



Provided by the author(s) and NUI Galway in accordance with publisher policies. Please cite the published version when available.

Title	Implementing e-government in Ireland: a roadmap for success.
Publication Date	2003-10
Publication Information	Golden, W., Hughes, M., & Scott, M. (2003). Implementing e-government in Ireland: a roadmap for success. Journal of Electronic Commerce in Organizations (JECO), 1(4), 17-33.
Publisher	IGI Global
Link to publisher's version	http://dx.doi.org/10.4018/jeco.2003100102
Item record	http://hdl.handle.net/10379/1784

Downloaded 2020-10-20T09:20:21Z

Some rights reserved. For more information, please see the item record link above.



Implementing E-Government in Ireland: A Roadmap for Success

Abstract

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. This paper analyses the Irish Government's evolutionary path to the provision of successful e-Government. The success factors and stages of evolution of e-government are identified and a detailed examination of how the Irish Government successfully implemented its e-government strategy is presented. The lessons learnt from this case provide a valuable roadmap for the successful attainment of citizen centred e-government in other jurisdictions.

Keywords: e-government, portal, Ireland.

1. Introduction

Information technology has had a long association with business, firstly as a provider of unprecedented efficiencies and secondly as an element of business strategy in its own right (Porter, 2001; Venkatraman, 1994). Through the use of electronic commerce technologies, public and private sector companies are challenged to redesign their processes in order to achieve the benefits of increased efficiencies, cost reductions, and better customer service (Glasse, 2001; Warkentin, Gefen, Pavlou, & Rose, 2002).

The Internet is an important new technology as it provides better opportunities for companies to establish distinctive strategic positions than those offered by previous generations of information technology (Porter, 2001). It can provide opportunities for strategic advantage, cost savings and new revenue streams (Mahadevan, 2000). Consequently, Internet technologies bring challenges for public and private sector companies (Earl & Bushra, 2001).

Electronic commerce can be defined as the use of the Internet to conduct commercial transactions (Mahadevan, 2000). Electronic commerce is generally conducted in three broad

structures: portals, market makers, and product/service providers (Bakos, 1991; Mahadevan, 2000). The benefits of these structures to the supplier include lower costs and access to wider markets, while the advantages to the buyer are lower transaction costs, access to greater amounts of information and convenience of purchase (Porter, 2001).

Today, governments are using the Internet to provide public services to their citizens (Gouscos, Georgiadis, Martakos, & Stamoulis, 2001; Watson & Mundy, 2001). In so doing, governments aim to form better relationships with businesses and citizens by providing more efficient and effective services (Al-Kibisi, de Boer, Mourshed, & Rea, 2001; Layne & Lee, 2001; Warkentin et al., 2002). Governments can also use e-commerce to improve core business processes (Coulthard & Castleman, 2001; Lloyd, 2002).

This paper investigates the evolution of e-Government in Ireland up to the summer of 2002. A review of the literature is presented which details the recognised success factors in e-government, the stages of e-government evolution and international e-government comparisons. 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 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.

2 Electronic Government

Electronic government is defined as the use of technology, particularly the Internet, as a means to deliver services to citizens, businesses and other entities (Tambouris, 2001; Watson & Mundy, 2001) with the purpose of providing convenient access to government information and services

(Brannen, 2001; Gefen, Pavlou, Warkentin, & Rose, 2002). 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 & Robbins, 2001; Watson & Mundy, 2001). Operational benefits of e-government, include continuous availability of service, a reduction in response time and a reduction in error rates (Al-Kibisi et al., 2001; Gouscos et al., 2001). These factors contribute to an increase in the efficiency of government (Coulthard & Castleman, 2001; Dearstyne, 2001; Lagroue, 2002).

2.1 Critical Success Factors of Electronic Government

Barriers to e-Government include organizational, political and technical factors as they posit threats to achieving the benefits of integration of service delivery (Akbulut, 2002; Dawes, 1996). Redesigning services and improving their coordination are difficult tasks which are compounded in public sector organisations as they rely heavily on consensus (Al-Kibisi et al., 2001).

