Chapter 21
E-Planning:
Information Security Risks and Management Implications

Stephen Kwamena Aikins
University of South Florida, USA

ABSTRACT

This chapter discusses the security risks and management implications for the use of information technology to manage urban and regional planning and development processes. The advancement in GIS technology and planning support systems has provided the opportunity for planning agencies to adopt innovative processes to aid and improve decision-making. Although studies show that a number of impediments to the widespread adoption these technologies exist, emerging trends point to opportunities for the integration of planning supporting systems with various models to help estimate urban growth, environmental, economic and social impact, as well as to facilitate participatory planning. At the same time, information security infrastructure and security preparedness of most public agencies lag behind vulnerabilities. Drawing on the literature on planning, e-planning and information security, the author argues that the emergence of e-planning as an efficient approach to urban planning and development also poses enormous security challenges that need to be managed to ensure integrity, confidentiality and availability of critical planning information for decision-making.

INTRODUCTION AND BACKGROUND

The purpose of this chapter is to discuss the security risks and management implications for the use of information technology (IT) in managing urban planning and development. Numerous societal problems are explored and addressed in urban and regional planning agencies, including urban growth, unemployment and economic revitalization, transportation, environmental degradation and protection, neighbourhood decline and redevelopment, conservation of land and natural resources, provision of open space, parks and recreational facilities, etc. Planning is therefore a future-oriented activity, strongly conditioned by the past and present. It links “scientific and technical knowledge to actions in
the public domain” (Friedmann 1987, 38). Ideally, planning happens via public discourse between all groups and individuals interested in and/or affected by urban development and management activities pursued by the public and or private sector, although such comprehensive sharing of information and decision making is rarely found in practice (Nedovic’-Budic’ 2000).

E-planning is the use of IT-based systems such as geographical information system (GIS), database management system (DBMS) and planning support system (PSS) for managing urban and regional planning and development processes. The advancement in IT and related hardware, particularly in relation to computer aided design (CAD), GIS, DBMS and PSS has provided the opportunity for local government authorities to adopt innovative and effective technologies to aid and improve the management and decision-making in urban development process. With CAD, maps and plans can now be prepared digitally. DBMS allows all the maps, plans and other data to be properly kept and easily retrieved. Using GIS, digital data represented on the maps and plans can then be retrieved and spatially analysed for decision-making purposes.

IT-based systems can also overcome the problems of paper-based systems. Smooth and swift flow of data and information between various stages of urban development enhances promptness and accuracy of decision-making and facilitates effective and efficient management. However, prompt and accurate decision-making can only be achieved if sufficient and accurate data and information are readily available to decision-makers. With a paper based system, files and folders that are physically moved from one office or department to another can only be accessed by one officer at a time, resulting in potential loss of documents and delay in decision making. In addition, a paper-based system is error prone and requires large storage space. If properly designed and implemented, an IT-based system can help resolve the problems of paper-based system by storing data in digital format to reduce storage space and minimize loss of critical information, and by keeping data centrally to facilitate access and enhance data security.

Effective automation of the planning and development processes, however, requires the design and development of multi-department systems that require integration of key components with various security implications that if unaddressed, could compromise the integrity, confidentiality and availability of critical information used for decision making. These components include workflow applications, data model for information sharing, the agency-wide network, as well as hardware and software to support the applications. Although several studies have been conducted on the use of information technology to aid urban planning and development, (e.g. French & Wiggins 1990, French & Skiles 1996, Warnecke et al. 1998, Yaakup et al. 2004) few studies are yet to be performed on the information security risks of e-planning and potential solutions. Drawing on the literature on planning, e-planning and information security, this chapter aims at filling the existing research gap by arguing that the emergence of e-planning as an efficient approach to urban planning and development provides enormous technological opportunities and security challenges for the planning profession. Therefore comprehensive information security management solutions are needed to ensure the integrity, confidentiality and availability of planning information for decision-making.

**E-PLANNING EFFICIENCY AND NETWORK SECURITY CONTROLS**

In planning analysis, information is derived from printed maps, field surveys, aerial photographs and satellite images. GIS systems enable data from a wide variety of sources and data formats to be integrated together in a common scheme of geographical referencing, thereby providing up-