

## **Guest Editorial**

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**Biographical notes:** Nikolaos Loutas is a Senior Manager with PwC Consulting, helping organisations respond to data management and analytics challenges to improve their products and services, and use technology megatrends to transform. Before joining PwC, he worked as a Researcher with the Insight Centre for Data Analytics and the Centre for Research Technology Hellas. He holds a PhD in semantic web technologies, where he studied how the feedback of customers on services can be collected and made machine-readable, so that it can be used as input to analytic algorithms that support service discovery, recommendation and personalisation.

Fedelucio Narducci is a Research Assistant at the University of Bari “Aldo Moro” and he is a Member of the SWAP (semantic web access and personalisation) research group. His primary research interests lie in the areas of machine learning, content-based recommender systems, user modelling, and personalisation. He served as co-chair of the three editions of Pegov. He is reviewer and co-reviewer for international conferences and journals on the topics of a recommender system, user modelling, and personalisation. He is also the author of several papers in international conferences and journals.

Adegboyega Ojo is a Senior Research Fellow and the Head of the E-Government Unit at the Insight Centre for Data Analytics, National University of Ireland, Galway (NUIG). His research addresses data-driven innovation in the government domain, value chains in big open linked data and socio-technical design of open data platforms. He has published over 100 scholarly papers. He currently serves as Principal Investigator on European Commission Projects in the area of linked data and open government. He is the current Secretary of the Digital Government Society. He obtained his PhD in Artificial Neural Networks from the University of Lagos in 1998.

Matteo Palmonari is an Assistant Professor in the Department of Informatics, Systems and Communication at the University of Milan-Bicocca. His research interests include semantic matchmaking, information quality, and knowledge representation for the semantic web; several of his researches have been applied to service modelling, service matchmaking and e-government applications. He has been Visiting Postdoc at the ADVIS Laboratory, University of Illinois at Chicago. He is a coordinator of the H2020 innovation action EW-Shopp: supporting event and weather-based data analytics and marketing along the Shopper Journey. He has published more than 70 papers in peer-reviewed international journals and conference proceedings.

Cécile Paris is a Science Leader at Data61, CSIRO. Her expertise is in Natural Language Processing, User Modelling, Social Media Analytics, and, more generally, in artificial intelligence and communication. She seeks to understand how people communicate and to facilitate communication with information environments. With a Bachelor degree from the University of

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We are pleased to introduce the special section on personalisation in e-government and smart cities, a prominent topic in digital governance research.

Over the last decades, user modelling and personalisation have been playing an important role in the development of intelligent systems, whereby these systems adapt their behaviour based on knowledge about their users. Such knowledge can include users' characteristics, interests and preferences, but also locations or past behaviours. While personalisation has been extensively studied and employed in domains characterised by the digital-object consumption (e-commerce, news, music, video recommendations, etc.), personalisation in e-government applications is still in its infancy.

e-Government (e-Gov) has transformed interactions between governments, citizens and other stakeholders in the society. Public services and public sector information can now be delivered electronically through Web portals and mobile apps (e.g., see Palmonari et al., 2008; Loutas et al., 2011; Lee et al., 2011; Colineau et al., 2013; Paris and Nepal, 2016). In this new context, innovative solutions that are better tailored to citizens' needs can facilitate better access to e-Gov services and reduce the red tape that usually characterises the provisioning of public services (e.g., Castelli et al., 2009; Bianco et al., 2013; Bista et al., 2013). In this direction, solutions for providing a cross-lingual access to e-gov services (e.g., Narducci et al., 2013a, 2013b, 2017), or solutions for delivering more targeted information to citizens (e.g., Colineau et al., 2013; Paris and Nepal, 2016) have been recently investigated. Governments have also started to look at ways to better engage with citizens, both for the delivery of services and for policy making (e.g., Lee et al., 2011). As a result of these initiatives, providing personalised services, often grouped in life-events and business episodes, are a real possibility now for governments.

Another interesting development is the recent push towards more openness of public sector information, with an emphasis on opening up government data (Ojo et al., 2015), which presents new application areas and opportunities for personalisation. This trend has specifically created the need for personalised access to Open Government Data predominantly by means of visualisations and faceted browsers. It has also given rise

to opportunities for improved decision making (e.g., Lee et al., 2011), as well as recommendation and personalisation of e-Gov services (e.g., Loutas et al., 2011; Baldassarre et al., 2013).