2.1.1 Strategic Vision

Success in e-government requires strategic direction (Poon, 2002). This strategy must encourage government agencies to create a networked environment that facilitates functional integration and departmental collaboration (Akbulut, 2002; Zhang, Cresswell, & Thompson, 2002).

2.1.2 Technical Strategy

Implementing the correct technical strategy is essential to ensure that the operational benefits of e-Government are fully realized (Al-Kibisi et al., 2001; Gant & Gant, 2001). Sinigoj (2002) argues that technological issues regarding service provision cannot be effectively implemented on a local level but need more initiative on a national level in order to be cost effective.

2.1.3 Integration

Traditionally, government services were provided from the government's perspective. However, e-government centralises the citizen and thus the integration of functions is essential to successful e-government (Jupp & Shine, 2001; Lapre & van Venrooij, 2001; Watson & Mundy, 2001).

2.1.4 Balancing Local V Central Concerns

The role of local government may be threatened by the use of centralised methods of providing services (Lapre & van Venrooij, 2001). Additionally, some citizens may prefer the familiar, face-to-face contact that local government provides and may continue to access services through local delivery (Gouscos et al., 2001). Thus the roles of local and central government need to be clearly defined (Lapre & van Venrooij, 2001; Phythian, 2001).

2.1.5 Privacy and Confidentiality

Privacy, security and confidentiality are critical concerns (Al-Kibisi et al., 2001; Kambil, 1998; Layne & Lee, 2001; Tambouris, 2001). Many citizens may feel that their privacy is threatened when personal data is stored centrally and accessible online (Dridi, 2001). Trust and confidence must be established if the system is to be successful (Al-Kibisi et al., 2001; Warkentin et al., 2002). One trust building measure is to allow the user to have some control over the information stored and which government department has access to the information (Layne & Lee, 2001).

2.1.6 Quality Service

For citizens to conduct online transactions, the service must be convenient, time saving and cost efficient (Al-Kibisi et al., 2001). Consequently, the issues of usability and timely delivery of

service are essential to maintaining high levels of satisfaction (Kaylor, Deshazo, & Van Eck, 2001).

2.2 E-Government Evolution

Layne and Lee (2001) have identified four stages of evolution in e-government: catalogue, transaction, vertical integration and horizontal integration. These stages are presented in figure 1.

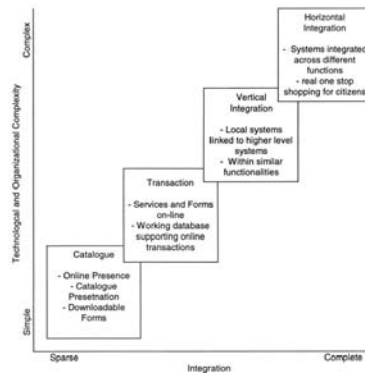


Figure 1 The Evolution of E-Government Source (Layne and Lee 2001)

Stage 1 Catalogue: The Government creates a static web site to gain ‘online presence’.

Information is catalogued for presentation to citizens and usually organised into departments. At this stage functionality is generally limited to search facilities. In achieving stage 1, government agencies tend to develop their web presence on an agency-by-agency basis (Gant & Gant, 2001). Initially, this strategy can be successful as it allows the individual agency to develop their web site quickly. However, inconsistencies, duplication of effort and other limitations soon emerged that encouraged some governments to redevelop their stand alone sites into web portals (Fernandes, Wilpen, & Krishman, 2001; Gant & Gant, 2001).

Stage 2 Transaction: This stage requires online interfaces for the purpose of conducting transactions. It is typically characterised by direct connections to live databases that require

minimal interaction from government staff. The focus of design in this stage moves from departmental orientation to presenting a customer focussed approach. Web portals can be utilised to deliver information according to customer needs and not departmental requirements (Baker & Baker, 1999; Gant & Gant, 2001). Portals are designed like virtual agencies that cluster together the disparate services a government offers into a single entry point (Watson & Mundy, 2001). This customer orientated approach facilitates ease of use as the customer interacts with a single point of contact, leaving the portal to communicate with the agencies that together provide the service (Al-Kibisi et al., 2001; Gant & Gant, 2001; Jupp & Shine, 2001).

