AUTHOR: LEON VILJOEN

What you need to know about the Fourth Industrial Revolution

At its core, the Fourth Industrial Revolution is driven by the coming together of physical and digital technologies.

—
As the Fourth Industrial Revolution gathers momentum, ABB is applying the pragmatic to the promise. We're developing solutions that help our customers capitalize on the efficiency and performance improvements that digitalization delivers today.

By gathering and analysing data from robots and machines, we are able to obtain insights into the health and performance of industrial installations, allowing us to optimize their operation to increase uptime, speed and yield. A small number of innovative companies are taking these innovations a step further and using them to develop new higher-value business models.

With recent advances in artificial intelligence, we are now able to envisage autonomous operations, where machines and even entire facilities can run themselves. On top of that, breakthroughs in biotechnology, nanotechnology and quantum computing are allowing us to manipulate the world on ever smaller scales, even at subatomic levels, and to introduce technologies into our bodies, which may ultimately transform us.

The Fourth Industrial Revolution, or Industry 4.0, builds on previous revolutions, which began in the 18th century with the invention of the steam engine. The Second Industrial Revolution used electricity to create mass production, and the Third used electronics and information technology to automate production.

The main differences between previous revolutions and the Fourth is the pace of change- breakthroughs are happening at a rate unprecedented in history – and the scale of disruption; today, every industry is being transformed at an accelerating speed.

What it means for business

In a recent survey to measure business and government readiness for Industry 4.0, Deloitte* polled 1,600 C-level executives in 19 countries. On the whole, participants were positive about the likely effects of the Fourth Industrial Revolution – 87 percent of executives believe it will lead to greater equality and stability, and three quarters said business would have much more influence than governments and other entities in shaping this

About the author
Leon Viljoen is the Managing Director of ABB Southern Africa.

future. However, only 14 percent of respondents are confident that their organisations are ready to fully harness the changes associated with this technological revolution, and only a quarter say they have the right workforce composition and skill sets needed for the future.

The Deloitte study showed that organisations which are using Industry 4.0 technologies are mostly doing so to make their operations more efficient and cost-effective, rather than pursuing new business models that can potentially deliver much greater value and help to prepare for the future. In part, this approach reflects the difficulty of making a business case to invest in advanced digital technologies. However, in an environment where technology is having a transformative effect on industry after industry, companies that don't start preparing now for the Fourth Industrial Revolution not only risk falling behind, but also passing up the opportunity to influence the future.

Turning data into intelligence

As its most basic level, the Fourth Industrial Revolution rests on unstructured data – mountains of it. The proliferation of low-cost sensors and successive falls in the price of computer processing power mean that data can now be easily and cheaply gathered from virtually any device, from household appliances to the largest industrial machines. My company ABB has some 70 million connected devices along with 70,000 industrial control systems installed worldwide. In itself, the data we collect is of little value. The value lies in the intelligence we derive from it by applying our decades of industrial expertise obtained from our installed base.

In the Fourth Industrial Revolution, productivity and performance depend increasingly on intelligence. If you know in advance when a robot or a machine is going to break down, you can intervene pre-emptively to avert a disruption in your supply chain, saving huge amounts of money and keeping your customers happy. Increasingly, ABB's business is centred on providing this kind of actionable intelligence to its customers. More than 5,000 ABB industrial robots worldwide are cloud connected, permitting remote monitoring and preventive maintenance, based on operating models that have been honed over time.

Industrial companies that invest in digital technologies are not only achieving significantly higher uptime, speed and yield; they are laying the groundwork for the application of advanced technologies such as artificial intelligence. Being digitally enabled – which means having your machines, robots and systems feeding data to the cloud – is an entry ticket into the Fourth Industrial Revolution.

From automation to autonomous operations

In the years ahead, essential infrastructure, such as the power grid and the water supply, as well as industry and our transport networks, will increasingly be controlled and operated by autonomous systems. On the one hand, this will bring tremendous benefits in terms of avoiding outages and shortages, and freeing up humans from dull, dangerous and degrading work. On the other, the workforce and society as a whole will have to adapt to a new industrial landscape, where people work alongside robots and machines. Education and training will have to change fundamentally.

For businesses in South Africa, the Fourth Industrial Revolution is a tremendous opportunity to raise their competitiveness globally and to play a more important, decisive role in shaping the future of this country. For government, it offers innovative solutions to pressing infrastructure challenges and new possibilities for tackling societal issues related to education and employment.

In closing, let me briefly address the fear that technology and automation in particular is going to take away jobs and deprive people of employment. All previous industrial revolutions created many more jobs than were ever lost – chiefly through the creation of new industries and business models. There is no reason to think the Fourth will be different, especially when one considers that the countries which have most readily adopted automation and robotics – notably China, Germany, Japan and South Korea – stand out for the competitiveness of their industries and their low levels of unemployment.

References

* https://www2.deloitte.com/insights/us/en/deloitte-review/issue-22/industry-4-0-technology-manufacturing-revolution.html