



HARNESS THE INFORMATION THAT SURROUNDS YOU BUILD A SAFER CITY

ARCHITECT A STRONGER MISSION CRITICAL FOUNDATION

This is your city. An active and engaged public expect you to keep them safe. Public safety officers expect access to communications technology to help them work smarter and more efficiently. Dispatchers expect to answer emergency calls and gather critical details quickly no matter what form those communications may take. You need the right technology and operational architecture to capture more of the information flowing between the public, front line officers and government agencies to meet these expectations. When you can turn every input into a single operational view, make data actionable and securely distribute it across networks, device and applications – information becomes intelligence and safer cities are built.

Safer cities create thriving communities. Places where people want to live and businesses want to operate. It takes a strong mission critical foundation to build a safer city. Opening richer, more flexible and secure communications between people and their environment keeps officers safe and agencies connected. With the right architecture, you can connect with your city in meaningful new ways, manage the complexity of rapidly converging communications technology and proceed with the intelligence necessary to make your city truly thrive.



CURRENT TRENDS ARE RESHAPING PUBLIC SAFETY

The operational landscape of government agencies is changing. Communications technology is evolving rapidly. Social media is exploding. New, complex security threats are emerging. To keep up with public expectations and meet challenging new demands, agencies need better ways to leverage and integrate data, improve processes and make more proactive decisions.

This is a bigger priority than ever because investments in mission critical solutions directly impact a community's economy. U.S studies revealed that every dollar of public safety investment returns about five dollars of economic impact.¹ And, conversely, for every murder that occurs in a city, population has been shown to decline by 70 people.² Making communities safer and more attractive is a big priority for all government agencies. Improving service delivery and creating a more open, participatory environment is fueling the interest and deployment of new technology solutions.

HERE'S HOW NEW REALITIES WILL TRANSFORM MISSION CRITICAL, ENTERPRISE-WIDE OPERATING ENVIRONMENTS:



DATA IS EVERYWHERE

Every second, critical operational data is being collected and stored – incidents reported, crimes committed, video recorded, calls for service received. You need the right tools to access, compile and share this data. And with 89 percent of public safety decision makers viewing data as mission critical, having a 360 degree actionable view of organizational data has become a critical capability.⁴



SMART DEVICES RULE

More than 50 percent of mobile phone users in the EU5 countries (Spain, Germany, Italy, France and the UK) now own a smartphone.⁶ Global tablets sales grew 78 percent in 2012 and will likely outpace personal computer sales by the end of 2013.⁷ The public is using these devices to text, tweet, capture and share video. But they aren't alone. 86 percent of police officers currently use their own consumer-grade devices for work-related activities, despite security concerns by 89 percent of government decision makers and more than half expressing a preference to invest in devices designed for public safety.⁸

THE WORLD GOES SOCIAL

We live in an increasingly social savvy society. Participation in social networks of all types has exploded. We tweet, post mobile photos to Facebook or Instagram and upload videos to YouTube daily. Social media has also transformed real-time public safety communications. 83 percent of agencies now use social media to share information with the public and 89 percent of agencies are actively using social media to monitor for investigative leads.⁹

VIDEO GOES PRIME TIME

From the street to the police car, video technology has proven an effective crime deterrent and an invaluable evidentiary tool. In-vehicle and wearable cameras deliver improved situational awareness and keep officers and the public safe. And many agencies now use wireless video to support investigations, traffic stops and ensure officer accountability. It's even saving communities cash – factoring in all costs, \$4.30 is saved for every dollar spent on surveillance cameras in high crime areas.¹¹

SECURITY THREATS CLIMB

As cybercriminals use new and more sophisticated methods to bypass security ramparts, computer espionage is an escalating problem around the world. 100 million general malware threats have been recorded,¹³ and 100,000 new samples are cataloged each day.¹⁴ Attacks targeting government agencies are also growing; the number of cybersecurity events reported is up nearly 680 percent over the last six years.¹⁵ The number of incidents will undoubtedly climb.

