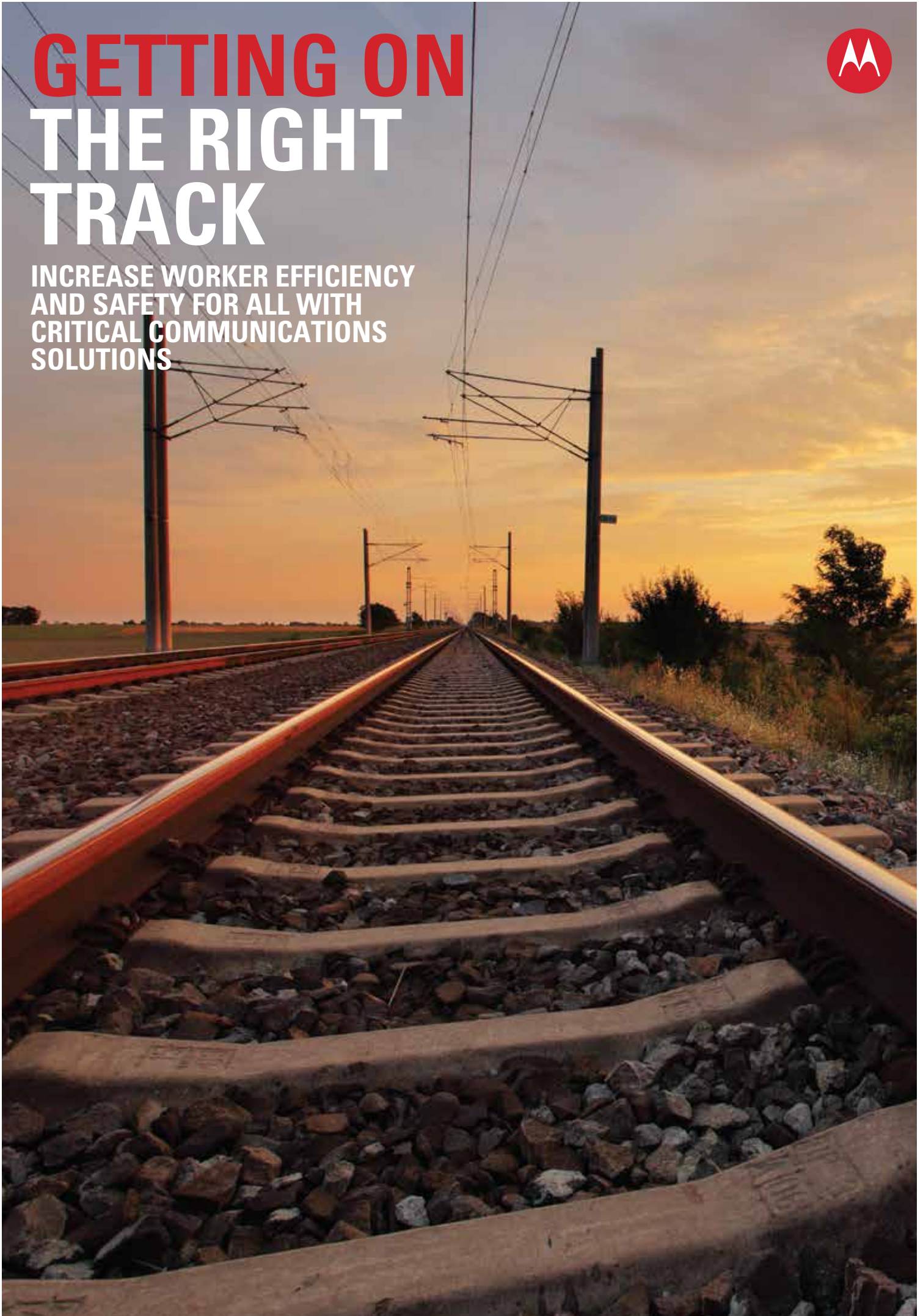


# GETTING ON THE RIGHT TRACK

INCREASE WORKER EFFICIENCY  
AND SAFETY FOR ALL WITH  
CRITICAL COMMUNICATIONS  
SOLUTIONS



# WHEN YOUR OPERATION IS ON THE LINE AND YOUR COMMUNICATIONS MUST GO THROUGH

## COMMUNICATION SOLUTIONS FOR RAIL DEPLOYMENT

Where train systems run smoothly without delays and where passengers are well informed and reach their destinations safely, two-way communication is the solution that bridges the information flow between the control and train.

