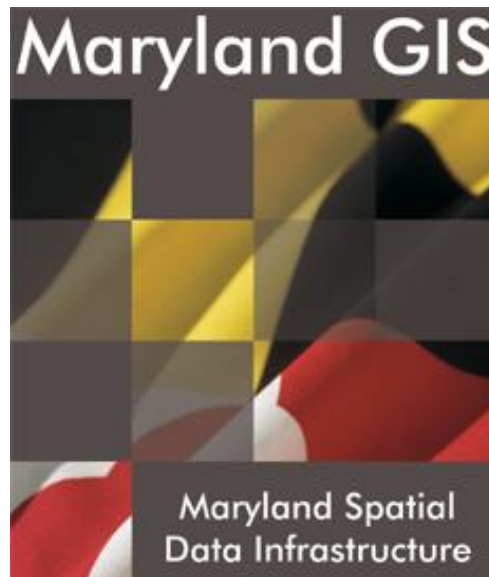


# **Statewide GIS Coordination In Maryland**

**Building an Effective Statewide Spatial Data Infrastructure**

## **Strategic Plan**

March 2007



**Prepared by**

**Strategic Planning Committee for  
Statewide GIS Coordination**

**Project Team Partners:**

**Towson University Center for Geographic Information Sciences  
Maryland State Geographic Information Committee**

# TABLE OF CONTENTS

<b>1 EXECUTIVE SUMMARY .....</b>	<b>3</b>
<i>Status of GIS Coordination in Maryland</i> .....	3
<i>Recommendations</i> .....	3
<i>Outcomes</i> .....	3
<b>2 BACKGROUND, CURRENT STATUS, AND NEED .....</b>	<b>4</b>
2.1 WHAT IS GIS AND WHY IS IT IMPORTANT TO MARYLAND? .....	4
2.2 CURRENT STATUS OF GIS IN MARYLAND.....	5
2.3 NSGIC ARTICULATES THE NEED FOR STATEWIDE GIS COORDINATION .....	7
2.4 BUILDING UPON A FOUNDATION OF COLLABORATION.....	9
2.5 REACHING THE LIMITS OF VOLUNTEERISM .....	9
2.6 BENEFITS OF EFFECTIVE COORDINATION.....	11
2.7 ESTABLISHING A COORDINATED GIS FOR MARYLAND .....	13
<b>3 RECOMMENDATIONS OF STRATEGIC PLANNING COMMITTEE.....</b>	<b>14</b>
3.1 GEOGRAPHIC INFORMATION OFFICER (GIO).....	14
3.2 GIS COORDINATING COUNCIL .....	15
3.3 TECHNICAL ADVISORY BOARD .....	16
3.4 TOWSON UNIVERSITY AS TECHNICAL SUPPORT FOR MSDI .....	16
<b>APPENDIX A: COLLABORATION SUCCESS STORIES IN MARYLAND.....</b>	<b>18</b>
<b>APPENDIX B: ABOUT FUTURE DIRECTIONS FIFTY STATES AND EQUIVALENT ENTITIES INVOLVED AND CONTRIBUTING TO THE NSDI PLAN .....</b>	<b>20</b>

# 1 Executive Summary

## Status of GIS Coordination in Maryland

- Virtually every aspect of government utilizes data that is geospatial in nature.
- Current coordination efforts are driven only by volunteerism.
- Coordination efforts are not as successful as possible because there is no unified approach to GIS in Maryland.
- Maryland scores extremely low on a nationwide survey of statewide GIS coordination conducted annually by the National States Geographic Information Council (NSGIC).
- A strategic plan for statewide GIS coordination has been established through a year-long process of stakeholder- and consensus-building.
- A business plan has been established to guide Maryland toward creating an effective Maryland Spatial Data Infrastructure (MSDI).

## Recommendations

- Establish a state-funded, full-time Geographic Information Officer (GIO) position that reports to the State CIO.
- Establish a GIS Coordinating Council that includes representative membership from stakeholders.
- Establish a technical advisory board that recommends action to the GIS Coordinating Council.
- Designate and fund Towson University as the technical support for MSDI.

## Outcomes

*An effective statewide coordinating office will enable Maryland to*

- Rapidly integrate and communicate government performance for StateStat.
- Effectively plan for the impact that Base Realignment and Closure (BRAC) will have on Maryland's citizens.
- Achieve a significant return on investment for the State.
- Reduce unnecessary redundancies.
- Leverage limited resources to their full potential.
- Improve emergency preparedness and regional homeland security.
- Facilitate Smart Growth efforts.
- Enhance Chesapeake Bay Restoration and Land Preservation efforts.

