

White Paper

Gate
G21

Gates

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Lounges



Safer, efficient airports

Integrated video and communications
solutions for modern airports



MOTOROLA SOLUTIONS



Global air travel demand continues its bounce back and is set to return to normal growth patterns and hit new records in the coming years. Air cargo traffic is also rising and predicted to soon return to pre-pandemic levels.¹

Aviation giants are forecasting robust growth and a doubling of fleets to 48,575 aircraft by 2040. The International Air Transport Association (IATA) estimates that global traffic could reach 7.2 billion passengers by 2035 and 10 billion by 2050, compared with 4.5 billion in 2019, with air traffic set to double in Europe and to increase by a factor of 2.5 in South America and by a factor of 3.25 in the Asia-Pacific region.²

IATA also declared 2023 the “safest year for flying by several parameters.”³ This significant achievement is serving to further boost the sector. However this resurgence presents various challenges for airports around the globe, many of which may have postponed investment into technology solutions from proven suppliers because of budgetary constraints during the downturn. These challenges may require airports to ensure certain innovations such as:

Airports are highly complex organisations and must find a balance between efficiency, productivity, an optimal passenger experience, safety and security. From terrorism threats and cybersecurity issues to freak weather events and stringent rules and regulations, airports are one of the most dynamic environments in the transportation market.



More effective
emergency
response



Enhanced
security



Improved
workforce
collaboration &
productivity



Efficient crowd
management



Safer ground
handling
operations



Airports are highly complex organisations and must find a balance between efficiency, productivity, an optimal passenger experience, safety and security. From terrorism threats and cybersecurity issues to freak weather events and stringent rules and regulations, airports are one of the most dynamic environments in the transportation market.

Disparate and possibly outdated communications, video and security systems make it harder for airport staff to carry out their tasks efficiently, safely and productively. Many airports are now turning their attention towards new technologies from proven suppliers to maintain and improve their competitiveness, security and incident response, especially given the sector growth expected over the coming decade.

Motorola Solutions has been serving airports worldwide for over 30 years and now offers a wide range of unified technologies within its safety and security ecosystem. Voice, video, data and analytics are unified so information can flow, operations can run smoothly and collaboration improves, to help strengthen safety and protect people, property and places. The ecosystem enables airports to efficiently monitor and connect their entire site, from perimeter to terminal, parking to control tower, and everywhere in between, while empowering teams to intelligently oversee and control crowd movements, operational workflows, passenger flow and suspicious activity or breaches. These solutions have been designed with the airport environment in mind and can be integrated with many of your existing systems or utilised for a wider collaboration with public safety agencies.





Challenge 1: Effective emergency response

Unify and expand the reach and capability of radio communications systems for improved incident management

In an emergency, every second counts. Critical messages and information need to be shared instantly, clearly and with everyone who matters.

Most airports already have a TETRA, Digital Mobile Radio (DMR) or P25 system in place for secure, reliable and efficient mission-critical communications, both landside and airside. These systems are the backbone of effective disaster and emergency response.

However, the latest technological advancements from Motorola Solutions mean airports can now further enhance their emergency communications with a range of features, functionality and services that seamlessly integrate and interoperate with their existing LMR or TETRA networks. These include Radio Alert, which allows users to receive and acknowledge alarms raised by the video technology directly onto their radios, or the broadband push-to-talk (PTT) multimedia group communication service, WAVE PTX™. These cost-efficient technologies are designed to be deployed quickly, while maintaining the highest levels of security and performance synonymous with Motorola Solutions. They make it possible to:

- Expand on-site communications beyond the airport for coordinated communications with wider emergency services and security and transport operators
- Gain extra visibility and improved situational awareness with video, photos and data files being shared over radio handsets
- Achieve even greater system reliability and redundancy

Integrate video security powered by intelligence for a more informed, truly coordinated response

Motorola Solutions now also offers a wide range of fixed and body-worn cameras, which can integrate with existing camera systems for a progressive deployment, as well as with radio and other emergency response systems, such as fire alarms and access control, for a truly coordinated response. Features include:

- Ultra long-range cameras, infrared cameras, Critical Part (CP) line monitoring, drone detection, signal light guns and radar integration
- Advanced AI video analytics to automatically detect incidents and track objects or people
- Automated alerts to ensure teams are aware of issues as soon as they happen
- Reports and analytics

The opportunities are vast and the technology is backed by advanced enterprise accessories, software and applications, coupled with strong service and support founded on years of aviation sector experience.

