MICHIGAN NSDI CAP GRANT
OUTREACH FINDINGS SUMMARY

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INTRODUCTION

282 GIS Community Stakeholders participated in an on-line survey

191 Stakeholders attended a listening summit

This document summarizes information collected during an intensive 4 week effort to gather stakeholder input to be used in preparation of a Statewide GIS Business Plan. This work is part of the state's NSDI Cap Grant project being managed by the State of Michigan's Department of Technology, Management and Budget (DTMB) Center for Shared Solutions and Technology Partnerships (CSSTP).

Collecting input from the stakeholder community in Michigan is an important element to the development of a geospatial business plan that can effectively meet the needs of the state and build a State Spatial Data Infrastructure that will be widely used and efficiently maintained.

The community outreach portion of the project summarized here included facilitated listening sessions in 5 locations, an on-line survey, and targeted interviews with key members of the stakeholder community.

This outreach effort has been focused on identification of specific business drivers in the GIS community, specific data needs to accomplish those drivers, and any obstacles to fully accomplishing goals. To support the development of a stewardship enhancement plan for the Michigan Geographic Framework (MGF) the outreach effort also sought to gather stakeholder impressions of cooperative programs and get their specific input into the future evolution of the MGF data and services.

OUTREACH PARTICIPANTS

PARTICIPANT DEMOGRAPHICS

A total of 191 individuals from the Michigan GIS community participated in one of five listening summits that were held in different locations throughout the state of Michigan. Additionally, 282 individuals responded to the on-line survey to provide their input into the direction of Statewide GIS Business Plan and stewardship enhancement plan. During the outreach phase of this project a total of 291 individuals provided e-mail information though either an RSVP to the listening summits or providing it during the on-line survey with the request they be added to a project mailing list.

Of the 282 stakeholders completed the on-line survey:
- 32% from County Government
- 24% IT/GIS Managers

The listening summits offered an opportunity for a daylong interaction with GIS stakeholders in Michigan. The participation and location of the summits was designed to offer a maximum opportunity for input by users from throughout the entire state

Chart 1. Does your organization have a GIS?

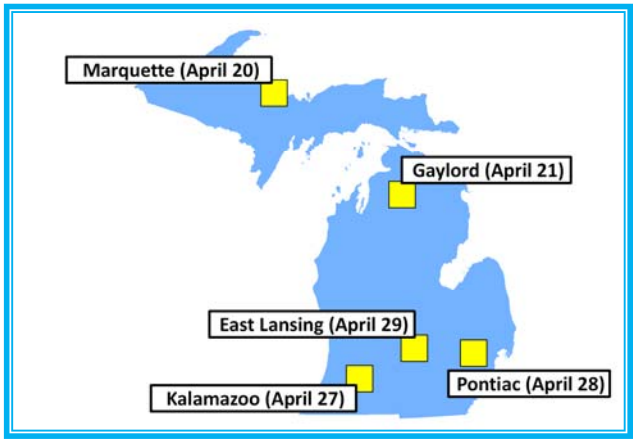
There was good representative attendance at each of the five (5) listening summits held around the state. With each session having a diverse set of attendees that include county governments, drain commissions, road commission, tribes, federal agencies, regional organization, private firms, cities, and townships.

Marquette and Gaylord had the lowest attendance, which is to be expected given the rural nature of those regions. Participation in the meeting held in East Lansing was the highest of the five sessions. This in part was due to the very large contingent of state organizations represented at that meeting.

The participation in the outreach effort has been broad based, and is fully detailed in Table 2. Government participation from all level of government (federal, county, state, city, townships, village, and sub-state regional entities) represented 75.4% of those completing a survey on-line and 77.9% of those attending a listening summit.

Table 1. Listening Session Locations and Attendees

Location	Date	Attendees
Marquette	April 20, 2010	15
Gaylord	April 21, 2010	26
Kalamazoo	April 27, 2010	36
Pontiac	April 28, 2010	32
East Lansing	April 29, 2010	82
	Total	**191**



Map 1. Locations of Listening Summits

Table 2. Organization Type of Outreach Participants

	On-Line Survey		Listening Sessions	
Organization Type	**Number**	**Percentage**	**Number**	**Percentage**
Government				
County	89	31.67%	60	31.58%
State	48	17.08%	44	23.16%
City	21	7.47%	23	12.11%
Township	20	7.12%	5	2.63%
Federal	16	5.69%	7	3.68%
Village	4	1.42%	0	0.00%
Sub-state Regional	14	4.98%	9	4.74%
Tribal	3	1.07%	4	2.11%
Private Firm	39	13.88%	15	7.89%
Utility	7	2.49%	6	3.16%
University	8	2.85%	14	7.37%
Not-for-Profit	7	2.49%	3	1.58%
Professional or Trade Association	3	1.07%	0	0.00%
Special Purpose District	1	0.36%	0	0.00%
Public School	1	0.36%	0	0.00%
Unknown	0	0.00%	1	0.52%
Total	**281**	**100.00%**	**191**	**100.00%**

All respondents to the on-line survey were asked to identify their title and the authority level associated with their position. While the majority of respondents were users of the technology or influencers of technology and budget decisions (61.2%), just over 20% of the respondents self identified as having decision making authority. Those assumed to have decision making authority included respondents identified with the title CIO, Director, City/Township/County manager, or Elected Official.

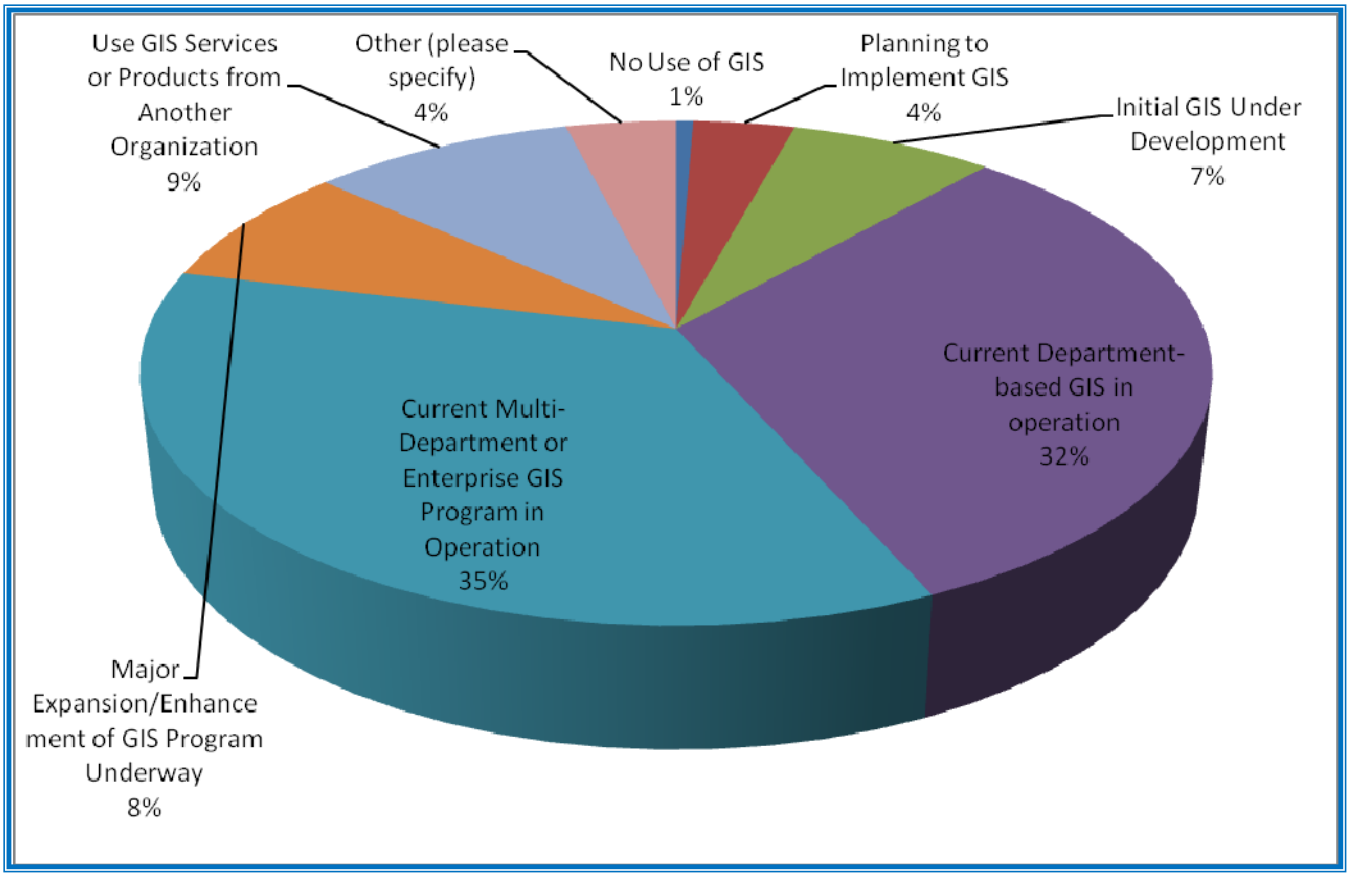
Of the 51 respondents that cited "other" as their title they were generally users of geospatial technology and data. If we combine these responses with GIS User response, the 102 responses represent 36.3% of all respondents.

TABLE 3. Respondent Title and Authority Level

Title/Level of Decision Authority	Responses	Percentage
CIO [principal decision maker for organization technology and budgets]	13	4.63%
Director [decision makers for GIS department or program]	34	12.10%
GIS/IT Manager [influence decisions, supervise GIS staff, manage projects]	66	23.49%
GIS Analyst [senior technical GIS staff]	37	13.17%
GIS Technician [junior GIS technical staff]	11	3.91%
GIS User [GIS not primary job but uses technology]	51	18.15%
City/Township/County Manager [jurisdiction senior manager]	3	1.07%
Elected Official	11	3.91%
Educator	4	1.42%
Other	51	18.15%
Totals	**281**	**100.00%**

The most common response to the type of GIS indicated that multi-departmental operations were in place. Over 4% of respondents indicated that their organization is planning to implement a GIS while others were in the initial development phase (7%) or using another organization for their GIS services (9%).

Chart 2. Description of Current GIS Status



BUSINESS DRIVERS

A "business driver" is a major program area, need, or challenge that GIS technology and geospatial data can help support or address. A business driver is the reason an organization or institution chooses to invest resources into the development of geospatial data and information systems. There are a number of overarching business drivers that are used to support expenditures in any technology. These often include items such as reducing labor costs, eliminating inefficient or ineffective programs, improving services to customers, enabling better decisions through improved understanding, protecting physical assets, protecting natural resources, and enhancing the quality of life for all residents.

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OVERARCHING BUSINESS DRIVERS

In our outreach to stakeholders we asked them to identify program-specific business drivers that their organization is attempting to achieve through the application of geospatial data and technologies.

The on-line survey yielded the following results ranked by the percentage of responses citing the business driver being critically important or highly important.

Table 4. Business Drivers by Identified Importance

Business Drivers	High Importance (4 or 5)	Medium Importance (3)	Low Importance (1 or 2)
Improvement in data quality and consistency	87.61%	8.41%	3.98%
Infrastructure improvement and maintenance	65.61%	16.74%	17.65%
Improved land-use planning and decision making	64.71%	19.00%	16.29%
Emergency preparedness and response	58.72%	16.97%	24.31%
Enhance/increase inter-organizational partnerships	55.76%	28.11%	16.13%
Environmental protection/Natural Resource Enhancement	51.14%	26.94%	21.92%
Reduction in labor or operational costs	44.59%	26.13%	29.28%
Economic/business development and improvement	42.40%	26.73%	30.88%
Enhancement of quality of life for citizens	38.76%	33.49%	27.75%
Enhancement of health for citizens	31.90%	23.33%	44.76%
Explore new sources for revenue generation	29.03%	21.20%	49.77%
Support quality and availability of educational and training opportunities	23.81%	28.57%	47.62%

Attendees at listening summits provided further insight into business drivers, and although they were not prioritized they present a set of specific business drivers with additional supporting information.

DISCIPLINE OR APPLICATION SPECIFIC BUSINESS DRIVERS

PUBLIC SAFETY, EMERGENCY PLANNING/MANAGEMENT

A variety of specific business drivers that can be combined into a "public safety, emergency response and planning" category were identified during the listening summits. Among the most repeated drivers were for E911 dispatch, response planning based on modeling of risk (identifying where to place resources to improve response times), and assisting with post-event recovery.

A key driver was identified in the need to develop and implement a wildfire protection plan that included risk modeling, planning, and education. The wildfire was extended beyond the pre-event planning to include a driver for situational awareness (specifically the distribution of resources relative to current conditions and likely future conditions) among a wide variety of organizations potentially involved in event response.

It was also pointed out that these events can be multi-jurisdictional crossing multiple county, city, and township boundaries requiring responders to work from a common geographic base map and coordinate system.

ECONOMIC DEVELOPMENT AND TOURISM PROMOTION

With the current state of the national economy, a business driver to support economic development activities was identified. There was an impression that geospatial technologies should take an active role in supporting efforts to grow the economy of Michigan.

Specific areas that were identified during listening summits included using GIS to:

- support site selection decisions;
- demonstrate and understand the availability of infrastructure;
- serve as a "sales tool" in visualization of development potential;
- understand local demographic data;
- analyze and report on labor force availability and skills;
- promote "brownfield" redevelopment; and
- support small businesses as they grow and expand.

Promotion of tourism, particularly nature-based activities such as snowmobiling, hiking, hunting, and fishing were identified as a key opportunity for GIS to be used to support economic development activities.

Economic Development business drivers all support cross-jurisdictional cooperation since economic systems do not stop at county or other jurisdictional boundaries.

REAL PROPERTY ASSESSMENT AND TAXATION

The need for property assessment and tax collection to be equitable, fair, and efficient is a primary business driver for geospatial technologies in Michigan. The need to maximize revenue collection by making sure everything that can be taxed is taxed fairly was a key factor in supporting geospatial systems and data collection. Identification of improved properties taxed as unimproved and the need to identify properties that had additional improvements not taxed was a large driver.

The need to effectively administer the principal residence exemption (commonly called the "homestead exemption") to make sure that owners were receiving only a single such tax break is also necessary.

Cross-jurisdictional cooperation is critical to equitable assessment since comparable value properties may be located outside of the jurisdiction responsible for setting the assessed value of the property. This is particularly true of commercial or industrial properties which need to be assessed within the context of a regional economic circumstance and the low number of transactions makes establishing market value difficult. This cooperation beyond the region is important when attempting enforcement of the principal residence exemption, areas where significant numbers of rental properties or vacation homes are particularly at risk for revenue reduction by inappropriate use of this exemption.

INFRASTRUCTURE FACILITY AND ASSET MANAGEMENT

There is a very active community within Michigan using geospatial tools for infrastructure facility and asset management. This is particularly true from organizations responsible for road construction and maintenance but the technologies are also widely used by utilities and drain organizations.

The goal of spatially enabling asset management is primarily to support the movement from reactive maintenance, the fix it when it fails approach, to a predictive maintenance cycle where repairs are undertaken before a total failure of the asset while repairs are more cost effective. For example, cleaning storm-water catch basins before they fail and result in flood damage or identifying the need for pavement resealing before a total pavement failure requiring expensive resurfacing.

The use of GIS data and tools to support infrastructure design and construction was identified as a logical application of these technologies. The ability to efficiently collect and format information necessary to design a project (including right of way and other property records, environmental data, and other scheduled projects) makes the initial design phase of project can significantly reduce costs for taxpayers.

Good asset inventories are required to support effective asset management, including road (transportation) and surface hydrology data.

Asset management was also identified as a driver for private firms, particularly forestry industries.

LAND DEVELOPMENT PLANNING AND MANAGEMENT

The need to apply geospatial technologies to improve decision making in the area of land development was mentioned by several attendees as listening summits. The ability to understand and evaluate land development alternatives through GIS based analysis on land-use, infrastructure, demographics, and regional economics to support efficient development was identified as a business driver for many county, city, and regional organizations.

A general feeling expressed was that development often is approved without a full understanding of the potential economic and environmental impact because the entire picture isn't available to decisions makers. This could be improved through the effective use of geospatial technologies and modeling.

The need to manage development during construction for inspections and post development for service provision was also cited.

DRAINS, FLOODPLAINS, AND FLOOD EVENT MANAGEMENT

There was participation in the regional listening summits from individuals involved in the daily activities of drain commissions. Those participants clearly identified the need for GIS to be used to meet the drain commission needs for asset management, scheduling appropriate maintenance, and identification of properties to be assessed for drain construction and management.

The driver of this need is requirements for equitable taxation of parcels for their benefit from improvements.

DATA SOURCES

In order to assist in creating priorities for data development based on the needs of the GIS community, the on-line survey asked a series of questions related to the source and utility of a number of common data sets. The first of these questions asked respondents to identify and describe their use of NSDI foundation data elements. Responses to that question are found in Table 5.

A question requesting additional information on data needs and uses was more detailed and included many additional data sets and requested additional clarification of some foundational elements. The responses to that question are detailed in Table 6.

Table 5. Detailed Foundation Data Needs and Sources

Foundation Data	Don't Use or Need		Produce my own		Receive and use as-is from an outside source		Receive and edit from an outside source		Need it but don't have it		Total Responses
	Count	%	Count	%	Count	%	Count	%	Count	%	
Orthophotography (high resolution)	4	1.95%	33	16.10%	127	61.95%	28	13.66%	13	6.34%	205
Cadastral Parcels or Legal Lots	16	7.69%	72	34.62%	59	28.37%	36	17.31%	25	12.02%	208
Street Centerlines and Transportation Features	2	0.96%	75	35.89%	74	35.41%	49	23.44%	9	4.31%	209
Administrative Boundaries	9	4.41%	68	33.33%	87	42.65%	33	16.18%	7	3.43%	204
Hydrography	11	5.37%	34	16.59%	102	49.76%	46	22.44%	12	5.85%	205
Elevation	15	7.32%	35	17.07%	103	50.24%	18	8.78%	34	16.59%	205
Geodetic Control	28	14.07%	45	22.61%	72	36.18%	23	11.56%	31	15.58%	199

Table 6. Additional Data Sources and Requirements

	Don't Use or Need		Produce my own		Receive and use as-is from an outside source		Receive and edit from an outside source		Need it but don't have it		Need Data	
Data Type	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Addresses [Street Centerline Ranges]	19	9.84%	51	26.42%	75	38.86%	33	17.10%	15	7.77%	174	90.16%
Addresses [Point Features]	25	12.76%	64	32.65%	50	25.51%	21	10.71%	36	18.37%	171	87.24%
Bioscience-Aquatic Habitats and Features	96	52.17%	13	7.07%	38	20.65%	10	5.43%	27	14.67%	88	47.83%
Bioscience-Terrestrial Habitats/Features	90	48.65%	14	7.57%	43	23.24%	11	5.95%	27	14.59%	95	51.35%
Buildings/Structures	24	12.50%	48	25.00%	42	21.88%	21	10.94%	57	29.69%	168	87.50%
Cadastral Reference (24K PLSS)	42	24.00%	33	18.86%	69	39.43%	14	8.00%	17	9.71%	133	76.00%
Climate/Meteorological	115	63.19%	0	0.00%	41	22.53%	7	3.85%	19	10.44%	67	36.81%
Critical Facilities	47	25.27%	53	28.49%	32	17.20%	12	6.45%	42	22.58%	139	74.73%
Cultural/Historic Sites and Features	48	25.81%	44	23.66%	49	26.34%	15	8.06%	30	16.13%	138	74.19%
Demographic Enumeration Districts/Data	48	26.09%	15	8.15%	86	46.74%	16	8.70%	19	10.33%	136	73.91%
Elevation—Contours	15	7.89%	31	16.32%	85	44.74%	17	8.95%	42	22.11%	175	92.11%
Elevation—Digital Elevation Models	20	10.58%	28	14.81%	88	46.56%	16	8.47%	37	19.58%	169	89.42%
Geodetic Control	33	18.23%	35	19.34%	69	38.12%	11	6.08%	33	18.23%	148	81.77%
Geology	55	30.56%	4	2.22%	88	48.89%	7	3.89%	26	14.44%	125	69.44%
Governmental Boundaries	5	2.63%	47	24.74%	106	55.79%	24	12.63%	8	4.21%	185	97.37%
Hydrologic Unit (watershed) Boundaries	20	10.75%	24	12.90%	107	57.53%	16	8.60%	19	10.22%	166	89.25%
Land Cover	22	11.83%	30	16.13%	95	51.08%	18	9.68%	21	11.29%	164	88.17%
Land-Use/Zoning	18	9.63%	62	33.16%	67	35.83%	17	9.09%	23	12.30%	169	90.37%
Natural Hazards	49	27.53%	16	8.99%	57	32.02%	6	3.37%	50	28.09%	129	72.47%
Recreation Sites and Facilities	24	13.04%	64	34.78%	60	32.61%	12	6.52%	24	13.04%	160	86.96%
Satellite imagery	39	20.86%	4	2.14%	107	57.22%	12	6.42%	25	13.37%	148	79.14%
Soils	24	13.04%	5	2.72%	121	65.76%	16	8.70%	18	9.78%	160	86.96%
Surface Hydrography (water bodies/streams)	7	3.83%	27	14.75%	106	57.92%	31	16.94%	12	6.56%	176	96.17%
Subsurface Hydrology	58	32.95%	7	3.98%	76	43.18%	4	2.27%	31	17.61%	118	67.05%
Survey Reference Grids (e.g., PLSS)	31	17.13%	30	16.57%	87	48.07%	12	6.63%	21	11.60%	150	82.87%
Telecommunications Facilities	61	33.33%	21	11.48%	44	24.04%	6	3.28%	51	27.87%	122	66.67%
Transportation (aviation facilities)	51	27.57%	28	15.14%	62	33.51%	10	5.41%	34	18.38%	134	72.43%
Utility-Electric Transmission/Distribution	39	20.63%	16	8.47%	46	24.34%	8	4.23%	80	42.33%	150	79.37%

Data Type	Don't Use or Need		Produce my own		Receive and use as-is from an outside source		Receive and edit from an outside source		Need it but don't have it		Need Data	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Utility-Gas Transmission/Distribution	42	22.22%	11	5.82%	46	24.34%	8	4.23%	82	43.39%	147	77.78%
Utility-Pipelines	28	14.89%	31	16.49%	43	22.87%	8	4.26%	78	41.49%	160	85.11%
Utility-Sanitary Sewer	30	16.13%	47	25.27%	38	20.43%	9	4.84%	62	33.33%	156	83.87%
Utility-Drainage, Flood Control	34	18.28%	31	16.67%	39	20.97%	8	4.30%	74	39.78%	152	81.72%
Utility-Water Distribution	35	19.23%	44	24.18%	36	19.78%	10	5.49%	57	31.32%	147	80.77%
Utility-Water Supply, Transmission	37	19.79%	43	22.99%	38	20.32%	10	5.35%	59	31.55%	150	80.21%
Wetlands	12	6.28%	18	9.42%	115	60.21%	19	9.95%	27	14.14%	179	93.72%
Other	9	31.03%	10	34.48%	2	6.90%	1	3.45%	7	24.14%	20	68.97%

PRIORITIZED DATA NEEDS

While overall it is valuable to understand the data needs of the community it is more important to understand the data that is currently in use and those data that are viewed as necessary to effectively meet business drivers.

Table 7 identifies the 15 data elements that were identified by respondents to the on-line survey as being data necessary to achieve their business objectives. Table 8 identifies the top 15 data elements identified as necessary but unavailable.

Table 7. Needed Data Ranked by Respondents Needing/Using These Data

Rank	Data Needed	Percent Responding
1	Street Centerlines	99%
2	Ortho Imagery	98%
3	Governmental/Administrative Boundaries	97%
4	Surface Hydrography (water bodies/streams)	96%
5	Wetlands	94%
6	Cadastral/Parcels	92%
7	Elevation—Contours	92%
8	Land Use/Zoning	90%
9	Addresses [Street Centerline Ranges]	90%
10	Elevation—Digital Elevation Models	89%
11	Hydrologic Unit (watershed) Boundaries	89%
12	Land Cover	88%
13	Buildings/Structures	88%
14	Addresses [Point Features]	87%
15	Soils	87%

Note: this table includes summarized responses from two on-line survey questions. Responses to questions addressing "foundation" elements and questions addressing additional data needs have been combined here.

Table 8. Data Needed to Meet Business Needs but Unavailable
Ranked by Percentage Responding

Rank	Data Item Needed but Unavailable	Percent Responding
1	Utility-Gas Transmission/Distribution	43%
2	Utility-Electric Transmission/Distribution	42%
3	Utility-Pipelines	41%
4	Utility-Drainage, Flood Control	40%
5	Utility-Sanitary Sewer	33%
6	Utility-Water Supply, Transmission	32%
7	Utility-Water Distribution	31%
8	Buildings/Structures	30%
9	Natural Hazards	28%
10	Telecommunications Facilities	28%
11	Critical Facilities	24%
12	Elevation—Contours	23%
13	Elevation—Digital Elevation Models	22%
14	Transportation (aviation facilities)	20%
15	Addresses [Point Features]	18%

Nothing in tables 7 or 8 suggests the criticality of the need for the data, for example which if any are necessary to achieve business objectives and without them progress is impeded. These data also do not suggest what priorities should be within a broader context of programmatic priorities at the state or local level. However, they do provide insight into the data most widely used that should be prioritized for maintenance and additional quality improvement. The data needed but unavailable also provides some insight into future development areas and perhaps the ability of newly developed data to meet the needs of a broad set of stakeholder needs.

GIS BENEFITS

In order to build an effective and efficient SSDI the benefits from participation in an active stewardship program must be communicated to all stakeholders. Clearly there are benefits to participating in an initiative to build a statewide data infrastructure, however, the challenge can be to identify those benefits and demonstrate how those benefits compare with the costs associated with participation. Table 9, below, identifies a set of potential benefits from GIS implementation and the number of responses that reported seeing that particular benefit.

Table 9 . Organizations Reporting Benefits from GIS

	Yes		No		Not
Benefit from GIS	**Count**	**%**	**Count**	**%**	**Applicable**
Improved Decision Making	168	93.85%	4	2.23%	7
Improved Timeliness and Quality of Data and Services	163	91.57%	6	3.37%	9
Improved Staff Productivity/Labor Cost Savings	148	84.57%	12	6.86%	15
Catalyst for Partnerships and Information Sharing	128	76.65%	13	7.78%	26
Reduction in Duplication and Redundancy	125	74.40%	20	11.90%	23
More Effective Management/Allocation of Field Services	112	67.88%	26	15.76%	27
Protection/Enhancement of Natural Resources	113	66.47%	15	8.82%	42
Support for Economic Development Initiatives	102	61.45%	16	9.64%	48
Reduced Costs from Asset Management	91	56.88%	26	16.25%	43
Reduced Costs Through Joint Funding	84	51.85%	34	20.99%	44
Savings of Life and Property	79	47.31%	36	21.56%	52
Savings in Capital Project Design and Construction	73	44.79%	36	22.09%	54
Avoidance of New Costs	67	42.14%	52	32.70%	40
Legal Compliance/Protection Against Expensive Legal Claims	69	41.07%	33	19.64%	66
Code Compliance/Improved Voluntary Compliance	64	37.65%	35	20.59%	71
Protection from Catastrophic Records Loss	59	36.88%	41	25.63%	60
Increase in Revenue	54	32.93%	37	22.56%	73

TANGIBLE BENEFITS

Tangible benefits are those that accrue to an organization that can be identified and quantified. These benefits can be difficult to fully measure, particularly in a governmental organization where staff time on specific tasks and other expenditures are rarely closely monitored. While many examples were discussed during the listening summits few attendees were able to provide detailed examples with dollar or human resource savings

quantified. However, 42 respondents to the on-line survey were able to provide a quantifiable response to at least one of the tangible benefit areas on the survey.

Table 10. The Value GIS has provided over the last 5 years.

	Average	Total	Responses
Staff Productivity and Labor Cost Savings	$ 139,659	$ 3,072,500	22
Revenue Increases [improved collection of taxes, fess, fines, insurance claims, etc.]	$ 282,191	$ 4,797,250	17
Reduction in Duplication and Redundancy	$ 66,833	$ 1,002,500	15
Asset Management	$ 55,000	$ 440,000	8
Support for Economic and Business Development Initiatives	$ 63,722	$ 573,500	9
Avoidance of New Costs	$ 45,111	$ 406,000	9
Savings in Capital Project Design	$ 76,250	$ 610,000	8
Savings in Infrastructure Maintenance and Design	$ 37,125	$ 297,000	8
More Effective Management/Allocation of Field Services	$ 39,808	$ 517,500	13
Reduced Costs Through Joint Funding	$ 1,226,900	$ 12,269,000	10
Totals	**$ 2,032,600**	**$ 23,985,250**	**42***

Note: Only responses deemed valid were used to calculate averages and totals. Thus figures that were $100 or less were removed from the calculations and the individual item response totals. The total responses identified do not equal the responses for individual items since many respondents identified savings in only a few of the potential areas.

