



**2015 Michigan NASCIO Award Nomination
Enterprise Information Management**

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Executive Summary

Michigan struggled with a half-hazard and decentralized approach to data management. Specifically, we had no framework to assist agencies in what types of open data to share on our open data portal. We lacked a standard data sharing framework that enabled agencies to share data with each another. We didn't have standards to help agencies classify data from a security and protection standpoint. We had each state agency storing redundant information about citizens and business – driving up costs and compromising data accuracy and integrity. We had pockets of data excellence and governance in some agencies, and limited success in others. We had no vision. On November 1, 2013, [Executive Directive 2013-1](#) was issued establishing a data sharing, data management and data governance priority across all state agencies. The State of Michigan would manage its data as a strategic asset. This paper will highlight a variety of before and after vignettes describing the success of this directive specific to multiple data efforts in Michigan.

Preliminary to the issuance of ED 2013-1, Michigan established a small enterprise information management team to help define the problem for Executive leadership. A sample study of five departments identified 108 systems that create/update identity information for 25.4M individuals and almost 1M businesses a year. These numbers far exceed the number of citizen's and registered businesses in our state. This same study looked at data share agreements. Sharing data across State departments is a lengthy and laborious process. We determined as many as 161 agreements exist across departments, with address being the most frequently shared data element. Our Department of Human Services indicated it took 9 months for a data share agreement to be written, reviewed, altered, finalized and signed by participating agencies. Generally each agreement was specific to two agencies and limited to a specific data system and a limited amount of data sets. Our public facing data share efforts were equally disjointed. We found that multiple agencies maintained their own "open data" websites embedded within their respective agency websites, contained in the broader state portal, www.michigan.gov. There was no single website dedicated to open data. Citizen developers had to navigate multiple sites to locate relevant data. These fundamental issues paved the way for Executive commitment for a unified state-wide data strategy.

Subsequent to ED 2013-1, state leadership formed an Enterprise Information Management (EIM) program chaired by the Governor's Legal Counsel and led by the Director of the Department of Technology, Management and Budget (DTMB). The directive requires participation and engagement by all Executive Branch departments and agencies to establish new and improved protocols for data sharing, management and governance. In 13 months, the state has significantly streamlined the data share agreement process, created new data classification standards to be applied universally to all state data and established a governance body that meets regularly to break down barriers and provide specific direction.

Business problem and solution description

Michigan has a wealth of historical and current data at our disposal, but lacked a clear policy for sharing that data. We restricted our ability to provide relevance to our data by self-imposed limitations. Our enterprise data warehouse holds over 20,000 data tables, consuming 27.5 terabytes of data. Over 10,000 users spanning 12 participating agencies have access to the data. The problem was, agencies only had access to their data. This became problematic as we began building data models in support of our enterprise fraud project, which began development in 2013. Discussions with other states pointed out the correlation of fraud in food assistance to the same bad actors making false medical claims. Likewise the inability to compare address of record across several programs limited our ability to establish false claims or spot anomalies between address of residence and where benefits (food and medical) were being secured. Income is another example. Income is reported in our Treasury department via tax filings. Our child support office uses income as a basis for establishing support. Our unemployment insurance agency uses income as a basis for determining benefit. They also use quarterly wage record data for validation purposes. Access to income data across multiple reporting sources would be of great benefit for both fraud prevention and to better validate need for income based assistance programs. The primary barrier was restrictive policy at both the state and federal levels for sharing this data across programs.

The shortage of a well-defined data strategy plagued efforts to make government more efficient. This problem wasn't limited to effective administration of state programs. Michigan has a significant amount of consumable data that we offer up to citizens via our open data portal. The problem was finding this data and then being able to use it. Several agencies had their own data portals. There was no uniform strategy for presenting the data, for updating the data or making the data accessible via application program interfaces. We also had redundant data offered by different agencies. For instance, geospatial data maintained by our center for geographic information and the Department of Natural Resources.

Michigan's challenge is not unique in the public sector, and the problem was not lack of funding to fix these problems, it was lack of strategic direction. These issues had been well known across government and was validated via a 2012 Gartner assessment of Michigan's ICT opportunities. We needed strong leadership to tell us to fix the problem. The decision to fix the problem involved several agency chief data stewards helping the Governor's Office craft a succinct Executive Directive that ordered state agencies to begin sharing data. Executive Directive 2013-1 had core mandates: Executive branch agencies to establish protocols for data and information sharing, management and governance; Establish a cross agency governance board to set policy, champion and resolve issues; Establish a centralized information management and analytics "service center" to help coordinate efforts across agencies and most importantly, create a "share first" environment for data sharing in a secure manner.

