Automated for the People

This brief is one of a four-part series in which we take a deeper dive into the impact that human-machine partnerships will have in four industries over the next 15 years: entertainment and media, health care, financial services, and manufacturing. For a more detailed explanation on human-machine partnerships, please download the full report, *The Next Era of Human-Machine Partnerships*, here.

Emerging technologies, such as Robotics, Artificial Intelligence (AI) and Machine Learning, Virtual Reality (VR) and Augmented Reality (AR), and Cloud Computing, stand to reshape how many of us live, work, and play over the next two decades. They will upend the way in which we coordinate our daily lives, learn new skills, make personal and professional decisions, and take care of ourselves and others. They will also change the way we create things.

As described in the full report, *The Next Era of Human-Machine Partnerships*, industrial supply chains are transforming into dynamic production webs, drawing together resources and tools of production at many scales. For example, large-scale manufacturing processes that were once far removed from the people who use their products are often scaled down to more nimbly address individual and community needs. As these new capabilities, along with innovative manufacturing tools, roll out over the next decade, they will not only change the variety of things people in different places can access but they will also strengthen the relationship between people and manufactured goods in their environments.

So, what does the next era of human-machine teams mean for manufacturing by 2030? How might these emerging technologies influence industrial systems and economies? And, how will human-machine partnerships bring together the best that both humans and machines have to offer?

This brief offers a first-person view of new manufacturing capabilities in the automotive and manufacturing space. This foresight vignette is not intended to be a prediction of future behavior. Rather, its objective is to provoke us to think creatively about the future possibilities—and potential pitfalls—generated by the next era of human-machine partnership.

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Automated for the People | 2030

Eva Hunya
Age 24 in 2030

For Eva, the world of Robotics has always seemed exciting. From the age of 7, Eva has been enthralled by how stuff is made. Whether it was the anime series she watched as a child, the 'care exoskeleton' her uncle used at his job as a caregiver for homebound seniors, or the 3D printed car that her professor drove, Eva found inspiration everywhere.

Signal of Change

Divergent 3D's Blade is a proof of concept vehicle, showing it is possible to build whole cars (except the carbon fiber reinforcements, wheels, and tires) out of 3D printed metal.

In the gap before her second year studying for her Master's degree in Digital-Mechanical Engineering, Eva worked at a hardware accelerator where she used collaborative software to co-design innovations with peers from around the world.

Signal of Change

HAX is an accelerator focused on hardware startups based in Shenzhen and San Francisco. It is currently one of the biggest early stage investors in hardware startups.

Eva had been selected by her startup coach to attend a meetup with others who share her enthusiasm for the positive impact Robotics are having on people's lives. One of the first people she met was an engineer who focused on automating intralogistics systems. Indoor industrial self-driving vehicles had all but replaced most human involvement in material transport inside factories, and unmanned vehicles were increasingly common in large hospitals and sprawling enterprise campuses.

Signal of Change

OTTO Motors develops self-driving vehicles to automate the movement of inventory in factories.

A young woman wearing a discreet pair of Augmented Reality (AR) glasses joined the conversation and immediately asked very pointed questions about Eva's work history. Initially, these kinds of glasses were the preserve of manufacturing workers to help them access critical information in real time. Increasingly they were being worn for other work purposes. Eva suspected that, in this case, the woman was a recruiter, outfitted in AR glasses to use the digital information displayed over her glasses to better target her search for top Robotics talent.

Signal of Change
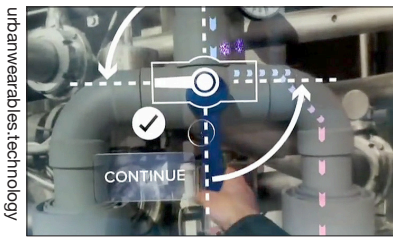
DAQRI is an Augmented Reality company based in Los Angeles. Its primary product is an AR Smart Helmet designed for industrial use.

Eva exited the conversation to explore a large shipping container situated in the middle of the room. As she examined the container, Eva realized that it was not intended for shipping at all, but instead for micro-manufacturing. This was a living demonstration of the model that had famously allowed small automotive plants to be set up in areas where it would have been unthinkable 20 years before.

Signal of Change

Local Motors is an auto company focused on low-volume manufacturing of open-source motor vehicle designs using micro-factories.

Venturing on, Eva engaged with a team of innovators focused on developing robots with human-like hands. While most manufacturers still focused on purpose-built systems, this startup was causing a stir with their robots designed to look and perform more like humans. The human-like hands on their robots made them a good option for working in unstructured environments, and many small-scale manufacturers rented them on an hourly basis to work alongside human "co-workers."

Signal of Change

The user-friendly robot Sawyer learns by a human grabbing hold of its wrist and leading it through an activity once. Its series elastic actuators give it a high level of accuracy in sensing forces, enabling it to take on more delicate tasks.

Eva confessed to her new acquaintance that she had rented one of these robots a couple of years before when she needed help testing hundreds of different samples as part of a genetic computing course.

As amazing as the engineering and technology is behind these next gen robots, for Eva, the on-demand model that makes them available to millions of people is equally revolutionary. She realizes that as robots become more commonplace in homes, schools, and workplaces, their impact may be even more life-changing than she had ever imagined.

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