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Over eleven years ago, interoperable communications was identified as one of the major areas of public safety that required major improvement following the attacks of 9/11. Communications is the one constant that forms the foundation for all other public safety disciplines; it is the bedrock of every response plan, the core of every procedure. Without reliable communications, effective command and control cannot be achieved, critical information cannot be passed, and life threatening developments cannot be shared. In the past eleven years, billions of dollars have been spent across the nation, new radio systems have been fielded, interoperability has been greatly improved, and the ability of our first responders, emergency managers, and homeland security professionals to communicate is better than ever.

We stand at a crossroads, however. Many of those critical radio systems procured in the years following 9/11 are becoming antiquated. Technology, as is always the case, has continued its relentless advance resulting in the need to perform major upgrades to existing systems, or in some cases wholesale replacement. The increased use of the finite radio spectrum has resulted in the FCC requirement to “narrowband”, a federal mandate resulting in improved efficiency in the use of radio spectrum, but also creating the de facto obsolescence of an entire generation of radio equipment. Maintenance and sustainment costs for existing systems alone cost hundreds of millions of dollars, forcing jurisdictions to make tough budgetary choices, often resulting in critical systems no longer being supported.

All of this is occurring while funding levels have fallen precipitously. Virginia has seen consecutive 50% cuts in federally funded State Homeland Security Grant Programs and historically almost 30% of this funding has gone to support and maintain these federally mandated communications programs. In 2011 alone, the Commonwealth received \$43M in requests from localities for communications grant funding, and was only able to allocate \$2M. Virginia has also recently seen the loss of funding of two Urban Area Security Initiatives (UASIs) resulting in the reduction of tens of millions of dollars in annual funding, much of which went to mandated communications programs.

Interoperable Emergency Communications Grant Program (IECGP) also lost federal funding. This grant provided for the planning, training, and exercises that improved the capabilities of the first responders who use these communications systems. IECGP also funded many of the Statewide Interoperability Coordinators (SWICs) around the country, who focus on the issues surrounding Interoperable Communications. Through the SWICs, states now have Statewide Interoperability Executive Committees (SIECs) that pull people in from across jurisdictions and disciplines, allowing them to work together to solve cross cutting communications problems, share lessons learned and best practices, and ultimately write the federally mandated Statewide Interoperability Plans (SCIPs) that shape a common direction forward. States were required to submit the inaugural Statewide Communication Interoperability Plan (SCIP) in 2008, and are required to report progress against the SCIP in an annual SCIP Implementation Report. Federal grants funding emergency communications require grantees to align projects to needs identified in the SCIP<sup>i</sup>.

We stand on the verge of a revolution in emergency communications capabilities. Traditional Land Mobile Radio systems are beginning to become integrated with Voice over Internet Protocol (VoIP) technologies. By fusing voice communications with internet technologies, new possibilities are becoming a reality. Virginia operates one of the largest Public Safety VoIP networks in the nation which, by the end of CY 2013, will have points of presence in 122 jurisdictions, as well as the Virginia State Police, Department of Transportation, and Department of Emergency Management. The Commonwealth's Link to Interoperable Communications (COMLINC) program allows different radio systems to be linked together, much in the way that other radio gateways do, resulting in interoperability through the creation of a "patch" by an operator in a Public Safety Answering Point (PSAP). The true potential of COMLINC, when fully implemented, lies in its VoIP functionality however. Soon, any laptop, tablet, or smart phone in the hands of a public safety professional will become a radio capable of communicating with any PSAP in the state, or any responder on a radio connected to it.