Is it time to strengthen your emergency response?

“

When something happens at the airport, such as an accident or when a customer is having a problem, the matter is dealt with swiftly. Also, by integrating with systems such as LTE and 5G, it will be possible to build a system that can be used to send photos, videos, files and live images of a site, captured by cameras attached to a security guard, to the department in charge of countermeasures.

Masanori Otsubo, Head of the Centair Operations Centre, Central Japan International Co. Ltd.⁴





Challenge 2: Enhanced security

Airport security and breaches

The Motorola Solutions technology ecosystem integrates voice communication, video security and data analytics to enhance team responses to security incidents. This ecosystem aims to provide immediate situational awareness and coordinated collaboration to create a safe travel environment for passengers and workers. The system also facilitates unified data, incident and evidence reports. These cost-effective systems, which can also integrate with other third-party technologies, such as video management systems (VMS), access control, perimeter intrusion detection systems (PIDS), and baggage handling systems (BHS) help ensure faster, more accurate incident resolution through early detection, targeted information sharing, and coordinated response to issues such as:

- Perimeter and restricted area breaches
- Drones and other unmanned aircraft systems (UAS) detection
- Unattended luggage and baggage handling
- Potential terrorist threats
- Missing person
- Escalating situation and antisocial behaviour
- Fleeing criminals or suspected people trafficking
- Smoke, chemical leaks, or unusual noises (e.g. gunshots)

Cybersecurity: a solid defence against cyber attacks

Cybersecurity threats can impact operations and result in significant financial consequences for airlines and airports. Cybersecurity is a core aspect of Motorola Solutions' ecosystem, to ensure critical information is always securely delivered. Motorola Solutions and its partners provide ongoing cybersecurity services – both remote and on-site – such as security patching, firmware updates, advanced security platforms and advisory services, for safeguarding mission-critical systems now and in the future.

Service staff safety: the promise to deliver efficiency, reliability and business continuity is only possible in an environment built on a foundation of workforce safety

Motorola Solutions also has a wide range of intelligent technologies to help protect workers: from body-worn cameras that integrate with radios for automatic live streaming triggered through the Fall Alert application, body-worn camera evidence and software that can send instant alarms to specific radios, pinpoint GPS tracking and geolocation, to intrinsically safe devices and accessories that enable operators to work hands-free. Worker safety is at the heart of everything designed by Motorola Solutions.



A large commercial airplane, likely a Boeing 747, is parked on an airport tarmac. The scene is captured during sunset or sunrise, with a warm orange and yellow glow in the sky. The airplane's wings and tail are prominent. In the background, other smaller aircraft and airport infrastructure are visible.

With its 180 hectares of area and an average of 4 million passengers annually, Guayaquil's airport plays a crucial role as an international air traffic terminal connecting Ecuador with more than 15 international destinations. Avigilon Unity was chosen to help mitigate security threats common to international airports across the world, from petty theft and robbery to organized crime and terrorism.

“

Technology is vitally important to maintaining the high service standards that have always characterised Guayaquil's airport and to keeping our passengers, staff and air operations safe. With our new video and access control management solution, we have been able to extend security to areas that were not previously covered while adding capabilities that allow our security staff to make more informed and efficient decisions.

Ángel Córdova, General Manager, Guayaquil Airport¹¹



Challenge 3: Workforce collaboration and productivity

Workplace communication statistics show that 86% of employees and executives cite the lack of effective collaboration and communication as the main causes of workplace failures. On the other hand, teams who communicate effectively may increase their productivity by as much as 25%.⁷



Airports are complex working environments with multiple stakeholders working across a wide area: real-time, informed collaboration is essential to drive productivity and efficiency.

