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# The role of Business Process Redesign in creating E-Government in Ireland

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## Abstract

*The growth and popularity of e-commerce has both challenged and enabled public sector organizations to redefine their levels of service. E-government provides unparalleled opportunities for governments to streamline processes and improve customer service. As a result, achieving successful citizen centric e-government has become a key concern for many governments. Given the unique characteristics of public sector organizations it is argued in this paper that the evolutionary based development of business process change is better positioned to expand the use of e-commerce technology. This is due to the fact that cultural acceptance of the technology and its implementation is a critical success factor in public sector organizations due to their individual departmental structures. This paper analyses the Irish Government's evolutionary path to the provision of successful e-Government. The lessons learnt from this case provide a valuable insight into a possible roadmap for the successful attainment of citizen centred e-government in other jurisdictions.*

*Keywords: e-government, process redesign, portal, Ireland.*

## **Introduction**

Competitive pressures and improvements in information technology constantly force organizations to re-evaluate their business strategies (Venkatraman, 1994, Porter, 2001). Although public sector organizations may not operate in a competitive environment, changes in management philosophies are causing public sector organizations to think and act more like private sector organizations (Gulledge and Sommers, 2002). Electronic commerce is one means by which governments can offer more effective and efficient services (Layne and Lee, 2001).

This paper investigates the evolution of e-Government in Ireland – one of the leading countries in online government service provision within the European Union (Wauters, 2002). A case study is presented detailing how the Irish Government's e-government strategy was devised and implemented. The success of this implementation yields valuable insights into the identification and management of critical concerns during the evolution and attainment of business process redesign in e-government. Cumulatively, these lessons provide a roadmap for the successful attainment of citizen centric e-government. Specifically, the case details how in excess of 50 government authorities, both local and central, were brought together in order to provide a single point of access to government services.

## **Electronic Government**

Electronic commerce can be defined as the use of the Internet to conduct commercial transactions (Mahadevan, 2000 p56). Today, governments are using the Internet to provide public services to their citizens (Watson and Mundy, 2001). In so doing, governments aim to form better relationships with businesses and citizens by providing more efficient and effective services (Layne and Lee, 2001, Al-Kibisi et al., 2001).

Electronic government consists of using technology, particularly the Internet, as a means to deliver services to citizens, businesses and other entities (Tambouris, 2001, Watson and Mundy,

2001). E-government has the potential to transform not only the way in which most public services are delivered but also the fundamental relationship between government and citizen (Burn and Robbins, 2001, Watson and Mundy, 2001). Operational benefits of e-government, include continuous availability of service, a reduction in response time and a reduction in error rate (Al-Kibisi et al., 2001). These factors contribute to an increase in the efficiency of government (Lagroue, 2002, Coulthard and Castleman, 2001, Dearstyne, 2001).

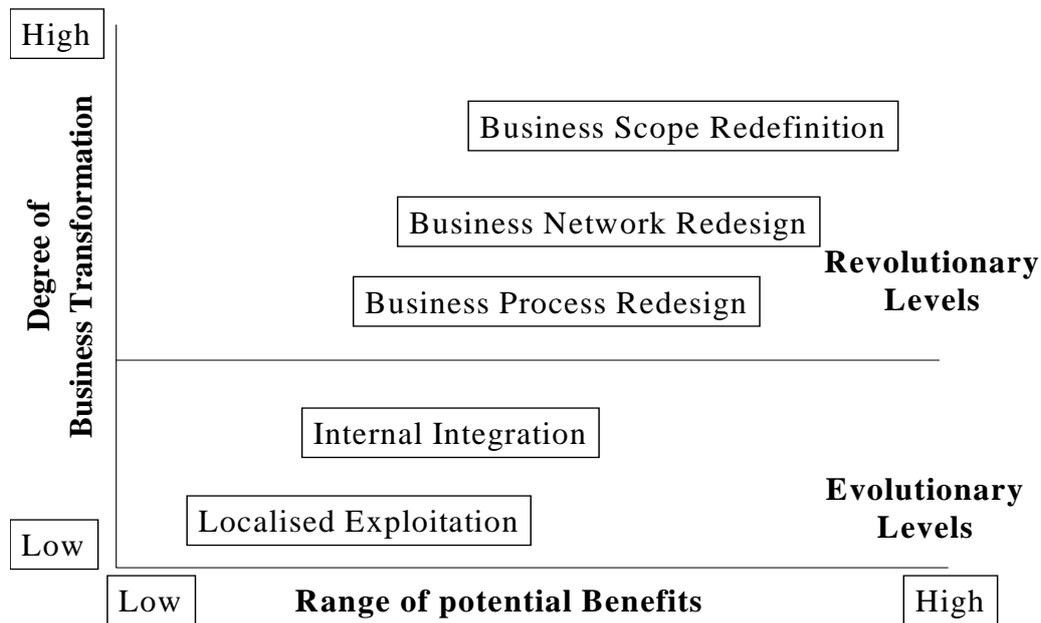
Through the use of electronic commerce technologies, organisations are challenged to redesign their processes in order to achieve the benefits of increased efficiencies, cost reductions, and better customer service (Glasse, 2001, Warkentin et al., 2002). Governments can also use e-commerce to improve core business processes (Coulthard and Castleman, 2001, McAdam and Donaghy, 1999).

