Digital Internships

How Made Smarter helps SME manufacturers tap into tech talent

MADE SMARTER

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Executive summary

While technologies have undoubtedly brought great innovation and opportunity to the manufacturing sector, the biggest challenge we face is having people with the right skills to fully capitalise on the moment.

Manufacturers face a cross wind of skills issues, from a lack of digital knowledge and expertise, to labour shortages and an ageing workforce.

The Made Smarter Review identified the opportunity for Adoption programmes to create a bridge between digitally native students and SMEs, providing a scalable, flexible, and cost-effective way to prepare the next generation of workers for the demands of modern manufacturing.

Phase one of our Digital Internship programme from 2019-2022 was a massive success with almost half all the interns securing permanent jobs at the end of their placements.

Businesses were able to access fully-funded technology skills and expertise and apply them to their challenges with some significant and immediate effects. Meanwhile, young people had valuable hands-on practical experience and in many cases, their first step on a potential career path.

Three years on and with funding for the National Adoption Programme confirmed, here in the North West we are launching phase two to further demonstrate the multitude of benefits that opening up the huge resources of tech-savvy young people to under-resourced manufacturers can have.

This white paper explores the broader skills issues facing SME manufacturing when it comes to technology adoption, and where Made Smarter is helping.

Donna Edwards,
Director of Made Smarter's North West Adoption Programme

Setting the Scene

Manufacturing is undergoing significant technological transformation, with automation, artificial intelligence, the Internet of Things (IoT), and advanced robotics changing the landscape.

The ability to design, make and deliver things better, faster and more efficiently, is creating jobs that are increasingly dependent on digital skills, which creates a puzzle for manufacturing leaders tackling challenges around recruitment, retirement and skills.

The digital skills gap

The discrepancy between the digital competencies employers need and the actual digital skills possessed by employees to perform their jobs effectively is something every industry is grappling with.

The digital skills gap can significantly impact a company's productivity, competitiveness and innovation potential.

Research suggests that around 20% of the UK workforce - around 6.5 million people - will be significantly under-skilled for their jobs by 2030[1].

A recent survey of SMEs revealed nine in 10 (92%) businesses in manufacturing are anticipating some kind of skills gap within their business[2].

Technical expertise

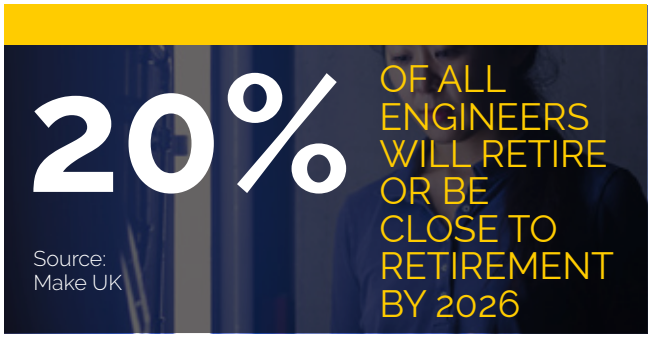
As manufacturers implement cutting-edge technologies, they often face a shortage of skilled technicians and engineers who can both operate and maintain these new systems.

The demand for new skills, particularly in areas like data analysis, machine programming, systems integration and cybersecurity, highlights a shortage of workers possessing these competencies.

Labour shortage

The sector also suffers from high job vacancy rates created by a shrinking pool of workers following the restricted movement of a valuable immigrant workforce, low unemployment levels, and the rise in those taking early retirement.

