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## Editorial



## Articles



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# Editorial: New Business Models

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At the start of this decade, Europe's Digital Agenda for Europe signalled the continent's openness to the potential innovation of new business models (**European Commission**, 2010a). Aligned with this, in an era in which ICT was seen as simultaneously "help[ing] the public sector develop innovative ways of delivering its services to citizens while unleashing efficiencies and driving down costs" (**European Commission,** 2010b), the Union's 2015 eGovernment action plan concentrated on empowering both citizens and businesses.

In recent years, central and local governments all over the world have begun to finance and operate eGovernment initiatives using a range of new forms of collaboration. The underlying reasons for these changes have included tightened budgets, the need for increased accountability, and demands for more efficient and faster public services. The potential benefits offered by these kinds of models include more adaptive government, growth and employment, faster learning and innovation and improved quality of the services delivered. Indeed, innovative eGovernment business models that are flexible and adaptable can also help to create additional revenue and take-up.

The new eGovernment business models that have been explored range from new ways of delivering public services, development of new services, and the delivery of eGovernment projects. They include public-private partnerships, franchising, and gains-sharing. The financial instruments used include the raising of bonds and loans. At a finer level of detail, the revenue-raising mechanisms include advertising for a particular service, and payments by citizens for premium services such as mobile Services. The kinds of partners involved in these new models have been private companies – large corporations as well as small- and medium-sized companies – non-governmental organisations, professional associations, community organisations, and even the public at large – whose members have become engaged in crowd-sourcing activities.

Supporting approaches that are successful at ensuring "more for less" involves the introduction of new business models, entrants and technologies, and either reducing or phasing out some existing practices[1]. In a context of disruptive innovation[2], insights are needed into when and how to disrupt.

1 We have been inspired in our thinking on what follows by the work during 2011-2012 of the Deloitte GovLab (a think tank in the Deloitte Federal Practice in the United States), although we have extended the ideas in directions that can be integrated more closely with the concept of new eGovernment and ePractice business models

2 *I.e., "a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves 'up market,' eventually displacing established competitors".* http://www.claytonchristensen.com/disruptive_innovation.html (Accessed 10 October, 2012).

Although there have been relatively few examples to date of disruptive innovation in government services, this is probably not inevitable. There will certainly be ways to encourage government to think and act differently. Particular domains which can offer opportunities for the application of these novel ideas include secondary and higher education, open source analytics and intelligence, development aid, emergency response and health care. While these are public sector domains, and can certainly fall within the domain of ePractice, they have not to date been included under the umbrella of eGovernment. Connecting up and merging associated eGovernment or ePractice domains could well, therefore, be on the horizon.

Many policy-makers especially need to consider how to handle their various tasks and responsibilities. For many, the future focus will continue to be on cost-effectiveness, but will also include starting to emphasise how to influence personal and individual actions, and to work with new types of incentives and motivations. There are several areas of change which will involve new models of action that concentrate much more on individuals and their lifestyle choices. The types of changes to be made include areas of frequent personal choice, among a large or diverse group of people, that need to be refined over time and will have effects over a considerable length of time. Obvious examples include how people consume goods and services, use energy, deal with waste (including e-waste), and live their lives in terms of lifestyle. As others have noted, behavioural approaches could be among the most powerful new tools available to the public sector.

Several areas of the current public sector are ready for the introduction and development of new eGovernment business models. Europeans are currently exploring the domains of climate change and energy, sustainability and social innovation[3]. Domains of innovation, such as education, intelligence and health care, can enable the identification of further new eGovernment/ePractice business models, promising areas of application of behavioural approaches, and enablers and best practices that could be taken into consideration and ultimately applied elsewhere in a wider range of public or private sector business and activity. Today, there are many new eGovernment business models on the horizon; the whole field – in many areas of ePractice – is ripe for further exploration.

This special issue of the ePractice journal focuses on possible new business models for eGovernment. They include especially those that are based on investigation and show evidence to support:

- eGovernment modifications to real-world business models in the European Union;
- examples of alternative eGovernment business models;
- the enablers as well as cost-benefit analysis of new business models in eGovernment.

## The papers and their content

How business models can be used by organisations to satisfy both public and private sector interests despite differing perspectives and goals is the subject explored by **Janssen** and **Klievink** of Delft University, Netherlands. They organise and describe the main challenges faced by public and private organisations according to a conceptual framework of a business model. Their observations are drawn from work in the course of a public-private collaboration in the Netherlands to develop a web portal. They conclude that a successful, working business model must establish common ground among all the actors. Such a business model needs not only clear agreement, roles and responsibilities but also continual dialogue, and recognition that some changes may be necessary in the course of implementation.

3 http://ec.europa.eu/information_society/activities/collectiveawareness/index_en.htm (Accessed 10 October 2012).

**Bharosa**, **de Winne**, **van Wijk and Janssen** describe the effort made in the Netherlands to streamline the process of statutory reporting by private sector firms. At the centre of their paper is the concept of a "lean process" that originated in manufacturing but which has been adopted by other areas of the private sector. In the context of the exchange of business-to government information, the aim is to reduce the costs of collecting and analysing the data to all stakeholders, and to improve compliance. The beginning of this undertaking is dated to 2004, which underlines the importance of taking a long-term view of such far-reaching changes. The challenges that are implicit in the creation of an open-ended set of definitions that are acceptable to diverse stakeholders, and the advantages of using the open-source eXtensible Business Reporting Language (XBRL) as the common reporting format are considered. Finally, several critical success factors that have emerged thus far in the course of implementing the transformations to these processes are explored.

As part of the prerequisites to establishing a public-private partnership to deliver eGovernment services, **Moutet** examines the factors to consider when assessing how best to organise the public sector entities that want to participate in such an enterprise. He discusses in detail two models that are being used in France, the *Groupement d'Intérêt Public* and the *Syndicat Mixte*. He argues strongly for the continuous measurement of the cost benefits of two aspects of these models in particular: the sharing of an eGovernment platform, and the reduction of costs that result from the digitisation of administrative processes. He also sees as important the nature of the contractual relationships between the eGovernment platform and information and communication technology (ICT) service suppliers: contracts should be based on performance, risk-sharing, and time and materials.

A second insight from the same geographic area is offered by **Fléri** and **Ruestchmann**. They provide a detailed consideration of one of the models reported by Moutet. They explore the public-private partnership that exists between the *Groupement d'Intérêt Public* – comprising government, health and education entities in Burgundy – and private sector firms to use ICT to deliver eGovernment services. They based their insights on the experience gained during the first three years of the partnership's ten-year contract. As a result, they highlight important aspects of the partnership agreement, such as risk management, quality assessment and performance specification. Among other elements, their discussion points to the need for these agreements to allow some flexibility in certain areas so that refinements can be undertaken in the light of experience gained during the implementation process

Open and interoperable services are becoming more and more important in the public sector. Their potential value is further increased through the possibilities offered by concepts of service oriented architecture, reusable components and cloud concepts. Beginning with a taxonomy of services, **Wauters** and **van der Peijl** describe how, together with a decomposition methodology, the taxonomy is used to identify and define fundamental public services structured according to domain-specific life events. If they are implemented in an interoperable way and made available through an open cloud of public services, these basic services can be reused and recombined to provide new services that are either more complex or more customised. Three case studies of open and interoperable approaches to public services are examined. They cover three different European Member States. They enable identification of the prerequisites for, and challenges to, the creation of a successful cloud of public services. Finally, the authors provide four further case studies to offer observations on the possible migration strategies towards a cloud of public services, and to quantify their main benefits.

An alternative software procurement framework came into effect in Sweden in 2011. **Offerman** describes its background before proceeding to provide a transparent mechanism for public sector bodies to procure open source software applications. The author gives details of the types of applications and services that are eligible, the selection of approved suppliers, the competition

process, and the terms and conditions that apply to software and services commissioned in this framework. A broad overview of the current European Union position with respect to open source software and open standards is described, before Offerman provides specific perspectives from Spain and the United Kingdom on their approaches to public sector procurement of open source software.

The DIEGO project anticipates being able to offer European public authorities an accessible front-end to their eGovernment service portfolios. The front-end is intended to be complete and scalable, and to encourage continued use of eGovernment by customers who may be otherwise disadvantaged. DIEGO shows how an application designed for one location may be explored by, and transferred to, another. It nevertheless draws on more generic business modelling ideas. A set of questions (which could eventually form the basis for a questionnaire) have been collated by **Fragidis**, **Gerosavva**, **Koumpis** and **Monrós Barahowa** that cover a number of key areas of business models: the business characteristics, the business value, costs, intentions, and the evaluation process alongside quantitative estimates and metrics. The four authors point to the specificities and idiosyncrasies of organisational settings.

Indeed, different approaches clearly operate in diverse circumstances. Finally, in the journal issue, a single case study is drawn from the situation of the Czech Republic in its approach to electronic record management. **Lechner** and **Monrós Barahowa** focus on a single municipality and its communication methods. It indicates modifications in the structure of modes of communication over a six-year period between 2004-2010. Significant milestones in the development of eGovernment in the Czech Republic are used as background. For incoming communications, the municipality treats a business model as an important factor, but not the most important. For outgoing communications only the legal framework is a strong factor. A business model and possible savings do not play a major role. As the author reflects, "[u]nderstanding current development in the changes in modes of communication can significantly help to find ways to meet the objectives of the [a] Digital Agenda for Europe."

## Commonalities and differences among the papers

These seven papers illustrate the need to compare empirical evidence, findings and conclusions from both similar and different experiences, including the actual methods used for the research or studies undertaken. Examining good practices is important both at a general and at more detailed levels. Knowing how lead initiatives work, and the extent to which they are applicable in each setting, is crucial whether the partners involved are public or private. Much of the material outlined in this issue will be of interest especially for public sector players.

This journal issue covers a number of different eGovernment services, and how these have been achieved as a result of public sector services, public-private partnerships and collaborations, and through diverse types of private sector firms. The services themselves include statutory reporting and business-to-government models.

The applications covered are various, and they show just how wide-ranging are the objects of these new forms of collaboration. On the technology side, they encompass open XBRL, open source software and web portal(s). Within the public sector they include the procurement of open source software, and software procurement framework(s) including statutory reporting. Concretely, among the business functions investigated are: commissioning and procurement, communications, contractual relationships, and interoperability.

The countries outlined in these individual papers include nine of the current European Member States, countries that are from all geographic areas of the Union: the Czech Republic, France,

Netherlands, Spain, Sweden, and the United Kingdom. The settings described, and the levels at which the new business models operate are national, regional and even very local. At least two other papers (**Moutet**, and **Fléri** and **Ruestchmann**) illustrate different aspects of the same initiatives in the same administrative/geographic area.

What methods of case-by-case comparison are useful? They range from the more academic, to consultancy and policy-based, to experiential. Janssen and, Klievink for example, focus on a conceptual model. In complete contrast, **Lechner** and **Monrós Barahowa** deal very much with the experiences uncovered in a very localised setting. Critical success factors and cost benefit analysis are covered by other authors. **Fragidis**, **Gerosavva**, **Koumpis** and **Monrós Barahowa** test out the kinds of questions that can be posed when examining how a specific software application can be of use to public authorities.

Current management research increasingly tends to place its focus on lean, light and rapid decision-making. Yet we also know that change management, implementation and deployment can take time. Among the commonalities of several of these papers (especially **Janssen** and **Klievink**, Bharosa, **de Winne**, **van Wijk** and **Janssen**, and **Fléri** and **Ruestchmann**) are the implications, when introducing new business models, for implementation processes not only to take time but also to change over time. **Fragidis**, **Gerosavva**, **Koumpis** and **Monrós Barahowa** highlight the need for longevity of any application designed and introduced. Stakeholder involvement and engagement is also key (for example, **Janssen** and **Klievink**, and **Lechner** and **Monrós Barahowa**). How this will play out as the precise balance changes between the public and private sector, and between the state and active responsibility of individuals, is very definitely an issue to be watched with care and to be reflected on maturely.

Many of the papers in this issue of ePractice have referred to the need to monitor and measure impact, results and outcomes of new business models. Some have explored new technological approaches. Others have implied that it is not just policy-makers and private sector players who need to change their behaviours, but also individuals.

Among the wider issues for new business models are several that have not been raised by this set of authors: the necessary potential legal and regulatory frameworks, public accountability, reassurance (trust) mechanisms, and individual behaviour. Hence, many more challenges with regard to setting up and operating new eGovernment business models remain on the European and international agenda. It is highly likely, therefore, that the upcoming policy agenda of 2013-2020 will create an opportunity for focusing on these matters.

## Opening up a number of wider issues

"To get more for less requires doing things differently," state Eggers et al (2012, p.41). Supporting such an approach involves the introduction of new business models, entrants and technologies, and either reducing or phasing out some existing practices. This Deloitte policy paper concludes that disruptive innovation "offers a proven path to ... transform public services." (op cit, p.41). The report draws on **Clayton Christensen's** description of disruptive innovation as "a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves 'up market,' eventually displacing established competitors" (p.3)[4]. The report also offers insights into when and how to disrupt.

4 http://www.claytonchristensen.com/disruptive_innovation.html (Accessed 7 October, 2012)

Although there have been relatively few examples to date of disruptive innovation in government services, the paper's authors determine that this is not inevitable and that there are ways to encourage government to think and act differently. To increase disruptive innovation in the public sector, **Eggers** and colleagues suggest focusing on the kinds of public-private partnerships explored in this journal issue (p.39), introducing some necessary legal and regulatory modifications, removing the kinds of contracts and subsidies that have permitted incumbents in particular industries to dominate certain markets, and "sunset[ing]" certain existing programmes once a disruptive innovation is positioned for success.

Tips include acting first in unserved markets, and outside of large government organisations before expanding disruption further and, eventually, bringing it in-house (pp.37-38). Particular domains which can offer opportunities for the application of these novel ideas include secondary and higher education (pp.22-26), open source analytics and intelligence (pp.27-29), and development aid, emergency response and health care (pp.30-31). While these are public sector domains, they have not to date been included under the umbrella of eGovernment. Connecting up and merging associated eGovernment domains could well, therefore, be on the horizon.

In this decade, a number of key issues affect government services: an era of economic austerity, increasingly complex societal challenges, and signs of diminishing confidence in forms of public regulation and enforcement. Policy-makers especially need to consider how to handle their various tasks and responsibilities. For many, the future focus will continue to be on cost-effectiveness, but will start to emphasise how to influence personal and individual actions, and to work with new types of incentives and motivations. The traditional "lenses" of government action have included the enforcement of laws and regulations, subsidies and taxation (**Shah et al, p.4**). However, more attention is being paid to alternative and complementary areas such as education, feedback loops, incentives, and structured choices (op cit, p.4).

These are areas of change which will evolve into new models of action that concentrate much more on individuals and their lifestyle choices. The types of changes to be made include mainly areas of frequent personal choice, among a large or diverse group of people, that need to be refined over time and will have an effect over a considerable length of time. Obvious examples include how people consume goods and services, use energy, deal with waste (including e-waste), and live their lives in terms of lifestyle. "Behavioral approaches could be among the most powerful new tools available" to the public sector (op cit, p. 14). Indeed, insights into eGovernment directions in Europe for 2015-2020 have concluded:

> *"[I]t is essential to let the citizens lead. Not only does this increase the odds of getting it right - in the long run it helps the citizenry to mature and to take greater and more rational responsibility for and control of their own lives (in the public, private and civil spheres), this ultimately deepens the partnership between government and governed and enables the achievement of truly lasting benefits." (***Schindler et al, 2010***).*

As this overview shows, several areas of the public sector such as education, intelligence and health care, are ready for the introduction and development of new eGovernment business models. Europeans are also currently exploring the domains of climate change and energy (**Whitehouse et al**, 2011), sustainability and social innovation[5]. These domains of innovation enable the identification of further new eGovernment business models, promising areas of application of behavioural approaches, and enablers and best practices that could be taken into consideration and ultimately applied elsewhere in a wider range of public or private sector business and activity. Today, there are many new eGovernment business models on the horizon – in many areas of ePractice – is ripe for further exploration.

5 http://ec.europa.eu/information_society/activities/collectiveawareness/index_en.htm (Accessed 7 October 2012).

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# Challenges in Developing Public-private Business Models

New forms of collaboration between public and private sectors are emerging in which private parties take over roles traditionally performed by government organisations. As private and public organisations have different values and different ways of realising them, the question addressed in this paper is how business models can be utilised by organisations to meet both public and private interests. These business models have to address and balance challenges in public-private collaborations in order to meet public values like equality and accountability, while at the same time ensure profitability for the private parties involved. Essential ingredients of the business models include the creation of a common interest, an equal division of the costs and benefits and the ability to facilitate the various technologies and systems of the actors.

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Keywords

Public-private networks, eGovernment, open government, governance, business models

> “The inherent challenge is realising both public values and profitability for businesses in one business model.”

# 1. Introduction

In light of budget reductions, many governments increasingly rely on activities performed by private organisations (Klievink, 2011; Salamon, 2002). Public and private organisations collaborate in a chain or network in order to realise or facilitate actions that transcend the boundaries of individual departments and organisations, as well as the boundaries between the public and the private sector (Milward & Provan, 2003). Private parties can act as intermediaries between government organisations and citizens or businesses and perform functions that have been traditionally performed by public organisations (Janssen & Klievink, 2009). They also take over functions and tasks that are traditionally performed by governments, thus affecting the way that organisations operate in relation to each other (Goldsmith & Eggers, 2004; Provan & Milward, 2001).

Public-private collaboration implies a multitude of interdependent departments and organisations (De Bruijn & Ten Heuvelhof, 2000; Powell, 1990). A fundamental tension underlying the business models of these interdependent organisations is the difference in objectives between the private and public sector organisations. Simply stated, private parties are aimed at being profitable whereas public parties serve the purpose of accomplishing a wide range of public values. Given this multitude of interdependence and different objectives, the question begs: Which business models can be used by the organisations in a public-private network to meet both their own interests and to contribute to the interests of the network, which is needed to reap both individual and shared benefits? Specifically, the question is which elements should be considered to make a public-private business model work for all parties.

The concept of a business model was first introduced by Timmers (1998) and originates from the dotcom era (Keen & Qureshi, 2006). The business model concept is about shaping the relationships between a strategy and information systems (Hedman & Kalling, 2003). As such, it influences the way in which organisations realise certain values (e.g. economic and public values). Recently, the unified business model has been introduced which describes variables that shape business models (Al-Debei & Avison, 2010). In the public sector, the term business model was only recently introduced (Janssen & Kuk, 2007; Janssen, Kuk, & Wagenaar, 2008) and has started being extended to organisational networks (Janssen & Kuk, 2007) in the area of public engagement (Panagiotopoulos, Al-Debei, Fitzgerald, & Elliman, 2012); nevertheless, the domain of public-private has not yet been explored.

In this paper, the background of business models for public-private collaboration is described and accompanying challenges are analysed based on practical experience in the Netherlands. Lessons learnt are then discussed followed by conclusions.

# 2. Business Models for Public-private Collaboration

Among the various existing business models, Bouwman, De Vos and Haaker (2008) developed the Service, Technology, Organisations and Finance (STOF). More recently, Al-Debei and Avison (2010) have developed a unified business model conceptual framework based on a comprehensive review of the relevant literature. They distinguish four primary business model dimensions with their respective elements that form an ontological structure describing a business model:

- *value proposition*, which demonstrates the business logic of value creation through the offer of products/services that satisfy the needs of their target segments;
- *value architecture*, an architectural blueprint for an organisation that allows the provisioning of products/services in addition to information flows;

- *value network*, in which an organisation enables transactions through coordination and collaboration among multiple organisations;
- *value finance*, a way in which organisations manage issues related to costing and pricing to optimise their revenue creation.

Each of these dimensions is explored in turn, first on a theoretical and second on a practical basis.

In terms of these business model dimensions, public-private collaborations can vary in the dimension they stress. Public-private collaborations, for example in the form of Public-Private Partnerships, were often set up to reduce costs for government (Rosenau, 1999). However, in the past decade, more emphasis has been placed on the idea of collaborating with private partners in order to improve the services of governments, for example though private sector involvement in creating a continuum of care (Milward & Provan, 2003) or by integrating service components of public and private organisations into integrated services (Klievink & Janssen, 2008). Figure 1 shows a situation in which a service consumer (a citizen of business) goes through a process that consists of multiple services from both government organisations and businesses. Traditionally, the service consumer had to identify and request the individual services on their own. The individual service providers each had their own business models. When organisations provide cross-organisational services that are offered in an integrated manner, they have to collaborate and joint public-private business models have to be designed.

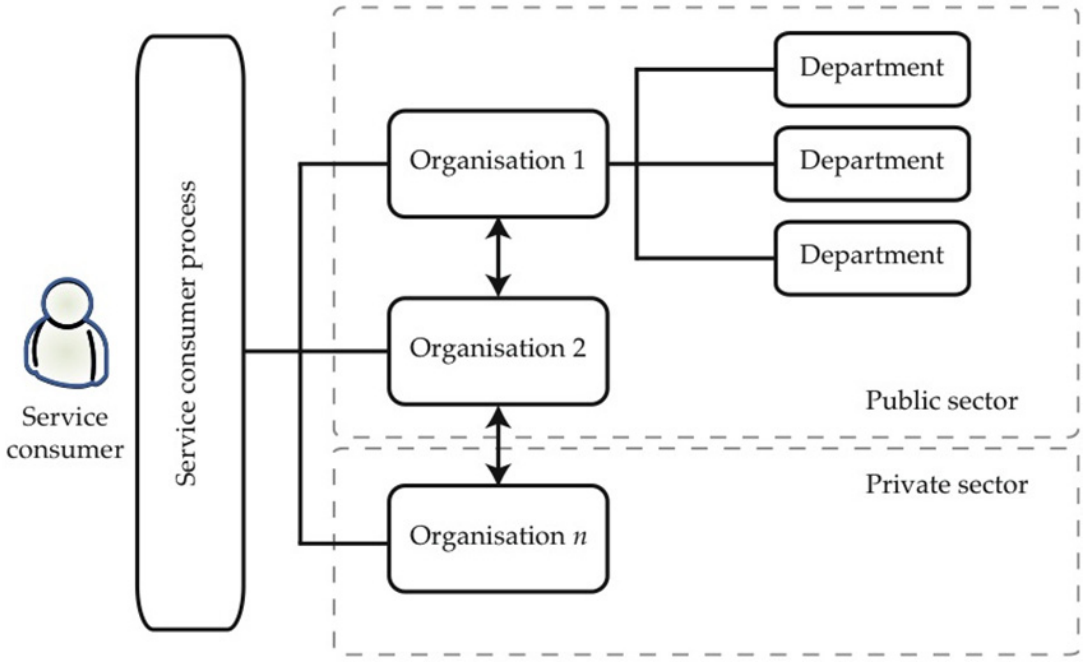


Figure 1: Cross-sector service delivery (Klievink, 2011)

Collaboration with - or outsourcing to - private parties and other levels of government is seen as a way for governments to improve their operations (Milward & Provan, 2003). There are two basic value models for public-private networks as a whole, which are best described by the terms that Milward and Provan (2003) used when they identified two implicit theories of such collaborations: one focused on (competitive) contracting and one on integrating services, e.g. by providing a continuum of care. Recent literature on public sector reform primarily stresses a role for the private sector in collaboration with the public sector in order to realise public values and goals (e.g. Stoker, 2006).

This is mostly related to the continuum of care approach, which is also the focus of the platform described in the next section.

A key element of contemporary thinking is that governments should focus on realising and warranting certain values. The public sector is considered to be something fundamentally different than enterprises. However, instead of a harsh contrast of public versus private, contemporary literature stresses that public and private organisations have to collaborate in order to deal with the challenges that governments face today. In a shift from earlier work that emphasised the private sector as a role-model for the public sector (Osborne & Gaebler, 1992), current developments no longer focus on the idea of public versus private, but rather on public and private (Salamon, 2002; Stoker, 2006).

**Value proposition**

When focusing on public service delivery, the key value proposition in public-private business models is how the service offerings of the private sector can complement the services of public sector organisations (Figure 1). Klievink (2011) identifies three forms of public-private service delivery:

1. Joined-up service delivery: services from both the public and the private sector are bundled in one place (virtual or physical) and offered in a consistent way to service consumers.
2. Integrated service delivery: service consumers deal with one organisation only; the partners (public and private) play a role in the background (e.g. in the back offices), for example by processing service requests or by providing relevant information to the service providing organisation.
3. Intermediation: private organisations play a role in the service delivery channel structure; intermediaries can play various roles and thereby add value, for example by aggregating information, facilitating a process or service or by acting as a trusted third party (Janssen & Klievink, 2009).

**Value architecture and value network**

Given the important role that information and communication technologies play in government and private organisations alike, the value architecture of public-private collaborations is closely related to the value network. As many services are provided by fragmented organisations that rely on fragmented and isolated information systems, realising the value proposition of public-private business models means that the actors which play a role in a service have to collaborate. In such networks of multiple parties, joint action relies on collaboration between public and private parties (despite their differences in interests and goals) and is not coordinated solely by price mechanisms (as is typical for the private sector) nor solely by consciously designed administrative structures (as is typical for the public sector). Public-private networks rely more on 'informal practices of coordination', such as common interests, personal contact, loyalty and trust (Adler, 2001; Thompson, 2003). Apart from the collaboration between organisations, the fragmented information systems have to be made interoperable if services are to be supported electronically. The services offered to service consumers are interwoven with many tasks and processes in both the front- and back-offices of organisations in the network. The value architecture of a public-private business model is thus essentially a cross-organisation architecture, in which standards, interoperability and information sharing play a key role (Gil-Garcia, Chengalur-Smith, & Duchessi, 2007).

**Value finance**

Where financial elements work well for the private sector business models, this should be substituted by public values for the public sector (Janssen et al., 2008). Therefore, in terms of value finance, a difference between the public and private sector can be identified. As value is not created by a single actor in the network but by coordinating the organisations in the public-private network, public value creation is not exclusively the domain of the government (Jørgensen & Bozeman, 2007). While businesses focus on making money and profitability is essential for their long-term survival, public values like equal access might clash with such private sector values as competition and efficiency (Rosenau, 1999). Only at relatively high costs can access be given to all, which reduces the profitability for businesses. Consequently, private sector business models that focus on economic value might not be interested in providing equal access for all service consumers, a public value that is part of the business models of the public sector. Consequently, the value finance dimension of public-private business models depends on striking the balance between enabling businesses to find a sustainable business model and governments to realise public values. To achieve this, governments may have to facilitate the collaboration, for example by ensuring a level playing field for the actors in the network, by setting standards or by subsidising those parts that do not have a private sector business model.

## 3. Public-private Business Models in Practice: An Electronic Service Portal

The theoretical basis of public-private business models indicates that a number of challenges can be expected given the differences between public and private organisations. To explore these challenges, a project focused on developing an electronic portal for public-private service delivery was studied. Together with the project members (coming from government, business and academia), the challenges were identified as well as generic lessons on how they impact public-private business models. The project[1] aimed to establish requirements and solutions for public-private service networks that provide integrated, demand-driven electronic services. Private parties complete the public sector service offerings so as to facilitate the service demand and processes of the service consumer. One implementation of the portal was on the electronic provisioning of social support in the Netherlands.

In 2007, the Dutch government introduced the Social Support Act (Wet Maatschappelijke Ondersteuning - WMO), an act which replaced a number of other acts on social support and aimed at assisting people with (temporary) special needs to participate in society. The focus of the act is on mitigating hurdles in and around a person's house, on getting around locally and on meeting other people. Municipalities are responsible for providing support and tools for the people eligible for it, for example in the form of the provision of wheel chairs or house help (Rijksoverheid, 2010).

As part of this act, private parties provide the support, whereas public parties provide funding. Both public and private parties wish to have a low administrative burden in the process of providing support. To achieve this, the project was set up to explore and to develop an electronic portal for the provision of electronic services operated by a network comprising both public and private actors. Figure 2 illustrates the steps that are supported by the portal and the organisations involved.

1 http://www.b-dossier.nl.

