

# Chapter 24

## Urbanizing the Ambient: Why People Matter So Much in Smart Cities

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### ABSTRACT

*The purpose of this chapter is to develop and explore the ambient urbanizing concept as a way to shed light on what happens at the urban level when people become more aware and attuned to smartness and ambience in everyday city spaces. The research design for this work includes a case study approach and multiple methods of quantitative and qualitative data collection and analysis. In parallel with this study, anecdotal evidence gathered from individuals across the city through informal individual and group discussions enabled further analysis, comparison, and triangulation of data. This chapter makes a contribution to the research literature across multiple domains; sheds light on the emerging relationships of awareness in the people – technologies – cities dynamic, highlighting the critical role of people, in their everyday urban activities, interactions, and experiences; and offers a proposed ambient urbanizing framework for enriching spaces, things, and designs in smart cities.*

### 1. INTRODUCTION

This chapter explores aware technologies and aware people in the formulation of emerging understandings of urbanizing the ambient in 21<sup>st</sup> century cities. Building upon Sassen's work on urbanizing technology in the context of smart cities and Weiser & Seely Brown's (1995) work on calm technology design, this chapter explores the ambient urbanizing concept through the constructs of awareness, attention, and attunement. Calm technology, as in, invisible or ubiquitous computing, is variously known as pervasive computing, ambient computing, to name a few, depending upon the research lab (Dourish & Bell, 2011). Using a minimally viable city-focused platform as a space with real-time, real-world, social media components, the ambient and ambient urbanizing concepts are explored. The mechanisms of noticing, idea-generation, and the sharing of content about the city contribute insight into the ambient-related constructs under study – awareness, attention, and attunement.

DOI: 10.4018/978-1-5225-2589-9.ch024

The significance of this chapter is that it provides a conceptualization of ambient urbanizing in the context of 21<sup>st</sup> century smart cities with an emphasis on the combination of aware people and aware technologies. As such, the objectives of this chapter are to: a) explore emerging understandings of aware-enabled smart cities; b) shed light on what happens at the urban level when people become more aware and attuned to smartness and ambience in everyday city spaces; and c) explore urban level activities contributing to urbanizing the ambient, giving rise to the ambient urbanizing concept as emerging perspectives on the importance of people in smart cities.

The research design for this work incorporates a case study approach and multiple methods of quantitative and qualitative data collection and analysis. Use of a minimally viable city-focused platform as a space for thinking and sharing about the city is followed up with an interview about use experience of the tool and semi-structured questions about the city as smart. In parallel with this study, anecdotal evidence gathered from individuals across the city through informal individual and group discussions enabled further analysis, comparison, and triangulation of data. A more detailed discussion of the methodology for this work is described in section 4. A selective review of the ambient, urbanizing, and smart cities research literature in section 3 provides a theoretical perspective for the chapter in support of the deductive portion of qualitative data analysis, to complement emergent aspects of the inductive analysis portion.

Section 2 provides additional background and context for this chapter in terms of motivation; the ambient, urbanizing, and smart city concepts, incorporating emerging and developing perspectives and challenges from the research literature; along with definitions for key terms used in this chapter.

## 2. BACKGROUND AND CONTEXT

This chapter is motivated by the need for engaging people in more meaningful discussions about smart city phenomena. In response to the unprecedented challenges associated with rapid urban growth in the 21<sup>st</sup> century (Charoubi et al., 2012), Nam and Pardo (2011) articulate the smart cities concept as a way for cities to innovate themselves using information and communications technologies (ICTs). Gil-Garcia, Pardo, and Nam (2016) advance smarter as the new urban agenda while Ojo, Dzhusupova, and Curry (2016) identify current gaps in the smart cities research literature. Relevant to this chapter are the research gaps (Ojo et al, 2016) pertaining to the *dimensions* of education and of people and the *research approach* of living lab, as in real world everyday life. The smart city topic is present on the agenda of policy-makers, technology companies, and academics, yet city inhabitants do not seem to be involved in meaningful discussion about the concept and its implications for surveillance, privacy, inclusion and many other issues (Craglia & Granell, 2014). Further, the smart cities concept is said to be unfamiliar to more than 61% of the 1000 surveyed by Frost & Sullivan (Gamble, 2014). The concept has emerged as contested and controversial in the smart cities research literature (Greenfield, 2013) with utopian and dystopian visions (Townsend, 2014; Marvin, Luque-Ayala, and McFarlane, 2016, Hollands, 2016) and is articulated in terms of tensions and implications by futures researchers (IFTF, 2011). Smart cities have been evolving over the last decade (Scholl, 2016) yet Brandt (2015) notes a kind of obliviousness in the United Kingdom where “nearly 100 percent do not notice smart cities growing around them.”

Smart cities are enabled by a confluence of at least four developments: the emergence of information and communication technologies (ICTs) (Charoubi et al., 2012) including smart/ambient technologies

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