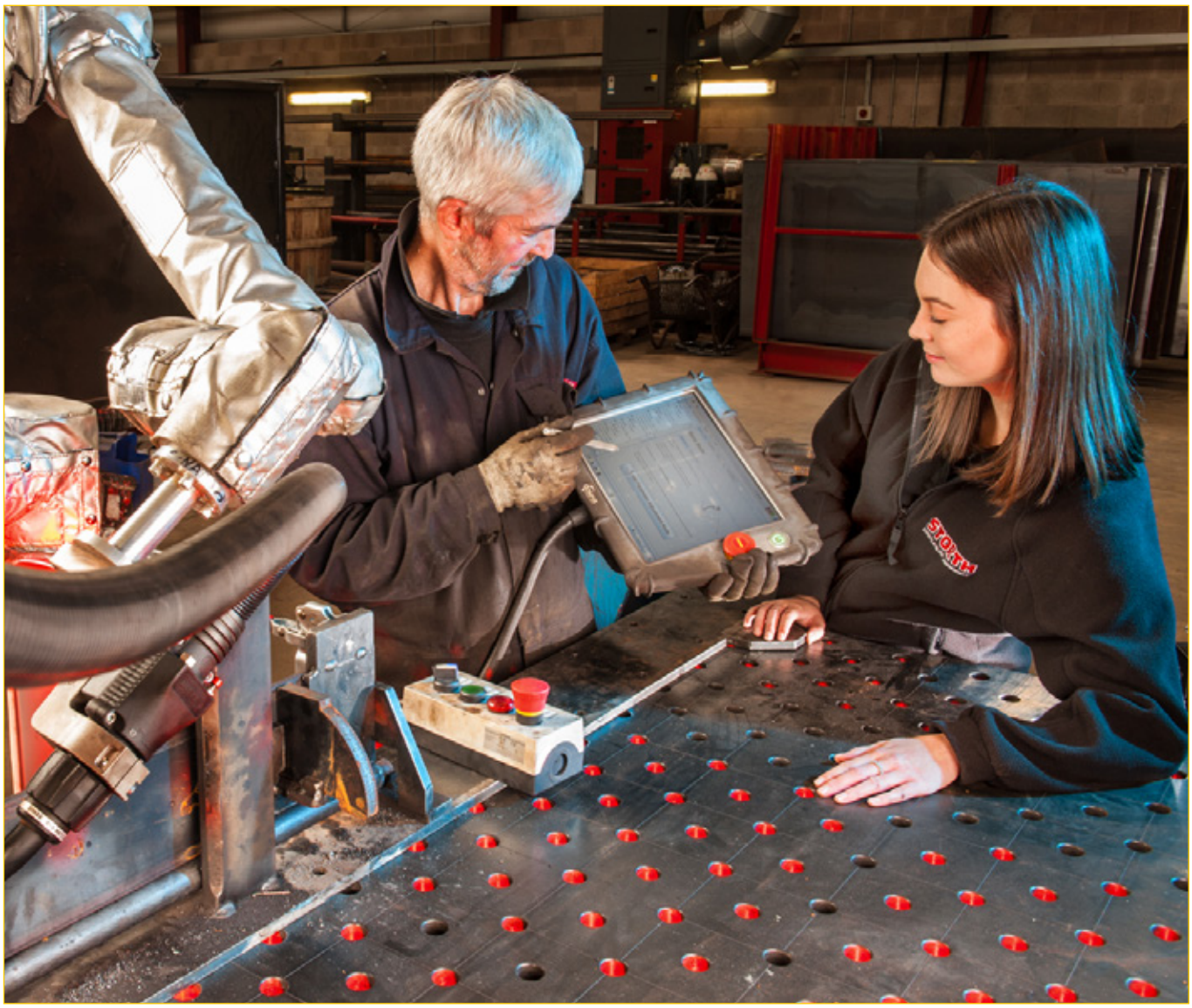
According to the latest Office for National Statistics (ONS) figures, there are currently 61,000 manufacturing job vacancies in the UK - a 20-year high, which according to Make UK is costing the UK economy £7.7billion - or approximately £21 million a day - in lost productivity[3].



Furthermore, the increased competition for talent is adding significant financial pressure to manufacturers who have to offer more pay and benefits not only to recruit but to retain their existing workforce.

Aging workforce

On top of the skills gap and labour shortage, the situation is expected to become more challenging. By 2026, 20% of all engineers will retire or be close to retirement, taking their valuable experience and organisational knowledge with them[4]. This exodus threatens to widen critical skill gaps.



Rachel Brown, CAD technician, and Steve Elleray, R&D fabricator, at Storth

Skills investment and barriers

Manufacturers are recognising the need to invest in skills.

Make UK research shows that half of manufacturing employers have increased their investment in skills training for production and non-production staff in the last few years[5].

