Mapping the Future of Work in MENAT: A 2015 Outlook

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In 2014, GE examined three disruptive forces of innovation: the Industrial Internet, Advanced Manufacturing, and the Global Brain. These three forces together drive the Future of Work, a technological revolution that focuses on speed and collaboration; accelerates innovation and change; redefines economies of scale; enables micro-factories and new artisanal activities; reshapes supply chains and distribution networks; and alters the relationship between employers, who get access to a wider pool of talent, and workers, who gain greater entrepreneurial control over their skills and careers.

In Mapping the Future of Work in MENAT, published in September 2014, we discussed how these forces of innovation can bring enormous opportunities for the Middle East, North Africa and Turkey (MENAT) region. MENAT countries have great potential, but struggle with formidable challenges and a status quo that is not good enough.

Since September, the challenges have intensified. The sharp drop in oil prices, in particular, has increased pressure on several governments in the region to be more efficient in allocating reduced financial resources to achieve their goals—notably lowering the extremely high youth unemployment rates that are a source of instability and undermine future growth.

Innovation can help. It can broaden the base of economic growth, increase productivity and competitiveness, lower costs, and save resources. As we discussed in our paper, this will require a flexible education system with greater focus on science, technology, engineering, and math (STEM); school and industry partnerships; and investment in infrastructure.

Since September, it has become even more obvious that the pace of digitally-driven innovation is accelerating. GE has launched Predix - the operating system for the Industrial Internet - a platform that will enable the rise of an industrial app economy, bringing more efficiency-enhancing solutions to a wider range of industrial sectors. The value of collaboration has also become more apparent. GE leverages the "GE Store," which allows every business in GE to share and access collective technology, R&D, and commercial and managerial expertise to achieve lower costs, higher efficiency, and faster growth. It makes GE, as a whole, more competitive than its parts could ever be in isolation. In turn, the value of a job in this context is greater. GE workers can benefit from constant interaction with colleagues operating in different regions and sectors, and even with resources outside GE, as the company becomes more open and makes greater use of collaboration and crowdsourcing. In the process, workers improve their skills at an accelerated pace, resulting in greater efficiency for the company and stronger career prospects for employees. In time, distributed and digitized technology will allow skillsets and capabilities to cross and transcend industries, further boosting productivity.

Therefore, collaboration should be the main underlying theme as the MENAT region leverages innovation to address its challenges. The benefits of collaboration have already started to accrue. GE and other multinational companies have been partnering with national businesses and organizations to produce disruptive, innovative technologies and solutions to raise sustainability and efficiency. Looking forward, collaboration will enable the development of local and regional supply chains and ecosystems, which will accelerate learning, innovation and economic growth.

The creative disruption of the Future of Work is a unique opportunity for the region. Governments and private institutions, including multinational companies, must collaborate to rapidly reap benefits in terms of productivity, sustainability, jobs, and living standards.

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1The Industrial Internet is the merger of software and hardware, of big data and big iron, with the integration of cloud-based analytics and industrial machinery.
2Advanced Manufacturing is the digital thread that links together design, product engineering, manufacturing, supply chain, distribution, and remanufacturing (or servicing) into one cohesive and intelligent system.
3The Global Brain is essentially the collective intelligence of human beings across the globe, integrated by digital communication networks.
In our September 2014 report, Mapping the Future of Work in MENAT, GE discussed the region’s key challenges and outlined how innovation can help turn these challenges into opportunities. Since we published our report, the challenges have intensified. Oil prices have declined sharply, and the majority of experts believe they are likely to remain at low levels for some time. Uncertainty on the oil price outlook has also increased substantially. Lower oil prices reduce the revenues of a number of governments in the region, making it even harder to address high youth unemployment rates. Political and social instability in the region has also not abated; the external environment is perhaps even more uncertain than it was last September. Global economic growth continues at a solid pace, but the U.S. Federal Reserve seems set to begin raising interest rates over the course of 2015; after a record low period of zero interest rates, the Federal Reserve’s move is likely to increase financial market volatility, which could have adverse repercussions on the availability and cost of international capital for emerging markets. Additionally, Europe, a very important trade partner for MENAT, now faces the risk that Greece might exit the Eurozone—something that would have a serious impact on confidence across Europe and beyond. Finally, energy sustainability issues continue to dominate the global and regional agenda.

