

**2008 NASCIO Award Submission**

**Implementing the Arkansas Wireless Information Network (AWIN)**

**State of Arkansas**

**Category: Information Communications Technology (ICT) Innovations**

## **Executive Summary**

Prior to the implementation of the Arkansas Wireless Information Network (AWIN), public safety personnel across the state responded to emergencies with a sense of isolation. With each individual agency communicating on separate radio systems, a coordinated emergency response was not only delayed, but limited. AWIN is making a positive and significant impact on the emergency response process in Arkansas. AWIN, as a tool, assists agencies for a more efficient response to emergency situations. The State of Arkansas' implementation of the interoperable system eliminated steps in the previous process in which agencies had to determine a source of communications for an event and provide or distribute that means of communication. AWIN also works as an additional backup source of communication for agencies, in the event that an agency experiences problems with local systems, limiting the amount of time an agency is without radio communications.

AWIN, as a multi-phased program, leveraged new and existing wireless resources to create a statewide, interoperable, wireless communication system for first responders and Arkansas public service entities. AWIN is a multiple site, trunked communication system based on a digital 700/800 MHz system using the Association of Public Safety Communication Officials (APCO) Project 25 (P-25) standard, which is the industry standard.

The return on investment in AWIN for the state is not only proven through the increased coverage for emergency responders to communicate throughout the state, but through lives saved because of the increased communications among agencies. The implementation of AWIN provided first responders with a tool to warn public safety personnel of other agencies in the state of severe weather, respond to severe weather aftermath and other emergency events, coordinate search and rescue efforts, and communicate from areas of the state that were previously isolated from any radio communications.

## **Description of the problem and solution**

Wireless communication networks are a fundamental component in the effective delivery of services to citizens and public safety. Historically, Arkansas agencies built and operated independent radio networks, leading to incompatible equipment and delays in emergency response. In most cases, Arkansas' radio users could not directly communicate across jurisdictional or organizational boundaries to coordinate emergency response. Disparate radio systems created difficult situations where coordination was imperative, leading to the use of multiple radios in a single vehicle to provide communications. Under these conditions, not only were the radio systems separate, but first responders, including personnel from fire, law enforcement, emergency management, and public health and safety, functioned in communication silos. Interaction with first responders from other jurisdictions or disciplines was limited at best. Planning and coordination prior to an event seldom included personnel outside of individual organizations.

The state-owned and antiquated Automatic Multiple Site Selection (AMSS) system was the communication system in place prior to AWIN. AMSS was a conglomerate of 10 separate zones with no interoperability. The system did not provide necessary coverage, and 47% of the state's users with critical communication needs rated the system coverage as less than satisfactory. The lack of maintenance contributed to the poor performance of AMSS, creating distrust with local agencies, further complicating collaboration efforts. Addressing the state's communication needs became critical when it was determined that AMSS was starting to fail. The 82nd State General Assembly created Act 502 of 1999 which established the Radio Systems Work Group (RSWG). The legislation charged the group to make recommendations to the Governor and Legislature regarding the feasibility, design, resource needs, and other requirements for system implementation.

Funding was a concern in the implementation of a new radio system. In the days prior to September 11, 2001, federal dollars for communications were limited. State funding for a project of this size was not available. Through the tireless efforts of state officials, Arkansas' first responder community, the Arkansas State Police, Department of Information Services (DIS), and Governor's office, the state developed a plan to secure funding and revitalize existing systems into a single Project 25 statewide interoperable network that is state-of-the-art technology.

The AWIN program planning process involved the assessment of first responder needs, agency situations, and existing technology. The solution that was identified to address the lack of interoperability for first responders included four key objectives: develop and implement an approach to provide a single system for first responders to allow for coordinated emergency response; upgrade existing infrastructure to support the needs of the state's first responders; incorporate a stand-alone communications project for the Chemical Stockpile Emergency Preparedness Program (CSEPP); and develop three pilot counties to act as 'proof-of-concept,' placing all first responders in a county on a single system.

To achieve the objective of establishing a single system, the AWIN Steering Committee and the Local Leadership Council were established, along with a Command and Control philosophy. Through Command and Control, a multi-jurisdictional and multi-disciplinary coordination of emergency response was outlined, and the foundation for an interoperable communications system was established.