## 2 Background, Current Status, and Need

*A formal, coherent means of coordinating geospatial resources across disciplines does not exist in Maryland. In 2006 a Strategic Planning Committee (SPC) funded by the United States Geological Survey/Federal Geographic Data Committee/National Spatial Data Infrastructure cooperative agreement program and championed by the State CIO worked to produce strategic and business plans for GIS Coordination by following a template process created by the National States Geographical Information*

### 2.1 What is GIS and Why is it Important to Maryland?

More than 80% of all data has a geographic—or location—component (such as address, zip code, census tract). Geography is a discipline with significant financial, practical, and logistical implications for government and business. Geographic Information Systems (GIS) are used to analyze geographic trends and patterns; manage assets such as utilities, infrastructure, and resources; form a basis for planning, operations, and decision-making; manage map service locations; and plan and deploy local and statewide response to emergencies and other crises. Geographic data and tools comprise a valuable resource that is becoming widely recognized as a critical asset.

Geographic data and GIS technology are vital to responding successfully to many of Maryland's biggest challenges. GIS is well established as an effective decision support tool that enhances the State's ability to meet the following key objectives, among others.

- Successful implementation of **StateStat** to measure government performance and citizen satisfaction.

This intensive, performance-driven, continuous management tool requires the ability to create intuitive maps and graphics that are based on data that is often geographic in nature. Efforts such as measuring the condition of the Chesapeake Bay (BayStat) or the health of Maryland citizens (HealthStat) require effective interagency coordination and cooperation. Unless the underlying GIS data is effectively managed and coordinated, a clear picture cannot be created.

- Respond to rapid growth resulting from the **Base Realignment And Closure (BRAC)** recommendations.

Base Realignment and Closure (BRAC) will result in significant growth in many areas of Maryland over the next six years. Although these projected gains present many economic opportunities, they will require careful geographic analysis and planning. Successfully achieving the benefits of BRAC will require a keen, integrated analysis of workforce readiness, education, business

development, community infrastructure and growth, environmental stewardship, workforce housing, and transportation. This cannot be done successfully without accurate, up-to-date GIS data and technology that is coordinated among state and local governments.

- Improve **Homeland Security** and establish a **Security Council** that unifies relevant agencies and departments.

Maryland's homeland security is inevitably linked to the security of the National Capital Region. Regional prevention, preparedness, and recovery efforts require an unprecedented level of cooperation and coordination across jurisdictional and disciplinary boundaries. GIS technology provides a platform for transcending "language" barriers of police, fire, transportation, and medical communities, and enables creation of a common operating picture that can be shared by all.

## **2.2 Current Status of GIS in Maryland**

The use of GIS is advancing at all levels of Maryland government. Virtually *all* agencies collect data that has a geographic aspect, and nearly every one of Maryland's Executive Departments uses GIS technology in some capacity. However, unlike other common business functions across state government, such as information technology and procurement, GIS activities are not formally coordinated to ensure maximum benefit and reduced redundancy. As a result, many opportunities for cross-agency collaboration, communication, and interoperability are lost.

In many cases, the most detailed, up-to-date geographic data, including new information about roads, properties, buildings, water features, and other aspects of the local landscape, is collected by local government. State agencies can realize tremendous benefits from using this data to achieve their mission at the state level, but the absence of formal standards and GIS coordination stifle the opportunity. Most of Maryland's counties and large municipalities have GIS data that is more detailed than the State's.

A limited amount of coordination has occurred through the Maryland State Geographic Information Committee (MSGIC) and the Towson University Center for GIS (Towson CGIS).

