

FINAL PROJECT REPORT

March 30, 2007

NSDI Cooperative Agreements Program Strategic and Business Plan Development in Support of the NSDI Future Directions Fifty States Initiative



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NSDI Cooperative Agreements Program

Fifty States Initiative: Strategic and Business Plan Development in Support of the NSDI Future Directions Fifty States Initiative

Final Project Report

Cooperative Agreement Number: **06HQAG0100**

Project Title: **Strategic and Business Plan Development for Maryland in Support of NSDI Future Directions 50 States Initiative**

Project Start and End Dates: **March 16, 2006 – March 15, 2007**

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Project Narrative

Summary of Project Activities

Introduction

A 2006 National Spatial Data Infrastructure (NSDI) Cooperative Agreement Program (CAP) grant enabled a partnership of the Towson University Center for Geographic Information Sciences (TU-CGIS) and the Maryland State Geographic Information Committee (MSGIC) to engage GIS stakeholders in Maryland in the project to develop a Strategic Plan and a Business Plan for GIS Coordination in Maryland. This final report describes project activities, their level of success, and the plan for follow-through.

Objectives

The overarching goal of Maryland's participation in the *Fifty States Initiative* project is to contribute to the NSDI vision of assuring that "spatial data from multiple sources are available and easily integrated to enhance the understanding of our physical and

cultural world.” The specific goal of the year-long project was to write strategic and business plans that will create the Maryland Spatial Data Infrastructure (MSDI) and associated technical and advisory boards, and obtain financial resources for MSDI’s sustainability. MSDI is intended to help achieve the NSDI vision by making best use of Maryland’s GIS resources.

Objectives toward reaching the project goal of writing effective strategic and business plans included the following pre-project planning.

- Compiled a list of all GIS stakeholders in Maryland.
- Invited key Maryland GIS stakeholders to become members of the Strategic Planning Committee (SPC).
- Invited key executives to be ex officio members of SPC.
- Developed a communications plan to keep all stakeholders informed.
- Created a shared Web site portal for posting announcements, documents for collaborative editing, contact and stakeholder lists, and resources.
- Disseminated important project information prior to the first SPC meeting.

Objectives reached during the first six months include the following.

- Created branding and developed a marketing and networking strategy for MSDI.
- Followed through on plans for networking to create awareness and buy-in.
- Reviewed Maryland’s existing GIS status against NSGIC’s nine criteria for coordination.
- Drafted a strategic plan.

The following critical objectives for the strategic plan became clear early in the discussion process.

- Create a statewide office to coordinate GIS resources.
- Strengthen the effectiveness of MSGIC, an all-volunteer coordinating committee.
- Improve participation in and contribution of statewide geospatial information activities among all stakeholders.
- Gain recognition from state level governmental and legislative entities.
- Improve geospatial data discovery, access, and use.
- Increase participation in national geospatial data programs.
- Work toward sustainable funding mechanisms.

The Strategic Plan recommends four key elements that will help Maryland meet all nine of the National States Geographic Information council’s criteria for statewide GIS coordination. The Business Plan intends to identify options for building, funding, and sustaining MSDI. *Please note:* The Business Plan is necessarily incomplete, as explained in the “Next Steps” section of this report.

Key Accomplishments as of March 2007

- I. Prior to forming a Strategic Planning Committee, project staff designed a plan for committee composition and size, established guiding principles, and developed a workable timetable. Pre-planning enabled project staff to go into the first SPC meeting prepared with a structure for the planning process, which allowed committee members to focus more quickly on critical issues. During the pre-planning process, staff accomplished the following specific tasks, which were covered in detail in the Interim Report:
 - Set up a communications portal for SPC members through MS SharePoint.
 - Drafted a charter for the Strategic Planning Committee.
 - Drafted a Communications Plan.
 - Created project branding including a Maryland Spatial Data Infrastructure (MSDI) logo.
 - Created a 1-page handout of information about GIS Coordination in Maryland.
 - Identified members of SPC.
 - Issued formal invitations to the heads of agencies, organizations, departments, and divisions to request permission for the selected individuals to serve on the committee.

- II. Beginning on June 22, 2006, SPC met on a monthly basis (eight meetings total). The meeting format remained uniform throughout the duration of the project. Following a brief welcome, each member gave a status report on current statewide, countywide, or local GIS projects and on outreach and communication activities. Status reports often generated discussion about specific aspects of statewide GIS coordination. Work then proceeded on drafting the strategic and business plans as well as planning for outreach activities.

- III. Outreach Activities
 - A. Meetings and discussions with the following individuals who have executive leadership roles in Maryland generated awareness of and support for GIS coordination in Maryland with a centralized office and/or staff.
 - Matt Gallagher, Deputy Chief of Staff (Governor's Office)
 - Jan Gardner, President, Maryland Association of Counties
 - Ellis Kitchen, State CIO (Department of Budget and Management)
 - Chris Geldart, Assistant Director of Homeland Security (Governor's Office of Homeland Security)
 - Neil Pederson, Administrator, MD State Highway Administration
 - Raja Veeramacheni, Director, Planning & Preliminary Engineering, MD State Highway Administration
 - John Droneburg, Director, Maryland Emergency Management Agency
 - C. Ronald Franks, Secretary, MD Department of Natural Resources
 - Frank Dawson, Assistant Secretary, MD Department of Natural Resources

- Dr. Mary Livers, Deputy Director Operations, Department of Public Safety and Corrections
 - Gordon Deans, Executive Director, Emergency Numbers System Board
 - James Robey, Howard County Executive
 - Wilson Parran, Calvert County Board of Commissioners
- B. Multiple presentations were made to GIS user groups across Maryland to generate awareness and support for GIS coordination in Maryland, including the following.
- ESRI Regional Meetings
 - Eastern Maryland User Group (EMUG) – June 2006
 - Western Maryland User Group (WMUG) – July 2006 through February 2007
 - Central Maryland User Group (CMUG) – August 2006 through December 2006
 - MSGIC Quarterly – October 2006 through January 2007
 - MSGIC Executive Committee– monthly
- C. Presentations were made and handouts were distributed at the following relevant conferences and meetings.
- Maryland Association of Counties (MACo) Summer Conference, August 2006
 - DelMarVa Emergency Task Force (DETF), Spring 2006
 - Maryland’s State Interoperability Executive Committee (ongoing communication)
 - 2006 NSGIC Conference in Little Rock, Arkansas, October 1-5, 2006
 - Traffic Records Coordinating Council (TRCC) – December 06
 - Maryland Information Technology Advisory Council (ITAC), December 11, 2006
 - Maryland Association of Counties (MACo) Winter Conference, January 2007
- D. Presentations were also made and handouts distributed at several sessions during TUgis, the annual GIS conference held at Towson University. Note that the conference date is beyond the project period.
- TUgis Conference at Towson University, March 19-20, 2007
 - General Session
 - Senior Executive Seminar
 - Draft Strategic plan was distributed
 - Questionnaire was distributed