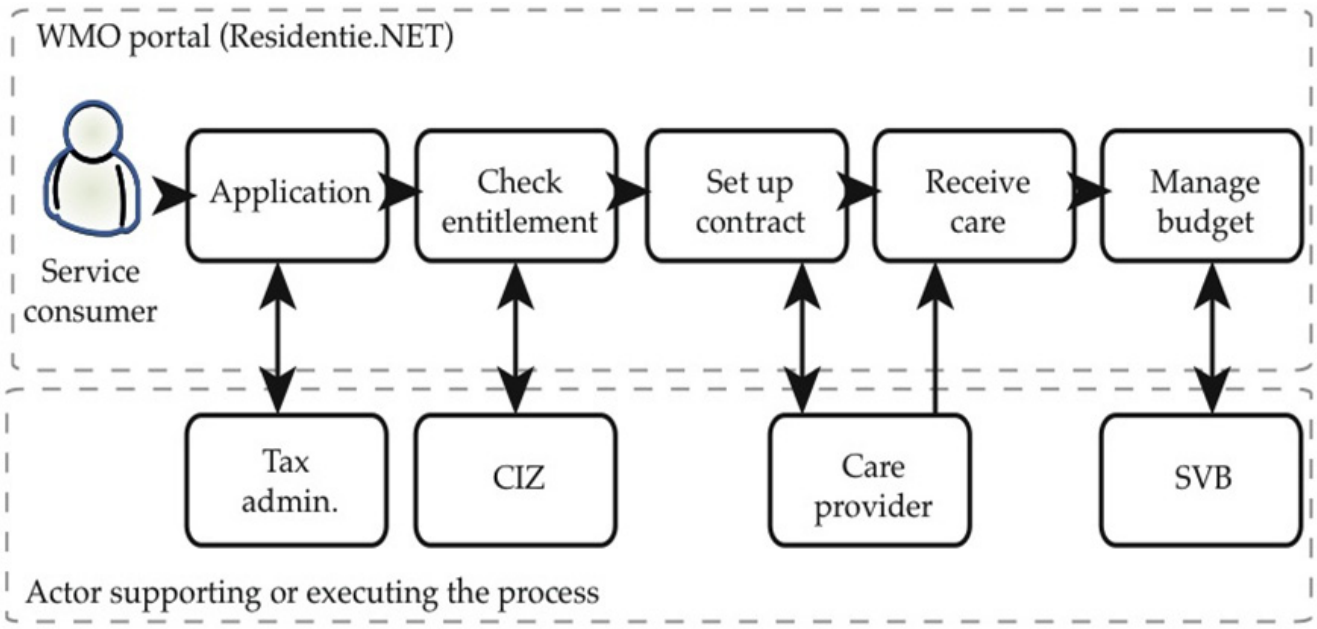


Figure 2: Actors and steps in a social support scenario (Klievink, 2011)

Figure 2 shows that multiple organisations are involved in the process that the service consumer goes through and that is covered in the design of the electronic portal. As the service depends on the income of the service consumer, the tax administration is involved in the application process. If the income is within limits, a centre for assessing care entitlement (CIZ in Dutch) then assesses whether the service consumer is entitled to care, and if so, what kind. By using this as a basis, the service consumer can select a care provider based on the offerings that those providers are making. Once selected, a contract can be set up and care can be provided. Lastly, the social support agency (SVB in Dutch) can assist the service consumer with the administrative process.

**Analysis of the business model for the electronic portal**

The added value that the public-private collaborations aim to offer is to provide integrated electronic services. For the paper's purposes, the service process of a consumer is defined as the process that a citizen or business (the service consumer) goes through when interacting with at least one government agency. The portal intends to offer the activities that are performed for the service consumer's process in an integrated fashion. The technical challenge of realising such a portal is immense, but equally challenging is the fact that the public and private service providers have to collaborate, which requires the design of a public-private business model to accompany the portal design. In this section, the components of such a public-private business model are described for the electronic portal.

*Value proposition*

The value proposition of the portal offers a 'continuum of care' Milward and Provan (2003). Service consumers can select a social support provider (the specific focus of the study is on providing a home help service) among a number of providers. The value proposition is aimed at giving the service consumers a choice and not directly to have private providers compete with each other in order to lower costs (the user scenario and requirements of this case are more extensively described in Van Velsen, Van der Geest, Ter Hedde, & Derks, 2009).

The service consumer's process spans multiple organisations and crosses the boundary between the public and the private sector. The portal is intended to be demand-driven and to therefore electronically facilitate the process of the service consumer. This requires the inclusion of relevant private organisations. These partners in service delivery contribute something to the service offering of the portal and thereby relieve the service consumer of the burden to identify required or optional steps in service delivery and to contact private organisations that perform those steps in the overall process. Thereby, the private parties improve the overall quality of the service by adding functionality or by completing a chain of related services. For the latter, the services of public providers have to be integrated or joined up with the services of private organisations, thus realising a one-stop shop.

Although partnering with private organisations offers the possibility to better facilitate the service consumer process by offering the services of multiple parties in one place, cooperation with private organisations is a challenge. This is because the actors involved have a certain degree of autonomy (and thus do not answer to hierarchical approaches of government), may have different goals and values (e.g. focus on serving the most profitable groups instead of those with the biggest need for care), and have to address accountability concerns (a public party must be able to relay accountability for the operations of the private parties).

*Value architecture*

During the project, a service architecture blueprint was developed consisting of a large number of services. Lankhorst et al. (2006) provide an overview of the most important services and functions of the architecture for demand-driven electronic service delivery. For the architecture in question, some services and functionalities are part of a shared architecture. The actual provision of parts of the integrated service, the adaptation to the demand of the service consumer and the integration of information from several sources are all examples of functions that are performed by the individual service providers involved in the cross-agency process. These service providers are the organisations that provide (parts of) the service-delivery. The challenge lies in determining what is to be done collaboratively to gain mutual benefits and what individual parties need to do.

The overall architectural challenge is to allow public and private partners to cooperate in a service network. Partners can connect to the architecture by using standardised interfaces developed in the shared enterprise architecture for the portal. To reach the ideal of a flexible architecture for public-private service networks, the interfaces should be uncoupled from organisational processes and systems. This allows partners to plug in or out of the service network, analogous to an electricity network where you just connect by using the power plug and – if necessary – adaptors to translate one format into another. The participants of the study identified a number of notable challenges for interoperability. These challenges include lack of standardisation, coping with legacy systems and the fact that the organisations all have their own architectures. The directions that the different architectures offer can be conflicting or lack a focus on collaboration.

*Value network*

Collaboration between parties is necessary, as the government has decided that the tasks to assist the target groups are best executed by private care providers. A key assumption is that private parties can operate at lower cost, as they will be competing with each other. Nevertheless, both private and public parties have the shared objective to make the services available in a portal and in supporting care users to find the appropriate services. In the context of the social support act, the social security facility of home help for people that cannot fully take care of their housekeeping themselves has been decentralised to the municipalities. As a result, the implementation of this act may vary by municipality. Furthermore, the citizen is an important actor, as are the public and private organisations involved in the network as presented in Figure 2. Note that this is a selective

view on the situation, chosen to demonstrate the electronic service delivery through a portal. In practice, these organisations are also part of other networks, and other organisations interact with this network. Furthermore, in practice, networks can have a different composition in other situations.

## 4. Challenges in Public-private Business Models

In the process of the functional and technical development of the portal, a number of challenges were observed that need to be addressed in a public-private business model. The notion of the necessity for collaboration to improve the service offering is an important starting point, which may be well covered by a generic business model. Nevertheless, when public and private organisations have to work together in operational, ICT-supported, service delivery processes, the level and complexity of interdependence rise. The business models have to heed these challenges and the generic challenges may have to be explicitly addressed in the business models themselves. The aforementioned challenges that arose during the project and the impact of the public-private business model of the electronic portal are presented in this section.

*Fragmentation and autonomous actors*

One of the main challenges that came up was that the organisations involved in the portal were all relatively autonomous. The portal is not developed in a green field situation; organisations can operate without the portal. Still, those organisations are the ones that have to develop a portal that is able to accommodate each partner, technically, but also in the goals and interests of each organisation. Furthermore, such organisations often have fragmented and 'siloed' information systems and diverse processes, which need to act together to realise integrated services.

Improving service delivery by providing online portals is a goal of the government. More specifically, in this case it is the goal of the central government, whereas it needs to be realised by multiple organisations from other levels of government and from the private sector. However, municipalities have limited budgets and a large number of public tasks to fulfil. The strategies of the individual organisations can conflict with those of other organisations. Even more, many government organisations consist of multiple departments with relatively high degrees of autonomy. If each of these departments were to focus on developing cross-organisational service portals with parties outside their own organisation, the alignment of the organisational business models and the various other business models would be additionally challenging.

*Division of cost and benefits: creating incentives for collaboration*

Public-private business models often bring complex arrangements to distribute costs, benefits and share risks. This is because the actors involved in these collaborations often have various goals, values and interests. In the business model, it is important to develop a division of costs and benefits that respect the basic interests of all actors. For public organisations, this is focused on realising public values, such as an efficient spending of public funds, improved service and accountability. Also, for the private parties it may be beneficial to focus their service delivery on a specific segment of service consumers that is likely to yield the highest revenue. Government agencies, however, have the responsibility to warrant that everyone entitled to a service is served. Therefore, even in the collaborative setting of the portal development, the relationships between the public and the private partners are not entirely on a peer level, as government organisations take the lead. The relationship between the two sectors resembles a principal-agent relationship. In this way, the government agencies retain some control over private sector involvement. However, if private organisations decide not to collaborate in the network, or no longer do so, the continuity of the shared service delivery can be in danger. In any private sector involvement case, there needs to be

something in it for the private partners and it is often up to the public partners to ensure that the incentives for the private sector enable sustainable revenue models but do not conflict with the values and benefits for the stakeholders in public service delivery, such as the service consumers, politicians and tax payers.

*Agreements and shared expectations*

In the portal, agreements about service levels, the monitoring of quality, allocation of responsibilities and ways of dealing with potential issues have to be made in order to guarantee public value. During portal development, a number of issues arose that needed to be handled in agreement with the governance structure of the portal. Even if such issues cannot be dealt with and therefore are not considered in the development of the portal, this needs to be made explicit, lest the expectations of partners are higher than can be realised.

The issues involve the question of who is responsible for developing, maintaining and funding a new service portal, which is a service channel apart from the existing structure that organisations have in place for communicating with citizens and businesses. In addition, as organisations already have structures and systems in place, the way they should interconnect with such a portal cannot always be prescribed, but has to accommodate this variety of systems. Furthermore, in the development of the portal, government organisations raised concern over sharing privacy sensitive information with private partners. However, not willing to share information with private parties results in more work for the service consumer, as integration is harder when shared information is limited. The way that these issues are dealt with should be part of agreements for clarifying to all stakeholders how such issues are taken up in the operations of the portal.

*Goals and values of actors*

As governments need to cultivate fair opportunities for every private organisation providing the same service, the portal needs to be open to many potential providers. Every provider of the service should – in principle – be able to join the portal and the portal should facilitate this. However, as the individual (private) providers cannot warrant the entire process, it is up to a government organisation to ensure that the task the network of organisations is required to carry out is realised and public values are safeguarded.

In general, the goals and interests of the organisations involved in the portal may be conflicting, even when the planning and enactment of the portal itself is a result of a common goal or shared interest, or when the portal fulfils different goals of the organisations that collaborate on the portal. For government, upholding and realising public values should be most important. From a public value perspective, the goals and interests of private organisations may be conflicting with public values such as transparency (which might threaten the competitive position of companies), equality of access for every potential service consumer (conflicts with economic rationale of focusing on profitable customers), and privacy. These threats to public values need to be mitigated.

Furthermore, public organisations can have various reasons for entering a collaborative portal. Some organisations may be forced by law or through hierarchy to join up with other public organisations and offer their services via a one-stop shop. For another organisation, its participation in a joint service delivery portal allowed it to realise (existing) goals better. Thus, public organisations can also have different interests and goals for collaborative networks. Moreover, even though the government partners in a network have to warrant and realise public values, this is not limited to the realisation of such values for the final service consumer only. An important value is that of good governance: the government parties in the network have to be a reliable partner for the private organisations in the network.

*Clashing values: accountability and responsibility*

Allocating accountability for the joint service in the context of the portal is a challenge. Networks have to specify the roles and responsibilities of the parties involved. Furthermore, it must be determined who is accountable for failures such as exceeding lead-times. This challenge also extends to determining which partner can provide accountability information to stakeholders, if necessary. It should be specified which actor takes the lead and which actor is responsible for monitoring the cross-agency process and the quality of the services provided.

Maintaining transparency and accountability is a challenge, especially when including private partners. Public organisations depend on the private organisations for the realisation of public services, but also need to be able to allocate accountability throughout the chain of operations. Therefore, public-private collaborations should jointly be held responsible for the performance. However, there is some evidence in the case studied that the democratic and accountability costs for public-private collaborations are largely allocated to the public partners. As a result, it is therefore necessary to clearly allocate roles and responsibilities.

*Dealing with fragmented information*

To ensure availability of all necessary information at the right place in the network, a shared and up-to-date basis of information or data is essential. The exchange of data or information, such as handing over a case to partners for their part of the process, and the interactions between service providers are largely automated activities. Given the fragmentation of organisations, the information architecture is often very fragmented as well. As a result, (every department within) an organisation may have its own information systems, its own formats, guidelines, etc. Interoperability is therefore very important, as it is necessary to coordinate the various sources of data, information and systems. Information sharing is a powerful coordination mechanism for collaborative government (Gil-Garcia et al., 2007).

# 5. Conclusions

Collaboration between public and private sectors is taking on new forms, thus resulting in private parties assuming roles traditionally carried out by government organisations. In this paper, such collaboration was presented in the form of a public-private service delivery portal. As private and public organisations have different values and different ways of achieving them, the question addressed in this paper is how business models can be utilised by organisations. More specifically, the concept of a business model was employed to identify challenges in public-private service provisioning that impact the business models of public-private collaborations. This is based on the premise that the business models of joint public-private technological artefacts (like the portal in the study) are configured and employed to achieve the strategic goals of the actors involved.

The analysis of the challenges show, for example that the design of the business model has to respect the autonomy of the concerned organisations. Furthermore, the collaboration is not permissive: public services must be provided, which might conflict with the need to respect the autonomy of the actors. For example, if private service providers may choose which potential service consumers they serve, this autonomy may lead to a situation in which none of the providers offers services for a specific request, resulting in a situation in which a public service (care) is not provided. This potential conflict is also found in the need for flexibility, a result of the idea that multiple providers of the same type of services should be able to join the portal in order to deliver their services through it. Continuing from the challenges identified in the preceding section, three overarching themes which impact public-private business models can be identified:

1. The goals and interests of the organisations involved in the portal may be conflicting, even when the planning and enactment of the portal itself is a result of a common goal or shared interest, or when the portal fulfils different goals of the organisations that collaborate on the portal.
2. The organisations in public-private networks come from different sectors and therefore have different types of stakeholders that may provide conflicting directions for the collaboration.
3. Public values have to be warranted and may depend on the quality of a private organisation. Agreements about service levels, the monitoring of quality, allocation of responsibilities, and ways of dealing with potential issues have to be made in order to guarantee public value.

In brief, public-private business models rely on having a division of costs and benefits that respect the basic interests of all actors. For public organisations, this is focused on realising public values (including an efficient spending of public funds) and accountability. For private organisations, a sustainable revenue model is required. Finding the middle ground between the differences and bringing together the actors based on mutual benefits are essential for finding public-private business models that work. However, making them work also requires clear agreements, regular consultations and alignment, and a clear division of roles and responsibilities. The inherent challenge is realising both public values and profitability for businesses in one business model. The challenges that, according to the analysis, impact the formation or selection of businesses models for public private collaborations are briefly presented in Table 1.

| Challenges |
|---|
| Organisational fragmentation |
| Autonomy of actors |
| Cost & benefit distribution |
| Shared expectations |
| Creating incentives |
| Different goals and interests |
| Potentially clashing values |
| Fragmented information |

Shapes

| Public private business model |
|---|
| Value proposition |
| Value architecture |
| Value network |
| Value finance (values) |

Table 1: Overview of challenges impacting public-private business models

Further research on the factors that influence public-private business models is required; even though the overall value proposition is clear (public and private organisations can complement each other in their service provisioning), when these collaborations are put to practice, a number of challenges arise that need to be acknowledged and covered. Table 1 should be expanded, refined and tested for other businesses models for public private collaboration.

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# Lean Government: Critical Success Factors for XBRL-based Business-to-government Reporting

Lean government is all about doing better with less through the use of ICT and the realisation of process improvements. The recently introduced eXtensible Business Reporting Language (XBRL) has shown some initial success in realising lean government. Once data is stored in XBRL format, businesses can transmit it electronically to government for reporting purposes. For businesses, XBRL will increase both corporate accountability and transparency by reducing the time needed to collect, structure and share corporate data within the company, as well as with supply chain partners, investors and government agencies. Government agencies will benefit from higher information quality (no data rekeying in the reporting chain) and new forms of compliance monitoring requiring fewer resources. Yet, because of the complexity of standardising processes, data and infrastructure in a public-private information exchange, the full potential of this 'sleeping giant' is often left dormant in practice.

Drawing on the best practice of Standard Business Reporting (SBR) in the Netherlands, this paper shares some critical success factors derived from the move towards a lean government in the country. Eight critical success factors (CSFs) focusing on the transformation process are identified. While the scope and elaboration of the factors is limited to business-to-government (B2G) reporting, the possibilities for lean government are broader, opening new avenues for governments and researchers.

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## Keywords

Lean government, XBRL, SBR, transformational government, standard business reporting, critical success factors, compliance management

> "XBRL is a sleeping giant that is awakening to realise lean government."

# 1. Introduction

Governments all over the world are under pressure to reduce their costs without deteriorating service levels, or even attempt to improve them. To accomplish this, governments are embracing the concept of 'lean', which originates from the manufacturing industry. It focuses on eliminating several types of waste in business processes (Ohno, 1988). Lean involves a variety of tools and technologies (Womack, Roos, & Jones, 1990). The concepts of lean processes have recently been adapted to the financial sector (George, 2003). The next frontier will be the public sector, which needs to get leaner to reduce cost, improve efficiency and at the same time improve quality and service levels.

The processes for the exchange of business-to-government information are changing under the pressure of new technologies, which enables new opportunities, as well as under the pressure of better compliance and cost savings. Compliance monitoring, which refers to the continuous process of collecting and analysing business information in order to determine the extent to which the regulated community operates in accordance to legislation, is one of the most important tasks of government agencies (Bonazzi, Hussami, & Pigneur, 2010). Government agencies with regulatory tasks require companies to report business information for many different purposes such as taxes, statistics, industry regulation, safety, environmental control, etc. Government agencies demand this information in order to check if businesses operate in compliance with the established laws and regulations. While the amount of reporting may vary, in general it is significant and has grown over the recent years, particularly as a result of more stringent regulatory requirements (National Audit Office, 2008). Historically, these reporting requirements have grown piecemeal, often driven by diverse legislation and different agencies within governments, with little or no coordination of what information should be reported and how it should be reported. As a result, a company often ends up reporting the same information multiple times to different government agencies and in different formats. This means that the reporting of data to government agencies has become a significant cost burden for companies.

A recent study by the Organisation for Economic Cooperation and Development (OECD) estimates this cost to be around 2.5 % of the GDP (OECD, 2009). Consequently, businesses call for reducing the cost of compliance, referring to the expenditures needed in order to collect, structure and share business information with government agencies. Reducing this cost is a major driver for transforming the business reporting architecture in many western countries. While reducing the amount of information demanded from businesses may seem to be a straightforward option, the many financial and auditing scandals (e.g., Lehman Brothers) and private sector failures of the past decade remind policy makers why they need to monitor compliance in the first place.

When it comes to reducing the cost of compliance for businesses, policy makers also draw attention to the high cost of monitoring and regulatory enforcement. Pressured by the on-going economic crisis, policy makers urge for a 'compact' government with fewer personnel and reduced spending. However, an impasse emerges when we consider the conflicting goals of becoming more vigilant (i.e., by means of compliance monitoring) and downsizing when the number-one challenge faced by all governments is capacity. Government agencies simply do not have enough resources to keep up with ever-expanding and ever-more complex workloads. Lean is a promising approach for helping government deal with the challenge of crushing demand and limited resources. It recognises that inefficiency resides in our systems and the way we have designed our work processes.

A lean government does more tasks with fewer resources by means of standardisation of processes, data and the collective IT-infrastructure. Understanding the implications of this statement requires us to consider the modus operandi. Usually, government agencies react to budget restrictions by enforcing traditional policies, including hiring freezes, travel restrictions, delaying maintenance, and so on. While these actions may result in a better balance sheet in the short term, the inefficiencies in processes remain the same. Alternatively, agencies that employ lean thinking examine the actual work being done and find ways for doing things more efficiently while creating more value (e.g., new services and improved service delivery). Lean focuses on reducing time and resource waste in batching, bottlenecks, backlog, checking and re-checking processes. Waste is anything that does not add value from the customer's point of view; in this case, the businesses in the regulated community and the regulators. Lean concepts such as increasing capacity, reducing manual processing, making processes flow more smoothly and understanding which customer's value can have a huge impact on government performance. More efficient and effective use of IT is one of the imperatives for lean processes.

However, a major challenge in realising lean government is the lack of data standards for exchanging business and financial information among governments and businesses. The lack of a standard business identification numbering system for various government agencies hinders the reuse of financial and business information submitted by businesses. The manual process of data extraction from paper or PDF reports is time-consuming and error-ridden. Moreover, it is difficult to compare the financial performance of two businesses when, for example, the definition of 'expenditure on equipment' differs across public agencies.

On the business side, compiling business and financial reports for various government agencies with differing data definitions and rules is burdensome. Even when financial information is collected electronically, the integration of data elements from various data sources is difficult without a common data standard. The recently introduced XBRL can accelerate the standardisation of B2G reporting needed to realise a lean government. Once stored in XBRL format, businesses can transmit the information electronically to government for reporting purposes. Hence, the burden of manual processing can be significantly reduced, thus taking a critical first step towards the sought for lean government. Agencies can be more efficient in gathering and analysing financial and business information when using XBRL as a standard. XBRL also allows for business rules to be embedded, which enables automatic validation of business rules in financial reports. Such automation is a significant efficiency gain. Consequently, scholars have described XBRL in various ways: as "a sleeping giant" (Pinsker, 2003), "a critical technology" (Burnett, Friedman, & Murthy, 2006) and a "source of fundamental change" (Troshani & Doolin). XBRL is viewed as a Web 3.0 (semantic web) technology, where financial information is machine-readable and standardised for meaningful comparison. Once XBRL is made available on the Web, it has the potential to introduce a new era of open government.

Summing up, the adoption of XBRL presents new opportunities for considerably enhancing the business information supply chain and creating a leaner government. However, its diffusion has proved to be very challenging. Drawing on a qualitative, interpretive study (Walsham, 2006) of the implementation of XBRL in the Netherlands, this paper describes the challenges for creating a lean government and reveals CSFs for addressing them. CSFs are of a conceptual character that implies increased dialogue between research and practice in order to identify new perspectives.

This paper proceeds with some background on the commencement of XBRL in the Netherlands. The Netherlands are considered as the front-runner in the implementation of XBRL while many other countries have started similar initiatives (OECD, 2009). The case study involves a data taxonomy resulting from legal and process compliance requirements, collaboration in a network of government agencies and private parties and no optimal solution. Section 2 explains the components of XBRL in more detail, as well as the advantages anticipated from its implementation. Section 3 presents lessons learnt from the case study as CSFs for guiding stakeholders in public-private networks. This paper concludes with a discussion on the transformation to lean government and the definition of avenues for further research.

# 2. Case study: XBRL for Standard Business Reporting in the Netherlands

## 2.1 The pre-XBRL business-to-government reporting chain

Like many other countries, the Dutch government was, and still is, searching for ways to reduce the cost of compliance for companies and the cost of monitoring for government agencies. The earliest attempt dates back to the National Taxonomy Project (NTP) which started in 2004 as part of the parliament's objective to reduce the administrative burden for companies (van Veenstra, Janssen, & Tan, 2010). In addition, the development of a more transparent, effective and efficient compliance monitoring architecture for government agencies was called for by the parliament. From the beginning, it was clear that achieving these goals required the creation of lean B2G processes, standardisation of data and process definitions, alongside the development of a secure electronic reporting infrastructure. NTP reversed the reporting chain: it is not 'government' systems that are decisive, but businesses' financial administration is taken as the starting point. This is accomplished by having a common language that is realised in the data taxonomy that provides a universal set of financial concepts. This taxonomy would enable a company to generate the required reporting information directly from its own records, and allow government to check this information efficiently and effectively. The open-source platform and its supporting international community were two main reasons for the selection of XBRL. One of the main results of NTP was the first version of Dutch Taxonomy, a structured list of reporting definitions, guidance, references, rules and relationships in accordance with the relevant laws and regulations. The Dutch Taxonomy is based on XBRL. We will briefly explain XBRL in section 2.3.

In 2006, a feasibility study on a generic reporting infrastructure delivered a first set of functionalities required for financial reporting using the XBRL standard. In 2007, the first versions of the technical infrastructure developed for exchanging data based on XBRL were ready. Stakeholders decided that it should be controlled and maintained by a government agency. This agency provides IT-infrastructure building blocks related to data exchange, data processing, standardisation and information security.

Since 2009, NTP continues as the SBR Programme. The programme objectives are deepening and embedding the results obtained so far. As such, SBR is advertised as a programme to reduce administrative burden for companies by providing a standardised data representation format, semantics and secure electronic infrastructure for filing official reports (Winne, Janssen, Bharosa, Wijk, & Hulstijn, 2011). The achievement of this goal requires a major transformation of the previous architecture for financial reporting depicted in Figure 1.

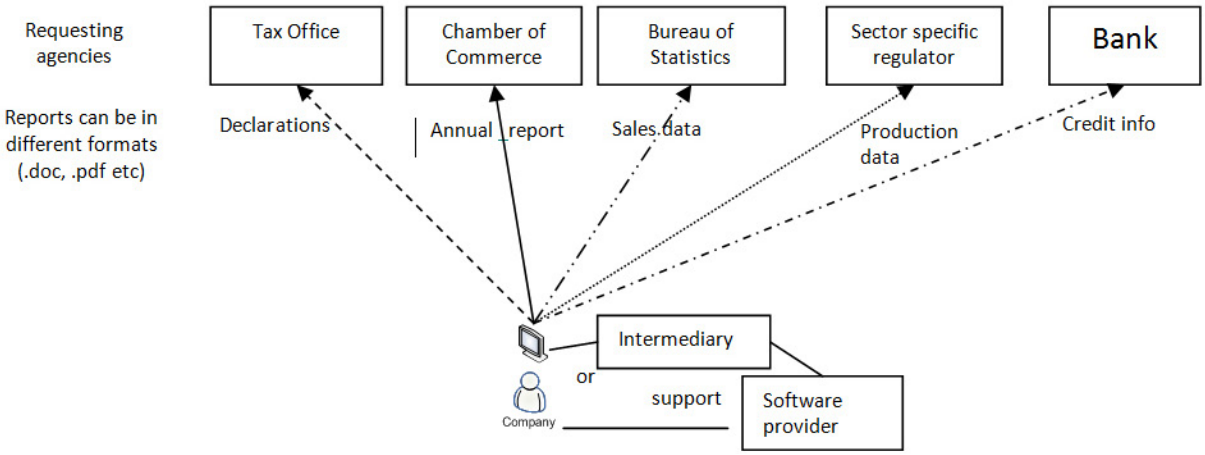


Figure 1: The pre-XBRL B2G reporting chain

Figure 1 shows the fragmentation and many reporting obligations of public (requesting) agencies. Government agencies and other organisations (e.g., intermediaries and banks) have different requirements for the same piece of information. The different dashed lines from a company to the government agencies underline this situation, demonstrating the extent to which companies have to produce unique reporting capabilities to fulfil their reporting responsibilities to government. The cost of compliance for the average business increases when the various government agencies employ many data formats (templates) and definitions for the required information. The required information often resides in the various databases a company uses for its day-to-day operations. However, for accounting and financial reporting purposes, the fragmented information first has to be manually assembled, reformatted, modified or re-entered before being sent to government agencies. Each entry error and every report that needs resubmitting incurs a cost. Typically, a company is required to provide information to government agencies such as the Tax/Revenue office, Statistical Agency, the Chambers of Commerce and sector specific regulators. These governmental agencies check commercially sensitive data of thousands of companies. Although business and governments have the same objective of reducing the administrative burden, governments have different concerns than businesses (e.g., different value perspectives, legislation/political concerns) and these concerns might compete at some time (Turner, Bowker, Gasser, & Zackland, 2006).