## VOICE AND DATA COMMUNICATION

You need a comprehensive range of devices that offer not just superior voice communications but also real time information transfer, on and off trains.

Operating in challenging environments, devices must stand up against loud background noise and severe weather whilst also providing timely access to critical information. Accomplish this and your workers will hear and be heard no matter what environment they are in and they will be responding to live information to keep operations running as smooth as possible.

From rail-certified two-way radios to LTE handhelds, our devices are customised for professional use and characterised by excellent audio clarity, durability and reliable performance.

## OPERATIONS-CRITICAL DIGITAL COMMUNICATIONS NETWORKS

A secure, dedicated radio network will provide reliable and efficient communications no matter the circumstances. Rail operators gain the confidence that they have the necessary foundation to build upon in the future – with LTE, productivity applications and video surveillance.

## Digital LMR Systems

Systems to connect professionals effortlessly and efficiently, wherever they work. Engineered to meet the needs of businesses around the world, digital systems provide voice and data functionality for rail operators. A wide range of business applications, such as alarm management and personnel tracking, will increase the level of efficiency, safety and productivity throughout your network.

Digital systems are easily scalable, so they can meet your needs in the days ahead and expand if necessary in the years beyond.

“ We have been delighted with the quality of radio communications and coverage along the line. The Digital LMR system is reliable, cost-effective and easy to manage. The radios are robust and user-friendly”

– Arch. Andrea Vignaroli, Head of Purchasing, Minimetron S.p.a

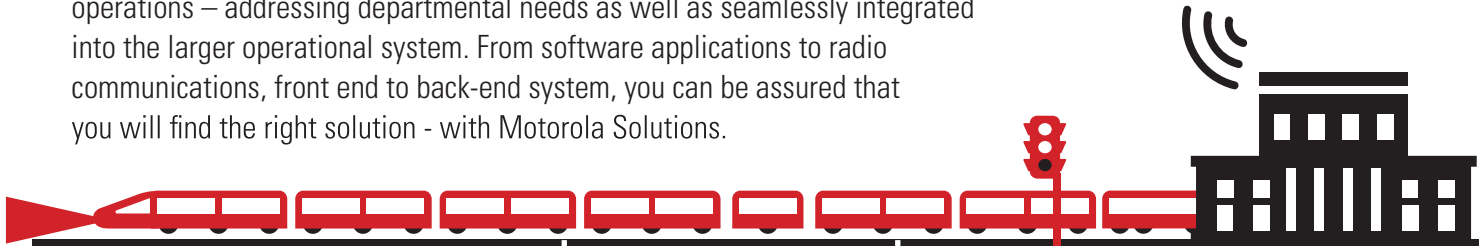
CHALLENGING ENVIRONMENTS





REAL TIME INFORMATION



# UNDERSTANDING YOUR OPERATIONS WITH END-TO-END RAIL COMMUNICATION SOLUTIONS

Each customer is unique and it is critical that your solution best fits your operations – addressing departmental needs as well as seamlessly integrated into the larger operational system. From software applications to radio communications, front end to back-end system, you can be assured that you will find the right solution - with Motorola Solutions.



