



2010 NASCIO Awards Recognition

Title: Michigan Public Safety Communications System (MPSCS)

Category: Cross Boundary Collaboration Nomination

State: Michigan

Submitter: Brad Stoddard

B. Executive Summary

Standardized interoperable communications in Michigan have been a business and technical hurdle affecting local and state partners for decades. The Michigan State Police (MSP) and several other state and local agencies operated legacy, non-standard, and non-interoperable communications systems that posed tactical and strategic emergency coordination communications problems. This significant, cross boundary effort to replace the antiquated voice communication systems merged the business needs of multiple state agencies with those of local agencies.

Solution: Michigan completed a multi-year, collaborative project focused on providing standardized interoperable communications for disaster response and day-to-day support of activities for public safety and governmental entities. The cross-boundary solution provided reliable, integrated voice and data coverage from border to border and facilitated enhanced communications among public safety peers. It also facilitated a single communications direction for disaster response, allowing agencies to communicate effectively and seamlessly while responding to such events.

Significance: The radio system was a deliberate effort to collaborate across local government levels in the face of declining revenues. Projected loss in revenue sharing to local government necessitated an innovative approach to maintain critical operations within available funding limits.

With the footprint of radio towers strategically and systematically dispersed across the state, the Michigan Public Safety Communications System (MPSCS) is a significant component of Michigan's broadband plan and enables an enterprise, computer-aided dispatch solution and an automatic vehicle/person locator that expands life-saving capabilities across all jurisdictions.

Benefits: In addition to policy, strategic and procedural benefits discussed in *Section D. Significance*, there have been operational, efficiency and cost-avoidance benefits to the cross-boundary users of the system.

Comparing interoperable communications over the past twenty years identifies not only a robust change in effective interoperable communications among first responders, but also reductions in parallel investments for radio equipment and communications systems. At a time when Michigan is facing an economic crisis, the MPSCS has not only been a foundation for communications, but also an effective and sustained solution to maximize taxpayer investments for all levels of government.

C. Description

Problem

Standardized interoperable communication in Michigan has been a business and technical hurdle impacting local and state partners for decades. The Michigan State Police (MSP) and several other state and local agencies operated legacy, non-standard communications systems that posed tactical and strategic emergency coordination communications problems. The effort to replace the antiquated voice communication systems merged the business needs of multiple state agencies with those of local agencies.

Challenges

- **Collaboration.** The legal, environmental, and policy issues emphasized the need for a governance structure that would oversee coordination of new policies, laws, and project construction and develop a standard objective of seamless interoperable communications for first responders.
- **Funding.** In 2001, Michigan distributed \$1.5 billion to local government via revenue sharing payments to help maintain local government operations and projects. In 2009, that amount was reduced 33% to \$1 billion.
- **Support.** Agency representatives failed to buy into the value of a single state system versus the existing parallel systems they already operated and controlled. This created silos of communication, thus impeding interagency information sharing and collaboration.
- **Design.** Legislators developed additional opportunities for their constituents and taxpayers by permitting local agencies to join the state system. System planning had to ensure that the solution would eliminate the impediment to local and state public safety collaboration.

Solution

Michigan completed the multiyear project focused on providing standardized interoperable communications for disaster response and day-to-day support of activities for public safety and governmental entities. The solution provided reliable integrated voice and data coverage from border to border and facilitated enhanced communications among public safety peers.

Context

Phase One (1997-2001): The state prepared to address public safety construction, maturation, and expansion problems by aligning strategic direction and financial support from state agency directors, legislators, and the Governor. A quality assurance vendor directed the project management team which mapped the business requirements and technology deliverables for the stakeholders. Towers and infrastructure would be constructed throughout the state, ensuring that the terrain and weather conditions of the Michigan peninsulas would not impede first-responder communications.

A radio system communications vendor was selected to construct a statewide communications system, and the partnership was formed between the State of Michigan, the communications vendor, and the state's quality assurance vendor. Upwards of 100 state staff, 28 vendor staff, and eight quality assurance/project management staff supported the project.

The three entities established a strong partnership and set the tone of a single mission and equal investment in the success or failure of the system. This same strategic and tactical approach is in place today as the system continues to grow under the direction of state agency staff.

Phase Two (2005 – 2009): A modern, effective cross-boundary platform was established. Building on Phase One, the MPSCS facilitated efforts to meet the policy goals of legislators and the Governor by providing a reliable and defined shared service. Accessibility to the network was simplified for locals with the submission of membership and integration agreements, which provided access to local units after their purchased equipment was added to the state network. In addition:

- the MPSCS Advisory Board was established and included local stakeholders
- usage of the system was expanded to nongovernmental public safety entities
- 37,000 radios were added by local agencies
- local agency and regional collaboration added seven new simulcast subsystems consisting of 44 additional towers and 162 dispatch consoles
- accessibility to wireless data increased with the addition of integrated voice and data
- the number of first responder conversations reached over 53 million.

Technical Overview

The MPSCS began as an 800 MHz Project 16 standard and grew into an 800 MHz integrated voice and data Project 25 standard system. The MPSCS includes:

- 7 integrated zones
- 231 mixed multicast and simulcast tower sites
- 52,000+ radios
- 29 local and state integrated dispatch centers with 162 dispatch consoles
- 1200+ state, local, and federal agencies

The technology is composed of a Radio Frequency communications infrastructure with an integrated microwave backbone utilizing a digital voice IP system. Security measures that include "Over the Air" re-keying encryption solutions, firewalls to secure the private radio network from the state network, antivirus solutions, and a 24-7 staffed Network Communications Center, providing a human element as activity is monitored at each MPSCS location.

