

State of Michigan Portal: Vision Statement and Strategy

Preliminary Draft:
For Discussion Purposes Only

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Introduction to e-Michigan

State of the State of Michigan Web Presence

The State of Michigan (SOM), like the majority of its state counterparts, has already developed a significant presence on the Web. The State has more than 100 Internet sites that represent the different agencies, departments and initiatives of state government. The proliferation of SOM sites is a signal that the government is interested in providing users (businesses (G2B), state employees (G2G), and citizens (G2C)) with greater access to information and improved service.

It is also a signal that the state is aware of potential benefits of deploying current technologies to achieve these goals in the most cost effective and efficient manner. In a detailed assessment of the State's existing Internet applications however, the following was concluded about the "state of the State's" web presence:

- Most sites are still in either presence of interaction mode providing little opportunity for a user to transact with the state
- No consistent design standards exist across the State agencies
- The highest quality sites in terms of design are not the most heavily visited sites
- There are a large number of pages that attract extremely few visitors

And although e-Government, simply stated, is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees, it is not that simple. e-Government needs to be implemented with a "customer-centric" focus. Michigan's current web presence is not "customer-centric."

Governor Engler's Executive Order

Sensing many of these shortcomings and seeking to prevent the further spread of a fragmented approach to interacting with citizens, businesses and state employees, Governor John Engler issued Executive Order 2000-6 creating the e-Michigan Office. The core objectives of the e-Michigan Office were outlined as follows:

- Develop a comprehensive statewide strategy for the installation and use of state-of-the-art technologies that allow the state to exchange information and conduct business-related transactions electronically with private and corporate citizens, state, federal, international and local governments, business partners and its employees.
- Develop the technical, legal, policy, and financial framework and infrastructure necessary to deliver e-Michigan services
- Design a single-state of Michigan portal for easy navigation and customization that integrates user preferences with information relevant to these preferences and captures user profile information, on a voluntary basis, in order to send information and announcements based on preferences

- Promote e-Michigan awareness and acceptance and foster cooperative development of e-Michigan initiatives between government and private sector organizations
- In cooperation with CIO and DMB, plan, provide, operate, maintain, and manage the e-Michigan technology infrastructure to be used by all executive branch agencies

e-Michigan Office Mission and Vision

The e-Michigan Office has put considerable effort into the development of a strategy for the web presence of the State of Michigan. The Vision and Mission statement of the e-Michigan Office follow:

Vision
To be the leading state in providing trusted electronic government services to all customers.

Mission
e-Michigan will rapidly increase access to the State's services and information for citizens, businesses and state employees through leadership and coordination of relevant and innovative technology. We will partner with state agencies to transform and improve government operations in pursuit of an integrated e-government portal, organized according to the interest and needs of its customers.

e-Michigan Office Global Initiatives

e-Michigan is responsible for coordinating and managing customer relationships at the statewide level. The procurement of a portal is a major part of the fulfillment of that role. This role will be a complement to, and not a replacement for, customer relationship management at the agency or departmental level. In addition to implementing a portal, e-Michigan has other "global initiatives" and "theme initiatives" underway.

Global initiatives, or initiatives whose impacts are felt across the state's agencies rather than in just one or a few, include:

Branding: The Common "Look and Feel"
Because e-Michigan needs to ensure that the brand, navigation strategy, and customer-centric design of the portal's home page are leveraged on the sites that reside behind it, e-Michigan is establishing basic standards around the required components of any page falling within the e-Michigan umbrella. These will include items such as:
- Common e-Michigan portal naming and logo
- Standard search engine location
- Standard navigation toolbar
- Standard font type and size

Electronic Funds Transfer (EFT)
e-Michigan is participating in an enterprise-wide effort to allow private and community/non-profit organizations engaged in business with the State to receive payment electronically. This ability to directly receive funds into a predetermined account will be extended to vendors providing goods and services to the State and to those (providing services to State-supported populations) that are eligible for reimbursement. e-Michigan is also driving the identification and execution of process reengineering opportunities that naturally accompany such automation.

Electronic Invoicing and Forms
Just as EFT addresses the cumbersome, paper-based accounting model on the back-end (payment), electronic invoicing addresses the identical characteristics on the front-end (billing). E-Michigan is leading an effort to provide all State agencies the ability to receive electronic invoices from registered vendors and service providers, and to give those providers a standard template and process to create and transmit such invoices.

At the same time, "web form" technology that is being used to improve the billing process, will be used to eliminate the myriad of administrative forms in general. Ultimately, Michigan will strive to first convert all agency forms into .pdf format (for downloading and remote printing) via the Web and then quickly migrate to an HTML or XML form standard that can be directly submitted by a customer into a legacy system in the back-end.

Common Payment Module
In order to complement the rapid deployment of citizen-facing transactional applications over the Internet, the State is considering the importance of standardizing the manner in which its constituents can securely pay for services rendered electronically.

