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Michigan

Title of Nomination: Michigan's Cross-Boundary (XB) Asset Management

Category: Cross-Boundary Collaboration and Partnerships

Nomination Information

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Michigan's Cross-Boundary (XB) Asset Management: Executive Summary

Michigan's cross-boundary asset management program demonstrates the synergies and multiplier benefits possible by systematically applying XB processes and boundaryless technology solutions such as GIS to managing integrated and interactive assets. This best practice case study demonstrates outstanding benefits, with powerful state and national lessons learned, and documentation of transferable practices.

Michigan Assets and Shared Challenges: Michigan has extensive, nationally prominent land, water and infrastructure assets. Their sound management is pivotal to Michigan's economic development, quality of life, and paramount to sustaining the state's vitality and brand. These assets are facing a number of critical and interactive challenges. For example, the rate at which Michigan's open land is being converted to residential and commercial use outstrips the rate at which the states population is increasing at eight to one. The history of land development is a lesson in transportation history. Accordingly, Michigan is integrating land and transportation planning, and has a goal of balancing economic development with smart and sustainable growth. Additional challenges include the prevention, control and eradication of plant, animal diseases and pests, and more recently and most urgently, homeland security and disaster mitigation and recovery.

This powerful symbiosis of asset and driver dynamics has been addressed through early recognition of the problem, a sustained vision and leadership, and combining sound XB practices with full use of a powerful, versatile, silo busting IT technology … location aware services. The result has been an integration of services, processes, systems, and data and applications that include and have benefited all levels of government, including several state agencies, multiple counties and municipalities, several federal agencies, and the private sector

XB Process, Milestones and Accomplishments: Success required resolving a progression of challenges and opportunities to establish successful cross-boundary relationships, capabilities and services. Progressive accomplishments and shared benefits dynamically evolved from separate use of separate data bases, to shared information and solutions, and the development of completely new capabilities and services under a shared governance mechanism and standardized processes and technologies. This involved reconciling and resolving numerous other issues including: Vision and leadership; business cases and shared value; strategies and policies; information management; standards and architecture; people, resource and funding allocation; integrating processes; and consensus on appropriate, standardized technology. The process went through four stages between 1996 and 2006, with the more recent creation of the Michigan Center for Geographic Information (2002), full collaboration with the Office of Technology Partnerships (2003) and promulgation of a formal Michigan XB Framework (2006).

Benefits: The government benefits derive both from the cross-boundary approach as well as the processes and services strengthened and the technologies maximized by the XB approach. Jointly these helped create a platform for enhanced and new government capabilities. The XB program is the most advanced, and strongest building block for Michigan's goal of joined up or whole of government processes and services. Further, it helps advance digital government maturity, creating a platform for transformation.

Benefits total a cost avoidance of $133 million over the last ten years with a ROI factor of 4.2. Government benefits, in addition to implementing integrated XB asset management, include: alignment with state priorities, improved and advanced information management, improvement of existing and enabling of new statewide programs and services, improved communications, collaboration and decision-making and materially enhanced support for disaster recovery. Customer benefits include XB effectiveness and efficiency enhancements, including increased productivity and timesavings. In addition, there are benefits that vary by type of asset, organization and customer.

A. Description of the Business Problem and Solution

Organizations spend billions of dollars producing and using geographic data. Yet, they often still do not have the information they need to solve critical problems. The reasons can range from lack of consistent data, to funding, or jurisdictional control. Often the same information is developed again and again because little or no coordination exists between organizations. The explosion of GIS in the 1990s has democratized decision-making systems that include processes open to all affected groups. GIS has eliminated real or perceived barriers to participation in decision-making. The evolution could be described as moving from focus on a single agency to multiple agencies working in collaboration.

Michigan has a multitude of unique nationally prominent assets. The assets include (at 4.5 million surface acres) the largest acreage of public lands East of the Mississippi; 40,000 square miles of lakes including the Great Lakes interface, the most extensive shoreline after Alaska; 120,000 miles of public road and 11, 548 bridges; 2,500 state facilities, and the busiest international crossings in North America. In addition, the state manages 36,000 miles of rivers and streams and 97 state parks and recreation areas with 30,000 managed buildings and amenities.

