

DIGITAL TRANSFORMATION PACK

July 2022





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INDUSTRY FOREWORD



Welcome to the first edition of the Digital Support Pack developed by the Factories of the Future Working Group of the Aerospace Growth Partnership

There have been countless documents and reports written on the importance of digitalisation and the wide range of benefits to be realised by the Manufacturing sector. This is especially true for the UK Aerospace sector as we look to restore our capacity post Covid and develop our capabilities in response to global competition and need for sustainable operations. The pathway to building our future industry is founded on the successful adoption of digital technologies and all parts of the supply chain will be affected. Every business needs to chart its own journey on the road to adopting digital technologies and this Support pack is designed as a useful reference to helping the planning and implementation. It is also not just about the technology; People play a critical and arguably more important role in the success of any programme and failure to recognise the value of good communications and investment in skills will often lead to a poor outcome.

Why should you adopt Digital Technologies? Digital Transformation is now becoming less of an option now for manufacturers, more a necessity. By implementing digital technologies, organisations can achieve gains in productivity and efficiency, leading to reduced costs and increased profitability. This improves overall customer satisfaction and allowing the ability to respond to changing customer needs at short notice, giving a critical edge over the competition. As aircraft production rates increase to pre-pandemic levels, the manufacturing supply chain will need to be ready to deliver at pace, without compromising on cost and quality, to compete at a global level.

Many of the organisations featured in the Support Pack are experienced in guiding businesses through their digital journey and overcoming the most common challenges associated with digital adoption. We recommend reaching out to these organisations to find out what support is available both in terms of expertise and in many cases grants or subsidised finance.

We could not have produced this Support Pack without the help of a wide range of collaborators across the AGP from the Factory of the Futures Steering group, the Regional Aerospace Alliances and ADS. We are very grateful for their input and continued support in keeping the content up-to-date and relevant for companies on their digitalisation journey.

We will continue to develop the Support pack to ensure future editions keep pace with the changing landscape of support programmes available across the UK and Northern Ireland, so visit the AGP website regularly to ensure you have the latest version.

My call to action is for all UK Aerospace supply chain businesses to review their Digital Strategy and determine whether it is delivering the future capabilities the business needs. If you don't have a digital strategy, then now is the time to create one, so reach out to one of the organisations in the Support pack and get started on your digital journey.



Stephen Cowan

VP - General Manager , GKN Fokker Landing Gear

Aerospace Growth Partnership - Manufacturing & Supply Chain Working Group Chair

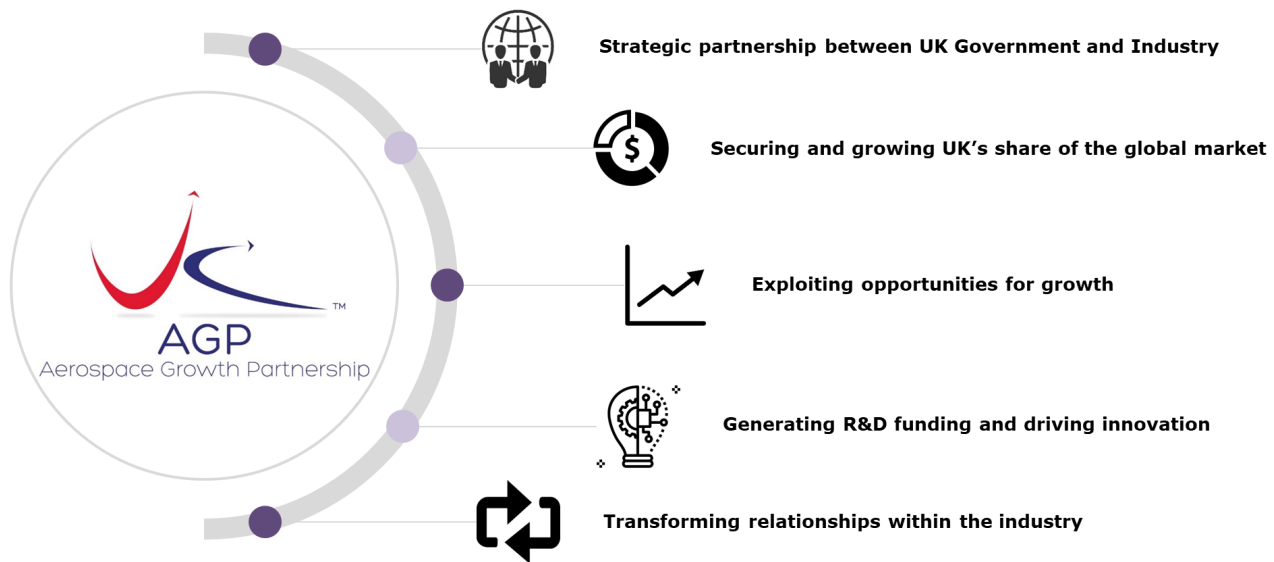


AGP OVERVIEW

The Aerospace Growth Partnership (AGP) is a strategic partnership between the UK Government, industry and other key stakeholders. The AGP was established to secure the future of the UK aerospace industry in the face of an ever changing, and increasingly competitive global landscape. The partnership is intended as a vehicle to tackle barriers to growth, boost competitiveness and exports and grow the number of high value jobs in the UK.

The AGP is focused on the following themes, each with its own Working Group made up of Industry and Government representatives:

- UK Aerospace Strategy
- Manufacturing & Supply Chain Competitiveness
- Sector Skills
- Engagement and Communications



MANUFACTURING & SUPPLY CHAIN COMPETITIVENESS WORKING GROUP

The Manufacturing Working Group consists of 3 work packages:

1. Strategic Competency Analysis
2. Factories of the Future and Digital Technology adoption
3. Supply Chain Competitiveness

Work package 2 activities include supporting the adoption of Industry 4.0 and digital technologies which is the focus for this support pack. The Working Group aim is to help develop a digitally enabled supply chain that realises benefits in improved efficiency and productivity. Embracing the use of digital technologies will help ensure the UK aerospace supply chain remains competitive globally.

PURPOSE OF THIS PACK

Recognising the challenges that many businesses face when looking to adopt digital technologies, this pack aims to provide an overview of the support available in the UK for Aerospace manufacturers embarking or progressing on a digitalisation journey. The pack contains:

- An overview of how 'Digitalisation' can benefit your business
- A guide for SMEs on where they can find help and support
- A selection of case studies from manufacturers who have implemented digital technologies



WHY GO DIGITAL?