IV. Recap of Coordinated Statewide Projects

- A. Coordination was achieved with the Maryland State Highway Administration (SHA) effort to create a Federated Street Centerline layer that enables coordination between SHA and local county GIS offices.
 - B. Coordination was achieved with a MSGIC effort to establish a Cooperative Agreement to purchase orthoimagery for the entire state of Maryland. This effort involves contribution and partnership between federal, state, local, private, academic, and non-profit organizations.
- V. Redesign of Maryland Mapping Resource Guide
- Project staff redesigned Maryland's GIS Web Portal to include current information about GIS coordination activities and to showcase state and county GIS projects. The Web site provides public visibility for Maryland's *Fifty States Initiative* efforts and serves as a means for stakeholder input. <http://www.MarylandGIS.net>
- VI. Executive Sponsorship of Statewide GIS Coordination
- Maryland's Chief Information Officer previously identified GIS Coordination and establishing data standards (including GIS) as formal IT Priorities for Maryland in The "State of Maryland Information Technology Master Plan 2008." To help achieve these goals, he stepped forward as the executive sponsor for SPC's work toward GIS Coordination in Maryland.
- VII. The project team completed the Strategic Plan, included in this report as *Appendix A*.
- VIII. The project team began drafting the Business Plan, included in this report as *Appendix B*.
- IX. A PowerPoint presentation that illustrates progress toward GIS coordination in Maryland is included in this report as *Appendix C*.

How Statewide Coordination has Changed as a Result of this Project

Previously, no organized effort to officially coordinate GIS services by establishing a funded GIO, advisory and technical boards, and a technical support team was undertaken. Using NSGIC's Nine Criteria for Coordination as a guide, SPC identified Maryland's deficiencies, prioritized the criteria for Maryland, and tracked progress. The tabular guide is included on Page 7 of this report to show the progress made over the project year.

Status of Maryland Relative to NSGIC's Nine Coordination Criteria

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.	Red	Yellow	Immediate	Drafting job description
#2 A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.	Red	Yellow	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).	Red	Yellow	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.	Red	Green	Fundamental, Ongoing	Support from State CIO
#5 Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned.	Green	Green	Dependent on 2	Unofficial but functional
#6 The ability exists to work and coordinate with local governments, academia, and the private sector.	Yellow	Green	Dependent on 1,2	Unofficial but functional
#7 Sustainable funding sources exist to meet projected needs.	Red	Red	Ongoing	None. Some initial awareness
#8 Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.	Red	Red	Dependent on 1	No formal coordinating entity
#9 The Federal government works through the statewide coordinating authority.	Yellow	Yellow	Dependent on 1,2	No formal body to work through

Inclusiveness of this Project

Every effort was made to include the spectrum of key GIS users across Maryland, as evidenced by the degree of outreach described in this report.

Successes

- I. All agencies and organizations that were invited to be members of SPC accepted, for a participation rate of 100%.
- II. Pre-planning proved highly successful relative to streamlining the discussion and strategic planning process.
- III. As a result of participation in the project, as well as outreach and networking by project members, key individuals in Maryland agencies and departments gained a broader understanding of the functions and importance of GIS in all levels of government. The need for and the potential benefits of statewide coordination that is at least partially funded by the state and supported more actively by state leadership was clearly described during SPC meetings. The prevailing attitude about achieving statewide coordination is more favorable now that the issues are better understood, and MSGIC's priorities are being recognized by a broader audience.
- IV. Three important data projects in Maryland played a significant role in illustrating the need for statewide coordination. The Maryland Cooperative Centerline Program is a data sharing process between the State Highway Administration and local governments. The program demonstrates the value of intergovernmental coordination to **save time**. The Maryland Statewide Orthoimagery Partnership is an effort to acquire high resolution digital imagery for the entire state that will meet the needs of federal, state, and local government agencies and others within the state, and promote data management consistency. The project demonstrates the value of coordination to **save money**, in part by reducing duplication of effort between agencies and thereby reducing the number of disparate data sets that have different standards. EMMA[®] (and related MEGIN effort) is a decision support tool for emergency management that provides situational awareness and a common operating picture. EMMA[®] demonstrates the value of coordination to **save lives**. MSGIC, Maryland agencies, TU-CGIS, and the NSDI/USGS *The National Map* all play an active role in these cooperative projects that are recognized collectively as a centerpiece around which to build a case for statewide GIS coordination.
- V. Towson University is building a collaborative relationship with Salisbury University relative to data stewardship and distribution for *The National Map* on Maryland's Eastern Shore, and with Frostburg University relative to GIS activities in Western Maryland.

Non-Successful Efforts

While SPC acknowledges that there is still much to be accomplished, the project team encountered no non-successes with specific efforts.

Next Steps

SPC has made significant progress toward achieving statewide GIS coordination by creating widespread awareness of the need for coordination and by developing a workable strategic plan. To maintain the momentum toward a successful conclusion, members of SPC will continue to meet formally and informally to complete the business plan and to continue outreach activities.

A questionnaire about statewide GIS coordination was distributed at the MSGIC booth at TUgis (March 19 and 20, 2007, held on the Towson University campus). The goals were to summarize the work SPC accomplished in the past year and determine if responders were familiar with and supportive of the effort to achieve statewide GIS coordination. MSGIC received 155 completed questionnaires; 142 responders were already familiar with the effort to achieve statewide GIS coordination. Although all of the results are not tabulated as yet, a preliminary review of the completed questionnaires indicates that most respondents agree with the need for coordination and are in favor of SPC's recommendations.

Further efforts will focus on the following:

- Continued outreach to new leadership in the state, including the Governor's office and new cabinet members, to promote acceptance and support of the strategic plan.
- Continue to work toward centralization of GIS coordination with attendant authority.
- Further alignment of statewide GIS coordination with strategic state priorities such as Base Realignment and Closure (BRAC), StateStat (statistics-based government management program being introduced into Maryland government), and Homeland Security.
- Expansion and further definition of partnerships with entities in Maryland's university system to leverage regional and technical expertise.
- Continued investigation into funding and business models to ensure sustainability of a statewide coordination office. The results will be incorporated into the final draft of the Business Plan, which is necessarily incomplete as of the date of this report. The Maryland State CIO suggested that SPC follow the networkMaryland model for sustainable funding. NetworkMaryland provides a high-speed network for public sector use based on a rate schedule. After thorough discussion of the pros and cons of using this model, SPC determined that a different initial funding source would be more appropriate. In the meantime, Maryland voters elected a new Governor. SPC

quickly realized the advisability of devoting additional time and effort in outreach to the new administration, both to discover the administration's thoughts about GIS in general and to familiarize the administration with SPC's GIS coordination efforts. The final Business Plan will be drafted to respond to the administration's goal to implement a statistical accountability structure that relies on accurate databases and geospatial mapping.