The cross boundary approach to managing Michigan's assets built on a foundation that began in the summer of **1996** when several departments, the Southeast Michigan Council of Governments (SEMCOG), and Wayne County voluntarily came together to pool resources and create a single, accurate, statewide Geographic Information System (GIS) to align their business applications. Such an undertaking was more than any one agency could accomplish alone. But more importantly once the framework was built it became a knowledge base for all partners to build on, creating applications to help make better decisions, streamline processes, and deliver more effective services. In the past, these types of data would have been kept in hardcopy reports or documents, or in "silos" of databases that were difficult to share within or between agencies and departments. During this time an advisory group was established to guide the process. The group has met the 1st Thursday of each month for the past 10 years and has been extended to receive comment from 300 partners statewide. The initial agencies involved were Management and Budget, Natural Resources, Transportation and the Department of State, SEMCOG, Wayne County.

In **1998**, the Michigan State Budget Director recognized the value of GIS and its ability to break down institutional barriers. As a result, $1,750,000 was established as baseline funding to support cross boundary enterprise system development. Additional agencies joining the partnership included: State Police, Department of Human Services, Agriculture and Environmental Quality, all 14 Regional Planning Commissions, 30+ counties, many local governments, the United States Census Bureau, United States Geological Survey, United States Department of Agriculture, and others.

As a result of state government's coordinated effort a synergy developed with local and federal partners. Between **1998 to 2004** asset management and data sharing was built directly into core sustainable business functions of government agencies that are fairly stable regardless of the budget situation, political climate or time of year. For example, agencies have strived to align the geographic data standards and update mechanisms with existing state/federal/local business processes like Road Certification, Governmental Boundary Certification, Census, Voter Registration, Land Management, etc. Today 51 of Michigan's 83 Counties are using a GIS in some capacity. This translates cross boundary efforts to 91 percent of the state's population.

In 2002, the State of Michigan brought GIS to the forefront of its information technology initiatives for influencing public policy. The Michigan Center for Geographic Information (CGI) was established to provide leadership, technical expertise, and policy for the development, use, dissemination, promotion, and sharing of the state's geographic resources.

Today, the state, federal and local agencies, private companies, and the public are leveraging this collaborative investment to effectively manage its magnitude of resources in a comprehensive coordinated manner. Nearly 2 gigabytes of data is consumed daily form from the state's $30 million public geographic data library and **annual on-line** users of the state's cross boundary investment is nearing the 1 million mark.

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The **Michigan Department of Natural Resources** (DNR) manages 97 state parks and recreation areas with 30,000 managed buildings and amenities. Multiple divisions have information regarding infrastructure location, status, and condition. The information is critical to department field staff as a tool for daily management of facilities and enables more effective communication between field and centralized staff through the sharing and viewing of the same web accessible current data. The DNR also manages 4.5 million surface acres and the largest state forest system in the nation as a part of the state's Land Consolidation Strategy. Department staff is reviewing all land holdings, particularly land lying outside identified DNR project boundaries. The review process looks at natural resources, cultural resource, mineral, and/or recreational values to determine if the parcel should remain protected and/or accessible to the public. Results of the reviews allow for the conveyance of land to be leased or managed for natural resource development or sold, with proceeds going to obtain lands of greater resource value for the state. Recreational users of Michigan Resources contribute $12 billion and 200,000 associated jobs annually to Michigan's economy.

The **Michigan Transportation Asset Management Council** (TAMC) collects road maintenance data from all of the 618 publicly funded transportation jurisdictions (state, counties, cities, and villages). The data is used for analysis, modeling and reporting on the condition and investments being made in the state's 120,000 miles of public roads and $3 Billion annual transportation budget.

The **Michigan Department of Labor and Economic Development,** Michigan Land Bank Fast Track Authority (Authority) was created under Public Act 258 of 2003 with the mission of returning blighted tax reverted properties to productive and economically viable use. The Authority currently holds title to 5,365 properties that it manages in a manner and for an amount of consideration that is proper, fair, valuable, and in the best interest of the community.