Stage 3 Vertical Integration: This stage requires integration between local and central agencies that exist within the same function. It is characterised by a transformation in services and in the linking of local and central systems through the use of centralised databases. When used in conjunction with citizen identification numbers portals can also deliver customised services enabling better customer focus by removing repetitive form filing as information about the citizen can be dynamically generated from a centralised database (Jupp & Shine, 2001). These benefits are driving portals as the centrepiece of enterprise approaches to e-government (Fernandes et al., 2001; Gant & Gant, 2001; Watson & Mundy, 2001).

Stage 4 Horizontal Integration: The final stage of evolution requires integration across not only different levels of government but also integration across different functions of government. This type of integration means that a transaction in one agency can lead to checks against data in other functional agencies. This stage of integration supports true 'one stop shopping'.

2.3 International Perspective

In a survey of EU countries Ireland was recently ranked best overall in online government service provision (Wauters, 2002). With an overall ranking of 85%, Ireland was considerably above the European average of 55% (Wauters, 2002). Another comparative e-Government study of each member country of the United Nations, revealed that of the 190 UN member states, 169 had a government web site presence, 84 had a national government web site and 36 had single entry portals (Ronaghan, 2002). The report identifies single entry portals as an important and accepted international standard. Classifying the 190 member states according to the Layne and Lee (2001) framework Ronagan (2002) argues that 97 have reached stage 1 of the evolutionary process, 55 have reached stage 2, 17 have reached stage 3 and none have attained stage 4.

Field Code Changed

3. Research Methodology

Exploratory research methods were used to investigate the success of both the e-government strategy adopted by the Irish government and its implementation at both local and national levels. 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. The interviews conducted with the LGCSB were supported by a demonstration of the technology while the interviews conducted in the Department of An Taoiseach and the REACH agency 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.

4 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 such as the revenue commissioners and the court service. Local government consists of local authorities primarily County Councils or City Councils, 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.

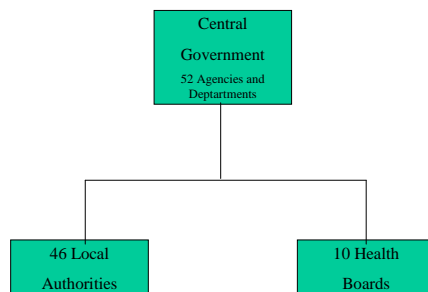


Figure 2 Structure of Government in Ireland

4.1 IS Support

IS support at both central and local level is provided through a combination of in house expertise and outsourcing to the private sector. An alternative outsourcing arrangement is also available through 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.

4.2 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 implementation of the Information Society. Outlines an integrated approach to the online delivery of public services.	
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 www.reachservices.ie
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. The plan spearheaded the drive to make

better use of the Internet for information dissemination. 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. The action plan also introduced the initial concept of a portal as the possible architecture of a public service access interface.

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. Initially REACH was composed of 11 members, all civil servants who were drawn from a variety of departments, and was established as an independent unit within the Department of Social and Family Affairs reporting to the Department of An Taoiseach. 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, can be broken down into three key 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. Thus allowing for fully integrated services regardless of whether the provider is a local authority or central government or both. 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. Thus the provision of non-basic data will be voluntary and determined by the level of interaction that the user wishes to have. For example, the storage of personal identity photographs will be voluntary however; if an individual intends to apply for a driver's license using the PSB they will have to allow the system to hold their photograph.

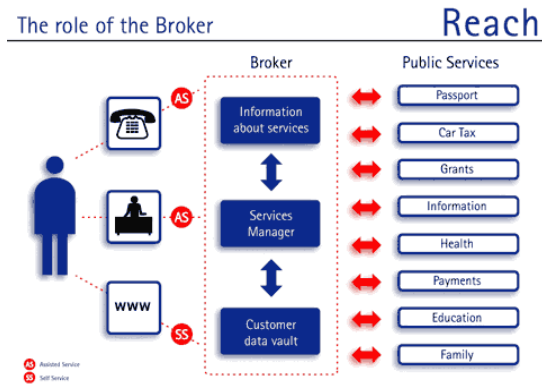


Figure 3 The Public Service Broker, Source: REACH internal documentation

4.2 Implementing e-Government

In November 2000, as an initial step in the move towards e-government, the OASIS (www.oasis.gov.ie) and BASIS (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. 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; enhanced control of fraud and abuse of publicly funded services and finally to establish Ireland as an exemplar of international best practice. The government also made a commitment to have all public services capable of electronic delivery available through a single point of contact by 2005.

