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The e-Society Repository: Transforming e-Government Strategy into Action

Patrick Genoud
Observatoire Technologique, CTI, Etat de Genève
82, route des Acacias, CP 149, 1211 Genève 8, Suisse
patrick.genoud@etat.ge.ch

Giorgio Pauletto
Observatoire Technologique, CTI, Etat de Genève
82, route des Acacias, CP 149, 1211 Genève 8, Suisse
giorgio.pauletto@etat.ge.ch

Abstract: The e-Society repository is a tool developed by the Canton of Geneva to implement its e-government strategy. Topics such as inclusion, ethics, security, and systems interoperability are explicitly recognized as important dimensions. This tool can be a great help when conceiving an IT project and is currently used as a framework for the realization of e-government projects.

Keywords: E-government, strategy implementation, information society, e-Society repository, IT projects selection.

1 Introduction

Tackling complex problems such as an e-government programme requires a new tool, first to guide the construction of new IT projects and then to evaluate the results. The e-Society repository provides this framework through a set of fifteen dimensions that are organized hierarchically into three increasingly larger sets. IT projects are examined in this analytic framework, to add a sound underlying structure and provide a decision aid to steer and select them.

The paper is organised as follows. We first present the goals of the e-Society repository and its structure. We then give a description of the different layers and dimensions that compose the repository. Next, we report on the practical impacts this tool has already shown on e-government projects and we finish the paper with some concluding remarks.

2 The e-Society Repository

The main goal of the e-Society repository is to provide a tool to reflect the strategy of the Canton of Geneva on its IT project portfolio. At the heart of this strategy lies the vision of an e-Society, a global concept that encompasses not only the technological aspects but also a societal and organisational perspective. As noted in (Martin and Byrne 2003), the perspectives on e-government have matured and now take into account essential elements such as improving social development and a networked administration using technology as an infrastructure.

Our tool should provide a decision-making aid and create consistency over time in designing an e-government architecture. Figure 1 depicts the decision flow and the links in this framework.

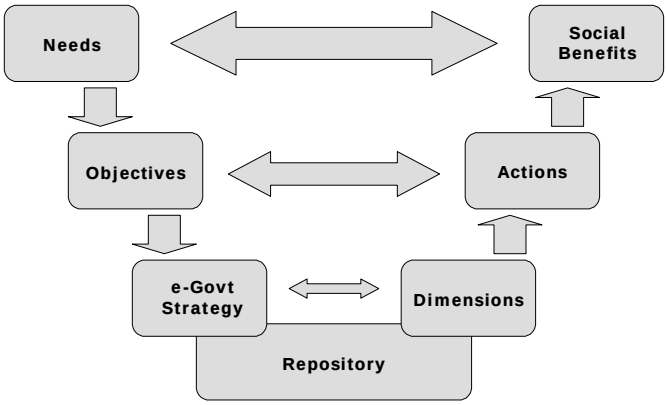

Figure 1: E-Society repository as a strategic tool for implementing e-government.

One should note that the purpose of such an analysis is not to provide definite answers, but to help understand the issues and to recognize the risks. This framework offers to identify, classify and understand the main areas to be kept in mind when tackling such a complex topic as e-government. Our goal is also to use a range of experiments and to try to collect and make the most of the best practices in the field by including feedback from the prototypes and projects underway.

2.1 The Structure

E-government is a complex field which, for the most part, remains to be discovered. The first challenge of the e-Society repository is to adequately reduce this complexity through the choice of a number of concepts hereafter called “dimensions”. It is also important to strike the appropriate balance between an abstract vision, which allows the analysis of as yet unknown objects, and a practical implementation, which guarantees the usability of the repository in the analysis of concrete projects.

The structure of the repository can be represented as a set of three layers (see figure 2). The selected dimensions span a large breadth of subjects. Each layer groups five dimensions for practical purposes. The complete description of the e-Society repository is given in (Observatoire Technologique 2001).

The first set of dimensions deals with issues directly related to e-government IT projects. Topics such as the secure handling of relations with citizens and other services or the analysis of new technologies entering the information system are addressed.

A second set of dimensions touches upon the administration internal exchanges. It includes dimensions such as data and process transversality, interoperability and knowledge management.