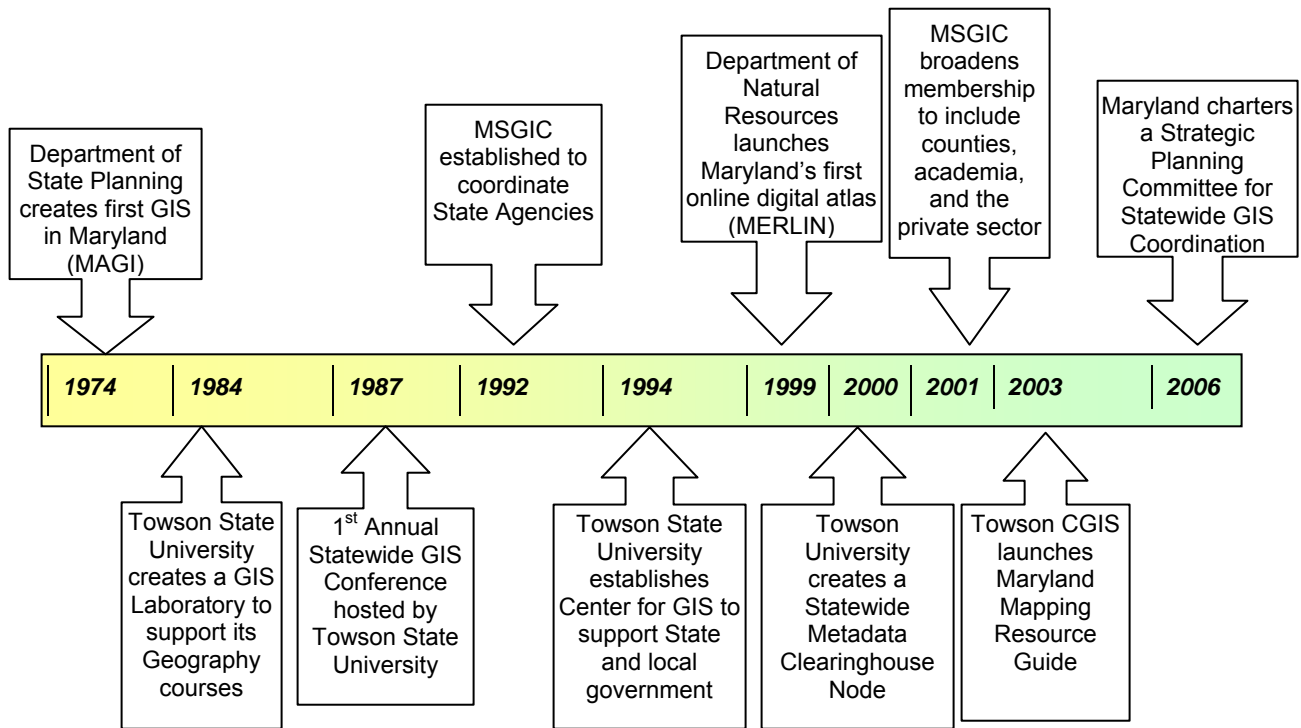
- **MSGIC** was established in 1992 to coordinate GIS activities for agencies in the Executive Branch of state government. MSGIC served as an effective coordinating body for state agencies throughout the 1990s and has since evolved into a committee that represents all GIS user sectors in Maryland. MSGIC comprises GIS professionals from state, county, municipal, and regional government, as well as universities and businesses in Maryland that strive to coordinate GIS activities in Maryland. MSGIC acts to promote coordinated

development and efficient use of resources among all entities involved in the collection and/or use of spatial data and GIS technologies in Maryland.

- Towson CGIS** is part of Towson University's Division of Economic and Community Outreach (DECO), which is charged with forging stronger links between Towson University and the regional community it serves. Towson CGIS is a self-supporting business unit within DECO that has partnered with MSGIC and the State of Maryland to implement GIS objectives. Since 1987, Towson University has hosted Maryland's statewide GIS conference. Since 1994, Towson CGIS has helped many state and local government entities advance their GIS capabilities through database development, application deployment, training, and GIS integration projects. In many ways, Towson CGIS serves as the "hands" of MSGIC by building and maintaining a shared geospatial infrastructure that can be leveraged by the entire Maryland community. Examples include the *Maryland Mapping Resource Guide* and Maryland's National Spatial Data Infrastructure node, which were built and have been maintained by Towson CGIS since 2000. With roughly 40 full-time professional staff, Towson CGIS currently serves as the geospatial hub for Maryland's Spatial Data Infrastructure.

Both organizations played a key role in the development of statewide GIS. The graphic below highlights milestones in Maryland's history.

***Timeline of Key Milestones for Maryland GIS Coordination***



## **2.3 NSGIC Articulates the Need for Statewide GIS Coordination**

In 2005, the National States Geographic Information Council (NSGIC) conducted a national survey on Statewide GIS Coordination. Maryland scored low on several key aspects, including the lack of formal authority that can enter into contracts and effectively coordinate GIS initiatives. In fact, Maryland fully met only one of NSGIC's Nine Coordination Criteria: "*Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned.*" Even this activity, however, is not supported by the state; rather, it has been funded through several small federal grants and maintained through the support of Towson CGIS. Other technological or institutional limitations include non-participation by key agencies, participation that varies with current workload and level of interest, and lack of coordinated high-level support for MSGIC and state GIS initiatives.

In March 2006 a partnership between MSGIC and Towson CGIS was awarded a United States Geological Survey/Federal Geographic Data Committee/National Spatial Data Infrastructure (USGS/FGDC/NSDI) Future Directions Fifty States and Equivalent Entities Involved and Contributing to the NSDI Plan (Fifty States Initiative) grant to develop strategic and business plans for GIS coordination in Maryland and ultimately advance Maryland's role in NSDI. The Fifty States Initiative program provided Maryland with the timely opportunity to develop a plan that meets the needs of all GIS stakeholders and also represents a significant cost-saving for the state.

