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"Progress on P25: Furthering Interoperability and Competition for Public Safety Radio Equipment"

Testimony of:
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Chairman Wu, Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the current state of interoperability and competition in the marketplace in Public Safety radio equipment. It is truly an honor to speak with you today, thank you for the invitation. ARINC support the full adoption of the P25 standards.   In my testimony today, I would like to leave you with 3 items for your consideration:

1. Standards drive competition and innovation in any marketplace and it will in Public Safety communications
2. Technology is not a barrier to finalizing the P25 standard - several manufactures are anxiously awaiting completion of several elements of the standards
3. Finalizing communications standards and adoption of compliance and conformance testing is imperative to fully solving the interoperability issue.

I represent a company that has a long history in radio communications stretching back almost 80 years. ARINC was originally formed to manage aeronautical radio frequencies used by the airline industry and we still perform that role today. ARINC has participated in creating interoperability of communications within the aviation industry. ARINC has built and manages a global mission critical network that is used by airlines around world to communicate.

In the aviation industry, many of the communications standards are referred to as "ARINC" standards and they enable voice and data communications interoperability as well as physical equipment interoperability. The standards are far reaching with everyone from airframe manufacturers to rental car companies utilizing them. They enable a pilot to bring you weather forecasts for the destination airport at 35,000 feet, lets a rental car company know you will be late, and enables an engine manufacturer to know when a jet needs servicing automatically.

The tragic events of 9/11 motivated some smart people at ARINC to evaluate how we could leverage our expertise in aviation communications to contribute in solving the

public safety communications interoperability problem. That's when the business unit I represent was formed.

While a relative newcomer to public safety, our track record demonstrates our ability to solve complex problems and deliver mission critical solutions. In the industries and markets where we participate we are viewed by our customers as a thought leader and partner. For the most part we do not manufacture hardware; we use existing components to create new or integrated solutions.

From this background you might infer how important standards are to ARINC. Standards are what enable ARINC to build the integrated solutions we provide to our customers. This is true in every market vertical we participate. The market confusion regarding P25 standards is one factor that has slowed our ability to add real value to public safety customers. Until recently, there were only two vendors where customers could purchase a trunked P25 system. These vendors provide a complete end-to-end system sold through a direct sales model with little to no room for additional vendor participation.

Over the past few years the P25 standard has evolved to the point where more manufacturers are making P25 compliant "*components"* such as subscriber units, consoles, system control software, and repeaters. These smaller companies make very capable products, however they don't make a complete system. As an integrator, we now have the ability to take the components from these manufacturers and build complete systems using a "best of breed" approach. Many of these manufacturers seek ARINC out due to our unbiased approach to designing and implementing public safety systems. ARINC has invested and will continue to invest substantially in the in the testing and delivery of systems that conform to the P25 standard.

This transition from a single vendor solution to the integrated multi-vendor solution is nothing new. The IT industry went through this very transition in the early 90's. The real question from our perspective is why has it taken so long for public safety to get where it is? And why does it seem that it still has a very long way to go?

The P25 standard, started in 1989 just celebrated it's 20th anniversary and it's still not complete.   To put this in perspective, twenty years ago the Internet was limited to universities and research companies, PC's were very expensive, slow, and very few people had them, there were no mobile phones, and "high speed" connections were 56kbps dialup. If other industries moved at the same pace as the P25 standard, almost no one would have a portable phone, "portable computers" would cost $10,000 weigh 20lbs, with less than 1MB of disk space, and wireless broadband would still be a pipe dream regardless of the spectrum availability. I say this with some risk of offending the many good folks who put so much effort into the standards as they exist today, for they have developed a worthy baseline. But in large part, many are just as frustrated as we are regarding the pace of development. Overall this has had a negative impact on the ability of first responders to communicate and put the public at risk on both a daily basis and during times of crisis such as on 9/11 and during hurricane Katrina.

"What challenges has ARINC encountered in integrating P25 digital land mobile radio equipment from different vendors? In your experience, how can these technological challenges impact the customer of this equipment?"

ARINC has integrated technology from several P25 equipment manufacturers, including EADS, Zetron, EF Johnson, Kenwood, TAIT and Thales. We are working with several others to get their equipment in our labs so that we can then include them in proposals to customers. We have found these manufactures to be enthusiastic in working with us and each other. We have all collaborated to increase the interoperability of all the products. Many of these manufactures have expressed the desire to participate in ARINC delivered systems as they will be able to compete with one another on a level playing field.