A number of additional demonstrations of tangible benefits were provided in the on-line survey that were not specifically quantified or did not fit in any of the requested categories.

One respondent indicated that the development of digital FEMA flood insurance rate maps resulted in a reduction in the need for some properties to purchase insurance.

The use of oblique imagery, in the cited example provided by Pictometry, resulted in the re-assessment of many undervalued properties for one respondent who pointed out that the resulting increase in revenue is on-going that would not have been captured without using those tools.

Although no specific details on the hours or cost saved were provided one equalization department report a reduction of 75% spent in parcel look ups and a shifting of 50% of the engineering budget to the GIS Department at a 1/3 reduction in hourly rates.

Another respondent indicated that the overall annual costs for overhead operations for the county were reduced significantly:

- Road Commission
  - sign management field applications$30-35,000
  - verify road markings from imagery$2-10,000
- Drain Commission
  - search property maps for incoming calls$15-25,000
  - access current tax and drain district maps to print rolls$8-12,000
- Treasurer
  - Property maps accessible by TaxID#, forfeiture id#$30-50,000
  - Reduction in field work for appraisals by 75%
  - Reduction in public calls through web access by 60%

Through access to Google Earth one jurisdiction is saving between 120 and 240 hours per week of engineering staff time to identify locations. The PR finder application saves them 10 to 20 hours per week of engineering time. A conservative estimate of the cost of engineering tech time of $30/hour would yield an annual savings of over $300,000. (Using mid-points of hour estimates to estimate 195 hours/week at $30/hour and 52 weeks per year + $304,200).

GIS has been applied to grant applications and in at least one jurisdiction a $900,000 grant was received in part because GIS was used to assist in generation of data and graphics to support the application.

Another tangible example, provided without specific dollar figures attributed, was a reduction in an annual special assessment project from 2-3 month project with overtime for 6-8 staff members to a 3 week process without requiring any staff overtime. Not only does this example show the potential efficiencies from technology in the reduction of staff overtime it also clearly demonstrates that the staff can be allocated to more valuable or pressing tasks.

Reductions in vehicle maintenance and operation costs through efficient scheduling and routing of code compliance inspectors was a benefit identified during several of the listening summits although only anecdotal evidence of the savings from these activities could be provided.

INTANGIBLE BENEFITS

Benefits that do not easily lend themselves to quantified financial returns are often identified as “intangible.” At each of the listening summits a number of these intangible benefits were identified. As was demonstrated through the on-line survey responses the vast majority of organizations using geospatial technologies enjoy benefits from improved decision making, improved timeliness and quality of data and services, and improved staff productivity. Other widely identified benefits from geospatial technologies include serving as a catalyst for partnerships and information sharing and a reduction in duplication and redundancy.

Often cited during listening summits were benefits received from the application of geospatial technologies in appearing in the eyes of citizens and elected officials to be more professional and efficient. The application of these technologies allows staff to avoid the appearance of giving citizens the ‘run-around.’

Increased compliance with codes, specifically environmental regulations, was also identified as a benefit.

CURRENT OBSTACLES TO MEETING BUSINESS DRIVERS

An important element of the Business Plan to be developed will be the ability to overcome the obstacles that impede the success of potential stewardship partners. At the listening summits and through the on-line service stakeholders provided us with information relative to the obstacles that they are currently facing. Not surprisingly funding limitations, staffing limitations, and data problems are currently being experienced by many stakeholders. Fortunately in no case are these obstacles being experienced by a majority of organizations.

Table 11. Current Obstacles to Meeting Business Drivers

Obstacles	Currently Experiencing	Never Encountered
Funding limitations	31.55%	3.74%
Staffing limitations (number of staff or skills)	25.42%	11.86%
Problems with data quality, currentness, updating	22.81%	5.26%
Difficult integration of data from different sources	21.02%	6.25%
Needed geospatial data does not exist or is not readily accessible	20.90%	14.12%
Inter-departmental communication and coordination obstacles	20.56%	13.33%
System problems: software, hardware, and networks	18.97%	19.54%
Lack of or insufficient external partnerships	16.29%	14.61%
Lack of or insufficient use of data or system standards	16.11%	17.22%
GIS applications are not "user-friendly" enough	15.93%	12.09%
Poor program focus, direction, or plan	14.55%	26.06%
No or insufficient operational management for GIS program	14.12%	27.68%
Insufficient senior management awareness or support	13.66%	25.14%
Insufficient opportunities for training and education	12.02%	21.31%

In an attempt to determine if these potential obstacles were sufficient to impede GIS development the survey asked respondents to identify the level of the threat to achieving business goals created. Those data are summarized in Table 12 below, sorted by those obstacles with the greatest percentage of respondents believing they had a major potential impact on or represented a critical threat to achieving business goals.

As would be expected funding and staffing limitations were identified by the highest percentage of respondents as being a potential critical threat. Problems with data quality was the third overall most pressing obstacle, but was view as a critical threat by just over 7% of stakeholders.

Table 12. Obstacles Ranked by Percentage Identifying as Critical or Major Impact

Obstacles	1-Minor Impact	2-Some Impact	3-Major Impact	4-Critical Threat	Response Count	3 or 4
Funding limitations	10.26%	26.92%	35.58%	25.64%	187	61.22%
Staffing limitations (number of staff or skills)	19.29%	33.57%	27.33%	15.71%	177	43.04%
Problems with data quality, currentness, updating	34.21%	31.58%	25.47%	7.24%	171	32.70%
Insufficient senior management awareness or support	26.32%	34.59%	20.11%	12.03%	183	32.14%
Inter-departmental communication and coordination obstacles	35.06%	33.77%	20.79%	7.14%	180	27.93%
Needed geospatial data does not exist or is not readily accessible	36.99%	34.25%	16.37%	9.59%	177	25.96%
Lack of or insufficient use of data or system standards	35.86%	35.86%	17.61%	6.90%	180	24.51%
System problems: software, hardware, and networks	41.41%	30.47%	16.05%	7.81%	174	23.86%
Poor program focus, direction, or plan	47.46%	23.73%	15.53%	7.63%	165	23.16%
Insufficient opportunities for training and education	41.43%	34.29%	15.08%	5.00%	183	20.08%
Difficult integration of data from different sources	41.40%	37.58%	17.86%	1.91%	176	19.77%
Lack of or insufficient external partnerships	42.18%	36.05%	16.76%	2.04%	178	18.80%
No or insufficient operational management for GIS program	42.02%	33.61%	13.69%	5.04%	177	18.73%
GIS applications are not "user-friendly" enough	47.74%	36.13%	12.99%	1.29%	182	14.28%

STEWARDSHIP AND COOPERATIVE PROGRAMS

Stewardship is a sustained program with clear roles and responsibilities for organizations or individuals supporting the regular update of and access to spatial data. Active stewardship is a fundamental attribute of cooperative programs and will serve as the foundation to the State Spatial Data Infrastructure.

> "**Stewardship**" is a sustained program with clear roles and responsibilities for organizations or individuals supporting the regular update of and access to spatial data.

In an effort to identify the nature of cooperative programs currently in place in Michigan this was a topic of extended discussion at each of the regional listening summits. The detailed notes of each listening summit are in Appendix B of this document.

CHARACTERISTICS OF SUCCESSFUL EFFORTS

In an effort to build successful cooperative initiatives within Michigan a focus of each of the regional listening summits was a discussion of relationships and the characteristics that had made them successful.

While the specific examples of collaborative efforts and their characteristics can be found in Appendix B of this document, it is clear that there are some common elements of those that have been successful:

- Benefits are shared by all partners and the benefits are roughly equal to the cost for each partner.
- Communication between partners occurs regularly through formal and informal channels.
- There is trust in the relationship between partners.
- Each partner has a clear understanding of their role and responsibilities.
- There is continuity in the involvement of organizations and individuals.

Many of the successful collaboration efforts, or partnerships, also shared the following characteristics:

- They are based on a formal structure with regular meetings of organizations and individuals involved.
- One organization accepts a leadership role in the effort including contracting with vendors and project management.
- Partners have accepted a set of standards and have committed to attaining those standards.
- Tools and training are made available to support the partners.
- Technology is shared between the partners to minimize costs.
- Technical assistance is provided to all partners by another of the partners.
- The relationship, along with requirements and standards, evolve over time as the technical sophistication of partners increases.

CHARACTERISTICS OF UNSUCCESSFUL EFFORTS

As with the successful collaboration efforts described during the listening summits, stakeholder provided good information on the efforts that have less than fully successful. Among the characteristics that stakeholders identified as contributing to these less than optimal efforts are:

- They were “unfunded mandates” where cooperation was demanded but not supported financially
- Project suffered from poor communications between partners and weak management
- Roles and responsibilities of participants were not clearly defined.
- There was a lack of sensitivity to local needs in favor of a state or federal partner.
- Costs for a participant are more than the benefits for that participant while more benefits accrue to other partners.
- No support from decisions makers even if the technical staff are in full agreement results in less than full institutional support for the project.
- The lack of professionalism on the part of some participants.
- A “data ownership” culture inhibits collaboration.

MICHIGAN GEOGRAPHIC FRAMEWORK (MGF)

Over 72% of the respondents to the survey are aware of the MGF and the Bing initiative recently undertaken by the Department of Technology, Management and Budget's Center for Share Solutions and Technology Partnerships.

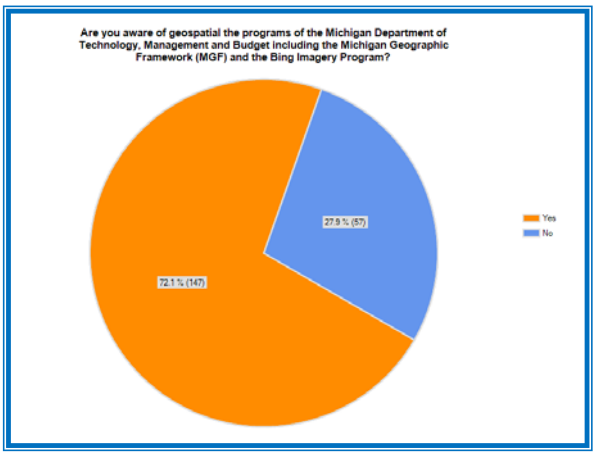

Chart 3. Awareness of MGF Programs.

The majority of the respondents to the on-line survey that are aware of the MGF use the data (52.1 %) and another 25% are participating in the MGF as a partner providing updates.

These high levels of awareness and participation indicate there are significant strengths with the existing MGF and that is has value to the GIS community in Michigan.

Twenty (20) respondents answered the on-line survey questions "Why is your organization not using the MGF?" Many of the organizations that reported they were not using data from the MGF indicated that they had no need for the data offered or the data does not meet specific business needs because of accuracy. Several others noted that they were unaware of the specific information available in the MGF and how it might be useful.

Chart 4. Participation in MGF Program

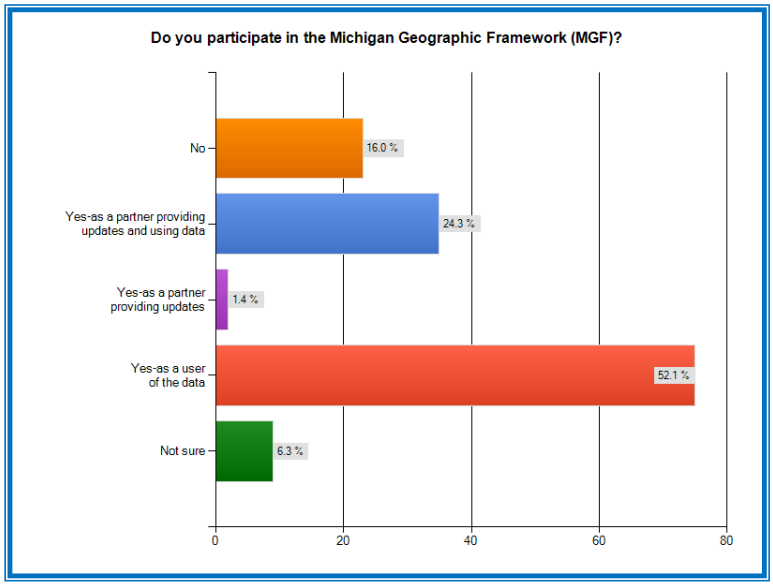

Table 13. Why Is Your Organization Not Using the MGF?

Answer Options	Response Percent	Response Count
No need for transportation data	15.0%	3
No need for hydrography	15.0%	3
No need for government boundaries	15.0%	3
No need for PLSS and geodetic control data	20.0%	4
MGF spatial data is not accurate enough to support my needs	15.0%	3
MGF attribute data does not meet my business needs	20.0%	4
MGF data is not available quickly enough to support my business needs	10.0%	2
Participation in MGF could reduce my revenue from data sales	5.0%	1
MGF data is not provided in a format I can use	0.0%	0
My organization doesn't have sufficient staff to support anything outside of our core data and mission	45.0%	9
Other (please specify)	45.0%	9

POSITIVE ATTRIBUTES OF THE MGF

A comprehensive listing of the comments received during each listening sessions regarding the MGF can be found in Appendix A of this document. Additionally the comments provided to the on-line survey on this topic can be reviewed in Appendix B.

Generally the comments in support of the MGF revolved around the following themes:

- It provides a single seamless source of data statewide.
- The MGF is readily available at no cost and can be shared.
- Data is well organized and easy to use.
- The MGF is very data rich and generally the information required is available.
- It is updated on a regular basis so changes can be counted on to be in place eventually.

SUGGESTED IMPROVEMENTS TO THE MGF

A comprehensive listing of the comments received during each listening sessions regarding suggested improvements and data additions to MGF can be found in Appendix A of this document. Additionally the comments provided on this topic via the on-line survey on this topic can be reviewed in Appendix B.

In general the most common comments can be summarized as follows:

- The spatial accuracy needs to be improved to be uniform from county to county and to match the ortho photos available.
- Communications and training should be improved with users and potential partners.
- Web services should be offered to include traffic and road closings, address validation, and a cartographically appropriate base map.
- An improved method for submitting changes and updates and for tracking those changes through the system is needed.
- Overall the address data needs to be improved and merged with the MSAG and the QVF files.
- All Features need to have a permanent ID so local data and changes can be linked to the MGF data.
- Data need to be updated more often than the current annual release cycle.
- The annual release cycle should be synchronized with the schedule for the Transportation Asset Management Council.

IN DEPTH INTERVIEW FINDINGS

This section summarizes information collected in individual interviews conducted as part of the Michigan NSDI CAP Grant project being managed by the State of Michigan's Department of Technology, Management and Budget Center (DTMB) for the Center for Shared Solutions and Technology Partnerships (CSSTP). These interviews were conducted with individuals who play an important role in the statewide GIS program and who can provide a good perspective and ideas for incorporation in the statewide GIS business plan and marketing plan for the Michigan Geospatial Framework (MGF). The table below identifies the individuals interviews and the organization the represent.

Table 14. Interviewed Individuals and Organization Affiliation

Name	Title	Organization
Steve Aichele	GIS Liaison	USGS
Scott Ambs	GIS Manager President	Jackson County IMAGIN
Phil Bertolini	CIO	Oakland County
Valdis Kalnins	Director, Land Information	Allegan County
Jessica Moy	Director, Remote Sensing & Geographic Information Science Research and Outreach Services	Michigan State University
Scott Oppmann		ESRI
Steve Perry	GIS Specialist	SEMCOG
Rob Surber	Administrator	DTMB CSSTP
Eric Swanson	Director	DTMB CSSTP
Ken Theis	Director and CIO	DTMB
Matt Van Dyken	Director of Technology Services and GIS	City of Holland
Jeroen Wagendorp	Chair, Dept. Geography and Planning Chair	Grand Valley State MiCAMP

In addition to these interviews, project consultants conducted informal discussions with Listening Session participants and attendees at the IMAGIN conference in Lansing (5/3-4).

The comments below are a consolidated summary of key points and ideas from the individuals listed above.

SUMMARY OF KEY INFORMATION AND IDEAS VOICED BY INTERVIEWEES

Impressions about the recently completed Listening Sessions: There as generally a positive reaction about the regional Listening Sessions by people who attended one or more. Comments were favorable about the meeting locations, organization, and topics covered. There were observations about less than expected participation at the Pontiac session (including no representatives from the City of Detroit or Wayne County personnel) and low participation from Federal agencies. A few interviewees observed that participation at the East Lansing session did not have sufficient participation from some state agencies (the DNR part of the DNRE, Michigan Economic Development Corporation).

MGF Program Operation: Most interviewees reacted positively about the data content, quality and availability of the MGF and there was praise for the MGF staff. There were observations about weaknesses and suggestions for improvement including:

- MGF program will be used in different ways by different types of participants. Counties and municipalities with robust GIS programs, the MGF will not be the primary source of data they use but it is a primary source by lower population/lower resourced counties, cities, villages, and townships. Most of the interviewees representing organizations with robust GIS programs indicated that they would have some use for the MGF—when GIS applications requires data outside of their jurisdiction boundary and most indicated that they would participate in the MGF program as a data provider if he CSSTP provided an efficient way to submit data.
- The CSSTP has proposed the idea of "capability groups" as a basis for planning and organizing services to MGF users around the state—this idea should be formalized in the business plan and MGF marketing plan
- There was close to full consensus that the CSSTP needs to be doing a better job of outreach and establishing partnerships with local government entities to maintain the statewide MGF database
- Some individuals noted that the CSSTP has not provided a clear approach and mechanism for local governments to provide data updates to the MGF—indicating that this has been a factor inhibiting participation by local governments
- One interviewee brought up the issue of possible technical obstacles with the MGF being maintained in Oracle Spatial format—specifically the ease of export of data to ESRI ArcSDE databases (used by a majority of GIS users around the state).

State agency GIS support: CSSTP personnel discussed their role in supporting GIS needs of state agencies. While expanding support and outreach with local governments and other non-state organizations, there is a need to explore opportunities for GIS for state agencies including Michigan Economic Development Corporation (MEDC), Michigan State Housing Authority (MSHA), and PSC. The CSSTP will continue support for public safety applications and legislative redistricting (2011).

Federal-State Partnership: Several interviewees commented on the need for closer relationships between the CSSTP and federal agencies with a role in statewide GIS data and applications. Most interviewees identified poor communications and a poor working relationship between the CSSTP management and the USGS appointed state GIS liaison. Interviewees indicated that this situation was a detriment to the statewide GIS program and should be resolved (although no specific recommendations on how to resolve it were provided). One interviewee also noted that a barrier is that Federal agencies

with presence in Michigan (USGS, USDA, USFS, USACOE) do not always coordinate GIS-related activities well and this should change.

Statewide GIS Data Improvement and Augmentation:

- Some interviewees (from jurisdictions with well-managed GIS databases) indicated that MGF was not accurate enough for most of their GIS application needs. This was voiced mainly about road centerline data—particularly in cases where the MGF centerlines have been overlaid on high-resolution orthoimagery (mismatches are apparent). Some interviewees raised a question about whether such mismatches are mainly cosmetic but not major problems with the use of the road centerline data for GIS applications.
- CSSTP personnel discussed ideas about incorporating a statewide parcel database and making it accessible by users statewide. It was noted that the contractor BS&A has automated parcel maps and real property data for a majority of local governments in Michigan and that a partnership with BS&A might be possible. Several other interviewees indicated that there would be interest in this initiative.
- There were a variety of comments about statewide orthoimagery. Full consensus that the state would benefit from an ongoing program for repeat coverage of high-resolution orthos (with preference for 6-inch resolution in developed areas of the state).

Trend toward commercial providers of GIS data and Web-based services: several interviewees commented that planning for the future of the statewide GIS program and the MGF must take into account the likely expanded role that commercial providers (Google, Microsoft, Teleatlas) will have in providing GIS data and services to users and consumers. The likely trend is that more and better geographic data (more accurate, more detailed, higher resolution) and more extensive Web-based GIS applications will be offered. The result is that more people and organizations will use these commercial sources for GIS access (displacing some of the need for "traditional GIS services"). While it is difficult to project into the future, GIS program business planning should take into account this trend.

Statewide GIS Program Coordination and Management:

- There was a general consensus, from CSSTP and other interviewees, that CSSTP needs to improve and expand its approaches and programs for communication and outreach (mainly to local governments around the state).
- Some interviewees expressed some uncertainty about the role of the Cross Boundary Steering Committee and questioned whether this body could properly play a strong role for statewide GIS coordination. Several interviewees indicated that they supported the now de-activated GIS Steering Committee and are concerned that the Cross Boundary Steering Committee can play the necessary role. It has been acknowledged by CSSTP that the role of the Cross Boundary Steering Committee needs to be better defined and put into action.
- The State User Group (organized by CSSTP) was discussed by CSSTP and several interviewees with a general positive reaction on its role as a professional networking forum and opportunity for distributing information to the statewide GIS community. There was general discussion that its role could be improved but not specific proposals on how to make improvements.
- Interviewees were asked about a topic that has been voiced in Listening Sessions—the need for a statewide GIS Coordinating Council. About half of the interviewees voiced strong support for a Council and the other half either indicating lack of support for this or not strong opinion either way. Interviewees did not provide specifics on the way in which such a body would be created and its role but those in favor of formation of a coordination body seem to be addressing the need for a stronger high-level voice and influence on the GIS

program and its management by CSSTP. One interviewee questioned whether there are a sufficient number of individuals in the state at a senior management level with the proper understanding of GIS to serve on a high-level council.

- There was strong consensus on the need for specific steps to be taken to increase and improve support for GIS implementation/access by Counties and municipalities in Michigan without the resources and/or trained staff to implement GIS or get access to GIS data and applications. One interviewee identified a number of approaches (not mutually exclusive) to encourage/stimulate state-local partnerships: a) provide financial incentives (state to local governments), b) Local governments provide data for MGF with some like-kind exchange (services) from state, c) Local governments provide data for MGF with CSSTP collecting revenue for data sales and reimbursing local government, d) Legislative mandate for statewide GIS program with specific requirements for state-local partnerships, e) prepare convincing business case for local government participation in MGF program.

Revenue Generation from GIS Data Sales: Interviewees discussed observations that some Counties and local jurisdictions have formal policies for revenue generation from sales of GIS data (mainly high-resolution orthoimagery and parcel data) which is allowed by Michigan Open Records Law. Many local governments have made a decision not to charge fees for data so there is an inconsistency in policy. Most interviewees indicated that this was an obstacle for statewide sharing of data—with the idea that more open sharing can generate indirect benefits (e.g., economic development initiatives) that exceed revenue generated from sales. CSSTP personnel have suggested several ways to deal with this: a) provide viewing access to statewide GIS data but continue to allow local governments to sell data, b) CSSTP establish a statewide data distribution pool collecting revenue from data sales and reimbursing local governments. One interviewee suggested that a business case should be developed that demonstrates lack of justifiable benefit from GIS data sales.

IMAGIN and MiCAMP: Many of the interviewees provided information about the origin of IMAGIN and MiCAMP and how they differ in terms of mission, governance, membership, and "organizational culture". The majority of interviewees expressed a feeling that the existence of these two groups (with similar missions) may exacerbate existing barriers between different elements of the statewide GIS community—despite attempts by IMAGIN and MiCAMP leadership to coordinate activities. Over half of the interviewees suggested that the groups should join and share resources to better serve professional networking, education, etc. for the state's GIS community.

Role of Universities in statewide GIS Program

- Universities provide a number of services that are important to state agencies, local governments, and regional organizations. Several universities have been very successful in providing GIS technical services and consulting support to government agencies. Michigan State University is hosting and providing imagery access services (supporting CSSTP). Michigan Tech continues to support to road asset management organizations through the Roadsoft product. One representative of the private sector suggested that in some cases universities can have unfair advantages in competitive procurements of GIS services.
- Only a few interviewees made general comments about the role of universities in the statewide GIS program. One expressed concern that academic programs in GIS could do more to connect with practical GIS program topics and prepare students for jobs in GIS.
- GIS certificate programs at universities have served an important role in educating GIS professionals
- General view that universities should continue to support student intern/coop programs and that government agencies and private companies should make more use of these programs to augment existing staff.

APPENDIX A
ON-LINE SURVEY RESPONSES

Michigan NSDI CAP Grant
Outreach Findings Summary

Prepared for

Michigan Department of Technology, Management and Budget

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INTRODUCTION

This document captures all responses provide to the on-line survey offered to the stakeholders in the Michigan CAP Grant. Since many questions were open ended and intended to collect general impressions this document includes the comments received.

ORGANIZATIONAL INFORMATION

WHAT BEST DESCRIBES YOUR ORGANIZATION?

Answer Options	Response Percent	Response Count
Government: City	7.5%	21
Government: Incorporated Township	7.1%	20
Government: Village	1.4%	4
Government: County	31.7%	89
Government: State	17.1%	48
Government: Federal	5.7%	16
Government: Tribal	1.1%	3
Government: Sub-state Regional Agency/Authority	5.0%	14
Special Purpose District or Authority	0.4%	1
Public School District	0.4%	1
Private Firm: Survey/Mapping	6.0%	17
Private Firm: GIS or IT Service Provider	5.3%	15
Private Firm: Resource Management	0.4%	1
Private Firm: Retail and Commercial Services (Real Estate, Development, Business Planning)	0.4%	1
Private Firm: Service Delivery (Transportation, Shipping, Delivery, and related)	0.0%	0
Private Firm: Other	1.8%	5
Utility: Public (Utility Department of Government Jurisdiction)	0.4%	1
Utility: Public (Independent District or Board)	1.1%	3
Utility: Private (Investor Owned or Cooperative)	1.1%	3
University or Educational Institution	2.8%	8
Not-for-Profit	2.5%	7
Professional or Trade Association	1.1%	3
Other (please specify)		12
answered question		281
skipped question		1

OTHER?

Hyrdogeology & Environmental Engineering Consultant
Hospital
Management consulting
Military
Geospatial Services
Private Firm: Engineering Consultants
Engineering
COUNTY ROAD COMMISSION
County Road Commission
Charter Township of Independence
County Road Commission
Citizen Appointee to a county Brownfield Redevelopment Authority

WHAT BEST DESCRIBES YOUR POSITION?

What best describes your position?		
Answer Options	**Response Percent**	**Response Count**
CIO [principal decision maker for organizations technology and budgets]	4.6%	13
Director [make decisions for GIS Department or Program]	12.1%	34
GIS/IT Manager [influence decisions, supervise GIS staff, manage projects]	23.5%	66
GIS Analyst [senior technical GIS staff]	13.2%	37
GIS Technician [junior GIS technical staff]	3.9%	11
GIS User [GIS not primary job but uses technology]	18.1%	51
City/Township/County Manager [jurisdictions senior management staff]	1.1%	3
Elected Official	3.9%	11
Educator	1.4%	4
Other	18.1%	51
Other (please specify)		53
	answered question	281
	skipped question	1

OTHER?

Supervisor
Engineer
IT Specialist
MDOT Real Estate Project Development Manager
Transportation Engineer
Emergency Manager
Emergency Manager
Consultant
One of several Principals in the firm
Surveyor
professional surveyor
GIS Specialist
Land Surveyor
GIS project Manager
Engineering/ Transportation/ State & Local Gov. Account Manager
Planner
Road Commissioner
911 director
Transportation Engineer
Manager
Photogrammetrist
Database Architect - Assisting with GIS data implementation
GIS Developer
Administration/Management
surveyor
Supervising Surveyor, Geodetic Surveys and Mapping
Aerial Mapping Project Manager[Imagery User/creation to support engineering design and GIS]
Transportation Engineer - MDOT
GIS Specialist (Professional Staff)
Administrative Assistant
Transportation Planner
Professional Surveyor
Web Developer
ENGINEER
Land Use Planner
Ecologist, GIS lead
Geodetic Advisor
Health Department Staff
equalization director

EQUALIZATION DIRECTOR
Sales
Appointed County Planning Commissioner
Planning Commission Chair
Professional Surveyor
Survey Department Manager
Zoning Administrator
planning commission chairman
Solid Waste Council member
Citizen Appointee to a County Redevelopment Authority
Zoning Administrator
Deputy Clerk
County appraiser
land use planner

DOES YOUR ORGANIZATION HAVE A GIS?

Answer Options	Response Percent	Response Count
Yes	90.7%	255
No	9.3%	26
answered question		281
skipped question		1

WHAT BEST DESCRIBES THE CURRENT GIS PROGRAM STATUS IN YOUR ORGANIZATION?.

Answer Options	Response Percent	Response Count
No Use of GIS	0.8%	2
Planning to Implement GIS	4.9%	12
Initial GIS Under Development	9.8%	24
Current Department-based GIS in operation	42.7%	105
Current Multi-Department or Enterprise GIS Program in Operation	47.6%	117
Major Expansion/Enhancement of GIS Program Underway	10.6%	26
Use GIS Services or Products from Another Organization	12.6%	31

Other (please specify)	13
answered question	246
skipped question	36

OTHER:

Single User license - used on a "as needed" basis
Currently use GIS for recreation/master plan maps
develop GIS data and maps for governments
GIS Consultant
High level GIS every day for consulting and products
ArcGIS Server after release of 10
We develop tools for Enterprise GIS
academic
Using GPS coords in crash mapping system
We pull our GIS from Oakland County's GIS
Our Township uses the County GIS services
We build GIS solutions for our clients
County

IN YOUR DAY-TO-DAY ACTIVITIES, WHAT DO YOU USE GIS FOR?

