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# information FOR INDIANA

unleashing data for decision making and research

JUNE 2006

**Information for Indiana** is a collaborative project launched by Governor Mitch Daniels in July 2005. It brings together government, university, and private resources in an effort to build a solid foundation of data and analysis for informed decision-making statewide. The objective of IFI is to work with internal and external partners to assess, improve, and coordinate the collection, management, dissemination, and analysis of vital data for Indiana. For more about **Information for Indiana**, see the back page of this report and/or visit the project website at [www.ibrc.indiana.edu/ifi](http://www.ibrc.indiana.edu/ifi).

IFI is a joint project led by the **Office of the Governor**, the **Center for Urban Policy and the Environment**, and the **Indiana Business Research Center** in cooperation with the Indiana Geographic Information Council, Purdue University, and Ball State University. In July 2005, the Lilly Endowment, Inc. generously provided an award of support to the Center for Urban Policy and the Environment to facilitate and coordinate the efforts of the IFI Project. This, combined with a planning grant from the Endowment to the Indiana Business Research Center and additional support for the IFI Project provided by the Central Indiana Corporate Partnership, contributes to the collaborative efforts of IFI partners.



## GIS can Map a Better Future for Indiana

**Author: Jill Saligoe-Simmel, Ph.D, Executive Director, Indiana Geographic Information Council**

### What are the Issues?

What if you could use a single tool to save tax dollars, improve citizen services, protect the environment, save lives, and create a technology-friendly environment for Indiana business? All of these goals are possible with geographic information systems (GIS).

In the past decade, governmental agencies, educational institutions, and private industry have developed increasingly powerful GIS. Here are some ways GIS is being used in Indiana:

### ***GIS Helps the Division of Forestry Save Hoosier Forests***

The larvae of the Emerald Ash Borer have devastated Indiana forests, already killing more than 8 million ash trees. Strategies to combat this Asian beetle include quarantine and removal of all ash trees within one-half mile of each infested tree. The Division of Forestry of the Indiana Department of Natural Resources is using GIS to track the infestation so that staff members can act quickly and decisively to remove diseased wood and preserve healthy woodlands on both public and private land.<sup>1</sup> By using GIS, the Division of Forestry can reduce the time spent analyzing problem areas and respond quickly. GIS has improved the quality of analysis with more accurate information, and it has saved millions of dollars over traditional management techniques. GIS has also helped improve communication and relations with the public – both essential to the program's success.

### ***GIS is Lilly's Big Man on Campus***

As a fortune 500 company, Eli Lilly is faced with the daily task of managing millions of existing assets, as well as planning for the future. That future includes nearly a billion dollars worth of corporate and municipal infrastructure improvements over several campuses. Lilly's GIS plays an essential role in coordinating hundreds of design projects. It provides utility and asset management; infrastructure protection; construction layout and design; and successful tracking of \$1.5 billion in municipal and private infrastructure improvements.<sup>2</sup>



### **GIS Saves Lives When Disaster Looms**

In January 2005, much of the state, including Fort Wayne, experienced massive flooding. Thanks to the efforts of concerned citizens, the emergency operations center, and GIS, vulnerable residents – those with physical or mental disabilities who would need help evacuating – were identified prior to the emergency. In all, 88 at-risk residents or their caregivers were contacted *before* flood waters had risen, giving them time to prepare to leave.<sup>3</sup>

### **Indiana Needs a Comprehensive GIS Data System**

Despite these impressive GIS success stories, Indiana is unable to realize the vast benefits of comprehensive geographic information. The state lacks a base map that is statewide, seamless, accurate, accessible, and maintained for the future. Because of independent or isolated government business models (supported by provisions for GIS data in the Indiana Public Access Code<sup>5</sup>), many agencies are not eager to share mission-critical data among neighboring jurisdictions or among different levels of government. Existing data are not consistently available for applications that affect the health, safety, welfare, and economy of Indiana citizens. This lack of data integration also affects state and local system development costs. Different jurisdictions often duplicate efforts, such as when the same location is mapped at one scale for one purpose (e.g., farmland protection), and again at another scale for a different project (e.g., new highway design).

