

MANAGING E-GOVERNMENT PROJECTS – A COMPARATIVE CASE STUDY OF TWO INTER-ORGANIZATIONAL E-SERVICE DEVELOPMENT INITIATIVES

Melin, Ulf, Linköping University, Department of Management and Engineering, Information Systems, VITS Research Group, SE-581 83 Linköping, Sweden, ulf.melin@liu.se

Axelsson, Karin, Linköping University, Department of Management and Engineering, Information Systems, VITS Research Group, SE-581 83 Linköping, Sweden, karin.axelsson@liu.se

Abstract

E-government initiatives have large potentials in developing better services for citizens and a potential to transform government structures. However e-government initiatives face a number of challenges of complexity and risk – it is not an easy matter to realize its potentials. A key research issue for the e-government field, as well as the information systems field in general, is to understand why some projects progress to success while others end in failure. The main objective in this paper is to contribute to a better understanding of the progress and the success vs. failure in e-government development based on case studies of two inter-organizational e-service projects. The analysis in the paper is made from a) an e-government systems development life cycle perspective and b) a challenge and success factors perspective. The main result in this paper is that crucial success factors of an inter-organizational e-government project include project manager skills and position in the agency organization as well as when and how systems maintenance issues are introduced in the project. Criticism is presented concerning the life cycle model used in the analysis regarding this last matter.

Keywords: project, e-government, e-service, inter-organizational, one-stop government.

1 INTRODUCTION

E-government initiatives have large potentials in developing better services for citizens and a potential to transform government structures (e.g. Irani, Love & Montazemi, 2007). However, e-government initiatives face a number of challenges of complexity and risk – and are not a simple matter to handle (ibid.; Gil-García & Pardo, 2005). “*Most e-government projects fail*” (Heeks, 2006, p. 3). Complexity and risk factors are also common in information system development (ISD) projects in general, but public managers find themselves making decisions about IT for which they are often unprepared or even ill-equipped (Gil-García & Pardo, 2005). A key research issue for the e-government field is to understand why some projects progress to success while others end in failure (Heeks & Stanforth, 2007). This research issue is also interesting in the IS field in general. The main objective in this paper is to contribute to a better understanding of the progress and the success vs. failure in e-government development based on case studies of two inter-organizational (IO) e-service projects. Learning from the past and from the experiences from other development initiatives is essential for improving the development of public e-services (Irani, Love & Montazemi, 2007) and ISD in general.

IO aspects are central in e-government development, when understanding the public sector actions. Within the e-government research area there are some topics that deal with IO aspects of e-service development. The most obvious areas are the research that pivots on one-stop government e-services (e.g. Gouscos et al. 2003; Wimmer 2001; Kubicek & Hagen 2000) and studies that relate to the reconstruction of IO case processes from the client point of view (e.g. Andersen 2004). The two cases focused in this paper are examples of one-stop government e-services. In e-government research we can also identify normative statements on how to deal with problems associated with e-government development. Some of the normative statements on how to deal with problems in e-government development are, like in projects in general, expressed in terms of critical success factors (CSF) (e.g. Reel, 1999). Pardo and Ho (2004), for example, mention: top management commitment, linkage to business, technical alignment, knowledgeable personnel and user involvement.

The challenges in developing e-government can also be related to: information and data, the information technology (IT) in itself, organizational and managerial issues, legal and regulatory preconditions, and overall institutional and environmental factors (Gil-García and Pardo, 2005). Other challenges are related to the fact that e-government initiatives (e.g. one-stop government solutions) often involve several government agencies (i.e. the IO dimension introduced above). One important identified barrier that needs to be overcome is the delaying factor of lack of organizational cooperation (Kubicek & Hagen, 2000) in IO projects – a barrier that IO e-government shares with IO system development projects in general. Agencies tend to act too independently, since the initiatives tend to be poorly coordinated (Irani, Love & Montazemi, 2007). These challenges are further discussed in section Two and Four, below.

