

Evolving Government-Citizen Ties in Public Service Design and Delivery

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Abstract: This paper discusses ongoing research on how to enforce government-citizen ties in collaborative public services design and delivery among citizens and public service providers. It is discussed how fine-tuned collaboration support and public service information transparency and understandability can be designed to enhance government-citizen interactions. The research is contextualised into the COCKPIT project, which aims at providing a governance model for public service design and delivery and a metamodel for public services structural representation.

Keywords: e-government; public services delivery; process model understandability. **Track:** Open government, transparency, and collaboration

1 Introduction

Governments have as one of their objectives to deliver public services to their citizens for their general interest. To realize these services, public bodies typically use several cross-organizational business processes, transactions and resources that operate on an Information and Communication Technology (ICT) platform. Nevertheless, interactions with public service organizations are characterized by deep dissatisfaction.

Service Oriented Computing (SOC) is the computing paradigm [Pa03] that leverages the technical value of solutions in the area of public services. Current trends in improving the relationship between governments and citizens aim at exploiting the development of tools and collaborative platforms for supporting formal analysis, conceptualisation, modelling, implementation, publishing, and further on provision of e-services.

The COCKPIT¹ project aims at providing a systematic methodology while empowering the role of citizen in the service design and delivery process. It comprises the definition

¹ <http://www.cockpit-project.eu>

of a governance model to the design, construction and operation of public services based on co-production approach to shape public service offerings around the citizen's experiences; and a formal representation (metamodel) to express the structural and behavioural characteristics of public services while keeping in mind the delicate balance that should be achieved between government and citizens.

The definition of the COCKPIT governance and meta-model has evolved towards the description of business aspects of services and the main steps of service delivery activities considering citizen participation. However, citizen involvement in public affairs is not an easy target. Citizens' involvement in terms of service modelling and taking the final decision on important aspects are kept to a minimum in most stages. Information technologies are deployed internally and not for interaction with the citizens, as IT tools for business process modelling are still too difficult to be leveraged by citizens with no IT background. The same applies for legislation, which needs to be presented to citizens in a simpler manner.

The main challenges concerning electronic governance are how to help governments to pass from an authority to a service provision relationship with citizens; and how to improve citizens' cooperation and commitment with decision making, acquiring continuous education on democratic practices. This work moves towards the extension of the COCKPIT service design and delivery methodology in order to refine its potential to strengthen Government-to-Citizen ties in public service delivery. This extension takes into account two aspects of Government-Citizen relationship support – collaborative interaction and public services information transparency and understandability.

The remainder of the paper is organised as follows. Section 2 describes the COCKPIT methodology for public services design and delivery, focusing on its governance model and public service representation metamodel. Section 3 highlights those aspects to be considered as a strategy for systematically build stronger government-citizen ties for eGovernment solutions. Section 4 argues on ideas for extending COCKPIT governance model and metamodel into a citizen-centered view. Section 5 concludes the paper.

2 A Citizen-centered Methodology for Public Services Design and Delivery

Public service design and delivery process is the activity of planning people, infrastructure, communication, and materials components of a service in order to improve its quality, the interaction between the service provider and citizens, and the citizen's experiences. Such a process is critical since it allows government organizations to translate their political and strategic plans into the operational level and that the efficiency of operations strategy is contingent upon making the right design choices.

The main purpose of the public service design activity is to create a service that meets citizen needs and expectations. Proper design ensures that both the service outcome and the process of service delivery are perceived as being of good quality by citizens so as to generate citizen satisfaction, driving citizen retention.

A service can be described as an outcome, the *what*, and as a process, the *how*. Since citizens that consume the outcome also participate in the process, conceiving a service involves designing both the outcome and the process that produces the result. Developing the service outcome is affected by the service consumer's needs orientation while the service operational team is concerned with managing the service delivery.

To make the service design and delivery traceable to both service providers and consumers, a governance model and a reference model have been defined.