Indiana needs a clear vision, strategy, and leadership to realize the vast benefits of consistent information. There is much potential for Indiana to make progress in areas such as economic development, property tax equity, and educational services by marrying GIS data to a variety of state and local indicators.

### **What GIS Information and Tools are Available and Accessible in Indiana?**

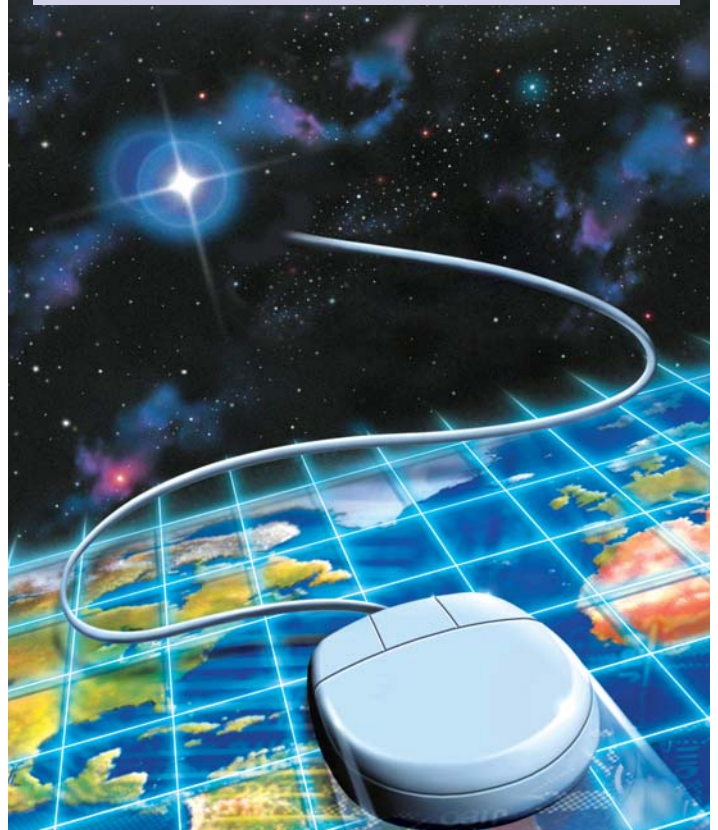
Experts estimate that more than 80-percent of government data has a geographic component. All levels of government (federal, state, and local) have a role in supporting and maintaining Indiana's collective geographic information. In Indiana, over two-thirds of local governments have some level of GIS capability. State agencies have a wealth of data that may or may not be in GIS formats, but could be "geocoded" (mapped to an address or location) and analyzed in a GIS.

Local government geographic information can play an important role in state business. Its value stems largely from the fact that detailed local data change frequently and are maintained by those agencies closest to the source.

## **What is GIS?**

GIS is a computer-based mapping tool that can take rooms full of old paper files and gigabytes of new electronic data to turn ordinary maps into visual layers of highly useful knowledge for state and local decision-makers. It has been referred to as the great integrator of data. It enables turning data into information.

Remember those multi-layered images of the human body from middle school science class that show the body's skeletal system, nervous system, and organs? GIS is similar.<sup>4</sup> It has been called *the great integrator of data* because it combines layers of numerous 20th century maps – of streets, properties, zoning, crime statistics, demographics, even subterranean infrastructure – using 21st century technology and data.