One way of structuring and organizing e-government development is to understand the process of development in terms of different phases; like any system development project. System development methods in general tend to have more or less four core stages: analysis, design, construction, and implementation (Heeks, 2006). To these generic stages, project assessment can also be added (ibid.). In the analysis below, five generic stages are used to structure, understand and analyse two e-government development projects. The two cases are “the provisional driving licence application project” and the “the driving licence web portal project”. Both these initiatives are e-government initiatives of a one-stop-government character in Sweden. The two e-service development projects are described more thoroughly in section Four.

The purpose of this paper is to analyse the two e-government development projects from: a) an e-government systems development life cycle perspective and b) a challenge and success factors perspective. The analysis is made in order to reach a more thorough understanding of e-government development, using a comparative case study approach, and to explore and evaluate a development life cycle model. E-government projects are regarded as a special case of an ISD project; performed under,

e.g., a certain set of laws and regulations, and therefore also interesting to learn from. Research questions addressed in this paper are the following: what challenges and success factors are represented in the two e-government development projects? Which are the differences and similarities and why do they occur? How is e-government systems' development life cycle organized?

After this introduction, the paper is organized in the following way: In Section Two we address theories on managing e-government development projects. The research design is reported in Section Three, followed by the introduction of the empirical cases in Section Four. The empirical findings from the two case studies are discussed and analysed, based on two major perspectives, in Section Five. The paper is concluded in Section Six, where we also make some statements about the need for further research efforts in this area.

2 MANAGING E-GOVERNMENT DEVELOPMENT PROJECTS

This section of the paper presents theories in the area of managing e-government development in particular and ISD projects in general. The section is focused on a development life cycle as well as challenges and success factors in this area.

2.1 An E-government Systems Development Life Cycle

Heeks (2006) claims that an e-government development project typically consists of five stages; (1) project assessment, (2) analysis of current reality, (3) design of the new system, (4) system construction, and (5) implementation and beyond. The e-government system development model by Heeks (2006, p. 159) is illustrated in Figure 1, **Fel! Hittar inte referenskölla.** below. Project assessment (1) in the development model is the identification of possible e-government projects. At this stage the outline of basic project parameters are done, and the assessment of whether or not to proceed with a project. New e-government projects are typically initiated based on: "a problem that needs to be solved" or "identification of an opportunity which could be seized" (Heeks, 2006, p. 162). That kind of opportunities can arise from several different sources; e.g., from internal sources or external (environmental) sources. Examples of external sources are: complaints from media, politicians or citizens, new legislations or directives, technological innovation, and economic crisis. Examples of internal sources are: strategic planning, staff problems, and individuals' desire to give their career a boost (ibid.). Analysis of current reality (2) means that a description of information, technology, processes, objectives and values, staffing and skills, management systems and structures, and other resources: money and time are done. This stage consists of a mixture of hard and soft techniques such as information systems audit, information systems analysis, problem analysis, context analysis etc. in order to build an overall picture. A SWOT-analysis can, for example, be performed (ibid.).

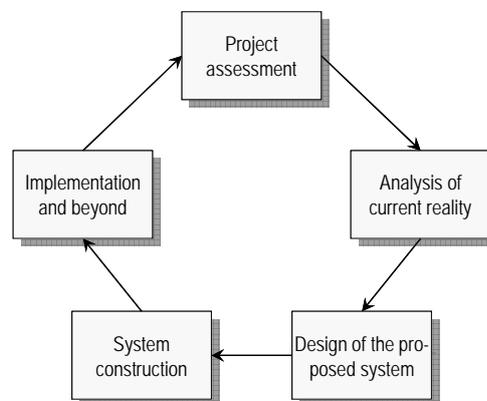


Figure 1 An e-government system development life cycle (Heeks, 2006, p. 159)

The stage of design of the proposed new situation (3) consists of setting the objectives related to the above mentioned dimensions of the new system – putting together the different objectives for the new system to meet. In this stage issues of software and hardware need to be dealt with. Work processes are also necessary to take into account from a design perspective, and not just the front-end processes, but also the underlying processes (ibid.; Jupp, 2003). System construction (4) consists of the process and activities in acquiring any new IT, undertaking detailed design of the new e-government system (e.g. system installation), building it, testing it, and documenting it.