Electronic Procurement
The State of Michigan has already taken a significant step toward the implementation of an electronic purchasing system. Through the current MiBuy pilot, the State's employees and vendors are able to conduct the entire procurement process for a limited set of goods and services, from "order to payment", electronically.

e-Michigan Office Theme Initiatives

Because of Michigan's commitment to a web taxonomy based on customer orientation and "life events" instead of agency/departmental silos, the presentation of content into "themes" is essential.

Theme initiatives help ensure that navigation is driven by the orientation and "life experience" of the customer, not by the agency or department in which the information or application currently resides. This role resolves the frequently discussed condition, "The information or service is already on the Web- the customer just doesn't know how to find it". Because the "themes" will drive a large percentage of the applications and content accessible through the portal, they are critical to the success of e-Michigan.

Based on current e-Michigan Office organization, the life experiences will translate into the following seven themes. Based on ongoing market research, these themes may be amended to better reflect the orientation of the State's electronic customers.

The *Education* Theme is committed to adding value to all stakeholders within Michigan's pre-K, K-12 and higher education communities. Accordingly, the theme will offer services that impact students, parents, teachers, and administrators alike. High-profile initiatives within the theme will include a consolidated site for all financial aid information and the integration of all "kids" pages.

The *Health and Human Services* Theme will deploy information and applications designed to assist Michigan families in their pursuit of health and wellness. The theme will also provide a clear path to the services offered by the State to constituents. Finally, the HHS theme will assume responsibility for ensuring that global initiatives such as EFT and electronic forms are leveraged to streamline interaction and communication between the State and its various social service providers.

The *Travel and Recreation* Theme will deploy information and applications designed to assist individuals in navigating the myriad of opportunities for recreation, entertainment, and leisure activities in the State. These efforts will include a heavy focus on marketing Michigan's natural, historical, and cultural assets so as to increase tourism revenue for the State.

The *Business Services* Theme is responsible for managing the State's effort to deploy specific electronic services and transactions that impact Michigan's business community at-large. The theme must be viewed as a cornerstone of the Governor's attempts to bring Michigan's public and private sector communities together through technology, and will rely heavily on joint public-private leadership and solution development. The business services theme will target its activities toward four primary customer segments (individual businesses may fall into one or more categories): information seekers, businesses based in Michigan, small businesses, and vendors (those businesses providing or aspiring to provide goods and/or services to the State).

The *Occupational and Professional License* Theme's efforts are targeted to allowing all professional and occupational licenses, required state permits, and required state certifications to be fully researched and executed on-line. While much of the information about licensing and permitting requirements and processes are currently available on various agency web pages, very little in the way of interactive or transactional capability exists. The licensing theme, therefore, will be responsible for coordinating three integrated activities that ultimately bring together the numerous State agencies involved in licensing under a common umbrella.

The *State Employee Services* Theme ensures that employees are an equal beneficiary of e-government initiatives. Accordingly, the state employee services theme will be initially focused, in the spirit of self-service, on web-enabling administrative processes

and forms that currently require paper, manual data entry, and/or physical office visits. The lynchpin of the employee theme is the HRMN system, a state-of-the-art, employee-self-service-based human resource system currently being implemented.

Driving in Michigan: Motor vehicle transactions represent an ideal candidate for web-enablement because they affect an enormous segment of the population, currently require physical office visits, are high-volume, and consume a significant amount of State resources for manual processing and in-person service delivery. In addition, many states have already experienced a high web demand for motor vehicle services, and a corresponding drop in the cost of serving customers.

Implications of Themes for the Enterprise Portal

Ultimately, we anticipate e-Michigan's themes assuming two core responsibilities: content reorganization and application sponsorship. e-Michigan anticipates that, when portal production begins, each theme will have already created and "prototyped" a new navigation path to existing content and applications. This conceptual theme portal, therefore, will be integrated within the enterprise portal prior to its initial launch. On the application front, the State of Michigan is and will continue to be a strong advocate of providing an electronic transaction alternative to most processes that require manual forms or physical office intermediaries.

The portal will, however, be only immediately concerned with the e-government applications that are "live" or under development within the State already. Among the applications at the forefront of e-Michigan are:

Transaction/Application	Status	Description	Hosting
Campground Reservations	Active	Online reservations via credit card for State operated campgrounds	External
Hunting and Fishing License Renewal	Active	Online renewal of gaming licenses	External
Citizen tax filing	Active	Electronic payment of annual personal taxes (done through a third party)	External
Motor Vehicle Registration Renewal	Active (will eventually be modified or replaced)	Online renewal of personal vehicle registration	Internal
e-Forms	Pending (pilot with HHS service providers)	Implementation of electronic forms as replacement for manual data entry and tabulation	TBD
Consolidated occupational license portal and application function	Pending	End-to-end look-up of licensed professionals in the State, renewal of existing	TBD

		occupational licenses, and first-time application for those licenses (using License 2000 software)	
Online trip planner	Active (will be enhanced based on activities of Travel and Recreation Theme)	Plan your vacation to Michigan	Internal
Michigan Surplus Internet Auction	Active	Online bids for state surplus and unclaimed property. Waves of new items ranging from office furniture to state vehicles available for live, timed viewing and bidding	External
Direct Deposit	Active	Register, receive and update State of Michigan direct deposit payment information	Internal

Michigan 's Current Technology Architecture

Because the State views its portal platform as significantly more than "window dressing" that applies a new presentation layer to existing content and functionality, it is important to understand the technical implications of data and application integration.