The partnership formed a Strategic Planning Committee (SPC) comprising representatives from various levels of government, higher education institutions, non-government organizations, and the private sector. Members of this committee met monthly with the overarching goal of producing strategic and business plans for effective GIS coordination in Maryland. From April 2006 through March 2007, SPC followed a template process created by NSGIC and was actively engaged in outreach to the stakeholder community across Maryland.

As a result of this progress, Maryland has moved closer to meeting NSGIC's nine coordination criteria (below).

*In order for Maryland to fully achieve effective statewide GIS coordination, the recommendations set forth in this strategic plan must be implemented and sustained by state leadership.*

**Status of Maryland -  
NSGIC's Nine Coordination Criteria**

	<i>Functional</i>
	<i>Moving Forward</i>
	<i>Impaired</i>

Criteria	Status		Priority	Progress
	2006	2007		
#1 A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans.			Immediate	Drafting job description
#2 A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.			Immediate	Strategic plan defines governance structure
#3 The statewide coordination office has a formal relationship with the state's Chief Information Officer (or similar office).			Immediate Dependent on 1,2	Executive sponsorship via IT Master Plan
#4 A champion (politician or executive decision-maker) is aware and involved in the process of coordination.			Fundamental, Ongoing	Support from State CIO
#5 Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned.			Dependent on 2	Unofficial but functional
#6 The ability exists to work and coordinate with local governments, academia, and the private sector.			Dependent on 1,2	Unofficial but functional
#7 Sustainable funding sources exist to meet projected needs.			Ongoing	None. Some initial awareness
#8 Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.			Dependent on 1	No formal coordinating entity
#9 The Federal government works through the statewide coordinating authority.			Dependent on 1,2	No formal body to work through

## 2.4 Building Upon a Foundation of Collaboration

Despite the lack of formal coordination, Maryland's GIS community has been adept at coming together and meeting the needs of regional collaboration. Several recent projects demonstrate this willingness to collaborate. They also highlight the critical role that formal coordination plays to ensure each project's ongoing success:

- The **Maryland Cooperative Centerline Program** represents a strong partnership among state and county transportation entities and is a significant contribution *The National Map*.

*Long term success requires that standards are established and enforced and that awareness is maintained among the many creators and users of the data at the local, state, and federal level.*

- The **Maryland Imagery Acquisition Partnership** demonstrates the ability to leverage funding from multiple sources to acquire data that benefits all levels of government. The project is a significant contribution *The National Map*.

*Long term success requires that formal structures are in place to collect monies, establish pricing, and ensure equitable distribution of data.*

- Deployment of **EMMA**<sup>®</sup> (Emergency Management Mapping Application) and creation of **MEGIN** (Maryland Emergency Geographic Information Network) demonstrate the importance of GIS coordination to the critical mission of the public safety community.

*Long term success requires that a coordinated approach is taken to obtain, integrate, and secure GIS data from multiple disciplines and jurisdictions across levels of government.*

These projects illustrate the current spirit of collaboration among state, local, and federal government, academia, and the private sector. MSGIC and Towson CGIS have played a significant, valuable role in coordinating these successes.

## 2.5 Reaching the Limits of Volunteerism

Without a designated authority to manage software procurement and data acquisition, scarce resources are being poorly utilized. Without a designated authority to engage in contracts, set policy, maintain standards, and provide oversight, some agencies and departments are implementing enterprise systems that are not considering GIS early enough in the process, if at all. Without a designated authority to coordinate data, resources are scattered and duplicated, and rural areas and municipalities with limited funding lack the means to access other entities' resources. The situation is further compounded by uncoordinated activities among Maryland's regions. Regional

activities—though at times coordinated internally among member counties—are often isolated from other regional activities that could benefit the state as a whole.

A broad foundation for coordination exists in Maryland. However, *a coherent means of coordinating geospatial resources across disciplinary, jurisdictional, and agency boundaries does not exist in Maryland.* Without a designated lead agency, organizations are “stretching their mission” each time they take a volunteer role in managing a statewide data purchase or coordinating a regional activity. Though moderately effective to date, volunteers are experiencing an increasing demand on their time that is difficult to maintain. This issue is underscored in the following excerpt from MSGIC’s 2005 Strategic Plan, which identifies rapid changes in technology and citizen expectations, among others, as issues that classify GIS coordination as an imperative.

