social care services by virtual means.

This paper outlines the early results of an ongoing action research intervention in a virtual healthcare project called OLDES - see www.oldes.eu -. The project is concerned with deploying internet and digital technology to deliver virtual health care and related services to older people. The intervention is based on the principles of socio-technical systems design and in particular the concept of ‘co-production’. It is intended to assist in equipping stakeholders - including health informaticians, service providers, system designers, technology suppliers as well as end users – with an orientation to the design process that allows them to develop systems that more purposively fit the everyday practices of those using them. This process is being facilitated by the deployment of a pilot system or ‘demonstrator’ tool that supports stakeholders in visualising different socio-technical scenarios for the configuration of virtual services for older people.

2. The use of virtual technologies in delivering care services to older people

Older people are becoming an increasing percentage of the population of all European Union (EU) countries. In the member states 23% of the population will be aged 65 or over by 2020 and 31% by 2050 with major implications for ‘the labour market and the health and long-term care sector’ (European Commission, 2005: 19). Older people frequently require access to public and other services to support them in their daily lives and to deal with the onset of medical and other conditions that arise from the ageing process and that can progressively reduce their degree of autonomy. The

¹ The demonstrator tool is a fully operational synchronised audio-visual recording environment (including screens; cameras; microphones and editing/publishing suite plus supporting software) which captures the complex social learning interaction activity occurring in the Social Informatics lab.

ISSN 1479-439X 163 ©Academic Conferences Ltd

Reference this paper as:
ageing of the population is also accompanied by a growing number of older people living alone. These changes place new pressures on both formal health care and social service resources and the extensive networks of informal care that frequently underpin or compensate for these arrangements. They also emphasize the need for a more integrated approach in the delivery of care for an ageing population (see e.g. Foresight, 2000).

Information technology is seen by many policy-makers and others as a key enabler if not driver of such responses to the needs of an ageing populace and trends in health care. The European Commission sees virtual service delivery as an opportunity to improve illness prevention and safety of care, facilitate active participation of patients and enable personalisation of care by offering new opportunities in health and disease management (EU, 2007). The European ‘e-Health Action Plan’ (2004) initiated a commitment by all EU member states to develop a national or regional roadmap for e-Health. As such, e-health and virtual healthcare form a key part of the Commission’s vision towards an ‘Information Society’ (see Commission of the European Union, 2004, 2005, 2007), in which advanced technology driven clinical systems, telemedicine services, personal wearable and portable communicable systems and health network applications will assist prevention, diagnosis, treatment, health monitoring, and lifestyle management.

3. The design-reality gap

Proposals for developing virtual healthcare systems for older people have focused on empowering care recipients by enabling remote interaction, between clinicians and patients (Lenaghan, 1998). The promise of virtual healthcare is that it will revolutionize the practice of medicine by providing personalized proactive and prospective health services through the implementation and use of home telemedicine, telemonitoring, teleassistance, and telehealthcare (Kun 2001; Rialle et al., 2001). For policy makers and clinicians, these services offer the potential to provide ease of access to specialist care, an increase in the speed of referral and medical decision making and a reduction in the costs of service delivery (NHS, 1998). For older people it is expected that virtual healthcare applications will contribute to individual empowerment and stimulate learning, and thus increase the possibility of independent living at home. Available research findings suggests that telecare applications for old people can result in reducing hospital admissions, unblocking beds and better managing of chronic diseases. Other studies point to reduced health care costs where ICTs are deployed in the home-based healthcare of the elderly and the likely reduced burden on pension financing where the elderly are able to remain in the workforce longer (Colmer, 2007:1)

However, in practice, the implementation and use of virtual healthcare systems is somewhat more contentious and problematic than these technology driven visions suggest (Lehoux et al., 2002). Although, proponents value the potential benefits they may bring, such virtual services typically fail to become part of routine healthcare delivery (May et al., 2001). For example, in a European context, a number of virtual healthcare initiatives have been piloted over the years, however only a few projects have progressed beyond their initial phase of funding. Thus, whilst there is now widespread experience of using technology through pilot and demonstration projects, its introduction into mainstream care practice has proved far more problematic. While some of these projects have been discontinued due to limited funding resources others lacked a sufficiently ‘user friendly’ interface or configuration. These problems appear to be compounded by the lack of understanding that can exist between the various stakeholders involved during the design process – for example between clinical concerns for such things as safety on the one hand and the concern to improve the quality of life for older people on the other - and the cultural, ethical and other complexities of the context of use (Blythe et al., 2005). This lack of understanding can develop into long delays in meeting milestones, while the needs of the potential user(s) tend to be neglected by designers in preference to meeting other criteria such as ease of design and operation. One suggestion has been that, these potential barriers could be overcome by improved communication between the widely different disciplines involved in the design process, each with their own culture, ethos, and knowledge (Dewsbury et al., 2002). The question, then, is how might such improved understanding and capacity to communicate effectively be brought about amongst the many stakeholders in a project seeking to configure virtual healthcare systems and services to better meet user needs?

4. Co-production in multi-agency service environments

To answer this question we start from a socio-technical perspective. Many studies in this tradition have tended to emphasize the distinctive roles of “system user” and “system designer” and the need to improve user-centred interventions (communications) across the gap in order to make sure the
values embodied in the designed system reflect more than just those of the designer. The embodiment of user values is sought through a variety of intervention techniques, e.g., 'socio-technical design' (Mumford, 1983), 'participatory design' (Suchman et al., 1993), 'soft systems' (Checkland, 1999). These approaches usefully move us away from more 'technological determinist' understandings of design being largely technology enabled and driven and thereby design decisions as largely the province of 'technical experts'. Instead, the central role of 'the user' is emphasised and the importance of opening up the decision process to their input stressed if final system outcomes are to be accepted by the user community.

However, in practice the extent to which user involvement has been achieved and design outcomes improved has been limited. In particular, practical problems of finding appropriate points in the design process for users to intervene and providing them with the means to do so have limited the extent of user engagement. One issue here is that in the main socio-technical approaches, often implicitly and/or explicitly, assume a clear demarcation between the domain of 'the problem owner' and 'solution provision' and between the 'designer' (as 'solution provider') and 'user' (as 'problem owner'). More recently much greater stress has been given to the innovation that users engage in through 'design in use' during implementation and operation. Nevertheless, the idea that this is a separate temporal activity to that of formal system design and development still prevails.

However, recent conceptual development suggests that the boundary between “system user” and “system designer” and the distinction between design and use should not be taken as socially given. Rather, how these distinctions are made and established is context dependent and variable. In more conceptual terms the boundaries can be seen as both socially configured and socially configurable thus allowing alternative ways of constructing social relationships in the system design and development process (Mackay et al., 2000; Grint and Woolgar, 1997; Woolgar, 1991). Moreover, the idea that social values (be either these of ‘designers’ or ‘users’) are at some point ‘embodied’ or ‘frozen’ within a system design or configuration is also misleading when the every day use of systems is more closely examined. In particular, what users seem to interact with in practice is their own context specific, situated and institutionalised understandings of a system rather than some notion of the social values embodied within technology by a ‘distant’ designer (see e.g. Whittington, 2006; Orlikowski, 2000). Such understanding further emphasises the context of use as a major arena in configuring ‘working versions’ of systems where users may be engaged not only in the technical configuration of a system but also in the constructions of new understandings and meanings through which they make sense of the system in relation to their own everyday practice.

Addressing this challenge requires a new conceptualization of intervention to engage both ‘designers’ and ‘users’ and other stakeholder in the configuration of systems and associated organisational arrangements. In this type of intervention the traditional asymmetries of designer/user, practitioner/client, provider/customer and design/use are reassessed and open to renegotiation. We refer to this type of intervention as ‘co-production’. We define this as: a socially organised, situated learning methodology, aiming to facilitate interventions which seek to better enable multi-agency user communities to shape technologies/systems in practice. In the following section we outline the experience to date of one such co-production intervention. This is taking place in the context of a European Union supported technology project to develop a pilot virtual health care and related services system.

5. The OLDES project

The OLDES project (www.oldes.eu) aims to offer new technological solutions to improve the quality of life of older people. The project is part of the European Union's Information Society Technologies (IST) Framework 6 Programme (FP6) for ‘Ambient Assisted Living (AAL) for the Ageing Society’. The overall objective of the programme itself is to, ‘to facilitate life conditions of the elderly generation’ using, ‘highly innovative ICT-based solutions that are cost effective, reliable and user friendly for assisted living taking into account design-for-all principles where applicable’ (http://cordis.europa.eu/ist/so/aal/home.html). The project involves a collaboration of local public health and social care providers, system suppliers, intermediary research organizations and ourselves as university action researchers. The project is a three-year programme that commenced in January 2007. In what follows we report on progress and experience to end February 2008. At the core of the project is the objective to develop an easy to use entertainment, health and social care platform intended to ‘ease the life’ of older people ‘in their homes’. The OLDES platform will be based on a PC corresponding to Negroponte’s paradigm of a € 100 device, giving the guarantee of an affordable
system. User entertainment services will be provided through easy-to-access thematic channels and special interest forums supported by animators, and health care facilities will be based on established internet and telecare communication standards. The proposed system will include wireless ambient and medical sensors linked via a central contact centre to social services and health care providers. OLDES will also cover the definition, implementation and evaluation of a Knowledge Management (KM) program, an advanced user profiling system that will enhance the communication and information sharing between care agencies. The platform will be tested at two different ‘user’ locations: (1) a group of 100 elderly (including 10 suffering with cardio disease) in Bologna, Italy; (2) a group of 10 diabetic patients in Prague, Czech Republic. Alongside these objectives is a commitment to ‘user-centred’ development that, ‘puts older people at the centre and makes their needs the main priority in all developments’ (OLDES Project Description).

The first phase of the project focused on ‘system requirements and user engagement’ and was led by the action research team. The objectives were:

- To ground the design of the OLDES technical service components, and the broader architecture in which they fit, in the needs of older people, their carers and the networks of service provision
- To promote a wide range of appropriate, well informed and creative participation in the definition and shaping of the OLDES products
- To ensure that the products are as widely applicable as possible across the range of approaches to the commissioning, funding and delivery of care to older people in Europe
- To ensure that all aspects of work of the project take into account the ethical and professional standards appropriate for research and development in a socio-clinical setting

The methodological approach followed to deliver the required relationship between the project and the contexts of use and benefit delivery was based on what we term ‘ethnographically informed action research’ (Vaughan et al., 2003).

6. Abstraction and world views: Establishing a space for a valuable dialogue with stakeholders

Conventional system development methods and practice face great difficulties in making sense of the realities of complex care environments and social needs (Martin, 2007). Typically the tools, methods and procedures of system development, abstract user requirements in such circumstances by selecting only those aspects that are meaningful from the rational scientific, clinical or engineering points of view. As a result they ignore many aspects of the real worlds of the users, in particular those that appear the most incoherent and problematic. This process can lead towards developing a system that may be powerful and logical but which bares no real relationship to the needs, constraints, risks and opportunities of those engaged in care or those in need. In short, such systems can exhibit little relationship to the way the providers of care and those cared for make sense of and cope with their everyday world.

As we have already noted, one of the major challenges for socio-technical systems design is to develop effective and well informed ‘design space’ to enable dialogue between a number of different constituencies with quite different ways of making sense of the world. To bring these parties together through a co-production approach requires the ability to draw, share and communicate a ‘big and rich picture’ compiled from these different viewpoints, or world views. The first step in this process is an identification of the different domains themselves and the use of ethnographic methods to create rich pictures of the identities of actors, groups and their interactions and practices both within and between domains.

Our intervention in the first phase of the OLDES project has involved observing and constructing, five typical worldview domains which have bearing on the delivery of health and social care in Bologna (our work in the Prague pilot has yet to commence). Each of these complex domains gives rise to their own norms of technical discourse and culture and existing patterns of historical interaction between them. The planned deployment of a range of virtual healthcare and related services envisaged by the OLDES project requires the development of an elaborate understanding and representation of these worlds and the manner in which such a system might cut across them. Moreover, in order to develop the espoused ‘user-centred’ approach, our intervention, has stressed to all stakeholders that the project needs to take the issues as expressed in the community of care as its starting point.
However, in order to engage stakeholders in the activity of co-production, a conceptual framework and language in which to discuss what is appropriate, acceptable and governable is required. In this way the interests and concerns of service providers and users can be articulated and their needs and concerns expressed effectively. In our intervention we are seeking to facilitate this through the use of the demonstrator tool. The following example is used to show the basic concepts behind the tool and the kinds of possibilities that the demonstrator provides.

![Diagram](image.png)

**Figure 1:** A simple service

Let us imagine a simple service relationship in which two ‘users’, in this case both service providers, operate in a context of use - in this case let us assume it is health care (see Figure 1). User A is a GP and User B is a hospital consultant. User A interacts with User B with respect to care of specific patients – say the GP refers the patient to the Consultant. This is actioned through a ‘conversation’ of some kind – in this instance say a referral letter which when it arrives at the hospital is input into a computer-based health care system of some description by a member of hospital staff. The content is then accessed by the Consultant as an output from another computer. The GP and the consultant have a relationship with the Service Provider who in turn has worked with a designer to provide the technological platform, operated by the Platform Provider that supports the hospital IT system. The relationships between the service provider and designer are the means through which the service as a whole may be redesigned. Let us imagine such a redesign is intended.