But for SMEs time and financial constraints prevent investment in skills training, with money being spent on other priorities.

There are concerns over the relevance and availability of the existing training provision. The skills training landscape generally offers either highly technical or very basic training, with little in between.

For instance, the number of apprenticeship starts are down 42% since the Apprenticeship Levy was introduced seven years ago[6] and T-levels, designed to deliver much-needed technical skills into industry, still do not have the required uptake to make a meaningful difference.

Brainboxes

For manufacturers, investing in training programmes, partnerships with schools and colleges, and the ongoing upskilling for current employees, takes time and resources.

The cumulative risk of these barriers, as well as other skills and labour challenges, mean many leaders are less confident to plough ahead with the adoption of digital technology.

Recent Made Smarter research found that 8 out of 10 manufacturers recognised that gaps in their skills and knowledge were potentially impacting on their ability to adopt digital technologies[7]. This means manufacturers risk missing out on creating opportunities to increase productivity, reduce costs and accelerate innovation, which could have significant effects on competitiveness and growth.

How Made Smarter is tackling the challenge

The Made Smarter Review

Made Smarter was a movement born out of the 2017 Made Smarter Review - a UK government-commissioned exploration of how the widespread integration of digital technology could foster a step change in UK manufacturing.

It highlighted a lack of effective leadership and skills as key barriers preventing the UK from achieving its potential, along with poor levels of adoption, particularly among SMEs, and under-leveraged innovation.

One of the targets of the Adoption programme was to increase collaboration between universities and SME manufacturers. Access to students through placements from universities was seen as an opportunity to raise the absorptive capacity of participating SMEs to drive innovation, and increase the awareness of career prospects for the next generation of workers.

Paul McLaren, Chair of Made Smarter North West's Steering Group, and Donna Edwards, Programme Director

Made Smarter North West

Since 2019, the North West adoption programme has blazed a trail in its approach to helping SME manufacturers approach those core challenges by ensuring digital transformation is tackled the right way.

It takes a multi-levelled skills approach offering high impact and focussed support from the top floor to the shop floor, with flexibility to allow businesses to fit it around their workload and business demands; giving them practical skills to implement straight away, bringing immediate benefit.

The programme has also developed a digital transformation workshop process whereby a technology adviser, supported by the Organisational Workforce Development team, analyses a manufacturer's people, process and product to identify the most effective technologies to overcome their operational challenges and any skills gaps.

Digital Technology Internships

To tackle the skills challenge facing SMEs and to increase the awareness of career prospects in manufacturing for the next generation of workers, Made Smarter launched its Digital Technology Internships programme.

The initiative connected UK university students and recent graduates with SME manufacturers to work on real-world digital transformation projects. These internships provide valuable, paid, hands-on experience for students while helping manufacturers adopt and implement new technologies.

From 2019 to 2022, the programme proved highly successful. Interns worked on a range of projects, from implementing software and hardware to developing digital roadmaps. In addition to upskilling employees, interns gained real-world experience that complemented their academic learning.

A student at PrintCity, Manchester Metropolitan University's 3D additive and digital manufacturing hub

Out of 75 interns from 20 universities and training providers, nearly half secured permanent jobs at the end of their placements. Others leveraged the experience to gain employment elsewhere. The programme helped bridge the gap between education and employment, particularly during the COVID-19 pandemic when many placements were cancelled.

In April 2025, with national funding support, Made Smarter North West relaunched Digital Technology Internships. Over the next year the programme now aims to match a new wave of students or graduates with manufacturers across the region.

Interns will work on live digital adoption projects, supporting technology implementation and strategy. These internships are designed to make a real difference to the businesses involved while providing career-advancing experience to participants.

The internships are open to second and third-year undergraduates, MSc and postgraduate students, and recent graduates (within 12 months). Course backgrounds may include:

- **Robotics and Automation**
- **Mechanical or Design Engineering**
- **Digital Design and Manufacturing**
- **Product Design Engineering**
- **Data Science**

Internships are flexible (full- or part-time), and funded by Made Smarter.

