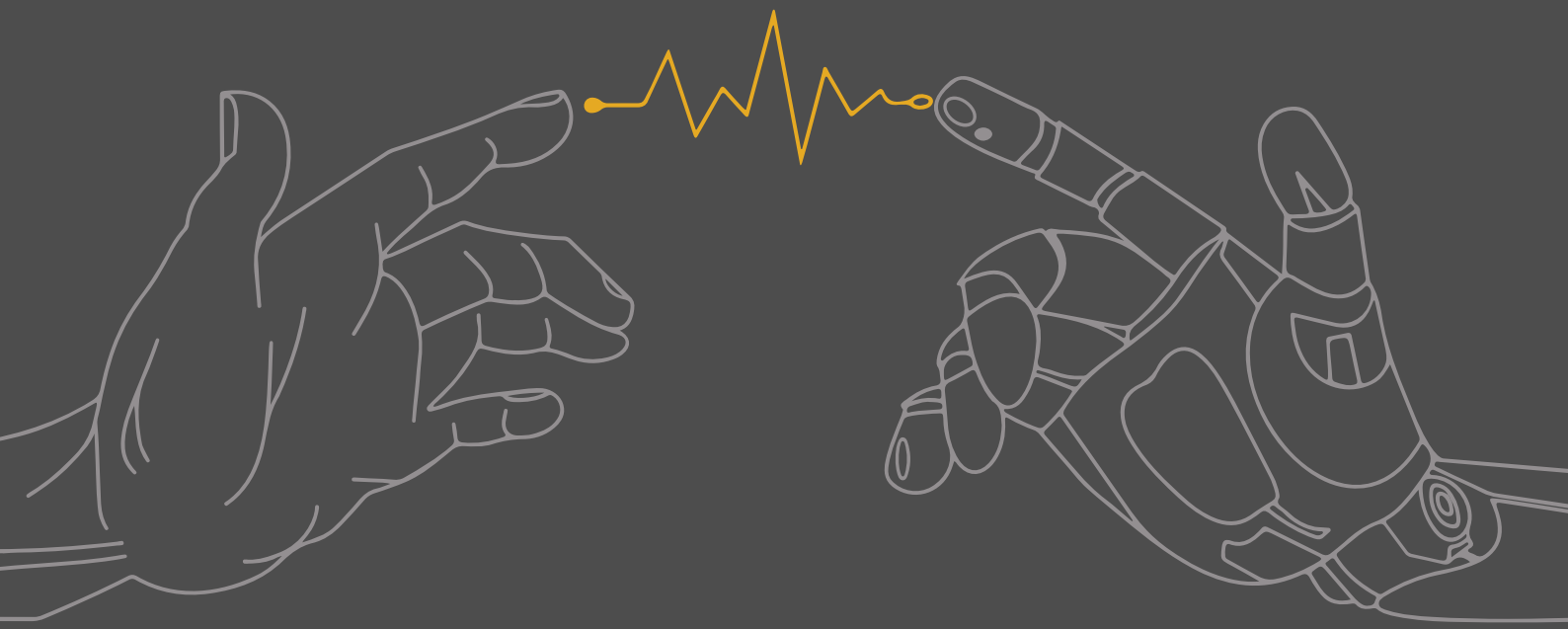
Automation - the collaboration between human and machine



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a smarter approach to executive search & interim

Automation

– the collaboration between human and machine

What is human and machine collaboration? How is it being used today?

UK manufacturing, supply chain and logistics have invested heavily over the years in working alongside intelligent robotics, with a hope to improve business efficiency, cut production cycle times and boost quality.

However, the industries are still behind the curve and there is scope for improvement.

What will human and machine collaboration look like in the future?

It's unsurprising that roles in the industry are changing. The manufacturing, supply chain and logistics industries are already committed to working in collaboration with automation but they need the right people with the right skill set and knowledge to support this new and developing technology.

The leaders of today need to understand what automation means for their business.

In this discussion paper, we hope to stimulate your thinking and share insights from an exclusive roundtable event we held with leaders in manufacturing, supply chain and logistics from top UK companies at The Manufacturing Technology Centre, Coventry in July 2017.