Implementation and beyond (5) is represented by the planning of implementation processes, for example: training users to use the new information system, converting data from old to new formats, introducing the new e-government system, monitoring and evaluating its performance and context, and undertaking necessary activities (Heeks, 2006). The efforts concerning post implementation tasks such as marketing and support, in order to avoid the common “*build it and they will come*” (Jupp, 2003, p. 135) strategy, are also important (Heeks, 2006).

2.2 Challenges and Success Factors in E-government Development

The literature in the area of e-government development and e-government projects as well as ISD projects in general reports on several sets of success factors. For example, Gil-García and Pardo (2005) as well as Ho and Pardo (2004), has made an extensive survey of key success strategies of government ISD initiatives. Success factors mentioned are, for example: top management commitment, linkage to business, technical alignment, knowledgeable personnel, and user involvement (Pardo & Ho, 2004, p. 2). CSF, independently of source and context, tend to be of this kind. If we, for example, have a look at critical success factors in software projects in general we will find factors like the ones mentioned by Pardo and Ho (2004), and even reports of information system project failures, which the CSFs tends to be the inverse of. In Reel (1999), for example, ten signs of a project failure are reported. Project managers do not understand user’s needs, the project scope is ill-defined, project changes are managed poorly, the chosen IT changes, business needs changes, deadlines are unrealistic, users are resistant, sponsorship is lost, the project lacks people with suitable skills, and managers ignore best practices and previous lessons learned (ibid, p. 19). Kubicek and Hagen (2000) have also identified challenges in the area of e-government development. They present six key areas of barriers with a clear IO focus to be overcome for fewer delays, failures and obstacles in one-stop government development. The first key area is summarized in lack of organizational cooperation, the second key area is missing legal regulations, and the third key area is the necessary area of pre-conditions in regard to technology and fourth in regard to human factors. The last barriers are lack of appropriate funding and political support.

Gil-García and Pardo (2005) report that challenges to e-government initiatives are cross disciplinary and can be grouped into five categories: (1) information and data, (2) IT, (3) organizational and managerial, (4) legal and regulatory, and (5) institutional and environmental. The category concerning information and data (1) covers the capture, management, use, dissemination, and sharing of information (ibid.). There are also aspects of data quality and data accuracy as well as dynamic information needs in this category that is important in e-government initiatives. In the IT category (2) technology related aspects are present. Usability and security issues, technological incompatibility, technology complexity, technical skills and experience, and technology newness are also issues in this category. Organizational and managerial challenges (3) are the main challenges to ISD initiatives according to Gil-García and Pardo (2005). The size of project and the diversity of users and organizations involved are two major factors here. The lack of alignment between organizational goals and an ISD project is also put forward as a major factor in the set of organizational and managerial challenges. Dawes and Pardo (2002) also address, from an IO perspective, the existence of multiple, and partially conflicting, goals in the public sector. Legal and regulatory changes (4) represent the specific formal rules or groups of rules that government organizations operate based upon. Restrictive

laws and regulations must be taken into account when developing e-government. The institutional and environmental challenges (5) are the institutional framework in which governments operates (ibid.). This also includes the policy environment. Norms, actions, or behaviours that people accept as good or taken for granted in the context of government “daily life” are examples of the policy environment that are important for the success or failure of e-government development initiatives (Gil-García & Pardo, 2005). Success in e-government initiatives is not only a question of choosing the appropriate IT, it is also a question of managing capabilities in organisations, regulatory and environmental conditions. In order to obtain successful e-government, development managers have to deal with all these aspects (ibid.).

3 RESEARCH DESIGN

The empirical base used in this paper is collected within a research project concerning e-service development in the public sector in Sweden. The research project studies and contributes to two IO e-service development projects. The research project will also result in a method for development of IO e-services in the public sector and contribute to the theoretical knowledge on e-service development. The aim of the two development projects is to develop (1) a one-stop government e-service for driving license matters and (2) a web portal where e-services and information about the driving license process will be easily accessible.