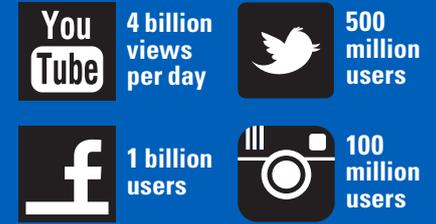
NATURAL DISASTERS MORE FREQUENT

Flooded homes. Destroyed businesses. Debris-filled streets. Displaced families. Failed infrastructure. Natural disasters have hit global cities with historic frequency and ferocity in recent years, causing worldwide losses of more than \$500 billion in the last two years alone.¹⁷ While mission critical communications technology certainly cannot prevent these events, it can help government and public safety agencies better manage situations when they occur and minimize impacts on people, infrastructure and the environment.

DISCONNECTED COMMUNICATION NETWORKS

Today, there are more communication choices for public safety than ever before. In addition to private two-way radio systems, officers have access to Wi-Fi™, metro IP systems and commercial operator networks. This plethora of communications networks makes it challenging to connect responders from multiple agencies during an emergency, reducing their effectiveness. 76 percent of agencies surveyed say that current data networks are not dependable or integrated well enough to support data needs during emergencies.⁸

SOCIAL SNAPSHOT¹⁰



1.85 MILLION CAMERAS KEEP UK CITIES SAFE¹²



1 CAMERA FOR EVERY 32 PEOPLE

TOP GOVERNMENT CYBER THREATS¹⁶

Malware
Phishing
Data Leakage
Hacking
Spam



\$380 BILLION 2011 HIGHEST GLOBAL COST IN HISTORY¹⁸

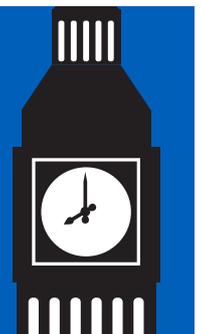
Double 2010

Triple average for past decade



UK RIOTS 26 AGENCIES¹⁹

POLICE ON LONDON STREETS INCREASED FROM 6,000 TO 16,000



BUILDING A SMART, INTEGRATED OPERATING ENVIRONMENT

To stay a step ahead, front line officers and those who watch over them, need the right technology to have better visibility to what's happening around them at all times. To make this possible, you need a future-ready architecture that unifies radio and broadband networks and enables extraordinary levels of service, safety and community prosperity.

You need a mission critical operating environment that operationalizes the data that surrounds you, turning information into intelligence and intelligence into safety. The foundation of this architecture begins with three interrelated principles: unified data, dynamic intelligence and mission critical performance.



UNIFIED DATA



While the volume of data collected by government and public safety agencies is growing, it comes from and is stored in disparate sources, making it hard to access and correlate. Big data is changing everything; unless you can make sense of it, its value is limited.

