

SMART project: industrial and academic collaboration for service design

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Abstract. Governments need to devise services centered on citizens and their needs. The SMART project focuses on the development and validation of new service science methodologies in e-Government domain to achieve value added services able to satisfy explicit and implicit citizen needs. To reach its goals, SMART benefits from the experience of industrial and academic worlds that sharing multidisciplinary knowledge contributes to build services more citizen-centered. SMART considers three different scenarios to devise and validate its methodologies. This paper presents the initial experience carried out by industrial and academic partners in one of the considered scenarios.

Keywords: industrial-academic experience, service design, citizen-centered service

1 Introduction

Service science is an emerging discipline which studies the process for the discovery of customer needs and the creation of deliverable values. It aims to propose more systematic approaches to service innovation compared to the practice already in use [4]. As such, it provides models and principles that a government can apply to innovate citizen-centered services through the proper application of Information Technology (IT), economics and sociology advances. Different expertises may contribute in the development of personalized services by highlighting different needs and constraints. Personalization of e-services has been addressed in different works as a key mean to offer more citizen-centered services [1, 3]. Furthermore, a common vocabulary ³ has been devised in order to enable experts of different domains to easily communicate on the basis of a shared knowledge conceptualized in an ontology.

The underlying question addressed in this paper concerns the possibility to identify aspects and interests shared by academic, industrial and government

³ https://joinup.ec.europa.eu/asset/core_public_service/description

communities that should synergically act towards the provision of e-services personalized to citizens. More precisely, this study describes the experience carried out in the service science domain within the SMART project. SMART (Services and Meta-services for smART eGovernment) is a 3-year project founded by the Italian PON project PON01 00861 and it aims to define and validate new design approaches for citizen-centered e-services and their application in IT service production. The project involves several partners with different points of view and objectives presented briefly in the following:

- Industrial partners are interested in the production of a software application for service distribution. The application should provide citizens with an integrated view of local government services and should ease the interaction between people and Public Administrations (PAs). Moreover, the application should promote further technological development by offering the opportunity to publish and advertise correlated services, thus improving citizen satisfaction;
- Academic researchers are interested in defining new service science methodologies and experimenting their application in real service delivery scenarios. The application should investigate the effectiveness of the proposed techniques to discover citizen needs, the flexibility of methodologies to deal with any legal, economic and sociological issues, and their ability to promote public service re-engineering activities;
- PAs are interested in the innovation of their services. The developed methodologies should promote effective re-engineering activities, reduce waste and improve the efficiency of service production and delivery. Moreover, the developed software application should provide a more immediate and valuable access to public services, reduce the amount of employees' work and increase the citizen satisfaction.

All partners try to develop effective methods for sharing multidisciplinary knowledge and training new service science experts. Thus, the project experience should teach professionals how to effectively collaborate and generate ideas in an environment with different objectives, expertises and backgrounds. In addition, an education project should validate a curriculum for a service science expert.

SMART involves the University of "Milano-Bicocca" and three IT companies, namely Ancitel, Future Space and Halley Sud-Est. The academic partner studies and promotes the application of methodologies for modeling services and training professionals. Ancitel offers services to Italian local governments both at the IT level and at the strategic consulting level; it also contributes in SMART with its knowledge of the local government needs and its service development experience. Moreover, Ancitel hosted an education center for eighteen service science experts who are able to deal with a wide range of topics about information technology, law and government organization. Finally, Future Space and Halley Sud-Est offer e-services to public and private sectors and, in SMART, they are essentially involved to apply the proposed methodologies on real scenarios in order to validate their suitability.

The rest of the paper is organized as follows. Section 2 describes the main activities of SMART, focusing on three demonstrative scenarios. Section 3 describes the joint experience carried out by academic and industrial partners considering the first scenario. Section 4 concludes the paper.

2 The Three SMART Scenarios

The project activities were begun by analyzing the current needs of local governments and citizens with respect to ease and efficiency of access to services, law and administration rules that enforce the technological upgrade, available funds and readiness to accept innovation. The analysis has provided some insights about three specific scenarios identified as interesting study cases.

For each scenario, SMART has aimed to develop “Value Added Services” (VASs), i.e. protocols and tools for an integrated access to basic services that a citizen requests driven by a motivation. Different basic services could be actually related whenever they are useful to satisfy a unique need of the citizen. The discovery of these latent relations should relieve the citizen from the cognitive, organizational and logistical burden needed to produce and execute a plan that allows the access to basic services. Hence, in a first approximation, we may consider a VAS as a package or bundle of basic services which, taken together, cover a need. In addition, a VAS should take into account that in different situations the same need may be covered by different sets of basic services. Consequently, the citizen should interact directly with many services by using them in different production processes. Hence, the main aim of a VAS is to define a proper orchestration plan of basic services in order to satisfy explicit and implicit citizen needs. The scenarios are briefly described in the following:

Public business opening: in this scenario, the VAS offers an integrated view of services that an entrepreneur uses in order to establish and maintain a company. Italian laws introduced an unique access point, named “SUAP”, which aims at coordinating all the administrative requirements needed for creating enterprises in order to streamline relations between PA and citizens. The VAS to be developed for this SMART scenario should contribute to making SUAP services more citizen-centered. In this way citizens could perceive the SUAP not only as an institution able to eliminate useless constraints, but also as a help for efficient company start-up. The partners involved in the development of this VAS have different interests. Specifically, Ancitel is interested in developing an application for on-line SUAP services; academic researchers are interested in exploring innovative methodologies to add value in SUAP services. The starting point was the analysis of the SUAP domain to understand actual needs of entrepreneur and PAs. Precisely, analysis effort focused on services for opening café and Bed & Breakfast (B&B) businesses. More details on this analysis are given in section 3.

