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Digital Nations – Smart Cities, Innovation, and Sustainability

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e-Business, e-Services, and e-Society, I3E 2017
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Preface

This volume presents the proceedings of the 16th International Federation of Information Processing (IFIP) Conference on e-Business, e-Services and e-Society (I3E) held at the Indian Institute of Technology, Delhi, during November 21–23, 2017. The IFIP-I3E conference is highly interdisciplinary in nature and focuses on academic contributions in varied domains of electronic business, services, and society. It had great participation from academia, industry, and practitioners who are either working directly in the domain or are in the process of exploring it. The central theme of the 16th edition of the conference was "Digital Nations – Smart Cities, Innovation, and Sustainability." The idea of digital nations perfectly aligns with the three Es of the conference series. As you get through the following pages, you will discover interesting ideas in the domains of governance, social media, and analytics that are shaping our lives today or most likely will alter the digital nations of tomorrow (Zuiderwijk and Janssen 2014; Rana et al. 2017). From any benchmark, the trajectory of technology developments in the post-Internet period is extraordinary and never seen before (Khatwani et al. 2014). It is complex but fascinating; it is bringing people and communities together, enterprises to collaborate on strengths to grab opportunities as competition becomes intense and nations to break boundaries allowing societies to interoperate across different domains and communities. It is producing an amalgamation of various cultures and the emergence of a new way of living – a society that is truly global with global citizenship (Carter et al. 2016).

In the digital society, the issues emerging are plenty and complicated due to the networkedness and possibilities of understanding the complexities through big data analytics (Janssen et al. 2012; Chauhan et al. 2016). The governance is not so much about digital spread as access is fast bridged by expanding mobile networks and broadband as it is about ability in enabling digital-based services to everyone to their expectations. The literacy gap around the globe will remain a cause of concern in the use and adoption of new media, even though the younger generation is fast in adoption. Digital literacy programs will need continuous monitoring and revision to keep pace with the technology change. The underpinning factor in leveraging the new media is having clarity about the culture and community where one is operating. This has not been explored much. Social media has fast become a widespread fascination for everyone, much more than normal social life, raising new challenges and opportunities related to community, culture, and business (Rathore et al. 2016; Lakhiwal and Kar 2016). Understanding variability in cross-cultural boundaries, particularly East vs. West, is necessary in developing a social media strategy for different contextual settings. It hardly needs any emphasis how trust plays a major role in allowing people to overcome the perception of risk and insecurity. Gender effect is also found to play a key role in social media use.

The use of information and communication technologies (ICTs) is greatly impacting the economy (Chew et al. 2010) and governance (Gupta and Jana 2003). Citizens

across the globe are adapting to the changing e-government systems for smart and sustainable digital nations (Carter et al. 2016; Rana et al. 2017). These advancements have empowered citizens and have been a major driver for e-participation and e-democracy (Alathur et al. 2016). Despite these advances toward digital nations in the areas of e-governance, e-democracy, e-participation, and open government data (Janssen et al. 2012; Dwivedi et al. 2012; Zuiderwijk and Janssen 2014; Janssen et al. 2015), there are many issues that remain unexplored in greater detail. This includes the use of the Internet, social media, analytical frameworks, and smart services that are still developing each day with the burst of data in the Web 3.0 space (Joseph et al. 2017). Furthermore, with the huge inflow of data, concepts surrounding big data, their impact, and challenges come into the picture that need a deeper understanding (Grover and Kar 2017). Several advanced analytical and meta-heuristic approaches have emerged to address such highly complex computational problems that have arisen with this explosion of data (Kar 2016; Chakraborty and Kar 2017).

The previous IFIP I3E 2016 Conference had a focus on social media, its benefits and pitfalls (Dwivedi et al. 2016), and addressed them in greater detail. The I3E-2017 conference circumscribes the overall broader domain of digital nations including e-services, e-governance, social media, and data analytics with a focus on recent trends. The call for papers sought full-length papers as well as short communication articles. Extended versions of selected submissions also had a chance for fast-track publication in *Information Systems Frontiers* by Springer and in the *e-Service Journal* published by Indiana University Press.The conference received 96 high-quality submissions from 14 countries. Each article was sent for a blind peer review to at least two experts. After a rigorous review process, 44 submissions were accepted for presentation at IFIP I3E 2017 and are included in the proceedings. These are grouped into five themes or tracks, each of which is outlined here.