- Convergence of the current MSGIC Web site with Maryland Mapping Resource Guide (MMRG) to unify Maryland's GIS coordination Web presence.

Project Partners' Response to the Cooperative Agreements Program

Since 2000, TU-CGIS and MSGIC have produced useful GIS and metadata products through a series of USGS/NSDI/FGDC CAP grants. Without the strength of USGS assistance, TU-CGIS and MSGIC would have difficulty continuing their commitment to work toward representing and meeting the needs of Maryland's GIS community, and by extension, the nation's.

The GIS Coordination project is well regarded by key agency leaders in Maryland. With their support, the anticipated implementation will advance Maryland's contribution to NSDI and validate USGS funding for the development stage.

Maryland's USGS State Liaison, Roger Barlow, has devoted significant energy and attention to the TU-CGIS/MSGIC projects, and has attended most of the SPC monthly meetings. His input, advice, encouragement, and attention to the Category 3 *Fifty States Initiative* grant was invaluable.

Besides hosting conference calls that kept the states informed about each other's progress, Milo Robinson, Cooperating States Coordinator, assisted Maryland by attending the December 2006 SPC meeting and offering input.

TU-CGIS, MSGIC, and participants in the *Fifty States Initiative* project are grateful to USGS, NSDI, and FGDC for the opportunity to work on behalf of our state and the nation to promote best use of Maryland's GIS resources and assets.

APPENDIX A

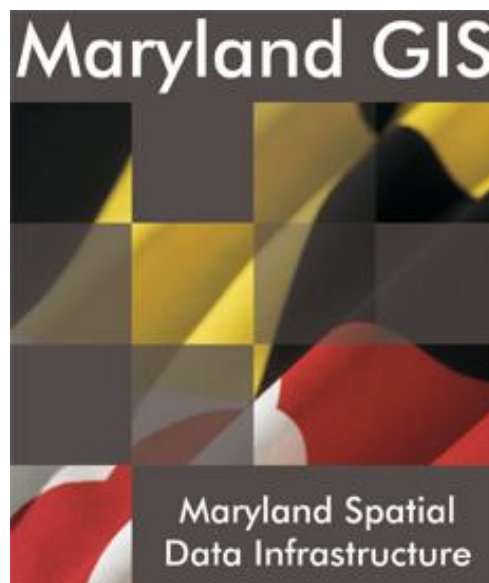
Statewide GIS Coordination

In Maryland

Building an Effective Statewide Spatial Data Infrastructure

Strategic Plan

Alpha Draft
February 2007



Prepared by

Strategic Planning Committee for
Statewide GIS Coordination

Project Team Partners:

Towson University Center for Geographic Information Sciences
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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.
- Increase 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).

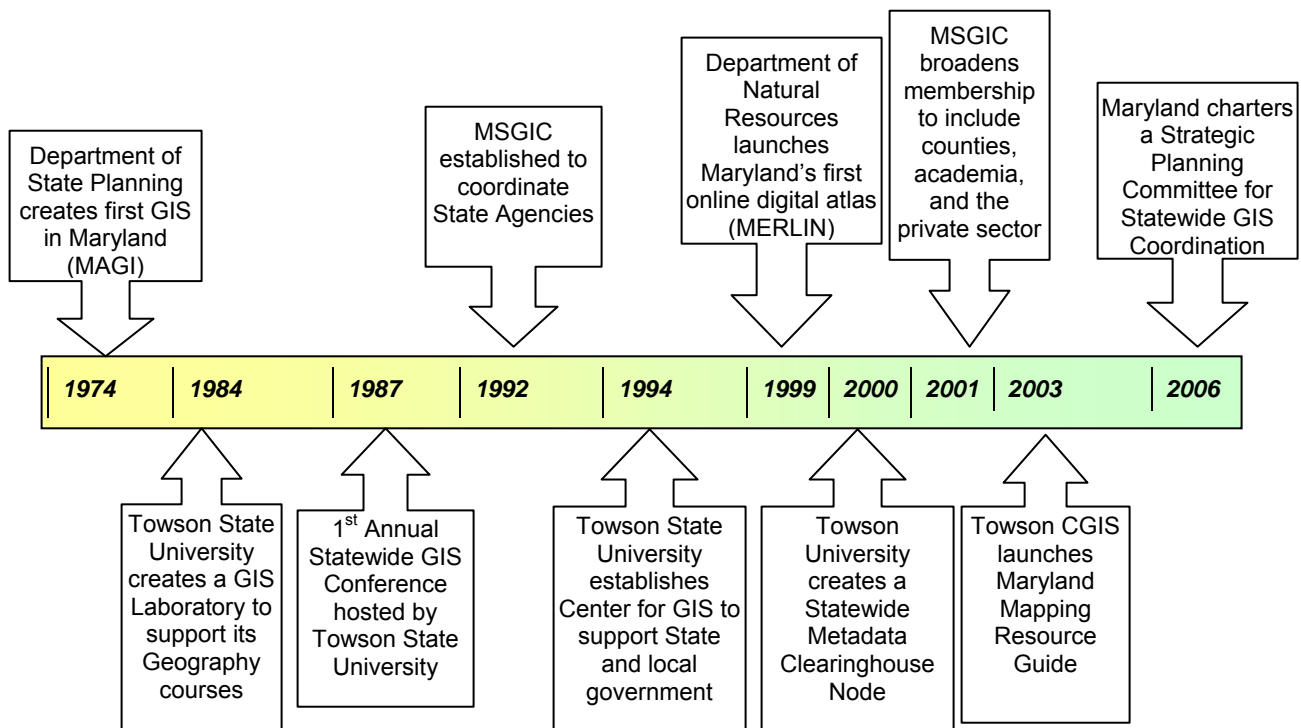
- **MSGIC** was established in 1992 to coordinate GIS activities for agencies in the Executive Branch of state government. MSGIC served as an effective coordinating body for state agencies throughout the 1990s and has since evolved into a committee that represents all GIS user sectors in Maryland. MSGIC 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**[®] (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:

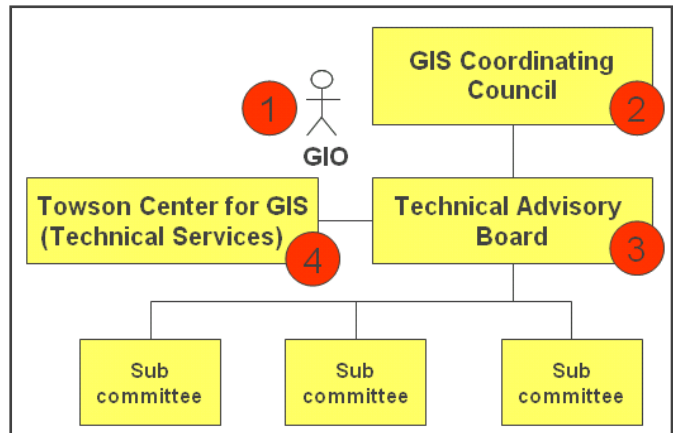
- Up-to-date imagery enhances 911 service by providing a current base map for locating calls;
 - Specifications of the data are consistent statewide and meet each partner's needs;
 - Seamless coverage of imagery removes jurisdictional boundary mismatch and missing data;
 - Quality inspection standards 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**[®] (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)

About The USGS National Geospatial Programs Office

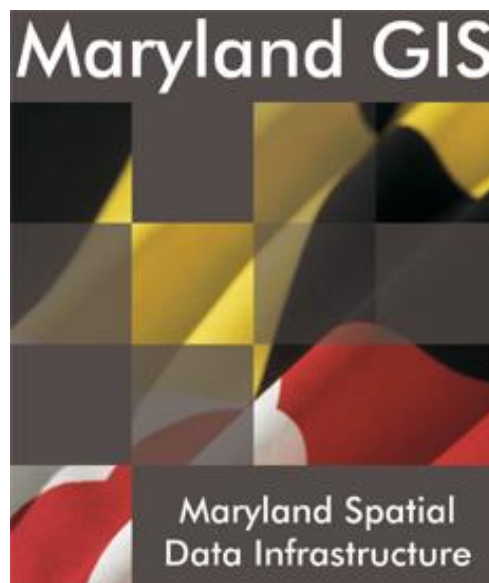
“The mission of the USGS National Geospatial Programs Office (NGPO) is twofold. One mission component focuses on leadership and the prominent role of partners and stakeholders; the other focuses on the operational aspects and technical services needed to implement the NSDI and provide useful geospatial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

APPENDIX B: Statewide GIS Coordination In Maryland

Building an Effective Statewide Spatial Data Infrastructure

Business Plan

Draft
February 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**

Maryland Spatial Data Infrastructure Business Plan

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1.0 Achieve the Goals of the Strategic Plan

Virtually *all* Maryland government 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, reduced redundancy, or optimal cost savings. As a result, opportunities for cross-agency collaboration, communication, and interoperability are lost.

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.*" However, this activity is not funded by the state. The State Clearinghouse was established through several small federal grants and is now being maintained with material support from the Towson University Center for Geographic Information Sciences (Towson CGIS).

In March 2006 a partnership between the Maryland State Geographic Information Committee (MSGIC) and Towson CGIS was awarded a United States Geological Survey/Federal Geographic Data Committee/National Spatial Data Infrastructure (USGS/FGDC/NSDI) grant. The Future Directions Fifty States and Equivalent Entities Involved and Contributing to the NSDI Plan (Fifty States Initiative) grant was intended to develop strategic and business plans for GIS coordination in Maryland and ultimately advance Maryland's role in the National Spatial Data Infrastructure (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, the SPC followed a template process created by the National States Geographic Information Council (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. *In order for Maryland to fully achieve effective statewide GIS coordination, however, the recommendations set forth in the strategic plan must be implemented and sustained by Maryland state leadership. This Business Plan outlines the steps required and options for an effective and coordinated statewide GIS.*

2.0 Implement the Recommendations of the Strategic Plan

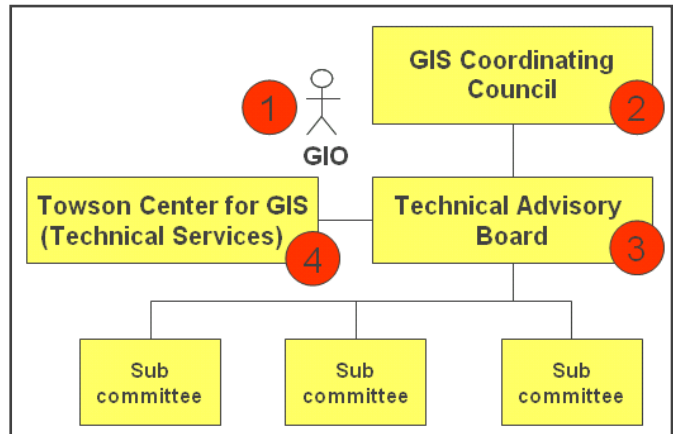
Maryland's current status relative to the NSGIC's Nine Criteria is described in Table 1 below. While the Strategic Plan prioritizes the criteria according to level of urgency, all nine criteria must be addressed ultimately.

Table 1 *Status of Maryland - NSGIC's Nine Coordination Criteria*

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.	Impaired	Moving Forward	Immediate	Drafting job description
#2 A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.	Impaired	Moving Forward	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).	Impaired	Moving Forward	Immediate Dependant 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.	Impaired	Functional	Fundamental Ongoing	Support from State CIO
#5 Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned.	Functional	Functional	Dependant on 2	Unofficial but functional
#6 The ability exists to work and coordinate with local governments, academia, and the private sector.	Moving Forward	Functional	Dependant on 1,2	Unofficial but functional
#7 Sustainable funding sources exist to meet projected needs.	Impaired	Impaired	Ongoing	None. Some initial awareness
#8 Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.	Impaired	Impaired	Dependant on 1	No formal coordinating entity
#9 The Federal government works through the statewide coordinating authority.	Moving Forward	Moving Forward	Dependant on 1,2	No formal body to work through

To achieve success in each of the nine criteria, the Strategic Planning Committee recommends the following four key action items that will establish a coordination structure consistent with the Nine Criteria for Statewide Coordination developed by NSGIC.

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.



The following graphic shows that implementing the four key recommendations of the Strategic Planning Committee—establishing a State GIO position, an Executive Council, and a Technical Advisory Council, and housing MSDI at Towson University—will each meet several of NSGIC’s Nine Criteria. Ongoing Support combines with the recommendations to successfully meet all nine criteria.

**GIO Position
Enables NSGIC Criteria:**

- #2 A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.
- #3 The statewide coordination office has a formal relationship with the state's Chief Information Officer (or similar office).
- #8 Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.

