

# RAIL OF THE FUTURE

Honeywell is helping shape the future of the rail industry and the future of travel, by enabling digital transformation and preparing rail authorities and operators to be more agile and resilient.

**Honeywell**

# A NEW RAIL REVOLUTION

The pandemic had an important toll on ridership. Rail operators need to reassure passengers that public transportation is safe and secure, reliable and efficient whilst dealing with new mobility patterns and expectations. From indoor air quality to advanced risk detection, flow management, digital transformation and much more, Honeywell helps rail authorities bringing passengers back and contribute to a greener and more connected planet.

## FORGET COMPLICATED. THINK INTEGRATED.

Operational 24/7 is a constant challenge particularly when managing multiple vendor installations, adhering to new passenger safety guidelines and travel habits whilst maintaining the continuity of freight transportation.

Our intelligent approach focuses on the integration of multiple subsystems and orchestration of alarms to enable better service uptime, increased punctuality and improved passenger satisfaction across his journey.

Coupled with Honeywell's IoT enabled city scale command & control platform that helps manage multiple citizen services across multiple stakeholders, rail authorities and municipalities can count on a single-view solution in case of emergencies or abnormal crowd for instance.

## INSPIRING BETTER PUBLIC TRANSPORT

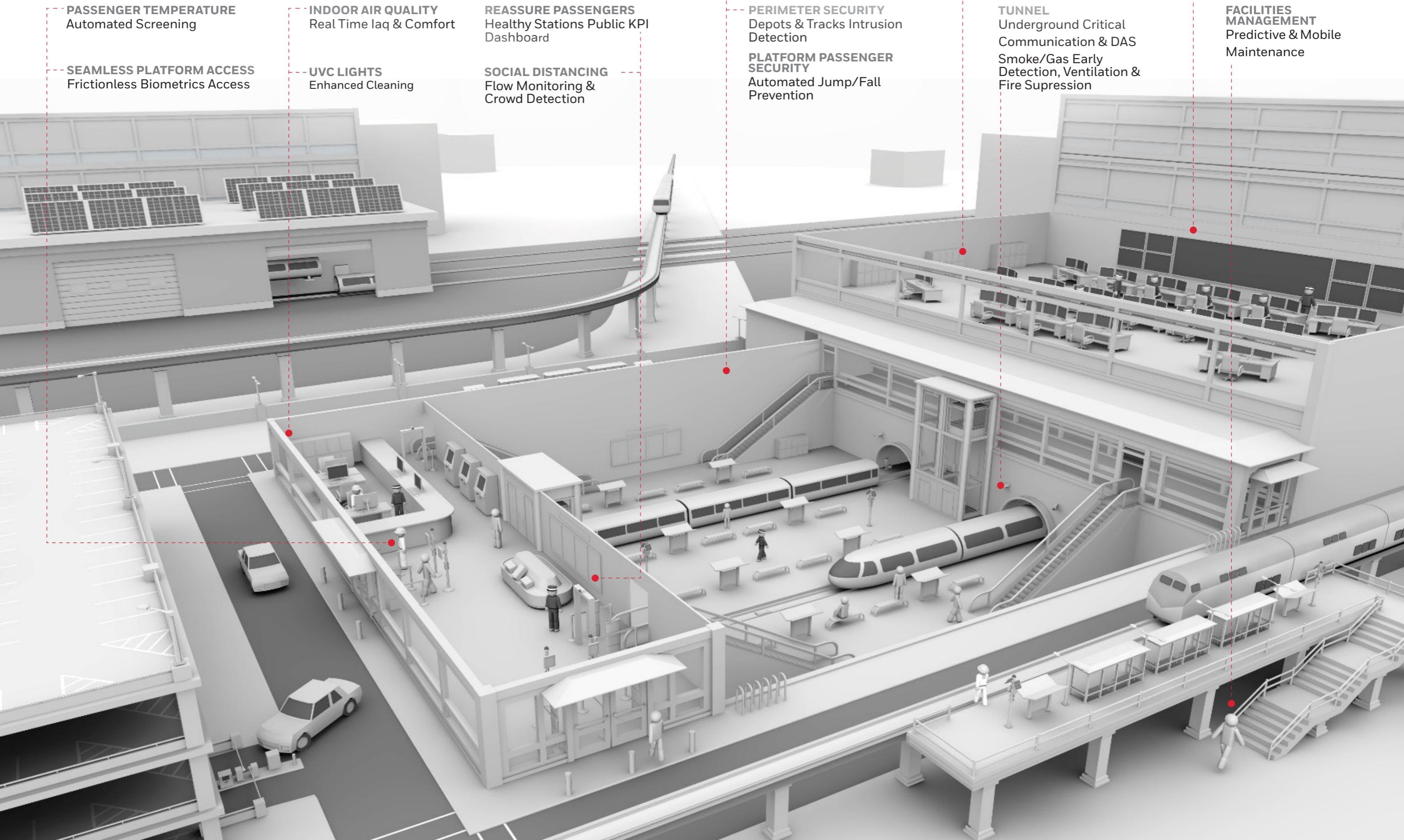
Our intelligent approach focuses on the integration of multiple subsystems and orchestration of alarms to enable service uptime and passenger satisfaction. We empower operators to address the tough challenges around safety, security, efficiency and productivity— inspiring better public transportation.