In Figure 1, companies report based on proprietary software applications, each dictating reporting templates for users. This means that information models, business rules, process designs, controls, etc. are redundantly embedded within each software application. Moreover, data validation and analysis need to be conducted by consumers (receiving agencies) and manual manipulation of information from disparate sources is needed to create custom reports. The stakeholder group referred to above as 'intermediaries' is a large group and includes accountants, tax agents, financial advisors, payroll specialists and book-keepers, as well as business and industry associations. In conclusion, in the pre-XBRL situation, companies and their intermediaries are left with the problem and cost of identifying each piece of information within their accounting or other systems and mapping that information multiple times for different reports. This situation presented the basis for launching XBRL in the Netherlands. The next section presents the benefits expected from the implementation of XBRL.

## 2.2 The XBRL based B2G reporting chain

Figure 2 shows the envisioned standardised, XBRL based reporting streams to requesting agencies such as the Bureau of Statistics (production statistics, investment statistics and short-term statistics, i.e. revenue per period), Chambers of Commerce (possibility to file the year-end financial report) and Tax Office (revenue taxes, corporate taxes, income taxes, etc.). The gateway checks and forwards incoming XBRL reports. Depending on the requirements of the requesting agencies, the gateway can also perform other services (e.g., authentication, logging, archiving, validation and enrichment). In particular, it could be used to allow for a single submission of financial data which the Gateway 'disaggregates', sending relevant information to each agency as appropriate. Stakeholders in the SBR programme have chosen the 'store once, report to many' architecture. This means that although the data definitions and the infrastructure may be re-used over different reporting chains, the actual act of reporting remains specifically addressed to one agency. The reasons for this choice are twofold: firstly, legislation does not allow the re-use data collected for one purpose to be used for different purposes; secondly, reports may have a different function and may therefore have different contents. For example, in a tax report, the company will try to report as little revenue as possible. In a year-end financial statement meant for shareholders, a company will try to report as much revenue as possible in order to appear as a solid investment opportunity.

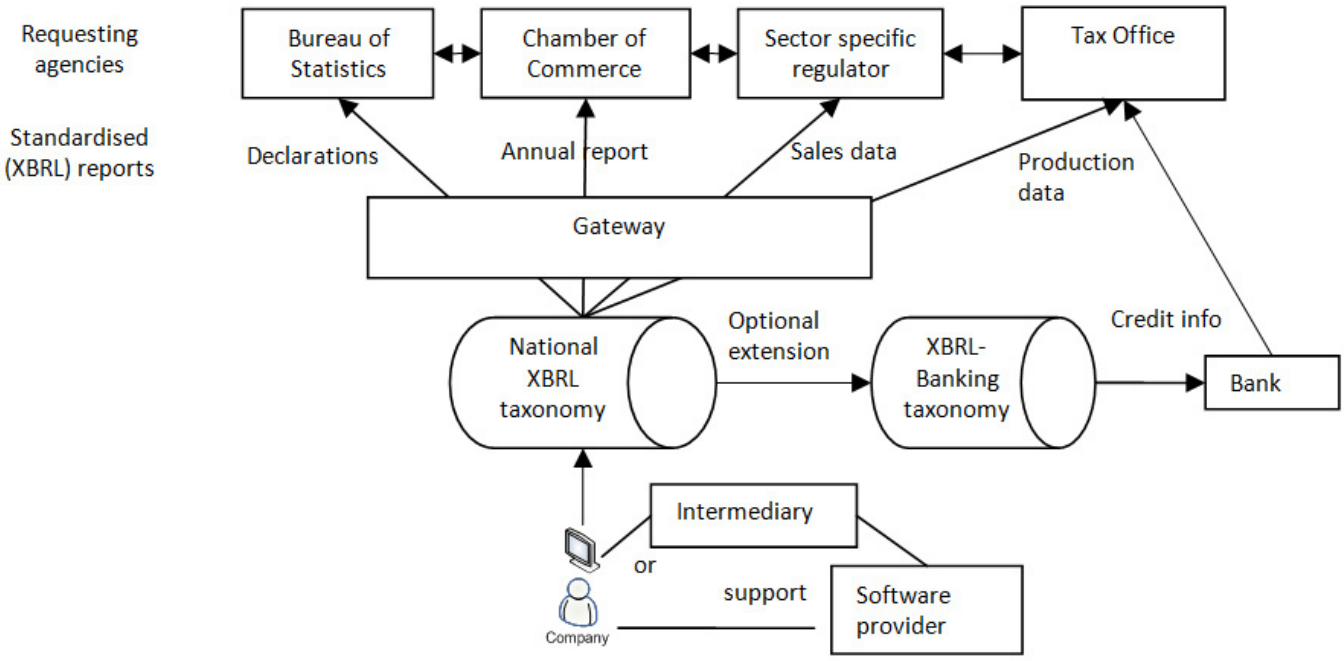


Figure 2: Lean information flows for B2G reporting chain

As depicted in Figure 2, SBR will operate much like a post office, simply moving electronic messages from business' systems to the right agency, and returning an electronic receipt. While the main goal is the development of a single set of reporting definitions in a single language, a further goal is for the information to be sent directly and electronically from the business' systems to the participating agencies, and remain in the control of the business. This cooperation is settled in an agreement that was signed by over 80 parties. The main idea behind SBR is that the development of a XBRL based taxonomy, harmonised across the needs of participating public and private agencies will simplify and accelerate business to government reporting.

## 2.3 The benefits of using XBRL

XBRL is an example of lean government that reinvents the way in which data are used and transmitted in business.. As a derivative of XML, XBRL takes advantage of the 'tag' notion which associates contextual information with data points in financial statements. Each item (e.g., profit) is tagged with information about various attributes, such as calendar year, audited/unaudited status, currency, etc. These tags are understandable to both computers and humans. The tags themselves are based on accounting standards and regulatory reporting regimes and are defined in XBRL taxonomies (Pinsker, 2003). These are developed for specific countries, accounting jurisdictions, and even specific organisations (Deshmukh, 2004). Therefore, the purpose of taxonomies is to provide standard rules on how information is applied worldwide. When formatted with tags, financial statements are called XBRL instance documents. Instance documents can be read by any software that includes an XBRL processor and thus can be easily transferred between computers. To create instance documents, you do not need to take an XML computer programming course. The necessary software in order to tag data for clients, submit tagged data to various recipients, and receive and analyse tagged data from other sources is available. The following table summarises how these characteristics of XBRL can benefit both businesses and government agencies.

Table 1: Benefits of XBRL adoption for B2G reporting

| Benefits for businesses | Benefits for governments |
|---|---|
| • Single language to report to government agencies, regulators and potentially banks. This reduces the time and cost of assembling, analysing and providing data to government thanks to the articulation of information models, business rules, process designs, controls, etc. in standardised taxonomies that are executed across software applications.<br>• Real time reporting via XBRL increases corporate accountability in two ways: reducing the time period management has to eventually manipulate reported information; increasing user access to the information, thereby increasing the information's transparency (Hannon, 2003).<br>• Opportunities for streamlining the process of passing/aggregating data across different internal departments, offices or business units of a company.<br>• Increased interoperability of information across finance applications.<br>• Increased access to comparable performance information to guide investors. | • Improved data quality — no human rekeying of data and less manual intervention leads to fewer errors.<br>• Data validation tasks are partly moved to the accounting software since XBRL allows for business rules to be embedded, thus enabling automatic validation of business rules in financial reports (data validation at the source).<br>• A data dictionary (taxonomy) is at the heart of XBRL that standardises the financial terms used. Such standardisation allows for meaningful comparison of financial information across businesses and allows for the aggregation of financial information across a business sector for monitoring purposes.<br>• Government, when using XBRL as a standard, can be more efficient in gathering and analysing financial and business information.<br>• XBRL enables new and more targeted (risks-based) forms of inspections and regulations (e.g., continuous control monitoring), thus allowing for advanced data mining and cross-checks in the supply chain. |

As outlined in Table 1, the benefits of streamlined reporting are not limited to meeting government reporting requirements. For regulating agencies, XBRL can provide benefits such as benchmarking/ market comparisons and credit risks monitoring (trend and what if analysis). XBRL can also be used for business-to-business (B2B) reporting, something that is becoming increasingly important in supply chains and business networks. Initially, most applications of XBRL were executed in the context of the financial domain, covering reports to the Tax Office, Bureau of Statistics and Chambers of Commerce. Due to the generic nature and applicability of the XBRL language, broadening the scope to other domains and applications also became a programme objective. In the future, the inclusion of applications concerning food quality and public health are also envisioned.

## 3. Challenges and Critical Success Factors in the Transition to a Lean Government

The adoption of XBRL presents new opportunities for considerably enhancing the business information supply chain. However, its diffusion has proved to be very challenging. It involves complex inter-dependencies between processes, data and technical infrastructure and the interests of many public and private stakeholders. Moreover, government projects which involve the development of information systems often turn out to be more expensive than initially estimated, require more time than planned, and do not deliver intended results (Heeks., 2005). The case study in the Netherlands allows us to clarify what the challenges are and which factors were critical in successfully addressing them.

Rockart (1979) first introduced the term critical success factor in his efforts to help CEOs develop their systems. Rockart defined CSFs as the few key areas in which things must go right for an organisation to thrive and these are “areas of activity that should receive constant and careful attention from management”. According to Boynton and Zmud (1984), “the CSF methodology is a procedure that attempts to make explicit those few key areas that dictate managerial or organisational success”. Remus and Wiener (2010) argue that CSFs cannot be treated as instrumental, causal or objective. Instead, CSFs are of a conceptual character, which implies increased dialogue between research and practice in order to identify new perspectives. Typical CSFs in literature (e.g., Gil-García & Pardo, 2005) include leadership and project champions, project team competence, end-user training and education on new business processes, etc. While such factors have also played a role in the SBR case, we focus on deriving CSFs that specifically target XBRL related challenges. The XBRL related challenges and CSFs found in the case study are outlined in Table 2. Addressing these CSFs helps create a lean government.

Table 2 provides an overview of the challenges and CSFs derived from the SBR case study in the Netherlands. The following subsections provide more detail on how the CSFs helped address the listed challenges.

Table 2: Overview of challenges and critical success factors for creating lean government

| Challenge | Critical Success Factor |
|---|---|
| Poor data quality | Business data reuse |
| No green field | Use of generic (shared) infrastructure services |
| Different ways of thinking, modelling and working across the stakeholders | Emergence of architecture as a critical stabilising force |
| Complexity of checking huge volumes of business data delivered to government agencies | Shift of control tasks for simple data checks and functions to the businesses |
| Many deliverables of the transition to XBRL based reporting are not yet clear upfront | Restrictive yet flexible project management |
| Adoption of XBRL amongst businesses, intermediaries and software providers | Positioning SBR as a cross-government policy initiative |
| | Emphasis on end-to-end security |
| Avoiding the emergence of various jurisdiction-specific taxonomies leading to standardised yet incomparable data definitions | Development of a national taxonomy allowing extensions |

## 3.1 Business data reuse

This CSF underlines the need to analyse existing reporting needs, processes and procedures as one of the first steps towards SBR. Compliance reporting is a very specific domain with its own lexicon of process flows, standards and definitions. Due to the extensive body of legislation in this domain, there is little room for legislative or process adaptation to introduced taxonomy and infrastructure design. As such, several agencies within the Dutch Government continue to work directly with software developers, intermediaries and business in implementing SBR so as to enable government reporting to become a by-product of the information already in the businesses' accounting systems. Doing so enables SBR to be used not only for reporting to multiple regulators, but also for improving internal reporting and analysis. The key components of interest to accountants would be the rationalisation/harmonisation of terms and definitions, the mapping of the taxonomy and the use of the SBR-enabled tools when available. It is expected that SBR will become standard functionality in accounting, financial and payroll software, but the benefits accrue only when that functionality is used extensively.

## 3.2 Sharing of generic infrastructure services

Government agencies are known to be reluctant in opening up their systems and infrastructure to other agencies. Since there is no green field, a detailed understanding of the IST situation is imperative for the successful migration to an SBR environment. In the Netherlands, several agencies have agreed upon the development and use generic infrastructure components (e.g., electronic recognition, process engine and message validator) for handling specific types of public-private information sharing. Instead of having to abandon their legacy systems, the agencies can use generic services provided and maintained by the central government's infrastructure provider.

## 3.3 Emergence of architecture as a critical stabilising force

The public-private collaboration formed, to achieve a lean government has complicating characteristics, including: intertwining of requirements with implementation and organisational contexts; dynamic evolution of requirements; and the need to recognise unprecedented levels of design complexity because of the continued evolution of problems and artefact solutions after initial implementation. Stakeholders used architecture in a different way compared to most IT implementation case studies, in which architecture is a mere 'tool' for managers. Architecture was used for four purposes: analysis and communication; design and change management; control and governance; and audit and evaluation. Consequently, architecture is a stabilising factor during the continuous iteration between legislation changes, business reporting requirements and solutions (e.g., taxonomy and web-services). Architectural considerations and associated evolutionary paths played a central role in shaping and reshaping business, product and application requirements. Recognising the necessity to consider architectures as enablers and constraints in the continuous creation and shaping of design ecologies, stakeholders managed the implementation of XBRL through architectures.

## 3.4 Shift of control tasks and functions to the businesses

This CSF proposes to move quality assessment and error detection capabilities into the vendor supplied accounting software, which can be used by companies to directly send reports to the requesting agencies. Such application controls will automatically verify correct entry of data against the data types (e.g., 31 February is not permitted), and will verify reconciliation relationships between data elements (e.g., the sales total over months should equal the sales total over departments). Since built-in application controls reduce the possibility for errors, reliability of the data is improved. From a small business perspective, such SBR controls will be almost invisible, as the facilities will be built into the accounting software that businesses use to manage their records. Moving up the scale to large business, much of the SBR abilities will still be built into accounting software, but the range of reports will be broader. Some of the information mapping between the SBR definitions and the information in business' accounts will need to be set and audited by the business or its accountant. However, once mapped in a reliable way, the information can be used to satisfy a range of reporting needs. For some of the simpler forms, the accounting software may pre-fill the reports while companies can complete the forms where necessary, check for accuracy and validity and correct any errors before final submission. This will save time and effort with corrections.

## 3.5 Position SBR as a cross-government policy initiative

This CSF addresses the issue of stakeholder's expectations and gaining commitment. XBRL is a 'network innovation' requiring concerted action from several stakeholders to be widely adopted. For this reason, its development has been, and continues to be, facilitated through the voluntary and collaborative efforts of key stakeholders – currently driven principally by local government and regulatory agencies (Willis, 2005). SBR is an example of using new technology (XBRL) to achieve a policy objective; in this case, reducing the burden of reporting to government agencies. We found that it is crucial for this policy objective to be underlined; otherwise, SBR becomes a technology-push initiative providing a solution to something that is not perceived as a problem by everyone. Of course, SBR is not the only way to reduce the administrative burden and it may not be the most appropriate way in the circumstances of particular sectors (e.g., customs and trade, agriculture). SBR offers a way for the requesting agencies (e.g., Tax office, Chambers of Commerce) to meet their

own regulatory targets while contributing to wider government policy objectives. There is, therefore, every reason for the revenue body to play a major part in assessing the potential of SBR and driving its implementation. However, ideally, leadership should come from a policy arm of government that ranges wider than just tax reporting. This is what has transpired in the Netherlands, where both the initial assessment and the implementation have been led by a consortium of the Ministries of Justice and Finance. This has given the Dutch project a very powerful base and has avoided the project being seen as just a new tax collection initiative or an information technology push.

## 3.6 Emphasis on end-to-end security in the reporting chain

The final CSF covers the issue of security in the B2G reporting chain. In the SBR case study, security, more specifically authentication (using digital certificates) and authorisation (permissions and delegation to intermediaries), has led to considerable debates and delays. The requesting agencies underline the need for 'end-to-end security', referring to security checks and controls beyond a single secure sign-on built into company software and the gateway. Certificate and permissions policy used for transactions to the requesting government agencies should guarantee non-repudiation and confidentiality (disclosure of information to unauthorised individuals). Security from an end-to-end perspective requires business to register once for a digital credential (provided by the Dutch Chambers of Commerce). A company can now use that credential to send reports from its accounting system via the gateway to the appropriate requesting agency.

## 3.7 Development of a national taxonomy allowing extensions

Initially, there was no agreement amongst the requesting agencies on what type of information they need from businesses. There was debate on the need for each of the jurisdictions (e.g., tax, safety, etc.) to develop different XBRL taxonomies as their data standards. Stakeholders in the SBR programme quickly abandoned this road because it would lead to semantic heterogeneity in the taxonomies, the corresponding instances and the internal systems that store the original data. Consequently, there would be substantial difficulties in creating and using XBRL instances that involve multiple taxonomies. To fully realise the potential benefits of XBRL, stakeholders opted to develop a single national taxonomy that reconciles semantic heterogeneity and assures interoperability of various parts of the supply chain. Extensions to the taxonomy are allowed if these do not cover the process requirements of the stakeholders.

## 3.8 Restrictive yet flexible project management

The public-private collaboration (PPC) formed in the SBR case needed to address this 'lean yet vigilant' dilemma. Generally, PPCs have proven to take a long time to establish and lead to fruition. Hurdles that delay the achievement of goals include the need to agree on standards in an environment with heterogeneous interests, changing laws and unclear revenue models. Many deliverables of the transition to XBRL based reporting are not yet clear upfront. While literature on managing PPC hints towards the need for both compulsory measures (plan-driven, restrictive) and adaptive measures (learning-driven, leeway), the SBR case study revealed that both compulsory and adaptive measures are necessary to advance in multi-actor standardisation processes (Bharosa et al., 2011). One example is the restriction to using a single national taxonomy, while allowing extensions to this taxonomy. Another example was the way companies could connect to the gateway. While companies were restricted in using the gateway as the exclusive channel for system to system communications, they are left free in deciding which of their systems will connect to the gateway and to what extent XBRL is embedded in their business transactions (bolt-on, build in or embedded).

## 4. Conclusions

The promise lean government brings is simple: public agencies will be relieved from redundant compliance and monitoring tasks (and associated costs), while companies will be rewarded with simplified and accelerated reporting procedures (and lower costs of compliance). Moreover, governments will benefit from better quality and improved information forms of compliance monitoring requiring fewer resources. However, while the anticipated benefits are attractive, the transformation to the required architecture is a complex change process involving many public and private organisations, heterogeneous technologies and changing legislation. Moreover, benefits have not always been fully realised for B2G reporting, as many legacies still exist from the days of paper-based forms. Implementing XBRL requires a change in the way a company maintains and uses its own financial, accounting and payroll information to satisfy the reporting requirements of various government agencies. SBR in the Netherlands is a frontrunner that took over three years before the conditions were in place for implementing XBRL; what is more, the transformation is still not complete. One of the delaying factors is that sharing information in XBRL is still a voluntary process. Moreover, there are still debates on what the role of external auditors will be in an XBRL world. Real-time reporting is going to need real time auditing or assurance. Whereas auditing each transaction as it happens is nearly impossible, auditing the processes and systems used to capture and report the information is not. Perhaps the recent announcement from the Dutch government that starting in 2013 government agencies can only receive XBRL based reports via the gateway, will speed up the adoption of XBRL by companies, accounting firms and software providers.

The eight CSFs presented in this policy paper encapsulate the first lessons learnt from the partial transformation to a lean government using XBRL in the Netherlands. The CSFs include the use of architecture as a stabilising force, business data reuse, shift of control tasks for simple data checks and functions to the businesses, restrictive yet flexible project management, positioning a cross-government policy initiative, emphasis on end-to-end security and allowing extensions of the taxonomy. CSFs are areas of activity that should receive constant attention from the management. CSFs do not offer ‘silver bullets’ or ‘ready to use solutions’ and might be difficult to realise in practice, since many contextual circumstances also influence the outcome. The CSFs provided in this paper are derived from G2B case study and focus on managing the transformation process, and do not cover issues regarding the design of the data, process and technology architectures. In other areas for lean government, other CSFs will likely play a role. The derivation and evaluation of complementary design CSFs for the data, process and technology architecture is one of the next steps in research. Since the paper derived the set of CSFs based on a single case study in the Netherlands, further research on extending and evaluating these CSFs is recommended.

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# Sharing Regional eGov Platforms: A New Model of Governance

There are more than 100 000 local governments and local legal entities, as well as 36 000 municipalities in France. The size of municipalities ranges from 100 to several hundred thousand inhabitants. It is crucial to find the right business model of governance to deliver eGovernment services in an optimal way at local level. This paper describes a new business model, operational for more than three years in the Burgundy Region, which has produced proven benefits. These benefits can be further improved by increasing the number of shared platform members and of the delivered eGovernment services.

It is a prerequisite to evaluate costs and benefits on a continuous basis to demonstrate to elected people, those who make decisions, that sharing a Regional eGovernment platform and digitising administrative processes, including public procurement, are sound strategic directions. Such methods and models have been developed and applied successfully.

eGovernment regional services are part of the digital economy and have a strong impact on economic growth. The pace of digitisation in local governments needs a further boost. The same applies to other European countries, as described during the 4th eProcurement conference in Vienna (Moutet, 2012).

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Keywords

local governments, eGovernment platform, e-bourgogne, governance, eGovernment services, cost-benefit analysis

> “Burgundy developed a new model of governance to share a regional eGovernment platform, combining a legal structure (GIP) with a Public Private Partnership (PPP), which yielded significant measurable benefits.”

# 1. Introduction

Simplifying and improving the administrative processes through digitisation is a key objective for local governments, even if there are still some obstacles that need to be overcome. The purpose of this paper is not to demonstrate the good reasons to implement eGovernment services in local authorities; this has already been done in many other papers and the many obstacles are well known in different countries, though they might vary from one country to another.

The author assumes that deploying eGovernment services is well established in the mindset of local authorities, even if the deployment rate in many of them is far from reaching 100 %.

The objective of this paper is to describe a new model of governance for sharing Regional eGovernment platforms.

The various modes of organisation to implement eGovernment services in local governments will be first considered. Then, a new model of governance to share the development, implementation, delivery and maintenance of eGovernment services based on an operational case, e-bourgogne, will be described. Finally, in a third part, the results of a cost-benefit analysis for local governments will be presented with the aim to prove the benefits derived from the digitisation process and from sharing a regional eGovernment platform.

# 2. Various Modes of Organisation to Implement eGovernment Services

eGovernment services address different categories of players:

- enterprises;
- citizens;
- associations;
- civil servants of local authorities;
- local authorities;
- central government.

To deliver those eGovernment services, local governments and legal local entities (hospitals, schools, etc.) can choose various options:

1. Every entity buys and operates the service by themselves.
2. A group of entities consolidates their purchase and makes quantity purchasing, but still each entity operates the eGovernment services by themselves.
3. Every entity buys the eGovernment service from an external ITC service provider. This one can be a:

   a. private company;

   b. public entity.

4. New business model: sharing of a regional eGovernment platform. Local governments and legal local entities create a legal structure (stable and time resistant) with the mission to develop, install, deploy, operate and maintain eGovernment services for the different categories of economic players.

It is reasonably obvious that the first three options cannot provide an optimised solution, keeping in mind the large number of local entities in European countries, and more specifically in France. In France alone, there are 22 regions, 100 departments, 36 000 communes and many other local entities. Some municipalities may have less than 500 inhabitants. In Burgundy, there are 2 129 local governments without taking into account other legal local entities.

Then, sharing access to eGovernment services is a correct implementation option for two main reasons: the size effect will reduce costs in a significant way for all; small entities which cannot manage by themselves access to those services will benefit from them at an affordable cost with the right level of service and quality.

A new business model has been created: e-bourgogne from the Burgundy Region is a good practice in France and has proven measurable benefits.

# 3. A New Business Model of Sharing eGovernment Services for Local Governments

This new model is defined by the delivered eGovernment services, the economic agents to whom those services are provided, the architecture of the Regional eGovernment platform, the legal structure which manages the platform, the contractual relationships of ICT services providers with the legal structure.

## 3.1 Delivered eGovernment services

Delivered eGovernment services are related to all administrative procedures, including public procurement. Their implementation depends on local government political priorities and estimated benefits; they are delivered on a scheduled basis.

For e-bourgogne, 20 eGovernment services were planned for a 10-year period in the scope of a PPP contract. The operation started in 2006. Currently, the following 10 eGovernment services are fully operational, and were delivered on time:

- eProcurement portal;
- one-stop-shop for businesses (public grants);
- websites generator for small and medium-sized municipalities giving access to online administrative procedures;
- control of legality between local authorities and Central Government level;
- third-party digitisation exchange hub for municipalities;
- digital signatures for civil servants and elected deputies;

- eLearning capacities;
- geo-tagged public services for mobile devices;
- collaborative work facilities among local authorities;
- regional eArchiving for native digital legal documents.

An entire infrastructure has been built with full industrial processes to support those eGovernment services, as well as new and enhanced services. Technical solutions are developed under Open Source licenses.

## 3.2 Economic agents to whom eGovernment services are delivered

All economic agents are concerned; eGovernment services are delivered through local governments and local public entities such as social security local entities, hospitals, etc. It is important that the relationships with citizens and enterprises be managed directly by the local entities; they are in charge of the customer relationship.

As previously mentioned, there are numerous local entities in France. These local entities manage the relationships through a front office with:

- enterprises;
- citizens;
- associations;
- civil servants;
- central government.

## 3.3 Architecture of the Regional eGovernment platform

The general functional architecture consists of five levels (see Figure 1):

- a front-office which is specific to the local government and matches the local brand and insures the customer relationship;
- a back-office directly managed by the shared platform;
- interfaces with services of central government, trust third parties, partners services, archiving third parties;
- a call centre;
- an eLearning platform.

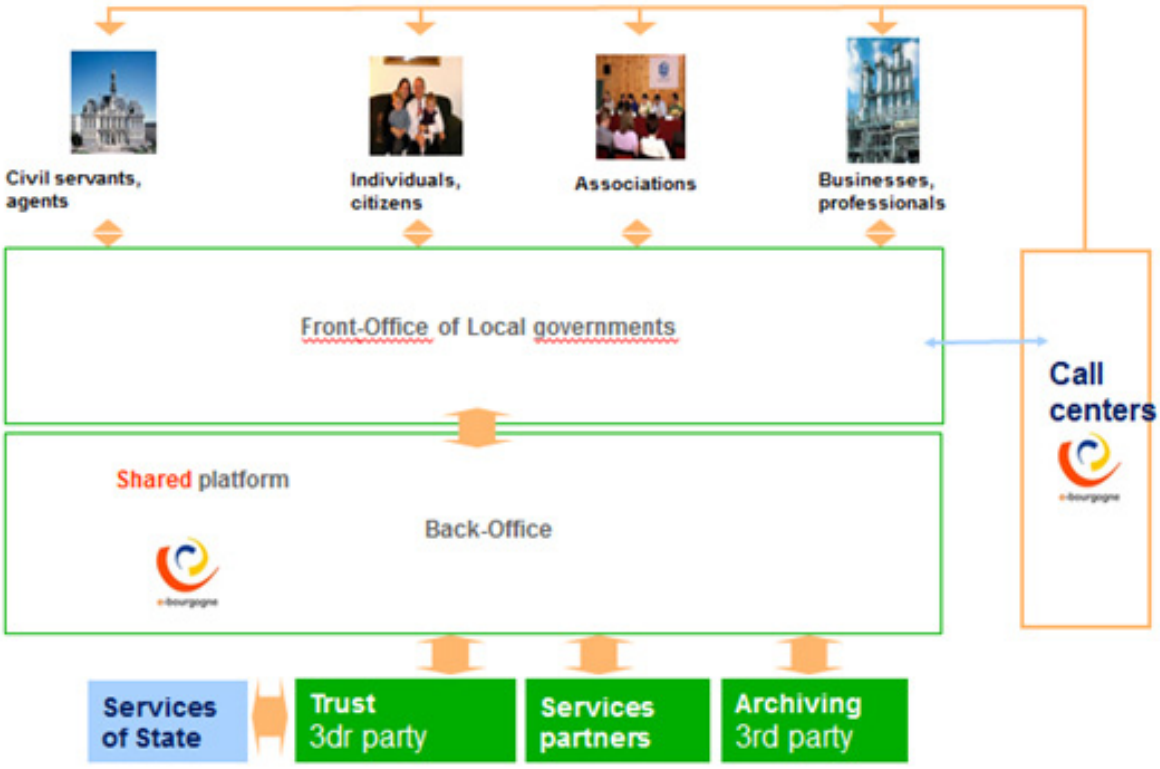


Figure 1: Regional eGov general architecture

Source: eGov-Solutions web site

## 3.4 Legal structure of governance

The general governance business model consists of a legal structure of governance and a contractual relationship with ICT services providers (see Figure 2).