There are many benefits to the adoption of digital technologies and these have been well stated in a wide range of industry reports. The Made Smarter Review in 2017 identified benefits to the Aerospace sector of £17.5bn in revenue growth, with the potential to reduce in cycle times by 25-35% and realise productivity gains of 30-50%.

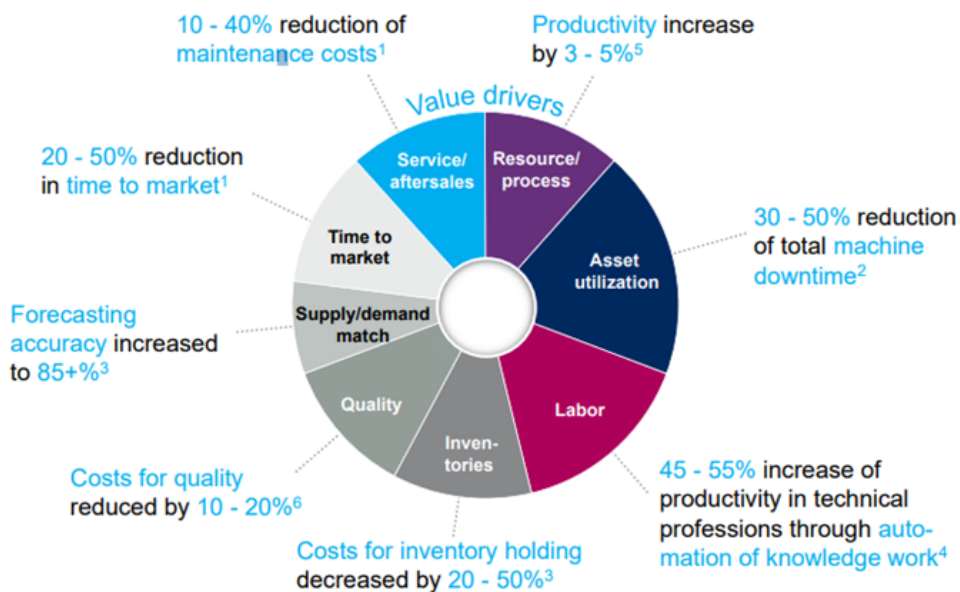
VALUE AT STAKE FOR THE AEROSPACE INDUSTRY IS ESTIMATED TO BE £17.5BN BETWEEN 2017-2027

VALUE LEVER DESCRIPTION	VALUE TO INDUSTRY (£ BN)	VALUE TO INDIVIDUALS	VALUE TO SOCIETY
Revenue growth through new revenue streams	£7.5	<ul style="list-style-type: none"> • 30% of cost savings (worth £3bn over 10 years) are expected to be passed on to consumers as the manufacturing process becomes more efficient through the use of digital technologies • 69% increase in customer satisfaction due to personalisation of manufactured products • 13% increase in job satisfaction as jobs will shift to higher value jobs and tasks 	<ul style="list-style-type: none"> • 63,000 tCO₂e reduction in 2027¹ from more efficient manufacturing and production processes as well as better in-use aircraft efficiency • 15,310 injuries avoided over the next decade as a result of improved safety during aerospace manufacturing, through digital tools and analytics
Cost reduction through digitally enabled products, processes and services	£4.8		
Cost reduction through digitally enabled manufacturing and asset maintenance	£4		
Cost reduction through digitally enabled supply chain management	£1.2		
Total value to industry	£7.5 £17.5		

1) Reduction of emissions is not presented as a cumulative figure, rather as the reduction saving potential in 2027

[Made Smarter Review](#)

Furthermore, a McKinsey report in 2015 identified benefits across 8 key business areas including significant opportunities for reducing costs for quality, maintenance, inventory as well as improvements in time-to-market and productivity.



[McKinsey Report – how to navigate digitization in the manufacturing sector](#)

Adopting digital technologies in manufacturing has been shown to have a significant impact on business performance and those businesses that actively embrace the transformation will be stronger, more resilient and better placed to adapt to changing market conditions.



DIGITAL SKILLS

An essential element of any digital transformation programme is the engagement of the workforce to embrace the changes that result from introducing Digital technologies. Digitalisation will require new skills across all people within the business. There are a broad range of programmes available to help with skill development. The following pages provide a few examples of these programmes, however many of the support organisations mentioned later in this pack will also be able to guide you in finding suitable sources of training and skill development.

MADE SMARTER - LEADERSHIP DEVELOPMENT

Feel overwhelmed by the move to digitalisation?
Concerned that it may cause issues amongst
your workforce?

You're not alone. Many leaders experience this when first
adopting new technologies.



Want to understand how you can maximise the
capabilities of digital technologies, and ensure that all
stakeholders are on board too? Strong leadership is
crucial for successful digital adoption.

Successful digital adoption is not just a matter of
implementing the technology. In order to create
transformative change within your business, leaders need
to consider the impact on their whole business.
Developing your own leadership skills will boost your
leadership proficiency and provide you with the tools to
understand how technology will impact your operations
and processes. It will help you to assess whether you have
the right culture to support digital adoption, if you have
the skills needed and how best to engage your employees
in the journey.

Find out what Leadership development is available in
your region.

Website: <https://www.madesmarter.uk/adoption/develop-your-digital-leadership/>

HELP TO GROW DIGITAL PROGRAMME

Help to Grow: Digital is a UK-wide government-backed
scheme that aims to help SMEs choose, buy, and adopt
digital technologies that will help them grow their
business.

Help to Grow Digital was launched in December 2021 and
could help up to 100,000 businesses adopt new digital
technologies over three years.

The Help to Grow Digital scheme will offer businesses:

- Free, impartial advice and guidance about what digital technology is best suited to their business and how it can boost their business' performance
- Targeted financial support for eligible businesses, worth up to £5,000, towards the costs of buying approved digital technologies for the first year.



Help to Grow – Take your business to the next level ([Help to Grow – Take your business to the next level](#))



HVMC/AMTC - E-LEARNING PROGRAMMES

The Practical Steps to Digitalising Your Manufacturing Business

Many manufacturing SMEs recognise that digitalisation could transform their business for tomorrow – but can't move past the challenges of today.

