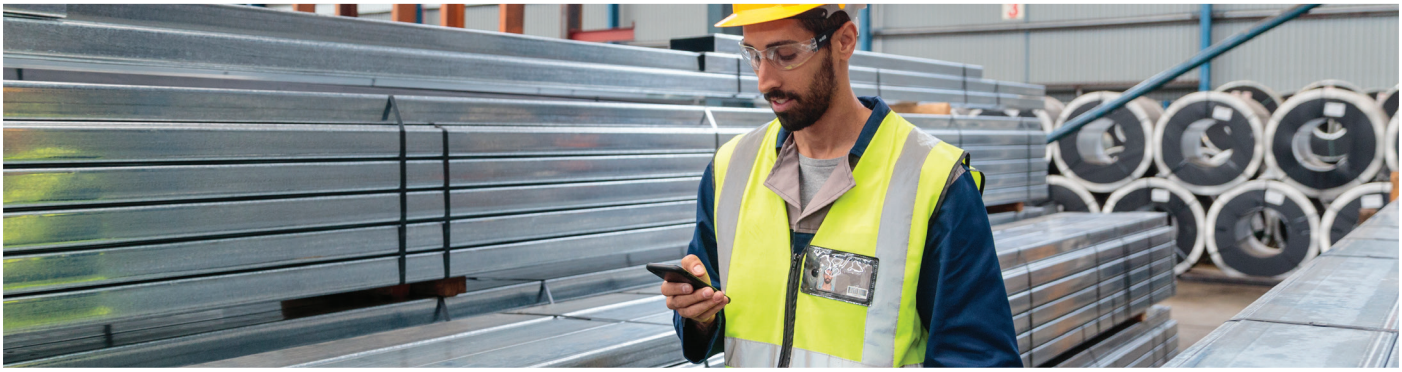
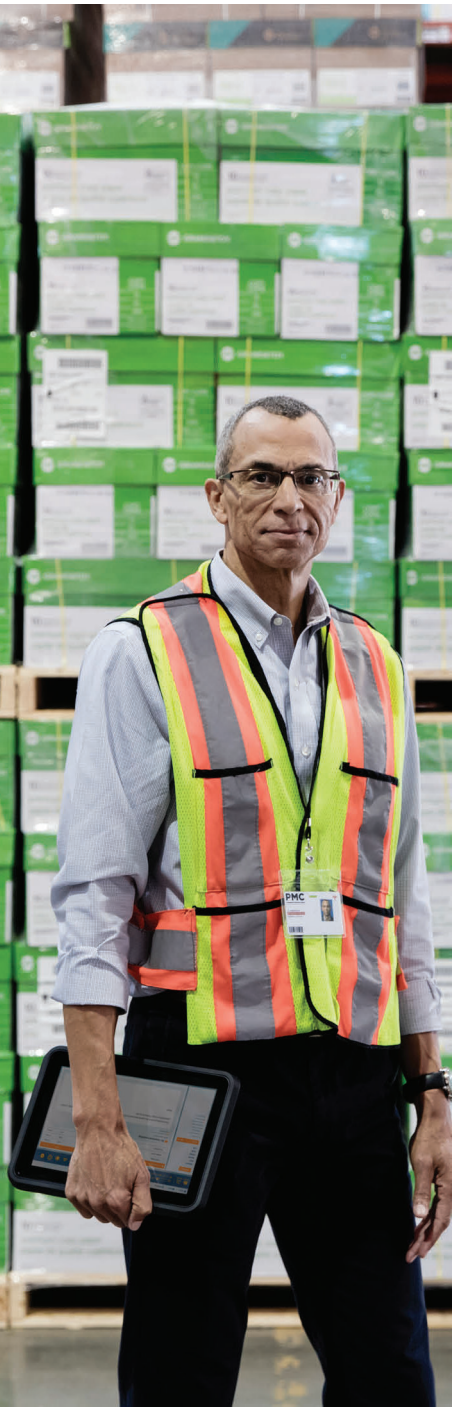
Hewlett Packard Enterprise | Tech Mahindra

Brochure

IoT is making workplaces safer for industrial workers.

Hewlett Packard Enterprise and Tech Mahindra collaborate to minimize occupational hazards.





Workforce safety—A matter over and above everything else

Workplace hazards are both a moral as well as a financial burden to the employers. Such accidents may have a double blow for the enterprises. First, it may violate the safety and wellbeing of the employees and secondly, may lead to serious damage to the profitability and reputation for the employer. According to the International Labor Organization, every 15 seconds, 151 workers have a work-related accident.[1] Further, the U.S. Department of Labor estimates that employers pay about $1B per week towards compensation for direct workers.[2]

Neither the employees or nor the employers want to be at a receiving end of a workplace hazard.

