PART 2
BUSINESS CASE FOR COORDINATED GIS

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2.1 *INTRODUCTION*

The purpose of this Business Case is to provide an economic argument (i.e., justification) for what the Geographic Information Systems Coordinating Committee (GISCC), and particularly the Georgia GIS Data Clearinghouse (Clearinghouse), has done in the past and can do in the future to benefit constituents in the State of Georgia. It is not enough to merely identify the sources of benefits from the Clearinghouse; it is vital to quantitatively measure benefits wherever possible.

The GISCC is an overarching body of state and local government, private sector, and GIS professional representatives formed in 1996 to provide a more efficient and effective framework for the planning, budgeting, acquisition, and utilization of State GIS resources. The Georgia GIS Data Clearinghouse (Clearinghouse) acts as the implementation arm of the GISCC. Established by the Georgia Information Technology Policy Council (ITPC) in March 1996 and functional by the following November, the Clearinghouse was created to provide an effective means for state and local agencies to share GIS data, reduce data duplication and development costs, foster joint development efforts, and develop statewide standards for GIS data collection and documentation. The Clearinghouse fulfills this mission by surveying and inventorying State agencies and other organizations for existing and planned GIS data; establishing data-sharing agreements with state, local, and federal agencies; processing data to conform to GIS Standards and Guidelines in the State of Georgia; and making data available to the public. Most of the data, tools, and other resources provided by the Clearinghouse are available free-of-charge through the Internet (http://gis.state.ga.us). The Clearinghouse also serves as the official State of Georgia node of the National Spatial Data Infrastructure (NSDI). The Clearinghouse is cooperatively managed by the University of Georgia's Office of Information Technology Outreach Services (ITOS) and the Center for Geographic Information systems (CGIS) at the Georgia Institute of Technology. It's operations are funded via an annual contract between the Georgia Technology Authority (GTA, formerly ITPC) and the Georgia Board of Regents (BOR).

To provide a business case, or economic justification for the GISCC's and/or the Clearinghouse's existence, the return on investment (ROI) and/or benefit-cost ratio must attempt to be calculated. Both analyses, however, are not easily applied to this situation. For example, how can a numerical value be placed on increased reliability and/or better decision-making? In the Clearinghouse's case, data development costs (hard-costs) are well defined, but the value of other "soft benefits" is more elusive. Therefore, although this Business Case will identify, in quantitative terms when possible, the benefits and costs associated with GISCC and Clearinghouse activities, it is not intended to provide a formal cost analysis.

Clearinghouse Constituency and Benefits

State Government

The GISCC and Clearinghouse have helped improve the operation of State government through the following efforts:

- Eliminating the redundant development of GIS data within State agencies;
- Reducing the need for State agencies to conduct research for sources of existing data;
- Removing the burdens of data distribution that accompany open records requests;
- Providing a forum for collaboration in the development of GIS systems;
- Providing a one-stop shop for GIS data and services in the State of Georgia;
- Serving as liaison between GIS offices of State agencies and similar offices in both federal and local government.

In addition, Georgia base map development coordinated through the GISCC has yielded federally-matched funds by way of grants, joint funding agreements, innovative partnerships, etc. All of the five Georgia base maps generated to-date, save for Boundaries, were accompanied by some federally-matched funds; the majority of base maps were covered by at least a 50/50 match (see Table 2-1). The fact that the GISCC was able to obtain these fund-matching prospects represents a cumulative cost-savings to the state of $1,206,650 (see Table 2-1). Furthermore, federal support was obtained that would have been provided elsewhere in the country if the Georgia GISCC had not been proactive in seeking funding.

A base map policy statement was established by the GISCC to collaboratively build a set of commonly used statewide GIS databases needed by multiple agencies for development of the Georgia Spatial Data Infrastructure (GSDI). The results yielded a Statewide USGS, DLG-F compliant set of five base products over a 3-year period. Development costs and federal contributions for each dataset are listed in Table 2-1 below. 1993 panchromatic Digital Ortho Quarter Quads (DOQQs)—captured and geo-processed per the GISCC predecessors, the Georgia Development Council and the subsequent GIS Advisory Committee–were used as the geodetic and feature base for the DLG-F compilation, yielding an extraordinary cost-savings. Also, the 1993 DOQQs were widely distributed through Regional Development Councils (RDCs) and the Georgia Emergency Management Agency (GEMA) flood mitigation program, the result of which placed personal computers, ArcView GIS, and DOQQ images into most of the 159 Georgia counties.