Demographic information update: in this scenario, the VAS offers an integrated view of the interaction between PAs and citizens when they need to update demographic information. In this VAS, the analysis focused on

services for residence change since PAs are interested in providing service bundles able to reduce the delivery effort and to enhance care for citizens. Such service bundles may help citizens to quickly change residence, offering them insights useful to make more comfortable their residence change and allowing them to share related information with other communities. The main interest of Ancitel in this VAS concerns the development of applications to enable citizens to change residence on-line in real time, according to the current law which was introduced as a key element in a nation wide effort to increase productivity. The academic researchers are interested in the design of strategies that create added value by composing service bundles. The VAS development began with the domain analysis focusing on Italian laws about change of residence and services that could be useful to citizens when they change residence, such as services related to school and nursery.

Territory control: in this scenario, the VAS offers an integrated view of information provided by actors, such as police, PAs and citizens. For instance, the VAS would allow police agents to carefully monitor the territory by also discovering stolen vehicles and common violations. Services for territory automatic control allow to reduce the amount of work, improve the effectiveness of investigations and interventions increasing citizen reliance on PAs. In this VAS Ancitel is involved in developing applications for allowing citizens to report violations and police agents to effectively intervene in reported violations. Moreover all partners are interested in exploring the opportunity of using open data and user generated content to deliver informative services. The early work in this VAS was the analysis of the police procedures, possible ways to gather territory information and to produce meaningful reports, for instance about vandal and criminal acts on public infrastructures.

One SMART outcome should be the VASs implementation by a web platform that integrates several services. The system should offer a common access point for PAs and other involved subjects to provide a service ecosystem enabling citizens to use VASs. Currently, some components of the platform have been analyzed and designed. Ontologies and models have been studied in order to allow providers and local governments to easily code their services and to quickly subscribe them in the platform with a minimum effort. Algorithms for automatic composition and selection of services have been devised, so that the platform is able to support the choice of the most valuable service combination and to automatically provide a bundle proper to needs of a specific user.

3 Experience in the Public Business Opening Scenario

This section describes the experience carried out by SMART industrial and academic partners to gather data about the demographic information, usage experiences and needs/expectations of entrepreneurs within the scenario on public business opening. To collect information about entrepreneurs, we devised questionnaires considering two kinds of public businesses, namely café and B&B. A questionnaire contains two main sections to collect respectively demographic

data and information about usage experiences on services for opening public businesses in Italy. Precisely, the first section includes questions about gender, age, marital status, children number, citizenship, residence, income, occupation and production field. Questions of the second section concern a set of services identified during the SUAP domain analysis (e.g., requests for certifications such as Italian anti-mafia attestation, acoustic influence attestation, and supplementary services such as insurance or wi-fi). Specifically, entrepreneurs were required to answer questions about some aspects of considered services such as the time spent to request it, the time to obtain it, its cost, its transparency, its ability to fulfill entrepreneurs' needs. For each aspect, entrepreneurs were required to indicate their perceptions by choosing one of the levels among those included in Likert scales commonly used in survey researches [2]. Two different strategies have been employed to provide questionnaires: entrepreneurs have autonomously completed online questionnaires or they have been assisted by an interviewer.

The gathering phase has involved entrepreneurs who have started their business during the year 2012. Precisely, we have selected from the Italian Registry of Company about 200 entrepreneurs of café and about 250 entrepreneurs of B&B from different Italian regions. Then, we have contacted them to obtain their availability to complete the questionnaire and 38 entrepreneurs of café and 64 entrepreneurs of B&B have completed at least the demographic section.

Successively, we have performed the descriptive analysis of the collected data. In this phase, for each question, we have analyzed the answers and computed some statistical descriptors on the collected values useful to increase knowledge on entrepreneurs using public business opening services. In the following we provide some graphics showing value frequency distributions for some sample questions. Graphics about gender, age and occupation questions are shown in Fig. 1. For some questions, collected data have been integrated with statistical data published by the Italian National Institute of Statistics (ISTAT) to derive more informative data. For instance, starting from the residence city specified by entrepreneurs we have derived the city size in terms of habitant number. Moreover, we have also determined the altimetrical zone corresponding to the specified residence in order to recognize the activity context by distinguishing among hill, litoral hill, plain and mountain zones. Such additional information may heavily affect expectations and requirements of users when they have to open a public business. Fig. 2 shows the frequency distributions for residence provinces ("*Other*" includes provinces with the lowest frequency), altimetric zones and city sizes.

