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UK must invest in smart factories

Where does the birthplace of the first industrial revolution stand in the race to be at the forefront of the fourth iteration?

James Harvey

Industry 4.0, the fourth industrial revolution, describes a new age of digitally enabled manufacturing, industry, consumerism and commerce. Legislation: the vision of the potential for digital transformation is compelling. Artificial intelligence will monitor, maintain and improve the physical processes of the factory, even anticipating problems before they occur. New processes and products will be tested virtually so real-world production can begin seamlessly. A network of hubs across the world will be controlled and operated remotely with little need for physical plant travel. In short, nations and companies that forged ahead in Industry 4.0 during the last decade will remain at the forefront.

While the UK – currently the world’s sixth largest industrial nation, has world-class manufacturers in the likes of Airbus, GlaxoSmithKline and Rolls-Royce, there are concerns that reluctance among many companies to invest means the nation risks falling behind. The UK’s share of global investment in manufacturing grew to 10.5 per cent of total investment in 2017 from 7.3 per cent in 2015, according to data from the International Trade Centre. Despite a slight improvement in recent years, the UK is also still lagging behind Germany and France when it comes to manufacturing investment as a proportion of gross domestic product, for example.

According to the Institute for Human Resources, the latest annual manufacturing report presented a positive and optimistic picture of readiness for the smart factory. While 30 per cent of manufacturers are actively moving to deployment Industry 4.0 in their facilities, 60 per cent are planning to do so. They should start making investments in automation in the coming years, the survey said.

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This publication is an advertisement for the Department for Business, Energy & Industrial Strategy 2017. The unusual, specialist structure is designed to finance the modernisation of production equipment for small and medium-sized manufacturers. The £450 million fund was launched in March. Interest rates for manufacturers that could benefit from improved machinery and processes often struggle to find funding. Instead of funding machinery in the traditional way, the fund offers a blend of debt and equity. Industrial Assets (ISIA) fund.

The government’s Industrial Strategy Note highlighted the UK’s ambition to be a world leader in artificial intelligence and related data science, with particular focus on ensuring the country is well-placed to attract the capital and talent required to propel the UK to the forefront of innovation in the coming years. However, the government has also recognised the need to meet the challenges that come with this transition, both in terms of public policy and in the private sector.

The industrial sector is crucial to the UK’s economy, employing over 10 million people and contributing more than £200 billion to gross domestic product. As a result, it is important that the government continues to invest in its development, ensuring that the country is well-placed to compete globally.

The government has made a number of commitments to support the industrial sector, including the industrial strategy, which aims to ensure that the country is well-placed to meet the challenges of the future. The strategy includes a range of initiatives, such as funding for research and development, support for small and medium-sized enterprises, and investment in skills and apprenticeships.

In addition, the government has also committed to devoting £20 billion to infrastructure spending over the next ten years. This investment will support the development of new technologies, such as artificial intelligence and robotics, which are expected to play a key role in shaping the future of the industrial sector.

The government has also recognised the importance of investment in education and training, with plans to increase spending on skills and apprenticeships by £500 million per year. This investment will help to ensure that the country has the skilled workforce it needs to compete globally.

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JAMES HURLEY

The UK’s industrial history was long and varied, and many of the world’s industrial leaders, including those in the UK, have been inspired by the country’s industrial heritage. However, the inherent complexity of manufacturing in the UK means that it is often difficult to understand the potential of industrial 4.0, or the fourth industrial revolution. In this article, I will discuss the potential of this technology and highlight the challenges that need to be overcome for the UK to be at the forefront of the fourth iteration of the industrial revolution.

The UK has a long history of manufacturing, and it has a strong tradition of innovation. In recent years, the UK has been at the forefront of the fourth industrial revolution, which is the latest phase of the industrial revolution. This phase is characterized by the use of advanced technology, such as artificial intelligence, robotics, and automation, to improve the efficiency and productivity of manufacturing processes.

