
# EDITED TRANSCRIPT

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Event at the Reserve Officers Association
Washington, D.C.

**TABLE OF CONTENTS**

## SUMMARY


**First Responder Mobile Communications Interoperability Failures**:

In too many cases where police, firefighters, and emergency medical personnel are responding to a crisis, they cannot coordinate their efforts because they cannot talk with each other in the field. Incompatible radios, different radio frequencies and other failures impede communications between first responders from local, state, and federal agencies and prevent the sharing of information that could save lives in an emergency. For example, emergency medical teams need to talk with state troopers, but cannot because their communications devices use different radio frequencies. Local police often cannot exchange life saving information with federal law enforcement on how to best deal with an emergency. Most Americans have heard about these failures as issues related to the World Trade Center bombing in 1993, the Columbine High School shootings, the Oklahoma City bombing, an Amtrak derailment in Arizona, Florida forest fires and of course all three locations of the September 11, 2001 terrorist attacks. Interoperability failures happen every day and jeopardize local public safety. It is imperative that policy makers expeditiously implement real solutions to assist first responders to better protect American communities.


On September 14, 2004 New Millennium Research Council (NMRC) convened a panel discussion on the communications interoperability problems and solutions facing first responders and policy makers. Nine experts from government and academia provided expert views on the critical interoperability issues facing America's first responders and related communities. This edited transcript[1] highlights the panelists' recommended immediate 'next steps' and short-term strategies to resolve this critical public safety issue, tragically highlighted on September 11, 2001, and that to this day is not yet resolved.

In summary, the panels called for the following actions:

- Congressional and Administration leadership that includes a clear mandate and timetable for fixing interoperability problems.
- State by state planning under that national mandate and timetable.
- Enough funding to meaningfully help local first responders.
- Expert staff available to help local first responders with needs assessment and transition plans.
- The ability to influence radio spectrum decisions.

The panels were clear that leadership and organizational issues should be the first challenges tackled. Technical and funding issues were important, but could be addressed quickly once a national mandate and timetable was asserted.

**Early in the sessions, insufficient funding levels – at the local, state, and national levels – was mentioned as a major obstacle affecting many of the proposed interoperability solutions across the country. Estimates for "achieving interoperability" ranged from 'several' billion dollars to well over the $18 billion estimate frequently cited from the 1998 Public Safety Wireless Network study. One panelist noted that there was an installed base of public safety agency communications equipment (at the local and state levels) of $50 billion to $70 billion and that replacing that entire base would be impractical. "Nobody can tell you what it's going to cost to get there," he said. Another panelist noted that the cost for all 50 states to achieve statewide interoperability would be much greater than $18 billion just using an average ($500 million per state) from states that have already moved in that direction.**

**Other major interoperability obstacles that surfaced were common technical standards and nomenclature, jurisdictional and governance issues, historical developments, and organizational issues**

[1] A full transcript of the day's proceeding can be found at: www.newmillenniumresearch.org

**within first responder agencies.** Several of the panelists agreed that encouraging a set of system requirements as opposed to adopting a specific technical standard was the best way to move toward interoperability. Identifying the functional needs of the system and coordinated planning with other jurisdictions were two elements identified by panelists as major impediments to current interoperability efforts. Most panelists agreed that governance structures – or a standard set of operating procedures within, between, and across jurisdictions – were difficult to negotiate because of the unwillingness of some first responders to come together.

The panelists were also asked to discuss their views on possible near-term solutions (18-24 months) to at minimum move the ball in the right direction. **Most panelists agreed about the need for coordinated planning and purchasing of communications equipment that meets a minimum set of required functions.** Some panelists mentioned short-tem technical solutions such as gateways or software defined radios, but the focus of discussion was how to get people and agencies to work together under a common command structure to coordinate emergency responses across jurisdictions or agencies. **Also in the short-term, the panelists agreed that freeing up the 700 megahertz broadcast spectrum as soon as possible would help first responder agencies get much-needed spectrum already allocated for them but wrapped up in the digital TV transition. The federal government can play a role by encouraging common standards and governance structures and providing technical assistance to public safety agencies.** One panelist suggested a national database of public safety frequencies so that first responders can see who is using what frequencies in nearby jurisdictions. Channels for first responders are spread out across a wide range of frequencies from 220 megahertz to 4.9 gigahertz, panelists noted.

Long-term planning and a national commitment to interoperability from the Administration and Congress were prescriptions of the morning keynote speaker, Rep. Bart Stupak of Michigan. **He noted that local agencies cannot afford to fund interoperability and offered a legislative solution to create a trust fund for interoperability needs from federal appropriations and future spectrum auction proceeds. Other longer term solutions included adopting the Department of Homeland Security's SAFECOM statement of requirements as a starting point for future equipment functionality needs, creating unified federal grant guidance from several different funding sources, encouraging common standards development, using unlicensed spectrum for rural areas, and developing firm deadlines for meeting minimum public safety communications capabilities.**

By the end of the panel discussions, all participants seemed to agree that collaborative efforts to seek elected officials' leadership was the next logical step to addressing the persisting, unsafe interoperability failures that continue to plague local communities and first responders.

***'MAKING COMMUNITIES SAFER: IMMEDIATE AND NEAR TERM SOLUTIONS TO RESOLVE INTEROPERABLE COMMUNICATIONS PROBLEMS FOR FIRST RESPONDERS'***

**THE RESERVE OFFICERS ASSOCIATION**
**CONSTITUTION AVE., N.E.**
**WASHINGTON, D.C.**

***SEPTEMBER 14, 2004***
***9:00 AM – Noon***

8:30 AM **Registration and Breakfast**

9:00 AM **NMRC Welcome and Introduction**

- Allen Hepner, Executive Director, New Millennium Research Council

I. **Keynote**

- The Honorable Bart Stupak (D-1st MI)

II. **Moderator Welcome (Overview of Format)**

- Jon Peha, Professor of Electrical Engineering and Public Policy and Associate Director of the Center for Wireless and Broadband Networks, Carnegie Mellon University

III. **Panel #1: Unable to Talk -The Lack of Interoperability in First Responder Communications Systems**

- David Boyd, Director of the SAFECOM Program Office, Department of Homeland Security
- Sal DiRaimo, Principal Engineer, New York State Technology Enterprise Corporation (NYSTEC)
- Donald Lund, Research Associate Professor, Director of the Atlas Project, University of New Hampshire
- Viktor Mayer-Shoenberger, Associate Professor of Public Policy, Harvard University Kennedy School of Government
- Tom Tolman, Manager for Communications Technology at the National Law Enforcement and Corrections Technology Center (NLECTC), University of Denver
- William Jenkins, Director of Homeland Security and Justice Issues, Government Accountability Office (GAO)

**Moderated Q&A/Audience Q&A**

IV. **Panel #2: Technical Solutions - What Can Be Done and How Much Will It Cost to Improve Public Safety Communications Interoperability In the Near Term?**

- Tom Tolman, Manager for Communications Technology at the National Law Enforcement and Corrections Technology Center (NLECTC), University of Denver
- Sal DiRaimo, Principal Engineer, New York State Technology Enterprise Corporation (NYSTEC)
- Viktor Mayer-Shoenberger, Associate Professor of Public Policy, Harvard University Kennedy School of Government
- David Boyd, Director of the SAFECOM Program Office, Department of Homeland Security

**Moderated Q&A/Audience Q&A**

V. **Panel #3: What Public Policy Remedies Are Available to Spur Action?**

- George Ake, Program Manager, Capital Wireless Integrated Network (CAPWIN)
- David Boyd, Director of the SAFECOM Program Office, Department of Homeland Security
- William Jenkins, Director of Homeland Security and Justice Issues, Government Accountability Office (GAO)
- Ray Steele, Director of the Center for Information and Communication Sciences at Ball State University
- Tom Tolman, Manager for Communications Technology at the National Law Enforcement and Corrections Technology Center (NLECTC), University of Denver