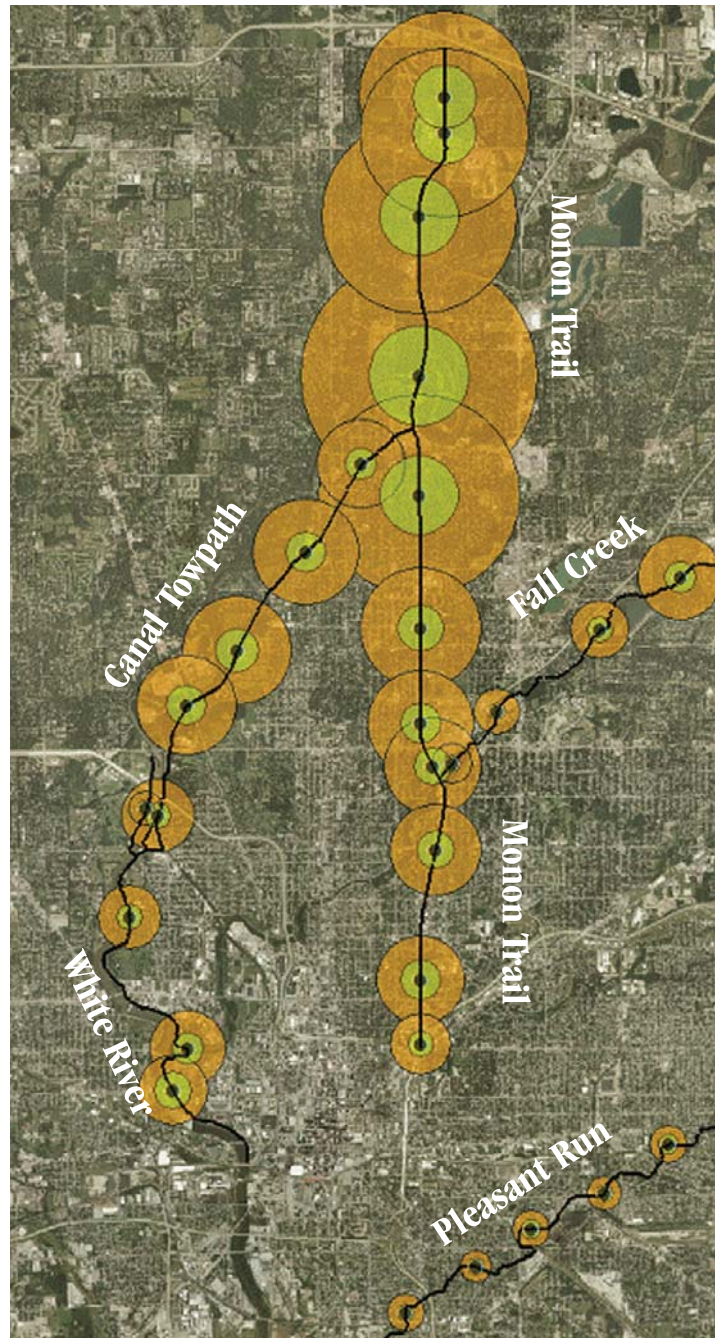


For example, many local governments currently maintain GIS databanks of addresses for emergency-911, and parcel maps for tax assessment. That same local data could be combined and used for regional and statewide analysis. In fact, neighborhood and county reassessment patterns cannot be viewed effectively to evaluate fairness in taxation without accurate and well-maintained parcel maps. Technically, the pieces exist for combining geographic information from federal, state, local, and other sources. However, current policies and business models do not support it.<sup>5</sup>

While the groundwork is in place for a stellar statewide GIS program, advancement is severely constrained without state leadership. There is now a window of opportunity to capitalize on progress that has been made. Through the Indiana Geographic Information Council<sup>6</sup> (IGIC), a structure exists for effective statewide coordination – demonstrated by projects like the 2005 Statewide Orthophotography Project (see *IndianaMap—One Map for Indiana* on page 6). Through cooperating organizations such as the Indiana Geological Survey and IUPUI University Library, several GIS data sets are currently being made available to the public and researchers through the *Atlas of Indiana and IndianaMap Data Library*.<sup>7</sup> These innovative and cooperative projects set the stage for what could be a very successful GIS program. However, several key pieces are still needed, such as integration of vital state and local data.