4.3 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 presents a representation of the form builder application. 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.

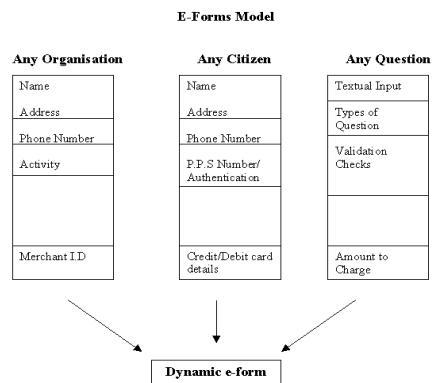


Figure 4 Representation of Form Builder Application; Source LGCSB internal documentation

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 or edit 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. The administrator can also remove forms for their local authority if necessary.

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. 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. Typically when a form is received it is printed off to a hard copy and processed manually in the same way as the traditional method.

4.4 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. Under this model the underlying structure and departments of central government will become less relevant to the citizen as all services will be provided in an integrated manner through the public service broker. 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 reachservices and from the user's perspective there will be a seamless transition from the initial service offering to the more sophisticated PSB.

5 Discussion

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. In addition, the submission process is simplified as it removes the need for postage or travel to the local authority thus expediting the delivery of the service.

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. 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.

Table 2 compares the achievements in this case with the Layne and Lee (2001) framework.

Year	Strategy Formulation	Implementation	Stage of Evolution
1999	First Government Action Plan for the implementation of the Information Society. Outlines an integrated approach to the online delivery of public services.		
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	Stage 1 & 2
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. The PSB endorsed and prioritized.	REACH in conjunction with LGCSB develop and launch reachservices, an interim PSB www.reachservices.ie	Stage 3
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	Stage 3
2005		Full installation of PSB	Stage 4

Table 2 Strategy and Implementation Process Compared to Evolutionary Framework

The development of local authority web sites and later the OASIS and BASIS fulfil the requirement for stage 1, catalogue, in the Layne and Lee (2001) model. In particular, the OASIS and BASIS web sites also represent the first evidence of a clear shift from a departmental orientation to a customer-focused orientation. Stage 2, transaction, was initially attained by the implementation of e-forms on the local authority web sites by LGCSB. However, enhancing the functionality of e-forms was abandoned in favour of the development of reachservices. Stage 3 vertical integration was obtained by the launch of the reachservices portal, which connected local and central systems through the use of a centralised database that maintains the authenticated data of the individual citizen. However, full vertical integration and stage 4, horizontal integration, will only be achieved through the launch of the full public service broker accompanied by authorities that focus on providing customer focused processes.

6. Findings

The development of reachservices exemplifies good management, coordination and implementation of the e-government initiative. Although this initiative is still ongoing valuable lessons can already be drawn from this case. Collectively, these lessons amount to a roadmap for successful implementation of e-government as presented in table 3.

	Stage 0 Strategy Development	Stage 1 Catalogue	Stage 2 Transaction	Stage 3 Vertical Integration	Stage 4 Horizontal Integration
Technological Infrastructure		Individual authority web sites New customer focused web sites	e-Forms	Portal Form Builder Centralised database with authentication	Public service broker providing multiple access modes
Success Factors	Develop strategy at highest level of central government	Central directive Independent development	Utilise central body of expertise to expedite development	Identify and manage local concerns Use familiar actors	Build on experience from previous stage

	Establish entity to oversee implementation	Focus on customer service		Leverage existing expertise Allow citizens some control over personal data Use scaleable model	Clearly define requirements Outsource development
--	--------------------------------------------	---------------------------	--	--------------------------------------------------------------------------------------------------------------	----------------------------------------------------------

Table 3 Roadmap for E-Government

E-government strategy was devised and ratified by the highest possible level of central government and an independent agency established to implement this strategy. The independent agency – REACH, identified and exploited the technological expertise of LGCSB and also 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, and cross-departmental collaboration and integration provided the ingredients for the provision of a successful public e-service.

