

State of Michigan MiHIN Shared Services Strategic Plan



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1 Stakeholder Approval

The MiHIN Shared Services Strategic Plan was endorsed by the MiHIN Governance Workgroup by unanimous vote on April 22, 2010. Membership of the MiHIN Governance Workgroup is listed in Appendix 1 of the MiHIN Shared Services Strategic Plan. The MiHIN Shared Services Strategic Plan was endorsed by the Michigan Health Information Technology Commission by unanimous vote on April 22, 2010. Membership of the Michigan Health Information Technology Commission can be found in the Governance domain section in the MiHIN Shared Services Strategic Plan.

2 Executive Summary

The State of Michigan and the stakeholders across Michigan who have been involved in the development of the Michigan Health Information Network (MiHIN) over the past years, plan to capitalize on the progress and experience gained from this effort by responding to the opportunities under the State Health Information Exchange Cooperative Agreement Program.

The Michigan Health Information Network (MiHIN) Strategic Plan is intended to communicate the vision, goals, objectives and strategies for addressing statewide Health Information Exchange (HIE) development in Michigan. The strategies outlined in this plan are designed to execute on the vision of developing an open architecture that complements the progress made by sub-state HIEs and leverages statewide shared services to accelerate statewide health information exchange. Our intended outcome is to continuously improve and expand HIE services over time to result in improved quality and efficiency of health care for our citizens.

2.1 Historical Perspective

The MiHIN began in 2005 when Governor Jennifer M. Granholm charged the Michigan Department of Community Health and the Michigan Department of Information Technology with collaborating with stakeholders to utilize Health Information Technology (HIT) and HIE to improve quality and decrease the costs of healthcare in Michigan. In 2006 more than 200 stakeholders participated in developing a plan for guiding statewide health information exchange, titled the MiHIN *Conduit to Care*. The MiHIN *Conduit to Care* set forth a roadmap for ensuring that health information exchange would occur statewide, including rural and medically underserved areas. It also set the direction for an incremental or phased approach to HIE, provided resources for sub state HIE planning and implementation, and most importantly, set the expectation that stakeholder engagement is critical to long term success.

The MiHIN *Conduit to Care* represented the first iteration of a Strategic Plan by establishing a vision of HIE across Michigan that continues to hold true today: *reducing the overall cost of care while increasing quality and patient safety.*

Michigan's pioneering approach included the identification of nine "medical trading areas" that cover all counties in the state in which HIEs would be developed, so as not to leave out any portion of the state. Michigan Department of Community Health (MDCH) used \$10 million in

funding appropriated from state general fund dollars to sponsor one HIE initiative within each of the nine medical trading areas. Seven of the regional HIE initiatives received planning grants while two regions received implementation grants. Throughout the past several years other community organizations have engaged in efforts to build sub-state HIEs. These sub-state HIE initiatives and the nine medical trading area initiatives are described in Section 2.1 Environmental Scan.

A major milestone for HIT and HIE progress in Michigan occurred when the Michigan Legislature passed and Governor Jennifer M. Granholm signed the Michigan Health Information Technology Commission into law. The Michigan HIT Commission was created in 2006 as an advisory body to the MDCH. The HIT Commission is charged with facilitating and promoting the design, implementation, operation and maintenance of an interoperable health care information infrastructure as well as to advance the adoption of health information technologies throughout the state's health care system.

2.2 Michigan's Approach

This MiHIN Strategic Plan seeks to close the gap between the *Conduit to Care* and the guidelines from the State HIE Cooperative Agreement as well as update Michigan's plan for statewide HIE that leverages the progress of sub-state HIEs in Michigan. The MiHIN Strategic Plan describes the incremental approach for advancing appropriate and secure health information exchange, implements a model that encourages public private partnership and develops a scalable open technology approach that would complement the activities of the sub-state HIEs.

To accomplish these goals a series of evaluations and environmental analyses were undertaken to assess current HIE capacity in Michigan that can be leveraged, to identify HIT resources that can be used, and to determine opportunities for collaboration. This information was also used to inform the work of the stakeholders involved in a comprehensive workgroup process that formulated this Strategic Plan. More than 100 stakeholders have been involved with planning and developing the approaches to implementation and evaluation activities by serving on workgroups that are directly aligned with the five domains of governance, finance, technical architecture, business/technical operations and legal/policy.

These activities have been complemented by integrating the MiHIN planning work with Medicaid, Medicare, other federally funded, state based programs particularly public health surveillance and other American Recovery and Reinvestment Act (ARRA) programs to include the Regional Extension Center (REC), workforce development initiatives and broadband mapping and access initiatives.

This approach has resulted in a strategy that uses the State HIE Cooperative Agreement funding in a comprehensive public private partnership to advance the stakeholder organizations toward obtaining meaningful use.

2.3 Strategy Highlights

This Executive Summary is intended to provide an overview that highlights each domain area. The subsequent sections of this document provide the details associated with Michigan's strategy for accomplishing the MiHIN Shared Services vision and goals.

2.3.1 Governance

Michigan's approach to Governance is to create a coordinated governance model that emphasizes public/private partnerships. Toward that end, a coordinated Governance model has been developed that uses the existing legislatively mandated Health Information Technology (HIT) Commission to set broad statewide policy initiatives. In addition to leveraging the HIT Commission, a separate not-for-profit entity called the MiHIN Shared Services will be created to act as the State Designated Entity. The governing board of this entity will consist of stakeholders from the sub-state HIEs, payer organizations and the State of Michigan (including a member of the HIT Commission). A legislative change will be sought to add a member of the MiHIN Shared Service Governance board to the HIT Commission.

The MiHIN Shared Services Governance Board will be primarily responsible for governing the business and technical operations of the technology infrastructure and have authority over the shared services including the financing structures required to enable MiHIN Shared Services to be self-sustaining.

The diagram below provides a graphic representation of the inherent collaboration in the coordinated governance structure.

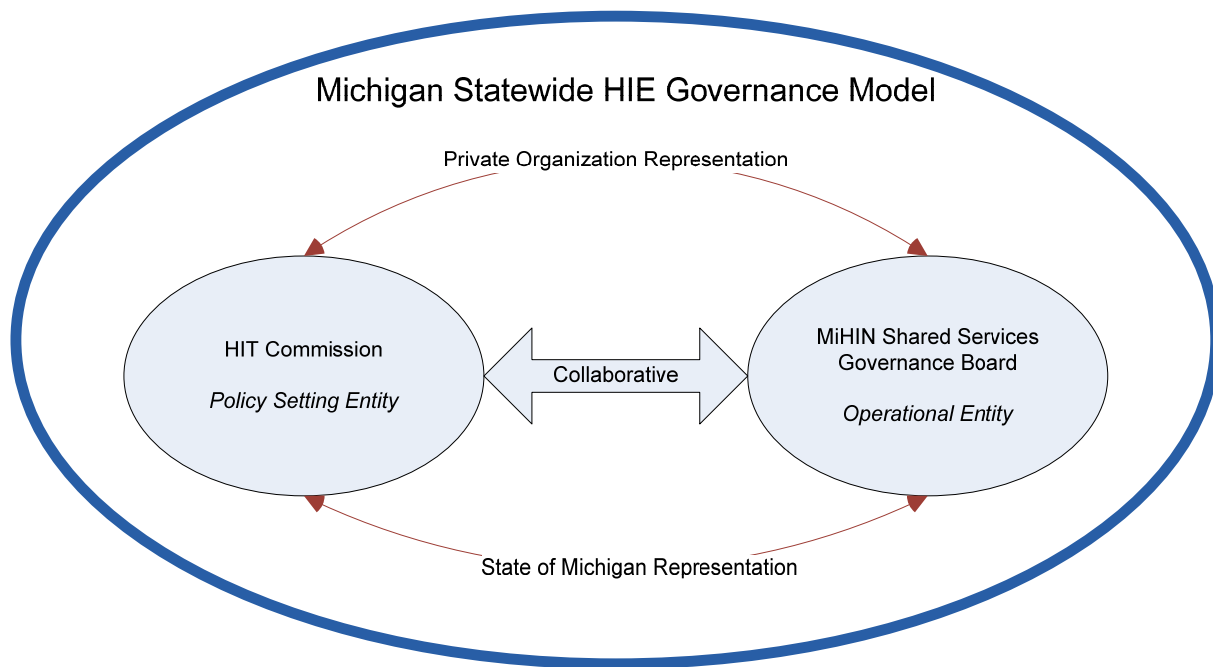


Figure 1. Michigan's Coordinated Governance Model

2.3.2 Technical Strategy

The MiHIN technical architecture will leverage Michigan’s existing HIE investments and create a technology model that enhances what the sub-state HIEs have either implemented or are implementing through the use of shared services. Shared services refer to a suite of services that can be utilized to connect Michigan’s sub-state HIEs and other data sources together for statewide communication. Shared Services functionality includes state level directories such as a Master Citizen Index, Master Provider Index and a Record Locator Service, Nationwide Health Information Network (NHIN) gateway, Messaging Gateway and other functions as needed.

MiHIN Shared Services technology will be based on a design that enables widespread interoperability among disparate healthcare systems. The design is vendor and technology agnostic and focuses on technical standards, protocols and architectural patterns. The resulting MiHIN Shared Services technology is based on a service oriented architecture paradigm and will be implemented through Web Services executing on an Enterprise Service Bus (ESB).

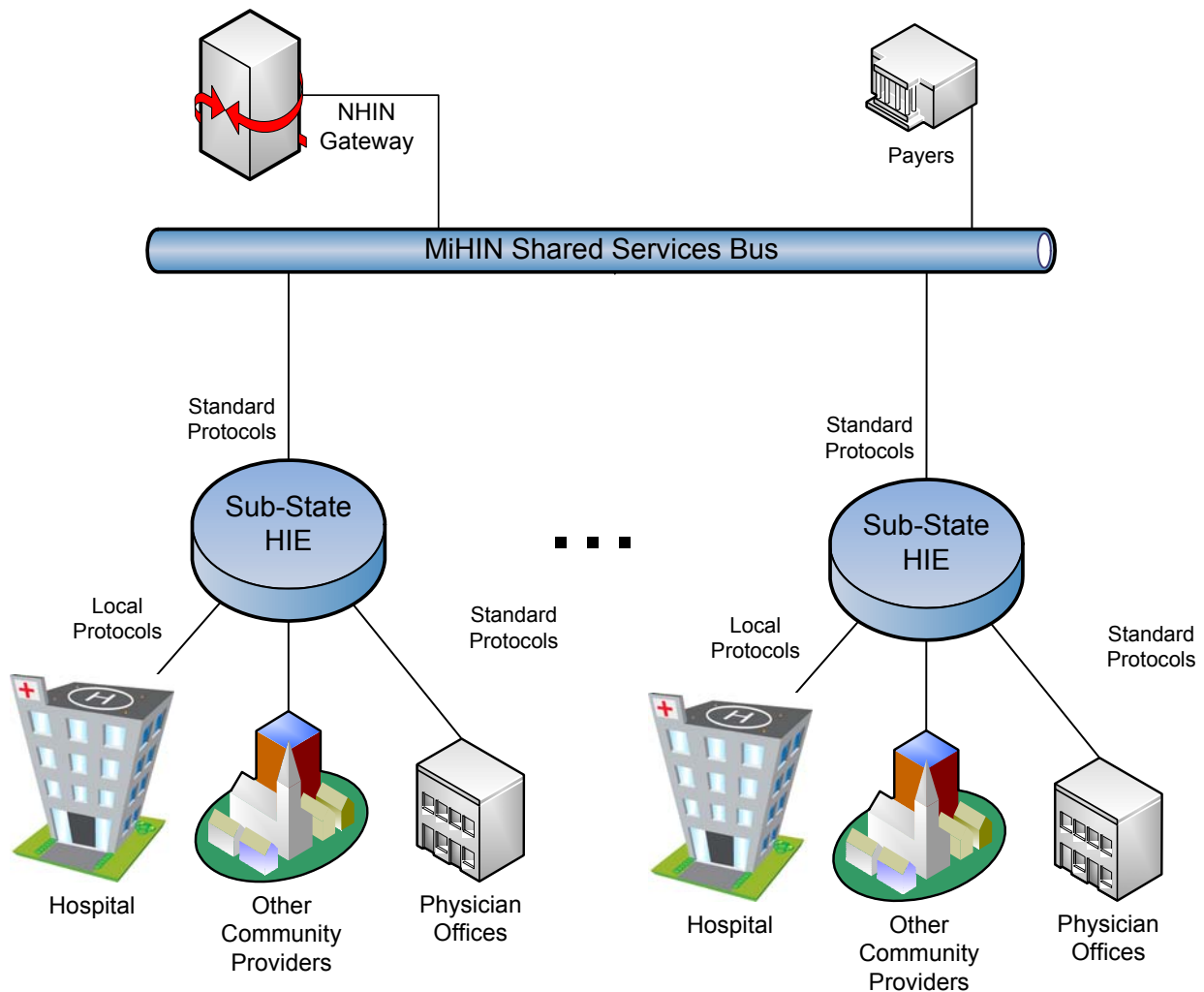


Figure 2. MiHIN Shared Services High Level Conceptual Architecture

The objective of the MiHIN Shared Services Bus is to provide interconnectivity between the Sub-state HIEs, payer organizations and State of Michigan systems. As national standards for interoperability and data exchange are developed and adopted, MiHIN will advocate, promote, align with state standards and foster adoption of national standards by all Michigan HIEs. The use of such standards will provide organizations with the interoperability necessary to electronically move clinical information between disparate provider organizations.

2.3.3 Budget and Sustainability Strategy

The State HIE Cooperative Agreement Grant will provide funding to plan and implement the MiHIN Shared Services. To ensure long-term sustainability, MiHIN has adopted a sustainability funding mechanism that is built upon identifying the primary customers associated with the MiHIN Shared Service Bus and empowering them to play an active role in governance and finance. At present, the primary financing and governing organizations are sub-state HIEs, the State of Michigan and payers.

This strategic direction allowed Michigan to determine the expected contribution available from the customers of the MiHIN Shared Services Bus; Sub-state HIEs, Payers and the State of Michigan at between \$1.5 and \$2.0 million per year starting in 2012. Final dollar amounts are pending multiple variables including vendor negotiations.

The money available from the Cooperative Agreement, combined with the State of Michigan matching funding and member organization contributions allowed Michigan to set a budget of approximately \$21.6M from 2010 through 2015 for creating a sustainable organization that executes on the strategy defined in this document.

The diagram below demonstrates how the expected grant expenditure and membership/other fees will ensure that Michigan create a sustainable model for the MiHIN Shared Services Bus.

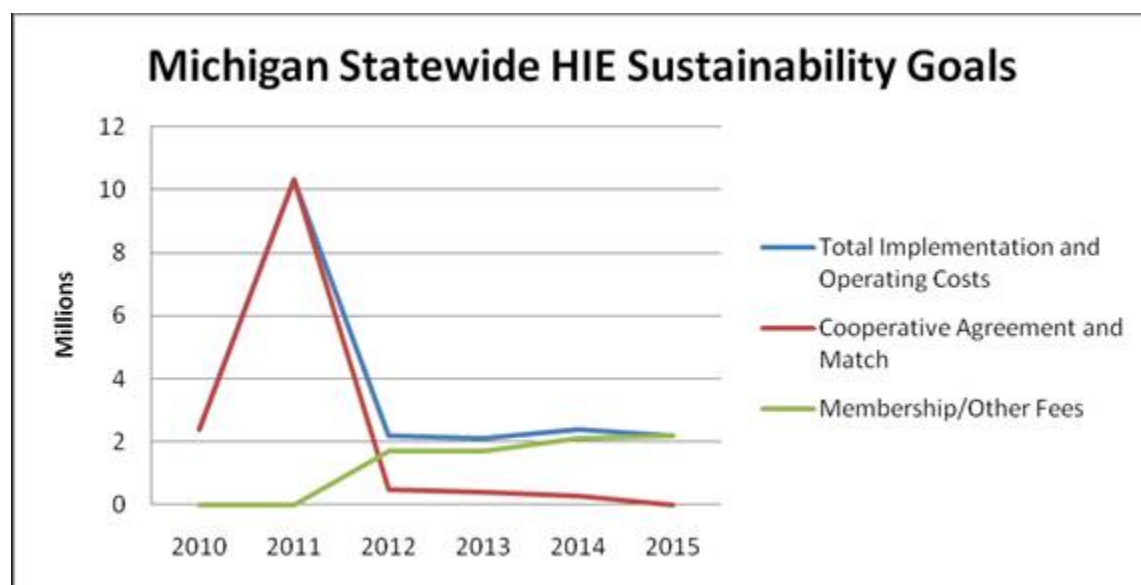


Figure 3. Projected MiHIN Shared Services Sustainability Model

2.3.4 Business and Technical Operations

MiHIN Shared Services Entity will use a phased approach to incrementally build out technology that both satisfies use cases and implements fundamental components of the infrastructure that provide increasing capabilities.

Staffing requirements of the MiHIN Shared Services will initially be satisfied using a combination of contract, vendor and staff.

Phase 1 will consist of deploying technology that will enable two use cases that are related to Public Health Reporting. These uses case include: the transfer of lab results from the sub-state HIEs to the Michigan Department of Community Health's Disease Surveillance System and the transfer of Immunizations from the sub-State HIEs and the Michigan Department of Community Health's Immunization Registry. In order to satisfy these use cases the technology that will be deployed will include core services of master patient index, security services, and a provider directory.

Phase 2 deployments will further build out the technical infrastructure and enable the sub-state HIEs to extract data from the Immunization Reporting System and enable the transfer of Continuity of Care Documents (CCD's) from the Sub-State HIEs to Emergency Departments and Physician Offices. The technology required to deploy these capabilities will build on that deployed in Phase 1 and add most of the remaining functionality of the core services including the Shared Services Bus, XDS Services and a Record Locator Service.

2.3.5 Legal and Policy

The Privacy and Security workgroup was tasked with creating a set of policies that balances the benefit of the HIE with ensuring the privacy and security of patient data.

The security policies will contain minimum standards for participation in MiHIN Shared Services. The privacy policies will also incorporate the minimum standards as well as offering comprehensive guidance for Michigan's Sub-state HIEs. MiHIN Shared Services Governance Board's work will provide the Sub-State HIEs with needed clarity, alignment and certainty- as they continue to evolve and develop.

3 General Components

3.1 Environmental Scan

Health Information Exchange (HIE) is advancing throughout Michigan in various forms with a wide array of functionality. The State of Michigan government has advanced public health reporting systems, health systems are moving information electronically to users, provider offices in Michigan are utilizing portal technologies, Electronic Health Records (EHRs) and are utilizing the services of sub-state HIEs.

An analysis of Michigan's HIT and HIE environment was conducted in the fall of 2009 in two phases. First, with the use of a survey instrument, 32 health systems, hospitals, public health, behavioral health, physician offices and other healthcare delivery entities were assessed. Approximately 63 percent of those responding reported HIE to be one of the top five organizational priorities and 57 percent are or are planning to participate in a sub-state HIE. An overwhelming 90 percent of respondents reported that they plan to participate in the Medicare and Medicaid EHR Incentive Programs. A very high level analysis of technical capabilities showed that 57 percent of respondents were utilizing a Certification Commission for HIT (CCHIT) certified EHR. Nearly 64 percent of respondents indicated use of e-prescribing functionality.