The third set deals with the so-called e-Society. At this level, we consider the influence of social factors such as technological inclusion in order to avoid a digital divide in the community, the acceptance of new technologies and ethical issues.

In the following sections, we detail the meaning of the dimensions.

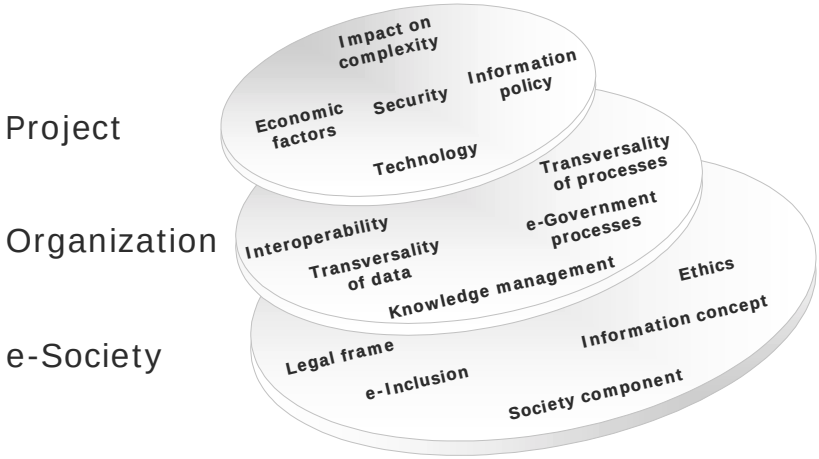

Figure 2: The structure of the e-Society repository.

2.2 The Project Layer

This layer encompasses dimensions that pertain directly to IT projects for building e-government services.

2.2.1 Security

Ensuring security is of paramount importance when building a framework for e-government. The privacy of citizens and businesses is a key factor that greatly influences the trust they will have in exchanging information with the public sector. Information is nowadays a strategic asset and it must therefore be protected and shared in an appropriate way. Confidentiality, integrity and availability are the three main keywords in this context. Confidentiality refers to limiting information access and disclosure to a set of authorized users, and preventing access by or disclosure to unauthorized users. Authentication methods that identify systems users, and access control mechanisms that limit use, underpin the goal of confidentiality. Integrity refers to the trustworthiness of information resources. It includes the concept of “data integrity” — namely, that data has not been changed inappropriately, whether by accident or deliberately malign activity. It also includes “origin” or “source integrity” — that is, that the data actually came from the person or entity one would expect, rather than an impostor. Availability represents the requirement that an asset be accessible to authorized person, entity or device. As a rule, the more important a component is, the higher its availability will be. An interruption of service could mean the inability for customers to access computing resources and staff to access the resources they need to perform critical tasks. Therefore, a loss of the service could quickly translate into a large financial loss in employee time and potential customer discontent due to inaccessibility of resources.

2.2.2 Economic Factors

E-government projects can be measured with regard to their economic efficiency. The goal is not necessarily to obtain the best return on investment, but to find the most economically sensible alternative. Citizens' costs or benefits such as the changes in waiting time or fees should also be considered. In many cases, measures of intangible benefits should also be included. Several countries such as the USA or Australia include social benefits to extend the classical cost/benefit approach, see (Di Maio 2003), (Australian Government 2003) and (US General Services 2003). We are currently also extending this dimension to include a real options value approach to take into account uncertainty and prototyping often embedded in e-government projects.

2.2.3 Impact on Complexity

The basic idea conveyed in this dimension is that even a small project may have a large impact on the complexity of an information system. This effect must therefore be taken into account from the beginning of the project and might affect its selection. One should note that the effect could also be positive since new technical or organisational mechanisms can introduce a great deal of simplification. This goes beyond a pure technical IT aspect because new business rules and organisational functions may be implemented to better integrate and therefore reduce complexity.

2.2.4 Technology

Even tough this dimension is instrumental in any e-government initiative, its importance is not as great as may first appear. We analyse a technology by mapping it to an architecture framework and then evaluating it according to a set of criteria. The architecture is explored along two main axes: first, along the technological layers ranging from hardware to the information system and, second, along the so-called "tiers" following the information path going from the resource to the client. Once the boundaries of a new technology are mapped, its qualities are examined by evaluating factors such as the human aspects (for instance end user satisfaction), the systemic qualities (quality of service), organisational issues (work organisation and education of IT personnel and users) and applications security. This framework is depicted hereafter in figure 3.

