

# FLEXPUB: Developing a Strategy for Flexible and Innovative e-Services

**Rink W. Kruk\*** (*National Geographic Institute – Belgium, rink.kruk@ngi.be*), **Maxim Chantillon** (*KU Leuven – Belgium, maxim.chantillon@kuleuven.be*), **Anthony Simonofski** (*UNamur – Belgium, anthony.simonofski@unamur.be*), **Thomas Tombal** (*UNamur – Belgium, thomas.tombal@unamur.be*) & **Joep Crompvoets** (*KU Leuven – Belgium, joep.crompvoets@kuleuven.be*)

## Abstract

Developing innovative and flexible public e-services, capable of adapting to the citizens' changing needs, has become crucial for public administrations. To help them with these challenges, the FLEXPUB research project aims at developing a federal Strategy for the implementation of flexible and innovative geographical public e-services.

In order to develop this Strategy, a baseline measurement of the existing federal administrations' practices in terms of geographical e-services was conducted, and was complemented with an analysis of the deriving stakeholders' requirements.

To guide the federal administration along the way, a twelve years (2018-2030) Strategy was created, as a framework that lays the foundations enabling a federal administration to build flexible and innovative e-services, by relying on three pillars (Openness, Participation and Collaboration) and one key fundament: Geo-orientation.

Openness implies rethinking the information management system; ensuring sustainable funding for public data quality and up-to-dateness; and guaranteeing personal data protection and security. Participation implies aligning with internal stakeholders; integrating the input from citizens and external users; and developing the appropriate methods and tools. Collaboration implies rethinking organisational structures to actively serve the end-user; strengthening coordination and sharing practices within a single administration; and building on common service and data approaches to stimulate cooperation across public administrations. Finally, Geo-orientation underlies these three pillars.

**Keywords** – e-services; e-government; openness; participation; collaboration

## 1 Research context

Our society bathes in technological evolutions. Accordingly, public administrations have to get on board with this movement and need to innovate in the field of the services that they offer.

On the one hand, due to the technological improvements that citizens and businesses experience in the private sector, they also expect the public administration to innovate in the same way. Indeed, citizens and businesses

also want to be offered public services that are as efficient as the services they get from the private sector. Moreover, it is assumed that these citizens' expectations are less and less stable over time, and are characterised by a desire to be offered personalised tailor-made public services fitting their specific needs.

On the other hand, public administrations had to deal, especially in the last decade, with repeated budget cuts. In this context, developing innovative and flexible public e-services, capable of adapting to the citizens' changing needs, has become crucial. Public e-services can be defined as any interaction, through the use of electronic networks, between a service provider and user, aiming to fulfil a general purpose (Lindgren, 2013). This digitalisation of government is labelled a e-government in the literature (Andersen, 2006)

It is within this context that the FLEXPUB project was founded. FLEXPUB is a four-year (2016-2020) multidisciplinary research project conducted by two Belgian universities (KU Leuven and UNamur) and a federal public administration institution (the Belgian National Geographic Institute).

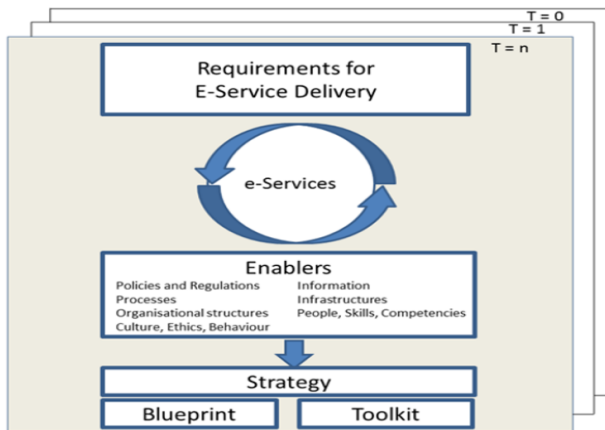
The study aims to understand (1) how the public e-services can be made more flexible and innovative, and (2) how the Belgian federal government can become more adaptive and innovative. For practical purposes, and because geographical information is among the most-structured and organised types of information (among other as a result of the EU 2007 INSPIRE Directive), the research is limited to e-services with a geospatial orientation in the implementation of a public policy (e.g. the more efficient combat of wildfires or the management of addresses).

