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Continuing Technology Shifts Give Rise to Need for New Workplace Skills

By Georgette Kiser and Cam Dyer

Each wave of broad technological change since the start of the Industrial Revolution has altered how people work. We see this today as we continue into the "Fourth Industrial Revolution." The driving trends include artificial intelligence and machine learning,[1] automation, data exchange, voice recognition, the Internet of Things (IoT), etc., and the convergence of all digital technologies (cloud, big data, mobility). These trends promise much more productive experiences for both companies and technology users.

For example, Amazon's Alexa, a cloud-based, artificial intelligence software agent—or as some call it a virtual assistant—is part of a high-profile wave of such technology that includes Siri, Cortana and Google Home. Virtual assistants have created new experiences for users, enabling voice vs. touch commands, and have also driven automation resulting in the creation of jobs for the development of these products or the use of those services.

Another emerging technology changing how we work is drones. These sometimes small but highly complex pieces of equipment consist of processors, cameras, and GPS units, and they are changing work habits across many industries. Drones may supplant a certain number of mail carriers or package delivery personnel in making the drop-off at your home or office. Also, first responders may not need to make the initial foray into a law enforcement or fire situation; drones may be able to make an assessment prior to humans entering. With respect to humanitarian aid, drones may be used to drop food and/or water in a targeted way to those in need, freeing up the military, aid agencies and non-profits to focus on higher-value add tasks and roles.

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If we look at highly regulated industries such as investments and insurance, emerging technologies including robotics process automation (RPA) are poised to see significant market penetration. RPA refers to the automation of industrial and clerical processes using robots or robotic automation software. RPA can standardize a large portion of many investment and insurance company back office employee experiences, reducing the need for so many manual touch points, mitigating risks, creating efficiencies, lowering costs, and allowing the workforce to move onto higher level initiatives (for example, dealing with the more complex items in the process where humans are still needed to think through the problem).

Companies will find further ways to leverage emerging technologies like virtual assistants, drones and robotics and will need highly skilled people to design, develop, produce, market, and sell products that work with these technologies. And even though drone technology, for example, will reduce the number of physical bodies typically needed up front, society will need to retool and reskill people so that we have the higher level thinking necessary to design and develop even more enhanced drones for the future.

While skill set needs have differed during each phase of the Industrial Revolution—the hands-on needs of the early Age of Steam in the late 18th Century differed greatly from those of the new "Age of STEAM"—Science, Technology, Engineering, Art, and Mathematics—jobs are still expected to be created as public and private entities work on ways to fill the skill gap. There are risks with the Fourth Industrial Revolution if organizations and companies do not adapt to changing technologies, but as we see from the first, second and third industrial revolutions, people have always found ways to reskill, retool and employ.

Carlyle is cognizant of these broad technological shifts reshaping the corporate world across all of the industry sectors in which we are active. We have been especially focused on this within our Telecommunications, Media and Technology Group.

For example, enterprises are increasingly looking to machine learning techniques to derive business efficiencies and productivity improvements. ProKarma is a recent Carlyle investment that helps companies with automation, analytics and digitization, as well as with artificial intelligence and machine learning techniques. For example, ProKarma built a healthcare reference architecture designed to lower hospital readmission rates through a predictive model that incorporates machine learning to identify patients with high readmission risk. The model incorporates significant amounts of information including medical history and other data on patients' background and allows hospital staff to administer appropriate and additional care to "at risk" patients as well as identify potential shortcomings with respect to the treatment and discharge process. Ultimately, hospitals will be able to significantly lower readmissions, avoid Medicare penalties and excess costs, increase resource utilization, and improve patient satisfaction.

Global enterprises are also increasingly looking to harness the power of their existing data to power machine learning techniques and artificial intelligence. However, today's corporate environment is fast-growing, fragmented, and increasingly complex, creating daily challenges for organizations with respect to data management, visibility, and availability. To address these challenges, another Carlyle portfolio company, Veritas, has focused on helping clients illustratively display data with products such as Veritas Information Maps so users can see, comprehend and gain actionable intelligence.

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Concerns exist about technology-related job growth and worker displacement, as noted by MIT's Erik Brynjolfsson and Andrew McAfee, who tracked decades of linkage between job growth and productivity that decoupled over the past decade and found that we are creating jobs but not enough of them, in part, they held, because digital labor is in some cases substituting for human labor.[2] But emergent technologies are also improving customer and workplace experiences as well as elevating skills such as problem solving, critical thinking, coordinating with others, and judgement. We are optimistic the Fourth Industrial Revolution will, over time, result in improvements to life and work that we cannot now envision.

1. Machine learning is a type of artificial intelligence that provides computers with the ability to learn without being explicitly programmed.
2. "The Great Decoupling: An Interview with Erik Brynjolfsson and Andrew McAfee," Harvard Business Review, June 2015 (https://hbr.org/2015/06/the-great-decoupling)

Georgette Kiser is a Managing Director and Chief Information Officer at The Carlyle Group where she is responsible for leading the firm's Global Technology and Solutions (GTS) organization, by developing and driving IT strategies across the global enterprise, which includes the firm's application development, data, digital, infrastructure, and program management and outsourcing activities.

Prior to joining Carlyle, she was the Vice President of T. Rowe Price Associates, Inc. where she headed Enterprise Solutions and Capabilities within the Services and Technology Organization. Ms. Kiser lead and managed teams that provided creative solutions and leveraged technology for investment front office, trading, and back office operations. Prior to T. Rowe Price, she worked for General Electric within their Aerospace Unit.

Ms. Kiser earned a B.S. in Mathematics, with a minor in Computer Science from the University of Maryland, College Park, a M.S. in Mathematics from Villanova University, and an MBA from the University of Baltimore. She has served on various non-profit boards, including The Boys' Latin School of Maryland, the T. Rowe Price Foundation Board, Maryland Business Roundtable STEMnet Advisory Board, the University of Baltimore Foundation, and the Kennesaw State University Brian Jordan Center for Excellence and Professional Development at Lakepoint. Ms. Kiser currently serves on the Board for Year Up. In partnership with leading US employers, Year Up invests in highly motivated, low-income young adults. The students participate in an intensive year-long program, comprised of professional training and an internship. Year Up provides young adults with the skills, experience, and support to empower them to reach their potential.

Cam R. Dyer is a Managing Director in the Global Technology, Media and Telecommunications ("TMT") group. Mr. Dyer focuses on buyout and growth equity investments in larger companies including software, tech services, financial technology and payments, communications infrastructure and related supply chain businesses.

Since joining Carlyle in 2002, Mr. Dyer has been actively involved with the firm's investments in CommScope, Inc. (NASDAQ:COMM), Firth Rixson, Ltd. (acquired by Oak Hill), Open Link Financial, Inc. (acquired by H&F), Open Solutions, Inc. (acquired by Fiserv), SS&C Technologies, Inc. (NASDAQ:SSNC), Sippican, Inc. (acquired by Lockheed Martin) and most recently Dealogic, Veritas Technologies, ION and ProKarma.

Prior to joining Carlyle out of business school, Mr. Dyer was an Associate with the private equity firm William Blair Capital Partners (now Chicago Growth Partners). Mr. Dyer's prior work experience also includes serving as an investment banking Analyst in the M&A Group of Bowles Hollowell Conner & Co. and as a summer Associate during business school with Bain & Co.'s Private Equity Group.

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