**Moderated Q&A/Audience Q&A**

VI. **Closing Remarks**

- Allen Hepner, Executive Director, New Millennium Research Council

**ESTIMATED COSTS TO FUND COMMUNICATIONS INTEROPERABILITY**

The costs of and funding mechanisms for achieving interoperability were discussed in several contexts throughout the morning. The panelists agreed that moving toward interoperability, whether it was "full" or "partial" interoperability, will require a substantial investment for solutions such as switching to common frequencies or equipment, training personnel to use new equipment, or temporary fixes such as gateways. Referenced estimates for "achieving interoperability" ranged from 'several billion dollars' to $18 billion. Prior government estimates, including the oft-quoted $18 billion, appear to fall far short of the needed funds, according to most of the panelists. The panelists noted that prior studies did not take into account other variables such as handsets or training, or were limited to certain types of radio systems like land mobile radio. The Council on Foreign Relations task force estimate of $6.8 billion was rejected out of hand as too low. "*I'm not sure what the origin of that is, but I know that's way too low to be reasonable*," noted one panelist. Another panelist noted, "*So there are 50 States. Just take the numbers that I just did and average them or take the mean [approx. $500 million per state]. It's not $18 billion. It's substantially more than that just on the back on the envelope."* The cost for increasing an agency's geographic coverage area by a small increment climbs substantially once the equipment is in the ground, a panelist added. The panelists also noted that local agencies often complained that federal funding was slow in coming. *"If you could interview State and local agencies and say are you happy with the funding you get, the majority would say, what funding? We don't have it."* Rep. Bart Stupak noted that recently authorized grant programs for homeland security have fallen "*well short of the estimated $18 billion that is needed to make the nation's public safety agencies fully interoperable."* He proposed a trust fund that would provide $500 million per year from appropriations for three years and after that would be funded by 50% of the proceeds of auctioned spectrum.

MR. STUPAK: This [communications interoperability] is a huge problem. What it says to me is, our local public safety agencies are nowhere closer to being interoperable than they were 3 years ago or 20 years ago when I was working the road.

Why is that? I believe there has been a serious lack of commitment by both the administration and the U.S. Congress. This administration talks a great game on homeland security and interoperability, but has not delivered a product, especially when it comes to funding. ***Despite the creation of the Department of Homeland Security and grant programs for first responders, funding for modernizing their communication systems has fallen well short of the estimated $18 billion that is needed to make the nation's public safety agencies fully interoperable.***

I wonder if, other than Washington, D.C., any effort or money has been put forth to bring interoperability to the nation. ***If you take a look at the funding in fiscal year 2003, only $100 million was devoted to local public safety communication systems and no funding was available at all in fiscal year 2004. We are in the middle of the budget process now, the appropriations process. The President's funding request for interoperable communication systems for 2005 is zero, nothing.*** The President didn't ask Congress for money to operate his new SAFECOM division of the Department of Homeland Security that has been charged with developing a long-term plan and strategy on interoperability.

***That is why there needs to be a guaranteed funding stream for communication grants.*** I have introduced a bill…[that] would set up a public safety communications trust fund to expeditiously move to provide our nation's public safety agencies with interoperability so they will be able to talk to each other.

In the short term, the trust fund would be ***funded by a three-year grant program funded through the trade appropriations cycle, providing up to $500 million per year for interoperability grants.***

In the long term, *the trust fund's revenue would come from the sales of spectrum* conducted by the Federal Communications Commission. *Our bill would dedicate 50 percent of net revenue from the future spectrum auctions to the trust fund*. By dedicating funds from the sale of spectrum, we would ensure that funding will be set aside no matter what happens in the annual appropriations process…

DR. BOYD: …This community [public safety] has 60,000 agencies. Every single one of these agencies is sovereign, and every chief of police sees himself as the chairman of the joint chiefs-of-staff in his community, and every fire chief disagrees.

It's important to understand what we are talking about. We are talking about an installed base that goes beyond the numbers in here. We're talking about *an installed communications base paid for, 99-plus percent, by localities and States to the tune probably of $60 billion or $70 billion*, conservatively estimated…

In 1993, when I first proposed that we ought to do something about interoperability, the response I got from my political boss initially was interopera-what? Fortunately, he was willing to say, okay, if you think it's really important, go ahead and try that. We nevertheless had to scrape money out of other programs. There was no money for it, no money with Congress, no money from anywhere to do this.

There's a fundamental difference now, and it's largely because of 9/11 frankly, and that is, there's a national program in the SAFECOM office. There's a new office being created in the Department of Homeland Security, the Office of Interoperability and Compatibility, the first two times those kinds of things have ever existed at that level to bring that kind of focus.

Since 2001, some $280 million has been invested in grants to localities specifically for interoperability. Some $85 million in grants will come out of the COPS office in the Justice Department this year, and the Office of Domestic Preparedness estimates that about $1.2 billion of the some $12 billion or $13 billion in State block grants have, in fact, been used for interoperability. So there's been a lot done, more frankly than at any other point in history…There is a presidential management initiative for the first time in history on interoperability, the SAFECOM program…

DR. JENKINS: …*I think with regard to why there's a perception that this problem can be solved quickly is part of it, frankly, is the media.* I saw a report just this weekend on NBC in which they said for $350 million, by buying one of the patching devices, you could solve this problem in six months. That was it. That was the solution. And why hasn't Congress provided the $350 million to do this? *As Dr. Boyd said, that just is such a breathtaking misunderstanding of the issue that it's really phenomenal*…

MR. DiRAIMO: Another thing is funding and encouraging the purchase of systems with as much commonality and standards in the procurement as is possible, particularly on the infrastructure side. It's very easy for us to focus on the subscriber side, the handsets, the mobiles, and so forth. Yet, we forget that standardizing along the infrastructure side is the most promising. Again, we tend to dwell on, to some extent -- not here, but in the hinterland, there's a lot of concern about different bands and so forth, and yet, no one in here has any problems or even gives a moment's thought when they pick up their cell phone and place a call whether it's going from a Verizon phone to a Cingular phone to a land line. There's full interoperability on the carriers. That's accomplished in the backbone. That's accomplished in the infrastructure end…

DR. BOYD: …*A typical community sees its communications system as a massive capital undertaking. This is a big expense*. It's typically going to take a bond issue. You're not going to get a community to sell its equipment and decide it's going to upgrade tomorrow to a new system when it's only had it in place for three or five or eight years. So, unfortunately, we have an environment where, because of the cost of making the transition – the technology life cycle, talking in terms of how long the technology lasts typically is 20 or 30 years. The technology cycle is only 18 to 24 months. Now, those things aren't going to converge for a while. It's going to take time for that to happen…

DR. BOYD: [T]here are in fact a number of technically feasible solutions, but technically feasible doesn't mean they're things we necessarily want to do. Let me give you some ideas.

We can go to almost any of a variety of technologies that are produced by a variety of companies. You can name the company. But the answer is that *most of these involve either different technologies or proprietary elements, which means they're not going to be backward compatible with existing systems, and we're not going to be able to change out our existing systems so rapidly that we can afford to replace it overnight with any of these other systems, and they're not necessarily compatible with each other*. And as Sal, I think, has made very clear, we don't want to tie first responder agencies to having to buy a single-company, single technology…We want to see competition in the marketplace…

[H]ow about going to other things that people often suggest? One is the common radio system. *The problem with common radio systems is that we don't want to stifle innovation, not to mention even that would take a long time because there's a cost associated with it.* We're not going to be changing all of these systems out. *Our best estimate is that the current installed infrastructure* -- and this is only an educated guess – *is in the neighborhood of $50 billion or $60 billion or $70 billion.*

Second, different systems on a common frequency. Well, that's cool except that you now have to move things around. *So you're going to have to move things off existing spectrum, move others to it, and that increases the cost as well…*

Gateway systems are cool. Those are also useful, but they have limitations…So while they're very good near term, probably the only reasonably one to three year kind of solution, they nevertheless are spectrally inefficient. However, given the transition costs, these are probably near-term solutions that will last 5 to 10 years even though we could probably put them into place very quickly. They will probably last some time…

Of course, the last issue is what does it cost? Well, as I told you before, nobody knows. *Nobody can tell you what it's going to cost to get there. All of the estimates you've probably heard, those from the old public safety wireless network, about $18.3 billion, was limited to land mobile radios. What goes in the cars? The second one was an OMB estimate, $15 billion. That also was a limited estimate based on what people had to offer. The Council on Foreign Relations task force, $6.8 billion. I'm not sure what the origin of that is, but I know that's way too low to be reasonable. GAO was probably the most honest of all the reports at several billion, which is an accurate measure…*

MR. TOLMAN: However, there is one big barrier to that. Remember my reference earlier to 75 percent of the nation's agencies on the law enforcement side has less than 25 sworn officers; the huge majority are small agencies. *The idea of a $10,000 radio just isn't going to make it.* So that's up there and that's out there. Yes, will it have a future? It will find its way. But the idea of cost, which has been mentioned by all panel members, is a foundational factor in all of these technologies. *Whatever the technology is, in order for it to be accepted and tried, the cost must come down.*

But part of the reason that it's [Internet Protocol technology] taking off -- and it is taking off, and it will have a place in the public safety community -- is that again, those providers, those technological vendors are offering it without outrageous expense.