How a digital internship helps a business

There are several key benefits for a manufacturer accessing the digital internship programme:

Operational Impact

Digital interns can significantly improve operational efficiency by taking on focused tasks or research projects, freeing up experienced staff to concentrate on strategic priorities. By managing activities outside of daily operations, interns help increase overall productivity while introducing fresh perspectives and problem-solving approaches.

Interns are often up-to-date on the latest trends, technologies, and industry practices from their academic studies. By working with interns, manufacturers can tap into this knowledge and potentially adopt new tools or methodologies that can improve business operations.

Innovation

Interns bring new ideas, perspectives, and energy to the workplace. They can provide valuable insights from their academic training and previous experiences, helping to push the company forward with innovative solutions.

They can introduce new processes, tools, or product ideas that may not emerge from within established teams. Their involvement also enables low-risk digital trials, allowing companies to explore and experiment with new technologies without making significant up-front investments.

Luke Hickson at Fabricon Design

Case study - Arden Dies

Arden Dies, a die-maker based in Stockport, took on two interns to develop additive manufacturing (AM) projects.

The experiences gave the company the confidence to invest in a 3D printer, backed by a Made Smarter technology grant. As a result, integrating AM into the firm's rotary tooling operations has accelerated production by 75%, increased in-house productivity, and reduced external costs.

Arden has now even established a small AM department for R&D to prototype new ideas. This team is also part of a digitalisation team pursuing a continuous improvement approach, bringing ideas from across the business to the table.

Sarah Poynter, Operations Director, said: *"Working with Made Smarter has highlighted the importance of investing in people and skills to drive that technology and make us more efficient.*

"The digital interns that Made Smarter supported us with have really helped accelerate our adoption of 3D printing. As emerging experts in their fields they also introduced us to technology, processes and materials we weren't aware of. This enabled us to bring things to market a lot quicker than we would have done otherwise.

"They have also been able to mentor and share their skills across the business to embed that knowledge."

"The internship scheme from Made Smarter is a fantastic initiative that provides the students with valuable practical experience within the industry, while organisations like us can benefit from their expertise as we adopt new and emerging technologies into our workflow."

Sarah Poynter, Arden Dies

Workforce development

Internships can support a long-term recruitment strategy. By identifying and nurturing young talent through internships, manufacturers can build a pool of potential future employees who are already familiar with the company's culture and operations. This reduces recruitment costs and time in the future.

In addition to supporting recruitment, interns can offer reverse mentoring by helping existing staff learn and adapt to emerging digital technologies. Meanwhile, supervising interns also gives current employees the chance to develop their leadership and mentoring capabilities, strengthening internal capacity and resilience.

Case study - Harten Frameworks

Harten Frameworks, a manufacturer of bespoke art presentations based in Bollington, was paired with Robert Fairclough, studying Design at Lancaster University.

Frances McDonnell, Harten Frameworks

Frances McDonnell, MD, said: *"We would thoroughly recommend to anyone thinking of taking on an intern to jump at the opportunity.*

"Rob had a raft of valuable skills which would help us. He was calm and confident and from this start-point he was able to translate our requests through engineering and 3D software to provide beautiful solutions that added to our product offering. He was also able to teach one of our team how to use the 3D software to help us."

Cost efficiency

Digital interns are funded by Made Smarter which reduces the financial burden for manufacturers while still giving them access to fresh talent. It's a low-risk way to trial digital transformation without long-term hiring commitments.

Meanwhile, interns can be invaluable in helping with special projects, research, or tasks that are outside of the day-to-day work but still important for the company's progress.

Case study - Mantle Packaging Machinery

Mantle Packaging Machinery, a food packaging machinery manufacturer in Clitheroe, utilised the expertise of Naga Gurudatta Kataru (studying an MSc Business Analytics & Big Data at the University of Liverpool) to implement a game-changing inventory management project.

Mantle Packaging

Laura Sieczkowski, Director, said: *"Through Made Smarter we were able to replace our old enterprise software with three new integrated cloud-based programmes.*

"This involved a significant amount of data migration which Naga played a key role in, especially in the most complex areas. Without this extra resource and expertise, this vital part of implementing the new technology would have been a mammoth task.

"We now have a fantastic new system which has increased efficiency across the business, enables us to make timely business decisions, and given us access to customer relationship management tools for the first time.