Answer Options	Response Percent	Response Count
Public Safety [law enforcement, crime analysis, emergency response, fire, E-911]	39.4%	97
Real Property Appraisal and Tax Assessment	40.7%	100
Land Development or Other Permit Review and Tracking	29.3%	72
Land Use Planning	47.2%	116
Transportation Planning	38.6%	95
Transportation Management	27.2%	67
Economic Development [Facility Site Selection, Workforce Development, etc.]	27.6%	68
Infrastructure Asset Management or Maintenance	39.8%	98
Natural Resource Planning or Management	36.6%	90
Environmental Assessment and Regulatory Management	32.1%	79
Public Health/Social Services Planning or Provision	16.7%	41
Engineering Modeling or Analysis	32.5%	80
Financial or Business Planning	7.7%	19
Budgeting and Facilities Management	12.6%	31
Market and Demographic Analysis	15.0%	37
Delivery Route Optimization	5.3%	13
Parks and Recreation	32.1%	79
Schools/Education	15.9%	39
Agriculture	11.0%	27
Other	16.7%	41
Other (please specify)		43
answered question		246
skipped question		36

OTHER:

preliminary planning for field recon. / mapping of survey and ecological data
Public and Board explanations
occasional use only
Data development for most of the above items
N/A at this time
Mapping for 911, ORV, equalization
Wide Area Network Mapping
Crash Mapping
any or all of the above, as needed by client governments
All in GIS consulting and products realm
Watershed & Stormwater Management
Professional geospatial consulting
Utilities
Develop and distribute GIS based asset management software
Military
Equalization
we also assist others in implementing a GIS
Range Management for Military Training
In support 2010 Census & on-going Census programs
All the above
Asset inventory (natural, cultural, historic) of 8 county region
academic
Transmission Line Engineering
ortho photos for transportation
Land Surveying, Ground Control, Photogrammetric and aerial mapping planning, Engineering for Transportation Design
Safety - Engineering Analysis
Electric and Water Engineering, Creation Work Orders, Study, Plant Management, Analysis, Landbase, and Record Keeping
Mapping crashes and other points-of-interest
Land Bank
These are the uses of GIS in my agency, not necessarily just by me.
Research
Ecological Research
Keeping Track of Road History (Road Commission) and other Data for Helping with Engineers to do planning and other functions
Project Planning
Emergency Response and Recovery, Floodplain Mapping, Nuclear Planning,
Review and editing of soil survey spatial data.
query data to produce maps for assessors
use by planning dept and citizens
Land/Property Records
We don't use GIS per say, we build GIS Solutions for a variety of client activities
we are not operational yet
County Drains

wetland mapping

SELECT THE NUMBER OF RESPONSES YOUR GIS SUPPORTS

Answer Options	Response Percent	Response Count
2 or 3	21.4%	25
4 or 5	28.2%	33
More than 5	50.4%	59
answered question		117
skipped question		165

PLEASE SELECT THE DEPARTMENTS SUPPORTS BY YOUR GIS

Answer Options	Response Percent	Response Count
Public Safety [law enforcement, emergency response, fire, E-911]	64.9%	72
Tax collection and assessment	55.0%	61
Permitting	41.4%	46
Planning and Growth Management	65.8%	73
Economic Development	49.5%	55
Asset Management	53.2%	59
Natural Resource Protection	45.0%	50
Parks and Recreation	49.5%	55
Schools/Education	23.4%	26
Drain Commission	38.7%	43
Other	27.0%	30
Other (please specify)		42
answered question		111
skipped question		171

OTHER:

transportation/ IT
Engineering
Road Commission
Public Works and Engineering
Transportation Applications, Forecasting
In our GIS consulting and products practice
Municipal services and application development
Utility Services
State wide Master Planning efforts
Transportation, Environment, Demographic and Land Use
Operations
Health Dept--Env. Health
Heritage Wildlife
Federal land program delivery
Military Departments
U.S. Census Bureau
All Above
Created for Real Estate to display permanent land record maps linked to data/documents (fee, easements, leases, licenses) needed to support electric/gas transmission & distribution systems.
your answers are all geared toward government users
Transportation and Public Works (utilities)
Road Commission, Health Department
Within DTE Energy we support numerous business units and projects both enterprise wide and also specific to gas and electric.
Department of Public Works
mosquito control $ gypsy moth suppression
Customer Service, Engineering, Maintenance, Operation, Dispatch
Engineering, survey, environmental
Animal Control
Research
Sign Shop and Engineering Department (Construction and Design)
Emergency Response & Recovery, Mitigation, Public Assistance, National Preparedness, Individual Assistance
Emergency Management
Register of Deeds
Treasury, Courts, Clerk, Transportation, Road Commission, Facilities
Engineering & Highway Maintenance
Geography, Botany, Plant Pathology, Fisheries & Wildlife
GIS data conversion, maintenance, professional services
Mine Commission
Environmental Health
Clerk (Qualified Voter File), Public Health, Transportation, Road Commission, Local Communities
Engineering

We don't have departments; but we build solutions for all of these departments
engineering

BUSINESS DRIVERS

WHAT ARE THE BUSINESS DRIVERS FOR GIS IN YOUR ORGANIZATION?

Answer Options	1-Little or no importance	2	3	4	5-Critical Importance	Response Count
Reduction in labor or operational costs	31	34	58	59	40	222
Improvement in data quality and consistency	3	6	19	76	122	226
Explore new sources for revenue generation	65	43	46	35	28	217
Enhance/increase inter-organizational partnerships	6	29	61	75	46	217
Economic/business development and improvement	39	28	58	53	39	217
Infrastructure improvement and maintenance	21	18	37	64	81	221
Environmental protection/Natural Resource Enhancement	25	23	59	54	58	219
Improved land use planning and decision making	19	17	42	74	69	221
Emergency preparedness and response	27	26	37	60	68	218
Enhancement of health for citizens	47	47	49	41	26	210
Enhancement of quality of life for citizens	28	30	70	48	33	209
Support quality and availability of educational and training opportunities	48	52	60	35	15	210
Other	16	2	4	4	10	36
Other (please specify)						18
					answered question	227
					skipped question	55

OTHER:

A general perception that it is valuable. Econ development is a new focus.
So far these questions are government related only. Answering them in light of our firms supporting these operations with services and products.
Citizen services, efficiency of our departments (particularly building, zoning, DPW, and assessing), promote the Township with high-quality, accurate graphics on our website and in advancing our industrial parks.

Make GIS affordable, available and easy to use by anyone who wants or can benefit from the technology.
to provide an accurate count of people, where they are, & their associated demographics for use by anyone within or without the Federal government.
As a service provider, any one or all of these issues may be the critical focus of the user(s) development. Systems need to structured for evolution.
Assist of our member counties, townships, cities and villages - serve as a central data collection point. Serve as a resource for high quality maps for the region.
academic
HPMS submittal
Research
Enhanced data analysis, visualization, planning and decision making (beyond the traditional confines of Land Use as the county doesn't have a planning dept or land use planning authority.)
Maps assist organization in marketing its services as well identifying county geography for public use
provide base data for construction operations
We are a GIS services provider.
Promote interdepartmental communication and shared knowledge across the organization.
Improves efficiency of day-to-day operations; greatly enhances public education
Public Safety
habitat mapping

DATA USE AND NEEDS

NSDI FOUNDATION DATA USE

Answer Options	Don't Use or Need	Produce my own	Receive and use as-is from an outside source	Receive and edit from an outside source	Need it but don't have it	Response Count
Orthophotography (high resolution)	4	33	127	28	13	205
Cadastral Parcels or Legal Lots	16	72	59	36	25	208
Street Centerlines and Transportation Features	2	75	74	49	9	209
Administrative Boundaries	9	68	87	33	7	204
Hydrography	11	34	102	46	12	205
Elevation	15	35	103	18	34	205
Geodetic Control	28	45	72	23	31	199
					answered question	212
					skipped question	70

OTHER DATA NEEDS

Answer Options	Don't Use or Need	Produce my own	Receive and use as-is from an outside source	Receive and edit from an outside source	Need it but don't have it	Response Count
Addresses [Street Centerline Ranges]	19	51	75	33	15	193
Addresses [Point Features]	25	64	50	21	36	196
Bioscience-Aquatic Habitats and Features	96	13	38	10	27	184
Bioscience-Terrestrial Habitats/Features	90	14	43	11	27	185
Buildings/Structures	24	48	42	21	57	192
Cadastral Reference (24K PLSS)	42	33	69	14	17	175
Climate/Meteorological	115	0	41	7	19	182
Critical Facilities	47	53	32	12	42	186
Cultural/Historic Sites and Features	48	44	49	15	30	186
Demographic Enumeration Districts/Data	48	15	86	16	19	184
Elevation–Contours	15	31	85	17	42	190
Elevation–Digital Elevation Models	20	28	88	16	37	189
Geodetic Control	33	35	69	11	33	181
Geology	55	4	88	7	26	180
Governmental Boundaries	5	47	106	24	8	190
Hydrologic Unit (watershed) Boundaries	20	24	107	16	19	186
Land Cover	22	30	95	18	21	186
Land Use/Zoning	18	62	67	17	23	187
Natural Hazards	49	16	57	6	50	178
Recreation Sites and Facilities	24	64	60	12	24	184
Satellite imagery	39	4	107	12	25	187
Soils	24	5	121	16	18	184
Surface Hydrography (water bodies/streams)	7	27	106	31	12	183
Subsurface Hydrology	58	7	76	4	31	176
Survey Reference Grids (e.g., PLSS)	31	30	87	12	21	181
Telecommunications Facilities	61	21	44	6	51	183
Transportation (aviation facilities)	51	28	62	10	34	185

Answer Options	Don't Use or Need	Produce my own	Receive and use as-is from an outside source	Receive and edit from an outside source	Need it but don't have it	Response Count
Utility-Electric Transmission/Distribution	39	16	46	8	80	189
Utility-Gas Transmission/Distribution	42	11	46	8	82	189
Utility-Pipelines	28	31	43	8	78	188
Utility-Sanitary Sewer	30	47	38	9	62	186
Utility-Drainage, Flood Control	34	31	39	8	74	186
Utility-Water Distribution	35	44	36	10	57	182
Utility-Water Supply, Transmission	37	43	38	10	59	187
Wetlands	12	18	115	19	27	191
Other	9	10	2	1	7	29
Other (please specify)						15
					answered question	200
					skipped question	82

OTHER:

Once again, we produce and help maintain a lot of data for clients but not our own so don't want to answer and throw off statistics.
Air pollution sources; point (factories), area (gas stations) and mobile (auto)
Owner names; parcel sizes; parcel dimensions; use for Master Plan
META DATA???? don't see that on the list
Business locations
Anything else we create in-house
GIS activities currently limited to ground control, Land survey corners and project tracking
Primarily use is health or vital statistics data
many listed as needed we are short for all areas and current
Research plots, other inventory-monitoring plots
Utility Notification Polygon Layer For Cable,Telephone, Water, Sewer, Schools, MCD's, Gas & Electric
CRITICAL DUNES AREAS. PRODUCED MY OWN ANSWERS IMPLIES MODIFIED OUTSIDE SOURCE DATA.
Regulated Woodlands, Street Tree Locations
Election Geography, ZIP codes, Tile Drain, Drain Districts all produced in-house
surface impermeability (need don't have)

OBSTACLES TO MEETING BUSINESS OBJECTIVES

RANK OF CURRENT OR PAST OBSTACLES

Answer Options	Never Encountered	Currently Experiencing	1-Minor Impact	2-Some Impact	3-Major Impact	4-Critical Threat	Response Count
Insufficient senior management awareness or support	46	25	35	46	36	16	183
Inter-departmental communication and coordination obstacles	24	37	54	52	37	11	180
No or insufficient operational management for GIS program	49	25	50	40	23	6	177
Lack of or insufficient external partnerships	26	29	62	53	29	3	178
Funding limitations	7	59	16	42	58	40	187
Poor program focus, direction, or plan	43	24	56	28	25	9	165
Staffing limitations (number of staff or skills)	21	45	27	47	44	22	177
Needed geospatial data does not exist or is not readily accessible	25	37	54	50	28	14	177
Problems with data quality, currentness, updating	9	39	52	48	41	11	171
GIS applications are not "user-friendly" enough	22	29	74	56	23	2	182
System problems: software, hardware,and networks	34	33	53	39	26	10	174
Difficult integration of data from different sources	11	37	65	59	30	3	176
Lack of or insufficient use of data or system standards	31	29	52	52	31	10	180
Insufficient opportunities for training and education	39	22	58	48	27	7	183
Other:	11	2	3	4	2	2	23
Other (please specify)							4
						answered question	190
						skipped question	92

OTHER:

Lack of time to sufficiently keep data updated and skills current.
Usually Project specific
Difficult to leverage robust in-house GIS data in third party applications used by other departments
Lack of State integration of local level GIS data and knowledge

COMMENTS ON OBSTACLES

Answer Options	Response Percent	Response Count
Insufficient senior management awareness or support	36.1%	22
Inter-departmental communication and coordination obstacles	39.3%	24
No or insufficient operational management for GIS program	18.0%	11
Lack of or insufficient external partnerships	29.5%	18
Funding limitations	52.5%	32
Poor program focus, direction, or plan	24.6%	15
Staffing limitations (number of staff or skills)	42.6%	26
Needed geospatial data does not exist or is not readily accessible	27.9%	17
Problems with data quality, currentness, updating	32.8%	20
GIS applications are not "user-friendly" enough	31.1%	19
System problems: SW, HW, and networks	29.5%	18
Difficult integration of data from different sources	26.2%	16
Lack of or insufficient use of data or system standards	23.0%	14
Insufficient opportunities for training and education	27.9%	17
Other:	9.8%	6
	answered question	61
	skipped question	221

COMMENTS:

Insufficient senior management awareness or support
County & Township boards and decision makers are not aware of the "under the hood" GIS use and its potential
Comment redacted. To receive comment text please make a request to the DTMN project management team (Paul Harmon, harmonp@michigan.gov, or Laura Blastic, blasticl@michigan.gov).
GIS is not a mandated operation and hence funding is limiting full utilization of potential
Great support in implementing and using, terrible recognition of staffing needs and commitment.
hard to explain details to non-technically oriented people
Have to get them up to speed and show the usefulness of software
If senior management is aware, they need to let those who are affected know that they are aware and trying to fix the problem.
Increased exposure at their peer gatherings and print media, also, increase exposure one political level above/below the target.
it is getting worse...Sr Mgmt not qualified to make GIS decisions
It's always difficult to manage what you don't know.
Lack of Understanding
Major budget issues, no implementation at this time.
Management tends to not know how to use the programs or their capabilities and therefore does not endorse funding initiatives.
Many senior managers in our agency are not GIS users, therefore are not aware of GIS needs and variables that can decrease efficiency/applicability of GIS issues we face.
More education and demonstration for top tier.
Senior & Middle management supports IT, not GIS
Senior mgmt claims they support it, but GIS projects are not approved...
Senior officials do not recognize importance of accurate GIS data
State CGI does not connect with Locals - communication/cooperation
This is the most critical problem I'm facing while trying to GIS implement.
Too many problems distracting their focus on resource opportunities.
Visions of the important of public facing GIS differs slightly from that of senior management
Inter-departmental communication and coordination obstacles
Again education and moving to distributed operations.
AutoCAD users/department feel threatened by GIS. In other words that they won't have work/mapping to do. And they feel that we will simply duplicate work using GIS.
CAD Dept not using State Plane coordinates

DNRE needs to share data more easily with other agencies. Why does it take so long to upgrade ArcGIS? Why does it take so long to upgrade hardware and the network?
DOT manages Geodetic control system that would be of benefit to geospatial users. Coordination would prove beneficial.
Egos need to be shelved. Hurts forgotten.
GIS staff time insufficient to inform other departments of full potential of GIS implementation in their program areas
How to incorporate many databases into one management system
Increased senior management awareness of potentials, increase examples at state government; demonstrate what information is common to all "stove pipes" and how coordination can save.
Internal data-sharing problems; GIS users get along, but bosses don't
lack of funding for enterprise solutions
Little coordination among Fed/State/County data producers
need more data sharing between Depts of LaborEconDevGrowth and NaturalResourcesEnvironment
Need to train others so they can benefit from GIS
Other depts have no desire for desktop apps.
same
Some departments just "don't like each other" and thus data does not get shared
Still some lingering interdepartment disagreements
too much overlap within
Using GIS to the full potential
using separate systems now which are not completely compatible
Water Department and Engineering Department do not communicate or get along very well
We are an MDOT maintenance agency; would like to see state storm drain infrastructure in county-based GIS alongside county structures to have complete drainage models.
Working on it.
No or insufficient operational management for GIS program
a minor problem due to lack of high level experience
AirQualityDivision in DNRE has no GIS management
Documented, easy to read examples of GIS success with further reading options; constantly demonstrate in press and at other trade conferences.
GIS coordinator staff is only 10% FTE which limits true operational management
Internal GIS resources are minimal but high functioning. What is lacking is standardization & awareness of GIS mapping initiatives throughout the organization.
Internal knowledge of GIS opportunities lacking
Need overall plan for GIS departmental use
No good champion in many cases.
Our current GIS is a larger job than the assets which are assigned to it.
same

same as "Insufficient senior management awareness or support"
Lack of or insufficient external partnerships
As a federal govt entity, it's difficult to generate partnership when the data we produce will be available for free anyway.
external partners are so far behind we end up doing all the work.
Haven't been ones that really worked or been true partnerships.
Improved, however need less duplications from entities
Increase use of GIS Server resources to facilitate sharing
Need more help/data/funding from State and Federal Agencies
Need more user groups and relationships to share data
need real partnerships w state, not enough county incentives
partnerships exist but not enough support for each party to make any headway
Resources may be available, but awareness of them is lacking.
See #2
SEMCOG helps when it can, but business data is guarded
sometimes due to competitive nature of looking for work or ownership of data
Specifically for Emergency management disasters are not contained within geographical boundaries. Data sets are not quickly accessible or "linked".
State of Michigan needs to incorporate local level data - parcels, address points, centerlines.
There are many opportunities for cooperation between the state and federal agencies - but sometimes it seems like there is a competition
Working on them, part of problem is identifying
would external partnership at county level help with access to parcel dataset
Funding limitations
A fact of life
a recurring problem
A stable funding source for geospatial technologies needs to be implemented through legislation.
Budget shortfalls may cause dissolution of GIS program in upcoming years
Budgets are getting tighter and tighter due to state revenue sharing cuts. We need more and more stable funding for GIS throughout the State.
Could use more seats
DNRE needs to buy more help from CSS. DNRE needs more hard-drive space to handle GIS data. (Best Buy has 2 TB hard drives for <$200!)
Due to funding limitations it is taking a long time to complete our county. (8 years for one township).
Find a dedicated revenue source to replace Enhanced Access
Funding limitations are always an issue for the federal agencies, there are many departments competing for limited funds.

Funding,...of course; sufficient staff, equipment, data refresh, training, etc.
GIS is general fund, no dedicated funding source
GIS is not a specific line item in our budget. Have to be multifunded by other budget areas.
housing market drives government revenues
Key issue in staffing and knowledge
lack of funding for advancement in GIS integration in enterprise and web development
Licensing with ESRI is not cost-effective. The State or Regions need to work with ESRI to develop better "enterprise" licensing agreements.
Never seems to be enough money.
of course
REVENUE CUTS HAVE NOT CURRENTLY IMPACTED DEPT. BUT MAY ELIMINATE SOFTWARE SUPPORT CONTRACTS IN NEXT BUDGET.
software funding limitations
Sometimes I would like to use ArcInfo but don't have software or knowledge to use
Spell out GIS relationships to mandated services from State, bring OEM community at state levels to local programs, targeted resource allocations for GIS programs
Staff funding.
Surviving at current levels, but no expansion.
This is connected to "Insufficient senior management awareness and support". We have the money, senior management won't spend it.
This is Michigan
This is the main concern we have. We are a regional agency trying to service 8 counties with no budget for GIS. Funding for GIS activities must come as part of other projects, but those projects typically involve just one community. There is no mechanism for funding the maintenance of GIS data at a regional level. Seems that the state should fund at least one GIS staff for each regional agency.
We are a small County with a limited budget NO $$$
We have enough money for a good GIS enterprise system but we need more money to improve the access to the GIS data we have. Specifically, we need money for a GeoCortex to improve the city's GIS web capabilities.
we need yearly bi-annual flyovers, but too expensive
Who doesn't?
Poor program focus, direction, or plan
Changing technology and multiple platforms confuse issue
CONTRACTOR HIRED TO CREATE BASE LAYERS, TOOK US IN A DIRECTION THAT WAS EASIER FOR THEM TO IMPLEMENT, INSTEAD OF WHAT WE REALLY NEEDED. PROJECT QUALITY CONTROL WASN'T.
Dept did not lost focus on GIS for over 2 years...now are scrambling to catch up.
GIS thus far has been an option for field staff- very, very limiting to our success.
high quality spatial location of air facilities and property boundaries is relatively low priority for AirQuality management

I would like to post as much GIS data on the city's website as possible but we lack the funding, licenses, or interest from city officials to do that.
Lots of floundering for many orgs, some have good plans.
Materials from management peers which help demonstrate GIS Data and interactions
Need plan for inter-departmental GIS initiative
No goal setting, just reactive to demands.
No plan on how utilize the GIS more fully
Part of Problem with developing a program is not enough time to implement a program and policies
should be state regulated
State level objectives are poorly defined and outcomes difficult to measure
This is a problem at all levels
Staffing limitations (number of staff or skills)
#1 but inseparable from funding limitations, not enough core staff to even manage contracting if budget was larger
1 FTE is not sufficient to keep up with demand.
Additional staff needed for programming related projects, but no monies available.
Because of lack of GIS focus, staff GIS skills are not nearly where they should be.
could use another staff member dedicated to GIS but no funding available ever
Could use more staffing that understand GIS
Current skills operating a very involved and powerful
Data maintenance is staff intensive - consider a distributed data maintenance model
Do not have dedicated GIS staff
Fail to recognize the need for staff and the time commitment needed to produce a quality and timely GIS system that reaches expectations on time.
Fisheries Division needs help with division-specific business-critical projects involving GIS and statewide database. We get low priority because we are "only" one division. Please allow divisions to have some GIS/IT staff of their own, rather than all being in DTMB.
Gets back to funding problems and keeping qualified staff in poorer orgs.
Huge problem in my area. Staff using GIS also do dozens of other tasks, and often GIS is pushed aside.
I am only AirQualityDivision staff w/limited knowledge of GIS
I AM the GIS department, but have other responsibilities that compete for my time.
I'm a one person GIS Department when I'm not busy being the DPW Director.
Increase funding sources and program awareness
Key issue to developing further expanded use
Need database manager and trained IT staff
No one in the Assessing Dept fully knowledgeable in GIS
ONE EDITOR ONSITE, EQUALIZATION STAFF DISPLAYS EXISTING DATA BUT HAS MIN. TRAINING WITH PAGE LAYOUTS OR SQL.
Our GIS program is data rich, but programming poor. We need an application developer to fully realize the

benefits of GIS.
R&D staff are the first to get laid off
remote sensing experience by GIS staff is a joke...
Staff limitations hinder better training and utilization of GIS in other county departments
The program is growing so fast that we need more people right away.
Needed geospatial data does not exist or is not readily accessible
costly to collect or buy
Data is too expensive to acquire on our own. Need help from outside sources.
Gas and electric utility information is always a struggle to obtain.
I would like access to power transmission line data but currently do not have it.
In the past 20 years our quality and quantity of spatial data available to us has increased logarithmically.
Increase funding sources and program awareness
MDOT's Michigan Spatial Reference Network is a system of CORS (Continuously Operating Reference Stations) covering the state. Data is readily available at www.mdotcors.org or National Geodetic Survey data site.
more remote sensing...less GIS
Need better sources for accurate data
Need Elevation Modeling / Contours
Not too big a problem except in gap areas of the state with no local level parcels or address data.
Often data does not exist. More often data, restricted behind licensing barriers
Parcels are impossible to obtain from local gov'ts
poor area source inventory, business location, high resolution land use
Relates to lack of staff and funding - data is not getting updated.
Trying to expand capabilities of a mapping system to POIs alongside current crash mapping
updated digital parcel mapping is needed
Problems with data quality, currentness, updating
A fact of life
always, GIS data not part of IT or maint crews job
Base map issues - very slow in getting it updated
Data for GIS mapped parcels was recently migrated from several legacy systems into one Property Mgmt system. This presents a challenge for data scrubbing over the next 3 years.
EXISTING DATA FROM OUTSIDE SOURCES IS BEING CORRECTED AS NEEDED. IF CORRECTED "CREATED MY OWN" WAS CHECKED
GIS'ers go after the easy out of date sources...unwilling to invest in updating GIS data
I make updates to the Jackson's road layer that never seem to make it to the states All roads layer on the spatial website.
Increase funding sources and program awareness

Insufficient staffing to keep up with updating
Issues with determining who has the final "say" for a layer. E.g., Emergency Response claims something is a hospital, Health division disagrees.
lack of regular parcel maintenance in some key counties
Lot of issues here with accuracy and suitability from local to state to federal levels and the whole maintenance, transmittal, financial, and trust issues
Many discrepancies with data at different levels
Metadata is important
National Hydrography Dataset needs editing; several hundred lakes seem to be missing; some flow directions are incorrect.
Required accuracy continues to increase.
State of MI needs to update orthophotos
State's road centerline is not spatially accurate or have accurately maintained address ranges for geocoding purposes.
surveyor needs to be involved
yes, sometimes
GIS applications are not "user-friendly" enough
Web mapping application development will resolve this problem with time.
User friendly GIS apps to get the information out to all users are too costly. Free options are too bulky and slow.
training, training, training
This may become more of an issue as we develop ArcGIS Server apps.
This is getting better. Good work.
Our current internal GIS website used by city employees to access GIS data is too difficult for some to use easily. Upgrading from ArcGIS Server Manager to GeoCortex would help but we lack the funds.
not usually
Need a stable free viewer for distribution to GIS users who don't need to edit
More of a financial issue, cost is not keeping up with ease of use.
LOTS OF BUTTONS AND SEQUENCES TO REMEMBER TO ACHIEVE WHAT YOU WANT TO ACCOMPLISH.
It's a hurdle that newcomers have to negotiate
Internet band with makes web service difficult for the public
Increase training and development of web tools; educate why GIS should not be overly user friendly.
GIS data consumers want an "Easy" button. We struggle to create applications and procedures to make it easier for them.
Getting better- my support as well!
ESRI is not user friendly...Go with Open Source like Mapserver/Geomoose
DNRE and Fish Div could benefit from additional specific applications that are tailored for specific tasks and easier for field staff to use than ArcGIS.

Continuing to get better.
AMEN! Too complicated, inconsistent, and poorly indexed.
System problems: SW, HW, and networks
Aerial imagery is housed in one Corporate ImageServer implemented in 2008; however, due to bandwidth issues access of these images Statewide is not currently possible.
As part of the Military, we have very strict security which interferes with our daily operation.
continued interface problems in a federal standardized configuration.
DNRE needs to move to the latest version of ArcGIS. DNRE needs to be able to share data between former DEQ and DNR folks. DNRE should not have to duplicate storage of MI Framework data due to hardware/network issues.
Educate IT folks on GIS use, demands and resources from within the community. GIS is not IT with a map!
Firewalls and bandwidth
handled by DIT
Mostly all related to money and planning.
network infrastructure needs some upgrades, need $ for this
not usually, except in some instances, but usually find work around
Obtaining hardware with enough speed, RAM, etc. to support GIS is getting harder and harder.
Occasionally floating ArcView licenses are not released even when they are no longer being used.
software limitations due to budget restraints
Speed, backups
State Govt not set up for GIS applications; storage space inadequate; lack proper backup solutions
SW see above. HW= printer problems, but I suspect these are actually SW problems.
This is getting better. Good work.
We are having internal network problems
Difficult integration of data from different sources
Coordinate system variations between Michigan GeoRef and statutory Michigan Survey Coordinate Systems complicate data sharing.
Data is created for a given purpose; unify the purpose for creating data.
especially imagery, converting/clipping/reprojecting/re-georeferencing image file types (.sid, .ecw)to fit your project area in state plane coordinates int. ft.
Having problems with some of the most recent Microstation formats.
Issues center around local/county data lining up together and not having a common standard.
Many sources-conflicting data
metadata is important
need to eliminate e00 format and put them into shapefile format/some problems with MIGeoRef and outside data
No one is posting their data

not usually
problems with software talking to each other - ex. 911 software
State should drive standards and metadata
This is why most of us have jobs.
Time of convert different Application projection
We use RoadSoft for Asset Management which is based off State Framework GIS, but we also have a county-based Centerline layer which is more accurate and updated faster than State framework centerline..would like to see process for integrating edits of county centerline layer into RoadSoft/state framework centerline layer.
yes, Oracle, MS SQL, ArcSDE, etc
Lack of or insufficient use of data or system standards
Any statewide local to state to federal data must collaboratively develop and enforce standards.
Framework data needs to allow for local level attribute feature validation.
Has been a serious problem. Becoming better as we move towards centralization of our spatial databases.
Increase funding and program awareness
maybe
Michigan should use the National Hydrography Dataset as the hydrographic standard for the Michigan Framework.
No standards and no metadata. No staff time to dedicate.
no state to state standards for the most part
relates to data integration. geography fine, attributes standard needed. differing attribute needs for differing software
System knowledge
This is getting better. Good work.
We attempt to enforce standards, but too often a project "just has to get done" and the standardization step is skipped, creating a data nightmare for us to clean up later.
We have problems with inconsistent addresses.
yes, everyone needs something different
Insufficient opportunities for training and education
Budgets are limited everywhere.
Harder with the financial circumstances.
Insufficient training is a problem for two reasons, limits on my time and explosion of IT developments in this field
maybe
Need more opportunities to utilize tools, extensions, etc.
Not enough $$$ to send staff
Not enough opportunities for training & education.