The objective of the FLEXPUB project is to develop a federal Strategy for Flexible and Innovative geographical public e-Services (hereafter 'Strategy'). These main objectives encompass the following sub-objectives: to provide an overview of the current situation in the field of geographical public e-services in Belgium, to identify the future needs of the users and to define the possible options which could be used to provide an answer to the changing needs.

## 2 Methodology

In order to develop this Strategy, it was first necessary to realise a baseline measurement of the existing federal administrations' practices in terms of geographical e-services, and to complement this with an analysis of the deriving stakeholders' requirements. A methodological triangulation took place whereby two methods were combined: A combined qualitative and quantitative survey and a set of qualitative interviews (Bryman, 2006).

Figure 1. Schematic overview of the FLEXPUB-research methodology



The online survey research was conducted between December 2016 and February 2017 and focused on gaining an understanding of the geospatial e-service landscape within the federal Belgian context from a judicial, public administration and information management perspective. A response rate of 27,6 % was reached. In total 201 respondents filled in the survey. The respondents are active in the public sector as well as the private sector. The data was analysed via the IBM program SPSS Version 24. For each question, the descriptive statistics have been calculated. Where applicable, correlations have also been tested as well as possible relations between different factors.

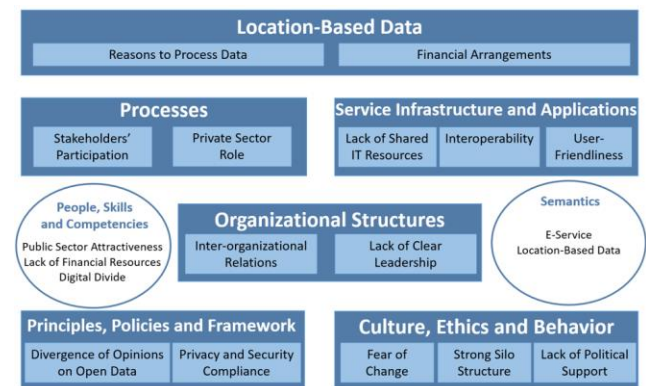
Next to the online survey, 35 in-depth interviews were conducted, in order to get a profound insight in the state of play of e-government in Belgium and to identify the stakeholder's requirements. The respondents can be divided into three categories: (1) civil servants working in the Belgian federal administration, (2) civil servants working in one of the other public administrations, i.e. from the supra-national level, the regional level or the sub-national level, and (3) actors from the private sector. Respectively 17, 12 and 6 interviews were conducted, which in total makes 35 interviews. They were conducted between July 2016 and May 2017. Each interview lasted between one and two hours. For the interviews, it was decided to use a combination of the "interview guide

approach" and the "standardised open-ended interview" (Mortelmans, 2009; Patton, 2015). The interview data was analysed via NVivo according to literature's best practices (Silverman, 2016). The respondents were selected on the basis of their knowledge and experience with e-government, e-services and/or data used in e-services. Based on the analysis of this data, a Strategy for Flexible and Innovative e-Services was created.

## 3 Baseline measurement and requirement identification

Based on the results of the online survey and interviews, and in combination with COBIT 5, a number of challenges and requirements were identified. COBIT 5 has been used as a coding scheme for the data. In this way, a precise analysis could be made (Ridley et al., 2004). The results of this analysis can be found below, and are summarised in Figure 2. A detailed overview can be found in the designated research reports, i.e. Chantillon et al. (2017) and Chantillon et al. (2018).

Figure 2. Overview of the challenges



### 3.1 Processes

The introduction of innovative processes sometimes faces challenges inherent to the public sector domain such as the existence silo-structure, the lack of internal competence etc. An increased focus should be put on stakeholders' participation within these processes to better align the development to the real needs of the potential users such as citizens and businesses. This alignment should ensure a higher use of public e-services.