2.1 The COCKPIT Governance Model

The COCKPIT Governance Model [Ko11][Ko12] spans four different layers (or stages) which are based on the logical flow of the lifecycle of a service - from its conceptualisation to its post-operational evaluation – from which public bodies may have direct feedback in fine tuning or revamping their services: i) *Service Conceptualisation and Implementation*: opinion mining is proposed as a direct way to collect citizens' opinions on the services that are under consideration; ii) *Service Modelling*: citizens opinions, selections and preferences get translated to service requirements and features, meanwhile being presented with a visual representation of their decisions' outcomes; iii) *Service Deployment*: highly sophisticated profiling mechanisms for services are provided to automatically adjust themselves to citizens' preferences; and iv) *Service Delivery Evaluation*: opinion mining is once again used, in order to directly assess the opinions of citizens and for receiving feedback.

2.2 The COCKPIT Metamodel

The Public Service Formal Representation [TW11], COCKPIT Meta-Model, has been proposed to deal with the integral parts of every service description - to formally describe what the service is able to do, and how the consumer is able to consume what the service provides. The COCKPIT meta-model underpins the public service governance model supporting iterative development of public services; starting from identifying the abstract citizen needs, and subsequently aligning them with the strategy of public bodies, laws and regulations through a stepwise process of reconciliation and refinement until they can be modelled, simulated, and evaluated.

COCKPIT Meta-Model has been organized into a stratified architecture comprising layers, each of which focuses on a particular aspect, considered as a view, of the overall service representation: i) *Service concept view*: the service is defined in high-level coming up with a clear concept which specifies the vision and the goals of the service; ii) *Service stakeholder view*: provides description about the stakeholders involved in the service design and delivery process, as well as their roles: provider, owner, intermediary, and beneficiary; iii) *Service requirement view*: zooms in on the service requirement entity - a public service is seen as an entity which has to fulfil different stakeholder requirements; iv) *Service interaction view*: focuses on the service request entity aimed at formally capturing the interaction between the service and its stakeholders; v) *Service operation view*: comprises the entities related to the service functioning such as, the processes composing the service, the tasks composing the processes, and different types of resources (human, IT, Infrastructure) consumed to achieve the service functionality; and iv) *Service cost view*: zooms in on the cost entity and its relations.

3 Evolving Government-Citizen Ties

The literature suggests that citizen participation should follow an increasing scale where, at each level, citizens are empowered in their possibilities for participation, discussion and decision making in government processes and issues [Gr09]. Through this scale, different relationships between government and citizen can be configured, where, at the low levels, government and citizens have very distinct responsibilities and roles; and at higher levels, roles and responsibilities are mixed and interchanged. Initiatives to provide interaction between government and citizens should start with practices and tools which provide basic levels of participation, being continuously improved.

The challenge of designing tools to support government-citizen interaction lies on how to identify effective requirements for each tool, taking into account the specific characteristics of every interaction context – the desired participation level, public organization policies and strategies; social, cultural and economic aspects of the target audience; regulations; and IT infrastructure available. It is very common to see government-citizen interaction platforms which relies on general and popular social software products – wiki, blogs, social networks, etc – or which relies on very simple communication channels, such as ‘contact us’ and ombudsman processes. To cope with the generality of social software tools, Gov 2.0 approaches combine government-citizen interaction with mining techniques, so as to catch relevant information about citizen opinions. These approaches address well the challenge of dealing with a great amount of information but may not show enough impact on citizen participation, neither helps citizens and government to establish improved levels of proximity.

[D09] suggest an approach to systematize the specification and development of virtual environments to support eDemocracy which combines decisions on a desired democratic participation level and the identification of different sets of supporting requirements grouped into three key aspects: **collaboration, transparency and social memory**. A scale to establish closer ties between citizens and between society and government through public services is proposed, ranging from: i) *availability of online services* - government presents information about public services and their execution, and society can request their use and follow its requests without having to go to a government agency, with very limited or none possibility of participation; ii) *possibility to comment*: citizens can pose pre-classified comments (suggestions, praise, criticism etc) about public services via “Contact us” or ombudsman online offices, which may be answered or not, according to the agency relationship policy; iii) *comments share*: interaction among citizens about the service is permitted, creating possibilities to share experiences, information and ideas; iv) *improvements implementation*: service providers analyse and use citizens opinions in order to translate them into service improvements; and v) *change visibility*: service providers and citizens decide on how to prioritize service changes which will then be deployed and made visible to society.

