

# A Public Safety Communications Journal

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# The Impact of Next Generation 9-1-1 on Quality Assurance

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# **PROTECT THEM** ASK THE RIGHT QUESTIONS

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The first quarter of 2011 has brought on some new and exciting changes for our association. We have revamped and streamlined our administrative services with a view to better serve you. Please make a note that our phone number has changed. The new number is 1-855-443-2726 (APCO).

Our next new change is the format from which you will receive the *Wavelength*. It is becoming a partial "e-mag" and hopefully we will complete the actual printing phase this year and go strictly green for next year. This is a huge boon to us as it is extremely environmentally friendly; it is more cost effective for our publisher which will ultimately conserve finances. Finally and I think most importantly, it can be distributed to a much larger audience. Stories and articles can be easily passed on to colleagues, associates, supervisors etc. It gets the word out. It gets our word out now having said that, if you want your word out, send it in! We need content to make it a successful magazine. This magazine is yours and we want to make it as interesting and viable as possible. Is there someone in your communications centres that has reached a milestone or is retiring - write about it. Do you want to air a problem and share your solution - write about it. I have noticed over the years, that communicators share the same issues, doubts, joys, and sorrows across the country - why not share them in writing. We are trying to regenerate our magazine and our membership. We welcome your ideas, thoughts and words of encouragement and primarily, your articles.

If you have any questions or comments – or want to submit an article, please contact me at Theresa.virgin@apco.ca or Director Corrine Begg at: Corinne.begg@apco.ca, or go to the APCO website and click on Information, then select *Wavelength*.

Another exciting change is the website. Corinne has been working diligently with our service provider to update the look and interaction of our website. This is a work in progress and looks great so far. Keep checking for new stuff.

Am looking forward to these changes for our association and for our membership!

Theresa Virgin, Director APCO Canada, Wavelength Editor-In-Chief





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# Wavelength

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# **Contents**

# DEPARTMENTS

- 3 MESSAGE FROM THE EDITOR-IN-CHIEF Theresa Virgin, Director APCO Canada, Wavelength Editor-In-Chief
- 6 MESSAGE FROM THE PRESIDENT Gavin R. Hayes
- 7 **PENCIL IT IN:** Upcoming Events
- 7 APCO CANADA NEWS

# FEATURES

- 11 700 MHz BROADBAND FOR MISSION CRITICAL PUBLIC SAFETY DATA By Superintendent Pascal Rodier
- 14 GENUINE P25 INTEROPERABILITY By Dr. Jan Noordhof, VP Product Marketing, Tait Radio Communications
- 17 THE IMPACT OF NEXT GENERATION 9-1-1 ON QUALITY ASSURANCE By Patrick Kiernan
- 20 BEST TRAINERS ARE THE MOST PASSIONATE By Christopher Irequi
- 21 STRESS BUSTERS: THERE IS A LOT YOU CAN DO TO FEEL BETTER By Kim Rigden, Principal of Kim Rigden and Associates







I want to wish you all well from Dubai in the United Arab Emirates where I have just opened the inaugural APCO Global Congress as your president, and chair of the APCO Global Alliance.

The concept of this Congress was started in 2006 when the partner Associations (APCO International, APCO Canada, British APCO and APCO Australasia) signed the Global Alliance Charter at the C.N. Tower in Toronto. One of the goals of the Congress was to provide the APCO Global Alliance with a revenue stream to offset some of the costs for its respective Associations.

I cannot tell you how excited all of the Global Alliance partners and congress staff are to see over two-hundred people register for this inaugural event, and also have over twenty-five vendors from around the world sign up to exhibit their public safety communications products in this part of the world. Through the efforts of the Congress sponsors On-Star (Founding Platinum), Alcatel-Lucent (Silver). Motorola Solutions (Silver), Harris (Bronze), and PowerPhone (Bronze) we have been able to secure a number of speakers from across the globe to attend the event and provide the attendees with dynamic and informative educational sessions covering emerging technology, disaster management, and human resource issues.

Due to the support and interest shown in hosting this event in Dubai, the members of the Global Alliance have committed to another Congress in Dubai for 2012. There has also been interest shown by another organization to join their event with ours as they saw our event as, "unique in the region and what is needed to raise the level of awareness for public safety."

On the national level, over the past few months the APCO Canada Board has been able to secure part-time administrative support for your association. This support will include the processing of memberships and also a quicker response to inquiries made of the association in written, electronic, and verbal medium.

As mentioned in my last message, our new website will be launching in the next few weeks which will provide you with true "on-line" registration and membership changes. It will also have a number of changes that will allow you to access the e-bulletins that we are sending you on a more regular basis. The board is very excited about the pending release of our "Canadian Public Safety Communications Best Practices" that will assist those in our profession in the daily administration and operations of centres around the country. I have already been asked by our Global Alliance partners for this document so they can review it, and possibly use what we have created in their respective nations.

In May I was invited by APCO International to speak on an international panel at their National Broadband Summit in Washington DC. This event brought technology experts, policy leaders, industry partners, commercial carriers and public safety professionals together to learn how to position state and local governments to begin planning to build out public safety LTE networks. While at this event I was able to provide staff from the Federal Communications Commission (FCC) input from a Canadian perspective as it relates to the 700 MHz spectrum, and how it is vitally important that both of our nations need to work together to ensure our border communities will have the same interoperability capabilities available to them in times of disaster or national security.

Cindy Kirby, Corrine Begg, and I will be attending the APCO International Conference in Philadelphia from August 8-10, 2011. We will have our APCO booth set-up to speak to potential vendors and promote the upcoming Canadian Conference in Ottawa this year.

In closing, I again want to thank all of you for what you do to keep our communities safe and secure on a daily basis. Without your professionalism and dedication the citizens of the communities you serve would no doubt be placed in harm's way.