The State of Michigan's IT systems, applications, data management, network infrastructure, security systems, and associated support services are provided through a combination of enterprise-level and agency-specific sources.

Central services provided at the enterprise-level include mainframe operations through the Michigan Information Processing Center (MIPC), telecommunications, network security, and the establishment of IT policies and standards. The individual agency IT organizations are responsible for a range of services, including client/server systems, desktop (PC) management, application development, application support, local area network administration, help desk support, and data management.

Mainframe

The Michigan Information Processing Center (MIPC) was created in 1995 to consolidate the data center operations of the State's individual agencies. This consolidation was completed in 1999. MIPC provides mainframe operations and technical support for agency applications and other services running on several different mainframe and server class platforms. The following table provides a summary description of the mainframe platforms supported by MIPC.

Platform	***Operating System***	***% of Agencies on Platform***	***% of Data on Platform***
Unisys		*80%*	*50%*
A18-762	*MCP (v45.1)*		
NX4822-52	*MCP (v45.1)*		
A18-223THE	*MCP (v45.1)*		
A11-222	*MCP (v45.1)*		
2200	*OS/2200*		
Bull		*15%*	*40%*
DPS9000	*GCOS8 (SR45030)*		
DPS9000	*GCOS8 (SR45030)*		
IBM		*5%*	*10%*
VM-ESA 2003-216	*VM-CMS (v2.2)*		
NCR			
Teradata 5100M	*NCR-Unix (v2r2)*		

Approximately 65% of the State's total application inventory is mainframe-based. Over 70% of the mainframe applications were developed using COBOL and most are more than 10 years old. Data base systems are primarily proprietary and non-relational. Limited disaster recovery capabilities are in place to support key Unisys and Bull mainframe systems.

Special Purpose Servers

While MIPC has significant responsibility in managing the State's mainframe computing platforms, it also administers a number of systems that are server based. These systems are based on both the WinTel and the Unix operating systems.

Michigan Administrative Information Network (MAIN)

The State has an outsourcing arrangement with IBM to provide data center operations and other support for its MAIN application. MAIN provides enterprise-wide administrative/financial applications such as accounting, budgeting and payroll for all agencies under the Governor's jurisdiction. MAIN is based on an IBM mainframe computing platform (IBM 9672-R26 – MVS).

Consumer and Industry Services – Unemployment Agency (CIS-UA)

This agency has outsourced the operation of its mainframe system to IBM. The CIS-UA system runs on the VM operating system.

Client/Server Environment

While the State has a substantial investment and dependence on the mainframe computing platform, there has also been a significant movement into and subsequent expansion of client/server technology among the 19 Executive Branch agencies. The following table provides a summary description of the State's client/server environment.

Agency	*Platform*	Quantity	OS
Agriculture	HP	1	Unix (HP)
Career Development	Compaq	42	Windows NT
ESA	Sun Enterprise 4500	1	Unix (Solaris)
	Sun Enterprise 4000	1	Unix (Solaris)
	Sun Enterprise 3000	7	Unix (Solaris)
	Sun E450	2	Unix (Solaris)
	Sun Ultra 1-170E	10	Unix (Solaris)
	Sun Ultra 1-170	2	Unix (Solaris)
	Sun Sparc 20	2	Unix (Solaris)
	Sun Sparc 1000E	1	Unix (Solaris)
Civil Rights	Sun Enterprise 3000	1	Unix (Solaris)
Civil Service	Compaq 1600	4	Windows NT
Community Health	Compaq Proliant 1500	6	Windows NT
	Compaq Proliant 2500	1	Windows NT
	Compaq Proliant 5500	2	Windows NT
	Compaq Proliant 800	1	Windows NT
	Dell Optiplex XL590	1	Windows NT
	Dell Optiplex XMT 5100	4	Windows NT
	Dell PowerEdge SP5166-L	1	Windows NT
	Sun Enterprise 3000	2	Unix (Solaris)
	Sun Ultra 2	2	Unix (Solaris)
Consumer & Industry Services	Sun Sparc 5	2	Unix (Solaris)
	Sun Sparc 10	1	Unix (Solaris)
	Sun Sparc 20	3	Unix (Solaris)
	Sun Sparc 1000	1	Unix (Solaris)
	Sun Ultra Enterprise 2	4	Unix (Solaris)