This introduces new challenges for personalisation models. On the one hand, personalisation can lead to better services and more relevant information. This is seen as desirable, by both the public and governments, as it can improve service delivery (e.g., Colineau et al., 2013; Iaquina et al., 2013; Penadés et al., 2014; Torsello et al., 2014; Vicente-López et al., 2014) and participation in decision-making processes (e.g., Ardissono et al., 2013, 2014). On the other hand, there are potentially ethical (including privacy) issues related to the fact that citizens might be in a dependence relationship with governments, and automatic user profiling might be considered 'big brother' and not desirable (e.g., Paris et al., 2013). Indeed, the difficulties to obtain some of the information required for personalisation, because of privacy, confidentiality, ethical and potentially trust reasons, represent the main hindrance for personalisation in the e-Gov domain.

Smart Cities provide new opportunities and new challenges in this context (e.g., Villena-Román et al., 2014; Ojo et al., 2015). Smart Cities can have access to very detailed data about the citizens, e.g., using urban sensing devices, which can support new personalisation models. Improving the quality of both life and services in the city have high relevance in many research fields such as social sciences, psychology, education, medicine, and computer science. For these reasons, Smart Cities are becoming a very interesting topic for different conferences belonging to the ICT area.

This special section on personalisation in e-government and smart cities collects relevant works which investigate the new challenges and research directions about personalisation in e-Gov and Smart Cities. This special section derives from the experiences shared in the three editions of the personalisation in e-government and smart cities – smart services for smart territories (PEGOV) workshop, which took place in conjunction with as many editions of the international conference on user modelling, adaptation and personalisation (UMAP).

This special section is composed of three papers. In the paper *MuSe: a semantic solution for personalised recommendations of municipality services*, Carenini et al. describe an ontology, called the municipality service (MuSe), which supports the creation of formal and machine-readable descriptions of services available to citizens, and enables for personalised recommendations of services based on citizen profiles. The MuSe ontology is one of the main outcomes of a project supported by the Italian Ministry of University and Research, and has been built having in mind the principles of the Semantic City Service Ecosystems. The result is a powerful model to represent the semantics of the services offered by local public administrations to citizens. Specifically, two types of usage scenarios have driven the design of MuSe: in the first scenario, citizens need to retrieve services and perform proper activities of browsing and searching the websites of the local public administrations (pull modality); in the second scenario, the system proactively suggests services to citizens (push modality). The MuSe ontology supports the first scenario in that it offers a rich modelling of municipality services, allowing citizens to perform an effective search and navigation; with respect to the second scenario, the MuSe ontology enables the matchmaking between municipality services and citizens' needs, with concrete examples based on citizens' profiles. The authors also present the results of a user study consisting of the field trial of the solutions developed in the two above mentioned scenarios with the direct involvement of citizens.

In *SEPIR: a semantic and personalised information retrieval tool for the public administration based on distributional semantics*, Basile et al. present a tool that analyses a large collection of documents using Natural Language Processing Techniques to enable semantic search over that collection. SEPIR provides visualisation tools so that the users can get a quick overview of the concepts contained in the collection. Finally, the system is able to personalise the search based on the user's past queries. The authors illustrate the use of SEPIR with two use cases: the first concerns an analysis of patent data related to pre-commercial procurement procedures, and the second is about the analysis of documents about projects funded by the Apulia Region in Italy to understand the impact of the projects. In both cases, the authors show how the system first analyses the document collection and then supports the exploration of the collection content and the retrieval of specific documents.

Finally, in their paper entitled *Personalised community maps*, Ardissono et al. describe the information-sharing model they developed together with a testbed software applications to enable the generation of personalised community maps to help individuals or groups view territorial information for their specific interests (e.g., cultural events) and engage in participatory decision-making and crowdsourcing. Group members can tag information items to describe their content and formulate queries by specifying tags of interest. While users (or groups of users) can obtain ephemeral search results, they can also define persistent maps by specifying tags for their generation. Finally, they can create multiple views on the map through the concepts of *personae*. The authors present their model and the results of an experiment they carried out with the model.

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