The infrastructure solution is a standards based 700/800 MHz Motorola ASTRO25 IP network consisting of two (2) Master Sites, 72 RF Sites, 22 console locations, and three (3) High Performance Data (HPD) locations, providing statewide interoperable communication and integrated voice and data capabilities to 13,000 users throughout the state.

To address funding issues, project leadership sought to maximize all available resources. Analysis identified a significant investment by the state in the AMSS infrastructure, and the quantity and location of tower sites, associated radio equipment, and interconnecting networks had both monetary and strategic value. This investment was leveraged as the AWIN backbone to maximize performance to all agencies and minimize costs to the state for wireless communication capabilities. The investment in AMSS was approximately \$21,000,000 in 1985. With additional bond and grant dollars, and a small portion of General Revenue, totaling \$73,407,950, the total project investment was approximately \$94,407,950.

#### Comparison of AMSS and AWIN system

	AMSS	AWIN
Number of Sites	64	75 *3 sites w/ High Performance Data
Microwave System	96 site microwave system	110 site microwave system in four OC3 loops
Zones	10 (Disparate)	2 (Integrated)
Type of Communication	Voice	Integrated Voice and Data sites
Dispatch	12 dispatch locations	22 dispatch locations (60 consoles in total)
Subscriber units	1200	13,000
Coverage	Coverage 90% - broken down into 10 separate systems	Coverage - 97% reliability statewide (85% total land mass)
Roaming	None	Statewide Roaming
Average number of calls daily	*	123,000
Number of Entities using the System	40	117
System Availability	*	99.998%

*\*AMSS was comprised of 10 disparate zones that were not controlled from a central location, making it impossible to track the number of daily calls or accurately determine system availability.*

AWIN implementation and integration was performed in two phases: the cutover of tower sites began in February 2005 and completed in March 2006. As the sites cutover to AWIN, the state's first responders had beneficial use of the system. The next phase included the build-out of an additional microwave system loop and installation of a system controller and began in June 2006. This phase was completed in June 2007 when the system transitioned to operational status.

The AWIN Steering Committee, Local Leadership Council, and various first responder entities provided countless hours of work to provide guidance in developing and building structures to ensure a successful project completion. The Steering Committee provides executive level support and direction to the program, and the membership includes Directors of the Arkansas State Police, DIS, Arkansas Department of Emergency Management (ADEM), Department of Finance and Administration, the Governor's Office, and two representatives of the Local Leadership Council. The AWIN Local Leadership Council provides advice and guidance from the first responder's point of view, and includes the County Judges Association President, Arkansas Emergency Managers Association President, Sheriff's Association President, Municipal League President, and the Arkansas State Firefighters Association President.

Management for the project followed DIS Project Management Methodology, which is based on the Project Management Institute (PMI) Body of Knowledge, calls for key roles and responsibilities to be outlined in the project charter. Arkansas State Police, ADEM, and DIS provided the personnel and administrative support to ensure the successful completion of the project. During the implementation, the project staff consisted of eight (8) FTE's on the state project team, 22 FTE's on the vendor implementation team, and five (5) FTE's on the third-party quality assurance team.

A communications plan was developed for the AWIN Program with a primary goal to create and disseminate compelling, credible, consistent, relevant, and effective communication. Program communications provide a clear explanation of strategy and goals, helping gain support and alignment. AWIN Program Management strives to uncover and address issues and concerns of key stakeholders in timely manner to maintain good relationships with critical constituents. The communications plan includes a monthly newsletter, electronic alerts with time sensitive and critical information related to the system, and a website which provides a multitude of informational and educational resources for stakeholders and users. An AWIN Status Report provides information to the Legislative stakeholders in the state.

### **Project significance**

State, counties, and federal agencies use the system in providing services to the citizens of the state, making citizens and first responders the primary benefactors of AWIN. The different

disciplines of agencies using AWIN include, but are not limited to, fire, law enforcement, emergency management, public health and safety.

An obstacle faced in the development of AWIN was overcoming the distrust of a state managed system, and getting first responders to collaborate on a more open approach to managing emergency communications. The AWIN Steering Committee, Local Leadership Council, and first responder working groups developed standards, policies, procedures, talk-groups, and templates to provide a firm foundation for interoperability and Command and Control philosophy. Command and Control is based on the National Incident Management System (NIMS).