Orthogonally, three distinct types of requirements for citizen participation support can be identified: i) *Collaborative support*: advanced or better suited collaboration requirements regarding communication, coordination and awareness functionalities, for each interaction context; ii) *Transparency of information*: requirements that suggest the

ability of an organization to publish information according to general characteristics of access, use, presentation, understanding and auditability; iii) *Social Memory*: requirements for managing social memory, past discussion and decisions.

This research work aims at combining this approach to COCKPIT framework, providing the governance model with a specific methodology for designing supporting tools according to each context and service being delivered, and extending the COCKPIT metamodel in order to formally represent collaboration, transparency and social memory requirements, starting the definition of a new layer, a citizen-oriented view.

4 Extending the Cockpit Governance and Metamodel – A Citizen-Oriented View

The COCKPIT governance model and its underlying metamodel infuse the citizens' opinions in various steps of the whole service design lifecycle towards a more citizen centric process. Specific emphasis has been placed on the distinctive approach to the design, construction and operation of public services based on co-production, engagement and empowerment of citizens when shaping public services offerings [TW10]. The issue that arises is how to leverage this engagement, progressively strengthening Government-Citizen ties.

Considering the COCKPIT governance model activities, it is possible to distinguish three desired Government-Citizen relationship objectives: public opinion, service information transparency and decision-making about public services design and delivery. We propose an approach to improve the COCKPIT governance model in order to provide alternatives for government-citizen interaction aligned with a desired participation level and adapted to each application context. The idea is to provide flexibility in identifying requirements to support citizen interaction for each governance model layer, according to desired levels of collaboration and social memory support.

Another important aspect of the Government-Citizen interaction in COCKPIT is that the artifact they share is the public service. Considering the COCKPIT metamodel, public services are described both in terms of its business/strategic information as well as through its process or workflow definition. A service process is described as the sequence of activities and steps, the flows and interactions between these activities, and the resources required for producing and delivering the service outcome as well as the interactions that occur between the citizen and the organization. Regarding the main representation of a public service as a process model [Du12], it is also proposed the extension of the metamodel so as to describe meta-information to allow the design of public services process models according to distinct transparency requirements [NM09].

4.1 Public services process understandability

The COCKPIT metamodel suggests public services process models to be visualized by citizens as a way to provide transparency of the public service information. Process models are technical artifacts, which may not be easily understood by common citizens. In order to improve the effectiveness of this transparency and communication intent, the

design for understandability of public services process models was suggested by [EAC11], where converting a process model into a model which can promote public understanding can be faced as a design task guided by the communication objectives, business domain and characteristics of both the target audience and the public organization strategy. This design task relies on the concept of organizational transparency [LC10] where transparency is defined as a set of aspects that suggest the existence of politics that allow to provide information according to general characteristics of access, use, presentation, understanding and auditability.

In [EAC11] it is suggested that the process design may comprise the following characteristics: *adaptability* - the ability to allow changes in process and its representation in agreement with stakeholders' needs; *clarity* - the ability to allow the discrimination of an object/element used in the process representation avoiding ambiguity; *concision* - the ability to summarize the content, helping users to get information faster; *intuitivity*- the ability to allow stakeholders to read the process model representation without requiring previous knowledge about the domain and/or the notation used to describe the proces; and *uniformity* - the ability to provide a unique form of description and representation of each process element.

One objective of this research work is to include the characteristics described above as attributes of the COCKPIT metamodel, particularly concerning the stakeholder view. This would allow the possibility to consider the understandability aspect during service modeling step of COCKPIT governance model. Additionally, the design guidelines suggested in the catalogue can be used as requirements for the specification and implementation of tools to support the collaborative design of public services process models. The catalogue has been applied in brazilian public organizations, evidencing that process analysts can apply the catalogue in designing simpler process models.