With the ED in place, Michigan quickly set about forming the Michigan Information Management Governance Board. This board consisted of Executive leadership from all state agencies. The board met bi-weekly and was supported by the enterprise information management office (EIM). The EIM office provided project management, research and overall operational support for the board. Within the first sixty days, the board settled on primary goals for year one:

- Enterprise data governance framework – including change management and issue resolution;
- Establishment of a data sharing agreement template that streamlines data share language and provides the legal basis for sharing data to affect administrative efficiencies. This was developed in conjunction with the State Attorney General Office;
- Development of a master data index to help agencies discern which data could be made publicly available, which data could be used internally, and which data was covered under confidentiality rules;
- Establishment of a data steward in each steering committee department – these positions would begin work on both data share agreements and data classification noted above; and
- Development of sample cross agency use cases to help agencies better understand the benefit of sharing data. Work in this area had been completed by Grand Valley State University to examine data correlations that can identify underlying causes for school absenteeism, education outcome in relation to neighborhood health. This was helpful in securing buy-in from participating agencies. Development of additional use-cases is on-going to further secure commitment from agencies and is a key tenant in our change management strategy. With this framework in place, Michigan quickly began demonstrating the significance of a “share first” policy backed up with metrics of demonstrable benefit.

Significance

By July 2014, Michigan had already crafted a master data sharing agreement across nine state agencies supporting the use of data to prevent fraud, waste and abuse in our food stamp, Medicaid and unemployment insurance programs. This was in direct support of the enterprise fraud project. Access to this data has positioned Michigan to quickly improve the operation of these three programs that together is responsible for the distribution of billions of dollars on an annual basis. Multiple stakeholders are benefiting with this access to data. New data models have been built across program areas that provide investigators alerts for potential waste and abuse, such as:

- A Michigan resident who is receiving unemployment benefits but does not have a state driver’s license, or an application for food assistance;
- A household who claims four dependents on a food stamp application but no dependents on a state tax filing; and

- A person receiving Medicaid benefits using a provider located miles away from where they use their food stamp card.

This new emphasis on data sharing not only benefits state programs, it helps us reduce federal sanctions for over-payments in programs supported with federal funding (i.e. food stamps, Medicaid, etc.).

The significance of Michigan's new data management strategy also extend to our citizens. We struggled with the low usage of our open data, averaging less than 500 website visits each month. To try and resolve, Michigan turned to our public / private thought leaders to organize a strategic advisory council to help us "brain-storm" how to cultivate interest and innovative uses of open data. This group applied for and received a \$50,000 grant from the Kellogg Foundation to improve our open data presence. One of the grant caveats was to collaborate with large and small start-up companies to advise Michigan on marrying open data with mobile technology. Together, we created a strategy for "citizen managed data". The idea is to create citizen data vaults that take advantage of open data in secure environments to give citizens unprecedented access to information. These data vaults became reality in January 2014 with the initial launch of our public / private funded [Open Data Portal](#) that s implemented as software as a service (Saas) from Socrata, Inc. The portal treats citizen developers as customers. We built a software model that helps citizens load a dataset and immediately generates an Application Programming Interface (API) through which the data may be manipulated. The API is restful with JSON, CSV, XML and RDF outputs. It highly versatile, suitable for sharing with desktops, web/application servers, mobile phones, and any device that can connect to the internet via Hypertext Transfer Protocol (HTTP). To further engage citizens, we seek input via an [online survey](#), to solicit citizen input. We've added 30 new datasets in 2014 spanning natural resources, registered voters, state offices, education outcomes, affordable housing and recreational locations.

Our strategic and tactical strategies governing open data came together for our inaugural community "Code Michigan" event held October 3-4, 2014. The premise of the event was to open up Michigan data to citizen's developers over a weekend period, and see who could build the "coolest" mobile application using the data. Three locations were selected for regional competitions. 18 corporate sponsors pledged \$31,000 in cash prizes. Collaboration with higher education partners built interest across college campuses. Social media (Facebook, Twitter, and Event-bright) helped build interest through targeted user groups. 78 data sets were made available via our portal. All told, we had 35 teams and over 100 citizens submit applications for evaluation by our judges. This partnership really highlights why Michigan's data strategy is special – no boundaries, just dedicated citizens, government and vendors working together to make a difference with open data.