Aimed at Senior Decision Makers and engineers within manufacturing and engineering SMEs, this interactive three-part certificate delivers relevant, practical, sector-specific insights to fuel your first steps towards data-driven operations.

So, whether you're just starting to explore the possibilities, have a strategy in mind, or have already begun to implement digital and data tools within your business, this forward-looking three-course certificate will put you firmly in charge of your digital future.

<https://the-amtc.co.uk/training/digitalising-your-manufacturing-business/>

Digital manufacturing training courses

The trends, behaviours and expectations of consumers are ever-changing and the manufacturing industry must evolve in line with demand.

Digital manufacturing is central to this and can enhance productivity significantly, in turn reducing costs and improving market response times.

As a relatively new concept, digital manufacturing principles are being adopted industry-wide and at the MTC. As a result, we offer a range of courses to ensure that your staff are well-equipped to manage and implement these principles.

<https://the-amtc.co.uk/training/engineer-training/digital-manufacturing/>



NATIONAL SUPPORT MAP

The organisations shown provide support on a national basis with specific programmes aimed at SME businesses. Details of how to contact these organisations can be found in the following pages:





NATIONAL SUPPORT SCHEMES - OVERVIEW

HELP TO GROW

DIGITAL

Help to Grow: Digital

Website: [Help to Grow: Digital \(learn-to-grow-your-business.service.gov.uk\)](https://www.learn-to-grow-your-business.service.gov.uk)

Email: sme.helptogrow@beis.gov.uk

Help to Grow: Digital is a UK-wide government-backed scheme that aims to help you choose, buy and adopt digital technologies that will help you grow your business.

The Help to Grow: Digital scheme offers your business:

- Free, impartial advice and guidance about what digital technology is best suited to your business and how it can boost your business' performance
- Targeted financial support, if your business is eligible, worth up to £5,000 towards the costs of buying approved digital technologies

High Value Manufacturing Catapult (HVMC)

Website: <https://hvm.catapult.org.uk>

Enquire: [Talk to Us](#)

The HVMC are here to bridge the gap between business and academia, helping to turn great ideas into reality by providing access to world-class research and development facilities and expertise that would otherwise be out of reach for many businesses in the UK.



CATAPULT
High Value Manufacturing



**MADE
SMARTER**

MADE SMARTER

Website: <https://www.madesmarter.uk/>

Enquire: <https://www.madesmarter.uk/contact-us/>

We're leading the UK's ambitious plans to grow manufacturing through digital technologies, innovation and skills. Made Smarter was created following an industry-led review of how UK manufacturing industries can prosper through digital tools and innovation. Currently 4 main adoption programmes in England - North West, North East, West Midlands and Yorkshire & The Humber.

Knowledge Transfer Network (KTN)

Website: <https://ktn-uk.org/>

Enquire: [Connect With Us - Knowledge Transfer Network - KTN \(ktn-uk.org\)](#)

Innovate UK Knowledge Transfer Network exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions. UK Wide Support for SMEs.



UKRI
Innovate UK
KTN



CATAPULT
Digital

Digital Catapult

Website: <https://www.digicatapult.org.uk/>

Email: info@digicatapult.org.uk

Digital Catapult is the UK authority on advanced digital technology. Through collaboration and innovation, we accelerate industry adoption to drive growth and opportunity across the economy.



ENGLAND - REGIONAL SUPPORT MAP

The organisations shown can provide support on a regional basis with specific programmes aimed at SME businesses.

Local Growth Hubs

38 Growth Hubs Across England



The Centre for Process Innovation (CPI)



The Manufacturing Technology Centre (MTC)



The Manufacturing Technology Centre (MTC)



The National Composites Centre (NCC)



Farnborough Aerospace Consortium (FAC)



ENGLAND - NATIONAL SUPPORT ORGANISATIONS #1

Warwick Manufacturing Group (WMG) - Coventry

Website: <https://warwick.ac.uk/fac/sci/wmg/business/innovationexperience/>

Email: imcreception@warwick.ac.uk

WMG is the lead centre for two of HVM Catapult's 12 strategic objectives of Vehicle Electrification and Connected and Autonomous Vehicles (CAV), and is active in deploying Digital Manufacturing technologies to improve supply chain competitiveness.

Centre for Process Innovation (CPI) - Wilton

Website: [CPI | From innovation to commercialisation \(uk-cpi.com\)](https://www.cpi.com)

Enquire: [Contact | CPI \(uk-cpi.com\)](https://www.cpi.com)

The Centre for Process Innovation (CPI) uses applied knowledge in science and engineering combined with state of the art development facilities to enable our clients to develop, prove, prototype and scale up the next generation of products and processes.

The Advanced Manufacturing Research Centre (AMRC) Sheffield - Sheffield

Website: <https://www.amrc.co.uk/pages/smaller-companies>

Email: enquiries@amrc.co.uk

The AMRC is a network of world-leading research and innovation centres working with advanced manufacturing companies of any size.

The Manufacturing Technology Centre (MTC) - Coventry

Website: <https://www.the-mtc.org/what-we-do/sme-support/manufacturing-support-services/>

Email: mss@the-mtc.org

The MTC develops and proves innovative manufacturing processes and technologies in an agile, low risk environment, in partnership with industry, academia and other institutions. Drawing on the extensive resources and expertise at the MTC, our nationwide team of engineering experts support manufacturing SMEs to embed innovation and new ways of working to increase their competitiveness and accelerate their growth.

The National Composites Centre (NCC) - Bristol

Website: <https://www.nccuk.com/sectors/supporting-smes/>

Enquire: <https://www.nccuk.com/contact-us/>

The National Composites Centre (NCC) is the world leading authority on composites, bringing together the best minds and the best technologies, to solve the world's most complex engineering challenges.

Local Growth Hubs - England

Website: [LEP Growth Hubs | The LEP Network](https://www.lep-network.com)

If you are looking for business support or guidance, your local Growth Hub is there to help you.

The network of 38 Growth Hubs are local public/private sector partnerships led by the Local Enterprise Partnerships (LEPs). They join up national and local business support so it is easy for businesses to find the help they need.



ENGLAND - NATIONAL SUPPORT ORGANISATIONS #2

The Midlands Aerospace Alliance (MAA) - Midlands

Website: [Midlands Aerospace Alliance](#)

Email: info@midlandsaerospace.org.uk

The Midlands Aerospace Alliance was formed in 2003 to support and represent the aerospace industry across the Midlands region. The MAA currently has 300+ members with 60% of members make "flying parts," 40% make equipment for design, testing, manufacturing or provide specialist services.