However, the UK has also faced some challenges in its efforts to embrace the fourth industrial revolution. One of the main challenges is the lack of investment in research and development. The UK has a strong tradition of innovation, but it has also been slow to invest in research and development. This has led to a lag in the development of new technologies, which has made it difficult for UK manufacturers to compete with companies from other countries.

Another challenge is the lack of a skilled workforce. The UK has a strong tradition of manufacturing, but it has also been slow to invest in education and training. This has led to a shortage of skilled workers, which has made it difficult for UK manufacturers to compete with companies from other countries.

The UK must invest in smart factories

The UK must invest in smart factories to maintain its position as a leader in the fourth industrial revolution. The UK has a strong tradition of manufacturing, and it has a strong tradition of innovation. However, the UK must also invest in research and development and education and training to ensure that it can compete with companies from other countries.

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Q&A

Automated manufacturing predicts the role humans will play in the fifth industrial revolution and Simulation, looks forward to chairman of the Centre for Modelling and not best done by humans. To tasks that are best done by robots automatically to make the factory more productive and to execute the routine tasks within a factory environment, basically to make the factory more productive and to execute the routine tasks that are best done by robots and not best done by humans. To me, however, it’s not just about generating increased productivity, but long-term, high-value careers because the jobs change as you’re introducing Industry 4.0 technologies into a factory. As soon as you enter an Industry 4.0 factory, you also get a massive increase in safety, quality and reduced waste. Industry 4.0 starts to move towards Industry 5.0 when you begin to allow customers to customise what they want. Within Industry 4.0, you can already design your own trainers online and the manufacturer, wherever in the world, probably has the best technology with the best price point to deliver those trainers to your door. You can also go on the Mini website and select the kind of car you want with thousands of different variables, not just colours, headlights and interiors, but lots of other apps as well. Industry 5.0 takes that concept of personalisation to the next level.

Can you provide an example of what personalisation will look like in Industry 5.0?

The medical profession is working towards an artificial pancreas and it’s not quite there yet. Type-1 diabetes sufferers are issued with a device that draws blood and measures the glucose for sugar levels in your blood. That device talks to another device which then delivers insulin into your blood. It kind of works, but it’s a one size fits all and the medical professional does its very best to try and tweak the control system for the individual. Type-1 diabetes is very hard to control because we all have different metabolic rates and we’re all different sizes with different skin thicknesses, behaviours, lifestyles and so on. If you move to Industry 5.0, it enables you to give individuals an app that follows their lifestyle and routine, and produces a manufacturing process for diabetes control and ultimately a smaller, more discrete and robust device that’s tailor-made for the individual. So for diabetes sufferers, the ability to manufacture an Industry 5.0 process would be completely life-changing for them. The technologies deployed in Industry 5.0 are the artificial intelligence (AI) techniques that basically understand and work out how your body is going to react to the device itself, and then take measurements from the field and learn how the body has reacted. They feed that into the manufacturing process to make the best artificial pancreas there is for that particular individual.

In Industry 5.0, what will be the new relationship between humans and machines?

As you go from Industry 4.0 to Industry 5.0, you create even higher-value jobs than you did before because you’re giving the freedom of design responsibility back to the human. A recent study from Meggitt shows the workspace doesn’t become smaller in terms of a manufacturing cell around the human being: it actually becomes bigger. The human being has more responsibility and you end up with a bigger, lighter environment that’s safer than the previous environment. The manufacturing operational within the manufacturing cell starts to become more involved in the design process rather than the manufacturing process, which is more or less automated. It allows freedom of design to work with you and enables products that are more bespoke and personal.

As factories become more and more automated, how will humans add value?