Due to this advancement, interoperable communications no longer involves just voice and radio systems. We are entering an era where interoperable *information* is the goal. Advances in Computer Aided Dispatch (CAD), Crisis Management, VoIP, video, and Geospatial Information Systems (GIS) allow for the sharing and display of information that allows decision makers and responders to have previously unheard of levels of situational awareness. Using the common denominator of location, the ability to merge real-time information such as CAD, weather, sensor data, video, and Crisis Management reports with mapping systems and plan overlays allows personnel, from the tactical to the strategic, to have a better understanding of a given situation, presenting information in context that is critical for effective decision making. For example, a large hazmat on the highway is one thing, but a large hazmat on the

highway upwind from a county fair in a neighboring jurisdiction is something else entirely. The integration of COMLINC and its VoIP functionality now allows not only the rapid understanding of the true severity of a situation, but also allows for the interaction of decision makers through the same interface

It is important to note that we are not doing this in a vacuum. Virginia, along with the States of Oregon and California, initiated a National Information Sharing Consortium (NISC) in order to share technology and best practices which will enable state and local agencies across the country to work together towards these goals which we all share. Through the Consortium, which has grown to twenty- six members representing 100+ state and local government organizations (civilian and military), non-governmental and private industry partner organizations across the nation, we are able to leverage one another's experiences so that we, as a community, don't repeat costly mistakes over and over again. Additionally, we are also working closely with the DHS Science and Technology First Responders Group (FRG) and its Office of Interoperability and Compatibility (OIC) who are providing us critical assistance in assessing and working through the issues with the new generation of technologies that can facilitate achieving these goals such as shared services in "the cloud" and various "bridge" technologies. Taken together all of this will enable us to create a true "Virtual USA" enabling intrastate and interstate interoperability and will serve as the roadmap towards making use of the new broadband capabilities when they reach fruition.

All of these capabilities rely on reliable connectivity. In many cases, public safety responders rely on the public network for mission critical communications. This is especially true in the wireless world, where the rise in popularity of smart devices has created a demand for bandwidth that threatens to overwhelm the entire network when an incident occurs. According to the President's Council of Advisors on Science and Technology's report entitled "Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth", the amount of wireless data transmitted from smart phones and wirelessly connected tablets has doubled every year for the last four years. We saw this scenario realized during the recent earthquake in central Virginia. When the shaking stopped, most people picked up their phones to call a loved one, text a friend, or post on a social media site. This spike in volume resulted in the overload of the available wireless networks and reduced capability for users trying to access the network.

Public Safety Broadband offers a solution that addresses many of the connectivity issues faced by public safety. Now public safety professionals have the opportunity to have unfettered access to wireless communications in order to improve their ability to respond to incidents safely and effectively. Public Safety Broadband also provides the opportunity for public safety to implement a *terrestrial* network, linking PSAPs, EOCs, and critical infrastructure facilities in a secure and reliable manner, free from the

demands and limitations of the public internet. This network is necessary to support programs such as VoIP communications, GIS based information sharing, and Next Generation 911 routing. It would allow for the consolidation of PSAPs, the rerouting of call volume around failures, the use of improved situational awareness tools, and the ability for the public safety community to depend on data based communications unlike ever before. In short, it could change the entire landscape of the discipline.

The challenge lies in making all of this a reality in the current fiscal environment. Public safety communications budgets, like other budgets, are heavily encumbered with existing core funding needs and have little flexibility to fund new programs or new capabilities. After conducting an informal poll with the localities within Virginia in which we asked how much they could afford to contribute toward the operation of a Public Safety Broadband network, the almost universal response was “if it cost more than my departmental cellular service costs now, we can’t do it”. An analysis of that statement is revealing. Using the example of one county fire department in Virginia in which currently 50 of the 500 responders in the department have county issued cellular devices at a cost of approximately \$50 dollars a month. This results in a department budget of \$2500/month. In order to fulfill the operational vision of FirstNet, all 500 responders would have to have at least one (some probably more) device. If FirstNet were able to achieve the same price point as current private sector service, the increased operational usage alone would result in a new departmental budget of \$25000/month, a 1000% increase. If you repeat that process in the hundreds of departments across Virginia, and the thousands of departments across the nation, we are talking about a very large fiscal requirement that currently has no funding support. Beyond the actual service, device cost is another issue. It has been said that FirstNet desires to provide public safety devices at a price consistent with current land mobile radios, most of which cost \$3000 to \$5000 a unit. Public safety will require thousands of those devices in order to utilize the connectivity that the NPSN provides, yet many do not have the funding to procure them in the current fiscal environment. The situation is akin to building a superhighway, but not being able to afford cars.