	Sun Ultra Enterprise 1000	1	Unix (Solaris)
	Sun Ultra Enterprise 3000	1	Unix (Solaris)
	Sun Ultra Enterprise 4000	2	Unix (Solaris)
	Sun Ultra Enterprise 4500	1	Unix (Solaris)
Corrections	Sun Sparcstation 4	4	Unix (Solaris)
	Sun 1000 E Server	4	Unix (Solaris)
	Sun Ultra Enterprise 4000	1	Unix (Solaris)
	Sun Ultra Enterprise	1	Unix (Solaris)
	Sun Sparc 5	1	Unix (Solaris)
	Sun Sparc 20	1	Unix (Solaris)
	Sun Ultra 1	1	Unix (Solaris)
	Sun Ultra 2	1	Unix (Solaris)
	Sun Ultra 5	1	Unix (Solaris)
Environmental Quality	Compaq	8	Windows NT
	Dell	1	Windows NT
Family & Independence Agency	Unisys (Unix)	138	Unix (U6000)
	Unisys (NT)	150	Windows NT
	Dell 6100	10	Windows NT
	Dell 4350	6	Windows NT
Lottery	Compaq Alpha Server 4100 5/400	2	Unix (True 64)
	Netframe 9016	1	Windows NT
	Dell PowerEdge 6300	1	Windows NT
	Sun Ultra Sparc	2	Unix (Solaris)
	Lucent Intuity Conversant	1	Unixware
Management & Budget (MAIN)	HP V2500	2	Unix (HP)
	HP V4000	2	Unix (HP)
	IBM RS 6000 570	2	Unix (AIX)
	Sun E 4000	1	Unix (Solaris)
	HP K460	1	Unix (HP)
	Unisys QR/2	2	Windows NT
	HP Netserver LPR	2	Windows NT
	Compaq	1	Windows NT
Management & Budget (OAS)	Compaq Proliant 6500	13	Windows NT
	Compaq DeskPro 2000	1	Windows NT
	Compaq Proliant 1600	4	Windows NT
	Compaq Proliant 4500	1	Windows NT
	Compaq Proliant 5000	2	Windows NT
Military & Veterans Affairs	Dell PowerEdge 4300	2	Windows NT
	Compaq	1	Windows NT
Natural Resources	Compaq Proliant 1600	1	Windows NT
	Compaq Proliant 2500	2	Windows NT
	Compaq Proliant 4000	1	Windows NT
State	Sun Ultra Enterprise 3000	1	Unix (Solaris)
	Digital Alpha 4100	1	Unix (Alpha)
	Sun Enterprise 3000	1	Unix (Solaris)
State Police	Sun Ultra 1	2	Unix (Solaris)
	Sun Sparc 20	1	Unix (Solaris)
	Sun Sparc 5	1	Unix (Solaris)
Transportation	Sun Ultra 4500	3	Unix (Solaris)
Treasury	Compaq 7000	3	Windows NT
	Compaq 6000	5	Windows NT
	Compaq 5000	2	Windows NT
	Compaq 2500	2	Windows NT
	Unisys Aquanta	2	Unix
Distribution of Client/Server Systems by OS Platform	Windows NT 284 Servers 56% Unix (All Types) 226 Servers 44%		

As shown in the above table, the client/server platform is nearly evenly divided between the WinTel and Unix platforms. Approximately 30% of the State's total application

inventory is built on a client/server technology. While data is maintained in a wide variety of database systems, Microsoft SQL Server and Oracle are the dominant platforms used by State agencies. Over 90% of the agency-based client/server systems have backup and restore capabilities, although there is no consistent tool used throughout the enterprise for this function. Currently, 27 different backup and restore tools are used within the agencies. Disaster recovery capabilities are less prevalent within the agencies – only 19% have such capabilities - and 10 different tools are used for this purpose.

Desktop Computing and Local Area Networks

The responsibility for managing and supporting desktop technology and local area networks (LANs) resides within the individual agency IT organizations. The following statements provide a general overview of the State's desktop computing and LAN environment.

Personal Computers

- Approximately 46,000 desktop computing devices (seats).
  - 71% - Pentium Class Devices
  - 23% - Pentium II or Higher Devices
  - 5 % - Sub-Pentium Class Devices
  - 1 % - Unknown
- Operating systems
  - 64% - Windows NT
  - 18% - Windows 95
  - 1 % - Windows 98
  - 7 % - Windows 3.1
  - 10% - Other

Local Area Networks

- Over 930 LAN servers providing file/print services and e-mail.
- Network Operating Systems
  - 60% - Novell
  - 18% - Microsoft Windows NT
  - 9 % - Banyan Vines
  - 1 % - Other
  - 12% - Unclassified

Web Servers and Web Applications

The State's Internet infrastructure is predominantly based on the WinTel platform – Microsoft Window NT Server 4.0 as the server operating system and Microsoft Internet Information Server 4.0 as the web service platform. Although agencies have made a substantial investment in the Unix platform for client/server systems, it does not play a

significant role in supporting agency web sites. Only three agencies use Unix-based operating systems and three use Apache server for web services.

