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Designing Digital Communities that Transform Urban Life: Introduction to the Special Section on Digital Cities

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Abstract:

The pervasive integration of digital technology into cities provides new opportunities for information systems scholars to participate in the efforts in transforming urban life. It requires (a) the creation of a large-scale digital infrastructure, (b) the design of new services and applications, and (c) the re-examination of the meaning of social interactions in public and private spaces. In order to create an initial forum for multi-disciplinary dialogue to explore these issues, a research workshop was organized by the Irwin L. Gross Institute for Business and Information Technology, Temple University on November 1–3, 2007. This special section includes three papers from the workshop. These three articles point out that the future socio-technical reality of digital urban environments must be deliberately *designed* in order to magnify the strengths of the most daring human design endeavor ever—cities.

Keywords: digital city, ubiquitous computing, digital infrastructure, design

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Cities—arguably the most ambitious and successful of humankind’s design achievements—have become mired in problems like crime, poverty, traffic, and pollution. Despite the advancements in society at large, a significant portion of urban residents have been left behind. Despite these problems, cities are growing worldwide. According to the United Nations, more than half of world population now lives in cities, and the growing trend of urbanization is expected to continue [<http://www.unfpa.org/swp/2007/english/introduction.html>]. Therefore, transforming cities—economically, environmentally, culturally, and socially—emerges as a key strategic issue for our generation.

The emergence of digital technology gives us a chance to fundamentally reshape the landscape of cities. We have the opportunity, as well as responsibility, to design this emerging digital urban environment right, so that it benefits people in all walks of life. It requires the creation of both a large-scale information infrastructure that will cut through existing physical and social infrastructures in the city and the design of new services and applications. It also requires new media, both in form and function, that can take advantage of the mobility and the ubiquity of information. It forces us to rethink the meanings of familiar activities, while, at the same time, it allows us to envision novel forms of social interaction. It demands new forms of partnership and collaboration between public and private sectors, researchers and practice, and the social and technical realms. The digital urban community, then, is a socio-technical innovation space where new forms of digitally mediated social interactions are designed and the meanings of old social interactions are reshaped and mediated through new technologies.

In the United States, cities like Philadelphia, New York, Seattle, and San Francisco started city-wide wireless networks, which captured the public’s imagination and attracted both private and public investments. In Europe, a public-private partnership network called *Living Lab* attempts to bring together the private sector’s entrepreneurial ingenuity, government support, and wide public participation in order to solve specific local challenges in many different areas [<http://www.openlivinglabs.eu/>]. In Asia, large-scale ubiquitous cities combining wireless networks and RFID (radio frequency identification) tags are being implemented in countries like South Korea and China. With the growing interests in sustainability, companies like IBM are actively pursuing the integration of digital technology into public infrastructure such as streets, buildings, and power grids, many of which undergird urban environments.

The integration of digital technology into cities creates new opportunities for information systems scholars to explore many important issues relevant to the information systems community. The emergence of the vision of a digital city requires careful attention to physical and digital materiality simultaneously [Leonardi and Barley, 2008; Orlikowski and Scott, 2008]. Furthermore, the idea of digital city requires us to explore how information technology reshapes the way we experience space and place [Dourish, 2001; McCullough, 2004; Yoo, 2010]. The use of digital tools can potentially transform the meaning of “public” space. Creating digitally augmented urban communities also demands that we revisit the notion of community and its membership [Carroll, 1996, 2005]. The addition of digital layers on existing local communities situated in specific geographic locales can create new social dynamics by offering connectivity and disconnectivity at the same time. It is simply an open question, for example, if the introduction of urban digital infrastructure will lead to more open and distributed civil participation to address many of the pressing social, economic, and cultural challenges faced by many cities today.

Since the digital city requires substantial investments in digital infrastructure, information systems scholars can explore several issues related to the design, implementation, and maintenance of digital infrastructure in urban settings. Given the substantial financial investments needed in order to build such infrastructure, one important question is the role and nature of business models in building urban digital infrastructures. Moreover, governance of infrastructure is another key issue, given its public nature.