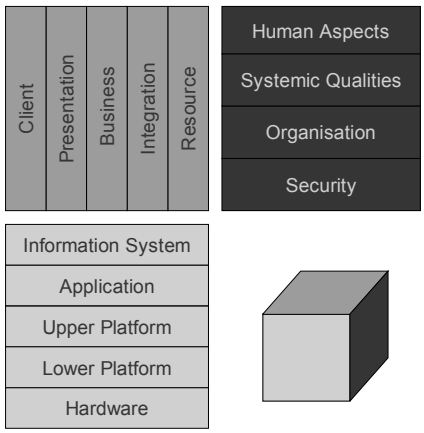

Figure 3: Analysis of the technology dimension along three axes.

2.2.5 Information Policy

In order to maximise the chances of success of a project, it is important to include information channels through which project leaders, end users and IT specialists can communicate. The three main aspects of this dimension are outgoing information, incoming information and the integration of new information in a project. This is an important factor as e-government is still an unfamiliar area and synergies are often found between diverse projects. Formalising such a dimension at a strategic level allows project leaders to better include and implement this often forgotten matter.

2.3 The Organisation Layer

In this section we develop dimensions that go beyond the notion of the IT project or the technological aspect. We try to convey the idea that implementing an e-government strategy also implies reorganising processes and insuring a smooth flow of data and information.

2.3.1 Knowledge Management

Many organisations are beginning to recognize that managing internal knowledge and sharing it creates value, increases productivity and fosters innovation, see e.g. (Malhotra 2002). This dimension should not be driven solely by technology or as an isolated project, and therefore is included in the organisational layer. Enabling this change in a large organisation requires a sustained effort that goes from mapping and analysing knowledge sources and targets, to identifying communities of practice and fostering collaborative knowledge networks.

2.3.2 Transversality of Processes

Developing an e-government initiative often requires to re-engineer existing processes or to create completely new ones. Building more efficient services means often going beyond the internal borders of an administration. The goal is not only the functional improvement of relations with the administration and between administration and its clients, but also the reorganisation of business processes.

2.3.3 Transversality of Data

The concept of transversality of data must be put in place in order to insure that data is consistently shared and used, and that its quality is preserved. Meta data (information on how data is structured) and ontologies (information on how data is categorized) are being developed to meet these goals. It is important to distinguish pure data from its structure and also from its presentation. This will allow better semantic definition of data resources, a more flexible information access and also easier records management. Standards such as the Resource Description Format (W3C RDF 2004), eXtensible Markup Language (W3C XML 2004) and Web Ontology Language (W3C OWL 2004) are recommendations of standard metadata tagging languages, and the Dublin Core Metadata Initiative (Hillman 2003) defines a standard set of elements for cross-domain information resource description.

2.3.4 Interoperability

The Interchange of Data between Administrations framework (European Commission 2004) defines interoperability as the ability of information and communication technology systems and that of the business processes they support to exchange data and to enable sharing of information and knowledge. This concept is crucial for the success of e-government, since it is essential to allow communication and interaction

between the administration, citizens and enterprises. The e-Society repository mainly focuses on semantic and technical interoperability. In this context, and as also proposed by the IDA framework, the canton of Geneva recommends relying on open standards to insure interoperability.

2.3.5 E-Government Processes

E-government helps modernize state and public administration by reorganizing the large workload and integrating the mandatory regulations, which are often more complex than in the private sector. Designing e-government processes leads to creating new workflows. These should smoothly blend with resources and applications in order to accomplish work more efficiently. These workflows and new e-government processes will include dynamic elements, such as events, and will constantly modify the ensuing path according to the information provided by the user as the request is completed.

2.4 The e-Society Layer

This layer focuses on issues that go beyond technological or purely organisational aspects. The dimensions touch on the evolution of society and take into account the subtle and complex interactions of e-government and society.