Web servers are currently hosted in one of three ways: through the Network Operating Center (NOC), by the individual agency, or by an outside provider. The NOC houses the majority of the State's web sites, providing web hosting services for 43 individual sites across several agencies. A list of the current agency sites are listed below:

Branch	Agency/Organization	Site Name	URL
Executive	Agriculture	Michigan Dept. of Agriculture	www.mda.state.mi.us/selectmi/index.html
Executive	Attorney General	Michigan Attorney General	www.ag.state.mi.us
Executive	Career Development	MCDC	www.state.mi.us/career/2frame2.html
		MDCD (Employment Service Agency)	www.michmli.org
		MDCD (MI Community Service Commission)	www.state.mi.us/career/mcsc
Executive	Civil Rights	Dept. of Civil Rights	www.mdcr.com/index
Executive	Civil Service	Michigan Dept. of Civil Service	www.state.mi.us/mdcs
Executive	Community Health	Dept. of Community Health	www.mdch.state.mi.us
Executive	Consumer and Industry Service	Dept. of Consumer & Industry Services	www.cis.state.mi.us
Executive	Corrections	Michigan Dept. of Corrections	www.state.mi.us/mdoc/le1.html
Executive	Education	Michigan Dept. of Education (MDE)	www.state.mi.us/mde
Executive	Environmental Quality	Dept. of Environmental Quality	www.deq.state.mi.us
Executive	Executive Office	Office of the Governor	www.migov.state.mi.us/
Executive	Family Independence Agency	FIA	www.mfia.state.mi.us
Executive	Lottery	Michigan Lottery	www.state.mi.us/msl
Executive	Management and Budget	Department of Management and Budget	www.state.mi.us/dmb/
		Department of Management and Budget - Mgmt.	www.state.mi.us/dmb/mgmt/
		Department of Management and Budget - Budget	www.state.mi.us/dmb/budget/
		DMB - Purchasing	www.state.mi.us/dmb/oop
		State Budget Office (Michigan Information Center)	www.state.mi.us/dmb/mic
		Information Technology Budget & Finance	www.state.mi.us/CIO/itbf
		Michigan Information Network	www.min.state.mi.us
		Computing Services	www.state.mi.us/cio/cs
		Office of Information Technology Solutions	www.state.mi.us/cio/oits
		Information Technology Services Division	www.state.mi.us/cio/itsd
		Office of Project management	www.state.mi.us/cio/opm
		State CIO	www.state.mi.us/cio
		Telecommunication Services (site name- MiNet)	www.state.mi.us/cio/telecom
		State Administrative Board	www.state.mi.us/dmb/ad board
		DMB (State Budget Director) - MI Admin. Info. Network	mainweb.state.mi.us
		Vehicle & Travel Services	www.state.mi.us/dmb/mgmt/services/vts
		DMB - MI Bid	www.state.mi.us/dmb/mgmt/services/oss/mibid
		Office of State Employer	www.state.mi.us/dmb/ose
		Office of Retirement Services	www.state.mi.us/dmb/ors
		Office of Financial Management (State Budget Office)	www.state.mi.us/dmb/ofm
		Office of Children's Ombudsman	www.state.mi.us/dmb/ombudsman
Executive	MI Economic Development Corp.	Michigan Economic Development Corporation	medc.michigan.org
		Michigan Film Office	film.michigan.org
		MEDC - Travel	travel.michigan.org
Executive	Michigan Gaming Control Board	Michigan Gaming Control Board	www.state.mi.us/mgcb
Executive	Military and Veterans Affairs	Dept. of Military & Veteran Affairs	www.state.mi.us/dmva/index3.htm
Executive	Natural Resources	Dept. of Natural Resources	www.dnr.state.mi.us
Executive	State	Secretary of State - Bureau of Automotive Regulation	www.sos.state.mi.us/bar/index.html
		Secretary of State - Michigan Historical Society	www.sos.state.mi.us/history/index.html
		Michigan Dept. of State - Organ Donor Registry	www.sos.state.mi.us/pamphlet/donor.html
Executive	State Police	Michigan State Police	www.msp.state.mi.us
		Michigan State Police	www.voyager.net/msp
Executive	Transportation	Michigan Dept. of Transportation	www.mdot.state.mi.us
Executive	Treasury	Michigan Dept. of Treasury	www.treas.state.mi.us
		Michigan Dept. of Treasury - Merit Award Program	www.meritaward.state.mi.us/merit/meap/index.htm
		Michigan Education Trust	www.treas.state.mi.us/met/metindex.htm
		SOM Student Financial Aid	www.mi-studentaid.org
Judicial	Supreme Court	Supreme Court	www.state.mi.us/jud/
		Attorney Grievance Commission	www.state.mi.us/jud/AGC/index9.htm
Judicial	Michigan Court of Appeals	Court of Appeals	www.state.mi.us/jud/coa/index.htm
Legislative	House of Representatives	House of Representatives	www.house.state.mi.us/
Legislative	House Fiscal Agency	Michigan House Fiscal Agency	www.house.state.mi.us/hfa/
Legislative	Senate	Senate	www.senate.state.mi.us.
Legislative	Senate Fiscal Agency	Michigan Senate Fiscal Agency	www.senate.state.mi.us/sfa/
Legislative	Auditor General	Michigan Office of the Auditor General	www.state.mi.us/audgen/
Legislative	Legislative Council (LC)	Michigan Legislative Council	www.milegislativecouncil.org/