[AUDIENCE QUESTION]: I just want to press David and I guess the other panelists a little bit on that issue of estimated cost, just kind of following the theme of Congressman Stupak and being up on the Hill and trying to give a more direct answer to constituents, which is what will it cost to achieve interoperability, understanding that that term is kind of nebulous too, full interoperability, partial interoperability, understanding David, that you mentioned the whole array of different groups that gave various estimates and that you don't want to rely on any one technology.

The "but" that I keep coming back to is…doesn't there still need to be an estimated cost for interoperability that one could then deduce or presume based on evolution or modification to those standards and requirements over time? Isn't that what needs to be done?

DR. BOYD: Yes, we agree. But in order to do that, in order to arrive at that estimate, there are some basic things that had to be done. We first needed the statement of requirements to define exactly what it was we were talking about. What we are

now initiating -- we will probably initiate about the middle of October -- is an effort to take that statement of requirements and now measure where the nation is against that statement of requirements to establish what we call a baseline.

The baseline does a number of things. One of them is that it tells us where are now. No one can answer that question. There's no database you can go to, and you can't arrive at any cost figures that are anything but extraordinarily mushy until you suddenly have some idea where we are in order to measure what it will take to get there.

The second piece of that, I think, is that this also then becomes a driver for helping us to understand where is R&D required, where are standards required, where is funding required to fix this because it's not just funding that's required to do this. The total installed infrastructure is very large, but you don't really need to fund or replace all of that to achieve interoperability…

That then begins to give you a really clear picture of what it's going to take to get there, and then you can actually provide more than swag guesses on cost. The best we can do now are swag costs. And I know why Bill Jenkins and GAO came up with several billion, and that is because there's no way to defend any cost estimate without the statement of requirements, which we now have, and baseline, which we are now trying to create.

MR. TOLMAN: "Achieve interoperability." Boy, how do you define that?...I mean, the potential of the thing and who defines it, "achieve interoperability" -- and it does fall to the baseline standards. From an engineering perspective, just to give you some perspective, an agency says I want a system that will provide 95 percent coverage in my area. The vendor says, okay, that will cost X million dollars. Now, wait a minute. I want to improve that. I want to go from 95 to 97 coverage capability. There's a nonlinear, an exponential increase to go from 95 -- I know Sal will certainly back this one up. *To go from 95 to 97 percent takes it [cost for extra coverage] off the page.* Achieving interoperability perhaps can mean different things to different people…

MR. AKE: I'd like to add to that a couple of things. *When you talk about costs, there are a lot of other things in that cost because if you do new technology, you've got to train folks, you've got to teach them how to use it. All that has got to be figured in this cost.*

I remember when I first came to Washington, I went to a police department and a fire department in the city, and they said to me, look, this CapWIN thing is great. But guess what. We're not going to replace what we already have. We went to the City Council. *We got millions of dollars to put this in. We're not going to replace it.* You're going have to figure out how to make CapWIN work with what we have. I think that's the secret to this in the near term…

But we're going to have to let these folks use the technology they have today. If I was a police chief or a fire chief and I went to my city council and I got $20 million, as we did in North Carolina, to do a statewide system, and I go back to the general assembly three years later and say, guess what, it's no good anymore, I'm probably going to be looking for employment. So we really need to take that into consideration as we start moving forward.

DR. PEHA: …[p]erhaps most important, if we wait until we know exactly how much it costs to spend a dime, we will never get there. So we're going to have to make some best guesses and move forward.

MR. DiRAIMO: Jon, in response to that, you're very correct. It's not really possible to divorce oneself from the functionality of interoperability and a complete system solution that satisfies all the requirements because requirements are so interwoven ultimately in the procurement and the system design.

If we wanted to take a temperature -- and there is no database of what it costs -- there are a few things that we can look at. The State of New York issued an RFP and got two consortiums to respond to it, one from Tyco, one from Motorola. The State ultimately entered in negotiations with Tyco. I can't mention or I can't detail what that is. However, for an ad hoc assembly committee hearing, Motorola was on the record that their bid to the State of New York was $3.5 billion.

Another thing that is on the record in the public domain is the State of Florida went through a couple of twists and turns to procure a statewide system for their multi-agency users, and that's around $1 billion ultimately. The Congressman that

spoke, the State of Michigan has -- as a matter of fact, one of the early systems to go in that wasn't multi-agency but was statewide, that system in Michigan is estimated reasonably at about $500 million to $700 million.

*The State of Pennsylvania is in the midst of completing procurement, and that's in the $300 million range. So there are 50 States. Just take the numbers that I just did and average them or take the mean. It's not $18 billion. It's substantially more than that just on the back on the envelope.*

DR. PEHA: And let me ask you a follow-up on that. One of those States I know pretty well. When you give those numbers, what is it you are including and what are you not including?

MR. DiRAIMO: I tried to compare apples and apples in all of those examples, and in all of those examples, those were complete systems. Again because you can't really divorce oneself from interoperability versus a complete system solution, in those States that I just noted, those were for complete systems, not necessarily multi-agency, but complete systems.

DR. PEHA: Complete infrastructure not complete handsets and the like, which can be most expensive.

MR. DiRAIMO: Actually handsets to the infrastructure. And in the case of Florida, the infrastructure was $700 million and allow a typical one-third for the handset and subscriber –

MR. AKE: I remember putting in a statewide data system in North Carolina, and there was a holler in western North Carolina the fire chief really needed to be covered. We had not figured. So we had to go put another transmitter in that. I suspect most people that do this in a statewide area or regional area find the hollers that they haven't thought about that cost more money than what they estimate. This is very expensive stuff. It's not cheap…

DR. STEELE: I think within a year's time, with appropriate focus and very little funding, you could get the functional standards identified from the bottom up with people participating from the fire department of 25 players and the police department of 10 officers, and I think you could do it through States and involve the CIO types of each State because all you have to do is read the government publications recently, the planned spending per State. There's a lot of planned spending on technology in every State in the nation. Even the States claiming they have no money are planning spending in that area because of the last three to five years. Since 2000 we have held back…

MR. TOLMAN: He's right. (Laughter.) He's absolutely right. Last week there was the Intergovernmental Relations Subcommittee that was going on, and there were a number of comments from the table, not just from the panel but also from those that were on the committee, talking about -- and they've got it nailed right -- the issue of the process [for public safety grants]…[I]n the grand scheme of it -- and we're hearing this out in the field from the State and local community -- when you talk about Federal funding, it turns them off…. They want to run and go in the other direction…But that is a point… *if you could interview State and local agencies and say are you happy with the funding you get, the majority would say, what funding? We don't have it.*

## MAJOR OBSTACLES TO PUBLIC SAFETY INTEROPERABILITY

Panelists agreed that there is a pressing need for immediate interoperability (a term defined differently by various experts) among first responders. However, they cite major obstacles to expeditiously achieving interoperability, including: (1) insufficient funding, (2) problems with technical design and standards development, (3) jurisdictional squabbling and governance issues, (4) historical animosities and federalism issues, and (5) interpersonal communication problems and (6) a lack of standardized resource nomenclature. Panelists noted that years ago communications systems were able to interoperate because they were simple. "*The split or the interoperability problem began in the late 80's when the different vendors began what were called trunking systems. That's when the proprietary system development started."* As commercial mobile wireless systems (cell phones) developed, interference in the main public safety channels at 800 megahertz also became a major problem. *"That's a massive problem and one that desperately needs to be addressed very quickly because, even if we had interoperability in those channels, the interference effectively destroys our ability…to communicate."* Among other obstacles to achieving interoperability for first responders in the near term were: the complexity of the technical problems, fragmented spectrum for first responders, a lack of coordination of nationwide interoperability channels, and organizational issues within public safety agencies. One panelist named this the, "*the intra-agency hurdle," or "the reluctance of agency leadership to lose the bottlenecks of communication control, give up communication hierarchy."*

DR. PEHA: If a bunch of engineers were to go out and design a brand new system, starting from scratch, for emergency responders nationwide, interoperability would not be among the serious problems we would face. There would be other challenges, but this would not be a problem.