The drop in oil prices is by far the biggest and most challenging development. Low oil prices have shocked the industry and have created significant opportunities and challenges for oil and gas companies in the region. For many oil importers, lower oil prices are a straightforward boost to growth. For a number of oil exporters, they raise a difficult trade-off: scale back social subsidies, or reduce infrastructure investment. Reducing infrastructure investments can considerably hinder a country’s growth, but social stability concerns could affect the decision-making process. The region must carefully consider its investment strategy and plan for the long term.

Reduced spending among the GCC will be a crucial feature of the outlook—and how the reduction is targeted will be extremely important. For 2015, the International Monetary Fund (IMF) forecasts slower economic growth for GCC countries. To navigate this environment, governments must shift their strategy and find a collective, long-lasting solution. Fiscal reform can rationalize public expenditures and ensure government budgets can deploy sufficient resources for infrastructure investment. Infrastructure investment for services like communications and transportation can improve access to the benefits of the Industrial Internet, enhancing factories and plants in unprecedented ways.

Energy subsidies are a big part of this picture. Given the reduction in revenues, subsidies have become a burden for oil exporters. The sustainability benefits of the Future of Work can be helpful on this front; they can improve energy efficiency in transport and industry, while reducing subsidies and domestic fuel consumption in power distribution without imposing undue burdens on consumers. Industrial Internet solutions can bolster the efficiency and resilience of oil and gas facilities and enable and accelerate the exploration of unconventional resources.

Lower oil revenues increase the pressure to address the region’s paramount challenge: reducing youth unemployment. Today, many MENAT countries have high rates of unemployment, and youth unemployment rates are well above those prevailing in other regions such as Asia, Latin America, and Sub-Saharan Africa. Youth unemployment is not just a potential source of social instability — it is a waste of resources. It reduces the region’s pipeline of human capital and undermines its ability to adopt—and develop—future technologies. To address this challenge, governments should strengthen education systems, emphasize science, technology, engineering, and math (STEM); and encourage closer partnerships between the education system and companies and local organizations.

Oil-exporting MENAT countries start at a disadvantage in this area. The education system is not focused on the skills demanded by the industry. To achieve sustainable progress, the region must provide opportunities for youth to build their skills and experiences and contribute to economic growth. GE has partnered with more than 25 universities and educational organizations across the region to support talent growth and development. These and other similar initiatives must continue and be developed further.
More than ever, the MENAT region today has a crucial need to broaden its manufacturing base, upgrade its workforce, and increase productivity and efficiency. In our September paper, we have discussed in detail the main ways the Future of Work can help:

Industrial Internet solutions can deliver greater efficiency gains and reduce costs in sectors ranging from oil and gas and aviation to healthcare and transportation. Advanced Manufacturing can increase speed and flexibility in manufacturing processes, redefining economies of scale and enabling a shift towards micro-factories and the potential rise of new, high-tech artisanal activities. The Global Brain can help the region connect MENAT’s intellectual resources among themselves and to the rest of the world, accelerating the generation of new ideas and opportunities. We have already begun to see results. GE’s Innovation Barometer shows that Algeria, Turkey, the UAE, and the Kingdom of Saudi Arabia rank among the top eight countries that have seen an increase in revenues and profits generated by collaborative innovation activities. The share of respondents acknowledging such an increase was extremely high, 70-80% in each country.

The pace of these innovations continues to accelerate. Since last September, GE has launched Predix, the software platform and operating system designed specifically to meet the standards and requirements of the Industrial Internet. Optimized for machine-to-machine communication, it supports distributed computing and big data analytics and guarantees mobility and security. It is focused on supporting the development of Industrial Internet applications for asset and operations optimization across a wide range of sectors.