**Executive Council
Enables NSGIC Criteria:**

- #3 The statewide coordination office has a formal relationship with the state's Chief Information Officer (or similar office).
- #9 The Federal government works through the statewide coordinating authority.

**Technical Advisory Council
Enables NSGIC Criteria:**

- #2 A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.
- #9 The Federal government works through the statewide coordinating authority.

**MSDI Housed at Towson University
Enables NSGIC Criteria:**

#5 Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned.

#6 The ability exists to work and coordinate with local governments, academia, and the private sector.

#9 The Federal government works through the statewide coordinating authority.

**Ongoing Support
Enables NSGIC Criteria:**

#7 Sustainable funding sources exist to meet projected needs.

#4 A champion (politician or executive decision-maker) is aware and involved in the process of coordination.

3.0 Current Resources to Build Upon

Though not formally integrated into a coordinated resource, Maryland currently possesses many elements of an effective statewide GIS. These elements should be leveraged to their fullest extent and serve as a building block for a coordinated statewide GIS. They can be grouped into four categories: data, systems, people, and funding streams. These resources, along with pertinent action items are described below.

Data

There is a wide array of geospatial data assets that already exist in Maryland, however an adequate inventory does not exist. Although tools exist to create a comprehensive inventory, the effort has been stifled by a lack of staff resources who can reach out to data owners and assist with the documentation of their data assets. Tools such as the Maryland Mapping Resource Guide (MSGIC) and Ramona (NSGIC) exist, but without a formal coordinating entity to encourage ongoing population of these resources, their utility is limited.

Systems

Like data, there are many well-functioning GIS programs in place across Maryland at all levels of government and academia. These systems are at various stages of maturity and range from isolated, stand-alone systems to broad collaborative environments that incorporate data from a variety of external agencies and sources. Coordination efforts should seek to fully leverage these systems in order to share technical knowledge and capabilities among stakeholders, rather than “reinventing the wheel”.

People

Staff resources across the GIS community in Maryland range from one or two individuals at a single agency who occasionally utilize GIS as part of their daily process to fully functional, multi-staff GIS divisions. The GIS workforce is currently very strained, and efforts to create a coordinated statewide GIS should leverage these limited resources by providing GIS users with a shared infrastructure of spatial data. This would free up time spent on redundant data collection and assembly, allowing them to focus on the particular GIS related business functions of their agency. This approach, for example, would enable GIS users to leverage centralized technical knowledge about Web-based GIS, rather than recreate/reinvent that knowledge in-house.

Funding streams

GIS is funded through a variety of means across the state. In most cases, GIS activities are funded by individual agencies to support their mission, and include a combination of general funds and federal grants. In a few cases, GIS is self funded by the sale of data,

applications, or services. GIS is being increasingly recognized as a powerful decision support technology that benefits from cross-cutting collaboration and the sharing of geospatial resources. As such, efforts should be made within current funding structures to encourage collaboration. However, for collaboration to be most effective, a dedicated source of funds should be identified or established that would ensure a cohesive coordinated approach and maximize the return on investment being made by individual agencies.

4.0 Action Items

ACTION: Create 20% FTE dedicated to maintaining inventory of data, application, and people resources

ACTION: Identify a sustainable funding model to fund *shared* resources, such as a GIO and Maryland's Spatial Data Infrastructure.

ACTION: Create and annually update an inventory that categorizes maturity of GIS within state agencies and counties in Maryland.

ACTION: Create a consistent means for stakeholders to request technical guidance from Towson University related to shared spatial data infrastructure.

ACTION: Establish a consistent funding mechanism that supports *shared* needs among GIS stakeholders in Maryland.

5.0 A Timeline for Establishing Coordinated GIS in Maryland

- Funding horizon
- Establishing a GIO
- Establishing Committee Structure
- Building MSDI
 - MMRG (Public)
 - MEGIN (Secure)
- Supporting Projects
 - Cooperative / Federated Centerline
 - Imagery Acquisition Partnership
 - Data Clearinghouses
 - Other?

6.0 Funding GIS Coordination in Maryland

- Current funding mechanisms
 - What's being funded and how
 - What needs funding
 - Data
 - Applications
 - People
 - Levels of Government
 - State agencies
 - County GIS
 - Enterprise GIS - Frederick, Howard, Anne Arundel
 - Municipality
 - Gap – what's not being funded
 - Coordination (currently volunteer)
 - Shared infrastructure
 - Current funding mechanisms are not enough.
 - There's a need for a mix of funding sources depending upon the project
 - Matrix showing project funding (Centerline – Grant, Orthoimagery – Coop, MEGIN–Grant, MSDI–Grant)
- Possible funding methods and their merits
 - Self supported funding
 - networkMaryland™ approach
 - Center for GIS
 - Strengths
 - Maintains accountability that the services are valuable
 - Shortcomings
 - Those that could benefit most (b/c they don't currently have a GIS) won't have the \$ to contribute (i.e., the “have nots”)

- State supported funding
 - Unified budget
 - Similar to “Unified Bay Budget” (input from Kenny Miller)
 - Alignment with key state initiatives
 - Strengths
 - Limited Focus
 - Shortcomings
 - Limited focus leads to inequalities and overlooked opportunities in dealing with counties and municipalities.

- Grant based funding
 - Pilot efforts
 - Targeted projects
 - Strengths
 - Front loaded funding
 - Shortcomings
 - Limited total funding, potential limitations, and lack of maintenance.

- Recommended approach to funding
 - Unified State funding for
 - GIO (shared vision) \$200K Include 2.5M for Aerials
 - Councils (shared accountability) \$50K – leads to authoritative decision-making that will limit duplication of effort.
 - MSDI (shared infrastructure) \$250K (+ future years) – Improves data accuracy, improves data availability/access, provides for centralized data repository, standardizes datasets, and allow for timely maintenance.
 - Applications (i.e., unified StateStat)
 - Reusable, SOA-based infrastructure
 - Data (cooperative initially, shift toward state and local funded)
 - Agency funding for
 - Hosted data/applications
 - Targeted (agency-specific) projects
 - County funding
 - County “contribution” is sharing detailed data to MSDI
 - Saves state from collecting redundant data
 - Federal funding
 - As available
 - Coordinated through Councils and GIO
 - NGO/Private
 - Fee for accessing non-baseline data/capabilities