OPERATIONS MANAGEMENT	FREIGHT MANAGEMENT	CONTROL CENTER MANAGEMENT
 <p><b>MAIN LINE OPERATIONS</b></p> <p>Efficient management of your train run numbers enables you to maintain close contact with the respective train operators – ensuring greater coordination with the train operators as well as enhancing the monitoring of your operations at any given time.</p> <p>For the efficient and safe operations of the trains, critical train status information can be sent in real time to the control center.</p>  <p><b>SHUNTING YARD/ DEPOT OPERATIONS</b></p> <p>With heavy machinery and equipment constantly being moved around the work areas, equipping operational crew with a communication solution can expedite the co-ordination they require.</p>  <p><b>TRAIN CONTROL</b></p> <p>In the absence of trackside signals, rail operators may consider relying on GPS (global positioning system) information to provide train location updates. The GPS data can be sent via on-board radio system to the control center for Automatic Train Location management. This will enable the line capacity to be optimised.</p>	 <p><b>PRODUCTIVITY AND COST EFFICIENCY</b></p> <p>Efficient management of goods and cargo enables you to provide customer confidence in your service – resulting in greater customer satisfaction. As train systems become more complex and require more information to operate efficiently, many are turning towards an integrated solution approach to address these enhanced requirements.</p>	 <p><b>COMPUTER-AIDED DISPATCH (CAD)</b></p> <p>CAD systems combine both computer and mobile communications equipment, to dispatch information to train operators. Advanced CAD systems utilize both in-train radios and mobile data terminals, which enable more detailed and clearer messages to be communicated to the operator.</p> <p>With the use of free text and status messages to replace some of the common voice commands, this solution ensures clarity and reduces error.</p>  <p><b>AUTOMATIC TRAIN LOCATION (ATL)</b></p> <p>Trains are equipped with computer terminals and radio modems to derive their location from the GPS satellite constellation an in turn transmit their location back to the command and control center.</p>  <p><b>TRAIN CONTROL INTERFACE</b></p> <p>Trainborne operations may require a series of information such as radio control, passenger information and train status, to be sent across the radio network to the control center for analysis and management. The interfaces from the radio to the various trainborne components can be efficiently handled by the Train Control interface. The applications on the Train Control Interface consolidate the various interface commands to one that can be understood by the radio system – ensuring a smooth efficient operation of the trainborne system.</p>  <p><b>VIDEO SECURITY</b></p> <p>Frontline personnel will be empowered with increased situational awareness, enhanced operational collaboration and greater productivity. Communications centers will benefit from real-time visual updates as an incident unfolds with intelligent video security solutions.</p>

# MOTOROLA SOLUTIONS TEAM COMMUNICATIONS FOR RAILWAYS.

## ANY TEAM MEMBER



### Owner / Managing Director

- Instantly contact all employees with PTT app
- Monitor emergency talkgroups
- Stay connected from anywhere



### Dispatch

- Dispatch drivers using integrated console or web client
- Use GPS tracking and workflow applications to monitor vehicles, shipments for on-time delivery
- Communicate with management when needed



### Operations Manager

- Communicate with drivers and employees using PTT web client
- Monitor GPS tracking and workflow applications from the same device
- Use Fleet Management to track vehicle data, monitor routes, schedules and more



### Conductor

- Be notified and alert office of emergency situations or trouble spots with PTT radios
- Ensure greater safety with hands-free features
- Enjoy better audio clarity with background noise cancelation

## ANY NETWORK



LAND MOBILE RADIO



CARRIER NETWORK



WI-FI



LAN



TELEPHONY

## ANY DEVICE



## ANY APPLICATION

- Work Order Ticket Management
- Dispatch Solutions
- Fleet Management
- GPS Tracking
- WAVE PTT

### SOURCES

1. 80% - <https://www.ringlead.com/25-sales-outreach-statistics-help-sell-better/>
2. 28% - <http://www.mckinsey.com/industries/high-tech/our-insights/the-social-economy>
3. 96% - <http://blog.thinkahead.com/ceos-will-love-enterprise-file-sync-share-efss>
4. 85% - [bit.ly/qlik-multiple-devices-report](http://bit.ly/qlik-multiple-devices-report)
5. 20-25% - <http://www.mckinsey.com/industries/high-tech/our-insights/the-social-economy>