As many of you know from experience, as you will hear later today, it is a problem. ***It is a complicated problem.*** And as many of you know from experience, one of the best ways to get really complicated is to tie it in with government policy. So government policy helped get us get here, and I also mean government policy can help get us out. So I am really glad to see turnout from a variety of different places within the government. The commercial sector is also going to play a very important role…

Let me start by asking the panel -- there is a lot of competition for our attention and our resources. What evidence is there that lack of interoperability is a real threat to first responders or to the public in general? Do we know that this is a minor inconvenience or a major problem?

DR. BOYD: Well, I think the importance of the problem is fairly obvious…there is a clear issue of safety of life associated with interoperability, and to the extent that they cannot communicate with each other among disciplines or in jurisdictions that are supporting themselves, lives wind up at risk.

The second reason why it's important is that ***there's an incredible cost associated with this***…[U]rban search and rescue teams are volunteers who are provided by local communities. When they arrive on scene, ***the way they normally establish interoperability,*** unless they happen to have the good fortune to have radio equipment that communicates, ***is either to bring extra radios -- and of course, there's a cost associated with that -- or the agency that they are coming to support needs extra radios -- and there's a cost associated with that*** -- to provide to the urban search and rescue team in order to allow what is often clumsy, primitive, and very clugy interoperability.

MR. DiRAIMO: Well, as far as interoperability, I'd have to examine what is the "why." Why does it exist? And there are a number of technical reasons for that and historical reasons…I think from the managerial level that is probably the principal problem that needs to be dealt with.

[O]n the engineering end, there are transitions going on. The transition from the first generation of land mobile systems is still being completed, as a matter of fact, is just really kind of getting underway. By contrast, carriers delivering cell phone services to all of you have been doing it for many years and are probably going into their third generation now. So as a consequence, there's something of a paradigm shift within the engineering…

*All of that has come together - some parochialism - a transition in the technology - and ever-increasing demands by the public for more efficient, cost-effective delivery of these services that has resulted in people starting to notice that there are interoperability issues*…

DR. LUND: We need to look at some *side issues that aren't technical but do impact communication, which include the linguistic side of interoperability, that is, the use of different codes, the use of different descriptors for resources. In other words, we have no standardized resource nomenclature*…

We have the culture of communications, in which we include those issues that my colleagues have mentioned, plus the breakdown of communication discipline. The breakdown of discipline, meaning that people are talking over each other or stepping on each other because they don't listen before they push the talk switch, is an important issue…

And my last concern is something I call *the illusion of communication. It's the illusion that a message that has been transmitted has been received and understood*. Frequently, yes, you get your message out, but frequently it's not understood. There was a wreck of an Amtrak train, a derailment, in central Florida. The train happened to be the Auto Train, and when the sheriff's office in Putnam County got the message that there had been an accident, they were looking for a car-engine collision, not realizing until they had men on the scene that there were cars derailed and numerous injuries and some fatalities.

MR. TOLMAN: This goes back actually to the 80's. *The split or the interoperability problem began in the late 80's when the different vendors began what were called trunking systems. That's when the proprietary system development started* its fork in the road…

Starting with the report, Congress had tasked the FCC and NTIA to go out and find the needs for the public safety community to the year 2010 and get back with this report, which they did in September of '96.

This is what was found…*Fragmented spectrum in 10 different bands*…[numerous] *System access methods*…a *lack of coordination nationwide of interoperability channels*…and then *spectrum* was an issue…

In '98 and '99, through the National Institute of Justice, we undertook a law enforcement study, got the attention of the FCC…Even though this was done in '97, '98, and the first part of '99 with the fire EMS study, we have good evidence that the groups that we work with, that while the percentages may have changed, the ratio really hasn't. This was it*. Funding, number one. Then, different bands. Then planning, which I'm sure we'll be talking about later on in the day here. Planning is an issue. Coverage capabilities*…

The National Task Force on Interoperability, where they identified *five key challenges: incompatible and aging equipment, limited funding*. There's that common denominator again, which I'm sure we'll be talking more about today. *Limited and fragmented coordination* and I would love to go on but in the interest of time will stop there.

DR. JENKINS: In order to deal with this, it's a peoples and processes and technology issue…

That leads to the second thing, which is *if there is not an agreement on how you're going to operate, it doesn't matter what the technology is*. In our view *one of the key issues here has been unwillingness of multiple jurisdictions to come together and develop and agree upon an incident management command system and structure*…

Different nomenclature is a huge problem. It's something that's relatively easy to fix…

*The jurisdictional issues are considerable*…One of the big issues that stands in the way of getting incident command structures together is memorandums of understanding about liability, about what happens if your guys go into another jurisdiction…

So from our perspective, *one of the key problems has been and continues to be the inability of people to put aside egos and address this on a regional basis, not a stove pipe basis*, which has been the traditional thing…So from our perspective, that is the key, fundamental barrier to be able to achieve interoperable communications. It's not technology issues so much as it is a people and processes issue.

DR. MAYER-SCHOENBERGER: There are three main points that I'd like to make. One is that whenever you look at the last 20 years of interoperability challenges, you think that history loops. *Every time you have a big disaster or catastrophe*, a terrorist event, from, the World Trade Center, Columbine High shootout, Oklahoma City bombing, Amtrak derailment in Arizona, Florida forest fires to 9/11, every *time you have a blue ribbon panel at the end recommending that more interoperability is desperately needed, then some interim measures are being taken and then everybody goes back to the usual routine.* And then everything starts all over again at the next incident. We need to break out of that history loop problem, number one.

Number two…There is a public policy problem that has to do with frequencies and standards, budgets, money, and that needs to be addressed. There is a number of collective action issues involved in the public policy problem, and this is a harder problem than the technical problem.

And there is a third group of problems. That has to do with the *organizational issues within first responder agencies*. That's what I'd like to call *the intra-agency hurdle, a reluctance of agency leadership to lose the bottlenecks of communication control, give up communication hierarchy*, these types of issues…

[AUDIENCE QUESTION]: Recently there's a group that's come forward that said interoperability and interference are a similar issue. Do you think it's unrealistic that they can both be solved in the same channel even though they equally need to be addressed?

DR. BOYD: Now, that's really very much both a process and a technical issue. I like to treat them separately because interoperability has to do with communicating with each other. Interference is a different kind of issue. But obviously, if you can't communicate, then you can't interoperate either. So *interference is a massive issue*.

There are a variety of kinds of interference that we're experiencing now. Probably *the largest, most complicated one causing the most grief to public safety, as Charles well knows, is the interleaving of cellular channels and public safety channels in the 800 megahertz spectrum* where they are interleaved so tightly that intermodulation -- that is, the production of frequencies you didn't mean are interfering with each other because you've got lots of mixing in the air. *That's a massive problem and one that desperately needs to be addressed and we think needs to be addressed very quickly because that's a case where, even if we had interoperability in those channels, the interference effectively destroys our ability*, whether it's in an interoperable or in a non-interoperable situation, *to communicate*. The first responders have got to be able to talk in an emergency not just with each other but back to the kinds of resources and the support that they need. And those radios are essential to them. And that voice piece of it, while data is a critical piece -- and our statement of requirements covers it -- as I know Charles would tell you in a heartbeat, is crucial because that fireman out there holding a hose with both hands trying to put out the fire aren't reading a PDA now.