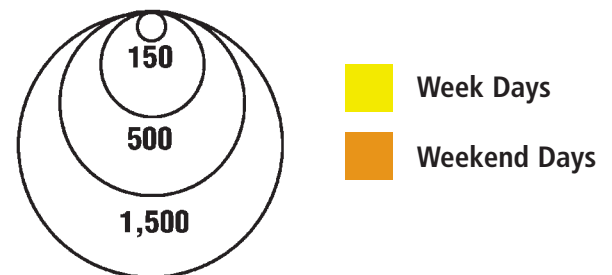
**What is the Status of GIS in Other States?**

At least 29 states have offices responsible for GIS data and technologies.<sup>8</sup> Increasingly, states are developing mapping programs and each year, more states develop sustained funding sources for those programs. Indiana’s neighbors are quite competitive in the arena of geographic information. Ohio’s GIS Office is aggressively implementing the *Ohio Location Based Response System*, a multi-jurisdictional statewide GIS asset to help ensure rapid response to natural and man-made disasters. Kentucky’s GIS Office is far ahead of Indiana with *The Commonwealth Map*, a 12-layer statewide digital base map available free via the Internet for interactive mapping and geographic data querying and downloading. Michigan is attracting business to its state through *Map Michigan* and its strong support of the Michigan Geographic Framework. Illinois was recognized as the national leader in GIS and Transportation by the Center for Digital Government (2002).



IUPUI researchers in the School of Liberal Arts, Department of Geography and the School of Public and Environmental Affairs use GIS to analyze trail traffic on Indianapolis greenways.

**Mean Daily Count - September 2004**



Many other states also excel in maintaining high-quality publicly-available GIS data that support their business and information requirements. For example, in Mississippi, the Department of Human Services pairs information on the location of grocery stores with data on the addresses of food stamp recipients. This alerts investigators when an unusual number of people drive long distances past several food markets to shop at one particular market. This system helps the state detect and reduce fraud. GIS also has been put to some unexpected uses such as response assistance after Hurricane Katrina, helping Mississippi receive billions of dollars in federal disaster aid. With such experiences, Mississippi is rapidly expanding its geographic information technologies.

### How Would Improved GIS Data in Indiana Impact Policy?

Indiana needs improved GIS data because disasters cross boundaries, economic development is regional, highway planning is multi-jurisdictional, criminals and sex offenders change addresses, and emergency responders provide mutual aid response to neighboring jurisdictions. Accurate and accessible GIS data could ensure a complete count of residents in the 2010 Census, which will give Indiana its fair share of federal funds (nearly \$400 for each person counted) and help retain its number of congressional delegates.<sup>9</sup>

A GIS base map consists of “framework” data that can be widely used. This assures that different data developed for specific needs will fit together. Mission-critical activities, of both the public and private sectors, use the GIS base map locally, regionally, statewide, and even nationally. By “building once and using many times,” costs and duplication of effort are reduced or eliminated. To gain the greatest advantage through multiple use, the base map data should be in the public domain and broadly accessible.

There is great potential for Indiana to have a first-rate GIS program that minimizes costs and ensures that opportunities are leveraged to benefit all levels of government. There have been a number of notable initiatives undertaken by the Indiana Geographic Information Council and the State’s GIS Center of Excellence. However, many improvements are still needed.