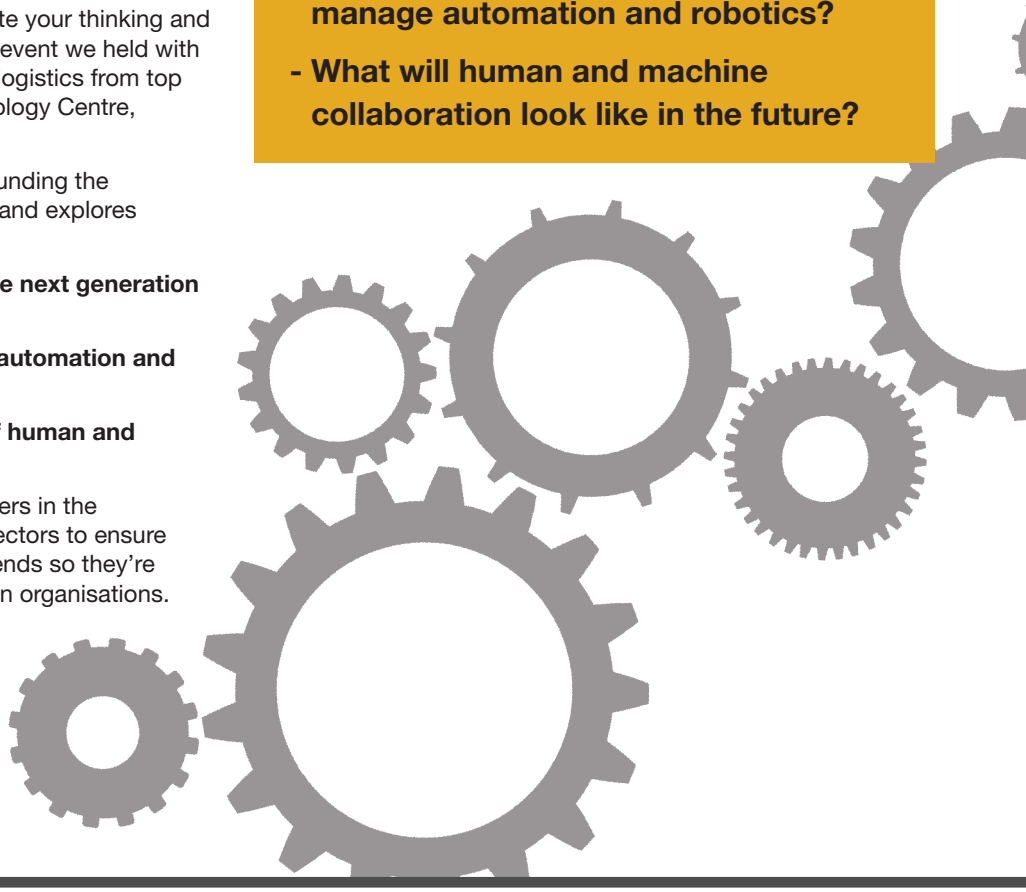
This paper sets out a variety of issues surrounding the collaboration between human and machine and explores questions such as:

- **What impact will automation have on the next generation of humans?**
- **How are we training people to manage automation and robotics?**
- **What are the benefits and challenges of human and machine collaboration?**

At Holmes Noble, we work closely with leaders in the manufacturing, supply chain and logistics sectors to ensure they are fully aware of developments and trends so they're equipped to actively make a difference within organisations.