Gavin R. Hayes President, APCO Canada



### UPCOMING EVENTS

# Pencil It In

APCO International August 7-12, 2011 *Philadelphia, PA* 

# APCO Canada 2011

November 6-9, 2011

Westin Ottawa, Ontario Canada

APCO Australasia March 12-14, 2012 Gold Coast Convention and Exhibition Centre Queensland, Australia



### APCO CANADA NEWS

# 2011 APCO Canada Conference



There's something about planning a conference that helps to start build excitement for the conference early on in the process. Between the registrations flowing in, vendors signing up for the tradeshow and the regular bi-weekly conference calls, it's almost impossible not to get excited!

A challenge for the 2010 conference program was to create a full program that would meet the interests of all attendees. Last year the program was packed with over 40 quality educational tracks and the feedback from attendees about the program was very positive. For the planning committee, this would be considered the minimum standard to plan to at future APCO Canada conferences and thanks to all those who submitted to speak at this year's conference, we're confident the program will again be packed full with quality sessions.

Another exciting part of the planning process is the conference tradeshow. Our tradeshow is the largest in Canada for the public safety communications industy and we're proud to provide a great showcase of new products and technologies each year. Already we have a number of vendors signed up and the list keeps getting longer! Sponsors are a very big part of our conference. We've received incredible support in the past and it's not any different this year. We would like to take this opportunity to express our sincere grattitude for the ongoing support of our sponsors. They are as follows:

Motorola (Platinum) Harris (Gold) Kenwood (Gold) Intergraph (Silver) Verint (Bronze)

If you are interested in sponsoring, please check out our website for sponsorship opportunities or contact our conference planner directly at nsilzer@detailsinc.ca.

A reminder to those planning on attending this year, the conference is being held close to Rememberance Day and this is an excellent opportunity to take part in the ceremonies being held in our Nation's Capital.

For more information on the 2011 APCO Canada Conference, please visit our conference website at www.apcocanadaconference.ca and be sure to follow us on Twitter (APCOCanada) and Facebook (APCOCanada2010).





# Judy Broomfield Then and Now



Judy Broomfield joined the Toronto Police Service as a communications operator in 1977. In 1995 she was promoted to the position of 9-1-1 coordinator. Judy's position as 9-1-1 coordinator gave rise to her participation on various regional, national and international boards and committees. These included: the Toronto 9-1-1 Advisory Committee, where she served as a chair; The Ontario 9-1-1 Advisory Board, where she again served as chair: the National Canadian Wireless Telecommunication Association/E911 Committee, where she was a co-chair; actively involved with the National Emergency Number Association (NENA) and the Canadian Radio-Television & Telecommunications Commission (CRTC) Emergency Services Working Group (ESWG); and a member of Association of Public Safety the Communications Officials (APCO) where she was awarded Telecommunicator of the Year. While serving on the CRTC Working Group - a group established to

allow a direct public safety voice on issues relating to technology - Judy made presentations before the CRTC commissioners as well as participated in numerous CRTC proceedings. Judy's expertise has made her a sought after participant for panel discussions, conferences and interviews around the topic of 9-1-1. In September 2009 Judy's contribution was recognized by the International Association of Women in Law Enforcement, where she was awarded their Civilian Achievement Award. A retirement celebration was held for Judy on June 23, 2011, with many honoured and distinguished members of the Communications/9-1-1 community in attendance.

# **EMERGENCY MEDICAL SERVICES WEEK: MAY 15-21, 2011**

By Tammy Jewell- Quality Improvement Officer Communications WFPS



Emergency Medical Services (EMS) week is a celebration and commemoration dedicated to the achievements of individuals on the front lines within the EMS community. With advances in modern technology, exciting Medical Priority Dispatch protocols, and an eagerness to provide continual preservation of the public's life and property, the emergency 9-1-1 communications centre are the first to arrive at the scene of an incident. The emergency medical dispatchers of the Winnipeg Fire Paramedic Service are the "first, first responders" of our system and provide pre arrival life-saving treatments to callers and their families from the onset of the 9-1-1 call. In addition to admiring the work that all EMS providers deliver to the public, the International Academy of Emergency Dispatch acknowledges the devotion and hard work that dispatchers across the world provide by awarding the

International Dispatcher of the Year Award. Annually at the International Academy of Emergency Dispatch conference, an exemplary individual is presented with the award for their untiring and continual commitment to the public they serve. I am privileged to work with a very devoted group of Communications Operators who go above and beyond each and every day to provide paramount customer service to the citizens of the City of Winnipeg. This year, several of our communications operators were selected potential nominees for this as prestigious award. The criteria for selection included higher than average overall compliance to protocol, leadership within the communications centre, professionalism towards peers and the community as well as outstanding customer service skills. In April, I had the opportunity to be present at this conference and was very pleased to learn that four of the nominees were Winnipeg Fire Paramedic Service employees. The Winnipeg Fire Paramedic Service Communications staff takes great pride in identifying that of the 31 countries in the world using the Medical Priority Dispatch protocol, our communications



operators are amongst the very finest. I was delighted to recognize and present commendations to Brent Belot, Cheryl Lenchuk, Brenlee Sippel, and Nicole Smith for the continuous service they provide to their peers and community at the Celebration of Life Ceremony at City Hall on May 16, 2011. They each display compassion and concern to every caller. Brent, Cheryl, Brenlee, and Nicole extend themselves by mentoring and coaching new employees and are always enthusiastic to support others in the Communications Centre. Please join me in congratulating them on their accomplishments and future endeavours.

# **Celebrating Public Safety Telecommunicators Week**

Simcoe County 9-1-1 Management Board 2010 Public Safety Communications Awards

By Cathy Clark, Chair, Simcoe County 9-1-1 Management Board

On April 14, 2011, four deserving individuals were honoured for their outstanding work as communicators at the Simcoe County 9-1-1 Management Board Public Safety Communications Awards for 2010.

Simcoe County is a large upper tier municipality situated about an hour north of Toronto. With 21 fire services, seven police agencies, and three paramedic services, our public safety communicators are kept busy 365 days

a year. Far too often, these communicators remain the unsung heroes of our emergency response system and so each year, the Simcoe County 9-1-1 Management Board recognizes individual and team excellence public safetv in communications through its established awards program, coinciding with the annual recognition of 9-1-1 Awareness and Public Safety Telecommunications Week. The public awards ceremony brings a sense of pride to the

communicators honoured and their colleagues, as well as a heightened community awareness of the vital work that our public safety communicators perform.