### **Business Process Redesign**

Organizations are required to produce at a low cost, with high quality and with fast and flexible responsiveness to customer needs (Venkatraman, 1994). This puts pressure on organizations to redesign the way in which they conduct their business and build information systems to support new processes (Venkatraman, 1994). Out of such pressures was born the idea of Business Process Re-engineering (BPR) (Davenport and Short, 1990, Hammer, 1990). The key aspect of BPR is the fundamental and radical redesign of business processes to achieve dramatic improvements (Hammer and Champy, 1993). While BPR promised radical change the attainment of true BPR remained illusive for most organizations, with 50-70% of BPR projects failing (Nissen, 1998). Yet there is still a need for process change (Nissen, 1998). The lessons learnt from the BPR era served to inform management that less radical, more holistic and more incremental changes to business processes were required (Guha and Grover, 1997).

Venkatraman (1994) identified five levels of IT-enabled business transformation. The central thesis of Venkatraman's (1994) work is that only marginal benefits will accrue from superimposing IT on existing organisational conditions (Venkatraman, 1994). This is illustrated by the first two levels of Venkatraman's (1994) model (figure 1) i.e. localised exploitation and internal integration. These levels, according to Venkatraman (1994), are evolutionary, as they require only minimal changes to business processes.

The top three levels are revolutionary, as these levels require radical change to existing business processes. An organisation could redesign its processes and then go on to redesign its network stretching beyond the organisation and ultimately redefine the scope of the organisation. Venkatraman (1994) stated that it was possible for an organisation to start at either the top or the bottom of the framework.



**Figure 1 Alternative Approaches to BPR (Source: Venkatraman 1994)**

The organisation moving up the framework is seeking efficiency. Initially, this begins with localised exploitation and then moves up to internal integration. As the organisation moves up each level the range of potential benefits increases. However, each higher stage requires a

greater degree of organisational change. Eventually, in order to achieve more dramatic results, it will need to move up to the first revolutionary level and engage in Business Process Reengineering. A similar evolutionary/revolutionary model for the creation of e-government is proposed by (Layne and Lee, 2001). They identify four stages of evolution in e-government: catalogue, transaction, vertical integration and horizontal integration.

### **Research Methodology**

This research is exploratory in nature and seeks to investigate the extent to which Business Process Redesign was instrumental in the movement to e-government in Ireland. The Venkatraman (1994) model of IT enabled change was adopted as a framework for the research.

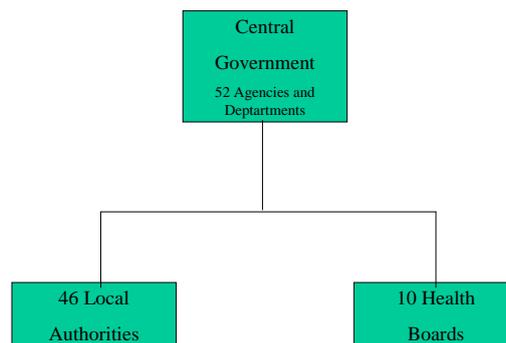
The research methodology was further influenced by the use of stakeholder analysis for the purpose of ensuring that critical stakeholders involved in e-government were identified and their multiple viewpoints accounted for in analysis (Burgoyne, 1999). The principle of multiple interpretations requires the researcher to seek out and document multiple viewpoints, the analysis of which may involve seeking to understand conflicts relating to power, economics or values (Klein and Myers, 1999).

