

## Chapter 3.14

# Institutional Opportunities and Challenges of the Wireless City

**Sukumar Ganapati**  
*Florida International University, USA*

### ABSTRACT

This chapter explores the institutional opportunities and challenges of adopting wireless communications for mobile government at the local level. The basic ingredients of wireless for m-government include the wireless devices and the wireless infrastructure. The proliferation of wireless devices provides opportunities for transforming field operations, coordinating emergency management, enhancing citizen services and participation, and narrowing the digital divide. Challenges, however, exist in terms of wireless security, interoperability, and infrastructure provision.

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### INTRODUCTION

Wireless communication is a core building block for the mobile government. The basic ingredients of the wireless communications include the wireless devices and the wireless infrastructure required for communications among the devices. Wireless devices have rapidly evolved and diffused world-wide. For example, mobile phones, which are common forms of wireless devices, have evolved from the traditional analog cellular phones to digital “smartphones” with internet and other capabilities (e.g. camera, location awareness). The growth of mobile phones is not limited to the developed world; they have become commonplace in the developing world, leap-frogging the landline

phone connections. The wireless infrastructure for supporting communications between the devices has also advanced considerably. Several types of wireless infrastructure support have emerged in the recent years, including the Wi-Fi, WiMax, and Mesh Networks. The wireless infrastructure complements wired infrastructure in providing last mile solutions for data transmission as well as voice communications.

The purpose of this chapter is to outline some of these key institutional opportunities and challenges of adopting the evolving wireless technology for e-government at the local level. Wireless devices provide opportunities for both better government service delivery and citizen participation. The proliferation of wireless devices has enabled the mobile government (i.e. m-government), which refers to the provision of government services (government to government, government to business, and government to citizen services) using the various forms of wireless technologies (especially mobile phones). Wireless devices, for example, have been adopted for greater efficiency of field operations, emergency management, and to enable citizen participation. Wireless broadband offers opportunities for reducing the digital divide. Barack Obama's use of text messages and the Blackberry during the 2008 Presidential campaign also popularized the use of wireless devices.

Challenges, however, exist in terms of security of wireless communications, interoperability, and infrastructure provision. Despite encryption technologies, wireless networks (particularly open ones) are prone to security breaches through various means (e.g. spoofing). Confidentiality of sensitive information could be compromised in such networks. Interoperability, which broadly refers to the ability of devices to work together to exchange and use information, is a challenge due to the different technological standards and vendor preferences. Organizational, political, and legal issues could complicate the achievement of interoperability. Much debate has also centered

on the institutional mechanisms of provision of the wireless infrastructure. Wireless accessibility in the field requires extensive wireless networks. Although wireless hotspots are available in several locations, such as coffee shops, fast food places, airports, and hotel lobbies, such wireless coverage is not available beyond these sites. In the face of private sector failure, municipalities stepped in to provide the wireless networks. However, municipal wireless networks have also hit snags recently in the United States, with a few major cities dropping their plans for implementing such networks.

The rest of the chapter is organized as follows. The subsequent section describes the evolution of the wireless communications, enabling the m-government. Next, the institutional opportunities of the wireless for m-government are examined. After this, the challenges of the wireless communications are identified. Finally, the chapter concludes with the major a summary of the major opportunities and challenges.

## **EVOLUTION OF WIRELESS COMMUNICATIONS**

Wireless communications are not new. The telegraph network was invented by Samuel Morse in 1838. Guglielmo Marconi obtained the patent for wireless telegraph in 1897. Radio communications have been in use since the beginning of the 20th century. Mobile telephone services were introduced after World War II, with the Federal Communications Commission's (FCC) recognizing them as new class of services in 1949. However, the modern wireless communications technology has evolved significantly since then. The widespread growth of wireless across the globe is also a more recent phenomenon, since the late 1990s. The exponential growth of wireless communications is one of the key drivers enabling the mobile government (Kuscu, Kushchu, and Yu, 2007).

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