Accidents occur at workplaces despite safety measures and procedures in place. Organizations pay attention to this critical aspect of business partly because of regulatory compliance, but also due to their business ethics considerations. Historically, employers have ensured the safety of the workforce and provided all necessary support in the event of accidents. That said, physical monitoring of a large production environment is both cumbersome and costly. Therefore, enterprises have always been on a lookout for high impact solutions for enhanced reliability and round the clock surveillance. Convergence of global industrial systems with advanced technologies like wearables, low-cost sensors, and data analytics provides better visibility of field workers that can be monitored 24/7 through a centralized system.

An IoT-enabled connected worker solution takes industrial safety to the next level.

Most workplace hazards result from oversight

Workers within a factory are often exposed to hazardous conditions. For example, a factory floor may be full of spots where a worker may unknowingly walk into, say a fast-moving robotic arm, a moving conveyer belt, high-tension wires, or areas of chemical exposure, fire, heat, laser, etc.

Generally speaking, the severity of many workplace accidents could be contained had workers been more diligent with their safety gears such as helmets, gloves, and shoes. The common reasons for accidents on the shop floor are:

1. Not being aware of the surrounding hazards.
2. Not having sufficient supervision in unsafe conditions.
3. Not staying alert.
4. Not wearing the right safety equipment.

Industrial safety using IoT and Artificial Intelligence

To avoid such incidences; enforcing safety measures becomes a priority for the manufacturers. IoT has already helped companies from a wide array of industries come up with innovative solutions to these problems.

Usually, the high cost of data transmission proves to be prohibitive for industrialization of many IoT solutions given large packets of data transmission to the cloud via satellite is expensive. Therefore, the alternative is to bring analytics to the source of action (aka. edge) to segregate actionable data from noise. The combination of IoT and AI technologies are ensuring deployment of edge computing at scale.

[1, 2] **nasdaq.com/article/how-advanced-technology-can-make-workplaces-safer-cm983346**

Challenges faced by the organizations with respect to occupational hazards

1. Possible loss of life, loss of productive hours, business disruption, and liabilities arising of an incident are all inevitable consequences of an on-premises accident.
2. Loss of reputation to business and loss of employee engagement as an aftershock.
3. A vast expanse of industrial operation can't be monitored effectively without the mobilization of a military-grade system and process.
4. Current manual systems used by the manufacturers don't provide active 24/7 surveillance.

Advantage of an IoT–AI solution bundle

1. Round the clock, visual monitoring of the hazardous areas at the factory floor.
2. Camera vision continuously scans whether pre-set safety compliances are adhered to or not, such as; workers' distance from a robotic arm, fast-moving conveyor belt or a slippery floor, etc.
3. Minutely watches the safety zones and alert of any potential violations.

Solution outcome

1. The solution provides a visually intuitive dashboard to keep a tab on any untoward safety situation on the factory floor with a mandate to prioritize worker safety.
2. Cataloging of incidents for future references, disputes or training, etc.

HPE and Tech Mahindra provide an "edge" to the surveillance systems of Enterprises

HPE and Tech Mahindra have acknowledged the complexity of maintaining workforce safety. Together, they have created an intuitive Worker Safety Monitoring solution. The solution brings the following advantages:

- Provides edge computing for rapid image acquisition and processing.
- Contains algorithms for planning, inspection, maintenance, and operations.
- Monitors and suggests safety measures using artificial intelligence, deep learning, and analytics.
- Uses visual monitoring of hazardous factory floor, fast-moving conveyor belt, and usage of safety gear in a restricted area.

Top 5 features of the solution

1 Modular	The solution can be implemented both in a greenfield as well as in brownfield operations involving different types of cameras or hazardous areas.
2 Scalable	The solution can be replicated across multiple sites and geographies in parallel.
3 Interoperable	The solution can integrate seamlessly with other Industry 4.0 solutions already installed in the factory premises.
4 Reliable	It is a simple business solution with fast uptime and high impact.
5 Maintainable	Due to its unique architecture, the ongoing maintenance of this solution is unlikely to disrupt the business as usual.

Contacts

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Business benefits

This solution delivers real-time benefits. It not only ensures workforce safety but saves companies from defamation and insurance liabilities. Human life is saved, and brand equity is maintained; brand value is enhanced due to safe work environments.

Understand how you can enhance the safety and security of your workforce

Tech Mahindra has in-depth expertise of industrial environments, conditions of operations, and workforce behavior. The organization has built an application by leveraging HPE's Converged Edge Systems to enhance the safety of the workforce and critical assets on the shop floor.

Solution composition

Hardware	Usage
HPE Edgeline EL4000	Edge Server for Application Hosting
Tesla P4	GPU accelerator boards optimized for high-performance, general-purpose computing
Web Camera	Capture Video

Software	Usage
TensorFlow—Object Detection API	Open source framework built on top of TensorFlow that makes it easy to construct, train, and deploy object detection models
Angular 4	UI development
Spring Boot	Use of back-end service development
MySQL	Database

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