### 3.2 Organisational structures

Almost all actors underlined that the federal state structure is a complicating factor in both the development and maintenance of e-services, and in the collection, processing and exchange of geospatial data. Though not much can be done about this, the creation of a formal (and informal) coordination structure between the different administrations could be an avenue forward. Regarding the coordination within the federal administration, it was clear

that much is expected from (1) the Digital Transformation Office created in 2017, (2) the coordinating federal G-Cloud initiative, and (3) the definition of a role for the National Geographic Institute of Belgium regarding geospatial data. This organisational coordination is also complicated by a lack of trust.

### **3.3 Services, infrastructures and applications**

There is a crucial need to share hardware and software within and between public administrations in order to deliver economies of scale. Therefore, an end-to-end enterprise architecture must be developed within an administration to deliver innovative e-services. An enterprise architecture needs to be implemented with two key challenges in mind: making the e-services user-centric and reaching a balance between efficiency and privacy.

### **3.4 People, skills and competences**

The public sector often struggles to compete with the private sector when it comes to attracting specific profiles, such as IT specialists. Indeed, it suffers from a truncated negative image, namely that the wages are low, jobs are bureaucratic, and projects are insufficiently innovative. Thus, it would be good for the administrations to engage in an 'active employer branding' in order to wash-off the negative stereotypes, to generate an appealing image and to rebuild trust in the public sector. Moreover, it is necessary to tackle the digital divide resulting from a lack of digital skills, rather than a lack of access to technology.

### **3.5 Culture, ethics and behaviour**

All organisations made clear that there is a crucial role for bottom-up initiatives that have strong support, and accompanying resources, from the top management of organisations. Legally binding actions are important in this regard (e.g. only-once principle), but do not resolve all challenges. Furthermore, the introduction of new technologies has to be done in such a way that staff understand the needs, and does not see it as a threat – this can be done by involving the staff in the choice and implementation of new technologies.

### **3.6 Principles, policies and frameworks**

Administrations are still reluctant to engage fully with the principle of open data because they lack visibility on what happens with the opened data and therefore only see the costs, and not the positive outcomes. An avenue forward would thus be to raise the awareness about the benefits of open data, for instance via the promotion of 'success stories' deriving from the re-use of public sector information. This is fundamental in order to increase adherence, by the administrations, to the 'open data mentality'. Moreover, the administrations still struggle with the implementation of the General Data Protection Regulation (GDPR, 2016).

### **3.7 Semantics**

The meaning of the concepts 'geospatial data' and 'e-services' is not clear for the users of such data and services, nor sometimes even for those who collect, manage and distribute those data and services. At the source side, small steps are made to clearly define these concepts. It is obvious that if such misconception exists already within the expert groups of users and providers, the uptake of geospatial data and the development of e-services will be difficult to reach.

### **3.8 Geographical data**

Communication on geospatial data must be improved. In this regard, defining authoritative sources is a first step towards a better organised data landscape. Additionally, the creation of a focal point for the governance of geographical data is desired, as well as more political awareness and support. Currently most emphasis is given to the opening of geospatial data on portals, rather than integrating these data in e-government processes and services. It is clear that common, urgent and shared needs can be a driver for the breakdown of silo-structures within organisations and the administration. It was also pointed out that regional administrations are not always aware of the existing user needs for a federal dataset, and that interoperability and governance difficulties may arise in combining and integrating those datasets into a federal data set.