Stage 1 can be achieved by directing all authorities to implement individual web sites. This encourages the authority to become web proficient and potentially lowers later barriers to centralised web development. At this stage, the development of customer focused web sites, independent from the local authorities, as authoritative repositories of government information promotes a shift in focus from departmental orientation to customer need.

The requirements of stage 2 transaction can be achieved by implementing electronic forms on local authority web sites. This should be accompanied by authentication and payment facilities although that was not the situation in this case. This development can be expedited by the use of an outsourcing arrangement.

Stage 3 vertical integration can be achieved by implementing a portal strategy that provides form building, database and authentication services to the participating authorities. However,

providing a centralised service can create tension between central and local government. In this case, potential tension 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, helps to appease fears relating to centralising data storage.

The final stage horizontal integration has not yet been achieved however, preparations are well underway and initial lessons can be drawn at this point. What is clearly evident from this case is that the gap between stage 3 and stage 4 is much greater than the gaps between the other stages of evolution. The successful attainment of stage 4 will therefore require a far more sophisticated infrastructure. The design and functionality of this infrastructure can be devised from the experience gained in the earlier stages. The scale of the project at this stage will necessitate very detailed requirements specification and outsourcing of the development.

6 Conclusion

This case provides valuable insights into the attainment of citizen centred e-government that cumulatively amount to a roadmap for successful implementation. Following the strategy formulation by the highest level of central government, a specific entity REACH was established with the sole purpose of implementing this strategy. REACH was therefore 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.

This case also provides strong evidence to support the evolutionary model of e-government as proposed by Layne and Lee (2001). However, it also provides evidence indicating that stage 2 may, in some cases, be bypassed and incorporated into stage 3. The case also suggests that the gaps between the stages greatly increase, requiring sophisticated strategies and infrastructures to obtain the latter stages. While the framework is useful in identifying the stages of evolution, it provides little support for how to evolve. Evidence from this case suggests that the roadmap for success may be constituted as follows. Develop strategy at the highest level of government and establish an entity with the sole purpose of implementing this strategy. Implement an appropriate model initially by leveraging existing expertise. Once the model has been proven successful outsource its full implementation. Encourage local buy-in through the use of familiar actors and by maintaining the role of the authority. Encourage citizen buy-in by the provision of high quality service in a convenient manner that is non-threatening to individual privacy concerns.

References

- Akbulut, A. Y. (2002). An investigation of the factors that influence electronic information sharing between state and local agencies. *In the Proceedings of the Eighth Americas Conference on Information Systems.*
- Al-Kibisi, G., de Boer, K., Mourshed, M., & Rea, N. (2001). Putting citizens on-line, not inline. *The McKinsey Quarterly, Special Edition(2)*, 64.