With the aid of the demonstrator tool the range of organizational and technological options can be represented and explored in the form of animations which allow a visualisation of different service models and scenarios. This is done by segregating the entities and relationships in the service model into separate graphical representations or ‘projections’. One of these projections – the ‘roles and relationships projection’ – represents, at its simplest, people and places that act as ‘mirrors’ to users of their practice and ‘windows’ into the practice of other stakeholders. Asking users to create scenarios involves story telling, making lists and tables, drawing diagrams and pictures and is one way of making visible current practices and attitudes. These initial models are then analyzed with the users to identify more abstract ‘conversations’ and ‘transactions’ on the one hand and real interactions on the other. If these projections represent ‘the problem’ then other projections represent the offered ‘solution’. In particular what are termed ‘functional’ and ‘deployment’ projections.
For instance, functional projections might show how abstract conversations can be implemented through different processes, media and channels. A deployment projection would then show how these functions might be deployed within networked systems across organizational boundaries. Such projections represent a ‘solution’ to the ‘problem’ in the sense that they are iteratively posed as questions to the other stakeholders in the form of: ‘Do you, stakeholder, take this execution of this functionality allocated to these human and system resources, to mean the implementation of those roles, the performance of those transactions and the discharge of those responsibilities?’. The questions can be posed at an individual through to organizational level and the responses are neither correct nor incorrect. Rather, in a co-production approach, these are matters of exploration and negotiation by the stakeholders. For this reason a final projection is concerned with the (re) design, evolutions and governance of the emerging system. That is, the means and mechanisms by which the service is defined, commissioned, delivered and evaluated by those with the rights and responsibilities to do so in order to ensure that the service environment is directed and operates in an appropriate and effective way.

The demonstrator tool is intended as a means of facilitating and nurturing this process. The system and organizational architectures that emerge from it, to the extent that they indicate a growing shared vision and understanding (which might further develop through implementation and use), can be seen as symbols of the success or otherwise of the process. At this stage of the project the tool has yet to be fully deployed and our work has been focused upon the initial development of ‘people’ and ‘places’ projections in order to shift the focus of the project away from a purely technological starting point. In so doing, we are inviting participants to start to think about key issues of the OLDES environment themselves and to start to develop alternative scenarios which place the needs of service users and providers at the centre of the discussion. A possible further output from this process is provided in Figure 2 as an indication of a possible direction of travel that might flow from co-production as we are seeking to develop it in the project. This provides a graphical depiction of one potential alternative ‘people and places’ projection of the OLDES multi-agency virtual healthcare and related service environment.

Figure 2: A possible OLDES environment
This figure distinguishes between two groups of older people – the ‘vulnerable’ and the ‘active’. The latter group might be provided with Internet access and VoIP (Voice over Internet Protocol) services as a free post-retirement service and provide a technical infrastructure to support networking and the growth of a culture of mutual support and self-care. The former would have more sophisticated services provided in their home through an individual ‘OLDES home hub’ that would provide remote and personal contacts. Personal contacts would take place through a tele-accompany cell (a central contact centre, an extension and evolution of a current telephone-based contact facility). The interfaces between the contact centre and medical professionals would be managed through a paramedic/nursing operator who would manage clinical data, filter information and be responsible for things such as activating escalation procedures.

The contact centre would also generate data for service monitoring and planning by the funding and commissioning bodies which would support the need at this level to be able to respond to ever changing demands for data and evidence and the ability to set up new investigations to test as yet unknown hypotheses about the efficiency and effectiveness of new policies and initiatives. Finally, the environment depicts channel content providers the identity of which will be shaped by both social and cultural value as well as financial costs (for example religious foundations who may wish to broadcast church services into older people’s homes where they are unable to attend the services themselves). The relationship of content providers with the providers of the core OLDES services and infrastructure will require careful management (for example some content may be objectionable to older people and so forth). This and/or alternative representations will undergo several further iterative developments as the in-depth enquiries necessary to flesh out its detail, provenance and acceptability as a framework for developing shared understanding evolves. At the same time, work on the ‘solutions’ projections will also begin and be informed by and inform this process.

At this stage, we emphasise again, that in the first phase activity reported here the project deliverables have focused upon establishing stakeholder acceptance of the need for an understanding of the OLDES environment, based not on designer’s technology driven assumptions, but upon a more in-depth understanding gained through qualitative and ethnographically informed observation of current practices in the user domain. In subsequent phases of the project our intervention activities will focus more on the observation and support of the processes by which the OLDES developments are presented to, explored and evaluated by users and by the various actors in the service delivery networks. The outcomes of these observations will then be incorporated in further versions and elaborations of the demonstrator tool and the visualisations that it allows. This will progressively involve more connections being made to the technical platform and the instruments, resources and content that it supports.

7. Conclusions

Recent developments in internet and related digital technologies offer increasing possibilities for transforming the delivery of care by virtual means. Both medical, healthcare professional groups as well as potential patients are encouraged to make more and better use of the opportunities offered by digital technologies to provide health and social care services by virtual means. This paper has outlined the early results of an ongoing action research intervention in a virtual healthcare project. Our intervention in the project has been based on the principles of socio-technical systems design and in particular the concept of co-production. The intervention is intended to facilitate the development of a system that more purposively fits the everyday practices and needs of older people and the agencies and institutions that provide care services for them. This activity is supported by the deployment of ‘demonstrator’ tool that supports stakeholders in visualising different socio-technical scenarios for the configuration of virtual services. We have sought to show in the above discussion the potential for this tool to support processes of shared sense making amongst multiple care agencies and institutions in complex care environments. Our belief is that this activity will result in an OLDES system platform for a virtual healthcare system that is more likely to be valued by those whose needs it is intended to serve and those who exercise a duty of care in meeting those needs.

References


www.ejeg.com 169 ISSN 1479-439X


Romanian Urban e-Government. Digital Services and Digital Democracy in 165 Cities

Virgil Stoica and Andrei Ilas
Alexandru Ioan Cuza University of Iasi, Romania
virgilstoica@gmail.com
andan_i@yahoo.com

Abstract: There is little disagreement in the doctrine that we live in extremely changing and innovative societies. Nowadays, the information technology is getting more and more accessible, complex and secure, changing the well-established traditions of modern societies. In many democratic states, electronic-government represents an answer to the request of reducing the cost of the decisional process. However, the new administration requires not only an innovative solution, but “intelligent citizens” to make use of it. Recent studies show that e-government has developed five stages, each of them reflecting the degree of technical sophistication and of interaction with the users: simple information dissemination (one-way communication), two-way communication, service and financial transactions, integration (horizontal and vertical), and political participation. Starting from this model, the present research evaluates the stage of urban e-government within Romania, and identifies its influencing variables. All existing sites of urban local administration – 165 cities - are analyzed through the perspective of both digital government (public services through internet) and digital democracy (citizens’ participation to the governing process through internet). Despite the fact that literature regarding e-government is continuously developing, the number of empirical researches worldwide is relatively a small one. The evaluation of Romanian local e-government is a national premiere and will enlist Romania among those where a comprehensive evaluation has been made. Finally, alternative future researches on variables that influence Romanian e-government performance are outlined.

Key words: Romanian e-government, digital services, digital democracy, information technology

1. Introduction

During the last few years, electronic government has been an issue more and more present on the agenda, in our societies. However, intense academic debates on the topic are not necessarily reflected in the chosen solution of each administration. There are numerous democratic and democratizing states in which instruments of e-government accessible to citizens are at an early stage.

The aim of our research is to explore and to describe e-government’s level in Romania. The 165 existing urban sites have been analyzed using five evaluation criteria: security and personal data protection; usability; content; provided services; and citizen participation. The gathered data are explained and interpreted taking into account the Romanian context and the international achievements.

Finally, we will make suggestions and raise questions for future researches concerning both the independent variables that are influencing Romanian e-government and the theories which could be tested.

2. e-Government: A theoretical approach

Information technology is a factor that generates changes, being one of the central elements of managerial reform within both private and public space. E-government is also an essential dimension in a society of information and knowledge influenced by globalization as well as by localization. The use of information technology opened various possibilities of rising the public services quality and generated major political changes (Norris 1999) regarding the managerial performance (Brown 1999) and reducing bureaucracy (Moon and Bretschneider 2002).

e-Government represents one of the newest concepts of public administration field, emerged at the end of the ‘90s. As usual in these cases, the_annalists and those employed in public services could not agree over a standard definition and a prevailing comprehension of the concept (Moon 2002).

Latu sensu, e-government includes the use of all communication information and technologies, from faxes to mobile phones, in order to facilitate day-to-day administration of governmental issues. However, as in e-commerce happened, the common interpretation of e-government is referring exclusively to activities based on internet, that are bettering citizens access to governmental information, to services and expertise, in order to satisfy citizens interests and to facilitate mass participation in governmental process (ONU and ASPA 2001). Therefore, e-government means, stricto sensu, providing
public services through information technology. As Sprecher (2000) put it, e-government represents any use of information technology in order to simplify and to improve the relations between officials and other actors, such as citizens, private firms, and governmental agencies.

The studies made until now show that there are five stages in the development of e-government, stages which reflect the degree of technical knowledge ability and the extent of interaction with the users: information dissemination (one-way communication), two-way communication, financial services and economic transactions, integration (horizontal and vertical) and political participation (Moon 2002). The first stage is the simplest form of e-government and consists only in posting data on the official website in order to inform the citizens. The second stage is characterised by an interactive communication between government and the citizens, incorporating e-mail and information transfer systems. In the third stage, the sites provide online services and financial transactions (Hiller and Belanger 2001). This type of e-government can be reached partially by providing databases and online access to them (Layene and Lee 2001). The next step is to integrate both vertical (inter-governmental integration) and horizontal (intra-governmental integration) all governmental services. However, this fourth stage requires a lot of time and resources in order to merge the on-line system and the specific services provided by each administration (Hiller and Belanger 2001). The last stage means promoting political participation throughout internet using on-line voting, forums, opinion polls, or any other means of immediate and direct interaction.

This conceptual framework is only an exploratory instrument for understanding e-government’s evolution. Practice shows that it is possible this linear evolution to be not respected. It is a problem faced by evaluation researches, especially regarding the municipalities. E-governance Institute realized in 2003 and in 2005 two researches at global level (Holzer and Seang-Tae Kim, 2005). In both cases, 100 cities have been considered through the perspective of digital-government performances. There have been studied e-government (public services providing) as well as e-democracy (citizens participation in governing). Concretely, the analysis focused on: sites security; usability; sites content; the type of on-line services; and citizens’ participation to the decisional process throughout local authorities’ sites. The evolution of local e-government in recent years has been monitored from both theoretical and practical perspective (Choudrie, Ghinea and Weerakkody 2004, Norris and Moon 2005, Finger and Pecound 2003, Martin and Byrne 2003). Other researches have analysed socio-economic and organizational factors related to local e-government development, or the difference between theory and reality concerning local e-government (Moon 2002).

3. Research methodology

The aim of the research is to evaluate the official websites of Romanian cities, closely following Mark Holzer and Seang-Tae Kim’s model described in their study Digital Governance in Municipalities Worldwide (2005). There are 308 urban settlements (towns and cities), including the 6 districts of Bucharest Municipality within Romanian territory. At the time of the study, only 165 (that is 53.57%) of these had functional web pages.

The present research examined local government starting from an incremental model of development, as follows: the first step is providing information, the second one information exchange, followed by service provision, service integration and, in the end, political participation. The criteria used for assessing the cities’ websites have five components: security and personal data protection, usability, contents, type of provided services, and digital democracy. The study used 98 measures, yielding a maximum raw score of 219, and a maximum weighted score of 100. Weighting was necessary, because each of the five dimensions had a different number of questions (18 in the case of security and 20 for all other dimensions), as well as different scores (25, 32, 48, 59, 55). The five dimensions were given equal weight, not taking into account the number of questions used when assessing it. Thus, after weighting, each dimension was able to take on scores from 0 to 20, the maximum score being 100. Forty three items are dichotomous. For questions that have not only yes or no answers (mostly 0/1 and few 0/3), a scale of 3 or 4 steps has been utilised (0,1, 2 or 0, 1, 2, 3), where 0 indicates that for the respective site there is no information regarding the asked question; 1 the fact that information does exist; 2 the fact that the information can be downloaded (files of folders, audio or video documents); and 3 indicates the possibility of on-line transactions (payments for goods or services, applications for premises, the existence of certain data bases where information can be searched for, the possibility of using an electronic signature).
In the case of "security and personal data protection", concepts such as public statements concerning personal data protection, authentication, encryption, the management of collected data and the use of cookies were operationalised. Easy-to-understand and easy-to-use design, length of access page, structure, the extent to which it addresses particular target audiences, and the ability to search for information on the site were the concepts behind usability operationalisation. As for contents, the accent was placed on the possibility of accessing recent information, official documents, reports, publications and audio/video materials. In the "services" category were included the transactions that might occur between local administration and citizens, or between local administration and business owners, as well as lodging requests for various authorisations (permits, licenses). The research regarding "digital democracy" dimension started from the means offered to citizens in order to provide feedback to the local officials, from debates concerning local public policies, held via the city webpage, and went through to the existence of a system for measuring citizen satisfaction and governmental performance. This evaluation scale has been applied to all Romanian cities that, along the referring period (1 – 20 June 2007), had a functional webpage (165 from 308) The process of data gathering has been realized with the aid of our colleagues, as well as of undergraduate and master students within Political Science Department of "Al. I. Cuza" University of Iasi.

