AUTO/MANUFACTURING: AUTOMATED FOR THE PEOPLE

Interview with Greg Jacobs

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(Edited for clarity)

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

OTTO Motors is a division of Clearpath Robotics which makes self-driving vehicles that utilize laser-based perception and AI to dynamically move through facilities, infrastructure-free. Greg Jacobs is the Infrastructure Manager at OTTO Motors.

Q: How plausible do you find the scenario, *Automated for the People*? Why?

A: It's plausible, given how OTTO Motors operates today. We work with people, who are spread across the globe, on source code collaboratively, oftentimes very close to real-time. Someone on one side of the world might design a part, and someone on the other side of the world will work out the specifics, manufacture it, and ship it back. I personally task people from different continents to work collaboratively on different aspects of our product solution offerings.

Q: What would accelerate this future?

A: As the Internet's bandwidth and computing resources grow, and augmented reality (AR) technologies get better, you will be able to sit at a conference table, put on a pair of glasses and see a transparent ghost of a colleague who is on a different continent. More bandwidth lowers barriers and creates new efficiencies in interactions between people. I've seen this progress grow over 20+ years now, and it's been exciting to watch it unfold.

Q: The section in the scenario that most directly describes OTTO Motors suggests that the autonomous movement of materials within a factory will spread to other spaces like hospitals and enterprise campuses. Do you agree with this provocation?

A: Yes. In some hospitals, today's robots are already carrying medicine or delivering food to patients on different floors with some self-guidance. We're seeing customers adding robotic arms to our mobile platforms. The idea is you can have a manipulator on a machine that doesn't have to be bolted to a conveyor belt or follow a painted line or magnetic strip like in a conventional factory. It will move around equipment, transfer materials, perhaps even package-up the product—handling material on your behalf.

As a result, people will be freed-up to do more important things. They'll say to a robot, "I need you to go over there and do this task" and it will figure it out on its own. I often call this "Fire and forget technology." Simply put, you can just say, "Go do it," and it will happen. You don't have to be involved, you can focus on other things.

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Q: Would anything prevent this future from happening?

A: No. The technology, the platforms, and the scales of economy are here now, and it's opening doors. For me, the next decade is about connectedness—the data itself. The industry as a whole will amass and process huge amounts of data, which will serve as the largest force multipliers over the next decade.

Today, our products have features that enable them to beam back information to us. This information can be used to recreate environments in simulation, find issues or optimize product aspects for our customer's benefits. You can iterate a product's evolution much faster as a result. It's almost like distributed intelligence. Anyone able to wield this power will be able to attack problems on a massive scale and speed.

Q: What do organizations need to do to prepare for the scenario?

A: The old world way of doing things involved, setting aside a bunch of people to spend several years designing a very elaborate plan, and then executing it. They'd put their heads down and build the whole thing, end to end. They'd ship it and only realize later that the market had already moved on. Customers would say, "This is what we wanted two years ago, but now we need something different."

To prepare, organizations will need faster design and development: more agility, the ability to make incremental changes using feedback loops, and a competency to measure, as close to real time, the benefits, risks, or impacts of those changes. Building intimate connections with customers to gather their needs and feedback is key.

Organizations will also need to strike a better balance between build vs. buy. Thanks to open source technology and the Internet fueling collaborative power, there are many more opportunities to grab stuff off the shelf. If you are not good at balancing buy vs. build decisions, your competitors will race past you. If you are building everything yourself, you are not focusing on your core strengths. You won't get to market as fast as someone who can better balance those decisions and utilize a technology, product, service or strategic vendor faster.

Q: What do individuals need to do to prepare for the scenario?

A: They need to show an ability, curiosity and drive to learn. Over the past 20+ years, I've had to reinvent myself many times. People can't rely on a few fixed core skills alone anymore. They'll need to embrace plasticity, with a willingness to retool themselves to respond to new demands or opportunities.

The other key skills are rooted in this now hyper-connected world—understanding how everything is pieced together and being able to build some of that puzzle securely. If you have networking skills, if you understand the principles of large scale data or distributed computing like cloud and other concepts, you are in a position to champion these new value streams. Everything runs on top of these concepts now, so fluency in the subject matter and knowing how to apply it is very empowering.

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