### BENEFITS OF INTEGRATION

- Improves** real-time emergency response
- Increases** operational efficiency and maximizes your ROI
- Enhances** control capabilities, reducing costs and improving efficiencies
- Gathers** greater operational intelligence for more informed decision making
- Creates** opportunities for increased ridership satisfaction



# HONEYWELL SOLUTIONS METRO/RAIL



## INTELLIGENT BUILDING MANAGEMENT SYSTEM



Improve situational awareness, identify anomalies and get clearer answers with a single-view solution across and inside stations that leverages analytics to identify and resolve potential risks and threats before they affect core rail operations or passenger experience. With Honeywell Command and Control Suite, incident workflows incorporate standard operating procedures for a faster and more consistent response helping to reduce the risk of operations disruption.

Aligned with Honeywell's IoT enabled city scale command & control platform, a virtually turnkey solution for city management, workforce dispatch, citizen engagement and pre-integrated city applications rail authorities and municipalities are better equipped than ever to provide a seamless journey to passengers.

### GRANDI STAZIONI

Grandi Stazioni wanted to protect Italy's railway network to make it safer and more secure, to ensure legislative compliance and to attract more paying customers to both the railway and the shops within its stations. It sought a supplier with the expertise to deliver integrated security and fire detection solution across a large geographical, mission critical environment.

**The result?** An integrated and centralized solution covering multiple stations across the country and providing better situational awareness.

# TAKE THE JOURNEY

From the moment passengers set foot on railway property until they arrive at their final destination, Honeywell is along for the journey. From curbside to platform, from waiting lounge to tunnel and every touchpoint in between, our technology is at work—providing a safe, comfortable and exceptional travel experience.

## CURBSIDE

### RADAR VIDEO SURVEILLANCE (RVS) AND PERIMETER INTRUSION DETECTION SYSTEMS (PIDS)

Radar-enabled surveillance means rail authorities can identify potential security threats before they reach the network perimeter or train depots. Radar is the preferred technology for threat detection while CCTV is better for identification and confirmation.

### SMART SECURITY CAMERAS AND VIDEO ANALYTICS

Ideal for inside and outside the station, Honeywell's high-performance networked video solutions provide advanced security capabilities, including intelligent recording, video analytics and state-of-the-art storage to help ensure that evidence is never lost.

### SMART PARKING

Leveraging smart access controls and license plate recognition, passengers can benefit from multimodal transportation and easily find a dedicated spot to park their car with the peace of mind of catching their train on time.

## STATION ENTRANCE

### HEALTHY BUILDINGS DASHBOARDS

From indoor air quality to capacity levels, Honeywell's Healthy Building Dashboards reassure staff and passengers about the health and safety levels of the station.

### AUTOMATED TEMPERATURE SCREENING

Today, thermal camera technology can be used to measure surface skin temperature and identify someone who may be potentially infected. And while they are not diagnostic tools for detecting viral infection, thermal cameras are valuable initial sources of body temperature and risk detection.

### TICKETING

Honeywell label printers can help print tickets with QR or 1D barcodes. In addition, Honeywell barcode scanners and scan engines can be installed in kiosks for ticket collection or turnstiles as access control on railway platforms.

### AUTOMATED TRANSIT NEEDS EVEN SMARTER FIRE DETECTION

When the Doha Metro needed an industrial fire-safety system that could keep up with its world-class rapid-transit system, only one choice could meet the stringent requirements: Honeywell.

