What do you think of when you hear the term, “augmented reality” or “AR?” Do you picture yourself surrounded by neon colored lights, lasers and the sounds of a video game or do you imagine someone wearing futuristic-looking eyeglasses, like Google Glass?

Back in 2013, when Google sold its prototype, Glass was high-end and high priced: $1,500 a pop. You had to qualify as a “Glass Explorer” to even buy one. At first, celebrities and intrepid techies clamored to get their hands on a pair. But you could say the wider culture at the time wasn’t quite ready. Amid privacy concerns and other obstacles, the Glass Explorer program ended in 2015. But that doesn’t mean that smart glasses have gone away. They’ve just found a new audience: workers.

As it turns out, Google was on to something big: wearable AR devices are dramatically improving performance in manufacturing, making for safer, happier and more productive workers.

In this episode of Innovation Decoded, we look at how AR is finding a new home in industries from automotive to aeronautics. Take Airbus, the first major aviation leader to use wearable tech on the final assembly line. It’s all part of a huge shift Accenture characterizes as Industry X.0 — the digital transformation of industry through smart, connected technology.

But before we dive into this story, let’s take a detour back to the beginning with Steve Mann, a professor of Electrical and Computer Engineering at the University of Toronto, who is also known as the “father of wearable computing.”

Mann told us it all began for him during his childhood as a volunteer at a television repair shop:

I sort of saw a future in which the world around us was becoming really smart: transistors all around us. So, I thought, well I want to create a world in which there are all these smart technologies around us. You have smart lights and smart streets, and how about smart people?

In 1974, Mann created the world’s first wearable AR device to visualize electromagnetic radio waves.

Interestingly, just like Google Glass, Mann’s inventions have often provoked passionate responses. In 1991, when Mann brought his Digital Eye Glass invention to the MIT Media Lab, director Nicholas Negroponte, characterized it as “very much on the lunatic fringe.” Similarly, early-adopters of the Google Glass report being stopped on the street by rattled pedestrians afraid they were being monitored and recorded.

And though it still may be unusual seeing someone wearing an AR headset on the street, Ken Perlin, who leads NYU’s Future Reality Lab, predicted that smart glasses will eventually be “socially invisible.” Here’s what he told WNYC last year:
Accenture and Airbus identified that pain point, and to fix it, they applied the Industry X.0 approach — via AR glasses.

Here’s how it works: AR superimposes computer-generated images, video, sound and data onto real-world environments, enhancing the user’s perception of reality. In this case, the glasses scan a barcode at the start of the job to retrieve data from the cloud for the assigned assembly line operation. Wearers control the interface with voice commands, such as “move left.” The connected glasses display all the information needed to help an operator mark the floor faster and verify a confirmed seat marking with 100 percent accuracy to the millimeter.

If this sounds like it took years to carry out, think again. The smart glasses were implemented in less than a month, explains Craig Gottlieb, Accenture Management Consulting Principal Director and Aerospace and Defense Innovation Lead.

Mann’s point is particularly pertinent when it comes to the business applications of AR. Smart, connected technologies, such as wearables, are transforming the shop floor as we know it by providing a hyper-personalized experience for workers.

Eric Schaeffer, Accenture’s Senior Managing Director and head of the firm’s industrial practice group, explains.

The user interface will be adaptive, real-time, context based. You’re in the shop floor, Paul comes to the station, the machine recognizes Paul, the machine knows Paul’s strengths and weaknesses, the machine will adapt both from a user interface but also in the way it augments Paul’s areas of development.

All of this brings us back to the present. In Toulouse, France, Airbus is using AR to make a major impact on the shop floor. There, workers used to undertake hours of labor to mark seats in the final assembly line of the massive A330 jetliner.

Just a couple years ago, Airbus’ team worked off a paper manual for the plane’s customization, a job that required careful precision. Also, marking seats takes place when the aircraft is nearly completed and any mistake can be costly.

The technologies are now such that we can try things out very quickly, see if they work, move on if they do, drop off if they don’t. And really, the idea came up of, what if we tried this? We’re seeing that sort iterative, fast to success, fast to failure if you will, kind of approach with a variety of these digital technologies. It really makes the process much more effective in the sense that we get to an answer quickly, and if we don’t find an answer, we move on, we try the next thing. As opposed to having to go through a really long cycle that we might have had to have done even three or four years ago.

Since their introduction to the final assembly line, the glasses have changed the way workers locate seat markers by providing real-time data, eliminating the need to rely on a paper manual. This has improved productivity in the cabin seat marking process per aircraft by a whopping 500 percent and reduced errors to zero. That’s right, zero.

Where this is all leading is becoming increasingly clear. Today, smart glasses are training workers on how to use technology to work smarter and faster, freeing them to do all sorts of other things.
So, if we’re not going to be taken over by an army of cyborgs, what will the future workforce look like with new technologies?

Join us for the next episode of *Innovation Decoded*, where we explore a workforce tagged with RFIDs. It’s a technology used across the world to save money and lives – and as you’ll hear – it may even one day find its way under your skin.

This has seismic implications for the workforce.

That’s Aidan Quilligan, Accenture’s Managing Director and Global Lead for Industry X.0. He’s optimistic about the future, but believes companies need to make sure their workers are ready to collaborate with smart technology, like AR.

Well, let’s remember that what we’re talking about here is a Fourth Industrial Revolution brought about by digital technology. And recall what happened, we’ve all read about it from the history books, when steam arrived and when electricity arrived and then, in our lifetime, at least in my lifetime, when computing arrived. And this Fourth Industrial Revolution is no different and therefore, it’s going to require time. It’s going to require a multitude of actions from companies, from the educational system, from government. It really is that deep-rooted in terms of the scale of change that we have ahead of us.

To help manage this transition, companies must take a holistic approach to Industry X.0 with an emphasis on the workforce and talent sources. You can’t just add these technologies, like AR, to a factory floor and expect a miraculous boost in efficiency. Companies will need to lay a groundwork of integrated engineering and production systems, and it’s going to take both smart people and new digital ecosystems to accomplish that. And it won’t be enough to simply hire new people with the requisite skills; companies must also invest in re-skilling their existing workforce, who bring decades of experience.

Neither alone will suffice. Getting a blend and a fusion of those together is what will make the workforce of the future a success. At the end of the day, workers want a number of things, including secure and rewarding employment. And, in the example that we have here with Airbus, it was eliminating errors and allowing workers to concentrate on more fruitful activities. So, this to me is the reality of human-machine collaboration in the immediate future, not robots taking over the world as it is sometimes portrayed as.