

# Commentary

## SAFETY WEARABLES AND EMERGING TECHNOLOGY Increasing Safety and Productivity in Construction

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Personal protective equipment is a worker's primary line of defense when working at a construction site. OSHA defines personal protective equipment, commonly known as "PPE", as equipment worn to minimize exposure to a variety of hazards and recommends a battery of protective gear for construction workers<sup>1</sup>. PPE is worn in the form of hardhats, boots, safety glasses, earmuffs, respirators, gloves, vests, and full bodysuits. Struck by objects on the job site is one of the leading causes of job site injuries and deaths as indicated by the Fatal Four List, published by OSHA. Despite the importance of proper PPE, it's not always comfortable for the worker nor always suitable in some work environments. Luckily, emerging technologies are on the rise and developers continue to make improvements to the safety and wearability of construction gear. The US Chamber of Commerce reported in the Commercial Construction Index that in 2018 wearable technology was being used onsite by 6% of contractors, those numbers were expected to grow to over 20% in 2021<sup>2</sup>. This article will examine some of the emerging wearables that, with the technology from the Internet of Things, are transforming worksite safety and how construction project management software are increasing project producibility.

Hardhats were the first popular form of PPE when the construction of the Golden Gate Bridge started in the 1930s. The composition of hardhats started as canvas and has since been made with different materials from metal to fiberglass to plastic. But today the creation of hardhats has evolved to include high-tech additions like the Internet of Things sensors, microphones, cameras, and more. These smart hats can keep workers safe from impact injury and help boost productivity by facilitating better office to field communication and enabling injured workers to call for help at the touch of a button<sup>3</sup>. Guardhat is a smart Type I Class-G industrial hardhat. It's equipped with a battery pack to provide wireless connectivity, provides sensor-based contextual detection of the workers surroundings, real-time location worker positioning on site, audio-visual

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<sup>1</sup>U.S. Department of Labor – Occupational Safety and Health Administration (OSHA) Personal Protective Equipment <https://www.osha.gov/personal-protective-equipment#:~:text=Personal%20protective%20equipment%2C%20commonly%20referred,serious%20workplace%20injuries%20and%20illnesses.>

<sup>2</sup> US Chamber of Commerce- Q4 2018 Commercial Construction Index [https://www.uschamber.com/assets/archived/images/cc\\_i\\_2018\\_q4\\_report.pdf](https://www.uschamber.com/assets/archived/images/cc_i_2018_q4_report.pdf)

<sup>3</sup> Jobsite Powered by Procure- The Smart Hard Hat is Doing more than Keeping Workers Safe <https://www.procure.com/jobsite/the-smart-hard-hat-is-doing-more-than-keeping-workers-safe/>

communications, and more<sup>4</sup>. Besides a full smart hardhat, WakeCap creates a lightweight device that attaches to a hardhat, enabling tracking worker location on site, monitors productivity, and worker fall and impact injury detections<sup>5</sup>.

Many other forms of smart PPE are shaping construction safety.

- Smart Glasses are equipped with a microphone and camera that can capture photos, video, audio, and make phone calls. Smart glasses create a hands-free office wherever you are. They make it easier to communicate with expert technicians that may be able to make it on-site and can be used as a first-person view in conducting safety inspections.
- SolePower Work Boots are a smart boot that uses your kinetic energy to power itself and other smart devices as you take steps. They also have built-in safety features like temperature and motion sensors, and fall and fatigue monitoring, and they light up the way as you are in nighttime work zones.
- Robotic exoskeletons have been used to help stroke and spinal cord injuries but have been used in the industrial industry to reduce fatigue while increasing productivity time.

Besides the use of a smart wearable, the Internet of Things has enabled new project management software applications to manage a job, keep teams on task, stay on budget and maintain the safety and quality of the environment. Using construction project management software allows collaborations between individuals and teams working on a project to share information and documentation. It allows for tracking progress and costs for one or multiple projects. Some key features of construction management software include:<sup>6</sup>

- Document storage and management
- Submittals
- Daily logs
- Plan markups
- Punch lists
- Reports capabilities
- Order changes
- Real time and remote syncing

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<sup>4</sup> Guradhat- HC1 Communicator <https://www.guardhat.com/hc1-communicator>

<sup>5</sup> WakeCap Technologies <https://www.wakecap.com/>

<sup>6</sup> Construction Coverage- The Best Construction Project Management Software for 2022  
<https://constructioncoverage.com/construction-project-management-software>

The construction industry continues to move toward better ways to prevent injury and improve productivity at the same time. The pandemic specifically made it clear to many that investing in technology can help firms remain robust in uncertain times. And now as we recover, construction has boomed causing more construction companies to look for a way to stand out in the crowds and be more productive. PPE remains to be an essential part of workplace safety; new equipment is here to ensure that. Every construction worker deserves to be able to come to a job site with confidence they won't get hurt today.

When implementing wearable safety devices on a job site, you may receive resistance or worries of the "Big Brother" effects to the new concept. By educating workers and explaining the benefits and usage of the safety devices, this tech-phobia can be overcome. For safety-related help, please reach out to Ally Nelson at [anelson@gramercyrisk.com](mailto:anelson@gramercyrisk.com) or Bob Bambino at [rbambino@gramercyrisk.com](mailto:rbambino@gramercyrisk.com).