Pooled training opportunities across all levels of government should be embraced.
Promote and use free web resources
Rural area, so training involves travel and added time & expense. Other job responsibilities besides GIS limit my opportunities.
Software vendor's offerings are introductory.
Some out there, could be more.
There are few opportunities locally (Lansing) for GIS training for professionals. Most training is focused on those who have some knowledge, but not for those with little or no knowledge. Professional training would be extremely helpful.
too much ESRI training to support an expensive program.
training facilities have a hard time finding sufficient students for so many customized needs
Will soon need training on ArcGIS 10.
would love to get some hands on programming training but no funding ever available
Other:
(1)Time, and (2) frustration with the software
Create distributed editing environments where certified GIS professionals are enabled to update State framework datasets
I use Autodesk map for mapping & arcmap to query data & produce visual maps. The assessors have been pleased with the output.
NON-PROFIT CORPS. THAT ARE RECEIVING GRANT MONEY ARE MAKING IT EXTREMELY DIFFICULT FOR COMMERCIAL BUSINESS TO COMPETE IN GIS MARKET
Comment removed since it singled out an individual for criticism.
There are three core limits: Time, Funds, Accuracy. We must pick two and the third will be a result... How can the State assist with any of the three limits.

MGF AWARENESS AND COMMENTS

ARE YOU AWARE OF THE MGF AND BING PROGRAMS?

Answer Options	Response Percent	Response Count
Yes	72.1%	147
No	27.9%	57
answered question		204
skipped question		78

DO YOU PARTICIPATE IN THE MGF?

Answer Options	Response Percent	Response Count
No	16.0%	23
Yes-as a partner providing updates and using data	24.3%	35
Yes-as a partner providing updates	1.4%	2
Yes-as a user of the data	52.1%	75
Not sure	6.3%	9
answered question		144
skipped question		138

HOW ARE YOU USING THE MGF?

Mapping, Data collection
As base map for displaying our data in a county
As a user of MGF data. I download shapefiles from the CGI website for use as basemaps to create maps of groundwater sampling laboratory analytical results, groundwater potentiometric surface maps, groundwater and soil sampling location maps.
use the transportation layer, government corner layer, hydrographic layers, streams layer, municipal boundary layer.
Some departments use MGF as their base data
Street centerline / address, locational base
Downloading shape files to use when creating maps for planning.
Currently using a version of the MGF for 911 calls that I've updated and manipulated for our purposes.
User of data
We take delivery of the data annually.
Downloaded data used in GIS projects in communities that do not have a GIS program
Reference Data for 9-1-1
The original data set for 911 was taken from MGF. A street centerline and hydrology layer was created.
As base data.
A variety of methods, but most critical as base layers for GIS. Specifically the PLSS, Administrative, roads and hydro layers.
data downloads
Will download and use with clients as appropriate.
Watershed and Stormwater management and modeling
Doing a great job on infrastructure data. Perhaps a clearer partnership between MGF and counties would be useful. I use framework 2 data because that is what I started with and have modified locally. I am hesitant to use more recent framework data because I'm fearful of losing local modifications.

downloading data sets
as base data
All of our Transportation and Demographic Planning occurs on the framework. It's an integral part of our business workflow
In my day to day work, creating maps and data, I use MGF data. All of my mapping work uses data from the Framework at the very least.
Base layers.
Basemaps
various projects with orthos, and base layers being most used (roads, lakes etc)
Base mapping
Have gradually transitioned to framework version 9 from internally generated layers. Use it as a base layer for nearly all applications.
Data source for counties we are associated with
Primarily for base maps.
Mostly as base map data
PLSS, Roads, hydro for reference in program delivery
We use MGF for regional mapping.
We use the MGF for our base files for our counties.
Sharing data and occasionally downloading data from your site for areas off of our ownership.
As base map data for land use and transportation planning
Currently not using.
User of the various data sets
Transportation
Base map for asset management of county road system.
Reference data. Starting point for many projects.
I download street centerlines, hydro and aerials for base map development. This is primarily in the less developed counties or in areas where we have limited coverage of a data layer.
As a user of the data.
Using framework to fill in gaps for features we do not have as we well as provide adjacent jurisdiction data.
As an "as is" road centerline file for our and surrounding counties.
We use the data as basemap data for transmission line and substation projects throughout the state (both UP & LP)
Through Roadsoft
Providing annual updates to CCS and using MGF in programs such as RoadSoft and Google.
We frequently obtain ortho imagery to supplement our design surveys for transportation.
Limited use as reference to other data.
Trying to incorporate road name and address range corrections for roads
Clerk Office and Transportation Funding (Act 51)
We have used the Framework file as a base for updating a local centerline file with enhanced address ranges. We are currently in the process of providing that updated file to MGF. As the GIS Coordinator is also the Transportation Planner we update and feed road network changes to MGF during annual review and rating of the federal aid eligible roads.
I use the MGF as part of the Michigan PR Finder, TMS.
Downloading current versions of statewide data for land use planning
Used for base information in GIS applications
Reference and geocoding outside of corporate limits.
Generic downloads for surrounding county information.

mainly the roads, bridges and boundaries.
obtained list of Michigan street names and coordinates of all intersections
As base layers
As basedata to build more complex infrastructure schemes. Integrated with Federal data to complete this picture. Information is also compared against crime statistics.
Within RoadSoft. I use it for PASER rating of pavement, but
We use it to provide data to our users outside of the county (e.g., county boundaries, hydro, roads).
We aren't. The data is not accurate enough and has to be transformed to integrate with CLEMIS and other internal systems.
Primarily for graphic purposes on small scale maps
Linear Referencing of the roads
Most of the data our agency uses comes from the MGF. It is used for all of our mapping needs.
Mostly pulling data out of the library.
as reference data when creating new data, as part of my geospatial library i.e. usgs DRGs', wetlands, soils, geology
The base layers, streets, hydrology, etc. in county mapping.
Download GIS data annually to make regional data available to the enterprise.
For data where accuracy is not very important
Forms the basemap for almost all of our GIS/mapping projects
as base map data
RoadSoft; other cartographic output
We are using the data to have information on surrounding counties and to supplement layers we currently do not have.
I assume that the base layers created by the contractor came from MGF. Supplemental information DEM, Hydrology, Soils, Land use. LUST sites.
It is the base data for all of our GIS. We update the data on a regular basis and send the updates to MGF once a year.
Base mapping
Road centerlines - pavement condition assessment inventorying and deterioration modeling using RoadSoft software.
All regional data sources are being used from MGF.
In my regular GIS business.
Reference
Foundational for most every spatial project we do -- Data conversion, Data integration, geocoding, cartography, GIS analysis, etc..
As data for our clients
Obtain some data. Provide updates for roads and NHD (through state)
Often use the MGF data sets to as a starting point and edit to the necessary scale needed within my organization. Also use when producing maps at smaller scales.
I use MGF in analyses for many projects in DNRE Fisheries Division.

WHAT DO YOU FEEL ARE THE GREATEST STRENGTHS OF THE MGF?

easy access

Freely downloadable.
can download data from a central source
Everyone can have access to it, it is a good base for our needs as a road commission with limited recourses.
Standardized between counties. Wealth of data
inexpensive
There are a variety of data files, and they are well organized and readily accessible on the MGF website.
Availability
Good range of sources are available and a lot of the data has great Metadata.
The linear referencing system, community boundaries, census boundaries, school districts, etc.
free, easy to use
Availability
Inexpensive center line was created. This county did not have a center line available from any other location.
Statewide coverage, uniformity, and segmented by county. Ease of download and use.
Standardization across large geography.
broad selection of data
One stop shop, lots of feature categories.
strengthens basic data base
Sheer amount of data made available for counties and other agencies to use.
free data
free
A statewide consistent fabric
It is well documented and easy to download. The updates to the framework and documentation of the improvements are a great strength.
Availability of good, complete base layers for the entire state.
ease of access, quickness, completeness
a nice array of data layers (most are useful to us)
Accuracy and labeling.
County wide and state wide data. The continual improvement of attributes and geometry and how it interfaces with other applications (Roadsoft)
It is is on place and readily available. May be more useful - if it was served up by and enterprise program with layer files to the users.
Having actual GIS data to disperse freely to anyone.
State compilation.
Data structure is EXCELLENT.
I feel that there is a great amount of data provided by the MGF. The fact that it is free is also beneficial.
Providing statewide extents for many datasets.
Its available and free
General Information.
single state wide repository of GIS data, saves time and money when looking for data
Central point for updates
Up to date digital resource.
Statewide coverage, easy-to-use, good reference.
Its consistency and known level of quality. It is very good for projects covering multiple counties, where the individual counties have varying degrees of data available.
Frequent updates

The availability of data and providing a standardized format (data fields).
Multi-agency use.
Easy to use table of contents (By County, By Theme), Most data is kept up-to-date, data sorted by categories (hydrology, political, elevation, etc.)
It gives me a great basemap for road asset management
My experience with CCS has been great-very strong communication and quick response times with staff.
Ease of use and extent of data.
That it is potentially a "common denominator" of communication and sharing of data from Local, County, State and Federal levels as well as quasi governmental (schools, etc)
Good base product and friendly staff. They have always been willing to share and help with technical questions.
Availability of diverse data.
It has a simplistic representation of the transportation system in Michigan. This allows for relatively fast loading of data.
One source for data; chance for standardized base mapping; opportunity for networking with other GIS users
consistency of data sets
statewide dataset
Many types of data all in one place.
broadness of the data
Statewide coverage
A first step toward data integration. Data integration is the most important factor in a successful GIS program.
Having a seamless, state-wide coverage of the most common basemap data layers
For Counties with no GIS data it is a good base
Statewide consistency
It is statewide, current, free, and accessible to all.
The ease of use in obtaining the data. Also the way it's organized by geography/topic/ etc.
the amount of data available for download
Easy access, good start for a basic GIS
Making GIS data available to organizations that do not have the resources to develop and maintain it locally.
Easily accessible
Currentness of the road network
FREE, wide variety of data
Uniformity throughout state; applications such as RoadSoft
Covers the whole state.
Easy access broken down by county. Easily downloadable on high speed connection. No waiting.
It is excellent base data, and they have integrated all of the changes we have requested. It also gives us a place to send folks who want the base data for free.
Has been greatly improved through local feedback Unique identifiers for road segments Free and available to public
Comprehensive coverage of statewide features at intermediate to small map scale applications.
Standardization of data, clearing house function, easily accessible source of base map data, aerial imagery archiving, Availability of Bing Map for Enterprise as a tool for user friendly interaction with

public agency maps - this is the selling point rather than imagery).
Access, update frequency and the amount of data
1) Integrated statewide data (government boundaries, census, transportation, hydrography, core attribution) 2) Complete statewide Linear Referencing with version control and change transaction files 3) Completely funded by state agencies so data can be made available for free 4) Completely owned by State of Michigan which enables collaborative data exchange partnerships - no license/partnership restrictions
State-wide coverage, decent accuracy and completeness.
Easy to work with for our updates. Good website.
The volume and variety of data produced and maintained.
Annual updates; statewide coverage; standardization.

WHAT ARE THE GREATEST WEAKNESSES OF THE MGF?

Significant lack of communication to the end-users.
no parcel data set available
MDOT produces plans in State Plane Coordinates and MGF image data is not as accurate.
None that I am aware of.
need to have data on an SDE layer.
Errors in data, without a local partnership on our part the errors are not fixed as they don't know about them, we are not in a position as of yet to enter into a partnership with CSS to provide them with necessary updates.
Not up to date. Address ranges incomplete. Too many hurdles to contribute updates. Much data is too low rez. Some data contain many, many errors (well log records). Migeoref coords have fundamental coordinate resolution limit as I understand it. inability to sync data between locals and state.
not timely
Some information, particularly the hydrography layer, was digitized using a 1/24k scale, so it is not spatially accurate on top of an aerial photo.
Timely updates.
Organization and the ability to preview data before download.
Level of detail could be better, spatially and with attribute data.
Data is often out of date, incomplete/inaccurate, often does not line up with orthophotos or other datasets obtained from other sources.
Accuracy
The data was inaccurate. Multiple corrections by the county GIS department had not been corrected in the past.
Slight data errors that require manual editing. Surprised to find these after the layers have been revised over the years.
need for updated data and way of notifying users of update availability

In general, not appropriate for local/county level operations. Addressed centerlines not appropriate for E911, public safety applications. Not reconciled with MSAG. No consumable web services to integrate with client desktop and viewers. Many local updates have been sent to them and not integrated with MGF.
water resource data is very weak
Too disconnected from small county organizations.
Not very accurate
updating process
It's driven by MDOT and other state department needs and not on local needs. It's becoming too cumbersome.
A weakness is the data format of MGF as only offering shapefiles. It would be good to start offering a Geodatabases with the Framework and an ability to replace the database as the data at MGF is updated.
Accuracy of some of the data, for example township/sections.
Some data table could be more robust (e.g., roads w/better alternate names, interstate, state and local road data). Sometimes I need better hydrology catchment data (subsubsubsub watershed).
positional accuracy is an issue for some layers
Getting updates in a timely fashion.
somewhat unpredictable update schedule - which is understandable on a statewide level. And why aren't commercial products using this same data?
Not coordinated with all counties, cities and townships
The ability to update layers timely and more accurately.
Inaccuracies.
A better method of input from users when errors are discovered- quicker turn around.
MGF has never realized its potential. There are still swaths of transportation information not attributed for addresses. I think the staff at the state has to find someone who is expert enough at addressing to fill in the blanks. These large blank areas translate up to internet mapping sites, making navigating in certain areas of Michigan hard for the general public.
Incomplete road data. The lack of a formal process for submitting updates.
Web site is not very intuitive to find and download data. Mostly to find it.
Accuracy, attributes incorrect (road names, lake names, etc.)
IT is more of an information stream than an active operating stream
not updated often enough
Lack of timely updating
Detail.
Spatial and temporal accuracy i.e. some areas are definitely more up-to-date than others. Lack of input from counties and local units.
It can really only provide the starting point for a project. The aerial quality is ok, but for many applications I need much higher resolution imagery.
Lack of understanding on how to use the data.
This is in regards to the road layer, which we use most often. Weakness is in the accuracy in geometry and lack of coordination of street names. We have experienced and noticed that the street name varies from the local level to State to U.S. Postal to MSAG - Master Street Address Guide. There need to better coordination regarding standardizing street names.
Ease of updates and integration with other datasets at the geography level. (stream/road) Requires updates to multiple geography datasets within the unified product.
Orthophotos are not as up-to-date as possible, no parcel data from local governments - even if it is just

the lot lines and a parcel ID, the use of the e00 file format
Proper naming of roads at change points (i.e. county line, north v. south)
Would like higher resolution imagery, prefer to work in State Plane Coordinates.
Based on Michigan GeoRef coordinates. Positional accuracy of data collected and incorporated into MGF not as accurate as desired.
disconnects to make it a seamless common denominator. Identify who is responsible for what.
There data is somewhat gross at times for local county use.
It has a simplistic representation of the transportation system in Michigan. Being simple it does not always align with the actual roadways, or have the ability of correctly identify intersections. The way the framework is laid out, it considers the roadway going over the freeway and the freeway itself to be an intersection with no vertical separation. This issue can cause data to be incorrectly located. Another issue that I have encountered is the lack of network speed when trying to retrieve aerial imagery from CGI. The connection has become worse over the past 2 years where I have been restricted to downloading the images at less than 30 KB/s.
Data from too many sources; outdated data; not enough metadata to support files; inaccurate data; no ortho imagery from current flights
positional accuracy
Lack of accuracy in some places and no state attribute standard to follow.
up to date information on all fields, road centerlines should be within 1 meter or so, lack of synchronization with Act 51.
lack of accessibility via the web
Address ranges
Lack of historical data
Not services driven outside of the SoM domain. Also versioned meaning updates that are needed in real time have reduced its overall efficacy for use in law enforcement
typically find the centerline is not as accurate as our produced local centerline. Most of the time the Centerline does not match up with the ortho or have wrong names and the representation is not always accurate.
Currency of the data, and how to streamline updates between the locals and the state.
The data has to be reprojected to match up with local data. Even when reprojected it doesn't match up with local datasets. Wish the State could use State plane instead of georef. Even though we submit our data to the State, those changes do not seem to get integrated and some data gets lost in the mix.
poor spatial and topological accuracy; much of MGF is redundant with high quality but fragmented county and local data sets, especially in southern MI.
Spatial and attribute accuracy is not always the top quality
Sometimes accuracy at the local level
horizontal accuracy is not tight enough for our standards, way too many fields on such things as road centerlines
Sometimes there is no projection file with the downloaded files. Michigan georef projection has to be converted to State Plane, NAD 83, international feet in order to use orthos and other county data.
The duplication of effort in maintaining the same data locally and at the State.
Like us all the manpower to update and make more accurate
hydrography layers need updating - they should be brought into conformance with NHD-Hi-Res so there is only one, standard vector line file representing the stream/river hydrography of Michigan. MGF need not carry all the NHD attributes, but should store and disseminate all the NHD_Hi-Res perennial and intermittent stream vectors.
PLSS needs to be updated with remon coords
May not have spatial accuracy of local GIS data sets or reflect recent changes as quickly as county data sets

Data does not always lay in with aerial photography(could be the aerials, but aerials come from two different sources, local 1997 and 2005 USDA, both lay in the same location). Parcel layers has been COGO'd and aligned to aerial, Qtr/Qtr grid is way off from proposed location. You mentioned updating the data at the local level. What degree of accuracy would be required to do this? Our road layer is ever expanding with new private roads that the road commission does not keep track. Can this be added updated locally?
Not all updates and changes are taken. Only can update once a year.
Road data do not include paved / not-paved information Roads often segmented into tiny segments
1. Absence of spatial and attribute accuracy necessary to support large scale mapping applications. For example, road centerlines are out of position and their address ranges are not accurate enough to support E-911 applications. Even Bing/Google address geocoding is more accurate and consistent for many local level applications. 2. Absence of staff to responsively maintain and update core Framework data layers, especially roads. 3. The absence of address points and parcels also hinders the large scale applications of the State's Framework dataset.
Local Projection needs, Local attribute needs, insufficient funding for critical data needs (e.g. imagery: the agreement with MS/Bing allows for capturing areas of Michigan that may not be captured otherwise, but it comes with many costs beyond financing. Affordable marketing of the BME platform for interactive mapping services may provide more funding than the imagery partnerships. Control of the aerial project and certain restrictions on distribution of the imagery are too big of a cost for many agencies.
Sometimes less than desirable spatial accuracy
Accuracy
1) Does not contain a parcel layer 2) Address range stewardship update mechanisms are strong in some areas and weak in others 3) Cartographic representations for general consumption could be better 4) Better integration of state forest roads and trails 5) current editing system (which is being updated) can't handle digital update mechanisms from partners
If others are not using them (e.g. counties) to make updates (e.g. roads) then we also suffer from the poor data outside our immediate jurisdiction.
Data is not appropriate for use at small governmental agencies and needs to be edited for use.
The hydro layers differ from the NHD, the national standard.

WHAT IMPROVEMENTS TO THE MGF WOULD BENEFIT YOUR ORGANIZATION?

There needs to be a two way communication between the state and its data providers.
access to parcel data,
Major improvements to data quality. Data provided in State plane international feet.
more current updates
A continual updating of data ensures higher accuracy and more information with each new version.
Updated more often.
Updated streets, census block boundaries, one way street data

Accuracy and updating of data, a way to automatically update MGF data without having to go to the CGI site every so often to see if I have the most current information.
Accuracy
Integrate the subdivision plat information at http://www.cis.state.mi.us/platmaps/sr_subs.asp.
state wide access to remonumentation progress and attributes of reestablished corners etc
See above and, A truly reciprocal arrangement to receive and integrate current and accurate local/county data in return for tangible benefits from the state/feds either in funding support or in-kind return of data such as orthos/lidar. A fair formula badly needs to be collaboratively developed to ensure sustainability.
significant effort to include water resource data enclosed in the GIS system
A direct communication and data link between smaller counties like us and MGF would be useful. Classes held in northern Michigan a few times a year to help us understand data available and how to better integrate it into our system.
Improve precession and accuracy
ability to update certain data sets in house.
Have it meet more of the local needs such as the Act51 process. Some county's have adopted their workflow to be done directly (digitally) on the Act51 features and then submitted back to the state. NO MORE HARD COPY MAPS!!!. I believe the direction of the state to have local users be editors is a good start. But the biggest benefit will be if the future direction of the MGF is not solely on the MDOT's plan but on all users; state and local. Until that happens you will have a segmented audience.
Offering of more data, such as elevation - statewide. Higher resolution of aerial or satellite products would be well received and used in our organization, too.
Improved accuracy of some of the cadastral layers.
Dun and Bradstreet database access
having lakes and rivers "fit" digital orthos
ROW layer from County and State projects
Add an image server to serve all state imagery in a seamless way.
Have a system in place that would allow for better and quicker methods for updating framework layers such as roads.
Better communication
Standard PLSS attributes per a national standard. Parcel information. Plat book data.
MGF hasn't caught up to us for data accuracy. If we could ever synchronize, then I'd be able to go over to MGF completely.
Specifically, I would like to see address ranges for all road segments (which match the MSAG). Structure point files would also be beneficial. A file which shows all public lands would be helpful (local public lands as well). Separate the lakepoly from the riverpoly like it used to be (putting them together makes it difficult if you just want to see lakes). Provide a river centerline for the riverpoly file. A road right of way polygon file would be great. And, the biggest thing that would be beneficial - provide a file of business locations. This information can be purchased from 3rd party vendors, but having it for free would help Michigan tremendously. Another great benefit would be to present the actual census data - already put in shapefile format rather than just the boundaries. I find it difficult to find the census data I need and then link it to the boundary file.
Accuracy, updated and accurate name and attribute information
It would be great if internet hosting were available to the counties and other units at cost-effective rates.
county level parcels and street info
Updates must be made more timely

That depends on the layer but the major issue would be work with counties/local units to accelerate updates.
1.Higher resolution imagery. 2.Becoming a depository for state-wide parcel data with metatdata on the timeliness of updates and to provide a standard to follow for counties developing parcel data. This would be a huge task, but many counties are still creating poor quality parcel data which leads to local complaints and lack of use.
In house explanations of what is available and how we might use it.
Improve of the weaknesses state above will be a start.
ArcGIS Server access via the web and a developed "sand box" for local updates.
see weaknesses
Proper naming of roads at change points (i.e. county line, north v. south)
See above.
Easy transformation between coordinate systems and among various platforms. Better ties to and utilization of MDOT statewide CORS network and system for better data positioning and improved accuracy in maps.
ability to merge locally maintained street attributes with each new version. Have confidence that changes I make will stick from version to version
If there were some state funding provided by MGF to the counties to assist in GIS development, the counties would likely be more willing to share the data, and all would benefit. Something like the remonumentation program which provided state funding and also the opportunity for local funding.
Better accuracy in roadway layout, and the ability to overlay data to Google Earth as a *.KML file.
Bringing user groups together; help to set up GIS implementation plan for inter-departmental integration; partnerships to acquire current ortho imagery, centerlines, parcels, etc.
Statewide parcel mapping
More incentives to participate in a partnership with the State. This would enable them to have better data, updated at regular intervals.
a robust and accurate lrs migration tool that can also update fields other than the PR and MP's.
A web-based API for Framework, so my applications could access the data contained.
Historical data/images
More data on infrastructure in Michigan. Also if there was an effort to coordinate the crime mapping of state, county and local agencies.
spatial accuracy then the centerline might be able to be used and also provide a more current version of the centerline than 1yr old for RoadSoft. I believe there is a process to update that more frequently to get to the end users.
Adding web services that could be consumed by locals, such as address validation. Offering an easy way to provide updates that would eliminate duplication of effort.
have the State stand up a server app that allows locals to submit their data or changes electronically or just make it easier to submit edits, improve the accuracy of the data and clean up issues with topology/data errors, make it easier to download and use - the State website is hard to navigate and the data library is buried. Provide the data as Geodatabase and get rid of coverages.
better integration of local data, local stewardship of both transportation and hydrography
if the Addressing from and to fields followed our counties standards so we could geocode
making sure all attributes are checked for accuracy. Such as correctly identifying the names of Lakes and Roads etc.
data downloads including imagery: need to be able to download this data in your chosen projection and units. The .ecw and .sid image formats can be difficult to work with when having to clip and either re-project or re-georeference the imagery to you coordinate system and units. I think the state and local units need to have monetary relationship with data, after all, the local units (county) are starving for revenues and any monetary offer for the data they have spent their tax dollars on needs to be supported/backed up by the end users or the state. The local units can't proceed to create and maintain

this high quality, local data if their isn't money supporting the cause.
Address ranges in road segments are important to us, but they need major revisions in the MGF street layer. We are working on it locally and providing MGF with updates, so slowly we'll get better quality address ranges.
Rectification to updated imagery
Live editing environment and quicker integration of edits
Improvements to the hydrography layer(s) [see above]/
PLSS needs to be updated with remon coords
Faster edits/updates with local sources; ultimately having a single data set for state/local that is used in RoadSoft and all other applications
The Bing maps proposal was a great idea. If you could take that and allow the county to pay into a fund annually, instead of once every three to five years, it may be easier to finance. Our departmental budget surplus (if any) disappears at the end of the year.
More frequent updates. Inclusion of more data in this model (i.e. statewide imagery and topography programs, more updated land use/land cover data)
Quicker integration of updates
Provide the opportunity for distributed data management/editing using internet map web editing tools. Offer a certification program whereby qualified GIS professionals participate in maintaining roads, parcels, address points, and government boundaries in conjunction with or on behalf of the State. Everyone who adds/revises data would know when their update submission would propagate into the next Framework data release published by the State. These professionals are not exclusive to local government but could also involve State funded universities - consider Michigan Technological University's work with the Asset Management Council and the RoadSoft application for pavement evaluation rating systems as a perfect example. There are other universities with outstanding GIS outreach programs like MSU, CMU, EMU, and WMU which could take some responsibility for helping train/certify GIS professionals to maintain State Framework datasets.
Marketing of the BME platform and designing of APIs for specific public interaction initiatives could provide needed services for Michigan regions. Our transportation GIS staff attended a National Association of Regional Councils (NARC) GIS Web Applications webinar that was concurrent with the Lansing NSDI meeting. BME was not even mentioned from what I can tell which is a shame given our state's agreement with MS/BME. This should be a role that the state takes strong leadership in since most regions do not have Arc-IMS. At a minimum, offering training in how to convert GIS data for use within BME would be a potentially profitable solution for the state.
Adding elevation data from counties that have collected it so far (i.e., LiDAR data)
DNR ownership mapped to below the 40 level. Work with Counties to get their updates.
Use an unchanging (i.e., constant from version to version), unique, identification code for individual lake polygons. Do NOT merge together all unnamed lakes into a single feature. Use the highest resolution NHD as the statewide hydrography layer. Update/improve the naming of the hydrography layer.

WHAT HAS PREVENTED YOUR FROM FULL PARTICIPATION IN THE MGF?

Answer Options	Response Percent	Response Count
No need for transportation data	15.0%	3
No need for hydrography	15.0%	3

No need for government boundaries	15.0%	3
No need for PLSS and geodetic control data	20.0%	4
MGF spatial data is not accurate enough to support my needs	15.0%	3
MGF attribute data does not meet my business needs	20.0%	4
MGF data is not available quickly enough to support my business needs	10.0%	2
Participation in MGF could reduce my revenue from data sales	5.0%	1
MGF data is not provided in a format I can use	0.0%	0
My organization doesn't have sufficient staff to support anything outside of our core data and mission	45.0%	9
Other (please specify)	45.0%	9
	answered question	20
	skipped question	262

OTHER:

Core datasets maintained and provided at county level.
Lack of familiarity with MGF, its programs, services, and needs.
Not in control of the data that is used in MGF or data I produce or use is used in the MGF.
Became ESRI users in 2007. We are a utility and there has been little support or interest. There is more interest in partnering with local government, municipality, etc.
It is not accurate enough, was not created in conjunction with our business process needs, and there is very little communication and cooperative effort put forth the make the products better.
We already had a system in place to meet our (whole County) needs and got it done cheaper than the cost originally quoted by the MGF.
Not that familiar with it or what it offers.
Data integrity. The data supplied is not accurate.
MGF is for only Michigan....I need all Great Lake States to be on the same page using the same standards.