Five in depth interviews were conducted with three government agencies involved in the e-government project. An in depth interview was conducted with one senior civil servant from the Department of An Taoiseach (Prime Minister); the governmental department providing strategic leadership to e-Government initiatives in Ireland. Two in depth interviews were conducted with members of REACH - the executive body created specifically to implement the e-government strategy. In addition, further interviews were conducted with two senior members of the Local Government Computer Supply Board (LGCSB), a public sector company providing IS services to local government.

These interviews were conducted onsite in April 2002. All interviews were semi-structured and lasted approximately two hours. The interviews conducted with all participants were supplemented by access to internal documentation. Records were kept of the content of all interviews. Further clarifications and updates were obtained by email and telephone contact.

## **Government in Ireland**

Government in Ireland is conducted at two tiers: national and local levels as depicted in figure 2. Central government consists of 17 government departments and 35 agencies, while local government consists of local authorities, with 46 currently in operation, who are responsible for the provision of a variety of government services at a local level and 10 Health Boards who are responsible for administering health services.



**Figure 2: Structure of Government in Ireland**

## **IS Support for Government**

IS support at both central and local level is provided through a combination of in house expertise, outsourcing to the private sector and LGCSB. LGCSB is a public sector company whose objective is to provide local authorities with IS systems and expertise on an individual basis. The basic premise is that expertise gained in one local authority can be passed on to others. An example of such service provision is the Complete Information System for Water Services

led initially by one local authority. This system was subsequently installed in all local authorities by July 2000.

In response to local authority requests, LGCSB developed electronic forms (e-forms) for use on local authority web sites. These forms were web versions of the traditional paper based form. Users could register with their local authority but there was no online system in place either to process the form electronically or to authenticate the individual. These initial e-forms served only to promote the accessibility of public service forms through an electronic medium.

### Road Map for E-Government

The overall strategy and corresponding implementations of the Irish Governments e-Government initiative are presented in table 1.

Year	Strategy Formulation	Implementation
1999	First Government Action Plan for the Information Society. Outlines an integrated approach to the online delivery of public services.	Local and central authorities develop web sites
2000	REACH agency established. Mandated to develop and implement a strategy for e-Government. Public Services Broker (PSB) Framework agreed for the integrated delivery of public services, accessible from a single point.	OASIS and BASIS projects launched  e-Forms available on local authority web sites
2001/2002	Second Government Action Plan: New Connections. Objectives: radical improvement in quality of service and to establish Ireland as an exemplar of international best practice The PSB endorsed and prioritized.	REACH in conjunction with LGCSB develop and launch Reachservices an interim PSB <a href="http://www.reachservices.ie">www.reachservices.ie</a>
2002/2003	Technical specifications of PSB finalised. Implementation strategies devised.	Reachservices maintained and enhanced Open tendering process for the construction of the PSB. Vendor Selected
2005		Full installation of PSB

**Table 1 Strategy and Implementation Process**

In January 1999, the Irish Government released its first action plan on the Information Society. The plan outlined a three-strand approach to online delivery of public services: information services, interactive services and integrated services. Government departments were required to

implement web sites and the OASIS (online access to services information and support) and BASIS (business access to state information and support) projects were initiated. These web sites were to be designed to meet the entire informational needs of a client regardless of the source of the information.

Towards the end of 2000 the REACH agency was officially established, its name reflecting the concept of government reaching out to its customers. REACH is an executive body with the responsibility of coordinating the central agencies responsible for implementing the e-government strategy and to provide management of the overall e-government initiative.

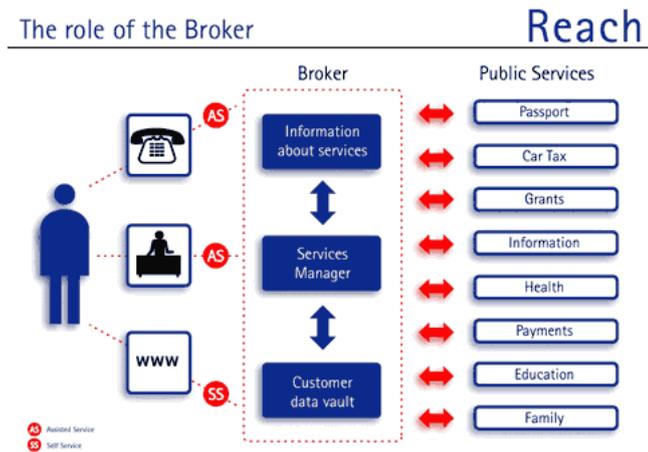
*Central to achieving our strategic targets for e-government is the Reach agency – this body has the essential responsibility of managing the complexities involved in developing better services and in ensuring the support of service agencies for the implementation of the PSB.*

*Department of An Taisoeach, 2003*

Initially REACH was composed of 11 civil servants drawn from a variety of departments, and was established as an independent unit within the Department of Social and Family Affairs. The concept of a portal based Public Service Broker (PSB) was adopted by REACH as the central mechanism for delivering the e-government agenda.