The second phase analysis included a detailed technical assessment sent to 27 organizations. The recipients were identified through both the results of the first survey and subsequent follow – up interviews. Included were a diverse set of organization types (providers, payers, sub-state HIEs, public agencies) and geographic locations, while including organizations serving as much of the population as possible. The response pattern was consistent with the first survey's finding and determined that the majority of Michigan's health information exchange capability resides in collaboration with Michigan's hospitals and health systems.

The details of this analysis are noted in the following "readiness" sections.

3.1.1 Clinical System HIE Readiness

MDCH awarded planning grants to seven organizations in 2007 and 2008. These initiatives have been focused on convening stakeholders to develop a collaborative approach to implementing regional HIE. Each of these initiatives is at a different stage of development.

- **Greater Flint Health Coalition:** This planning HIE initiative was awarded a MiHIN planning grant in 2007 and is focused on a three-county region in the Flint, Michigan area. This initiative is facilitated by the Greater Flint Health Coalition.
- **Health Current:** This region represents five counties in the mid-south area of the state and Altarum Institute received a MiHIN planning grant from MDCH in 2008.
- **Michigan Health Information Alliance:** This MiHIN planning grant was awarded in 2007 to the Central Michigan University Research Corporation. This region comprises 11 counties in mid-Michigan.

- **Northern Michigan HIE:** Organized by the North Central Council of the Michigan Health and Hospital Association, the Northern Michigan HIE received a planning grant in 2007 to cover the 21 counties of Michigan's northern Lower Peninsula.
- **Southeast Michigan HIE:** The Southeast Michigan HIE (SEMHIE) planning grant was awarded in 2007 and is focused on five counties in the southeast Michigan area, which includes the greater Detroit area. This initiative is called SEMHIE. In February of 2010, SEMHIE received a \$3 million grant from the Social Security Administration to accelerate the disability claims process using the National Health Information Network.
- **Southwest Michigan HIE:** The Southwest Michigan HIE (SWMHIE) is facilitated by ChangeScape Inc.; it received a MiHIN planning grant in 2008. This initiative focuses on a five-county region that borders Indiana.
- **West Michigan HIE:** The MiHIN Planning grant for this 12-county region on Michigan's west side was awarded to the Alliance for Health in 2007.

Along with the seven HIE *planning* grants, MDCH awarded grants to two organizations in 2007 to *implement* HIEs. Described below, each organization was able to build a sustainable business plan, select an HIE vendor, and begin exchanging data among regional stakeholders.

- **Capital Area RHIO:** Capital Area Regional Health Information Organization (Capital Area RHIO)—a coalition of public and private community members, including physicians, health systems, businesses, health plans, and academic institutions from the Clinton, Eaton, and Ingham tri-county area of mid-Michigan—has selected Axolotl Corp. of San Jose to deploy its RHIO and has begun implementation with data being exchanged in the initial phase.
- **Upper Peninsula Health Care Network:** The Upper Peninsula Health Care Network (UPHCN) serves the 319,000 residents of Michigan's Upper Peninsula. Collaborative efforts among the network include sponsorship of the Upper Peninsula Poison Crisis Network, joint purchasing, mobile MRI services, education, publication of the physician directory, the U.P. Medical Library Consortium; the U.P. Teleradiology, Teleconferencing and Telemedicine Networks; and a reference lab network. The UPHCN continues to develop the Upper Peninsula-wide integrated information systems network to connect the U.P. hospitals, providing a cost-effective mechanism to access patient information and streamline patient care delivery.

Other community organizations have engaged in efforts to build sub-state HIEs. There are six community initiatives that are implementing key functions including e-prescribing, laboratory ordering and results delivery, prescription fill status and medication fill history, clinical care coordination, and quality reporting.

- **A3HIE :** The Ann Arbor Area HIE (A3HIE), serving the greater Ann Arbor area, comprises 220 physicians and 50 physician assistants from four primary care and specialty practices caring for more than 800,000 active patients. Currently, the practices share the following patient information: demographics, medications, allergies and current problems, and diagnoses lists. Physicians enter information into their practice's electronic medical record systems, and relevant details are "pushed" to the central data repository, where other partners can access and import them securely. There are more than 400,000 patient records in the repository.
- **Jackson Community Medical Record (JCMR):** JCMR is a joint venture of Allegiance Health and the Jackson Physicians Alliance. It was formed to improve the quality of patient care through IT and lower the total cost of ownership of an EHR system. JCMR currently connects 140 Jackson county physicians, who represent more than 80,000 patients.

- **Michiana Health Information Network (MHIN):** MHIN is a community HIE that serves more than 600 physicians and 2,500 clinical health care providers in northern Indiana and southern Michigan. MHIN provides secure, single-source access to patient clinical information, and connects health care providers with a clinical data repository, results delivery, clinical messaging, interfaces, and a fully integrated EHR.
- **MSMS Connect:** MSMS Connect is an electronic portal that was released in January 2009 by the Michigan State Medical Society (MSMS). This convenient, single-sign-on portal is a free benefit to MSMS members that securely connects physicians to patient information and each other for referrals and consultations, as well as to labs, patient registries, and other resources.
- **My1HIE:** Based in southeast Michigan, My1HIE enables physicians to share vital patient information and collaborate on patient care with other providers. My1HIE connects users to multiple clinical applications, including electronic prescribing, patient registry tools, e-labs, document managers, health plans, and more. All of these applications are interconnected and can be accessed with a unique user ID and password from any location with an Internet connection. Currently, 1,000 physicians use My1HIE.
- **Michigan Health Connect:** A nonprofit corporation founded by Spectrum Health, Trinity Health, Metro Health, Lakeland Regional Health System, and Northern Michigan Regional Health System with a purpose to advance the delivery and coordination of health care through collaboratively leveraging Medcity's information technology and clinical data exchange platform. Currently the organization has connected over 460 provider offices and 1,700 providers across 14+ Michigan counties with results delivery as well as laboratory and radiology orders. Other community hospitals and health systems have indicated they will engage with MHC to evolve a comprehensive health information exchange across Michigan.

Additionally, as noted in the survey section above, several of Michigan's health systems and hospitals have made considerable progress in the development of IT systems that form integrated delivery networks.

3.1.2 Administrative HIE Readiness

Michigan has a strong history of administrative HIE including electronic eligibility and claims transactions. The detail below describes three initiatives that are responsible for building the administrative HIE capacity in Michigan.

- **Blue Cross Blue Shield of Michigan Electronic Data Interchange (EDI) Clearinghouse:** The BCBSM clearinghouse has one of the highest rates of electronic claim submission in the nation. It processes more than 99 percent of facility claims and 92 percent of professional claims electronically. The BCBSM web portal is used by more than 95 percent of all Michigan providers, handling more than 70 million transactions in 2007. This web portal supports Michigan's Medicaid eligibility verification, as well.
- **Community Health Automated Medicaid Payment System (CHAMPS):** CHAMPS is Michigan's Medicaid Management Information System. The recently implemented system supports online provider enrollment, prior authorizations, claims submission, and beneficiary eligibility checking; it also provides an in-box for system alerts. CHAMPS processes and adjudicates all Medicaid claims. The new system is a secure Web portal that gives providers a single source for direct access to enrollment, claim information, and other Medicaid-based business functions.
- **Michigan Association of Health Plans (MAHP) Connect:** During 2009, MAHP launched an initiative to provide an Administrative Simplification Solution for MAHP members. This

solution enables the sharing of information from MAHP and MAHP members to their respective provider communities and provides. The overall objective is to capitalize on technology that will centralize common, non-competitive health plan related transactions performed by physicians and their staff. The MAHP Connect will provide: portal capability for providers to interface with multiple health plans; methods to increase the exchange of real-time administrative data between health plans and providers; and methods for integration of existing data exchange portals, practice management systems, and health plan websites to help reduce the need for 'double entry'.

3.1.3 E-Prescribing Readiness

In a 2009 study by Surescripts, Michigan ranked third in the nation for e-Prescribing with nine percent of Michigan prescriptions ordered through e-Prescribing. This percentage was more than double Michigan's 2007 rate. The following initiatives have played key roles in advancing e-Prescribing in Michigan.

- **Southeastern Michigan E-Prescribing Initiative (SEMI):** SEMI is a purchaser initiative aimed at increasing the adoption of e-prescribing in Southeast Michigan. Implemented in 2005, it is sponsored and funded by the local auto industry, BCBSM, and Medco. More than 3,800 physicians are currently enrolled in the program. Since 2005, more than one million prescriptions have been modified or cancelled due to adverse drug alerts.
- **e-Prescribing in Michigan Medicaid:** In 2008, the Michigan Legislature enacted legislation requiring MDCH to develop a three-year strategic plan for the implementation of electronic prescribing within the state's Medicaid program. The department's resulting plan focuses on two goals: (1) increase e-prescribing awareness and use in the Medicaid provider community, and (2) develop system capabilities to track and report Medicaid e-Prescribing transactions.

3.1.4 Other HIE Readiness

An analysis that solely focused on the healthcare related systems within the State of Michigan government found a robust and well-functioning set of services and systems that will both provide a benefit and receive a benefit from interoperating with a statewide HIE system like the MiHIN Shared Services. The analysis evaluated a variety of systems, including public health (systems used to record and monitor population health), health analytics (the MDCH data warehouse, a system to aggregate data from various health-related systems and enable analytics), and infrastructure (systems for security, electronic data transfer, identity management, Extract Transfer Load (ETL) tools and Service Oriented Architecture platforms).

Public health systems surveyed included the Michigan Care Improvement Registry (MCIR), an immunization history registry; the Michigan Disease Surveillance System (MDSS), a system used to monitor lab results and process submission of reportable conditions; the Michigan Syndromic Surveillance Systems (MSSS), which receives patient admission information from emergency departments across Michigan to analyze reported chief complaints to detect outbreaks; and the Bureau of Labs, the sole provider of many critical lab tests not done in the private sector.

The MDCH data warehouse meets the challenge of tracking individual clients of more than 27 separate health related services administered through MDCH and providing decision support

capability by integrating separate data sources into a single integrated environment. The integration of the separate program information has reduced health care fraud, increased the number of children tested for high blood lead levels, raised the number of children receiving immunizations, and improved the care coordination of Michigan's Medicaid population.

3.2 HIE Development and Adoption

Michigan has a strong history of utilizing stakeholder involvement to set the direction for Health Information Exchange. Over 200 Michigan healthcare stakeholders successfully developed an initial Strategic plan called the MiHIN *Conduit to Care* in 2006. Michigan then implemented this plan with an appropriation from the Michigan Legislature to provide planning and implementation grants as defined in section 3.1.1 Clinical System HIE Readiness.

In the fall of 2009, the State of Michigan sought funding from the Office of the National Coordinator for HIT to support continued planning and the implementation of state-wide health information exchange. Michigan used an open and transparent approach that leveraged the success of the MiHIN *Conduit to Care* in developing this Strategic Plan.

One of the initial activities of the strategic planning process was to review and refine the original vision, goals and strategies from the MiHIN *Conduit to Care*. This Strategic Plan for achieving statewide HIE development and adoption has been grounded in a highly participatory stakeholder-driven process based on the following updated vision, goals, strategies and approaches to continuous improvement.

3.2.1 MiHIN Vision & Goals

The MiHIN Vision, which has remained constant since its inception, is to foster development of HIE that will reduce the overall cost of care while at the same time increasing the quality of care and patient safety. This Vision is supported by the corresponding MiHIN goals, which include:

- Improve the quality and efficiency of health care delivery for Michigan citizens by accelerating the adoption and use of a collaborative model including health information technology (HIT) and health information exchange (HIE)
 - Minimize redundant data capture and storage, inappropriate care, incomplete information and administrative, billing and data collection costs
- Promote evidence-based medical care to improve patient safety and quality
- Encourage patient-centered care: Connect health care providers – clinicians and facilities – to ensure continuity of care for every patient
 - Increase patient understanding and involvement in their care
 - Enhance communication between patients, health care organizations and clinicians
- Promote national standards to guide the sharing of information and electronic data interoperability
- Safeguard privacy and security of personal health information
- Leverage existing health information systems
- Create a business model that balances cost and risk

- Implementing organizations must see sufficient value to justify their investment

3.2.2 MiHIN Strategy

The following domain-specific sections of the MiHIN Strategic Plan provide in-depth detail of the strategies that have been developed in support of ensuring that Michigan can realize the vision of the MiHIN. These strategies are summarized below:

Governance: Create a coordinated governance structure that leverages the Michigan HIT Commission to govern the statewide vision and creates a new entity to become the State Designated Entity made up of direct customers of the MiHIN Shared Services to govern the business and technical operations.

Finance: Create a self-sustaining organization by 2015 that relies on the direct customers of the MiHIN Shared Services, Sub-State HIEs and Payers, as its primary funding source.

Technical: Create a cost effective, scalable architecture, based on standards that provides for a set of statewide services that can be leveraged by all organizations that connect to the MiHIN Shared Services Bus.

Business and Technical Operations: Execute on a plan that provides value to Michigan consumers by incrementally deploying capability that satisfies the ONC clinical priorities and enables Michigan's providers to meet meaningful use while building out components of the MiHIN Shared Services.

Legal and Policy: Create a set of Privacy and Security policies that ensures the security of the information that moves around the MiHIN Shared Services Bus that meet national standards of interoperability while not causing an undue administrative burden on providers and consumers.

3.3 Medicaid Coordination

Michigan's Medicaid program has been a part of the Michigan (MDCH) since 1996. The integration of the Medicaid agency into MDCH has fostered many collaborative efforts improving the health care of Michigan citizens. One of the most effective initiatives implemented was the Medicaid supported data warehouse. The data warehouse is a component of the Medicaid Management Information System (MMIS) IT architecture.

Utilizing the data warehouse to improve the quality of care spurred Medicaid's involvement in Michigan's health information technology projects. The work group will also assist in the creation of a State Medicaid HIT Plan. The coordinated effort between the MiHIN and the Medicaid EHR Incentive Program provides an efficient means to advance EHR adoption and health information exchange. The Director of Medicaid Operations and Quality Assurance is an executive steering committee member of the MiHIN Program Office, serves as co-chair of the MiHIN Business Operations Work Group and is a voting member of the MiHIN Governance Work Group. There is Medicaid representation on the majority of the MiHIN planning work groups. The Director of Medicaid Data Management Division is a member of the MiHIN Privacy and Security Work Group and staff from the Medicaid Data Management Division is a member

of the MiHIN Technical Work Group. This collaboration with the MiHIN and the Medicaid agency allowed for the natural progression of coordination between the MiHIN project and the Medicaid EHR Incentive Program.

The Medicaid EHR Incentive Program is also led by the Director of Medicaid Operations and Quality Assurance. Several of the MiHIN Program Office staff are members of the Medicaid EHR Incentive Program planning initiative. The State's HIT Coordinator is a member of the EHR Incentive Program planning steering committee. The MiHIN Project Lead is a member of the Medicaid EHR Incentive Work Group. The Medicaid EHR Incentive Work Group was charged with developing the Michigan Department of Technology Planning – Advanced Planning Document (HIT P-APD).

Through the coordinated planning process of the MiHIN and the Medicaid EHR Incentive Program, two shared objectives were identified. Both initiatives seek to accelerate Medicaid beneficiaries' coordination of care and streamline eligible professionals' meaningful use reporting requirements through the secure electronic exchange of health information.

The strategies Michigan will take to accomplish these objectives are:

1. To continue the coordinated planning efforts of the MiHIN and the Medicaid EHR Incentive Program
2. To leverage existing State of Michigan health information technology assets
3. To develop electronic services and directories shared between the MiHIN and the Medicaid agency.

Michigan will continue to have members from both initiatives participate in the planning and implementation efforts to ensure the shared objectives are accomplished. The project management of the implementation of the Michigan Medicaid EHR Incentives and the MiHIN implementation will be coordinated. An overall project plan will be developed to synchronize the timelines of the shared tasks and deliverables.

To improve the Medicaid beneficiaries' coordination of care, MiHIN Shared Services will leverage the data warehouse integration capabilities and extract pertinent administrative and clinical information making it electronically available in a Continuity of Care Document (CCD) format to Medicaid providers through the Michigan Health Information Network. MiHIN Shared Services in partnership with the sub-state HIEs will also leverage the repository capacity and analytical capabilities of the data warehouse to support the quality reporting requirements.

Michigan's Medicaid Management Information System (MMIS), Community Health Automated Medicaid Processing System (CHAMPS) will be enhanced to aid in the administration and monitoring of the Medicaid EHR Incentive Program. CHAMPS will also be leveraged to streamline eligible professionals' meaningful use reporting requirements. Eligible professionals will be able to report directly from their EHRs, sending the data through the sub-state HIEs into the MiHIN Shared Services and then into CHAMPS.

The success of the interoperability between the data warehouse, CHAMPS and EHRs will be dependent upon the shared services and directories of the MiHIN. The Medicaid IT infrastructure will utilize the MiHIN's core components such as the provider index, the enterprise master patient index and the security services. The sharing of the MiHIN core components will increase efficiencies and reduce the cost of the Medicaid EHR incentive program.

3.4 Coordination with other Federally Funded and ARRA Programs

Coordination with all ARRA programs in Michigan will continue to be accomplished largely through the facilitation of the State HIT Coordinator. The HIT Coordinator has convened a working group with members of all Michigan ARRA programs which includes: the State HIE Cooperative Agreement, the Regional HIT Extension Center, the Medicaid EHR Incentive Program, and the broadband initiatives. This group will continue to share information and leverage efforts to shared client communities in perpetuity.

The State of Michigan has been working to coordinate projects to successfully secure funds from the two ARRA Broadband programs. First round funding so far has resulted in over \$50 million ARRA dollars to be dedicated to Michigan to expand broadband infrastructure and public computing centers. Planning for second round is underway and additional investments are expected in Michigan as a result of applications. The infrastructure that is put in place as a result of these investments will enable data to be moved and shared at higher rates of speed between health care providers where bandwidth has been limited in the past, as well as help make it possible for more citizens to monitor health care from within their homes.

The State of Michigan has worked with many partners on a \$24 million FCC Rural Health Care Pilot Project. The Project will aim to connect over 500 rural health care sites via an affordable broadband connection to help foster the movement of health data to and from their clinics. The ability to reach the most rural clinics will help to improve the health care and reduce the costs of offering specialized care in rural and remote areas of the state. The project is currently in the request for proposal stages and is planning to have a contractor begin construction on the network as early as summer of 2010.

Benefits to the general health population are being increased by early implementation of public health use cases, lowering costs, increasing efficiencies, and raising the quantity and quality of data acquired for Michigan's immunization registry, syndromic surveillance system and disease surveillance system. These public health services existing relationships with cross-state and federal organizations, including the Centers for Disease Control and Prevention (CDC), will benefit those agencies in the same fashion: lowering costs, increasing efficiencies, and raising the quantity and quality of data.

Where gaps exist in the coordination with other federal programs, it is the responsibility of Michigan's HIT Coordinator to perform outreach throughout the state. The goal of the outreach is to identify issues of common concern and coordination plans will be devised and documented, both in the areas of population and organizational benefits.

4 Domain-Specific Components

With the support and funding provided through the State HIE Cooperative Agreement Program, the MiHIN will be able to maximize the public and private investments that have been made in HIT and HIE throughout Michigan. This funding will also assist in accelerating the implementation of the MiHIN vision by acquiring, implementing, and operating the technical and business infrastructure required to enable the secure exchange of health information within Michigan, with its neighbor states, and across the nation.

Beginning in the fall of 2009 more than 100 State and industry leaders and decision makers have led and molded the activities of the five domain-based MiHIN Workgroups. The result is this MiHIN Strategic Plan for acquiring, implementing, operating and sustaining the MiHIN Shared Services.

