

## **Michigan State Police Department Unifies Data, Improves Visibility Into Criminal Activity**

### ***Law Enforcement Analytics Puts Vital Crime Information at Commanders' Fingertips***

State: Michigan

Category: Open Government and Data, Information and Knowledge Management

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Completion date: November 2016

## **Executive Summary**

Founded in 1917, Michigan State Police (MSP) consists of approximately 1,500 law enforcement professionals, all of whom use modern information technology to protect citizens across the state. With more than 2,900 employees, the organization's mission is to provide the highest quality law enforcement and public safety services throughout Michigan. The organization is led by Director Kriste Etue, the first female Colonel to lead the Michigan State Police.

MSP has tapped the potential of business intelligence (BI) and analytics for over a decade, developing a culture that leverages data to provide knowledgeable and responsive service to Michigan's citizens, while supporting law enforcement and promoting safety across the state. The department's analytic initiatives began by making crime and public safety data available to staff, then expanded to include the tracking of key metrics such as crime clearance and efficiency measures. In recent years, MSP has shared data analytics with local, state, and federal law enforcement agencies to enhance situational awareness, support Homeland Security initiatives, and expedite real-time decision-making across criminal justice, intelligence, cyber, and device data.

By rolling out enhanced search capabilities, mobile dashboards, and an integrated data set based on golden records, MSP will increase operational efficiency and effectiveness and pushed real-time insights down to the trooper level. Integrated, cleansed data will be readily available for search and analytics from multiple agencies, providing the department not only with historic insight, but also with predictive analytic capabilities that help deter crimes and traffic accidents.

## Concept

In an era when information informs every aspect of modern society, Michigan State Police recognized the need to modernize its analytic systems to better support its core mission of law enforcement while promoting safety across the state. Under Colonel Etue's leadership, in 2011 MSP created a department-wide dashboard to establish a single source of the truth for MSP leadership. The dashboard was implemented in partnership with Information Builders and was based on its WebFOCUS Law Enforcement Analytics (LEA) package. The WebFOCUS LEA solution platform includes several integrated functional components including reporting, dashboard, mapping, predictive analytics, data integration, and search.

This centralized analytics has improved visibility into department performance and crime statistics and given officers the functionality they need to respond knowledgeably to incidents and make more informed decisions. By tracking trooper activity, law enforcement leadership can balance of time that troopers spend on patrol versus reporting. The dashboard also helps track how quickly investigations are closed and records crime and safety statistics.

In 2016, under the leadership of the Intelligence Operations Division's Captain David Kelly, the Michigan State Police Intelligence Operations Center (MIOC) configured a near real-time, mobile, web-based search tool for troopers and detectives. As a statewide fusion center, the MIOC is chartered with increasing communication between federal, state, and local agencies.

The search tool, called MI-Intel Search, is based on Information Builders' Magnify technology. It allows authorized users to query all major MSP data sources to search by person, address, and many other variables. Officers can quickly sort through result categories to find key information and perform drill-down analytics when responding to a call for service or during an ongoing investigation.

The department had to surmount several technical hurdles to move forward in its data-driven mission of data-integration, services-consolidation, and data-analytics. Many of the MSP's applications were built and deployed in isolation, in an era when the possibilities of data integration and aggregated analysis were not evident. This problem of isolation was compounded by the diversity of real-time sources, through equally diverse applications. With data coming from multiple sources and disparate databases, analysts and detectives couldn't directly access the data.

The department did not have an easy way to link people across some of their key systems, and much of their address data was incomplete. While the search solution allowed users to query across multiple data sources, without a consistent and accurate way to match people across systems and cleanse and enhance data, the

results were sometimes missing key data points. For example, the department has a large component of criminal intelligence analysts who support the detectives in the field. Data from multiple sources and many disparate databases, some of which analysts and detectives couldn't access directly, was not easy to locate.