The fourth annual event paid tribute to the public safety communicators who both answer and dispatch 9-1-1 calls across the region. These communicators play a vital role in ensuring that the right help arrives as soon as possible. They are voices of calm who often stay on the line with the caller until help arrives.

The winner of the 2010 Simcoe County Public Safety Communicator of the Year Award was Warrant Officer Paul Dorval, a communicator with the CFB Borden Military Police Commissionaires for less than two years. During 2010, Dorval demonstrated exceptional competence and professionalism and consistently went above and beyond the expectations of his position. Over a five-day period, he was the communicator responding to four extraordinary calls all involving potential suicides.

The winners of the 2010 Simcoe County Public Safety Communications Team Award were Ryan Macdonald and Amanda Wickham from the Barrie Fire and Emergency Service. Both demonstrated exceptional teamwork while responding to a life-threatening call involving a motorist lost and stranded during a severe winter storm.

The inaugural Simcoe County 9-1-1 Youth Award was presented to James Slok of Innisfil. The 10 year old courageously called 9-1-1 during a traumatic event that threatened the life of his mother, an event made more traumatic because the attacker did not survive.

The Warden of Simcoe County, Cal Patterson, City of Barrie Mayor, Jeff Lehman, and Town of Innisfil Mayor, Barb Baguley, each paid tribute to the excellence of this year's award winners. Proud family and friends were joined by senior personnel representing all emergency response agencies across Simcoe County in saluting the accomplishments of Paul Dorval, Ryan Macdonald, Amanda Wickham and James Slok. Video of the awards ceremony is available on **YouTube.com** by searching **Simcoe County 9-1-1 Management Board**.

The County of Simcoe is composed of 16 member municipalities and provides crucial public services to County residents, in addition to providing paramedic and social services to the separated cities of Barrie and Orillia.

Visit our website at simcoe.ca.



# 700 MHz Broadband for Mission Critical Public Safety Data

By Superintendent Pascal Rodier

**This is a once in a life time opportunity!** While this phrase often makes us think of a scam or sparks memories of timeshare property pressure sales, in this case it is very true. Emergency responders have a once in a lifetime opportunity to obtain 700 Mhz broadband spectrum from Industry Canada. This will allow responders the needed spectrum to transfer mission critical data to and from scenes. Once this spectrum is gone it will be gone forever.



Partnerships in the field of emergency response and management are critical – and never more than in today's challenging economic times. With that in mind, the Canadian Association of Chiefs of Police (CACP), the Canadian Fire Chiefs Association (CFCA) and the Emergency Medical Services Chiefs of Canada (EMSCC) are leading the charge for a nation-wide public safety broadband system for mission critical data.

With advances in technology, Canadian responder agencies will have an increasing need to access data and video networks during all emergency incidents. Law enforcement agencies will need access to streaming video, surveillance networks capable of identifying known terrorists through the use of video analytics, criminal records, automated license plate recognition and biometric technologies including mobile fingerprint and iris identification to prevent and respond to criminal activities. Fire services will need access to building blue prints, in-building 3-D, and personal health-monitoring sensors and GPS tracking systems for their staff, in order to save lives. Emergency medical services will need access to telemedicine, highresolution video and ultrasound, and patient records to reduce the time it takes to deliver medical services at the scene of an incident such as a car crash on a highway. In addition to profession specific technology, these agencies will require information sharing capabilities in real-time for all unified responses. Critical-infrastructure service providers will need to be able to coordinate their responses to restore power and telecommunications services during large-scale incidents. Governments at all levels across Canada and crossborder with our US counterparts need access to situational awareness information, including from wireless sensors (i.e., flood data) during large-scale incidents to coordinate mitigation, response and recovery efforts. Obviously the key here, as always, is the planning phase that we are just commencing now.

All these applications and services depend greatly on the amount of spectrum that is available for public safety broadband services – they require considerable bandwidth and speed that is currently not available. Future networks must be built with public safety requirements in mind.

On Wednesday, December 8, 2010, during the Fourth Canadian Public Safety Interoperability Workshop, the presidents of Canada's three major chiefs associations announced the creation of the Tri-Services Special Purpose Committee on 700 MHz Broadband for Mission Critical Public Safety Data. The creation of the committee is in direct response to Industry Canada's recent announcement of public consultations on the use of the 700 MHz band by commercial mobile services.

They have appointed three representatives to the committee: I am representing the EMSCC and I am privileged to be working alongside two very experienced colleagues from partner agencies and associations, Superintendent Bill Moore, Halifax Regional Police and the CACP and Division Chief Mike Sullivan, Ottawa Fire Service representing the CAFC. Together, the three of us have set in motion a mechanism to monitor and advise on the issue, inform stakeholders and identify responder spectrum needs and potential opportunities.

The issue is that Canada's radio spectrum regulator, Industry Canada, has opened consultations on the 700 MHz broadband allocations (the result of spectrum availability due to the transition from analog television to digital) that will ultimately affect public safety agencies' ability to deploy mission critical data well into the future. The chiefs' associations developed a joint position on the issue and have been working with emergency management partners, including many provincial Emergency Management Office's, to determine the exact needs and the optimal use of the, soon to be available, spectrum.

This is truly a "once in a lifetime" opportunity, not just in Canada but in the United States and beyond. Inaction poses significant risk as the upcoming allocation of spectrum will directly impact responder agencies' and government's ability to fulfill their most important mission over the coming decades. The current bandwidth is the *waterfront property* that everyone wants.

August 30, 2011 marks the transition from analog television to digital in Canada, freeing up spectrum for potential use by public safety. Emergency responder agencies are looking for 20 MHz to be allocated to broadband services (10 plus 10), 8 MHz of that 20 would come from the existing 24 MHz allocation to public safety. We are looking for a total of 36 Mhz; these figures include the 4 MHz of guardbands within the narrowband block that have limited usefulness. Many private and public agencies are also vying for the additional (and very valuable) spectrum, and Industry Canada (our nation's spectrum regulator) opened 700 consultations on the MHz broadband allocations on November 30, 2010 (consultations closed February 28,

2011). We had a very limited time to submit our response to industry Canada and we are continuing to convince government that the best place for this spectrum is in the hands of responders!