More than 50 people serve on the MAA board or one of our three working groups -- a number maintained since 2004. This network lies at the heart of the MAA's achievements.

The North West Aerospace Alliance (NWAA) - North West England

Website: [Aerospace Industry North West England - North West Aerospace Alliance](#)

Email: claire.lambert@aerospace.co.uk

The North West Aerospace Alliance (NWAA) was formed in 1994 to represent and support the Aerospace Industry across the North West of England. NWAA represents approximately 25% of the UK aerospace industry with over 220 member companies and a combined turnover in excess of £7 Billion. NWAA has developed considerable technical expertise to support aerospace companies through the delivery of over £20 Million of supply chain improvement programmes such as Aerospace Supply Chain Excellence (ASCE), Growing Autonomous Mission Management Applications (GAMMA) and the National Aerospace Technology Programme (NATEP).

Farnborough Aerospace Consortium (FAC) - South England

Website: [FAC Home](#)

Email: kim.yeomans@fac.org.uk

FAC (Farnborough Aerospace Consortium) is a business-winning trade association with national and international members. It is the longest established aerospace and defence trade body in the UK, providing support to some 300 companies located in southern England – the heart of the UK's aerospace industry.

The West of England Aerospace Forum (WEAF) - West of England

Website: [West of England Aerospace & Advanced Engineering Forum – WEAF](#)

Enquire: enquiries@weaf.co.uk

The West of England Aerospace Forum (WEAF) is a membership trade organisation that is passionate about all aspects of aerospace and defence. Our member and partner base represent a very wide spectrum – from SMEs to global corporations.

As one of the largest aerospace and defence associations in Europe, we are able to provide a strong voice for our members, as well as representation and access to prominent regional, national and international decision makers in industry and government.

By providing support and new opportunities for our members, we strive to improve efficiency and effectiveness in the supply chain, and bring stakeholders together to create one cohesive community.



ENGLAND - MIDLANDS REGION

Local Growth Hubs - example Support

Digital UpScaler Project, D2N2 Growth Hub

Derbyshire and Notts

Website: www.d2n2growthhub.co.uk/grow/scale-up-support/digital-upscaler-project

- Intensive one-to-one digital adviser support
- Funded diagnostic consultancy and support to implement new technology
- Digital strategy programme and Technology Forums
- Capital technology grants of between £10,000 - £50,000

Digital Growth Programme, East Midlands Chamber of Commerce

Leicester and Leicestershire

Website: www.emc-dnl.co.uk/supporting-growth/access-to-funding/digital-growth-programme-grants

- Grants from £2,000 to £25,000 for SMEs looking to exploit existing technology solutions or, with the introduction of new systems and software, to assist with the implementation of new digital resources



Universities support programmes

Innovation Network, Coventry Uni Enterprises (CUE)

Coventry & Warwickshire, Black Country and Greater Birmingham and Solihull

Website: www.cuebusinessolutions.com/portfolio-item/innovation-networks-2

- Grants of up to £10,000 for SMEs who are working with at least 2 other businesses to develop innovative new products, processes or services



Focus Digital, Coventry Uni Enterprises (CUE)

Coventry & Warwickshire, Black Country and Greater Birmingham and Solihull

Website: www.cuebusinessolutions.com/portfolio-item/focus-digital-find-out-more-2

- Grants towards projects up to £12,500 to help SMEs introduce new digital products, systems and processes



Smart Concept Fund, Wolverhampton University

Black Country, The Marches, Stoke on Trent and Staffordshire

Website: www.wlv.ac.uk/business-services/funding-and-support/the-smart-concept-fund

- Proof of Concept Grant of up to £16,500 designed to support the commercialisation of new technologies



Grant Funding and Funded Support - Digital specific

DI4M - Digital Innovation for Manufacturing, WMG

Coventry

Website: <https://warwick.ac.uk/fac/sci/wmg/business/innovationexperience/digitalsolutions>

- Collaborative projects to maximise the impact of digital technologies
- Internships



Grant Funding and Funded Support - Business Generic

Aerospace UP, Midlands Aerospace Alliance (MAA) and University of Nottingham.

Midlands

Website: www.aerospaceup.com/digital

Email: AerospaceUP@midlandsaerospace.org.uk

- AerospaceUP R&D Grant from £1,000 to £100,000, can be used for Digitisation
- Small support package: Expert help for Digitisation, Digital Baseline Review



Manufacturing Growth Programme (MGP), Oxford Innovation Advice

Midlands

Website: www.manufacturinggrowthprogramme.co.uk

Email: enquiries@oxin.co.uk

- Small Business improvement Grant (Maximum project value of £10,000 with a minimum grant value of £1,000)
- Business diagnostic tool GROWTH mapper will highlight a range of growth solutions, including Digitisation

The Manufacturing Technology Centre (MTC)

West Midlands

Website: <https://www.the-mtc.org/what-we-do/sme-support/>

Email: mss@the-mtc.org

- Tailored support programmes for digital technology adoption and manufacturing improvement. Match funded.





ENGLAND - SOUTH EAST REGION

Grant Funding and Funded Support - Digital specific

Future Worlds - Connecting the world to University of Southampton start-ups and spinouts

Future Worlds is the on-campus start-up accelerator at the University of Southampton. We exist to help aspiring student and staff entrepreneurs change the world with their ideas.
www.futureworlds.com

Universities support programmes

EMphasis3 CO2 Reductions Project, University of Portsmouth, Greentech South

Website: <https://www.greentechsouth.com/emphasis3>

- Free energy efficiency audits
- Research and Development grant funding: grants are funded at 36% for projects up to £25,000

ARIC Home - Aerospace Research and Innovation Centre

From collaborative research through knowledge transfer to business start-up support, ARIC is set to become an iconic aerospace gateway, embodying Farnborough's aviation history as a neutral space to develop aerospace/space technology for the future.
<https://aric-farnborough.com/>



CEMAST Campus for Engineering - Study at Fareham College

Since it opened in 2014, the CEMAST campus has become renowned as a pioneering state-of-the-art facility in terms of its industry-leading workshops, technology and equipment, providing students with a unique and industry-standard training environment.
www.fareham.ac.uk



Local Growth Hubs—Example Support

Enterprise M3 Growth Hub (Hampshire and Surrey.)