### What are the Costs of GIS and Who Should Bear Them?

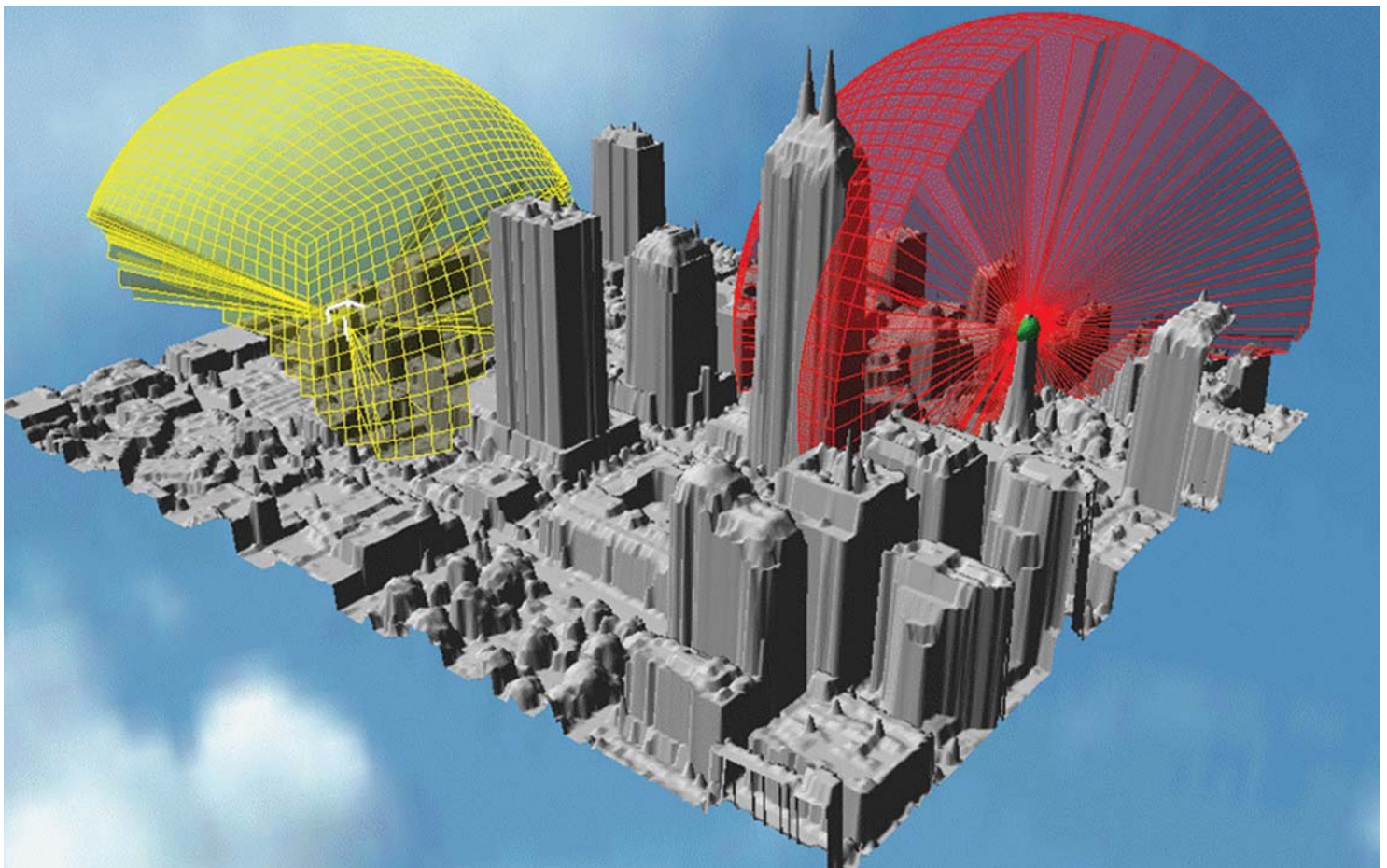
The Indiana Geographic Information Council evaluated funding models from similar programs in other states and found that the best funding sources provide a dedicated, continuous stream of revenue, often in perpetuity.<sup>10</sup> Property transfer fees are well acknowledged as the key source of funds in Wisconsin, Vermont, Oregon, and Montana, but statewide GIS efforts are also conducted with general appropriation support. In 2001, the Illinois legislature authorized counties to adopt a fee structure for filing documents with the funds used strictly for GIS implementation and maintenance. Wisconsin's funding mechanism is a land-related documents recording fee collected by each County Register of Deeds, and it has generated more than \$70 million statewide since 1991. The benefits of Wisconsin's program are numerous and include:

1. land records modernization,
2. accelerated local government GIS activities,
3. leveraging of federal funds,
4. reduction of title insurance costs, and
5. economic development (including the creation and expansion of consulting and software development firms).