The following chart has been presented to the Burgundy Region management in November 2005 as a road map. Its content has been fully implemented in the Region.

The legal structure of governance as a Group of Public Interest (GIP), called e-bourgogne, is illustrated. It is a consortium regrouping 1 250 members, Local Authorities (LA's) and Legal Local Entities (population of Bourgogne is 1.5 million). Today, after more than three years of operation, it provides 10 eGovernment services with full support and manages a budget of €4.5 million a year that is covered by members' annual fees plus country and EU funding. The fee covers full access to the shared platform (ePractice.eu, 2012).

e-bourgogne GIP members are:

- French central government;
- Burgundy Region;
- 4 departments (Conseils généraux);
- Municipalities and groups of municipalities;
- Other Legal Local Entities (LLE's) such as hospitals, schools, local social security agencies, etc.).

The GIP signed a PPP contract with an ICT services provider for a period of 10 years, after a one-year RFP and competitive dialogue process.

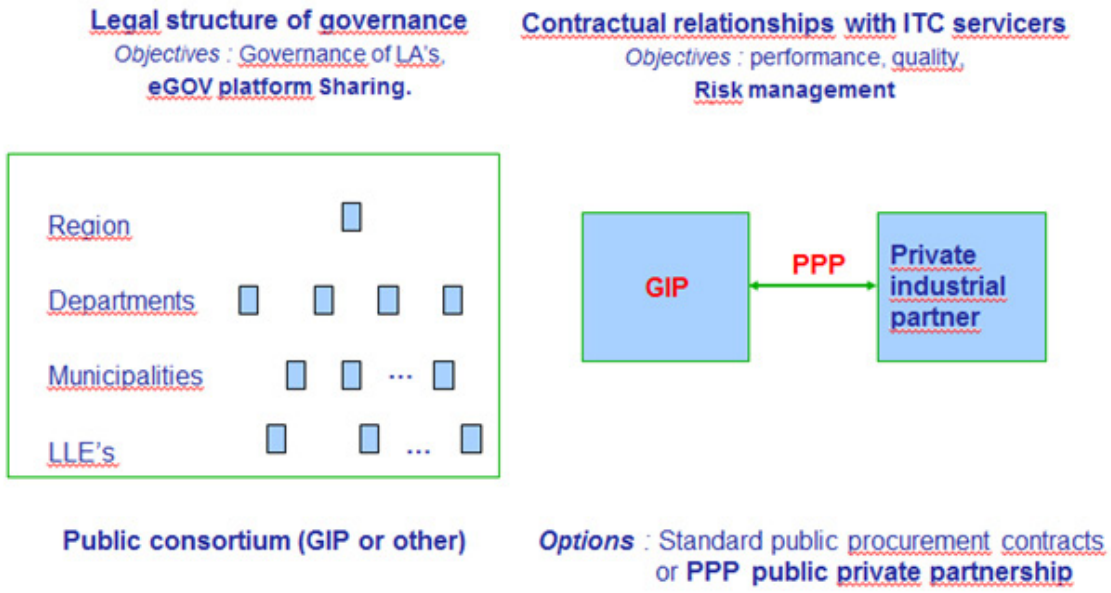


Figure 2: eGov regional platform governance vision

Source: eGov-Solutions website

As previously stated in this paper, the key issue in delivering eGovernment services in an optimised manner is the large number and different sizes of local entities. For municipalities, the size may vary from 100 inhabitants to few hundred thousand. The GIP e-bourgogne addresses this issue at the regional level by matching three objectives:

- economy of scale;
- geographical proximity;
- access of small size local authorities to eGovernment services with the right level of performance and quality.

At this stage of development, the Region is the appropriate level of sharing. National level will not match the proximity requirement; department level will not match the economy of scale objective.

A GIP is a stable legal entity which can resist changes, especially political ones. It defines the legal framework and rules of operations:

- Members can be local governments, local public legal entities, not private companies.
- Geographical coverage is defined.
- Scope of eGovernment services might be defined.
- Categories of members are defined with associated yearly fees.

- Yearly fees can be of two types, covering the usage of the shared platform and the access to a specific eGovernment service.
- Other rules address specific points of governance: general assembly, strategic committee, executive management, financial and budget management and control.

To date, the region of Brittany has established a similar legal structure through e-mégalis. (e-mégalis Bretagne, 1999). Ile de France is considering doing the same. In the next two years, a stronger momentum towards this end is expected.

At lower levels, several departments also headed towards this direction: Alpes-Maritimes, Dordogne, Aube, Ardennes, Marne, Moselle, Landes and Manche. It is still strongly considered that this is no more than the optimal level to get the most efficient and effective results from a shared eGovernment platform. Departments were traditionally created in such a way so as to allow anyone to reach the prefecture in less than one day on horseback; this is no more a binding criterion.

Now the established legal structure of governance has to decide if they will manage the whole cycle of eGovernment services by themselves or outsource all or part to an external ICT services provider.

## 3.5 Contractual relationships with ICT services providers

The contractual relationship can be twofold: standard public purchase contracts with ICT services providers and a PPP. In both cases, economies of scale do apply and local governments will benefit from wholesale purchasing.

PPP is better suited if the Public Consortium set as key priorities the following:

- take the lead in defining strategic directions and outputs;
- outsource the operational tasks of developing, installing and maintaining eGovernment services and the underlying shared platform;
- leverage the financial investment costs for an extended period of time (10 years);
- benefit from better value for money and sharing risks with private partner;
- set service level agreement and performance indicators directly linked with yearly private partner and yearly professional fees.

The pre-analysis of e-bourgogne PPP developed for Mission d'appui aux PPP (MaPPP) approval provides a more detailed study of PPP advantages and rationale (Ministry of Finance, 2008). MaPPP is a finance ministry department in charge of supporting all PPP projects in France and confirming that these projects meet the required criteria. One criterion is that PPP should bring more benefits than a standard public purchase contract. Such an analysis has been made by eGov-Solutions before deciding to go through the PPP process.

As shown in Figure 1, the best model of governance for a Shared Regional Platform in the long term with sharing of risk management is the combination of a public consortium GIP and a contractual relationship (PPP) with a private partner in order to design, develop, operate and maintain the shared platform. It was evaluated beforehand by the pre-analysis, and has been confirmed after implementation of the shared platform. Results were presented to the elected officials of the Region.

# 4. New Model Produces Considerable Gains

The new model of Governance for e-bourgogne (GIP plus PPP) yields significant measurable benefits. Those benefits have been measured after implementation of the shared platform on a limited number of eGovernment services. These measurements assured the elected officials that the decision taken to implement such a shared platform responded to citizens' expectations.

The two types of benefits evaluated were those derived from platform sharing and from digitisation. The benefits from digitisation validate and support the decision to go digital, which constitutes the first step. The second step is to prove that developing a shared platform generates benefits.

A method and a model have been developed by eGov-Solutions to evaluate these two types of benefits and have been applied to e-bourgogne. The main results are presented below.

## 4.1 Benefits derived from platform sharing

In evaluating the benefits derived from sharing a common Regional eGovernment platform, all LA's members for eBourgogne with the following two options were covered:

1. LA's manage by themselves the purchase and implementation of eGovernment services.
2. LA's are members of the platform entity and agree on sharing based on a yearly participation fee.

Benefits result in the reduction of five categories of costs:

- purchase and implementation of services (which includes eProcurement);
- agent education (how to use and job specific);
- user support and help desk;
- maintenance;
- project management (tenders, ITC suppliers, third parties, etc).

**Results**

Based on 10 eGovernment services over the course of a 10-year period, benefits from cost reduction due to platform sharing was €4 million per year for e-bourgogne at the time of evaluation (2010). All municipalities exceeding 20 000 inhabitants are members of the platform; the rate of membership below that size is less than 50 % on average.

These cost reduction figures will increase as local authorities join the platform. The increase in the number of eGovernment services provided will also improve those figures.

## 4.2 Benefits derived from digitisation process

It is not taken for granted that digitisation of administrative processes brings straightforward benefits, as they have to be evaluated. A model has been designed to evaluate those benefits (see Figure 3).

The evolution of a number of GIP members and of digitisation's percentage were evaluated. Then, the reduction of costs related to four categories was estimated:

- document handling and management;

- paper saving;
- storage and archiving saving;
- distribution saving.

These saving items are calculated for each eGovernment service and each task of the eGovernment service process. Those benefits are evaluated for all local authorities members of the Shared platform.

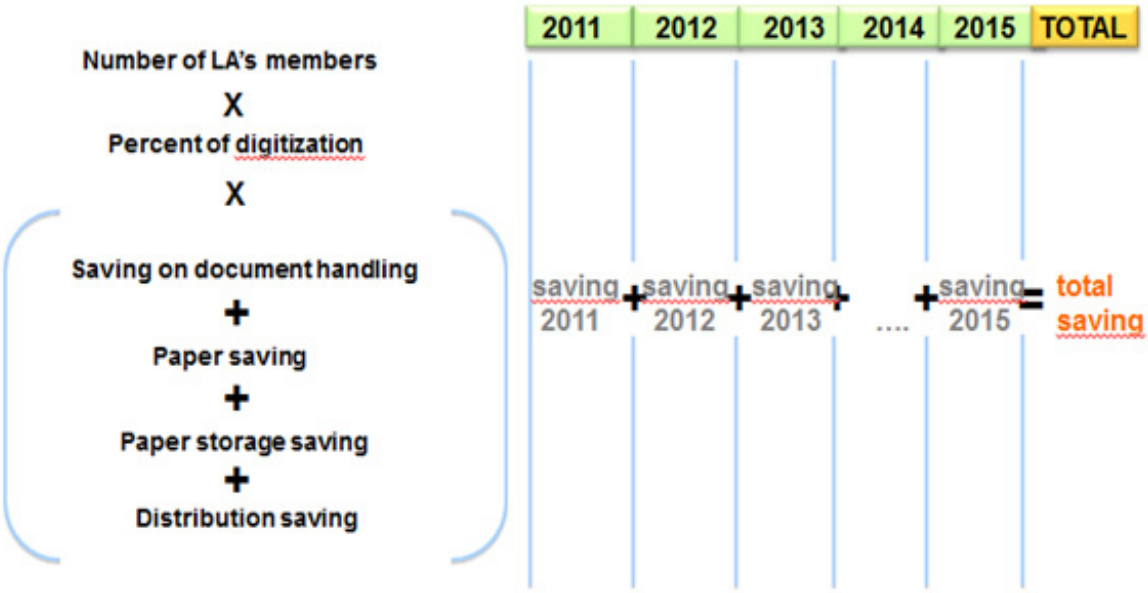


Figure 3: Digitisation – Benefits evaluation method

Source: eGov-Solutions website

**Results**

Based on three eGovernment services (eProcurement, legality control and accounting documents transfer to central treasury) over the course of a 10-year period, benefits from cost reduction due to the digitisation process was €2 million per year for e-bourgogne.

Saving will be increased with the addition of new eGovernment services. Benefits in better buying still have to be evaluated for e-bourgogne.

Other benefits not directly measured in euros are:

- reduction of processing delays, errors and loss of documents, advertisement costs;
- improvement of security, project education, buyer professionalism;
- impacts of end to end process digitisation.

eGov-Solutions recommended to the Ministry of Economy to accelerate the process of digitisation of public procurement and relationships between local governments and central government by making this process mandatory and to build the road map accordingly.

## 5. Conclusions

A new business model exists to deliver eGovernment services in an optimised way to citizens, enterprises, associations: a good practice is e-bourgogne, comprised of a GIP and PPP, which shares a regional eGovernment platform with many local entities, while delivering most of eGov services at best cost, quality and performance, with minimum long-term risks. Other models exist, i.e. e-mégalis, while others might be present in different countries with their specific legal environment.

The e-bourgogne model (GIP + PPP) has so far resulted in significant measurable benefits.

If the benefits measured for Burgundy to the whole country pro-rata population, together with the full spectrum of eGovernment services are extrapolated, the result amounts to € 1 billion per year.

Another key point is that contractual relationships between eGovernment platform and ICT services providers should be made on performances and risk sharing, not only on time and material, as is usually the case. This will be in line with the smooth running of the holistic circle (see Figure 4).

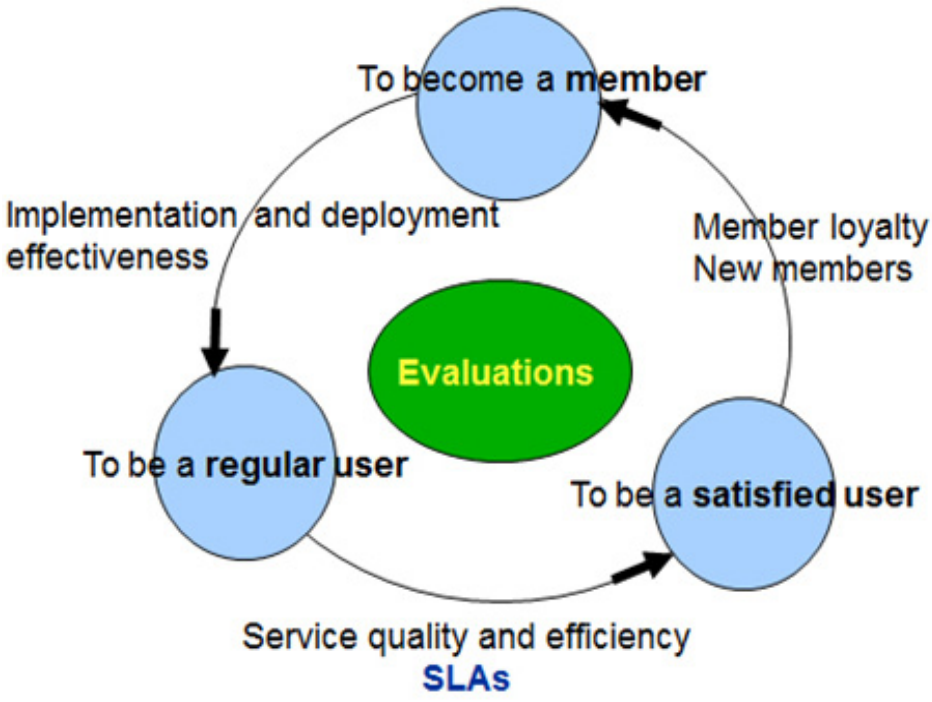


Figure 4: Holistic circle
Source: eGov-Solutions website

An interest group (Interest Group on Shared Services - IGSS) has been created at European level to carry out an exchange on shared services (ePractice.eu, 2012). It is run jointly by the European Institute for Public Administration (EIPA) and GIP e-bourgogne.

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# Leveraging Territorial Competitiveness through Strategic Service Delivery Partnership

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Sources Productions consulting

Keywords

PPP, eGovernment, performance, e-bourgogne, regional government

The e-bourgogne project constitutes a non-profit organisation, which uses the legal structure of a Public Interest Group (GIP). More than 1 100 local government entities of the Burgundy region, 40 % of educational and health entities, and more than 22 000 enterprises put to good use a large array of eGovernment online services, including eProcurement, one-stop shop for public grants, collaborative work, eLearning or eArchiving.

In October 2009, the GIP signed a 10-year Public-Private Partnership (PPP) with Atos, the very first ICT PPP in France. The GIP, through its strategic service delivery contract, supports regional competitiveness using both tools and methodology. More recently, the GIP has decided to proceed with the design of a Public Procurement and Digitisation Observatory for the region.

With the contribution of the PPP, the GIP has helped the local government entities and enterprises to better grasp the opportunities and challenges that ICT constantly offer. After three years of operation, a strategic service delivery contract is considered a substantial vehicle to:

- improve the performance of administrative procedures throughout the territory, thus providing assets to the regional competitiveness policy;
- organise a systemic view of the delivered services thanks to the shared platform;
- structure a group effort among the GIP members by seeking to develop common services with strong savings potentials;
- answer new challenges, directed from the members or from other factors, without wasting time and money on separate procedures.

> “The first French ICT public-private partnership helps support regional competitiveness in eGovernment.”

# 1. Introduction

113 PPPs have been contracted by French local government units from May 2005 to May 2012, of which 11 deal with ICT (essentially telecommunications) and only two handle strategic service delivery. In late 2009, the GIP e-bourgogne and Atos signed the only PPP focused on shared IT services for a whole region.

This article focuses first on the motives that led the GIP e-bourgogne to opt for a PPP that supports a strategic service delivery. It proceeds to elaborate on the experience gained through the first three years of this 10-year contract.

# 2. Supporting Regional Competitiveness with an eGovernment Platform

The French Strategic Plan for eGovernment (2004) (Premier Ministre, SIG, 2009) is a key component with regards to Local Government. It set up Burgundy as a pilot for a regionally-shared eGovernment services initiative. Predictably, the project was named "e-bourgogne". A partnership was signed between Central and Local Government in order to launch the project. Led in its early years by the Conseil Regional (Regional Administrative Council) and its partners, the project rapidly attracted concerted attention from the Central Government and its local representations. e-bourgogne was initially an answer to a procurement legal constraint (2005) (Code des Marchés Publics, 2012), compelling administrations to accept electronic biddings. This legal opportunity eventually transformed into the first regional shared electronic platform for procurement needs.

The e-bourgogne project comprises a non-profit organisation using the legal structure of a Public Interest Group (ePractice.eu, 2012; GIP e-bourgogne, 2012). The founding members of the GIP e-bourgogne (hereafter referred to as GIP) are the Burgundy Region, its four Departments and the State. Its members (1 100) include half of the local government entities of the region and 40 % of Educational and Health entities (colleges, university, hospitals). There are also more than 22 000 enterprises that use eProcurement and public grants services delivered by e-bourgogne.

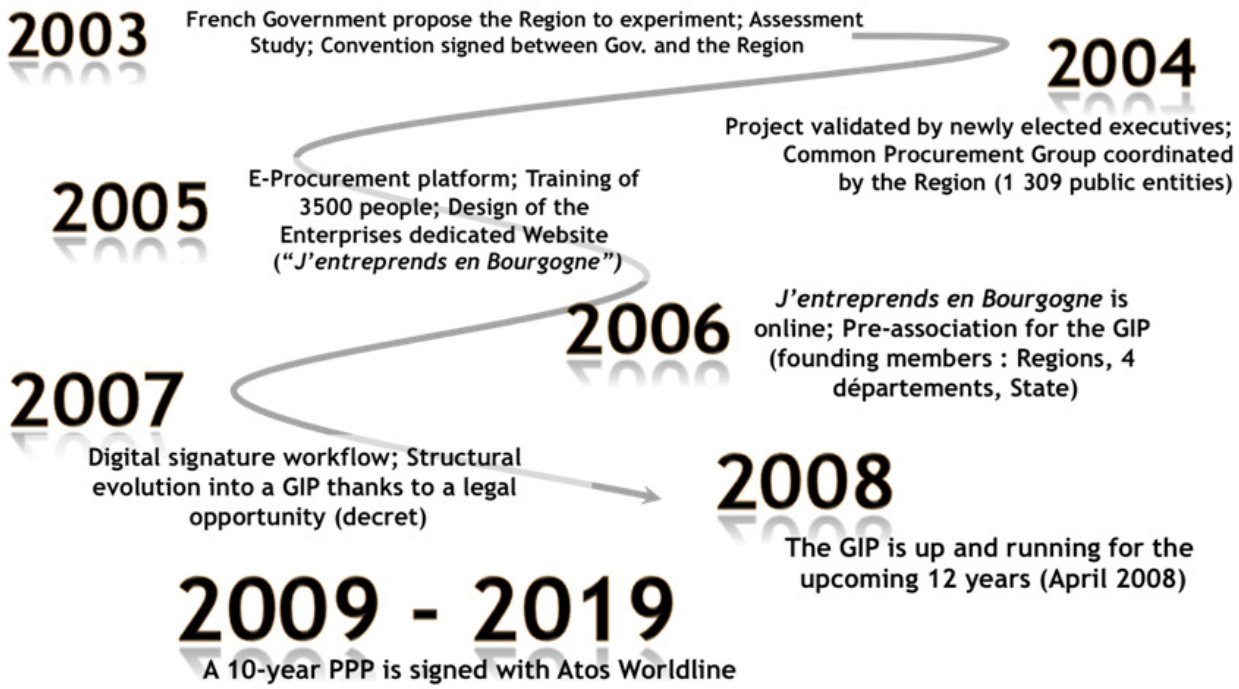


Figure 1: Roadmap towards the GIP

Choosing a legal structure for the project was a critical first step to achieve. As a requirement, the PPP contractual form of procurement needs an entity, which can provide the annual fee without endangering the overall economic structure between the project and its members. The GIP responds to this requirement, and also creates the appropriate organisational environment to resist political changes and to embrace the critical mass of all public entities in Burgundy.

At European level, the GIP is constantly involved with European projects (PROCURE, 2009) and has been recognised by various international organisations. Notably, in 2009 it won the European Public Service Award 1st prize in the "Performance improvement in public service delivery" category (European Public Sector Awards, 2009) and in 2010 the project received an honourable mention in the public sector for the Stockholm Challenge (Stockholm Challenge, 2010). In 2011, the GIP signed a partnership with the European Institute for Public Administration (EIPA, Maastricht) and co-designed and launched the Interest Group for Shared Services (IGSS) (ePractice.eu, 2011). Although the IGSS does not aim at PPP in particular, one of the outputs of the kick-off demonstrates the need to share public-private experiences.

**Economic model**

The annual budget, as voted by its members, is approximately € 4.5 million. The budget sources are three-fold. The 2013 budget projects the following:

- 55 % from the yearly fee paid by each GIP member, based on the type/size (inhabitants) of the entity;
- 25 % from direct participation by the founding members. These larger public entities subsidise for the smaller ones;
- 20 % from grants from the European Regional Development Fund.

Every member can access the whole range of services without any additional cost. Economic actors or citizens are not subject to fees.

**Tools and methodology to support competitiveness**

Burgundy is primarily a rural territory and the design of services should constantly keep those characteristics in mind. Out of the 2 045 municipalities spread across four Departments, more than 75 % have between 3 500 to 20 000 inhabitants. The TGV train takes 1 hour 40 minutes to travel from Paris to Dijon, the main city. The region attracts trading and services.

The GIP's primary objective is to assist the public entities to access the tools needed to develop eGovernment services for themselves and in relationship with their partners and customers (associations, enterprises, citizens). As an induced objective, this modernisation movement should lead to productivity assets, thus improving the Region's overall situation with respect to competitiveness: attracting SMEs (particularly thanks to a one-stop shop for public procurements, grants, alerts, counselling, etc.); increasing quality of services to the end users; and reducing administrative costs through shared digital policies. Developing awareness and giving the "digital push" are obvious secondary objectives for the GIP. As such, training sessions are expected to be deployed (via a network of "proximity representatives") all over the region.

As a result of these objectives, a strategic service-delivery approach rapidly came to the GIP's attention. It started to seek a long-term contract based on the procurement of eServices in line with its status (i.e. promoting and delivering eGovernment throughout the Burgundy region).

## 3. Rationale for Using a Public-Private Partnership Contract

Considering the ever-expanding field of eGovernment projects (either at local or national level), the GIP was interested in the specification of project outputs rather than project inputs: technical definition of the solutions would not be the burden of the GIP which would just remain at the helm. Furthermore, the structural capacity of the GIP in human resources (not exceeding 13 full-time equivalent) could not support designing, building and operating services for a target of more than 2 000 public entities. In addition, a direct financing of the technological investments for a sound, industrial platform was out of reach. The cost of the platform had to be spread over time (10 years) rather than on an upfront basis. It was considered that investments and design-build-run risks could be transferred to the private sector in payment of a negotiated fee, reflecting the quality of the services delivered.

Ultimately, the rationale for choosing the PPP rested on the intention to benefit from better Value For Money (VFM), considering the technical and deployment complexity as well as an expected optimal sharing of the risks (compared to successive tiling of usual public procurement). This will be further discussed in the VFM issue section.

**Catalogue of shared services**

The PPP is essentially a strategic service-delivery partnership based on information and communication technology (ICT). In order to support cost efficiency policy aligned with the competitiveness requirement, a shared services approach was decided. The following is an array of deployed eServices: eProcurement portal; one-stop shop for businesses (i.e. public grants); website generator (CMS) for small and medium-sized municipalities, which gives access to online administrative procedures; legality control of documents between local authorities and Central Government level; third-party digitisation exchange hub for municipalities; digital signatures for civil servants and elected deputies;

eLearning capacities; geo-tagged public services for mobile devices; collaborative work facilities among local authorities; and regional eArchiving for native digital legal documents.

An entire infrastructure has been rebuilt with full industrial processes as well as new and enhanced services. Technical solutions are developed under Open Source licenses.

To support this offer, the private consortium maintains the following tasks within the PPP:

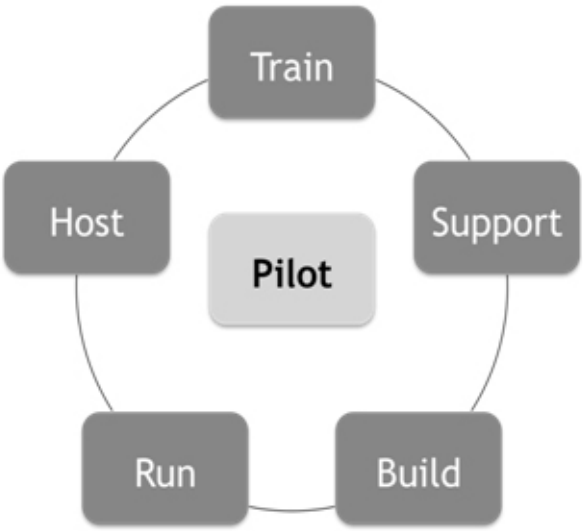


Figure 2: Tasks allocated to the PPP contractor

A dedicated company (Atos Bourgogne) was established with the designated task of managing the investment and financial workflows throughout the contract's duration.

**Understanding risks and specifying performance**

The PPP has been designed with a focus on risk management and quality assessment. Consequently, this concentration should somehow impact the contractor's success fees based on end user satisfaction.

The GIP potentially faced many risks when the PPP began. Although these risks were extensively debated during the competitive dialogue, they were yet to be experimented. The full matrix (six dozen organised individual risks) will not be presented in this paper, as it will instead focus on the GIP's most significant experiences.

- Operational issues building the core platform: success to meet investment, planning and performance expectations (a top priority for Year 1). The core was finally ideally delivered on time and on budget.
- Operational issues running critical eServices: concerns a few services (e.g. eProcurement portal) but from a member perspective, the GIP is in the front line delivering the right quality of services. Failure to properly delivery services means consequences for the enterprises and the municipalities involved. This situation has actually happened once during a tendering procedure. The combination of velocity and proper communication, along a simple decision process, provide a satisfactory answer to potential operational issues.
- Budgetary adjustments: some members' budget has been tightening up recently due to the

financial crisis. In this context, the implementation of a shared services platform has a significant impact on savings if investment keeps up. The balance between budget and implementation led to pressing discussions in order to recalibrate budgetary perspective with the contractor and the elected members. The GIP strengthens the virtues of a strategic service delivery contract as larger local authorities are squeezing their own budget.

- Partnership issues with the sub-contractors: outsourcing a chain of services, from the members' contact centre (emails/calls) to the critical eProcurement portal, attracted much attention. A shared understanding of the GIP's drivers is essential and regular partnership meetings with the contractor's staffs are scheduled.

Attributed to risk monitoring are performance specifications. Most of the Key Performance Indicators (KPIs) focus on processes and objective measures for the services delivered by the contractor. Some are directed towards the GIP who is in charge of external communications and delivering training to the members. Few refer to qualitative appreciation of the services (through surveys and calculus of quality ratios). These are directly bound to the annual potential fee bonus. It took two years of observation to start deploying them correctly. The project steering committee uses a monthly online tool to monitor the KPIs in direct connection with the financial impact for the contractor. Interestingly enough, after the first years of operation, the GIP considers implementing a full Balanced Scorecard approach later in the PPP timeframe. The motive is to help the elected members of the GIP better understand and participate in the supervision of the contract.