WHAT COULD BE DONE TO MAKE MGF PARTICIPATION ATTRACTIVE TO YOUR ORGANIZATION?

MGF is an excellent program to provide geospatial data to municipalities and private organizations lacking the funds to create core GIS datasets including aerial photography and transportation layers. However, we are fortunate enough to work in a county that handles these core datasets and hands them down to the local units of government. As someone that used to work in a municipality where we had to create our own tax parcel layer and pay for our own orthophotography flights, I can ensure you that we appreciate the fact that our core datasets are maintained by the county.

Information about what it is, how it works, etc.
not much since it is base a counties and not tribes
Not sure, I am looking forward to attending the listening session.
Comment redacted. To receive comment text please make a request to the DTMB project management team (Paul Harmon, harmonp@michigan.gov, or Laura Blastic, blasticl@michigan.gov).
It's all about cost.
More information - more training from MGF; better presence at conferences and workshops around the state.
The CSSTP needs to acknowledge the value of locally developed data. The State would like to utilize local data, but does not provide anything in return. In order to participate in any data sharing opportunity, I need to show that it is an equal partnership with data or other resources flowing in each direction. In past attempts to partner with CGI, the local agency did not receive much in return for providing data and expertise that are literally worth millions of dollars. CSSTP needs to change their workflow and technology to utilize enterprise geodatabases (if they have not done so already) in order to facilitate efficient data sharing among partners. Comment partial redacted. To receive full comment text please make a request to the DTMB project management team (Paul Harmon, harmonp@michigan.gov, or Laura Blastic, blasticl@michigan.gov)
Coordinate system should NOT be Michigan GeoRef. It is substandard.
Make it a Great lakes GF!

BENEFITS FROM GIS IMPLEMENTATION

IDENTIFY ANY BENEFITS YOU HAVE RECEIVED FROM IMPLEMENTING GIS

	Yes	No	Not Applicable	Response Count
Improved Decision Making	168	4	7	179
Improved Timeliness and Quality of Data and Services	163	6	9	178
Protection/Enhancement of Natural Resources	113	15	42	170
Legal Compliance/Protection Against Expensive Legal Claims	69	33	66	168
Code Compliance/Improved Voluntary Compliance	64	35	71	170
Savings of Life and Property	79	36	52	167
Protection from Catastrophic Records Loss	59	41	60	160
Catalyst for Partnerships and Information Sharing	128	13	26	167
Improved Staff Productivity/Labor Cost Savings	148	12	15	175
Increase in Revenue [improved collection of taxes, fees, fines)	54	37	73	164
Reduction in Duplication and Redundancy	125	20	23	168
Reduced Costs from Asset Management	91	26	43	160
Support for Economic Development Initiatives	102	16	48	166
Avoidance of New Costs	67	52	40	159
Savings in Capital Project Design and Construction	73	36	54	163
More Effective Management/Allocation of Field Services	112	26	27	165
Reduced Costs Through Joint Funding	84	34	44	162
			answered question	180
			skipped question	102

RETURN ON INVESTMENT INFORMATION

ESTIMATE COSTS ON TECHNOLOGY & DATA OVER THE LAST 5 YEARS

Answer Options	Response Average	Response Total	Response Count
Hardware ($)	1,160,550.56	104,449,550	90
Software ($)	183,292.78	16,496,350	90
Data ($)	1,495,624.34	110,676,201	74
Personnel ($)	1,148,951.91	90,767,201	79
Contracted GIS Services ($)	2,507,126.34	190,541,602	76
Other ($)	28,934.59	839,103	29
		answered question	99
		skipped question	183

RESPONSES:

Hardware ($)	Software ($)	Data ($)	Personnel ($)	Contracted GIS Services ($)	Other ($)
4,000.00	2,000.00	1,500.00	35,000.00		
5,000.00	3,500.00	4,000.00	100,000.00	-	10,000.00
100,000.00	100,000.00	1.00	1.00	1.00	1.00
3,000.00	9,000.00	3,000.00	60,000.00	-	-
10,000.00	10,000.00		100,000.00	15,000.00	
20,000.00	5,000.00				
3,000.00	2,400.00	100.00		-	
10,000.00	45,000.00	430,000.00	1,000,000.00		
	60,000.00	-	300,000.00	600,000.00	
					2,500.00
50,000.00	150,000.00		250,000.00	100,000.00	
					1.00
5,000.00	5,000.00	25,000.00	100,000.00		
-	2,000.00	-	-	1,500.00	
5,000.00	4,500.00	500.00	100,000.00	-	-
1,000.00	-	-	-	-	-
5,000.00	7,000.00	-	45,000.00	-	-
8,000.00	15,000.00				

3,000.00	2,500.00	-	6,200.00	-	
3,000.00	1,500.00	-	-	-	-
100,000.00	7,500.00	100.00	70,000.00	100.00	100.00
10,000.00	10,000.00		120,000.00		
				50,000.00	
-	65,000.00	-	300,000.00	500.00	
17,000.00	14,000.00	4,000.00	175,000.00	27,000.00	
30,000.00	5,000.00	30,000.00	150,000.00	30,000.00	
-	5,000.00	-	-	-	-
5,000.00	1,200.00			25,000.00	
800.00	600.00	15,500.00	45,000.00	1,500.00	1,000.00
10,000.00	3,500.00		200,000.00		
10,000.00	25,000.00	40,000.00	300,000.00	25,000.00	
5,000.00	25,000.00	-	200,000.00	-	-
300,000.00	50,000.00	2,000,000.00	200,000.00	25,000.00	
30,000.00	30,000.00	19,000.00	114,000.00		
5,000.00	1,500.00	60,000.00	500,000.00	-	
7,500.00	5,000.00		40,000.00		
2,000.00	8,000.00	-	-	-	-
1,000.00	2,500.00	-			
10,000.00	30,000.00				
-	4,000.00	-	-	35,000.00	
500,000.00	900,000.00	-	50,000.00	-	800,000.00
6,000.00	70,000.00	-	400,000.00	-	-
30,000.00	40,000.00	20,000.00	1,500,000.00	15,000.00	
50,000.00	150,000.00	25,000.00	150,000.00		
34,500.00	70,000.00	22,000.00	450,000.00	56,000.00	
30,000.00	20,000.00	1,000.00	80,000.00		
6,000.00	20,000.00	10,000.00		5,000.00	
15,000.00	500.00	-	50,000.00		
				-	
15,000.00	15,000.00	4,000.00	350,000.00	-	
50,000.00	250,000.00	50,000.00	1,250,000.00	50,000.00	
10,000.00	32,500.00		225,000.00		5,000.00
30,000.00	60,000.00	250,000.00		60,000.00	
50,000.00	250,000.00	60,000.00	200,000.00	130,000.00	
10,000.00		5,000.00	300,000.00		
10,000.00	40,000.00	25,000.00	300,000.00		
50,000.00	27,000.00	5,000.00	60,000.00	90,000.00	
10,000.00	20,000.00		40,000.00	35,000.00	
250.00	500.00	-	-	1,000.00	500.00
25,000.00	75,000.00		350,000.00	45,000.00	
20,000.00	20,000.00	2,000,000.00	2,000,000.00		
	200,000.00				
20,000.00					
15,000.00	10,000.00	500.00	200,000.00	-	-
360,000.00	150,000.00	70,000.00	420,000.00	86,000,000.00	
10,000.00	15,000.00	5,000.00	150,000.00	10,000.00	

15,000.00	9,000.00	135,000.00	300,000.00	130,000.00	
2,000.00	3,000.00	4,000.00	100,000.00	150,000.00	1,000.00
				1.00	
15,000.00	15,000.00			40,000.00	
5,000.00	5,000.00	-	25,000.00	1,000.00	
35,000.00	85,000.00	400,000.00	600,000.00	150,000.00	
30,000.00	30,000.00		25,000.00	150,000.00	
60,000.00	25,000.00	5,000.00	2,289,000.00	-	-
20,000.00	20,000.00	5,000.00	150,000.00	20,000.00	
				25,000.00	
20,000.00	100,000.00	75,000.00	500,000.00	-	-
5,000.00	2,500.00	-	-	-	
7,000.00	15,000.00	-	-	30,000.00	
500,000.00	1,000,000.00	700,000.00	12,000,000.00	266,000.00	-
5,000.00	10,000.00	55,000.00		-	
50,000.00	25,000.00	50,000.00	50,000.00	100,000.00	
1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	-	
35,000.00	70,000.00	5,000.00	420,000.00	35,000.00	3,000.00
70,000.00	185,000.00	1,000,000.00	1,360,000.00	130,000.00	16,000.00
10,000.00	5,000.00	8,000.00	350,000.00	-	
-	-	-	-	-	-
7,500.00	49,750.00	9,000.00	150,000.00	150,000.00	
10,000.00	2,000.00			10,000.00	
12,000.00	99,400.00		408,000.00	660,000.00	
25,000.00	10,000.00	8,000.00	200,000.00	1,000.00	
75,000.00	-	-	150,000.00	-	
250,000.00	500,000.00	2,000,000.00	7,500,000.00	1,000,000.00	
10,000.00	50,000.00	10,000.00	30,000.00	20,000.00	
					-
10,000.00	3,000.00	-	-	-	-
100,000,000.00	10,000,000.00	100,000,000.00	50,000,000.00	100,000,000.00	
25,000.00	20,000.00	20,000.00	100,000.00	40,000.00	
6,000.00	5,000.00	2,000.00	25,000.00	1,000.00	1.00

WHAT IS THE VALUE THAT THE GIS HAS PROVIDED YOUR ORGANIZATION OVER THE LAST 5 YEARS?

Answer Options	Response Average	Response Total	Response Count
Staff Productivity and Labor Cost Savings ($)	96,015.66	3,072,501	32
Revenue Increases [improved collection of taxes, fess, fines, insurance claims, etc.] ($)	145,374.30	4,797,352	33
Reduction in Duplication and Redundancy ($)	37,133.37	1,002,601	27
Asset Management ($)	19,134.83	440,101	23
Support for Economic and Business Development Initiatives ($)	26,072.82	573,602	22
Avoidance of New Costs ($)	17,656.61	406,102	23
Savings in Capital Project Design ($)	26,526.13	610,101	23
Savings in Infrastructure Maintenance and Design ($)	13,504.59	297,101	22
More Effective Management/Allocation of Field Services ($)	20,704.04	517,601	25
Reduced Costs Through Joint Funding ($)	533,439.22	12,269,102	23
		answered question	42
		skipped question	240

RESPONSES:

Staff Productivity and Labor Cost Savings ($)	Revenue Increases [improved collection of taxes, fess, fines, insurance claims, etc.] ($)	Reduction in Duplication and Redundancy ($)	Asset Management ($)	Support for Economic and Business Development Initiatives ($)	Avoidance of New Costs ($)	Savings in Capital Project Design ($)	Savings in Infrastructure Maintenance and Design ($)	More Effective Management/Allocation of Field Services ($)	Reduced Costs Through Joint Funding ($)
10000	5500	5000						20000	
20000	1	1	1	1	1	1	1	1	1
	0								
	3000								
2000		2000			10000				
100000	0	25000	0	25000	0	0	0	25000	0

10000	50000	0	0	0	100000	0	0	0	0
100000	100	100	100	100	100	100	100	100	100
						150000			
500	1000	0	0	500	0	0	0	500	2000
50000	2500	5000		3000			2000	2000	
20000	5000								
0	0	0	0	0	0	0	0	0	0
	10000			5000	6000			10000	7000
						120000			
200000	5000	120000	10000	5000	200000	0	50000	0	0
	250								
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
	0	0	0		0	0	0	0	0
40000	0	30000	250000	0	10000	0	50000	50000	0
						100000			
		100000				0			
0	0	50000	0						
0	0	0	0	0	0	0	0	0	0
	1200000								
									10000000
600000	0	350000	0	0	0	0	0	180000	180000
50000	100000	15000	20000	10000	10000	10000	10000	5000	100000
1									
40000	20000	20000	20000	500000	40000	50000	100000	50000	10000
15000									
						150000			
35000	250000					0			
0	0	0	0	0	0	0	0	0	0
	3000000								
25000	0	20000	20000	15000				15000	50000
									1000000
0	0	0	0	0	0	0	0	0	0
500000	100000	100000	50000	10000	10000		50000	100000	100000
8000000		160000							820000
	40000								
0	0	0	0	0	0	0	0	0	
300000									
150000	5000		50000		20000	20000	30000	50000	
5000	1	500	20000	1	1	10000	5000	10000	1

IF YOU HAVE ANY EXAMPLES OF BENEFITS FROM YOUR GIS PLEASE PROVIDE US WITH THAT INFORMATION

Exceptional coordinate conversion utilities help us move between AutoCAD and ArcView 9.2. GIS also gives us the ability to assign desired attributes to the spatial data; e.g. well data (point data) we could also have sample dates, various contaminant concentrations, groundwater elevations, etc. associated with the data.
The GIS system has been used by my organization to supplement a wide range of planning initiatives at regional and local levels.
Pictometry imagery and software, while not true GIS has provided more revenue to the communities in under assessed properties. These increases are not one-time, but perpetual.

Probably some trips to the field are eliminated by aerial imagery and tools. This saves some direct costs that have not been quantified but also indirect costs such as risk involved by staff driving etc.
The planning commission's mapping activities can be done in-house.
FEMA Community Rating System increase in scoring. Floodplain location is easier and faster.
As a private firm, our ability to provide high-quality GIS services and maps is one of the reasons for our success in planning and economic development. While it's impossible to quantify, I would guess that we would have missed out on business opportunities if not for our GIS capabilities
DDA planning, assessment and appraisal
GIS is used for 9-1-1 in this organization so there is no way to calculate the value. In NG9-1-1, accurate datasets are the key foundation.
GIS data when used by 911 does not have dollar amount assigned. 911 operations measure improvement in time in seconds.
Improved quality of maps available to public.
much more precision in our modeling, hard to tell about accuracy...
Data not traced to be able to quantify above figures.
Pending delegated authority to regulate aluminum, copper and other nonferrous foundries via US EPA National Emission Standards for Hazardous Air Pollutant (NESHAP). Maps of locations/types/size of existing foundry air sources helped foundry business organization knowledge of this industry in Michigan as well as Air Quality Division managers assess the strengths (pollution abatement) and weaknesses (workloads to district FTE inspectors/permit engineers) of taking/assuming delegated authority to regulate these sources. Potential revenue from fees, increased compliance (decrease air pollution translates to increase public and environmental health).
Professional image, department efficiency (esp. building, zoning, DPW, assessing), coordination of departmental projects
Hard to come up with these numbers since the use is so widespread
Developing a GIS is time consuming and costly. Although we are fully committed, we're only beginning to see potential at the field level. I can't summarize cost savings,...but they are certainly there in both tangible and intangible forms.
Online mapping for parcels saves about 75% of the time previously spent in the Equalization department doing parcel look ups. We estimate 50% of the cost of engineering services to have been absorbed through the GIS at 1/3 of the rate of outside services. As a data repository the GIS also saves about 50% of the start up cost for new projects.
Townships can visually see issues and solutions to problems they face
Our GIS and new Property Management software are just being rolled out. No dollar savings have yet

been realized/tallied.
As a private firm our intent is to make money by providing these benefits to our clients, which I think we do but it is very hard to determine a dollar value spread over 30-40 communities.
Reduced Overhead for County Departments Annual Value

Sign Management Inventory: Field Application: Road Commission $30,-$35,000

*Access to high resolution aerial imagery; verify road markings " " $2, - $10,000

*Searchable property maps: locate incoming calls: Drain Commission $15,-$25,000

*Access to current tax and drain districts maps for printing rolls: " " $8,-$12,000

*Property maps with TaxID#, link forfeiture ID#'s Treasurer $30,-$50,000

*Property maps with TaxID, aerial, drains: Equalization field appraisals visits 400%

*Property maps with assessing data on-line for the public calls 60%

*Must have up-to date information to achieve benefits
improved routing/ better engineering of transmission lines/improved decision making
Hard to estimate dollars saved.
Google Earth saves us at least 3-6hrs a week x40 engineers/tech. = 120-240 hrs per week

PR Finder saves us at least 1-2 hrs a week x10 engineers/tech. = 10-20 hrs per week
Michigan Environmental Mapper Web Application
We have used limited GIS to date, and we generally contract with the County to obtain what is needed. We use the County services for Zoning Maps, as the base map for our Future Land Use Map (which was developed by a consulting firm) and for our Non-Motorized Transportation Planning Maps.
Digital flood maps., Directing staff to the right locations during response, where to establish sand bag locations, calculating the evacuation needs for housing in a flood event, where to direct EPA spill recovery teams, assisting communities in planning for floodplain development to mitigate disaster damages, assisting communities in post disaster recovery, using USGS gage data for planning, critical infrastructure protection, coordinating disaster recovery center locations, catastrophic planning for earthquakes, long term recovery planning from flood disasters, groundwater inundation mapping.. I'll stop there
excellent decision making tool across the board at the local level (E911, Equalization, Treasurer, Clerk, Register of Deeds, Emergency Mngmt, Planning/Zoning, Building Dept., DPW, Landfill operations, Road Commission, DNR, USFS, Assessors, Townships, Villages, Cities). GIS has taken root in all these units and is considered a must-have in some.
It's impossible to put a dollar value on the benefits of the GIS at this time. We have not done the type of surveys needed for that information.

We started a mapping website four years ago and get about 4000 visitors a month to the GIS webpage (5th most popular page on our county website, after the homepage, HR and some directory webpages). This obviously saves on phone calls and walk-in traffic. Also the Health department and Equalization uses the website daily. They are able to do preparatory work before going out to the field, which saves time and money. But the benefits are hard to quantify without specific studies in each department, and even then some of the benefits are intangible but real.
The Assessing Dept uses (or can use) GIS to make maps for vacant land sales, land acreage, measure wetland areas, determine similar homes in neighborhoods, property that is vacant, voting locations and areas assigned to them, school district boundaries, etc.

I HAVE NO INFORMATION REGARDING COSTS ABOVE....THEREFORE, PUT IN $1 IN ORDER TO CONTINUE.
The public can go to our website and find out information on individual parcels. The information includes owner, addresses, legal descriptions etc. They can then look at our map and get a general location of the property and information about the surrounding properties. This saves time for staff having to answer some of those questions and allows the public to find the information any time of the day. They are not limited to office hours.
I have created maps for numerous grants. Jackson recently received about $900000 to restore the Amtrak station in town. Our GIS system was used to make maps that assisted in the grant application.
The availability of oblique and ortho photography has saved much of our time in the field. We can do the measuring from our desks and thus be available to the customers as they come in the office while doing "field" work.
#1- Labor savings come from not having to get up and get a book or measure by hand the area of a parcel.

#2- With the use of aerial photography structures that were not currently on the tax rolls were added.

#7- Engineering firms use our parcel layer data and aerial photography to supplement designs for the local units. It is assumed that they pass that savings on to the local unit. 911 center upgraded to a point address system created in house based on centroid (and aligned to aerial photos currently in work). Saving the 911 center on implementation cost.
We recently completed some analysis that allowed me to provide information regarding investment in GIS. Unfortunately, information with regard to savings is not readily available.
I work for a federal agency and have no idea of the $ benefits or costs in the 2 areas immediately above this box.
Data sharing agreements between county - city - council of governments provide for basis of consistent / reliable decision making support. Land record information updates and comparisons support and justify local property assessments which are revenue source lifelines for local and state operations.
We are able to assess more drain districts than we did before GIS was implemented at the Drain Commissioner's office. Also, only one person maps parcels in the county thereby eliminating the need to map the parcels within each drain district, which took one person 40 hours per district before GIS was utilized. Staff time is also saved when they can research an address location before going to a site visit only to find out that the address is actually in a neighboring county. This saves each employee almost 40 minutes for a site that is near the county boundary.
We provide GIS services to others and support our own project work.
Can’t quantify the benefits. Again, the County maintains the GIS we at the Township level use it.
We are strictly a GIS company, so benefits don't really apply. Everything we do is meant to benefit someone else.
We've taken our annual special assessment process from a 2-3 month process, involving 6-8 staff members and hundreds of hours of overtime, to a 3 week process involving 3-4 people and no overtime!
marinemap.org
Portable laptop for field utility location.
DNRE and Fisheries Division are better able to distribute information to the public using web applications, such as MRBIS, MI-SWIMS, MI-Hunt, online Trout Regulation Maps, online lake depth-contour maps.

WHAT COULD BE PROVIDED TO HELP MAXIMIZE THE RETURN ON YOUR INVESTMENT IN GIS?

low cost access to parcel data and address point data
More cost effective options for higher resolution digital orthophotos than the 2005 NAIP imagery.
Base GIS data made available by the Michigan CGI is very valuable to my organization's GIS. Our planning efforts would benefit from the availability of more data.
More cost effective options for data... regional data collection perhaps or state programs.

Standard web applications designed by state that could be hosted their or provided to meet needs of counties. Example: how about a zoning notification application? We would provide parcel data in return for that capability. How about more clear guidelines on contributing data to the state?
additional training
Better customized applications. Cost effective software.
We work often in small, rural communities, who often don't even know what GIS is. Therefore, improving the quality of the freely available data - and making more data available - are very high priorities for me.
Training should be made available for outlying areas; i.e. Northern Lower & the Upper Peninsula of Michigan
An Enterprise solution model would better serve the public both in money and in increase in quality of service.
all of the above...
Increased access to programming resources, possibly through college interns.
Help in creating a complete GIS program to better serve the county departments and citizens.
More data both raster and vector available as gis services so there won't need to be any downloading and prepping of data prior to use. The state offers imagery, only to State Agency's this way via their MIS. Why not open this to the public.
additional training; access to more cost effective options for data,
Knowledge of businesses (location/type/size) in Michigan would help DNRE AirQualDivision better regulate businesses through permits and enforcement actions. Some smaller businesses not in AQD air inventories affect air quality and environment (in broad sense). Having demographic (including disease surveillance data) along with business data would enhance AQD's ability to provide the public with knowledge of areas surrounding the places they live, work and play (e.g. Detroit urban blight, dumping, industrial sources, environmental justice).
Additional training, more time to work on GIS.
Better customized apps

Additional training

More accurate base map
Less expensive maintenance costs. Less expensive software upgrades.
Better hardware and investment in staff using current tools. Annual partnership to obtain leaf on imagery.
Access to the New PLSS corner coordinates!!!!!

Access to current MDF data is great don't mess with it!
We could really use a web based data entry portal at the state to make direct submission and

corrections to the framework. I spent 6 weeks using the census tool to update their information and would be willing to make the same commitment to the state data IF we could be assured that it wouldn't be ignored. A partnership similar to Bing for the acquisition of LIDAR would also be wonderful.
Finding where the right data is located is difficult. Even within state agencies there doesn't seem to be one collection and dissemination point. Having one central place where all GIS data is uploaded and available for download (for free) would be ideal. However, this will probably never happen without some sort of state mandate. First, communities have to convince their powers that be that GIS is worth the investment. If they are successful, that leads to the next problem - the powers that be see the value of the GIS and aren't going to let their data go for free.

ArcInfo license, updated parcel and address data, updated land use data

I didn't fill out most of this survey as most of the questions seemed to deal with justifying a GIS. Not to be rude but such questions seem about 10 years out of date. At this point in time, the utility of GIS in Michigan is well established (in most sectors of the economy). What is not well established are funding mechanisms which vary widely by organization e.g. simply compare one county to another. This is in contrast to states like Wisconsin where there is a uniform funding mechanism. What is also not well established is the interaction between the various users of GIS technology and data throughout the State. This is most pronounced in the limited back-and-forth between the State and the counties and local units of government. All have very serious responsibilities and complementary areas of expertise. The big question is how can a productive and economical partnership be established that will benefit all GIS professionals within the State?

Improved access to data: (1) Having Parcel/Tax information available for ALL Michigan counties would be a huge benefit. Currently we are limited in Michigan with on-line parcel/records information. (2) We currently pull in Aerial images from the ESRI website. It would be great to have updated flights available through the Michigan.gov website. (3) The Map Library on the website is of great value. Adding a 'More to See' communication to GIS partners updating us on new Map Products that are available would be a plus.

Improved access to data; additional training;

Increased requirements for local assessors to use digital parcels, create annual maps from digital parcels and database records, and share all source information.

improved access to data, more up-to-date data

affordable training. RS&GIS is great, but with budget cuts, it's getting tough to attend.

Improved image resolution, tighter geodetic reference.

Access to more cost effective options for data, software, hardware; Better imagery storage and serving; better customized applications that are easy to use.

Improved data access, data accuracy and redundancy minimized.....

enterprise based system in cooperation with the city of bay city, which could provide better data with lower software costs. More integration of GIS with other departmental applications.

The lack of computing power (no 64-bit systems so there are no systems with more than 2GB of RAM even though they can go to 3GB and with the 64-bit go to 8GB). There are computers here that have been found online for $90; so even if the network is upgraded, they are not going to be able to stream any application to them. The programs that are run by MDOT exceed the computing requirements of most other departments and require more bandwidth in order to properly function; currently the bandwidth supplied does not meet the needs of the user at MDOT . Constraints that have been put on the user as of recently and they have restricted the efforts of our educational aspect to Safety.

additional training, access to data, planning

being able to report changes/corrections/additions on MGF segments via program or web that tracks them and has a QC mechanism.

Historical Data and Imagery

Applications that every government could utilize such as a public safety/dispatching/emergency management apps. This could be a great way to start implementing a standard for roadways, addresses, and other boundary information which could be utilized across jurisdictional boundaries. These could also be leveraged as incentives for partnership participation and give more weight to having data at the state up-to-date.

Additional training. If I had better training opportunities, I would use GIS much more frequently and for considerably more projects. Access to more cost effective options for data, software and hardware would also be helpful in this difficult budget time.
Funding from the State for GIS Staff or data development
Improved data serving via the internet
Without a doubt access to data, particularly the structure location on tax parcel ID data, more trained staff particularly in database management, getting staff trained.
GRANT FUNDING from anywhere, it is hard to find if you don't live on the Great Lakes coastline or have tribal ties within the county. Money for hands-on training or ESRI led training for programming. Funding for the advancement of GIS such as ArcServer, SDE, ArcInfo, etc... Remonumentation needs to be required to supply local units (GIS) digital coordinates of the PLSS be contracted for remon. We need funding for GPS of section corners or any of the PLSS to advance our parcel accuracy. We need funding for web applications.
Very targeted, hands-on training is needed to change the working habits for people in for instance Equalization, Public Safety, or Register of deeds office. The GIS people don't know what the other professionals do, and the professionals don't have a good understanding of all the potential that GIS has in their specific work circumstances. I wish I could just watch over the shoulders of the people in these departments and get an understanding of what exactly they do, and I think I could come up with many shortcuts using our GIS website or other GIS solutions. But I don't have that kind of time.
Additional training for our staff so we can utilize GIS better and do more mapping and reports with it.
Access to more cost effective options for data, software made available at a more reasonable price including maintenance
The State of Michigan (all of us, not the Governmental Entity) needs to have a coordinated, supportive, cooperative effort put forth to develop GIS. This will most likely need to come in the form of a Coordinating Council that will be put together of a wide range of accepted decision makers and influencers that can drive GIS forward. The current structure at the State of Michigan CSSTP is not and does not support the development of GIS down to the local levels, and the efforts they have put forth do not support the business needs and/or concerns that local counties, cities, townships and villages have in regard to GIS development. They need to work WITH us instead of forcing programs down. Also, they need to support ALL GIS organizations in the state, not just the one that always supports their position without any challenges to their proposals.
Having access to more cost effective software would be helpful. The software would need to have better editing capabilities and a way to more easily share the data among the different departments. GeoCortex or similar program to improve access to the data we already have. More current air photos flown on a regular basis.
Better and more up to date data. More funding. greater access to training and networking opportunities. better and cheaper viewing and web viewing sources.
inter-operability of data, being able to bring in data from various sources.

low cost training
I like the idea of improved access to data(updatable, standardized data), additional training.