4.1 Public Opinion

Processes are experiences in citizens' day life. It is very common for citizens to freely express occurrences, curiosities and observations about this experience, personally or through social media. Mining information for process improvement through social media is a primary approach to obtain citizen opinion about a service, specially in lower levels of citizen participation. However, it does not guarantee both engagement nor full understanding about the public service process. The challenge is how to help citizens to present opinions and suggestions for service improvement in a more structured way, being aware of more details about the public service process; and how to provide/share summarized information about public opinion and decisions back to citizens.

A second objective is to extend the COCKPIT metamodel to include meta-information so as to organize more precise information on user experience around the public service process. This extension could be applied to the service interaction view of the COCKPIT metamodel. It is argued that citizens would benefit from describing their experiences associating it directly to process elements/information - activity, document or resource which he/she had to use during service provision, actor/person with whom he interacted and so on. The intent is to support citizens to describe their experiences meanwhile they gather more understanding about the way the public service is provided (its process).

This extension could lead to the construction of virtual interaction environments such as the one proposed by [DAC11]. It suggests a way to collect public opinion about public services by means of conversations. Conversations are narratives made by those who are involved in the service provision and are a common practice in public service contexts in almost all cultures. Conversations can be conducted around descriptions of the process displayed to the audience, where participants can comment on their experiences associating their comments to distinct elements in the process representation (activities, actors, events, rules etc). Participants may interact with each other and with government representatives for sharing experiences, opinions, questions, problems, etc in a process-oriented way. Engagement into discussion is improved by rendering participants with mechanisms designed to provide understanding about the conversation flow.

Another objective is to extend the COCKPIT metamodel so as to store the social memory generated through conversations about public services. New structures for organizing this information can be formalized into the COCKPIT metamodel, and the governance model can be improved with new tasks to assist collaborative decision making, allowing service providers and citizens to analyze the accumulated knowledge of past situations. An overview of the proposed extensions is depicted in Figure 1.

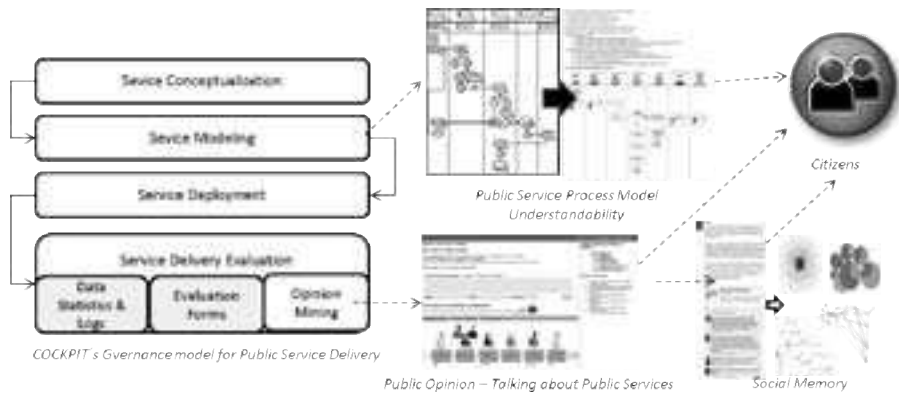


Figure 1: Overview of proposed extensions

5 Conclusion

This paper discusses research directions towards the extension of the COCKPIT service design and delivery methodology in order to refine its potential to strengthen Government-to-Citizen ties in public service delivery by improving collaborative interaction and public services process models transparency and understandability.

The challenges of this research are to provide COCKPIT with flexibility to cope with different government-citizen interaction levels and the design of tools to refine collaborative interaction and social memory. This can be achieved by refining the metamodel so as to include new information in its existing layers, as well as to define an

specific layer comprising the citizen-oriented information/view; and by specifying activities and tools to improve service design and delivery provided by the governance model. The extensions both on the governance model and metamodel, as well as the conduction of case studies, specially in brazilian contexts, are outlined as future work.

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