Written Statement of David Billstrom
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Chairman Inouye and Chairman Stevens, members of the Committee…
Thank you very much for the opportunity to speak today.

My name is David Billstrom, and I am a public safety communications consultant with a long background in radio communications, the computer industry and in venture capital. I've also been a first responder for over 25 years. First as an EMT, then sheriff's search & rescue for many years, and one of 27,000 volunteer firefighters in the Pacific Northwest.

I want to give you just a few high-level observations on public safety communications – from my somewhat unusual position of being both part of the problem, and I hope, part of the solution.

I'm going to talk about three things: why interoperability is expensive, what's wrong with the plans underway in almost every state in this country, and why Google provides the key to effective public safety communications.

Why Is Interoperability Expensive?

If we continue on the current path to interoperability solutions, I can guarantee you that five years from today, if you invite me back, we will still be talking about the problems with interoperability.

That is because both historically and currently, questions of interoperability assume that we have an equipment problem that calls for completely new radio systems and new radios. I believe this is because we're relying upon the same equipment suppliers that we have used for years.

And these equipment suppliers have a vested interest in "solving the problem" with more radio equipment.

The focus on new equipment is understandable. Equipment is tangible, it's concrete, you can touch it. And of course we always need better equipment, and more of it.

But an equipment-centric approach is very, very expensive. Which means it will take years.

Statewide Interoperability Systems

The good news is that in the last several years, hard-working committees called "SIECs", or State Interoperability Executive Committees -- in more than half of all the states have analyzed the needs of public safety and proposed new statewide systems that provide interoperability.

Most of the new statewide radio systems designed and specified by these SIECs will be state-of-the-art, best-of-breed, and very effective. They will be compatible with new, digital P25, narrowband radio systems already adopted and implemented by federal agencies.

The problem is, they are also the most expensive radio systems ever devised when calculated on a per-user basis.

In one state, the cost was approximately $65,000 per radio user to build the proprietary system. Additionally, it will cost more every year to operate it. With 14,000 users in this system, it is quite lucrative for equipment suppliers.

Why does this matter to this Committee? Because most of the states I have met with plan to ask you, the federal government, to pay for most, if not all of their new system.

How much are we talking about?

In Washington State, we have an initial estimate of $600M. Our Governor in Oregon has just proposed $561M for the *first phase* of the system there, which is likely to run past $1B when complete.

Florida already has a $900M system and New York has started on their $2B system.

The math is fairly easy – if we continue in this direction there is a $50 to $100 billion dollar funding requirement for interoperability for state agencies.

But the news gets worse.

The problem is, these statewide systems are designed for, and provided to, *state* public safety agencies – *not* local public safety agencies.

And, as you may know, 72% of the one million-plus firefighters in the United States are volunteers.   About 79% of all 800,000 law enforcement officers in the nation work for local police departments. Nearly all EMTs are with local agencies. In fact, only 20% of

the nation's first responders work for state or federal agencies. All of the others are with local agencies.

And in general, outside of large metropolitan areas, local public safety agencies do not have the funds for new radios compatible with these new statewide proprietary systems. I know my fire department does not.

So what we have are new statewide radio systems that most of our firefighters, EMTs, and police officers will not be able to afford to use.

There are, of course, many major metropolitan centers that already have effective, efficient, top-of-the-line systems. These cities were forced to go to modern radio systems some time ago just to cope with the number of users on their systems – as many as 20,000 first responders. It was the only real choice at the time.

But these metropolitan systems are not necessarily compatible with the new statewide systems – in fact very few are compatible let alone interconnected. And they face their own problems: every single one of these metropolitan systems depends upon proprietary technology, so every additional radio added (or replaced) in their systems is fundamentally a sole source procurement. Most are in the 800 MHz band, and must move as part of the Nextel 800 MHz rebanding requirement. There is no mandate for these metropolitan systems to be compatible and interconnected with the new statewide systems except in the most limited way. Which means that responders from other cities and rural areas coming to help – as in Katrina – cannot use their radios on the closed, proprietary metropolitan systems.

The approach is upside down. We should be building public safety communication systems that first accommodate the 1.8 million local first responders, and then the 200,000 state and federal first responders, rather than the other way around.

Open and Closed Systems

You may be wondering how we can accomplish this. This is where Google comes in…

It is a simple issue – open versus closed systems. Imagine if you could only access Google if you were on a Dell laptop, because IBM laptops didn't work with Google.

That might sound absurd, but that's exactly the current state of first responders in the Pacific Northwest – a police radio from Seattle, Washington does not work on the Portland, Oregon system – that is the world that proprietary systems create.

The more proprietary – the less interoperable.

Google and Yahoo and all internet businesses thrive because the services they provide run on every type of computer made, world-wide.

The same idea – indeed, the same technology – is going to solve the problem of public safety communications.

I can make this prediction because I can simply look at how the U.S. Military has addressed this very same issue.

Starting more than four years ago the military has been deploying a technology called IP Radio to allow field radios, fixed telephones, encrypted command radios, laptops, and satellite radios to all interconnect. From the battlefield across the seas to the command centers right here.

And, this is a technology, not a single product from a single equipment vendor.

Like Google and Yahoo, this technology is absolutely independent of the hardware used.

"IP Radio" means sending and receiving radio traffic on internet hardware.   It works by connecting together existing radio systems. Users on one system can talk to users on another system.

I will even go this far: if the public safety community operated with the command structure of the U.S. Military, we wouldn't be having this discussion today because firefighters, EMTs and police officers throughout the U.S. would already be interoperable using IP Radio.

Now you can see why it is not radical for me to predict that open, standards-based software will revolutionize public safety communications.