However, as standards have been delayed, competition has been stifled, costs have remained high, and the full potential for interoperability has not been achieved. Vendors of proprietary systems have taken advantage of the delay in standards development to advance their gain in market share. Customers have had to purchase or extend the life of their existing system or systems with proprietary features and function, often at a

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hefty price tag, until the standard is developed enough to use. As Mr. Dereck Orr of the National Institute of Standards and Technology testified before this committee on May 27th, 2010 only small but critical portions of the standard have been ratified, and it's only been in the last 2 years that a compliance testing program has been implemented.

The first few years of P25 deployments had many failures with respect to multi-vendor interoperability and finger pointing as to who was at fault. This instilled a level of doubt in the minds of many first responders that has not been fully overcome. In several procurements we've been asked 'How can guarantee that components from various vendors will interoperate?' Even today, as CAP labs attest to interoperability the customer base uses the past as an excuse to stick with the status quo of a single vendor end-to-end solution, of which there are still only two. *To be sure, there are still ways to purposefully deploy a P25 system such that another vendor's equipment will not function on it, but there are also ways to deploy it so that it will and it has been possible for quite a number of years.*

To once again draw a parallel to another industry, most of you know who manufactured your mobile phone, and what carrier you pay your service charges too. How many of you know who made the infrastructure at the local tower site? Do you worry that it's not compatible? Of course not. The reason is the testing that other industries go through to ensure compatibility and the zeal with which they want to ensure their product is accepted in the marketplace.

Another challenge is dealing with the idiosyncrasies of how each manufacturer interprets the standards. This has the potential to cause issues with deployments. ARINC maintains a test and demonstration lab at our headquarters in Annapolis Maryland to ferret out troublesome configuration issues before we deploy systems to the field. We also work with vendors during their development cycles to test new functionality or products in a "private" environment that isn't as sterile as their lab, yet won't impact customers. These vendors also test among themselves to see if they have each come to the same conclusion regarding how to implement technology. The level

of activity in this arena has increased over the last two to three years due to more vendors in the space and recognition that the procurement process if finally starting to shift from single to multi-vendor solutions.

What we have seen is that vendors with smaller market share must and will work harder to prove to the larger vendors and the market in general that their radio will interoperate with the "big guys". They also work harder to innovate in areas such as ease of configuration, battery life, fireground features, and packaging.

"What would you recommend to ensure that the P25 standards are implemented consistently?"

I believe open standards in public safety communications will increase competition and provide innovative, cost sensitive solutions. We have witnessed this in other industries, but the pace of the current public safety communications standards development process, has in fact frustrated equipment manufacturers who wish to invest in the development and enhancement of their products. ARINC supports accelerating the adoption and implementation of the most critical public safety communication standards and technologies, along with compliance and conformance testing.

- ARINC recommends federal funding be established and managed by a dedicated governing body, to provide grants to public safety personnel, technology vendors and others to participate in the ratification of the published P25 standards.
- ARINC recommends a schedule be established and maintained by the dedicated governing body to ensure completion of the standards in a timely manner.
- ARINC recommends portions of the standards be released in manageable phases.
- Finally, ARINC recommends that this initiative be closely monitored by this and other legislative and regulatory bodies charged with solving the problem of Public Safety interoperability.

Chairman Wu, Members of the Subcommittee, thank you again for inviting me to testify on this very critical issue, I am honored.

Marvin Ingram Biography

Marvin Ingram has served as the Senior Director for ARINC's Public Safety Communications business unit since 2004. ARINC is a Communications Engineering and Systems Integration firm based in Annapolis Maryland. Mr. Ingram has led the development of the strategic plan, technical roadmap and go-to-market strategy for the ARINC Wireless Interoperable Network Solutions (AWINS).

AWINS was developed to provide architecture for a standards platform to provide interoperable communications between Public Safety and Homeland Security agencies. It is designed to provide greater flexibility, resiliency, a choice of vendors, lower costs, and the capability for future expansion. As an industry leader in legacy radio systems interoperability using IP and VoIP, ARINC is known as an integrator that delivers mission critical solutions. In addition to traditional legacy radio integration, AWINS includes APCO P25 radio technology. Focused on standards compliant systems, ARINC is able to deliver end to end communications interoperability.

 Mr. Ingram has provided leadership for over 20 years in program management, engineering, quality assurance, customer satisfaction, sales and marketing for Public Safety Communications and IT solutions.

Mr. Ingram started his career serving in the U.S. Air Force as an Electronic Intelligence engineer. Mr. Ingram's career includes network engineering and executive management in several information technology organizations prior to joining ARINC.