This section will present the MiHIN Strategic Plan by the domains based on the guidance of the State HIE Cooperative Agreement. Each domain will begin with an overview of the goals and guiding principles of that workgroup and conclude with the results of the planning process.

4.1 Governance

Full stakeholder engagement and buy-in of governance is critical to success of this and any other HIE initiative. Proper governance is needed to not only oversee business and technical operations of the MiHIN, but also to foster trust through transparency and inclusion, maintain a vision for Michigan and respond to public needs and concerns. The stakeholders of Michigan vigorously debated the full spectrum of governance options through the MiHIN governance workgroup. The following section details the strategy for the governance of the MiHIN Shared Services, which includes creating a new Governance Board and leveraging the experience and strong establishment of the Michigan HIT Commission.

4.1.1 Guiding Principles

The following guiding principles are based on the experience Michigan gained through the MiHIN *Conduit to Care* process and have been updated to reflect the current statewide and national HIT and HIE landscape. These guiding principles will serve as the foundation for the Governance of the MiHIN.

Guiding Principle 1: Michigan citizens are at the center of the MiHIN goals to improve patient care and population health.

Health information exchange in Michigan will be designed to benefit Michigan residents. Consumer privacy, security and confidentiality are paramount and as such the MiHIN will adhere to all federal and state laws regarding privacy and security to build trust.

Guiding Principle 2: The MiHIN will leverage existing and planned information technology.

Health information exchange will be made accessible to all naturally occurring and commerce-defined communities of providers by leveraging, and to the extent possible not duplicate, existing and planned information technology investments – State of Michigan, regional, community, private and other HIE initiatives.

Guiding Principle 3: Multi-stakeholder collaboration is needed to implement achievable and measurable initiatives.

Cooperation and collaboration on the implementation of health information exchange will drive innovation and change across the various stakeholders in the state as well as foster the sustainability and financial solvency of statewide HIE efforts.

Guiding Principle 4: The MiHIN will conform to applicable federal guidelines.

Statewide health information exchange will be designed and implemented to support Michigan priorities within the guidelines of the Office of the National Coordinator – Meaningful Use, standards, NHIN, etc. – in order to facilitate national health exchange and optimize funding.

Guiding Principle 5: Those that benefit should participate in paying the cost.

Long-term financial sustainability of the MiHIN will be dependent upon fair contribution from those who benefit.

Guiding Principle 6: Adoption and use of the MiHIN is critical to success

Since the benefit of statewide health information exchange comes from adoption and use, the MiHIN should be attractive to a broad range of healthcare stakeholders throughout Michigan and be designed and implemented in phases to deliver early results to support increased adoption.

4.1.2 Governance Model

The model for long term governance of the MiHIN was developed with the input of Michigan’s healthcare stakeholders and leverages existing organizations to fulfill all governance roles and responsibilities. The goal of the MiHIN governance model is to ensure broad-based stakeholder collaboration, oversight and accountability, efficiency and flexibility to align with nationwide HIE governance. The MiHIN long-term governance model will achieve these goals through a coordinated governance structure that includes utilizing the statewide vision and public structure of the existing Michigan HIT Commission and the creation a new MiHIN Shared Services Governance Board to allow those that directly benefit from and financially contribute to the MiHIN Shared Services to govern the business and technical operations.

4.1.2.1 MIHIN LONG TERM GOVERNANCE MODEL

In May 2006, the beginning of Michigan’s long-term governance emerged when the Michigan Legislature created the Michigan Health Information Technology Commission as an advisory

commission to the Michigan Department of Community Health (MDCH). The legislation creating the HIT Commission states that it will facilitate and promote the design, implementation, operation, and maintenance of an interoperable health care information infrastructure as well as advance the adoption of health information technologies throughout the state's health care system.

The law creating the HIT Commission includes the requirement for 13 members that represent specific Michigan healthcare stakeholders including; Consumers, Doctors of Medicine, Non-profit Healthcare corporations, purchasers or employers, pharmaceutical manufacturers, schools of Medicine, the HIT industry, third party payers, Doctors of Osteopathic Medicine, hospitals, pharmacists and representatives from the Michigan Department of Community Health and the Michigan Department of Information Technology. The HIT Commissioners are appointed by the Governor.

The HIT Commission will uphold the tenants of transparency and inclusion since it is, by statute, subject to the Michigan Open Meetings Act of 1976. As such, the Michigan HIT Commission holds all meetings in a public location with the opportunity for public comment on each agenda and widely publishes the meeting schedule, meeting minutes and agendas. The Michigan HIT Commission must provide the legislature with an annual report.

Leveraging the establishment and experience of the Michigan HIT Commission is a natural choice for specific roles and responsibilities for Michigan's Governance model. Since its involvement and integral guidance in Michigan's Health IT and Health Information Exchange projects since 2006, the HIT Commission brings experience and sustainability to the coordinated governance structure as well as transparency and a level of trust among stakeholders.

Under the coordinated governance model, the HIT Commission is responsible for the more expansive roles of the MiHIN governance related to HIE and HIT development and adoption, including, building consensus on principles, development of public policies, overseeing statewide performance, aligning the statewide and national vision and monitoring implementation.

In addition to the Michigan HIT Commission, a new governance board will be created to perform a specific set of roles and responsibilities, which will complete the coordinated governance model. This new entity will be a 501(c)(3) corporation established as the State Designated Entity accountable for the implementation of the MiHIN Strategic and Operational Plans. The new board will enable close alignment with the existing and emerging sub-state HIEs where health information exchange begins. This new entity of the coordinated governance structure will be accountable for the more focused roles including day to day business and technical operations, coordination with state programs including public health and Medicaid, building the statewide technical infrastructure for shared services and implementing sustainable finance structures for the MiHIN activities.

The table below illustrates a high-level division of the roles and responsibilities in the coordinated governance structure. The Michigan HIT Commission has a broad and diverse role

of guiding HIT and HIE policies that affect the entire state, where the newly created governance board will focus on the business and technical operations of the MiHIN Shared Services, as described in the Technology and Business Operations sections of this plan.

HIT Commission	MiHIN Shared Services Governance Board
<ul style="list-style-type: none"> • Setting consensus-based goals, objectives, and performance measures to achieve statewide coverage for all providers that relate to FOA requirements for HIE services • Overseeing diverse ongoing health information exchange activities to ensure compliant HIE practices, meeting targets for interoperability, and demonstrating health care improvements. • Navigating emerging opportunities and requirements to align state efforts with the NHIN, including standards and emerging governance. • Monitoring the implementation of statewide HIE technical infrastructure according to the agreed upon respective roles and responsibilities of local, regional and state level stakeholders, vendors and state government 	<ul style="list-style-type: none"> • Facilitating State Strategic and Operational Plan implementation • Ensuring the coordination, integration and alignment of efforts with Medicaid and Public Health programs through efforts of HIT coordinators. • Facilitating the implementation of statewide HIE technical infrastructure according to the agreed upon respective roles and responsibilities of local, regional and state level stakeholders, vendors and state government. • Developing public and/or private financing strategies and ensuring a sustainable business model is developed that supports and incorporates different types of HIE across the state. • Supporting business and technical operations as appropriate.

Figure 4. Role Delineation for the Coordinated Governance Structure

There are four major advantages of the coordinated governance structure. The structure leverages the success of the existing HIT Commission. It enables a broad, statewide view combined with a focus on the connection of sub-state HIEs. Keeping the two separate yet highly collaborative entities promotes efficient and effective decision making toward achieving the goals of statewide HIE while promoting broad stakeholder representation in accordance with the State HIE Cooperative Agreement requirements. The legislative oversight of the HIT Commission combined with the state representation on the MiHIN Shared Services Governance Board provide checks and balances by two branches of state government to the new, emerging statewide HIE.

4.1.2.2 GOVERNANCE MODEL: MEMBERSHIP AND DECISION MAKING AUTHORITY

As an advisory Commission to the Michigan Department of Community Health, the HIT Commission recommends policy and action to MDCH and provides recommendations to the Michigan Legislature annually, at minimum. The HIT Commission is made up of 13 members that are appointed by the Governor to represent stakeholders as specified in the legislation that created the Commission. Current members comprise:

- Gregory Forzley, M.D., of Grand Rapids represents doctors of medicine and is the Medical Director of Informatics for St. Mary’s Hospital in Grand Rapids, MI. Dr. Forzley is also the chair of the Michigan State Medical Society Board of Directors.

- Joseph Hohner of Canton represents nonprofit health care corporations and is the Senior Vice President, Chief Information Officer and Chief of Staff of Blue Cross Blue Shield of Michigan.
- Toshiki Masaki of Canton represents purchasers and employers and is the Public Policy Manager for the Ford Motor Company.
- Kimberly G. Ross-Jessup of Dewitt represents pharmaceutical manufacturers and is the Manager of Governmental Relations for Pfizer.
- Mark Notman, Ph.D., of East Lansing represents schools of medicine and is an Associate Professor and Chief Financial and Technical Officer for the Michigan State University College of Osteopathic Medicine.
- Janet Olszewski of Williamston is the Director of the Michigan Department of Community Health.
- Thomas Lauzon of Shelby Township represents health plans and other third party payers and is the Executive Vice President and Chief Information Officer for Health Plan of Michigan.
- Dennis Swan of Okemos represents hospitals and is the Chief Executive Officer for Sparrow Hospital.
- Ken Theis is the Director of the Michigan Department of Technology, Management and Budget.
- Larry Wagenknecht, R. Ph., of Haslett represents pharmacists and is the Chief Executive Officer of the Michigan Pharmacists Association.
- Robert Paul of Novi represents members of the health information technology field and is the Chief Operating Officer and President of Compuware Corp.
- R. Taylor Scott, D.O., of Williamston represents doctors of osteopathic medicine and surgery and is an Assistant Professor and Director of the Learning and Assessment Center at the Michigan State University College of Osteopathic Medicine.
- Robin Cole of Detroit represents consumers and is the Chief Operating Officer for Pro Care Health Plan.

The MiHIN Shared Services Governance Board will have decision making authority over the business and technical operations of the MiHIN Shared Services. The MiHIN Shared Services Governance Board will be established through articles of incorporation and bylaws that will guide the specifics of voting, financing and membership terms. The MiHIN Shared Services Governance Board will include a maximum of 13 board members. The initial board will include the following seats:

- Sub-state HIE (up to 7)
- Payers (up to 3)
- State government (2, including the Michigan Department of Community Health and Medicaid)
- HIT Commission Representative (1)

Formal integration of the two entities that comprise the coordinated governance structure will be a member sitting on each other's board. Currently, the categories of membership for the HIT

Commission is specified in legislation, so a legislative change will be sought to formally add a MiHIN Governance Board member to the HIT Commission.

4.1.2.3 GOVERNANCE MODEL: ALIGNMENT WITH NHIN

The coordinated governance model is well positioned to align with the emerging NHIN and nationwide HIE governance. As the Michigan SDE, the MiHIN Shared Services Governance Board is a key stakeholder of the NHIN. In turn, board membership of the MiHIN Shared Services Governance Board includes the key Sub-state HIE stakeholders throughout Michigan, providing a direct and cascading connection from the national level to each local healthcare enterprise within the state expected to exchange health information. This alignment will enable health information exchange intra state and well as across state lines in accordance with NHIN strategies and policies as the MiHIN Strategic and Operational Plans are implemented.

A major strength for Michigan is the ability to accelerate the MiHIN Governance model by leveraging the existing and proven HIT Commission in a coordinated governance structure. The HIT Commission adds the breadth and depth of statewide HIE stakeholders along with direct connections to the Executive and Legislative branches of the State of Michigan government. The HIT Commission's overarching vision for Michigan combined with the focus of the MiHIN Shared Services Governance Board over business and technology will ensure effective division of roles and give clear-cut domain responsibility. The current membership of the HIT Commission and proposed composition of the new MiHIN Governance Board enable optimum balance between broad stakeholder representation and flexibility to evolve in response to the evolving NHIN governance structure.

4.1.3 Accountability and Transparency

The coordinated governance structure is designed to optimize transparency and accountability. The coordinated governance structure of the HIT Commission and the MiHIN Shared Services Governance Board not only provides accountability through a checks and balance mechanism but also enables stakeholder buy-in and trust.

The Michigan HIT Commission is accountable to the Executive and Legislative branches of government as it falls under the auspices of to the Michigan Department of Community Health and is appointed by the Governor. Further, the HIT Commission provides recommendations and an annual report to the Michigan Legislature.

The MiHIN Shared Services Governance Board is also accountable to the Executive and Legislative branches of government as it will be created by designation as Michigan's State Designated Entity, which is a designation that is made by the Governor.

Both the HIT Commission and the MiHIN Shared Services Governance Board will be accountable to one another. The HIT Commission will include a member of the MiHIN Shared Services Governance Board (pending Legislative action) and the MiHIN Shared Services Governance Board will include a member of the Michigan HIT Commission. Further, as a standing agenda item, the MiHIN Shared Services Governance Board will provide a monthly

update to the Michigan HIT Commission. This will ensure cross-coordination and the necessary level of checks and balances.

Under the coordinated governance structure, there will be a continual need for stakeholders to continue to directly participate in the formulation of MiHIN activities, policies and standards through multiple mechanisms. In a near-term example, working committees will need to form to assist in the development of privacy and security policies and interoperability standards. The direction and monitoring of the working committees will be conducted in the already established open and transparent meeting practices of the HIT Commission.

The HIT Commission is required to adhere to the Michigan Open Meeting Act, Public Act No. 267 of 1976. The purpose of the Act is to strengthen the right of all Michigan Citizens by requiring public bodies to conduct nearly all business at open meetings. Meeting notices and minutes are also required to be publicly available. The HIT Commission's meeting schedule for the year as well as the meeting minutes and materials are posted on the Michigan Department of Community Health's website. The agenda always permits time for public comment. The HIT Coordinator is responsible for the HIT Commission's compliance to the Open Meeting Act.

4.1.4 State Government HIT Coordinator

The Michigan HIT Coordinator is a position that is housed within the Michigan Department of Community Health (MDCH), Health Information Technology Office and reports directly to the Chief Deputy Director of MDCH. With Michigan's strong history of state government involvement in health information, this position has been in place for over three years and is well established in the MDCH organizational structure. Michigan's HIT Coordinator is positioned to guide state government involvement in all Michigan HIT and HIE programs as well as related programs funded under the American Recovery and Reinvestment Act of 2009, including the federal broadband programs.

The role of the state HIT Coordinator will be to ensure that State of Michigan government is sufficiently represented and involved in HIE throughout Michigan. Michigan's HIT Coordinator, Beth Nagel, is the manager for the Michigan HIT Commission and will play an integral role in ensuring that the Michigan HIT Commission fulfills all roles and responsibilities through the coordinated governance model. The HIT Coordinator is a key liaison and point of coordination between the Michigan HIT Commission and the State of Michigan and HIT Commission representatives to the MiHIN Governance Board.

The Michigan HIT Coordinator is also responsible for the integration of the State of Michigan's public health reporting systems and the Medicaid information systems with the MiHIN. Further, the Michigan HIT Coordinator is charged with ensuring that the state of Michigan government is appropriately involved in all HIT and HIE related activities in Michigan.

The Michigan HIT Coordinator serves on Michigan's Regional HIT Extension Center's Executive Board and is a member of the Michigan Medicaid EHR Incentive Program steering committee, as well as a partner in Michigan's HIT Workforce initiatives.

4.2 Finance

The combined efforts of the Michigan Departments of Community Health and Technology, Management and Budget and the many Michigan Health Information Exchange stakeholders have resulted in the establishment of the guiding principles, the overriding strategy, and the underlying approach to the financial sustainability of the MiHIN Shared Services. This foundation not only guided the decisions and efforts that were required to develop the Strategic and Operational Plans for the MiHIN Shared Services, but will provide the ongoing guidance for financial decision making by the MiHIN Shared Services Governance Board.

4.2.1.1 FINANCIAL SUSTAINABILITY GUIDING PRINCIPLES

The Guiding Principles provide the fundamental framework for financial decision making for MiHIN, these are meant to shape all financial decisions for the MiHIN Shared Services through and beyond the State HIE Cooperative Agreement Program funding period, and in addition, these will influence other critical MiHIN business, technical, and operational decisions.

- Multi-stakeholder collaboration is needed for success
- The MiHIN Shared Services must be self-sustaining
- The MiHIN Shared Services business model must balance cost, value, & risk
- Stakeholders must see value to justify the investment
- The MiHIN Shared Services should leverage existing private and public HIT and HIE investments, and to the extent possible not duplicate these existing or planned investments
- Grants should be used to enable the launch and evaluation of a new value added service, but should not be relied upon for the long term sustainability of a service or for the MiHIN Shared Services itself
- Revenue should not be sought disproportionately from any one stakeholder or group of stakeholders; the Sub-state Health Information Exchanges and Healthcare Payers will be the initial and primary customers of the MiHIN Shared Services
- Those who benefit should participate in paying the costs; long-term sustainability will be dependent upon fair contribution from those who benefit including all who realize benefits such as those related to improvements in care, quality, patient safety, patient and provider satisfaction, reduced disparity in care, reduced redundancy in tests, admissions, visits and procedures, and improved communications resulting in cost reduction or avoidance
- The MiHIN Shared Services should be attractive to a broad range of stakeholders and be implemented in phases, as necessary, to deliver early results to promote adoption
- The MiHIN Shared Services must encourage adoption by being an open and non-proprietary network
- The MiHIN Shared Services must support participant access to non-MiHIN supplied HIT and HIE applications hosted by other participants or service providers

4.2.2 Financial Sustainability Strategy

The MiHIN Shared Services strategy for financial sustainability incorporates the guiding principles listed above and establishes the foundation for financial sustainability. The strategy is to implement a series of funding mechanisms that establishes an equitable and proportional allocation of costs across all MiHIN Shared Services customers. It directs the organization to utilize only those funding mechanisms that through an ongoing process of analysis and review achieve the following:

- Recognize that all who benefit from the values realized from the exchange of health information will equitably and proportionally participate in the financing and support of the statewide shared services network, and
- Optimize the use of the statewide shared services network by establishing a fee structure that encourages the adoption and use of HIT and the exchange of health information within and across Sub-state HIEs, thus further assisting eligible providers in achieving “meaningful use”, and
- Enable the extension and expansion of the capabilities, services, and benefits of the exchange of health information within the State of Michigan by ensuring that sustainable revenues are available to meet both current and future federal, state, and stakeholder service demands beyond the four years of the State HIE Cooperative Agreement funding (2010 – 2014).

4.2.3 Financial Sustainability Approach

The MiHIN Shared Services will evaluate and potentially utilize several different funding mechanisms to ensure the operational sustainability of the statewide shared services network beyond the HITECH grant funding period. The selected mechanisms will enable the equitable and proportional allocation of costs to the various stakeholders, will ensure that the pricing structures reflect the relative value of each service, and will as much as practical reflect the environmental, economic, and political circumstances affecting the delivery of healthcare in Michigan.

Startup & Pilot Stage - During this stage of initial operations (2010 and 2011) MiHIN financing will utilize funds provided through the State HIE Cooperative Agreement and the State of Michigan matching funds to cover planning, capital, operational startup, and pilot project implementation costs.

Production Stage - Beginning in 2012 with the first full year of production operations MiHIN will initiate the collection of access and usage fees from its primary customer base which includes the sub-state Health Information Exchanges and public & private healthcare payers. These fees will begin establishing the financial sustainability of the network. It is likely that the allocation of the fees to each of the primary customers will be based upon one or more factors that reflect some relevant aspect of its service base such as total population, number of hospitals, number of hospital beds, number of admissions, number of ER visits, number of ambulatory encounters, number of physicians, market share, number of covered lives, or other such statistical indicator

of potential impact and benefit. This equation will be finalized by the MiHIN Shared Services Governance Board.