The Doha Metro is an ambitious rapid-transit system that began operations in 2019, integrating Qatar's capital city of Doha into the nation's larger rail network. To protect its best-in-class automated rail system, Qatar Rail expects equally world-class fire safety – which made a Honeywell industrial fire system the clear choice.

Honeywell Industrial Fire Solutions was the only provider that met the two key requirements: UL/FM-certified and SIL2 approved fire suppression, combined in one product.

The next challenge, however, was a fast-track timeline: Could Honeywell and the installation partners manufacture and install approximately 600 panels in less than six months? Thanks to a high level of engineering precision and close coordination among all stakeholders, the answer was yes.

## FREIGHT

### IMAGING AND MOBILITY SOLUTIONS FOR FREIGHT HANDLING

Honeywell solutions using industrial smart printers, media and hand-held mobile computers improve freight sorting, loading and tracking and tracing at many logistics hubs around the world.

### TRACK AND TRACE OF GOODS

Honeywell Forge Track & Trace is an end-to-end supply chain traceability and supply chain monitoring solution that solves multiple challenges. From manufacturer to retailer, this scalable software solution tracks products within a vehicle, a container, a palette or a packaging box at the micro-level and provides end-to-end visibility and electronic documentation about where an item has traveled throughout the supply chain.

## IN THE STATION

### BUILDING MANAGEMENT SYSTEMS

These leading-edge systems integrate security, comfort, life safety and energy control, among other functions. This gives managers a single point of access and a consistent view to information and resources that enhance the ability to monitor, manage and protect stations and their facilities. The result? Improved efficiency and reduced energy and operational costs through simplified setup, scheduling and optimized control.

### SECURITY OPERATIONS

A person of interest. Suspicious movements. A restricted zone intrusion. A post-event investigation. Or even issues of basic safety and compliance, like occupancy levels and social distancing. Honeywell provides smart surveillance solutions that enable rail operators to identify and respond to risks or threats more quickly.

### ENERGY OPTIMIZATION

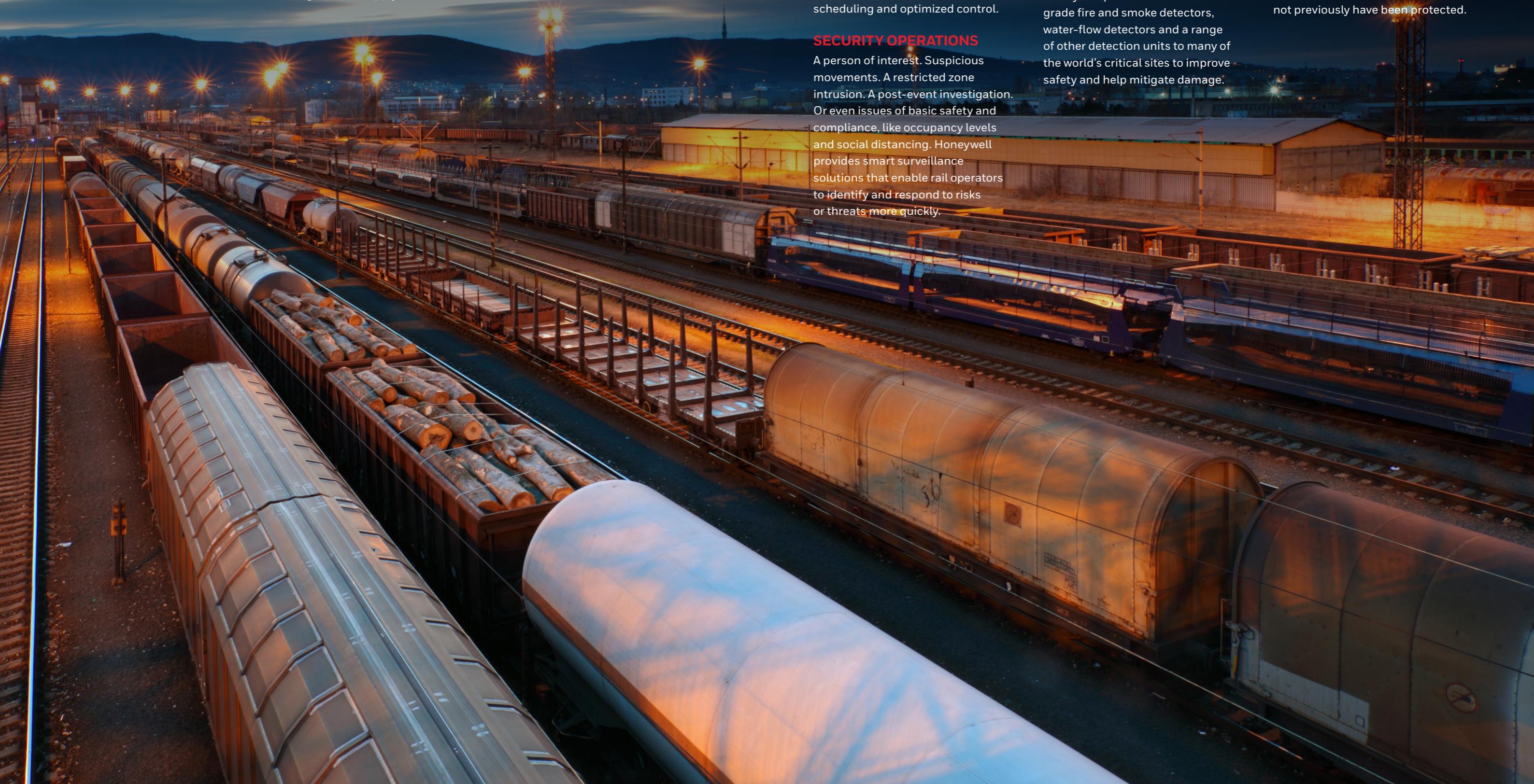
Honeywell energy management solutions include performance contracting, demand response, the use of renewables and dynamic energy optimization—all of which give rail authorities the ability to manage and cut their energy use in alignment with passenger foothold.