The evaluation grid also included grading examples for each item, the operators being also given detailed explanations about the grading system. In order to ensure the reliability of the instrument and its application, each website has been evaluated at least twice, by separate operators. If the difference between the scores was larger than 5 points (5% of the maximum value of the scale), then the website underwent one more assessment.

4. Results of the study

Table 1 shows the scores obtained by some of the 165 surveyed cities for each of the considered dimensions, as well as the global score resulting from their addition. The highest score was obtained by the website of Timisoara municipality (39.66), the webpage of Bucharest (the country capital) coming very close, at 39.36 points, while the third highest being obtained by the city of Arad, with 38.73 points. The maximum possible score being 100, any score under 40 points to the very long distance between Romanian reality and the ideal type of e-government.

Table 1. Global scores and the scores for the five dimensions of some Romanian cities’ websites

<table>
<thead>
<tr>
<th>No.</th>
<th>City</th>
<th>County</th>
<th>Global score</th>
<th>Security</th>
<th>Usability</th>
<th>Contents</th>
<th>Services</th>
<th>Digital democracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Timisoara</td>
<td>Timiş</td>
<td>39.66</td>
<td>0.65</td>
<td>15.63</td>
<td>8.4</td>
<td>8.81</td>
<td>6.17</td>
</tr>
<tr>
<td>3</td>
<td>Arad</td>
<td>Arad</td>
<td>38.73</td>
<td>0.65</td>
<td>12.5</td>
<td>9.2</td>
<td>9.49</td>
<td>6.9</td>
</tr>
<tr>
<td>4</td>
<td>Aiud</td>
<td>Alba</td>
<td>37.39</td>
<td>3.87</td>
<td>13.75</td>
<td>5.2</td>
<td>4.41</td>
<td>10.16</td>
</tr>
<tr>
<td>5</td>
<td>Targu Mures</td>
<td>Mures</td>
<td>36.64</td>
<td>3.87</td>
<td>10</td>
<td>11.2</td>
<td>5.76</td>
<td>5.81</td>
</tr>
<tr>
<td>162</td>
<td>Buzias</td>
<td>Timis</td>
<td>5.17</td>
<td>0</td>
<td>3.75</td>
<td>0.4</td>
<td>1.02</td>
<td>0</td>
</tr>
<tr>
<td>163</td>
<td>Baia Sprie</td>
<td>Maramures</td>
<td>5.06</td>
<td>0</td>
<td>4.38</td>
<td>0</td>
<td>0.68</td>
<td>0</td>
</tr>
<tr>
<td>164</td>
<td>Targu Secuiesc</td>
<td>Covasna</td>
<td>3.93</td>
<td>0</td>
<td>3.13</td>
<td>0.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>165</td>
<td>Buchuresti Sect 5</td>
<td>-</td>
<td>3.07</td>
<td>0</td>
<td>1.25</td>
<td>0.8</td>
<td>1.02</td>
<td>0</td>
</tr>
</tbody>
</table>

1 Here are some examples of questions included in our questionnaire. For "security and personal data protection": Is there any note regarding personal data protection?; Does the note mention any reference concerning the use of cookies? Is there a contact address or an e-mail address for questions referring personal data protection?. For “usability”: What is the length of access page?; Do the accessed links modify their initial colour?; Is there any search engine available?. For content: Does the site contain recordings of local council meetings?; Is there any information on the local budget?; Does the site utilise wireless applications?. For “services”: Is it possible for a citizen to pay taxes on-line?; Are there any on-line forms for complaints against administration?; Is it possible for a citizen to apply on-line for licenses or permits?. For “digital democracy”: Can a citizen transmit her/his comments or proposals to the local officials?; Is there a forum regarding community problems?; Is there any e-petition or e-referendum?.

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The amplitude of the resulting scores' variation was 36.59. The lowest score was obtained by Sector 5 (District 5) from Bucharest – 3.07 points, followed by Targu Secuiesc – 3.93 points, and Baia Sprie – 5.06.

Figure 1 stands for the average and the best 5 scores obtained by the Romanian cities. As it can be easily observed, the 5 pentagons have similar shapes with high values for "utility" dimension and very low values for "personal data protection" and "citizens participation".

![Figure 1: The average score and the best scores](image)

Figure 2 presents the histogram of total scores distribution on class boundaries of 5 units. The average for scores was 16.39, with a standard deviation of 7.66, while the median was 14.87. The fact that the median is lower than the average shows that the score distribution leans to the right, as can be seen in the figure: fewer and fewer sites in the intervals with high performance values. The category with most scores is between 10 and 15, where no less than 49 cities can be found.

The fact that among the 20 cities in terms of global performance of e-government we can find mainly (but not exclusively) large cities, seems to confirm the hypothesis according to which in cities with large populations there is more pressure for increasing the quality of e-services, the same way there are more resources for achieving this goal. However, the hypothesis needs to be tested in later assessments and especially through a qualitative one. The fact that the average for the scores is only 16.39 and that over half of the 165 cities have obtained scores lower than 15 of a possible maximum of 100, suggests that not only the resources allotted to e-government are low, but that the attention given by local authorities to this phenomenon is also marginal. We do plan to test this hypothesis in the future.

In terms of security and personal data protection, the best sites, those of Bistrita and Ploiesti, barely reached 5.81 points of a maximum of 20 possible (table 2). The average was 0.62 and the median was 0. In fact, of the 165 city web pages in use when the study was carried out in Romania, 128 do not even mention personal data protection.
The above does not necessarily show the absence of concern for information security on the websites, but the fact that security measures are not pointed out to the users. The notice concerning security and personal data protection is present, most of the times, only on the page where the users can pay taxes online (a service provided only by a minority of the websites assessed). In the majority of cases, the access to such services can be realised only in the "classic" way, by filling in forms and then sending them to the City Hall financial department. None of the sites clearly states whether cookies are used or not, nor if electronic signatures are permitted. This shows that the websites are still seen as a one-way platform of presenting information, from authorities to citizen, and that the importance of personal data protection is still not given the deserved importance.

Table 2: Best websites in terms of security and personal data protection

<table>
<thead>
<tr>
<th>Pos.</th>
<th>City</th>
<th>County</th>
<th>Score</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bistrita</td>
<td>Bistrita-Nasaud</td>
<td>30.56</td>
<td>5.81</td>
</tr>
<tr>
<td>1</td>
<td>Ploesti</td>
<td>Prahova</td>
<td>25.07</td>
<td>5.81</td>
</tr>
<tr>
<td>2</td>
<td>Deva</td>
<td>Hunedoara</td>
<td>24.98</td>
<td>5.16</td>
</tr>
<tr>
<td>3</td>
<td>Aiud</td>
<td>Alba</td>
<td>37.39</td>
<td>3.87</td>
</tr>
<tr>
<td>3</td>
<td>Targu Mures</td>
<td>Mures</td>
<td>36.64</td>
<td>3.87</td>
</tr>
<tr>
<td>3</td>
<td>Otopeni</td>
<td>Ilfov</td>
<td>31.44</td>
<td>3.87</td>
</tr>
<tr>
<td>3</td>
<td>Turda</td>
<td>Cluj</td>
<td>29.68</td>
<td>3.87</td>
</tr>
<tr>
<td>4</td>
<td>Galați</td>
<td>Galati</td>
<td>32.09</td>
<td>3.23</td>
</tr>
<tr>
<td>4</td>
<td>Sibiu</td>
<td>Sibiu</td>
<td>27.55</td>
<td>3.23</td>
</tr>
<tr>
<td>4</td>
<td>Lupeni</td>
<td>Hunedoara</td>
<td>25.80</td>
<td>3.23</td>
</tr>
<tr>
<td>4</td>
<td>Petrosani</td>
<td>Hunedoara</td>
<td>24.70</td>
<td>3.23</td>
</tr>
<tr>
<td>4</td>
<td>București Sector 3</td>
<td>-</td>
<td>22.52</td>
<td>3.23</td>
</tr>
</tbody>
</table>

Table 3 shows which are the best sites in terms of usability. The maximum score was obtained by Timisoara – 15.63 points of maximum 20 possible. The average score for this dimension was 8.17 points, with a standard deviation of 2.58, and the median was 8.13, the distribution being almost symmetrical. Most of the websites have relatively brief access pages/homepages, extending over maximum two screens. Also, most of the websites have a sitemap, and the navigation bar is present on each opened page. The homepage often displays useless photographs, such as the portrait of the mayor or those of local councillors, fact that further hinders page loading, inducing the idea that the Internet infrastructure is still underdeveloped. There are very few instances where the audience is
targeted as groups. In the best of cases, the websites include links for locals and for tourists, very rarely for business owners, and never for elders, young people or for individuals with special needs. Only few sites give the possibility of filling in online forms, and none of them offers the opportunity for the entire administrative procedure to take place exclusively in electronic form. Approximately one third of the official city pages has a search engine, but without the possibility of sorting the results by relevance or by any other criterion. Approximately one quarter of the websites show the date of latest update, for the rest, this date has to be inferred from the latest press released or documents published.

The website of Targu-Mures municipality obtained the best score in terms of contents – 11.2 (table 4). The rest of the scores were under 10. The average score for this dimension was 3.91 points, with a standard deviation of 2.42, and the median was 3.6. Most of the websites provide the address of the City Hall and some contact details, as well as a list of the decisions/resolutions of the local council. The minutes of the local council meetings can be found on less than 20% of the websites, and information on the local budget is even more limited. Almost half of the websites offers information in at least two languages (Romanian and English, but the information in English is much reduced compared to that in Romanian). In Transylvania there are websites in three and even four languages (Romanian, English, Hungarian and German), but also one website exclusively in Hungarian. There are no specific alert systems concerning natural disasters, no adapted access options for those with sight or hearing disabilities. Most items are concerning events that have already taken place. Future events are announced in few brief words and are related, as a rule, to city's most festive moments (legal holidays, religious festivals, celebrations/commemorations of historic events, Oktoberfest-type celebrations etc.). There are no websites containing information related to day-to-day life aspects, such as the closure of motorised traffic on a certain a route.

**Table 3: Best websites in terms of usability**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>City</th>
<th>County</th>
<th>Score</th>
<th>Usability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Timisoara</td>
<td>Timis</td>
<td>39.66</td>
<td>15.63</td>
</tr>
<tr>
<td>2</td>
<td>București</td>
<td>-</td>
<td>39.36</td>
<td>14.38</td>
</tr>
<tr>
<td>2</td>
<td>Constanta</td>
<td>Constanta</td>
<td>30.30</td>
<td>14.38</td>
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<td>3</td>
<td>Aiud</td>
<td>Alba</td>
<td>37.39</td>
<td>13.75</td>
</tr>
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<td>3</td>
<td>Craiova</td>
<td>Dolj</td>
<td>29.65</td>
<td>13.75</td>
</tr>
<tr>
<td>4</td>
<td>Reghin</td>
<td>Mures</td>
<td>22.11</td>
<td>13.13</td>
</tr>
<tr>
<td>5</td>
<td>Turda</td>
<td>Cluj</td>
<td>29.68</td>
<td>12.50</td>
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<td>Oradea</td>
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<td>22.83</td>
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<td>Arad</td>
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<td>Iasi</td>
<td>Iasi</td>
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<td>12.50</td>
</tr>
<tr>
<td>5</td>
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<td>Constanta</td>
<td>20.97</td>
<td>12.50</td>
</tr>
<tr>
<td>5</td>
<td>Sacele</td>
<td>Brasov</td>
<td>21.40</td>
<td>12.50</td>
</tr>
</tbody>
</table>

**Table 4: Best websites in terms of contents**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>City</th>
<th>County</th>
<th>Score</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Targu-Mures</td>
<td>Mures</td>
<td>36.64</td>
<td>11.2</td>
</tr>
<tr>
<td>2</td>
<td>Constanta</td>
<td>Constanta</td>
<td>30.30</td>
<td>9.6</td>
</tr>
<tr>
<td>3</td>
<td>București</td>
<td>-</td>
<td>39.36</td>
<td>9.2</td>
</tr>
<tr>
<td>3</td>
<td>Arad</td>
<td>Arad</td>
<td>38.73</td>
<td>9.2</td>
</tr>
<tr>
<td>3</td>
<td>București Sector 3</td>
<td></td>
<td>22.52</td>
<td>9.2</td>
</tr>
<tr>
<td>4</td>
<td>Alba Iulia</td>
<td>Alba</td>
<td>33.40</td>
<td>8.8</td>
</tr>
<tr>
<td>4</td>
<td>Sibiu</td>
<td>Sibiu</td>
<td>27.55</td>
<td>8.8</td>
</tr>
<tr>
<td>5</td>
<td>Timisoara</td>
<td>Timis</td>
<td>39.66</td>
<td>8.4</td>
</tr>
<tr>
<td>5</td>
<td>Resita</td>
<td>Caras-Severin</td>
<td>33.54</td>
<td>8.4</td>
</tr>
</tbody>
</table>
Table 5: Best websites in terms of services

<table>
<thead>
<tr>
<th>Pos.</th>
<th>City</th>
<th>County</th>
<th>Score</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bucuresti</td>
<td>-</td>
<td>39.36</td>
<td>9.49</td>
</tr>
<tr>
<td>1</td>
<td>Arad</td>
<td>Arad</td>
<td>38.73</td>
<td>9.49</td>
</tr>
<tr>
<td>2</td>
<td>Timisoara</td>
<td>Timis</td>
<td>39.66</td>
<td>8.81</td>
</tr>
<tr>
<td>3</td>
<td>Resita</td>
<td>Caras-Severin</td>
<td>33.54</td>
<td>7.46</td>
</tr>
<tr>
<td>4</td>
<td>Alba Iulia</td>
<td>Alba</td>
<td>33.40</td>
<td>6.78</td>
</tr>
<tr>
<td>5</td>
<td>Botosani</td>
<td>Botosani</td>
<td>24.18</td>
<td>6.44</td>
</tr>
<tr>
<td>6</td>
<td>Slobozia</td>
<td>Ialomita</td>
<td>23.44</td>
<td>6.10</td>
</tr>
<tr>
<td>7</td>
<td>Targu-Mures</td>
<td>Mures</td>
<td>36.64</td>
<td>5.76</td>
</tr>
</tbody>
</table>

Bucharest and Arad City Halls are providing to the citizens the largest number of online services, their score for this dimension being 9.49 (table 5). The average score in terms of services provided was 2.09, with a standard deviation of 1.84, and the median was 1.7. In fact, the websites of 44 cities do not offer any online services to the users. There is no city where the utility bills can be paid using the City Hall official webpage as a portal. On the other hand, in almost one-quarter of the cases, the websites do allow online payment of local taxes. The registration procedure for paying local taxes is not actually an electronic one. The citizen has to take a "classic" written request to the City Hall after which the citizen will be handed, after presenting an identity document, a written answer containing the password for accessing the website area dedicated to payments, which will consist in one additional trip to the City Hall. As concerning time expenditure, such a procedure is more costly than the one consisting in paying at the tax desk. Less than 40% of the assessed web pages are providing access to databases. Most of the sites do give contact details for requesting information or lodging complaints, but only a few have pages for online complaints.