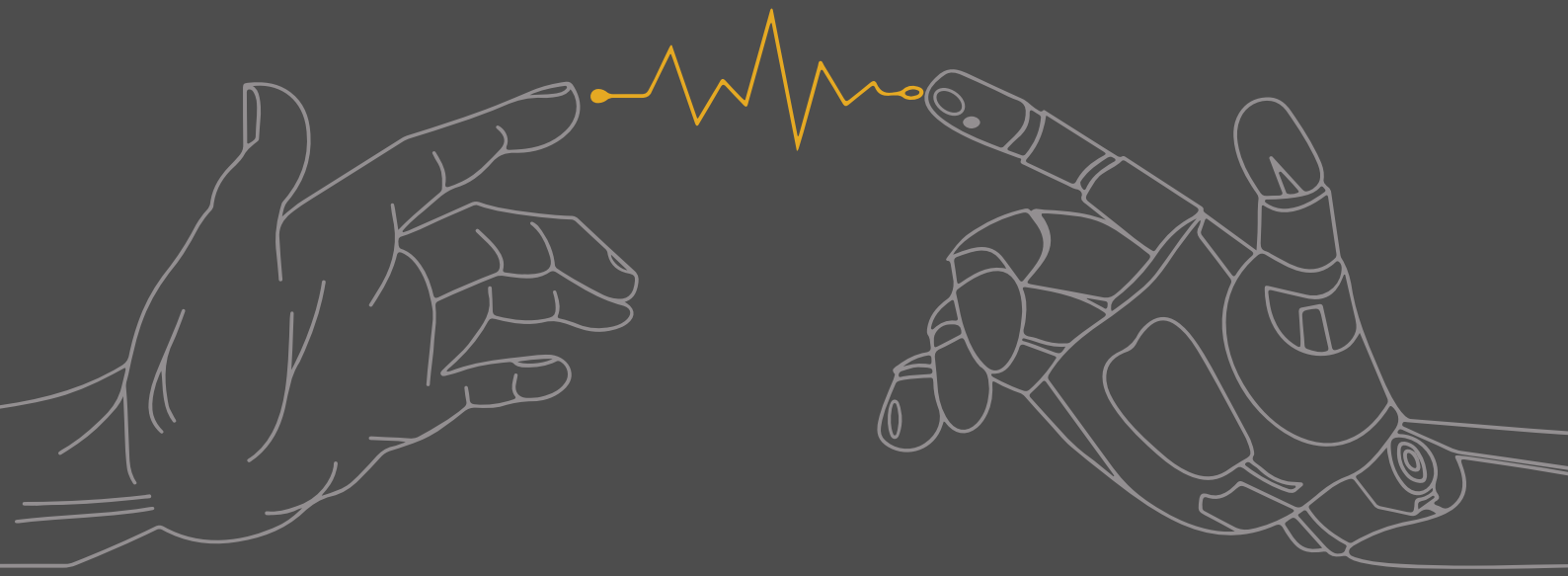
Executive Summary

- **What is human and machine collaboration and how is it being used today?**
- **What are the biggest automation challenges facing the industry?**
- **What are the benefits of human and machine collaboration?**
- **What impact will automation have on the next generation of humans?**
- **How are we training people to manage automation and robotics?**
- **What will human and machine collaboration look like in the future?**



New technology trends – what is happening?

At a roundtable event held at The Manufacturing Technology Centre in Coventry, in July 2017, we invited leaders in the manufacturing, supply chain and logistics sectors to discuss the salient issues around human and machine collaboration today.



The way we work has changed and we're on the brink of another technological revolution – the Fourth Industrial Revolution. The original Industrial Revolution was driven by the discovery that we could use steam engines to automate production and that was followed by additional revolutions in electricity, computers and communications technology.

Bringing together digital, physical and biological systems, we're currently in the early stages of the Fourth Industrial Revolution. The speed of current breakthroughs has no historical precedent. If we compare this with previous industrial revolutions, the Fourth is evolving at an exponential pace.

What is human and machine collaboration?

Human and machine collaboration is changing the manufacturing, logistics and supply chain's business operations. People are learning to co-work alongside intelligent robotics with each party bringing to the production line abilities the other lacks. Whilst some are beginning to consider artificial intelligence (AI) systems as partners with special skill sets, others fear automation will cause a shortage of work for human workers.

Rather, we should think of human and machines collaborating. In the future, humans and machines will not just work side-by-side, they will interact and collaborate with such a degree of intimacy that the distinction between us and them will become almost imperceptible.

Rachel McGowan-Kemp, head of supply chain, logistics and procurement practice at Holmes Noble, comments:

"By 2030, up to 30% of existing UK jobs could be impacted by automation. But we must remember that over the next 15 years, in many cases, the nature of these jobs will change rather than disappear altogether."