In order to complete our response the committee met with a number of stakeholders from across the country. After compiling all of our findings we came up with three main themes in our response: To have Industry Canada assign the full 20 MHz for public safety broadband use; that we coordinate the 700 MHz Canadian public broadband spectrum with the US; that the governance of the 20 MHz of 700 MHz spectrum for public safety for broadband use must reside with public safety stakeholders: and that current commercial systems will not meet the mission critical requirements of our public safety community.

As the consultation response period closed there were 88 total responses to Industry Canada: 55 from Companies and Organizations (the Tri-Services, Telcos, CATA, Industry, etc.); 4 from Federal Government (ICSAR, Public Safety Canada, RCMP and Scott Simms, MP); 23 from Provincial and Municipal Governments (notables include CCEMO, SOREM, many provinces); and **6** from private individuals. Overall, the Tri-Services and public safety stakeholders were pleased to see that the majority of responses to the consultation acknowledged the need to designate a portion of 700 MHz spectrum to be dedicated for public safety use.

Of the respondents: 44 advocated harmonize with the U.S.; 26 called for 20 MHz of spectrum to be dedicated to public safety; 7 called for only 10 MHz of spectrum to be dedicated to public safety; 6 called for 10 MHz of spectrum to be dedicated to public safety now, plus a possible additional 10 MHz after D Block assigned in the U.S.; 3 respondents called for 0 MHz dedicated public safety; The remaining to responses made no mention of public safety. Of note, one Telecommunications company acknowledged the need to designate a portion of 700 MHz spectrum to be dedicated for public safety use.

In the U.S., a similar digital TV transition was accomplished on June 12, 2009. The U.S. spectrum regulator, the Federal Communications Commission (FCC), has already dedicated 10 MHz to the Public Safety Spectrum Trust. Collectively, U.S. public safety agencies are now fighting for a second 10 MHz block in the critical band of 700 MHz spectrum known as the D Block. The FCC recently announced that the D Block may be sold at auction for commercial purposes instead of being allocated to public safety (currently under consideration by U.S. Congress). This move has caused U.S. counterparts to mobilize quickly on what is arguably the most important issue U.S. law enforcement, fire and EMS officials have faced in decades. Canadian responders may be faced with the same challenge.

Today, Canadian public safety entities use existing commercial networks for their voice and data needs. Some 700 MHz narrow and wide band spectrum is already dedicated to public safety in Canada for voice and some low speed data use. However, securing dedicated spectrum for broadband applications for public safety will ensure wireless broadband networks (a system of systems across the country) can be built with the needs of public safety in mind moving forward. Canadian police, fire, EMS, and other emergency professionals must have access to modern, reliable, and robust communications capabilities, including high speed data and video, to communicate with each other across agencies and jurisdictions during emergencies and during day-to-day operations. Responders need to stop being a customer that simply takes a number and waits for service when bad things happen. Responders need to be the owners and in control over who has access to this spectrum and when. Responders should not have to compete for bandwidth with the teenager who is sending live video to all of his friends of the very emergency responders are dealing with. There is an expectation that when things go wrong responder can communicate within their agencies

as well as with their partners in the community.

Here are three examples of this technology at work to help save lives:

Firefighters from New Brunswick asked to fly to British Columbia (or California, or Australia) to help fight wildfires. The wireless device (future versions that are hardened and intrinsically safe) they use at home immediately connects to the 700 MHz system in BC (or wherever), authenticates them as a public safety user and gives them full broadband access to mission critical data including GIS location tracking, situational awareness info about where the fires are located (based on access to wireless sensors that have been deployed) and full topographical and /or satellite maps.

Paramedics are called to the scene of a mass casualty event along the Washington State - British Columbia BC Incident commanders border. quickly realize that they require assistance from their U.S. counterparts. They begin deploying wireless patient care telemetry devices that connect via the 700 MHz broadband network. Because the network was built using the same spectrum and standards, the US responders can immediately get access to the information required (as authorized by previous governance and SOPs) to successfully respond to this joint operation.

Police are called to an active shooter situation at a local college. Based on broadband access to the 700 MHz network, they immediately deploy three teams into the school via three different entry points. 3D in-building location and tracking devices (originally spearheaded by the fire community) allow team leaders, local incident commander and HQ to be aware of each other's location. They then access the IP based speaker/microphone system in the college, overlay sounds on the building floor plan, and immediately identify victim/suspect location info. Simultaneously, fire and paramedic teams responding have (as authorized) access to the data to begin planning their response.

The issue of spectrum and possible nationwide broadband network(s) is very complex and potentially expensive, and at this point Canadian responders have more questions than answers. What is known is that dedicated public safety spectrum for the creation of wireless interoperable broadband networks for data and video transmissions is the 21st Century vision communications system for for Canada's responders. Availability of such networks responds directly to the ministers' responsible for emergency announcement management on January 26, 2011 about the approval of the new Communications Interoperability Strategy and Action Plan for Canada. One of the top priorities outlined in this excellent, cooperatively built, strategy is that of 700 MHz broadband. In fact, in the ministers' communiqué they stated:

"...the Ministers discussed the current consultation related to the 700 MHz broadband spectrum and securing a portion for the use of emergency responders for public safety and security purposes. Provincial and territorial ministers expressed support for this approach as it offers significant interoperability enhancement potential. The use of the 700 MHz spectrum would link public safety and security stakeholder communities across Canada and along the Canada-U.S. border, while promoting innovation and Canada's digital economy."

The allocation of 700MHz spectrum truly represents a once in a lifetime opportunity that ties directly to community and responder safety, innovation, and the health of Canada's digital economy. Stakeholders and citizens are encouraged to get informed and put this issue on your organization's and government's radar; inform your boards, municipalities, provincial/ territorial governments and other governing bodies that spectrum allocations will have a significant impact on public safety in Canada; and work with tri-services colleagues and others to advocate a strong voice for public safety in advance of spectrum allocations. For more information on the Tri-Services Special Purpose Committee's work on

the 700 MHz Broadband for Mission Critical Public Safety Data, please visit www.action700.ca.