The framework for the PSB, as depicted in figure 3, consists of three features: integration, multiple access channels and data security. Firstly, the PSB will provide a single point of access to all services of both central and local government. The revolutionary aspect of the PSB is that service is to be provided from the customer's perspective. That is, the customer interacts with the broker and not the actual service provider. Secondly, the PSB will make services available through many access channels; these include online self-service, assisted service through

telephone contact centers and one-stop shops. Finally, the PSB will provide a customer data vault which will store data relevant to their interaction with the Government. This data will be used to facilitate online transactions, provide personalization of the user interface and various other aids in form completion. The individual user will have authority over their personal data and may specify which departments may access what information.



**Figure 3: The Public Service Broker, Source: REACH internal documentation**

### Implementing e-Government

In November 2000, the OASIS ([www.oasis.gov.ie](http://www.oasis.gov.ie)) and BASIS ([www.basis.ie](http://www.basis.ie)) web sites were launched. These web sites provide detailed information on government services to citizens and businesses respectively. With a focus on customer requirements these sites broke the long-standing tradition of distributing government information along functional lines.

During 2001, REACH, in partnership with LGCSB, developed an interim level PSB. LGCSB was identified as a technical partner for two reasons; first LGCSB had gained significant expertise through the implementation of e-forms and second local authorities had a tried and trusted relationship established with LGCSB.

*“LGCSB have excellent relations with Local Authorities and the combination of this in-depth technical knowledge and recent experience of e-forms has subsequently encouraged widespread adoption of the PSB.”*

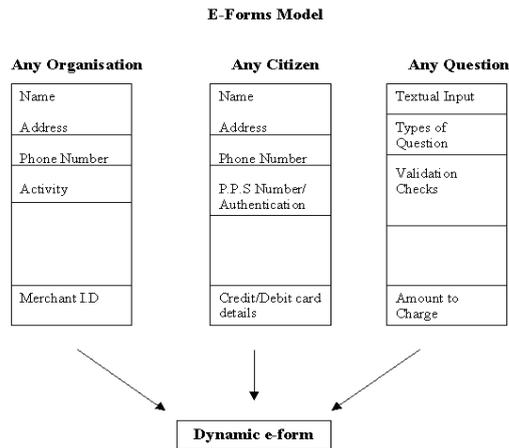
*REACH, 2003*

This interim service became known as Reachservices and was officially launched in April 2002. Also in April 2002, the second government action plan entitled ‘New Connections’ was published. The main objectives of the e-government strategy were outlined as: a radical improvement in quality of service to customers; major improvements in administrative efficiencies and enhanced control of publicly funded services. The government also made a commitment to have all public services capable of electronic delivery available through a single point of contact by 2005.

### **Meeting the Challenge of Delivery**

The main challenge in the development of Reachservices was to have every local authority paper based form available online for electronic download and submission. Each of the 46 local authorities had at least 133 forms that they required to be individually customisable. This resulted in a total requirement of in excess of 5,000 forms, excluding the health boards. To meet this requirement, LGCSB developed a centrally administered system that would allow each local authority access to an electronic form builder.

The form builder tool has a graphical user interface and is based on the idea that a generic form can accommodate any organisation for any citizen and cover any question (Figure 4). The form builder is based on three basic entities: the organisation, the individual and the question. It enables the local authority to create their customised form that is then uploaded onto the Reachservices site.



**Figure 4: Representation of Form Builder Application; Source LGCSB internal documentation**

### Process Redesign

The implementation of Reachservices necessitated changes to traditional processes. These changes occurred in three areas: publication and distribution of forms, citizen identification and data security, and completion and submission of forms by citizens.

Central to the progression of the online service provision achieved by REACH was the redevelopment of e-forms into the form builder tool accessible to the local authority through the portal Reachservices. The local authorities are allocated a username and password allowing them access to the form builder. Each local authority administrator can then select which e-forms are to be made available for their authority and can customise those forms online. From a template form the administrator creates the questions, defines what type of response the user will give and can add whatever validation checks or mandatory fields that are required.