And, this technology can dramatically cut the cost of those $1B statewide radio systems.

To put it simply, this means our first responders will be able to use any radio they can afford – even the radios they already have – and be interoperable with all of their state and federal colleagues.

Already Underway For Public Safety

It isn't just the U.S. military that is leading the way. One of the first completely open, completely software-based IP Radio systems for public safety is being tested right now in our Pacific Northwest. The Department of Homeland Security funded the OPSCAN project. OPSCAN is Olympic Public Safety Communications Alliance Network, and it will use off-the-shelf, computer industry standard networking equipment, running standards-based IP Radio software that permits the interconnection of any type of radio, telephone, or computer. So far, 41 different local, state, and federal agencies as well as three Native American tribes are interconnected.

The system is really a *network* – interconnecting a variety of radio towers across a broad and challenging geography with a variety of dispatch centers including small towns, regional 9-1-1 centers, and state agencies such as the Washington State Patrol.

Like any good IP Radio design, there is no central point of control to provide a critical failure point in a natural disaster. There are a wide variety of networking technologies, including fiber and microwave, with redundancy and flexibility for the future. The investment in the network equipment is completely separate from the software, so each can grow over time without lock-step coordination, and without reliance on a single vendor.

The users will not buy new radios, but instead use their existing radios on the variety of different radio technologies they already have... except now they will have the ability to talk to any other user in the network. Now a state trooper operating on one kind of radio can call the sheriff's deputy or U.S. Forest Service ranger on a different type of radio.

The approach is so flexible that public safety responders from across the international border in Canada can participate. Federal agencies such as the U.S. Forest Service, Border Patrol and the U.S. Coast Guard are all participating, each with very different radio systems, and neither has to buy a single new radio.

The geographic scale of the system and the scope of 41 very different users is comparable to the interoperability requirements of a small state, yet the cost is a fraction of the estimates we have seen for statewide systems implemented with traditional proprietary, hardware-centric approaches.

A New Opportunity

Soon our federal, state and local agencies will be faced with the daunting task of being prepared for the 2010 Olympics just over the Pacific Northwest border with Canada. This presents a new opportunity, for the taxpayers, for the first responders in the Pacific Northwest, and for the various federal agencies that will be involved.

Imagine a tsunami occurring during the Olympics. A terrorist event. Severe weather such as our recent winter storms. Outbreak of the flu. The region would be impacted even without the increase in visitors passing through the Pacific Northwest on the way to and from the games – but with the increased population of visitors, the need for region-wide preparedness is even more pronounced.

Washington State has not yet deployed an interoperable public safety communications network statewide, or in this region. Obviously there is a real need for an interoperable communications capability to support the agencies that will respond to any natural disaster.

An interoperability system for the 2010 Olympics will need to be at least the size of OPSCAN (the region is similar in size to the OPSCAN region, but with far higher population density, an interstate freeway and a major rail line) and probably larger. But if consultants follow the previously charted path, they will recommend the same type of design that we have seen recommended to the state interoperability committees across the nation.

In other words, if it is "business is as usual" then we will see a recommendation for another expensive, proprietary radio system.

And as you know from today's discussion, this means that such a system for the 2010 Olympics could be built without new radios for the local public safety agencies.

Even with an influx of federal personnel and resources to the region during the Olympics, we all know from the statistics that a majority of the response to any incident, large or small, will be local first responders. I can tell you that the hard-working police, fire, and medical first responders in the region are intimately familiar with the potential dangers and skilled in providing an effective response; they will be ready. Except that they will have their current radios, which will not work with the new radios the federal agencies carry – except in the most limited way. And if a new radio network is built the traditional way, the local responder's radios will not work with that either.

This presents an opportunity to reverse the inverted pyramid. The opportunity is to direct federal agencies to consider first the needs of the local first responders that provide 80% of the response, and then consider the needs of the state agencies in the region, and then last consider themselves. Then we could say that we've supported our first responders; that we've prepared our personnel to respond to the public.

Suggestions

I respectfully submit that this Committee can make interoperability more effective, immediately, by mandating the use of open standards, software-based radio systems whenever federal funds are used for public safety radios.

And where proprietary, hardware-centric systems are already in place, the Committee could mandate full and open connectivity from those existing proprietary systems to the new open standards, software-based radio systems, whenever federal funds are used for public safety radio systems. I acknowledge that two or three proprietary radio vendors may not like this, but two million plus first responders will.

And finally, the Committee can take advantage of the tremendous opportunity presented by the preparations for the 2010 Olympics, and direct the development of an effective, affordable IP Radio –based network in the Pacific Northwest that takes the needs of local first responders in mind first, instead of last.

I also want to applaud Chairman Martin of the F.C.C. for his comments last week to this Committee, in which he called, as I have here, for funding for IP Radio technology as an immediate interoperability solution for federally-funded public safety radio systems. He suggested that if sufficient funds were made available now for fixed and portable IP Radio networks, then interoperability could be functional throughout most of the nation within four years. I agree with him whole-heartedly.

Using IP Radio technology to address interoperability speeds the implementation by as much as a decade. And faster implementation means a safer and more efficient response by our firefighters, police and EMTs, which in turn means a safer public.

If I could leave you with a central message today, it would be this:

First, let's not assume that the traditional suppliers of radio systems with proprietary technology will offer the most desirable solutions.

Second, we absolutely need to support the hard work by states in their interoperability efforts, but with an approach that doesn't require every first responder in the country to buy a new radio.

Third, an open, device-independent, standards-based, software approach such as IP Radio, already embraced elsewhere, will meet several of our most critical needs immediately. And save lives. And we may actually be able to afford it.

Thank you. I welcome your questions.