Each sub-state HIE will determine the methodology it will use to allocate their MiHIN Shared Services fees across their customer base. This process will significantly simplify the MiHIN Shared Services revenue administration activities, and will take advantage of the revenue processes already in place in each sub-state Health Information Exchange.

Additionally, during this initial production period the MiHIN Shared Services may institute the use of additional access and usage fees such as membership, subscription, sponsorship, transaction, and fee-for-service fees to accommodate the addition of new customers and new statewide shared services. This evolving fee structure and the growing customer base will provide the sustaining revenue required to operate the MiHIN statewide shared services network beyond the State HIE Cooperative Agreement funding period.

Sustainable Production Stage - Finally, beginning in 2014 at the end of the State HIE Cooperative Agreement period, the MiHIN Shared Services will have established the statewide shared services and the customer base to provide the sustaining revenues it requires for operations without dependence upon additional grant funding or State of Michigan government subsidies. While grant funding will no longer be required for operational support, it is anticipated that additional grant funding will be sought to support the acquisition, deployment, and piloting of new statewide shared services.

4.2.4 Financial Sustainability Modeling

The MiHIN Shared Services will utilize financial sustainability modeling in two distinct stages to analyze, establish, and refine the fee structures required to generate the sustaining revenues. The first stage was initiated to support the Strategic and Operational Plan development processes. The second stage will be undertaken by the MiHIN Shared Services Governance Board once it is established and upon receipt of notice of ONC approval of the MiHIN Shared Services Strategic and Operational Plans and the associated funding.

Stage 1 modeling will utilize estimated operational and capital budgets generated from information and knowledge obtained from the analysis of existing operational HIEs, information obtained from an informal request for information process conducted with a few of the leading HIE software vendors, and from information obtained through the practical experience of the HIE consultants retained to facilitate this planning process. While these figures will certainly change once the MiHIN Shared Services undertakes its initial steps toward startup and implementation, they do provide a reasonable basis for these preliminary financial planning activities. The results of the Stage1 modeling are displayed in the table shown below, this includes operational and capital budget projections, and projections of the revenue required from each funding mechanism for each of the six years included in the modeling.

MiHIN Capital & Operating Budget and Funding Mechanisms Revenue							
Funding Source & Mechanism	CY-2010	CY-2011	CY-2012	CY-2013	CY-2014	CY-2015	Total
Capital & Startup Budget	8,419,811	4,768,607	268,650	242,250	181,687	0	13,881,005
Federal HITECH Grant	7,607,151	4,379,419	230,271	161,500	121,131	0	12,499,472
State of Michigan Grant Match	786,260	336,388	38,379	80,750	60,556	0	1,302,333
Stakeholders In-Kind Contribution	26,400	52,800	0	0	0	0	79,200
Operating Budget							
Operating Budget	0	0	1,617,182	1,635,945	1,879,158	1,935,641	7,067,926
Stakeholders In-Kind Contribution	0	0	52,800	52,800	52,800	52,800	211,200
Stakeholders Access & Usage Fees	0	0	1,564,382	1,583,145	1,826,358	1,882,841	6,856,726
MDCH Planning & HIT Commission Operating Budget							
Operating Budget	1,116,843	468,277	471,035	470,832	355,170	0	2,882,157
Federal HITECH Grant	1,105,603	423,233	406,195	318,381	240,174	0	2,493,586
State of Michigan Grant Match	11,240	45,044	64,840	152,451	114,996	0	388,571
Total Grant & State Match Funding							
Total Funding	9,510,254	5,236,884	739,685	713,082	536,857	0	16,736,762
Total Federal HITECH Grant	8,712,754	4,802,652	636,466	479,881	361,305	0	14,993,058
State of Michigan Grant Match	797,500	381,432	103,219	233,201	175,552	0	1,690,904

Figure 5. Stage 1 Capital & Operating Budgets and Funding Mechanisms Revenues

Stage 2 modeling will begin after the MiHIN Shared Services Governance Board has been created and upon receipt from ONC of the approval of the MiHIN Strategic and Operational Plans and the associated funding. In this phase the estimated operational and capital budgets developed during Stage 1 will be replaced with actual budgets that result from completing a

formal request for proposal process and from the implementation and ongoing support of the planned HIE pilot projects. This modeling is an ongoing process that will allow all factors including those listed below to be fully analyzed and periodically reviewed to ensure that the funding mechanisms remain aligned with the financing strategy and guiding principles, and that they continue to produce the required sustaining revenue.

- The impact, appropriateness, acceptability, and timing of each of these funding mechanisms as it relates to each stakeholder group
- The size and number of participants in each stakeholder group
- The timing of the delivery of each of the identified service priorities
- The extent to which the value of a given service can be determined and associated with one or more stakeholder groups
- The extent to which a given service has a directly associated ROI that can be associated with one or more stakeholder groups

Stage 2 modeling will enable MiHIN Shared Services Governance Board to finalize its initial revenue targets and establish the appropriate fee structures that will be incorporated into the stakeholder trust agreements thereby establishing the formal basis for financial support of MiHIN. Additionally, this modeling activity will allow MiHIN Shared Services Governance Board to develop a business plan that details the financial sustainability strategy and approach and submit it to ONC by the February 10, 2011 deadline.

4.3 Technical Infrastructure

The overarching goal of the MiHIN Technical Architecture is the secure and efficient exchange of patient's health care information to improve operational efficiency and patient care. The MiHIN Shared Services is designed as a network of networks with local providers connecting to sub-state HIEs which connect to the MiHIN Shared Services Bus (SSB) and then to the NHIN.

The technical architecture is designed to satisfy the following goals:

- Put current and comprehensive patient information in the hands of practitioners at the point of care.
- Electronically exchange clinical information between disparate health care information systems (e.g., hospitals, laboratories, physician offices, ambulatory treatment centers, and pharmacies) while maintaining the integrity and meaning of the information being exchanged.
- Facilitate delivery, access and retrieval of clinical data to provide safe, timely, efficient, effective, equitable, patient-centered care.
- Drive quality improvements and be patient-centered as opposed to driven by efficiency or cost reduction.
- Make HIE and HIT compatible and interoperable
- Institute business process and behavior changes at the provider level to facilitate the sharing of information.
- Align HIE and HIT incentives for the adoption of such technologies

- Free clinical data from their silos, transform it and deliver it securely, rapidly and reliably to the patient's caregiver;
- Aggregate and organize clinical data to inform physicians and other caregivers about the patient's complete history and treatment, thereby enhancing quality and patient safety;
- Promote the development of statewide master patient and provider indices and a record locator service (RLS)
- Identify and develop HIT and HIE solutions for medically underserved areas, technology challenged areas or areas falling between naturally occurring sub-state HIEs
- Promote national standards to guide the sharing of information and electronic data interoperability.
- Safeguard privacy and security of personal health information.
- Leverage existing health information systems.

4.3.1 Guiding Principles

This section contains an overview of the Guiding Principles and includes statements about how the MiHIN Shared Services must fit into the existing business and technical environment. The MiHIN Shared Services will be an open, scalable and extensible infrastructure that follows the following guiding principles:

- Be built from numerous vendor products which must interoperate
- Be vendor agnostic
- Support multiple communication protocols within reason (FTP, SOAP, Sockets, etc).
- Be a hybrid architecture that will not be entirely federated or centralized
- Comply with the latest interoperability standards but be practical enough to get something working
- Undertake an incremental approach to implementing a statewide architecture
- Be consistent with national industry standards (web services, etc)
- Focus on designing information exchange, not end-user applications
- Interoperate with sub-state HIEs
- Interoperate with existing state government systems like public health surveillance and reporting
- Use web services for real-time communications where feasible
- Interoperate with the NHIN
- Be highly secure and Health Information Portability and Accountability Act (HIPAA) compliant for all external communication paths
- Maintain the privacy of patient data
- Be extensible (capable of adding new functions or services easily)
- Be scalable (capable of adding more users, transactions, other volumes of work easily)
- Support delegated user authorization, authentication & administration
- Support auditing
- Be able to support data and analytical capabilities
- Be cost-effective to maintain

4.3.2 Technical Infrastructure Strategy

This section describes the strategic approach to the technical architecture design for the MiHIN Shared Services based on the priorities identified in the ONC Guidance for Meaningful Use and guidance from the State of Michigan. The MiHIN Shared Services is an infrastructure design that enables widespread interoperability among disparate systems. This design is both vendor agnostic and technology agnostic, and focuses on technical standards, protocols, and architectural patterns. The architectural design framework will guide detailed requirements definition, vendor selection and the implementation of the MiHIN shared services.

The intent of this technology infrastructure design is to look long-term at networking infrastructure and business models that support many different needs for information exchange and act short-term beginning with a few kinds of information exchange that encourage provider and organizational participation and generate cost savings that lead stakeholders to accept long-term financial participation in the networks.

The architectural details specified here are intended to accommodate implementation of the shared services bus while providing a framework that sets boundaries on the dimensions of technical implementation to ensure interoperability and consistent operation. Relevant interactions between the shared services bus and sub-state HIEs are described in this section.

Since standards are critical for long-term viability of the MiHIN the architecture has an overarching goal to be compliant with the national standards for healthcare interoperability recognized by the Secretary of the Department of Health & Human Services (HHS). Specifically, HHS recognizes interoperability specifications containing harmonized standards published by the Healthcare Information Technology Standards Panel (HITSP), and as such, the MiHIN is being designed as a HITSP-compliant and HITSP-consistent (where no direct conformance criteria exist) architecture. The approach to accomplish that goal will be described in this section.

As national standards for interoperability and data exchange are developed and adopted, MiHIN will advocate, promote, align with state standards and foster adoption of national standards by all Michigan HIEs. The use of such standards will provide organizations with the interoperability necessary to electronically move clinical information between disparate provider organizations.

4.3.3 Proposed Conceptual Architecture

The MiHIN Shared Services will be implemented using a service-oriented architectural paradigm (SOA), implemented through web services operating through an enterprise service bus (ESB), with a four-tier protocol stack. The Conceptual Architecture of the MiHIN Shared Services is depicted in the figure on page 30.

4.3.3.1 CORE DESIGN CONCEPTS

The design of the MiHIN Shared Services Bus is predicated on there being relatively few direct connections (<50). The idea is based on the common network design principle of segmentation

for performance, security and reliability. We expect that a significant amount of the patient data that needs to be exchanged will be within sub-state HIEs where the patient receives care. Just as networks use bridges, switches or routers to segment traffic we will expect that HIEs will segment traffic that can stay within the HIE and only route transactions to the MiHIN Shared Services Bus that must cross HIEs.

The MiHIN Shared Services Bus architecture is designed to accommodate a vast majority of the administrative and clinical use cases that support broad Health Information Exchange by implementing four core services. Those services are:

- **Developing a Security Framework** -Allows for the authentication of systems (nodes) and users and manages patient consent. Also implements appropriate security policies for role-based access and auditing.
- **Messaging** - The ability to “push” messages from one node to another and accommodate data translations required for each site.
- **Subject Discovery**- The ability to perform deterministic and probabilistic searches for patients across HIEs.
- **Query for Documents** - The ability to look up structured and unstructured data in the form of documents stored somewhere in the MiHIN network of data repositories.

Any use case which is predicated on connecting to a secure network and either pushing data or performing inquiries can be met with these core services. Of all the ONC priorities mentioned above the only one that could not be accomplished with these base services alone is ePrescribing which requires a fairly complex prescription ordering system.

MiHIN Conceptual Architecture

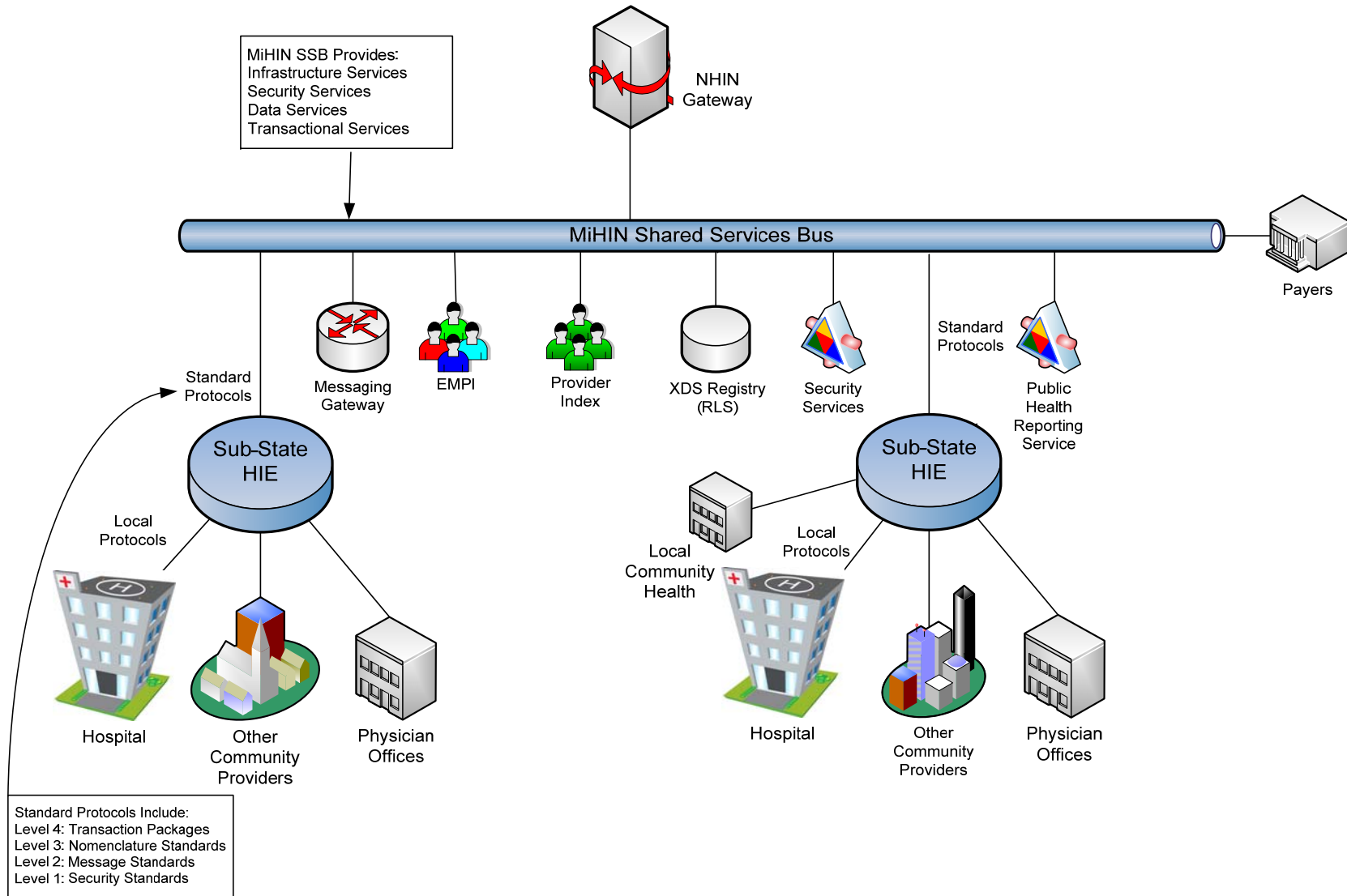


Figure 6. MiHIN Conceptual Architecture

MiHIN Shared Services is being designed with sub-state HIEs which provide “last mile” connectivity to providers and State of Michigan systems that are connected to the shared services bus for cross community interoperability and NHIN connectivity. This represents the best, most viable short term architecture with the most sustainable long term benefits. For a summary of alternative approaches considered, see Appendix 6.3 Alternative Approaches Considered.

4.3.3.2 DATA EXCHANGE COMPONENTS

NHIN Connectivity

This component provides communication to the Federal Government and other states. This connectivity is effective for communicating outside the MiHIN Shared Services.

MiHIN Shared Services Bus

This component provides the shared services bus connectivity and state-wide services for sub-state HIEs, ancillary data sources and connection to the NHIN.

Sub-state HIEs

Progress has already been made on establishing various models of sub-state HIEs in Michigan, some supported by public funding and some through private investment.

Since the sub-state HIE is central to MiHIN Shared Services architecture it is critical that a set of criteria be defined to designate an organization as a sub-state HIE. Designation as a sub-state HIE will allow an organization that agrees to adhere with the strategic and operational plans and optimize the use of statewide shared services to connect to MiHIN Shared Services.

Criteria were developed for each of the domains as follows:

- Governance
 - A sub-state HIE shall have a governance structure which includes representative members of participating stakeholder groups in the HIEs area of operations.
 - A sub-state HIE shall have a policy which addresses transparency and openness of its proceedings and decision making with the stakeholders it serves.
 - A sub-state HIE shall have a strategic plan
- Finance
 - A sub-state HIE shall agree to contribute on a monthly or otherwise designated frequency the apportioned MiHIN access and usage fees comprising their MiHIN Membership Fee.
 - A sub-state HIE shall provide MiHIN an annual report of its financial position
- Business Operations
 - A sub-state HIE shall commit to National (ONC, CMS, etc.) directives, standards and requirements regarding:

- Interoperating with EHRs certified by ONC approved certification bodies
- Meaningful use and associated timeframes
- HIE/RHIO certification
- Privacy & Security
- Audit
- Technical
 - A sub-state HIE shall be capable of all MiHIN technical specifications relevant to their operations, security policies and use cases. Minimum specifications include enabling subscribers to access patient clinical data including lab results and medication history and working towards providing all elements of CCD. MiHIN technical specifications will be published in Requirements Documents.
 - A sub-state HIE must be capable of supporting all MiHIN security specifications including the IHE Audit Trail and Node Authentication (ATNA) specifications for secure nodes and audit trails. The HIE must also support user authentication at the HIE level and the use of SAML assertions (of user identity) for all transactions across the MiHIN.
 - A sub-state HIE must be capable of supporting all MiHIN patient identity transactions.
 - A sub-state HIE must be capable of supporting all MiHIN Query for Documents (XDS.b & XCA) transactions and must deploy an XDS.b document repository.
 - A sub-state HIE shall enable bidirectional interoperability between locally connected health information systems (inpatient, ambulatory, pharmacies, clinician offices, health plans and the states) in areas of operation and provide the gateway to the MiHIN for "cross community" transactions.
- Legal and Policy
 - A sub-state HIE shall comply with all privacy and security requirements set by Federal and State law and MiHIN governance-approved policies. The compliance will be documented through written policies and procedures.
 - A sub-state HIE shall provide a written copy of their Data Use and Reciprocal Support Agreement in use

4.3.4 Interoperability

The long term plan for the MiHIN Shared Services Bus interoperability includes four core capabilities:

- Aggregating data and interconnecting providers via sub-state HIEs
- Connecting sub-state HIEs and providing a vehicle for the delivery of shared services
- Sharing clinical and administrative services and applications
- Providing NHIN connectivity for sharing data with other states and the federal government

This is a long term venture that will take substantial time and resources. To enhance interoperability the architecture focuses on several technical design paradigms:

- HITSP and other national and industry standards
- Vendor agnostic design
- NHIN design concepts
- “Shared Services Bus” to act as the broker for cross community interoperability
- Security framework that complies with state and federal regulations but is also straightforward to implement

4.3.5 NHIN

HHS has sponsored a large scale development effort to build a national health information exchange capability called the Nationwide Health Information Network (NHIN) that instantiates the HITSP standards into real networks and systems. The MiHIN will leverage the work of the NHIN effort in its architectural framework.