Superintendent Rodier began his career as a Paramedic with the British Columbia Ambulance Service (BCAS) in 1988. In August 2002, he was promoted to Paramedic Chief and accepted his first posting in the City of Richmond. In April of 2008 he was promoted to Superintendent and he was assigned to the Lower Mainland Regional Headquarters Operations Section. He is currently the Officer in Charge of the Lower Mainland's South Fraser District.

Superintendent Rodier was one of the original planners of, and has been, the BCAS' project team leader for the province-wide expansion of the Combined Events Radio Project (CERP) since 2003. He is a member of CITIG and was a part of the national working group that wrote, the recently approved, Communications Interoperability Strategy for Canada and the Communications Interoperability Action Plan for Canada. Also, he is currently the EMSCC Representative and Co-Chair on the Tri-Services Special Purpose Committee on 700 MHz Broadband for Mission Critical Public Safety Data.

Superintendent Rodier has a Master of Arts, in leadership with a specialty in health, from the Royal Roads University in Victoria BC. Superintendent Rodier has written articles on voice interoperability and has been a presenter at a number of public events, courses, and conferences. He may be reached by e-mail at, Pascal.Rodier@BCAS.ca.

# Genuine P25 Interoperability

By Dr. Jan Noordhof, VP Product Marketing, Tait Radio Communications



P25 Interoperability means more than investing in a standard that enables public safety agencies to communicate and work together. It is also a guarantee that radio communications equipment is tested for reliability, public safety operability, is future-proofed, and, above all, is cost-effective.

Project 25 began in the United States in 1989

when public safety representatives, regulators, and manufacturers, under the aegis of the Association of Public Safety Communications Officials (APCO) and the Telecommunications Industry Association (TIA) began a collaboration to develop a suite of standards for digital public safety communications services.

The barriers to communications between different groups, which Project 25 sought to overcome, were caused by agencies operating with different frequencies, different technologies, different vendors' implementations of the same features, encryption incompatibilities, and an inability to link networks.

When the first suite of P25 standards appeared in 1995, they represented a benchmark for interoperable communications, designed by and for public safety users. These standards have continued to evolve as the ambitious program has been fleshed out and new requirements have been added. The current suite, called Phase 1, defines digital radio communication in 12.5 kHz channels. The next suite, called Phase 2, provides better use of spectrum by enabling twice as many voice channels to communicate in the same 12.5 kHz band. Throughout, the overarching goals for P25 have been to ensure interoperability between vendors, agencies and networks; to encourage competition, and to offer easier migration paths from analog to digital.

"Interoperability," as envisaged by APCO, includes the following:

- Multiple vendors' radios working together
- Multiple agencies working together
- Neighboring agency networks working together.

But how successfully has P25 met these interoperability objectives?

### Real P25

However long it has taken, P25 still represents the most-advanced and best-tested open digital radio standard with the support of the largest consortium of manufacturers. The progress that has been achieved so far can be gauged by the following outlined in Table 1

	Early P25 (mid 1990s)	Current P25 (2011)		
Frequency Interoperability	No	Yes, through multiband radios		
		and Inter RF-subsystem Interface (ISSI)		
Technology Interoperability	Basic standard CAI features only –	Phase 1 P25 standards completed, deployed		
	self-compliance testing against standards,	and tested in Compliance. Assessment Program		
	but no vendor-neutral standard test	(CAP), interoperability test programs, and		
	program in existence.	statewide test programs.		
Vendor Interoperability	Not demonstrated	Yes, as above.		
Security interoperability	Mixture of P25 standard and	P25 AES/3DES encryption approved		
	proprietary encryption.	under Federal Information Processing		
	Standard (FIPS) and tested in CAP.	Standard for deployed encryption.		
Network interoperability	No	Yes, link networks through ISSI		
Number of supporting vendors	1	> 12		

## Table 1. P25 Progress

To fully understand this table, some more explanation is necessary.

# Understanding the P25 Standards and Barriers to Interoperability – P25 Standards

The P25 Standards, formally collected together under the TIA 102 document suite, define standard interfaces for radios to communicate over the air (the Common Air Interface or "CAI"), for connecting consoles to a P25 network (the Console Subsystem Interface or "CSSI"), for connecting P25 networks together (the Inter RF Subsystem Interface or "ISSI") for data, for mobile data terminals, and for fixed stations. The standards also prescribe how to perform network management, implement and manage standardized encryption, and so on. Given, however, that the current P25 standards are now largely complete, why isn't interoperability between different vendors' radio equipment automatically assured?

### THE P25 STANDARDS THEMSELVES ALLOW FOR SOME FLEXIBILITY

Under the standards, radio features can fall into any one of the following three categories:

- 1. **Mandatory options.** *Required* P25 features that must be implemented exactly as prescribed by the TIA 102 specifications.
- 2. **Standard options.** *Optional* features that, if offered by a manufacturer, must be built to the TIA 102 specifications.
- 3. **Manufacturer's extensions.** *Optional* manufacturer-specific features that lie outside the P25 standard.

So two radios may fail to interoperate if one uses a Standard Option or Manufacterer's Extension that the other does not have.

### DIFFERENT INTERPRETATION AND IMPLEMENTATION OF THE STANDARDS

In spite of concerted efforts to make the standards tight and explicit, there are holes where conflicting interpretations are possible. For example, a feature such as failsoft requires not-yet-standardized supporting features to make it work. But if each vendor implements them differently, then how failsoft functions is dependent upon a proprietary implementation. As a result, one vendor's failsoft will not work the same as that from another vendor.

# CONFIGURABILITY AND USABILITY OF RADIOS

Radios are set up to operate in a certain way that depends on the settings of parameters stored inside the radio. Vendors put useful default settings into each radio which the end customer can modify, using a software application, if he wants the radio to operate differently. Problems can arise, however, if the radio's settings do not match the configuration of the network on which it supposed to operate. For instance, a radio that is taken to a neighboring network, may fail to work on that network because of a configuration mismatch. Tempting as it may be to blame the standards, user settings are clearly a user problem.