The DLG-F, or derived GSDI base, will be in large part the base for the next version of U.S. Census TIGER/Line datasets, i.e., the foundation for Georgia's TIGER Modernization.

2-1. Georgia Base Map, or "Framework" Data – Costs and Savings				
Base Map Item	***State Development Costs***	***Federally Matched Funds***	***Base Map Total Cost***	***Number of Clearinghouse Downloads (2002/Cumulative)***
Hydrography	$300,796	$612,520	$913,316	4,676/8,405
Transportation	$176,532	$540,225	$716,757	5,893/ 12,209
Boundaries	$120,000	$0	$120,000	173/190
Imagery Flight/Processing ('99 CIR)	$1,469,625	$695,950	$2,165,575	1,400/3,000
Imagery Flight/Processing ('93 panchromatic)	$1,000,000	$2,000,000	$3,000,000	
Wetlands	$294,672	$382,860	$677,532	5,195/6,236
Totals	**$3,361,625**	**$4,231,555**	**$7,593,180**	**17,349/ 30,055**
Source: Georgia Geographic Information Systems Coordinating Committee (GISCC).				

* Image capture (i.e., flight) costs fall under a separate budget and not included in DOQQ pricing
" Number of Clearinghouse DOQs purchased and distributed on CD-Rom

Of mention is that the Center for GIS at GA Tech, one of the two Clearinghouse nodes, finds funding partners for imagery, not the state, thus providing an additional business development cost-savings value.

Complimentary to data development funding supplements coordinated through the GISCC, the Clearinghouse is a highly effective cost-saving tool via its data dissemination function. The Clearinghouse provides Georgia GIS data in one centralized location. By brokering data orders and fielding public questions/requests, it can be justified that the Clearinghouse's existence is worth at least one potential Full-time employee (FTE) to each state agency. At a conservative $11.95/hr.[iv], that's a total savings of $24,856 annual salary per agency, excluding any fringe benefits. Accounting for each of the 15 state agencies serving as GISCC stakeholders (see below)—and not accounting for any non stakeholders who might still propagate data via the Clearinghouse--, the cumulative benefit to the state equates to a conservative minimum of $372,840.

Software is required to take full advantage of GIS benefits in research and industry. A tremendous asset to the State of Georgia is the Environmental Systems Research Institute (ESRI) annual education subscription, a flat fee of $100,000.00 that includes training and the complete GIS product line to the entire University of Georgia System. One retail site license to ESRI's virtual campus (comprised of over 40 educational courses) is $10,000 annually. The retail cost of one ArcInfo seat and one ArcView seat is $14,000 and $1,100, respectively. Therefore, the Georgia school system reaps the benefit of unlimited free training and software after the retail cost of 7 ArcInfo licenses are covered. Considering that the University of Georgia System is comprised of 36 campuses, including community colleges, (and not considering all of the various departments/research facilities at each campus) means that this subscription is worth its weight in gold. Above and beyond the significant direct cost savings for training and

software comes the indirect cost savings of teaching materials; many of the GIS distance learning programs taught through Georgia schools use ESRI's virtual campus for a portion of or their entire curriculum.

Savings result not only from data development and dissemination, but also from agency coordination. For example, Georgia has purchased annual Landsat coverage from 1998-present. The University of Georgia has provided access to DOQQ's and digital raster graphics (DRGs) to all University System of Georgia students and faculty through a no-cost lending library. Although it is difficult to estimate the value of this resource to the research community, savings to UGA can be approximated at a few thousands of dollars.

Local Government

Digital orthophotography, i.e., imagery, one of five major base map development efforts stemming from GISCC activities (Table 2-1), has contributed to a savings of $2,233,660 for over 17% of Georgia local governments (see Table 2-2). Figure 2-1 below shows Georgia counties that have used, are currently using, or will use DOQQs as their GIS map base layer (current as of December 2002). These 28 counties have also used or will use the Department of Transportation (DOT) road centerline data as a second base layer. Additionally, the majority of these rural counties compliment their GIS with many other datasets available from the Clearinghouse. The savings afforded by DOQQs and other Clearinghouse data are significant. For many counties, a GIS would not be possible without these data.