As regarding "digital democracy" dimension, the best results have been obtained by the city of Aiud – 10.16 points (table 6). All the other cities have obtained scores below 7.62, 41 websites including no possibility of online feedback. Thus, the average score for participation was 1.14, with a standard deviation of 1.84, the median being 0.73. Only few websites are providing forms to be online filled in order to comment upon local authorities' performance. Less than 10% of the city halls' websites have online opinion polls, and none of them offers the possibility of organising a digital referendum or to adhere to online petition. Mainly large cities have discussion forums open to citizens, but one very seldom can see any reply from local officials. Therefore, these forums may be considered either a channel for receiving citizens' complaints, or a communication environment for individuals facing the same problems in relating to local authorities.

Table 6: Best websites in terms of digital democracy

<table>
<thead>
<tr>
<th>Pos.</th>
<th>City</th>
<th>County</th>
<th>Score</th>
<th>Digital democracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aiud</td>
<td>Alba</td>
<td>37.39</td>
<td>10.16</td>
</tr>
<tr>
<td>2</td>
<td>Resita</td>
<td>Caras-Severin</td>
<td>33.54</td>
<td>7.62</td>
</tr>
<tr>
<td>3</td>
<td>Galati</td>
<td>Galati</td>
<td>32.09</td>
<td>7.26</td>
</tr>
<tr>
<td>4</td>
<td>Arad</td>
<td>Arad</td>
<td>38.73</td>
<td>6.90</td>
</tr>
<tr>
<td>5</td>
<td>Feteşti</td>
<td>Ialomita</td>
<td>22.15</td>
<td>6.53</td>
</tr>
<tr>
<td>6</td>
<td>Timisoara</td>
<td>Timis</td>
<td>39.66</td>
<td>6.17</td>
</tr>
<tr>
<td>6</td>
<td>Craiova</td>
<td>Dolj</td>
<td>29.65</td>
<td>6.17</td>
</tr>
<tr>
<td>7</td>
<td>Targu-Mures</td>
<td>Mures</td>
<td>36.64</td>
<td>5.81</td>
</tr>
</tbody>
</table>

When comparing the scores of the five dimensions of the general e-government index (table 7), it can be noticed that usability has the highest individual maximum score – 15.63 – and the highest average score – 8.17. It can easily be observed that the best performance is reached in the case of technical dimension of e-government: information structuring, easiness in navigation, the presence of forms and the way they can be filled in, the existence of a search engine. However, the performance decreases drastically when assessing the other dimensions, the average scores being 3.91 for contents,
2.09 for services, 1.14 for participation and just 0.62 for security and personal data protection. The existence of minimum scores (i.e. 0 points) for 4 of the 5 dimensions of the assessment suggests that many local authorities consider the issue of an official webpage as a purely formal one, something that needs to exist in order to ensure some transparency, but without any special significance for the way the community is run.

Table 7: Maximum, minimum and average scores for each dimension

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Maximum score</th>
<th>Minimum score</th>
<th>Average score</th>
<th>Standard deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security and protection of personal data</td>
<td>5.81</td>
<td>0</td>
<td>0.62</td>
<td>1.23</td>
<td>0</td>
</tr>
<tr>
<td>Usability</td>
<td>15.63</td>
<td>1.3</td>
<td>8.17</td>
<td>2.58</td>
<td>8.13</td>
</tr>
<tr>
<td>Contents</td>
<td>11.20</td>
<td>0</td>
<td>3.91</td>
<td>2.42</td>
<td>3.60</td>
</tr>
<tr>
<td>Services</td>
<td>3.91</td>
<td>0</td>
<td>2.09</td>
<td>1.84</td>
<td>3.60</td>
</tr>
<tr>
<td>Digital democracy</td>
<td>10.16</td>
<td>0</td>
<td>1.41</td>
<td>1.84</td>
<td>0.73</td>
</tr>
</tbody>
</table>

The next question is "how are the performances of e-government distributed across the regions"? Romania is divided in eight regions of economic development (figure 3) which are not independent administration units, but they form a framework of regional cooperation. Each region covers between four and seven counties. The population of each region, the percentage of the population living in towns/cities, the number of urban settlements and the GDP per inhabitant are shown in table 8.

Figure 3: Romanian regions of economic development

Observing the table above, it can be noticed that Bucharest and the West region have the highest number of urban settlements and the highest GDP per inhabitant, while the North-East, the South-West and the South regions have mainly rural settlements and the lowest GDP per inhabitant.

The degree of e-government implementation within various Romanian regions is presented by table 9: while all nine local administration authorities within Bucharest region of development (including the county of Ilfov) have official web pages, in the South-West region (counties of Mehedinti, Dolj, Gorj, Valcea and Olt), only 14 of the 33 cities are visible on the Internet, that is 42.4%. Also below the national average of 60.6% are the Centre region (counties of Alba, Sibiu, Brasov, Covasna, Harghita and Mures), with 54.7%, the North-East region (counties of Suceava, Botosani, Neamt, Iasi, Bacau
and Vaslui), with 56.2%, and the South region (counties of Arges, Prahova, Dambovita, Teleorman, Giurgiu, Calarasi and Ialomita), with 55.8%.

Table 8: Romanian regions of economic development

<table>
<thead>
<tr>
<th>Region of economic development</th>
<th>Population [0,000 inhabitants]</th>
<th>Urban population [%]</th>
<th>No. of towns/cities</th>
<th>GDP/inhabitant [Euro]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania</td>
<td>21623</td>
<td>54.9</td>
<td>308</td>
<td>2932.8</td>
</tr>
<tr>
<td>Bucharest</td>
<td>2208</td>
<td>90.5</td>
<td>9</td>
<td>5616.7</td>
</tr>
<tr>
<td>Centre</td>
<td>2530</td>
<td>59.9</td>
<td>57</td>
<td>3056.9</td>
</tr>
<tr>
<td>North-East</td>
<td>3734</td>
<td>43.4</td>
<td>35</td>
<td>2029.3</td>
</tr>
<tr>
<td>North-West</td>
<td>2737</td>
<td>53.1</td>
<td>42</td>
<td>2850.7</td>
</tr>
<tr>
<td>South</td>
<td>3329</td>
<td>41.7</td>
<td>48</td>
<td>2447.0</td>
</tr>
<tr>
<td>South-East</td>
<td>2846</td>
<td>55.5</td>
<td>35</td>
<td>2661.3</td>
</tr>
<tr>
<td>South-West</td>
<td>2306</td>
<td>47.5</td>
<td>40</td>
<td>2443.9</td>
</tr>
<tr>
<td>West</td>
<td>3363</td>
<td>63.6</td>
<td>42</td>
<td>3363.7</td>
</tr>
</tbody>
</table>

From the point of view of geographic distribution and depending on each region of development, Bucharest has the best performance – an average score of 21.82 – despite the fact that the lowest score in the country was obtained by Sector 5 (Table 10). Scores above the national average were also obtained by the North-East and the West regions (counties of Timis, Arad, Caras-Severin and Hunedoara). Whereas concerning Bucharest and the West region the performance rises to the expected theoretical level, in the case of the North-East region the resulting score reaches paradox. In theory, regions that, in terms of technology, are richer and better developed will have more material, human, and technological resources in order to put into practice an effective e-government system. Moreover, the citizens in these areas will force implementing such a system.

Table 9: Percentage of urban settlements with official websites

<table>
<thead>
<tr>
<th>Development region</th>
<th>No. of urban local authorities</th>
<th>No. of local authorities that have websites</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucharest</td>
<td>9</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td>Centre</td>
<td>53</td>
<td>29</td>
<td>54.7</td>
</tr>
<tr>
<td>North-East</td>
<td>32</td>
<td>18</td>
<td>56.2</td>
</tr>
<tr>
<td>North-West</td>
<td>32</td>
<td>23</td>
<td>71.8</td>
</tr>
<tr>
<td>South</td>
<td>43</td>
<td>24</td>
<td>55.8</td>
</tr>
<tr>
<td>South-East</td>
<td>33</td>
<td>23</td>
<td>69.6</td>
</tr>
<tr>
<td>South-West</td>
<td>33</td>
<td>14</td>
<td>42.4</td>
</tr>
<tr>
<td>West</td>
<td>37</td>
<td>25</td>
<td>67.5</td>
</tr>
</tbody>
</table>

Table 10: e-Government scores by region of development

<table>
<thead>
<tr>
<th>Development region</th>
<th>No. of sites</th>
<th>Maximum score</th>
<th>Minimum score</th>
<th>Average score</th>
<th>Standard deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationwide</td>
<td>165</td>
<td>39.66</td>
<td>3.07</td>
<td>16.39</td>
<td>7.66</td>
<td>14.87</td>
</tr>
<tr>
<td>Bucharest</td>
<td>9</td>
<td>39.36</td>
<td>3.07</td>
<td>21.82</td>
<td>10.12</td>
<td>20.83</td>
</tr>
<tr>
<td>Centre</td>
<td>29</td>
<td>37.99</td>
<td>3.93</td>
<td>16.13</td>
<td>8.75</td>
<td>12.79</td>
</tr>
<tr>
<td>North-East</td>
<td>18</td>
<td>27.11</td>
<td>7.56</td>
<td>17.96</td>
<td>5.74</td>
<td>19.59</td>
</tr>
<tr>
<td>North-West</td>
<td>23</td>
<td>30.56</td>
<td>5.06</td>
<td>15.42</td>
<td>6.82</td>
<td>15.07</td>
</tr>
<tr>
<td>South</td>
<td>24</td>
<td>26.94</td>
<td>5.98</td>
<td>14.72</td>
<td>6.45</td>
<td>13.12</td>
</tr>
<tr>
<td>South-East</td>
<td>23</td>
<td>32.09</td>
<td>6.99</td>
<td>14.75</td>
<td>6.43</td>
<td>12.49</td>
</tr>
<tr>
<td>South-West</td>
<td>14</td>
<td>29.65</td>
<td>6.68</td>
<td>15.33</td>
<td>6.15</td>
<td>15.38</td>
</tr>
<tr>
<td>West</td>
<td>25</td>
<td>39.66</td>
<td>5.17</td>
<td>17.02</td>
<td>9.82</td>
<td>13.33</td>
</tr>
</tbody>
</table>

Figure 4 shows the scores obtained by each region of development on the 5 dimensions. In this case, too, the pentagons are similar, with high values for "utility" and low values for "personal data protection" and "citizens participation". Considering the 5 dimensions, Romanian e-government is at the first stage, the one of disseminating information, while characteristics from the other four stages are either missing or poorly represented.
The North-East region is the poorest within Romania, but, despite this handicap, it has the best results after the municipality of Bucharest. The relatively low spread of scores for this region - the standard deviation being just 5.74, with a median higher than the average - points to a distribution leaning to the left, where no important cities as well as cities that fare poorly can be found. The case of the North-East region suggests new possible research questions: is there a special concern of the local authorities within the poorer regions for modernising the administration precisely in order to cover the gap between them and other regions? Is there any form of regional cooperation as far as e-government is concerned? How is the "learning" process possible at local administration level?

