

HOW WILL EMERGING TECHNOLOGIES IMPACT RADIO INTEROPERABILITY
BETWEEN LAW ENFORCEMENT AGENCIES IN A RURAL CALIFORNIA
COUNTY BY 2008?

Article

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Since the inception of two-way radio for law enforcement in the 1930s, police departments have struggled to communicate in an effective and timely manner. Public safety's inability to communicate between agencies has never been better displayed than during the Oakland-Berkeley Hills fire in the San Francisco Bay Area in 1991, the Oklahoma City Bombing (April 19, 1995) or the bombing of the World Trade Towers in New York City and the Pentagon in Washington D.C. (September 11, 2001).

Local law enforcement does not need to look at these large-scale incidents to find problems in their own communication. Perhaps the largest, single obstacle to local law enforcements' ability to combat a growing crime problem in an efficient manner is their inability to communicate between one another. Many local agencies experience problems weekly, if not daily, as they try to communicate between one another in an effort to achieve their mission for the population they serve. When law enforcement agencies can communicate between one another, they are able to complete their mission with an efficient use of resources while providing for the safety of the officers.

Radio interoperability is the means for officers in the field, who are providing services to their community, to be able to communicate with officers from other agencies in a timely, efficient manner. The National Task Force on Interoperability defines radio interoperability as the ability to exchange both voice and data communications with one another on demand, in real time, when needed. Many members of the public assume that public safety is already interoperable. However, throughout the United States, many law enforcement officers cannot even talk to their own agencies. All law enforcement should be able to communicate with units within their own agency and with other surrounding law enforcement agencies.

Today, law enforcement agencies within rural parts of the country are impacted most by a lack of interoperability. Traditionally, rural communities have been self-sufficient and have not relied upon others for their own services. Rural law enforcement is no exception. Frequently, rural police departments have provided police services for small communities separated from neighboring communities by differing amounts of open space. Although these agencies might share information about common criminals during phone conversations or countywide or regional meetings, they rarely work together on a daily basis. As the leaders of these agencies developed their radio systems they frequently purchased and operated their own systems without thought of how they might communicate with one another if the need ever arose.

However, after the events described above, the public and the federal and state governments have expressed a desire for public safety, and law enforcement, to be able to communicate between agencies so that agencies can coordinate their efforts when responding to a large or regional event. California Senator, Diane Feinstein, has advocated a product introduced by JPS Communications, Inc. as a solution for agencies inability to communicate, and the State of California has purchased dozens of this product and placed them throughout the state as their first effort towards regional interoperability. Additionally, since September 11, 2001 the Federal Government has begun to release grant funds through the Office of Homeland Security for radio projects involving multiple agencies.

In an attempt to address radio interoperability in his own county, Captain Giugni chose to study radio interoperability for his P.O.S.T. (California's Peace Officers Standards and Training) Command College project. As a model for his project, he used

his own agency, Fairfield Police Department, and his own county, Solano County, located in central California. He identified an issue statement – “How will emerging technologies impact radio interoperability between law enforcement agencies in a rural California county” – researched literature and utilized a Nominal Group Technique (NGT) to brainstorm trends and events that might impact radio interoperability in Solano County.

Solano County law enforcement is no exception when it comes to agencies trying to overcome their inability to communicate. Solano County is a rural county located upon the western fringe of the San Francisco Bay Area. It covers an area of 823 square miles. It is made up of seven cities: Benicia, Dixon, Fairfield, Suisun City, Rio Vista, Vacaville and Vallejo. Each city has its own police and fire department.

During the 1950’s and 1960’s the larger cities (Benicia, Fairfield, Vacaville and Vallejo) and Solano County obtained their own radio frequencies within the VHF spectrum. Public safety answering points (PSAPs) and mobile units from neighboring agencies were able to communicate between one another as the radio equipment was capable of communicating on frequencies within the same spectrum. Solano County Sheriff’s Department and some of the larger cities provided police dispatch to some of the smaller cities (Dixon, Rio Vista and Suisun City) all of the time or during the night when small departments could not provide dispatch staff.

As the population of Solano County and the communities within Solano County grew, the limited frequencies within the VHF spectrum allocated to Solano County proved inadequate for some of the law enforcement agencies. Two of the larger cities, Fairfield and Vacaville, applied for and obtained their own radio frequencies: Fairfield in

the UHF spectrum and Vacaville in the 800 MHz spectrums. The technology at the time allowed PSAPs to patch a mobile radio from one jurisdiction, through PSAPs of both jurisdictions to another mobile radio in the other jurisdiction, but the process was cumbersome and slow. Frequently, the patch was of such poor quality that mobile units rarely chose to request dispatch to attempt the patch. Additionally, agencies could only patch with one other agency at any given moment; they could not patch together multiple radio systems.