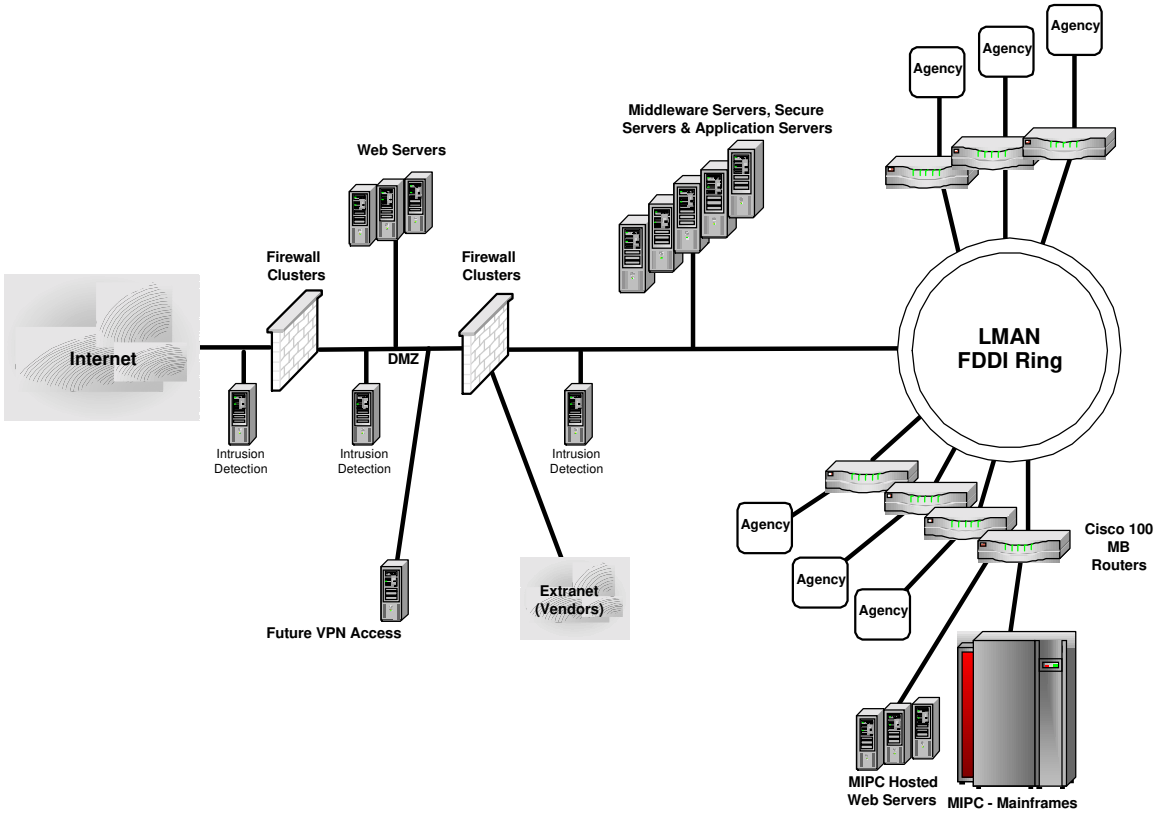
Telecommunications and Network Security

The Lansing Metropolitan Area Network (LMAN) provides a high-speed telecommunications infrastructure that interconnects State agencies. The LMAN consists of five core FDDI rings as its backbone.

To provide a more secure network architecture, the NOC is implementing a "demilitarized zone" or DMZ that provides two levels of firewalls. Web servers that were previously on the unsecured segment have been transitioned into the DMZ. Approximately 40 servers are currently located within the boundaries of the DMZ. These servers include external proxy servers, email web access, SMTP gateways, intrusion detection and some agency web servers. The intent is to move all of the web servers hosted at the NOC within the DMZ to provide a secure network segment that sits external to the LMAN. The number of web servers that may ultimately sit within the DMZ could exceed 100 servers.

An effort is currently underway to develop "LMAN2". The final design of this network has not yet been established. Two options are being evaluated - packet over SONET and ATM.

The following diagram provides a high-level graphical representation of the current LMAN topology.



Scope of Services Envisioned

"One Customer" Portal Strategy
e-Michigan's enterprise portal will be developed according to the State's "one customer" vision for electronic government. This strategic vision represents the cornerstone of our e-government activities and the foundation for the "customer centric" portal platform solution. Highlights from e-Michigan's "one customer" point of view include:

- The portal must serve as the strategic platform upon which the State can provide personalized, integrated access to all services for its three "core" customer groups: citizens, businesses, and state employees.

- e-Michigan, as the program manager for e-government, has the unique ability and authority to create an integrated service delivery vehicle from an enterprise, customer-focused point of view. By embracing the idea of "one customer"- the innovative business strategy that adopts an enterprise approach to using Internet technology to personalize and streamline customer interactions across multiple departments or organizations- e-Michigan will fundamentally address the State's critical customer management shortcomings. In addition, "one customer" allows the State to provide a level of comprehensive service and enterprise-wide branding previously considered unachievable for governments with a strong agency/departmental orientation.