"The digital internship programme added real value to the implementation of this new technology and we would thoroughly recommend other manufacturers take advantage of this opportunity."

Inclusion, sustainability, and social responsibility

Internships play a key role in improving diversity and inclusion by creating opportunities for underrepresented groups to enter the manufacturing sector. They also support the development of green skills, enabling businesses to advance sustainability initiatives, adopt lean manufacturing practices, and work toward net-zero targets.

By hosting interns, manufacturers demonstrate a strong commitment to responsible business practices. This not only contributes to positive social and environmental impact but also enhances the company's reputation and attractiveness as an employer.

Case study - Sustainable Smart Technologies

Kamran 'Kammy' Nawaz was a student at the University of Manchester (UoM) when he was matched with Sustainable Smart Technologies, an Internet of Things (IoT) Solutions provider based in Rawtenstall.

He spent three months supporting a series of technology projects before being offered a full time position.

Niamh Allen, Managing Director, said: *"Kammy's short-term role evolved into a 4.5-year journey. He grew into a trusted and valued Operations Manager, taking charge of our largest and most complex installations.*

"Made Smarter's digital internship programme proved an effective recruitment route for a small, but growing business like ours. It allowed for close collaboration with Kammy, evaluating his skills and work ethic before offering a permanent role. The funded nature allowed for flexibility in trialing talent without immediate financial commitment. Kammy's progression to Operations Manager showcased his adaptability and leadership skills. The internship also encouraged collaboration and mentorship, fostering innovation and teamwork. Overall, it was an excellent way to uncover talent and bring a significant contributor to the business."

Kamran Nawaz and Deyrick Allen, Sustainable Smart Solutions

Academic collaboration

Internships help foster strong partnerships between manufacturers and universities, strengthening research connections and encouraging valuable knowledge exchange. These collaborations create opportunities for innovation and shared learning.

By aligning academic research with real-world industry needs, internships ensure that both sectors remain responsive and relevant. This mutual benefit supports long-term growth and keeps the talent pipeline closely aligned with evolving business demands.

Get in touch today to start your Made Smarter journey

How a digital internships helps students and graduates

Made Smarter's digital internships provide a valuable stepping stone for students and graduates, especially those pursuing careers in digital technology, engineering, or manufacturing.

The programme offers real-world exposure, practical skill development, and career advancement opportunities in a supportive and flexible environment. The key benefits include:

Real-world industry experience

Interns work directly in the manufacturing and engineering companies, applying their academic learning to solve practical business challenges. Whether it's automation, software development, or data analysis, these experiences allow interns to see the tangible impact of their work and gain a deeper understanding of industry needs.

Skill development

Internships provide the opportunity to develop and refine both technical and professional skills. Students can build expertise in areas such as data science, CAD, IoT, and AI/ML, while also improving soft skills like project management, communication, and problem-solving in a real-world context.

Case study - Victory Ogbebor

Victory Ogbebor was studying a masters in Data Science at the University of Salford when he was paired with a distillery based in Greater Manchester. He worked on a project which reviewed the integrations of internal systems and platforms to maximise their performance, improve efficiency across all departments and impact company growth.

Victory Ogbebor

He said: *"The internship was fantastic because I gained paid experience while working on impactful projects in the business. I was also able to pass my analytics and dashboard modelling skills to others in the business. After the internship I went on to apply my tech skills at Chelsea FC, Zoopla and Commercetools. Made Smater set me up for a bright future in the tech industry."*

Oliver Miller and Rod Wah at Beverston Engineering

Career clarity and enhanced employability

Internships help students explore career paths in digital and manufacturing sectors, offering insight into what roles and environments suit them best. The project-based nature of the work adds meaningful experience to their CVs, setting them apart in a competitive job market.

Case study - Fabricon Design

Fabricon Design is an Ashton-Under-Lyne-based business using advanced manufacturing methods to produce innovative plastics, aluminium and steel component designs. The company was matched through Made Smarter to Luke Hickson, a master's postgraduate studying Industrial Digitalisation at Manchester Metropolitan University. With impressive work on university projects using CAD design and 3D printing, he secured a permanent job as a design and development engineer.