7.0 Planned Outcomes Monetary Return on investment

- Example from another state
 - Reference other examples (Ohio?)
- Example from a Maryland County
 - ESRI Licensing Example – Frederick County
- Example from Maryland Collaboration
 - Imagery Acquisition Partnership
- Anticipated ROI for Maryland
- Intangible benefits
 - Improved ability to measure performance
 - StateStat
 - Decision support tool enhancements
 - Ability to view problems through a spatial lens
 - Maximizing use of human capital
 - Doing more with current resources
 - Freeing up resources that otherwise spend time collecting and assembling data
 - Ability to focus on the specific function of agency
 - Example: DHCD or DHR
 - Accessibility for the “have-nots”
 - Streamlined processes and improved quality
 - Cooperative Centerline
 - Improved public safety
 - Fast access to information from broad range of sources
- Other benefits ...
 - Money savings
 - Quality improvements
 - Public safety
 - Etc
 - User feedback
 - Statewide Spatial Data Infrastructure
 - Shared Applications
 - Enterprise Licensing
 - Proposal Writing Assistance
 - Training
 - “How do I get started with GIS?” (Needs Assessment)
 - “Whom do I go to for X?”
-

8.0 Measuring Success

- Tracking money spent / saved
- Performance measured via “GIS Stat” in alignment with other “State Stat” components
- Other?
- Recognition of GIS authority throughout the state, unquestioned points of contact

- Public access to one timely statewide GIS dataset through one consistent interface

Notes to be incorporated

- Identifying the state's framework data layers (the structure that governments, academia, and the private sector can use to build their own GIS data) and their location.
- Conducting an inventory of the state's GIS resources and their concentrations.



Maryland Spatial
Data Infrastructure

Maryland Statewide GIS Coordination

Strategic and Business Plan Development for
Maryland Spatial Data Infrastructure

March 2007
TUgis Conference

Ken Miller, Acting Director
Watershed Services
MD Department of Natural Resources

Matt Felton, Director
Center for GIS
Towson University



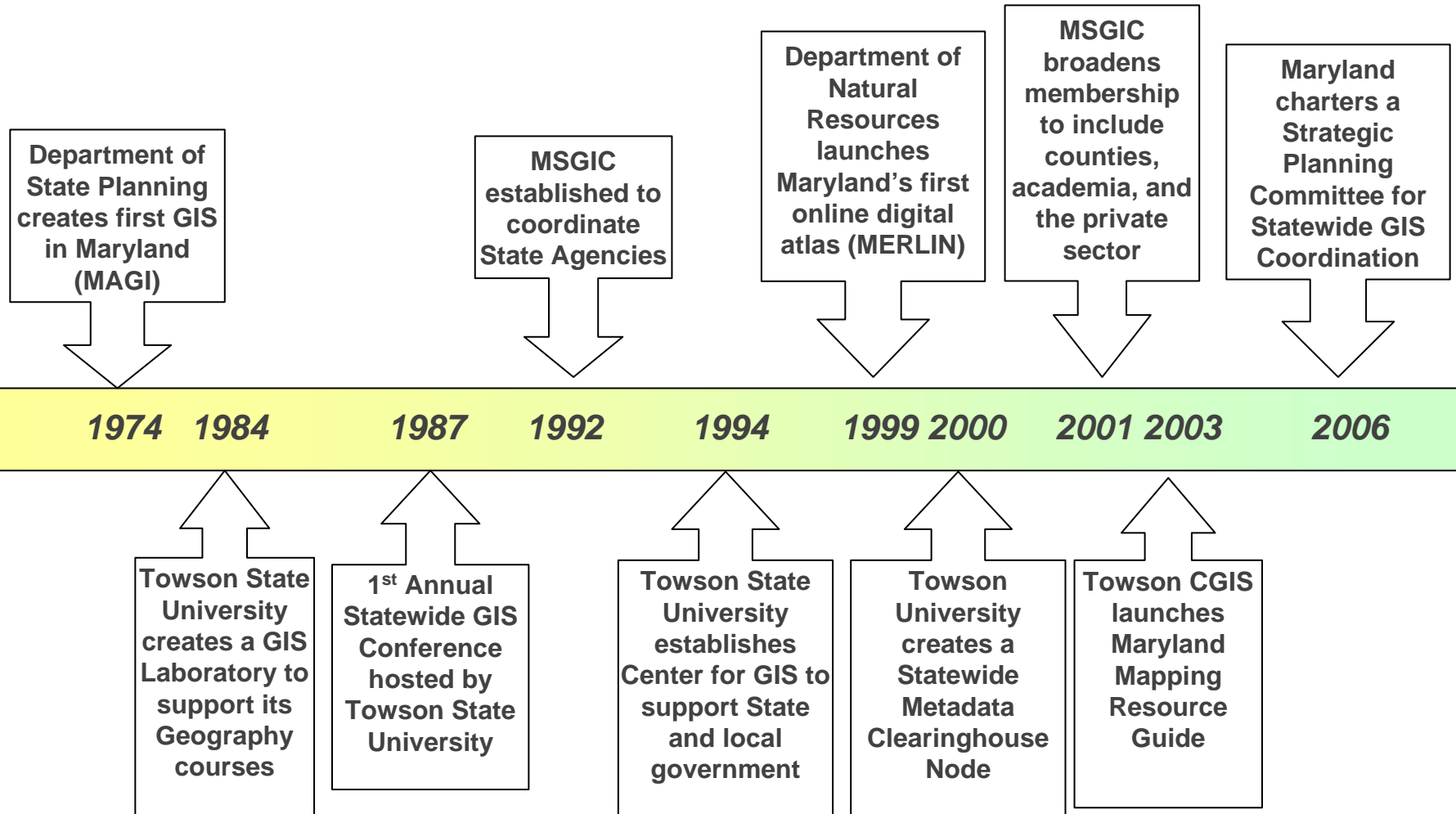
Maryland State Geographic
Information Committee



Center for Geographic Information Sciences



Timeline of Key Milestones for Maryland GIS





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 draft business plan has been established to guide Maryland toward creating an effective Maryland Spatial Data Infrastructure (MSDI).