Since this a 3 person department, primarily the Equalization Department, more time to work on the existing layer data would be nice. No new personnel are ever going to be hired within this department and I suppose once the budget contracts enough this department will experience reduced staffing.
Putting an end to the current GIS program in this county.
Improved access to quality data, particularly imagery and elevation data
Create a dedicated revenue mechanism to support data maintenance and distribution practices. Data which is reliable, accurate, and timely will be of greatest value. Local level support for data management practices must be a central component to maximize ROI. Provide a Convincing ROI Case to Prevent Local Unit Data Hoarding Under Enhanced Access: Enhanced Access is restraining the use of data at a cost which is far greater than the revenue being realized by local governments selling their data. If the green economy is where Michigan is focusing its investment and our State is handing out tax abatements than local government needs to realize the full potential of their data to further economic

development initiatives. This goes back to my earlier points regarding the use of assessing level data to help promote properties which can be affordably purchased and secured for business development potential. Enhanced Access will be an obstacle for many communities' participation until there is recognized value in openly sharing their datasets. The real value is in the use of the data NOT in keeping it under lock and key in the hopes that large commercial vendors will come along to purchase datasets for a one time sale.
We need a voice in the state legislature to promote geospatial knowledge, which could lead to legislation to create a stable funding source for geospatial technologies at all levels of government. We also need the CSSTP to acknowledge that local data has value and that local government GIS programs can benefit the state only when the partnership works both ways. The CSSTP cannot expect to 'take' locally developed GIS data and not 'give' anything in return.
Need more Counties/Townships to implement GIS.
Data warehousing, Public interfacing for data requests, BME promotion with comprehensive support for GIS applications (The state could charge reasonable fees for this coordinated service!!)
Greater access to high-resolution elevation data. Willingness of folks to partner. Training in Coordinate Systems and Datums.
I think the greatest benefit would be to build into every GIS service and application a set metrics that will help define the ROI. The metric development should be a requirement for every application using GIS data and services. In this way, the case could be better made as to how to prioritize projects and where investments need to be made.
Staffing levels are currently limiting our ability to maximize the return and potential of the GIS. Other factors like training would help but are relatively minor compared to our lack of staffing resources.
Have everyone post their GIS data on the Web using OGC formats....and use more opensource software.
Improved access to data on the servers in other departments (and former departments: DEQ & DNR).

Additional training (ArcGIS 10 is coming soon). Access to more cost-effective options for data, such as easier network connections so that DNRE does not have to store its own versions of MGF. Better customized applications, such as GIS-network services additions to the DNRE Fisheries Division's Fish Collection System (the main database for Fisheries Division).

MICHIGAN GEOGRAPHIC FRAMEWORK QUESTIONS

NON-GIS ENABLED ORGANIZATIONS

WHAT HAS PREVENTED YOUR ORGANIZATION FROM IMPLEMENTING A GIS?

We are working w/LIAA to create a base layer. We are hoping to have it completed by the end of August.
Funding
THE COST OF IT.
Cost and operational utility.
not sure
We are private consulting firm to Michigan municipalities, and provide services assessing municipal IT systems and processes, including GIS.
Not required
Size of firm, limited use.
Staff, funding and knowledge

Start up costs, Lack of trained GIS operator
Participate in countywide GIS program.
Money and training.
We coordinate with state and the development of their system
WORK WITH ROADSOFT, USE SOME OF THE COUNTY GIS SYSTEM
money
funding
We contract for services
We're located in a county that has a GIS system which we're able to utilize freely
Cost
We do not have our own system in place, we piggy-back on the local county.
Lack of information
Don't know. Probably need (we are a rural twp) and finances
Needs are limited at this time. Minor user.
Staff education
budget!

APPENDIX B
NOTES FROM LISTENING SUMMITS

Michigan NSDI CAP Grant
Outreach Findings Summary

Prepared for

Michigan Department of Technology, Management and Budget

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INTRODUCTION

This document captures comments provided by the stakeholders in the GIS community in Michigan at each of the listening summits held around the state.

Draft notes from each meeting were distributed to everyone that attended the meeting for review and comments. The text included here represents those notes following requested edits by those that attended the meetings.

Information that was submitted after the summits were concluded is also included in this report.

The objectives of each meeting were:

- Learn about status of stakeholder GIS use and business needs
- Get input and ideas for achieving the SDI
- Identify needed improvement to the MGF and help guide the path of MGF future development

MARQUETTE MEETING (APRIL 20, 2010)

ATTENDEES

First	Last	Title	Organization
Eric	Anderson	Sr Planner, Resource Management Dept.	Marquette County
Nels	Anderson	GIS Specialist/Assistant Planner	Western UP Planning & Development Region
Brian	Bower	GIS Specialist	Hannahville Indian Community
Nathan	Fazer	Community Planner/GIS Coordinator	EUPRPDC
Cam	Fuess	GIS Coordinator	Superior Watershed
Matthew	Koss	GIS Engineering Technician	City of Marquette
Steve	Lenaker	GIS Coordinator	CUPPAD
Kelly	Levely	GIS Specialist	TriMedia Environmental & Engineering Services, LLC

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Matthew	Koss	GIS Engineering Technician	City of Marquette
Steve	Lenaker	GIS Coordinator	CUPPAD
Kelly	Levely	GIS Specialist	TriMedia Environmental & Engineering Services, LLC
Ken	Marshall	GIS Specialist	Keweenaw Bay Indian Company
Justin	Murawski	GIS/Tax Administrative Specialist	Marquette County Tax Roll/Equalization Dept
Chris	Pinnou	Engineer	MSU-LTAP
Bill	Rowe	GIS Systems Analyst	Marquette County Information Systems Dept
Gary	Schlaff	IT Manager, Center for Technology & Training	Michigan Tech University
Lori	Schultz	GIS Specialist	Public Health, Delta & Menominee Counties

Additional Attendees:

Paul Harmon	Michigan Department of Technology, Management and Budget
Steve Aichele	USGS
Martin Roche	GeoPlanning Services

MEETING AGENDA

1. Welcome and Introduction
2. Business Drivers and Business Needs for GIS
3. Identification of GIS Benefits
4. High level characterization of GIS Status and Implementation Obstacles
5. Specific Data Activities and Needs
6. Overview of MGF
7. Characteristics of Successful Collaborative Programs
8. Data Stewardship and Access
9. MGF Detailed Discussion
10. Wrap-Up and Next Steps

MEETING NOTES

BUSINESS DRIVERS FOR GIS

Development and implementation of a Wildfire Protection Plan specifically with GIS used for:

- Risk modeling
- Planning
- Education
- Completion of required US Forest Service-Federal Forms
- Participation from Feds, State, County, Tribal, Township and Villages

Cartographic production to support master planning and recreational planning

Modernization and maintenance of Zoning Data to improve efficient implementation of land use regulations and to reduce legal costs. Additional business driver for zoning GIS is the preservation of records and the ability to communicate zoning designation for individual parcels to the public.

Preservation of paper records for zoning, utility systems (water/wastewater) and plats is a driver for building GIS. Digital copies can be stored off-site for preservation in case of a fire or other disaster. Conversion of paper to digital formats is also driven for a variety of legal reasons.

Property assessing was cited as having a number of business drivers for implementation of a GIS:

- Cost savings from reduced field work

- Forecast revenue for future years based on sales data trends in property values

Property Assessment
Making sure that properties are appropriately taxed is a large driver for building a GIS and acquiring imagery. Specifically identifying improved parcels taxed as unimproved, underserved agricultural exemptions, and identifying improvements that were not issues building permits (sheds, garages, mobile homes, etc.) were cited as reasons.

Homestead exemptions, specifically individuals claiming more than one for property to get tax breaks that they are not entitled to was identified as a driver for creating a GIS on land ownership. Significant additional revenue is possible particularly for areas with summer homes or significant numbers of rental properties.

Corner monumenting issues
- Property transfer fees pay for collection of section corners
- Frustration with current project by land surveying department (pace of project, data received)
- Coordinates required but not provided by contractors
- Establish township lines for property appraisers
- Important for E-911
- Disaster planning
- Disputes exist over current or re-drawn boundary lines

Natural Resources
- Private land forestry issues
- Management of resources—to maximum yield
- Management of variable distance buffers based on soils, slope, water quality, etc.
- Understanding of land values
- Resource management

Flood Maps
- Requires better elevation data than currently available
- Current flood map modernization with 'best available" data doesn't provide a suitable solutions for most communities
- Poor flood maps jeopardize water quality as septic permits may be issued for inside of flood plain
- Improved elevation data required for economic development
    - Identification of appropriate industrial sites
    - Tower locations for broad band accessibility

Provide improved public information

Planning and communicating road improvement projects

BENEFITS FROM GIS IMPLEMENTATION

Technology reduces staff time to:
- Maintain critical data
- Respond to citizen requests
- Lower costs maps and services to walk-in citizen requests
- Reduced time to identify location to provide service from 1 hour to 5 minutes

Routing of snow plows, school busses, garbage trucks, inspectors:

- Reduced fuel use and vehicle maintenance from reduce miles driven
- Improved accountability—no plows parked at bar when they should be working
- Better service to citizens

Improved data quality through people using the data and identifying issues

Digital Data available via .pdf provided info faster cheaper and easier interactive

GIS can be used to support grant application bring money and needed services to the community:

- Can provide better more competitive applications using GIS
- Communications and graphics
- Identification of compliance with grant requirements
- Reporting grant requirements

Jobs

Education—GIS can be used to educate elected officials and the public about complex issues. "Maps are worth more than 1,000 words…" when attempting to explain a difficult issue or put together different data.

Data Integration—able to take data from multiple sources and perform analysis that would otherwise be impossible

Analysis—modeling for improved infrastructure planning, wildfire risk assessment and mitigation, etc.

Maximize road improvement budget—

- use asset management to repair roadways before situation requires very expense repairs (example may be reseal road before it is so bad it needs to be completely re-structured
- identify critical improvements based on crash data

Tower location example

- move tower to tribal or other owned land and efficiently place it to provide service eliminated $1,400/month rental fees

Prioritize Infrastructure for construction

- Use GIS to identify most critically needed infrastructure

Seek $$ from Grants

Quantify the costs of sprawl

- Additional road mileage comes with specific costs—GIS can be used to analyze those
    - Plow $$ per mile
    - Garbage collection, student transportation
    - Pavement maintenance

Visualization/Analysis of Alternatives

- See and better understand variable land use scenarios
- Produce 3D visualizations of slope to demonstrate impact of development

Limit "Stupid Things"

- Better information enables decisions makers to make better decisions

- Example: Understand that an easement that was initially with a single parcel may now cross two (after a subdivision for example) and changes to add a pipe when only a road was authorized by the easement may required negotiation with multiple landowners

Boost Public Confidence

- Make Government appear to citizens to "have its act together"
- To be technologically up to date and provide efficient services
- Minimize the "run around" for permits from zoning, to building, to address assignment, etc.

Make Complex concepts easy to understand

- Visualization of results of analysis
- Put together different data to identify situations where a circumstance exists when it would have been very difficult to do in the past (Example: crash data and business locations to make access to shopping safer and easier)

Economic Development

- Provide information to local businesses to allow them to grow
- Seek grant moneys for training workers, building infrastructure, etc.
- "Economic Gardening" enabling local people to start and build profitable businesses

Recreation and Tourism

- Better market the fact that a region has a lot of opportunities in close proximity
- Identify trails (hiking and snow mobile)
- Provide improved access to opportunities to local citizens

Fire Protection

- Improved response times through appropriate assignment of address to 911
- Location of fire stations in places here most needed to reduce response times
- Perform risk assessment (primarily wildfire) and assignment of stations or districts to areas of high risk
- Model high wildfire risk areas, compare to housing locations, work to mitigate potential loss of life and property

Search/Rescue

- Coordinate for improved response
- "Get to them quicker" by understanding access via trails, forest roads, etc.

GIS CHARACTERIZATION

Stand Alone GIS	2
Enterprise GIS	10

Enterprise GIS w/1-5 Depts	2
Enterprise GIS w/6-10 Depts	2
Enterprise GIS w/10+	5

What are the departments that you are working with or supporting?

- NRCS Natural Resource Conservation Service?
- USDA
- Forest Services
- Private firms (foresters, engineers, others)
- Conservation Districts
- National Parks
- State Police
- Timber Companies
- E-911 Coordinators
- Electric/Gas providers
- Townships

OBSTACLES TO GIS MEETING BUSINESS NEEDS

Departments view GIS as "something I use the maps from but don't need to understand myself"

Lack of Training and Education

Lack of Data

Lack of Communications (internal and external)

Money

Ownership restrictions—This is "my data"

Needs private company data (utility) that they are unwilling to share

Concern over cooperation with private firms

Staffing capacity—only so much time and most of it is devoted to doing basics

Lack of education (focused on decisions makers)

Resistance to change from current staff and management

Time spent on coordination can be spent on doing the job my employer demands

Staff turnover

Charging for public data since it is exempt from FOIA

STEWARDSHIP AND COOPERATIVE PROGRAMS

Reasons for concerns about data sharing

- Need to recover costs for data development and to support data distribution
- Bad analysis done by people after I provide data may put me and my organization in a bad light with the public
- Poor data quality—or data that I have is fit for my use but may not be appropriate for what the next person wants to do with it
- Management demands for cost recovery
- A lack of trust

Bureaucracy gets in the way of effective stewardship. Some institutions want secrecy.

ROI for the data "custodian" (organization that collects and maintains the data) may not be there if additional time and effort must be spent to meet other people's needs.

Chippewa County is in the early stages of working with the county, city, state, and feds on data sharing.

CHARACTERISTICS OF SUCCESSFUL COLLABORATION EFFORTS

Local sharing with County has been positive—close, similar requirements
Good communications
Informal relationships—I know who to call to get what I need and we work well together
Trust—built on long term personal relationships
Everyone benefits

Data Development Collaborations (for example orthos with USGS)

- Single administrator to deal with vendor and project management
- Everyone gets a good deal on cost

User groups that meet locally are a big benefit for successful collaboration

- Build relationships
- Get a good understanding of what everyone is doing and how we can cooperate

Positive attribute of cooperating on framework data is that the state distributes it—when requested can direct to state to take care of them

Tribal data sharing is successful based on strong communications and shared goals

Wildfire prevention and containment has driven sharing based on a national system has also been successful. Training available, certification system and $$$ are available

Collaboration with Universities is also a positive thing

- Lake Superior State—Lab and project give an opportunity to have students do projects
- They provide answers to "hard" problems we don't have the time or technical knowledge to work out
- Michigan Tech's Roadsoft is an example:
    - Driven by a legislative mandate

- Support people are readily available by telephone and have been stable over the life of the product
- It is FREE

CHARACTERISTICS OF LESS THAN OPTIMAL COLLABORATION EFFORTS

Flood map modernization projects were identified as a less than successful project from the viewpoint of local governments. This is largely because they are driven by old data resulting in an inferior product. The project also was developed without sensitivity to local needs and situations—particularly in rural communities with limited data and resources.

The re-monument program current underway for township corners is not sensitive to local needs and although it has a dedicated funding source (in the form of property transfer fees) the funds are not sufficient to get the work done in a timely manner. Local needs and GIS were not considered since the coordinates of the re-monumented corners are not provided.

General comments on the failure of some collaborative efforts include there can be no match of local benefit to local cost. The cost may be carried locally while benefits are realized by the state or federal government.

A lack of good management of collaborative efforts was also identified as a reason that many have failed to produce desired results.

Other general comments on failed collaboration efforts:

- Ownership “this is OUR data”
- Some benefits don’t come back to locals even if promised…the real benefits of the effort are at the state level not the local level
- Negotiation is difficult with multiple parties (with variable budget deadlines, project requirements, etc.)
- Liability concerns—will I be liable for mis-use or mistakes in my data
- Public safety may be compromised
- Privacy of data may be compromised—individual names of property owners, etc.
- Homeland security concerns—making sensitive data available for critical facilities
- Variable needs not identified and cause trouble with scale, attributes, etc.

DISCUSSION OF THE MGF

WHAT IS GOOD ABOUT THE MGF?

Free

Available

Data is "pretty good"

It provides a reliable source for our base data and base maps

We use it for:

- Platt books
- Road Atlas for emergency responders, etc.
- Long range planning (land use and transportation)

MGF is important to support or planning for:

- Land use and zoning
- Wildfire protection and identification of future land uses
- Natural resource protection and management

It is also useful for:

- Maps required for grant applications
- Provides surrounding county data when necessary
- Supports census analysis
- Redistricting
- Transportation planning
- Asset management
- Access management (state roads, driveways, etc.)
- Non-motorized transportation (trails, rail)
- Logistics (routing, etc.)
- Railroads & Distribution Utilities
- Contained in Geographic Data Library

WHAT CAN BE IMPROVED?

Accuracy

- Spatial accuracy doesn't match the orthos
- Tabular data can be incorrect or lacking important information
- Content—it contains some roads that do not exist
- Structure data not complete

Need to have more timely corrections (some corrections are not accomplished after 3-4 notices to the state. Example cited was a jurisdictional boundary)

New versions aren't turned around quickly enough

Schedule of distribution of updates doesn't match demand for RoadSoft users

WHAT CAN BE ADDED TO THE MGF TO MAKE IT MORE VALUABLE

What data elements should be added to the MGF to make it meet your business needs?

- Flood zones
- Parcels (statewide)
- Emergency response zones (fire districts, etc.)
- Orthos

Improve the coordinate density would be a benefit

Consistency across jurisdictions in the roads that are in the database would be beneficial. Include all local roads, forest service roads, unpaved/gravel roads, and important driveways to boost utility of data for emergency response and local transportation

Review the labeling of roadways. It is difficult to pull a single road from the database since the county names, state names, and local names seem to be variable.

Correct error in roadway functional class identifies

Add reservation boundaries.

Establish more clarity in resolving boundary disputes in the data. [Note: There appears to be a lack of understanding in the complexity of changing boundaries between legal jurisdictions that should be resolved if possible.]

Hydrology as it exists in the MGF is poor. Improve the quality, consider moving toward the National Hydro Dataset NHD. There was also some concern expressed about lakes in the database that don't exist and the lack of a linear feature for water at lakes.

Establish a mechanism for providing communication about the status of changes.

Provide a list of the MGF contact in other regions to facilitate communication.

Provide users with an organizational chart so it is clear who does what at the State office. (Name and staff changes have caused some confusion)

Establish a process for identification of authorized data editors.

Allow digital submissions. County has great data and it would like to include it in the MGF but there appears to be no mechanism in place to do so.

Clean up Act51 and TIGER 2000 data

Provide improved information with the re-monumentation data.

Include ortho data and synchronize collaborative programs with local budget and project cycles. Provide longer notice on potential joint projects including timelines and cost models.

LIDAR and elevation data at a better resolution than current would be a nice addition.

More collaboration with state and federal agencies to enhancing the MGF is necessary.

Change tracking and communication with locals would be a benefit.

Consider creation of a funded "regional" representative structure. Perhaps have an individual from each planning council fill this role as the local voice of the MGF. They could be the authorized editor and serve a role in building partnerships to improve the dataset.

Adjust timing of releases so they can be more in sync with the asset management council requirements for RoadSoft.

GAYLORD MEETING (APRIL 21, 2010)

ATTENDEES

First	Middle	Last	Title	Organization
James	A	Bennett		InfoGeographics, Inc.
Justin	M.	Booth	GIS-Remote Sensing	MSU
Denise		Cline	GIS Specialist/Community Planner	Northeast Michigan Council of Governments
Alexander		Code	Area Geologist	Dept. of Natural Resources & Environment
Carla		Elenz	GIS Manager	MI Dept. of Military Affairs
Candice		Fox	County Administrator	Montmorency County
Patricia		Gnotek	Property Analyst	MDOT
Donald		Grier		Grand Traverse County Rd Commission
Kevin	G.	Keller	Director	Montmorency County Equalization Department
Tom		Kellogg		Corwith Township
Toby	J	Kuznick, Sr.	Engineering & Zoning Assistant	City of Rogers City
Mark	W.	Larrow	Engineering Information Specialist	Monroe County Road Commission
Darcia		Little	GIS Technician	Camp Grayling
Liz		McNichols	Resource Information Specialist	Huron-Manistee NF
Sarah		Merz	GIS Analyst	Northwest MI Council of Governments
Jessica		Moy	Director	RS&GIS, MSU
Gaye		Pizzi		Crawford County Equalization and GIS
Sarah		Prinie	Clerk/Deeds & Descriptions	Montmorency County

First	Middle	Last	Title	Organization
Alan		Proctor	GIS Director	Little Traverse Bay Bands of Odawa Indians
Rainer	E.	Reichert	GIS Analyst	Grand Traverse County
Paul	H.	Riess	GIS Specialist	LIAA
Marc		Seelyem	Drain Commissioner	Charlevoix County
Tom		Sheneman		Kalkaska County Equalization
Matt		Tonello		Michigan DTMB
Sharon		Weiss		Cheboygan County GIS
Sharon		Zakrajsek	Director	Kalkaska County Equalization

Additional Attendees:

Laura Blastic Michigan Department of Technology, Management and Budget
Steve Aichele USGS
Martin Roche GeoPlanning Services

MEETING AGENDA

11. Welcome and Introduction
12. Business Drivers and Business Needs for GIS
13. Identification of GIS Benefits
14. High level characterization of GIS Status and Implementation Obstacles
15. Specific Data Activities and Needs
16. Overview of MGF
17. Characteristics of Successful Collaborative Programs
18. Data Stewardship and Access
19. MGF Detailed Discussion
20. Wrap-Up and Next Steps

MEETING NOTES

BUSINESS DRIVERS FOR GIS

Asset Management—

- repair roadway pavement in a timely and efficient manner to avoid higher costs through postponing work until the situation has degraded to the point of total replacement
- pavement management
- Maximize insurance claims for crash damaged property (signs, guard rails, etc.)

- sign management
- pulp industry

Collecting revenue—managing tax appraisals so they are equitable, fair, and represent actual market values. Also making revenue collection efficient

Improved service to citizens 24/7 (Example; camp ground reservations)

Better long range planning for infrastructure, land use, and public facility site selection

Meeting mandates from state and federal government.

Range management—ensuring a safe training environment for military while maintaining environmental compliance

Homeland security—protection of critical assets

Natural disaster response and risk mitigation

Natural resource management—
- preservation of water quality
- protection of habitat for endangered species
- management of resources for sustainability—pulp and timber management

Access Management—making sure businesses can be safely accessed from public roadways without impeding traffic flow

Protection of water quality—from spills

Wells & Pipelines—
- safety inspections (compliance with regulatory requirements)
- maintaining of right of way

Reduction in staff time
- responding to citizen questions
- find information necessary to identify location of work order (pothole filling, etc.)

Record retention
- digital information duplicated and stored off-site
- historical changes over time with audit trail

Grants
- complete effective and improved grant applications
- management of grant processes
- identification of areas eligible for grants

Cultural resource protection
- protect unique resources from destruction
- education of the value of these resources

Map truck routes

Provide improved information to the general public—boost credibility

Private firms—sell products from data received from government

Economic Development—
- assist to identify the site for facilities
- demonstrate and understand utility availability
- identify broadband access to support development (understand potential impact on land values)

Manage permits (applications and inspections)

Minimize or defend against litigation
- wetland encroachment
- assure that well distances are maintained

Reporting to federal/state government agencies

Meet audit requirements

BENEFITS FROM GIS IMPLEMENTATION

Saving staff time through self-service on the web

Improved accuracy of data

Reduced travel time and expenditures—specifically referenced ortho and oblique photos and tax assessment

Analysis of crash data would be impossible (or very difficult) without GIS. The analysis improves safety and helps prioritize investment in road work

Improved tax revenue by using orthos to identify property not appropriately taxed or receiving a homestead exemption that isn't eligible.

GIS based inventory of assets allows for improved budgeting

Timely road maintenance saves money. Execute the repairs before it is too late and the repair is much more costly.

Efficient inspections and improved compliance with regulations

Improved staff accountability

Better routing for E-911 and inspections saves on response time and transportation costs.

Reduction in personnel costs

Wildfire risk modeling has benefits in improved response times by staging equipment in areas where it is likely to be needed. Also has a benefit of prioritizing areas for mitigation and public education.

Improved cooperation between agencies

Better quality of information

Consumer protection—based on improved information

Improved citizen understanding

Tools for education of citizens and decision makers

Visualization of alternatives and encouraging public participation in planning efforts

Smart transportation decisions—from both public and citizens

Understanding funding impacts from alternatives

Trends can be apparent

Improved tax assessment

GIS enables analysis and empowers improved decisions

Visualization of land records and easements—understand where easements are and how many parcels are impacted by utility construction projects

Cooperation between departments on address assignment

Improved citizen satisfaction in services—they don't feel like they are getting the runaround

- better client services—can provide answers to questions that weren't possible before
- available 24/7 on web

Fewer stupid mistakes

Reduced duplication of efforts

Improved accountability in data

Economic development—information to support appropriate location decisions

Multiple departmental use of data

Improved communication up and down the management chain

Tie data together for improved understanding and analysis

GIS CHARACTERIZATION

OBSTACLES TO GIS MEETING BUSINESS NEEDS

Security of information and systems

Confidential data needs to be protected

Lack of infrastructure—specifically cited was broadband availability

Silos of information—no sharing even within organizations

Lack of needed data—elevation data

Staff—don't have the people we need

No money

The data we have is old

Corrections and additions take all of our time so we can't devote time to other applications of GIS
- maintenance of old data takes all available staff time

Lack of understanding
- elected officials
- boards
- ROI

Recreation of data

Lack of metadata from already available data makes it difficult to judge quality and appropriateness of the data for next use

Poor 2 way communications
- Within organization
- Up and down the management chain
- Between local jurisdictions and state/federal governments

Lack tax base to support GIS development

Internal support is lacking
- Need internal marketing to build support
- Need to identify a political champion

Organization charge for data so I can't get what I need even though it exists

Unable to find time for training

It is difficult to keep up with technology changes and maintaining the data

End users accessibility
- Providing them with the tools they require to get to the data and analytical tools
- Uses don't understand that they need it

Lack of priority—money is available and spend on other items rather than GIS

There is a conflict between tax base and services demand. More demand than $$

Resistance to change. We always done it this way and it works—so why spend $$ on GIS

Accountability—people don't want to be held accountable (cited example was plow drivers)

Need value education. Necessary services can be improved with GIS but they must also be paid for now so directing budget to GIS implementation is immediate cost but benefits are down the road.

Turf protection. "My data" feeling.

Legal restrictions make important data unavailable

- Some "confidential" information would be good to have
- Appraisals are sensitive

Protection desires limits availability of some data

- Endangered species
- Archeology and cultural resources

I can't fund the data I need

Resolution of available data doesn't fit my needs

- MGS road data
- Imagery (NAIP—leaf on vs. leaf off)

Poor data quality of available data and a lack of metadata.

STEWARDSHIP AND COOPERATIVE PROGRAMS

Organizations need to build a "champion"

- Get a key decision maker interested in GIS
- Sell them on the benefits and ROI
- Find a need and fill that need
- Create a plan with clear goals, details, implementation steps and clearly define the benefits for the decision maker from attaining the goals

There was an identified need to establish a governance structure (a legislative coordinating council was specifically mentioned) within Michigan that will support and sustain cooperation and stewardship over time. North Carolina was cited as an example where effective coordination has been implemented but it was recognized that formal coordination efforts around the nation have seen variable levels of success.

CHARACTERISTICS OF SUCCESSFUL COLLABORATION EFFORTS

Regional E-911 effort example of a successful collaboration

- Technical support available at regional council
- Cost savings
- Transfer of knowledge to local partner with the understanding that they eventually will do maintenance themselves
- Project is formal and has a limited duration—clear deliverables and schedule

Ortho photos joint projects

- Provide accurate data
- Save everyone involved money
- Single product meets multiple needs—example cited included two products with a lower resolution product made available to state partner for distribution while local partner could continue to sell the higher resolution data

Re-monument project underway

- Good cooperation between Corps of Engineers, Tribes, and local government
- Money is available to do the project
- Data is becoming available
- Negatives
    - Long time to complete the project with the funding available

Roadsoft is a successful collaboration between federal, state, university, and local organizations

- Good available tools that don't have to be developed by each user
- A product is readily available
- There is good use support—if I call someone will give me an answer
- System can grow to support local needs
- Negatives
    - Compatibility with systems in place
    - Data may also not be in a compatible form
    - Release schedule means working with old data

Oblique imagery projects

- Help multiple organizations including tax assessment, wildfire, and first responders
- Cost savings from multiple partners participating
- Data is available and accessible

Data sharing projects were discussed and generally had the following characteristics

- Technical assistance was available from the lead partner
- Data QA/QC was performed one of the partners to assure everyone a quality products
- Some were formal—with signed agreements in place
- Many were informal—accomplished at technician or GIS coordinator level without involvement of high level decision makers
- Data share projects sometimes encountered difficulties with
    - Edge issues—different projects or data structures made combining data difficult
    - No central place to get all the data needed

Good cooperation between Bureau of Indian Affairs provides tribes with ESRI licenses without cost to tribe.

Regional user groups have been very valuable in building partnerships and understanding

Standards help collaboration efforts since everyone knows what they will be getting and how it fits together

Good collaboration efforts have representation of all parties involved.