The **Michigan Department of Environmental Quality, United States Geological Survey**, **United States Environmental Protection Agency, and Michigan Department of Natural Resources** have initiated the development of a management system that will allow managers, technical staff, and the public to view information about Michigan lakes and streams. Information from the DEQ Water Bureau's Water Quality Monitoring Program, multiple DNR Fisheries and Wildlife databases, and the USGS National Hydrographic Dataset, will be integrated in the application. The specific objective is to provide information to the public as well as DNR and DEQ staff to support ecosystem management, lake management plans, and DEQ permitting. Michigan ranks 8th in the nation in numbers of licensed anglers who contribute $2 billion annually to the economy and Michigan ranks 1st in the nation in the number of registered boats which contributes $2 billion annually to the economy.

The **Michigan Natural Resource Conservancy** provides a preliminary evaluation of whether endangered, threatened or special concern species, high quality natural communities, or other unique natural features have been known to occur at or near a site of development interest.

B. Significance to the Improvements of the Operation of Government

Government benefits derive both from the cross-boundary approach as well as the processes and services strengthened and the technologies maximized by the XB approach. Jointly these created a platform for enhanced and new government capabilities. This program is the most advanced, and strongest building block for Michigan's goal of joined up or whole of government processes and services.

Integrated, XB Asset Management: Supports inventory, monitoring, allocation, maintenance, conservation, analytic and planning activities surrounding assets such as land, water, environment and infrastructure. Major participants include the state, the states' 14 regional planning organizations and numerous local governments. For example, the state currently holds title to 3,517 blighted tax reverted properties located in the City of Detroit. Many of these properties are 50' lots—however, when combined with Wayne County's inventory of 2,565 and the city's 36,014 properties a much more productive and economically viable approach can be achieved for urban re-vitalization.

Aligns with and supports state priorities: This XB initiative aligns with the Cabinet Action Plan goals for better government as well as supports the economic development and environmental service areas. It also supports the outreach and cross-boundary goals of the IT Strategic Plan, and the activities of the Office of Technology Partnerships. Serves as a policy base for the Michigan Land Use Leadership Council, Michigan Transportation Asset Management Council, and several Department Strategic Plans.

Support decision-making: Extensive, in depth and shared databases that have credibility with the XB participants supports decision-making. For example, ecosystem management integrates biological, social and economic factors into a comprehensive strategy aimed at protecting and enhancing sustainability, diversity and productivity of our natural resources. Ecosystem processes operate over a wide range of spatial and temporal scales, and their behavior at any given location is greatly affected by surrounding systems. Thus, there is no single appropriate scale or timeframe for management.

Improved and advanced information management: The information base was **b**uilt on existing collaborative relations and trust, increasing the total number of data sets, resulted in an integrated and more accurate system, reduced data development redundancy and improved communications and decrease overall operational costs. Further, it complements MDIT's data sharing and integration program and the refinement of Information Architecture. Partners have pooled terabytes of data to produce an integrated information resource that is "blind" to jurisdictional ownership operational "silo" mentality.

Improve access to government: Flagship example of a single point of access to information—since 1996 when the state first launched location aware services on the web, public consumption has risen from 500,000 hits to nearly 80 million hits annually translating into 800,000 current users.

Improve communications and collaboration: Information is assembled, processed, shared and displayed in a way that partners, clients and the public can understand and use. Statewide datasets and applications are systematically maintained through integrated partnerships. For example, transportation data are maintained through the Public Act 51 state/local road certification process, lands are maintained through the tax reversion process and state land consolidation strategy, water quality and use is maintained through the National Hydrography Dataset, etc. In each case, the real power comes when other data is connected and integrated.

Advance Digital Government Maturity, create a platform for transformation: Driven by the Internet, e government transformation goals, efficiencies, communications, connectivity, networking, changes in jobs, organizational design, work flow, lifestyles, budgetary pressures, simplification or citizen-centric processes, citizen centric outcomes. Integrated collaborative systems development creates intelligent systems through which sophisticated planning and analysis can be performed at the touch of a button.

Improve existing and enable new statewide programs and services: Enable new and support and strengthen existing statewide, cross boundary functions, programs and services. Examples include, interfaced land use and transportation planning, disaster mitigation and recovery, disease surveillance and reporting, and underground storage tank inspection and monitoring. The resulting combination, and the ability to manipulate the data in response to any number of "what if" scenarios, provides government agencies with a powerful and dynamic tool that has opened doors in management effectiveness and organizational efficiency.