In Indiana, the annual costs to implement and maintain a comprehensive GIS technology strategy must include multi-jurisdictional support. A comprehensive statewide GIS must be maintained, accessible to all, and used effectively to answer questions regarding Indiana's future. As a cross-cutting technology resource, a strategic GIS program will foster efficiency across these issues.

#### About IGIC

The Indiana Geographic Information Council (IGIC) is a nonprofit organization whose mission is to lead the effective application of geographic information in Indiana. Our membership includes individuals from all levels of government, private industry, educational institutions and other nonprofit groups. Through our membership and elected board of directors, we strive to make a real difference in Indiana GIS - both for those who use it and those who benefit from it



IUPUI researchers in the School of Liberal Arts, Department of Geography are using 3D LIDAR data of Indianapolis for viewshed analysis in GIS.

A multi-purpose GIS base map is an effective way to leverage the value of GIS across the state. In 2005, the foundation was laid when the entire state was mapped with high-tech aerial photography and elevation data.<sup>11</sup> These data are used as an essential part of a base map – referred to as the IndianaMap – and will support data integration among all of Indiana’s jurisdictions, public, and private institutions.

A better base map would save money and save lives. If maintained strategically, Indiana could save significant money with bulk purchasing, streamlined management, and reduced duplication. When disaster strikes and responders are using the same information to make crucial decisions, many lives would be saved.

Viewed as a groundbreaking project nationwide, the 2005 mapping project was entirely grant funded and saved significant tax-payer dollars.<sup>12</sup> The 2005 statewide mapping project is a model for how statewide organization of GIS can serve the State, local government, and citizens of Indiana. Sustained funding is needed to continue and maintain the benefits of the IndianaMap.

Multi-use requirements are met when data are developed in partnership with local, state, and federal government; university; private sector; surveyors; and regional planning organizations. The IndianaMap bridges the “digital divide” by providing the same high quality data to every community, even those that could not previously afford it. An information-rich

state would help develop Indiana’s economy, attract business, and make the state a better place to live.



## IndianaMap — One Map for Indiana

### *Build Once, Use Many Times*

With the IndianaMap, consistent data will be available to all for cross-functional purposes (homeland security, emergency management, economic development, local parcel mapping, environmental, e-911, Flood Insurance Rate Map modernization, Census data modernization, GASB-34, etc.). In this way, the base map is built once, but used many times for

many purposes. Other data can be put “on top” of this base map and will fit together, resulting in better information for decision-makers.



<sup>1</sup>See *Saving Hoosier Forests* at [www.in.gov/ingisi/realworld/envireab.html](http://www.in.gov/ingisi/realworld/envireab.html)

<sup>2</sup>See *Big Man on Campus* and *Attracting the Big Retailers* at [www.in.gov/ingisi/realworld/index.html#econ](http://www.in.gov/ingisi/realworld/index.html#econ)

<sup>3</sup>See *An Ounce of Prevention* at <http://www.in.gov/ingisi/realworld/hsflood.html>

<sup>4</sup>See *What is GIS* at [www.in.gov/ingisi/aboutgis/index.html](http://www.in.gov/ingisi/aboutgis/index.html)

<sup>5</sup>The Indiana Access to Public Records Act IC 5-14-3-8(k) “Fees; copies” has provisions that treat GIS data differently than other public data. The code is intended to enable jurisdictions to generate revenue to support GIS. However, it has resulted in a complicated web of licensing agreements and fee structures that severely limits data access among governments and the public. Several studies and experiences of Indiana counties demonstrate that government charges for data are ineffective at generating adequate revenue to support GIS. Nonetheless, a consistent funding base is required to adequately support GIS development and maintenance.

<sup>6</sup>The Indiana Geographic Information Council is a 501c3 not-for-profit that provides coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, building partnerships and the IndianaMap [www.in.gov/ingisi](http://www.in.gov/ingisi).

