A Look Ahead

Intelligent Machines and the Future of Work

How will artificial intelligence and robots impact commercial real estate?

The future is coming sooner than you think. Climate change, extreme weather, rising seas, drones, driverless cars and trucks, 3-D printing, global unrest, space junk, terrorism, drought, fracking and, now, artificial intelligence (AI) and robots all will have big impacts on commercial real estate (CRE) in years to come.

Peter Sondergaard, head of global research at Gartner Research, predicted at the technology consultancy’s 2014 annual symposium that “… one in three jobs will be converted to software, robots and smart machines by 2025.” Others estimate that as many as half of the jobs in the U.S. will be performed by robots and AI machines by that year. A 2014 study from the Pew Research Center asked 1,896 experts if “networked, automated, artificial intelligence (AI) applications and robotic devices [will] displace more jobs than they have created by 2025?” Half of those polled said robots will add more jobs for humans than they will displace, while the other half said the opposite. These results suggest that the potential implications of AI on employment, the workforce and CRE are not yet clear.

Other key findings from the Pew study provide the following insights:

Reasons to be hopeful: People will adapt to these changes by inventing entirely new types of work, and by taking advantage of uniquely human capabilities.

Reasons to be concerned: The nation’s education system is not adequately preparing students for the work of the future, and its political and economic institutions are poorly equipped to handle the hard choices that will have to be made.

The Big Question

The “big question” in this scenario, then, is what will 33 to 50 percent of the workforce be doing in 2025 if its current professions have been supplanted by AI? One can only begin to speculate about the future impacts on CRE. Robots can work 24/7, 365 days a year. Will this drive demand for more space, or less? How will suppliers, supply chains and warehouse distribution systems adapt and change? Will it become more competitive for industry to bring manufacturing back to the U.S., once the cost advantage of cheap labor disappears and supply chain reliability and the cost of transportation from far-away lands are factored in?

Consider how driverless cars and trucks — which should increase the efficiency of the transportation system — will impact human behavior and infrastructure design. How will they affect land use patterns based on moving people long distances between work and home? Will millions of people continue to commute each day? What will happen when a manufacturing facility that previously employed 1,000 people can be managed and operated by 70, with robots cranking out products 24/7?

How will these changes impact the ways people design, build and rebuild cities and workplaces?

This article clearly raises more questions than it answers. The CRE industry must seriously consider these questions, quickly, because 2025 is right around the corner. The speed of technological change flies in the face of an industry ecosystem that is designed to build and finance fixed single-purpose assets with a structural lifespan of 50 years but a functional lifespan of only five to 10 years. Repurposing, “future proofing,” densification, expecting and planning for change, and resilience are all terms that must begin to drive industry thinking.
Where does one begin? Most speculators and pundits believe that throughout history, technological advances have elevated man’s quality of life, extended lifespans and narrowed the gap between the haves and the have-nots. In the next 25 years, the world will have to adapt in order to accommodate a population of 9 billion people, 1.5 billion more than reside on the Earth today and 75 percent of whom will live in cities.

An Optimistic Outlook

Perhaps the sheer magnitude of this growth will capitalize on the efficiencies made possible by AI and robots. A lot more “stuff” will have to be produced as efficiently and as cleanly as possible in order to preserve the planet. In “Abundance: The Future is Better Than You Think,” Peter Diamandis and Steve Kotler ask readers to “imagine a world of 9 billion people with clean water, nutritious food, affordable housing, personalized education, top-tier medical care and nonpolluting ubiquitous energy.” Their optimistic view of the future is one to which CRE developers and architects, as designers and builders of the space that humans need for commerce and productivity, must ascribe. Yet advancing this dialogue within an education system stuck in the industrial age and a political system that refuses to move forward will be challenging.

A May 2014 Cassidy Turley white paper, “Insights: The Innovation Age of Manufacturing,” asserts the following:

This transformation is accelerating thanks to the convergence of several trends: the falling costs of electronic sensors and microprocessors that can be used to make machines more proficient, the acces-
A Look Ahead

Resilient Power Hubs: Emergency Power That Pays Off

A prototype on-site energy generation system could provide reliable back-up power during utility failures and other long-term benefits.

THREE YEARS AFTER Superstorm Sandy devastated the East Coast and left thousands without power for days or weeks, many affected areas are experiencing renewed interest in more secure and uninterruptible power supplies. In response, municipal leaders and building owners and developers, among others, are seeking innovative power solutions. Some new concepts offer promising answers to a serious and potentially life-threatening question: How to provide power to buildings when the larger electrical grid goes down, whether in long-term emergency situations or simple, day-to-day outages?

One of those techniques recently got the green light in New York City. Called the Resilient Power Hub (RPH), this innovative system connects solar photovoltaic (PV) collectors to a combined heat-and-power (CHP) plant and energy storage technology to maximize the amount of power available to a building or site during utility failures. The system shows potential for commercial applications at office, industrial and mixed-use buildings.

Prototype Projects Funded

In May 2015, the New York City Economic Development Corporation awarded a grant to build at least three RHPs, noting the system’s value as a low-carbon, resilient power option with a “building-based microgrid” technology.” The prototype projects will support three commercial facilities in as-yet- undisclosed New York City locations.

Leading the project are the energy technology and efficiency expert Bright Power Inc. and the architecture, design and landscape architecture...