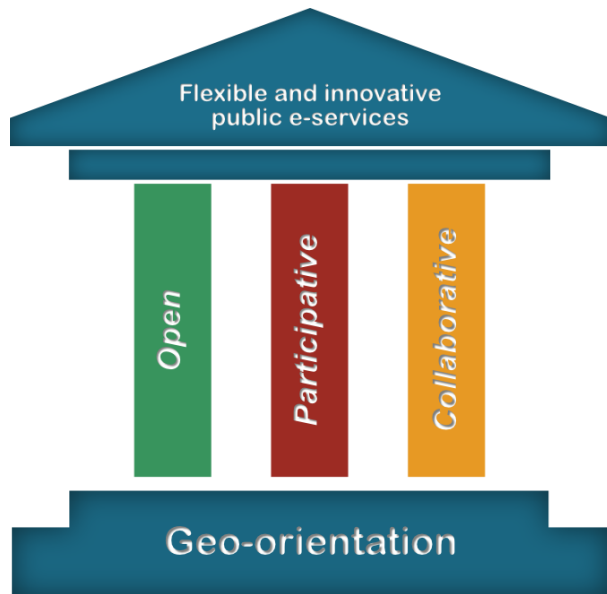
## **4 Strategy for flexible and innovative e-services**

Based on this baseline measurement and this requirement identification, a Strategy was created. A clear and strategic approach towards e-services is a prerequisite for the development of a strong forward-thinking federal administration. Indeed, a strong federal e-government policy does not only serve the administration's organisations, but also, and more importantly, citizens, business and society as a whole. Although there is no silver bullet to approach the future digital developments, the federal administration can be organised in a way that allows for constant interaction and reaction to the changing demands of society. An innovative administration is capable of reinventing and transforming itself and the services that it offers, in order to match new demands and needs. This implies a need for flexibility, which in turn requires finding a correct and workable balance between independence and unity.

To guide the federal administration along the way, a twelve years (2018-2030) Strategy for Flexible and Innovative e-Services is envisaged as a framework that aims to establish an environment in which federal organisations and civil servants can reflect on e-government and e-service

developments. This framework relies on three pillars, i.e. Openness, Participation and Collaboration, and one key fundament: Geo-orientation. The Strategy is depicted in Figure 3. It has to be underlined that this Strategy is partially based on the well documented pillars of the Open Government Movement (Lee, 2012).

Figure 3. Strategy for flexible and innovative e-services



## 4.1 Openness

Openness is about sharing information and services as broadly as possible, when possible for free, in a secure and privacy compliant manner, in order to increase transparency and foster economic growth through collaboration and data re-use, and to generate value-added services. It implies fundamental data governance reflections, rather than being content with simply opening data on a portal, as rethinking the whole information management system is a pre-requisite to achieve efficient openness. Indeed, integrated information systems can enable better decision-making and help improve on the public values that the federal administration pursues. It also implies finding the right balance between budgetary autonomy and user orientation, namely between free and royalty fees' models, as sufficient funding is necessary to keep the quality of the data, and specifically its up-to-dateness, at an appropriate level.

### 4.1.1 Rethinking the information management system

Transitioning towards a truly "Open Government" implies fundamental data governance reflections, as rethinking the whole information management system is a pre-requisite to achieve efficient and effective openness. While this process has been started by the administration, it is a

constant work in progress to reflect on how the information infrastructure should serve the administration's goals. Indeed, integrated information systems can enable better decision-making and help improve on the public values that the federal administration pursues. Moreover, it can help to identify, in a timelier fashion, relevant datasets requested by re-users. Being 'open' thus requires much more than uploading data on an 'open data' portal. It is a mind-set requiring cultural change.

### 4.1.2 Ensuring sustainable funding for public data quality and up-to-dateness

It implies finding the right balance between budgetary autonomy and user orientation, namely between free and royalty fees' models, as a sufficient funding is vital to keep the quality of the data, and specifically its up-to-dateness, at an appropriate level. Indeed, the value of the data for re-users is function of its nature (value-added data is more useful than raw data), quality and up-to-dateness. The administration should strive towards meeting these requirements

### 4.1.3 Guaranteeing personal data protection and security

The public administration shall take personal data protection and security concerns into consideration from the start when rethinking its information management system. Ensuring maximum privacy for citizens should be the norm (Privacy-by default) and the IT infrastructure should be developed in a way that ensures this (Privacy-by-design).