Another significant advance achieved by Reachservices is citizen identification. Before using the system, the individual must register with Reachservices. Part of this registration is an authentication process that is managed by the Department of Social and Family Affairs. The individual may then access the Reachservices site using their Personal Public Service (Social Security) number and password. This is an essential feature of the process, as it provides the authority with proof of the individual's identity and enables features like intelligent form filling.

Personal data is then stored in a data vault. All authorities have access to the data vault however the citizen retains the right to determine which authorities have access to their individual information. Thus, the system complies with current data protection and privacy legislation as the individual citizen decides what information, beyond the statutory minimum, is shared with whom.

With respect to form completion by the citizen, intelligent form filling allows certain fields to be populated automatically based on the information stored on each citizen. It also allows for certain questions to be deactivated when they are not necessary. The user is also provided with the capability to save a partially completed form for completion at a later date. Visual aids are provided as means of indicating to the user which pages of a form have been fully or partially completed. When the user submits the form it is automatically routed to the relevant authority in XML format. At present the front-end interface is fully automated while the back end system still relies on human interaction.

### **Future Developments**

The central e-government strategy is to implement a Public Service Broker by 2005. This broker will facilitate multiple access modes, including telephone access and one-stop shops, to all government services. The construction of the PSB has been outsourced and is currently under development. When complete it will act as a single point of contact to the customer by integrating services around predefined life or business events, instead of presenting services around functional departments. The fully functional PSB will also be known as Reachs services and from the user's perspective there will be a seamless transition from the initial service offering to the more sophisticated PSB.

## **Findings**

E-government strategy was devised and ratified by the highest possible level of central government. The independent agency established to implement this strategy – REACH - identified and exploited the technological expertise of LGCSB and successfully procured a partnership with the Department of Social and Family Affairs in order to provide an authentication service. The effective management and coordination of otherwise autonomous stakeholders, combined with the right technical infrastructure provided the ingredients for the provision of a successful public e-service.

Process changes occurred within local authorities and health boards with respect to form publication and distribution and in the acceptance of electronic submissions. Responsibility for citizen identification was shifted from the service provider to the Department of Social and Family Affairs. This also facilitated the introduction of a single repository for citizen data.

The immediate impact to citizens can be judged in terms of ease of access, ease of use and efficiency. Providing a multitude of forms from individual authorities in one location gives citizens ease of access resulting in timesavings. The completion of a form is greatly simplified through intelligent form filling. The Reachservices web site went live in mid April 2002 and was launched without the use of advertising in order to prevent an initial surge of activity. Nonetheless, the initial uptake rate was approximately 500-600 registrations per month during its first few months of operation and the total number of registered users currently stands at 1500. This volume of traffic was regarded as successful due to the subdued launch and the fact that the site only offered a fraction of the functionality ultimately intended.

Reachservices has had a 100% uptake rate by local authorities, albeit some authorities are implementing at different levels. This should be viewed in the context that the Local Authorities have not been mandated to participate in the Reachservices project. There has also been a very high percentage take up rate amongst the health boards although not 100%. The case also

highlights a more subtle yet profound observation. The Reachservices infrastructure and the future PSB are to be developed around the existing government structures. In other words due to political considerations a full and complete process redesign will never be possible as the existing authorities must remain in place. Thus a complete understanding of the intricate and sometimes bureaucratic processes that combine to form citizen services is necessary so that it is possible to identify the process or elements of processes that can be redesigned, automated or left unchanged.

However, this interim portal highlights the transformation stages that need to be managed in order to deliver any level of e-government. Table 2 compares the e-Government achievements in this case with the Venkatraman (1994) framework.

Venkatraman Stage	E-Government Initiative
Localised Exploitation	Development of local authority web sites with pdf forms.
Internal Integration	Launch of OASIS and BASIS web portals, availability of e-Forms on local authority sites and the establishment of REACH
Business Process Redesign	Partial process redesign through the use of Reachservices form builder application, citizen identification and online access
Business Network Redesign	Establishment of interim Public Service Broker Reachservices.
Business Scope Re-definition	Strategic thrust from agency centric to citizen centric services

**Table 2 E-government Initiative Compared to Venkatraman Framework**

The development of local authority web sites represents the occurrence of Localised Exploitation that is the implementation of IT within a business typically at a functional level requiring little process change. However, the subsequent move to restructure information from a user perspective through the OASIS and BASIS web portals represents Internal Integration as this is

characterised by a systematic attempt to leverage IT capabilities. The establishment of REACH also illustrates the commitment of senior government officials to the attainment of an integrated and co-ordinated approach to e-government.