As concerns questions of the second section, we have analyzed the perception distributions. As an example, Fig. 3 shows the distributions for all aspects of the insurance service. Perceptions are expressed on a scale from L1 (the most unsatisfactory level) to L7 (the highest satisfactory level). L0 is the level for unexpressed perceptions. In addition, we examined how perceptions are distributed with respect to the actual values of each service aspect. Fig. 4 shows an example of the distributions for the cost of the insurance service. For each perception level expressed by entrepreneurs, the figure shows box plots indicating insurance cost

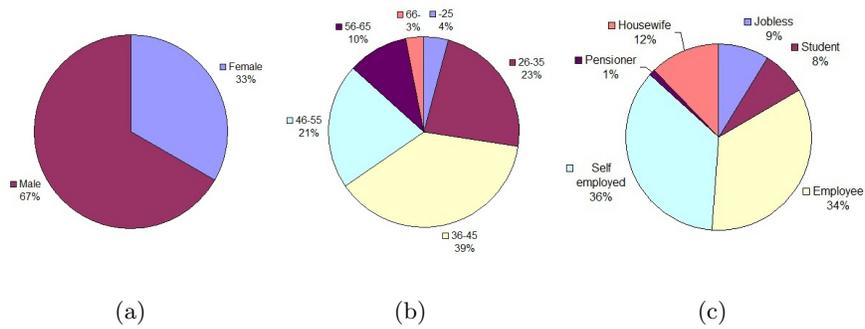


Fig. 1. Frequency distribution of gender(a), age (b) and occupation (c)

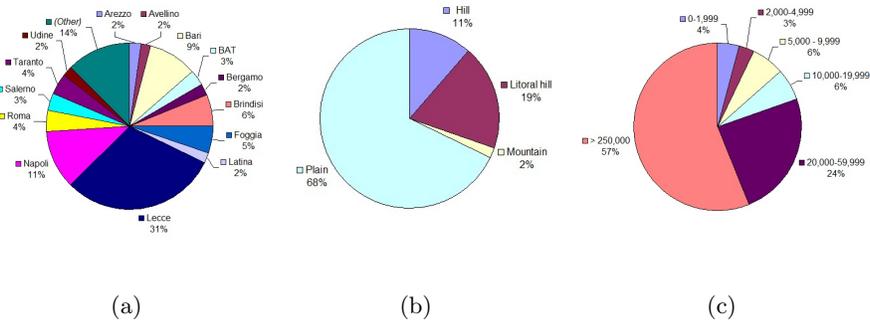


Fig. 2. Frequency distribution of residence (a), altimetrical zone (b) and city size (c)

values on which they expressed the corresponding perception level. The gathered information is the basis for a future knowledge mining process. Such process will highlight service characteristics that can be enhanced in order to improve values perceived by entrepreneur groups. Its results will also allow personalization of VASs according to group membership. For example, Figure 3 shows that entrepreneurs are mostly concerned with insurance cost and that there is a niche who would benefit from reduced delivery and request time. Hence, a VAS can improve value by reducing costs and times by means of IT improvements.

Data gathered through questionnaires may be conveniently exploited to identify groups of users sharing similar characteristics and thus providing service bundles tailored to their actual needs and expectations. More specifically, the software platform will gather demographic information from the user and will use it to deliver more personalized services depending on the user group.

4 Conclusions

This paper has presented a joint experience of academic and industrial partners in SMART, a research project that aims to define and validate new methodologies for more citizen-centered services. SMART considers three scenarios to

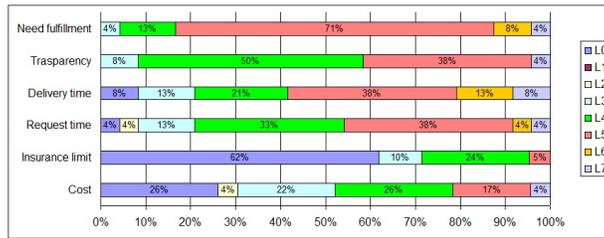


Fig. 3. Frequency distribution of perception levels for insurance service

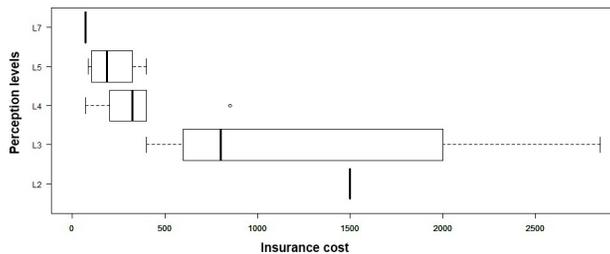


Fig. 4. Insurance cost distribution with respect to perception levels

develop VASs able to bridge the PA-citizen gap by providing service bundles that satisfy explicit and implicit citizen needs. The paper has reported the experience carried out within the scenario for public business opening. The descriptive analysis of data gathered by questionnaires will allow to mine knowledge about entrepreneurs that can be useful to devise effective VASs. In particular, such analysis may be considered as a preliminary step for the activity of identifying homogeneous groups of users to offer personalized services according to their mined characteristics.

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