## NEAR-TERM SOLUTIONS TO COMMUNICATIONS INTEROPERABILITY PROBLEMS

Panelists recommended a range of immediate steps that would assist first responders to better communicate in the mid-term. The solutions offered ranged from addressing jurisdictional issues to technology fixes and process improvements for incident communications and command. Panelists agreed that minimal standards for communications capabilities were of paramount importance so that first responders and communications vendors can work toward resolving incompatible systems. "*One of the first things that comes to my mind is [to] encourage standards. At the Federal level, standards can be encouraged in a number of ways,"* said one panelist. Other panelists suggested the development of a nationwide database of public safety frequencies so it is clear which first responder is using what channel. Panelists see the role of the federal government as a facilitator of cooperation and technical assistance on standards development, grant guidance, funding mechanisms, and spectrum management. Speakers agreed that there needs to be a common governance structure. "*I think the single biggest challenge with the longest payoff, the most sustained payoff, is creating a governance structure by which you know who's going to be involved, what you're going to do,*" said one panelist. Speakers stressed the importance of freeing up the 700 megahertz spectrum currently held by broadcasters to provide an additional 24 MHz of spectrum for public safety. They also noted the need for the commercial sector to seize what could be a significant market opportunity, and the need for a knowledge base where first responder agencies could get reliable information. *"You need somewhere a 'consumer reports' function that can provide objective technical assessment of the solutions that these first responders are being sold."*

MR. DiRAIMO: So there are things there to break down in terms of the organization. So how do you do that without a disaster? And that's where I have some, again, spark that is somewhat idealistic in that *you can have policy and develop public policy that encourages the people making decisions as to how they're going to implement these services* to their clients, which is ultimately the public in an efficient way that's going to keep their job, that's going to get them reelected, that's going to get them a successful department. *To a great extent, technology can be applied that can help economy of scale where agencies can actually share systems*, where agencies can be encouraged to develop those standard operating procedures ahead of time so that they are comfortable with them…

DR. BOYD: I think there are some very near-term things that you can do. In the RapidCom program what we tried to do was to say, look, given what Federal programs may already be in some of these areas and given what they may already have in these agencies, how can we take what they've got now and make it much more effective. How do we help them get to interoperability with what they currently have? We think in the near term things that you can do -- quite frankly, RapidCom was probably about a 120-day exercise in the 10 urban areas. Even there, we were able to achieve a great deal by looking at all the elements on the continuum I talked about earlier. That is, if *we can help them identify the basic equipment -- patch panels, gateway kinds of technologies are probably in the nearest term most immediately available*, despite some drawbacks. They're spectrally inefficient. They require channels in both systems. Nevertheless, they offer you a near-term approach, but only if -- only if -- you can provide the technical assistance to do all the things they need to do, that engineering technical assistance they need to actually get the systems up and in operation, and *then more importantly, assistance in helping build the governance* and all the other things…

But that plan puts a lot of emphasis on all of those other non-technical pieces on how do we develop the SOPs [standard operating procedures], how do we develop the agreements and the governance structure, how do we set up the exercises, how do we provide the training so that we can, in fact, milk as much interoperability as we can out of what we already have, because there's a lot of capability there, if we just stop, think it through, do some careful planning, and work out the essential agreements and standard operating procedures.

MR. TOLMAN: Now in public safety, the issue of public safety and interoperability has become a buzzword and a high-level subject. Two things have happened…One is we see that there are initiatives underway to obtain additional

spectrum…perhaps this one that we're all watching, and that's the Nextel decision, what comes down with that, because that's going to be a major reallocation of spectrum that will impact…

But the other driver is getting legislation, but *the other driver is that the commercial sector, industry is in some areas starting to prick up and say, wait a minute, there's business opportunity here*…The point is that there are other technologies that are coming and, because of the issue, *create the driver to make such things happen as software defined radio* that we'll be hearing about and other technological areas.

DR. JENKINS: I think one of the things he's [Boyd/SAFECOM] working on that's very important -- and we think the sooner, the better -- is to *develop a nationwide database of interoperable frequencies and a common nomenclature for those frequencies that's readily available to all first responders across the country*. First responders can talk to each other, but they don't know that they can talk to each other because you have different names for exactly the same thing. That's something that can be done relatively quickly and could have benefits…

[W]e have so many of these small organizations among first responders, they don't really have an ability to assess what manufacturers are telling them. *One of the really key roles that the Federal government or somebody can play -- but you need somewhere a "consumer reports" function that can provide objective technical assessment of the solutions that these first responders are being sold* and someplace that they can go to get that assistance…

MR. DiRAIMO: Jon, I'll be glad to share my quick laundry list on how to get going in the short term…*One of the first things that comes to my mind is encourage standards. At the Federal level, standards can be encouraged in a number of ways, and that's also another item on my list and that is coordination*. The agencies outside the Pentagon could coordinate their purchases better…in a comprehensive way…

Another thing that would be very helpful in the short term is to get *going on this 700 megahertz reallocation*. It is an extremely tedious situation that the broadcasters are slow to migrate, which we've alluded to here, and many of those broadcasters are migrating to over-the-air broadcasting very slowly…The vast majority of their subscribers are on cable. Yet, *this issue drags on and is becoming a real impediment to the deployment of new technologies in public safety communications*.

Another thing is *funding and encouraging the purchase of systems with as much commonality and standards in the procurement as is possible, particularly on the infrastructure side*. It's very easy for us to focus on the subscriber side, the handsets, the mobiles, and so forth. Yet, we forget that standardizing along the infrastructure side is the most promising. Again, we tend to dwell on, to some extent -- not here, but in the hinterland, there's a lot of concern about different bands and so forth, and yet, no one in here has any problems or even gives a moment's thought when they pick up their cell phone and place a call whether it's going from a Verizon phone to a Cingular phone to a land line. There's full interoperability on the carriers. That's accomplished in the backbone.

MR. TOLMAN: [T]hey've got to want to, they being the industry. You've got to have that driver in place. Why should they manufacture standards? Standards development needs to move along, and there are ways to change the paradigm, change the approach. There are ways to make that accelerate.

DR. JENKINS: I *think the single biggest challenge with the longest payoff, the most sustained payoff, is creating a governance structure by which you know who's going to be involved, what you're going to do*. The reason that is so important is that developing interoperability is not a static thing. It's not "got it, that's it," I don't have to worry about it for the next 20 years. What is required for interoperability depends on changing technology, the changing events…

*You need a governance structure, an in-place governance structure, which everybody recognizes is legit that represents their interests, that they buy into…It really needs to be a statewide governance structure*, which is one of the things that we recommend in our report. That is extraordinarily difficult to do because everybody wants to play as long as they make the rules…

*So in the long run, establishing a good governance structure that has some sustainability over time is absolutely critical* I think.

DR. MAYER-SCHOENBERGER: We certainly have, it seems, the capacity to tackle the issues, but unfortunately, we don't have enough traction on the ground to solve them. What seems to me important -- and I'd like to stress that again -- is that some solutions that are available to us, technological solutions, some public policy solutions, and so forth, might help us in solving other issues as well.

DR. BOYD: We know terrorists aren't going to wait, so there's a near-term requirement. That is, how do we achieve a level of interoperability that will support emergencies, say, the footprint of a Twin Towers, and allow at least the command structure to communicate, and how do we do that quickly? *We think we can do that largely with gateways and the kinds of things we've been offering in RapidCom*, and we think that can be executed in one or two or three years, depending on availability of resources. *That's one of the cases where, if sufficient resources are available, you could probably do that in 12 to 24 months*...

MR. AKE: I think there are a lot of things we can do with the technologies here today. Tom has talked about all the different things. I've done the exchanging of radios and all those sorts of things, but I think there's a better way to do business. In the future, we have to look for that better way...We have a voice system in CapWIN that we played with that will allow me to go to one individual using IP. Would I put my life on it today? No. Might I be able to put my life on it in 10 years from now? Yes. So there are a lot of things coming in the future.

*The expansion of the Internet, all the technologies that are going on with the Internet. There's so much resource money being put into those technologies that public safety can take part of. We need to look for those technologies*...