5. Conclusions

Eleven years after the birth of the first city webpage in Romania, e-government seems to be still making its first steps. In terms of usability the performance is somehow acceptable, the average score for this dimension being 8.17 points of maximum 20 possible, and there is practically no concern for security and personal data protection. The information contents of cities' official websites are relatively meagre, most concerning events that have already taken place. The provided services are sparse, mainly because there is no city where the utility bills can be paid using the City Hall official webpage as a portal. The citizens do not have many opportunities to voice their opinion regarding the way the community is run. Less than 10% of the city halls' websites have online opinion polls, and none of them offers the possibility of organising a digital referendum or to adhere to online petition. There are significant differences between cities, as well as between regions. Paradoxically, the poorest Romanian region (North-East) has the best results after the municipality of Bucharest. Further studies could identify the variables influencing the best results, as well as the dissemination of the research results among the local authorities could foster a learning process which might later be translated into an improvement of authorities' performance in terms of e-government, thus leading to better management of local issues and to higher degree of citizens satisfaction.

References


Remodelled and Restyled e-Procurement – New Power Relationships Down Under

John Douglas Thomson
RMIT University, Melbourne, Australia
doug.thomson@rmit.edu.au

Abstract: This paper analyses the way in which a major public sector organisation undertakes its high tech e-procurements and its power relationships at the interface with its private sector suppliers. This is undertaken by examining the corporate governance of significant high tech e-procurements by the Australian Department of Defence. Comparative case study data of 106 e-procurements were undertaken by the author over the key client development period from concept to contract award, with a view to determining ‘best practice’ e-procurement process. The best practice model links technological developments with e-procurement power frameworks, and provides a public sector client with knowledge to realize new power relationships at the public/private interface through the remodelling and restyling of its e-procurement arrangements.

Keywords: e-governance, e-transactions, e-procurement, e-transparency, e-trust, e-project management

1. Introduction

Public sector organizations spend billions of dollars procuring products when implementing their concepts and strategies. The Australian Department of Defence (Defence) is no exception. The Australian DoD is a Federal Government Department with a FY 2007/8 spend of AUS$23.4bn on products (goods and services), their support and maintenance, from almost every industry sector, on a global basis. Defence land, sea and air capability e-procurements are highly complex and technically sophisticated. The Department is the leading and most experienced public sector procurer of high tech capabilities in Australia. However, such high tech capabilities are often not able to be completely, clearly or satisfactorily defined at contract award – there often remain many unknowns. This leaves a public sector organization such as Defence vulnerable to misunderstandings, failure to achieve perceived outcomes, and vulnerable to contract claims. A client supplier relationship can deteriorate rapidly in this environment. But it is during the pre-contract award period that a public sector client organization such as Defence has the most power to orchestrate its required outcomes so as to lessen the likelihood of future poor outcomes. The paper aims to analyse Defence e-procurement pre-contract award to provide a basis for consideration by other public sector organisations interested in remodelling and restyling their e-procurement power relationships with providers.

2. Unit of analysis

The unit of analysis selected is the transaction. While transactions may differ in attributes, they differ in their cost and competence, and so provide a comparative measure of their economy (Williamson, 2002b). The Defence e-procurement process is undertaken on a whole of life basis, from concept to contract award, thence to contract management to completion, bringing the product into service, and finally to exit of the product from service (Figure 1).

![Figure 1: The defence ‘through life’ e-procurement governance process](image-url)
3. The public sector organisation as a governance structure

A public sector organisation such as Defence is reconceptualized ‘as a governance structure’ (Williamson 2002). Defence e-procurement governance structural arrangements are complex. They are project based within a matrix organization, which itself resides within a divisional structure. Divisions are then grouped within functions. While this governance structure appears complex, it is surprisingly flexible, adaptive and responsive. Emphasis is placed on concept, strategy and capability development, which involves significant research and development. For a major defence capability such as a submarine, ship or aircraft, it can take from ten to fifteen years or more to progress from concept to contract award, and similar periods from the start of a contract to its completion. There has however been a significant functional organizational gap between the concept phase and the design and development phases which has caused, and continues to cause, Defence governance concerns. This is because some of the intellectual property developed during the concept phase is lost in the transition across functions to the design and development phases. As a result of this loss of knowledge, there is also loss of power at the interface with prospective suppliers - ‘doctrina vim promovet’ – learning promotes strength (Horace 13BC).

4. Transaction cost economics relies on competition to sort between modes of governance

Transaction cost economics operates in many alternative modes of governance - markets, firms, bureaus, and has an effect on the strengths and weaknesses of each (Williamson 2002). It relies in a general way on competition to perform a sort between more and less efficient modes of governance (Williamson 2000). Thus, Defence as a public sector organization uses its power to choose competition to ‘perform the sort’, with some protection of the choices of supplier made by Defence being provided by ‘selection of the fittest’ supplier to survive in a particular environment (Darwin 1859). But this subscribes to a weak-form of selection since ‘in a relative sense, the fitter survive’, so ‘there is no reason to suppose that they are fittest in any absolute sense’ (Simon 1983, p. 69).

The basics of Williamson’s (2002) model are the attributes of the transaction, the possible modes of governance and the purposes they serve. For Defence, the attributes of the transaction apply to the completeness of the specification of the required capability, made difficult or impossible at contract negotiation and award because of rapidly developing technologies in a turbulent environment (Emery and Trist, 1965). There are many possible modes of governance serving different purposes, but which will serve Defence best? Emery and Trist (1965) and Myer, Goes and Brooks (1993) assert that in turbulent environments, individual organizations however large, cannot cope successfully in isolation but must establish cooperative relationships. Cooperative relationships between Defence and a supplier rely upon Defence, as the client, to be able to maintain the balance of power in the contractual relationship. This requires both parties to be knowledgeable, responsive and trustworthy, and to contractually rely on bilateral dependency expressed through a mutually equitable contract. But is this achievable? Incentive intensity, administrative control, and contract law define a governance structure where markets and hierarchies differ (Williamson 2002). Defence chooses markets, where competitive and incentive intensity is greater, administrative controls are less and hence Defence transaction costs are less, but dispute resolution can mean the expense of going to court (Williamson 2002b). Going to court is a rare occurrence because it can be unpredictable and very expensive. Also, suppliers do not wish to lose Defence or other’s patronage as a result of being perceived to be litigious.

Capability developments build and deepen capability specificity over time (Williamson 2002). But complete capability specificity at contract award is difficult if not impossible because of the nature of high tech Defence capability requirements and the hyper turbulent technological environment in which these are currently taking place (Figure 2).

Transactions align with governance structures in an economizing efficient way - the governance branch of contract differs from the incentive branch (Williamson 2002b). Defence prefers the incentive branch to the governance branch, concentrating on contractual incentives with respect to adaptation, cooperation and reward during contract implementation (Williamson 2002). Incentives are used by Defence to lower its governance and administrative transaction costs, to maintain cooperative relationships, and to minimize supplier’s rent seeking activities (Smith 1776).
The firm as governance approach (Williamson 2002) maintains that capability delivery structure arises mainly from ‘economizing on transaction costs’. This approach appeals to law and organization theory in use of incentive intensity, administrative control, and contract law regime as three critical attributes (Williamson 2002) in the development of capability. Research indicates that the concept, design and development phases account for twenty percent of the cumulative percentage of a capability’s life cycle costs; that the transaction costs to extract defects increases considerably with time; and that the concept and design phases commit seventy percent of costs with the development phase adding a further fifteen percent to committed costs (Figure 3). According to this research, the most important phases are those pre contract award ie the concept, design and development phases, because if these are poorly done, the transaction costs to extract defects are significant. This becomes complicated and risky where the complete scope of an asset cannot be specified prior to contract award.

6. Incentive intensity and alignment

For Defence, a fundamental difference applies to that subset of e-procurement transactions for which large numbers of qualified suppliers are, over time, transformed into small numbers of suppliers prior to contract or at contract renewal. For Defence, the identity of suppliers is important where continuity of the relationship may have significant transaction cost and other consequences. The key factor is whether a transaction involves specialised investments. Defence specialized investments may be physical, human, site specific, dedicated, intellectual property, security, technology, capital assets, or many others. Suppliers to Defence are vulnerable in that Defence cannot easily turn to alternative sources of supply, and suppliers can redeploy specialized assets to their next best use or user only at a loss of productive value (Klein, Crawford, and Alchian, 1978). Defence contracts include powerful penalties for premature termination, information disclosure and verification mechanisms, specialized dispute settlement mechanisms, and the like. While unified Defence ownership (vertical integration) may well be theorized as contract risks increase (Williamson 2002), this is not an option for Defence because of a history of poorly performing and inefficient (‘make’) State owned enterprises, which have now been closed down. These are unlikely ever to be reconstituted.

7. The power of adaptation, cooperation and reward

Continuity of relationships are a necessary part of the e-procurement of specialized Defence procurements from the marketplace. For commodity purchases from the marketplace, Hayek (1945) emphasized ‘spontaneous’ adaptation through markets. Barnard (1938, p4) emphasized cooperative adaptation of a ‘conscious, deliberate, purposeful’ kind for specialised investments. Transaction cost economics makes provision for both (Williamson 1991a,b). These approaches enable Defence commodity purchases (low value, high volume) to be ‘spontaneous’. These can be differentiated from its ‘conscious, deliberate, purposeful’ procurements (high value, low volume). Identification of these different transactions is shown in Table 1. ‘Conscious, deliberate, purposeful’ procurements of AU$2,000 or more represent less than 20% in number but more than 80% by value (Pareto 1897), when compared to ‘spontaneous’ commodity item purchases. Table 1 provides details of two of the seven financial years captured in an e-procurement data base developed for this purpose (Thomson 1996).

<table>
<thead>
<tr>
<th>Value Bracket of Procurements</th>
<th>FY 1 No of Transactions</th>
<th>FY 1 Value (AU$m)</th>
<th>FY 2 No of Transactions</th>
<th>FY 2 Value (AU$m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 $150m and over</td>
<td>4</td>
<td>1404</td>
<td>2</td>
<td>1515</td>
</tr>
<tr>
<td>2 $100m to 150m</td>
<td>3</td>
<td>178</td>
<td>4</td>
<td>306</td>
</tr>
<tr>
<td>3 $50m to $100m</td>
<td>2</td>
<td>195</td>
<td>6</td>
<td>187</td>
</tr>
<tr>
<td>4 $20m to $50m</td>
<td>18</td>
<td>241</td>
<td>12</td>
<td>177</td>
</tr>
<tr>
<td>5 $10m to $20m</td>
<td>28</td>
<td>191</td>
<td>28</td>
<td>197</td>
</tr>
<tr>
<td>6 $5m to $10m</td>
<td>193</td>
<td>395</td>
<td>253</td>
<td>549</td>
</tr>
<tr>
<td>7 $1m to $5m</td>
<td>2221</td>
<td>590</td>
<td>2205</td>
<td>583</td>
</tr>
<tr>
<td>8 $100k to $1m</td>
<td>4746</td>
<td>250</td>
<td>4410</td>
<td>231</td>
</tr>
<tr>
<td>9 $30k to $100k</td>
<td>43769</td>
<td>327</td>
<td>42035</td>
<td>309</td>
</tr>
<tr>
<td>10 $2k to $30k</td>
<td>50,000-200,000</td>
<td>3,768</td>
<td>48,955</td>
<td>4,054</td>
</tr>
<tr>
<td>11 Less than $2k</td>
<td>150,000-200,000</td>
<td>50 est</td>
<td>150,000-200,000</td>
<td>50 est</td>
</tr>
<tr>
<td>12 Total &gt; $2k</td>
<td>50,989</td>
<td>3,768</td>
<td>48,955</td>
<td>4,054</td>
</tr>
</tbody>
</table>


8. Buyer and supplier power applied to the global marketplace

Figure 4 describes global marketplace power arrangements between Defence and its suppliers.

Quadrant 1 describes the ‘spontaneous’ commodity marketplace – Defence is one of a large number of buyers in a sea of many sellers, neither having much transaction power, and each transaction being small in value with very low e-transaction costs, usually less than a dollar in value. Defence’s power over its suppliers in this quadrant is minimal and vice versa, and both buyer and seller have no option but to accept the market’s ‘invisible hand’ arrangements (Smith 1776).
In Quadrant 2, where there are few suppliers but many buyers, a supplier’s power may be described as an oligopoly or monopoly. Such situations present themselves to Defence where there are one or a few suppliers of specific or unique high tech defence capabilities, and there are many defence buyers. This presents a difficult marketplace situation for Defence, where options may be to counter supplier power by assisting to create new entrants, or by finding a substitute product (Porter 1990).

In Quadrant 3, there are few buyers but many suppliers. Defence power in this quadrant may be described as a monopsony (Robinson 1933). Defence may develop a monopsony in certain industries simply because of its buying power for specialized defence products. This is the best possible e-procurement situation for a client organization to be in. This may occur for example, in the construction industry, where there are many suppliers contending for specialized Defence contracts.

In Quadrant 4, there are few buyers and few suppliers. Defence has a unique capability to be developed and there is only one, or a few, possible suppliers. In this quadrant, both Defence and supplier need to pursue a cooperative and strategic alignment. However, while each may depend on the other, each may try to dominate the other. This can lead to considerable tension between the contracting parties, and needs to be carefully considered by the client in the pre-contract award period.

Thus the power position for Defence with each its suppliers can be better understood, defined and acted upon to minimize Defence transaction costs for each of its e-procurements – the larger the e-procurement, the larger should be the potential transaction cost saving. However, there may well be an unavoidable and continuous tension between Defence and its suppliers because each will want to move towards its most favourable power position (Fig 5). Defence will want to move from Quadrants 1, 2 and 4 and into Quadrant 3, and its suppliers will want to move from Quadrants 1, 3 and 4 towards Quadrant 2.