Similar to Google’s Android or Apple’s iOS operating systems, Predix has a set of software services that help developers both inside and outside of GE build apps for the Industrial Internet. And just as the development of mobile applications and services is powering a revenue-rich “app economy” in the consumer sector, the rise of the Industrial Internet will be powered by the growth of an app economy in the industrial sector. The platform—in this case, Predix—is the foundation.

The importance of collaboration and cross-fertilization among different industrial sectors and fields of expertise is becoming increasingly obvious. At GE, it is already one of the main drivers of innovation. We call it the “GE Store.” The GE Store allows every business in GE to share and access collective technology, R&D, and commercial and managerial expertise in order to achieve lower costs, higher efficiency, and faster growth. It makes GE, as a whole, more competitive than its parts could ever be in isolation.

The GE Store
Driving Competitive Advantage Across Our Businesses
No other company has the ability to transfer brain power and technology the way GE can through the Store. We take alternators from our aircraft engines, designed to pass rigorous FAA certification, and use them to improve motors for pumping oil from the ground. We use imaging technology from healthcare equipment to inspect oil pipelines. In Egypt, we combine mobile gas turbines made for remote power and permanent, heavy-duty turbines made for industrial power to accelerate energy generation faster than previously possible – GE is set to add 2.6 gigawatts to Egypt’s power grid in 2015. These technologies cross conventional industry borders and provide solutions for better outcomes. Transferring solutions across the region can produce similar results.

GE’s workforce also embodies this collaborative idea. The value of a GE job lies in its larger ability to improve human capital at an accelerated pace, resulting in greater productivity and efficiency for the company and stronger career prospects for GE’s employees. This happens by integrating workers into a global innovation network of highly differentiated expertise. GE workers can benefit from constant interaction with colleagues operating in different regions and sectors, and even with resources outside GE, as the company becomes more open and makes greater use of collaboration and crowdsourcing. Workers can transfer their skills across fields to move the needle of industry further than would be possible in a world of extreme specialization. Localized skills develop global solutions. The workforce gains valuable experience and training to increase overall capacity and allows for greater entrepreneurial control over their talents. Thanks to new digital technologies that augment human abilities, these benefits accrue to workers at all levels of the skills distribution.¹

The advancement of the Predix platform for the Industrial Internet, the power of cross-sector technology transfers in the GE Store, and the way workers in this context can more rapidly upgrade their skills demonstrate that collaboration is the most important factor in the way the MENAT region can benefit from the innovations of the Future of Work.

Collaborative innovation activities have already begun addressing some the region’s top priorities. Multinational companies like GE are partnering with national businesses and organizations to produce disruptive, innovative technologies and solutions to raise sustainability and efficiency. Looking forward, collaboration will enable the development of local and regional supply chains and ecosystems, which will accelerate learning, innovation and economic growth.

In Saudi Arabia, the Aramco Entrepreneurship Center and GE’s Ecomagination global Innovation Challenge produced state-of-the-art proposals to address renewable-energy seawater desalination, one of the most important processes for the region. Treating even low-salinity seawater is about ten times the cost of a typical freshwater source and nearly double the energy cost of treating wastewater reuse. Renewable-energy seawater desalination solutions are crucial to meet the region’s water supply needs.

Four winning teams from five countries, including Italy, Singapore, Saudi Arabia, the Netherlands, and the United States, were honored for their work. The competition, a first for Saudi Aramco and the fifth for GE, attracted 108 innovative solutions from 32 countries, reflecting the increasingly diverse and supportive environment for open innovation.