COMMON SERVICES

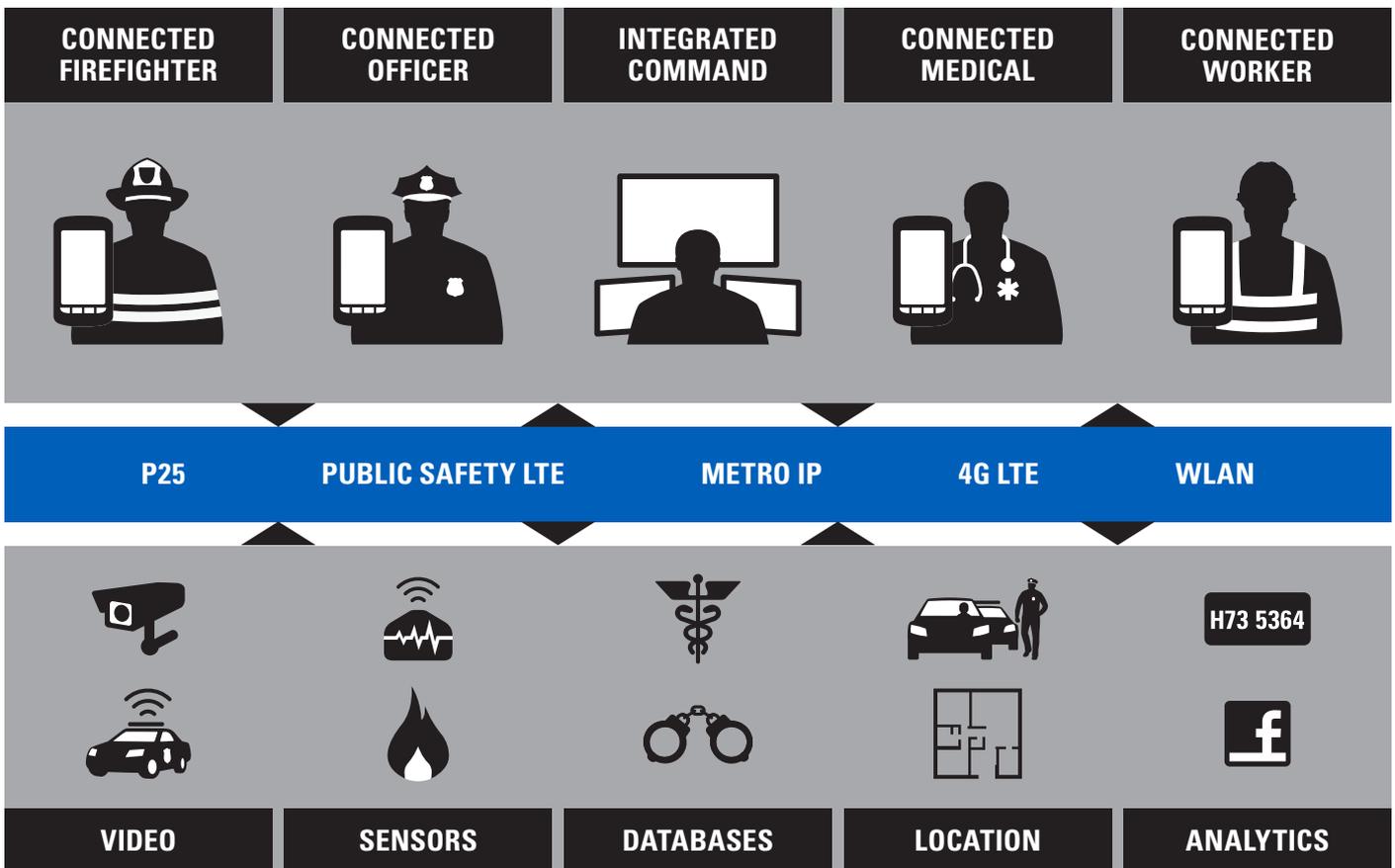
Unified data services bring together information like location, tracking, presence and video and serve up that data, connecting across any technology or application. With all your applications in sync, you'll have a single real-time operational view of every situation.

SIMPLIFIED MANAGEMENT

Today, networks are often managed in a patchwork fashion, making failures difficult to detect and resource-intensive to resolve. A mission critical operating environment will provide an integrated view and simplify network, device and application management. It gives you intuitive visibility and control over all dimensions of a unified communications network, and creates a platform that accepts and correlates all data inputs for faster failure resolution and improved operational efficiencies.

AN OPEN AND STANDARDS-BASED PLATFORM

A simplified application development environment with open and standards-based APIs enables developers to focus on the requirements of public safety, not proprietary network interfaces. This helps cultivate and encourage a larger developer ecosystem that can more rapidly deliver innovative and purpose-built applications, giving safety and government agencies a more robust selection of applications.



DYNAMIC INTELLIGENCE



You need to provide the information that makes your public safety officers ready for anything. But managing siloed, unstructured data, multiple communications networks and devices adds considerable complexities to an already challenging job, not to mention strain on shrinking budgets and resources. Reliable communications remain a critical lifeline for first responders. But lines of communications are often rigid. They can't easily adapt to meet the needs of different agencies or changing situations.

DYNAMIC PRIORITIZATION

A mission critical operating environment lets you dynamically prioritize resources based on individual, application or incident. Radio and broadband resources are prioritized for those users most critical to serving an incident, and de-prioritized for non-essential users when necessary. Prioritization also allows for the development of customized service tiers for all users.

IMPROVED COLLABORATION

As various teams respond to an incident, collaboration is key to a quick and effective response. Whether critical information is in the form of voice, data, or video, you need to easily and instantly share it across all teams. A mission critical architecture enables dynamic multimedia groups, multi-network operations and intelligently directs the flow of voice, push-to-talk, images and video between the command center and the field over the best network available to the most suitable device.

SYNTHESIZED DATA

Finding the right information at the right time is more important than ever – yet is increasingly more difficult as the amount of government and public safety data grows. Automated data analysis allows you to make more intelligent predictions and more targeted counteractions. Proactive policing is made possible with applications that can synthesize current and historical information to find patterns, target information where it's most needed, analyze crime and measure response times to help plan optimal strategies and make better predictions.