The articles appearing in Track I primarily cover discussions on the adoption of smart services focusing on various domains and sectors across nations. The vision of digitization can only be successful if the relevant stakeholders adopt, use, and embrace the ICT-enabled technologies, processes, and outcomes. Sahu and Singh explore the factors that may influence a consumer's behavior to adopt mobile applications with a specific focus on the IRCTC connect mobile application. Tuikka and Sachdeva highlight the experiences surrounding the assistive technology services and their delivery. Hoque, Islam, and Talukder further investigate the factors that may affect the adoption of e-commerce in the readymade garment industry at the B2B level. The exploratory study by Mustafa and Kar evaluates multidimensional risk factors for digital services catering to smart cities. Klimova uses the studies in the existing literature to highlight the use of smart phones in managing dementia. Tamilmani, Rana, and Dwivedi present a systematic review of citations surrounding UTAUT2 and the usage trends. Svobodová and Hedvičáková demonstrate the use of social networks with a primary focus on elderly people in various countries. Patil, Dwivedi, and Rana also present an exploratory study reviewing the existing literature on the adoption of digital payments. Guo and Gao's article concludes Track I with a case-based article exploring the barriers of adoption of e-commerce specifically in rural China. Track I thus comprises articles that present a holistic view of discussions surrounding the adoption of e-services for

promoting digital nations. The studies present insights from different countries including India, Bangladesh, China, and Finland.

The Track II submissions focus on assessing the impacts of ICT-enabled smart initiatives. Assessment of ICT-enabled initiatives is critical in understanding the shortcomings of current approaches, and it paves the way for potential improvements. The first article by Praditya and Janssen focuses on the assessment of factors that have an influence on information sharing using the best–worst method. Ramalingam, Christophe, and Samuel assess the potential of the Internet of Things (IoT) in the aerospace domain. Spil, Effing, and Kwast compared the smart city participatory strategies of Hamburg, Berlin, and Enschede. Svobodova and Cerna explore the benefits and pitfalls faced by elderly people while using the Internet. The advances in the adoption of e-government research by SAARC countries are demonstrated in an exploratory study by Rana et al. The work by Mishra et al. assesses the open government data initiative using a perception-driven approach. Singh, Grover, and Kar focus their study on the quality of mobile payment service in India. Finally, the work of Svobodová, Černá, and Hruša explores the use of advanced technology to support smart cities with a focus on identifying simple and composite indicators that impact the tourism sector.

Track III of the proceedings shares insights into the analytical aspects surrounding smart initiatives. Here, the main focus was on providing insights into the governance of the new era of digitization in domains like Web 3.0 and digital literacy. Aswani et al. develop a semantic-based mechanism for exploring the vitality of content in Facebook. Maresova and Klimova highlight the use of the Internet for searching health-related information. Joseph, Kar, and Ilavarasan proposed a model to prioritize and predict the impact of digital literacy training programs along with validation. Joseph et al. use Twitter as a medium for analyzing public conversations proving insights for policy makers. The study by Aswani et al. identifies outliers among influencer blogs using web analytics. Dabrowski, Weippl, and Echizen propose a community-based method for the protection and privacy of photographed subjects on various social networks. Kumar et al. on the other hand developed a profile-based mechanism that mitigates fake orders. AlSabeeh and Moghrabi investigate the utilization of programmatic advertising and real-time bidding. Track III concludes with the intelligent vehicle tracking and prediction system proposed by Dhanasekar et al. in their research.

