

Improving public safety

— the answer lies in commercial systems

Fires, disaster relief, police work, national security . . . to handle demanding tasks like these, authorities always need reliable and controlled information. This information is handled by systems that are usually tailor-made and very costly. Now we see a new market emerging that uses commercial solutions.



IMAGINE YOU ARE in the shoes of field workers when disaster strikes:

Routine or not, I need to finalize this task quickly, thinks police officer Alex. While writing down information about a driver in a crashed van along a busy road, a new text message appears on his terminal instructing him to proceed with his colleague with a new case. It is some miles up the road, in a large industrial area under reconstruction.

The heat is already getting too intense, realizes Helen, chief of firefighting operations, while instructing additional resources to come from the north and fight against the firestorm in a national park close to a popular camping area. She needs to ensure that the police understand how the fire is quickly approaching new territory, in order to ensure people's safety.

Tom, chief of local rescue services, could not have imagined the extent of the destruction he sees as he climbs out from the helicopter and looks over the isolated village that is covered by powerful streams of water. It is now of vital importance that he communicate the situation as accurately as possible, so the people will be evacuated rapidly.

It is obvious that the more you know, the better decisions you can make. Looking at the scenarios above, we can agree that the operations would be more effective if, for instance, Alex's instructions were accompanied by maps and images

point

» **Several initiatives have been undertaken to make commercial technologies available for the national security and public safety end users.** «

and an access to the home database, or if Helen could share the same forecast of expected progress of the fire with the police. It would also help the people in the village if the international disaster relief organizations could ask for aid from different countries supported by real-time images of the destruction.

Filling the gap

We can conclude that information needed by national security and public safety end-users must be available independently wherever they are — in a rich multimedia format when required to clarify the situation. This covers information sharing not only within one agency but also between cooperating agencies as the operations demand.

National security and public safety organizations expect to have control over the communication networks — their features and applications. It also must be possible to secure their communication in terms of authentication and user confidentiality.

High availability of communication is required on the move, not only locally but also regionally and internationally. This means a solution that can include different types of users; for example, civilian experts. Additionally, a solution that can interface different communication systems during planned and unplanned operations.

No need to wait

The scope of communication should cover both traditional group radio communication and multimedia communication capability, as seen in the examples above. Terminals need to support these capabilities, be easy to use, and be available at low cost for a number of users.

Consequently, the communication requirements that arise from the wide scope of national security and public safety operations do not fully match what is offered by the communication systems for voice and text messages normally used by these organizations. The question is how to fill this gap in a financially sound and operationally safe way.

In this, commercial technologies, open standards, and commercial public net-



**Can public networks take the heat?
Yes, the advantages of using commercial
technologies are in fact numerous.**

works have an important role to play.

Envision how “digital natives” easily share video clips from the real-time situations they are experiencing — just using their mobile phones to reach friends instantly around the world.

Think of a community like, for example, the police. How useful would it be for them to visualize and share a situation with colleagues beyond voice and text messages? Must we wait until new technologies have been developed and procured for national security and public safety organizations before the end users catch up with the digital natives? Of course not.

The success story of leading mobile technologies like GSM/WCDMA (sometimes referred to as UMTS) has taught us that open standards create a broad marketplace for many commercial suppliers. This has resulted in communication networks that connect across the world.

Getting the latest

A broad market, based on more than 3 billion users of GSM/WCDMA, with 1 million new subscribers each day, will continuously encourage development of improved performance and a variety of terminals and applications. This eliminates the risk of being stuck with a single

supplier and going through long and painful negotiations for every upgrade of the legacy system to, for instance, mobile broadband.

Peak rates for GSM/WCDMA can be measured in tens of megabits per second, and performance is constantly increasing. Long-term evolution (LTE) promises an even brighter future for high-performance mobile broadband applications.

Tapping commercial technologies and open standards for professional use means that the users can get immediate access to existing modern networks, with the latest services and applications.

The technology is here, no doubt, but



can professional communities really use commercial services for their operations, for instance, mobile broadband in public networks?

Yes, this is possible, and it can be done in different ways. Sometimes public networks can be used as they are, depending on the purpose. If control of the essential parts of the core network and protection of its users are required, authorities can act as virtual network operators, or buy the communication capabilities with specific features as managed services from a public operator.

Full roaming

What about availability, when the traffic is intense or the network is not functioning?

The first big enabler of public safety communication over standardized 3G (3GPP) networks was the introduction of priority access. This can be compared to the way we use roads. In case of emergency, authorities can turn on their vehicles' blue lights to ensure priority on the roadways. The same function can now be applied in the 3GPP communication networks.

The second feature would be the roaming capability which allows overlapping access to different networks. If one is down, another network is looked for. Increased availability is the first benefit of using public networks. So, through wholesale roaming agreements national and international networks are reached globally: interoperability on a global scale.

What about during disaster situations, when all infrastructure is down?

In this case, commercial technologies offer compact transportable solutions with connections via satellite to work when no other existing network is available locally.

It can also be predicted that the same group communication capability that is traditionally used by blue light organizations over closed radio networks will be available in commercial networks in the near future. As far as security is concerned, it is just an added application.

point

» Commercial technologies based on open standards, including mobile broadband, will make a big difference for public-safety users. «

Several initiatives have been undertaken to make commercial technologies available for the national security and public safety end users. We have seen government agencies implement complementary systems for mobile broadband or other examples such as the initiative in the United States to develop public-safety nationwide mobile broadband capability using the 700 MHz spectrum.

Market trends

There are also initiatives at the local level when the benefits of economy of scale, through commercial subscriptions and access to commercial devices, have substantially reduced the capital cost and released budget for other tasks. The cost of terminals is often also an issue for organizations that are supported by volunteers.

In a disaster situation, when professional networks did not work, there is an example where a community official was sent abroad to procure a number of Subscriber Identity Module (SIM) cards. This gave his home area a communication

capability that used the different operational parts of commercial networks.

Those responsible for making effective communication tools available to national security and public safety end users must consider using commercial technologies, open standards, and public networks. They must consider how to use them in the most efficient way because it is already happening. The benefits include getting access to the latest technologies, economy of scale, worldwide network coverage, and making use of all the development that goes on within services and applications in the market.

So the creativity and innovation of these organizations confirms and paves the way for a market trend that is inevitable: commercial technologies based on open standards, including mobile broadband. They will make a big difference for public-safety users: not only will they bring new capabilities to the field workers, they will also bring cost efficiency to a new level. So, decision makers should start looking now. ■



the author

Ritva Svenningsson (ritva.svenningsson@ericsson.com) is Marketing Director, National Security & Public Safety, at Ericsson. After her graduation from Chalmers University of Technology in Gothenburg, she joined the space industry, managing programs for development of systems for satellites, probes, and launchers, often based on commercial technologies. She joined Ericsson in 2001 to manage the development of an airborne early warning system based on commercial aircraft.