**REAL-TIME
CRIME SOLUTIONS**
FIND PATTERNS, AUTOMATE ANALYSIS,
RESPOND PROACTIVELY



**PROCEED WITH
INTELLIGENCE**
MULTIMEDIA TALK GROUPS WITH
PRIORITIZED RESOURCES

MISSION CRITICAL PERFORMANCE



Reliable voice and data communications are essential for mission critical operations. As you consider next generation communications options, it is imperative to find the right balance between private and commercial systems to ensure you can rely on the network when you need it most.

SEAMLESS SERVICE

No matter where they are or where they're going, front line officers need a continuous communications connection. With a mission critical operating environment, you can give them the ability to securely and seamlessly move between private radio and broadband networks to 3G and 4G public carrier networks, enterprise WLANs and LAN systems. And your network will have the dynamic intelligence to automatically determine the best network available based on coverage, reliability and throughput.

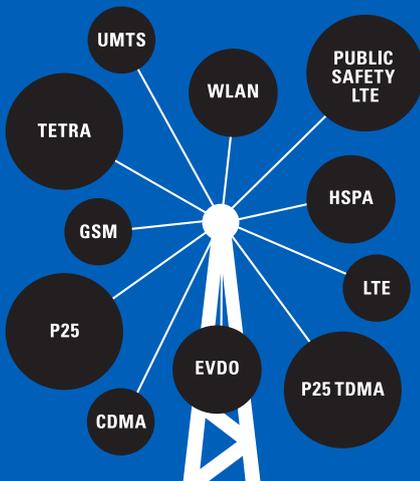
STANDARDS-DRIVEN PERFORMANCE

A mission critical network is engineered for extreme survivability, dependability and security of critical voice, data and video communications under the most challenging conditions. These networks serve as the last line of communications under the worst of conditions. Standards enable interoperability during multi-agency emergencies, letting visiting officers operate on networks outside of their jurisdiction.

SECURE COMMUNICATIONS

Threats emerge and evolve quickly, making critical data vulnerable. And cyber criminals are getting more sophisticated and specifically targeting government agencies. Mission critical architecture delivers concentric rings of protection to secure sensitive operational information and agency data with end-to-end group security and information assurance, along with intuitive management, monitoring and controls. It holistically addresses the people, policy, process and technology that comprise mission critical communications.

ROAMING ACROSS PUBLIC AND PRIVATE NETWORKS



DESIGNED FOR PUBLIC SAFETY, BUILT TO STANDARDS



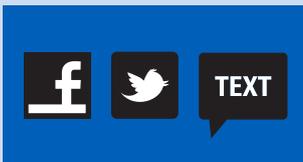
SECURED AGAINST COMPLEX CYBER THREATS



TURN INFORMATION INTO INTELLIGENCE INTELLIGENCE INTO SAFETY

To prepare public safety for what's next, you need to keep officers empowered and safe with purpose-built technology that constantly monitors the environment for threats and delivers only the information they need. A mission critical operating environment links and strengthens government agencies, allowing them to operate more efficiently and cost-effectively. You'll be able to arm public safety officers with the real-time data and improved situational awareness they need to make fast, potentially life-saving decisions. You can improve patient care and outcomes by connecting Emergency Medical Technicians (EMTs) on the scene with emergency room doctors. And you can connect residents to the services and systems they need to resolve community issues and convey their satisfaction for a job well done. Your ability to deliver greater connectivity and access will provide the safety that makes the public confident and helps communities grow and prosper.

A WATCHFUL EYE ENSURES SWIFT CROWD CONTROL



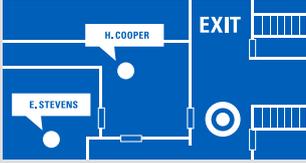
A concert is in full-swing at an outdoor summer festival. As the surrounding crowd grows, it becomes more unruly. Concertgoers take to social media – Facebook, Google+ and Twitter – to voice their concerns. The quick rise in social activity triggers a real-time crime solutions alert. Texts with photo attachments begin to come in from concerned concertgoers. As the crowd starts to overflow into the streets, video analytics trigger cameras and live video streams. Motorcycle and foot patrol officers receive a re-assignment alert on their mobile devices, collaborate and head to the area around the concert. Public works is notified of locations where barricades are needed and work orders are sent to employee devices.