### FIRE SENSORS AND DETECTORS

Honeywell provides industrial grade fire and smoke detectors, water-flow detectors and a range of other detection units to many of the world's critical sites to improve safety and help mitigate damage.

### FIRE ALARM ASPIRATION SENSING TECHNOLOGY™ (FAAST)

This new generation of smoke detectors from Honeywell uses advanced technologies and software to deliver the earliest and most accurate smoke detection. The FAAST device range is designed to protect people and assets in even the most challenging environments where standard detection methods fail or are prone to false alarm, or in areas which may not previously have been protected.





## ON THE TRACKS AND INSIDE TUNNELS

### TRACK INTRUSION DETECTION SYSTEMS

Honeywell's integration capabilities enable the fast identification of objects or people on the tracks or in the tunnels that could lead to a potential accident or a train delay.

### RAIL SENSORS

Honeywell sensors and switches provide repeatable and accurate sensing, lower failure rate and operational costs, and increased engineering support. They are designed to help control and sense both the train, rail, and communication network.

### TUNNEL VENTILATION

Coordinating signaling, ventilation, climate control, electricity, communication and lighting in a critical environment can be difficult. Honeywell's integrated solutions allow end-to-end communication across disciplines and levels – from the field level with ventilation, climate control and electrical components, to the automation and management levels. Their great flexibility enables rail operators to react at any time to expansions or extensions. Integration into a SCADA system also allows technical processes to be monitored and managed.

### CRITICAL COMMUNICATION AND COVERAGE

Honeywell Fiplex Filters, Signal Boosters, and DAS systems are mission-critical to all types of venues in the transportation industry. This high technology solutions provide first responders with the extra coverage needed to protect their lives and others, even in the most difficult

### MAXIMIZING SAFETY AND RELIABILITY AT DELHI METRO RAIL CORPORATION

Honeywell has, through various EPC contractors, delivered a number of Tunnel Ventilation Systems (TVS), Environmental Control Systems (ECS)-Building Management Systems. The result is a first-class affordable solution encompassing all the safety, security and reliability standards of a world-class Metro system. consumption.

## ON THE PLATFORM

### PUBLIC ADDRESS/VOICE ALARM (PA/VA) SYSTEM

Honeywell technology enables operators to target critical announcements to specific platforms or areas of the station and automatically adjust the volume to account for varying levels of background noise. It also automatically synchronizes messages in case of an emergency or an evacuation.

