Guest Editorial

Special Issue on "Smartness in Governance, Government, Urban Environments, and the Internet of Things": An Editorial Introduction

Two 21$^{\text{st}}$-century trends appear to feed off each other: the *urbanization of the globe* and the *ubiquitous connectivity of people and things* between and across each other. While in 1960 seventy percent of the world population lived in rural and non-urban environments, in 2050 more than seventy percent of the world population are projected to live in urban centers and metropolitan areas. In other words, in less than a century, the human species has not only more than doubled in numbers, but the much larger global population compared with a century ago will live in urban centers of unprecedented population density. The human experience, which until fairly recently was mostly rural, has become urban and in the very near future will become even more urban.

While this marks a fundamental and rapid change in the human experience, another groundbreaking change co-occurs, which both feeds on and facilitates the former trend. With the advent of the Internet and via its connected computing and communication devices, humans began to connect and directly access information across geographies and time zones in an unprecedented, comprehensive, and immediate fashion.

However, meanwhile not only traditional computers and communication devices are connected via the Internet, but also cars and their individual subsystems, buses, streetcars, trains, airplanes, laundry machines, temperature control systems, traffic lights, street lights, health control systems, surveillance cameras, wrist watches, swimming pools, elevators, sensors of all kinds to name just a few. In other words, an *Internet of Things* has emerged, which powerfully complements the traditional Internet-connected computers and communication devices. Devices of all sorts now communicate and exchange information including steering and control information without human interference or even notice.

As a consequence, ever smarter, more effective, and more efficient infrastructures emerge, which are self-monitored and self-directed within predefined boundaries. The highly sophisticated self-monitoring and self-steering of all kinds of systems by means of and via the Internet (of Things) have been labeled with the summary term of *smartness*, which extends to and encompasses all areas of human activity and transactions such as transportation, education, health care, built infrastructure, natural environment, energy, industry, retail, government, and governance.

In the wake of these developments we see discourses unfolding in academia and practice on *Smart Governance*, *Smart Government*, or *Smart Cities*. This special issue contributes to the understanding of these trends and developments and presents six papers on the subject.

The first article, co-authored by Joachim van den Bergh and Stijn Viaene, analyzes and discusses the implementation challenges of a smart-city initiative at the Belgian city of Ghent. The authors hold that a smart city represents an ecosystem, in which the City government has to meet the challenge of finding and defining its role and position. Once the position to be taken is determined, the next challenge becomes to assign the relative administrative place and rank in the hierarchy, from which the smart-city initiative is orchestrated and executed. This then leads to the third challenge of how departmental boundaries could be bridged, since smart-city initiatives typically span departmental boundaries. The fourth challenge consequently becomes finding a governance structure that allows for cross- and interdepartmental interactions and initiatives. Commitment to change and embracing innovation on part of civil servants presents the next challenge, and last, moving from experimentation with smart-city projects and transferring the changes to permeate the whole City administration poses the sixth challenge, which the authors derived from studying the City of Ghent context. The authors conclude that smart city governments have to "install smart city leadership with internal and external credibility and alignment competencies."

The second article, co-authored by Hans Jochen Scholl and Suha AlAwadhi, echoes and responds to the challenges identified in the Ghent case by analyzing and discussing the case of the City of Munich, which embarked on a more-than-decade-long successful smart-city initiative, which radically overhauled the City's business and ICT processes along with creating a new ICT governance structure that overcame the City's departmentalism. Key elements of this comprehensive change program were an agreement of primary stakeholders that (a) fundamental change was inevitable, (b) a process view needed to be implemented, which helped overcome traditional departmentalism, (c) maintaining a shared vision of the final result was essential, (d) ICT savviness was a City government core competency, which could not be outsourced, (e) mutual respect and trust was of the essence, (f) the change program needed skillful execution, and (g) the final result was homegrown and balanced based on a consensus culture and adamantly backed across the elected and appointed city leadership.

The next article, written by Joan Batlle-Monserrat, Josep Blat, and Ernest Abadal, entitled "Towards benchmarking smart city services: Impact analysis and methodology improvements for local e-government benchlearning" looks at assessment and evaluation methods for smart city services. The authors make the point that high-level index-based methods provide little assistance to practice when it comes to practical recommendations for necessary service enhancements. They rather propose to incorporate so-called benchlearning methods, that is, learning through detailed benchmarking, which makes possible detailed site-by-site comparisons between services offered by different municipalities. As a result, detailed benchmark-based recommendations become available enabling pinpointed and tailor-made service enhancements. By employing benchlearning approaches in this way, electronic services inescapably become smarter over time it is argued.

The fourth article, contributed by Benoit Granier and Hiroko Kudo under the title "How are citizens involved in Smart Cities? Analyzing citizen participation in Japanese 'smart communities'" studies the evolution of smart services via citizen participation and service co-provision in the context of the Japanese municipality of Kitakiyushu. According to the authors, the Japanese society, in general, exhibits certain idiosyncrasies and peculiarities in terms of discourse and discourse participation, which are also identifiable within the context of the municipality studied and do not necessarily strongly support the joint smart service provision. However, the authors hold that this notwithstanding Japanese citizens build trust in the process and find ways of participating in and co-providing to smart City services, which also have the capacity to inform cases outside Japan..

In the fifth article, entitled "E-Regulation and the Rule of Law: Smart Government, Institutional Information Infrastructures, and Fundamental Values," Rónán Kennedy proposes "e-regulation" as a new

field of study, which would be strongly connected and intersected by studies on smartness in governance, government, and the Internet of Things. As discussed also elsewhere (Scholl and AlAwadhi, the second article in this volume), Kennedy's conceptual contribution argues that ICT-based interoperability and integration as well as the potentially ubiquitous surveillance by means of the Internet of Things have a powerful potential to offset the carefully crafted current system of democratic checks and balances as well as the principle of division of powers along with privacy rights and rights to citizens' self-determination, which would have the capacity to effectively compromise the existing rule of law.

The final and sixth article, entitled "Understanding electronic government research and smart city: A framework and empirical evidence" is co-authored by Leonidas G. Anthopoulos and Christopher G. Reddick. The authors investigate the appropriateness and capacity of theoretical lenses developed in electronic government research and attempt to determine, whether or not these theoretical prerequisites suffice to study and capture the dimensions of the smart city concept and its constructs. The authors review leading journals in electronic government research for theoretical themes and concepts that relate to smart city. Likewise, the authors searched smart city-related articles in non-electronic government journals in search of smart city and government. After establishing a cross-tabulation between the two separate literatures, they subjected their intermediate findings to a Delphi expert panel for discussion and feedback. As a result of the study, the intersection of the two research agendas could be concretized and substantiated.

In summary, with this special issue, Information Polity adds to the emerging stream of research on smartness in governance, government, urban environments, and the Internet of Things. While the six articles presented hereafter cannot exhaust the wide topic, they nevertheless provide important initial perspectives. The topical direction is likely to strongly influence the future discourse in electronic government research with the potential to expand and in part redefine this research in terms of Smart Government. However, the theme of smartness that roots in the rapidly evolving ICT capabilities, their ubiquity and mobility, their pervasive and permanent connectedness, their speed, along with their various novel uses reaches beyond the public sphere, in general, and government, in particular. The study of smartness defined this way will cut across disciplines and domains both in academia and practice. This way it will be guaranteed that more contributions on the subject will appear in future volumes of this outlet.

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