Successful collaborative efforts can be driven by availability of grant money from outside sources—federal or state government

CHARACTERISTICS OF LESS THAN OPTIMAL COLLABORATION EFFORTS

In some cases a lack of local understanding can limit success-they lack technical understanding

Distance between organizations can hamper communications

Often people who need data don't know what other have or where to get the info they need

Some organizations and individuals "lack professionalism"

Buy in at the decision maker level can be difficult. It is easy to get GIS folks to agree.

Mandated without funds to support the effort—demands from state that require doing something without funding that activity for example.

Benefits of the project may not be at the level where the bulk of the expenses are carried. There may be value to the state or private sector but that value is not captured by the partner doing the bulk of the work.

Conflicting standards.

DISCUSSION OF THE MGF

There were 7 users of the MGF and 2 contributors at the meeting

WHAT IS GOOD ABOUT THE MGF?

Free

Statewide availability and it works across jurisdictional boundaries

Easy to get

Up to date—somewhat

Easy to send updates

WHAT CAN BE IMPROVED?

Address data is weak

Spatial accuracy is poor

Update schedule—it takes too long to get updated data

Not a web service—provide as WMS, KML, etc.

Redundant data sets

Metadata doesn't convert well to ESRI formats and tools

Needs fire protection zones—which fire department is assigned to where

Coverage or Shape to GeoDatabase conversion problems
- Relational ties lost
- Topology
- Domains

Will Oracle to ESRI conversion result in data loss or reduction in utility?

Make available data library definitions
- Better tools for layer customization
- Easier to extract features (example: All "M" roads)

Better communication of data model so potential users can understand what they can do with the data. Suggestion for a "data catalogue"

Include all roads (alleys, commercial driveways, forest roads)

Include unincorporated points

Improve the hydrology data set
- Blend of line and polygon has created problems for users
- Polygons need a centerline for flow modeling
- Migrate to National Hydrology Data
- Provide high water line for Great Lakes

Make the MGF fully compatible (two way) with E-911 systems in place and homeland security tools

MSAG info should be merged into MGF with reconciliation to other data and to standards (NENA/Postal)

Public land boundaries should be included

Forest Road standards for inclusion need to be developed

State leadership in promoting value of MGF

Improved quality DEMs (possibly from LIDAR) is needed for a variety of applications (flood modeling, tower placement, viewshed, wind power studies)

Add the following to road vectors:

- Speed limits
- Pavement type (paved yes/no)
- Weight limits on bridges
- Height restrictions

Improve rail updates and communication of metadata (inactive vs. removed)

Electric and natural gas data should be added

Point locations of critical facilities

- Hospitals
- Schools
- Police stations
- Fire stations
- Communications towers

Add information on oil/gas wells and transmission lines

Bathymetry at least along coast is not for entire lakes.

KALAMAZOO (APRIL 27, 2010)

ATTENDEES

First	Last	Title	Organization
Rose	Anger		Barry County
Aaron	Boos	Manager of GIS	County of Ottawa--IT Department
Nina	Consolatti	Graduate Student	WMU Geography Dept
Joel	Cook	Southwest Region Asset Management	
Amber	Eckert	Technical Specialist	Fishbeck, Thompson, Carr & Huber, Inc.
Darcy	Ellinger	Real Estate Records Dept	Consumers Energy
Rich	Francisco	GIS Systems Analyst--IT Department	County of Ottawa
Andrew	Hartwick	GIS Director	St. Joseph County
John	Hippensteel	Director of Equalization	Calhoun County
Lotta	Jarnefelt	Director	Kalamazoo County Dept. of Planning & Community Development
Joanna	Johnson	Managing Director	Kalamazoo County Road Commission
Valdis	Kalnins	Director-Land Information Services	Allegan County
Karl	Klemm	GIS Specialist, Dept. of Community Development	City of Portage
Dwight	Leeks		
Dan	List	GIS Manager	Facilities Management, Western Michigan Univ.
Jon	Merrick		Calhoun County
Richard	Muyskens	Electric Distribution GIS Specialist	Holland Board of Public Works
Jeff	Reicherts	Surface Water Specialist	Kalamazoo County Health and Community Services Department
Kitty	Rothwell	Associate Region Engineer	MDOT
Laura	Sanford	Real Estate Records Dept	Consumers Energy
Erik	Schnepp	Southwest Region Surveyor	MDOT
Andrew	Schwallier	Environmental Specialist	Fishbeck, Thompson, Carr & Huber, Inc.
Steve	Sedore	Director of Information Services	Allegan County
Teresa	Stassines	Real Estate Records Dept	Consumers Energy
Steve	Stepek	Senior Transportation Planner	Kalamazoo Area Transportation Study
Jason	Sundell		MDOT-Grand Region Delivery
Margaret	Tenkow	GIS Analyst	W.E. Upjohn Center For Geographic Change
Rick	Updike	Superintendent of Public Works	City of Plainwell
Thomas	Van Bruggen	Property Information Analyst	Muskegon County Mapping & GIS

First	Last	Title	Organization
Nick	VanWoert	Resource Analyst	Southwest Regional Office (MDOT)
Kenny	DenBraber	Transportation Engineer	St. Joseph County
Robert	Goodwin	GIS/Remote Sensing Analyst	RS&GIS MSU
Wade	Hawes	Assistant Planner	Pokagon Band of Potawatomi Indians
Ken	Oscarson	KCRC Commissioner	Kalamazoo County Road Commission
Matt	Vandyken	IT Director	City of Holland

Additional Attendees:

Laura Blastic	Michigan Department of Technology, Management and Budget
Paul Harmon	Michigan Department of Technology, Management and Budget
Steve Aichele	USGS
Martin Roche	GeoPlanning Services
Peter Croswell	Croswell-Schulte Information Technology Consultants

MEETING NOTES

BUSINESS DRIVERS FOR GIS

Public Safety

- Dispatch
- Emergency Disaster Planning
- Locations of Hazardous Materials (with a mobile capability)
    - Concerns were expressed about liability for these data
- Identify locations of threats of violence to inform field crews of potential dangers
- Disaster recovery
- Guard Rail repairs are tough to collect on following a crash

Accident Analysis—link crash statistics and locations to responses for both pre-planning and post-event use

Utility Infrastructures Asset Management

- GIS based asset inventory and tracking of assets
- DOT for culvert and catch basin maintenance—make more efficient management decisions and make sure only appropriate features are services
- Stormwater drainage analysis—prevent flooding and assess those benefitting from improvements the cost of the improvement

Customer Service—improved service with better data. Reduce phone and walk in requests that interrupt staff during work on other assignments

Infrastructure Asset Management

- Real estate management
- Long term planning for sustainability

Capture institutional knowledge

- Staff turnover and retirements cause a loss of knowledge

- Building spatial databases may retain some of that knowledge

Real property appraisal
- More equitable
- Identify missed attributes or features (improved properties taxes as un-improved for example)
- Cross boundary information is important to support
    - Economic development—housing and non-residential property availability outside of county
    - Non-residential appraisals since low volume a sales in a single county don't provide enough comparables for valuation. Non-residential property markets are multi-county in nature
    - To detected Homestead violations
- Make sure all improvements in a jurisdiction are taxed properly.

Flood plain modeling (1999 DEQ flow modeling)

Government/Private partnerships (example Consumer Energy property project)

There are business drivers for 'structure' data

Alternative revenue source to replace gas taxes--vehicle tracking for miles driven in an automated fashion since fuel economy and alternative fuel vehicles will reduce collection of revenue used to support road maintenance.

Infrastructure
- Planning and design for new projects—make sure they are efficient and meet potential future needs
- Generate accurate cost estimates to assure adequate funding for projects

Environmental and public health regulations—particularly septic tank permits and well head protection
- Parcel data may be required to do this effectively

Health Clinical Services
- Critical structures for emergency planning and response
- Incident analysis—disease outbreak tracking

Ortho-imagery identified as a business driver
- Method, organizational approach for capturing

Need to capture duplication of efforts

Route inspectors and transportation services
- minimize travel and vehicle maintenance costs
- provide improved customer service (schedule service windows for example)

Improved data access—more flexible applications for on-line access

Federal and State reporting requirements—example cited Act51 road miles

GIS CHARACTERIZATION—SPECIFIC DATA NEEDS

GENERAL DATA COMMENTS

The community needs to define, for each element of data, functional vs. ideal accuracy.

Spatial accuracy should be consistent to boundary data matches other data sources (census geography not matching road centerlines and hydrology was cited as an example)

Communication of improved data or newly available data needs to be improved. Users need to be able to find the data they need.

SPECIFIC DATA NEEDS

Facility data (HSIP)
- Schools
- Nursing homes
- Day care centers
- Fire stations
- Police stations

Environmental justice information (example: Amish locations for areas to avoid installation of road rumble strips)
Soils
Hydrology
Drains
Elevation point data sufficient to support generation of 2 foot contours
Water well locations—residential
Historical information including aerial photos and Sanborn fire maps
Broadband availability
Endangered species locations
Utilities—all water/sewer/natural gas/electrical (in part to support "call before you dig" programs)
Boundaries
- Special purpose districts
- School
- Fire protection

Section corners—need to have accurate location data of these since the entire parcel fabric is built off these locations
- The re-monument program needs to include requirements for precise GIS coordinates to be made available

Ortho photos are critical and need to be updated on a specified schedule.
Infrared imagery
Parcel data statewide based on established spatial and attribute standards (for example a standard parcel ID #)
Oblique imagery
Address points
Road centerlines with address ranges
Private roads
Land cover and Land Use with a 1 acre mapping unit
Ground water contamination—build off of data already available at environmental mapping web site (http://www.mcgi.state.mi.us/environmentalmapper)

School districts
ZIP codes

OBSTACLES TO GIS MEETING BUSINESS NEEDS

Encourage use, expanded use requires people to see benefits rather than GIS as competition

Unable to get funding to "scrub" the data to help improve accuracy after funding is made available to convert the data from paper to digital.

Hardware/networks funding and support, connection with IT, technological challenges from virtualization

Introducing mobile devices—acquisition, training, applications

Understanding datums, projections, etc.

Technology transfer to regional office of state agencies due to bandwidth constraints

State agencies requirements to request support through IT. Minor requests for new accounts or to install software require too long.

Organizational structure and governance needs to be improved
- need for better coordination between entities
- not enough unification between entities
- restructure cross-boundary committee
- identify a "champion"

No State mandate to have GIS

Lack a well defined process for data updates

Training and orientation for use of GIS

Lack of state provided support for GIS services to low resources jurisdictions

Need a better channel to legislative or local bodies

Data access restrictions based on licensing requirements or data sales

Poor quality data

Lack of standards and/or lack of compliance with standards

Funding!

Insufficient support from management

There is a lack of a view of GIS as a process requiring ongoing support for data and applications. Somehow we to overcome the perception of GIS as a "project" with a distinct beginning and ending.

STEWARDSHIP AND COOPERATIVE PROGRAMS

During an open discussion on the status of stewardship in Michigan the following comments were made:

- There needs to be a respect for the needs from different levels of government
- There should be a theme of cooperation with GIS as a foundation for that cooperation
- Private use of public data (particularly if they are using the data to make a profit) can be a problem
- There is a lack of standard data licensing terms and that sometimes restricts sharing and cooperation (there was a suggestion that a standard license could be developed and potentially mandated)
- Need to "enforce" data standards particularly for parcels and funding should be provided to meet the standards including:
    - Parcel #
    - Legal description
- RoadSoft is used regionally and supported by State rule for low population areas
- We need to explore the possibility of inter-county cooperation (where multiple counties band together to jointly provide services and support on a contract basis)

The cost of sharing data was also discussed with 10-30% of staff time being devoted to data requests from local units of government, districts, state, federal, private firm, and general public requests being included in that total.

CHARACTERISTICS OF SUCCESSFUL COLLABORATION EFFORTS

A multi-organizational Pictometry project was cited as an example of positive collaboration. The project had:

- A lead organization that provide project management and technical support
- Cost share between partners provided everyone with data as a reduced costs
- Variable resolution products were available to meet all partner needs

Several organizations cited project where they jointly share and host data. In some cases this is a township/private vendor relationship.

Good communications were identified as key to any successful multi-party effort.

Regional E911/emergency services operations were identified as a successful collaboration because:

- They have a central office that manages activities
- Formal structure with clear roles and responsibilities outlined
- Provide a buffer of data from outside of the jurisdiction which can be important for response
- Based on historic positive personal relationships and long standing "mutual aid" agreements

The LUCA (Local Update of Census Addresses) was identified as a successful local/federal/state collaboration:

- A simple to use tool was provided to edit data
- There was the ability to add boundary data changes based on annexation, etc.
- The appeal process was clear
- The tool for use with ESRI wasn't great, but the stand alone tool was better
- There was a clear and tangible benefit to the local partner for participation.

A multi-jurisdictional data on-line data service was identified as a successful collaborative effort—it allows for multiple organization to use a single web server reducing costs associated with hardware, software, networking. It is an ad hoc working relationship with formal agreements or licenses.

Generally successful project benefit from:

- Economies of scale—reductions in total costs based on the size of the project. Examples are ortho photo projects and parcel conversion/maintenance projects.
- Standardized products

Multiple Townships have collaborated on parcel maintenance projects driven by improved efficiencies and better value.

Collaborative efforts between local governments and counties have been successful when the county allows the local GIS to grow, mature, and evolve over time. This includes the relationships as well as the attitudes.

CHARACTERISTICS OF LESS THAN OPTIMAL COLLABORATION EFFORTS

FEMA Flood Modernization was cited as an example of a project with less than successful characteristics. Some of those characteristics were:

- Local data and input were ignored in the process
- Leadership changed at the host Federal agency (more than once) during the project creating a lack of continuity
- Changes in the host agency—moving departments and people—caused project issues
- Communications to contractors from staff seemed to be a problem, particularly after there was a transition in contractors
- Program lacked sustainability after hurricane Katrina and the organization shifted key resources to issues related to hurricane clean-up
- If you ask for data from local sources USE the data from local sources
- Old data was used when better data was available but never requested
- Project restrictions on funds for data

A positive element of the FEMA Flood Modernization project was that data were provided that would have been unavailable without the project. However, some comments were received that suggested that in this case no-data may have been better than bad data.

DISCUSSION OF THE MGF

WHAT IS GOOD ABOUT THE MGF?

Low cost

Easy to use

Single statewide file make getting and using the data efficient

Attributes are good

Used for:

- multi-county base maps
- asset management
- planning and displaying future projects
- data set for training and education
- school bus routing
- supporting grant applications

Data outside of the county is valuable for:

- Court exhibits that have required tracking a vehicle
- Transportation routes
- Dispatch emergency vehicles—using a buffer around the county
- Geocoding features outside of the county

The road network is more updated than other sources

It doesn't require duplication of work

We have a history of involvement with MGF and involvement makes us "feel good."

We have a business driver for centerline data that can be linked to RoadSoft, is an improved set over TIGER, and supports the QVF (qualified voter file).

WHAT CAN BE IMPROVED?

The download process for orthos is tile based without an adequate index grid.

Spatial accuracy doesn't meet my needs.

Improve the alignment with local data sets, particularly focus on alignment to orthos

Divorce the township boundary lines from the road centerlines

There are projection issues particularly an error in ESRI's tools for the Michigan state projection

Some files lack any projection information

Files are in the MGF projection

Lack of a permanent ID on segments. Segments also need attributes on pavement type, all season/seasonal status.

Dynamic segmentation is a difficult environment for some small organizations to work with.

Break points are not at the end of road segments

Need a point file of intersections

The From-To values on address ranges sometimes don't match the PR-MP system. MGF road direction follows the LRS mile point but the local agencies prefer the road to follow address direction There is a need for a road naming guidelines document and some enforcement of postal standards for addressing

The MGF is complicated and there is an additional need for education for users.

Accuracy varies from county to county—need to define a working scale for the data

Act51 linkage is somewhat unclear in users minds. Need to include Arc51 mileage vs. the 2D GIS length.

WHAT DATA SHOULD BE ADDED TO THE MGF?

The transportation data should be enhanced to include:

- Surface type
- One-way designations
- Number of lanes
- ESN-emergency service network # to link to dispatch system

Overall a better linkage to the asset management council

Improved hydro data, specifically the; NHD

Other state data that is currently available in view only tools (for example well data)

Topo maps

Better elevation data

MGDL should be expanded to include other data

Historic data

Metadata

Green infrastructure

Survey data from construction projects—as "builts"

Hydrology should be enhanced to include:

- A county drain designation attribute
- Linear referencing
- Reach codes

Add ZIP code polygons

PARKING LOT NOTES

A number of comments from attendees were recorded but not fully discussed due to time constraints. These comments included:

- "State mandates" must come with funding
- Participation from private utilities is important
- GIS products/services sales has an impact on progress
- Data licensing and ownership
- FEMA flood map modernization and lack of local involvement
- Data collected based on difference geographies results in inconsistencies
- Data standardization is the basis for integration. This should include symbology, unique keys, and parcel #
- The Great Lakes restoration initiative should be explored (EPA program)
- Requirements for sex offender notification may be a key business driver for parcels and addresses
- There are other proximity based notification requirements (permits, zoning changes, etc.) that also drive need for address and cross boundary spatial data
- New broadband mapping initiative (connectmi.org)
- Data needs to be available for everyone—including counties with low resources
- State DEQ had an environmental mapper application that is in use
- State led deed fees should be considered to support GIS for local governments (like WI, MN, IL)
- Recurring costs for data refresh need to be understood
- Incentives are needed to support refresh costs
- Need a strong business case for GIS that considers partnership costs and "in-kind" expenditures
- Regional coordinators (maybe at regional councils) should be explored
- Work through MAC, MML, and other related organization to reach decision makers.

PONTIAC (APRIL 28, 2010)

ATTENDEES

First	Last	Title	Organization
Sarah	AcMoody	Remote Sensing & GIS	Michigan State University
Bryan	Agosti	GIS Specialist	Mannik & Smith Group, Inc.
Nathan	Arnold		Washtenaw County Support Services/IF
Jeff	Baker	Surveyor	RCOC
Michelle	Barnes	Res Eng	U of M
Alex	Bellak	GIS Administrator	City of Troy
Robbie	Beller	GIS Coordinator	Grand Blanc Township
Tom	Blust	Dir. Of Eng	RCOC
Ann	Burns	Assistant Manager	Information Technology Department
Anita	Campbell	Data Services Supervisor	Oakland County Information Technology
Cori	Cox	GIS Coordinator	St Clair County
Dennis	Doherty	Business Development Manager	Superior Information Technologies
Trevor	Floyd	GIS Analyst	St. Clair County Metropolitan Planning Commission
Scott	Harrod	Sr Applications Specialist/GIS Coordinator	Community Services, City of Ann Arbor
Jason	Heywood		Aerocon Photogrammetric Services
Kenneth	Hudak	Planner III	Road Commission of Oakland County
Ken	Koleda	GIS Director	Genesee County
Matthew	Malone	GIS Coordinator	City of Farmington Hills
Richard	Mangus	GIS Supervisor	City of Madison Heights
James	Miller	GIS Department Manager	Hubbell, Roth & Clark, Inc.
Susan	Moore	GIS User Support Specialist	Oakland County, Dept of IT
Richard	Owens	Graphic Technician-GIS Public Safety	Macomb County Planning and Economic Development
Steve	Perry	Senior GIS Specialist	Southeast Michigan Council of Governments
Laurie	Prange-Gregory	Applications Manager	State of Michigan
Christine	Ritchie	Assistant Director of Assessing	Independence Township
Doug	Ritter	GIS Coordinator	Northville Township
Tara	Russell-Weir	GIS Analyst	
Bill	Sauer	GIS Manager	City of Rochester Hills
Barbara	Saunders	Supervisor, Data Integrity Gas	DTE Energy\MichCon Gas

First	Last	Title	Organization
Dawn	Siegel	Supervisor, Dept. of Information Technology	Oakland County
Jeff	Staebler	Associate Partner, Director of Technology	OHM Architects, Engineers, Planners
Bill	Tyler		City of Livonia
Michael	Woods	Transportation Planner & Asset Manager	Opus International Consultants Inc.

Additional Attendees:

Laura Blastic	Michigan Department of Technology, Management and Budget
Paul Harmon	Michigan Department of Technology, Management and Budget
Steve Aichele	USGS
Martin Roche	GeoPlanning Services
Peter Croswell	Croswell-Schulte Information Technology Consultants

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MEETING NOTES

BUSINESS DRIVERS FOR GIS

Emergency Management

- Situational awareness
- Mash-up to support EOC
- Imagery, road centerlines

Asset Management

- Move from reactive to predictive maintenance to save $
- Support infrastructure management priorities with shifting population and related demands
- Population shifts have driven

    - changes in transportation planning,
    - reduced customers required market readjustments and analysis of maintenance relative to lower revenue
    - migration of roads from paved back to gravel to reduce maintenance expenses
- MDOT cost recovery for damages from crashes
- Accident analysis to improve safety
- County report of road miles in compliance with Act51 to drive revenue share from state
- Aging suburban infrastructure drive need for panning

Land management-US Forest Service
- Public land management (DNR budget of $4.1 million for management)
- General land management
    - Capability, characteristics, land use planning, decision making

Homeland security
- Border crossing management
- Regional focus on emergency management

Water/Sewer Districts—long range planning

Capture institutional knowledge
Record Preservation – linking records to location

Compliance with State and Federal Regulations
- Real property tax regulations
- Storm water management
- DIMP Federal (August Plan)
- Natural Gas assets and compliance with regulations on setbacks, buffers, etc. (FERC)

Water/Sewer requirements for 5 year vulnerability assessment and state revolving loan fund (SRF score)

Economic Development
- State economic development corporation requirements for report to legislature
- Site selection and site characterization
- Labor force analysis
- GIS as “sales tool”
- Brownfield redevelopment—support for grant opportunities
- Planning for incentives

Real Property Management
- Need for standards drive local assessors
- Parcel valuation
- Special tax districts
- Townships—sales studies for sales valuation
- Map foreclosures
    - forecast/track vacant structures to communicate to law enforcement
    - public health impact of unmaintained swimming pools
    - predictive analysis on housing values and resulting tax revenue
    - Hot spots analysis for complaints

Animal control/pet census
- Public health—making sure rabies vaccinations are done
- Revenue—collect on pet licenses

Data Standards – it is tough to determine a lowest common denominator to work from

BENEFITS FROM GIS IMPLEMENTATION

Reduce flow rate to treatment plant resulted in $132,000 savings in possible infrastructure costs

Improved workload planning using GIS

Legal cases made simpler or remove potential damages/liability
- Prove encroachment on easements or ROW
- Manage land development
- Recover costs for road infrastructure damage—value assets and seek $ from insurance company for damages
- Avoid liability—claim that a snow plow ran driver off road allowed AVL data to prove it wasn't a plow from County/Township

Lost opportunities minimized

GIS was used to support the police department murder investigation by mapping location with AVL and cell tower signals

Leak detection—comparing facility locations, weather, and fumes reported to identify source wasn't gas company but another manufacturer

Cost avoidance-shifting staff to higher level tasks once they are freed from redundant data maintenance

Pet licenses improved public health and revenue for programs

Improved maintenance—through work order management and making sure correct crews with correct equipment are dispatched to site

Permit application process streamlined (endangered species example)
- Added on-line form with GIS component
- Quickly found 80% have no impact—allowing 20% of time devoted to reviews to be spent on these with remainder on those that required careful examination
- Speed review of those requiring careful examination so as to not exceed required approval deadlines

Special assessment districts can identify impervious services for equitable taxation

Mailing of notices—identifying addresses with code required buffers—can be done very quickly and easily

Tree species diversity and ages can be mapped to better understand issues with tree replacement and management

Load balance of garbage collection—efficient routes and equitable quantities of collections

Provide bus routing information to citizens

Identify priority construction projects and make sure water/sewer projects are in sync

Pay back sewer costs through management of a recovery service benefit fee

Elimination of illegal discharges to surface waters

Received grant funding made possible through application of GIS
- Energy savings from appropriate routing of vehicles
- Reporting grant results to public and granting agencies made easy

Asset management generates a positive ROI with shift from predictive to reactive maintenance. Example cited was resurface of roadways prior to complete failure of payment or replace of water line prior to break.

Reduced printing costs from making data available on mobile devices—example of maps to location of call

Schedule service calls provide better service to customers and improved impression of organization

Validate correct mileage reimbursements being requested by staff—increased accountability

GIS CHARACTERIZATION—SPECIFIC DATA NEEDS

Data standards are needed for:
- Parcels
- Centerlines
- Content and format
- Mapping rules

Standard data models

Best practices for data development and maintenance

Metadata

GENERAL DATA COMMENTS

Local data is more detailed than state or federal data so little perceived benefit from working with those organizations

Need easy tools for data maintenance

SPECIFIC DATA NEEDS

Need a permanent base feature ID to support dynamic segmentations (Iowa as an example)

Need easy tools for data maintenance

Census geography—2010 Census data and past census geography boundaries and data

OBSTACLES TO GIS MEETING BUSINESS NEEDS

High cost of GIS software. Potential mitigation options

- Cost savings with open source software (Quantum, TatukGIS)
- State purchase enterprise license (ESRI)
- Review licenses actually required and reduce total numbers (replace ArcGIS with ArcView)
- Server consolidation
- Virtualization (desktop)

Organizational Structure/Coordination problems

- Need more ability to convey best practices
- State leadership for governance structure

Silos create competition for services and budget

- Improved communication
- Mandated reduction in redundancy—identify single responsibility for data maintenance

Data availability

- Needed data does not exist
- Data exists but is hard to find and access

Conveying need/justification for data from a multi-jurisdictional context

Staff to research products

Innovative staffing/resourcing

- Co-op programs with local universities can be problematic from a human resources department perspective
- Establish a clearinghouse for resumes of potential co-op or intern students

Union employees—changing their duties to include GIS

STEWARDSHIP AND COOPERATIVE PROGRAMS

State led data acquisition partnerships with local governments are viewed as a positive. Example: NAIP with opportunity for local enhancements. Issues include the NAIP standards don't meet local needs.

Microsoft Bing maps: issues with specific licensing terms and with the timing of the project relative to local budget cycles and deadlines for commitment.

Contrast Google Maps with more robust GIS data and tools.

CHARACTERISTICS OF SUCCESSFUL COLLABORATION EFFORTS

GIS Steering Committees were identified as being cooperative efforts that have lead to successes particularly in areas with limited resources and with a focus on data:

- Oakland County identified a committee that has been meeting on quarterly basis for 10 years to discuss issues and share needs
- SEMCOG has a group that meets made up of technical GIS users
- State MI GIS user group meets monthly
- SEMCOG Another area has quarterly steering committee meetings and technical working groups that meet monthly

Southeast Michigan Regional ortho photo project was an example of federal/regional/local/utility cooperation

- Needs of all partners were considered and flexible
- Cost savings were realized for all partners
- Local participation in structuring agreement
- Unified project management—a single organization responsible for management of all aspects of project
- Formal contract between SEMCOG (project host organization) and counties
- History makes cooperation easier. First time it took 3 years to put together, second version only a few months
- Group has history of working together and has built trust

A multi-jurisdictional parcel mapping program was identified as being a successful collaborative effort. It provides:

- A single hosted site representing cost savings on hardware and software
- Central data repository that assures data safety and availability
- Consistent format over multiple adjoining jurisdictions
- Standards are established and enforced
- No duplication of efforts saves staff time and resources
- Common data formats
- Technology is used efficiently

RoadSoft was identified as another successful collaborative.

- Money is available to maintain the software
- User feedback is used to drive further development
- A quarterly meeting of users is hosted via the internet
- On-line training is available
- The product is flexible
- Workflow is designed to pass information up the jurisdictional chain while still being useful at the lowest levels
- Technical assistance is available
- Negative: MGF data delivery schedule is out of sync with the Michigan Transportation Asset Management Council (TAMC) and the annual RoadSoft release
- Negative: RoadSoft is highly dependent on Michigan Technological University (MTU)
- There has been stability in the organization at MTU that develops and maintains the software
- This is an excellent example of a “funded mandate”

DISCUSSION OF THE MGF

Meeting was attended by 9 users and 3 contributors to MGF.

WHAT IS GOOD ABOUT THE MGF?

Provided data from outside of my jurisdiction

Free

Linear referencing system

Seamless for projects that are near county boundaries

Includes census data

Community boundaries are useful

WHAT CAN BE IMPROVEd?

Improved accuracy of geocoding services. Commercial services seem to provide better match quality

Spatial fit to ortho photos –Recommended Spatial Accuracy: +/- 6 feet, 1:2400 Scale

Funding to support local updates to the data

Web services:

- Traffic with road closings and construction projects
- Weather with wind speed and direction
- Address validation
- Base map service

WHAT DATA SHOULD BE ADDED TO THE MGF?

State right-of-way layers

Census blocks

Private roads (for geocoding and routing)

- Apartment complexes
- Condos
- Trail Parking

Speed limits

Elevation of features at intersections (overpass, tunnel, etc.) – This currently exists in the MGF as Grade Seperations.

Rail ownership

Feature points:
- Hospitals, health care facilities
- Shopping centers
- Shelters
- Schools
- Fire
- Law enforcement facilities (stations, jails, etc.)