Industry 5.0 will give us the ability to close the loop on design so we can push boundaries of physics on design. If you’re trying to make the next-generation aircraft, for example, you’re constrained by today’s manufacturing capabilities. You’re also constrained by the amount of data that you have coming back from the in-field service of an aero engine or aircraft and your ability to feed that in-service data back into the design process. With Industry 5.0, you’ll be able to automate the manufacturing process better, which means you’ll have real-time data coming in from the field. Rolls-Royce’s business model in the last ten years has flipped from selling engines to now having 50 per cent of its revenue from providing services to the engine. They can do that because they understand the design of failure of that engine. They know what the quality process is of that engine and they know how they want that engine...
Manufacturing gets personal in Industry 5.0

Industry 4.0 starts to move towards Industry 5.0 when you begin to allow customers to customise what they want to purchase. As different towns have thousands of different variations, just like clothes, products are customised to suit the individual customer who needs that freedom and not just be done by humans. To make this work, you need to use software to create the product as you order it, and then create the design that is customised to the individual and you can then take the customer's choice of materials and make the product there and then. It's a very useful tool to help you to make the product that they want.

Industry 4.0 has already begun to move towards Industry 5.0. It's just got to move a little further, and then it will be even more advanced. Industry 4.0 is about embracing Industry 5.0 and understanding the design process. Industry 5.0 is about taking the data that's been collected and using it to make the product that you want. Industry 4.0 is about understanding the design process, and Industry 5.0 is about taking the data that's been collected and using it to make the product that you want.
Five worrying cyberthreats to connected tech

As connected technology develops, potential threats to cybersecurity multiply. Here are five major areas of concern.

**Smart supply chains**

Innovations in lean manufacturing and connectedOT systems are leading to industry 4.0, with connected supply chains leading to new vulnerabilities. As Tom Holloway, printer to the data protection at Gemalto, explains, the supply chain is one of the most vulnerable points of an enterprise, as it is hard to control and monitor.

**IP-enabled operational technology systems**

The increased use of IP-enabled operational technology (OT) systems is becoming one of the biggest challenges for organizations. According to the International Organization for Standardization (ISO), the increase in connected devices is one of the biggest threats to cybersecurity. The ISO has outlined five major areas of concern for OT systems.

**Data manipulation**

Manufacturers must understand that they are not immune to this type of threat. The increased reliance on digital technologies has made manufacturers vulnerable to data manipulation attacks. These attacks can range from simple data theft to more complex cyberattacks that can lead to the compromise of an entire supply chain.

**Social engineering**

The manufacturing industry is a highly lucrative target for hackers, with nearly one in ten attacks hitting the sector, according to the FBI. Social engineering attacks are a growing threat, as they can exploit human weaknesses to gain access to sensitive information.

**Not so much revolution as industrial evolution**

The next big thing in manufacturing starts not with a bang, but a whir...
Five worrying cyberthreats to connected tech

As connected technology develops, potential threats to cybersecurity multiply. Here are five major areas of concern:

1. Smart supply chains

Inevitably, as the Internet of Things becomes more pervasive, so too will the attack surface. With every part of the supply chain connected, the potential for an attacker to insert malware, stealing intellectual property or other trade secrets, becomes more likely. Similarly, securing the supply chain itself becomes an important issue.

2. Social engineering

The manufacturing industry is a highly lucrative target for hackers, with high-value targets such as pharmaceutical labs and utility companies (APLs). But smart supply chains such as these are vulnerable to social engineering attacks, with attackers targeting not just the supply chain itself, but also the people who work within it.

3. Industrial control systems

Industrial control systems (ICS) are often the most vulnerable parts of the supply chain, particularly if they are connected to the internet. This is because they tend to be weakly secured, with many parts of the system being left open to the internet.

4. IP-enabled operational technology systems

The increased use of IP-enabled operational technology (OT) systems is creating new opportunities for attackers to exploit the systems. These systems are often connected to the internet, which makes them vulnerable to attack.

5. Data manipulation

Manufacturers must understand that they are not justнтер a target from outside, but also from within. Employees can be corrupted, either through social engineering attacks or through the manipulation of data.