Additionally, public safety broadband will not replace existing or planned Land Mobile Radio (LMR) systems in the near future. LMR has proven its reliability, survivability, and usability many times over. Cellular technologies on the other hand, as recently as during hurricane Sandy, have proven to be susceptible to widespread failure during natural disasters. Cellular’s infrastructure density results in a dependence on reliable power supplies and redundant backhaul connectivity that is a major vulnerability. Even after mitigations to these issues are designed into the NPSN, it will be some time before we can adequately evaluate their effectiveness. Finally, supplanting LMR with the NPSN violates the one truism of public safety communications; never put all your eggs in one basket. In summary, the cost of the FirstNet Public Safety Broadband service

will be in addition to the current land mobile radio cost currently paid by state and local governments. The time horizon for replacing LMR costs with the FirstNet Service cannot be determined today.

The Chairman of the FirstNet board has been on the record to state that the NPSN “will cover every square meter of the United States”<sup>ii</sup>. FirstNet must do this with a network that greatly exceeds the design specifications and redundancies of the commercial network, but with a fraction of the resources that the private sector has expended in a network that only covers approximately two-thirds of the country. The states are understandably nervous that the combination of increased cost and insufficient funding will result in the uncovered cost being passed on to the state and local governments, further diminishing funding for other core first responder necessities. In light of this, states need the ability to define the level of partnership that they will engage in with FirstNet. Clear guidance to establish the mutually beneficial relationship between FirstNet and the states has yet to be presented. To be successful in achieving our combined goal of a nationwide interoperable broadband capability for public safety, a successful model must be developed that falls somewhere in between the extremes “opt in vs. opt out”, focusing on a sense of cooperation and problem solving that can result in an evolutionary leap forward in communications capabilities while providing adequate fiscal protection for its participants.

Ideally, states should be allowed to negotiate partnerships with the private sector that are designed to generate revenue that can be applied to the implementation, operation, and maintenance of the network, as well as fund the equipment first responders will need to access the network. The arrangements can range from the sharing of infrastructure to the leasing of underutilized spectrum; with prioritization and pre-emption agreements that ensure the availability of the network to public safety when needed. Many of these potential partners are local or intrastate in nature, making the state-local team the appropriate governance structure for this arrangement as opposed to FirstNet. States should operate within a framework developed by FirstNet, but create partnerships with their jurisdictions and surrounding states to create coalitions that are able to work together to solve the myriad of implementation issues that will inevitably arise, at the correct geo-political level. States should also be allowed, within the interoperable requirements established by FirstNet, to pursue every technical means available, including those cited in the Presidents Panel report, to ensure that the spectrum is used as efficiently and effectively as possible. States must also be allowed to follow their codified procurement procedures that are designed to ensure that competition between vendors is maximized.

FirstNet cannot be expected to understand each states unique circumstances and needs. It is through a *partnership* between the states and localities, their existing

governance structures, and the FirstNet board that this program will be successful. In addition, adding a current state official to the First Net board would be very helpful to this endeavor. The Act requires that each state or territory certify that they have designated a “single officer or governmental body” to coordinate with NTIA, serving as the portal through which FirstNet will conduct its consultation with the state. Many states, including Virginia, have established this communication channel. A similar requirement for FirstNet to establish a communication channel for the states and territories to coordinate directly with the Board would be very helpful.

At the inaugural FirstNet board meeting, a notional architecture for the NPSN was presented, and we are told that a more refined version will be unveiled in April. This network is being designed before any of the coordination or consultation with the States has taken place.