Elements of the Motorola Solutions' ecosystem can be installed and configured exactly to individual needs; for example, to provide connectivity with operators beyond the confines of the airport via our flexible WAVE PTX broadband push-to-talk service which operates across networks (always roaming to find the best signal) and devices in flexible talk groups. This allows the right people, whether from the same team or multiple teams in various locations, to coordinate effectively. WAVE PTX also offers multimedia collaboration for improved situational awareness. A single Motorola Solutions device can provide a huge amount of functionality and coverage, and easy access to data and real-time information at the push of a button. Finally, as operations, roles and responsibilities change and develop, it is easy to scale Motorola Solutions systems to suit these growing requirements.

Departments and agencies using Motorola Solutions unified mission-critical systems



Airlines: ground handling, passenger information, flight management, cargo, cleaning, IT, loading, cabin service, cargo hub, cargo handling, emergency, engineering, flight operations, transport control, medical care



Airport Operators: airport operations, facility management, security, passenger information, retail, firefighting, medical, ground handling, transport, baggage handling, security checks, aircraft cleaning, refuelling, air navigation services



Service Providers: ground handling, security guard, facility construction, ramp bus, cargo handling, lighting management, snow removal, weeding, cleaning



Government Agencies: air traffic control, customs, quarantine, Ministry of Defence, municipal fire departments, National Fire Service, Police, National Security, Ambulance Service



We rely on the radios to provide clear communications around the airport, and integrating WAVE PTX as well means that we now have greater choice for our comms and can even stay in touch when off-site and out of radio coverage. The easy scalability of all the systems is also key, as we will need to grow them in line with the airport's expansion.

**Veljko Dimic, Project Leader IT Infrastructure,
Belgrade Airport⁶**



Challenge 4: Efficient crowd management

As the travel industry continues to rebound, airports need to ensure they can accommodate the increasing passenger flow by preventing congestion and optimising space, resources and assets. Smoother, more efficient crowd control enables airports to prioritise passenger comfort and safety for a more positive travel experience and ensures bustling airports remain organised, even during peak hours.

To achieve this, airports need real-time situational awareness, accurate data and information and coordinated communications. Innovative and integrated radio, video, data and analytics solutions enable airports to:

- Monitor passenger flows and mitigate queues
- Detect crowd formation: cameras can interpret, count and track everything within their field of view with a high degree of accuracy
- Supervise suspicious activity related to crowds for a proactive approach to possible escalations of violence
- Identify individuals with elevated temperature

Motorola Solutions is dedicated to researching and developing new features for extra functionality; its portfolio is designed for integration with other technologies where possible, so customers can maximise existing assets.

“

My department needs to monitor all the operational aspects of the airport from one remote point. That wasn't possible with our previous system, but we now have access to every relevant camera. Even more importantly, utilising Radio Alert, my operatives receive every relevant alert directly onto their radios, which has a direct impact on the smooth operation of the airport.

Vladimir Plemic, Airport Operations Manager, Belgrade Airport⁶





Challenge 5: Safer ground handling operations

The airport environment can be hazardous and accidents happen, so airports have stringent safety standards and practices in place to protect workers and passengers. Ground handling operations are a particular focus, as approximately 27,000 ramp accidents¹² and incidents, injuring 243,000 ground handlers¹², are recorded globally every year. That equates to one accident per every thousand departures and accounts for 84% of all ground incidents.

Keeping ground handlers safe

Ground handlers are required to navigate a ballet of moving aircraft and vehicles on the ramp in the noisiest and most hazardous of environments.

Motorola Solutions has an advanced AI-backed noise-cancelling technology to ensure workers can always hear and be heard even if they are standing next to an aeroplane starting up its engines. This, coupled with a broad portfolio of well-designed accessories, high-performance long-life batteries and a wide range of radios suitable for use in hazardous environments, means workers always have all the tools they need to be able to communicate effectively, so they can fully concentrate on the tasks in hand.