Similarly a radio may work differently because the usability of the radio - how it is used to perform a certain function - is simply designed differently. Usability is vendor specific and is not governed by P25 standards. One of the major headaches for vendors seeking to gain approval to operate on a statewide network is that the network certification tests are based on existing radio functionality and not on the P25 standards themselves. But these tests are frequently designed around the state's experience of one or two particular radios. If use of some proprietary functionality (e.g., proprietary encryption) is specified as a prerequisite for network access, then a major obstacle to interoperability exists.

# The CAP: A First Step to A P25 Interoperability Guarantee

The P25 Compliance Assessment Program (CAP) is a U.S. government initiative to define "P25 compliant" by creating a framework of standardized conformance tests for manufacturers' equipment. The government certifies P25 CAP testing labs. When the tests are completed, vendors can post their results as Supplier's Declaration of Compliance (SDoCs) and Summary Test Reports (STRs) on the Responders Knowledge Base (RKB) website: www.rkb.us.

P25 CAP Testing, however diligently performed, does have some major limitations such as:

- It only guarantees a *minimal* level of interoperability and is only as good as the completeness and quality of the tests. The CAP, just as the P25 standards themselves, are evolving as new requirements are added.
- P25 CAP interoperability testing only covers mandatory standards and some standard options.
- P25 CAP performance can't give guarantees of coverage or performance since these depend on many factors including the engineering specifications of the radio itself.

Nevertheless, the P25 CAP represents a detailed, well-supported and vendorneutral yardstick of interoperability that has been embraced by a number of manufacturers who have willingly invested time and effort to test each others' equipment.

### Conclusion

With the completion of the P25 Phase 1 standards and the development of the CAP testing program, P25 radio technology is at last beginning to deliver the reliability, interoperable functionality, and cost-effectiveness that was originally promised. The road to real interoperability is a difficult one that newer technologies, such as LTE will be cautious to enter. More likely, they will find it easier complement P25 with enhanced data services, rather than duplicate or replace the P25 experience.

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# The Impact of Next Generation 9-1-1 on Quality Assurance

By Patrick Kiernan





It's a familiar mantra. Call your credit card company, insurance provider or any customer service center and one of the first things you'll hear is: *"this call may be monitored for quality assurance."* In the corporate world, poor service can cut into the bottom line. But in 9-1-1, there's much more at stake: your agency's reputation, potential liability, expensive litigation; and most importantly, peoples' lives. Your 9-1-1 centre probably employs a

Patrick Kiernan

quality assurance solution to make sure telecommunicators are handling calls properly. But what you may not know is the mechanics of doing that QA are about to change. That's because the very essence of 9-1-1 service is evolving. Today, when a 9-1-1 call comes in, it's a voice call. But with Next Generation 9-1-1, telecommunicators will potentially need to handle images, video, text messages, and other data too. That means your PSAP will need to rethink its approach to Quality Assurance. Recently John Rennie, VP, Public Safety Solutions for NICE Systems, and Diamond Chaflawee, Public Safety Marketing Director for NICE Systems, sat down with me to discuss Next Generation 9-1-1 and its impact on quality assurance.



John Rennie



Diamond Chaflawee

**Patrick Kiernan:** We all know change is inevitable. I touched a little bit on some of the changes that are coming. Can you tell us more about what you're seeing and specifically, how you think QA will change with Next Generation 9-1-1?

John Rennie: Next Gen 9-1-1 will bring many changes for PSAPs. Today PSAPs are handling almost 100% audio calls. There are a few calls using TTD for the deaf and hard of hearing community, but the vast majority of calls are audio calls. So when supervisors QA these calls, they're really mostly just reviewing voice recordings. With Next Gen 9-1-1, QA will be much more multi-dimensional because PSAPs will have the capability to bring in non-traditional "calls" like text messages, and a whole host of data cell phone photos, video, maybe even medical records and other information related to the call or caller. A "call" will no longer be a single event - someone dials, you answer it, process it, then hang up and the call ends. Callers may very well have additional information -

maybe photos, maybe video – that they will be able to send. Automatic alerts such as telematics, crash notifications, and alarms from gunshot detectors and other sensors will also find their way into the PSAP. How well your PSAP handles and processes these information sources will not only impact your efficiency and productivity, but also how your center and staff are viewed from a service quality standpoint.

**Patrick Kiernan:** So given that supervisors are no longer just going to be listening to voice recordings of 9-1-1 calls for QA, but also potentially evaluating a telecommunicator's handling of other multimedia information, what technologies are going to be available to help with that?

Diamond Chaflawee: To review a telecommunicator's handling of an incident, you first have to capture it. It's true that with Next Gen 9-1-1 the amount and type of information flowing into PSAPs is going to greatly surpass what's delivered by the current E9-1-1 system today. The mere thought of capturing and managing that much information can be daunting. But the good news is that technologies already exist today to capture some of this information. Take, for example, screen capture capabilities - essentially a moving snapshot of what they were doing while they were handling the call. How were they interacting with the systems? Did they enter the right information? Follow the right protocols? Dispatch the right assistance to the right location? The screen recording can be synched with the voice recording, making it possible to see and hear what transpired.

So screen capturing is one way to capture this information. But I think a more elegant way, especially for NG9-1-1 where there will be a great deal more information, will be to integrate directly with the different source systems, whether it be CAD, RMS, video, GIS, or a myriad other systems. Capturing an incident via screen capture lets you see what the telecommunicator saw and did during the call. But capturing information directly from the source systems shows you that and more. It shows you what might have been missed – either because an application was minimized, covered up by another program, or due to some other systemic or procedural problem.

Another advantage of capturing data directly from source systems is that it gives supervisors a more holistic understanding of what was going on at the time of an incident. For example, by integrating to GIS mapping software, it's possible to capture and project the geographic coordinates (the latitude and longitude from the ALI feed) of recorded calls on a map, so supervisors can visualize those calls in a geographic context when reviewing them. This helps to answer the questions – who, what, why, where and when? This information can also be synchronized with other multimedia incident information for a 360-degree incident view. Solutions like NICE Inform make this possible today. In a single view, a supervisor reviewing an incident can see how the call taker or dispatcher interacted with applicable systems, view surveillance video from the scene, see where the call came from, and hear what transpired via the radio and 9-1-1 recordings. In the future of course, with NG9-1-1, this could include many other types and forms of incident-related information and data.