- Baker, S., & Baker, K. (1999). Portals to Paperless Prosperity. *Journal of Business Strategy*, 20(6), 32.
- Bakos, J. Y. (1991). A strategic analysis of electronic marketplaces. *MIS Quarterly*, 15(3), 295.
- Brannen, A. (2001). E-Government in California: Providing Services to Citizens through the Internet. *Journal of State Government*, 74(2), 6.
- Burn, J. M., & Robbins, G. (2001). Strategic Planning for E-Government. *In the Proceedings of the Seventh Americas Conference on Information Systems*.
- Coulthard, D., & Castleman, T. (2001). Electronic Procurement in Government: More Complicated Than Just Good Business. *In the Proceedings of the Ninth European Conference on Information Systems*.
- Dawes, S. (1996). Interagency Information Sharing: Expected Benefits, Manageable Risks. *Journal of Policy Analysis and Management*, 15(3), 377.
- Dearstyne, B. W. (2001). E-Business, e-Government & Information Proficiency. *Information Management Journal*, 34(4), 16.
- Dridi, F. (2001). Security for the electronic government. *In the Proceedings of the First European Conference on E-Government*, 99-111.
- Earl, M., & Bushra, K. (2001). E-Commerce is changing the face of I.T. *MIT Sloan Management Review*, Fall 2001, 64-72.
- Fernandes, D., Wilpen, G., & Krishman, R. (2001). ServiceNet: An agent-based framework for one-stop E-Government services. *In the Proceedings of the Seventh Americas Conference on Information Systems*.
- Gant, J. P., & Gant, D. B. (2001). Web portals and their role in E-Government. *In the Proceedings of the Seventh Americas Conference on Information Systems*.
- Gefen, D., Pavlou, P. A., Warkentin, M., & Rose, G. M. (2002). EGovernment Adoption. *In the Proceedings of the Eighth Americas Conference on Information Systems*.
- Glassey, O. (2001). Model and Architecture for a virtual one stop Public Administration. *In the Proceedings of the Ninth European Conference on Information Systems*.
- Gouscos, D., Georgiadis, P., Martakos, D., & Stamoulis, S. (2001). Re-orientating Information Systems for Customer Centric Service. *In the Proceedings of the First European Conference on E-Government*.
- Jupp, V., & Shine, S. (2001). Government portals - the next generation of government online. *In the Proceedings of the First European Conference on E-Government*, 217-223.
- Kambil, A. G., Mark. (1998). Public access Web information systems: lessons from the Internet EDGAR project. *Communications of the ACM*, 41(7), 91.

- Kaylor, C., Deshazo, R., & Van Eck, D. (2001). Gauging e-government: A report on implementing services among American cities. *Government Information Quarterly*, 18(4), 293-307.
- Lagroue, H. J. (2002). The impact of e-government initiatives: Louisiana's 'express lane' license and vehicle registration system. *In the Proceedings of the Eighth Americas Conference on Information Systems*.
- Lapre, L., & van Venrooij, A. (2001). Bridging the gap between citizen and administration. *In the Proceedings of the First European Conference on E-Government*, 247-259.
- Layne, K., & Lee, J. (2001). Developing fully functional E-government: A four stage model. *Government Information Quarterly*, 18(2), 122.
- Lloyd, R. M. (2002). Electronic Government. *Business & Economic Review*, 48(4), 15.
- Mahadevan, B. (2000). Business Models for Internet-Based E-Commerce. *California Management Review*, 42(4), 55-69.
- Pythian, M. J. T., William .G.K. (2001). Progress in electronic service delivery by English District Councils. *International Journal of Public Sector Management*, 14(7), 569.
- Poon, S. (2002). ESDLife of Hong Kong E-Government application with an e-business spirit. *In the Proceedings of the Eighth Americas Conference on Information Systems*.
- Porter, M. (2001). Strategy and the Internet. *Harvard Business Review*, 79(3), 63.
- Ronaghan, S. (2002). *Benchmarking e-government: A Global Perspective - Assessing the UN Member States*: United Nations Division for Public Economics and Public Administration and American Society for Public Administration.
- Sinigoj, A. (2002). Goriska e-region a new vision that can be accomplished by educating citizens and improving e-security. *In the Proceedings of the Fifteenth Bled Electronic-Commerce conference*.
- Tambouris. (2001). European cities platform for online transaction services: The euro city project. *In the Proceedings of the First European Conference on E-Government*.
- Venkatraman, V. (1994). IT - Enabled business transformation: from automation to business scope redefinition. *Sloan Management Review*, 35(2), 73.
- Warkentin, M., Gefen, D., Pavlou, P., & Rose, G., M. (2002). Encouraging Citizen Adoption of e-Government by Building Trust. *Electronic Markets*, 12(3), 157.
- Watson, R. T., & Mundy, B. (2001). A strategic perspective of electronic democracy. *Communications of the ACM*, 44(1), 27.
- Wauters, P. K., Hugo. (2002). *Web based survey on electronic public services*: Cap Gemini Ernst and Young.

Zhang, J., Cresswell, A. M., & Thompson, F. (2002). Participants' expectations and the success of knowledge networking in the public sector. *In the Proceedings of the Eighth Americas Conference on Information Systems.*