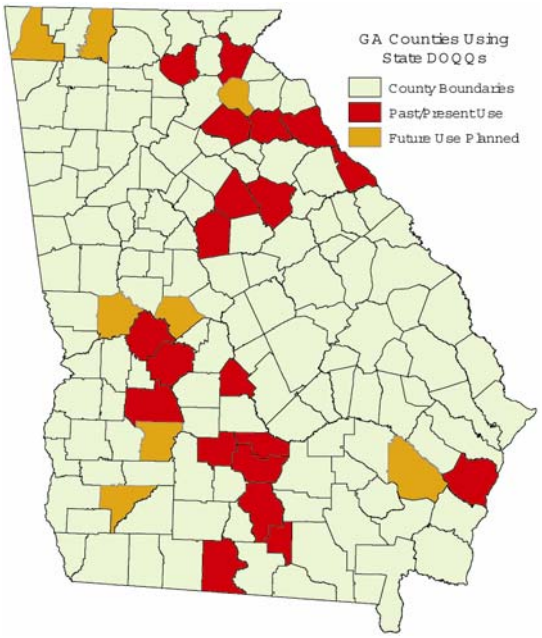

Figure 2-1. Georgia Counties benefiting from the use of state DOQQs (December 2002).

Table 2-2 below breaks out county savings via the use of state DOQQ imagery. This table compares GISCC DOQQ processing costs to the creation of private sector photography, including Digital Elevation Model (DEM) development, at a retail price of $220/mi^2. Although a conservative estimate yields a savings of at least $10,000 per county for use of additional datasets, such as roads, etc., their utilization was not factored into this enumeration.

2-2. Cost Savings to Georgia Counties via DOQQ Imagery		
County Name	**Square Mi.**	**Cost savings via DOQQ**
Walker	448	$98,560.00
Murray	347	$76,340.00
Habersham	279	$61,380.00
Lumpkin	286	$62,920.00
Banks	234	$51,480.00
Jackson	343	$75,460.00
Elbert	374	$82,280.00
Madison	286	$62,920.00
Lincoln	258	$56,760.00
Morgan	355	$78,100.00
Greene	406	$89,320.00
Jasper	374	$82,280.00
Talbot	396	$87,120.00
Crawford	328	$72,160.00
Taylor	381	$83,820.00
Macon	405	$89,100.00
Pulaski	250	$55,000.00
Sumter	492	$108,240.00
Lee	362	$79,640.00
Turner	290	$63,800.00
Ben Hill	254	$55,880.00
Wayne	649	$142,780.00
Irwin	363	$79,860.00
McIntosh	489	$107,580.00
Berrien	458	$100,760.00
Baker	348	$76,560.00
Lanier	200	$44,000.00
Brooks	498	$109,560.00
Total Savings*	**10,153**	**$2,233,660.00**
Savings based on a 2002 retail cost of $220/mi.[2]		
Source: Jimmy Nolan, UGA Information Technology Outreach Service, 2003.		

Clearinghouse data, therefore, saves the majority of each Georgia municipality many dollars and Level of Effort (LOE) hours via coordination, data development, technical support provision, and data dissemination.

Regarding efficiency, the Clearinghouse streamlines data availability and data documentation allowing for one-stop, easy access to statewide datasets. According to the National Center for Geographic Information and Analysis, the largest local government GIS savings come from greater efficiency in answering citizen inquiries. The querying ability of a well-designed GIS can save from two person-years in small towns to ten or more person-years in a large county[i].

Not only does the Clearinghouse provide a majority of the 159 local Georgia counties and their respective cities with GIS data thereby relieving GIS development costs, but also serves as a data dissemination source so that citizens can access and query GIS data directly and without local government interaction.

Public

The flexibility of GIS makes it possible for both private and public organizations to increase their product lines and fill new market niches at relatively small additional costs, and as a result, increase their customer/client base by appealing to a wider audience. Public organizations identified in the table below represent the most abundant data downloads from the Clearinghouse since 2001. It is worth noting that these statistics reflect numbers available from computer-generated log files that are not inclusive due to periodic loss of information, etc. In addition, imagery—one of the Clearinghouse's most in-demand information products sought at approximately 750 Mb/day—is not factored into any of the below statistics due to the fact that it has not been electronically transferred prior to 2003.