In Algeria, the I.D.E.A. initiative (Industrie et Développement de l’Entrepreneuriat en Algérie), launched by Sonelgaz and GE, completed Phase 1 to contribute local innovation in the energy-sector supply chain and foster talent for industrial jobs. Six winners from a range of backgrounds, including university students, engineers, SME owners, and company managers, were recognized as potential domestic supply chain leads. By focusing on Algerian talent, GE is nurturing and building local capabilities. I.D.E.A. uses an online open innovation call-to-action to suppliers, start-ups, and entrepreneurs to explore Advanced Manufacturing

¹We first highlighted this in Annunziata and Evans, “The Industrial Internet @ Work,” 2013.
techniques, such as 3D printing, injection molding, and laser cutting, and solve challenges with manufacturing processes, tools and equipment. On a larger scale, the initiative is building a robust supply chain for the country, leveraging the Global Brain to deliver significant improvements in the coming years.

In Turkey, the GE Turkey Innovation Challenge brought energy efficiency and healthcare services to the attention of entrepreneurs across the region. Held in collaboration with TÜBİTAK, the innovation challenge garnered nearly 1,000 ideas from almost 90 universities to answer GE’s call to collaborate and develop innovative solutions in support of Turkey’s Vision 2023.

Winners in the energy and healthcare categories produced solutions ranging from modular smart network systems to childcare products to prevent crucial health problems. These entrepreneurs were able to propel their ideas into the global market with their peers from around the country, representing a thriving culture of localized innovation made possible through business-community partnerships.

These partnerships reflect the power of the Global Brain, stretching across countries and the world, targeting critical issues to accelerate new discoveries. These discoveries are made possible by the sheer number of people able to participate in the innovation process and the increased scope for collaboration, which makes the Global Brain the human equivalent of High Performance Computing.

The GE Saudi Innovation Center is another example of collaboration in the region. At the Center, partners, customers, think tanks and academic institutions collaborate and co-create local manufacturing and entrepreneurship solutions. People contribute a thought: an idea, and take away a solution: an outcome. While the Center is one of many GE Innovation Centers in the world, the work it supports has implications across markets.

The MENAT region, perhaps more than any other, embodies and exemplifies both the enormous potential of Future of Work innovations and the hard work needed to turn this potential into reality. The wave of innovation brought forth by the Future of Work seems tailor-made to help MENAT achieve these objectives: The Global Brain can enhance industrial capacity by bringing technologies and workforces together across different countries to collaborate on ideas; Advanced Manufacturing techniques can increase access to production and development and make ideas a reality; and the Industrial Internet can boost productivity and efficiency to help achieve and deliver lower, affordable costs. All this can foster a stronger, more collaborative economy where factories and workers can build a sustainable, stable, and prosperous future for the region.
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Marco Annunziata is Chief Economist and Executive Director of Global Market Insight at General Electric Co. He is the author of “The Economics of the Financial Crisis,” published by Palgrave MacMillan, and two-time winner of the Rybczynski Prize for best paper in business economics, awarded by the Society of Business Economists in London.

Before joining GE in 2010, Dr. Annunziata was Chief Economist at Unicredit, Chief Economist for the Eastern Europe, Middle East and Africa region at Deutsche Bank, and spent six years at the International Monetary Fund, working on both emerging and advanced economies. Dr. Annunziata holds a BA degree in Economics from the University of Bologna and a PhD in Economics from Princeton University.

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Rania Rostom is Chief Innovation Officer for GE in the Middle East, North Africa and Turkey, and is responsible for leading innovation strategy for the region. Her work has positioned GE as a thought leader in the fields of advanced manufacturing, big data, and finding solutions for our customers’ biggest challenges through innovative and collaborative thinking and processes. She also leads GE’s Ecomagination and Healthymagination initiatives for MENAT.

Through a network of regional GE Innovation Centers in Saudi Arabia, Turkey, and the UAE; open innovation challenges with global impact held in Algeria, Saudi Arabia and Turkey; and other customer-focused initiatives, Rania has cemented GE as an essential part of the regional innovation ecosystem. She is also co-author of “Mapping the Future of Work in MENAT,” a groundbreaking white paper that looks at the evolving face of what jobs will look like, and how we will do them, moving forward into the future.

Rania has more than 23 years of industry experience. She attended the American University in Cairo and Penn State University in State College, Pennsylvania, graduating with a BA in Journalism and Mass Communications and a minor in English Literature.
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