Commercial feature

Not so much revolution as industrial evolution

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Air gap suffocation

Traditionally, control systems used in the industrial sector have relied on mechanical safety controls and fail-over switches, including physical keys and keys. However, with the evolution of the industrial Internet of Things (IIoT), the boundaries are blurring between the physical and the digital.

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Industry 4.0

Connected devices are set to not only transform the factory as we know it, but revolutionise everything from demand forecasting to inventory management, as companies wake up to the possibilities that the fourth industrial revolution presents. However, while the vast majority of firms recognise the opportunity, many remain behind the curve in terms of adoption.

- **88%** of global industrial companies agreed that the industrial internet of things (IIoT) is critical to their future success.

- **66%** said it will result in new revenue streams and business models for their company.

- **49%** believe it will enhance the customer experience.

- **28%** of companies had discussions.

- **22%** started implementation.

- **3%** have a business case.

- **8%** have made plans.

- **16%** fully implemented and running.

- **3%** already had discussions.

- **22%** started implementation.

- **8%** not thought about it yet.

- **16%** already made plans.

**Knowledge gap holding back implementation**

- **Lack of understanding of complexity**
- **Lack of knowledge about Industry 4.0**
- **Lack of technical skills in organisation**
- **Lack of necessary leadership skills**
- **Concerns on risk and security**
- **Decisive making by leadership team**
- **Lack of financial resources**

**Maintenance and output expected to improve**

Percentage of industrial firms that selected the following areas expected to improve through IIoT...

- Plant maintenance and asset uptime
- Plant operational execution
- Demand forecasting
- Inventory optimisation
- Warehouse operational execution
- Sustainability and compliance
- Plant environment, health/safety
- Transport operational execution
- Transport maintenance
- Maintenance and asset uptime

**Machine tools and product development take the lion’s share of budget**

Where manufacturers are allocating capital investment in technology...

- **32%** Machine tools
- **26%** New product development
- **15%** IT/computer hardware
- **11%** Operations technology, software and systems
- **6%** Property, land, buildings
- **5%** Other capital investment
- **0%** Transport equipment
- **0%** Facilities upgrades, regulatory compliance
- **32%** IT/computer software and systems
- **47%** Operations technology, software and systems
- **11%** Property, land, buildings
- **11%** Other capital investment
- **5%** Transport equipment
- **5%** Facilities upgrades, regulatory compliance
- **5%** New product development
- **0%** Machine tools
- **0%** Transport equipment
- **0%** Facilities upgrades, regulatory compliance
- **0%** Other capital investment
- **0%** Operations technology, software and systems
- **0%** IT/computer software and systems
- **0%** Property, land, buildings

**Big data analytics and advanced algorithms**

- **33%** said IIoT will result in new revenue streams and business models for their company.

- **47%** said it will enhance the customer experience.

- **5%** said IIoT will result in new revenue streams and business models for their company.

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Companies making a slow start

- 3% fully implemented and passing
- 8% as a business case
- 16% early-stage plans

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- Demand forecasting
- Inventory optimisation
- Warehouse operational execution
- Sustainability and compliance
- Plant environment, health/safety
- Transport operational execution
- Transport maintenance and asset uptime
- Warehouse maintenance and asset uptime

Knowledge gap holding back implementation

- Lack of understanding of complexity
- Lack of knowledge about Industry 4.0
- Lack of technical skills in organisation
- Lack of necessary leadership skills
- Concerns on risk and security
- Decision making by leadership team
- Lack of financial resources

% of global industrial executives who selected the following challenges to implementation of Industry 4.0...

- Lack of understanding of complexity
- Lack of knowledge about Industry 4.0
- Lack of technical skills in organisation
- Lack of necessary leadership skills
- Concerns on risk and security
- Decision making by leadership team
- Lack of financial resources

Maintenance and output expected to improve

Percentage of industrial firms that selected the following areas expected to improve through IIoT...