<sup>7</sup>Through the Atlas of Indiana users can view and/or download over 200 statewide GIS data sets <http://129.79.145.5/arcims/statewide/viewer.htm> hosted and maintained by the Indiana Geological Survey. The IndianaMap Data Library (<http://in-ulib-clark.ads.iu.edu/metadataexplorer/>) is a searchable directory of data available from local, state, federal and private sources and a partnership with the Indiana Geographic Information Council and the IUPUI University Library.

<sup>8</sup>See *Statewide Leadership and Coordination of Geographic Information and Related Technology in the 50 States* (NSGIC State Summaries, 2005) at <http://www.nsgic.org/states/statesummaries2005.pdf>

<sup>9</sup>Estimates based on research by the Indiana Business Research Center.

<sup>10</sup>Indiana Geographic Information Council, 2004. *GIS Technology Strategy for Indiana*. <http://www.in.gov/ingisi/igic/plan/gistechstrategy2004.pdf>

<sup>11</sup>View more information on the Indiana 2005 Orthophotography Project at [www.in.gov/ingisi/projects/ortho/](http://www.in.gov/ingisi/projects/ortho/).

<sup>12</sup>The Indiana Geographic Information Council estimates the Indiana 2005 Orthophotography Project saved 30-40% over comparable county-by-county mapping due to bulk purchase power and efficient project management. Additionally, the resulting high-quality product is available for universal GIS use, whereas a county-by-county approach does not produce consistent data that is available to the State or public.

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This publication is one of a series of subject area issue briefs authored by project steering committee members and other contributors who have been engaged to support the IFI project work through activities such as conducting case studies and assisting in pilot project initiation and implementation. Support for these publications is generously provided by the Central Indiana Corporate Partnership.

An electronic copy of this document can be accessed via the Center website ([www.urbancenter.iupui.edu](http://www.urbancenter.iupui.edu)), the IFI project website ([www.ibrc.indiana.edu/ifi](http://www.ibrc.indiana.edu/ifi)), or you may contact the Center for Urban Policy and the Environment at 317-261-3000.



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#### IFI Partners

IFI is a joint project led by the Office of the Governor, the Center for Urban Policy and the Environment, and the Indiana Business Research Center in cooperation with the Indiana Geographic Information Council, Purdue University, and Ball State University. In July 2005, the Lilly Endowment, Inc. generously provided an award of support to the Center for Urban Policy and the Environment to facilitate the efforts of the IFI Project. This, combined with a number of other funded projects, contributes to the collaborative efforts of IFI partners. The partnership is expanding to include new members in the future.

#### The Office of Governor Mitch Daniels

Governor Daniels launched this initiative in July 2005 to bring together government, university, and private resources in an effort to build a solid foundation of data and analysis for improved policy-making and administrative decision-making by private and public leaders statewide. Governor Daniels briefed his cabinet on the IFI Project and specifically requested their full support for the project. The Governor's personal commitment to IFI's goals and objectives has greatly facilitated cooperation from agency directors and senior staff. Meetings with key state agencies that collect and use large amounts of data have already uncovered possibilities for working with the project team to enhance their capacity to collect and manage data that is valuable to stakeholders both within and outside of state government.

#### The Center for Urban Policy and the Environment

The Center for Urban Policy and the Environment is devoted to supporting economic success for Indiana and a high quality of life for all Hoosiers. An applied research organization, the Center was created by the Indiana University School of Public and Environmental Affairs in 1992. The Center works in partnership with community leaders, business and civic organizations, nonprofits, and government. Center faculty and staff combine facilitative and interdisciplinary research skills to assist communities and organizations in developing and implementing effective programs to achieve their goals. Much of the Center's work is focused on strategies to strengthen Indiana's economy and quality of life.

#### The Indiana Business Research Center

Based at Indiana University's Kelley School of Business, the IBRC has provided essential economic and demographic data and analysis for more than 80 years. The IBRC is the state's official representative to the U.S. Census Bureau, the generator of official population projections for Indiana and its counties, and a key partner with federal and state government agencies, businesses, and economic development organizations in making economic information and insightful analysis available to public and private sector leaders and decision-makers.

ADDRESS SERVICE REQUESTED