*Partnership is very, very critical. You can't build something like this and you can't get the technology unless you get everybody involved, and they have to have ownership in it.* You can have the best system with the best technology, the best everything out there, but if people don't feel like they have some ownership in it, it's no good. That's my experience…

**POLICY SOLUTIONS TO SPUR NEAR-TERM ACTION**

Federal assistance – in the form of funding, creating guidelines for interoperability grants, creating more appropriate governance structures, creating and disseminating common standards or minimum requirements – were the policy solutions most mentioned by the panelists. Rep. Stupak noted, "*Local agencies simply cannot afford to upgrade their communication systems without the assistance of the Federal government*." He quoted the recent 9/11 Commission report which said, *"Federal funding of such interagency communication units should be given a high priority."* Rep. Stupak added that first response agencies, "*need spectrum and they need a long-term plan and commitment from this and future administrations."* Panelists also stressed that local first responder agencies needed to be involved in any formal process designed to improve communications interoperability. "W*hat we may need to do is to say first and foremost, let's find the needs through a process that is State by State and then regionalized by the involvement from the bottom up,"* said one panelist. Panelists highlighted the need for the establishment of common grant guidance and deadlines or benchmarks for measuring progress in this area. "*There has to be some consistency in the grant guidance and the review of those things so that you don't have the left hand and the right hand across the river doing things that are not going to work*." The grant guidance also needs to include deadlines so that progress can be assessed, said one panelist. "*There need to be some target dates for getting things done. Otherwise people talk forever about this*." Again this is where Congress can assist with a carrot and a stick, added another panelist. "*But I think the way you do it is by involvement that says here is a time frame and we're not going to spend another dime until you play."* Using unlicensed spectrum such as that used for Wi-Fi was also mentioned as a future possibility especially for rural areas. Panelists summarized the major needs for achieving interoperability as: (1) *"enough funding [to] really help local agencies"*; (2) *"We need staff, expert staff*"; (3) *"We need the ability to influence spectrum decisions,"* and (4) *"we need a clear mandate so that [one] Federal office doesn't step on other Federal offices."*

MR. STUPAK: *Local agencies simply just cannot afford to upgrade their communication systems without the assistance of the Federal government*. I believe that Federal assistance is more than justified when the Federal government calls upon local agencies to be even more vigilant and more prepared for possible acts of terrorism. In fact, the 9/11 Commission in their report outlines a similar recommendation. The report stated -- and again, I want to quote -- "The inability to communicate was a critical element of the World Trade Center, Pentagon, Somerset County, Pennsylvania crash sites where multiple agencies and multiple jurisdictions responded…The occurrence of this problem at three very different sites is strong evidence that compatible and adequate communications among public safety organizations at the local, State, and Federal level remains an important problem. *Federal funding of such interagency communication units should be given a high priority."*

The lack of funding isn't the only obstacle for public safety agencies to become interoperable. *They need spectrum and they need a long-term plan and commitment from this and future administrations*…

Finally, the administration needs to provide a long-term plan on how to make our nation's public safety agencies fully interoperable…

Public safety is not an issue where the administration and Congress should continue to drag its feet, but here we are three years after 9/11 and we're still at square one…

[AUDIENCE COMMENT]: What you gentlemen have said is absolutely correct. There needs to be a statewide program that pulls everybody together. Just to share a quick experience, what it has done is brought different disciplines of people and elected officials together in one forum to understand what the issue is and how it can be solved jointly. And people learn from each other of initiatives that were underway that they had no idea were in existence.

So *I would argue and request that SAFECOM be considered the method by which to do [interoperability planning] in every State*…And there are statewide interoperability executive committees under the FCC which could be charged to do that. But when you set your governance model, *the reason SAFECOM is successful is because it is practitioner driven*…

MR. TOLMAN: We know that the 700 band is coming. When it gets here, that's a whole other issue with different initiatives to try and get a date certain on that. 24 megahertz adds up to effectively doubling. That's 51 percent of the existing spectrum. If you added the 10 disparate bands up that public safety is on, low band, high band, UHF, 450 and 800, and a sliver of 900, and there's a piece of 220 in there, it's about 23.9 megahertz. And the 700 band eventually will be – 2,100 channels will be coming available, effectively doubling the spectrum. And that doesn't count the FCC's reallocation, fortunately, of what's being called the largest reallocation of spectrum, 50 megahertz of spectrum in the 4.9 gigahertz band. That's already moving out. It's moving out quickly in the 4.9 in that the FCC has taken a different approach and putting out blanket licensing. We haven't touched on that, but there are some impediments in my opinion certainly with regard to the FCC and how they've been conducting business with licensing with public safety.

*In that 700 band, we want it yesterday. The public safety can use it. So let's have it.*

DR. PEHA: On the question of standard-setting, a lot of companies are not coming together, giving up their proprietary solutions, because they don't see it as in their interest to. *In many other areas of communications design, consumer groups*, say, for example, CableLabs for all of the cable companies, *come together and force the manufacturers to build a standard*. *The consumer groups in this case are public safety agencies and I think a Federal role could be to force that issue rather than waiting for the companies to do so*.

DR. BOYD: It's important to understand that the Federal investment in this area can help steer a lot of this because it can be focused in a few areas as part of demonstrations and other kinds of things. But it's a relatively small piece of the total amount spent in the public safety community. So there is a limit to how much pressure it can apply.

[AUDIENCE QUESTION]: What I have heard is that in the heartland -- we don't see it here in the debate in D.C. -- hundreds of small communities, those 25-member police departments or smaller, are making heavy use of unlicensed spectrum. And I don't see APCO and others out there saying, hey, unlicensed spectrum is a key part of the vision for future public safety. My question to you is how important is unlicensed spectrum for public safety? Why not push for more unlicensed spectrum for public safety?

MR. TOLMAN: Well, I would say the answer is yes – unlicensed spectrum – this new paradigm. Now, there's a caveat with that. They've got to move consciously with public safety and they can do it, move out with this. The plus is that it's happening now, again with the FCC with the blanket licensing in the 4.9 gigahertz is typically a microwave frequency point-to-point. And yet, with today's technology advancements, most of the licensees aren't using point-to-point. It's actually operating as a hot spot type of technology. *The answer is unlicensed spectrum absolutely has a future in public safety*…

DR. BOYD: The first thing I'd point out is that frankly everybody needs to lead. It's not just one place. It's not just one thing. Everybody needs to lead. I think that applies to DHS. It applies to the Federal Communications Commission that owns the spectrum, DHS that deals with the responders and the funding of those activities, and Congress which passes the legislation and appropriates the money…

So the reality is that what the White House wanted to do and what the President wanted to do in the creation of SAFECOM was to say, look, we've got to have a way to get the Federal act together. We've got to get the Federal folks to play together, and so Federal coordination became a major issue. Spectrum is a critical piece and it's a policy issue, but you can't foist that all on the Federal Communications Commission…

*We need to institutionalize what we've done now because* one of the things that has happened is that while lots of people were put in charge of interoperability and now SAFECOM is in charge of interoperability*, there is no legislative*

*authority for any of the players to cause anything to happen*. The only real authority that currently exists -- and it's fairly potent authority – is authority which amounts to an executive direction, which comes down through the Office of Management and Budget through the budget process which provides pass-back language in each budget that says you cannot implement anything that touches wireless communication systems that doesn't comport with the SAFECOM national strategy. So there is at least that much direction associated with it.

Within the Department of Homeland Security, the Secretary has undertaken to create the Office of Interoperability and Compatibility which looks beyond just communications. It adds initially a focus on equipment at large and a focus on training. And the office has to be up and operational by the 1st of October, and it will be. It's on schedule to do that and may also encompass other things later because we were told to leave a place open for that.

So there is a departmental level of direction to make those kinds of things happen as well, but the fact is that we're still not fully institutionalized. So what happens is that we spend an awful lot of energy persuading people. We think we've become fairly convincing in this business, but it's not always easy. We have been able to put in place a number of things that I think are crucial as policy initiatives. One of them is common grant guidance, and the common grant guidance was used last year for the first time in interoperability grant funding that went through FEMA and that went through the COPS office. *That grant guidance was common. We helped up set up the selection criteria, use the common grant guidance criteria as part of the selection process, and that common grant guidance has been implemented* in Office of Domestic Preparedness grants this year to States as guidance, as information, because in block grants it works a bit differently. But here's another policy issue Congress can help us with.

When we say we applied the SAFECOM common grant guidance, I want to emphasize that we did that insofar as each of those grant programs would permit because Congress had written different rules for the different programs. So one of the programs allowed money to support specialized technical consulting, which the local guys don't have, and to support planning. The other grant in the COPS office said, you can only buy equipment -- remember, we've spent a lot of time saying equipment is only part of the issue -- and it had to be a 25 percent cash match, which was tough on the local agencies, and they couldn't spend any of the money on planning and training. Now, there were other planning grant monies that you could use for a year. *So you had this bizarre situation where you had to get money out to buy equipment long before you were going to be able to support or provide the planning that was required to make it make sense.*

DR. STEELE: Well, I'm the new voice on the block here. Far be it from me to suggest a solution in policy, but let me just suggest some things that I've heard this morning. *I think I would do it in a very simple fashion. I would say the words "resolve," "focus," and "discipline" haven't come together to get execution*, and I think they haven't for some very simple reasons.