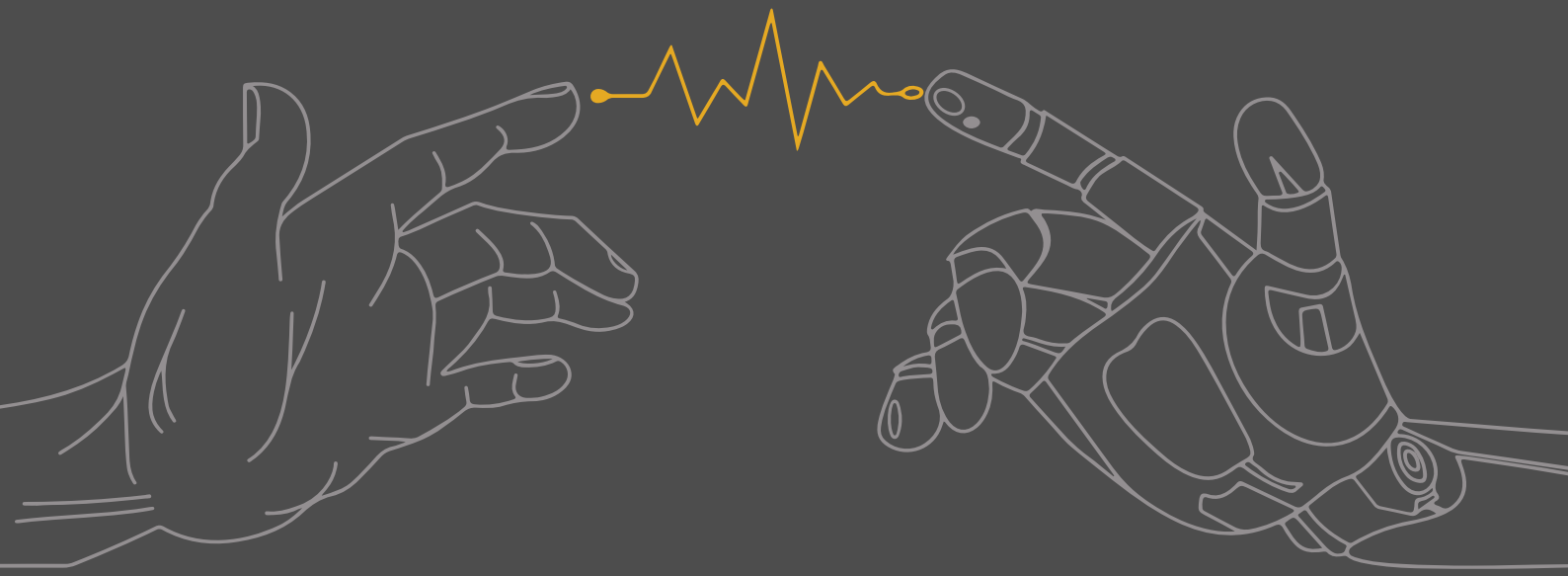
How is human and machine collaboration being used today?

Now, more than half a century after the first robotics worked on production lines, AI and machine learning are allowing companies to revolutionise the way they make and ship goods. Automation is already making the manufacturing, supply chain and logistics industries faster, smarter and is reducing the risk of error.

Today, there are 130,000 manufacturing companies in the UK. But around 5,000 of them only have one robot in operation.

One person around the table suggested:

"There are a number of issues behind UK businesses looking to implement automation. They may be interested in automation and robotics but they don't have the people with the right skills to manage the technology."



Productivity is one of the biggest challenges the UK faces today, but the government has started to recognise this with the development of the Industrial Strategy paper.

If we assume it takes Britain five days to complete the manufacturing process, it is not uncommon to see the same process completed within four days across Europe, particularly in Germany.

Current statistics from The Guardian put Britain's productivity output per hour worked 22.2% lower than that of the US, 22.7% lower than in France and 26.7% lower than in Germany.

The UK has made no intrinsic improvements over the last 20 years and this needs to change. Automation could be the answer to increasing UK productivity.

By using robotics and AI, Britain can address this issue as one person at the event commented:

"We need to encourage everyone in the industry to really see that automation, no matter how big or small, is paramount to our future."

The impact of the next generation of automation

According to Business Insider, more than half (51%) of professionals in the supply chain and logistics sectors believe robotics and automation will provide a competitive advantage in their industry.

AI is already playing a huge part in manufacturing, supply chain and logistics and is being championed by the biggest players in the industry. For example, Amazon has more than 45,000 of its Kiva robots moving goods around 20 of its UK warehouses, cutting warehouse operating costs by 20%.