Website: www.enterprisem3.org.uk

- Intensive, fully funded, one-to-one growth support
- Support in Net Zero, Marketing, and bid writing for grants
- Specialist peer programmes

SPRINT - SPace Research and Innovation Network for Technology

SPace Research and Innovation Network for Technology. SPRINT provides unprecedented access to the expertise and facilities at top UK space universities to help businesses accelerate the development of their products and services through the commercial exploitation of space data and technologies.
www.sprint.ac.uk

South Coast Centre of Excellence in Satellite Applications

The South Coast Centre of Excellence in Satellite Applications End of Year Publication 2021 was published on the 1st February 2022 and captures the impact of the centre's work in enabling businesses and academics to explore and exploit satellite technology to truly realise the 'possible' across the south coast.

www.sa.catapult.org.uk

Low Carbon in the South and East (LoCASE),

Grant Funding and Funded Support - Business Generic

Hampshire/Surrey

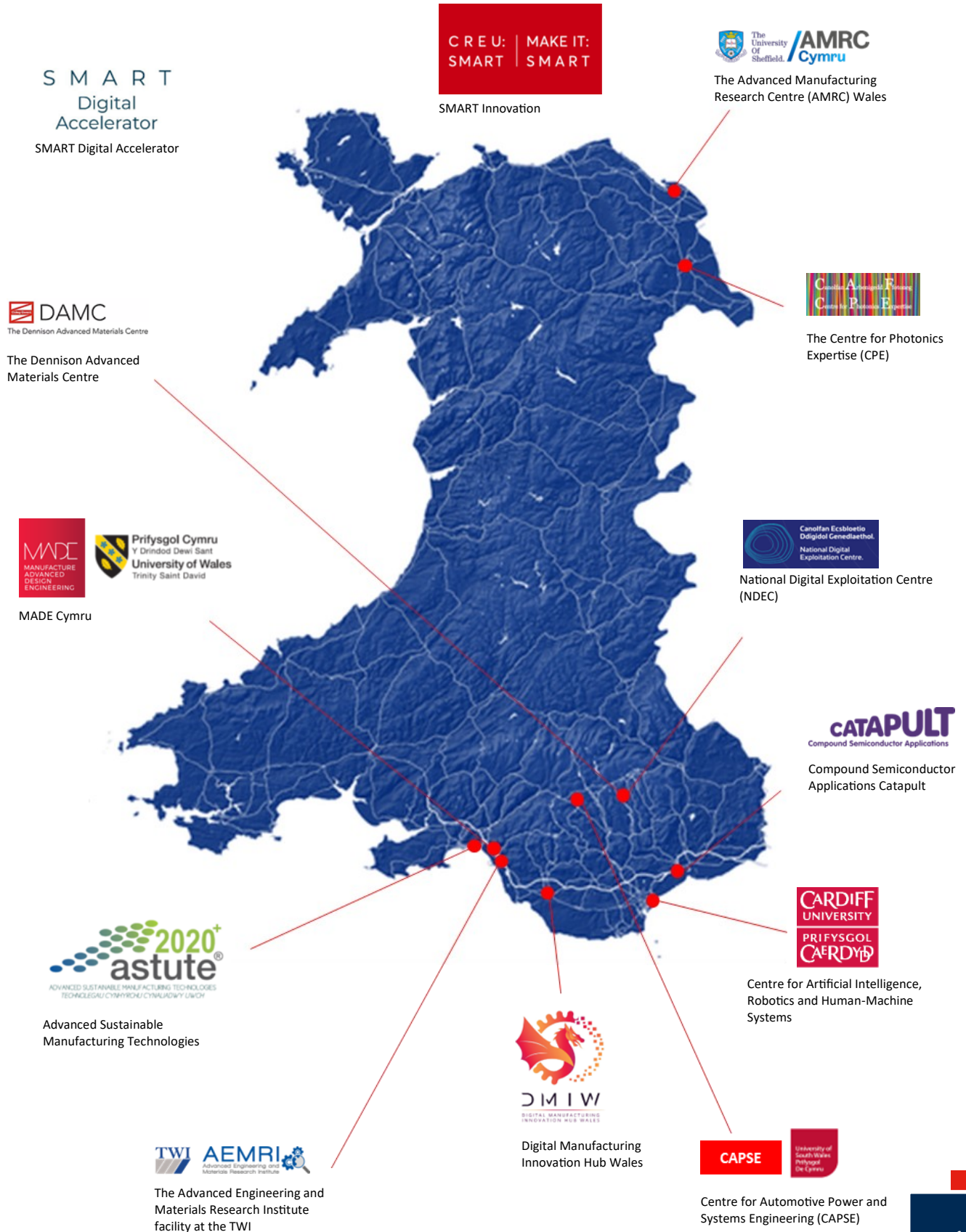
Website: <https://locase.co.uk/>

The LoCASE programme offers businesses within Rushmoor the opportunity to apply for a grant of up to £10,000 to cover 40% of the cost of introducing energy efficient measures or the purchase of energy efficient equipment.



WALES - REGIONAL SUPPORT MAP

The organisations shown can provide support on a regional basis with specific programmes aimed at SME businesses.





WALES - NATIONAL SUPPORT ORGANISATIONS #1

SMART Innovation

Website & Enquire: <https://businesswales.gov.wales/innovation/smart-innovation>

SMART Innovation is a unique programme lead by the Welsh Government and funded by EU money with the single aim of helping Welsh businesses do better by being more innovative.

SMART Digital Accelerator - University of Wales

Website: [SMART Digital Accelerator | University of Wales Trinity Saint David \(uwtsd.ac.uk\)](https://www.smartdigitalaccelerator.ac.uk/)

Email: accelerator@uwtsd.ac.uk

SMART Digital Accelerator is a team of industry expert advisers who work with manufacturers in Wales to help them identify the right technology to boost their bottom line.

MADE Cymru - University of Wales Trinity Saint David, Lampeter

Website: <https://www.madecymru.co.uk/>

Email: made@uwtsd.ac.uk

MADE Cymru is a suite of EU-funded projects supported by the European Structural and Investment Funds through the Welsh Government and delivered by University of Wales Trinity Saint David. Our university-accredited courses and expert-led business support scheme can help individuals and organisations to adapt to both the challenges and opportunities of Industry 4.0.