The MiHIN will support connectivity to the NHIN for data exchange with the federal government and other states with NHIN-compatible infrastructures.

We will support the NHIN core functions of Security Services, Subject Discovery, Query for Documents, and Retrieve Documents. NHIN Standards are mostly are still being tested but there is at least one case of limited production with the MedVirginia connection to the Social Security Administration using Connect Open Source. To meet these functional requirements we will follow the NHIN Trial Implementations specifications as follows:

- [Authorization Framework Service Interface Specification v2.2](#)
- [Messaging Platform Service Interface Specification v 1.9.8](#)
- [Patient Discovery Service Interface Specification v 0.9](#)
- [Query for Documents Service Interface Specification v 1.6.10](#)
- [Retrieve Documents Service Interface Specification v1.6.8](#)
- [Health Information Event Messaging v1.5](#)
- [NHIN Services Registry Specification v1.3](#)
- [Access Consent Policy Specification v0.3](#)
- [HIEM Profile Framework](#)

4.3.6 Interoperability with Federal Systems

The table below specifies the approach MiHIN will take to develop interoperability with federal systems.

System Purpose	Interoperability
Care for veterans	The MiHIN identify the sub-state HIEs that can work with the local Veterans Administration hospitals to develop mechanisms to connect to MiHIN or to the NHIN. This will be a longer term project and will depend on how the VA System decides to integrate into nationwide HIE.
Social security disability benefits	Investigate a working relationship with the Southeastern Michigan Health Information Exchange (SEMHIE) who was recently awarded a \$2.9M grant to

	connect to the Social Security Administration for disability benefits.
Tribal care	The MiHIN will identify the sub-state HIEs that can work directly with the local Indian Health Services (IHS) providers to develop mechanisms for these providers to connect to the MiHIN or perhaps to integrate this data by connecting to the NHIN. This will be a longer term project and will depend on how the IHS decides to integrate into nationwide HIE.
Public health reporting	There are several use cases are under consideration for the MiHIN that will support public health reporting. The Michigan Care Improvement Registry (MCIR) is a secure web-based statewide immunization information system accessed by more than 4,000 health care organizations. The Michigan Disease Surveillance System (MDSS) is a secure web-based statewide integrated surveillance system. MDSS has improved Michigan's ability to identify and track emerging infectious diseases and potential bioterrorism attacks. Both of these systems are intended to integrate into the MiHIN. Over time, the MiHIN will work with the federal government to use this system and the MiHIN to connect to the CDC and other federal agencies.
Emergency preparedness and response	<p>The Michigan Syndromic Surveillance System (MSSS) is a real-time surveillance system tracking and monitoring the chief presenting complaints from emergent care settings allowing public health officials and providers to rapidly detect and track unusual outbreaks of illness that may be the result of bioterrorism, natural outbreaks or other public health emergencies.</p> <p>The Michigan Health Alert Network (MIHAN) is a secure, Internet-based, communications and alerting system. The MIHAN contains a directory of over 4,000 participants from local health departments, hospitals, clinics and many other critical first responders across the state. It also includes many of Michigan's state government agencies. The MIHAN recently received Public Health Information Network certification from the CDC.</p> <p>These systems are intended to integrate into the MiHIN. Over time we will work with the federal government to use this system and the MiHIN to connect to the CDC and other federal agencies.</p>

Figure 7. Interoperability with Federal Systems

4.3.7 Interoperability with other States

The MiHIN will be designed using NHIN compatible standards and services which will allow us to perform cross-community services both within the MiHIN and to other states. As stated above we will support security, subject discovery, query for documents and retrieve documents services which will facilitate significant capabilities for inter-state HIE.

4.3.8 Medicaid and other State Systems

There are several Michigan Department of Community Health (MDCH) systems that could be connected to the MiHIN Shared Services. MDCH systems can be classified into two categories that represent the degree to which they would benefit from, contribute to, and impact the MIHIN Shared Services.

The first category is systems that should be early services on the MIHIN Shared Services. These are MDCH systems that require interaction with a number of providers across the state and benefit from two-way communication with those providers. These systems often provide information back to providers or act as a gateway to federal government agencies such as the

Centers for Disease Control and Prevention. These would be MCIR, State Lab System and Medicaid CHAMPS systems.

The second category is systems that can benefit from the MiHIN Shared Services infrastructure. These systems would benefit from automatic collection of relevant data or data exchanges with other systems. The MDSS, MSSS, Birth Registry, and Death Registry would be in this category.

State System / Medicaid	Interoperability
Michigan Care Improvement Registry (MCIR)	<p>The Michigan Care Improvement Registry is a powerful registry tool that has grown far beyond its original scope of protecting communities from vaccine-preventable diseases and to assure that the population of Michigan is appropriately immunized and that required child health prevention screenings are completed with the most efficient use of program resources. The MCIR is now a full-fledged population management registry and in conjunction with the state data warehouse provides analysis of at-risk populations.</p> <p>MCIR will interoperate with the MiHIN in several ways. First it will benefit by utilizing the master data management tools of the MiHIN specifically the EMPI for patient matching. Secondly it will benefit from the connection of EHR and other clinical systems into the MiHIN for reporting the vaccinations given to residents. Finally the MCIR can provide benefit to providers and patients by making vaccination records available to MiHIN users by populating a State of Michigan XDS repository that will be connected to the MiHIN.</p>
Michigan Bureau of Labs Systems	<p>The Bureau of Labs has one main lab system (StarLIMS) and a few other systems which provide lab data management and reporting for the State Lab.</p> <p>The state labs will benefit from two-way communications over the MiHIN by being able to receive lab orders from providers and being able to report back lab results. In addition the state lab should benefit from being able to report lab results to the CDC and other organizations using the MiHIN. Finally the state lab will be able to use the same State of Michigan XDS repository as mentioned for MCIR to make lab results available to users of the MiHIN.</p>
CHAMPS Medicaid System	<p>The Community Health Automated Medicaid Processing System (CHAMPS) is full featured payer system which provides the State of Michigan with nearly all the features they need for Medicaid patients. The system went live in early 2009. CHAMPS is capable of supporting all HIPAA transactions including:</p> <ul style="list-style-type: none"> • 270/271 Eligibility requests • 837 (P, I, D), 276/277 and 835 Claims set of transactions • 834/820 set of Managed care transactions • 278 PA transaction record <p>In addition the CHAMPS system has a JAVA Composite Application Platform Suite (JCAPS) interface engine which supports all HL7 transactions. The system has significant features that support interoperability with the MiHIN Architecture including support for PIX and PDQ transactions which would allow it to use the proposed EMPI and the Continuity of Care Document for populating patient records into a claims-based Medicaid health record.</p>
Michigan Disease Surveillance System (MDSS)	<p>The Michigan Disease Surveillance System (MDSS) will benefit from the MiHIN by allowing labs in the state to report their notifiable-disease test results electronically. Lab results can come from the state lab or private labs and can then use the MiHIN for reporting to the CDCP.</p>
Michigan Syndromic	<p>The Michigan Syndromic Surveillance System (MDSS) will benefit from the MiHIN by allowing emergency departments in the state to report their notifiable-disease</p>

State System / Medicaid	Interoperability
Surveillance System (MSSS)	diagnoses. Diagnoses or chief complaints can come from each hospital's emergency department probably in the form of an HL7 encounter transaction (A01) and can use the MiHIN for reporting to MSSS.

Figure 8. Interoperability with Michigan Department of Community Health Systems

4.3.9 Cross Community Interoperability

The MiHIN Shared Services is built to enable interoperability within an HIE and cross community (i.e., HIE to HIE). MiHIN Shared Services is designed to enable HIE to HIE communications as long as the HIE follows the MiHIN standards and implements some core and “middleware” technology.

HIE to HIE

Much of the core infrastructure necessary for integrating into the MiHIN Shared Services Bus must be in place to establish an HIE. On top of those core components will be a gateway layer which includes the services for interoperability with the MiHIN Shared Services Bus. The core components are:

Component	Description
Messaging Gateway	The messaging gateway or interface engine is the tool that provides network connections to data source and destination systems and can collect, translate and deliver messages. The messaging gateway is used inside the HIE and will be the infrastructure for sending and receiving messages from the MiHIN Shared Services Bus.
Enterprise Master Patient Index	The EMPI is the system used for collecting patient identities and resolving identity conflicts across sub-state HIE member organizations. Connection to the MiHIN EMPI will be through a Subject Discovery service as described below.
Record Locator Service	The Record Locator Service stores information on any data aggregated into the sub-state HIEs' federated data repository. There are several models used for this purpose but a typical one is for each member organization to have an edge server for storing this data. The RLS can also look up this data based on a user query. The RLS will interact with the MiHIN through a Query for Documents service.
User Directory	<p>Along with other security services that are internal to the HIE a User Directory must be maintained in order to authenticate users. The User Directory will connect to the MiHIN through a security service described below.</p> <p>Along with these core services MiHIN Shared Services will require each HIE to develop a set of gateway services which will allow that HIE to communicate across the shared services bus to other HIEs. These services will include:</p> <ul style="list-style-type: none"> ▪ Security Services ▪ Patient Identity Feed ▪ Subject Discovery ▪ Query for Documents ▪ Retrieve Documents

Figure 9. MiHIN Shared Services Component Description

HIE to Michigan Department of Community Health Systems

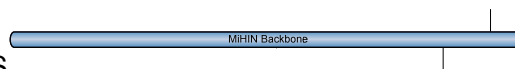
Interoperability from HIEs to the Michigan Department of Community Health Systems will work much the same as HIE to HIE. The HIE will develop their gateway and the Michigan Department

of Community Health must also develop a set of interfaces to expose their services as described above.

4.3.10 Technical Architecture/Approach

This section describes the components of the MiHIN Shared Services Bus (SSB) architecture. The symbols next to each component title reference the symbols used in Figure 1, the MiHIN Conceptual Architecture.

4.3.10.1 MIHIN SHARED SERVICES BUS



The MiHIN Shared Services will be designed as an Enterprise Service Bus (ESB) architecture. The ESB will be capable of supporting ESB nodes which can provide transaction services. The exact topology of the MiHIN ESB has not yet been designed (single instance or federated for example). The ESB will support one or more service registries for web services provided by secure nodes. Community HIEs will be required to be secure nodes and utilize a four level protocol stack for communication to the ESB.

4.3.10.2 EMPI/RLS



Enterprise Master Patient Index/Record Locator Service will be used for subject discovery (patient lookup) and content indexing services. This component can either be a single component or two separate components.

4.3.10.3 PROVIDER INDEX



This is an index of all care providers in the state. This could be part of the EMPI listed above or could be implemented as a User Directory.

4.3.10.4 MESSAGING GATEWAY



Used for all transaction-based services such as Lab Ordering, Results Reporting and Eligibility Checking. Primary function will be interface transactions and message translation. Nomenclature normalization will be expected to happen at the HIE level.

4.3.10.5 DATA WAREHOUSE/REPOSITORY



Data repository would be used for centralized storage of data for Public Health Reporting, Quality Reporting, Medical Research and Chronic Disease Registries.



4.3.10.6 SECURITY SERVICES

Security services will provide user authentication, access, authorization and auditing services. The User Directory will be a federated design and the MiHIN User Directory will be built by aggregating users from all connected sub-state HIEs or State of Michigan entities.

4.3.10.7 STANDARDS

The MiHIN architecture has an overarching goal to be compliant with the national standards for healthcare interoperability recognized by the Secretary of the Department of Health & Human Services (HHS). Specifically, HHS recognizes interoperability specifications containing harmonized standards published by the Healthcare Information Technology Standards Panel (HITSP), and as such, the MiHIN is being designed as a HITSP-compliant and HITSP-consistent (where no direct conformance criteria exist) architecture.

Since the intention is to follow the HITSP Standards there will be strict adherence to standards for the MiHIN Shared Services to promote an open and interoperable system.

For security, standard for the basis of the MiHIN Shared Services security architecture is the NHIN Messaging Platform v1.9 and the [HITSP Security and Privacy Technical Note TN900 v1.3](#). Most of the constructs we will use are described in TN900.

This specification is primarily concerned with the digital representations and mechanics of the security model. A trusted authority will issue digital certificates to all MiHIN nodes. These nodes use these digital certificates to construct encrypted and digitally signed messages between MiHIN nodes for sending, and to authenticate messages that are received. SAML tokens are used to transmit detailed information assertions about entities requesting information that are used to verify identity and check authorization and consent privileges. Auditable events are captured by each node and stored by that node. Auditable events can be retrieved using the [NHIN Audit Log Query Service](#).

4.3.11 Statewide Shared Services

Statewide shared services are broken out into Core Shared Services and Use Cases. While in the short term there will be additional costs to implement shared services bus core services, the potential to provide numerous state-wide shared services to Michigan providers and citizens will more than make up for the short term costs. These services represent the most significant long-term benefit of the architectural model.

4.3.11.1 CORE SHARED SERVICES

Patient Identity Feed

One of the primary functions of the EMPI will be the collection of patient demographics for Michigan residents. This will be accomplished by having each participating sub-state HIE or State of Michigan HIE send new patients and patient updates to the MiHIN EMPI in near real-

time. In addition the MiHIN Shared Services will need to be able to process patient merge and un-merge messages.

Subject Discovery

Other primary services provided by the EMPI will be patient matching using deterministic and probabilistic algorithms and cross community (HIE) patient inquiries.

Master Provider (User) Index

The primary uses of the Master Provider Index will be as both a provider database and a user directory. We will investigate connecting the Provider Index with the National Plan and Provider Enumeration System (NPPES) which is a national source of providers National Provider Identifiers (NPIs).

Query for Documents (XDS)

The Query for Documents service will be the primary way that users perform inquiry for clinical and administrative documents over the MiHIN.

Security Services

Security services will include state-wide trusted certificate authority for issuing digital certificates for Public Key Infrastructure (PKI). The security services must also host security policies most likely based on user roles. This is known as Role Based Access Control or RBAC.

It is not yet clear whether MiHIN Shared Services will need to have the identity of every provider and their authenticating credentials stored in the Master Provider Index described earlier. User authorization could just as easily be accomplished by using SAML (security access markup language) assertions in each message or inquiry request to the MiHIN and trusting each domain to have already authenticated the user. Security services must also implement audit controls.

4.3.11.2 LEVERAGING EXISTING STATE RESOURCES

It is an important task when designing a new infrastructure such as the MiHIN to consider how to leverage existing resources. Considering the complexity and overall costs of building a state-wide Health Information Exchange infrastructure is it imperative not to “reinvent the wheel.” However, infrastructure put in place must match the business and functional goals, and adopt the standards necessary to support state-wide HIE.

Simply because a component exists does not mean it can or should be reused for the MiHIN. Once the details are revealed, it could become too costly, too limiting from an interoperability point of view, or politically unpalatable to reuse existing assets. Four types of stakeholder or state government assets that might be leveraged as part of the MiHIN have been identified, which include:

- Existing Value Added Networks such as the claims processing network
- Existing Components such as EMPs at the state and other organizations
- State of Michigan systems such as the Michigan Care Improvement Registry

- Existing sub-state HIEs

4.4 Business and Technical Operations

Well thought-out and carefully considered Business and Technical Operations of the MiHIN Shared Services will be integral to success. The following section describes the Business and Technical Operations strategies that will be carried out to successfully implement the technology required to provide the HIE service priorities on a statewide basis and to run the day-to-day operations of the MiHIN Shared Services.

4.4.1 Business Technical Operations Strategy

The selection of use cases for initial implementation on the MiHIN was the result of deliberation of the stakeholders in the MiHIN Business and Technical Operations Workgroup. The initial focus was on prioritizing the HIE service priorities documented by the ONC in the Funding Opportunity Announcement. Several factors in the prioritizing of these services were analyzed including the degree to which each service improved healthcare outcomes and the healthcare workflow. Also, each priority was evaluated based on the size of the population of Michigan that it would affect, whether it supported the proposed Meaningful Use criteria in 2011, if there were known financial sustainability models or if the service is needed to develop HIE capacity in Michigan.

With careful review, data collection, an environmental scan, and debate by numerous stakeholders, the ranking of the HIE Service Priorities is:

1. Electronic clinical laboratory ordering and results delivery
2. Electronic public health reporting
3. Quality Reporting
4. Clinical summary exchange for care coordination and patient engagement
5. Electronic eligibility and claims transactions
6. Electronic Prescribing and refill requests
7. Prescription fill status and/or medication fill history

4.4.2 HIE Service Priorities

Based on funding constraints and other factors, only the top two service priorities were assigned use cases. The prospective use cases were developed based on a ranking that included several factors: such as clinical value, prevalence, stakeholder interest and the degree to which there were already existing technical standards.

In the top two HIE service priorities the following use cases were selected for implementation in the initial stages of the MiHIN Shared Services:

4.4.2.1 ELECTRONIC PUBLIC HEALTH REPORTING

Listed below are the use cases for the Electronic Public Health Reporting service priority.

- **Immunization event to MCIR:** a provider has administered a reportable vaccine. The information is reported electronically to MCIR, the State of Michigan system for immunization tracking.

- **Reportable laboratory result to MDSS:** a laboratory encounters a result that is required to be reported to a public health agency. The laboratory sends the required information to the required public health agency in a structured format suitable for consumption by an electronic system. MDSS is the State of Michigan system for disease surveillance.
- **Immunization history from MCIR:** a provider queries for the immunization history of a patient. Access and consent policies are applied. If allowed, MCIR provides the requested history in a structured format suitable for consumption by an electronic system.

4.4.2.2 CLINICAL SUMMARY EXCHANGE FOR CARE COORDINATION AND PATIENT ENGAGEMENT

Listed below are the use cases for the Clinical Summary Exchange for Care Coordination and Patient Engagement service priority.

- **Continuity of Care Documents (CCD) to ED:** a patient presents to the Emergency Department (ED). For treatment purposes, the ED requests the patient's longitudinal health record from its sub-state HIE. The sub-state HIE aggregates patient medical information available locally and via the MiHIN shared services, and then delivers it to the ED via a CCD.
- **CCDs to Physician Offices:** A provider requests an update to a patient's longitudinal health record from their sub-state HIE. The sub-state HIE aggregates patient medical information available locally and via the MiHIN shared services, and then delivers it to the provider via a CCD.

4.4.3 Medicaid Coordination

Currently, Michigan's Medicaid EHR Incentive program operations and technical requirements are being documented. Coordination between the MiHIN Shared Services and Michigan's Medicaid EHR Incentive program has been focused on educating on capabilities, leveraging resources and exploring potential areas of mutual benefit. There is a high level of management and staff cross-over between the two initiatives and that has facilitated a higher level of collaboration.

A working group comprised of staff from the Michigan Department of Community Health, which houses both Medicaid and public health, the Michigan Department of Technology, Management and Budget has formed to continually assess the current state of coordination and to work toward the most efficient and appropriate level of interaction with the MiHIN Shared Services.

4.4.4 Leveraging Existing HIE Capacity

Leveraging existing HIE capacity will begin by documenting capacities existing and under development across Michigan. Periodic environmental scans of operational status and new projects will be conducted.

The MiHIN Shared Services will use existing services where technically feasible and appropriate. Under the technical architecture, the MiHIN Shared Services will leverage the sub-state HIE activities to collect and aggregate data on sub-state levels.

To leverage the existing HIE capacity in Michigan, analysis of state-wide HIE resources has already begun. Regular updates to the survey and analysis will be conducted.

