

The design for wearables in the enterprise

by Venkataraman Krishnan, Vice President and Venture Leader, Emerging Business Accelerator, Cognizant and Rajesh Rajagopalan, Associate Director, Emerging Business Accelerator, Cognizant

Falling sensor and chip prices, longer battery lives, lower connectivity costs and miniaturisation of components have paved the way for greater mainstream adoption of wearables. Driven by the need to provide real-time data and insights to workers in the field, and the promise of superior return on investment for wearable workplace applications, wearables look set to enter the workplace. For instance, the likes of Google Glass, Vuzix and Epson augmented reality (AR) glasses, and Daqri's smart helmet can enable engineers and technicians to access information from mobile devices and the cloud, perform hands-free operations in the field as well as establish real-time bi-directional communication between the technician and supervisor or SME back-office. When such products are complemented by industrial data-exchange protocols, machine monitoring and management information can be available in real-time and on demand.



Mr Venkataraman Krishnan Mr Rajesh Rajagopalan

Why bring wearables into the workplace?

Wearable technologies can deliver real value in the workplace when they are introduced in business processes to:

- Improve worker safety: An engineer working with high-tension utility cables can access information on a heads-up display, thus allowing for safe, hands-free operations.
- Enhance operational efficiency: A forklift operator can access routing information to navigate through a warehouse without having to scan the barcodes on pallets and other packages.
- Enable access to information in hazardous environments: For example, carrying an additional mobile or hand-held device can be difficult and dangerous for an employee working on a windmill.

- Gain deeper, better informed insights: With increased real-time information flowing in, we can record observations around conditions as they unfold, and slice and store them as references for future use, resulting in more accurate understanding and quicker resolution of problems.
- Spot defects and associated decay early on: Using high-resolution cameras and other sensors available (and these are getting cheaper, better, smaller), we can now spot flaws well before they become 'visible'. Thus, a worker with a wearable belt fitted with sensors and cameras will be able to 'see' a lot more without actually having to see it.

Recognising the road bumps

Introducing wearables into the workplace brings multiple advantages, including greater employee satisfaction and productivity. Yet, some basic challenges remain.

- Safety: How safe is it for employees to walk around with something in their line of sight, especially in hazardous environments such as an oil rig? Will wearables cause more distraction?
- Usability: Interactive capabilities

ties such as capacitive touch and speed commands can be impacted by the external environment. For example, noisy workspaces such as the factory floor may render the voice controls function ineffective for smart watches and AR glasses. A worker wearing industrial gloves cannot make use of touch controls on Google Glass.

- Privacy: Do companies want to record everything their employees see with their AR glasses without security controls? How comfortable will employees be with this?
- Security: Highly confidential and, in some cases, classified data pertaining to installations and processes will now need to be protected and controlled.

The real question is how to make the advantages of wearables in the workplace outweigh these concerns. The rule-of-thumb companies need to go with is to ensure wearables are non-intrusive, performance-boosting accessories that simplify workers' tasks and do not take away focus from their primary job. Forcing workers to accommodate new, unfamiliar or awkward equipment must be avoided. On the contrary, existing devices or technologies must be

repurposed, enhanced, made simpler and more intuitive. Additionally, wearables introduced by organisations should address increasing personal conveniences of the employees. For example, workers in a plant floor environment wear protective helmets. Instead of adding a smart glass to the protective gear already worn by the workers, a wearable/AR device provides non-intrusive and real-time information, enabling the workers to perform their tasks without impacting personal convenience.

Another example is of safety glasses worn on the floor or in the office being enhanced with high-tech features to support:

- Task execution through a checklist of activities
- Audio and video collaboration with subject matter experts
- Automation of simple, discrete tasks (for example, barcode-scanning in a warehouse)
- Workflow automation (for example, identifying defective parts, feeding updated inventory into the ERP system etc)

A smart watch with haptic (touch) feedback capability, for example, can provide factory workers with real-time updates of manufacturing activity and notifications across noisy shop floors.

Implementing the foundational blueprint for wearables in the enterprise

Wearables offer hope in situations where more traditional technologies, such as smartphones and laptop computers, cannot be used or are not a good fit. It is only a matter of time before businesses fully embrace wearable technologies. In order to do so, they will have to develop clear policies for determining who is allowed to bring the equipment into the workplace and connect to the network. What persistent problems wearables can solve and what opportunities they can create would also have to be determined.

Wearables come with trade-offs and enterprises looking to embrace them must develop strategies to address these trade-offs. Wearables provide users with relevant, con-

textual information at the point of decision-making to enable real-time actions. They must be supported by a well-crafted plan that includes IT deployment, business process change and, most importantly, change management. To get started, it is imperative that business processes be reconsidered, various wearable devices and platforms be piloted and evaluated, the right wearable be chosen and designed from the ground up, and the workforce be engaged and its concerns about these devices be addressed.

It is critical that employees perceive wearables as a tool that will help them perform more effectively on the job. Concerns and apprehensions around privacy must be managed and mitigated by being transparent and bringing employees onboard early in the process.

It is necessary for enterprises to support workers with digital and just-in-time contextual information. Wearables in the workplace are not just about increasing worker efficiency and productivity, but also about making the workplace safer.

Environmental and activity tracker

GNS GmbH, a leading developer of embedded location and mobile electronics technology, recently announced the launch of the Kick-starter campaign for Fitti Guard, a new generation of fitness and environmental trackers.

Fitti Guard is said to be the first environmental sensing and protection device that can be worn on the wrist.

Fitti Guard comprises 10 sensors that help in identifying and avoiding unhealthy situations. Fitti Guard detects environmental impacts like ultraviolet light exposure, poor indoor air quality, radioactivity and noise nuisance. A vibration

alarm and specific warning icons inform the user as soon as a pre-defined threshold of exposure is exceeded.

Advanced fitness functions go beyond counting the number of steps and calculating the distance and calories. An activity recognition algorithm, based on a neural network, detects the kind of activity that the wearer is performing. Furthermore, tracks are recorded with the integrated GPS and a barometric level sensor measures precisely the covered elevation. The sleep tracking function completes the Fitti Guard support for a healthy lifestyle.



Fitti Guard detects environmental impacts like ultraviolet light exposure, poor indoor air quality, radioactivity and noise nuisance.