



**IDEA GROUP PUBLISHING**

701 E. Chocolate Avenue, Suite 200, Hershey PA 17033-1240, USA  
Tel: 717/533-8845; Fax 717/533-8661; URL-<http://www.idea-group.com>

**ITB9468**

---

## Chapter XVI

# Digital Government and Geographic Information Systems

Jon Gant  
Syracuse University, USA

Donald S. Ijams  
Tucson Police Department, USA

### ABSTRACT

*The focus of this chapter is to examine how government agencies are deploying geographic information systems (GIS) to enhance the delivery of digital government. We will explain how critical technological advances are enabling government agencies to use GIS in web-based applications. In addition, we will illustrate the approaches that state and local governments in the United States are taking to deploy GIS for e-government applications using examples from Indianapolis, Indiana, Tucson, Arizona, Washington D.C. and the State of Oregon's Department of Environmental Protection. While these examples greatly improve service delivery performance and enhance public decision-making, we raise the issue that e-government GIS applications may be more broadly deployed in organizations that are better adept at dealing with the managerial and technical issues related to using GIS.*

This chapter appears in the book, *Digital Government: Principles and Best Practices*, edited by Alexei Pavlichev and G. David Garson. Copyright © 2004, Idea Group Inc. Copying or distributing in print or electronic forms without written permission of Idea Group Inc. is prohibited.

# INTRODUCTION<sup>1</sup>

Government agencies worldwide are increasingly deploying digital government strategies to provide citizens and businesses with greater access to services and information through highly innovative integrated service delivery applications. It is, for example, now commonplace for citizens to file taxes, renew professional licenses, and track legislation through web applications available on Internet gateways or portals for each state. These applications offer numerous possibilities to use the Internet and web-based technologies to extend government services online, allow citizens to interact more directly with government, employ citizen-centric services, and transform operational and bureaucratic procedures.

Emerging as a critical component of digital government are geographic information system (GIS) applications that provide computerized mapping capabilities to citizens, businesses, and governments. GIS uses information and communication technology tools to store, analyze, query, manipulate, distribute and display data that has been spatially-referenced using addresses, political and administrative boundaries, or earth bound coordinate systems. GIS is used in a broad range of public sector applications including, for example, land use and urban growth planning, legislative redistricting, crime tracking and law enforcement, benchmarking human services, emergency management, environmental monitoring, and public information services (O’Looney, 2000).

GIS greatly enhances the business of government by making it easier to integrate data based on geographic location, particularly as GIS is increasingly embedded with decision support models, artificial intelligence tools, advanced database technologies, and Internet communication protocols. As Dangermond (2002, p. 57) notes, “[t]he integration of Web services with GIS is appealing within complex organizations like local governments that have many entities or departments and integrate many layers of independently collected and managed data, such as roads, pipes, surveys, land records, and administrative boundaries.” Marrying GIS with e-government applications empowers citizens with user-controlled maps served over the Internet while viewing a government web page using a personal computer or personal digital assistant (Greene, 2002). Citizens can quickly see, for example, what streets are being snowplowed, when the garbage will be picked up, where the closest polling place is and what neighborhoods have higher incidence of crime.

The focus of this chapter is to examine how government agencies are deploying geographic information systems to enhance the delivery of electronic government services. We will explain how critical technological advances are enabling government agencies to use GIS in web-based applications. In addition, we will illustrate the approaches that state and local governments in the United States are taking to deploy GIS for e-government applications using examples from Indianapolis, Indiana, Tucson, Arizona, Washington D.C., and the State of Oregon’s Department of Environmental Protection. We will present two cases to further examine the managerial, technical and policy related barriers limiting the broader adoption of geographic information system (GIS) applications for e-government. These cases include: “Snow Fighter,” a GIS application used by the City of Indianapolis to manage snow removal; and, “CityScan,” the first project sponsored by the City of Tucson GIS Cooperative where web-enabled GIS applications assist citizens to achieve the Livable Tucson Vision. While these examples greatly improve service delivery performance and enhance public decision-

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/digital-government-geographic-information-systems/8395](http://www.igi-global.com/chapter/digital-government-geographic-information-systems/8395)

## Related Content

---

### Socio-Technical Determinants of Information Security Perceptions in US Local Governments

Eunjung Shin and Eric W. Welch (2016). *International Journal of Electronic Government Research* (pp. 1-20).

[www.irma-international.org/article/socio-technical-determinants-of-information-security-perceptions-in-us-local-governments/167746](http://www.irma-international.org/article/socio-technical-determinants-of-information-security-perceptions-in-us-local-governments/167746)

### Evaluating Social Networking in Public Diplomacy

Hyunjin Seo and Stuart Thorson (2010). *Politics, Democracy and E-Government: Participation and Service Delivery* (pp. 243-259).

[www.irma-international.org/chapter/evaluating-social-networking-public-diplomacy/42585](http://www.irma-international.org/chapter/evaluating-social-networking-public-diplomacy/42585)

### Implementing Public Fiber-to-the-Home Network Projects: Risks, Challenges, Remediation

Roland J. Cole, Jennifer A. Kurtz and Isabel A. Cole (2012). *Managing E-Government Projects: Concepts, Issues, and Best Practices* (pp. 132-182).

[www.irma-international.org/chapter/implementing-public-fiber-home-network/62354](http://www.irma-international.org/chapter/implementing-public-fiber-home-network/62354)

### Public E-Participation Services as a Cure for Declining Voter Turnout: Acceptance Model Research Using PLS-SEM

Mario Klamer (2022). *International Journal of Electronic Government Research* (pp. 1-17).

[www.irma-international.org/article/public-e-participation-services-as-a-cure-for-declining-voter-turnout/292033](http://www.irma-international.org/article/public-e-participation-services-as-a-cure-for-declining-voter-turnout/292033)

### Reflecting on E-Government Research: Toward a Taxonomy of Theories and Theoretical Constructs

Nripendra P. Rana, Michael D. Williams, Yogesh K. Dwivedi and Janet Williams (2011). *International Journal of Electronic Government Research* (pp. 64-88).

[www.irma-international.org/article/reflecting-government-research/60522](http://www.irma-international.org/article/reflecting-government-research/60522)