4.4.5 NHIN Strategy

The State will utilize the NHIN for information exchange between states and with federal agencies by deploying a state-wide accessible NHIN gateway as part of a future phase.

4.4.6 Human Resources

To ensure adequate human resources for HIE in Michigan, the MiHIN Shared Services will document in the Operational Plan expected staffing requirements for deployment and ongoing support.

There are two critical components to MiHIN Shared Services acquiring and maintaining human resources across geographies and organizations: (1) during initial pilot implementations and (2) for ongoing development of HIE state-wide.

Workforce needs for deployment and ongoing operations for HIE state-wide will be evaluated and re-evaluated on a continual basis.

4.4.7 Vendor and Program Management

Vendor and program management will occur through an implementation staff that will be selected by the MiHIN Shared Services Governance Board. Policies for program and vendor management will be established by the MiHIN Shared Services Governance Board. The implementation staff will be guided by the policies set by the MiHIN Shared Services Governance Board. Implementation staff will be responsible for overseeing technology implementation in accordance with the Operational Plan to include day-to-day oversight of vendor(s) and system integrator(s).

4.4.8 Risk Management

Risk Management will occur through the creation of a risk plan, documenting risks and mitigation strategies. A risk analysis and mitigation plan will address:

- Technical risk – e.g., technology is not properly operating
- Process risk – e.g., method for deploying does not fit current needs
- Strategic risks – e.g., problematic choice of use cases or architecture/sustainability/governance
- User Acceptance risk – e.g. providers and consumers are slow to see value in the methods or information shared via HIE

4.4.9 Deployment Strategy

The MiHIN Shared Services deployment strategy involves piloting a series of use cases in incremental steps that build upon one another.

The initial projects are being grouped into three phases – deploy, pilot and production. Each phase will deliver a specific functionality and will be the basis for building the additional functionality of later use case implementations. Each phase implements a use case that falls under one or more of the seven HIE service priorities that were set by the State HIE Cooperative Agreement guidance and were prioritized by the MiHIN Business Operations workgroup.

Please note that only the first two phases are funded under the State HIE Cooperative Agreement and associated matching funds. It is expected that Phase 3 will be funded using other grants and alternative funding sources.

The two phases of deployment represent use cases that require similar technologies. Once the technologies, policies and operations of each phase are implemented successfully, the next phase will begin. The projects build on one another in a way that establishes base capabilities, before adding functionality. All deployment phases will have an early proof-of-concept period, testing the capabilities of MiHIN and participant systems to read, format, transform and move data as discrete activities, separate from each other and allows the documentation of system capabilities and potential errors in discrete units. The total deployment time for the two phases is expected to be 12 months. It is estimated that the third phase can be completed in 6 months once appropriate funding is identified and Phase 1 and 2 are completed.

In Phase one, scheduled from October 2010 through March 2011, two use cases will be implemented. Phase one also requires the MiHIN core capabilities of security services, MPI and provider directory. During this first phase, technologies for results interfaces, terminology normalization, and immunization and external repository interfaces will be deployed. The first use case is to report lab results to the Michigan Disease Surveillance System (MDSS) and will enable the mandatory reporting of lab results from appropriate organizations across the state. The second use case is immunization reports to the Michigan Care Improvement Registry (MCIR) and will enable the mandatory reporting of vaccinations from administrating providers through sub-state HIEs to the MCIR.

In phase two, scheduled from April 2011 through September, three use cases will be implemented. The second phase requires an MPI, Shared (SOA) Services Bus, , and XDS services from the MiHIN core capabilities as well as the completion of Security Services. During this time, technologies for XDS inquiries, XDS repository interfaces and ADT interfaces will be deployed.

The third use case, immunization history from MCIR, enables the retrieval of electronic immunization histories. The fourth use case, physician notes via Continuity of Care Document (CCD), will enable the storage and retrieval of physician notes in the CCD format. This solves the problem of inadequate patient records during transfers of care and will result in better clinical outcomes. The fifth use case, clinical summaries will further enable clinical information

sharing between healthcare providers, solving the problems of inadequate patient records, resulting in better clinical outcomes.

In phase three, use cases six through eight will be implemented pending the identification of alternative funding sources other than the State HIE Cooperative Agreement and State of Michigan matching funds. The sixth use case, syndromic result to the Michigan Syndromic Surveillance System (MSSS), enables the transmission of emergency department admission to the MSSS. The seventh use case, lab results inquiry, enables a sub-state HIE to query across all persisted lab results, providing a central registry of lab results and enabling the transmission of the lab result from the repository to the sub-state HIE. The eighth use case involves the transferring of Medicaid Eligibility information.

The use cases will be deployed using the sub-state HIEs as pilot sites. Criteria will be developed by the MiHIN Shared Services Governance Board to select pilot participants. The criteria will cover technical, operational, financial and policy factors.

Deployed use cases will be limited to the pilot organizations for the initial deployment period. After three months of successful pilot operations, a six-month limited-production phase will occur. During the deployment phase, organizations interested in implementing the piloted use case will be solicited, evaluated, and selected for the subsequent phase, limited-production. During limited-production, a small number (less than 6) of organizations will implement the use case. This will allow the MiHIN to scale-up operations and test capacity before wide-scale adoption. Successful completion of the limited-production phase will occur when six months of critical-error-free operations have occurred. The use case and its deployed technologies will then be considered production and will be available to any interested organization. Piloting organization will receive funding to help offset the cost of implementing the use case.

The deployment strategy phases, implemented use cases and timelines are summarized in the figure ten on the next page.

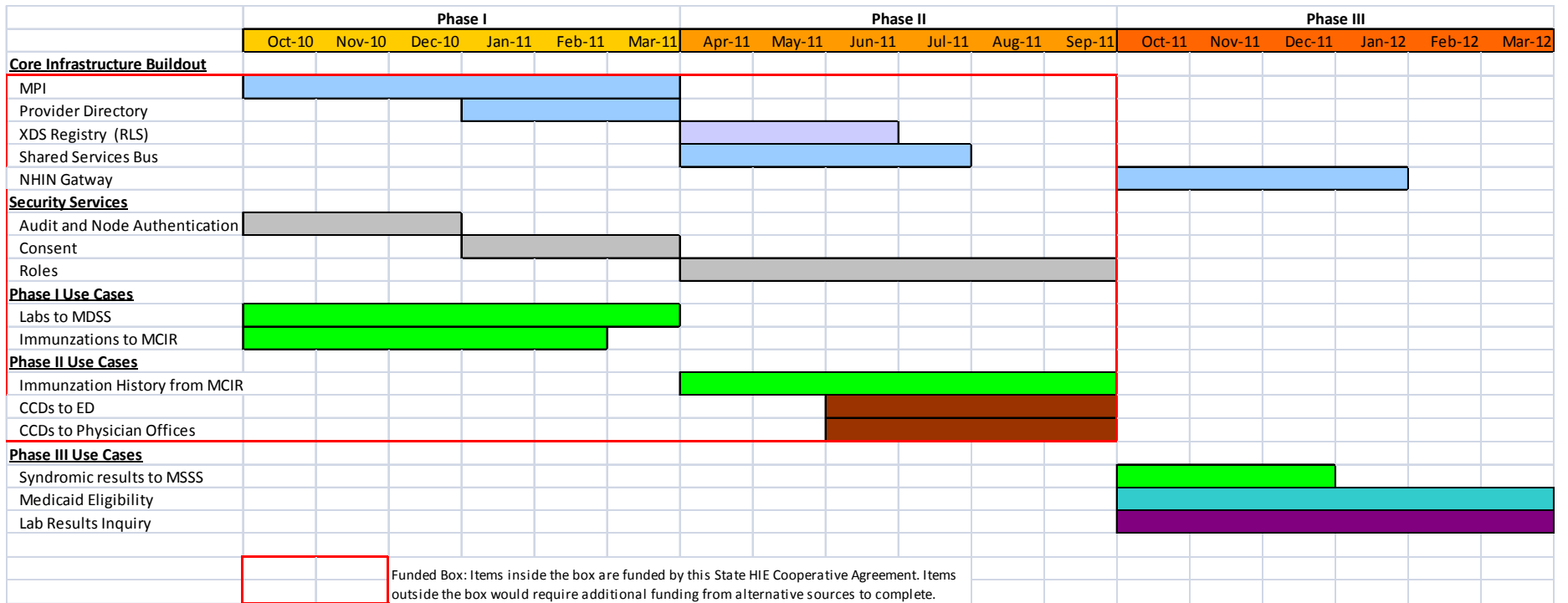


Figure 10. MiHIN Deployment Strategy

4.4.10 Outreach and Communications

The outreach and communications strategy of the MiHIN focuses on creating a message that can be delivered at 1) the provider level and 2) the consumer level. The Michigan HIT Commission will be responsible for determining the outreach and communications strategies for Michigan that have an overarching goal.

The provider level communications will be achieved by collaboration with other organizations, such as Michigan Regional HIT Extension Center - M-CEITA, the Michigan State Medical Society, and other healthcare provider organizations in Michigan. The provider-level communication will focus on the benefits of Health Information Exchange, the relationship between Health Information Exchange and the proposed Meaningful Use criteria, and the opportunities to engage in HIE in Michigan.

Communication and outreach at the consumer level will be done through utilizing community group meetings, public meetings, employer meetings and other available forums. Outreach on this level will be focused on assisting citizens in understand the direct benefits to their health of HIE, addressing privacy concerns, understanding potential impacts and educating on the privacy policies.

4.5 Legal/Policy

Michigan has been working on privacy and security policies for HIE since 2006. Utilizing a workgroup made up of a variety of stakeholders and volunteers has created the foundation for a shared vision that encompasses a unified approach to addressing security and privacy concerns.

4.5.1 Goals

The MiHIN Shared Services will focus on building consensus throughout Michigan by balancing the benefits of HIE and ensuring that privacy and security protections of health information appropriately protect consumers. The MiHIN Shared Services will build a statewide process for the ongoing development of legal guidance.

4.5.2 Guiding Principles

In order to manage the development of privacy and security as the MiHIN Shared Services grows, Michigan will rely on and prioritize the Nationwide Privacy and Security Framework principles that include; correction, openness and transparency, individual choice, collection, use and disclosure limitations, safeguards and accountability. As the MiHIN evolves, different principles will become more critical. The initial focus will be on openness and transparency, safeguards and accountability.

Additionally, Michigan will continue to build on its tradition of stakeholder input by continuing stakeholder involvement through the recommended creation of guidance bodies to address (1) privacy with a focus on policy, (2) security with a focus on technical standards and (3) sub-state HIE development.

4.5.3 Legal/Policy Strategy

Michigan will build on the foundation of accomplishments that began in 2006 with the MiHIN Conduit to Care project and the ONC's nationwide HISPC (Health Information Privacy and Security Collaborative) project to enable health information exchange, while protecting consumer privacy and security.

Existing federal and state laws already provide strong legal protections for patient health information. Like many other states, Michigan's legal protections expand upon those provided by federal law for protected classes of health information.¹ The MiHIN Shared Services will ensure that a high level of security and accountability with appropriate protections for patient information are in place, while ensuring no unnecessary barriers to HIE exist.

The ongoing development of a privacy and security policy framework will help to balance the protection and integrity of patient information while allowing healthcare providers to obtain necessary health information in a timely manner without undue cost and administrative burdens- ultimately benefitting the patient.

The security policies will contain minimum standards for participation in the MiHIN Shared Services. The privacy policies will also incorporate the minimum standards as well as offering comprehensive guidance for Michigan's newly developing sub-state HIEs. MiHIN Shared Services' work will provide the sub-State HIEs with needed clarity, alignment and certainty- as they continue to evolve and develop.

4.5.4 The Legal Framework

Governance of Privacy and Security will require a dynamic and innovative approach. Privacy and Security of health information is of critical importance to fostering and maintaining consumer trust and confidence in health care providers.²

- Shared vision and principles to guide planning
- Keep it reasonable and simple
- Plan short-term incremental implementation based on available resources
- Regularly review and evaluate progress

The Legal Framework's foundation has been established through Michigan's previous work on the MiHIN Conduit to Care Project³ and through the ongoing work of the Legal Workgroup and the HISPC project.

The workgroup is incorporating the HHS' "Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information"⁴ as well as additional

1. Health Information Security and Privacy Collaborative Harmonizing state Law Collaborative Final Report. March 31, 2009

2. Americans' Opinions about Healthcare Privacy. Ponemon Institute. February 1, 2010

3. Michigan Health Information Network; Conduit to Care: Michigan's e-Health Initiative. Dec. 2006

guidance from the ONC, GAO⁵, NGA's State Alliance for eHealth⁶ and other recognized federal policy committees and workgroups, along with relevant federal and state laws that will be utilized as tools to assist in reviewing and analyzing State laws. The main focus of the Workgroup was to set foundational concepts in place, along with identifying risks and benefits so that ongoing Workgroup bodies have a clear understanding of the work already completed.

The framework will help the workgroup build consumer trust by laying very clear principles confirming the critical role of consumer privacy and security, and more specifically that information will only be shared for purposes permitted or required by law or otherwise authorized by the consumer.

General framework principles:

- Acknowledge that consumer privacy, security and confidentiality are paramount to health information exchange but that consumer empowerment and control will occur over time
- Balance legal and regulatory barriers with the sharing of electronic health information
- Facilitate statewide consensus of legal opinion
- Provide guidance and minimum standards for HIEs in Michigan
- Promote safe and secure intrastate and interstate exchange of electronic health information
- Establish a MiHIN Privacy Committee to focus on legal and policy related issues
- Establish a MiHIN Security Committee to focus on technical and security related issues

4.5.4.1 INTRASTATE

MiHIN Shared Services will work with existing HIEs and other organizations and associations within the state to ensure the legal framework is reasonable and broad enough to embrace all of Michigan's Statewide HIE efforts. The workgroup will recommend Privacy and Security Officers from all of the existing sub-state HIEs actively participate in the ongoing work Privacy and Security work of the MiHIN.

Plans to address intrastate HIE include:

- Reviewing HIEs in other states
- Utilization of existing relationships within Michigan through other multi-state organizations and associations
- Update, review and analysis of Michigan's Comparative Analysis Matrix
- Continued drafting and updating of Privacy and Security policies for Michigan's sub-state HIEs that connect to the MiHIN Shared Services

4. Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information Exchange. Office of the National Coordinator for Health Information Technology, U.S. Department of Health and Human Services. Dec. 15, 2008

5. Electronic Personal Health Information Exchange: Health Care Entities' Reported Disclosure Practices and Effects on Quality of Care. United State Government Accountability Office Report to Congressional Committees. February 2010.

6. Policy Strategies for Advancing Interstate Health Information Exchange: A Report to the State Alliance for e-Health. October, 2009.

- Outreach and Education

The MIHIN conducted a survey among its stakeholders to identify issues that act as barriers to HIE. Armed with these preliminary findings, MiHIN can prioritize and begin to address the issues identified by the workgroup.

4.5.4.2 INTERSTATE

The MiHIN Shared Services will leverage agreements like the data use and reciprocal support agreement (DURSA) and the Inter Organizational Agreements (IOA) Trust Agreements (developed by the HISPC's IOA Collaborative) to help negotiate disparate requirements in an interstate exchange environment.

Michigan, like many other states, is in the early stages of HIE development. Interstate exchange will require considerable preparation. State laws that protect the privacy of health information differ from state to state and often narrowly target a particular health condition that is referred to as a specially protected class of health information.

At first glance, state laws that provide patients with privacy and security protections and access rights that are greater than HIPAA would seem to be a positive benefit. However, the patchwork of medical privacy laws creates barriers to the exchange of health information. Barriers range from the inability to exchange patient information for treatment purposes in a timely manner to inconsistencies in public health reporting and disclosures.

4.5.5 State Laws

MiHIN will conduct an updated review, analysis and ranking of Michigan laws related to privacy and security using the Comparative Analysis Matrix. This will include incorporating any changes or new information regarding laws related to health information, including the recent HITECH Amendments to HIPAA⁷, the Confidentiality of Alcohol and Drug Abuse Patient Records Regulation (42 CFR Part 2)⁸, and the Family Educational Rights & Privacy Act⁹ (addresses privacy of information held by certain educational institutions).

A comprehensive review of Michigan laws affecting the exchange of health information was undertaken in 2007 as part of Michigan's work on the HISPC project. The review was updated again in 2009, but will need to be re-analyzed given the many changes in health information exchange within the State and nationally. This review was developed by the Harmonization of Privacy Laws Collaborative and is also known as "the CAM".

The CAM (see Appendix 6.2) includes an inventory of nearly 150 subject matter areas typically addressed by state and federal law that involve or may impact use and disclosure of health information.

7. Pub. L. No.: 111-5, div. A, title XIII, 123 Stat. 115, 226 (Feb. 17, 2009).

8. 42 C.F.R. part 2.

9. 34 CFR Part 99.

There are four principles of analysis identified through HISPC:

- Laws must be surveyed: A survey of state statutory and regulatory law involving or affecting the exchange of health information (whether paper or electronic) must be conducted.
- Laws must be organized logically: Identified laws must be organized into logical subject-matter areas for review and analysis.
- Laws must be analyzed in relation to HIE: Each law (or gap in the state's law) must be reviewed and analyzed to determine whether a change in the law would facilitate HIE within the state.
- Feasibility of changing the law must be determined: For laws identified as requiring change, a consistent analytical process for determining the feasibility and priority of that change must be applied.¹⁰

4.5.6 Policies and Procedures

The Michigan HIT Commission and the MiHIN Shared Services Governance Board will work in a collaborative manner to finalize the high level Privacy and Security policies that will serve as the minimum requirements for Michigan's sub-state HIEs to connect through the MiHIN Shared Services. HIEs operating within the state will have to come to consensus on a minimum set of policies for how their participants will use the MiHIN Shared Services.

Enforcement of the policies regarding sub-state HIEs that are connected to the MiHIN Shared Services will be regulated by the MiHIN Shared Services Governance board. Under the MiHIN Shared Services Governance Board's direction will be a Privacy Officer and a Security Officer and respective stakeholder workgroups. In addition, a body composed of sub-state HIE privacy officers and a body composed of sub-state HIE security officers would also serve the state well, to promote reasonable policy development that would also meet with all state and federal laws.

Obtaining legal opinion will also be a critical component, whether those legal opinions are issued from the State of Michigan government or from a health law attorney- it is clear that in some cases, legal opinion will be necessary to give the appropriate reassurances to participants regarding policy choices.

The following recommendations are based on stakeholder input and have been created as an initial direction for Michigan HIT Commission and the MiHIN Shared Service Governance Board to collaboratively continue to refine for implementation. The initial policy directions are as follows:

- Individual Participant Policy for Informed Opt Out. An "Informed Opt Out" form, as well as standard language will be incorporated into each MiHIN participants' Notice of Privacy practices. The MiHIN Shared Services Governance Board must develop accompanying outreach materials for MiHIN participants. Generally the policy requirements are:

10. Health Information Security and Privacy Collaborative Harmonizing state Law Collaborative Final Report. March 31, 2009

- Allow the individual's health information to be shared through the MiHIN, unless and until the individual decides to "opt out". (and explains what the consumer will be opting out of)
 - Allow exceptions for the following:
 - "Break the glass" in case of a medical emergency
 - Public health reporting (only for legally permissible information)
 - One-to-one or direct transfers (movement of data via the MiHIN Shared Services that do not utilize the RLS functionality- or in other words, where data is being pushed out, rather than pulled in.)
 - Require additional information be added to the NPP of all participating providers.
 - Policy guidance calls for educational materials to be created and made available to consumers in a variety of media in plain English.
- Access- this policy will govern how and when PHI will be accessed.
 - Authentication- this policy will govern how users are verified to be who they say they are.
 - Authorization- this policy will govern the process for determining if the user has the right and ability to access the information they are requesting.
 - Audit- this policy will govern the requirements for oversight and keeping logs of who has accessed information and when they accessed it.
 - Breach- this policy will govern how HIEs will respond to breaches of health information. The HITECH amendments to the HIPAA Privacy Rule offer very specific guidance on reporting and these will be incorporated into the MIHIN policy.