Participation in the Reachservices portal required local authorities to make significant changes to specific elements of their service delivery process: the publication, distribution and electronic acceptance of forms and the storage of citizen information. Participation also introduced a new process of citizen identification to which the local authority was a passive participant. Finally, participation also enabled electronic access to services, although this required almost no process change as the actual service itself was still conducted in a traditional manner with the citizen receiving electronic or physical notification of service completion.

Government by its nature is a collection of businesses (agencies and department) and the development of the Reachservices platform represents the attainment of Business Network Redesign as the platform radically impacts on the nature of the exchange among multiple participants through new IT capabilities. Individual authorities that traditionally operated independently began to participate in a centralised mechanism. The Reachservices platform instigated the move towards electronic information sharing that was capable of supporting seamless interconnectivity, process linkage and knowledge management.

Finally Business Scope Redefinition was manifested by the strategic shift in Government policy toward citizen centric services that are enabled by a Public Service Broker. Thus the Government was redefining its business role from authoritative re-distributor to service provider.

## **Conclusion and Further Research**

This case provides valuable insights into how citizen centred e-government can be attained and highlights the central importance of managing processes and process change in the implementation of e-government. The Reachservices business network connects local and central

systems through the use of a centralised database that maintains the authenticated data of the individual citizen. However, Reachservices does not provide sufficient functionality to facilitate the provision of a comprehensive set of services and thus while serving as a successful example of a move to e-government it falls far short of a true citizen centric e-government platform.

The provision of the appropriate technical infrastructure and the redesign of local and interagency processes have been identified as the critical elements that will determine future success. While the case provides strong evidence that the infrastructure will be developed there is a marked absence of focus on the core process. Almost the entire effort of the REACH agency has been on the provision of the technical infrastructure. While REACH have proven that the local authorities are willing to participate in such a network they have not proven that these authorities are willing or capable of implementing more radical process change.

Localised exploitation was achieved by directing all authorities to implement individual web sites and this encouraged the authority to become web proficient and lowered later barriers to centralised web development. The later development of customer focused portal sites, independent from the local authorities, as authoritative repositories of government information promoted a shift in focus from departmental orientation to customer need. These portals and elements of the Reachservices platform are examples of internal integration.

In this case, potential tension associated with internal integrations was managed by ensuring that the authority previously responsible for the service remained responsible and furthermore that the responsibility was made clearly visible within the portal by allowing customised forms. Customisable forms combined with the usability of the form builder and the existing relationships between LGCSB and the local authorities greatly impacted on the rate of buy-in by the local authorities.

Throughout these stages, providing an easy to use system that is focused on the citizens' needs encourages citizen usage. Evidence from the case, in relation to registration rates, indicates that

allowing the citizen some control over personal data and the use of that data, may help to appease fears relating to centralising data storage.

However, business process redesign has been limited and as such this case provides evidence of the existence of the gap identified by Venkatraman (1994) between the evolutionary and revolutionary means of business transformation. The model of business transformation proposed by Venkatraman (1994) represents very well the process as it actually occurred in this case. In order to move from an evolutionary to revolutionary business transformation a requirement to abandon existing systems in favour of new systems has been identified. The ability to identify and scope these new systems was in large part facilitated by the learning that occurred while developing the initial e-government initiatives – the evolutionary stages. In addition, the establishment of a specific government entity - REACH - whose sole purpose is to oversee and implement the e-government strategy has contributed greatly to the success achieved to date.

REACH was in a position to both identify and manage the critical success factors involved in delivering e-government. First, the most appropriate model and technical infrastructure were identified and implemented by outsourcing to leverage expertise that already existed. This use of existing expertise proved highly successful in terms of developing a robust infrastructure within a limited timeframe. Second, critical concerns of local authorities were managed by using familiar actors. Third, the interactions necessary between otherwise independent agencies was successfully coordinated to ensure the delivery of a quality service. Fourth, the maintenance of a customer focus by providing a quality service through a single portal in which the citizen has control over their personal data contributed to a successful uptake of the system.

The case illustrates that e-government initiatives that fit within the evolutionary classification can be achieved in a timely and successful manner. The case also illustrates that more revolutionary initiatives are achievable but that the development of these initiatives beyond basic services requires sophisticated business network and business process redesign.

Thus an important area for further research is to investigate the unique nature of processes within the public sector so that IS platforms can be developed that accommodate less efficient processes rather than platforms that require unobtainable process redesign.

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