# **BOOST YOUR COMMUNICATIONS TO THE MAXIMUM**

## **ADDING INTEROPERABILITY BETWEEN RADIOS AND BROADBAND NETWORKS**

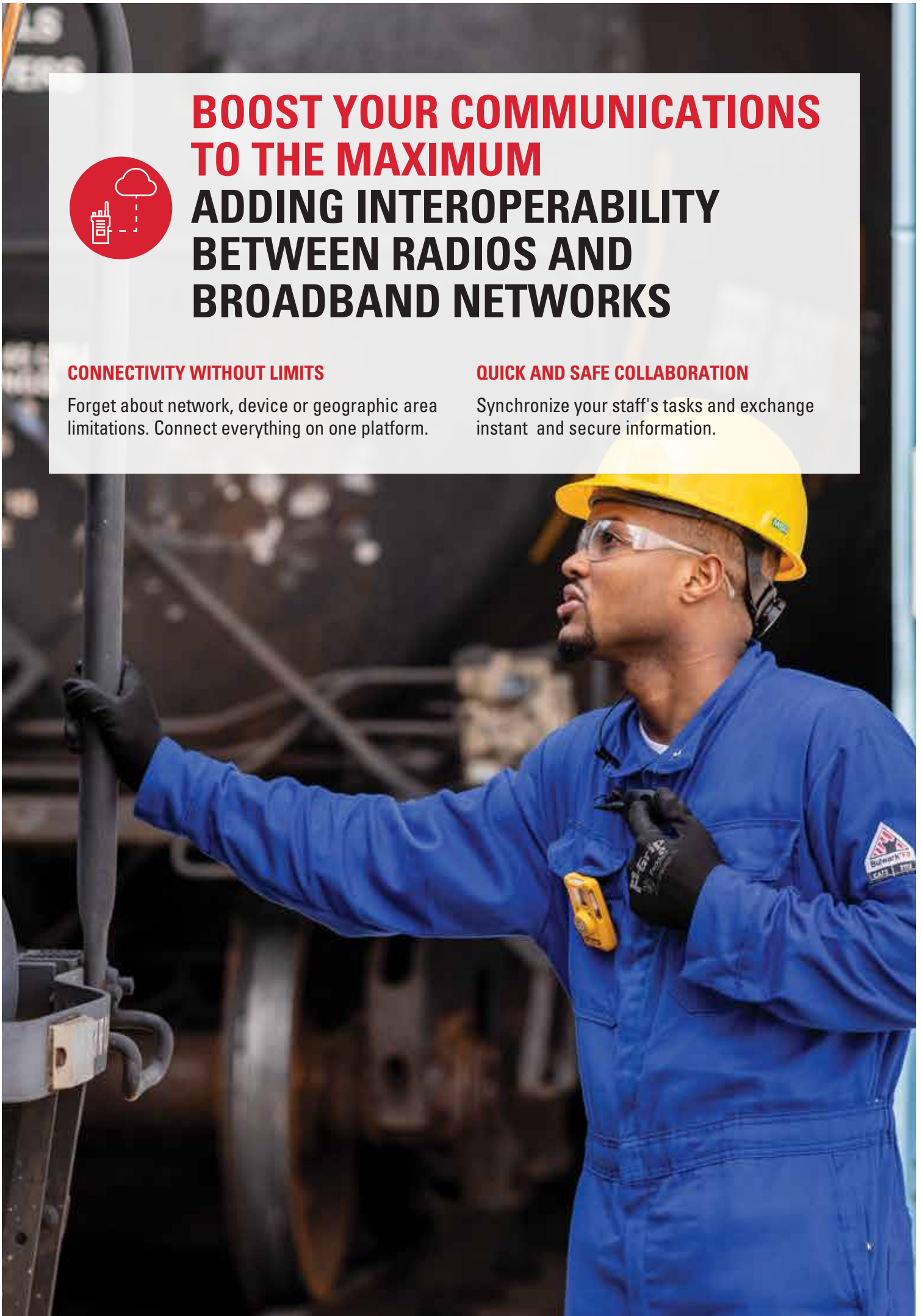


### **CONNECTIVITY WITHOUT LIMITS**

Forget about network, device or geographic area limitations. Connect everything on one platform.

### **QUICK AND SAFE COLLABORATION**

Synchronize your staff's tasks and exchange instant and secure information.



# ELIMINATE BARRIERS BETWEEN DEVICES, NETWORKS AND LOCATIONS WITH WAVE PTX

Allow the right team members to be part of the conversations with radios, smartphones, tablets, and laptops to communicate with each other seamlessly.