Figure 4: Sellers and buyers, market forces efficiency and commodity transaction relationships
Some private sector organizations have already applied this to their e-procurements to assist them in improving their understanding of their buyer/supplier power arrangements. This has been done with a view to extracting transaction cost savings, and for an improved strategic sourcing plan to be put in place. As can be seen from Figure 6, Tenix (the ANZAC Frigate Shipbuilder) has few transactions taking place in Quadrant 4, those of greatest value taking place in Quadrant 3, a number of lesser value in Quadrant 2, and low value numerous transactions taking place in Quadrant 1.

9. Some capability delivery governance structures have superior adaptive properties

Transaction cost economics holds that the chief lesson of bounded rationality for the study of economic organization is that all complex contracts are unavoidably incomplete (Williamson 2002c). An unavoidably incomplete Defence complex contract can cause costly losses. For example, Defence’s Seasprite helicopter project had considerable unknowns at contract signature. Committed costs were of the order of AU$1.25bn before the contract was cancelled. Corrective action by Defence or its suppliers can be delayed or defeated by bargaining over the potential gains. If some Defence delivery governance structures have superior adaptive properties than others, then the mitigation of contractual hazards through the ex ante choice of a better mode of governance should yield efficiency gains (Williamson 2002c). It is therefore suggested that use of Defence transaction cost data may provide guidance as to a best choice of e-procurement governance for other than commodity purchases. To obtain the necessary transaction cost data, it is necessary to case study (Yin,) randomly selected representative Defence high tech projects.
10. Standardization of quantitative performance stages and measures

Over the selected Concept, Design and Development Phases, there can be many sub-phases. There is some, though not complete, standardisation as to which of these sub-phases are used for any particular e-procurement (Figure 7).

11. Transaction cost data drawn from 106 defence e-procurement case studies

Defence e-procurement case studies, from which pre-contract award transaction cost data based on the sub Phases have been drawn, include twenty eight from the RAN, seven from Army, twenty five from the RAAF, and forty six from logistics, in all one hundred and six. Of particular interest were those Defence e-procurements where there were significant unknowns at time of contract award. This included multi billion/million e-procurements such as Collins Class Submarines, ANZAC Frigates, Minehunters Coastal, Field Digital Trunk Communications, Australian Army Tactical Command Support System, Single Channel Radio System, and Very Low Level Air Defence Weapons System, to mention but a few (Thomson 1994).

12. Direct e-procurement transaction costs collected

Defence pre-contract award e-procurement transaction costs collected include direct transaction costs incurred by Defence and its suppliers - human resource salaries and overheads such as superannuation, training and so on; travel and accommodation expenses; consultants and contractors fees; and committee meeting expenses. Indirect costs were not included because of the randomness of their attribution and lack of precise quantification. Direct transaction costs were determined from the commonly available Defence Costing Program and all were brought to the same time base using

Figure 6: Tenix aggregated e-procurement data for transaction cost savings and improved strategic sourcing

www.ejeg.com 189 ISSN 1479-439X
the Australian consumer price index. The phase and sub-phase durations over which the e-
procurements took place were also measured.

<table>
<thead>
<tr>
<th>Concept Phase</th>
<th>Design Phase</th>
<th>Development Phase</th>
<th>Contract Award</th>
</tr>
</thead>
</table>

Possible Sub-Phases are:

1. Capability concept developed from policy/strategy
2. Capability endorsed;
3. Capability office established;
4. Major capability submission considered;
5. Materiel acquisition strategy endorsed;
6. Major capability submission agreed;
7. Capability included in Investment submission;
8. Capability approved;
9. Statement of capability requirements completed;
10. Invitation to Register Interest issued;
11. Invitation to Register Interest closed;
12. Capability Definition Study issued;
13. Capability Definition Study closed;
14. Request for Tender issued;
15. Request for Tender closed;
16. Tender evaluation;
17. Source selection;
18. Contract approved; and
19. Contract awarded and implemented.

Figure 7: Defence capability development phases and sub-phases pre contract award

12.1 Three one hour interviews based on a standardised questionnaire

A standardised questionnaire was developed which ensured consistency and ease of information collection, collation and compilation, and provided a basis for comparison of the capability development transaction cost from concept to contract award. The data was collected on the basis of three, one hour interviews with each Defence capability manager or managers and selected staff. On the first visit, the reason for the research and the questionnaire was explained and fully discussed, and the questionnaire completed as far as possible. A week or two later, the questionnaire so far completed was forwarded to the capability manager for confirmation of accuracy and completion of any outstanding matters. A further week or two later, a third and final visit was made to collect the completed questionnaire and to have a discussion with the capability manager and staff. The data was collated and compiled into a summary table for each of Navy’s largely incentive based contracts (US DoD 2005), and Army, Air Force and Logistics predominantly behaviour based/method and material contracts (Newell and Jeffrey 2002).

13. Data collected

Each case study has an executive summary of the e-procurement as it developed over time. In addition to the transaction cost and time data, it included qualitative data such as contract type, investment, program, process, stages/phases, risk assessment, industry investment and lessons learned. Also included was:

- A brief description of the capability including its title, description, value, manager and contact details, risk assessment, complexity, strategy, comments and contract performance;
- The chronology of events, by month - intervals of one month were found to be adequate for these purposes because of the extended duration of Defence e-procurements;
- The direct costs of each e-procurement’s sub-phase development transaction costs, including consultant costs where engaged;
- The costs of meetings and travel; and
- A summary of the suppliers involved at various stages/phases of the e-procurement.
As an example, Figure 8 demonstrates the transaction cost/duration relationship of Defence and industry for the e-procurement of the ‘Radar Evaluation Facility’. Total transaction costs over the period from January 1980 (concept identification) to January 1994 (contract award) was AU$755,000, while industry transaction costs amounted to little more than $50,000.

Figure 8: Transaction costs over time for defence and industry for the ‘radar evaluation facility’

Figure 9 compares the e-procurement transaction cost and time for the ‘Radar Evaluation Facility’ with the average e-procurement transaction costs and times for 25 RAAF e-procurements. Similar summary and comparative graphs were developed for Navy, Army and Logistics.

Figure 10 provides a comparison of the e-procurement delivery time from concept to contract award for seven e-procurements by sub-phase. This demonstrates the wide variation in e-procurement process being used within Defence.

Figure 9: Comparison of capability development cost and duration of one capability (radar) with RAAF average capability development cost and duration.

Numerous pitfalls were identified. These included intellectual property ownership difficulties, numerous contract variations, and treating each capability delivery strategy and process as unique when there is much common process delivery ground from which useful quantitative and qualitative comparisons can be made. There was a failure to set up, access and use corporate capability development data that does exist. Despite there being central Defence repositories for such data, it was found that such failure was caused by complex, time consuming, onerous and incomplete data collection, collation and storage arrangements. This was complicated by the lack of continuity of staff, often with a complete staff change-over within three years. Information for predicting capability development times and transaction costs were not in a useful, easily usable format, additionally complicated by the transfer or loss of key staff over the extensive duration of the Defence capability developments. This lead to capability directors and Defence executives not being able to relate capability delivery performance of one capability team to another or to previous, current or future similar capability developments in terms of duration or transaction costs. Thus some poorly performing teams were over resourced and other well performing teams were overlooked, under-resourced, and over worked, much to the chagrin and stress of the efficient capability manager and team. There is a need for capability development performance comparisons to be made. Such comparisons need to be made on an equitable basis for the allocation of resources, and provide the means for identifying by exception when a capability delivery program is over budget or time, or is in trouble for some reason. Without guidance based on quantitative data measurement of transaction costs and time and guided by experience and judgement of qualitative variables, there is little or no basis for estimating the resourcing of capability development teams, over what period, with what sort of ramping up being required. This lack of accountability and transparency has lead to much inefficiency and ineffectiveness, and to high levels of dissatisfaction and stress by all stakeholders.
15. Conclusion

From the data, the best Defence concept to contract award e-procurement process model based on transaction costs was found to be that used for the e-procurement of the AU$5.5bn ANZAC Frigates and the AU$1bn Minehunters Coastal. For these, concepts, options, feasibility, performance and capability studies were undertaken on an incentive, competitive Capability Definition Study basis, jointly and cooperatively by Defence with industry. In both cases, industry was funded to assist in the development of the required capability, on a competitive basis. On completion of the Capability Definition Study, a Request for Tender was made to the marketplace for the development of the so far defined capability. The number of interested parties was reduced to the two or three best contenders who were each contractually tasked (and funded to various extents) to competitively undertake the development of a Capability Demonstrator prototype, with the award of the production contract on the basis of the best prototype so far developed. This research has provided a model for the remodelling and restyling of the power arrangements between the Defence organization and the marketplace, linking technological developments with public/private sector power frameworks. There may be some benefit for other public sector organisations with similar e-procurements to consider the Defence best practice model, so far.

References

Horace (13BC) Book 4 Ode IV.
Competent Electronic Participation Channels in Electronic Democracy

Dimitrios Zissis, Dimitrios Lekkas and Anastasia-Evangelia Papadopoulou
Department of Product and Systems Design Engineering, Syros, Greece
dzissis@aegean.gr
lekkas@aegean.gr
dpsd03040@syros.aegean.gr

Abstract: Electronic Democracy is appearing in political agendas across countries and boards. This paper refers to electronic participation channels implemented to digitalize decision processes in an electronic democracy. Electronic participation includes the sub processes of information acquisition and formation of an opinion. The function of efficient electronic participation in electronic democracy is crucial and indispensable. Electronic Democracy provides citizens with the opportunity to engage efficiently in democratic processes. Current technology can be perceived as an evolution of traditional communication linkages between political representatives and citizens. These can provide an “extensive library” of information and a “meeting point” for political debate. A surplus of existing technologies provides the means to enhance the unidirectional and bidirectional communication paths between citizens and involved political entities. Such a technological deployment though must meet a number of requirements ranging from usability issues to electronic security. An in depth analysis and review of social and technical requirements of such channels is provided in this paper. Solutions are presented which meet previously identified needs and through their comparison the fulfilment of the requirements will be met. This papers objective is to identify the custom design for efficient and competent electronic participation channels in electronic democracy. This goal will be achieved through a comparison of the current technological tools used in e-participation, called e-methods. For each one of these e-methods a SWOT analysis will be provided, listing the Strengths, Weaknesses, Opportunities and Threats, that this particular tool may have. Eventually a comparison is made after the establishment of criteria regarding many aspects such as: security, privacy, accessibility, user’s or developer’s viewpoints. Proficiently deployed technological infrastructures which enhance the bidirectional communication pathways will lead to engaged and better informed citizens, and evidently to a stronger democracy. Findings of this paper should be considered by parties interested in deploying electronic democracy infrastructures and fellow researchers in the field.

Keywords: e-democracy, e-voting, e-participation, e-methods comparison

1. Electronic democracy

Recent years have brought upon us the digitalization of society. Through innovation, evolutionary communication technologies have drastically altered traditional ways of interaction and communication, initially used by academia and businesses to provide their students and customers new services. Countries globally, realizing the benefits of new technologies, envisioned e-governments and e-democracies.

The dictionary’s definition for democracy is that of “a government in which the supreme power is vested in the people and exercised by them directly or indirectly through a system of representation usually involving periodically held free elections”.

Electronic Democracy is defined as the electronic representation of the democratic processes. (von Lucke). Democratic process are divided into three sub processes (Parycek, 2003)

- Information acquisition,
- Formation of an opinion and
- The decision itself.

E-democracy contains two aims which derive from the above statement (Alexander Prosser, 2004):

- The field of E-Participation (Information acquisition & formation of an opinion)
- The field of E-Voting (the decision making process)

Combining technical complexity and political processes leads to the development of an E-Democracy application framework. The proposed framework by A. Prosser and R. Krimmer follows an approach introduced by the EU Forum E-Democracy working group (Macintosh, 2003):

Reference this paper as:
Using Information & Communication technologies (ICT) to engage the public in the democratic processes is named electronic participation. E-Participation refers to “ICT-supported participation in processes involved in government and governance. Processes may concern administration, service delivery, decision making and policy making” (Pauliina Lehtonen, 2007). The combination of the various stakeholders’ interest in participation and the development of the technological infrastructure have resulted in many new projects designed to exploit the potential of ICT that supports communication and participation in political processes (Bekkers, 2004) (Best, 2005) (Curwell, 2005).

E-Participation can principally be understood as technology-mediated interaction between the civil society sphere and the formal politics sphere, and between the civil society sphere and the administration sphere (Clive Sanford, 2007). The task of e-Participation is to empower people with ICTs to be able to act in bottom-up decision processes, to make informed decisions, and to develop social and political responsibility. Therefore, e-Participation is a means to empower the political, sociotechnological, and cultural capabilities of individuals giving the possibility that individuals can involve themselves and organize themselves in the information society. (Christian Fuchs, 2006).