The solution was constructed in stages, correlated to geographic and regional state emergency management and medical control authority business areas. Each stage took approximately a year to construct. The state, through the Department of

Technology Management & Budget, now maintains all aspects of system operation and maintenance.

Communication

With stakeholders ranging from small volunteer fire departments to one of the largest police departments in the nation, a focused approach for information sharing was developed. Communication methods include:

- MPSCS established a Web site as a single source for directing current and future users to the policies and strategic goals of the system.
- Outreach communications were provided at Homeland Security Conferences in Michigan and regional meetings with other states to inform and educate partners and peers about the system's technology and operational aspects.
- A bimonthly newsletter provided information that focuses on the MPSCS public safety functions.

D. Significance

Policies/Strategies:

- Michigan's IT strategic plan incorporated the goals of the MPSCS and those of the federal interoperability continuum. To achieve these goals, collaboration and partnership between the MPSCS Advisory Board and the state's Homeland Security Council has been imperative. Cyber security goals within the MPSCS strategic plan play a significant role as they focus on protecting the state's IT infrastructure while ensuring first responder voice interoperability.
- The MPSCS has high-level executive support, which is considered essential to ensuring statewide interoperable communications and shared services across units of government.
- The MPSCS Advisory Board was established by executive order, a supported best practice by the National Governors Association. The board advises the Governor on interoperable communications and MPSCS strategies. Key board members include the state CIO, state agency directors, and local agency stakeholders.
- With the footprint of radio towers strategically and systematically dispersed across the state, the Michigan Public Safety Communications System (MPSCS) is a significant component of Michigan's broadband plan and enables an enterprise, computer-aided dispatch solution and an automatic vehicle/person locator that expands life-saving capabilities across all jurisdictions.

Processes/Operations:

- The radio system was a deliberate effort to collaborate across local government levels in the face of declining revenues. Ongoing projected loss in revenue sharing to local government necessitated an innovative approach to maintain critical operations within available funding limits and utilize a shared-solutions approach offered by the state to maintain superior service.
- The MPSCS maintained solid business processes and views (local units partnering with other local units as well as with the state) that were not readily apparent in the public safety ranks in the past. The MPSCS had an impact on communities by

indirectly “encouraging” them to plan operations strategically with neighboring units and to make solid, long-term decisions that would address significant community needs. As communities received federal grant dollars, they worked together in their emergency management regions to ensure a sustained focus on their goal of achieving regional interoperable communications

- The MPSCS is recognized nationally and internationally as a mature leader and model for large-scale interoperable communications. A high level of trust in the operational effectiveness of the system by state and local government users has been established while valuable lessons have been shared and many operational procedures and policies have been provided to other states and countries.

E. Benefits

Scope of Benefits: In addition to policy, strategic and procedural benefits, there have been significant operational, efficiency and cost-avoidance benefits to the cross-boundary stakeholders of the system.

Comparing interoperable communications over the past twenty years identifies not only a robust change in effective interoperable communications among first responders, but also significant reductions in parallel investments for radio equipment and communications systems. At a time when Michigan is facing local budget challenges, the MPSCS has not only been a significant foundation for interoperable communications but also an effective and sustained solution to maximize taxpayer investments for all levels of government.

The executive, legislative, and judicial branch agencies, local agencies, federal agencies, tribal agencies, and private first responder agencies have utilized the investment, and added additional investments to the system providing more enhanced radio coverage for all users.

Beneficiaries: The stakeholders comprise 1200+ agencies utilizing the MPSCS, ranging from:

- local volunteer fire departments to the Red Cross
- county sheriffs to the Michigan State Police
- local public works to the MI Department of Transportation
- EMS personnel to regional medical control hospitals
- US Forestry park rangers to US Customs and Border Patrol agents
- first responders providing life-saving support to every Michigan citizen

Procedural and Operational Benefits

- **Immediate Shared Service Benefits:** Equipment on MPSCS can be deployed in the time it takes to order and install mobiles and portables and train personnel. The result is a quickly implemented upgrade in communications capabilities, without the hassles of site acquisition, renovation or construction.

- **24 x 7 System Support:** The MPSCS operates the Network Communications Center (NCC), an around-the-clock operation that monitors the system and dispatches service support as needed.
- **Service Expansion:** In the past two years, the infusion of federal grant dollars for first responders created the unprecedented growth of an additional 37,000 radios for local agencies.

Efficiencies and Cost Avoidance

- **Ability to Retire Legacy Systems:** Communities were provided valuable communications built on interoperability, low cost, and the ability for local and state entities to retire legacy systems no longer viable to operate and maintain, provided the cost effective service for the citizens of Michigan
- **System Upgrades at No Cost:** Upgrades to the MPSCS infrastructure are currently installed free of charge to its members; thus, users are provided newer technology without the aggravation of securing additional funds.
- **State and Local Taxpayer Savings:** Although MPSCS wasn't constructed to save money, Michigan taxpayers are experiencing an estimated cost avoidance of more than \$87 million dollars due to the alleviated need for duplicate communications systems. This has been calculated at the average cost per duplicate system at \$15 million and multiplying it by six simulcast sub-systems that were added to the MPSCS

As technology continues to evolve, stakeholders will influence enterprise solutions and reduce taxpayer costs while continuing to provide the greatest level of public safety support. Michigan is now ready to utilize the MPSCS as a public safety, shared-service solution that will offer benefits from voice communications to application sharing in order to more effectively meet stakeholder needs in a fiscally constrained environment.