Moreover, like many law enforcement agencies, MSP did not have a standardized database model or schema. Through a complex system of controls, they had to manually alleviate inconsistencies among multiple CRM systems, intelligence dissemination, field support, and financial operations. The integration layer was not configured for real-time access to cyber threat analytics, and the data-architecture did not have the foundation for real-time dissemination.

To solve this data challenge, Deepinder Uppal, Assistant Division Director of the Criminal Justice Information Center for the Michigan State Police has begun working with Captain Kelly and Information Builders on the MSP Data Hub, which will allow for the automatic cleansing and integration of key data sets. This technology, derived from Information Builders' rich iWay heritage, will enable MSP to search "golden records," which enforce consistency among multiple dissimilar data sources. Officers can quickly sift through consolidated people records and categories to find a person, address, or other mastered data entity.

Deepinder and Captain Kelly are creating a solution that offers near real-time cleansing and geocoding to support violent crime mapping for Colonel, district, post, and trooper mobile dashboards. For example, a statewide analytic app pulls in GPS data to help officers chart drug seizure activities on dynamic digital maps. This cohesive data management system will facilitate searches across multiple data sources and information systems, maximizing information security while minimizing resource requirements and maintenance costs. This solution has allowed for opportunities for collaboration across the state of Michigan. David Behen, Director of the Department of Technology Management and Budget (DTMB), and local DTMB managers Kirt Berwald and David Roach, are working with Captain Kelly and Deepinder Uppal to invest in Michigan's premier Law Enforcement Agency, the MSP, the first State Agency in the nation to have a unified platform that combines data integration, data quality, and master data management—all together in a fraction of the time that such projects typically require.

## **Significance**

MSP's department-wide data and analytics program is significant because it will extend the information ecosystem from law enforcement leadership and troopers to other state

law enforcement staff and 142 local law enforcement agencies. It makes access to vital criminal, incident, and activity data from a variety of sources. The data is more accurate and consistent, helping MSP combat crime and improve public safety.

MSP's analytic applications will be based on a solid data model that unifies structured and unstructured data sources. The environment uses artificial intelligence and predictive policing technologies that help officers improve safety and combat crime.

Mobile dashboards improve situational awareness by displaying key metrics at all levels and divisions. Troopers and detectives will be able to search for real-time updates within one data system, supporting their efforts to reduce crime and coordinate activities across divisions. For example, without the new functionality a trooper could have been dispatched to an address at 1234 Main Street in Jackson, Michigan, on a report of a domestic disturbance and not know that two weeks before, the emergency support team had been there to deal with a barricaded gunman on a search warrant. If the trooper had that information he would have responded to that situation quite differently. Real-time updates to the system that are available to everyone provide the critical information that supports troopers in the field.

Moving to Omni-Gen enhanced MSP Data Hub was part of a natural progression, from data integration to cleansing and mastering. The solution will use an enterprise data hub to integrate legacy criminal justice information sources with new IoT sources, such as GPS data and extracts from social media networks. MSP is the first agency within the state of Michigan to complete the process of creating a master record for persons, places, and things.

These innovations will allow the MSP to work smarter and faster—and even to foresee the likelihood of crimes occurring at certain times and in certain areas, so they can deploy the force accordingly. When users are searching for information they get a complete report from multiple databases. For example, if a detective runs a report on a suspect, he or she can also see the suspect's associates. In the past the detective did not always have the time or resources to make those connections.

With more accurate and up-to-date information at their disposal, the department can generate detailed snapshots of crime data, trends, and statistics, leading to insights-driven decision-making throughout the department. For example, with a large heroin problem throughout the state, the MSP can now leverage the data contained in the MSP Forensic Science Division's database that contains the lab results on heroin cases from most police agencies in the state of Michigan. Access to statewide lab data creates an overall richer data set for monitoring and mapping drug seizures and deploying troopers effectively. This information is especially valuable for a commander who's running the highway interdiction teams. When the data shows a large amount of seizures occurring

at a specific location, and many overdoses in the vicinity, the commander knows to focus on the inbound and outbound roads of these areas. It increases the likelihood of an arrest of a supplier, or of a user who can lead them to a supplier.