**Value for Money: a synonym of administrative performance**

The Value for Money (VFM) assessment forecasts over € 50 million in savings for local government and € 7 million at State level (5.5 million sheets of paper will be liable to digital processes). Some of the estimates can already be reported regarding shared services such as eProcurement, collaborative web facilities, eLearning tools, regional eArchiving and a common CMS platform. The smallest members are those who get the most benefits: a municipality with 1 000 inhabitants accesses the full array of e-bourgogne services (see above) for little more than € 1 000 a year. It would be hard to compete with such a price.

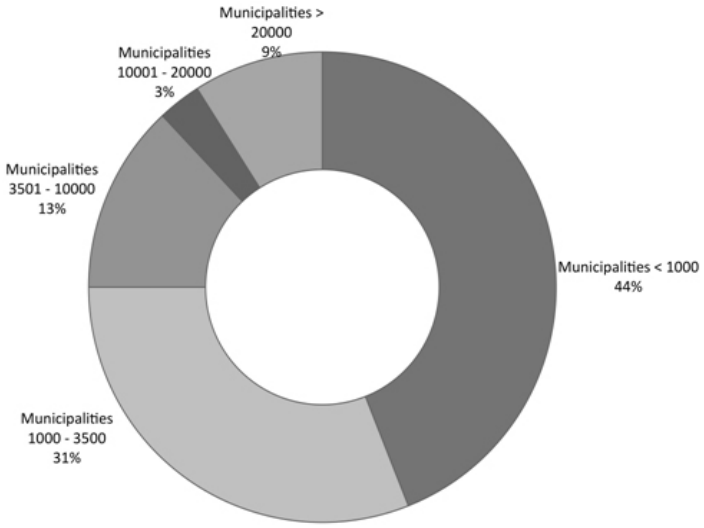


Figure 3: Savings per municipality size

The basic principles of the contract (PPP) allow the GIP to get a clear annual view of the budget for the entire duration (fees, investments, maintenance, roll-out, software developments). The investment programme is properly detailed for the first six years of the programme. The total budget for the duration of the PPP is € 20 million. Risks have been pre-estimated at different planned stages of the contract (first six months, first year, mid-term, end of contract) as well as in case of an unexpected premature termination of the contract. The PPP implies a strict enforcement of budgetary control specifically for the following topics: investments in hardware infrastructure to host the platform (storage capacity for eArchiving, web sites, virtual classrooms, etc.); regional call centre; software maintenance and developments; eLearning capabilities; and change management assistance.

Are there any hidden costs and profits? On such a long-term contract, the GIP elected members are vigilant to look for possible hidden costs. Those additional costs would come from outside the annual fee paid to the contractor or other external help. So far, experience has showed that a reasonable yearly budget should be considered for responding to specific queries by GIP members (e.g. development of an Open Data portal or a common procurement catalogue for public refectories) in the context of the PPP programme.

Moreover, options are open within the contract for new revenues based on eServices specifically designed for e-bourgogne that could be transferred to other regional contexts. New services that could arise during the contract are valued based on a negotiated grid regarding complexity (build, run). Those pre-contractual works were adamant to any presentation before the founding members of the GIP e-bourgogne. Yet the GIP estimates that 100 % sustainability is still dependent on the annual grant of the founding members.

## 4. Lessons learnt: maintaining momentum and opening dialogue

The PPP has already completed three years of operation. The GIP can formulate some insights about this form of management and strategic ICT delivery by mainly working side-by-side with a private contractor for an extended period of time.

**Dialoguing and contracting**

During the PPP competitive dialogue which lasted almost a year, it was essential for the candidates to understand both the principles and the economic model that are day-to-day drivers for the GIP. That is, basically, optimising public finance in sharing resources and applying the principle of solidarity in municipalities of various sizes. The competitiveness issue for the region was not something the majority of the candidates fully grasped in their strategies of the contract. During the dialogue in 2008, the GIP felt that the overall maturity of the industrial candidates regarding PPPs was rather low.

The contract design is, obviously, the cornerstone of the relationship over the years. It is a document both partners regularly refer to. The annexes of the contract define quality standards, provide a matrix for the risks (who takes what) as well as a procedure for technological evolutions of the platform and so forth. Those annexes have been refined once since the beginning to reflect procedural adjustment following the reality of the contract.

**Developing the offer**

In essence, the programme decided for the PPP offers a clear view of the core services to be deployed. This is the mandatory part of the contract. Alternatively, there are also optional services

the GIP can ask for. These options are very much linked to technological or legal opportunities (e.g. in 2011, online payment for civil servants or, later in 2012, building permits for citizens). Eventually, the service portfolio is bound to grow. This situation led the GIP to face a practical question: how do we promote continuous innovation in matters concerning service delivery and IT evolutions? Joint motivation from the GIP and the private partner has been observed on this issue. The GIP usually acts as a leader in presenting new governmental opportunities related to central services (e.g. simplification of an administrative procedure). The partner shows innovative designs and solutions imported from other customers (private or public). A dialogue is first initiated between the contractor and the GIP and then with appropriate members. The output of this dialogue is a go-no-go to explore a potential addition to the e-bourgogne offer (e.g. online payment of municipal facilities with a notion of "family account" containing parent and children data). As an example, a Citizen Relationship Management programme recently started for the GIP based on a contractor's new public entity client. This expertise brought by the private partner bears a substantial offset of the overall cost for this CRM project. But the challenge is to keep the focus on the core services (i.e. eProcurement, simplified online procedures for administrations, etc.) and seize the right opportunity (i.e. open data) from less value-added solutions. On the one hand, the IT-centric company may push forward the "shinny" stuff. On the other hand, rural municipalities still have to absorb many digital procedures.

It is significant to note that new IT developments are under open source licenses in order to help disseminate the software bricks to other municipalities. Since April 2012, the source code of the technical platform is freely available on the Adullact Forge (Adullact being an association sponsored by local government units).

**Managing contract flexibility**

The GIP is able to use the contract as a framework to draw technical expertise on the spot (e.g. mobility and geo-tagging of services, Open Data cataloguing). This easygoing option tends to strengthen and improve the overall position of the GIP as a facilitator for projects initiated by its members. Delays are minimised, costs are competitive and solution integration within the platform is optimal. It needs constant awareness to address GIP members' expectations without shifting the vision to singular/specific delivery of services ("My needs are special, how can you respond to them?"). As a result, the GIP recently took the lead in organising two types of regular (trimester) meetings with the founding members. The first involves the CEOs and discusses digital policies and how the GIP proposition can help develop territorial attractiveness. The second involves the CIOs. The goal is to obtain a cross-over view of the IT Strategic Plans of each founding member and the PPP development programme. The latter meetings proved to be the optimal solution to get the members involved proactively. There is still much to do, as the initiative for these meetings begun a little more than a year ago; nevertheless, it definitively puts the GIP on the right track to widen the PPP perspectives.

**Maintaining momentum**

The GIP learned that maintaining the momentum with the private partner is a key factor. The first year of the PPP was fully staffed since it consisted of the crucial building part of the contract. Year two needed a lot of human resources to complete the programme, even advancing somewhat the schedule. Year three was more maintenance and exploitation of the previously launched services. Each year, the GIP and its contractor lent themselves to a rigorous planning of the budget and the activity programme. For the contractor, it meant adapting its sourcing and investment but staying in line with the overall provisional programme signed in the PPP.

The GIP is constantly seeking out new members and strengthening the loyalty of its existing ones. It has to be vigilant with its contractor in order to share the same goal. The momentum ensured is critical to the contract as it contributes in reassuring the political involvement of the elected members of the GIP, along with the provision of tokens on the benefits of shared services (i.e. scalability, common ICT investments, large scale training, adherence to national and European interoperability framework, etc.).

## 5. Conclusions

Thanks to the PPP, the GIP has helped the local government entities and enterprises to better grasp the opportunities and challenges that ICT continuously offers. Elected members are more keen to understand how this particular form of contract is used to effectively support the development of the region's eGovernment initiatives. A useful knowledge map related to this can be found in 'Public-Private Partnerships (PPPs) in e-Government: A knowledge map and handbook' (Kelly, 2011). The PPP serves the following purpose: GIP members do not have to think about the next procurement procedure every 3-5 years or how to properly terminate the existing one while delivering at the same time continuous public service. After three years of operation, a strategic service delivery contract is considered a substantial vehicle to:

- improve the performance of administrative procedures throughout the territory, thus providing assets to the regional competitiveness policy;
- organise a systemic view of the delivered services thanks to the shared platform;
- structure a group effort among the GIP members by virtue of seeking to develop common services with strong savings potential;
- answer new challenges, directed from the members or from other factors, without wasting time and money on separate procedures.

The GIP currently intends to design a Public Procurement and Digitisation Observatory for the region. Rigorous steering tools have been put in place for the PPP that have allowed the GIP to step forward in assessing procurement and on-line services activities in the region. The municipalities are not the only ones concerned, but also the business fabric and, to some extend, the citizens. This gives the GIP a unique position in the region to observe the trends and the digital usage. It now aims to design an online portal able to produce stats and downloadable data of its services as well as some level of analysis of the "digital behaviour" of their users. Procurement will be the first topic with data that is useful for the Construction Federations (representatives of SMEs): trends in procurement by geography, by type of procurement, etc.

Among the next challenges for the GIP is the upcoming French territorial reform. It seeks to simplify the administrative map by merging municipalities and re-deploying competencies. The prospective impact for the GIP is a new assessment of its economic model. The PPP is en route to its fourth year and has 6 more to go. The contract should give enough flexibility to procuring Managed ICT Services in Local Government in the evolving local environment. So far, it proved to be a proper instrument for transforming the efficiency of public services delivery.

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# Sharing public services in a cloud by using global service-oriented architectures.

This article is based on a study conducted by Deloitte for the European Commission, published with the title 'Study on cloud and service oriented architectures for eGovernment' (EC, 2010b) that investigated eGovernment service delivery models based on the concept of providing 'fundamental services' in an open cloud of public services through which they can be re-used and recomposed to create new services. The key questions which the study addressed were: What is the correct level of granularity[1] needed to define 'fundamental services'; which services have the highest potential for re-use; and what the possibilities are and the impacts of delivering public services in an open cloud of public services?

The study revealed that the potential opportunities and benefits for public administrations, third parties and end-users of providing public services in line with the cloud of public services concept are significant. Migration towards this model of public service delivery is therefore highly recommended.

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Keywords

cloud of public services, interoperability, service orchestration, service-oriented architecture, Web2.0.

> "The move towards the concept of a cloud of public services has potentially large benefits for all the actors involved."

1 The overall quantity of functionality encapsulated by a service determines the service granularity. A service's granularity is determined by its functional context [...] The larger the quantity of related functionality, the coarser the service granularity (cf. SOA Glossary. Definitions for Service-Oriented Computing Terms. http://www.soaglossary.com, accessed 9 October, 2012).

# 1. Introduction

Service-oriented architecture (SOA) is increasingly recognised as an important driver of open and interoperable service delivery in both the private and public sectors. A review of online articles, particularly focusing on specialised technology blogs, underlined the constant evolution of the ICT world. There is an increasingly often-cited claim that 'SOA is dead' and that it has already been surpassed by new and innovative architectural approaches, including mashups, Software as a Service (SaaS) and cloud computing. However, proponents argue that the principles on which SOA is founded remain valid. While the acronym itself may become out-dated and its deployment mechanisms will change, the architectural approach of re-using existing services' functionality to create new applications is durable (Infoworld, 2009).

In this context, Web 2.0 technologies have an increasingly important role to play in the move towards universal or global SOA[1]. Indeed, Web 2.0 has been described as about 'the entire Web being a reusable, shareable, public SOA' (Ria News Desk, 2006). Already widely employed by citizens and businesses for social networking and other online interaction online tools and platforms, Web 2.0 has the potential to alter the dynamics between public administrations and third parties in terms of public service delivery. Indeed, a report conducted by Deloitte for the European Commission on 'User expectations of a life events approach for designing e-Government services' found that social networks, crowd-sourcing, rich content, blogging, and social bookmarking can offer public administrations immense opportunities to provide user-centric, collaborative online services, which are new, easy-to-use, and create more value for society as a whole (European Commission, 2010b).

Facilitated by Web 2.0 technologies, the evolution towards universal or global SOA highlights the different levels of SOA. This signifies a move from a traditional information technology (IT) silo approach toward a more and more 'atomic' or 'compartmentalised' collection of services that can be composed, virtualised, integrated and ultimately dynamically re-configured through services that can be re-used and orchestrated as part of other/new services (The Open Group, 2009).

# 2. A cloud of public services

The notion of a cloud is often associated with cloud computing and the technical aspects of enabling a cloud environment. In this study on cloud and service-oriented architectures for eGovernment, however, a cloud refers to a collection of public services serving as 'building blocks[2]', which can be offered in an open and interoperable way and re-used and combined by public administrations and third parties as part of other services, based on the concept called universal or global SOA.

The concept of a cloud of public services is illustrated in Figure 1 below. The figure shows that the provision of public services decomposed into individual public services (i.e. the small blocks in the cloud) can be instrumental in developing a new method of service delivery. It can benefit the different actors involved, namely public administrations, third parties, and end-users. In short, it allows public administrations to provide services that can be re-used across eGovernment applications by different public administrations as well as third parties. The more fundamental services that are available in the cloud, the greater the opportunity for re-use. The better also the combination of

1 'Universal' or 'Global' SOA has been described as "outside-in" SOA. This means re-using services within an organisation, such as a public administration, as well as services not created by that organisation, by connecting an internal SOA to the internet (cf. Linthicum, 2005).

2 In the context of this study, building blocks were defined as essential services components of end-to-end online public services that are potentially transferable and re-usable. Examples include identity and access modules or the transfer of electronic documents.

existing services available to deliver the same type of service in a more efficient, tailored way (e.g. an eGovernment application or an application developed by a third party) or to develop new services in combination with third parties.

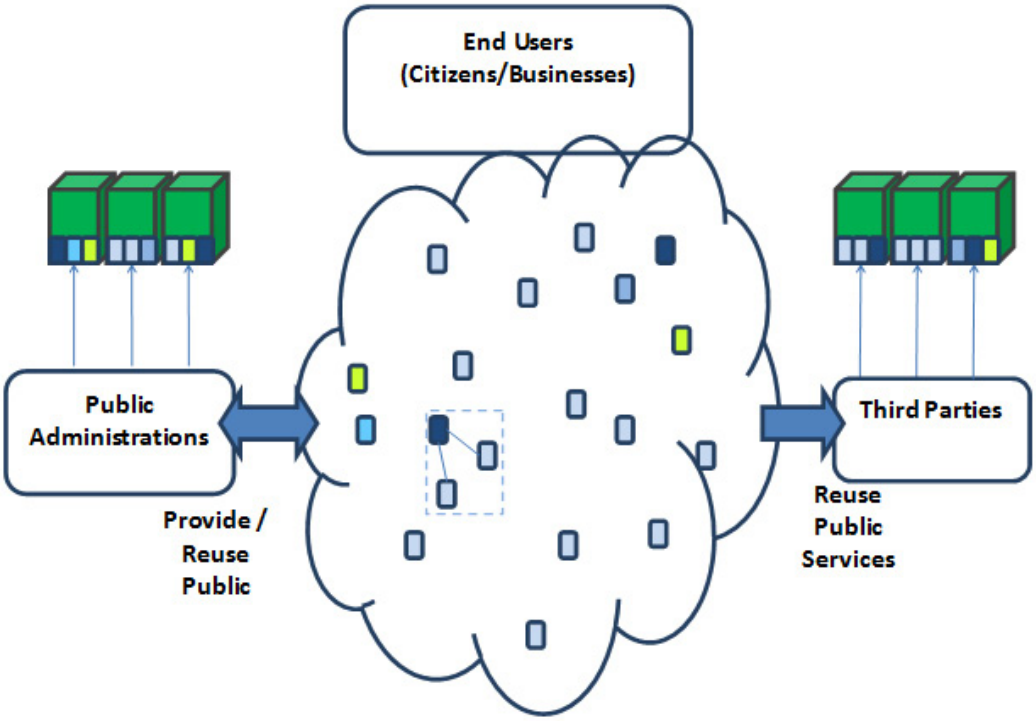


Figure 1: The Concept of a Cloud of Public Services

In order to achieve service delivery in line with the concept of a cloud of public services, the study investigated:

- how a public service can be categorised, and what services are fundamental services;
- how the different services can be identified as part of the process of public service delivery;
- what potential impacts can be derived from a cloud of public services.

In view of recent policy and technological developments, the study developed a service taxonomy and methodology in order to identify the building blocks of public services. The proposed taxonomy and methodology were then applied via case studies within the scope of the life cycle of a business in Belgium, Italy and Sweden. The findings were used to develop the definition of a fundamental service.

Based on real-life approaches to the provision of online public services for re-use by different actors, as well as a number of suggested future scenarios, the study analysed the possibilities for the design of a cloud of public services and the impact of offering public services in this manner. The main conclusions were then presented and recommendations for future activities were made.

## 3. Service Taxonomy

Following a review of existing service definitions, the study proposed a service taxonomy based on the categorisation provided by Josuttis (2007) in which services can be divided into three categories:

- Process Public Services represent workflows or business processes, combining other services through orchestration.
- Composed Public Services are based on other services which are combined to form a new composed service.
- Basic Public Services implement basic business functionality:
    - Basic Data Services read or write data from or to a backend system.
    - Basic Logic Services represent fundamental business rules.

This taxonomy was selected because its categories provided an appropriate framework both for the establishment of a degree of granularity and for the investigation of the potential for re-use.

In line with this service taxonomy, the entire process for the delivery of public services is supported by services that can be of the Process Public Services type, which are composed of Composed Public Services and/or Basic Public Services. A Basic Public Service can be either a Basic Data Service or a Basic Logic Service. As the name implies, Composed Public Services constitute Basic Public Services.

## 4. Service Methodology

Following a review of existing methodologies in the SOA-related literature, the study proposed a top-down service decomposition methodology. The methodology consisted of three steps:

**Step 1:** Define the overall scope and life events

The focus was on the life cycle of a business. The European Commission has adopted a 'common life events' approach to eGovernment services provided to businesses. The European Commission's 'Your Europe' website (EC, 2010b) defines eight major groupings of life events. The actors that were involved were identified for each life event.

**Step 2:** Identify the laws, input and output

In the second step, information concerning the service delivery process was analysed. A public service requires input and provides output. It also contains a certain logic, which is defined by those rules that originate in the relevant laws. The legislation defines the purpose, input and output of a service and is therefore key to defining the specific services.

**Step 3:** Identify services and create the service maze

The public services identified are grouped in different types, according to the service taxonomy. They are presented as a 'service maze'. Within this maze, the services that form the building blocks that support the delivery of public services, related to a life event, are located at the level of Basic Public Services.

## 5. Towards the identification of fundamental services

The service taxonomy and decomposition methodology were tested through case studies in three Member States in the scope of the life cycle of a business. The case studies included the following six life events of a business: Starting up, Managing, Expanding, European Union (EU) Market, Responsible Business and Exit Strategy.

The findings of the case studies identified:

- A total of 239 services, 118 of which were Basic Data Services and 54 of which were Basic Logic Services.

On the one hand, the high number of Basic Data Services highlighted the fact that public administrations regularly deal with the registration of data to support the delivery of public services. Basic Logic Services, on the other hand, contain a degree of logic derived from the legislation. Many of these services are therefore verification services, which verify compliance with a certain established law or rule.

Given that both data and rules (i.e., Basic Data and Basic Logic Services) are clearly essential to the delivery of public services, and are apparent in different public administrations across the three Member States, it is at the Basic Public Service level that fundamental services should be defined[3].

According to this formulation, the study identified a total of 172 fundamental services in the three Member States in a selected set of public services within the life cycle of a business. Many of these services are similar in scope across the Member States investigated. They provide much the same functionality (e.g. to register a new business in the business registry). Details of each service may, however, differ due to various legal environments and requirements for data input and output.

3 A 'Fundamental Service' is a Basic Public Service (both Basic Data and Basic Logic Services) that is autonomous. It is provided by a single responsible role and receives as input only the output from Basic Data Services, documents or objects produced by citizens, businesses or administrations.

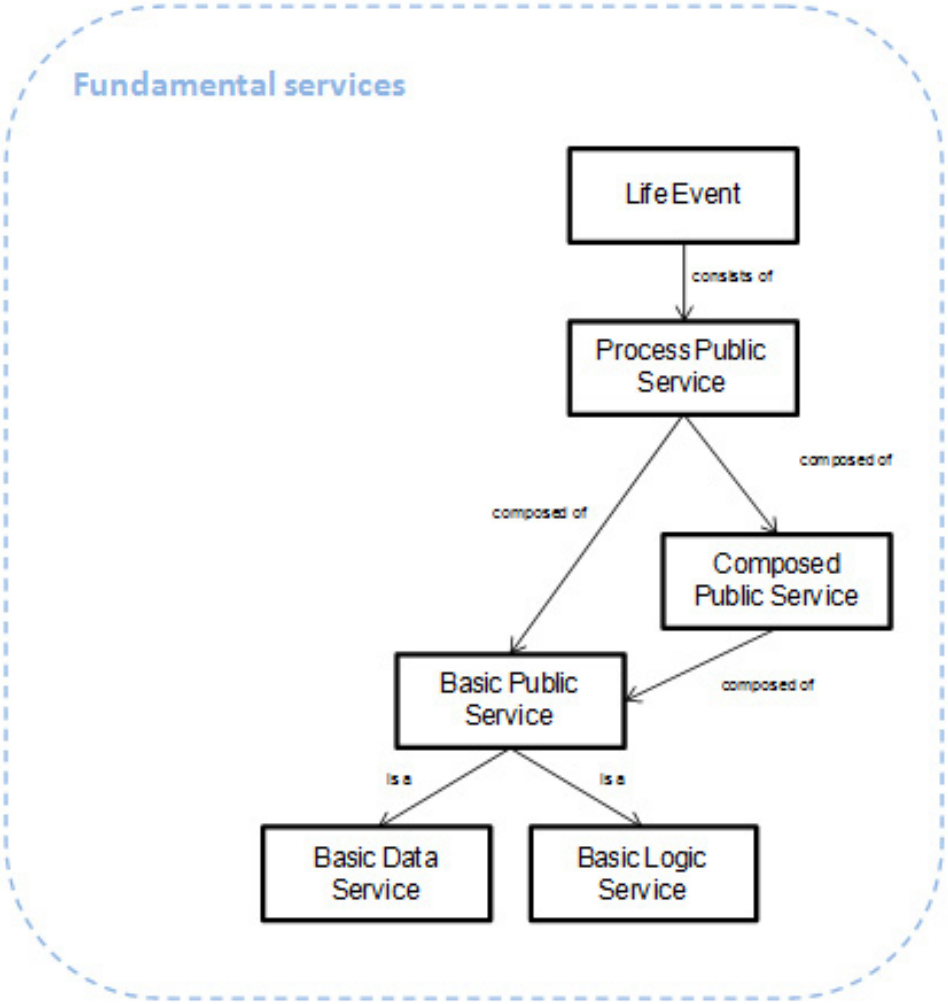


Figure 2: Service Taxonomy

These service definitions are also in line with the recommendations put forward in the European Interoperability Framework (EIF) that calls on "Public administrations should develop a component-based service model allowing the establishment of European public services by reusing, as much as possible, existing service components" (EC, 2010a:13). According to the EIF, "aggregate public services are constructed by grouping a number of basic public services that can be accessed in a secure and controlled way [...] they can be provided by several administrations at any level, i.e. local, regional, national or even EU level" (EC, 2010a: 16).

Re-use of public service components can in principle be found at each level of services. However, the examples explored in the study demonstrated that there is a relationship between the domain specificity, and the potential to re-use services. Service components in a particular area of public administration are more likely to be re-usable within that specific area. The higher the level of granularity of the component, or the higher it is positioned within the service taxonomy, the more the component tends to have a domain-specific functionality. As a general rule, there is therefore an inverse relationship between level of granularity and the scope for re-use. High-level Process or Composed Public Services are less likely to be re-used in comparison with Basic Public Services.

## 6. Model of a cloud of public services

Following implementation of the service taxonomy and methodology in Belgium, Italy, and Sweden, a conceptual model was developed to represent the key elements in a cloud of public services. These included:

- end-user (client or web) applications, which allow end-users to use services and interact with the service provider;
- the collection of public services as building blocks, which can be offered in an open, interoperable way and re-used;
- the different categories of public services – Process, Composed, or Basic (Data and Logic) Services, as defined by the service taxonomy.

The conceptual model of the cloud of public services reflects the public services by structuring these in layers as illustrated by Figure 3. These public services were also identified as service mazes in the case studies.

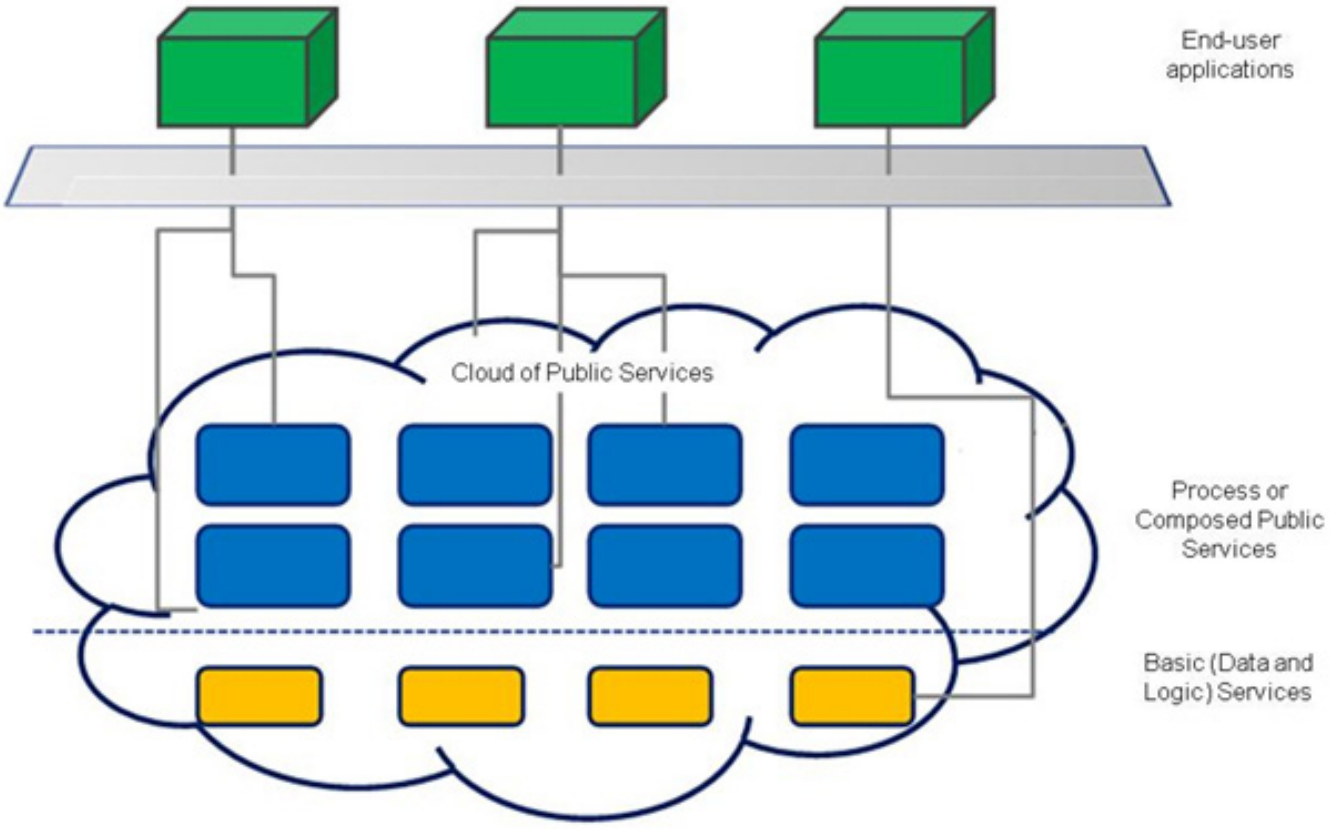


Figure 3: Conceptual model for the design of a cloud of public services

In this figure describing the conceptual model, the green boxes represent end-user applications which deliver public services to citizens and businesses. The blue rectangles are Composed and/or Process Services, and the orange rectangles represent the Basic Services involve Data and Logic. The end-user applications are typically built from Composed and/or Process Services and Basic (Data and Logic) Services or fundamental services. These are the building blocks of public services, which contribute towards the fulfilment of public services for end-users.