2-3. 2001-2002 Georgia GIS Clearinghouse Statistics – Cumulative Data Downloads by Organization

Organization	**Cumulative Download (Kb)**
Colleges/Universities	
University of Georgia	211,214,144
Georgia Institute of Technology	95,351,016
Georgia State University	60,333,934
Gainesville College	45,765,431
Clemson University	22,286,373
Local/State Government	
Georgia Department of Natural Resources	70,859,893
U.S. Department of Agriculture	17,624,858
Georgia Division of Public Health	13,484,341
Georgia Forestry Commission	9,971,933
Northeast Georgia Regional	9,636,303
Consultants/Private, for-profit organizations	
Jordon, Jones, & Goulding, Inc.	28,802,538
Photo Science, Inc.	16,317,983
Parsons Engineering Science	8,386,008
Kimley-Horn and Associates, Inc.	8,159,494
Oglethorpe Power Corporation	8,085,988
Source: Clearinghouse web statistics, 2003.	

Stakeholders

Stakeholders participate in the GISCC because of the numerous benefits in cost savings, customer relations, and political advantages. Stakeholders reduce the cost of labor and the cost of accessing information, streamline the effort in various data source integration, enhance the performance of complex analyses, and augment the presentation of information in map form. Through the ability to access GIS data directly from the Clearinghouse, staff efficiency gains of 20 to 60 percent have been observed in government agencies[i].

Stakeholders reduce the duplication of effort and cost of data development. Examples include the increase in effective management of transportation and utility infrastructure (lower maintenance costs), lowering damage from natural disasters through better

planning, and protecting organizations from costly legal or regulatory challenges by providing critical information. In certain settings, the use of Clearinghouse data has contributed to savings of 10 to 25 percent in infrastructure maintenance and repair costs. While avoidance of costs for unpredictable events cannot be estimated, State and local governments have used Clearinghouse data effectively to avoid millions of dollars in expenditures while saving lives and property (see Table 2.7).

Working with stakeholders has the added advantage of sharing costs and improving the level of benefits as a result of the specific functional expertise and data that each participant brings to every effort. Following is a list of current Georgia GISCC stakeholders:

- Association County Commissioners of Georgia (ACCG)
- Atlanta Regional Commission (ARC)
- Board of Regents
- Center for GIS, Georgia Institute of Technology (CGIS)
- Georgia Association of Assessing Officials
- Georgia Department of Community Affairs (DCA)
- Georgia Department of Human Resources (DHR)
- Georgia Department of Industry, Trade & Tourism (GDITT)
- Georgia Department of Labor (DOL)
- Georgia Department of Natural Resources (DNR)
- Georgia Department of Transportation (DOT)
- Georgia Emergency Management Agency (GEMA)
- Georgia Forestry Commission (GFC)
- Georgia GIS Data Clearinghouse
- Georgia Municipal Association (GMA)
- GeorgiaNet Authority
- Georgia Power
- Georgia Regional Transportation Authority (GRTA)
- Georgia URISA Chapter
- Information Technology Outreach Services (ITOS) - University of Georgia
- Georgia Technology Authority (GTA)
- Reapportionment Services
- University of Georgia, Institute of Ecology (NARSAL)
- U.S. Environmental Protection Agency, Region 4
- USGS, Center for Spatial Analysis Technologies (CSAT)
- USGS, National Mapping Division

The following individuals, by title, represent the most abundant data downloads from the Clearinghouse since 2001:

2-4. 2001-2002 Georgia GIS Clearinghouse Statistics – Cumulative Data Downloads by Individual	
Title	**Cumulative Download (Kb)**
Student	314,509,844
GIS Professional* (Analyst, Specialist, Technician, Manager, Coordinator)	213,206,342
Research Staff (Assistant, Associate)	59,749,674
Engineer	30,769,860
Environmental Scientist	21,494,101
Assistant Professor	15,884,331
Graduate Research Assistant	15,735,189
Environmental Planner	14,771,314
Director	13,438,866
Laboratory Supervisor	12,360,936
Source: Clearinghouse web statistics, 2003. * All GIS-related titles merged under the umbrella of "GIS Professional"	

If it were possible to assign an economic value to the intangible benefit of good will, the result would be an enormous aggregate cost-savings received by Georgia state residents through use of Clearinghouse products versus more expensive commercial alternatives.