- Machine tools and product development
- IT/computer hardware
- IT/computer software and systems
- Operations technology, software and systems
- Property, buildings and facility upgrades
- Regulatory compliance
- Other capital investment

32%
24%
18%
15%
11%
11%
6%
0%
0%
0%
0%
Waiting for pay day from servitisation

With a significant chunk of manufacturers yet to derive any value from servitisation, what is holding them back from realising its potential?

The internet of things and artificial intelligence are enabling servitisation to progress faster

If we get this right, there is a massive prize in creating a key lever and cure for the UK economy

Avoiding costly machine failure

Prognostics powered by machine-learning cuts factory downtime in half without the need for data scientists

Sensyne helps manufacturers avoid downtime and save money by automatically forecasting machine failure

Commercial feature

A manufacturer continues to automate its factories and connect them with intelligent ‘smart sensors’, the data collected unlocking critical information that helps in improving the efficiency of its machines, saving valuable production time.

The idea is understanding the health of machines, otherwise known as predictive machine monitoring, nothing new. As a principle, it’s familiar to many engineers, but online technology has seen widespread adoption in the 1990s, in the aerospace industry.

Unfortunately, performing it at an industrial scale has remained a pipe dream for everyone other than the privileged few who have been able to afford the high cost of using it in the past due to the need for monitoring and data experts, to reduce machine downtime.

Prognostics goes beyond condition monitoring (the regular monitoring of equipment faults and the logging of events affecting the condition of the assets) and typically involves the use of complex algorithms that have the ability to predict a potential issue and do something about it.

Sensyne Health, is a technology company based in the UK which is working with some of the world’s largest manufacturers to predict and prevent machine failures, saving them millions of pounds in lost production every year.

The data scientists at Sensyne use machine learning algorithms to continuously monitor the data being collected from sensors on machines to identify patterns and anomalies that indicate a potential issue before it becomes a real problem.

By using this data, they can predict when a machine is likely to fail and notify the manufacturer in advance, allowing them to take action to prevent it. This not only saves money by avoiding costly downtime but also improves safety by preventing accidents.

Sensyne’s approach is different from other machine monitoring systems in that it uses artificial intelligence to make predictions based on patterns in the data, rather than relying on human analysts to spot trends.

The company has worked with a range of manufacturers, from automotive to aerospace, to implement its technology and has seen promising results.

Sensyne Health’s technology is not just about saving money and reducing downtime. It also has the potential to improve safety by preventing accidents that can be catastrophic in industries such as manufacturing and construction.

The company is now working with manufacturers to further refine its technology and expand its use in different industries. With the growth of Industry 4.0 and the internet of things, the potential for machine monitoring is only going to increase in the coming years.

For more information please visit sensynehealth.com
Industry 4.0 has become a buzzword in recent years as companies seek new revenue streams closer to the success and failure of a company’s business model, but this has slowed. An IFS study that servitisation is well understood, a core component of servitisation, but this has slowed. Professor Tim Baines, executive director of the Advanced Manufacturing Research Centre with TWI, said: “Developing this portfolio of services is challenging and takes time. There has been a marked effect on profitability as servitisation caused by around 50% of manufacturers, such as Xerox and HP, but servitisation is here, it is embedded and growing. Manufacturers that don’t want to be left behind are today looking for ways to understand and predict failures, both to reduce costs and to improve the customer service offered. With more advanced and automated insights into their productivity, they can optimize performance and save money by automating key processes, and building a range of services that utilize the data as well as create jobs. As servitisation accelerates into the mainstream, it presents us with a unique opportunity to unlock the value hidden in Industry 4.0 technologies and manufacturing data.”

The idea of understanding the health and remaining life of machinery, otherwise known as condition monitoring, is a dream for everyone other than the few. The technology and expertise required to do this at scale, going from a few machines to millions, is hard to come by. If we get this right, there is a massive prize in creating a key lever and cure for the UK economy.