Many states have achieved interoperability by connecting, or patching calls from disparate radio systems, and prior to AWIN, that was the only way to achieve any level of interoperability in Arkansas. The establishment of AWIN provided one of the most technically advanced, statewide, digital, trunked radio systems in the nation for the citizens of Arkansas.

The efforts of the AWIN Program directly align with the Governor of Arkansas' priorities for public safety within the state as stated in Governor Mike Beebe's January 2007 State of the State Address. "Because the well-being of our future must be protected against large-scale natural and man-made disasters, we will work to connect all our communities in times of emergency. We need to facilitate funding to support full-time local emergency-management functions for local governments that have not otherwise had the resources to do so." Through AWIN's connection of all communities, the State of Arkansas is working to protect the citizens prior to, during, and in the aftermath of a large scale disaster.

### **Project benefit**

The State of Arkansas invested a significant amount of man-hours in implementing AWIN. Recent cost analysis for upgrading existing communication resources compared to the alternative reveals a wise investment. The cost to upgrade AWIN was approximately \$94 Million, compared to a \$200 Million estimated cost to build a new system. As a result of upgrading existing infrastructure, the State of Arkansas owns a system that is worth well more than what was invested. Also, several local entities have migrated to AWIN for daily operations and dismantled aging equipment, reducing local budget dollars spent on maintenance and repair of local legacy systems.

Where there were once barriers to communication, AWIN has helped to eliminate communication boundaries. Emergency Managers can coordinate emergency response hundreds of miles away, allowing for more efficient and timely response. First responders can be directed while en route to an event, providing for more effective personnel deployment. Enforcement of access to disaster areas provided by the State Police and National Guard is better coordinated.

The needs of the citizens and first responders in the state were paramount in the decision to implement AWIN. It is impossible to place value on a human life, or to determine the value of ending the suffering of people impacted by a disaster. The improvements to emergency response and the lives saved far outweigh the costs associated with the project.

The benefit of collaboration between multiple agencies for a coordinated emergency response is one of the primary advantages to AWIN. AWIN provides first responders with a critical tool for communication, which has aided in search and rescue efforts.

This benefit of collaboration was illustrated in the fall of 2006 when a four-year old autistic child wandered off and disappeared into a dense forest area of northwest Arkansas. Search and rescue teams from multiple counties responded to the emergency and used AWIN to coordinate the wide-area search with hundreds of first responders. The effective utilization of AWIN and the state's mutual aid plan resulted in the rapid rescue of the missing child.

In emergency events where time is of the essence, AWIN has improved the process for emergency response. As illustrated below, many first responders have the benefit of an AWIN radio on hand to assist in the quick and effective response to an emergency.

On April 02, 2008, a firefighter, outside of his jurisdiction, came upon an emergency in progress. An elderly couple traveling in a pickup truck skidded off the road into deep flood waters from the nearby White River. The firefighter grabbed his AWIN radio and called for assistance from the White County Sheriff's Office and the Searcy Fire Department's swift water rescue team. The water rescue team pulled the elderly couple through the flood waters to safety, thanks to an emergency response that was managed quickly and effectively through AWIN.

AWIN also provides the benefit of a backup communication system for many state, local, and county agencies. When local communication systems fail, due to power failures or issues with the system itself, the agency is able to switch to AWIN for daily operations. Through a quick switch of available talk groups, AWIN radios can be used for both local and statewide communications.

In one instance on May 10, 2008, a tornado hit Arkansas County, and all local communications failed. With no local system, AWIN was the sole communications source coordinating law enforcement, fire, and medical personnel efforts, as well as emergency utility crews, in an effort to restore the communities affect by these storms. Through the use of AWIN in the emergency response, the state's first responders more efficiently and effectively responded to the citizens' needs.

AWIN provides first responders with a critical tool, enhancing efforts to protect the citizens of the State of Arkansas. Since its implementation, AWIN has aided in hundreds of emergency response and disaster events. With increased coverage across the state, first responders can communicate from areas that were previously isolated from clear communications, and increased communication between agencies across the state has provided life-saving benefits.