2.2 STATEMENT OF THE OPPORTUNITY

Clearinghouse services relate to a broader interest through fundamental issues affecting public decision-making. A continued commitment to the Clearinghouse must not be taken lightly.

Geographic Information Systems are powerful and useful tools only when populated with a wide array of spatial datasets. Perhaps more than any other computer application, the value of a GIS increases dramatically with the ability to combine and explore relationships among numerous spatial data layers. Unfortunately, the most valuable and beneficial datasets, such as those created at high spatial resolutions, are the most costly to create and maintain. It has been estimated that as much as 70% of the cost of operating a GIS is associated with data creation and maintenance. Ironically, local governments, those most in need of high-resolution spatial data, are generally least able to undertake the investment alone. Smaller agencies may have little or no direct budget for GIS data development, and may seek to obtain free data, whether or not it truly meets their needs. Free datasets (such as the USGS's DLG files or the Census Bureau's TIGER files) frequently require significant effort to correct errors or otherwise adapt them to meet user needs. Repairing and/or adapting datasets yield 'hidden costs' sometimes absorbed by public agencies without notice since modifications do not require a purchase justification. It is not hard to imagine that more than one agency may independently and unknowingly improve the same dataset. State agencies, with bigger budgets for data development, can often deliver their mission with lower resolution, and hence lower cost, data. Still, only a

relatively small number of agencies at any level of government are making significant spatial data development investments. Agencies need data from each other to realize the full benefits of GIS. Partnerships are necessary for sharing in the creation and coordinated use of GIS datasets between government and private entities at all levels. The GISCC is Georgia's mechanism for fostering partnerships and inviting wide participation in GIS efforts.

Accurate, current, and actively maintained spatial data is a commodity that has real value. Because up to 70% of GIS costs are contained in the capture and maintenance of data, it is important that we establish standards and maximize its reuse among government agencies at all levels.

The GISCC and State Clearinghouse have been charged with developing a statewide policy that allows the transfer of digital data between State and local governments for easy access to data at minimum or no cost. The case is being proven in this document that the need for the GISCC and Clearinghouse is overwhelming and that the opportunity to continue serving Georgia constituents through these organizations is actually a necessity. The most useful roles of both the GISCC and Clearinghouse are as the hub of a network for coordinated base map development and maintenance.

2.3 BUSINESS CASE FOR GISCC

Benefits and costs of Clearinghouse commitment

The GISCC, as an entity, does not utilize any of the framework data development or Clearinghouse budget. It is an autonomous, volunteer body comprised of stakeholders acting to build a better Georgia Spatial Data Infrastructure (GSDI). Similar entities in other states have their own budget to perform the exact same function.

The Clearinghouse, on the other hand, has benefit-cost analysis elements built-in to its operations: cost reduction, cost avoidance, cost recovery, and improved performance[iii]. Cost reduction, or the decrease in an organization's operating expenses resulting in an increase in timesavings from more efficient job performance, accrues with more tasks performed using a GIS. Cost avoidance, or the prevention of future rising costs caused by projected increases in workload, is an extension to cost reduction as performance is optimized with continued GIS integration into an organization's business process. The Clearinghouse manages cost recovery, or the process of selling data and maps and improving the value of data used to apply for state and federal grants, via fee-based data sales for selective datasets. Improved performance, or more accurate information and faster more flexible analysis capabilities, improve the decision-making process itself.

On average, the Clearinghouse daily Internet data download is 1.7 Gb and 750 Mb from other means of data dissemination. The user base grows by an average of 366 members per month (based on 2002 statistics). These statistics alone reveal public dependency on the State Clearinghouse and justify its existence.

To more clearly validate the GISCC and Clearinghouse worth, tangible benefit values can be compiled from the various sections in this document. One can quickly surmise that the benefits greatly exceed the costs of GISCC activities and Clearinghouse operations (see Table 2-5 below). Note that tangible benefit values listed in the table are conservative and

that they don't include the majority of soft-costs identified throughout this text. However, the numbers provided here, at minimum, double the state ROI.