The papers in Track IV focus on the domain of social media and web 3.0 for promoting smartness in digital nations. These studies have highlighted interesting approaches that have used bio-inspired computing, text analytics, machine learning, and big data analytics for key insights. Amirkhanyan and Meinel propose a grouping mechanism that clusters based on density and intensity for fixed distance and time radius. Bühler, Murawski, and Bick discuss the impact of negative word of mouth on social media pertaining to consumer trust in fashion presentations with arguments surrounding the disabling of the comment function. Grover et al. present interesting insights from Twitter analytics on the USA presidential elections. The impact of trust and network ties on word of mouth is further discussed by Mikalef, Pappas, and Sharma, where they explore the social commerce sector. Findings surrounding demonetization and its impact on the Indian economy are highlighted by Mohan and Kar in their study using social media. User satisfaction surrounding fsQCA is explored

by analyzing the motivations and emotions in social media as presented by Pappas et al. in their work. Mikalef et al. explore the information available on social commerce, being reviews or marketer information. Gaurav and Kumar propose a mechanism to gauge consumer satisfaction based on the rating using sentiment analysis. Finally, Singh et al. present their forecast on the US presidential elections using sentiment analysis.

Track V continues the central theme of the conference with a focus on smart solutions for the future. This track focuses on the discussions surrounding smart solutions that may have a great impact in varied domains to support smart cities, innovation, and sustainability. Kumar et al. propose a digitized residential address system that provides faster service delivery for smart city development in India. Hyrynsalmi, Mäntymäki, and Baur discuss the concepts of multi-homing and software firm performance as a primary research agenda in their work. Sahu and Singh explore the case of India for explaining the paradigm shift from a cash-based to cash-less economy. The benefits and challenges faced by using reference architecture for processing statistical data are highlighted by Wahyudi, Matheus, and Janssen in their paper. Kumar, Grover, and Kar examine the existing literature surrounding IT consulting by giving an extensive systematic review. Giannakos, Pappas, and Mikalef extend the FsQCA approach to further demonstrate the role of contemporary skills in information technology professionals. The insights from roadway breakdown services for gauging complexity and productivity in e-mobility is another interesting study presented by Baur et al. The final article in the I3E 2017 proceedings explores the effective use of the Internet by elderly people.

In addition to the contributions of the aforementioned authors, we were delighted to have Prof. Luís Soares Barbosa and Prof. Jeremy Millard as our keynote speakers. Prof. Luís Soares Barbosa is Head of UNU-EGOV – the Operational Unit on Policy-Driven Electronic Governance of the United Nations University – Professor of Computer Science at the University of Minho, Portugal, and a senior researcher at INESC TEC. His research interests include formal modeling techniques and logics, applied to the rigorous design of complex systems and digital governance processes. He coordinates the PT-FLAD Chair on Smart Cities and Smart Governance, a recently established chair on the development of foundations, methods, and reliable technologies to support the development of smart cities and intelligent governance infrastructures.

Prof. Jeremy Millard has over 40 years' global experience on issues ranging from governance, ICT, open data, open and social innovation, participation, sustainable and socio-economic development, the new economy, urbanization, and nature-based solutions for growth. He has published extensively in these and related fields and his clients include governments, the European Commission, the United Nations, the OECD and World Bank, as well as many non-profit organizations and companies around the world. Recent assignments include mapping European Smart Cities for the European Parliament, designing the World Bank's Knowledge Exchange Platform for Indian Smart Cities, and an EC project on the maker movement and new forms of distributed manufacturing for FabCities.

The success of the 16th IFIP I3E conference is due to the efforts of numerous people and organizations involved. We thank the WG 6.11 for the conference series and their continuous support. We are grateful to them for selecting the Indian Institute of

Technology, Delhi, for the IFIP I3E-2017 conference. We further thank the authors from across the globe for choosing I3E 2017 to submit their manuscripts. We were overwhelmed with the response and felt privileged to receive a large number of high-quality manuscripts for the conference. We would also like to take this moment to extend our sincere gratitude to the keynote speakers for offering their valuable time and sharing their knowledge with the conference attendees. The conference would not have been a success with the members of the Program Committee who devoted their valuable time to give input for improving the quality of the manuscripts. We would also like to thank the Department of Management Studies, Indian Institute of Technology, Delhi, and the members of the Organizing Committee for hosting and supporting the conference in every possible way. The other faculty members of the department were extremely supportive towards our academic endeavors while trying to organize this mammoth conference. We are also thankful to the conference secretaries who dedicated a lot of time and effort to support us in organizing this program. Without the continuous support of our research scholars, we, the faculty chairs, would have found it impossible to organize a conference of this stature. Finally, we thank Springer LNCS for publishing the proceedings and helping the I3E series to disseminate and impart the collective knowledge across the globe in the form of this book.

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