Transferable Solutions: Due to the prevalence of the type of asset management issues and the maturity of the technology solutions used, the XB practices described are transferable to other jurisdictions either in part or in whole. Specific Michigan examples include the recent integration of Michigan Technology University's Road Soft transportation management system currently being utilized by over 100 local agencies and Michigan State University's Map Image Viewer environmental management system currently being utilized by nearly 1,000 state and 500 local agencies.

Disaster recovery: Integrates multiple databases, builds upon existing XB relationships and channels of communications. Enables decision-makers to address all phases of the disaster management cycle: preparation, mitigation, response and recovery.

And finally, the most important benefit from establishing GIS as a cross boundary collaborative effort is the political return. GIS has brought together state departments and key elected officials from all levels of government in the state. Key issues facing the state such as homeland security, smart growth initiatives, and education do not respect government jurisdiction. Neither should the data. GIS has given these leaders a literal "cross-roads" of information. Public policymakers and leaders need the best information available to them from the point of policy creation to implementation. In Michigan, GIS has become a literal information magnet to facilitate this process.

C. Benefits Realized by Service Recipients, Taxpayers, Agency, or State

Save money and cost avoidance: Reduced overlapping processes, staff and other duplicate investments. Sound transportation asset management alone results in $6 to $10 dollars saved or avoided in "re-construction" costs for every $1 spent in capitol preventative maintenance. In other words, taking a worst first approach—re-constructing 1 mile of road and in 15 years re-constructing it again would cost $80,000. Managing the same 1mile asset over the same 30-year period would cost $36,000.

Save time: Responses to public inquiries within and among organizations are speeded up, increasing quality of services as well as customer satisfaction. Integrating GIS in location aware, mobile and Internet based applications reduces trips by customers and travel to locations by employees. In the past, as established by Public Act 451, environmental reviews were manually conducted for the Department of Environmental Quality, Department of Natural Resources, Department of Transportation, Department of Agriculture, private consultants, some Federal Agencies including the U.S. Forest Service and U.S. Army, local government groups, non-profit organizations, and individuals. Approximately 3,500 review requests are processed a year. Today, 75% of the reviews are "automatically" approved as having no

special concerns for locations of endangered or threatened species and other natural features (exemplary natural communities, and geologic features).

Improved accuracy, reduced errors: The XB data integration standards, cross-referencing and validation processes, along with the support technologies improve accuracy and reduces error. The precision support technologies such as GPS, orthophotography, remote sensing and satellite imagery further increase the validity of data.

Increase efficiency: Eliminate redundant, outdated steps in processes; alter or reduce staff workloads; give employees access to a knowledge base for responding to customer inquiries or business tasks and decisions.

D. Realized Return on Investment, Short-Term/Long-Term Payback

The state's cross boundary GIS investment has produced a collaboratively developed resource to effectively manage the state's unique integrated resources. The current $32+ million dollar GIS asset available to Michigan today would not exist had it not been for progressive accomplishments, shared benefits, and issue resolution over the past 10 years. Furthermore, if it did it would have exceeded $165 million in costs.

Direct Cross Boundary GIS Investment

Michigan Department of Transportation:		$ 4,102,500
Michigan Department of Management and Budget:		$ 3,060,000
Michigan Department of Natural Resources:		$ 2,750,000
Michigan Department of State:		$ 2,000,000
Michigan Department of Environmental Quality:		$ 800,000
Michigan Department of Human Services:		$ 500,000
United States Geological Survey:		$ 375,000
Michigan Department of State Police:		$ 300,000
Michigan Department of Community Health:		$ 200,000
Michigan Department of Agriculture:		$ 100,000
Regional/Local Government in-kind (data/expertise share):		$ 14,687,500
	Development Cost:	$ 29,375,000
	Cost of Coordination:	$ 3,000,000
	Total XB Cost:	$ 32,375,000
Savings Assumptions—Go-it-Alone		
9 State Agencies @ $15,000,000ea:		$135,000,000
1 Federal Agency:		$ 15,000,000
Regional/Local Agencies:		$ 15,000,000
		$165,000,000

Cross Boundary 10 Year Investment GIS Savings: $133 million or $13 million per year

Overall Return on Investment: $133m/$32m: 4.2