“

We are delighted with our new Capacity Plus system, which offers us robust coverage everywhere we need, both indoors and out. The audio quality is excellent and we love the new R7 radios, which are light and compact, but rugged and waterproof, with a large display and exceptional battery life. Plus, as they are HazLoc certified, we can use them safely out on the runways, which is a huge bonus, especially as the amazing noise-cancelling technology means our teams can hear and be heard, even if they are standing next to a plane starting up its engines. We also know that we can easily expand and develop the system moving forward.

Thierry Yeung, Project Leader, Air Mauritius Ltd⁸



Ramp surveillance

A series of serious ramp incidents have been detected and investigated based on video footage. As a result, many operators are enforcing stricter protocols surrounding operational procedures in a bid to eliminate errors and further improve safety.

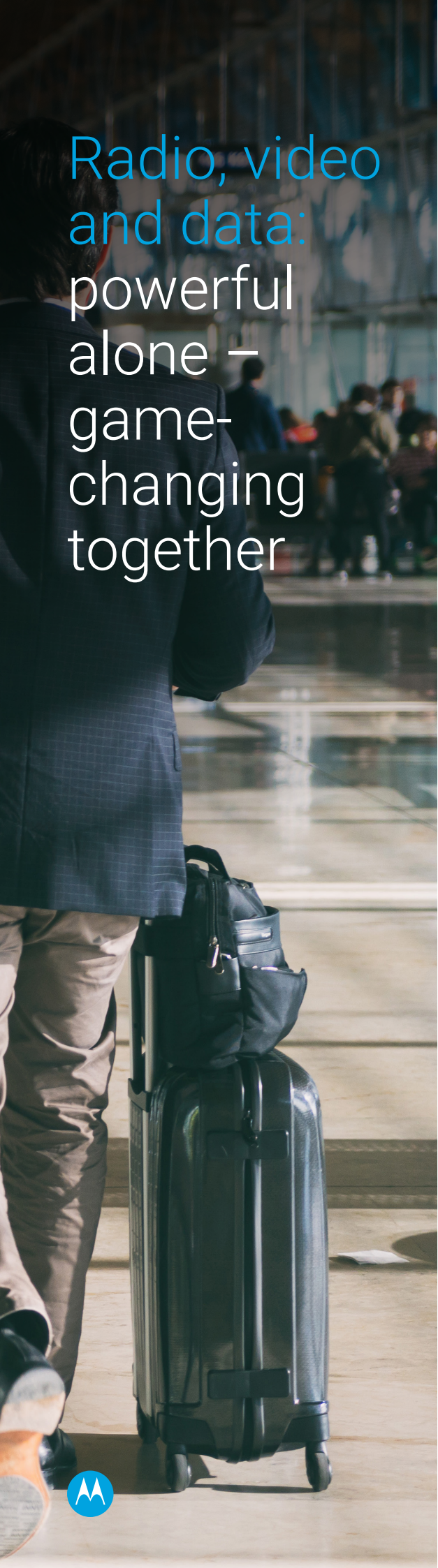
The advanced intelligence of the Motorola Solutions fixed camera range and video analytics can detect up to 50 specified objects in a scene and raise automated alarms relevant to these objects – alarms that can be directed to the relevant radio handsets of the ground handling team. Teams are immediately aware of any issues and can proactively ensure safety protocol is followed and errors are minimised. Ramp surveillance is also integral to post-incident forensics. Various operations occur concurrently on the ramps and Motorola Solutions multi-sensor cameras enable simultaneous high-resolution zooms in all ramp areas, ensuring no detail is missed and helping to identify if operational procedures were cut short. Body cameras (with programmed recording triggers and supported by VideoManager software), meanwhile, enable a first-person perspective and can be paired with a wide range of radios and accessories suitable for use in hazardous and noisy environments.



Having also seen how our security teams use the Motorola Solutions body-worn cameras, we are looking into the possibility of our ground teams using these to record the process of aeroplane cargo loading, for video proof that they have handled everything professionally.