Over the past 20 years, technology has changed the nature of industry. Previously, manufacturing and fabrication were done by hand but now technology has infiltrated the industry, automation has become the competitive advantage.

Allowing companies to work at great speed with reliability and quality, automotive is setting the standards for the industry. As with any change, automation presents many advantages and challenges.

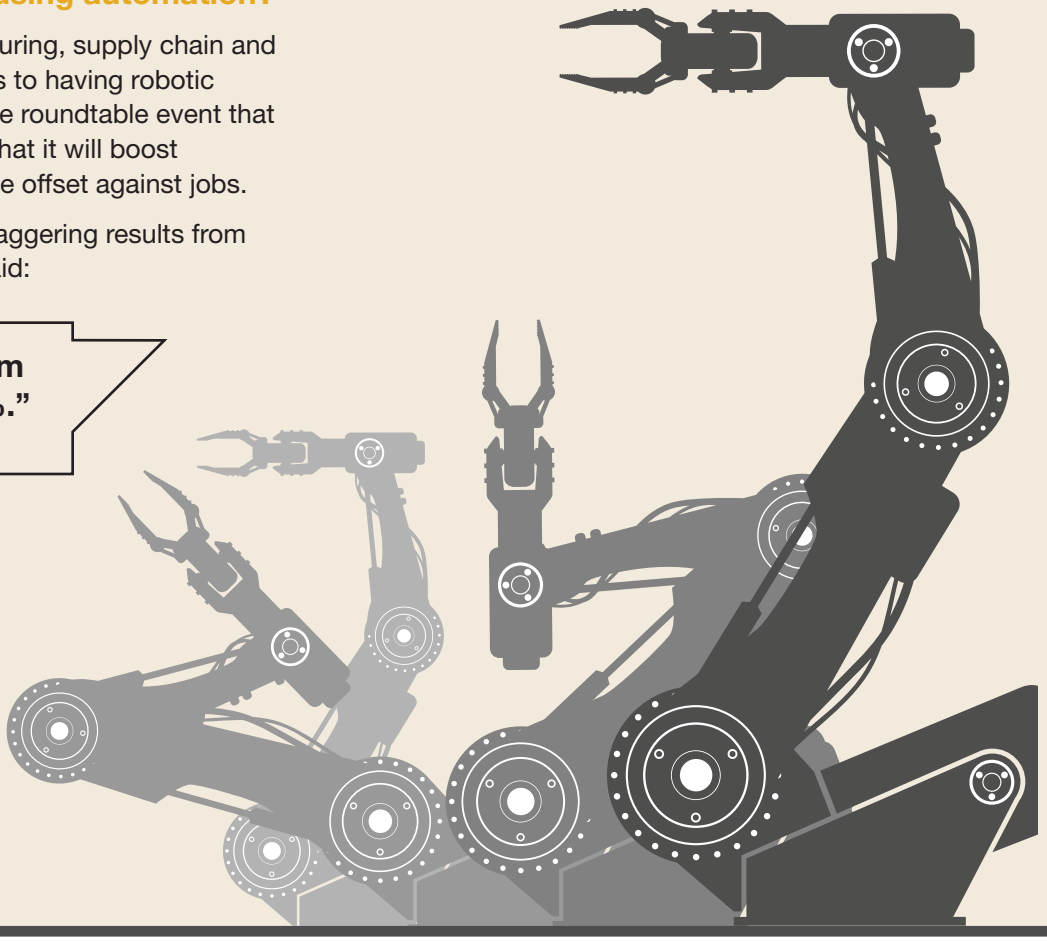
What are the advantages of using automation?	What are the challenges of using automation?
• Boost productivity • Increase wealth • Improve quality • Increase predictability • Better accuracy • Improved repeatability • Increase profitability • Reduce human error	• Widen income quality • Risk of job automation • Put a premium on education • Less versatility • Large investment costs • Lead to pollution

What are the advantages of using automation?

Automation is the future of manufacturing, supply chain and logistics. There are many advantages to having robotic systems in place. It was agreed at the roundtable event that the key advantage of automation is that it will boost productivity and wealth which may be offset against jobs.