The Advanced Manufacturing Research Centre (AMRC) Cymru - Flintshire

Website: <https://www.amrc.co.uk/facilities/amrc-cymru-wales>

Email: wales-enquiries@sheffield.ac.uk

The AMRC Cymru offers cutting edge research providing game-changing support to businesses and to act as a catalyst for industry and academic collaborations across multiple advanced manufacturing sectors.

The Centre for Photonics Expertise (CPE) - St Asaph

Website: <https://cpe-wales.org/>

Email: info@cpe-wales.org

The CPE works with companies in Wales to improve, or develop, new products and processes to benefit their businesses. It is a partnership of four Welsh Universities, and is funded by WEFO.

National Digital Exploitation Centre (NDEC) - Ebbw Vale

Website: <https://www.thalesgroup.com/en/europe/united-kingdom/about-thales-uk/our-uk-locations/thales-wales/national-digital-exploitation>

Email: enquiries@NDEC.org.uk

The centre exists as a cornerstone of Thales' cyber capabilities within the UK and aims to support the Welsh Government's programme of digital investment and transformation. It does this by providing support, training and project space to large organisations, SMEs and individuals, research and development opportunities, and by helping to win work-share within Wales.



WALES - NATIONAL SUPPORT ORGANISATIONS #2

The Dennison Advanced Materials Centre (DAMC) - Ebbw Vale

Website: <https://www.damc-composites.co.uk/>

Email: daniel.lockett@colegwent.ac.uk

DAMC is one of a limited number of further education colleges in the UK that can provide advanced composite training as part of its Aeronautical and Motorsport Engineering Courses.

Centre for Automotive Power and Systems Engineering (CAPSE) - University of South Wales

Website: <https://www.southwales.ac.uk/research/research-groups/capse/>

CAPSE is a nationally recognised independent research, development, test and certification house. We have a reputation for cutting edge research and knowledge transfer activities within the advanced automotive and power systems engineering sectors.

Advanced Engineering and Materials Research Institute - TWI Wales – Port Talbot

Website: <https://www.aemri.co.uk/>

Enquire: <https://www.aemri.co.uk/contact/>

The AEMRI is a state-of-the-art engineering inspection and validation facility. The facility supports dynamic sectors including aerospace, automotive, electronics, and nuclear and renewable energy.

Compound Semiconductor Applications Catapult - Newport

Website: <https://csa.catapult.org.uk/>

Enquire: collaboration@csa.catapult.org.uk

CSA Catapult was established to help the UK become a global leader in compound semiconductors through collaboration with both large companies, and start-ups to develop and commercialise new applications utilising this technology

Advanced Sustainable Manufacturing Technologies - Swansea

Website: <https://www.astutewales.com/en/>

Email: info@astutewales.com

ASTUTE 2020 will collaborate with the High-Value Manufacturing industry across Wales to stimulate transformational & sustainable growth by facilitating and de-risking the development and adoption of advanced technologies, increasing competitiveness and future proofing.

Digital Manufacturing Innovation Hub Wales - Bridgend

Website: <https://www.dmiw.co.uk/>

Email: info@dmiw.co.uk

The Digital Manufacturing Innovation Hub Wales (DMIW) is a Welsh Digital Innovation Hub, supporting innovation and the exploitation of industrial digital technologies within manufacturing and processing SMEs.

Centre for Artificial Intelligence, Robotics and Human-Machine Systems - Cardiff

Website: [Centre for Artificial Intelligence, Robotics and Human-Machine Systems - Cardiff University](#)

Email: irohms@cardiff.ac.uk

The Centre for Artificial Intelligence, Robotics and Human-Machine Systems (IROHMS) research builds on the strength of globally established academics in the field of digital manufacturing and robotics, human factors and cognitive psychology, mobile and social computing and artificial intelligence.



SCOTLAND - REGIONAL SUPPORT MAP

The organisations shown can provide support on a regional basis with specific programmes aimed at SME businesses.



Scotland's main economic development agency & SMAS delivery lead



Advanced Manufacturing in the West Highlands



Additive Manufacturing – Business and Technology Support (AM-BATS)



National Manufacturing Institute Scotland



Advanced Forming Research Centre



Centre for Sensing Imaging and Internet of Things (IOT) Technologies

The Critical Engineer

The Critical Engineer



SCOTLAND - NATIONAL SUPPORT ORGANISATIONS #1

SMAS & Scottish Enterprise - Glasgow

Website: <https://www.scottish-enterprise.com/support-for-businesses/develop-products-and-services/support-for-manufacturers>

Enquire: <https://www.scottish-enterprise.com/support-for-businesses/develop-products-and-services/support-for-manufacturers/support-for-manufacturers-enquiry>

A dedicated team of practitioners are key in helping improve business performance. In addition to our core support for Operational Excellence, SMAS can support Culture and Leadership development, Supply Chain development, Adoption of Digital Technologies and Business resilience challenges. A key strength for SMAS is the connection and links to other areas within Scottish Enterprise. The ability to draw on expertise from SE functions such as Sustainability, Digital Transformation and Innovation can add significantly to any company engagement success .

National Manufacturing Institute Scotland (NMIS) - Glasgow

Website: <https://www.nmis.scot/>

Enquire: <https://www.nmis.scot/get-in-touch/>

A place where industry, academia and the public sector work together on ground-breaking manufacturing research to transform productivity levels, makes companies more competitive and boost the skills of our current and future workforce.

CENSIS - Glasgow

Website: <https://censis.org.uk/>

Email: info@censis.org.uk

CENSIS is Scotland's Innovation Centre for sensing, imaging and Internet of Things (IoT) technologies. We work with private and public organisations of all sizes to de-risk and accelerate innovation and overcome technology barriers to achieve business transformation.

Advanced Manufacturing in the West Highlands - Fort William

Website: <https://www.whc.uhi.ac.uk/business/advancing-manufacturing/>

Email: amc.whc@uhi.ac.uk

Our mission is to help you bring the ideas you have into reality by supporting you with services in design and manufacturing.

Whether you need access to equipment and technology, or professional management input into research, development or design - we're here to help.

All of our services are offered at zero cost to small and medium businesses by our highly experienced team.