The purpose of the two development projects is two-fold; (1) the projects aim at facilitating citizens' authority contacts in driving license matters and (2) the projects also aim at making the internal processes in the agencies concerning these errands more efficient. An important objective is that the results from the two development projects will have a distinct service focus of an IO nature, which will decrease the unclear responsibility division between authorities. Three Swedish agencies are involved in the development projects besides the researchers; Sweden's County Administrations (SCoA) (which organizes the 21 county administrative boards of Sweden), the County Administrative Board of Stockholm and the Swedish Road Administration (SRoA).

The overall e-service research project can be characterized as action research and has the dual purpose of both developing and evaluating e-services. Action research is a qualitative research method that is often used within the information systems field (e.g. Baskerville & Wood-Harper, 1996). However, the empirical data generated and analysed in this paper have not been explicitly collected during action research activities such as modelling seminars or project meetings, but through semi-structured interviews with significant actors within the two development projects. Related to action research we as researchers have, in this paper, taken the role of *reflective observer* rather than an active change agent (cf. Checkland, 1991). The fact that we, as researchers, have had the role of reflective observers when performing the present part of the study makes this paper more in line with a general qualitative, interpretative, approach. The role of a change agent is present in the overall e-service research project, but as stated above, not in this paper. The fact that the overall research project (the context of this part of the study) is based on an action research approach has made it easier to gain access to empirical data, build trust when performing interviews etc. when generating empirical data in this paper.

We have initially (when the research project started in 2005) interviewed six persons who were involved in the development projects. The interviewees had the following roles in the three agencies: an IT strategist, a development project manager, a system manager, an internal investigator, a case officer and an IT development manager. In 2007 we have interviewed seven persons as part of evaluating progress and results in the two development projects. Six of these interviewees are within the public sector; four of them are case officers, one of them is a local project manager at a County Administrative Board (CoA). Two interviewees are external consultants working for the public sector related to the e-government initiatives reported in this paper. One of the consultants is acting as a project manager supporter and the other person is acting as a systems development project manager delivering e-government applications. The interviewees have been selected in order to reach a broad

view of apprehensions in the studied development projects. We have asked open questions about how they understand the notion of e-service, what opportunities and threats they apprehend, success and failure stories, lessons to be learnt from the projects, and what kind of cooperation and coordination they regard as necessary for the development projects. The interviews had a semi-structured and semi-standardized design and were recorded. The empirical data has been analyzed in a qualitative, interpretive way (Walsham, 2006).

4 INTRODUCING THE E-SERVICE DEVELOPMENT PROJECTS

As mentioned above, we have studied two e-service development projects. The two projects, that ended in 2007, are called (1) “the provisional driving licence application project” and (2) “the driving licence web portal project”.

The overall process and background to the initiatives above is that everyone in Sweden who want to get a driving license, first have to apply for a provisional driving license from the regional CoA. The provisional driving license is approved if the applicant is judged by the regional CoA to be able to drive a vehicle in a safe way. Thus, the permit is an important aspect of traffic security. The permit application is, until the e-service is implemented, a paper form that is filled in, signed and sent by mail to the regional agency. The application has to be complemented with a health declaration, a certificate of good eyesight, and maybe also an application that, e.g., a parent will be allowed to serve as a private instructor. These documents are received and reviewed by a case officer at the agency. The case officer also checks if the applicant has been punished for any crimes (such as being drunk in public places, drug possession, or any traffic misdemeanour). This information is registered in a database operated by the police and the case officer has access to this information through one of SRoA’s IT system. When the provisional driving license has been granted, the CoA reports this to SRoA through this IO IT system. When the applicant has completed the driving test and the theoretical test successfully he or she receives the permanent driving license from the SRoA. The mix of different responsibilities and contacts in the whole driving licence life cycle was regarded as a good reason for developing an e-service.