## 4.2 Participation

Participation is about involving all the stakeholders impacted by the digitalisation strategy, by considering their evolving requirements, needs, ideas or necessary training. This participation is essential to be able to match the expectations of the stakeholders regarding the e-services. This implies the participation of two main stakeholder groups. The first are the external users – whether these are citizens or private or public sector organisations –, that have to participate in the development of e-services. Thanks to this participation, the e-services will be better aligned with these stakeholder's requirements and, ultimately, more widely used, not only by the tech-savvy, but by all. The second stakeholder group to consider are the internal public servants whose jobs will evolve due to the digitalisation. As they will interact with the e-services in the back-office, it is essential to accompany this change with appropriate change management actions.

### 4.2.1 Aligning with internal stakeholders

The digital divide remains a crucial challenge in society. The administration must not only tackle it externally but also within the administration. New development in

technologies and the digitalisation will allow it to redesign its processes and organisations. This profound transformation must take place in coordination with the internal stakeholders, in order to decrease their fear of losing jobs and of change in general, and to transform their previous tasks in new ones, with more meaning and added-value.

#### 4.2.2 Integrating the input from citizens and external users

External users, such as citizens and businesses, have higher or new requirements regarding the services provided by the administration but also strive towards being recognised in a pro-active position for the service delivery. The administrations should organise a platform to let the interested external users take up that role. This proactive role can take several forms, from being a consumer of information to a highly active actor in the service delivery. Examples of such involvement are app development, service feedback rounds or participation in the development of services. Ultimately, external users can also be involved, in a broader debate, to redefine their needs and the role of government and public administration.

#### 4.2.3 Developing the appropriate methods and tools

Developing a participative strategy internally and externally requires a fundamental change in the existing processes of the administrations. The administrations should experiment with existing and new methods to gather the input, whether on a small scale, via group discussions, roundtables, or interviews, or on a large scale, via social media, surveys or online platforms. Those methods should be implemented in a coherent and continuous way, to ensure a lasting impact.

### 4.3 Collaboration

Collaboration is about the administration's organisations embracing an ever more globalising world and society, in which they no longer act as single actors, but strive from an administration wide perspective towards alliances, cooperation and the sharing of data, tools and capacity to fulfil their tasks and duties towards a variety of stakeholders (public, private and citizens). It implies that federal organisations restructure their cooperation in such a way that a coordinated partnership is established, if need be with the private sector when relevant. Via those partnerships, a common strategic vision can be established that guides the federal organisations in the development of their future services. At the same time, there is a need for organisational independence. Federal organisations require sufficient organisational leeway and freedom at project level to fulfil their tasks and duties, including developing

their own e-services. Guidance, within the federal administration, by a single organisation, is however necessary to establish a common foundation for all, on top of which each organisation can create innovation and flexibility.

#### 4.3.1 Rethinking organisational structures to actively serve the end-user

Developing a collaborative approach is a primordial requirement to ensure that the administration becomes and acts in a user-oriented way. In turn, it will also stimulate additional collaboration. The inclusion of stakeholders, both governmental and non-governmental, as well as the need to actively provide changing services based on the evolving needs of citizens, businesses and societal organisations can only be achieved by redesigning the current structures of the administration.

#### 4.3.2 Strengthening coordination and sharing practices within a single administration

The administration has to make use of the digital opportunities to increase the coordination and sharing of data, information and services across different organisations of the same administration. Interoperability, a shared policy and communication approach and the accelerated implementation of new organisational instruments within the same administration is crucial. New technologies play a key role in this as they will be a driver for strengthened coordination as well as the result of it.