Number one, with all due respect to the people at the table with far more experience, I do understand when you say it isn't going to happen fast. *But I believe timing is critical and the window of opportunity comes rarely*, and I don't agree at all that we need another crisis to understand what we learned from 9/11. I was part of that crisis, and it's time to stop saying we need the next crisis. *We need to act now*.

And to act now means some things. It means, number one -- I'd like to ask anybody on this panel or in the room if you can tell me in the State of X…exactly what's going on [with interoperability]. As I would posit, nobody in this room and nobody in the country probably does. We've got all kinds of organizations talking about it, but nobody is doing it. *Needs assessment is the most functional notion*. We've got more out there than we know about and more problems than we know about. We just often don't focus on the problem where it is, and that means a solution gets a lot more complicated.

So *I would suggest that if you look at the needs, you get a structure that might help*, and if you think of two triangles, points opposite direction, the first -- and it goes to your partnership issue. The first point I think that we've got to deal with is if we truly believe that we are a nation at risk in a war-like time, then we have to have executive leadership to stop it. We're not going to have seven firemen or six policemen sitting around a room voting on whether or not they're going to go out and answer the fire call or go out and answer the terrorist call. That doesn't work. We've got command issues here. Those of us

who have served in any military-like organization know that there's a command and control function, and everybody understands it who's in the game and they respect it.

So *what we may need to do is to say first and foremost, let's find the needs through a process that is State by State and then regionalized by the involvement from the bottom up*. I agree with you about the bottom up. I think you absolutely have to do that.

*But I think the way you do it is by involvement that says here is a time frame and we're not going to spend another dime until you play*. And that's where Congress and policy has to come together to begin to put some discipline in the system. *Do not spend a dime until we have agreed from the bottom up on a functional, not a technical, but a functional standard*.

I've worked with…lots of others [companies] to build all sorts of high tech projects, and I've never once asked you to define the functional standard. I've asked you to come in with the technical solution that meets the functional standard, i.e., we need to know what we need before we can ask you to bring it in and fix it. Once we have determined that, the functional standard is what people give buy-in to because they're saying that's what I want. And if you can get the functional standard first at the base, you can bring people together. If at the other end of that point, you can say from a leadership -- and I don't care who is sitting in the White House at the end of this current process -- *Someone has got to be willing to say we have a national issue and we have a significant national issue from the commander in chief's perspective and that Congress is going to have to get in line and play and agree*…

So whoever wins [the presidency] needs to understand the lead role and then we turn to the rest of the game and we simply say, look, at every State level, I don't care if you've got 30,000 or 22 people, you can still find a functional way per State and then by region to identify functional standards. And if you do that, a lot of the other issues will fall away because you'll begin to understand what the needs are. And *it's amazing when you actually understand how much you need and what the need is, how you find ways to fund it*.

DR. JENKINS: *We think it's very important that it be very clear who has the leadership*, for the reason that he mentioned. There are three different agencies that have been given the leadership in the Homeland Security Act*. It is important that there be a clear understanding of who has the leadership in the Federal government, who can set grant guidance standards, that there is funding for that organization*. And OIC, which Dr. Boyd will head, is going to be one step in that direction, but at this point they don't have for '05 an appropriation. It's not in the President's budget, so there's a question of how this organization is going to be funded.

The grant guidance is extremely important…You have a one or two year performance period, which encourages States to spend it on equipment rather than planning, spending it on equipment inconsistent with a plan. There is no consistent way of reviewing applications for the use of the money. So it is possible, with the various grants that are out there, to actually approve two grants in adjacent jurisdictions that propose diametrically opposed solutions to interoperability. There needs to be some way to make sure that that does not happen. *There has to be some consistency in the grant guidance and the review of those things so that you don't have the left hand and the right hand across the river doing things that are not going to work*. It's a waste of money. So we think that's extremely important. There has to be consistent grant guidance.

We think there also have to be deadlines. As this gentleman mentioned, *there need to be some target dates for getting things done. Otherwise people talk forever about this*. That has to be tied into grant guidance we believe. The grant guidance ought to include some target dates for getting things done. As it is now, for example, even the regional definition is different from grant to grant. They don't define metropolitan statistical area the same in grants. The FEMA and COPS grants use two different definitions…

So we really are focusing in this area on the accountability for doing something, whether it's for interoperability or the other use of the money. We think that's very important and we're going to be pushing that.

DR. BOYD: Let me make just a couple of real quick points before you move on…One of the critical things we've done is, first off, it's clear that the administration and Congress have both recognized this as a national issue. The administration created SAFECOM. The Department of Homeland Security created the Office of Interoperability. Congress funded interoperability grants and lots of hearings. At the national level, both Congress and the administration, while they may differ about the approach or the way to get to the end solution, I think it's clear that all of the levels that matter understand this is a national issue and want very much to address it. I think Congressman Stupak made that very clear in his talk today.

The second one is that we *also agree you have to start with a needs assessment*. In fact, we don't think we need a year to do that. We published it in April of this year. You'll find it on safecomprogram.gov. It's about 200 pages long, 192 to be exact*. It was actually created by the first responders who said this is what we need to be able to do*…and it steps through what they need, how much they need, the rest…

The reality is *where the Federal government can help is that we can help to answer the technical questions, we can help to provide technical assistance, we can help with funding and that kind of internal thing, but only -- only -- if the local guys are satisfied with the approach we're using and the way we're doing it*.

DR. PEHA: I think I will make one quick statement…We have a national system that doesn't work very well -- I mean, that's what failure of interoperability means -- and one we're spending a lot of money for, and we have spent a lot of money for and the reason is because we have 60,000 decision-makers*. We need a national strategy. We need lots and lots of local input. We don't need Federal people running it, but we need a national strategy*.

And that is only going to come if there is *an office with four things*: first of all, *enough funding that we can really help local agencies*, that they'll even return your phone calls. *We need staff, expert staff*, enough to provide some of the assistance that we talked about earlier in the panels. *We need the ability to influence spectrum decisions,* and *we need a clear mandate so that this Federal office doesn't step on other Federal offices*. With all due respect to David, I don't think we have an office with all four of those things. I'd like to think that everybody has taken this seriously, but we have a ways to go to get there.


# Making Communities Safer

## *Immediate and Near-Term Solutions to Resolve Interoperable Communications Problems for First Responders*

Reserve Officers Association
Washington, D.C.
September 14, 2004

### SPEAKER BIOGRAPHIES

#### *KEYNOTE SPEAKER*

**The Hon. Bart Stupak** was first elected to represent Michigan's First Congressional District in 1992. Rep. Stupak is a member of the prestigious House Energy and Commerce Committee and serves on four Subcommittees: Health; Telecommunications & the Internet; Commerce, Trade & Consumer Protection; and Environment and Hazardous Materials. In response to the terrorist attacks of Sept. 11, 2001, Rep. Stupak was named to the Democratic Caucus Task Force on Homeland Security. He currently serves as a member of a task force subgroup, the Domestic Law Enforcement Working Group. In that forum and by means of sponsored legislation he has fervently sought to train and equip local law enforcement and other first responders to be better prepared for potential bioterrorism attacks and other terrorist incidents. Congressman Stupak holds a J.D. degree from Thomas M. Cooley Law School, in Lansing, Mich. He earned his Bachelor's Degree in Criminal Justice from Saginaw Valley State College in 1977, graduating magna cum laude, and he earned his Associate's Degree from Northwestern Michigan Community College in Traverse City in 1972.

#### *PANELISTS*

**George S. Ake** is Program Manager at the Capital Wireless Integrated Network (CapWIN) project where he is responsible for overall coordination of a project to implement an integrated voice and mobile data network for transportation and public safety in the Washington D.C. region. He is also Assistant Research Scientist at the University of Maryland's Civil and Environmental Engineering program. His prior experience includes service with North Carolina Highway Patrol where he was Major, Director of Research and Planning, and was responsible for accreditation; information management unit; medical services; promotional system; and the research and planning section. He has also served on the IACP - Communications and Technology Committee; and National Institute of Justice - National Task Force on Interoperability (2002). Mr. Ake received his Master's of Public Administration from North Carolina State University, Raleigh, North Carolina and his B.A.S., Administration of Justice from Guilford College, Greensboro, N.C.