“The development of the Maryland Mapping Resource Guide (MMRG) and Maryland Emergency Geographic Information Network (MEGIN) web-based “portals” into the State’s data and processes elevates the expectation that spatial data will be available on the Internet in easily usable applications that parallel the federal National Map and Geospatial One Stop (GOS). These initiatives inherently assume that data and technologies will be utilized not only by agency staff, but citizens as well. Citizens have a higher degree of technological capability and now, more so than ever before, are demanding that the State’s processes become open, accessible, and interactive at *their* convenience. The challenge of putting data and technology “out there” for this new array of users will demand that agencies focus on issues of data quality and system interoperability that were not previously a consideration. The rapid change of information technology challenges state and local government to respond with innovative solutions in spite of limited resources. MSGIC members have experienced these increasing demands, and recognize that a renewed focus on foundational issues is needed. Interoperability, standardization and coordination activities must be stepped up to meet these expectations. Spatial data must be available, and it must be shared for better decisions to be made.”  
(<http://www.msgic.state.md.us/publicat/stratpln/StrategicPlan2005.pdf>)

As an all-volunteer organization, MSGIC often does not have adequate resources to effectively coordinate GIS activities in a manner that efficiently serves all of the state’s GIS needs.

Towson CGIS does have many of the technology resources needed to coordinate Maryland’s GIS activities but is currently limited by the requirement to devote most of its material resources to meet the individual—and sometimes disparate—needs of state and local government clients. As a self-supporting business function of the University, Towson CGIS currently relies on individual contractual relationships with external

agencies. Although individual agency expectations are met, there are no official overarching goals to bind individual efforts into a coherent statewide infrastructure for GIS in Maryland. With the exception of occasional small federal grant-funded initiatives, Towson CGIS is unable to fully support the statewide goals of MSGIC with Towson CGIS material resources, although efforts are made whenever possible.

## **2.6 Benefits of Effective Coordination**

The impact of improved coordination will be broad-reaching and include tangible benefits, such as saving money and saving lives, as well as intangible benefits, such as improving citizen engagement, protecting natural resources, and improving agency workflow. The benefits are best articulated by revisiting the recent success stories presented above.

- The **Maryland Cooperative Centerline Program** streamlines the data sharing process between the State Highway Administration and local governments. Roadway data is needed for emergency response and management, routing buses and other vehicles, planning for land use and transportation needs, and numerous other essential business and management processes. The Cooperative Centerline program addresses a shared foundation to make these processes more efficient and to solve issues. Using a common centerline offers the following benefits:
  - Emergency management officials can trust that they have the latest information available about new subdivisions and roadway characteristics;
  - More timely and accurate federal reporting about new roads ensures that localities receive appropriate federal funding;
  - Seamless boundaries (edge-matching) creates continuous roadway data across county boundaries, leading to a consistent appearance across jurisdictions;
  - Statewide consistency and data intelligence allows for improved asset tracking on and along the roadway network;
  - Automated GIS data synchronization enables streamlined workflow and the ability to do more with less.
  
- The **Maryland Orthoimagery Acquisition Partnership** consolidates multiple expenditures for aerial photography into a single coordinated purchase. High resolution digital imagery has become a mission-critical product for federal, state, and local government agencies throughout Maryland. This cooperative purchasing approach, which will occur during the spring of 2007, will substantially reduce the overall cost of the imagery. For example, Frederick County's imagery acquisition in 2005 cost \$240,566 and provided output data of 1-foot resolution. At 662 square miles in size, this represents a cost of approximately \$363 per square mile. Extrapolating this cost to Maryland's 9,773 square miles, and assuming that each county purchased its own data, expenditures for statewide

coverage could exceed \$3.5 million. Through the Imagery Acquisition Partnership, however, the cost to obtain new imagery for all 24 of Maryland's jurisdictions at a *more detailed* resolution of 6 inches is only \$2.5 million. In addition to cost savings, this coordinated approach realizes the following benefits:

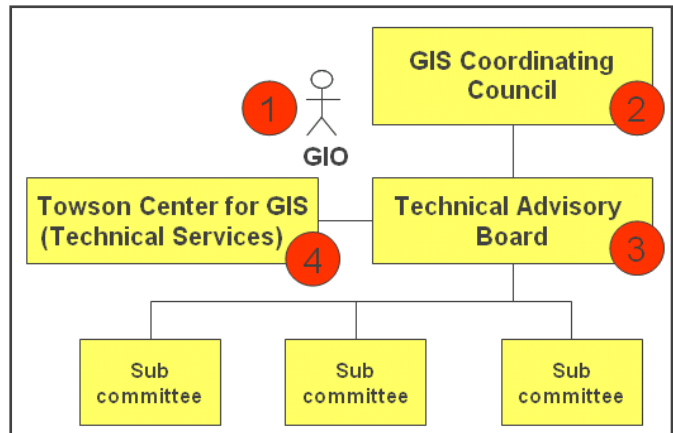
- Up-to-date imagery enhances 911 service by providing a current base map for locating calls;
  - Specifications of the data are consistent statewide and meet each partner's needs;
  - Seamless coverage of imagery removes jurisdictional boundary mismatch and missing data;
  - Quality inspection standards do not vary across the state, ensuring that data is reliable and accurate anywhere in the state;
  - Coordinating entity manages procurement process;
  - Cost savings provides opportunities for partners to upgrade data products to higher resolution or increased accuracy; e.g., a county upgrades to 6" or 3" pixels;
  - An update frequency of 2-3 years permits partners to plan and budget for value-added features, such as road centerline updates, parcels, etc.
- Deployment of **EMMA**<sup>®</sup> (Emergency Management Mapping Application) and creation of **MEGIN** (Maryland Emergency Geographic Information Network) enable the public safety community to more effectively access and integrate current and real-time data into a common operating picture. EMMA's ability to rapidly combine disparate information from multiple agencies and disciplines across all levels of government provides the following benefits:
    - Real-time data access enables greater situational awareness and provides timely information for making life-saving decisions;
    - Data presented in the form of a dynamic map reduces the need for responders to continually convey information across busy voice communications channels as new responders arrive on scene;
    - Data security protocols foster greater sharing among data owners who are often hesitant to share information;
    - Data sharing standards allow data to be shared across all levels of government and improve access among local, state, federal and other emergency management officials;
    - Presentation of data on a map enables disparate data to be easily integrated and interpreted based on *location* rather than a more complicated database linking;

These and other ongoing collaborations serve as case studies for cost savings and the improved ability to save lives during emergencies as well as other intangible benefits.

## 2.7 Establishing a Coordinated GIS for Maryland

After a year-long consensus building and planning (April 2006 through March 2007) initiative, the Strategic Planning Committee recommends four key action items that will establish a coordination structure consistent with the Nine Criteria for Statewide Coordination developed by NSGIC (discussed in detail in the next section):

1. **Coordinate**—Establish a state-funded, full-time Geographic Information Officer (GIO) position that reports to the State CIO.
2. **Set Policy**—Establish a GIS Coordinating Council that includes representative membership from stakeholders.
3. **Recommend**—Establish a technical advisory board that recommends action to the GIS Coordinating council.
4. **Implement**—Designate and fund Towson University as the technical support for Maryland Spatial Data Infrastructure.



An effective statewide spatial data infrastructure that draws resources from and generates resources to diverse stakeholder groups will serve and protect citizens, leverage resources, minimize redundancies, and achieve a significant cost saving for the state and taxpayers. The coordinating mechanism's authority is intended to augment and complement rather than interfere with individual agency missions and business processes.

*An authorized and funded coordination office will ensure that GIS technology benefits the entire state and does so in a cost-saving manner through the following activities and intended results.*

### Activities

- Establish a consistent, shared infrastructure for accessing geospatial data.
- Develop guidelines, policies, and standards for data and interoperability, operations, and management that ensure availability and integration of spatial data from multiple sources.
- Provide unified procurement and contract management of GIS software and services.
- Encourage and coordinate statewide GIS initiatives.
- Engage in agreements and partnerships that benefit Maryland GIS.

- Provide a forum for technology transfer, best practices, and program guidance.
- Provide accessibility to GIS capabilities for stakeholders who lack adequate resources.
- Provide oversight for coordinated GIS activities.
- Foster the growth and development of new GIS activities across all levels of government.

### Intended Results

- Cost savings through economies of scale for software licensing and data acquisition
- Ability to integrate data from disparate agencies to create a unified view of government performance.
- Improved foundation for decision support technology.
- Elimination of redundancy, such as duplication of datasets and their associated effort and cost.
- Integration of GIS technology as core component of the state's business process.
- Greater accessibility of geospatial data across all levels of government and industry.
- Improved ability to access federal funding for collaborative projects.
- Faster, more informed decision making during emergency response.
- Enhanced preparedness for homeland security.
- A meaningful contribution to the National Spatial Data Infrastructure (NSDI) by providing locally rich geospatial information to decision-makers at the regional and national level.

## **3 Recommendations of Strategic Planning Committee**

### **3.1 Geographic Information Officer (GIO)**

#### ***Issue***

Maryland does not have a full-time, paid GIS coordinator position with designated authority to act in the state's best interest relative to the use of GIS resources.

#### ***Recommendations***

- Establish a state-funded, full-time Geographic Information Officer (GIO) position that reports to the State CIO.
- Provide the GIO with administrative and budgetary infrastructure to negotiate statewide GIS purchases of data, software, and related geospatial technology.
- Create a non-lapsing account that would enable the GIO to leverage funds across multiple fiscal years for large, collaborative purchases.
- Designate the GIO as Maryland's representative to NSGIC.