## 7. Opportunities that emerge from a cloud of public services

Based on this conceptual model, three scenarios were elaborated to illustrate the opportunities for public and private actors that arise from having a cloud of public services. The scenarios depart from the current 'as is' situation. Rather, they build on existing initiatives to illustrate the future potential opportunities, which can be derived from providing services in an open and interoperable way.

The three opportunities are:

- Public Value Services: The services currently provided by the eHealth platform in Belgium could be used to provide additional services such as a flu prediction service.
- Competition: A scenario could be foreseen in which third parties, such as banks, deliver company registration services that are currently provided by one-stop-shops in Belgium.
- New business models: In the future, it would be possible for a single service provider to be authorised to carry out all the activities needed to acquire permits and licences for businesses.

The scenarios depended on three elements: the specific context in which a new service is provided; the actual functionality provided by the available services; and the creativity of service providers in combining these services to serve a specific purpose in a new context.

## 8. Prerequisites and Challenges

Three real-life examples of open and interoperable approaches to public services were also evaluated in order to investigate the prerequisites and challenges for the achievement of a cloud of public services. These were the Belgian Federal Service Bus (FSB), the reference architecture for the Dutch government (NORA), and German Standards and Architectures for eGovernment Applications (SAGA).

There were four prerequisites and challenges identified. They included the need for:

- open, published standards and agreements, which clearly state the ground rules;
- a service catalogue, which describes the available services, their content, quality and Service Level Agreements;
- consideration of data security requirements and the establishment of trust via transparency;
- attention to the legal implications of process redesign, political buy-in and coordination.

## 9. Migration Strategies

In order to fulfil the prerequisites and address the challenges identified, the study suggested that migration to the cloud of public services could be facilitated by using a layered architecture to create domain specific clouds of public services, which would be gradually integrated at a higher level. This approach would allow the service provider to start small in cooperation with a limited set of stakeholders, reduce the complexity, and increase the buy-in and ability to move towards new ways of delivering services. This approach is followed by most countries in which the real-life examples were identified: the countries started in specific domains to provide more open and re-usable services (e.g., in the field of citizen administration, social security and business registers).

Alternatively, functionality captured in existing legacy systems can be re-used by adding a service layer and exposing this to a cloud of public services. This approach avoids reinventing the wheel and keeps the responsibility for, and ownership of, services and data with the public administrations which are already in charge of them. It is an approach that is likely to provoke less cultural resistance to change, and limit the changes necessary to existing infrastructures and responsibilities at a minimal level.

Any strategy for migration is likely to be most effective when adopting a gradual, phased or incremental approach. Establishing a proof of concept, as was demonstrated by several examples in the study, is likely to result in the incorporation of more services over time.

This approach could also lead to the exploration of services that can be re-used at EU level in cross-border scenarios. The domain specificity of services, and country-specific requirements stemming from national legislation, would however also need to be taken into account when investigating the potential for cross-border re-use.

## 10. Impact of a cloud of public services

Following a review of existing frameworks, the study developed a model to investigate the potential impact of a cloud of public services. Three main high-level types of benefits were identified:

- **Efficiency:** Combining services in a cloud to increase the efficiency of an existing service (time, costs, resources and administrative burdens);
- Effectiveness: Enabling an existing service to be offered by new service providers (integrated service delivery and one-stop-shops);
- **Innovation:** Facilitating the creation of new services by re-using already existing services in the cloud as building blocks for innovation.

A series of more detailed indicators, which characterise the main impact categories, was also suggested. The indicators include: cost, time, resource and red tape reductions (Efficiency); more integrated and user-centric service delivery and increased competitive advantage (Effectiveness); and the development of added-value and new services, which are secure and reliable (Innovation).

The study identified four existing examples of open and interoperable service delivery, which are comparable to the future implementation of the cloud of public services. These were the Belgian eDepot and the Crossroads Bank for Social Security (CBSS), the German Administration Services Directory (DVDV), and the Danish system for the Registration of Land and Property (eTL). Their evaluation revealed significant positive impacts for public administrations, third parties and end-users in terms of Efficiency, Effectiveness and Innovation.

In terms of Efficiency, the eDepot (Belgium) reduces the time needed for a company to be set up from 56 to 3 days, while the introduction of eTL (Denmark) resulted in annual cost savings of €70 million. The CBSS (Belgium) and DVDV (Germany) meanwhile demonstrate the importance of Effectiveness indicators, acting as an integrated portal and one-stop-shop in the fields of social security and civil registration respectively. Innovation indicators for new and added-value services can also be observed across the two examples, with the CBSS and DVDV resulting in an improvement in both the quantity (availability) and quality (accuracy) of service delivery.

Importantly, the costs of providing public services in an open and interoperable way are relatively small in comparison to the benefits. The DVDV and eTL projects in particular have displayed impressive returns on investment. Application of the proposed measurement framework to the three future scenarios reveals a similar picture for a wide range of potential impacts.

This exercise has shown that the potential benefits of delivering public services via a cloud of public services are significant and should be considered by public administrations when implementing eGovernment services. The approach allows not only for cost-effective service delivery, but can also result in positive benefits for public administrations (which have the ability to re-use functionality provided by existing services for the development of new services), third parties (which, similarly, can re-use existing services in order to deliver new services, thereby gaining a competitive advantage by providing better services to clients or tailoring services to a specific group of users), and end-users (who benefit from a wider choice of services which are potentially more user-centric, effective and efficient).

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# Public Open Source Software Procurement Models: The Next Generation

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Keywords

Framework agreement, mini competitions, procurement models, open source software, Swedish model

One year ago, the new Swedish framework agreement for the procurement of open source was launched. Five suppliers were contracted to provide software and services. Central government, the public educational sector, all twenty county councils, and 225 out of the 290 Swedish municipalities are participating in the initiative. They promote mini competitions for contracts that the suppliers then have to compete for.

The current framework includes two major changes to the procurement model used in the previous framework agreement, aiming to overcome current barriers and increase the use of open source. First, under the old procurement directive, customers could pick and choose among the suppliers while the new framework requires mini competitions. Second, the old agreement did not protect the customers from 'Fear, Uncertainty, and Doubt' (FUD).

> "Swedish Framework Agreement overcomes FUD, inertia, risks and other barriers."

The rationale behind this model is the creation of competition between the suppliers, the minimisation of risks for customers, and the provision of a way for software development paid with tax money to be given back to the community.

To the best of the knowledge of the people at the Swedish National Procurement Services (NPS), this framework agreement is the first one for the procurement of open source software in Europe. Despite being recognised as a next step in software procurement, the agreement will not be replicated in countries like Spain and the UK.

# 1. Introduction

One year ago, the new Swedish framework agreement for the procurement of open source became active. Five suppliers were contracted to provide software and services. Central government, the public educational sector, all twenty county councils, and 225 out of the 290 Swedish municipalities are participating in the initiative. They promote mini competitions for contracts to which the suppliers then respond.

This model differs from the recommendations made in the European 'Guideline on public procurement of Open Source Software' that aims to overcome current barriers and increase the use of open source (http://joinup.ec.europa.eu/news/se-framework-agreement-increases-use-open-source).

The Swedish framework agreement 'Öppna programvaror 2010' (Open Source Software 2010) (avropa.se, 2010, in Swedish) has been active for almost a year now (http://joinup.ec.europa.eu/news/se-framework-agreement-increases-use-open-source). It constitutes an agreement between the national public sector and five IT suppliers for the procurement of open source software and associated services. All parts of the central government, the public education sector, all twenty county councils, and 225 out of the 290 Swedish municipalities can use the framework.

"By law, the government cannot decide what a municipality or county council should do," Daniel Melin explains. Melin is Procurement Officer ICT at the Swedish Legal, Financial and Administrative Services Agency (Kammarkollegiet). "So for each framework agreement we procure we ask each of those to give up their decision-making power to us. In this case, all county councils and 225 municipalities joined." This does not imply that it's mandatory to use the agreement: "Usually the customers use the framework if they can. They don't have to, but in that case they would probably end up having a less good deal."

The current number of participating municipalities is roughly equivalent to the number participating in the previous framework agreement. One of the problems the other municipalities had is the question of which department should take up this request.

# 2. Framework Agreement

According to Melin, this framework agreement is the first one on the procurement of open source software in Europe. Its origins date back to a similar framework that ran from 2007 to 2011. "The agreement was created by the National Procurement Services department (NPS). The previous framework called 'Programvaror och tjänster 2007 – Öppna programvaror' had roughly the same scope and suppliers. That contract ended on March 31, 2011. 'Öppna programvaror 2010' started on April 1, 2011, and is valid for two years, with an option for another two."

In 2011, the contracts were worth about six million euros in turnover. According to Melin, annual growth is 10-15 per cent: "The agreement is mostly used by those who have seen the light." To put these numbers into perspective: "There exists a parallel framework agreement called 'Licensförsörjning 2010' that customers can use to buy any kind of software (including open source). That agreement has got a yearly turnover close to 100 million euros."

"The drawback of this dual solution is that the customers cannot compare open to proprietary software via a single mini competition. They have to choose upfront which way to go. However, if we had not organised it this way and instead had created one large agreement called 'Software', smaller companies would not have been able to participate, and then the framework would have been populated by the largest companies selling only the software customers ask for, or the software that would give the supplier the highest margin. That would have resulted in close to zero open source sales."

## 3. History and Rationale

Since it is responsible for the coordination of procurement for the public sector, the Swedish NPS is responsible for the coordiantion of procurement for the public sector. Therefore, it ahs to make sure that optimum conditions are created for the acquisition and use of IT. These conditions apply not only to common features and solutions, but also to innovation and technology-neutral solutions in particular.

To determine the best possible terms for acquisition, a feasibility study was conducted to identify the required scope, focus and structure of the procurement of software and services. It looked into various delivery models serving eGovernment, operations, and consulting services: licenses: license management, Software Asset Management (SAM); installation, configuration, customisation and support; open source: supply, integration and project management; and office productivity from the cloud (SaaS: Software-as-a-Service).

The study found that the customers were content with the current suppliers, but they saw no added value in distinguishing the five different categories that were part of the old setup. As a result, the procurement model has been reduced to two parallel frameworks for the acquisition of software and services.

Two major changes were made specifically to the open source procurement model. First, under the old procurement directive customers could pick and choose among the suppliers, while the new framework requires mini competitions. Second, the old agreement did not protect the customers from 'Fear, Uncertainty, and Doubt' (FUD), a phrase that is related to Microsoft's marketing practices of defaming open source.

The new agreement secures the availability of support and moves risks related to intellectual property to the suppliers (i.e., issues of licensing, copyright and patents).

The rationale behind this model is the creation of competition between the suppliers, the minimisation of risks for the customers, and the provision of a way in which software development paid with tax money can be given back to the community.

Explicitly excluded from this framework contract is the procurement of: SaaS; appliances (hardware and software combined in a ready-to-run system); sector-specific applications; firmware; and embedded systems.

Although the feasibility study also identified an interest in software functionality delivered from the cloud (SaaS), Melin admits that current support is very limited. "But I am responsible for the upcoming procurement 'Kontorsstöd som molntjänst' (Office-as-a-Service), where we will set up a framework agreement for cloud-based services, including e-mail, calendaring, word processing and such."

## 4. Call for Tender

When calling for tender (avropa.se, 2010a, in Swedish), the NPS explicitly aimed to bring together public sector demand and open source software and services. The agency was looking for a maximum of six open source suppliers for a period of two plus two years. The primary suppliers could bring in as many subcontractors as they saw fit.

These are the groups of software covered by the framework namely office support: office productivity, collaboration, communication, project management; information supply: case management, document management, work flow; operating systems, access control; security software: scanning, filtering, network security, backup, encryption; operational support: system management, deployment, help desk, directory services, resource management, energy measurement; asset management for software (SAM) and hardware; middleware: message busses/queues, application servers, web servers, SOA (Service-Oriented Architecture), transaction management, legacy integration, Server-Based Computing (SBC); development tools: Integrated Development Environments (IDEs), compilers, test tools, version management, modelling, development frameworks, Object-Relational Mapping (ORM), package management; databases; statistics software: data warehousing, data mining, data visualization, spreadsheet tools, report generators, web statistics, questionnaire and statistical tools.

These are the associated services: installation of the software; implementation in the customer's existing environment; integration; management: customisations; migration from the existing installation to the purchased software; support: assistance to end users and support for IT managers; maintenance: continuous updates and upgrades; training for end users.

These conditions were included in the requirements of the call: bidders shall quote only open source software; demonstrable involvement in the open source community; active contributions to open source software; expertise in legal implications; and experience in training of users and technical personnel.

The framework leaves open the possibility of procuring open source software without any services. An example would be the acquisition of subscriptions to RHEL, a branded enterprise Linux distribution that is also freely downloadable as CentOS and Scientific Linux.

## 5. Selected Suppliers

The suppliers were above all selected on their ability to provide competence and comfort, and to deliver to the customers. Subcontractors without consultants were unceremoniously rejected. From the seven tenderers, two were ultimately dismissed; their scores were substantially lower that those of the other five companies (a score of around 20, compared to the 60-90 range of the others). According to the NPS, the remaining five companies would provide sufficient contention in the mini competitions.

The suppliers fulfilling the new framework agreement are the Arctic Group, Init, Pro4u Open Source, RedBridge and Redpill Linpro. In turn, they are subcontracting 75 companies in total to provide all the required competences and services. It comes as no surprise that these suppliers are not the typical companies that usually fulfil government contracts. Their sizes vary from a one-man shop (with a lot of subcontractors) to 180 employees.

Redpill Linpro is the combined operation of Sweden and Norway's largest open source companies. Redbridge was started by former employees of Oracle and comes from a server-side background.

Init is a smaller, technology-driven company. The Arctic Group is an umbrella company that sells open source consultants from other companies. Pro4U is a larger consulting company that has just started up an open source unit. Since all of these companies were already participating in the former framework agreement, they have a long history of working with the Swedish public sector.

## 6. Mini Competitions

A public organisation wanting to procure software through the framework agreement creates a mini competition between the main suppliers. All five companies then have to come up with a proposal. The customer's request specifies the requirements, including topics such as: functionality; certifications; documentation; help functionality; licenses; pricing; time/period and place of implementation; the ability to deliver software and services; support levels competences and references; languages spoken by consultants; security-screened consultants; information model and information structure; information security; programming language; development methods; work processes; changes/integration/adaptions/customisations; integration; accessibility (WCAG); infrastructure; hardware platform; virtualisation; and energy efficiency.

Maximum hourly rates for the various skill levels have been set in the framework agreement for each of the main suppliers.

Before the call-off, the customer is allowed to consult the suppliers so as to get a good idea of the available solutions and to be certain they can deliver. The extensive description of the customer's needs allows the suppliers to ensure that their subcontractors will be able to deliver.

Although every subcontractor must be connected to one or more primary suppliers at the time of the tender, suppliers can later switch subcontractors. Furthermore, suppliers have to be completely transparent about the subcontractors they will be using and what services these subcontractors will provide to the customer.

"The mini competitions create contention between the suppliers," Melin explains. "Since all of the companies can provide almost all kinds of open source software, there would be no use in having multiple suppliers in a hierarchy. The one on the top would almost always be able to handle all customers and their needs. In the end, that would make this supplier 'fat and lazy'."

So each mini competition should be organised in such a way as to warrant a fair, even-handed battle for the contract. To facilitate this, NPS has made available a template for the customers to use.

## 7. Terms and Conditions

When procuring software and services under the framework agreement, a predefined set of terms and conditions automatically becomes part of the contract. These are comparable to conditions traditionally used in IT procurement. The exceptions are the following terms specifically related to open source:

- The customer receives non-exclusive and indefinite rights to the Result, including a right to copy, modify, correct and further develop the Result. The customer has the right to hire third parties in order to utilise the Result in accordance with the specified terms of use.
- The supplier must indicate to what extent the software license affects the customer's rights to the Result.

- The supplier shall within 30 days after the customer's acceptance of delivery provide all changes and additions back to the relevant communities. When the supplier provides the changes and additions, they must adhere to the conditions and practices of the community or company behind the software.
- The supplier is not entitled to transfer or assign the rights to the Result to the customer on terms that restrict, or goes beyond, the terms in the software license.
- Results in the form of source code, and any documents pertaining to the source code, delivered to the customer shall be published, and made publicly available, on the supplier's public website. The supplier shall publish the Results within 30 days after the customer's acceptance of delivery and be available throughout the Framework Agreement period.
- The supplier is responsible for ensuring that they have obtained the rights necessary for the execution of the assignment and delivery. The Supplier is also responsible for ensuring that the customer is not required to have any additional license or pay royalty payments for the customer's use of the Result.

In addition, a model contract has been made available. It can serve as a starting point for the substantive agreement, as the details are elaborated in various annexes.

## 8. OSS Licenses and Procurement Guidelines

A contract entails the purchase of free software with or without associated services. The framework defines open source software as code available under a license approved by the OSI (Open Source Initiative). Besides promoting free software, this organization maintains a list of licenses (OSI, 2012) that have been checked against the Open Source Definition (OSD) (OSI, 2012a). In that sense the framework builds on the work already done in the community.

However, this approach differs from the recommendations made in the European 'Guideline on public procurement of Open Source Software' (EU, 2010). It describes explicit calls for open source software as bad practice. The guideline discourages organisations from issuing calls for tender for the supply and service or installation of specific open source software packages, or even stating 'open source' as one of the selection criteria. Purchasing a specific open source software application – i.e. the supply as part of installation, integration or support – may be out of line with regulations (but less so than issuing calls for tenders for specific, named proprietary software applications, which is a common practice). The authors of the guideline recommend best practice procurement based on the definition of functional and technical requirements, which may include properties that are equivalent to the characteristics of open source software or open standards, i.e. in terms of interoperability and needs of the customer, or by requesting specific standards or standards from a list.

The following, for example, could be ways to describe open source without explicitly using this term:

- the ownership of the software is transferred to the customer, with no restrictions on what the customer can do with the software;
- or the software may be used for any purpose (without transfer of ownership);
- the customer or a third party of his/her choice (or any member of the public) may study the source code;

- the customer or a third party of his choice may modify the software;
- the customer can distribute the software, with source code and modifications, to anyone of his choice and provide recipients with the same abilities to use, study, modify and redistribute.

When specifically looking for the right to redistribute software, the guideline names another three terms (taken from the Spanish National Interoperability Framework; NIF, 2010) that could be part of the requirements:

- allow the free use/reuse of these applications;
- prevent the appropriation of the software by a third party (copyleft);
- protect the administration from liability, support and warranty obligations.

These terms would allow the software to be distributed under the European Union Public License (EUPL).

## 9. A Different Route

The NPS, however, chose a different route. "We do not want to define 'open source' or 'free software'," Melin explains. "We rely on the OSI to provide that. Everyone agrees that it is good practice to do so. But you have to split procurement and create mini competitions from a framework agreement. If you do your own procurement, It would be suggested composing a functional requirements specification and favouring items that lessen lock-in. Requiring an open source license procured software is not against the public procurement directive and sometimes there can be good reasons to do so."

In the latter case, the guideline recommends that open source requirements are placed not in the functional specifications but as separate requirements or weighted criteria in the contract documents (cahier des charges) or the contract subject matter description.

Melin emphasises that, to the best of his knowledge, Sweden is the only country with a framework agreement for open source: "So we are creating our own path here. We weren't even aware of the existence of the 'Guideline on Public Procurement of Open Source Software'. Furthermore, the procurement of a contract is radically different from procuring a framework." On this path to reducing the lock-in of governmental agencies, he believes that more government support is needed. "In Sweden there is no outspoken support for open source at all. So some organisations are very well aware of open source and prefer it, others just buy whatever fits their needs."

Unfortunately, only a few Swedish organisations have recognised the value of open source. Most of them use the framework agreement to buy support contracts for RedHat (providing an enterprise Linux distribution), JBoss (a Java-based application server), Liferay (a Java-based intranet/extranet portal), MySQL (a relational database), Mule (a Java-based enterprise service bus), SugarCRM (providing a PHP-based CRM application), and Alfresco (providing a Java-based web CMS). "Very few seem to be interested in reducing their lock-in," says Melin.

"However, the Swedish governmental model implies that each municipality, county council or agency can buy IT pretty much as they see fit. Central government has very little to say about it. I would like to see more direction from the government pushing for open source software, so the framework agreement would be used even more."

## 10. Guideline on Public Procurement of Open Source Software

The 'Guideline on Public Procurement of Open Source Software' (EU, 2010) promotes the deployment of open source as a way to reduce costs and to increase transparency and sustainability. Technology-neutral solutions create independence from specific vendor and providers, avoiding vendor lock-in through proprietary technologies and standards.

Taking interoperability and openness as a starting point, closed source software is, by definition, expensive over the long term. "Supporting technologies without considering their degree of openness and their ability to foster a fully competitive market is harmful to competition and net social and economic welfare. So, even while software based on open standards may not always be available, public agencies should encourage its development, and indicate their preference for open standards to vendors."

At the same time the guideline's authors recognise that there were no policies dealing with open source and open standards at European level in 2010. "Public sector consumers of software have an obligation to support interoperability, transparency and flexibility, as well as economical use of public funds. Agencies should not require citizens to purchase or use systems from specific vendors in order to access public services." These are the principles laid down in the 'European Interoperability Framework' (EIF), a high-level architecture document (IDABC, 2012) produced by IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens), the predecessor of the current Interoperability Solutions for European Public Administrations (ISA). The further development of the framework, however, was bogged down on its way to version 2 (IDABC, 2010) due to pressure from proprietary software vendors (IDABC, 2009).

The guideline is based on the model presented in the 2007 Dutch government action plan 'Netherlands in Open Connection' (NOiV, 2007, in Dutch), "expressing an explicit 'preference for open source software in the case of equal suitability'", and the subsequent 2008 action plan 'The Acquisition of (Open Source) Software' (NOiV, 2008). The guideline emphasises that although "discrimination between individual vendors goes against numerous regulations and procurement principles, preference within a particular tender towards a specific business model is generally accepted", thereby defining open source as a business model.

"The purpose of this guideline is to allow individual public agencies at the regional, national or local level to acquire open source software," the authors say, "even if there is no policy in place regarding open source."

"Justification for this guideline is provided by the existence of widespread 'poor practices' in public procurement that lead to non-transparent, anti-competitive discrimination in software procurement. This discrimination is in favour of proprietary software, and typically, in favour of specific proprietary products and their vendors."

"Note that compatibility with previously purchased IT solutions may seem like a very valid technical requirement, but can also be a way of perpetuating the consequences of previous purchasing decisions, perpetuating vendor lock-in and preventing an unbiased procurement based on real organisational needs."

According to European policy, open standards can be part of the requirements whereas open source software cannot. That is why the authors of the guideline recommend defining open source in terms of code that is publicly available, modifiable, and re-distributable.

## 11. Spain: Same Goals but Different Paths

The people at the Spanish CENATIC (National Competency Centre for the Application of Open Source Technologies) see a bright future for the Swedish open source procurement model: "The Swedish model focuses on the elimination of the main barrier open source is facing: the technical difficulties that might be associated with a tender due to the lack of specific knowledge."

At the same time, CENATIC emphasises that the Spanish environment differs considerably from the Swedish: "Our strategy is based on legislation for reuse, sharing, and collaboration on IT systems between public administrations levering on interoperability.The Swedish model could not be applied in Spain due to our tender legislation. The preselection of a limited group of providers would be difficult to fit in the Spanish public contract law."

"But we do have various initiatives to facilitate the procurement of open source software by public administrations, especially for municipalities where a significant lack of technical knowledge gives them difficulties in formulating proper tenders. The ALIAL Guide, for example, was developed by the Spanish Federation of FLOSS Companies (Asociaciones de Software Libre Federadas, ASOLIF). It contains a list of certified companies providing open source products and services. The ALIAL Guide simplifies procurements providing models for documents and specifications. Also, in January 2011, CENATIC launched the Open Source Legal Community, a legal community for supporting the development, installation, and adoption of open source software in the private and public sector in Spain, and the AAPP Forum, a community of practice for sharing experiences and best practices on the migration to open source software in government."

Following European recommendations, since 2007 Spain has issued laws binding public administrations to acquire software based on open standards, to look for reusable solutions before buying licenses or taking up new developments, and to facilitate code sharing between public administrations. Spain has also developed an application repository for free reuse between public administrations ruled by the Technology Transfer Centre of the Department of Public Administration.

CENATIC is a public foundation aiming to increase knowledge and awareness of open source technology, policies, and methodologies in Spain. These strategic lines established by the Spanish central government have been embraced by several autonomous communities providing specific ways for reuse, sharing and collaboration in their regions. Special interest has been raised by the Basque Country decree for openness and reuse, and the Andalusian public administration repositories.

## 12. The UK: An Informational List of Open Source Suppliers

An open source specific framework agreement like the Swedish model would not fit current UK policies. "Our government will not produce an approved list solely for open source suppliers from whom purchases can be made," says Niki Barrows, member of the Strategy & Architecture Team at the Office of the CIO of the Home Office. "To be in line with our own policy any new frameworks for software procurement will be open to suppliers of both open and closed products."

After making the use of open standards mandatory through its public procurement policy (UK, 2011) (restated; UK, 2011a), the British Cabinet Office now requires government departments and agencies to consider open source solutions in making procurement decisions. "There is no current intention in the UK to mandate the use of open source software or do anything other than give it fair and equal consideration as part of a procurement exercise," Barrows stresses. "Procurement decisions will

continue to be made on the basis of best value for money. A Total Cost of Ownership model is being developed to help with a fair evaluation of a wider set of costs than might currently be considered."

The British strategy is the outcome of a business plan (UK, 2010) published in November 2010, "making a commitment to improve the rules around designing and running ICT projects and services".

The first steps were taken by Liam Maxwell as a local government representative for the towns of Windsor and Maidenhead, in southern England, responsible for IT policy. He is now the Director of ICT Futures advising the Efficiency and Reform Group (ERG) within the Cabinet Office.

As a member of the now defunct conservative research group Network for the Post-Bureaucratic Age (nPBA) Maxwell made two key observations in the 'Better for Less: How to make Government IT deliver savings' report (Maxwell, 2010). First, IT is too expensive: "At £21 billion the annual cost dwarfs some government departments. It is three times the amount we spend on the army, more than the Department for Transport." Putting the government IT cost into perspective, it is between one and two per cent of Gross Domestic Product, and almost ten per cent of it is spent on the procurement process.

Second, the quality of IT is poor. This statement is also true of the procurement process: it is very inefficient and badly designed, resulting in excessive spending. Furthermore, small companies cannot deliver their dynamic and innovative solutions to government. According to this report, a strategic change steering away from this unsustainable situation could save 40 per cent of the budget - £8 billion a year - while at the same time providing better services.

The key word in this transition is openness: of government data, standards, software, platforms and markets. Standards should be managed centrally, yet applied locally. Citizens should own their own data, while government should be responsible for its security and use. Government should be in control of its programmes, with outcomes being more important than targets.

The road map for open source sketched in the 2010 'Better for Less' report starts with a transition to OpenDocument Format (ODF), followed by a fully open source software based desktop. Microsoft and Oracle frameworks should be replaced by central mail and office productivity services, saying goodbye to these tier one suppliers selling monolithic software under monolithic contracts. Where necessary, the government should develop its own software, i.e., for education. Identity and personal data management should be organised centrally but be controlled by the citizens. Politicians and policy makers should become tech-savvy, and governments should build their own in-house expertise, so that they know what's out there and can communicate on an equal footing with the suppliers (demand organisation). Open source software should enable the re-use of code, applications and business functions across government.

In March 2011, an elaborated Government ICT Strategy (UK, 2011b) was published, containing three items specifically on open source:

- government will create a level playing field for open source software;
- where appropriate, government will procure open source solutions;
- government will remove barriers to allow small- and medium-sized enterprises (SMEs), the voluntary, community and social sector to participate in the government ICT marketplace.