Advanced Forming Research Centre (AFRC) - Glasgow

Website: <https://www.strath.ac.uk/research/advancedformingresearchcentre/>

Email: info@afrc.org.uk

The Advanced Forming Research Centre is a globally-recognised centre of excellence in innovative manufacturing technologies, R&D, and metal forming and forging research. We work with all types of organisations: from global original equipment manufacturers (OEMs) all the way through to local manufacturing companies.



SCOTLAND - NATIONAL SUPPORT ORGANISATIONS #2

The Critical Engineer - Glasgow

Website: <https://www.thecriticalengineer.net/>

Email: Paul.Fagan@wcs.ac.uk

The Critical Engineer is a new approach to work-based learning. If you are a small or medium enterprise seeking to modernise, our FREE events will help you to develop a culture of innovation and develop the skills and confidence of your employees, so that your company can be part of Scotland's advanced manufacturing future.

Additive Manufacturing – Business and Technology Support (AM-BATS) - Glasgow

Website: <https://www.nmis.scot/collaborative-projects/additive-manufacturing-business-technology-support/>

Enquire: <https://www.nmis.scot/get-in-touch/>

Our team of experts is on hand to offer free knowledge and support to Scottish-based SMEs, micro-companies, sole-traders, and start-ups that may be exploring the potential opportunities and, are learning how to navigate through the challenges of implementing additive manufacturing in their business.

Additive Manufacturing - Business and Technical Support (AM-BATS) is a research and knowledge transfer project which forms part of the Scottish Government's Advancing Manufacturing Challenge Fund (AMCF).

Online Digital Manufacturing & Leadership CPD Programme - Glasgow

Website: [Online Digital Manufacturing and Leadership CPD training support | National Manufacturing Institute Scotland \(NMIS\)](#)

Email: amcf-cpd@strath.ac.uk

DML-CPD provides digital manufacturing training support to help manufacturing SMEs navigate the digital transformation journey.

As we navigate into an uncertain future, the need for Scottish SMEs to improve their manufacturing capabilities has never been greater.

The support available from this AMCF project will help your organisation to Manage and exploit digital disruption, Advance and upskill the workforce, Become more efficient and productive & Make better informed technology investments.



NORTHERN IRELAND - REGIONAL SUPPORT MAP

The organisations shown can provide support on a regional basis with specific programmes aimed at SME businesses.



Invest Northern Ireland is the regional business development agency for Northern Ireland. Invest NI's role is to grow the local economy by helping new and existing businesses to compete internationally, and by attracting new investment to Northern Ireland.

Further details on support available and our sectors can be found here:

<https://www.investni.com/>

<https://www.investni.com/international-business/our-sectors>

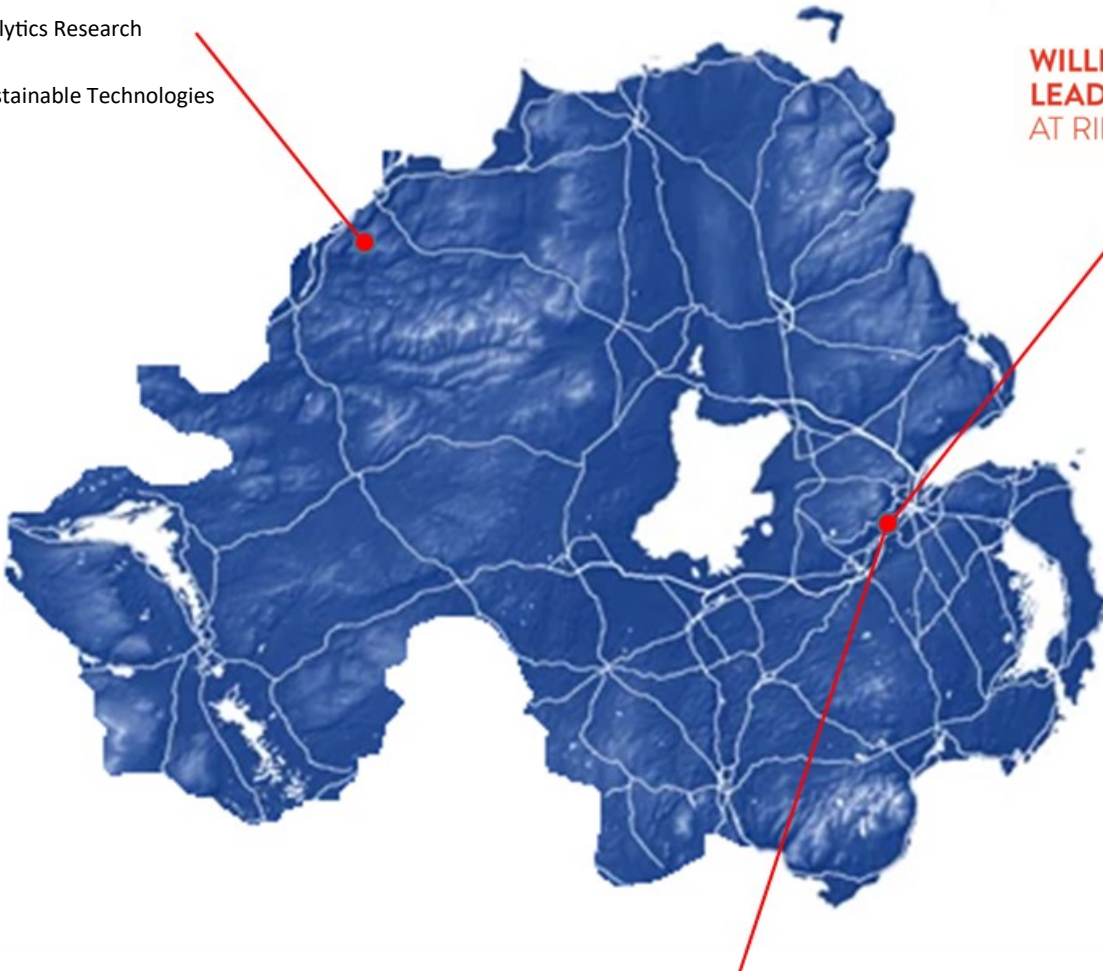


Intelligent Systems Research Centre
Cognitive Analytics Research Laboratory
Centre for Sustainable Technologies



**WILLIAM J. CLINTON
LEADERSHIP INSTITUTE
AT RIDDEL HALL**

**DIGITAL
CATAPULT
CENTRE**
NORTHERN
IRELAND





NORTHERN IRELAND - NATIONAL SUPPORT ORGANISATIONS #1

Centre for Intelligent Autonomous Manufacturing Systems (iAMS)

Website: <https://www.qub.ac.uk/sites/iams/>

iAMS purpose is to research, develop and demonstrate innovative technologies that enable and underpin the rapidly evolving digital manufacturing world, iAMS work in partnership with the Northern Ireland Technology Centre to develop innovative technologies and solutions to address the challenges of Industry 4.0.