**Patrick Kiernan:** John, I understand you routinely speak with people who manage 9-1-1 centers. How do they feel about the transition to NG9-1-1? Do they have any concerns?

John Rennie: Yes, they have concerns over next Gen 9-1-1 in general and how it will roll out. There are a lot of positives with Next Gen but there are also a lot of challenges. One is that it requires a bit of a change in the public safety mindset, where traditionally, a lot of systems have been closed. They've been isolated islands of data that carry very useful information on their own, but are not always open or good at sharing that information. Once you move to a Next Gen environment the barriers isolating the islands are broken down and bridges are built between the islands. This trend toward data sharing is a key

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fundamental part of the shift to a Next Gen environment. So these barriers will come down over time, and I think we'll find that this will deliver better insight, not only for real-time incident handling, but for incident reconstruction after the fact. That includes incident reconstruction for QA as well.

The second concern is there are a whole set of operational issues and compliance issues related to moving to a Next Gen environment. A lot of these are being addressed through APCO, NENA, and with other bodies, but it's still a significant amount of work and it's a significant change from the last 40 years of 9-1-1 - which has essentially been phone calls followed by dispatch. The whole idea of having access to so many additional sources of data during the course of a 9-1-1 call, such as a callers' medical records – this is all a big step in a very positive direction, but it's a big step. And a lot of people are very nervous about how they will move while forward successfully still maintaining the high levels of service that people expect from 9-1-1 centers today.

**Patrick Kiernan:** I think that brings us to a key and final question. With the inherent complexities of NG9-1-1, would you say that QA will become increasingly important?

Diamond Chaflawee: Yes, I definitely would agree with that. Next Gen is going to necessitate compliance with policies, regulations, new and procedures for handling situations and information. Proactive Ouality Assurance is going to be a critical tool to make sure that telecommunicators are successfully adapting in this regard. QA tools are going to be more essential than ever in terms of identifying knowledge gaps, so PSAPs can deliver targeted coaching and training and make sure their transition to NG9-1-1 is on track.

**Patrick Kiernan** is the director of marketing for NICE Systems Security Americas Division (www.nice.com). An expert on voice, IP video, and broadband technologies, Mr. Kiernan has published articles in numerous public safety and government trade publications and is an accomplished speaker. He has over 20 years' experience working for technology and telecommunications organizations including JDSU as director of field test marketing and Spirent Communications as director of market strategy. He is a graduate of Montclair State College in New Jersey, and received his MBA from American University in Washington, DC. Pat Kiernan can be reached at pat.kiernan@nice.com.

**Diamond Chaflawee** is sector marketing director for public safety for NICE Systems Security Americas Division. He has close to a decade of experience working for organizations in the public safety and government sectors, including NICE Systems and Genesis System House, an Israeli software subcontractor and integrator of large-scale government projects. Mr. Chaflawee holds a patent for technology he developed while at NICE. The technology provides an automated way for 9-1-1 centers to manage and reproduce multimedia information. Mr. Chaflawee served in the Israeli military intelligence corps and earned a bachelor's degree from Bar-Ilan University, Israel, and an MBA degree with honors from Tel-Aviv University, Israel.

John Rennie is vice-president of Solutions Engineering for the Security Division of NICE Systems. John has overseen system design to ensure successful implementation of complex audio and video solutions for public safety agencies for some of the world's largest cities and most well-known federal agencies. Prior to assuming the position of vice-president, John was VP of NICE Systems' Public Safety Research and Development team in the UK. Under John's lead, the team developed Next Gen-ready solutions for managing incident information designed from the ground up to support Next Gen communications and multimedia in the form of audio, video, pictures, documents and other data. John is a member of the Institution of Engineering and Technology, one of the world's leading professional societies for the engineering and technology community based in the UK. He earned his BA in engineering from the University of Cambridge, England.



### FEATURE

# **Best Trainers** Are the Most Passionate

By Christopher Iregui

The evolution and ongoing challenges of recruiting and reforming a hiring process for some organizations can be the easiest. At times finding a trainer who not only is technically competent, but also inspires and leads by example can be a more difficult challenge. The senior team members are often recruited, some willingly and others not, to train and precept new recruits – a practice that could be essentially hindering potential of tomorrows 9-1-1 dispatcher.



There are many skills that need to be considered when selecting trainers and mentors. The obvious is the required technical skills to conduct the responsibilities the public requires of us. The not-so-obvious or often overlooked asset of a potential new trainer is attitude, passion and conviction towards the role they and their student play in public safety.

Assuming the recruitment process has captured competent and skillful new employees, any classroom portion your organization engages with the new staff should create a strong foundation of technical skills. Capturing the right attitude can best be achieved by pairing the new recruit with a trainer or mentor who believes it is their responsibility to prepare the next generation of public safety communicators. The beginning of a culture begins with this pairing. Like a president motivates a country to have man walk on the moon, and like a CEO inspires a company to design and market the hottest selling computer tablet, a trainer must also inspire the student to protect and assist the public, at times being an advocate for the caller.

Gandhi once said "Be the change you want to see in the world." His advice is true for capturing what we want to see in potential instructors, but also what we do not want to see. Molding a student to steer away from complacency and to weather storms sometimes caused by the workplace is a strong and worthy skill of a trainer that should be recognized when selecting trainers. Potential trainers not only have strong technical skills, but the passion to do what is best for the calling party requesting help. Too often burnt out and senior trainers demonstrate what is best for resource management, therefore themselves and the workplace and not the patient who appears intoxicated but in reality is having a diabetic emergency. Rest assured if these dangerous habits and behaviours are captured by the new recruit, they will continue because it is natural for the student to follow the teacher and seek approval even months or years later.