2.4.1 E-Inclusion

One of the main challenges faced by the e-government is to achieve an “Information Society for All” as proposed by the European Commission in the eEurope 2005 action plan (European Commission 2002). This is also a central theme in the e-government vision of the Canton of Geneva: the citizen remains our first and foremost concern. The e-Society repository approaches these issues under four topics:

1. *Demand-oriented approach.* Each e-government project must be a new vector for a relation between government and citizen. It should respond to a well-identified need of the public and dealt with very early on in the projects as pointed out by Bruno Lasserre in a report to the French Prime minister, see (Lasserre et al. 2000).
2. *Accessibility.* The accessibility of governmental websites for the disabled or the elderly is a major issue for e-government projects. The adoption of the W3C Web Accessibility Initiative guidelines (W3C WAI 2004) for easy access to information on the web regardless of disability is a significant step in the right direction.
3. *Usability.* Usability is a combination of factors that affect the user's experience with an application or a Website. It includes ease of learning, efficiency of use, memorability or subjective satisfaction.
4. *Training.* E-government development, especially at the beginning, represents a major change for users. Each project should hence consider training as an essential part of the integration process.

2.4.2 Ethics

As emphasized by the Swiss federal government (Swiss Federal Data Protection Commissioner 2001), new technologies’ potential to collect, trace and link information represents a real threat for personal data protection. Indeed, a recent survey published by the University of Bern and Unisys (Unisys 2004) shows that, despite a strong demand for e-government services in Switzerland, many citizens are either unaware of

the availability of such services or put off by privacy and security concerns. Thus, confidence appears to be a key success factor for the integration of e-government. Furthermore, eluding ethical questions at the expense of technological aspects represents a significant risk for future e-government projects.

2.4.3 Information Concept

Information created and maintained by a government administration is a strategic resource. It is the raw material the administration receives, manages and produces. Information is difficult to produce but easy to reproduce. In digital form, it can be copied without loss and at negligible cost. Technology allows better access to information and thus enhances its value.

In this context, this dimension aims at ensuring an optimal management of this resource in regard to the strategic objectives of the organisation. In the long run, we hope to develop a new framework to identify the main characteristics that will help determine the value of information, therefore allowing efficient management of this resource.

2.4.4 Legal Framework

The laws regarding e-government projects in Geneva must satisfy both the cantonal and federal legislations. The protection of privacy is, for instance, ruled by both laws. Furthermore, the transparency of the administration is also regulated by a cantonal law allowing the people and the press to access information which is not private or subject to judicial procedures. New laws or modifications of existing ones, have significant impacts on how e-government is implemented and how the information system can be organized. Therefore, it is important for project leaders to stay informed on the legal framework and if need be to resort to legal advice.

2.4.5 Society Component

This dimension aims at estimating the value added by an e-government project to society, to citizens or the private sector. The term “added value” is not to be understood here as financial profit but as an additional or higher quality service that will directly benefit society. This dimension is qualitative but its impact should not be underestimated.

3 Putting the Repository into Action

This framework is being used in conceiving e-government projects in the canton of Geneva. It helps project leaders to have an organized and applicable translation of the global e-government strategy. It provides a reading chart for IT projects in order to include often forgotten aspects such as inclusion or ethics.

Concrete results of this strategy are beginning to appear. An accessibility initiative is underway for all the governement websites to ensure that they are usable by visually impaired persons, for instance. A blind person is in charge of this mission and works closely with the web publication team. An ethics committee reviews and advises on IT projects dealing with personal data and ensures that current legal aspects are also taken into account. A third illustration is a detailed analysis on the integration of Open Source technologies in a complex IT architecture and, now, the prototyping of a complete Open Source desktop.

4 Concluding Remarks

The goal of the e-Society repository is to convey the global strategic vision for e-government in the Canton of Geneva. It is a reading chart, an aid in the preparation of an IT project. Topics such as inclusion, ethics, security, and systems interoperability are appropriately taken into account.

This tool can be a great help when conceiving an IT project and is currently used as a framework for the realization of e-government projects within the Canton of Geneva. The real needs of future users are considered, as it does not focus on technological aspects alone.

The e-Society repository remains an adaptive tool: every time it is used for a project, we are provided with a feedback on how to improve its contents and manageability.

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