Prioritization of 9 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 Dependant 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.			Dependant on 2	Unofficial but functional
#6 The ability exists to work and coordinate with local governments, academia, and the private sector.			Dependant 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.			Dependant on 1	No formal coordinating entity
#9 The Federal government works through the statewide coordinating authority.			Dependant on 1,2	No formal body to work through



Building Upon a Foundation of Collaboration

- Several recent projects have demonstrated the how a coordinated GIS can
 - *Save Time*
 - *Save Money*
 - *Save Lives*
- **Saving Time:** Maryland Cooperative Centerline Program
 - *HOWEVER: 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.*
- **Saving Money:** Maryland Imagery Acquisition Partnership
 - *HOWEVER: Long term success requires that formal structures are in place to collect monies, establish pricing, and ensure equitable distribution of data.*
- **Saving Lives:** EMMA (Emergency Management Mapping Application)
 - *HOWEVER: 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.*



Reaching the Limits of Volunteerism

- Redundant data acquisition
- Duplicated efforts to create data or applications
- Lack of consistent standards
- Increasing complexity of GIS and related IT resources
- Slow growth of statewide clearinghouse
- Multiple, disconnected GIS communities
- No unified software procurement

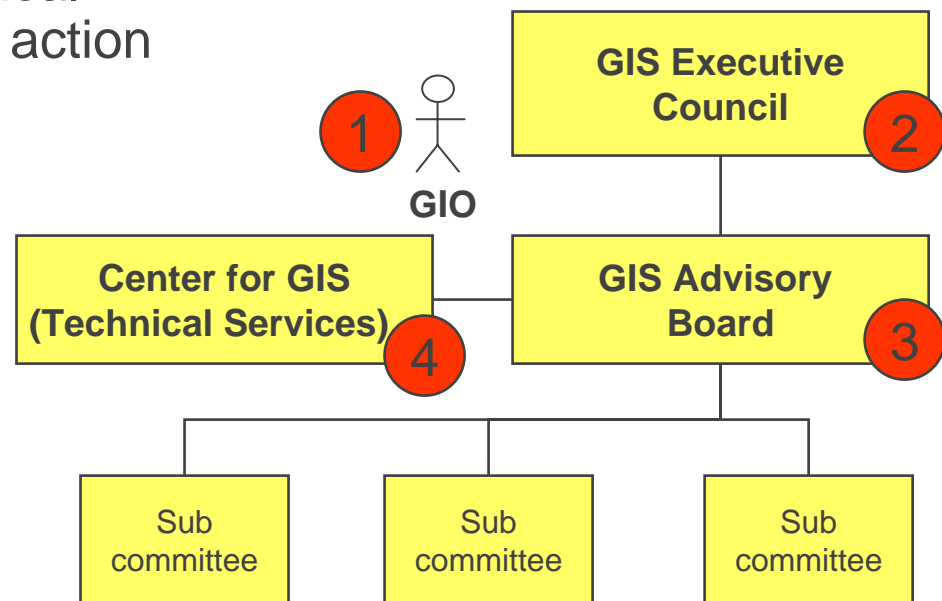


Statewide Strategic Planning Efforts

- One of MSGIC's "Top 3" priorities
- 2008 Maryland IT Master Plan Priority #6
 - "Standardize and consolidate Geographical Information Systems"
- Strategic Planning Committee (April 2006 – March 2007)
 - Funded through a federal grant from USGS
 - Led by Center for GIS @ Towson University in partnership w/ MSGIC
 - Executive sponsorship from State CIO
 - Created a Strategic Plan and Draft Business Plan (March 2007)
- Established recommendations for:
 - Coordinating Council
 - State Geographic Information Officer (GIO)
 - Technical Services
 - Possible funding methods

Strategic Plan – 4 Recommendations

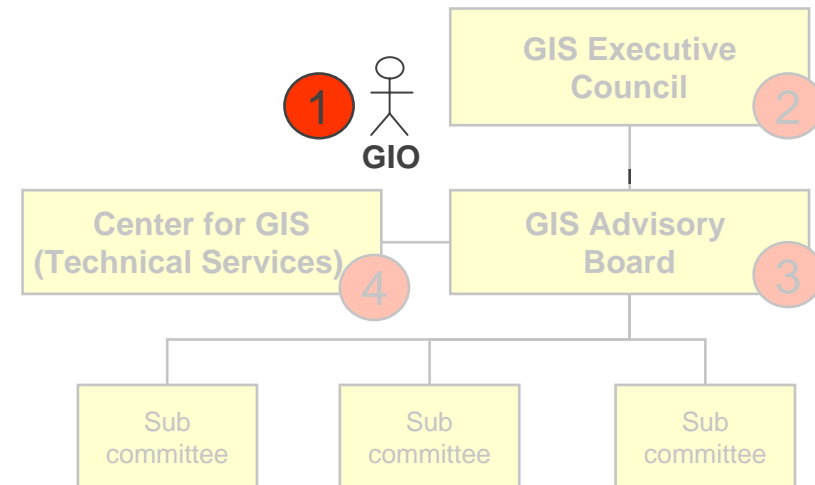
- 1. Coordinate**—Establish a state-funded, full-time Geographic Information Officer (GIO) position that reports to the State CIO
- 2. Set Policy**—Establish a GIS Coordinating Council that includes representative membership from stakeholders
- 3. Recommend**—Establish a technical advisory board that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





Recommendation #1: Establish a State GIO

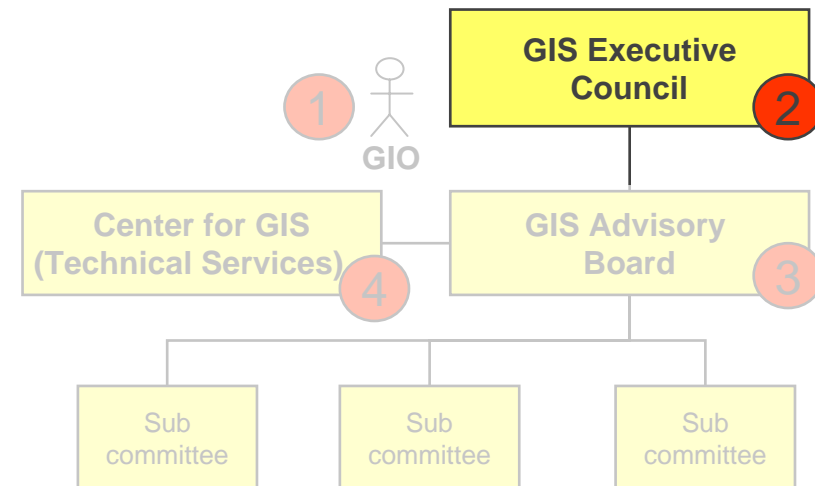
- Signatory and oversight of grants and joint funding opportunities
- Staff support for GIS Coordinating Council
- Central point of contact
- Authority to make a decision on behalf of the state
- Global perspective of the state's needs
- National representation of GIS (can communicate “all things GIS” in Maryland)
- Appropriate access to CIO, legislators, and technical resources
- Accessible to stakeholders at all levels of government and across all jurisdictions
- Build partnerships and collaboration among government, academia, private sector, non-profit, and public