### Table 1: Participation areas, identified by C.Fraser etc:

<table>
<thead>
<tr>
<th>Information Provision</th>
<th>ICT to structure, represent and manage information in participation contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community building / Collaborative Environments</td>
<td>ICT to support individuals come together to form communities, to progress shared agendas and to shape and empower such communities</td>
</tr>
<tr>
<td>Consultation</td>
<td>ICT in official initiatives by public or private agencies to allow stakeholders to contribute their opinion, either privately or publicly, on specific issues</td>
</tr>
<tr>
<td>Campaigning</td>
<td>ICT in protest, lobbying, petitioning, and other forms of collective action (except of election campaigns, see electioneering as participation area)</td>
</tr>
<tr>
<td>Electioneering</td>
<td>ICT to support politicians, political parties and lobbyists in the context of election campaigns</td>
</tr>
<tr>
<td>Deliberation</td>
<td>ICT to support virtual, small and large-group discussions, allowing reflection and consideration of issues</td>
</tr>
<tr>
<td>Discourse</td>
<td>ICT to support analysis and representation of discourse</td>
</tr>
<tr>
<td>Mediation</td>
<td>ICT to resolve disputes or conflicts in an online context</td>
</tr>
<tr>
<td>Spatial planning</td>
<td>ICT in urban planning and environmental assessment</td>
</tr>
<tr>
<td>Polling</td>
<td>ICT to measure public opinion and sentiment</td>
</tr>
<tr>
<td>Voting</td>
<td>ICT in the context of public voting in elections, referenda or local plebiscites</td>
</tr>
</tbody>
</table>

## 2. Social requirements

The roots of all democratic constitutions rely in ancient Athens. Athenian philosopher Plato (Greek: Πλάτων) and founder of the Academy in Athens, the first institution of higher learning in the western world, believed that an uninformed and disengaged public was the greatest threat to democracy. “In ignorance they tend to vote for politicians who beguile them with appearances and nebulous talk, and they inevitably find themselves at the mercy of administrations and conditions over which they have
no control because they do not understand what is happening around them. They are guided by unreliable emotions more than by careful analysis, and they are lured into adventurous wars and victimized by costly defeats that could have been entirely avoided.” (Plato, 370BC) Plato’s critique on democracy still poses the question whether citizens of today’s democracies are interested and informed enough to participate meaningfully in the democratic process.

Centuries later Barber (Barber, 1984) emphasizes on the concept of a strong democracy, on the basis of active citizen participation. Held (Held, 1996) in his participatory model emphasizes the need to engage citizens and civil society organizations in the policy process, however he recognizes the need for informed and active citizens. Many academics and authors of our time are recognizing the same need. Fishkin argues the need for ‘mass’ deliberation by citizens instead of ‘elite’ deliberation by elected representatives (Fishkin, 1995) (Macintosh, 2003). However he fears that technology could diminish face to face confrontation and increase the dangers of elite manipulation. Van Dijk also warns of the consequences of bad designs of technology and implications on the democratic system (Dijk, 2000). Macintosh (Macintosh, 2003) identifies as a social requirement” that computerized information campaigns and mass public information systems have to be designed and supported in such a way to help narrowing the gap between the ‘information rich’ and ‘information poor’ otherwise the spontaneous development of ICT will widen it.

The term “digital divide” is defined as disparities in computer ownership and Internet access based on income (Neu, 1998). The divide refers to an imbalance in physical access to hardware and in knowledge necessary to enable a digital citizen participating in an e-voting system. Digital Divide is discussed to hold in the context of socioeconomic, racial and geographic differences. The digital divide is often referred to as the primary socio-political issue (Hoffman L.J., 2000) leading to inequality of citizens vote. It can be argued though that this “divide” is not clearly “digital” and originates from a deeper societal issue. Scholars and policymakers have long recognized differential turnout rates by socioeconomic status in American elections; individuals with higher income, education and occupational status are significantly more likely to vote, as are whites (Campbell, 1960). “As a result the internet may merely magnify existing disparities in the electorate representation” (Tolbert C., McNeal R., Kent State University, 2001) and cannot be viewed as introducing inequality. The existence of a digital divide is not universally acceptable. Compaine (Compaine, 2001) argues that such a gap is only a “perceived gap”. As technology primary goal is becoming user friendlier such a gap, if existent, is evidently going to disappear.

From the above, a number of social requirements can be identified:

- Accessibility: Is it possible for this method to meet the accessibility guidelines stated by the W3C Recommendation 5-May-1999?
- Privacy: Can the user’s privacy be preserved?
3. Technical requirements

A number of tools which are targeted at increasing e-participation have been identified; these are also referred to as e-methods. These web based tools cover various areas of participation. Members of our research team have been involved in a number of national projects making use of such e-methods. The possibility has also been available to study electronic methods in a “bottom-up” approach within our own university. A “bottom up” approach refers to a decentralised approach to such issues allowing for individual research teams to drive their own projects in a controlled environment, targeting specific problems with high priority and then expanding to consider a wider system architecture. Many of the identified electronic methods are implemented on the University of Aegean’s electronic platform to deal with issues like multi-campus disconnection and student alienation due to geographical spread of the university’s campus, giving authors first hand information.

Each one of the e-methods presented below is accompanied by a SWOT analysis. SWOT analysis (Strengths, Weaknesses, Opportunities and Threats analysis) is a descriptive method for identifying and listing positive or negative factors about an issue, in a more representational and concentrated way. Eventually all the data from the SWOT matrixes are combined in one criteria form in order to make a comparison between e-participations’ tools.

The first step for the SWOT analysis was to establish a series of criteria. These criteria were carefully selected as to maintain a balance in sought after technical requirements and social requirements. Fraser et al. (2006) have identified a number of preconditions for the successful deployment of e-Participation tools. One of the identified preconditions is related to security and privacy in e-Participation contexts. E-Participation services need to be easy to use, simple and without time-consuming procedures to ensure the participation of users.

However, there is also a need to implement security and privacy measures in e-Participation services to ensure that the users will trust a system. If users’ expectations of security and privacy are not met, or if the measures are excessive, then participation will be ineffective, either due to a lack of trust in the system, or due to system usability problems. It is, therefore, important that a proper balance between security, usability and transparency of e-Participation services be achieved.

From the above, a number of technical requirements can be identified:

- Deployment Complexity: How difficult is the deployment of an e-participation tool?
- Information Richness: What amount of information is the specific e-method able to contain?
- Security: Can the user’s navigation be secured?
- Interactivity: To what degree are the communication channels unidirectional or bidirectional?
- Scalability: How effectively can the application scale to meet a broader public or extend its current capabilities?

3.1 Webcasts

A webcast is the Internet audio and/or video stream produced from a live event, or an online simulcast of a broadcast signal (Elaine G. Toms, 2005). A webcasting system can be classed as a form of multimedia system, and a webcast, thus, is a multi-media object with multiple components. In addition to the video, the webcast usually includes the slides from a presentation, and may include other artifacts. Webcasts are usually transmitted and seen by the participants at the same time (real-time) and their duration may be over one hour, although they can be archived to allow people to view them at a later time, creating an issue of data storage. This system offers its participants a way to see and hear a transmission but in general it’s not very interactive.
3.2 FAQ

This method presents information through questions (Q) and answers (A) that can be searched using keywords or by inputting a question or statement in ‘natural language’. However the information cannot be considered to be sufficient to cover and communicate a whole topic as the system question-answer provides participants a very fragmental opinion.

3.3 Blogs

A web-blog is a web page with minimal to no external editing, providing on-line commentary, periodically updated and presented in reverse chronological order, with hyperlinks to other online sources. (Daniel W. Drezner, 2004). Software required to run a blog is available free of charge on the internet, is relatively easy to use and requires no specialist knowledge of web languages to operate.

Table 2: SWOT Analysis for webCasts

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Deployment Complexity: HIGH</td>
<td>Real Time Video Player might create accessibility issues</td>
</tr>
<tr>
<td>Information Richness: HIGH</td>
<td>Interactivity: LOW</td>
<td>Large Hardware Requirements and High complexity in Deployment in case of scalability due to large amount of data stored</td>
</tr>
<tr>
<td>Privacy: HIGH</td>
<td>Scalability: MODERATE</td>
<td></td>
</tr>
<tr>
<td>Security: HIGH</td>
<td>User Hardware Requirements: HIGH</td>
<td></td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities</td>
<td>Information Provision</td>
<td></td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: SWOT analysis for FAQs

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Information Richness: MODERATE</td>
<td>May not fully inform a user</td>
</tr>
<tr>
<td>Deployment Complexity: LOW</td>
<td>Interactivity: LOW</td>
<td>Navigation and search problems</td>
</tr>
<tr>
<td>Privacy: HIGH</td>
<td>Scalability: MODERATE</td>
<td></td>
</tr>
<tr>
<td>Security: HIGH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities</td>
<td>Information Provision</td>
<td></td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: SWOT Analysis for blogs

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Information Richness: MODERATE</td>
<td>Information provided could be one sided if only authors opinion expressed</td>
</tr>
<tr>
<td>Deployment Complexity: LOW</td>
<td>Interactivity: MODERATE</td>
<td>Privacy issues could be a problem</td>
</tr>
<tr>
<td>Privacy: MODERATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security: MODERATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scalability: MODERATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities</td>
<td>Information Provision</td>
<td></td>
</tr>
<tr>
<td>Campaigning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threats</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.4 Quick polls

An opinion poll is a survey of opinion from a particular sample. Opinion polls are usually designed to represent the opinions of a population by asking a small number of people a series of questions and then extrapolating the answers to the larger group within confidence intervals. The answers given are anonymous, no personal or demographical data required.

3.5 Surveys

A survey is a process for gathering information, without detailed verification, on the activity being examined. It is in fact a questionnaire with specific structure of close-ended questions (typically with ordered response categories) and some open-ended questions.

3.6 Chat rooms

A chat room or chatroom is a term used primarily by mass media to describe any form of synchronous conferencing, occasionally even asynchronous conferencing. The term can thus mean any technology ranging from real-time online chat over instant messaging and online forums to fully immersive graphical. Chat rooms sometimes have a ‘moderator’ to facilitate interaction with the panel and to control the discussion.

Table 5: SWOT analysis for quick polls

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Information Richness: MODERATE</td>
</tr>
<tr>
<td>Deployment Complexity: LOW</td>
<td>Interactivity: MODERATE</td>
</tr>
<tr>
<td>Privacy: HIGH</td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
</tr>
</tbody>
</table>

Opportunities:
Consultation
Campaigning
Electioneering
Polling

Threats:
The same visitor could submit more than one responses to a specific poll
Security could be an issue if input not validated

Table 6: SWOT analysis for surveys

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Information Richness: MODERATE</td>
</tr>
<tr>
<td>Deployment Complexity: LOW</td>
<td>Interactivity: LOW</td>
</tr>
<tr>
<td>Privacy: MODERATE</td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td>Scalability: LOW</td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
</tr>
</tbody>
</table>

Opportunities:
Consultation
Campaigning
Electioneering
Polling

Threats:
Visitors’ privacy must be protected and no personal or demographic data should be required
Security could be an issue if not implemented carefully

Table 7: SWOT analysis for chat rooms

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td>Interactivity: HIGH</td>
<td>Deployment Complexity: MODERATE</td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td>Privacy: LOW</td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td>Security: LOW</td>
</tr>
<tr>
<td></td>
<td>Scalability: LOW</td>
</tr>
</tbody>
</table>

Opportunities:
Information Provision
Community Building
Campaigning
Electioneering
Deliberation
Discourse
Mediation

Threats:
A large number of visitors can create scalability issues
Privacy must be maintained
3.7 Decision-making games

Decision-making games allow users to view and interact with animations that describe, illustrate or simulate relevant aspects of an issue. There is usually some competitive aspect such as a quiz. The content, level of difficulty and types of interfaces are dependent on the target audience. Information can be provided through a question and answer type game similar to a FAQ. The user can be presented with a graphical representation of a place or situation and various options that, when selected, change the representation in some way to simulate the effect of real-life decision-making.

Table 8: SWOT analysis for decision-making games

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactivity: HIGH</td>
<td>Accessibility: LOW</td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td>Deployment Complexity: HIGH</td>
</tr>
<tr>
<td></td>
<td>Information Richness: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Privacy: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Hardware Requirements: HIGH</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>Information Provision</td>
<td>A large number of visitors can create scalability issues</td>
</tr>
<tr>
<td>Community Building</td>
<td>Accessibility requirements may not be able to be followed</td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
</tr>
</tbody>
</table>

3.8 Discussion forums

An Internet forum is a web application for holding discussions and posting. Internet forums are also commonly referred to as Web forums, message boards, discussion boards, (electronic) discussion groups, discussion forums, bulletin boards, fora (the Latin plural) or simply forums. It typically shows a list of topics people are concerned about. Users can pick a topic and see a ‘thread’ of messages and replies then post their own message. Communication channels can either be asynchronous or synchronous.

Table 9: SWOT analysis for discussion forums

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td>Interactivity: HIGH</td>
<td>Deployment Complexity: MODERATE</td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td>Privacy: LOW</td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>Information Provision</td>
<td>Information provided could be one sided if only authors opinion expressed</td>
</tr>
<tr>
<td>Community Building</td>
<td></td>
</tr>
<tr>
<td>Campaigning</td>
<td></td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
</tr>
<tr>
<td>Deliberation</td>
<td></td>
</tr>
<tr>
<td>Discourse</td>
<td></td>
</tr>
<tr>
<td>Mediation</td>
<td></td>
</tr>
</tbody>
</table>

3.9 e-Panels

E-Panels represent a recruited set, as opposed to a self-selected set, of participants who have agreed to discuss on a variety of issues using ICTs at specific intervals over a period of time. Sometimes we may have no interaction in case online questionnaires are used but it is also possible to support intensive engagement by providing participants a number of e-tools in order to contribute online.
3.10 e-Petitions

An Internet petition is a form of petition posted on a website. Website visitors are questioned if they want to add their email addresses or names in the petition form, and after enough "signatures" have been collected, the resulting letter may be delivered to the author of the petition, usually via e-mail. An integrated discussion forum can also be incorporated to allow users to voice their support or concerns for the e-petition.