Considerations for housing the GIO include proximity to Annapolis and/or Towson University, and the need for the incumbent to be available to all areas of the state.

### ***Benefits***

- Signatory and oversight of grants and joint funding opportunities.
- Central point of contact.
- Authority to make decisions on behalf of the state.
- Global perspective of the state's needs.
- National representation of GIS (can communicate "all things GIS" in Maryland).

## **3.2 GIS Coordinating Council**

### ***Issue***

MSGIC has served as a coordinating council since 1992. MSGIC provides a forum for discussing GIS activities within the state and maintains coordination while reducing duplication of effort and suggesting solutions to problem issues. However:

- MSGIC membership does not include policy makers, but rather represents only the technical GIS community.
- MSGIC is not a sanctioned organization with appointed members that are empowered to provide insight and make decisions.
- In recent years, as technology has progressed and more GIS personnel are hired throughout the state, it has become more difficult to maintain a consistent statewide representation due to political, cultural, and topographical differences.
- There are several regional GIS users groups or councils that are actively providing guidance for their regions in a non-coordinated manner.

### ***Recommendations***

- Establish a GIS Coordinating Council that includes representative membership from stakeholders.
- Designate the GIO as staff support for the Council.
- Charge the Council to conduct a state level COMAR (Code of Maryland) GIS spending audit.

### ***Benefits***

The recommended council structure is modeled after Maryland's State Interoperability Executive Committee (SIEC) and networkMaryland governance and offers broad representation of wide-reaching issues as well as involvement of cross-cutting organizations. Benefits include:

- Representation from all sectors of GIS (State, Local, Regional Council, Federal, Education, and Private Sector).
- Representation from multiple disciplines.
- Representation from policy and user groups (MACo, MML, etc).
- Representation from all regions of Maryland.
- Debated, agreed upon, published recommendation or position statement.
- Vast contact network.

### **3.3 Technical Advisory Board**

#### ***Issue***

Due to its nature as an all-volunteer organization, MSGIC cannot provide the cohesiveness and the energy required for responding to the significant array of tasks and issues associated with serving all of the state's GIS needs. However, MSGIC is a valuable, issues-driven organization comprising representatives of state and local government and other Maryland GIS stakeholders such as academia, regional planning groups, and the private sector. Because MSGIC has achieved much progress toward integrating GIS technology throughout state government and among all users of geo-spatial data and technologies in Maryland, MSGIC can provide valuable input to the GIO and the GIS Coordinating Council.

#### ***Recommendations***

- Establish MSGIC as the technical advisory board that recommends action to the GIS Coordinating Council.
- Create an NSDI subcommittee of MSGIC that focuses on the health and maintenance of Maryland's NSDI infrastructure.
- Increase participation in MSGIC to include a broader range of stakeholders.

#### ***Benefits***

The recommended committee structure is modeled after SIEC and networkMaryland and includes cross-cutting membership and participation, including:

- Technical input from all sectors of GIS (state, local, regional council, federal, education, and private sector).
- Technical input from multiple disciplines.
- Articulated needs from all regions of Maryland.
- Vast technical and operational knowledge base.

### **3.4 Towson University as Technical Support for MSDI**

#### ***Issue***

Towson CGIS and MSGIC have been developing, maintaining, and growing NSDI infrastructure since 2000 through federal grants and in-kind matches. However:

- No formal role has been assigned to Towson CGIS to maintain Maryland's Spatial Data Infrastructure (MSDI).
- No sustainable funding has been generated for maintenance of Maryland's Spatial Data Infrastructure.
- No official plan to manage and grow the infrastructure is in place.
- No mandate of responsibility for individual framework layers exists.

### ***Recommendation***

- Designate and fund Towson University as the technical support for Maryland's Spatial Data Infrastructure.
- Establish and implement a Master Plan for MSDI that describes the elements of an effective statewide spatial data infrastructure.
- Foster partnerships with other Maryland universities to leverage individual strengths.

### ***Benefits***

Housing technical support for MSDI at Towson CGIS leverages existing, proven resources that are already at work for various state agencies. Towson CGIS would respond to the direction of the GIS Coordinating Council and work closely with the GIO and Technical Advisory Board to form regional partnerships with other universities for the backup and redundancy necessary for emergency management.

Towson CGIS will be charged with the following responsibilities:

- Catalog and/or maintain Maryland's framework layers in the statewide clearinghouse.
- Leverage its expertise to provide training, guidance and technology transfer to Maryland's stakeholder community.
- Apply for and manage grant and other funding related to MSDI.
- Establish partnerships with Salisbury University's Eastern Shore Regional GIS Cooperative and other universities with similar GIS functions.