REAL-TIME INTELLIGENCE TAKES A KNOWN THREAT OFF THE STREET



On patrol on a dark roadway, an officer comes up behind a car and immediately receives an Automatic Number Plate Recognition (ANPR) alert that its number plate is on the warrant list. He turns on his lights, starting his video recording system, and pulls over the vehicle. The ANPR system initiates a records search for the history of the plate owner, revealing that the vehicle owner has numerous arrests for drug dealing and is known to carry a gun. Armed with these critical facts, he checks the location of other units in the area and calls for back-up. As they carefully approach the vehicle, the camera continues to capture footage. As one officer takes the dealer to jail, the other completes and submits the electronic incident report.

PROTECTING FIREFIGHTERS WHILE THEY SAVE OTHERS



While a fire continues to burn in a downtown apartment building, a rescued resident informs firefighters that a person is still inside. As firefighters enter the building and move toward the location of the trapped resident, each firefighter's progress and health status is monitored with locating and biometrics applications. With the heads-up display built into their SCBA masks, each firefighter can view the location of the nearest exit, see what channel he is on and monitor his own heart rate and the level of oxygen in his tank. Making their way through the smoke, the first two fire fighters locate the missing resident and carry him safely from the building where he receives immediate medical attention.

RESPONSIVE PATIENT CARE EN ROUTE



A man falls down in the bathroom and can't move. Fearing he's had a stroke, his wife dials the emergency call center, and dispatch sends an ambulance. When the EMTs arrive at the home, they examine the man, confirm stroke symptoms and load him into the ambulance. Knowing it will take 25 minutes to get to the closest hospital during rush hour, the EMT transmits the patient's vital signs and establishes a video chat with the emergency room doctor. With the ambulance en route, the doctor can monitor vitals, ask the patient questions and see how he performs various actions to determine the severity of the stroke. Since the patient's condition is already known when he arrives at the ER, the doctor can quickly administer medication.

MAKING SURE RESIDENTS ARE HAPPY WITH CITY SERVICES



Leaving home, a woman notices that her garbage bins are still full at the curb. She calls Customer Service Request (CSR) services to report the issue. Around the same time, several neighbors report the same problem. Looking up collection routes, the CSR rep confirms the street was scheduled for pick-up earlier that day and notifies public works. The manager who receives the notice identifies a nearby afternoon route. She creates a work ticket and sends it to the driver on his mobile device. Once the garbage is collected, the driver submits the completed work ticket via his handheld device. Before going home, the resident who reported the incident logs into the city's CSR system and sees that her garbage has been picked up.

ARCHITECT A PLAN NOW TO TAKE CONTROL OF CHANGE

Broadband and narrowband radio networks aren't converging to just one single point, they're exploding all around us. They cover more area and create new boundaries. They collect more data and introduce new threats. They offer revolutionary applications and unleash unprecedented complexity. And they're fundamentally changing the operating environment of public safety professionals.

The Motorola mission critical operating environment allows public safety professionals to securely and seamlessly transition between networks – narrowband and broadband, private and public. It unifies the data sources and services that enable next generation mobile applications, and dynamically prioritizes the information that matters most, to the people who need it most. And it's built on a future-ready, open architecture that's simple to manage and constantly reinforced.



TAILORED

ADAPT TO EACH AGENCY'S LOCAL NEEDS
AND OPERATING PROCEDURES



MIGRATABLE

CONVERGE RADIO AND BROADBAND
WITH FUTURE-READY TECHNOLOGY



FLEXIBLE

EVOLVE OVER TIME WITH A PATH TO
TOMORROW'S CAPABILITIES



TRANSPARENT

TECHNOLOGY THAT'S SECOND NATURE SO
THAT USERS CAN FOCUS ON THE MISSION

SAFER CITIES CREATE THRIVING COMMUNITIES

We've only just scratched the surface of data, and it's already changing everything. Inputs from smartphones, from social media, from cameras, sensors and alarms – from everywhere – offer the promise to help government agencies see, hear and do more with less. But capturing that data is just the start. The real inflection point is when agencies can operationalize the data that surrounds them so they can make more intelligent predictions, offer more targeted counteractions and establish a more enduring safety.

Learn more at motorolasolutions.com/safercities.

WHITE PAPER

MISSION CRITICAL OPERATING ENVIRONMENT

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