HOW AUGMENTED REALITY IS POISED TO TAKE THE LOGISTICS WORLD BY STORM

By Meg Lombardo, CPPS, Queen City Chapter

It happened to me, and maybe it happened to you, too. I was bumped into more times than I could count, run into head-on by several pedestrians and even had someone circle around me while walking on the sidewalk. If this scenario sounds familiar to you then you remember the Pokémon Go phenomenon. Just about everyone was obsessed with the Nintendo Augmented Reality (AR) game that had players exploring "their real world" to collect Pokémon and items and to battle other players via GPS coordinates displayed on their smartphone. Believe it or not, similar AR technology that powers the Pokémon Go app is poised to become an integral part of the logistics environment, specifically in a warehouse setting, by driving increased productivity, efficiency and cost savings across numerous functions.

Augmented Reality is the term for a technology that overlays computer generated enhancement, like digital images or graphics, and provides a new layer of interaction with the real world. It blends digital components into the real world in a way that they enhance one another, but can also be told apart easily, while using your current physical environment as a backdrop. Using the camera view of your smartphone, tablet or connected headset AR enriches your physical world with digital information via an app. It's the joining of the physical and virtual world that makes AR such a powerful tool.

One of the first commercial applications of AR technology was the yellow "first down" line that begun appearing in televised football games. The aeronautics and automotive manufacturing industry have also implemented AR using a "heads-up" display that allows pilots and drivers to view important diagnostics via the windshield of an automobile or aircraft directly in their field of vision. The next generation of augmented reality includes wearable technology – like glasses or goggles – that are connected to the internet. Via the use of apps, the devices receive and send digital information wirelessly. Often these apps contain GPS, object recognition and even gesture recognition technologies to allow the wearer to interact with both their physical and virtual environments. The use of this next-generation technology can significantly streamline numerous logistics functions from warehouse management operations to human resources and customer engagement activities.

Instead of traditionally receiving a list of items for retrieval through the use of barcode scanners and paper pick lists, with AR an employee can keep his/her hands free to pick items as the list is deployed within a visual field. **Order Picking** becomes more efficient and accurate. As each item is picked, the technology verifies the correct product using optical readers to scan barcodes and integrates with the warehouse management system to verify item information. It then directs the employee to the next most logical item to be picked. The **Physical Inventory** process is executed similarly: an employee can locate and confirm location of a specific item in a warehouse without the use of paper or a barcode scanner, while remaining "hands free" and increasing

operational efficiency. Jessica Dzara recently wrote about a pilot partnership between DHL international and Ricoh Company in the *"#AssetManagement – Trending Now"* column in Volume 28, Issue 1 of *The Property Professional*. This pilot tested the use of internet connected eye wear to fulfill orders. Utilizing two smart glass options, the 3-week pilot resulted in "more than a 25% performance increase," according to DHL International, based on increased productivity and a reduction in picking errors.

Amid the rise of the Internet of Things (IoT) industrial machines are becoming more automated, and these connected machines are producing vast amounts of data including: information on power supply, last maintenance date and operating statuses. **Equipment maintenance, repair and support activities** are greatly enhanced using AR because of the context in which the information captured is presented. When an object is scanned with an AR device an app connects back to a database and returns information currently available for that specific item. For instance, if looking at a pressure valve, a maintenance worker will see the temperature and pressure hovering around it. The data retrieval, though, is just the first step. AR overlays a graphic on the valve that shows how pieces fit together, how to disassemble it and what other pieces of the machine that part might connect to. It combines the physical world of the machine part with digital world of the IoT information. A worker is now able to confirm, simply by looking at the machine while wearing an AR device, the machine part that needs maintenance, the maintenance that needs to be completed and how to correctly complete that maintenance.

ThyssenKrupp, a $45 billion elevator manufacturer, announced in September 2016 that it would be arming its elevator field repair technicians with HoloLens, Microsoft's AR headset that resembles a pair of tinted goggles. Field technicians can look at a piece of IoT connected elevator equipment, identify the equipment failure and locate the solution. More importantly, with IoT sensors, technicians know when something is going to fail before it actually does, so they are prepared with the right tools for the job. With an AR device like the HoloLens the technician can view both step-by-step repair instructions and a simulated repair environment via the headset during the repair, so specialized training to complete the repair isn't required.

The implications of AR on **workforce training** are vast. Personnel no longer need to attend multiple trainings to learn how to repair and maintain specific machinery or parts. AR also eliminates the extra cost and time requirement of locating personnel who can remedy a problem, potential travel of those resources and lost time searching for repair information and instructions. All of this information, including manuals, step-by-step instructions, repair simulations and interactive maps, is available via the AR device. The on-site personnel can perform the repair, thereby increasing their skills faster. The time savings with this type of application is remarkable, not to mention cost savings, increased repair efficiency and the on-the-job training received by the technician.

With AR, an expert can also provide remote support and share the exact view as that of the onsite repair technician, so problem resolution is no longer a guessing game. Instructions become working interactive holograms. This is important when an aging workforce has valuable institutional knowledge gained over many years but may not be willing or able to go into the field to physically assist with the repair or provide **customer support**. AR can be used across a vast network of logistics management competencies to provide on-the-job-training that is specific and thorough while also being cost effective and timely.

AR can directly affect **quality control** of work performed. A team can quickly discuss methods to better analyze, document and improve processes without employees and supervisors needing to be in the same location, allowing the overall process to become more efficient. A team can, in real-time, walk through a current operational process via an interactive demonstration and identify where issues are arising. This eliminates time consuming activities like creating briefings and action reports outlining quality control or process issues. Each employee, regardless of level, can experience the issue first hand via AR technology.

Gartner, a technology research firm, predicts that AR will become an important workplace tool that is "most useful in industries where workers are either in the field, do not have immediate access to information, or jobs that require one or both hands and the operator's attention." Currently, many AR technologies are available only to developers, via developer kit packages, and have not been released for purchase to the general public, as continued enhancements are incorporated before a larger product release. Before wide-spread adoption can occur, challenges such as AR device battery life and network performance issues also must be evaluated and addressed. As AR becomes more readily available in the coming months and years, the logistics community is positioned to be one of the first large-scale implementers of this game-changing technology.

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