One person at the event has seen staggering results from using automation and, as a result, said:

> **"Automation has gone from 1% of our turnover to 70%."**



Rachel McGowan-Kemp says:

"As well as boosting productivity through a reduction in production time, automation can improve the quality of products and increase predictability of quality. Collaborative technology can increase production capacity by 20% whilst lowering material consumption by 4%."

An automated machine speeds up the production time as no thinking is needed by the machine, meaning better repeatability and an increase in accuracy.

There is also less human error, leading to higher volume production which, in turn, increases profitability.

"It's all about collaboration. Not just with human and machine, with the customer also."

What are the challenges of using automation?

Although the future is technology-bound, there are disadvantages that align with automation, robotics and AI. Whilst automation should boost productivity and not necessarily reduce total employment in the long-run, it could also widen income inequality because a greater proportion of the economic pie will go to those with the knowledge and skills needed to thrive in an ever more digital economy.

This would put a premium on education levels when entering the workforce and the ability to adapt and re-skill throughout working life.

According to new analysis by PwC in its latest UK Economic Outlook report, male workers could be at greater potential risk of job automation than women. Education is the key differentiating factor for individual workers.

One person at the event commented:

"Robotics was born in the UK and we took that knowledge, expertise and technology abroad. The UK now needs to get this technology back and integrate it into each of its businesses."

Other arguments against automation are that there is less versatility as machines are limited to perform a certain task, it could lead to more pollution and there are large initial investment costs associated with AI and robotics.

Ben Gilbert says:

"Demand will govern how many robotics individual organisations will require but there's no denying that automation is the future. The manufacturing, supply chain and logistics industries are already leading the way in the use of automation."

What does this mean for workers?

As one person around the table explained:

"We need to alleviate concerns within the workforce of being side-lined and moved by upskilling them into better jobs. It's all about re-education and introducing robotics and automation in the working environment."

It was agreed during the event that the industry is looking to work collaboratively with robotics, as another person commented:

"We're not talking about replacing humans with robotics, we want to upskill them to work collaboratively with automation. Vision is key."

The impact on business leaders

The industry skills gap

It was unilaterally agreed at the roundtable event that there is both a labour shortage and skills gap at present and this issue is looking to continue into the future.

Rachel McGowan-Kemp, comments:

"The supply chain is very committed to automation but one of the challenges is having people with the right skills to support new technology. Attracting the right people, with an innovative and creative mind set, to get the most out of new technology is paramount. It's essential to re-skill and up-skill the current workforce."

"The industry needs to get better at promoting employment on every level - from entry all the way to the top"

There is a significant skills gap between where most of the workforce is now compared to where it needs to be. Employers need a multi-skilled workforce so continual development of the right skills to work alongside new technology is vital.

There is also a shortage of senior, highly-skilled engineers and it's at the lowest level in more than three years. One leader at the event suggested:

The industry needs to get better at promoting employment on every level – from entry all the way to the top.

"It's not just about training people as apprentices or at college and university before they enter the workplace, it's about training and upskilling the current workforce to work collaboratively with machines, robotics and artificial intelligence.

"Young people are more digitally-savvy and are hungrier to learn but senior-level industry leaders need to understand what automation means for their businesses to continue profiting."



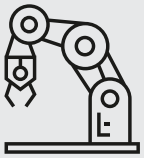
AI and industrial growth



This year has seen...

10-20%

Efficiency gains



Using robotics and AI to optimise manufacturing…

3:1

ROI

According to The Telegraph, using robotics and AI to optimise manufacturing can lead to a 3:1 return on investment and efficiency gains of 10-20%.

Will Brexit have an impact on automation in industry?

Brexit poses a problem for talent acquisition. We will need to adapt to marketplace changes as and when new agreements are made to overcome ramifications of Brexit.

Ben Gilbert concludes:

"Many businesses across the UK rely on imported labour as it's the only certain way to access people with the necessary and appropriate skillset for certain fields of work. Because of Brexit, overseas workers might seek employment elsewhere.

"We need to attract more talent, especially the right talent, to manufacturing, supply chain and logistics and we need to do this by harnessing technology and embracing automation in the industry."

What's the forecast for return on investment?