It has two associated actions:

- Create a level playing field for the use of innovative ICT solutions, the government will publish a toolkit for procurers on best practice for evaluating the use of open source solutions.

- Assist with the deployment of agile solutions using open source technology, the government will establish an Open Source Implementation Group, a System Integrator Forum and an Open Source Advisory Panel. These will aim to educate, promote and facilitate the technical and cultural change needed to increase the use of open source across government.

"The UK open source policy dates back to 2004," Barrows explains. "It has been restated several times and there have been action plans aimed at delivering a level playing field for open source solutions. The actions in the 2011 Government ICT Strategy attempted to identify and address the reasons why we do not yet appear to have reached our desired goal of a level playing field."

In October 2011, the Open Source Procurement Kit (UK, 2011c) was published. It is composed of six documents that make it easier for SMEs selling open source solutions to compete for government contracts.

The CIO Council, bringing together two dozen CIOs from across all parts of the public sector to address common IT issues and improve public service delivery, is currently developing an architecture, including lists of open standards and open source software. Until early June 2012, ICT Futures ran an open consultation on the use of open standards for interoperability, data and document formats.

A list containing dozens of open source software alternatives (UK, 2012) to proprietary applications has been published as part of the procurement kit. "While the kit does contain a list of open source options - a list of products which can be considered as alternatives for closed source products - this list is not prescriptive or definitive and is in no way a list of pre-approved or selected software. An updated version of this document is currently being developed."

## 13. Conclusions

In an effort to overcome FUD, inertia, risks and other barriers, the Swedish framework agreement aims to increase the use of open source software by public agencies. The framework includes two major changes to the procurement model used in the previous framework agreement. First, under the old procurement directive customers could pick and choose among the suppliers, while the new framework requires mini competitions. Second, the old agreement did not protect the customers from FUD. The new agreement secures the availability of support and moves risks related to intellectual property to the suppliers. The rationale behind this model is the creation of competition between the suppliers, the minimisation of risks for the customers, and the provision of a way for software development that is paid for with tax money to be given back to the community.

Allowing smaller companies to participate in a separate open source framework agreement prevents the framework from being populated by the largest companies that maximise their margins, and would have resulted in close to zero open source sales. The drawback of this dual solution is that the customers cannot compare open source to proprietary software via a mini competition.

The Swedish procurement model differs from the recommendations made in the European 'Guideline on public procurement of Open Source Software'. This guideline is based on the model presented in a 2007 Dutch government action plan that expressed an explicit preference for open source software in the case of equal suitability.

According to the people at the NPS, this framework agreement is the first of its kind on the procurement of open source software in Europe. Despite it being recognised as a next step in software procurement, the agreement will not be replicated in countries like Spain and the UK.

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# DIEGO Adoption in European Public Authorities: Asking the Right Questions Matters

This paper presents the use of the business model canvas to help public authorities recognise needs and identify the expected value of implementing the DIEGO platform for inclusive eGovernment services. Based on communications with users, we have created a repository. of 88 concern areas in the form of questions. Answering these questions may help public authorities to better position themselves in the area while also increase the relative value of any investment they make in the area of eGovernment service infrastructure.

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INTERFUSION SERVICES

Celsa Monrós

Generalitat Valenciana

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Education Institute of Serres

Adamantios Koumpis

Altec Software

## Keywords

Business models for eGovernment services, business model canvas, value co-creation in eGovernment service infrastructures

> “Adoption of a value-based approach in the assessment of the real utility and needs of citizens in the uptake of the DIEGO project results.”

# 1. Introduction

Despite the new challenges and opportunities for innovations envisaged in service science, there is limited progress in the development of service systems as value co-creation configurations with the customer, even more so in the case of eGovernment service systems, where the customer happens to be the citizen. A key reason for this is the inherent complexity and the limited understanding of value co-creation processes, as well as the complexity and the vagueness of certain conceptualisations in service systems.

This paper reports on the case of the European project DIEGO, which puts forward an inclusive eGovernment infrastructure for use by public administrations and authorities across Europe.

The aim is thus to promote the DIEGO system not only as another eGovernment portal, but as an enabler of services that can be regarded as knowledge-intensive interactions, as they are based on the application of resources and competences in order to produce some benefit for the customer, in this case the European citizen at large.

As the project heads towards completion, the partners' first and most important priority is to find ways to sustain its operation after the project lifetime. In light of this, the authors adopted a recently published approach on "Business Model Generation" Osterwalder, 2010), where the idea of a single reference model is promoted and called Business Model Canvas, based on the similarities of a wide range of business model conceptualisations.

Business model innovation is about new ways of creating, delivering and capturing value, and organisations that are not able to systematically rejuvenate their business model will struggle to survive and thrive. In times of austerity for the public sector throughout Europe, the message is clear: technology should support sustainable service solutions and eService infrastructures; any deviation from this will result in economically non-viable ends.

To this end, the paper makes use of the Business Model Canvas, which is a recently developed template for developing new or documenting existing business models. The authors use the canvas to organise a set of 88 concern areas presented in the form of questions that need to be examined before assessing the feasibility and the potential of deploying DIEGO within a public organisation.

# 2. Background

The DIEGO project (http://www.diego-project.eu/) aspires to offer European Public Authorities a complete, highly scalable and affordable accesibility front-end for their eGovernment services portfolios.

The main idea is to provide an easy and friendly way of transforming pre-existing eGovernment Services and remove any ICT barriers that cause exclusion. Its goal is to contribute to the maintenance and improvement of the everyday life of disadvantaged European citizens through a highly personalised set of Service Offers, thus helping them to access and use Government services (with a minimum learning curve) without concerning themselves with the technology behind such services.

Coming up with interesting service concepts is not a trivial task at all: innovation in the design of services is not an industrial process and the designers need to be capable of interpreting citizens' needs and putting them into a sense-making framework.

The design of an eService for a middle-sized municipality in Spain may not be the ideal pattern for the citizens of a remote village in Cyprus. Or this in the very least seems to be the common belief. On the other hand, all citizens use products that have been designed by international companies; the software running in smartphones and tablets can hardly be regarded as localised, as it is merely a translation that is offered, and in many cases not a very accurate one.

After the initial period of familiarisation with the DIEGO platform, the most important task was to open the service design process to a wide audience of interested parties. In addition to ICT companies, municipalities and citizens themselves should be able to develop their own services.

Capitalising on the recent advances of end user programming and the domination of citizen activism movements, it is time to enable individuals and groups to design their own services, share them with others and watch them being used by a wide audience all over Europe. An issue that is of utmost importance relates to the digital rights management: Who is the owner of a service? Who is the person or organisation to take the credit or be blamed in case of malfunctions?

No single answers to these questions will be provided, as there will be room for many different - and sometimes competing - approaches in order to co-exist and take smaller or bigger shares of the market.

Looking at the forefront of what the European market can afford to pay for from a technological point of view, DIEGO innovates in terms of opening its horizons to new ways of interacting with the users. Thus, besides the previously tested interfaces through smartphones and tablets, DIEGO shall also enable use by people with certain disabilities who have been deprived access to mainstream devices until today.

**DIEGO service infrastructure**

Regional and local authorities and service providers across Europe are increasingly under pressure to deliver better services with diminishing resources. Citizens, quite rightly demand a high standard of service, and also increasingly, convenience focused on their individual needs rather than how the services are organised for delivery to them. Citizens, on the whole, also prefer to be supported in their homes and be free to move as much as possible. While users without impairments are generally better provided for such services, there are increasingly users too who have special needs, including the aged and those with a range of physical and mental disabilities who are unable to make effective use of such services from their homes due to the lack of proactive and accessible services.

The concept is built on the fundamental principle that the DIEGO users should be supported as much as possible by accessible services to maintain independence through monitoring and advice and to involve available services when needed to address emerging needs.

The DIEGO services can be provided by both public and private providers (and even include wireless connection to devices) to ensure that the user is appropriately supported in independently managing while if needed, ensuring they receive emergency service. This should include other services required for daily living and to facilitate the user managing on their own and giving them the freedom of independent living. It is also envisaged that access to social networking services be provided to mitigate social exclusion suffered by housebound users who live on their own.

The authors firmly believe that making this vision a reality will have a significant impact on social inclusion and supporting disadvantaged users in leading independent lives with the assurance of support where needed. The vision is to develop an open service model that allows new service providers to enter, and which can easily be extended to different member states independent of the technology used.

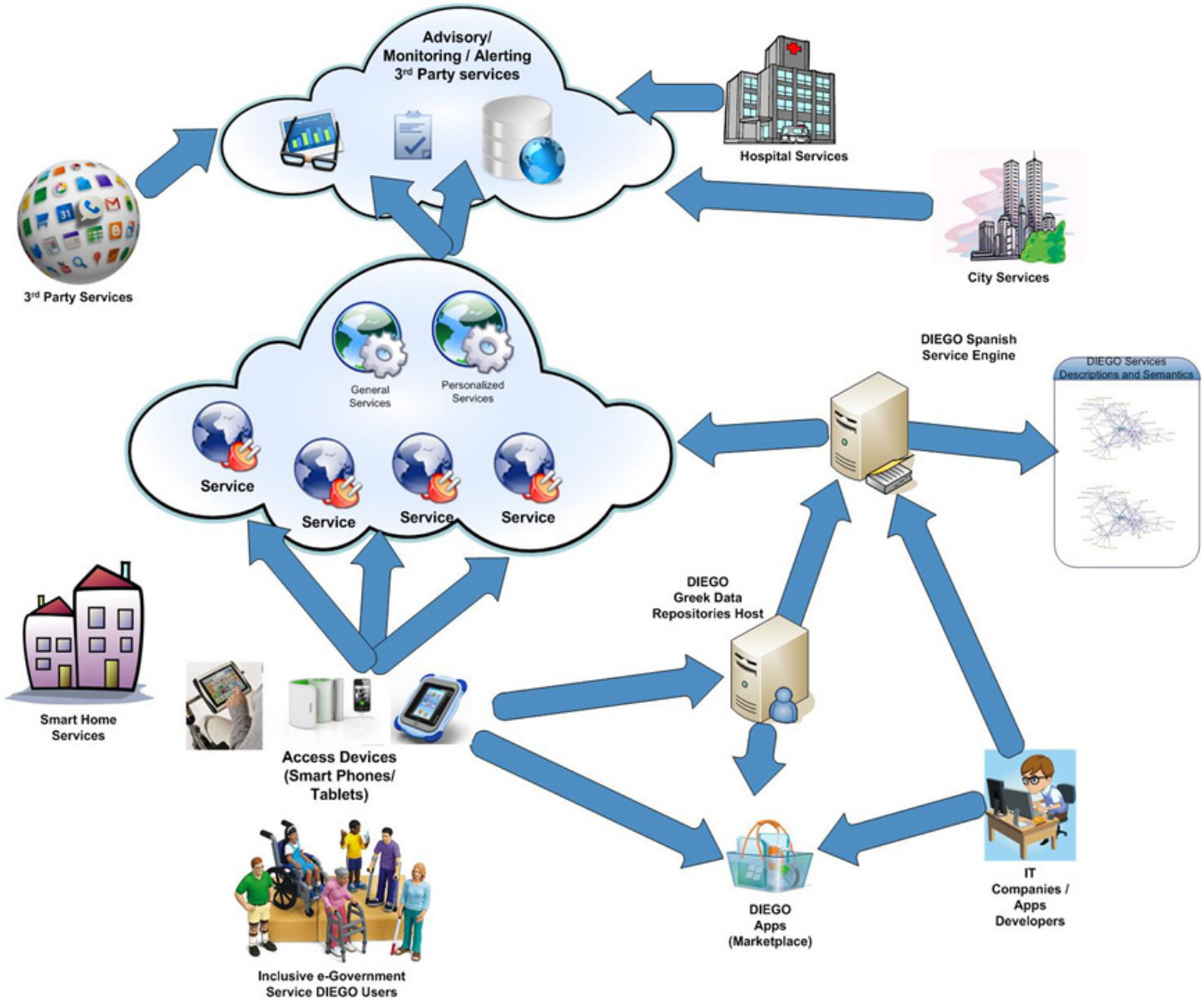


Figure 1: Conceptualisation of the overall service provisioning cycle

DIEGO aims to enable a large variety and diversity of users with special needs to use complex services through devices that despite being considered smart, are difficult for certain people to operate. Furthermore, a key aspect of the project is the inclusion of people with disabilities in executing such services. Although DIEGO is about services, it requires an enriched Service Oriented Architecture by components that enable and facilitate the discovery and execution of services from smart and mobile devices.

## 3. Value Co-creation in eGovernment Services

A primary requirement for service innovation is the understanding, analysis and modeling of services. In particular, the exploitation of eGovernment service innovations requires that they are incorporated in the corresponding business models by the respective public organisations. Given that service innovation is related to and tends to derive from value co-creation processes, business models are needed in the public sector that can reflect the concept of value co-creation and support the analysis of value co-creation phenomena within public organisations.

Service science has been developed as a new research field with the purpose of enhancing and boosting innovations in the new, service-based world (Chesbrough & Spohrer, 2006). Value co-creation has been recognised as a cornerstone concept of service science (Chesbrough & Spohrer, 2006). Recently, service science was defined as "the study of value co-creation phenomena" (Spohrer & Maglio, 2010). Value co-creation provides a very challenging concept for the development of innovative business models. Typically, value co-creation refers to the interaction between the provider and the customer, while newer approaches incorporate (potentially) the whole network of the customer's stakeholders. In service science literature, value co-creation refers to "a change or set of related changes that people prefer and realise as a result of their communication, planning, or other purposeful and knowledge-intensive interactions" (Spohrer & Maglio, 2009). However, the concept of value co-creation has not been adequately analysed in the literature and it remains vague, without a good understanding of what it is in fact and how it occurs.

The development of eGovernment service systems requires methods for the analysis of the role of the citizen as a customer, as well as the analysis of value co-creation as a contextual and use-dependent phenomenon. Using service science literature jargon, service systems are mostly characterised by the co-creation of value in the interactions between customers (i.e. the citizens) and providers (the corresponding public authorities that offer the particular service). The role of the citizen in value co-creation is of primary importance, not only because the citizen contributes and guides the process, but also because the value takes place contextually and can be manifested as "value in use".

Requirements engineering methodologies are concerned with the identification of the goals and the functionalities of the system, the operationalisation of goals and the assignment of responsibilities to humans or software (Van Lamsweerde, 2000). However, most of these approaches are not really based on the value co-creation concept (as well as the concept of "contextual value" and "value in use"); on the contrary, they tend to reflect the conventional view of the firm as creator of value and/or focus on the value of the system as such.

**DIEGO as a value co-creation service framework: asking the right questions matters**

In the previous section, an attempt was made to describe aspects of value co-creation when considering services in general and eGovernment services in particular. In the context of DIEGO (but also for several other eGovernment service systems), a service can be defined as a process of using one's competences and resources for the benefit of another party (Vargo & Lusch, 2008). A service system is a "value co-creation configuration of people, technology, value propositions connecting internal and external service systems and shared information, e.g. language, laws, measures, and methods" (Maglio & Spohrer, 2008).

This section presents concerns identified from the authors' interaction with current DIEGO users and how this was used as input in the business model canvas. All concerns are presented in the form of questions. Looking back on the communications the authors had internally within the consortium, one may judge that the nature of the majority of such concerns is rather ephemeral, i.e. part of the daily work routine in a project. However, looking at the big picture and the entirety of the questions, what one can see is that providing answers is not a trivial process at all, but rather needs a conceptual methodology like the one provided by the business model canvas.

Thus, the idea is to keep an open-ended discussion thread process within any interested public authority that wishes to become a potential DIEGO adopter regarding the use and deployment of DIEGO; the process intends to make it easier and less complicated for every administration, even those with less specialised technology, organisational and human resources, and to simply follow a path of questioning in order to find the model better suited to them and their needs.

The questions are organised in six subgroups:

33 general questions that aim to help identify the intentions behind a potential DIEGO adoption;

- 6 questions regarding the prospective business value offered by DIEGO;
- 9 questions regarding the quantitative estimates and metrics related to DIEGO adoption;
- 6 questions related to costs;
- 6 questions related to the evaluation of the system;
- 28 questions regarding the characteristics and idiosyncrasies of each businesses case.

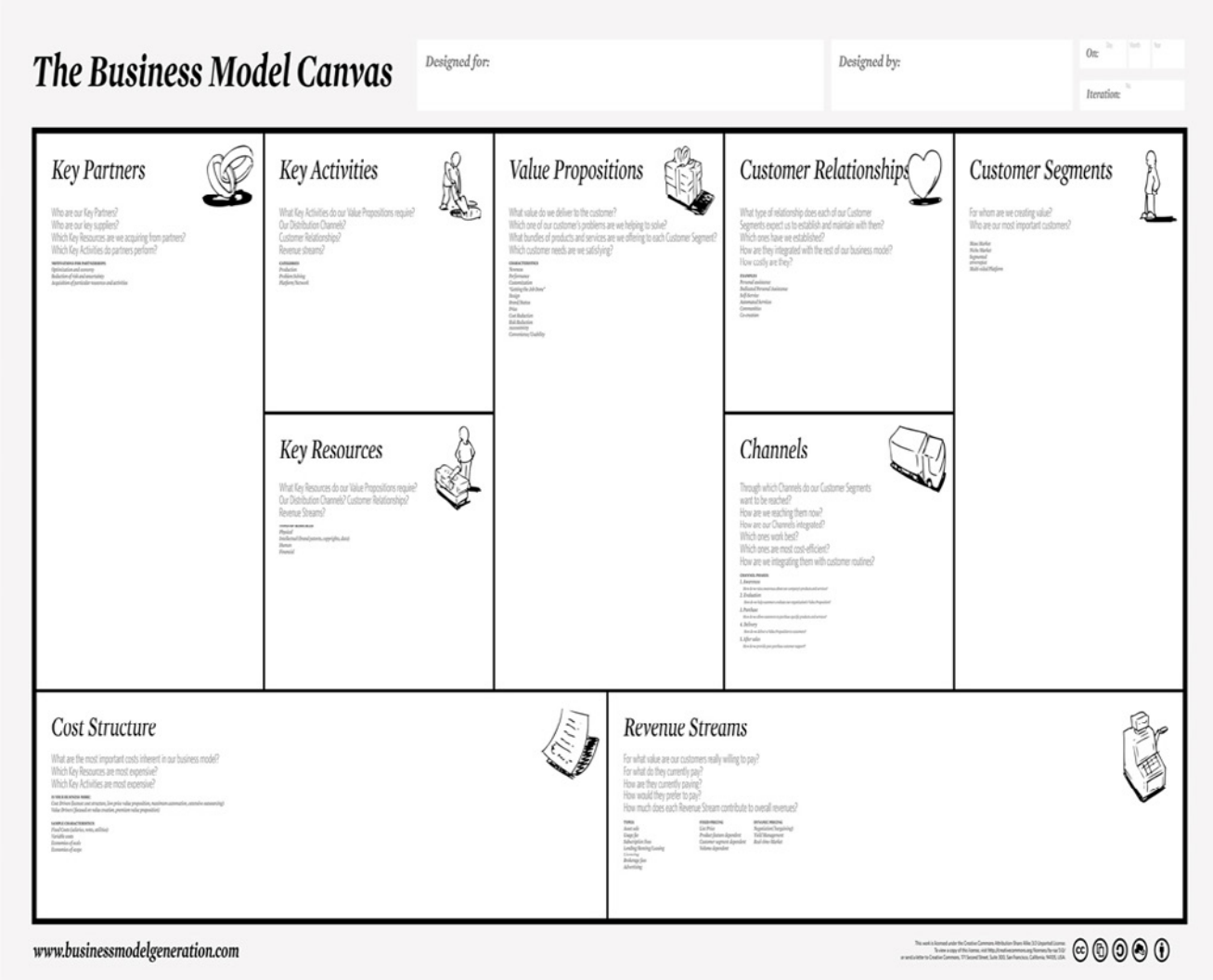


Figure 2: The Business Model Canvas (http://www.businessmodelalchemist.com/tools; use of the canvas is licensed under the Creative Commons Attribution-Share Alike 1.0 Generic license).

## 4. Identified Concern Areas

Below are listed the Identified Concern areas are listed below in order to help public authorities position themselves with respect to the real value and utiity that DIEGO can bring to their business and to citizens. Many of the questions apply to more than one of the recognised areas of the business model canvas template. However, given the feedback the authors have received from the application of the canvas to public authorities, there are differences in the ways that the various public authorities perceive their role regarding the provision of a service. In this respect, the following questions seek to help the public authorities better understand their needs and improve their planning for the introduction of DIEGO. Once the DIEGO public partners familiarised themselves with the questions, they were more comfortable in using the business model canvas.

**DIEGO general questions**

- Have you understood the systems and structures in your authority in order to approve, coordinate and oversee eGovernment style projects?
- If they exist, have you reviewed any documents that explain the relevant protocols in making proposed projects move forward?
- Given the nature and scope of DIEGO and its likely contribution to strategies, plans and programmes, with which decision-making bodies do you need to engage in discussions?
- Have you discussed with colleagues and managers how DIEGO would best be dealt with?
- Is DIEGO limited to one department or service, or does it involve several departments?
- Are external partners involved?
- Who are the main stakeholders affected by DIEGO?
- To what extent is DIEGO involved with IT or eEnabled services?
- What are its links to the modernisation agenda of your organisation?
- What is the most likely cost of DIEGO?
- What are the main risks involved in taking it forward?
- Given the nature and scope of DIEGO, is approval required at a corporate level? If so, which body would make the decision?
- Has the decision-making body been properly briefed on the project - as well as the decisions needed?
- In strategic terms, what would the aims and objectives of DIEGO be?
- To which existing programmes would DIEGO most contribute?
- Which programmes and plans are these aims and objectives most consistent with?
- How should the aims and objectives of DIEGO be articulated to make a clearer fit?
- Are there any risks affecting the fit of DIEGO with the particular corporate plans, strategies and programmes?
- What current ways of work are employed (in terms of technologies, organisational roles and responsibilities, and work processes), which DIEGO seeks to change?

- How much does the current arrangement's operation cost?
- What impacts will DIEGO have?
- What sort of indicators would demonstrate if these impacts have been achieved in a satisfactory way?
- What would be the critical success factors for DIEGO?
- Is the commitment and support in place to achieve DIEGO objectives?
- Which programme or budget is most appropriate to take DIEGO forward?
- Who will need to be approached, when and through what channel in order to make this happen?
- How would DIEGO contribute to the achievement of National Priority Outcomes?
- What contributions would it make in terms of efficiency savings?
- What improvements would DIEGO deliver at a corporate level?
- What service benefits would DIEGO create?
- What operational benefits would be produced?
- What are the likely costs of DIEGO - both in terms of the change itself and ongoing operational expenditure?
- Which specific benefits would be delivered to each DIEGO adopter?

**Business value provided by DIEGO**

- Have DIEGO benefits, with which to explore its business value, been identified?
- Have the organisational strategies, plans and programmes been thoroughly examined to ascertain what business value is contributed?
- Have the results of this analysis been communicated in an appropriate way to the key stakeholders and decision-makers?
- Are there clear links between benefits and business and service outcomes?
- Has the relationship between the strategic objectives, business value, performance measures and service impact been suitably specified to inform the benefits profile?
- Has this been communicated to decision-makers and recorded for future use as appropriate?

**Measurement - Impact - Indicators**

- What information about existing performance, against which the project is expected to deliver improvements, is available?
- Has such information been sourced and collated?
- If new measurements have to be taken, has agreement been reached on how the information will be collected, and the criteria that would determine when this should take place?
- Given this, has agreement taken place as to where measurements should occur?

- Has all the relevant measurement data been properly recorded, to update subsequent steps in the business case process?
- Have relevant performance measures and indicators been identified and understood?
- Have relevant stakeholders been consulted - or a workshop taken place - to identify and agree on the potential impacts that the benefits profile is likely to have against the baseline?
- Has agreement been reached on what these impacts will mean in terms of performance measures and indicators?
- Have these been properly documented and communicated as part of the particular business case change process?
- **Costs**
- Have corporate guidelines been consulted on how the costs and revenues associated with the project should be calculated and accounted for?
- Has information been gathered on the resources, software and equipment needed to implement and operate the options in question?
- Have the project options being examined in terms of the impact the benefits profile will have on costs and revenues?
- Have the one-off costs and benefits for each option been calculated, as agreed by managers and corporate guidelines?
- Similarly, have the revenue and operational cost implications been calculated?
- Have these estimates been checked with and approved by responsible managers and/or decision-making bodies?

**Evaluation - Assessment**

- Has analysis taken place, which pulls together feasibility studies and options appraisal?
- Have the agreed evaluation criteria been used as part of this analysis?
- Has a report been produced (on a formal appraisal form, where appropriate), which details the appraisal of the options using these criteria?
- Has this recommendation been agreed upon with key stakeholders?
- Have they been informed of the decision they are expected to make and the options available to them?
- Have the approval and accompanying statements and recommendations been formally lodged and communicated to relevant stakeholders?

**Business Case**

- Has corporate guidance and/or documentation for completing a Full Business Case been obtained and reviewed?
- Have the features and factors evaluated in the financial model been interpreted and presented appropriately?

- Has a Full Business Case been completed accordingly?
- Has this been checked informally with colleagues, managers and other stakeholders, as appropriate?
- Has this been submitted to the appropriate decision-making body for approval?
- Has the contribution of DIEGO to strategies, plans and programmes been re-visited in light of the Business Plan and have they been updated?
- Has the priority of the project vis-à-vis other priorities been assessed?
- Where necessary, has formal approval been sought/or decisions made to re-prioritise the project?
- Have project managers discussed any new implications with them?
- Have you identified an initial sponsor for the project?
- Have you clarified who will take the lead in building and presenting the business case?
- Have you identified the key internal stakeholders for the project?
- Have you determined the appropriate channels through which discussions will be taken forward?
- Have you identified the appropriate decision-makers/decision-making bodies with which to engage?
- Have you discussed the project with them and sought their advice on how to proceed?
- What would the consequences of continuing with the status quo in the short term (say, up to two years) be?
- What would the consequences be if the status quo remained the same in the medium to longer term (say, three to five years)?
- What specific risks are presented by the status quo (including technical, reputation, political and financial, as well the effects on the customer experience)?
- What risks will be obviated or ameliorated by DIEGO?
- Have you familiarised yourself with the criteria to be used in approving the business case before you?
- Are you aware of sources of advice and support in order to deal with any questions you may have about the business case (particularly its more technical elements)?
- Have you ensured that appropriate communications channels exist to allow you to question the people who have sponsored and developed the business case in question?
- Have you obtained the documentation you will need to complete to submit the strategic business case (such as templates or guidelines on format and content)?
- Have you checked to make sure you have the right documentation and/or guidance, given the nature and scope of the proposed project?
- Have you obtained the information (based on the key action points above) that will go into the business case?

- Have you checked that all necessary communications and protocols have been followed to allow you to draw up and submit the strategic business case documentation?
- Have you made sure that the case you have put forward and the documents you have completed have been checked with any necessary colleagues and managers?
- If resource needs have not been identified, what resources should be allocated for the next stage?

## 5. Conclusions

The concept of value is multifaceted and quite vague in the literature (what is value, how it is created, who it refers to, etc.). The co-creation of value increases the vagueness and the complexity and poses much bigger challenges in the analytical field. As the selected literature has illustrated, may eServices systems cannot accommodate the value co-creation concept as described in the service science literature. As a result, there is a limited understanding of the value co-creation processes in general and a lack of methods for the analysis of value co-creation in service systems.

However, the notion of value and its relative importance will be given more focus in the following years – in times of austerity as is currently the case. In this context, the authors believe that the most important intangible asset from their investment in DIEGO is not related to the existing services that are offered and are operational. It is rather related to the new services that will be conceived, designed and implemented in the future by either the industrial or the pilot user partners, as well as by a growing number of public authorities, their employees and the citizens themselves.

Based on the authors' experience, a common misperception of the evaluation of opportunities for new services to be added in the DIEGO portfolio is that their scope should be limited to the elaboration of already existing services functionality. To truly consider the potential for new services, new service concepts and their related qualities within several dimensions need to be examined. The list of concern areas presented in this paper is only a first attempt to come up with issues related to the service quality that may guide discussions amongst future adopters of DIEGO services.