4.1 The Provisional Driving Licence Application Project

The provisional driving licence application project aimed at developing an e-service that makes an automated decision in “green cases” (i.e., cases that do not call for any extensive handling process) and supports case officers handling such cases. By achieving this, the agency will in the long run try to save and reallocate resources from handling “green cases” to more complex errands. An e-service like this also provided an opportunity to standardise the application handling processes across the nation and the 21 county administration boards. The agencies had high expectations concerning the quality of data provided by citizens. The use of an e-service when filling in the driving licence application form makes it possible to automatically check the quality and the completeness of data. Another advantage with an e-service is that the underlying IT system directs the citizen to the appropriate CoA – instead of having citizens wondering which board that will be the right one for them. The handling of provisional driving licences and the development of an e-service to support this is one part of the empirical context in this paper. The provisional driving licence application project was hosted by SCoA, but consisted of members from SRoA and several external IT consultancy firms delivering project services and IT applications.

4.2 The Driving Licence Web Portal Project

The driving licence web portal project is the second e-service development project analysed in this paper. The background of the web portal development is that driving license issues in Sweden is divided between several government agencies (the regional CoAs and the SRoA, mentioned above). It is difficult for citizens to locate information fast and easy and get in contact with the appropriate

agency when having this kind of errands. In order to make it easier for citizen to locate information and interact with the appropriate agency, a national web portal has been developed (cf. www.korkortsportalen.se). The portal covers relevant needs along the driving licence life cycle. The web portal provides the citizen with access to e-services and serves as a bridge between the involved government agencies and organisations. The web portal is an example of a one-stop e-government solution. The driving licence web portal project aims to combine citizen benefits and agency efficiency. The portal development project was hosted by SRoA, but consisted of members from CoAs as well. External IT consultants was used only when the SRoA had not got enough internal resources or skills to perform a certain activity.

5 ANALYSIS AND DISCUSSION

In the sections below the two e-government development projects are analysed using a life cycle perspective and a challenge and success factors perspective.

5.1 Managing E-government Development – A Life Cycle Perspective

The analysis below is structured based on the different stages in an e-government system life cycle by Heeks (2006), introduced above. Our findings regarding these core stages are summarised in Table 1.

Table 1 Project stages in the two e-government development projects

Project stage / E-government project	Provisional driving license application project	Web portal project
Project assessment	Driven by a government commission	Driven by an organizational problem
Analysis of current reality	Low project experience	High project experience
Design of the new system	Complex outcome, outsourced development	Simple outcome, in-house development
System construction	Unclear requirements	Precise requirements
Implementation and beyond	No focus on systems maintenance	Early focus on systems maintenance

5.1.1 *The provisional driving licence application project – a life cycle perspective*

Project assessment – SCoA has got a special commission from the Swedish Government to develop four public e-services within their areas of responsibility. This can be classified as “identification of an opportunity which could be seized” (Heeks, 2006, p. 162). This e-government project was initiated as a direct response to this commission together with three other development projects (e-services for commercial traffic permissions, registers of private guardians, and registers of foundations). The process of applying for a provisional driving license was chosen because this process was apprehended as rather simple to automate. Another reason for choosing this process was the mix of involved agencies which might cause citizens problems. There was, however, no systematic assessment of citizens’ demands and public usefulness regarding this e-service before starting the project. The government’s commission, together with the notion of this area as an easy one to convert into e-government, were the two main reasons for starting the project. No explicit objectives were initially formulated for the project, except that the deadline in the government’s commission should be met. The commission stipulated that the four e-services should be developed within one year. This deadline was, however, heavily overdrawn before the development project was completed.

Analysis of current reality – A project manager was appointed who had no prior experience of public e-service development and very limited experience of leading IT development projects. The project was staffed with persons from several of the 21 County Administration Boards. The main criteria for selection of project members were personal interest in the project and unoccupied time in ordinary business to spend in the project. There was no explicit project management model concerning how different CoAs should handle resources when their employees took part in common projects like this one. The result of these vague and unclear routines was that people had to defend the project in their

local organizations and fight for releasing resources to work in the project. Since the project members were not appointed because of their skills, their opportunities to contribute to the project's results varied. It is part of the project tradition at SCoA to buy much of the necessary resources from external consultants. There are not enough internal competence to staff a project of this kind. Thus, the project had consultants hired from four organizations (external consultancy firms), responsible for requirements engineering, technical development, and project management support. In late phases of the project, the internal project manager had external support for managing project activities.