3.11 e-Deliberative polling

Deliberative polling combines small-group discussions involving large numbers of participants with random sampling of public opinion. Its overall purpose is to establish a base of informed public opinion on a specific issue. Citizens are invited to take part at random, so that a large enough participant group will provide a relatively accurate, scientific representation of public opinion.

Table 10: SWOT analysis for e-panels

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td>Interactivity: HIGH</td>
<td>Deployment Complexity: HIGH</td>
</tr>
<tr>
<td></td>
<td>Privacy: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Hardware Requirements: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Technical Knowledge Required: MODERATE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Provision</td>
<td>A large number of visitors can create scalability issues</td>
</tr>
<tr>
<td>Consultation</td>
<td>Privacy must be maintained</td>
</tr>
<tr>
<td>Deliberation</td>
<td></td>
</tr>
<tr>
<td>Mediation</td>
<td></td>
</tr>
</tbody>
</table>

Table 11: SWOT analysis for e-petitions

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Deployment Complexity: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Interactivity: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Privacy: LOW</td>
</tr>
<tr>
<td></td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Hardware Requirements: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Technical Knowledge Required: MODERATE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation</td>
<td>Data protection required</td>
</tr>
<tr>
<td>Campaigning</td>
<td></td>
</tr>
<tr>
<td>Mediation</td>
<td></td>
</tr>
<tr>
<td>Polling</td>
<td></td>
</tr>
</tbody>
</table>

Table 12: SWOT analysis for e-deliberative polling

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td>Interactivity: HIGH</td>
<td>Deployment Complexity: HIGH</td>
</tr>
<tr>
<td></td>
<td>Privacy: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Security: MODERATE</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Hardware Requirements: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Technical Knowledge Required: MODERATE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Provision</td>
<td>Data protection required</td>
</tr>
<tr>
<td>Community Building</td>
<td></td>
</tr>
<tr>
<td>Consultation</td>
<td></td>
</tr>
<tr>
<td>Campaigning</td>
<td></td>
</tr>
<tr>
<td>Mediation</td>
<td></td>
</tr>
<tr>
<td>Polling</td>
<td></td>
</tr>
</tbody>
</table>
3.12 Virtual communities

A virtual community, e-community or online community is a group of people that primarily interact via communication media such as, email or Usenet rather than face to face. If the mechanism is a computer network, it is called an online community.

Table 13: SWOT analysis for virtual communities

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Richness: HIGH</td>
<td>Accessibility: MODERATE</td>
</tr>
<tr>
<td>Interactivity: HIGH</td>
<td>Deployment Complexity: HIGH</td>
</tr>
<tr>
<td></td>
<td>Privacy: LOW</td>
</tr>
<tr>
<td></td>
<td>Security: LOW</td>
</tr>
<tr>
<td></td>
<td>Scalability: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Hardware Requirements: MODERATE</td>
</tr>
<tr>
<td></td>
<td>User Technical Knowledge Required: MODERATE</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>Information Provision</td>
<td>Data protection required</td>
</tr>
<tr>
<td>Community Building</td>
<td>The target audience must be willing to participate</td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
</tr>
<tr>
<td>Deliberation</td>
<td></td>
</tr>
<tr>
<td>Discourse</td>
<td></td>
</tr>
<tr>
<td>Mediation</td>
<td></td>
</tr>
</tbody>
</table>

3.13 Alert mechanisms – Email alerts and RSS feeds

RSS or Real Simple Syndication is technology designed to allow users to subscribe to a specific content feed and be automatically alerted when new updates are available.

Table 14: SWOT analysis for e-mail alerts and RSS feeds

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility: HIGH</td>
<td>Information Richness: MODERATE</td>
</tr>
<tr>
<td>Deployment Complexity: LOW</td>
<td>Interactivity: LOW</td>
</tr>
<tr>
<td>Privacy: HIGH</td>
<td></td>
</tr>
<tr>
<td>Security: HIGH</td>
<td></td>
</tr>
<tr>
<td>Scalability: HIGH</td>
<td></td>
</tr>
<tr>
<td>User Hardware Requirements: LOW</td>
<td></td>
</tr>
<tr>
<td>User Technical Knowledge Required: LOW</td>
<td></td>
</tr>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>Information Provision</td>
<td>Single sided information</td>
</tr>
<tr>
<td>Electioneering</td>
<td></td>
</tr>
</tbody>
</table>

3.14 e-Methods comparison

The following table is a criteria rating form for the above analysed e-methods. For each criterion established a weight is given to declare its importance. Then each e-method is rated corresponding to its coverage of the perquisites. The rates that each method gets are multiplied with the weight, in order to get a total score (note that the ratings are according to the swot analysis of each method). It is essential to note at this point that it doesn’t matter which method gets the maximum score. Instead the important thing is the fluctuation that each method’s ratings presents, that implies that one method may be more proper for one application than another.

“Total Score” corresponds to the sum of an e-method’s rates [Total Score = Sum of an e-methods Rates]

“Summary” corresponds to the weighted sum of the rates multiplied by the corresponding criteria weights. [Summary = Sum (Rating * Weight for each criteria)]
Table 15: Criteria form for e-methods

<table>
<thead>
<tr>
<th>Criteria Weight Rate</th>
<th>e-Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decision Matrix</strong></td>
<td></td>
</tr>
<tr>
<td>1: Webcasts</td>
<td></td>
</tr>
<tr>
<td>2: FAQ</td>
<td></td>
</tr>
<tr>
<td>3: Blogs</td>
<td></td>
</tr>
<tr>
<td>4: Quick Polls</td>
<td></td>
</tr>
<tr>
<td>5: Surveys</td>
<td></td>
</tr>
<tr>
<td>6: ChatRooms</td>
<td></td>
</tr>
<tr>
<td>7: Decision-Making Games</td>
<td></td>
</tr>
<tr>
<td>8: Discussion Forums</td>
<td></td>
</tr>
<tr>
<td>9: e-Panels</td>
<td></td>
</tr>
<tr>
<td>10: e-Petitions</td>
<td></td>
</tr>
<tr>
<td>11: e-Deliberative Polling</td>
<td></td>
</tr>
<tr>
<td>12: Virtual Communities</td>
<td></td>
</tr>
<tr>
<td>13: Alert Mechanisms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Deployment Complexity</td>
<td>-1</td>
<td>3</td>
</tr>
<tr>
<td>Hardware Required</td>
<td>-2</td>
<td>1</td>
</tr>
<tr>
<td>Information Richness</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Interactivity</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Privacy</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Security</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Scalability</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>User Technical Knowledge Required</td>
<td>-2</td>
<td>1</td>
</tr>
</tbody>
</table>

| **Total Score** | 10 | 22 | 17 | 16 | 17 | 14 | 15 | 19 | 17 | 21 | 18 | 24 | 20 | 24 | 18 | 18 |
| **Summary**      | 29  | 32 | 28 | 31 | 25 | 22 | 18 | 26 | 24 | 20 | 24 | 18 | 33 |    |    |    |

Table 16: Rates

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Fit</td>
</tr>
<tr>
<td>1</td>
<td>Low Fit</td>
</tr>
<tr>
<td>2</td>
<td>Moderate Fit</td>
</tr>
<tr>
<td>3</td>
<td>High Fit</td>
</tr>
</tbody>
</table>

Table 17: Weights for positive factors

<table>
<thead>
<tr>
<th>Weights</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low Importance</td>
</tr>
<tr>
<td>2</td>
<td>Moderate Importance</td>
</tr>
<tr>
<td>3</td>
<td>High Importance</td>
</tr>
</tbody>
</table>

Table 18: Weights for negative factors

<table>
<thead>
<tr>
<th>Weights</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>Low Importance</td>
</tr>
<tr>
<td>-2</td>
<td>Moderate Importance</td>
</tr>
<tr>
<td>-3</td>
<td>High Importance</td>
</tr>
</tbody>
</table>

Table 19: Explanation of criteria weighting

<table>
<thead>
<tr>
<th>Weights</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 or -3</td>
<td>Accessibility</td>
<td>If users' expectations of security and privacy are not met, or if the measures are excessive, then participation will be ineffective, either due to a lack of trust in the system, or due to system failure.</td>
</tr>
<tr>
<td></td>
<td>Information Richness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Privacy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td></td>
</tr>
</tbody>
</table>
usability problems. Security, usability and transparency are equally of high importance in e-Participation services. Accessibility is of high importance as inequalities in accessibility will exclude a number of users from participating. Information Richness (acquisition) is a crucial element of e-Participation, leading to e-Democracy.

<table>
<thead>
<tr>
<th>Weights</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or -2</td>
<td>Interactivity</td>
<td>As technology’s primary goal is becoming user friendlier such a gap in hardware requirements and technical knowledge requirements, is evidently going to disappear. An efficiently designed e-democracy system will provide the means for bi-directional exchange of information and re-engagement of active citizens in the political process (interactivity). So these factors do not affect participation or users in the same way that the above mentioned do.</td>
</tr>
<tr>
<td>1 or -1</td>
<td>Scalability</td>
<td>As e-methods are targeted at increasing participation in democratic processes, Scalability and Deployment Complexity, do not directly influence end users.</td>
</tr>
</tbody>
</table>

Not that the importance given when assessing with e.g. 3 or -3 is the same, with the difference that a negative weight implies a negative factor.

Table 20: e-Methods score fluctuation
Table 21: E-method’s synopsis

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Webcasts</td>
<td>Ensure information richness but introduce serious drawbacks on user hardware requirements and deployment complexity.</td>
</tr>
<tr>
<td>2: FAQ</td>
<td>Provide information in a simple and straightforward way while maintaining security and privacy. Information can be single sided as usually only answers provided to set questions.</td>
</tr>
<tr>
<td>3: Blogs</td>
<td>Can provide a means to hold vast amount of information but essentially single sided.</td>
</tr>
<tr>
<td>4: Quick Polls</td>
<td>Offers a simple method for opinion expression while able to maintain users privacy and security.</td>
</tr>
<tr>
<td>5: Surveys</td>
<td>A moderate tool for opinion expression that could possibly introduce security implications. Information usually unidirectional, as candidates answer pre-set questions.</td>
</tr>
<tr>
<td>6: Chat Rooms</td>
<td>A truly bidirectional information exchange method but with serious privacy and security weaknesses.</td>
</tr>
<tr>
<td>7: Decision-Making Games</td>
<td>A highly engaging interactive solution but with serious disadvantages on accessibility, deployment complexity and user hardware requirements.</td>
</tr>
<tr>
<td>8: Discussion Forums</td>
<td>An interactive platform capable of meeting bidirectional information exchange needs but with privacy weaknesses.</td>
</tr>
<tr>
<td>9: e-Panels</td>
<td>A vast amount of information can be exchanged through such a method but with a complex deployment cost.</td>
</tr>
<tr>
<td>10: e-Petitions</td>
<td>An opinion expression platform with serious privacy issues.</td>
</tr>
<tr>
<td>11: e-Deliberative Polling</td>
<td>A complex electronic method to deploy that can provide rich information.</td>
</tr>
<tr>
<td>12: Virtual Communities</td>
<td>Highly complex to deploy interactive information exchange and opinion expression platform at the cost of security and privacy.</td>
</tr>
<tr>
<td>13: Alert Mechanisms – E-mail alerts and RSS Feeds</td>
<td>A secure and straightforward method of bidirectional information exchange.</td>
</tr>
</tbody>
</table>

4. Conclusion

Towards an electronic society and an electronic democracy it is important to assess the suitability of each available method. Competent e-participation channels in e-democracy depend on the technologies used. This is the purpose of the comparison of e-methods presented in this paper, to point out the characteristics of each method in order to make appropriate use of them. Although a final score has been awarded to each method it cannot be a conclusive result leading to the use or not of a specific e-method, only a guide to each methods advantages and disadvantages. There is no e-method that can be suitable for all applications, and vice versa, no application can make use of all e-methods. An e-method must be chosen regarding each situation’s demands and considering the above mentioned advantages and disadvantages that the particular e-method has.

Accurate identification of user requirements and needs is the only guarantee of successful system design. The selection of electronic methods to be implemented according to identified requirements is of grave importance. A information system focusing on meeting the needs of a wide and diversified public, interested in conforming with accessibility guidelines could make use of webcasts, blogs, faqs, quickpolls, surveys and alerts mechanisms but should avoid implementing decision making games. On the other hand, design teams interested in designing highly interactive information systems, not steering clear of high deployment complexity and hardware requirements, should consider making use of decision making games, chat rooms, discussion forums, e-panels, e-deliberative forums and online communities. It is decisive that systems with high privacy and security requirements should avoid chat rooms and online communities, except if they are operated under surveillance.

Meeting the goals stated and effectively countering the identified requirements is always a complex step in system design. Efficiently performing systems have evolved from careful and detailed planning on the drawing board to real world operating systems.

References