Vladimir Plemic, Airport Operations Manager, Belgrade Airport⁶





Radio, video and data: powerful alone – game- changing together

However, don't just take our word for it. Here are what some of our airport customers have to say:

Portfolio range:

"Motorola Solutions can offer so much more than we first realised; and we are delighted to see that their video security technology is just as reliable and high performance as their radios, which we have, of course, been using for many years. We rely on the radios to provide clear communications around the airport, and integrating WAVE PTX as well means that we now have greater choice for our comms and can even stay in touch when off-site and out of radio coverage. The easy scalability of all the systems is also key, as we will need to grow them in line with the airport's expansion."

Veljko Dimic, Project Leader IT Infrastructure, Belgrade Airport⁶

Ease of integration:

"I have been at Aena for 32 years; I have worked with Motorola Solutions for all that time. The Motorola Solutions products are simply the best on the market, exceptionally reliable, high performance and easy to use. The coverage offered by our new MOTOTRBO IP Site Connect Site system is fabulous; we have double the channel capacity and significantly improved audio clarity. Moreover, the system has easily integrated with our existing analogue network, which we still use to communicate with the police and fire services. Direct mode air traffic control communications with planes coming in to land or taking off are also replicated on our appropriate digital channels, thanks to gateways developed for us. All in all, the project has been a resounding success."

José Chuliá Pérez, Communications Coordinator, Aena⁹

Service and support:

"We've been working with Motorola Solutions for over 30 years and have always had a service contract in place, to ensure the ongoing availability, stability, security and resilience of our communications systems, which are a big investment, after all. Ultimately, we know that, if anything needs fixing or updating, the Motorola Solutions services team will ensure we get the repairs or upgrades we need. We've got a fabulous, very close working relationship with Motorola Solutions and I would be happy to recommend an advanced services contract to other organisations looking to maximise their Motorola Solutions TETRA investments."

Thomas Kirschbaum, Head of IT Services, Traffic and Security, Stuttgart Airport GMBH¹⁰

Motorola Solutions has rich experience in aviation globally, offering tailored solutions designed for airport settings.





Departures

	Gate
19:35 Dusseldorf	
19:40 Frankfurt	Flight closing A20
19:55 New York	Go to gate A19
20:00 Nice	Flight closing B39
20:00 Brussels	Go to gate A6
20:05 Johannesburg	Boarding A15
20:10 Newcastle	Boarding B43
20:10 Stockholm	Go to gate A1
20:15 Aberdeen	Go to gate A18
20:15 Glasgow	Go to gate A2
20:35 Dubai	Go to gate A11
20:40 Manchester	Go to gate B46
20:45 Hong Kong	Gate opens 19:50
20:50 Edinburgh	Gate opens 19:40
20:55 Adh	Gate opens 20:10

22:30 Tel Aviv
Flights for Friday, February
06:20 Istanbul
06:40 Manchester
06:45 Edinburgh
06:50 Geneva
06:55 Aberdeen
06:55 Brussels
06:55 Copenhagen
07:00 Glasgow
07:05 Prague
07:05 Munich
07:05 Berlin

Contact us today to learn how to transform into a modern airport.

[CONTACT US](#)

¹ IATA - Global Air Travel Demand Continued Its Bounce Back in 2023

² Civil aviation: a climate-proof rebound? - Futuribles

³ IATA - 2023 Safest Year for Flying By Several Parameters

⁴ Nagoya Chubu Centrair Airport

⁵ Civil Enforcement | Transportation Security Administration (tsa.gov)

⁶ Belgrade Airport Case Study

⁷ Communication in the Workplace: Amazing Statistics (expertmarket.com)

⁸ Air Mauritius Case Study

⁹ Aena Case Study

¹⁰ Stuttgart Airport Case Study

¹¹ Guayaquil Airport Press Release

¹² Flight Safety Foundation

Motorola Solutions Singapore Pte Ltd. 80 Pasir Panjang Road #18-81 Mapletree Business City Singapore 117372. motorolasolutions.com

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