Finally, the vision of digital urban environments is necessarily political. Many cities use “digital divide” as a rallying cry to mobilize necessary political, social, and economic resources required in implementing digital infrastructure projects. Yet, it is not clear if the creation and diffusion of digital infrastructures such as municipal wireless networks will indeed act as an “equalizer” and give new voices to the underprivileged and minority social groups.

Many of these problems are of serious social consequence and require multidisciplinary approaches. In order to create an initial forum for such multidisciplinary dialogue, a research workshop was organized by the Irwin L. Gross Institute for Business and Information Technology, Fox School of Business, Temple University on November 1–3, 2007. Thirty-seven scholars and practitioners from various fields including information systems, design, architecture, software engineering, art, communication, history, management, economics, and sociology participated. Using the

Philadelphia Wireless Initiative as a source inspiration, the participants explored images, stories, and vocabularies that can inspire both research and practice using digital technology in transforming urban environments.

This special section includes three articles from the authors who participated in this workshop. These articles reflect the diverse and multidisciplinary nature of the topic of digital urban environments. The article by John Carroll puts forward an *Activity Awareness* as an analytical lens to explore possible positive use of digital tools, specifically social computing tools, to create collaborations among partners in local communities in ways that were not possible before. He further showcases several social computing applications that are being built based on this concept. These applications represent a further evolution of Carroll's earlier work at Blacksburg Electronic Village project. The article by Jan Fernback and Gwen Shaffer takes a critical perspective in analyzing the urban planning documents by seven major U.S. cities. Their discourse analysis reveals discontinuities between wireless technology policy and urban planning. Their analysis reveals a critical vacuum in urban planning in the role of ubiquitous connectivity that are provided by emerging urban wireless networks, as technology is treated only at a "cosmetic" level. Finally, the article by Antony Bryant takes a much broader societal perspective. Drawing on a broad range of works by Simmel, Goffman, Sennett and Bauman, he argues that, in order to fully realize the potential of digital urbanism, one must learn how to deal with the inherent tension between isolation and visibility in digital living in urban environments. The article warns against naive techno-centric utopianism; yet, it pushes us go beyond the pessimistic rejection of technology.

While these three articles come from three different disciplines (computer science, sociology, and information systems), they all point out that the future socio-technical reality of digital urban environments must be deliberately *designed* in order to magnify the strengths of the most daring human design endeavor ever—cities.

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Youngjin Yoo is the director of Center for Design + Innovation at the Fox School of Business and Management at Temple University, where he is Associate Professor in Management Information Systems and Irwin L. Gross Research Fellow. He is also a visiting professor at Viktoria Institute in Sweden. His research interests include digital innovation, design, experiential computing, and knowledge management. His work was published at leading academic journals such as *MIS Quarterly*, *Information Systems Research*, *Organization Science*, the *Communications of the ACM*, and the *Academy of Management Journal* among others. He is on the editorial boards of *MIS Quarterly* (associate editor), *Organization Science*, *Scandinavian Journal of Information Systems*, and *Information and Organization*. He was a former senior editor of *the Journal of Strategic Information Systems* and an associate editor of *Information Systems Research* and *Management Science*. Currently; he is coediting a special issue of *Organization Science* on digital innovation.

Antony Bryant is currently Professor of Informatics at Leeds Metropolitan University, Leeds, UK. His current research includes investigation of the ways in which the Open Source model might be used more widely, and in particular how it can be developed as a contributory feature for the reconstructed financial sector in the wake of the economic melt-down; coining the term *Mutuality 2.0* and developing the concept in various contexts (e.g., <http://www.opendemocracy.net/article/email/mutuality-2-0-open-source-the-financial-crisis>.) He has written extensively on research methods, being Senior Editor of *The SAGE Handbook of Grounded Theory* (SAGE, 2007)—co-edited with Kathy Charmaz with whom he has worked extensively within the area of Grounded Theory and research methods in general. He has developed and taught a wide range of postgraduate courses in South Africa, Malaysia, and China. He is currently ASEM Professor at the University of Malaya, and Visiting Professor at the University of Amsterdam.

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