## Appendix A: Collaboration Success Stories in Maryland

The **Maryland Cooperative Centerline Program** is a data sharing process between the State Highway Administration and local governments. Roadway data is needed for emergency response and management, routing buses and other vehicles, planning for land use and transportation needs, and numerous other essential business and management processes. The Cooperative Centerline program addresses a shared foundation to make these processes more efficient and to solve issues. Using a common centerline offers the following benefits:

- Allows better exchange of information about the roadway system;
- Creates continuity of roadway data and display at county boundaries, leading to the same “look and feel” across jurisdictions;
- Allows tracking of assets on and along the roadway network;
- Gives each entity that collects information about Maryland’s roads a common model when referring to the system;
- Provides opportunities for more efficient collection of information about that roadway asset.

The **Maryland Orthoimagery Acquisition Partnership** consolidates multiple expenditures for aerial photography into a single coordinated purchase. High resolution digital imagery has become a mission critical product for federal, state, and local government agencies throughout Maryland. This cooperative purchasing approach, which will occur during the spring of 2007, will substantially reduce the overall cost of the imagery. For example, Frederick County’s imagery acquisition in 2005 cost \$240,566 and provided output data of 1-foot resolution. At 662 square miles in size, this represents a cost of approximately \$363 per square mile. Extrapolating this cost to Maryland’s 9,773 square miles, and assuming that each county purchased its own data, expenditures for statewide coverage could exceed \$3.5 million. Through the Imagery Acquisition Partnership, however, the cost to obtain new imagery for all 24 of Maryland’s jurisdictions at a *more detailed* resolution of 6 inches is only \$2.5 million. In addition to cost savings, this coordinated approach realizes the following benefits:

- Up-to-date imagery enhances 911 service by providing a current base map for locating calls;
- Specifications of the data are consistent statewide and meet each partner’s needs;
- Seamless coverage of imagery removes jurisdictional boundary mismatch and missing data;
- Quality inspection standards do not vary across the state, ensuring that data is reliable and accurate anywhere in the state;
- Coordinating entity manages procurement process;
- Cost savings provides opportunities for partners to upgrade data products to higher resolution or increased accuracy; e.g., a county upgrades to 6” or 3” pixels;

- An update frequency of 2-3 years permits partners to plan and budget for value-added features, such as road centerline updates, parcels, etc.

The ***Maryland Emergency Geographic Information Network (MEGIN)*** is Maryland's technology infrastructure for multi-level, collaborative decision-making and a one-stop Web utility that provides access to geospatial information and Web mapping tools and services from the public and private sectors statewide. MEGIN enables the public safety community to more effectively access and integrate current and real-time data into a common operating picture. Integrating MEGIN with the Towson-CGIS built Emergency Management Mapping Application (EMMA) enables the emergency management and responder communities to rapidly combine disparate information from multiple agencies and disciplines across all levels of government, resulting in the following benefits.

- Real-time data access enables greater situational awareness and provides timely information for making life-saving decisions;
- Data presented in the form of a dynamic map reduces the need for responders to continually convey information across busy voice communications channels as new responders arrive on scene;
- Data security protocols foster greater sharing among data owners who are often hesitant to share information;
- Data sharing standards allow data to be shared across all levels of government and improve access among local, state, federal and other emergency management officials;
- Presentation of data on a map enables disparate data to be easily integrated and interpreted based on *location* rather than a more complicated database linking;

## **Appendix B: About Future Directions Fifty States and Equivalent Entities *Involved and Contributing to the NSDI Plan***

“The desired outcome of this effort is that ‘**By 2006, fifty state Coordinating Councils are in place and routinely contributing to the governance of the NSDI.**’ This activity is the fourth objective of ‘Forging Partnerships with Purpose: A governance structure that includes representatives of all stakeholder groups guides the development of the NSDI.’” (<http://pubs.usgs.gov/of/2005/1379/of2005-1379.pdf>)

The Fifty States Initiative “...recognizes that it will not be possible to build the NSDI without taking advantage of the day-to-day efforts of state and local governments. This will require effective statewide coordination mechanisms that routinely contribute to the development of the NSDI. The Fifty States Initiative, endorsed by the Steering Committee of the Federal Geographic Data Committee, will advance the implementation of effective statewide coordination councils and the development of geospatial strategic and business plans.” ([http://www.fgdc.gov/grants/2006CAP/2006CAP\\_Announcement](http://www.fgdc.gov/grants/2006CAP/2006CAP_Announcement))

### *About The USGS National Geospatial Programs Office*

“The mission of the USGS National Geospatial Programs Office (NGPO) is twofold. One mission component focuses on leadership and the prominent role of partners and stakeholders; the other focuses on the operational aspects and technical services needed to implement the NSDI and provide useful geospatial information to decision makers.” (<http://pubs.usgs.gov/of/2005/1379/>)