**David G. Boyd** is Deputy Director of Operations for Research and Development and Director of the SAFECOM Program Office at the U.S. Department of Homeland Security. Dr. Boyd joined the DHS as it was being formed in March 2003. As the Deputy Director of Operations, he is responsible for the operations of the office, and for the management or oversight of the operations of all the Homeland Security Laboratories. As the Director of the SAFECOM Program Office, he is responsible for the national effort to achieve interoperability among the communications systems of the nation's first responders at local, state, and federal levels. Dr. Boyd came to Homeland Security from the U.S. Department of Justice, where he had service, since 1992, as the Director of Science and Technology for the National Institute of Justice, the criminal justice research and evaluation agency within the U.S. Department of Justice. Dr. Boyd retired from the U.S. Army. He holds a career appointment in the Senior Executive Service, and is a graduate of the University of Illinois–Champaign,

Golden Gate University, the University of Illinois–Chicago, and Walden University. He holds graduate degrees in Operations Research and Public Policy Analysis, as well as a doctorate in Decision Sciences. He is an Adjunct Professor of Operations Research and Information Technology at Capella University.

**Sal DiRaimo** is an experienced Communications Engineer on the New York State Technology Enterprise Corp. (NYSTEC) engineering staff. He has 20 years of experience in radar and wireless engineering with such organizations as U.S. Air Force, U.S. Navy, U.S. Department of Justice, and a number of New York State agencies. He has worked on numerous public-safety wireless communications projects for New York State agencies and municipalities including the Statewide Wireless Network project (SWN). He has led a number of engineering projects in land-mobile radio; satellite, and microwave links as well as data and ITS (Intelligent Transportation Systems) projects in New York State. His work focus includes engineering and engineering management. Mr. DiRaimo is the co-author of *A Guide for Applying Information Technology in Law Enforcement,* on mobile computing and wireless technologies for law-enforcement and public-safety entities published by U.S. Department of Justice, National Institute of Justice.

**William Jenkins, Jr.** is Director of Homeland Security and Justice Issues at the U.S. Government Accountability Office (GAO). His areas of responsibility at GAO include emergency preparedness and response, elections, federal judiciary, sentencing and corrections, and bankruptcy. He was a Professor of political science prior to joining GAO as a Faculty Fellow in 1979. Mr. Jenkins has worked principally in areas of budget policy, defense, administration of justice, and homeland security. He was an Adjunct Professor at American University from 1989-1993 and from1995-2000. Mr. Jenkins has authored recent GAO reports on Emergency Preparedness and Response including: HOMELAND SECURITY: *Challenges in Achieving Interoperable Communications for First Responders, (Nov. 6, 2003);* HOMELAND SECURITY: *Federal Leadership and Intergovernmental Cooperation Required to Achieve First Responder Interoperable Communications, (July 20, 2004);* and EMERGENCY PREPAREDNESS: *Federal Funds for First Responders, (May 13 2004).* Mr. Jenkins received a B.A., *magna cum laude*, from Rice University; an M.A. in Political Science, and a Ph.D. in Public Law from the University of Wisconsin, Madison.

**Donald Lund** is a Research Associate Professor at the University of New Hampshire Institute for Policy & Social Science Research and Coordinator of the Advanced Technologies in Law and Society (ATLAS) Project. Dr. Lund has served as an Instructor in the Dissent and Disorder Management Branch at the U.S. Army Military Police School, as Director of Research and Evaluation with several Community Mental Health Centers, as Director of the Bureau of Program Evaluation with the New York State Department of Mental Hygiene and as Associate Commissioner for Quality Assurance with the New York State Office of Mental Health. His research interests include the interoperability of public safety communications, the implementation of incident command structures, the application of non-lethal weapons in crowd management situations, and development of crowd control strategies. Dr. Lund is an applied sociologist, who earned his baccalaureate degree at Middlebury College in 1965 and his Ph.D. in sociology, with specialization in social psychiatry, deviance and social control, from Yale University in 1969.

**Viktor Mayer-Schöenberger** is Associate Professor of Public Policy at Harvard University's Kennedy School of Government. His research focuses on information and communication technology policy. He is also an expert on the European Union. In 1986, he founded Ikarus Software, a company focusing on data security, and developed Virus Utilities, which became the best-selling Austrian software product. He was voted Top-5 Software Entrepreneur in Austria in 1991 and Person-of-the-Year for the State of Salzburg in 2000. He co-chairs the Rueschlikon Conference on Information Policy, the faculty group on information technology policy, and the governance of information seminar series. He is the cofounder of the SubTech conference, and a member of the ABA/AALS National Conference of Lawyers and Scientists. He advises businesses, governments, and international organizations on regulatory and policy issues of information and telecommunication technologies, including e-government. He holds a number of law degrees, including one from Harvard and an M.S. in Economics from the London School of Economics.

**Jon M. Peha** is Professor of Electrical Engineering and Public Policy and Associate Director of the Center for Wireless and Broadband Networks at Carnegie Mellon University. His work spans technical and policy issues of information networks. He has served on legislative staff in both the House and Senate, focusing on telecommunications and e-commerce. He launched an interagency U.S. government program to assist developing countries on information infrastructure, in conjunction with the U.S. Agency for International Development, Federal Communications Commission, State Department, and National Telecommunications and Information Administration. Dr. Peha has also served as Chief Technical Officers of network companies, and a member of technical staff at SRI International, AT&T Bell Laboratories, and Microsoft. His research interests include wireless networks and spectrum management, broadband networks, voice and video over IP, e-commerce payment systems and policies, market-based universal service mechanisms, privacy, and cybersecurity. Dr. Peha holds a Ph.D. in electrical engineering from Stanford, and a B.S. from Brown University. peha@cmu.edu, www.ece.cmu.edu/~peha

**Ray Steele** is a Professor of Management, Telecommunications, and Information and Communication Sciences and the founding Director of the Center for Information and Communication Sciences at Ball State University in Indiana. He has created two of the nation's leading graduate academic programs in the telecommunications field, first at the University of Pittsburgh and later at Ball State University. In 1993, the Center won the National Networking Education Award from Network World Magazine, as well as the International Distance Learning Conference Partnership Award for K-12 Partnerships. He also created the first K-12 electronic school district model employing voice, data, video, satellite, and fiber optics in the late 1980s. He was twice President and Chairman of the Board of the United States Distance Learning Association (USDLA), and he serves on their board and is currently their International Ambassador. He is also a Board Member of the Irish Centre for Distance Education Research and Applications in Ireland and he serves as Chairman of the Board of the Indiana Distance Learning Association. He has provided expert testimony and counsel in Washington, D.C., worked with the FCC and several states legislatures and regulatory commissions. He has served as an Overseer for the International Engineering Consortium, with the Academic Development Committee of the International Communication Association.

**Tom Tolman** is Manager for Communications Technology at the National Law Enforcement and Corrections Technology Center (NLECTC), part of the National Institute of Justice's (NIJ's) Office of Science and Technology. Mr. Tolman is the former Director of the National Public Safety Telecommunications Council Support Office (NSO), a federation of all major public safety associations. He also served on the Region 7 NPSPAC planning committee. Mr. Tolman is a 23- year member, and past President of the Colorado Chapter of the Association of Public Safety Communications Officials (APCO). In addition to sitting on the P-25/34 Standards Steering Committee, he serves on the editorial advisory board of Mobile Radio Technology and Radio Resource publications. He served as Vice Chair of the FCC's 700MHz NCC Implementation Sub-Committee and sits on the Denver DeVry University's Technical College Advisory Board, as technical advisor for the Wireless Communications course curriculum. Mr. Tolman is co-author of the National Institute of Justice Research report on State & Local Law Enforcement Wireless Communications Interoperability (1998), "Can We Talk?" -The Public Safety Challenge (1999), and creator of the popular NLECTC publication Understanding Wireless Communications in Public Safety (2000). Mr. Tolman holds a Bachelor of Science in Business Management and a Master's Degree in Technology Management from the University of Denver.