### PASSENGERS FLOW MONITORING AND MANAGEMENT

Honeywell's integrated technologies enable the identification of potential overcrowding on the platform that could lead to trespassing the yellow line and integrates with automated PA/VA to move passengers across the whole length of the platform.

## ENABLING UPTIME AND BUSINESS CONTINUITY

### DIGITIZED AND PREDICTIVE MAINTENANCE

Honeywell Forge Digitized Maintenance is a cloud-based SaaS solution that is part of Honeywell Forge platform for data, analytics, and IoT capabilities. It uses sensors and system integration to analyze controllers and mechanical assets, tracking system performance throughout facilities and enabling facility managers to help reduce the risks of planned and unplanned maintenance, giving better insight into building performance and improved operational efficiency.

### GUIDED OR REMOTE MAINTENANCE

Honeywell Guided Work brings the benefits of voice-guided workflows to maintenance operations. Guided Work integrates with leading enterprise resource planning (ERP) software to leverage existing technology investments and get the most out of your workforce.

### PROTECTIVE PERSONAL EQUIPMENT

Honeywell keeps workers safe on the job with premium quality arc flash PPE, including N95 masks, gloves and dielectric boots and saves lives by enabling workers to operate safely in hazardous conditions. This also includes a wide range of high quality, durable electrical accessories, from arm slings, to insulating saddles, blocks and handline assemblies.

### CYBER SECURITY

In an ever-evolving digital era, your building's Operational Technology (OT) systems have likely become more and more connected. Neglecting the overall operating environment can potentially increase cyber risks. Cybersecurity is an integral fabric of Honeywell's business, whether it's in product development, third-party integrations, or Honeywell's cyber security portfolio or solutions and services.



### BRINGING BRIGHT IDEAS TO SOUTHERN CROSS STATION

Honeywell assists Southern Cross Station by minimizing downtime and faults, ensuring quick rectification to issues and reducing the overall costs through complex asset lifecycle modelling as part of a 30 year performance-based Facility Management agreement.

To ensure this critical facility operates smoothly 24x7, Honeywell installed Honeywell Forge maintenance a cloud based solution that prioritizes maintenance activities aligned to key performance indicators within the station – real time data of escalator performance for instance promote big picture decisions and faster issue resolution. This helps ensuring the maintenance team focus their attention on high impact activities to mitigate risk whilst promoting efficient operations of the facility and consistent comfort conditions.

## INSIDE THE TRAIN

### UV LIGHT AIR AND SURFACE CLEANING

From trains to stations, Ultraviolet (UV) light can help inactivate pathogens all around us. Honeywell's UV Cabin System deploys UV-C light inside cabins using a combination of lights specially designed to deliver UV-C light at specified distances and angles to treat high-touch surfaces.

### SMART SECURITY CAMERAS

Honeywell high-performance CCTV cameras coupled with video analytics and state-of-the-art storage help identifying suspicious behaviors and ensure that evidence is never lost.

### BARCODE AND QR CODES READING

Honeywell's scanning and mobility products are used across the globe in multiple industries.

Honeywell barcode readers are plug and play with industry-leading scan performance, making even the most difficult-to-read barcodes or QR codes look good.

### REDUCING ENVIRONMENTAL IMPACT AT EUROTUNNEL

Honeywell together with Trane Technologies and GetLink SE enabled Eurotunnel to reduce their carbon footprint by

33 percent after the first season of operating a new cooling system for maintaining requisite temperatures in the landmark Channel Tunnel. The new cooling system included Solstice® z2 a non-flammable refrigerant based on Honeywell's hydrofluoro-olefin (HFO) technology with a GWP of 1, which is 99.9 percent lower than R-22, the previous refrigerant used in the Channel Tunnel, and lower than any other non-flammable solution in the market.

# READY FOR THE FUTURE WELCOME ABOARD

With Honeywell, railway travel is ready for the next revolution. With over a century of breakthrough innovations, experience in over 10 million buildings worldwide, expertise in safe cities and millions of dollars invested in research and development, it would be hard to find a company that touches more elements of the global transportation industry.

Contact us to see how our integrated, scalable, world-class solutions can modernize your entire infrastructure—improving the comfort, safety and efficiency of your stations today. And tomorrow.



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Rail-of-the-Future-SB | 11/21  
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THE  
FUTURE  
IS  
WHAT  
WE  
MAKE IT

**Honeywell**