4.5.7 Interstate Communication

In order to facilitate communication with other states, the MiHIN Shared Services will continue to build on the relationships it has formed with other states during the HISPC project. Michigan was one of 42 states and territories that worked in concert for 3 years, co-chairing two of the seven HISPC multi-state collaborative Workgroups.

Additionally, the MiHIN Shared Services will leverage its participation in other interstate activities, including the Great Lakes Border Health Initiative (GLBHI), which includes Ohio, Indiana Pennsylvania, Minnesota, New York and Wisconsin. The GLBHI is focused on addressing public health concerns, the NGA's work on the State Level Health Information Exchange and active participation in HIMSS.

Over several decades, states have passed laws to protect the privacy of health information. These laws differ from state to state and often narrowly target a particular population, health condition, data collection effort, or specific types of health care organizations. As a result, states have created a patchwork of privacy protections that are not comprehensive or easily understood.¹¹

11. Office of the National Coordinator for Health Information Technology. Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Information. Washington, DC, December 15, 2008.

Most states have enacted their own privacy laws that apply, in some cases unintentionally, to the electronic exchange of health care information. One of the impediments to interstate exchange is reconciling differing state laws and finding reasonable ways to facilitate exchange that both allows information to flow and meets the requirements of those differing laws.

The MiHIN Shared Services will address the following issues:

- Inconsistent laws addressing the disclosure or re-disclosure of information for treatment purposes.
- Inconsistent laws addressing the disclosure of “sensitive” patient information.
- Inconsistent laws addressing the disclosure of public health information (immunization records, communicable diseases, etc.) among states.
- Laws, designed for paper based HIE, which fail to address current modes of transmission and/or storage of electronic data. (Electronic Transmission/Electronic Signatures).
- Lack of uniform consent/authorization forms and policies

4.5.8 Trust Agreements

Data sharing agreements and data use agreements have been developed and the MiHIN Shared Services will utilize these agreements wherever reasonable. For health information exchange to take place among health care networks, all participants must adhere to a set of shared rules. In addition, the participants must define their relationships—community HIE to community HIE, state to state, and local and state to national—under state and federal law. Legal relationships are defined through data use, data sharing, or trust agreements or memoranda of understanding (MOU). These agreements or MOUs address the privacy and security responsibilities of the parties to the agreement.

Trust agreements or MOUs address the following (and other issues):

- The policies that establish who has access to health information
- What uses of information are acceptable
- The extent to which patients can give or withhold access to their information
- The design of privacy and security safeguards

The following intrastate and interstate agreements have been collected:

- National : DURSA¹²
- HISPC - Review agreements developed by the Inter -Organizational Agreements Collaborative¹³
- My One HIE (Southeastern Michigan based)

12 . Draft Data Use and Reciprocal Support Agreement, National Health Information Network Cooperative DURSA Workgroup. January 23, 2009; Data Use and Reciprocal Support Agreement (DURSA)for NIHIN Limited Production Pilot Activities. October 21, 2009.

13. Health Information Security and Privacy Collaboration (HISPC) Model Inter Organizational Agreements Public Entity Data Sharing Agreements and User Guide; Model Inter Organizational Agreements Private Entity Sharing Agreements and User Guide; Model Inter Organizational Agreements Health Information Exchange Agreement: Public Health Pilot. March, 2009.

- Capitol Area RHIO (Lansing, Michigan)

4.5.9 Stakeholder Endorsement

Stakeholder endorsement and alignment of MiHIN Privacy and Security goals is essential to ensure success of the project as a whole. For the MiHIN Shared Services that means “beginning with the end in mind,” and creating a vision of the project at its completion.

- Stakeholders value and understand the difference they are able to make through engagement.
- Stakeholder views feed into and influence strategic planning.
- Engagement is characterized by an open and honest dialogue

It will be the purview of the Michigan HIT Commission and the Michigan Department of Community Health (MDCH) to ensure stakeholder endorsement of the MiHIN Shared Services privacy and security policies and procedures. MDCH and the Michigan HIT Commission will undertake this activity with the MiHIN Shared Services Governance Board as the policies and procedures are further developed.

4.5.10 Oversight and Enforcement

Long-term policies will be developed and implemented to govern the oversight of statewide HIE and enforcement as the technology progresses. The Michigan HIT Coordinator is responsible for working with the MiHIN Shared Services Governance Board and the Michigan HIT Commission to develop a plan for complying with all applicable state and federal laws. This will be an evolving process as the applicable laws evolve and the privacy and security policies of the MiHIN Shared Services become finalized and formalized. The Michigan HIT Coordinator will explore multiple mechanisms for enforcing the applicable laws and will present this plan to the MiHIN Shared Services Governance Board and the Michigan HIT Commission for review, deliberation and approval.

Initially, oversight and enforcement for Michigan’s sub-state HIEs will be provided with assistance from a number of state and federal sources- primarily being federal regulations and laws and State HIE Cooperative Agreement guidance. The MiHIN Shared Services Privacy and Security Officers will oversee the day to day operations of privacy and security issues related to the MiHIN shared services, as well as offering privacy and security oversight to Michigan’s sub-state HIEs that are connected to the MiHIN Shared Services through the sub-state HIE Privacy and Security Officers. Primarily, the MiHIN will begin by focusing on federal laws, such as:

- HITECH, Health Information Technology for Economic and Clinical Health
- HIPAA, Health Insurance Portability and Accountability Act
- 42 CFR Part 2 Substance Abuse (Confidentiality of Alcohol and Drug Abuse Patient Records)
- FERPA, Family Education Rights and Privacy Act

- “Red Flag Rules” Part of the Fair and Accurate Credit Transactions (FACT) Act of 2003¹⁴
- Stark¹⁵
- Health Care Reform (Patient Protection and Affordable Care Act- H.R. 3590)

And State laws, such as:

- Michigan Social Security Number Privacy Act
- Michigan Identity Theft Protection Act
- Michigan Stark Rules

The MiHIN will assist sub-state HIEs in interpreting and complying with applicable federal and state laws by providing consistent outreach and guidance based on the priorities and challenges identified by the work group through the CAM and the Challenges Survey in the Operational Plan. In addition, policies, trust agreements and participant contracts will be developed and implemented to govern the enforcement of statewide HIE and sub-state HIEs.

¹⁴ The Federal Trade Commission (FTC), the federal bank regulatory agencies, and the National Credit Union Administration (NCUA) have issued regulations (the Red Flags Rules) requiring financial institutions and creditors to develop and implement written identity theft prevention programs, as part of the Fair and Accurate Credit Transactions (FACT) Act of 2003.

¹⁵ Three separate provisions, governs physician self-referral for Medicare and Medicaid patients. The law is named for United States Congressman Pete Stark, who sponsored the initial bill.

5 Summary / Conclusion

The MiHIN Strategic Plan is the result of a stakeholder workgroup driven process. The strategies contained in this plan have been based on the direction set by the 2006 MiHIN Conduit to Care and have been updated to align with the current HIE landscape in Michigan, the evolution of technologies and the State HIE Cooperative Agreement guidance.

Based on the investments and progress of health information exchange across Michigan, a strategy of establishing statewide shared services for the secure exchange of health information and NHIN connectivity has been developed. The MiHIN Shared Services will be designed as a network of networks with local providers connecting to sub-state HIEs which connect to the MiHIN Shared Services and then to the National Health Information Network.

This strategy will be realized by establishing the MiHIN Shared Services Governance Board that will hold the responsibility for finalizing the business plan for financial sustainability and implementing all the components of the MiHIN Operational Plan.

6 Appendix

6.1 MiHIN Workgroups

It is well recognized that stakeholder participation in the planning and implementation of HIE maximizes success. The State of Michigan can attest to this as the State successfully used this approach to develop the *Conduit to Care*, the initial version of the Strategic Plan, in 2006. At that time, over 200 stakeholders worked together to develop consensus on the initial direction for HIE planning in Michigan.

When the State of Michigan sought funding from the ONC to support further state-wide health information exchange in the fall of 2009, it was a priority for the State of Michigan to engage a broad mix of stakeholders for their feedback, input and buy-in. The State leveraged the success of the *Conduit to Care* in developing the MiHIN Strategic Plan and many of the same individuals have been involved in both initiatives and a similar workgroup process.

To encourage adoption for statewide services, the State opted to conduct the Strategic Planning using the five ONC-based domains as the focus of Workgroups comprising stakeholders from across the state. This phase of the MiHIN initiative was launched on November 10, 2009, with the MiHIN Workgroup Kick-off meeting. Janet Olszewski, Director of the Michigan Department of Community Health and Ken Theis, the CIO of the State of Michigan hosted the event. Over 200 stakeholders representing all stakeholder organizations as well as the nine regions of the state were in attendance.

Workgroups based on the ONC domains were formed to make recommendations for the Strategic and Operational plans. The key roles of each Workgroup are listed below.

- Governance – Key role is to develop the Governance Model to be used to implement the MiHIN and approve all of the deliverables produced by the other workgroups to assure all stakeholders' perspectives are appropriately represented.
- Business Operations – Key role is to recommend HIE business/clinical priorities, use cases to be included in the initial pilots and expected value.
- Technical – Key role is to recommend technical design, standards, architecture and approaches to HIE solutions.
- Finance – Key role is to recommend budgets and a financial sustainability model.
- Privacy and Security – Key role is to recommend HIE privacy and security protections of health information and on-going process for legal guidance.

The diagram below shows work structure, stakeholder input and interaction with and reporting to the State of Michigan. It also portrays how the Governance Workgroup was responsible for approving all the deliverables from the other Workgroups.

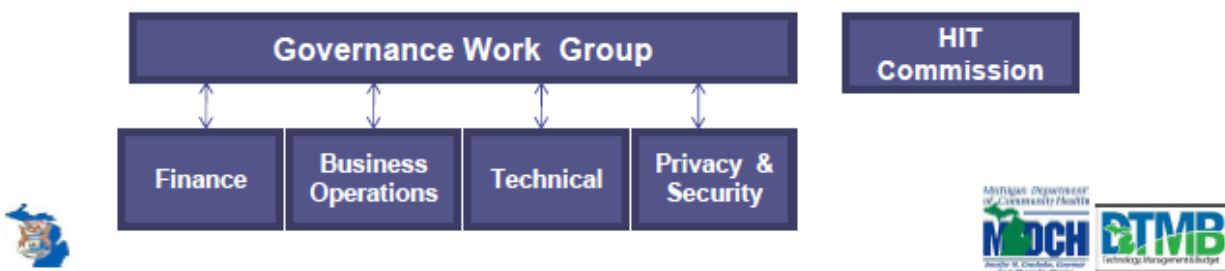
**Federal Administrative Office of the State HIE
Cooperative Agreement Program**

Office of the National
Coordinator for HIT

State HIE Cooperative Agreement Applicant

MDCH & DTMB

Stakeholder Input Structure



In addition to broad stakeholder representation and participation in the statewide HIE planning the State of Michigan placed a high priority on conducting the work in a manner that is as transparent as possible. Workgroup meetings are conducted at least twice a month. Although only voting Workgroup members vote, all interested stakeholders are invited to meetings and encouraged to participate. All meetings are open to the public, meeting minutes were posted publicly and during the meetings time was set aside for public comment. The State has also established an online work space where all documents and information are readily available for review.

6.1.1.1 MEMBERS SELECTION PROCESS

At the MiHIN Kick-off meeting on November 10, 2010, all stakeholders were invited to attend the first meeting of the Workgroups. In addition to reviewing objectives and work plans for the MiHIN initiative, the Workgroup selection process was introduced. The selection process was designed to meet specific objectives:

- To create workgroups that have broad stakeholder representation covering all entities and regions and including skill sets essential to the work of the individual workgroups
- To enable broadest stakeholder opportunity to serve as WG members
- To provide the most 'democratic' process for selecting voting workgroup members, considering the project's aggressive timeframe
- To provide broad stakeholder representation in the decision making for the MiHIN project as well as to align with ONC guidelines.

Roles and minimum requirements for each Workgroup were developed by the State of Michigan in advance of the Kick off session to include different types of stakeholders (providers, payers, public representatives), necessary skill sets (technical, finance, etc.) and geographic diversity (9 regions with mix of urban, rural representation). Co Chairs/Chairs for the Workgroups were appointed by the State in advance of the session. During the session, the 3 step selection process was announced and initiated:

1. All stakeholders throughout the state were invited to volunteer or nominate someone to serve in one of the roles required for each workgroup at the Kick off session, or within 1 week of the session.
2. Program staff collected the nominations, verified the nominees for each category and assembled the voting survey. Co-chairs were asked to review and nominate individuals to fill gaps in nominations for a geographic, organization type or skill set imbalance, to ensure a balanced, comprehensive representation of voting members.
3. Using Survey Monkey, the ballot was distributed widely and over 150 stakeholders cast a vote. The results were announced and posted on the MiHIN Website on November 24, 2009.

6.1.1.2 GOVERNANCE WORKGROUP MEMBERS

The Governance Workgroup was led by 2 co-chairs, 1 public, 1 private, who were appointed by the State of Michigan. The voting members and co-chairpersons are listed below along with the role and organization that they represent..

Name	Voting Member Role	Organization
Janet D. Olszewski	Co-Chairperson	Director, Michigan Department of Community Health
Larry Wagenknecht	Co-Chairperson	CEO, Michigan Pharmacists Association
John Barnas	Rural healthcare provider/clinic/hospital	Executive Director, MI Center for Rural Health
Bob Brown	Co-Chair of Business Operations Workgroup	Michigan State University / Kalamazoo Center for Medical Studies
Jocelyn Dewitt	Health System Executives	CIO, University of Michigan Health System
Helen Hill	Existing HIE Initiatives	Director IT Consulting & HIE, Henry Ford Health System and Southeast Michigan Health Information Exchange
Denise Holmes	Michigan Employer	Associate Dean Government Relations and Outreach, Michigan State University
Paula Johnson	Existing HIE Initiatives	Director, Upper Peninsula Health Care Network
Jim Lee	Provider Trade Associations	VP, Data Policy & Development, Michigan Health & Hospital Association
Margaret Marchak	Chair of Privacy and Security Workgroup	Attorney, Hall, Render, Killian, Heath & Lyman, PLLC
Sue Moran	Co-Chair of Business Operations Workgroup	Director, Bureau of Medicaid Program Operations and Quality Assurance, Michigan Department of Community Health
Richard Murdock	Insurer/Health Plan	Executive Director, Michigan Association of Health Plans
Patrick O'Hare	Health System Executives	SVP / CIO, Spectrum Health
Kim Sibilsky	Provider Trade Associations	Executive Director, Michigan Primary Care Association

Name	Voting Member Role	Organization
Dennis Smith	Chair of Finance Workgroup	CEO, Upper Peninsula Health Care Network
Ken Theis	Co-Chair of Technical Workgroup	CIO, State of Michigan
Rick Warren	Co-Chair of Technical Workgroup	CIO, Allegiance Health / JCMR

The workgroup was facilitated by John Evans and Sue Frechette of s2a Consulting.

6.1.1.3 FINANCE WORKGROUP MEMBERS

The Finance Workgroup was led by a public chairperson appointed by the State of Michigan. The voting members and co-chairpersons are listed below along with the role they represent and the organization they are from.

Name	Voting Member Role	Organization
Dennis Smith	Chairperson	Upper Peninsula Health Care Network
Timothy M. Jodway	Community hospital CFO	Northern Michigan Regional Health System
Donald Kooy	Health system CEO	McLaren Regional Medical Center
Stephan Ranzini	Banker/financier	University Bank
Valerie Glesnes-Anderson	Sub-state HIE	Capital Area Regional Health Information Organization
Janice Torosian	Payer/Insurer/Health Plan CFO	Health Plan of Michigan

The workgroup was facilitated by John Evans from s2a Consulting with assistance from David Allen from Dewpoint and Mike Mote also from s2a Consulting.

6.1.1.4 BUSINESS OPERATIONS WORKGROUP MEMBERS

The Business Operations Workgroup was led by 2 co-chairs, 1 public, 1 private, who were appointed by the State of Michigan. The voting members and co-chairpersons are listed below along with the role they represent and the organization they are from.

Name	Voting Member Role	Position and Organization
Sue Moran	Co-Chair	Michigan Department of Community Health, Bureau of Medicaid Program Operations and Quality Assurance
Bob Brown	Co-Chair	Kalamazoo Center for Medical Studies
Gary S. Assarian, DO	Laboratory representative	JVHL/Henry Ford Medical Laboratories
Leeland Babitch, MD, MBA	Chief Medical Information Officer	Detroit Medical Center
Christopher Beal, DO	Primary Care Physician	St. Johns, MI
Rebecca Blake	Provider Trade Association	Michigan State Medical Society
Michael Bouthillier	Pharmacy representative	Ferris State University
Bryan Dort	Hospital/Health System Representative	Alpena Regional Medical Center
Paul Edwards	Workforce development initiatives	Greater Flint Health Coalition
Mary Anne Ford	Existing HIE Initiative	Capital Area RHIO
Bernard Han	University health researcher	Center of WMU Health Information Technology Research and Services
Scott Monteith, MD	Specialty physician representative with EHR experience	Northern Lakes CMH/GTBM, PC
Betsy Pash	Public health representative	Michigan Department of Community Health
Timothy A. Pletcher	RHITEC representative	Central Michigan University Research Corporation
Sherri Stirn, BS, CPC	Rural Health Centers	Mecosta Heath Services
Deana M. Simpson, RN	Nursing	Detroit Medical Center

Name	Voting Member Role	Position and Organization
Linda Young	Home health representative	Borgess Visiting Nurse and Hospice Services
Peter Ziemkowski, MD	Primary Care Physician	Kalamazoo, MI

The workgroup was facilitated by Shaun Grannis, MD from s2a Consulting and Rick Brady from Dewpoint.

6.1.1.5 TECHNICAL WORKGROUP MEMBERS

The Technical Workgroup was led by 2 co-chairs, 1 public, 1 private, who were appointed by the State of Michigan. The voting members and co-chairpersons are listed below along with the role they represent and the organization they are from.

Name	Voting Member Role	Position and Organization
Ken Theis	Co-Chairperson	Michigan Department of Information Technology
Rick Warren	Co-Chairperson	Allegiance Health
Marcus Cheatham	Local public health	Ingham Co. Health Department
Doug Dietzman	Laboratory systems	Spectrum Health
Doug Fenbert	Hospitals & Health Systems	Trinity Health
Thomas Lauzon	Health plan/Insurer/Payer	Health Plan of Michigan
Paul G. Miller	Pharmacy systems	M.Sc., Pharm.D., R.Ph
Bill Riley	Behavioral/ mental health	Oakland County Community Mental Health
Dan Stross	Hospitals & Health Systems	Genesys Health System
Bruce Wiegand	FQHC	Michigan Primary Care Association
Mark Tuthill	Multispecialty group practice	MD - Henry Ford Health System
Ernie Yoder	Health research	MD, PhD, St. John Health System

The workgroup was facilitated by Mike Gagnon from s2a Consulting.