- Because the State home page serves as the gateway to State government services, it is rightfully viewed as an essential component of any customer-focused portal. Without a constituent-focused navigation path that organizes content according to life events and customer orientation, even the most sophisticated content or transactions will be difficult to access. This will also result in underutilization of the Internet services. At least for the foreseeable future, the portal's role as the initial compass for customer interaction with web-based content will not waver.

- By focusing primarily on developing a strong navigation path and an aesthetically pleasing front-end, a portal limits the transformation capabilities of the presentation layer. Instead, by asking the question, "How can the functionality of the front-end be augmented to reinvent the customer experience?", e-Michigan will be able to accomplish its goal to lead the government community in Internet enablement. It will also lay the foundation for incorporating the type of relationship-altering business strategies that are emerging in best-in-breed private sector customer relationship managers.

- Internet personalization includes the ability to "remember" and display key data such as an individual's name on each page, to aggregate such data within a consolidated State account, and to market services or content that match the continuously maturing user profile. Research broadly shows that personalization is a critical driver of customer retention and site usage. All personalization will be

based on the "opt-in" model and use of data collected will respect Michigan's privacy and security policies.

- "One customer" implies an ability to "learn" from each customer interaction and to use this knowledge to improve integrated service delivery. Not only does data mining from this base provide a deeper level of understanding about each customer, but it also allows for quantitative, customer-centric performance measurement.

- By providing a unified view and a unified personality to each customer, Michigan can see a dramatic increase in customer satisfaction and in customer transaction volume through the web delivery channel. Not only does "one customer" allow for consistency across previously independent entities, but it also becomes the home for common processes, most notably payment and security. The result of uniform branding is meaningful, durable customer relationships- the goal of any customer-centric enterprise.

The "one customer" portal, while focused on the central State of Michigan presentation layer, will also have major implications for the life experience "themes" presented earlier. An effective one-customer solution, therefore, will positively shape the themes in the following ways:

- The same content organization, customer navigation, and "look and feel" concepts applied to the consolidated Michigan portal will be applied to each individual theme sub-portal.

- One customer will promote the sharing of relevant customer data across agencies and across themes, thereby improving the richness and quality of the user experience. Because of access to the portal's robust enterprise customer data repository, themes will deliver personalized services, personalized content, and targeted marketing opportunities to customers.

Solution Components

Application Architecture and/or E-Commerce Platform

The portal's core function is as the flexible foundation and application architecture for all State e-government activities going forward. The platform will represent an integrated suite of packaged applications for conducting e- commerce interactions and transactions. The application will have demonstrated success in both private and government enterprises and will be used to sell, buy and exchange information over the web. The critical success factors for the strategic Michigan portal platform include open standards, flexibility, scalability, and the ability to quickly transform static Web sites into vital sources of dynamic Web content for customers.

While the e-Michigan Office recognizes that a comprehensive "out of the box" portal does not exist and believes that customization is a key ingredient to e-government success, it does want to maximize the use of robust, proven tools and technology that can be quickly adapted to and integrated with Michigan's environment, where possible and practical. Therefore, the minimization of custom coding and development is desired. Moreover, the Office anticipates a phased approach to portal implementation featuring several "releases" or enhancements to the initial portal.

Portal Design and Navigation Path
The portal will be designed in a "customer centric" manner, therefore ensuring that any information, service, or transaction available through the portal lies literally a "few clicks away". Building on the themes already established by e-Michigan and on the brand and "look and feel" currently under development, the portal will create an optimal navigation path to all content. The design will be consistent with the "no wrong door" approach to site navigation, one that champions the importance of providing multiple avenues for customers to access all content.

A "citizen-centric" design is a key element to the State's vision of a Service portal providing state government information and services. The State expects the portal to function as a user-friendly "one-stop shopping" site for citizens and businesses to access electronically delivered government services while also providing access to many informational state Web sites that currently exist.

Search Engine
The portal will establish and implement a standard search/knowledge engine that will contain information about all services, information, and transactions available through the portal or one of its related sites or embedded links. This advanced, "webcrawling" engine will allow users to make search queries in plain English. Rather than using a limited standard requiring the user to string together words in just the right way, a new, non-Boolean search engine will supply an answer to a question phrased in ordinary language.

On-line Help
The portal will provide on-line help and references, e.g. icons, directories, tutorials for the portal and its services to users. Just as e-Michigan believes that all desired content and transactions must be merely a few "clicks" always, the Office expects a solution that provides online assistance to "lost" users to be readily available.

Personalization
The state plans to offer the ability, for portal users to voluntarily ("opt in") personalize information they receive from the portal. Personalized "views" of the Michigan Portal would allow the users to identify areas of interest or geographic location in order for the portal to customize information and services to them. Customers, therefore, may receive personalized content based on zip code, community (student, business, tourist, etc.), or stated interests (hunting, skiing, politics, etc.). In addition, customers wishing to establish an "account" with the portal will be able to store critical payment information

such as name, address, phone number, and preferred payment method in a secure environment, thereby streamlining the process considerably.

Web Content Management
The portal will provide the technology and processes necessary to standardize the publishing, workflow, content management, and version control standards for web activities throughout the State.