When the county and communities were small, this type of communication worked adequately for everyone. Incidents requiring radio interoperability occurred infrequently. The county and communities worked together by creating protocols whereas shared communication occurred via telephone or by agencies responding a supervising officer to a designated command post and communicating instructions via their own radio frequency from that supervisor. Officers from different agencies working together either walked or drove to the other officer's location and communicated face-to-face or relayed information to their supervisor who walked to the supervisor of the other agency who then relayed the information via their radio frequency to the officers in the field.

However, the population in Solano County has grown, and with the population growth has come a rising crime rate and criminals that are very mobile and do not adhere to city limit lines. Last year (2002), Solano County had a population of 412,000. Solano County currently experiences a population growth rate of about 2% per year. In 2002, Solano County public safety answering points (PSAPs) handled over 450,000 incidents countywide. These incidents grow at a rate of 5% per year. While the crime rate climbs,

Solano County law enforcement agencies are also experiencing a growing number of incidents requiring mutual aid response: including investigations of persons in neighboring cities, police pursuits, narcotics investigations that involve multiple cities and suspects typically involving officers conducting investigations in adjoining cities and tactical requests for SWAT teams. Responding law enforcement agencies frequently cannot communicate between one-another.

The author conducted a Nominal Group Technique (NGT) with experts from Solano County law enforcement agencies, including police administrators and communications supervisors, members of Solano County Office of Emergency Services and Communications Unit, Fairfield Information Technology Department, the Fairfield Vice-Mayor, members of the Fairfield Fire Department and Motorola. The panel members provided a list of over 50 possible trends and 40 possible events that might impact radio interoperability and came to a consensus on eight trends and events that will impact radio interoperability in Solano County. The trends included: Regional interaction and cooperative solutions are becoming the norm, Federal Communication Rule changes, Mutual Aid Requests, Consolidated PSAPs, Development of technology and operational standards, Ability to share time critical information, Citizen expectation of maintaining a high level of service, and Budgetary constraints. The events included: Major terrorist attack in California, Earthquake or Forest Fire in California, Mass Casualty event, Pursuit, Legislature mandates interoperability in 2020, Federal Government fully funds Solano County interoperable radio system, High profile police communication failure, and Basic priority calls cross jurisdictional boundaries.

Afterwards, members of the NGT panel conducted a cross-impact analysis of the effects each event might have upon each trend. Utilizing the identified trends and events, three scenarios were created representing a possible future in a rural county in 2008, depending upon what interoperability solution a rural county chooses. A strategic plan, “SWOT” analysis and transition management offer a possible plan for rural counties as they seek complete, Level 7, interoperability by 2008.

Solano County’s effort towards radio interoperability is a model of what a rural county might accomplish with cooperative effort among local agencies, some vision and funding. Solano County Chiefs of Police chose to hire a consultant to conduct a needs analysis and offer different interoperability solutions to the local agencies. The consultants recommended that the Chiefs of Police create either a steering committee utilizing members of the different agencies or a Joint Powers Agreement (JPA) representing all Solano County agencies who want to be represented. The steering committee is tasked to create a memorandum of understanding among the communities in the county as they seek a “gateway”, or Level 4, solution to interoperability costing \$3,000,000 and the ability to share data. In the meantime, the county wide JPA should seek funding, and set policy for a trunked radio system in the 700 MHz radio frequency that will allow all Solano County law enforcement agencies to maintain their own radio frequencies, in the 700 MHz range, and switch to another level of the 700 MHz radio system upon demand to communicate with mobile units and PSAPs. This system, a Level 7 interoperability system, would truly allow Solano County and other agencies to be completely interoperable.

However, there are obstacles to Solano County's plan to implement Level 7 interoperability. Currently, 700 MHz frequencies are not available for public safety use. This band of frequencies is currently assigned to television stations in the 40 – 60 channel range. However, the Legislature has passed legislation requiring television broadcasting companies to give up this range of channels when 85% of all televisions are digital or have digital capability. Presently, the Federal Communications Commission has stated that these radio frequencies will be available beginning in 2006. Presently, television broadcasting companies are trying to force a change to this legislation; just recently, a federal Court of Appeals upheld the legislation. However, the television industry may challenge it again.

Trunked radio systems operating in the 700 MHz frequency range and allowing interoperability are expensive. Solano County believes it will cost over \$45,000,000 to purchase such a system. None of the agencies in Solano County have that type of money. However, money is becoming available from the federal government, through the Office of Homeland Security, and perhaps other sources.

In our current society, and with the present demands placed upon law enforcement, it is imperative that law enforcement leaders seek some level of interoperable solution. If those leaders want to achieve Level 7 interoperability, they must act now. As our experience regarding the 800 MHz spectrum showed, there will not be sufficient frequencies in the 700 MHz spectrum for all public safety needs across the nation. Law enforcement must act now to create plans towards interoperability, apply for the necessary radio frequencies and seek funding for these expensive projects.

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