Snapshots are available for different user types, such as colonel, executive, district and post commanders, troopers, detective, and the Commercial Vehicle Enforcement Division. Some of the snapshots share analytic widgets that map violent crime and fatal crashes, while other content is unique to each role-based snapshot view. Multiple divisions of MSP came together to work on the mobile snapshots, the MI-Intel Search, and the Omni-Gen data hub, including the Criminal Justice Information Center, the Intelligence Operations Division, and the Special Investigations Division.

In addition to the role-based snapshots there are subject-specific BI apps that are used across roles, such as drug seizure hotspot maps that assist with statewide enforcement efforts. Other examples include parole and probationer analytics and also a sex offender analytics BI app—all driven by clean, accurate, consistent data. MSP is making the snapshots and the subject-specific BI apps available in a mobile, responsive app store that makes it easy for users to traverse the analytics content in multiple apps. There are plans for Snapshots for additional user roles as well, such as finance, emergency management, and homeland security.

As the state-wide fusion center, the MIOC improves communication between federal, state, and local agencies. Fusion centers in all 50 states involve the Department of Homeland Security, the FBI, and the state police, reinforcing the need for the sharing of accurate information across all agencies.

MSP coordinates with other State of Michigan departments to access data for analyzing critical data linkages, including drivers' licenses and mugshots from the Michigan Department of State, Michigan Department of Corrections for Parole and Probationer data, and crash data, which is analyzed in partnership with the Michigan Department of Transportation.

## **Impact**

Through its implementation of data integration, data integrity, and data intelligence technologies, MSP has greatly improved critical law enforcement processes by ensuring the accuracy and reliability of key data sets. By obtaining golden records for key business entities, the department can work smarter and faster and reap the maximum reward from its BI and analytics investments. The department now has data available on-demand for new business intelligence needs that is integrated, cleansed, mastered, and enhanced, regardless of whether the data is from legacy criminal justice data

sources, intelligence data, social media data, the Web, or device data (such as GPS streaming data). MSP is the first agency within the state of Michigan to complete the process of creating such extensive master records.

Key metrics measured include crime clearance, crime lab throughput, trooper activity, patrolling of high-volume crime zones, and web investigations. Along with the improvements in key metrics, MSP is also able to provide near real-time search and alerts for troopers and detectives across 14 key state, local, and federal data sources, greatly enhancing operational efficiency. Improvements include identifying information on suspects faster and identifying potential vehicles from hit and runs. Automatic search and alerts enhance situational awareness for troopers when dispatched to addresses through 911 calls, where there might be people with outstanding felony warrants at the location.

MSP has coordinated statistical modeling across modalities to reduce crime and perform coordinated simulations across divisions. The inclusion of cyber data models allows MSP to detect online threats from cyber criminals by organizing terabytes of diverse data into a common linked data model. MSP has partnered with the Department of Management and Technology and Budget to handle the investigative aspects of protecting the state's law enforcement networks.

The Omni-Gen initiative has shown significant improvements in areas such as resource deployment and investigative analyst activities. Putting resources in the right place at the right time is critical. The department has developed a statewide scheduling program called Schedule Anywhere that helps determine where troopers should be located to minimize traffic crashes and criminal incidents.

Crime laboratory data helps associate individuals with criminal activity, enhancing the department's effectiveness. If a homicide occurs and a gun is sent into the crime lab, and there are, for example, three suspects, a database of fingerprints can link the suspects to each other and to the gun, even if these prints were taken years before.

This sustained initiative has positively impacted the police force's ability to protect and serve Michigan citizens. Officers and commanders can not only solve investigations quickly, but also be proactive by deploying predictive models. By understanding where crimes are taking place and why they are occurring, the potential exists to remediate the cause prior to the event taking place. In addition to having a stronger police force, Michigan citizens will soon benefit from all this data, as citizen-facing information systems come online that allow people to study crime trends by location and neighborhood. MSP is a leader in data integration and analytics throughout Michigan.

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