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Sensible help manufacturers avoid downtime and save money by automatically forecasting machine failure

Prognostics powered by machine-learning cuts factory downtime in half without the need for data scientists

Commercial Feature

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Previous predictive maintenance tools were expensive and required expert operators to do fault detection at scale because of the need for these tools. By not relying on human expertise to diagnose and predict failures, Sensible can provide the near real-time monitoring of machines, enabling manufacturers to avoid a myriad of costs. For example, the automotive industry loses $12 billion per year due to downtime, and Sensible’s technology could save this money. Sensible’s technology helps manufacturers avoid the high costs of machine failure, which include lost productivity, lost revenue, and potential equipment damage.

For manufacturers looking to automate condition monitoring, Sensible’s technology is easy to implement. Cost-effective and easy to deploy, Sensible’s technology is a game-changer.

Sensible’s technology is designed to be used by the manufacturer, not IT.

Avoiding costly machine failure

We are only beginning to use data-driven insight.

The internet of things and artificial intelligence are enabling servitisation to progress faster.

Waiting for pay day from servitisation

With a significant chunk of manufacturers yet to derive any value from servitisation, is what holding them back from realising its potential?

The evolution of servitisation will lead to massively valuable industries and begin to scale up its capacity. Manufacturers have a huge opportunity to change the way they do business.

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For more information please visit senseye.io
Breaking barriers in additive manufacturing

Collaboration with an additive manufacturing specialist in a long-term business relationship can overcome potential pitfalls and ensure success.

If sustainability now demands radical solutions, we must fully embrace technology and use it to sustain the planet.

It’s time for sustainability to get radical

The transformative impact of additive manufacturing is well known by global manufacturing mega-corporations, traditional manufacturers, and the medical device industry. One can consider the massive change when moving from the traditional manufacturing approach to the additive manufacturing one.

Potential additive manufacturing companies usually want to meet the requirements of their customers, bring value to the end users, and be able to engage with the end-users, and thus be able to design a customized product. This can be done through additive manufacturing, which makes it easy to create complex parts out of expensive materials, like aerospace manufacturers and the medical device industry, can use additive manufacturing when designing new products.

The use of additive manufacturing allows companies to scale up production more efficiently as well as to reduce materials and energy consumption. This allows companies to reduce costs, and also improve their sustainability goals. In addition, companies can use additive manufacturing to create complex parts that are difficult or impossible to create using traditional manufacturing methods.

However, there are still some challenges to overcome. For example, the use of additive manufacturing requires a significant amount of investment and training for employees. Additionally, the use of additive manufacturing requires a significant amount of energy and material, which can be a concern for environmentally conscious companies.

In conclusion, additive manufacturing has the potential to revolutionize the manufacturing industry. The use of additive manufacturing can help companies to reduce costs, improve sustainability goals, and create complex parts that are difficult or impossible to create using traditional manufacturing methods.

“Sustainability goals, as we all know, need to be met now and every day. Consumers are becoming more aware of the environmental impact of the products they are using and want to make sustainable choices. The manufacturing industry is no exception. As more companies turn to additive manufacturing as a sustainable option, it is crucial for them to understand the benefits and challenges of this technology,” says Professor Peter Perreault.

“By using additive manufacturing, companies can reduce their environmental impact and improve their sustainability goals. The industry is rapidly evolving, and companies must stay ahead of the curve to stay competitive in the global marketplace,” he adds.

The use of additive manufacturing has the potential to revolutionize the manufacturing industry. The use of additive manufacturing can help companies to reduce costs, improve sustainability goals, and create complex parts that are difficult or impossible to create using traditional manufacturing methods. However, there are still some challenges to overcome. For example, the use of additive manufacturing requires a significant amount of investment and training for employees. Additionally, the use of additive manufacturing requires a significant amount of energy and material, which can be a concern for environmentally conscious companies.