#### 4.3.3 Building on common service and data approaches to stimulate cooperation across public administrations

The administration has to collaborate with other administrations, within and across national borders. A user-centric approach and the global challenges force the administrations to look beyond their own level. The administration has to develop networks and stimulate participation with partners. It thereby has to further intensify data exchange approaches as well as the development of common services and standards

Figure 4. Summary of the strategic actions

Openness	Participation	Collaboration
Rethinking its information management system	Aligning with internal stakeholders	Rethinking organisational structures to actively serve the end-user
Ensuring sustainable funding for public data quality and up-to-dateness	Integrating the input from citizens and external users	Strengthening coordination and sharing practices within a single administration
Guaranteeing personal data protection and security	Developing the appropriate methods and tools	Building on common approaches to stimulate cooperation across governments

## 4.4 Geo-orientation

Geo-orientation underlies the three above-mentioned pillars and is about generating added value by answering the increasing demand for real-time geographic data and services. This is not only relevant within a group of specialised actors, but also for actors from other policy fields, which might not always realise the potential of including a location component in their services. “What?”, “When?” and “Where?” are the three simple questions that are to be considered in any e-service offered. In order to achieve geo-orientation, information integration is a necessity. As everything happens somewhere, geographical data and systems help to understand the interrelationships between and among the issues that the administration, businesses and citizens face every day via the integration of information and visualisations based on location. With the emergence of new technologies (including sensors and Internet of Things) and the increasing amounts of data, the need for ubiquitous and authoritative location information is becoming even more pressing. New technologies combined with advanced use of geo-oriented information systems are powerful tools for the governance of the administration as it supports policy making and services offered to the end users.

## 5 Conclusion

The Belgian federal administration is in need for a strategy on how to approach geospatial e-services and data. Via this research project, a scientifically underpinned Strategy is currently being developed. The project, which started in 2016, will deliver a final Strategy by mid-2020. This paper has discussed the identified challenges and requirements of the different involved stakeholders via an online survey as well as 35 interviews with civil servants and private sector actors. The challenges and requirements were structured according to the COBIT 5 elements which served as a framework. On the basis of these identified challenges and requirements, a Strategy has been designed. The Strategy lays the foundations enabling a federal administration to build flexible and innovative e-services, by relying on three pillars, namely Openness, Participation and Collaboration. The necessity to develop a geo-orientation within the public administration is a fundamental element underlying these three pillars.

Currently, three cases studies are conducted in order to refine the Strategy. The research team works on concrete practical cases of administrative (dis)functioning, through the means of official documents’ analysis, bilateral meetings with key actors, observation of daily practices and the testing of the proposed strategic action points. In June 2020, the final Strategy will be presented.

## Acknowledgements

The authors would like to thank BELSPO, the Belgian Federal Science Policy office, for their support. The research pertaining to these results received financial aid from the Federal Science Policy according to the agreement of subsidy no. [BR/154/A4/FLEXPUB]. BELSPO did not influence the study design, the data collection, the analysis or the interpretation of the data. BELSPO has also no influence on the writing process or in the decision to submit a paper to *Data for Policy 2019*.

## References

- Lindgren, I., & Jansson, G. (2013). Electronic services in the public sector: A conceptual framework. *Government Information Quarterly*, 30(2), 163-172.
- Andersen, K. V., & Henriksen, H. Z. (2006). E-government maturity models: Extension of the Layne and Lee model. *Government information quarterly*, 23(2), 236-248.
- INSPIRE. Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), *OJ L 108/1, April 2007*.
- Bryman, A. (2006). *Integrating quantitative and qualitative research: how is it done?*. Qualitative research, 6(1), 97-113.
- Mortelmans, D. (2009). *Handboek kwalitatieve onderzoeksmethoden*. Leuven: Acco.
- Patton, M. Q. (2015). *Qualitative research & evaluation methods*. Thousand Oaks: Sage.
- Silverman, D. (Ed.). (2016). *Qualitative research*. Sage.
- Chantillon, M., Simonofski, A., Tombal, T., Kruk, R., Crompvoets, J., de Terwangne, C., Habra, N., Snoeck, M., & Vanderose, B. (2018). *FLEXPUB Public e-Service Strategy - Report WP3 Requirements*. Leuven: KU Leuven Public Governance Institute.
- GDPR. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), *OJ L 119, 4 May 2016*.
- Lee, G., & Kwak, Y. H. (2012). An open government maturity model for social media-based public engagement. *Government information quarterly*, 29(4), 492-503.