The best practice to avoid future and potentially embarrassing meetings with the coroner is identifying what team members sincerely have passion for their role with the technical skills to protect the public. Their attitudes in a close pairing with a student can become a valuable asset which can reap rewards not only to the student and trainer, but to your organization and workplace by diluting poor attitudes and complacency. Another task should be assuring that the mentor and new recruit have regular opportunities with each other in an unformal manner. This could be hallway meetings or lunchroom discussions which provide the new employee to engage the mentor for advice or opinions. A responsible mentor will seek these moments but appropriate times can be challenging with team assignments and shift patterns.

The motivated and passionate trainers have a vital role in shaping the 9-1-1 of tomorrow and create confidence with the public by the duties they perform. They start by laying shape to those who will one day replace them and become mentors themselves.

Christopher Iregui is an Emergency Medical Dispatcher and Paramedic with British Columbia Ambulance Service, working in the Vancouver Dispatch Operations centre.

# **Stress Busters** There is A Lot You Can Do to Feel Better

By Kim Rigden, Principal of Kim Rigden and Associates

Originally published in The Journal of Emergency Dispatch, Sept/Oct 2010.

There's no doubt we're feeling more and more "stressed" as we struggle to adapt to our fast-paced and everchanging world. Everyone is affected by stress to some degree and, believe it or not, stress is not an inherently negative emotion. It is a normal part of life. Stress helps us make choices, develop plans, change behaviours, and begin new activities. Stress is good when it is controlled: we deal with it, recover from it, and may actually grow from it.

When I started speaking about stress at Navigator 2008, the feedback was along the lines of "Wow, I didn't know [insert symptom here] was from stress." Emergency dispatchers deal with a unique combination of stressors in the workplace: ever-changing technologies, limited resources, equipment failures, uncomfortable work stations, shift work, an incredibly high level of scrutiny, and dealing with people in crisis. These are the hallmarks of the job of an emergency dispatcher and they are not going away any time soon.

Now, three years later, I have Navigator attendees come up to me and say, "I know what stress is. I want to know how to deal with it!" The following suggestions may help you keep stress in check.

### Pavlov and the 9-1-1 Centre

Sitting down at your dispatch console is a form of Classical Conditioning1i that actually can provoke stress. Ivan Pavlov, who coined the name for the condition, noted that dogs salivated when a lab assistant responsible for feeding the dogs entered the room. In time, the dogs not only salivated when fed but, also, in response to the lab assistant entering the room whether or not the assistant had anything to give the dogs.

Look at the similarity in dispatch work. The ED comes into work assumes the dispatch slouch position (usually slumped down in the chair hunched over the keyboard), anticipating and experiencing multiple spikes in stress when answering serious 9-1-1 calls, dispatching ECHO and DELTA level calls, and dealing with limited resources. Over time, the brain develops a conditioned response and the body produces a spike in stress just by sitting down at the dispatch console. Nice, huh? Can you think of other things that have become conditioned responses? How do you feel when you hear the 9-1-1 line ring? What happens when the comm. centre manager walks in the room? While these stressors are unconsciously associated with sitting in the dispatch

chair (they don't call it the hot seat for nothing) you can teach your brain and body to change its response. Read on.

# Tall ship sailing

No, I'm not suggesting a cruise (although that would definitely help relieve stress). A tall ship is a metaphor thinking about how stress affects you and what can be done about it.

# Mast=Spine: The spine is the body's main support

Research reveals that people who sit for long stretches may be twice as likely to develop chronic conditions such as heart disease, diabetes, and cancer even if they exercise<sup>ii</sup>.<sup>2</sup> A quick fix is changing your position. Stand up! Imagine your spine lengthening and the top of your head stretching toward the ceiling. Roll your shoulders back and tuck in your pelvis slightly. You can do this anytime you notice that you feel stress coming on, but especially after a difficult 9-1-1 call. You don't have to make a big effort to interrupt this cycle. Set a goal to stand up at least three times an hour.

Sails=Lungs: Most of us don't know how to breathe properly When stressed, the body has an increased demand for oxygen, yet the "dispatch slouch" position does not allow the body to take in a deep breath. Sit or stand tall with shoulders rolled back and breathe deeply enough to move your belly outward. With every long, slow breath you should feel more relaxed. Breathing deeply and slowly floods the body with oxygen and other chemicals that work on the central nervous system and reduce stress levels. Next time you are in a stressful situation, take a moment and think about how you are breathing. Most likely your breath is only reaching to the top part of your chest. Take a few deep breaths that move your belly and see how much better you feel.

#### Hull=Gut: Yes, you are what you eat and drink

The types of food and beverages shift workers tend to eat and drink are the same known to increase stress and anxiety. Coffee, colas, and processed carbohydrates (potato chips, donuts, and candy) are the worst culprits. In many people, caffeine can produce feelings of anxiety and a British study shows that caffeine doesn't help the weary night shift worker stay more alert.<sup>3iii</sup> When tired, your body craves a pick-me-up. Snack foods like chips and candy provide a short burst of energy as blood sugar spikes, but that high will diminish leaving you feeling shaky and irritable from the subsequent drop in blood sugar.

The top five stress-busting foods<sup>4iv</sup> are highly portable and easy to eat right at the dispatch console: whole grains and popcorn, tea (black, green, white), dark green veggies, nuts and seeds, citrus fruits, and berries. Pack a healthy snack and when you feel peckish or tired reach for stress-busting foods instead of stressproducing ones.

#### Water: Just drink it

The ED environment produces a vicious cycle: stress dehydrates and dehydration increases stress and anxiety. Keep a water bottle at your workstation and take frequent sips. If you don't like the taste of water add a low calorie flavour. Yes, drinking water throughout your shift may increase your trips to the restroom, but guess what? That will only get you to stand up and walk around more!

Stress is an ever-present part of the job

for emergency dispatchers, but that does not mean that the dispatcher is helpless to reduce the effects of stress. You can train your body and your mind to interrupt the classical conditioning that leads to chronic stress. Imagine yourself as a tall ship and stand up, breathe deeply, eat stress-busting foods, and drink water. These tips are easily put into practice at the dispatch console and with practice they can become your healthy conditioned response to stress. It is a simple plan, as the best ones usually are.

Be well and stay safe.

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