Design of the new system – The project should deliver two outcomes; a public e-service for provisional driving license applications and an internal IT system for handling the digital applications and supporting the case handling officers' decision making process. These two expected results made the project complicated. The development of the internal IT system made an extensive reconstruction of internal processes necessary. Thus, the task turned out to be much more complex than expected when the project was initiated. The development of the public e-service also demanded that the 21 CoAs had to find common criteria for judging applications which was another complicated task to achieve. Since the project manager and the project team did not possess all necessary knowledge, some of these decisions were instead made by external consultants. In order to develop the e-service the legal regulation of driving license matters had to be reformulated, which was another time-consuming problem to solve in the beginning of the project.

System construction – A main problem for the consultants during the construction phase of the e-service and the internal IT system was that the systems requirements were formulated by the customer (i.e., the SCoA) in an unclear and imprecise way. The project team delivered a specification to the consultants that allowed many interpretations and different kinds of solutions. The consultants had to put much effort in redesigning these documents before starting the development. Thereby they also formulated requirements by their own in order to achieve progress in the project. Even though the project implied huge changes both in internal processes and external information to citizens, it had a severe focus on technology. The project team had an early prototype of the e-service and the internal IT system that got a lot of their attention.

Implementation and beyond – There were problems when the project results should be tested, since these tests were performed towards the real traffic register. This implied that real citizens' identities had to be used. Since a citizen cannot get approval of several applications for the same type of provisional driving license the project needed many identities, which were difficult to create. Employees at the 21 CoAs were trained in using the new internal IT system, but each CoA was responsible for transition from the old to the new system and for their way of working. The speed and success of this transition was to a large extent depending on local enthusiasts. System maintenance issues were not solved when the implementation started, which made responsibilities between the different actors unclear. It was not sorted out who should decide about changes in the system, whatever these changes were about (error corrections or new functionality, for example).

5.1.2 The driving licence web portal project – a life cycle perspective

Project assessment – The project was formulated as a response to an experienced problem; that information about driving license matters was found in too many versions at too many websites developed by too many organizations. This can be classified as “a problem that needs to be solved” (Heeks, 2006, p. 162); a problem with internal and external sources. Each CoA as well as the SRoA had their own website where the life cycle of driving licenses was described. Unfortunately, these descriptions were not identical and updated in a coordinated manner. The solution to this problem was to develop a web portal that should consist of all correct information. This should be the only place to find governmental information about driving licenses and the portal should be a joint agency responsibility. There were clearly formulated objectives for the project which were later fulfilled.

Analysis of current reality – The project was an IO effort but the project was hosted by the SRoA which appointed a project manager and formulated project directives. The project manager was an

experienced person who had conducted similar projects before. The project manager had good skills regarding project management, project management models and IT. This person had also near access to and good communication with decision makers within the SRoA, which made it easy to promote this project internally and also to get sufficient resources and in-house legitimation. SRoA has a project tradition of performing much work in-house using structured project management models. The organization has solid competence in project management in different fields (not at least in large construction projects as roads and bridges). The project followed an established project model.

Design of the new system – The project had a rather uncomplicated outcome; a web portal which should be filled with information and links to e-services. When the portal was developed all information did not necessary have to be published at the same time. Instead, the amount of information and the content of the portal are evolving over time. The process of handling public information was heavily influenced by the project, but internal processes at the SRoA and the SCoA were not at all influenced. The project took the consequences of this fact seriously and used focus groups to gather citizens’ opinions in different project phases (early design phase and evaluation).

System construction – The web portal had been clearly described regarding its functionality and layout when the construction started. The requirements were precise, limited, realistic, and controlled by the project manager. The system construction was accomplished without any severe problems and the web portal was delivered ahead of deadline and below budget.

Implementation and beyond – Early in the project, a model for the future systems maintenance of the portal was formulated. This issue was focused and different models for responsibility of involved organizational actors were discussed. This was seen as an important issue to handle in order to succeed in developing the web portal. The portal was released and during a test period the portal will exist together with the former websites for public information in this area. When the portal’s objectives are evaluated and found to be fulfilled all other websites will be closed down. All information handling officers at the agencies will instead deliver their information to the webmaster of the new portal.