Last month, NTIA released the State and Local Implementation Grant Program (SLIGP). In the SLIGP guidance, it is stated that “NTIA will focus the SLIGP initially on planning, consulting, and development activities in preparation for consultations with FirstNet, including strategy and timeline development, meetings, governance planning, and outreach and education efforts”. “The second phase will not begin until either after FirstNet has consulted with the State-designated contact about the matters listed in the Act, including defining coverage needs, user requirements, and network hardening and resiliency requirements, and advises NTIA it is ready for the commencement of data collection or when NTIA requests a revised budget from recipients for second phase activities. The second funding phase will primarily address States’ needs in preparing for additional consultation with FirstNet and planning to undertake data collection activities. The second phase will fund data collection activities provided that FirstNet has determined that it needs standardized asset and infrastructure inventories from the States in designing the nationwide public safety broadband network”<sup>iii</sup>.

As the SLIGP guidance suggests, we are a long way from a comprehensive and agreed upon set of user requirements, and are investing millions of dollars to: (1) establish a governance structure, or expand existing structures, to consult with FirstNet; (2) develop procedures to ensure local and tribal representation and participation in the consultation process with FirstNet; (3) create a process for education and outreach, through program development or through other efforts, among local and tribal officials, public safety users, and other stakeholders about the nationwide public safety broadband network; (4) identify potential public safety users of the public safety broadband network; (5) develop a standard Memorandum of Agreement (MOA) to facilitate the use of existing infrastructure with private sector entities that have been chosen by FirstNet to build, operate, and maintain the network on public safety infrastructure, or identified the legal

barriers to creating a standard MOA and describe potential remedies; (6) develop staffing plans that include local and tribal representation to participate in the public safety governance structure and to prepare for data collection activities in consultation with FirstNet; and (7) prepare a comprehensive plan as part of the existing Statewide Communications Interoperability Plan (SCIP), or a plan complementary to and similar in concept to the SCIP, describing the public safety needs that the States expect FirstNet to address in its design of the nationwide public safety broadband network<sup>iv</sup>. All of this work must be done in preparation for consulting with FirstNet, in order to generate and provide to them a comprehensive set of requirements that adequately represent the needs of the state's entire stakeholder community. Given this, we are concerned that FirstNet is already designing a proposed network.

Public Safety Broadband is a far reaching and mission critical program. To succeed it requires direct communication and coordination between FirstNet and the States. This will ensure that requirements are captured and adequate mechanisms are developed that permit the network, its operation and maintenance, and the planning, training, and exercising that support it are adequately and reliably funded. Establishing a vehicle for the designee of each state or territory to work directly with FirstNet within the FirstNet governance structure would vastly improve the collaboration between FirstNet and the States and territories. The partnership between the states and FirstNet should be direct, open, transparent, and ongoing.

Virginia is made up of 135 jurisdictions, each with its own budget priorities and fiscal demands. Working together, we have learned that establishing mutually beneficial partnerships and creating a "coalition of the willing" that respects jurisdictional independence and organizational need, is the most successful model for implementing interoperable communications programs. The Statewide Interoperability Executive Committees, the first of which was created in Virginia, have been the laboratories for this process, and their success is a testament to the power of a collaborative approach. The creation of a National Public Safety Broadband Network is an extraordinarily complex endeavor. We must build and expand on this collaborative approach for Public Safety Broadband to succeed.

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<sup>i</sup> FY 2012 SAFECOM Guidance on Emergency Communications Grants, p3.

<sup>ii</sup> National Governors Association, Winter Meeting. *States and Cyber Security*. Feb 23, 2013

<sup>iii</sup> ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY, Federal Agency Name: National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce  
Funding Opportunity Title: State and Local Implementation Grant Program (SLIGP)  
Announcement Type: Initial Announcement  
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Implementation Grant Program

Funding Opportunity Number: 2013-NTIA-SLIGP-01

<sup>iv</sup> Ibid