Points of interest—for tourism

Parcel fabric (for zoning notification) (Statewide)

Sex offender registry

Road project notifications—what is undergoing construction and the projected project dates

County drains

Improved hydrology
- NHD
- Local contributions and updates
- Storm water management information
- Arc Hydro data model

Elevation data that is easy to access and use

Education

Best practices—common analysis methods and source code for useful tools

EAST LANSING APRIL 29, 2010

ATTENDEES

First	Last	Title	Organization
Ronald	Agacinski	Deputy Director-Engineering Division	Wayne County Dept of Public Services
Scott	Ambs	GIS Manager	Jackson County
Jeff	Bachus	Master Planner/GIS Specialist	Michigan Dept of Military Affairs
Benjamin	Barker	GIS Cartographer	Commonwealth Associates Inc.
Chris	Beland	Professional Surveyor	State of Michigan Office of Land Survey
James	Bennett		InfoGeographics, Inc.
Frank	Boston	Certified Photogrammetrist	MDOT--Geodetic Surveys
Katie	Bower	Assistant Division Director	Michigan State Police
Kevin	Bowman		CMS Energy
John	Bush	Drain Commissioner	Ionia County Road Commission
Jean	Cain	IT Manager	DTMB
Chris	Cantrell	GIS Coordinator	Midland County
Larry	Christenson	Manager	AeroMetric
Tim	Croze	Roadway Operations Engineer	MDOT-Division of Operations
Eric	Daley	GIS Manager	Eaton County
Brad	Danks	Engineering Aide III/GIS Tech	Genesee County Road Commission
Edward	Dempsey		Prein Newhof
Daniel	Dillinger	Information Systems Planner	Tri-County Regional Planning Commission
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Nick	Ekel	Remediation and Redevelopment Division	Dept of Natural Resources and Environment
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John	Esch	Senior Geologist	Michigan Dept of Natural Resources and Environment

Lonnie	Finch	IT/GIS Director	Ionia County Road Commission
Dena	Fitzgerald	GIS Analyst	City of East Lansing
Edward	Fowler	Transportation Planner	Michigan DOT
Ty	Hosinger	Engineering Tech II	Road Commission for Oakland County
Michael	Hurd		MDOT
Merle	Johnson	GIS Manager	City of Ann Arbor
Brian	Jonckheere	Livingston County Drain Commissioner	
Mark	Jordan	Manager, Project Development Section	MI DOT
Dean	Kanitz	Transportation Engineer	MDOT-Operations Traffic & Safety
John	Kelly	Cartographer	Commonwealth
Bob	Kennedy	Web Developer	University of Michigan Transportation Research Institute
Keith	Lambert		
Tim	Lee	Assistant Commander	Michigan Intelligence Operations Center
Steve	Leese	Director	Eaton County 911
Marlio	Lesmez	Hydrologic Studies Unit	Michigan DNRE
Mark	Lewis	Structures/Area Engineer	US DOT, Federal Highway Administration
John	Lobbestael	Technician	MDOT
David	Lusch	Distinguished Sr. Research Specialist	MSU-Dept of Geography
Victor	Martin	Director	Lapeer County Central Dispatch
Raj	Mudaliar	Technical Lead	MDOT
Michael	Muskovin	Data/Radio Systems Manager	Ottawa County Central Dispatch Authority
Joyce	Newell	Transportation Planner	MDOT
Nick	Nolte	GIS Tech	Jackson County GIS
Jennifer	Osborne	Transportation Planner	MDOT-Urban Travel Analysis Unit
Theresa	Page		
Jesse	Parker	Operations Engineer	Tuscola County Road Commission
Shane	Pavlak	Sr. GIS Specialist	REGIS (Grand Valley Metro Council)
Bethany	Penn	DMUA	DMUA
Brad	Peterson	Landscape Architect/CSS Coordinator	MDOT
Andrea	Polverento	Planning Director	Watertown Charter Township
Sam	Quon	GIS Administrator	City of Lansing
Glenn	Radford	Statistician	Division for Vital Records, Michigan Dept. of Community Health

Wade	Renando	GIS Coordinator	City of Jackson
Dave	Rigney	Geodetic Advisor	NOAA
Everett	Root	Center for Geographic Information-DTMB	Dept of Technology, Management and Budget
Joshua	Ross	Geographic Framework Analyst	DTMB
Ron	Rushton	Permit Agent	MDOT
Sally	Sands	Crash Unit	Michigan State Police
Kenneth	Schapman	GIS Specialist	Michigan Farm Service Agency--USDA
Darcy	Schmitt	Planning and Zoning Administrator	City of East Lansing
Amy	Schoonover	Director of Public Works	City of Charlotte
Steve	Schreier	Traffic Records Program Coordinator	Michigan State Police
Randy	See	Program Officer	USGS
Jon	Sgtiegel	GIS Tech	Jackson County
Syd	Smith	Manager	MSP
Rob	Surber	Administrator	CSSTP
Mark	Swartz	Resource Conservation Section Manager	Michigan Dept of Agriculture
James	Tchorzynski	Infrastructure Analyst (MIOC)	Michigan State Police
Craig	Thelen	MIS Director	Clinton County
Michael	Toth	Transportation Planner, Asset Management Section	Michigan DOT
Sriram	Venkatasubramaniam	Data Architect	MDOT
Jeroen	Wagendorp	Chair	GVSU
Chuck	Walz	Utility	Jackson Co. Road Commission
Nicolas	Wheeler	Director	Hillsdale County Equalization & Land Information
Kelvin	Wixtrom	Photogrammetric Consultant Project Manager	MDOT Design Division
Erin	Wyrick	GIS Coordinator	Clinton County
Mike	Zonyk	GIS Analyst	GVMC

Additional Attendees:

Laura Blastic	Michigan Department of Technology, Management and Budget
Paul Harmon	Michigan Department of Technology, Management and Budget
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MEETING NOTES

BUSINESS DRIVERS FOR GIS

Emergency management and response

- Chemical facilities
- Hazmat on rails and planning for plume or spill
- Prepare response for mitigation
    - Access to sites
    - Pond locations for fire suppression
- Crash/crime relations patterns
- Response resource distribution for efficient and rapid deployment
- Pre-planning and training
    - Prison Evacuation
    - HazMat response
- Call routing—who is responsible for response to 911 call?
- Identify impact of emergency on businesses
- Food safety concerns
    - Proper refrigeration
    - Infectious disease tracking
- Required for Next Gen 911

Fresh data

Addressing:

- Standards vary between USPS and QVF
- Geocoding difficulties when address format vary

Asset Management

Economic Planning

- Understanding the regional economy

Water Resources

- Track and report on water quality and supply for compliance with regulatory and planning requirements
- Support for terms of Great Lakes Compact (evaluating impact of water use)Recreational opportunities
- Quality of life
- Underground water
- Filed tile drains
- Strom drain management

Regional storm water management and the maintenance and modeling of complex systems

Real Estate Management—GIS support for tracking location and characteristics of public land/facilities and transactions (sales, leasing, and acquisition) of this land

- DNR Data requests
- Easement management-encroachments, sales of surplus property
- DOT—access to local data to save staff time on field work, reduce travel to county courthouses
- Identify public land and facilities that might be sold or acquired—possibility of revenue as well as support for public programs through more effective land management
- BS&A software linkages to data to support property appraisal for counties and townships

Statewide imagery for rural counties and parcel maintenance

Statewide acquisition plan for consistent new imagery

Visualization

- Infrastructure status and distribution (drains were cited as initial example)
    - ROI for drainage improvements—show who benefits and why
    - ROI – impact on domestic products
- Planning
- Management
- Build understanding of decision makers to improve the quality of decisions

Government to private linkage necessary to improve and update navigation data (in-vehicle GPS systems base data)

Access to parcel information

Historical photos necessary to:

- Research environmental contamination issues (data from as early as 1920s and 1930s)
- Encourage land donation to wildlife organizations—show dramatic changes in development over time

Economic and demographic data to support planning and decisions support

LiDAR/Hypsography data to enhance base map and hydrological modeling

Economic development

- Site selection on a statewide basis (state coordination with local governments)
- Brownfield re-development

Grant applications and management

Permit review—make sure that reviews are timely, staff is focused on most critical applications, and regulations are enforced

GIS is a requirement for some programs. For example: PA451 amendments—water withdrawals

Understand inspector proximity for efficient field staff use. If an inspector is "in the neighborhood" of something that may require inspection in the near future he may be able to do it while there saving another trip.

Make sure that work is done correctly. Example cited was a state road crew cleaning catch basins on a county road

Improved quality data at facility level—continuous updates of spatial data for facilities

Reporting to state—for example crime statistics

Data mining to improve understanding—web links and improve existing tools

BENEFITS FROM GIS IMPLEMENTATION

Insurance claims can be managed relative to crash data to make sure that state property is replaced if damaged (guard rails, signs, etc.)

Show complex issues quickly to support decisions

Public Safety prevention of loss of life and property

Meet Transportation Asset Management Council requirements

Make information available for future analysis

Reduced redundant traffic counts

Michigan Environmental Mapper offers:

- Staff savings
- FOIA reductions—self service access to information to answer citizen and media questions
- Better data
- Better interaction with citizens

Staff savings in managing drain improvement special assessments—identify properties and make sure revenue is collected

Historical review of features possible

Highway performance monitoring

Asset management allows for some costs to be avoided and others minimized

Digital topo production

Public education from simple maps and visualization

Agency looks competent in eyes of citizens by being able to quickly respond to requests

Commonality over data quality—private sector data may not be a accurate as public but it is the same over the entire area of interest.

Collaboration with private firms

Clean Water Act Phase 2 compliance

Attach data to common basemap allows for MDOT and local road commissions to share project info, road closing, and road condition information

Transportation asset management allows for a support for prioritization of capital expenditures

Simple viewers on-line provide access to information for people who need it

GIS CHARACTERIZATION—SPECIFIC DATA NEEDS

SPECIFIC DATA NEEDS

Section Corners

DEM Terrain Data

Boundaries
- -Centerlines
- -Fire Jurisdictions

Address Ranges and Points

OBSTACLES TO GIS MEETING BUSINESS NEEDS

Funding limitations

Poor access to resources (lack of staff to provide access/upgrades)

Lack of understanding/awareness of GIS and the potential value of GIS

Easy and cost-free access/integration

Fragmented, legacy data (hard to access)

Poor access to local data (e.g. parcels)

Institutional barriers to data access

Limitations of access
- Bandwidth for downloads
- Server capacity
- Drive capacity

Restrictive IT policies limit access

IT imposed costs make progress difficult

Insufficient data accuracy and resolution of imagery

Open records restrictions (access fees on public agency data)

Data volumes (e.g. LIDAR)

Staff skills limitations—ability to hire proper staff

Lengthy learning curve

Time/availability for training (technology management)

Software licensing and license management

Not enough "local/regional" conference opportunities

Low external demand from public, private sector, government entities. People that should be requesting information and analysis are not doing so—may lack understanding or what to ask for

Data consistency (lack standard coding and schema impacting integration)
- Parcel data—lack of consistent data standards
- Hydrography, drainage, utility data also have this problem.

Prevalence of project-by-project data gathers inhibits effective use and integration

Insufficient senior management level advocates and support
Trust Issues restrict collaboration
Boss says you cannot participate in sharing

Data management problems-local storage (on desktop) of old and incorrect versions of data

Lack of tools and practices to support/encourage collaboration—need improved governance
- Policy board needed to craft policies, best practices, etc.

Distributed data—use server based environment to support better access

Data standards are lacking
- Lack common data identifiers (a common key to link databases)
- Inconsistent naming (for crime records: arrest, charged, adjudicated)

Concerns about access limited by governments

- Fees charged and established by local governments for data
- Cost Vs. Revenue and the lack of understanding the total costs or charging for data

Changes in government leadership/elected officials result in change directives

- Formal GIS –related work plans and policies can put GIS program in better position when elected administrator or senior management changes.
- Lack of a mandate
    - Mandates with funding equal to required work are good
    - Mandates without funding or not enough funding are bad
- Link to MML, Association of Counties, Assoc. of Townships and other representative associations to validate actions and education newly elected officials to importance of programs.
- Term limits require frequent "re-orientation" of newly elected officials

Need benefit to encourage local participation. **What is the benefit for local governments?**

- Funding support for meeting or migrating to standards
- Cost-sharing of new data collection
- Others?

Possible unfair fee-based programs (crime stats are reported to state and state sells the information via an on-line service with on share returned to reporting agencies)

Difficulty in outreach…"getting the word out" to local entities on cost sharing opportunities

- Insufficient lead time
- Lack of synchronization in fiscal years for varies entities

Some counties have "outgrown" the need for MGF (they have better quality data, accuracy, timeliness issues)

Have Vs. "Have Not" Counties/areas—need to address the fact that the majority of counties in the state (low population areas) have limited resources to implement and maintain GIS programs and databases.

Tie to geographically reference documents

- Spatially index documents
- Issues of public record retention policies

Importance of data maintenance not valued

STEWARDSHIP AND COOPERATIVE PROGRAMS

What is the impact of data sales on stewardship?

- Private vendors use of the data drives much of the demand for selling data
- Tangible benefits from participation in collaborative efforts may reduce demand for selling data

Collaboration driven grants are a positive opportunity

Data should be viewed as infrastructure—critical to functioning of government and providing efficient services

TIGER modernization from MGF was cited as a positive example where everyone benefits from work done by state

Any collaborative effort requires clear articulation of roles/responsibilities

NRCS (Natural Resource Conservation Services) publication "Shall We Dance" provides a good overview of the type of collaborative agreements possible. Examples: strategic partnership, joint venture, etc.

There are issues with multiple groups modifying and maintaining separate hydrology datasets, watershed boundaries, etc.

CHARACTERISTICS OF SUCCESSFUL COLLABORATION EFFORTS

Eaton County E911 (a four county project)

- Server consolidation and backups
- Cost sharing
- Formal by-laws in place

Military/Veteran Affairs funding support for US National Guard Bureau for data capture, maintenance. The project focus is on having data available for sharing with others to provide a common operating picture.

- Security issues (anti-terrorism provisions)
- Use of GIS/CADD standards---Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE) managed by the Corps of Engineers
- Issues with projection conversions

Shared solutions—NHD Federal partnership

- Shared data development costs
- Hosting provided
- Tools available
- Training available

NOAA height modernization and CORS maintenance

Jackson County collaboration with local Board of Realtors (example of public/private partnership)

- Data sharing on an informal basis
- Value of parcel data exchanged for ability to access private sector information on sales
- No exchange of money. just data
- County has a similar project with the Substance Abuse Council

State agreement with Microsoft is another public/private partnership example

Cropland data project with USDA, MI Agricultural statistics services, MUS, NAS

- Uses private satellite imagery
- Includes land ownership data

Ann Arbor-Washtenaw County joint IT services

- Driven by need for cost savings
- Formal governance structure
- New business case under development for GIs infrastructure consolidation
- Joint 911 dispatch center in place

- CLEMIS collaboration

MI Public Act 29 gives county authority to establish "telephone districts" for the collection of fees to support E911 implementation. Several other acts address fees and implementation for wireless 911. This is a local funding source with significant GIS impact.

Lansing, East Lansing, COG, USGS collaborated on LIDAR project

- Cost sharing
- Formal agreements
- Data in public domain

Genesee County had multi-department funding of GIS director

- Cost sharing
- Allowed position to be filled to benefit of all departments

LEIN (Law Enforcement Info Network) is a local, state, and federal collaboration

- Had a statewide governing board until recently
- Continues to function now that board has been dissolved by Governor

Jackson County has participation from municipalities, utilities on policy advisory board. Participation based in part on financial contributions. The board meets quarterly to discuss issues.

USGS has many project/contract based collaborations

Statewide governance

- Geolibrary
- Statewide focus

Joint participation for support of National Guard bureau

Statewide Structure would support collaboration

- Steering Committee generally too technical
- Need involvement from policy/decision makers
- Mechanism to "move" on recommendations and initiatives
- Center for Share Solutions has a good focus and the Cross Boundary Committee is a good start in this direction

DISCUSSION OF THE MGF

WHAT IS GOOD ABOUT THE MGF?

Easy to use

- Data access tools
- Good organization, intuitive for user

Beast way to get data for adjacent county or statewide

Free

Data Rich

Pretty up-to-date

Single statewide projection

Many data themes relatively up to data (but annual updates not sufficient for all)

WHAT CAN BE IMPROVED?

Synchronizing with RoadSoft releases and the needs of the Transportation Asset Management Council demands

DRG—problems with visual quality

Spatial accuracy limitations
- Mismatches in curves
- +/- 33 feet not sufficient for local applications

LRS need to update/migrate "event table" data when LRS is updated (new roads, route definitions)

Need for addressing and mile post points to support dispatch on highways

"Mining" data from RoadSoft from the MGF (e.g. # of lanes, signage, traffic volume, Act51 milages)

Improve linkages with Caliper at MDOT—Transcad and ESRI

Bridges should be represented as segments

Add Mile Markers or Highway address / referencing system

WHAT DATA SHOULD BE ADDED TO THE MGF?

SSURGO—could be added from the NRCS web sites

Addition of road data for private and seasonal roads, State forest service roads. Non-motorized / recreational trails

Structures as points
- CEPI—locations of public schools
- CSSTP has been asked by USGS to establish stewardship for HSIP data (hospitals, EMS, police, fire, etc.)

Watershed and drainage district boundaries

Elevation data associated with roads

Shared survey control

Migrant housing locations that do not have addresses (both licensed and un-licensed facilities).

Recreational trails (needed to promote tourism, for emergency response—search and rescue as well as wildfire suppression)

Legal border crossings

Utility corridors (above and below ground)

Park & Ride locations

MBSII—Michigan Business Portal information—including business locations and NAICS codes, employees, etc.

- Data needed to understand daytime vs. nighttime populations for transportation planning and emergency response planning
- Food safety issues
- Critical economic development information

Zoning and Land Use data

Souls and physical soil properties

All public land (as polygons) including federal, state, local

Consolidate multiple lakes layer to one source file

Bounder Crossings

Act 51 Certification length

Pumping Stations

Better watershed data

DATA PRIORITIES (WHAT IS NEEDED EVEN IF OUTSIDE OF MGS)

Section corners and quarter section locations

- Remonoumentation program
- Metadata is critical
- Issue of datum and adjustments

DEM and improved terrain data

- Storm water management
- Flood management
- Improved accuracy for ortho generation

Survey grade data to support facilities management

Parcel base—dependent on section corners—as a best possible location not a "legal position"

Building heights or number of floors for emergency response

Elevation data to compute slope

USGS topo hypsography

Hydrography—NHD including integration of storm drainage, drainage districts, etc.

Boundaries of jurisdictions and ESNs

Address data—specifically address range data. Solution to problems with cross-jurisdictional addresses that are significantly similar

Road data
- A simple attribute to differentiate the type of road (interstate, US highway, state highway, etc.)
- Surface type (paved going to unpaved for example)

Survey grade coordinates tied to visible features (identifiable in field and on imagery for quality control)

Critical infrastructure—issues of access limitations to certain types of utility/infrastructure data

Economic Development information
- Broadband data
- Pipelines and utility capacity information
- Site suitability information

Roads
- Indian/reservation roads
- Private roads
- Cross boundary roads for emergency response

Integration of NHD

POST MEETING NOTES & COMMENTS

This document is a listing of comments and additional information submitted after the conclusions of the five regional listening sessions.

NG9-1-1 AND GIS

Received from Michael T. Muskovin, Data/Radio Systems Manager, Ottawa County Central Dispatch Authority

I'd like to take the time to describe, in very limited detail, what I began to reference at the meeting. Internationally, 9-1-1 is approaching a fundamental change in the way that callers are reaching their local Public Safety Answering Point (PSAP).

Today, 9-1-1 calls are routed to the appropriate PSAP by way of the Master Street Address Guide (MSAG). The MSAG is a database of address ranges and their associated emergency response zones. The MSAG is referenced by the caller's telco in order to determine where to route the 9-1-1 call. While the MSAG can be verified against centerline data for purposes of QA/QC, the two are not synonymous. The MSAG, along with other call delivery and detail information, form Enhanced 9-1-1 (E9-1-1). With an E9-1-1 system, PSAPs may optionally deploy mapping systems that will plot the location of calls and incidents. In this way, GIS is a secondary or tertiary system for the operation of a PSAP.

In order to receive calls and location information from non-traditional devices, the 9-1-1 community is developing a system called NG9-1-1. Next Generation 9-1-1 (NG9-1-1) is changing 9-1-1 on a level as primary as call routing. In an NG9-1-1 system, telcos send a 9-1-1 call to an Emergency Services IP Network (ESINet). The ESINet is an IP network that may or may not be operated by a telco. Once the 9-1-1 call enters the ESINet, it is routed to an array of servers providing a multitude of services such as Location Validation Function (LVF), Location to Service Translation (LoST), and Emergency Services Routing Proxy (ESRP); all completely GIS-driven. The GIS systems within the ESINet makes it possible for 9-1-1 calls to be routed to the appropriate PSAP with supplemental data information that will assist first responders in locating and acting at the scene. In this way, GIS is a required primary system for the routing and deliver of 9-1-1 calls.

I'm afraid that the GIS community is not aware of this requirement for the operation of NG9-1-1. The level of accuracy required for this to function at the level needed by PSAPS is near 100%. It will take a monumental effort on the part of both 9-1-1 and GIS communities to make NG9-1-1 and accurate call-routing a reality.

To quote Lew Nelson, Law Enforcement Solutions Manager at ESRI, "GIS has traditionally been the paint job on the car. Now it is becoming the chassis." His words ring clear as the chassis for NG9-1-1 is GIS!

Additionally, the Center for Shared Solutions should be made aware of pending legislation to make matching funds available to build a statewide GIS system for the express purpose of providing routing of calls within the ESINet. While no detail has been including to identify the form or means by which this dataset should be developed, it is logical that CSS be involved if not tasked with this endeavor. House Bill 5622 (specifically page 4, line 6) can be found at http://www.legislature.mi.gov/(S(ldpybnb5yc1l2x45haeskhn4))/mileg.aspx?page=GetObject&objectName=2009-HB-5622

For more information regarding NG9-1-1 and its GIS components, see the NG9-1-1 Project page on the National Emergency Number Association (NENA) website http://www.nena.org/ng911-project

NEEDED USER FORUM

The following comments were submitted via e-mail by A Benjamin Barker, GIS Cartographer, Commonwealth Associates, Inc.:

The idea is to have a user forum similar to what is run through ESRI's User Forum. I noticed people who normally wouldn't talk to each other, because of varying reasons, were starting to discuss ideas and solutions with each other. If we had a discussion board/user forum specifically geared towards the MGF and its users, we, as users, could collaborate better. For example, imagine if Ottawa County 911 is having issues geocoding their rural addresses. They could create a post, or look to see if others are having the same issue. Ingham County's GIS Dept. may have a solution to the problem and can go online and post the solution. Often parties can be reluctant to share data but this way they could possibly get a solution to their specific problem without necessarily touching the data. A bonus with this proposal is solutions can be shared by the "haves" and the "have-nots" alike.

COORDINATING COMMITTEE NEEDED

Comment received from Steve Perry, Senior GIS Specialist, Southeast Michigan Council of Governments:

There needs to be an effort to create a Statewide Coordinated body that represents all facets of the geospatial community in Michigan.

STATE LAWS TO SUPPORT GIS AS CRITICAL DIGITAL INFRASTRUCTURE

Comment from Andrew J Hartwick, GIS Director, St. Joseph County:

My understanding is when Michigan's governmental GIS was in its infancy it got pigeon holed in with whatever department was attempting to champion it. Now that GIS has become more prevalent in everyday life, the desire for other departments to control it has increased (i.e. more data, more revenue, more personnel, etc). Some of these departments use the "its not a mandated service" to either keep them from becoming their own department or to attempt to place additional controls on them. This becomes a problem for governmental GIS practitioners because the majority of their time can be spent doing specific Equalization or Central Dispatch assignments, never getting to see its full GIS potential come to fruition. I believe State Law should be enacted to aid in the establishment and maintenance of local governmental GIS as a critical digital infrastructure.

FOCUS OF CENTER FOR SHARED SOLUTIONS

Comment from Andrew J Hartwick, GIS Director, St. Joseph County:

Also with the new name of Center for Shared Solutions I believe that they should focus more on “solutions” to usability rather than “solutions” of obtaining/creating/maintaining data that is already available through local governments. The State has the ability to create applications that are useful to local government and citizens of the State. This I did not see mentioned in the notes (perhaps I missed it). Software solutions could be the best leverage in getting a real data standard in place which local governments will want to use. An issue with creating data standards is that if you don’t need them for your daily use, why do so when everything is working fine here? For example if there were a 911 mapping application housed at the State where locals could upload their datasets into and have the local dispatchers utilize these data, there would be a large desire to have standardized attributes and geographies throughout the local GIS departments. This could also relieve some of the burden of data maintenance at the State because participation from cities and counties who have no incentive to participate to get involved would start doing so. Applications like a centralized 911 mapping system could pave the way for other user friendly for-public consumption online dynamic maps.

COMMENTS FROM THE US DEPARTMENT OF INTERIOR (NATIONAL PARK SERVICE)

United States Department of the Interior

NATIONAL PARK SERVICE
Great Lakes Network Office
Suite D
2800 Lake Shore Drive East
Ashland, WI 54806

Providing Inventory & Monitoring services to: Apostle Islands National Lakeshore, Grand Portage National Monument, Indiana Dunes National Lakeshore, Isle Royale National Park, Mississippi National River and Recreation Area, Pictured Rocks National Lakeshore, Sleeping Bear Dunes National Lakeshore, St. Croix National Riverway, and Voyageurs National Park.

4/13/2010
Michigan Center for Shared Solutions and Technology Partnerships
GIS Business Planning and Framework Stewardship Meetings

The National Park Service maintains three park units in Michigan, Isle Royale National Park, Pictured Rocks National Lakeshore, and Sleeping Bear Dunes National Lakeshore. We are very interested in cooperating on acquisition, maintenance and archival of spatial data layers in Michigan. The Great Lakes Network is a relatively new program within the NPS, and our mission is to conduct long term ecological monitoring in and adjacent to National Parks.

All of our Network monitoring programs rely on spatial data, thematic data layers, aerial photography, roads and parcel data, and others in carrying out this mission. In particular, the land cover monitoring program is primarily based on remote sensing techniques, and we currently budget for acquisition of high resolution aerial photography on a six year rotation for each of our parks.

We strongly support efforts to bring together various public and private funding mechanisms to provide for greater efficiency in acquisition of spatial data, in particular, aerial photography, providing for data availability to a broader user community. These efforts also build stronger working relationships for voicing our related data needs, development of data standards, as well as sharing of resulting analysis, information, and reports. NPS funding is committed to ensuring these datasets are available in the public domain, recognizing that the public should have access to data paid with public dollars.

Our primary need for aerial photography is spring, leaf-off imagery, preferably at 0.15 – 0.2m (6 – 8 inch) resolution. We also find the NAIP imagery to be of value, and we support acquisition of all four image bands when flown with digital camera. This year, we provided funding to a state-wide program in Wisconsin (Wisconsin Regional Orthophoto Consortium – WROC), rather than as an individually contracted flight, and believe efforts such as this provide for the best use of public funding to the larger user community.

I would appreciate being informed on any on-going efforts in developing data sharing opportunities, and we are in a position to contribute funding for aerial photography acquisition pertinent to our park areas.

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ADDITIONAL OBSTACLE AND DIFFICULTY COMMENT

Comment received via e-mail from John P. Lobbestael, P.S., Michigan Department of Transportation, Highway Development - Real Estate Technical Unit:

I attended yesterday's Listening Summit in Lansing. A few things have come to mind since - specifically under the category of "difficulties / obstacles:"

1.) Standard Coordinate System / Map Projection: I did not hear anyone mention that we have a legislated coordinate system in Michigan - as defined in Public Act 9 of 1964, as amended. In my opinion this piece of legislation is vague in defining who, exactly, must comply...but never-the-less it should be evaluated / addressed in your business plan under the topic of standardization of projection/coordinate systems.

2.) Geodetic Control:
a.) Digital Elevation and Terrain modeling is currently being performed relative to an obsolete / degraded national vertical control system. Mr. Rigney of NGS/NOAA briefly mentioned height modernization in yesterday's session. The importance of addressing / improving such foundational elements can not be stressed enough. To date the Height Mod program is underfunded and progressing very slowly.

b.) Geodetic control we reference as a basis for locating objects on the earth's surface, has dynamic values yet most GIS systems are rarely updated when NGS/NOAA performs mathematical updates to the control system.

3.) Occupational Code / Licensing Issues:
Michigan's Occupational Code (Act 299 of 1980) clearly limits some cartographic mapping functions, geodetic surveying, the management of "land information systems through establishment of datums" and other GIS/Survey activities as functions of the licensed surveyor...yet many stakeholders have encroached upon these legal boundaries...performing functions beyond their training / capabilities.

That being said I think it is reasonable that a GIS professional licensing program be considered in order that functions of the GIS professional are clearly defined.