6.1.1.6 LEGAL/POLICY WORKGROUP MEMBERS

The Privacy and Security Workgroup was led by 1 chair who was appointed by the State of Michigan. The voting members and chair are listed below along with the role they represent and the organization they are from.

Name	Voting Member Role	Position and Organization
Margaret Marchak	Chair	Hall, Render, Killian, Heath & Lyman, P.C.
Moira Davenport-Ash	Security/Compliance Representative	CEI Community Mental Health Authority
Jeff Bontsas	Hospital Setting Representative	St John Health System
Denise Chrysler	MDCH Representative with Privacy experience	Michigan Department of Community Health
Darrell Dontje	MDCH Enterprise Security representative	Michigan Department of Information Technology
Chuck Dougherty	CIO representative	CEI Community Mental Health
George Goble	CIO representative	Trinity Health
John Hazewinkel	Attorney with HIE experience and HIE Privacy and Security Compliance Representative	Michigan State University
Glen Lutz	Compliance representative	Ascension Health
Melissa Markey	Attorney Representative	Hall, Render, Killian, Heath & Lyman, P.C.
Mike Tarn	Consumer representative	Western Michigan University
Nancy Walker	Compliance representative	Michigan Health Information Management Association
Shellie Weisberg	Consumer representative	ACLU of Michigan

The workgroup was facilitated by Kelly Coyle and Linda McCardel from the Michigan Public Health Institute (MPHI).

6.2 The Comparative Analysis Matrix

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
		Y/N	Y/N		Y/N
Subject Matter					
Privacy Specific Provisions					
Comprehensive general privacy act					
Comprehensive medical privacy act					
Constitutional right to privacy					
Restrictions on use of Social Security number				Freedom of Info. Act	
HIPAA-Based and Other Federally-Based Provisions					
Provisions adopting HIPAA requirements					
Provisions adopting other federally-based provisions				HIPAA (42 CFR Part 2)	
Health Information Provisions					
Health information exchange specific provisions					
Electronic health/ medical record specific provisions				HIPAA (45 CFR 164.302 et seq.)	
Breach of electronic security reporting - general	Identity Theft Protection Act (MCL 445.72: Notice of Security Breach; Requirements)			HIPAA (45 CFR 164.302 et seq.) HITECH	
Breach of electronic security reporting - health records	Identity Theft Protection Act (MCL 445.72: Notice of Security Breach; Requirements)				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Telehealth/ telemedicine provisions					
Electronic signatures	Uniform Electronic Transactions Act (MCL 450.831 : Terms and conditions for using electronic signatures and information of business transactions) Public Health Code- (MCL 333.17753 : Centralized prescription processing, etc.)			Federal E-Sign Law (15 U.S.C. 96)	
Personal health records					
Uniform Electronic Transactions Act	Uniform Electronics Transactions Act (MCL 450.832 to 450.846 : Electronic signatures and information of business transactions)				
Technical security of electronic systems provisions				HIPAA (45 CFR 164.312)	
<u>Health/Medical Records in General</u>					
Records retention requirements	Public Health Code (MCL 333.16213 : Retention of Records; MCL 333.20175 : Patient records) Release of Information for Medical Research and Education (MCL 331.531 : Disclosures to peer review entities) Michigan Court Rules (MCR 2.314 : Release of medical information by subpoena)			HIPAA (42 CFR 482.24, 431.306)	
Patient access	Release of Information for Medical Research and Education (MCL 331.531 : Disclosures to peer review entities) Revised Judicature Act of 1961 (MCL 600.2157 : Waiver of physician-patient privilege)			HIPAA (42 CFR 431.306 d)	
Ownership of medical records	Public Health Code (MCL 333.16213 : Retention of Records; MCL 333.20175 : Patient records; MCL 333.20175a : Agreement with another health facility to protect, maintain and provide access to records, etc.)				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Accounting for disclosures					
Specific redisclosure prohibitions					
Redisclosure statement required				HIPAA (42 CFR 2.32)	
Disposition/ destruction of records	Public Health Code (<u>MCL 333.20175</u> : Patient records; <u>MCL 333.20175a</u> : Agreement with another health facility to protect, maintain and provide access to records, etc.)				
Consent/Authorizations					
Patient consent requirements	Mental Health Code (<u>MCL 330.1707</u> : Rights of Minor) Public Health Code (<u>MCL 333.5127</u> : Consent by minor for VD or HIV testing; <u>MCL 333.6121</u> : Consent by minor to substance abuse treatment; <u>MCL 333.17015</u> : Informed consent)			HIPAA (42 CFR 431.306 d; 45 CFR 164.510, 164.514)	
Patient authorization requirements				HIPAA (42 CFR 431.306 d)	
Disclosure for emergency situations	Public Health Code (<u>MCL 333.17015</u> : Informed consent)			HIPAA (42 CFR 431.306 d; 45 CFR 164.512)	
Minors					
Age of majority	Status of Minors and Child Support (<u>MCL 722.4</u> : Emancipation of minor) Age of Majority Act of 1971 (<u>MCL 722.52</u> : Adult of legal age, etc.)				
Emancipated minors	Status of Minors and Child Support (<u>MCL 722.4e</u> : Rights and responsibilities of emancipated minor; obligation and liability of parents)				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Age consent requirements - mental health	Mental Health Code (MCL 330.1498i: Notice to parent of hospital admission of minor; <u>MCL 330.1716</u> : Surgery consent; <u>MCL 330.1707</u> : Rights of minor; <u>MCL 330.1724</u> : Fingerprints, photographs, etc.)				
Age Consent requirements - other conditions	Public Health Code (<u>MCL 333.17015</u> : Informed consent for abortion) Marriage License (<u>MCL 551.103</u> : Persons capable of contracting marriage; age requirement; etc.)				
<u>Patient Proxies</u>					
Personal Representatives/ Executors	Medical Records Access Act (MCL 333.26263: Definitions)				
Guardians	Medical Records Access Act (<u>MCL 333.26263</u> : Definitions)				
Health Care Power of Attorney	Estates and Protected Individuals Code (<u>MCL 700.5501</u> : Durable Power of Attorney; definition)				
Health Care Power of Attorney - mental health	Mental Health Code (<u>MCL 330.1716</u> : Surgery; consent; <u>MCL 330.1433</u> : Assisted outpatient treatment, etc.)				
<u>Health Condition/ Situation Specific Provisions</u>					
Genetic information	The Insurance Code of 1956 (<u>MCL 500.3407b</u> : Nondiscrimination based on genetic information) Public Health Code (<u>MCL 333.17020</u> : Consent to genetic testing) The Nonprofit Health Care Corporation Reform Act (<u>MCL 550.1401</u> : Offering of health care benefits, etc.)			Genetic Information on Non-discrimination Act of 2008	

		More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
	Citation/ Link				
HIV/ AIDS information	Public Health Code (MCL 333.5114: Reporting HIV test results; MCL 333.5114a: Partner notification of HIV test results; MCL 333.5119: HIV test for marriage licenses; MCL 333.5123: VD, HIV or Hepatitis B tests for pregnant women; MCL 333.5127: Consent by minor for VD or HIV testing; MCL 333.5129: Communicable disease test results of prostitutes and intravenous drug users; MCL 333.5131: Confidentiality of HIV or AIDS test results; MCL 333.5133: Consent forms for HIV and AIDS testing; MCL 333.16267: Obligation to report positive HIV test results; MCL 791.267: Testing of prisoners for HIV)				
Sexually transmitted disease information					
Hepatitis C information	Public health Code (MCL 333.5123: VD, HIV or Hepatitis B tests for pregnant women)				
Adult mental health	Public Health Code (MCL 333.6521: Records confidential; disclosure; MCL 333.6111: Records confidential; limitations on disclosure)				
Children's mental health	Foster Care and Adoption Services Act (MCL 722.954c: Release of child's medical records, etc.) Mental Health Code (MCL 330.1498i: Notification to parent or guardian of hospital admission of minor)				
Communicable disease information	Rule 325.173: Reporting of Diseases and Infections Rule 325.181: Confidentiality of Reports			42 CFR Part 70	
Alcohol addiction	Rule 325.14304: Substance Abuse Treatment Program Patient's Right to Review Records Rule 325.14910: Content and Maintenance of Patient Records for Substance Abuse Treatment Programs			42 CFR Part 2	

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Drug addiction	Rule 325.14304: Substance Abuse Treatment Program Patient's Right to Review Records Rule 325.14910: Content and Maintenance of Patient Records for Substance Abuse Treatment Programs			42 CFR Part 2	
Reproductive rights	Public Health Code (MCL 333.17015: Informed consent, etc.; MCL 333.2834: Report of fetal death, etc.; MCL 333.9132: Consent of minor to provision of health care, etc.; MCL 333.2835: Abortion reporting)				
Minor wards of the state	Probate Code of 1939 (MCL 710.44: Consent to adoption; separate instrument, etc.)				
Adult wards of the state					
Reporting of abortions	Public Health Code (MCL 333.2835: Abortion Reporting; MCL 333.2837: Abortion-related deaths or complications; MCL 333.17015: Informed consent)				
Victims (domestic violence, sex assault, etc.)					
Futile Care Provisions					
Other proxies					
Provider Specific Provisions					
Pharmacy records	Public Health Code (MCL 333.17752: Prescription or equivalent record; preservation; disclosure; etc.)				
Emergency services (ambulance/ EMT)					
Health profession licensing	Public Health Code (MCL 333.16608: Health profession specialty field license, etc.; MCL 333.16196: License or registration of individual inducted or entering into service; continuation; notice; MCL 333.16221: Investigation of licensee, etc.)				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Health profession accreditation	Public Health Code (MCL 333.16148: Board; rules establishing standards for education and training; accreditation of training programs; etc.; MCL 333.20155: Facility accreditation and audits)				
Professional counselors	Public Health Code (MCL 333.18117: Confidentiality of counselor communications) The Revised School Code (MCL 380.1531: Requirements for issuing licenses and certificates and endorsements as qualified counselors etc.)				
Utilization, peer & quality review	Public Health Code (MCL 330.1143a: Confidentiality of peer review information for psychiatric facilities; MCL 333.21515: Confidentiality of hospital peer review records)				
Facility-Specific Provisions					
Hospitals	Rule 325.1028: Hospital Medical Record Requirements			HIPAA (CFR 42 482.24)	
School-based clinics					
Imaging labs and centers					
Testing and clinical labs	Rules 325.1743 and 325.1475: Laboratory Reports			HIPAA (42 CFR 493)	

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Assisted living facilities	<p>Public Health Code (MCL 333.21743: Confidentiality of clinical records by MDCIS, MDCH and nursing homes; MCL 333.21763: Confidentiality of communications by nursing home residents)</p> <p>Mental Health Code (MCL 330.1433: Assisted outpatient treatment, etc.; MCL 330.1469a: Treatment program as alternative to hospitalization; court order)</p> <p>Adult Foster Care Facility Licensing Act (MCL 400.712: Keeping and maintaining records and reports; etc.)</p> <p>Rule 325.20112: Nursing Homes' Policies for Access to Records</p> <p>Rule 400.14316 and Rule 400.15316: Maintenance of Resident Records by Adult Foster Care Group Homes</p> <p>Rule 325.1851: Records of Homes for the Aged</p> <p>Rule 325.1853: Content of Homes for the Aged Records</p> <p>Rule 325.20404: Life-Threatening Accidents or Injuries in Nursing Home</p>				
Drug & alcohol treatment facilities	<p>Rule 325.14304: Substance Abuse Treatment Program Patient's Right to Review Records</p> <p>Rule 325.14910: Content and Maintenance of Patient Records for Substance Abuse Treatment Programs</p>			HIPAA (42 CFR)	
Rehabilitation facilities					
Home health agencies					
<u>Payers/Insurance Company Provisions</u>					
Health insurance related provisions					

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
HMO provisions	<p>The Nonprofit Health Care Corporation Reform Act (MCL 550.1401(3)(e): Nondisclosure of genetic information; MCL 550.1406: Confidentiality of records; disclosure; etc.; MCL 550.1407: Complaint system; MCL 550.1604: Confidentiality: violation as misdemeanor; penalty)</p> <p>Rule 324.6405: HMO Contracts Rule 325.6805: HMO Patient Records Rule 325.6810: Confidentiality of HMO Clinical Patient Records</p>				
Medicaid/ Medicare related provisions					
Employer Specific Provisions					
EHR					
Provisions related to employers	<p>Rule 325.52116: Employer Retention of Medical Records Rule 325.70015: Employer's Duties as to Medical Records Rule 325.70111: Employer to Maintain Exposure and Exposure-Related medical Records</p>			HIPAA (45 CFR 164.308, 164.314, 164.501, 164.506)	
Preemployment screenings					
Employee assistance programs					
Public Health Reporting					
Newborn screening	<p>Public Health Code (MCL 333.5430: Newborn screening quality assurance advisory committee, etc.; MCL 333.5721: Reporting birth defects)</p> <p>The Nonprofit Health Care Corporation Reform Act (MCL 550.1401: Offering of health care benefits; etc.)</p>				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Vital records (birth/ death certificates)	<p>Public Health Code (MCL 333.2821: Vital records; MCL 333.2833: Recording death, etc.; MCL 333.2834: Report of fetal death, etc.; MCL 333.2835: Abortion reporting; MCL 333.2844a: Release of information to find missing persons; MCL 333.2888: Inspection and disclosure of vital records)</p> <p>Rule 325.3203: Confidentiality of Vital Records Collected by State Registrar Rule 325.3233: Listing of Marriages, Divorces and Deaths by Registrar</p> <p>Rule 325.3234: Inspection of Vital Records Maintained by Registrar</p> <p>Rule 325.3235: Security of Records Maintained by Registrar</p>				
State Department of Health reporting (reporting certain conditions to state)	<p>Public Health Code (MCL 333.16238: Confidentiality of information, etc.; MCL 333.16243: Reports, etc.)</p>				
Reports to other state agencies					
Immunization reporting	<p>Public Health Code (MCL 333.9206: Certificate of immunization required, etc.)</p>				
Registries					
Information sharing in public emergencies	<p>Public Health Code (MCL 333.20191: Infectious agent and emergency treatment)</p>				
State Facilities/Medical Records					
Other state facilities					
Public health clinics					
Correctional facilities (adult)	<p>Corrections Code of 1953 (MCL 791.234: Prisoners subject to jurisdiction of parole board, etc.; MCL 791.267: Testing of prisoners for HIV)</p>				
Correctional facilities (minors)					
State hospitals					
State Freedom of Information Act					
Penalties/Remedies					

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Statutory right to sue for damages related to health information	Public Health Code (MCL 333.21773: Involuntary transfer or discharge of patient; notice; etc.; MCL 333.20201: Policy describing rights and responsibilities of patients or residents; etc.)				
Common law right to sue for damages related to health information					
Criminal provisions - wrongful access					
Administrative penalties for wrongful disclosure					
Litigation Related Provisions					
Medical record subpoenas	Public Health Code (MCL 333.20175: Maintaining record for each patient; confidentiality; wrongfully altering or destroying records, etc.; MCL 333.7333a: Electronic monitoring system; MCL 333.16221: Investigation of licensee, registrant, or applicant for licensure or registration, etc.) Mental Health Code (MCL 330.1748: Confidentiality of Mental Health Records) MCR 2.314 : Release of medical information by subpoena MCR 2.506 : Compliance with Subpoena by Hospitals				
Patient/ provider privilege					
Workers comp disclosures	Workers Disability Compensation Act (MCL 418.230: Confidential records; power of court to subpoena records not limited)				
Law Enforcement					
DUI test results	Michigan Vehicle Code (MCL 257.625a: Arrest without warrant; availability of test results, etc.)				

	Citation/ Link	More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
Abuse & neglect	<p>Mental Health Code (MCL 330.1723: Obligation of mental health professional to report abuse or neglect; MCL 330.1748a: Use of mental health records as evidence of abuse or neglect)</p> <p>Public Health Code (MCL 333.2640: Provision of medical records for child abuse or neglect; MCL 333.16281: Disclosure of Child Abuse Investigation Records)</p> <p>Foster Care and Adoption Services Act (MCL 722.954c: Release of child's medical records, etc.) Child Protection Law (MCL 722.623: Individual required to report child abuse or neglect, etc.)</p>				
Other disclosures to law enforcement	<p>Uniform Crime Reporting System Act (MCL 28.258: Information for LEIN)</p>			<p>HIPAA (45 CFR 164.510, 164.512, 164.530) ; Patriot Act</p>	
Research					
Disclosures for research	<p>Public Health Code (MCL 333.2631: Reporting or sharing research information with MDCH; MCL 333.5703: Toxicological studies of Vietnam veterans)</p>			<p>HIPAA (45 CFR 164.512, 164.514)</p>	
Statutory Definitions					
Electronic Medical Record	<p>Child Protection Law (MCL 722.627: Central registry; availability of confidential records, etc.)</p> <p>Michigan Penal Code (MCL 750.492a: Placing misleading or inaccurate information in medical records or charts; etc.) Michigan Vehicle Code (MCL 257.207a: Electronic driver license status check, etc.)</p>				
Electronic Health Record					

		More Stringent than HIPAA for Patient Care?	More Stringent than HIPAA for Population Health?	References to Related State/ Federal Law & Legislative Proposals	Statutory or Regulatory Change Needed?
	Citation/ Link				
Health Information Exchange	Public Health Code (MCL 333.2503: Health information technology commission; creation, etc.)				
Health Information Organization					
Personal Health Record					
Consent	Rule 325.3828: Informed consent				
Authorization					
Privacy					
Confidentiality					

6.3 Alternative Technology Approaches Considered

The MiHIN is being designed with sub-state HIEs which provide “last mile” connectivity to providers and State of Michigan systems that are connected to the shared services bus for cross community interoperability and NHIN connectivity. This design is not the least expensive nor is it the most technologically advanced but we believe it represents the best, most viable short term architecture with the most sustainable long term benefits.

We reviewed the following architectural models and recommendations were reviewed and not pursued for the reasons noted below:

Single HIE

1. This model has one HIE for the entire state and all provider organizations plug into this HIE
2. Used successfully in small states (Vermont, Delaware, etc)
3. Not recommended for Michigan due to the number and scope of providers and because there are already HIEs in progress

Single HIE Vendor for all State HIEs

1. Single HIE vendor that provides HIEs for regions and then provides a custom gateway between HIEs
2. Not the primary model in any state and only one vendor is doing this
3. Could be less costly but not recommended due to the proprietary nature of the gateway and long term interoperability

HIEs playing the role of both HIE and Shared Services Bus

1. Each HIE builds the infrastructure for connecting organizations as well as the cross-HIE capabilities as a shared services bus
2. This is the model being developed in New York and possibly California
3. Creates a highly interoperable and flexible network
4. Not recommended due to cost and complexity

Shared Services Bus with Stakeholder Organizations plugged in directly

1. This is a Shared Services Bus with only standards compliant EHRs and other clinical systems allowed to connect
2. This is the Minnesota model
3. Depends on vendor EHR systems becoming fully standards compliant or organizations standing up the middleware (akin to our Private HIE)
4. Can be cost effective but vendors have made very slow progress towards being standards compliant
5. We are recommending this as part of our approach

Shared Services Bus with multiple HIEs

1. The HIE connects organizations and the Shared Services Bus connects HIEs
2. The closest model is in Virginia but many states considering
3. Creates a highly interoperable network but requires a middle layer to be developed for shared services bus connectivity
4. Keeps standards at the core and pushes non-standards to the edges

5. This is the **recommended** approach because it promotes both standards-based interoperability and timely implementation.