Recommendation #2: Establish a GIS Coordinating Council

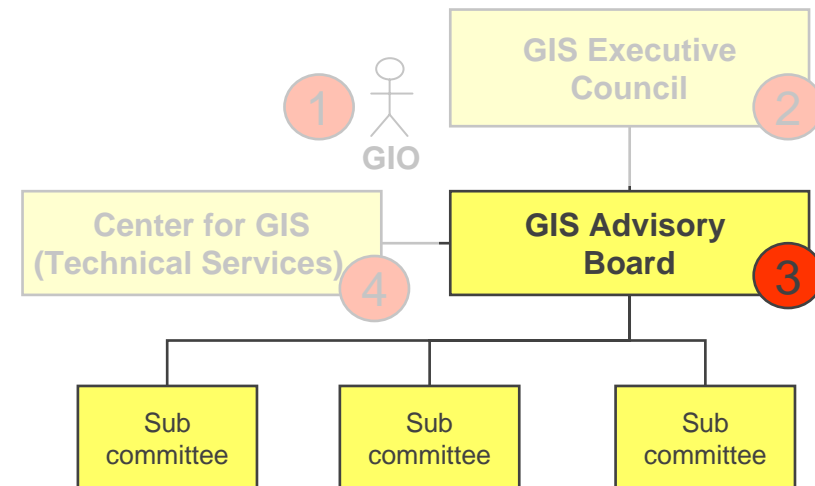
- Composition
 - Senior elected and appointed officials
 - Cross-cutting membership
- Responsibilities
 - Sets and approves policy
 - Advocacy
 - Legislation & Funding
- Meeting frequency
 - Meets quarterly





Recommendation #3: Establish a Technical Advisory Board

- Composition
 - Senior representatives from county, municipal, state, regional, federal, academic, private, non-profit
 - Elected chair & vice chair
- Responsibilities
 - Program management oversight
 - Planning
 - Manage grants and standards compliance
- Meeting frequency
 - Meets bi-monthly
 - Subcommittees meet monthly

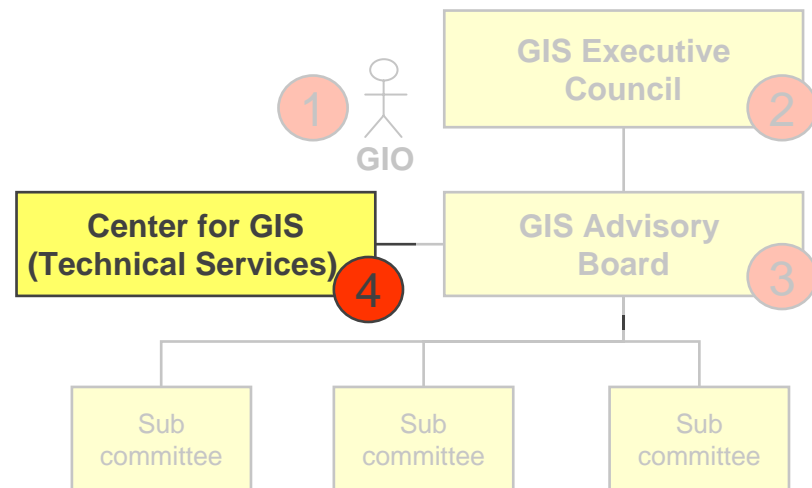




Recommendation #4:

Designate Towson University as Technical Support for Maryland Spatial Data Infrastructure

- Maintain Maryland's NSDI clearinghouse.
 - Responsible for populating MMRG with data and applications entries.
 - Serve as the formal location of Maryland's framework layers
- Two-tiered data repository accessible in real-time
 - Central repository of framework layers kept up-to-date via database synchronization technology
 - Catalog (metadata) for federated repository of agency-specific data
- Apply for and manage grants and other funding for **shared** applications or data
- Establish partnerships with other universities to leverage individual strengths
- Provide baseline technical assistance to GIS community in Maryland





Intended Outcomes of a Coordinated Statewide GIS

- 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.
- Increase emergency preparedness and regional homeland security.
- Facilitate Smart Growth efforts.
- Enhance Chesapeake Bay Restoration and Land Preservation efforts.



Raising Awareness and Feedback Around Maryland

- ESRI Regional Meetings
 - Eastern Maryland User Group (EMUG) – June 06
 - Western Maryland User Group (WMUG) – July 06 / February 07
 - Central Maryland User Group (CMUG) – August 06 / December 06
- MACo Summer Conference – August 06
- MSGIC Quarterly – October 06
- Information Technology Advisory Council (ITAC) – December 06
- Traffic Records Coordinating Council (TRCC) – December 06
- MACo Winter Conference – January 07
- MSGIC Quarterly – January 07
- TUgis Conference Senior Executive Seminar – March 07
- Other suggested venues?

Maryland GIS

Maryland Spatial
Data Infrastructure

Maryland Mapping Resource Guide


TOWSON
UNIVERSITY
Center for GIS[MMRG Home Page](#)[MSGIC Contacts](#)[Featured GIS Activities](#)[Find Data](#)[Share Data](#)[GIS for Public Safety](#)[Background](#)[FAQ](#)[Resources](#)[Data Survey for E. M.](#)[The National Map](#)[Statewide GIS Coordination](#)[Project Overview](#)[Newsletter](#)[Tools & Talking Points](#)[Contacts](#)[Links](#)[MMRG Home Page](#) / Statewide GIS Coordination

Statewide GIS Coordination

A partnership between the Towson University Center for Geographic Information Sciences (TU-CGIS) and the Maryland State Geographic Information Committee (MSGIC) has been awarded a federal grant to develop strategic and business plans for GIS coordination in Maryland. Maryland is one of eleven states to receive a *Future Directions Fifty States Initiative* award in 2006 to design coordinating mechanisms that will make best use of the state's diverse GIS resources.

The grant is funded by the U.S. Geological Survey through the National Spatial Data Infrastructure (NSDI) cooperative agreement program, whose mission is to help and encourage all levels of government, the private and non-profit sectors, and the academic community to share geospatial data.

The *Fifty States Initiative* grant affords the timely opportunity to define the framework of a specific plan that suits all of Maryland's GIS stakeholders and also represents a significant cost-saving for the state.

- [Project Overview](#)
- [Newsletter](#)
- [Community Tools & Talking Points](#)
- [Contacts](#)

Relevant Links

[Maryland State Geographic Information Committee \(MSGIC\)](#)

[Towson University Center for GIS](#)

[National States Geographic Information Council \(NSGIC\) Hot Topic: Fifty States Initiative](#)

[National States Geographic Information Council \(NSGIC\) Fifty States Initiative Handout](#)



For more information visit

<http://www.MarylandGIS.net/coordination>



*Stop by the MSGIC booth
and share your feedback
via a short survey!*



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