2-5. Deduced, Cumulative Benefit:Cost Analysis of GISCC Activities and State Clearinghouse Operations (1996-2003)			
Costs		**Tangible Benefits**	
Item	*Dollars*	*Item*	*Dollars*
Budget, cumulative over 7 years (operations, staff, equipment, etc.)	$2,150,000	DOQQ savings to local government, to-date	$2,233,660.00 (see Table 2-2)
State Data development Costs, to-date	$3,361,625	Federally-matched funds, to-date	$4,231,555
Cost of Data dissemination (via hard media)	N/A (Costs-recovered)	Clearinghouse Data purchases, to-date (i.e., cost recovery)	N/A (Costs-recovered)
ESRI software education license, annual	$100,000	Software License Savings, annual	Immeasurable!
ESRI training license, annual	N/A (Included with cost of software)	Training License Savings, annual ($10,000/yr/site * 36 GA campuses)	$360,000
		1 FTE per state agency/year ($11.95/hr. * 26 stakeholders)	$372,840
Totals	**$5,611,625**		**$7,198,055**
* $375,000/year until a $100,000 budget cut for FY2001-2002 to present.			

Positive Effects

This section follows on the previous by going into greater depth on specific enhancements to common services made possible by the Clearinghouse. The table below, pulled from a related study designed to highlight the effectiveness of GIS in local government, quantifies the usefulness/usability of GIS tools in local government. Per the case made in this document, a large number of Georgia local governments have Clearinghouse data as the basis or a portion of their GIS.

2-6. Most Important Benefits of a GIS	
Percent Reporting	
Improved information processing	61.4
Better-quality decisions	20.8
General savings	11.4
Other	6.8
Source: Looney, *Beyond Maps: GIS and Decision Making in Local Government* (ESRI Press, 2000), p.12.	

Clearinghouse membership/participation confers not only data development savings but economic benefits as well. Overall participation maintains a minimum of 12 new members per day and between 30 and 70 GB of data downloaded on a monthly basis (2002).

The gains of Clearinghouse membership/participation significantly outweigh the costs. Through GISCC labors, the following soft-benefits have resulted:

1. Coordination and development of state base map data (themes, accuracies, etc.)
2. State agency data contributions of over 550 themes
3. Innovative partnerships for data development and maintenance
4. Reduced redundancy (different accuracies, formats, etc.)
5. Reduced potential for misadministration and liability
6. Increased accessibility and usability of GIS tools (data, maps-to-go, etc.)
7. Improved consistency across agencies
8. Increased productivity
9. Improved decisions, collaborative decisions
10. Personnel savings via line agency release from data dissemination responsibilities (ex., DOT can refer public requests for data to clearinghouse website)
11. FGDC-compliant metadata
12. Enhanced technical expertise (group learning, professional discussions, etc.)
13. Pooling monetary resources thereby reducing overall price & distribution prices (ex., DOQQs), i.e., more data, more cheaply.
14. More diverse community services
15. Single-source location of state data resources
16. Pertinent application development (facilities management, comprehensive regional planning, modeling, etc.)
17. Recuperation of redundant investments
18. Reduced costs of maintaining disparate databases by multiple organizations
19. Increased efficiency
20. Information security
21. Improved customer service
22. University discounts on training/software
23. Easier interoffice/intraoffice coordination
24. Increased citizen participation
25. More rigorous data management
26. Enhanced visualization of graphical data
27. Ability to integrate data
28. Ability to generate new understandings

While the above are all distinctly valuable and cost-saving benefits, it is virtually impossible to translate them into a cash assessment; therefore, they have not been included in Table 2-5 above but must be considered, cumulatively, as a sizable monetary value to the State of Georgia.

Specific Uses/Applications

This section goes into even greater detail, itemizing 20 applications made better or more manageable by Clearinghouse datasets, grouped by service.