5.2 Managing E-government Development – A Challenge and Success Factors Perspective

This part of the analysis is based on challenges to e-government identified by Gil-García and Pardo (2005), introduced above. Other theories presented in section 2.2 are also used as additional references where applicable. Our findings regarding these challenges are summarised in Table 2.

Table 2 Challenges and success factors in the two e-government development projects

Challenges / E-gov. project	Provisional driving license application project	Web portal project
Information and data	Complex process and definitions with a non-fixed point of departure in processes	Information and data quality secured by the agencies separately or together in a group – a straight forward process
IT	Lack of in-house IT skills IO IT challenges Platform and application development in parallel – complex technologies Login and certificate problems Usability test problems External hosting of the applications	Appropriate in-house skills An artefact with low complexity In-house hosting of the application
Organizational and managerial	Size and scope of the project unclear Weak alignment between processes and IT Unclear staffing	Project limited in time and scope Processes (limited scope) and IT aligned Clear staffing
Legal and regulatory	Complex relation between the two agencies Laws and regulations not supporting data interchange	Limited legal and regulatory interdependencies A pre-study of legal conditions was made
Institutional and environmental	High dependency on common agency solutions	Limited influence from institutional and environmental issues Well-anchored solutions

5.2.1 *The provisional driving licence application project – a challenge and success factors perspective*

Information and data – As a part of defining systems requirements, data structures and data definitions had to be dealt with. As reported above the development of the internal IT system made an extensive reconstruction of internal processes necessary. Thus, the task turned out to be much more complex than expected, because there was no agreement of the common process or data definitions (e.g., common terms to use). The data structure issues were also complicated due to the parallel development of both an internal IT system and a public e-service. Other challenges according to Gil-García and Pardo (2005) (e.g., data quality, data accuracy issues and so on) has not been identified.

IT – The lack of relevant skills within the project team is a major challenge in the provisional driving licence application project. The in-house skills, as reported above, are low and the dependence upon external consultants and their IT skills is high. Challenges associated with integration of internal systems and IO systems between the SCoA and the SRoA are also identified. Technical solutions regarding security (login) certificates and the possibilities for young people to obtain that technology were not thoroughly analysed in the project start. The usability testing of the two applications were also surrounded by problems, for example the organization of the test environment, the use of test data (fictive identities applying for a driving licence). The applications are hosted by external consultants.

Organizational and managerial – The size and the boundary of the present project have been unclear and changing during the project timeline. This has added complexity to the organization and management of the project. The alignment between the ongoing development of organizational processes and goals vs. the e-government IT related development part of the project has not been the best either. As reported above (in section 5.1.1) the project staffing of the 21 CoAs have also been more ad-hoc than rationally planned and managed. The SCoA and the SRoA, as a part of the IO dimension of the project, also had some challenges regarding their interpretations of rules regulating the data interchange between their IT systems.

Legal and regulatory – A government commission initiated the e-service development project, as reported above. This mission influences the relation between SCoA and SRoA. The SRoA has to provide the support needed in order to assist SCoA to develop e-services. The fact that a public authority should provide what another authority needs within the agency area of expertise is stated in the laws that regulate the work of agencies in Sweden. In parallel, the SRoA has the overall responsibility for the national road traffic issues sanctioned by the government; this adds challenges to the management of the development. The overall restrictive laws and regulations concerning, e.g., agency data interchange using web technology, do not support these initiatives very well.

Institutional and environmental – The government commission initiating this project is an important institutional condition. The overall initiatives from the Swedish government providing coherent institutional conditions, however, are more on a policy level than at a common concrete government platform or a base for developing coordinated public e-services on a national level. This strategy leaves each government agency with a rather high autonomy in developing e-services. This can be an advantage for individual agencies developing intra-organisational solutions, but contra productive for one-stop government solutions, with several agencies involved. In the studied project these conditions are explicit concerning, e.g., the work with electronic signatures and security solutions.

5.2.2 *The driving licence web portal project – a challenge and success factors perspective*

Information and data – In the present project a national web portal has been developed. There are mainly two types of data represented; common information about the overall driving licence process, and links that provide the citizen with access to e-services located at the agencies. The quality of the information and data are secured by the agencies separately or together in a defined group. This process has been rather straight forward and uncomplicated.