After almost two years at Fabricon, Luke has progressed his career and is now an Additive Manufacturing Engineer for Bentley Motors.

He said: *"Since I was young, I've had ambitions to become an engineer. My internship at Fabricon Design was a turning point - it gave me hands-on experience with cutting-edge technology and real-world projects. The placement was focussed on CAD design, 3D printing and product development. Fabricon gave me the freedom to learn and apply my design skills, while taking me through the ropes of learning all the functions of their operation. I was able to incorporate some of my experiences as proof points in my academic work, and ultimately secure a job. That foundation helped me grow into my subsequent roles."*

Luke Hickson

Flexibility and financial support

The Made Smarter Digital internships are a paid opportunity. Timelines can be designed to fit around academic commitments, ensuring students can gain valuable experience without compromising their studies.

Ongoing support and guidance

Made Smarter supports interns with mentoring, training, and resources throughout the placement. This structured guidance helps bridge the gap between academic learning and workplace expectations, empowering students to make confident, informed contributions from day one.

Interested students can register via madesmarter.uk

Case study - CNC Robotics

Max Barnett was studying a postgraduate in data science and artificial intelligence at the University of Liverpool when he was given the opportunity to join CNC Robotics, a robotics integrator based in Liverpool.

His role initially focused on researching and identifying the best-fit CRM and project management system to enable the business to better integrate data across key processes, including sales, marketing, quality control and project management.

Max said: *"As my first real-world experience of manufacturing, being given the responsibility of implementing a new integrated system and reporting directly to management certainly felt like jumping in at the deep end. But the company and Made Smarter ensured I had their support throughout. It made me feel like I was a key member of the team and gave me priceless experience in the industry."*

Three years on he has transitioned through multiple roles including software development, marketing and sales, representing the company at major trade shows, both in the UK and internationally.

"Looking back on my experience, the internship was a pivotal stepping stone in my career," Max added. "Beyond technical skills, the internship also expanded my professional network, through industry events, trade shows, and direct collaborations with partners and clients. It provided a structured yet dynamic environment where I could develop, take on challenges, and prove my capabilities - all while contributing to a company at the forefront of robotic automation in manufacturing."

Max Barnett, CNC Robotics

View from Academia

At Manchester Metropolitan University Business School, we are dedicated to transforming lives, businesses and communiities and we know that relevant work experience is essential for students to succeed in a competitive graduate job market. That's why we're proud to partner with initiatives like Made Smarter, which paired 13 of our students as part of its first wave of digital interns.

"This successful collaboration highlights the value of internships not only for our students but also for the businesses they support. Whether it's helping organisations embrace digital transformation or bringing fresh ideas into the workplace, our students are proving they can make a real impact.

Internships and placements offer a win-win: students gain vital, real-world experience that complements their academic learning, and employers get the chance to identify new talent and bring in specialist skills.

We're thrilled to see our students thriving in industry through initiatives like Made Smarter - and this is just the beginning.

Claire Pattison, Senior Lecturer at the Centre for Enterprise

Conclusion

The Made Smarter Digital Internship programme has shown just how powerful it can be to bring together tech-savvy students and graduates with manufacturing businesses looking to embrace digital change.

By offering fully funded placements, the programme has helped SMEs explore and implement new technologies without the usual risks or costs - while giving young people real-world experience that often leads to a job.

From improving processes and kickstarting innovation, to building confidence and skills on both sides, internships have delivered real results. The success stories from the North West show what's possible when you open the door to fresh ideas and new ways of thinking.

It's not just for the North West anymore either. Thanks to national funding, the programme is now open to manufacturers taking part in other Made Smarter Adoption programmes across England - meaning even more businesses and students can get involved, helping to accelerate the digital transformation of UK manufacturing.

Get in touch today to start your Made Smarter journey

Further reading

Leading digital transformation
Decarbonisation through digitalisation
Delivering Impact

Sources

1 Industrial Strategy Council
2 SME Skills Horizon: 2025
3 & 5 Make UK
4 The Engineering Construction Industry Training Board (ECITB)
6 UK Government
7 Made Smarter

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www.madesmarter.uk