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# Changes in Communication Thanks to eGovernment: Case Study of a Single Municipality in the Czech Republic

This paper deals with the formal aspect of the communication of municipalities in the Czech Republic. It illustrates a structure of formal incoming and outgoing communication by using data generated by an electronic record management system and its statistical processing. For this purpose, one municipality was chosen to serve as a case study. The selection method, in addition to the author's previous research, allows some generalisation of the observed results. Furthermore, changes to the structure of modes of communication for the period 2004-2011 are examined. Subsequently, these results are compared with the significant milestones in the development of eGovernment in the Czech Republic, while connections with the various business models amongst different modes of communication are discussed. One of the main findings of the present research is that the structure of the modes of incoming and outgoing communication has changed in different ways during the aforementioned period. For incoming communication, it appears that a business model is an important factor, yet it may not be the most significant one. For outgoing communication, only the legal framework is a very important factor and, perhaps surprisingly, for a municipality in particular, the business model and possible savings do not play a major role.

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Keywords

Electronic Communication, Municipalities, Data Mailboxes, Administrative Procedure Code.

> "Development of the information society and the introduction of a new trustworthy electronic delivery system in the Czech Republic act in a synergistic way in order to enhance the preference of electronic communication by the municipalities, as the chosen business model is not necessarily a key factor."

# 1. Introduction

Communication is the fundamental basis of all social interactions (Giddens, 1992). As such, it is one of the most complex and most strategic activities of all (Dewatripont & Tirole, 2005). On the other hand, the development of information and communication technologies (ICTs) separates communication from the context of social relations (Giddens, 1992), and creates new points of view on communication. One of the most plausible ways of classification of the various types of communications is the division into formal or informal. This paper strictly presents the former. By means of analysis of statistical data yielded by an electronic record management system which only captures all formal incoming and outgoing communication of an organisation, changes in the modes of communication that are affected by eGovernment development in the Czech Republic are examined. Understanding the current development in the changes in modes of communication and how they are affected by chosen business models can significantly help to find ways to meet the objectives of the Digital Agenda for Europe (European Commission, 2010); specifically, this understanding can help to increase the electronic communication of citizens with public administration.

# 2. Development of Electronic Communication

Public administration in the Czech Republic works on the basis and within the limits of the law, and that is why all options and modes of formal communication of municipalities must be described by law. Namely, Act No. 500/2004 Coll., Administrative Procedure Code, as amended, whose existence as a summary of basic procedures for public administration in various countries is shown in the publication (OECD, 2001). Before the introduction of electronic means of communication, one could submit to a public authority under the Administrative Procedure Code either orally or by written correspondence delivered in person or via mail through a postal license holder. Deliveries to private bodies have always been in writing, either personally or through a postal license holder. In cases strictly defined by law, public authorities can use delivery by means of a public notice.

Development of ICT has brought about the sequential introduction of new communication modes for both submissions and deliveries. Historically, the first electronic means of communication associated with the Internet was communication via e-mail. Electronic registries, which are an instrument for electronic submissions defined by Act No. 227/2000 Coll. on electronic signature, were established by public authorities in the Czech Republic in 2001 (Lechner, 2008), a year after the adoption of the aforementioned Act which implemented into the Czech law system Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures.

However, this simple communication via e-mail signed with a recognised electronic signature (advanced electronic signatures based on a qualified certificate) did not become popular in the communication between public authorities and private bodies (Mates et al., 2010). According to Mates, one of the main reasons for this is that people must pay an annual fee for qualified certificate services in order to obtain a qualified certificate and renew it every year; this fee is comparable with the cost of approximately seven registered letters via postal services. Thus, the use of this mode of communication is financially beneficial for public authorities which dispatch dozens of registered letters per day, but it is not beneficial for citizens however, as they only make a few submissions to public authorities per year.

## 3. Data Mailboxes

The next step was to expand responsibilities associated to the delivery by means of public notice. This has also been executed via the Internet as a dual way of public notice delivery since 2006 (Lechner, 2008). A more comprehensive solution for a delivery system began to be prepared on the basis of the 'Efficient Public Administration and Friendly Public Services – Strategy on Realisation of Smart Administration for the Period 2007–2015' (Government of the Czech Republic, 2006), whose objectives were approved by the Czech Government on 28 February 2007 by Resolution No. 197. In legal terms, this plan was implemented by Act No. 300/2008 Coll. on electronic acts and authorised conversion of documents. Consequently, data mailboxes were created based on this law and subsequently introduced on 1 July 2009.

Unlike standard e-mails, data mailboxes are a trustworthy and secure communication tool whose basic features are the following:

- guaranteed delivery by a third independent body, which is the postal license holder by law;
- guaranteed safeguarding of postal privacy;
- automatically generated receipt, electronically signed and marked with a qualified timestamp which acknowledges receipt of a data message by an addressee;
- cost-free access for all private bodies and public authorities, including a cost-free entry registration procedure in the context of setting up a data mailbox (costs associated with the operation of an information system of data mailboxes are covered by the State from the General Treasury Administration chapter of the state budget allocated under the proposal of the Ministry of Interior for such a purpose);
- closed system, in which each act is clearly authorised and recorded in the transaction protocol and thus the phenomenon of spamming is almost excluded;
- Act No. 300/2008 Coll., also known as the eGovernment Act, provides a conceptual approach to eGovernment in the Czech Republic, and this new mode of communication upon which it is based on is rightly described as a revolutionary change (Mates et al., 2010). This paper also attempts to answer how this new tool affected the structure of modes of communication which are used to communicate between municipalities and other bodies in the Czech Republic.

## 4. Municipalities in the Czech Republic

Municipalities in the Czech Republic execute both local government actions and delegated central government actions. A mixed model is applied at the municipal level (Provaznikova, 2009). According to the extent of execution of delegated actions, municipalities are divided into three categories:

- Municipalities of the first type, which have delegated powers and perform delegated actions in the basic range;
- Municipalities of the second type, the so-called Municipalities with an Authorised Municipal Office, which have delegated powers and perform delegated actions in the wider range;
- Municipalities of the third type, the so-called Municipalities with Extended Powers, which in the terms of municipalities have the widest range of delegated powers and actions.

There are 5 652, 393 and 205 municipalities of the first, second and third type, respectively (Czech Statistical Office, 2010). Thus, there are a total of 6 250 municipalities in the Czech Republic and a significant percentage of them are small villages with fewer than 1 000 inhabitants. The structural distribution of the size of municipalities can also be illustrated by the average village population, which was 1 681 inhabitants at the end of 2009, and by the fact that only 669 municipalities have more than 2 000 inhabitants (Czech Statistical Office, 2010).

## 5. Selection of the Case Study Municipality

One Municipality with Extended Powers (MEP) has been chosen for the case study because of the diversity of performed agendas and the largest scope of related legislation, procedures and work-cases. Taking into account the above-mentioned structural distribution of the size of municipalities in the Czech Republic, one of the smaller towns in this category has been identified, which had slightly over 5 000 inhabitants at the end of 2009 (Czech Statistical Office, 2010).

## 6. Data

Data was obtained in the form of statistical output from an electronic record management system in May 2011. The chosen office, which shall remain nameless due to permission restrictions, has been using the electronic record management system since December 2004. For data comparison on an annual basis, data for the period 2005 to 2010 was used, while for some development graphs, data from the entire obtained period was used.

Figure 1 shows the development of the total amount of submissions and deliveries during 2005-2010. No increasing or decreasing trend is evident in the total amount of communication of the chosen municipality.

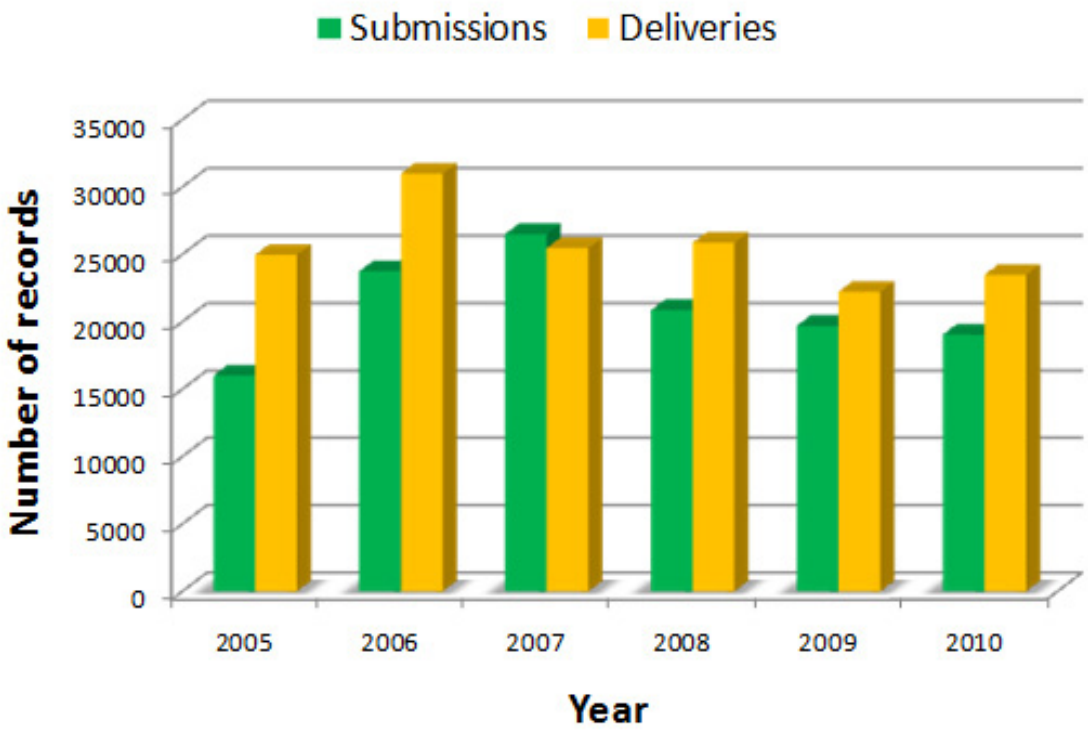


Figure 1: Total amount of communication of chosen municipality.

## 7. Communication channels

In the list of modes of communication which is implemented in the electronic record management system used by the chosen office, there are different categories which comprise the following groups for research purposes.

- Personal contact, which includes both an oral submission in the protocol and a written one delivered in person, and personal delivery.
- Post, which only includes various postal services.
- Other postal services, which include sending packages or postal stationary letters which cannot be transposed into electronic form.
- Public notice as a specific method of delivery, which exists in two forms, i.e. classical paper publication on the official notice board and electronic publication via Internet.
- Internal communication, which is registered for the needs of the dual nature of the action of municipalities, i.e. the nature of authority possessing delegated government powers and executing the relevant actions and that of the local government body.
- Other technical means, including telephone, fax, etc.
- E-mail, which is not signed with the recognised electronic signature and therefore, in terms of trustworthiness and capability of proof, essentially corresponds to 6 above.

- Signed e-mail, corresponds to an e-mail signed with a recognised electronic signature (advanced electronic signatures based on a qualified certificate).
- Data mailbox, which constitutes the above-mentioned new electronic trustworthy delivery system in the Czech Republic.

For a more general comparison of these categories, they were grouped in two ways and internal communication was consolidated as incoming and outgoing communication. The result of the first grouping includes the following: personal (including category 1), post (including categories 2, 3, 4), electronic (including categories 6 and 7) and trustworthy electronic (including categories 8 and 9). The result of the second grouping includes the following: classical (including categories 1, 2, 3, 4, 5), electronic (including categories 6 and 7) and trustworthy electronic (including categories 8 and 9).

The main results of the percentage distribution of summarised modes of communication are shown in Figures 2 to 5, where the described groups of communication modes are applied.

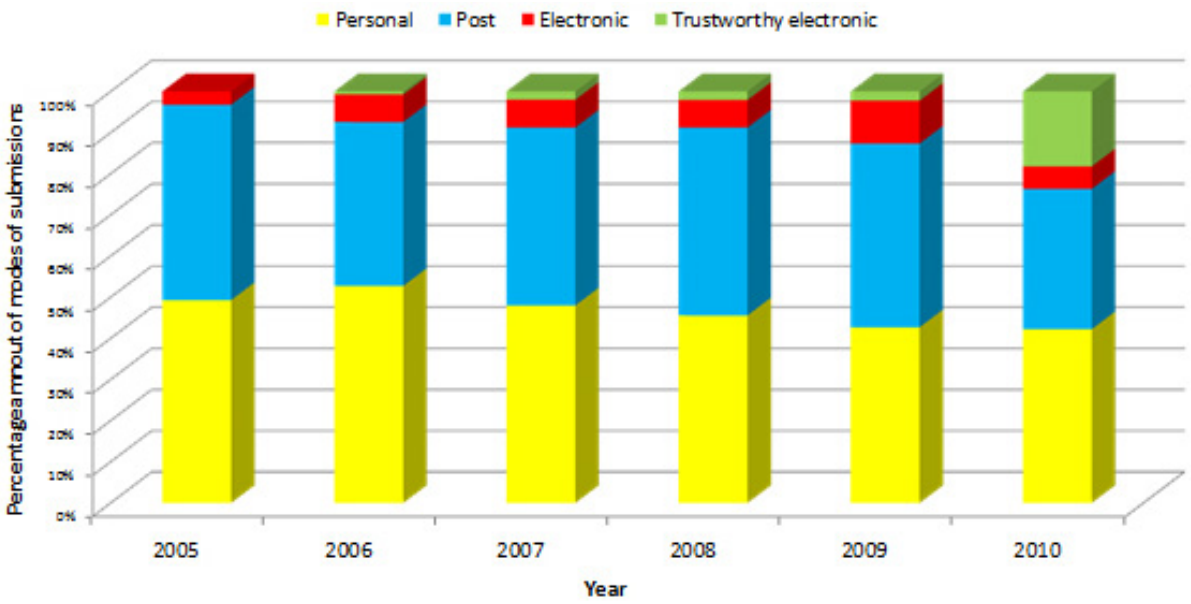


Figure 2: Modes of submissions to chosen municipality per year

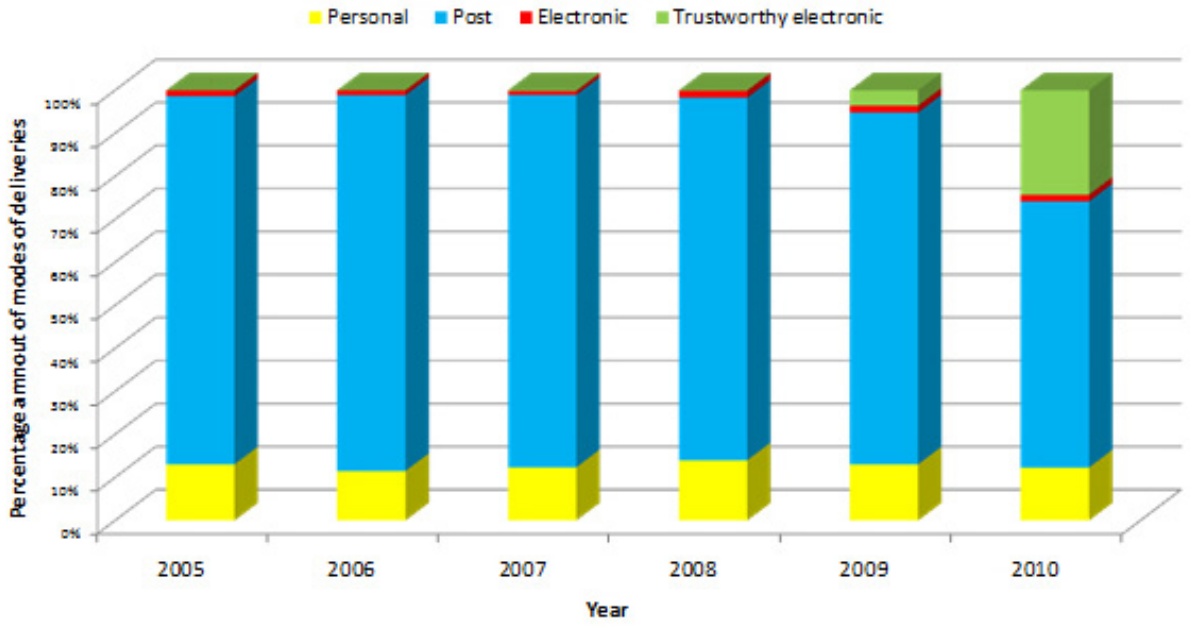


Figure 3: Modes of deliveries of chosen municipality per year

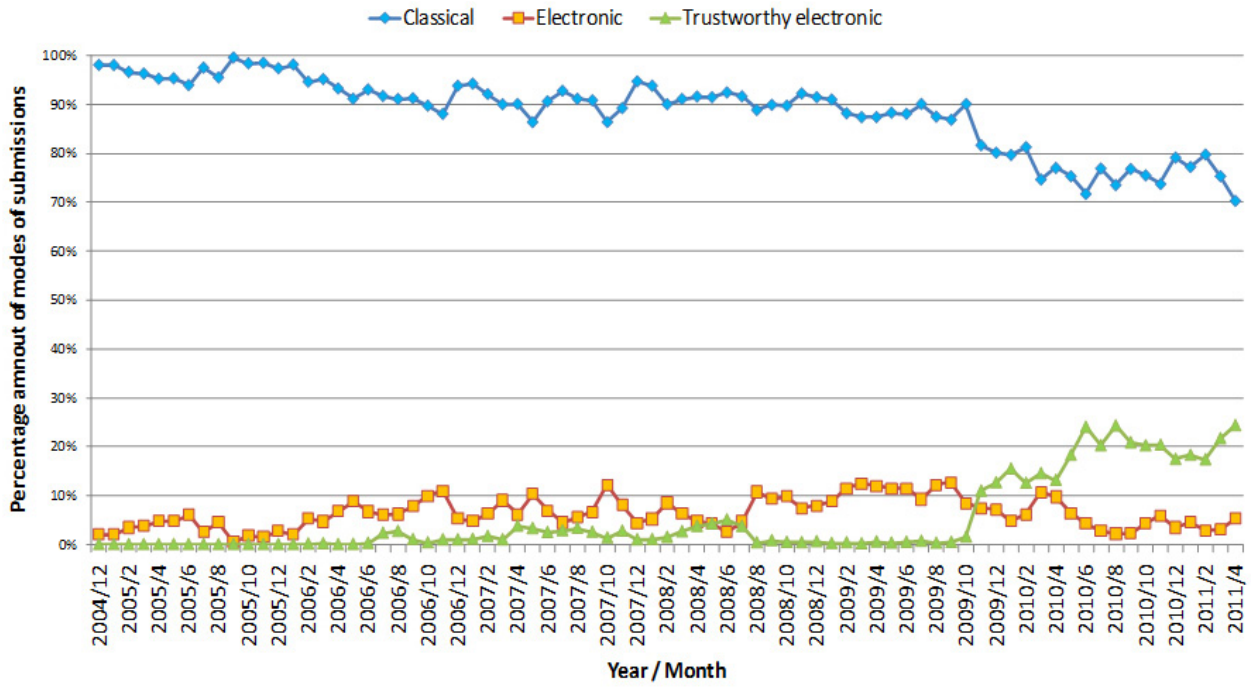


Figure 4: Development of proportional amount of classical and electronic incoming formal communication

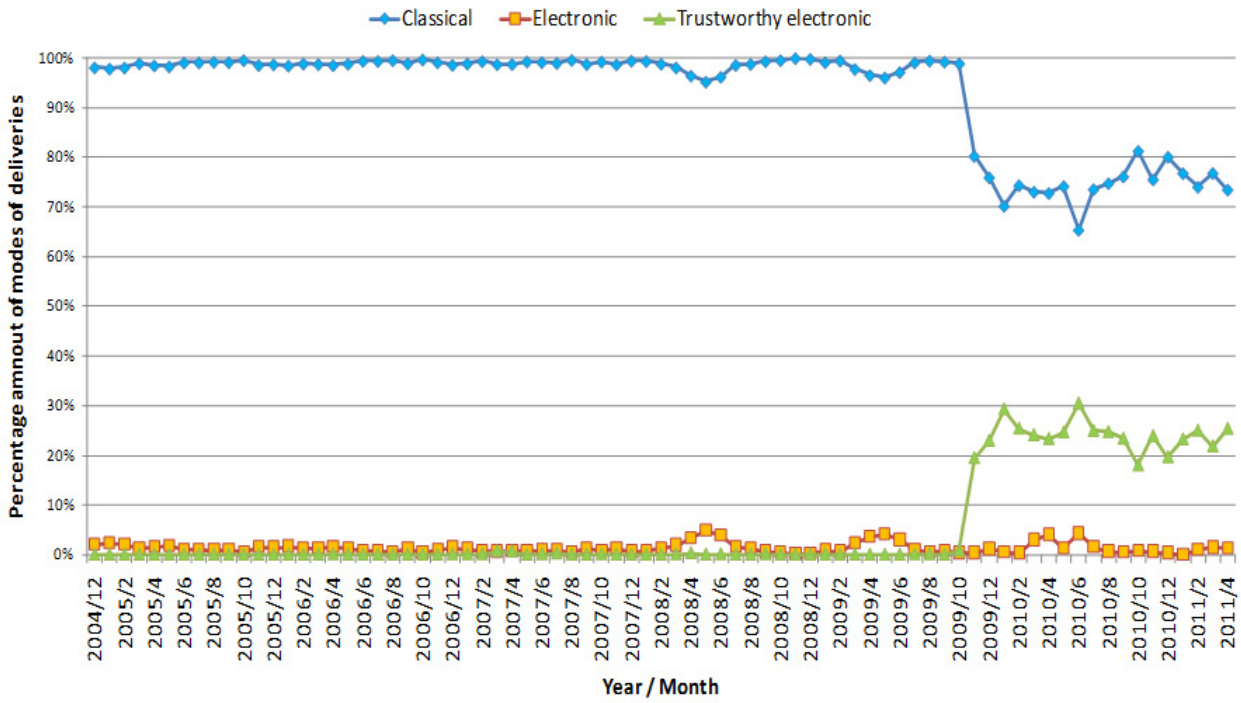


Figure 5: Development of proportional amount of classical and electronic outgoing formal communication.

## 8. Incoming Communication

Incoming (i.e. submissions) and outgoing (i.e. deliveries) communication will be discussed separately, since each one is influenced by slightly different rules and different purposes, especially those that initiate the communication.

With respect to submissions, the choice of communication method depends on the body that carries out the submission, naturally within the limits of the law. At the beginning of the period (2005), submissions to the selected municipality were mostly performed by traditional methods (49 % in person and 48 % via mail) (see Figure 2). This implies that if there was electronic communication, it was mainly part of an informal relationship and in minor terms it was a part of formal interaction in the sense of submission by law. According to the results of Channel preferences for contacting government in the UK in 2005 (Foley, 2008), the traditional modes of communication remained most popular in the UK, too. For formal communication, the In-person visits, Post and Post Office were most popular, which concurs with the paper results that are valid for the Czech Republic. For other channels, there is a significantly smaller amount of electronic communication in the Czech Republic than in the UK, owing to the disparate points of view in this paper's research and that of Foley's in the context of formal and informal interaction.

During the period from late 2004 to early 2011, Figure 4 shows a clear trend towards declining interest

in traditional modes of communication in favour of electronic ones, which before the introduction of an information system of data mailboxes (IS DM) used to be carried out by tools that do not allow a clear verification of the petitioner, such as fax or e-mail, without a recognised electronic signature. Thus, such submissions could only be performed in cases without required verification by law, such as complaints or requests for information under Act No. 106/1999 Coll. on free access to information. Introduction of the IS DM in mid-2009 caused changes which were not significantly leap ones. Figure 4 shows some fluctuations, the first one corresponds to November 2009 (which is the date by which all public authorities and all legal persons registered in the Commercial Register and a number of other bodies were obligated to establish a data mailbox), the second corresponds to the summer of 2010 and the third to early 2011. No explanation has been found yet for the second two waves, but a plausible explanation could be that they are connected with the seasonal distribution of the interest of private bodies in selected public services provided by municipalities (e.g. obtaining a building permit).

Nevertheless, Figure 4 illustrates that the introduction of the IS DM caused a reduction in non-secure electronic communications in favour of trusted ones offered by the IS DM. Moreover, Figure 2 demonstrates that trusted electronic submissions replaced letter postal services rather than personal contact with authorities. Personal contact decreases throughout the entire period, but only very slightly from the initial 49 % of all cases of submissions to the final 46 % in early 2011.

These results show that financial aspects and the chosen business model for financing communication affect the structure of modes of incoming communication, as it is obvious in the introduction of the trustworthy electronic communication channel. For IS DM use, citizens do not need to invest in qualified certificates. That is why it replaced the use of both electronic communication via e-mail without qualified certificates and particularly paid letter postal services. However, this effect does not play a major role, since there still remains a significant percentage of submissions by personal contact which is more costly for citizens than communication via IS DM.

## 9. Outgoing Communication

In the case of deliveries, the municipality is more bound by law, that is, for submissions the mode of communication depends on the free choice and preferences of the petitioner, but for delivery, the result mode or their preferential ordering is given by law. Some effects can even come from the second communicating body. For example, if a person goes to the authority in person, the clerk gives the document directly to him/her. This explains the fact that personal contact continues to present a constant percentage in the delivery cases is not at all surprising (see Figure 3).

Due to the nature of outgoing communication, it is not surprising that electronic delivery without a recognised electronic signature is used in a marginal percentage of cases. Fluctuations in Figure 5 regularly correspond to the second quarter of the year and likely caused by seasonal sending of information as they relate to local government performance.

Figure 5 clearly shows the introduction of communication via IS DM in mid-2009. Act No. 300/2008 Coll. § 17 provides for a public authority to primarily deliver to another public authority through the data mailbox, provided that the nature of the document allows for this to occur and it is not delivered locally. Likewise, if the nature of the document permits and if a person, a natural person or a legal body has its data mailbox available, a public authority carries out the delivery through this data mailbox if it is not delivered locally or by public notice. If the delivery mode of the Act is used, the provisions of other laws regulating the manner of service shall not apply. This means that public authorities, as well as the selected municipality, have to replace postal correspondence with

electronic delivery via IS DM in all cases when the nature of the document permits the addressee to have a data mailbox available starting from the date of validation of the Act.

This fact is quite evident in Figure 3, where guaranteed trustworthy electronic communication through IS DS has substituted original postal services, but no other means of communication. The development shown in Figure 5 demonstrates that there has been no long-term learning process, and also that there has not been an increasing possibility of converting documents into electronic form. In other words, a certain percentage of post delivery was replaced by electronic delivery as soon as the Act came into force, and this percentage has shown no further growing trend. The fluctuations can once again be observed because of seasonal influences.

These results show that municipalities are driven in the area of electronic communication only by duties laid down by law. Although they had the possibility to use electronic outgoing communication via e-mails signed with a recognised electronic signature (advanced electronic signatures based on a qualified certificate) which would have brought them financial savings (officials must have a qualified certificate for other reasons), they did not do it. Only the strict obligation to favour electronic communications via IS DM changed the structure of the modes of outgoing communication. Consequently, it seems that for this level of public administration there are other crucial aspects for the choice of communication channels than a business model connected to them and their financial demands.

## 10. Conclusions

The rate of electronic communication of the selected municipality was at the beginning of the period (end of 2004) very low: 2 % of the cases of both submissions and deliveries. This despite the fact that the Act on electronic signature had been approved four years earlier and that outgoing electronic communication could bring financial savings to municipalities. The structure of the modes of incoming communication gradually changed during this period, which means the gradual inhibition of traditional forms in favour of electronic ones. The introduction of the IS DM in 2009 accelerated this process of substitution, but not as it would have been expected. This implies that a business model could be important for citizens choosing a communication channel, but it does not play a major role.

On the other hand, the structure of the modes of outgoing communication remained virtually unchanged from late-2004 until mid-2009, in spite of the fact that the substitution of postal service with electronic outgoing communication via e-mails signed with a recognised electronic signature would have brought financial savings to authorities. In 2009, there was a leap change due the introduction of the IS DM. Since becoming obligatory to show a preference in this trusted electronic delivery via the IS DM, no significant development has been observed. For instance, the percentage of substituted postal communication with the delivery of electronic documents via the IS DS has not increased over the course of time. It appears that other issues are crucial for municipalities regarding the choice of communication channels than a business model.

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