IT – The SRoA had appropriate in-house skills that were used when developing the one-stop government solution. External consultants were only hired for limited assignments. The complexity of the artefact (the national web portal) has been relatively low. The application is hosted by the SRoA.

Organizational and managerial – The present project has been limited in time and scope and run by an experienced project manager using structured project management models. The staffing of the project has also been clear, recruiting people with useful skills from the regional CoAs and the SRoA. The web portal has effects on the organizations' different processes concerning, e.g., the editorial information handling. These issues were dealt with when developing the one-stop solution. The IO dimension of the project was not a complicated issue from a managerial point of view; rather a power and a constellation of comparative advantages that were professionally used during the project.

Legal and regulatory – The project works under the same overall restrictive laws and regulations concerning, e.g., data interchange between agencies as the driving licence application project, but here the conditions and the character of the artefact did not challenge the legal and regulatory preconditions. A pre-study was made in order to handle any possible legal issues that could influence the development process.

Institutional and environmental – The web portal project is rather uncomplicated and not that dependent upon institutional and environmental issues. The project dealt with agency ownership of data, hosting and the organizing of roles in a structured and correct way, and anchored different solutions in the organizations in order to, e.g., handle political issues.

6 CONCLUSIONS AND FURTHER RESEARCH

We have conducted a qualitative analysis of data from two IO e-service projects using an e-government systems development life cycle perspective as well as a challenge and success factors perspective. The two cases are each others' opposite regarding several aspects (c.f. summaries in Table 1 and Table 2). Never the less, we claim that these two cases both are illustrative and valid examples of public e-service development projects, since such projects can possess a wide range of appearances. The life cycle perspective illuminated some differences between the cases that we regard as important. The ground and incentives for initiating an e-service development project is one critical aspect – an aspect also critical for ISD projects in general. The use of project management models also differs in the projects. These are two interesting differences, but probably not the most crucial ones to understand and explain the differences in process and project outcomes. We have identified significant differences in project manager skills and position (formal and informal) in the two organizations that most likely had a larger impact on the processes and the project outcomes. This seems to be especially important in relation to the degree of complexity of the project's expected outcome (the artefact and the related processes). The amount of in-house or outsourced activities during the project is another key aspect that it identified to be related to project experience and complexity of the results. Yet another aspect that our analysis revealed is the importance of focusing on systems maintenance issues early in the project. Regarding this last aspect we find the e-government systems development life cycle by Heeks (2006) insufficient. System maintenance is placed in the last stage (implementation and beyond), but our empirical results clearly indicate that these issues need to be handled earlier in the project and more strategically than in the phase of implementation. Thus, we suggest that the life cycle should be revised in the sense that system maintenance is introduced during the second stage (analysis of current reality). Finding solutions of system maintenance in the IO e-service context often implies an analysis of several organizations' existing maintenance models, which obviously are parts of the current reality. The latter aspect is critical to ISD initiatives in general.

We have also identified the lack of precision and depth in the simplified assumptions of characterising a project as a success or a failure – this is of course a perspective and situational dependent phenomenon. When we analyse the success and failure factors, based on, e.g., Gil-García and Pardo (2005), of the two cases we have identified that much of the findings seems to be similar to those of any kind of ISD project. What might distinguish e-government projects from other ISD projects is the

heavily influence of laws and regulations in the design and construction process. Another difference is the fact that citizens' access to secure electronic signatures is crucial for the usage of the e-service.

One aspect not highlighted in this paper is the consideration of the political dimension in e-government development. The way that different stakeholders in a project relate to another via political processes are, for example, studied by Heeks and Stanforth (2007) using actor network theory in an interesting and rewarding way. An analysis of our cases from a political perspective would probably add another interesting dimension into the understanding of e-government development. Further studies on managing IO e-service development can also show if the patterns identified in this paper are possible to generalise from a statistical point of view. The focus in this paper however is on the analytical generalisation of results (above) in line with qualitative, interpretative, research ideals.

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