Benefits

In 2013, Michigan secured \$3.1 million to begin the Enterprise Information Management Office. The funds could be allocated towards any effort that advances EIM consistent with the Governor's Executive Directive. The funds allowed us to supplement state staffs with project management and research assistance. Our first effort was to develop a standard data share agreement that would support multiple agencies. We had ten agencies volunteer to help draft language covering standard data elements, security and legal authority to share. This was done with counsel from our State Attorney General Office and the Governor's legal counsel. In under six months, we've crafted one agreement that replaces 150 existing agreements and is binding across the ten signatory agencies. This same template allows easy onboarding of new agencies needing data access. The elimination of the annual review and renewal process for these 150 separate agreements alone will save an estimated 12,000 staff administrative hours (80 hours per agreement across sending / receiving agency).

Parallel to crafting the enterprise data share agreement was work being done developing a data classification standard across state of Michigan systems. The data classification standard helps establish information ownership and provides a central point of control for security and access to data. It increases accuracy and integrity of information by controlling who is authorized to modify. Michigan now has a uniform approach for knowing what data needs to be protected and guidelines toward implementing security controls commensurate with the sensitivity of data. This project included all agency partners, our cyber-security unit and our EIM team. We gave chief data stewards an 8 step classification framework that helped them identify data classification level, security controls, safeguards and monitoring and evaluation. Completed for major system in November 2014, we now a uniform classification protocol in place for existing and future data needs. This alone will help reduce numerous material audit findings across IT systems for weaknesses in data control and access. Thousands of hours used in audit remediation steps will now be avoided for current and future systems. The parallel work on data share and data classification "paved the way" for development of fraud models spanning multiple data-sets maintained by different agencies. Our enterprise fraud project launched food assistance fraud models in March 2014. Name and address and income anomalies between systems helped our investigators in part, identify \$1.1 million erroneous benefits and disqualifications. Our recoupment unit has recovered \$140,000 in overpayments. We believe this is just the beginning as we further refine models preliminary to adding Medicaid and unemployment insurance in the third quarter of 2015.

Executive Directive 2013-1 creating an enterprise information management strategy included language specific to open data: ***"We must improve upon the data available on our Open Michigan website"***. To this end, Michigan used our \$50,000 grant from the Kellogg Foundation to partner with Socrata to host a re-vamped Open Data website.

The 80+ open data sets available served as a data laboratory for the 35 teams that participated in our October 2014 “Code Michigan” event. The marketing and data evangelization this event promoted via social media by participating citizen developers has been incredible. The “Code Michigan” Facebook page has hundreds of subscribed users and links to You-Tube videos highlighting this event. Our panel of judges witnessed the innovative marriage of data and technology into mobile applications that they had not contemplated. Some of the most interesting applications aligned with themes important to state leadership – public safety, nutrition and travel and tourism. For example:

“SnowFi”, the overall winner was developed for winter Michigan driving. It combines Google maps, our transportation department’s grid of highways and the local community’s up-to-date data on plowed roads. As a safety feature, it helps residents select the safest snow free routes during periods of hazardous winter driving.

“Wrecktify” integrates with Google Maps to display hotspots for local traffic accidents, leveraging 2 years of data from the Michigan State Police. It predicts likely locations for accidents and allows users to submit comments about problem areas.

“Neighborfood” uses agriculture data to help merchants find local producers of Michigan produce. Prior to his application, most local retailers had limited choice but to use large commercial distributors. The application includes order exchange and inventory control between local buyers and sellers.

“MI Fish Tale” is a mobile tool allowing fisherman a way to track, compare and share their latest catch. As the database grows so does the value of statistics to the Department of Natural Resources on fish population and fishing trends.

Collectively, the utility and popularity of the dozens of applications show-cased will save the state considerable time and dollars as we pursue our “mobile-first” state-wide strategy. Code Michigan serves as a laboratory for in-demand applications. Michigan supplies the data, and our citizen developers provide the requirements, testing, focus groups and final solution. All application ideas have been shared with agency leadership as a basis for “quick-starting” mobile development at a fraction of the cost for a normal mobile project.

Our EIM strategy has put in place a standard data governance and “share first” mentality that lays the foundation as we pursue a single source of address supported by a single sign-on for both government and citizens to better manage their data. These projects highlight strategic goals moving into the next year.