Views from around the table concluded:

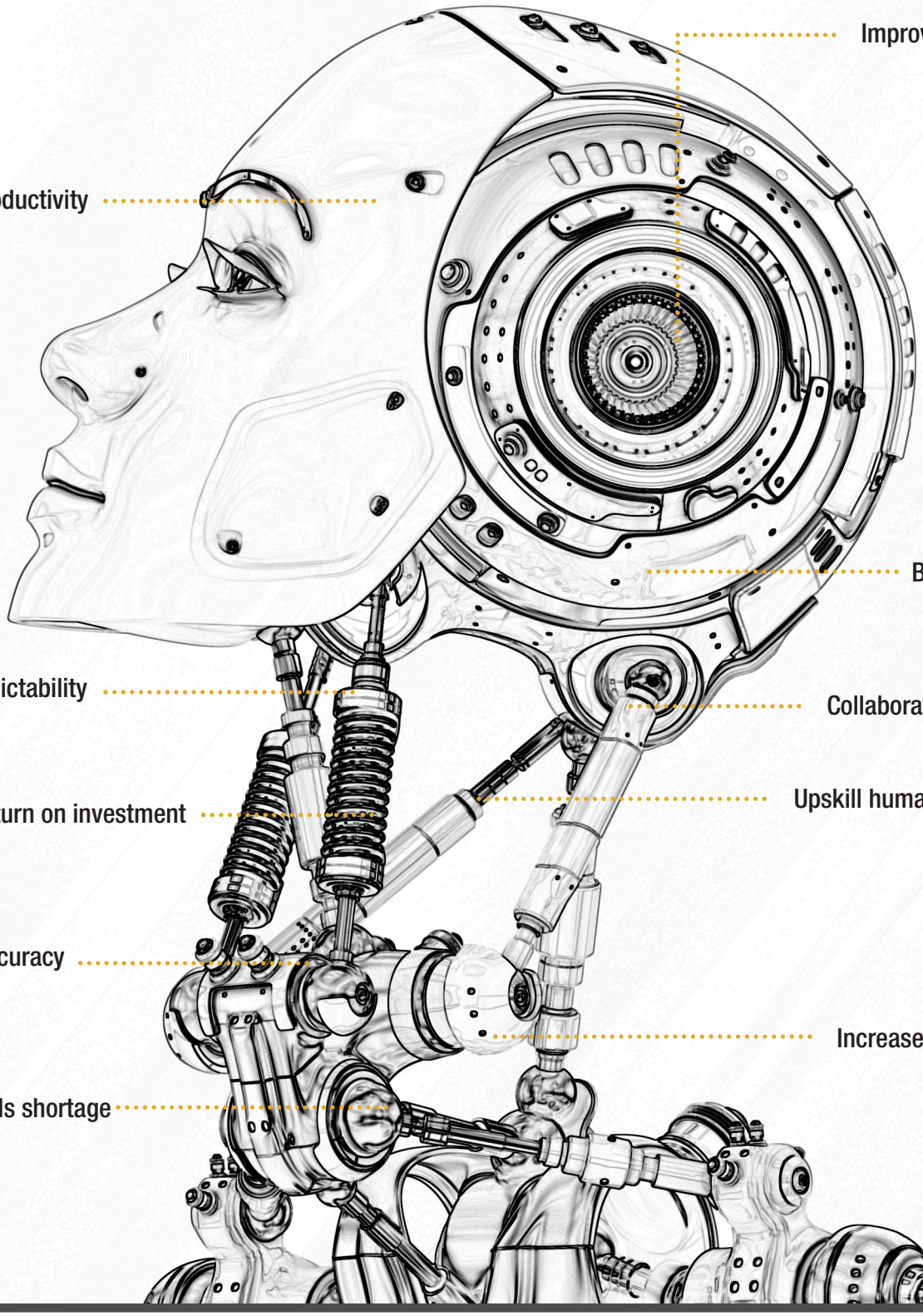
"When considering automation, don't think about the hardest job in the factory – think about the easiest which is perhaps running two shifts per day. A collaborative robotic would give you a good return on your investment in one year."

One person at the event explained:

"With robotics and automation, don't just think 'how many heads can I save?' The key things to consider are improving efficiency, quality and return on investment. The challenge is getting the right people in to work collaboratively with robotics and automation.

"If we don't highlight the benefits of working within UK manufacturing, in 10-15 years' time we're going to struggle to inspire people to take a career in the industry."

What will human and machine collaboration look like in the future?



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