In conclusion, additive manufacturing has the potential to revolutionize the manufacturing industry. The use of additive manufacturing can help companies to reduce costs, improve sustainability goals, and create complex parts that are difficult or impossible to create using traditional manufacturing methods.
The technology’s transformational impact on additive manufacturing has been profound. Known by many as additive manufacturing, the term has no industry-wide definition. In many sectors, including aerospace, the term is applied to a wide range of processes, from rapid prototyping to mass customization. In the aerospace industry, additive manufacturing has been particularly transformative, allowing for the creation of complex geometries and the ability to produce parts that are impossible to manufacture using traditional methods. This has led to a revolution in design and manufacturing, allowing for greater efficiency, reduced waste, and improved performance.

Collaborating with an additive manufacturing specialist can help you overcome potential pitfalls and ensure success. Additive manufacturing offers a wide range of benefits that are hard to resist for any business, including faster time to market, increased efficiency, and the ability to create custom-made parts. However, there are also some risks to consider, such as the need for specialized equipment and the potential for higher costs. To ensure a successful additive manufacturing project, it is important to work with an experienced specialist who can guide you through the process and help you avoid common pitfalls.

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Collaboration with an additive manufacturing specialist in a long-term business relationship can overcome potential pitfalls and ensure success.
Workers must be trained for a new future

A fourth industrial revolution, featuring automation and data exchange, is set to transform industry, but what skills and training for the UK workforce have to be developed to meet the challenge?

OPINION COLUMN

VIRGINIA MATTHEWS

I n the next few decades we’re going to see the impact of the Fourth Industrial Revolution, with advances in artificial intelligence, digital technologies, and robotics. This will change the way we work, the way we live, and the way we think. It’s a time of great opportunity, but also great risk. We need to be prepared.

The key to achieving the ambitions of the Fourth Industrial Revolution is to ensure that people can keep up with the pace of change. This means investing in education and skills, and ensuring that everyone has the opportunity to learn and grow. But we need to do more than that.

It’s not enough to just focus on technical skills. We also need to develop the soft skills that are essential in today’s workforce. These include things like critical thinking, problem-solving, and collaboration. And we need to ensure that everyone has access to these skills, not just those who can afford to pay for them.

We need a system of lifelong learning that helps people to keep up with the pace of change, and that helps them to develop the skills they need for the future. This means investing in education and skills, but also in training and development. It means ensuring that people have access to the tools they need to learn and grow, and that they have the support they need to make the most of their skills.

We need to be proactive in our approach to education and skills, rather than reactive. We need to look to the future, not just the past, and to ensure that our systems and processes are designed to meet the needs of the future, not just the present.

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**Workers must be trained for a new future**

A fourth industrial revolution, featuring automation and data exchange, is set to transform industry, but requires new skills and training for the UK workforce.

**VIRGINIA MATTHEWS**

A look into some of the skills that are needed for Industry 4.0 project leaders.

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Digital technology has made it possible for firms to develop innovative business models that benefit from data, thus becoming more efficient, competitive and growing. This means encouraging businesses to unlock the potential of their data and become early adopters of transformative digital technologies. To do that, Britain needs to focus on skills.

A fourth industrial revolution, featuring automation and data exchange, is set to transform industry, but it is not an easy model to follow. For business leaders without technical background, the problem is compounded, says the British Automation and Robotics Association, whose president in the UK is John Matthews, who says that nearly half of all businesses report a shortage of workers educated in science and technology. This needs to change, he says. Overall, 30 per cent of respondents said that they were working with unskilled or semi-skilled staff, while 48 per cent said that they were working with skilled staff. The remaining 22 per cent said that they were working with highly skilled staff.

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The Knowledge Platform for Accelerating Digitalisation

- Human Expertise
- Data From Silos
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- Better & Faster Decisions

AIRBUS, Chevron, GE, MAERSK, Shell

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