Chapter 21
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.

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...
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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).

Wireless communications require both the wireless devices and the wireless infrastructure to enable communications between the devices. Mobile phones are the common examples of wireless devices; however, the devices encompass a range of other gadgets such as remote control devices, Global Positioning System (GPS) units, remote garage door openers, satellite television, wireless computer peripherals and networks, and so on. Wireless communications are fundamentally based on the transmission and reception of radio wave signals. Unlike wired communications, wireless does not require a physical cable connection.