- **Work Flow** involves providing consistent publishing flow for publishing content. Support single and multi-tier approval flows as well as flexible flows for ad hoc approval requests (i.e., document that needs legal approval). It must also allow multiple users to have approval authority and provide administrators a GUI interface to control the approval path
- **Content** includes supporting publishing of multiple formats and file types (i.e., PDF, DOC, XLS, PPT, Video, XML). The tool should also allow dynamic navigation pages and easy correction of spelling and grammatical errors.
- **Version Control** must be provided for applications, text based content, non-text files, and for code
- **Site** refers to allowing any person to see status of changes (i.e., does not have to be content owner), and providing mechanism for display of status of files (completion status, review status, owner, etc.)

Directory Services
Use of directory services is required in order to simplify search and authentication processes for user and application verification purposes. The portal directory server will be used as an umbrella directory that interconnects existing agency directory services with a common interface (LDAP).

Security and Authentication Services
The security approach of the portal will reflect an understanding of the State's privacy policy, including:

- Assure confidentiality of data
  1. In transit – provide the ability to execute secure, authenticated, two-way transactions as well as ensuring that all other data is encrypted beyond the reasonable threat of a successful brute force attack;
  2. In storage – ensure that confidential data in databases from which public data is being extracted will not be compromised;

- Assure integrity of data – determine how to maintain data integrity and users' confidentiality and privacy; handle legal issues with regard to misuse or fraud and options for resolution;

- Maintain access control – determine method needed to prohibit users from accessing data or computer facilities unless such access was expressly approved by the State's Portal Manager;

- Provide authentication – determine how to provide robust authentication services;

- Provide audit capabilities – implement date-time stamp and an audit trail for identifying all network security breaches and attempted breaches; implement penetration analysis and intrusion detection policies to ensure that the portal remains as secure as possible over time.

The portal will be required to use the State's standard for server certificates and PKI for any state government applications requiring this capability. The portal will be required to authenticate users of state government applications. The portal must ensure that portal transactions can be authenticated.

For payment transactions made through Internet sites, the portal will ensure that card numbers, name, address, and expiration dates are secured through encryption, authentication, and other standard payment card operating procedures to ensure that card information remains secure. The portal shall prohibit users from accessing state data unless such access is expressly approved by the state. The portal will maintain and ensure data integrity and user confidentiality and privacy.

Business Analysis Tools

Analytic or business intelligence tools are key portal and personalization enablers because they synthesize large amounts of raw data about customer behavior into actionable marketing strategies and personalized web content. These tools must provide the ability to customize the interface and functionality of an application based on a user's explicit (attributes entered by a user such as name, address, payment method), observed ("clickstream"), and implicit (attributes developed by the solution's interpretation of user activity like purchases) profiles. In tandem with the personalization and content management capabilities discussed above, these tools must include the ability to "remember" and display key data, such as an individual's name on each page ("Welcome back to Michigan, Joe!), and to market services or content that match the continuously maturing user profile.

Performance Measurement

The State believes that it is critical for the portal to collect and distill the types of data that answer the question, "Is the portal achieving its desired objectives?" Metrics will be quantitative, relating to the expanded use of the Internet via the portal, increases in on-line expenditures, savings from internal business processes, savings from streamlining data redundancy, and any others.

Consumer Accessibility

The portal must be accessible via popular browsers such as Microsoft's Internet Explorer and Netscape Communicator. The portal must accommodate a minimum standard for citizens using a browser equivalent to Microsoft Internet Explorer version 4.0 or Netscape Communicator version 4.5.

Universal or Alternative Access
The portal will eventually be designed with the ability to accommodate other methods of accessing the Web that are increasingly becoming available through different services. Personal hand-held devices, Interactive Voice Response (IVR), kiosks, cell phones, wireless access protocol (WAP) devices, and WebTV are among the different ways in which the general public is now able to access the Internet without the use of a traditional Web browser. Not all these access devices would be able to accommodate the same level of display, communication and other programming capabilities that could be accessible on the Web through a standard Internet browser.

Disabled and Multi-Language Access
The portal will also provide support for state citizens who would need special features on the portal to accommodate certain disabilities. Adherence to Federal ADA guidelines and Section 508 of the Rehabilitation Act Amendments of 1998 are required.

The State may also consider certain features of the portal for alternative languages in response to the growing number of diverse nationalities within Michigan.

Potential Solution Components
In addition to the components listed above, the State is evaluating several alternatives for hosting the enterprise portal:

- Portal data center housed on State of Michigan property and hardware (MIPC/Telecom) and maintained exclusively by State of Michigan employees once operational.
- Portal data center housed on external (ASP, ISP, etc.) property and hardware and maintained exclusively by external employees once operational.
- Portal data center physically housed on State of Michigan property but built and maintained by an external host on hardware acquired and owned by the State.

Among the topics that will be addressed by an externally hosted solution are: disaster recovery strategies, service level agreements, pilot testing, performance monitoring and problem resolution, data ownership, ongoing application maintenance, knowledge transfer to State employees, and exit strategies.