2.7 GIS Applications Enhanced through Clearinghouse Services	
In Local Government	
Economic Development	Location of all major businesses and their primary resource demands
Transportation and Services Routing	Bus route identification, road capacity, signaling system equipment, accident site identification, sanitation truck route identification, staffing by area, identification of landfill and recycling sites, etc. DOT state map updates, etc.
Housing	Inventory of housing stock age, condition, status (public, private, rental, etc.), weatherization, demographics, etc.
Infrastructure	Inventory of roads, sidewalks, bridges, utilities: locations, names, conditions, foundations, maintenance, etc.
Health	Location of flora and fauna with particular health problems
Tax Maps	Identification of ownership data by land plot
Human Services	Inventory of neighborhoods with multiple risk indicators, location of existing facilities and services designated to address these risks
Law Enforcement	Inventory of police stations locations, crimes, arrests, convicted perpetrators, victims, plotting of police beats and patrol car routing, alarm and security system locations
Land-use Planning	Parcel inventory of zoning areas, floodplains, industrial parks, land uses, trees, green space, etc.
Parks and Recreation	Inventory of park holdings/playscapes, trails by type, etc.
Environmental Monitoring	Inventory of environmental hazards, layering of nonpoint pollution sources, etc.

Emergency Management	Location of key emergency exit routes, their traffic flow capacities, and critical danger points, etc. Emergency alert systems, flood cost analyses, etc. Fire locator map books, and GPS ground direction, etc.
Citizen Information/Geodemographics	Locations of persons with special demographic characteristics such as voting patterns, service usage and preferences, commuting routes, occupations, etc.
In Business	
Banking and Insurance	Customers purchasing habits, financial behaviors, needs for additional products or services, etc.
Media	Census data, crime statistics, traffic accidents, etc.
Real Estate	Compile variety of data affecting the desirability and value of property, accurate picture of the property's suitability as a first time residence, acquisition for a portfolio, or site for a retail outlet, etc.
Retail and Commercial Business	Determine addresses, service boundaries, sales territories, delivery routes, etc.
Utilities	Location of inventory, materials, condition, maintenance, capacities, etc.
Telecommunications	Integrate location-based data into analysis and management processes in network planning and operations, marketing and sales, customer care, data management, etc.
Source: Looney, *Beyond Maps: GIS and Decision Making in Local Government* (ESRI Press, 2000), p.90-93.	

A case-in-point of a current GIS application benefiting multiple stakeholders (state and local governments and private industry) financially and efficiently is the timber industry and Georgia Department of Revenue's (DOR) Property Tax Division's joint Timber Assessement Satellite Imagery Project. The Project consolidates many different datasets into an easy-to-use application for the identification of land cover changes. The data includes Georgia Department of Transportation road network coverage, 1993 Georgia DOQQs, digital topographical maps, and two years of satellite imagery. By comparing ground cover change detection derived from satellite imagery analysis, a GIS application has been created to delineate areas of timber harvest. This program is distributed to all Georgia counties via CD-rom. Harvested areas are displayed graphically atop DOQQs allowing tax assessor staff to cross-reference property owners with timber taxes paid or unpaid. Although incentives and penalties encourage harvesters to pay timber taxes, it can be estimated that counties only collect approximately 75% of due timber taxes. The DOR Satellite Imagery Project application allows Georgia counties to properly assess

harvested acreage and equips staff with the evidence required to enforce and collect timber taxes.

Impacts

This last section describes five key areas of impact that the Clearinghouse will implement with continued commitment.

1. Expedited service: electronic data download via FTP (including large datasets, such as imagery)
2. Additional datasets: Clearinghouse will encourage fresh data contributions via state and local agency inventories
3. Integration with Georgia.gov: Clearinghouse website will be revamped to include dynamic content, easier access to data, and easier navigability. Pending Georgia Technology Authority (GTA) approval, it will be integrated with Georgia.gov as a subportal site complying with state requirements and support.
4. Better cost-recovery: for-fee data (i.e., imagery) will be more accurately priced and will have more added value, i.e., new products will be built atop the standard DOQQ such as MrSid files, .jpg files, etc.
5. Ecommerce functionality: Clearinghouse purchases will be improved, data will be streamed via the Internet thereby expediting customer receipt and greatly reducing Clearinghouse time and materials

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[i] Looney, *Beyond Maps: GIS and Decision Making in Local Government* (ESRI Press, 2000).

[ii] Allen, AICP, Goers, *Beyond Maps: The Next Generation of GIS* (http://www.planning.org/planningpractice/2002/sept.htm)

[iii] *Determining, Measuring, and Analyzing the Benefits of GIS* (URISA, 2000)

iv *2001 State Occupational Employment and Wage Estimates, Georgia* (Bureau of Labor Statistics: http://stats.bls.gov/oes/2001/oes_ga.htm#b43-0000)