Northern Ireland Technology Centre (NITC)

Website: <https://www.qub.ac.uk/sites/nitc/>

Email: nitc@qub.ac.uk

NITC is a technology and innovation centre, bridging the gap between academic research and commercial production, to meet industry's needs. The NITC activities include working with leading OEM's as well as with local SME's, on projects focusing on Design, Engineering and Manufacturing.

Institute of Electronics, Communication and Information Technologies (ECIT)

website: <https://www.qub.ac.uk/ecit/>

email: info@ecit.qub.ac.uk

The Institute of Electronics, Communications and Information Technology is host to the award winning UK Innovation & Knowledge Centre for cyber security, The Centre for Secure Information Technologies, ECIT also houses The Centre for Wireless Innovation and The Centre for Data Science and Scalable Computing. ECIT are on a mission to make the changing global digital space both safer and faster.

Centre for Secure Information Technologies (CSIT)

Website: <https://www.qub.ac.uk/ecit/CSIT/>

Email: ecit@qub.ac.uk

CSIT is the UK's Innovation and Knowledge Centre for cyber security. CSIT mission is to couple major research breakthroughs in the field of secure information technologies with a unique model of innovation and commercialisation to drive economic and societal impact for the nation.

Polymer Processing Research Centre

Website: <https://www.qub.ac.uk/research-centres/PolymerProcessingResearchCentre/>

The Polymer Processing Research Centre (PPRC) was established in 1996 to conduct and support leading edge, industrially exploitable, fundamental and applied R&D to demonstrably improve industrial competitiveness. Research staff in the Centre work side by side with industrial and academic partners from across the world in developing new processes and innovative products and provide input to the implementation of new technologies. From brainstorming new ideas for projects to developing entire new processes right through extensive pilot plant trials before ultimately implementing these new developments into full scale production plants.

William J Clinton Leadership Institute

Website: <https://www.leadershipinstitute.co.uk/>

Email: leadershipinstitute@qub.ac.uk

Delivers impactful executive education programmes designed to develop leadership identity, transform performance and give participants the competitive edge. A range of short courses, open and custom programmes synergise the rich academic foundation of Queen's Management School, Queen's University research and industry insights and address many of the digital deployment and transformation challenges.

Northern Ireland Advanced Composites and Engineering Centre (NIACE)

Website: <http://www.niace-centre.org.uk/>

Email: info@niace.org

The Northern Ireland Advanced Composites and Engineering Centre (NIACE) is a technology hub for the research and development of advanced engineering and advanced materials technologies across a range of industrial sectors. Its vision is to establish a world leading knowledge hub that delivers innovative solutions for industry through collaborative research and technological advancement.



NORTHERN IRELAND - NATIONAL SUPPORT ORGANISATIONS #2

Intelligent Systems Research Centre (ISRC)

Website: <https://www.ulster.ac.uk/research/topic/computer-science/intelligent-systems-research-centre>

A state-of-the-art research environment established in 2007 with an extensive array of leading-edge robotic devices. ISRC translate research into technologies that catalyse innovation in small and large enterprises. ISRC co-locates researchers, engineers and commercial development experts and directly building innovation capability in SMEs and large industry locally including core partners such as Seagate and Allstate.

Cognitive Analytics Research Lab (CARL)

Website: <https://www.ulster.ac.uk/cognitive-analytics-research>

Ulster University's Cognitive Analytics Research Lab (CARL) is a cutting edge cognitive analytics research centre bringing together businesses, government and advanced research expertise.

Centre for Sustainable Technologies (CST)

Website: <https://www.ulster.ac.uk/research/topic/built-environment/sustainable-technologies>

The Centre for Sustainable Technologies undertakes multidisciplinary research to design, create, develop, improve, demonstrate and evaluate emerging, existing and alternative sustainable renewable energy, building design, construction materials, transport and environmental modification technologies.

Artificial Intelligence Research Centre (AIRC)

Website: <https://www.ulster.ac.uk/research/topic/computer-science/artificial-intelligence>

Focusing on Knowledge and Data Engineering including machine learning, knowledge representation and reasoning, informatics and systems, and foundations of artificial intelligence. AIRC's vision is to develop AI technologies that underpin an intelligent society, empower people and support a sustainable future.

Digital Catapult NI

Website: <https://www.digicatapult.org.uk/about-us/our-regional-centres/northern-ireland/>

Part of Digital Catapult UK network, Digital Catapult Northern Ireland connects industry and academia to build innovative partnerships, helping organisations of all sizes to work smarter by originating and adopting advanced digital technologies. Working closely with InvestNI, the Department for the Economy and FSNI, Digital Catapult Northern Ireland introduces businesses to new possibilities by sharing use cases that demonstrate how emerging technologies are being deployed in industry.

Digital Surge Programme

Website: <https://antrimandnewtownabbey.gov.uk/business/support-for-businesses/business-initiatives/digital-surge/>

The Digital Surge Programme is supported by all 11 local councils for businesses across all of Northern Ireland that are deemed to have digital transformation potential and related ambitions across any sector. This fully funded programme is for eligible organisations from any sector including manufacturing, tradeable services, retail, tourism, hospitality, agriculture, construction and social enterprises. You can find further information on your local council business support site, or Antrim and Newtownabbey council have agreed to take the lead role in coordinating the programme.

Artificial Intelligence NI

Website: <http://artificialintelligenceni.com/>

Networking the Northern Ireland AI community is the core mandate that drives AINI. This will be achieved through organising events that target a wide range of demographics that include companies, students and academia. Each of these events (Belfast based initially) will comprise presentations, workshops and panel discussions designed to educate & amplify; stimulate discussion but more importantly highlight the amazing Northern Ireland AI community.

Operate Technology - Advanced Research + Engineering Centre

Website: <https://www.pwc.co.uk/careers/experienced-careers/opportunities/operate-technology.html>

Technology solutions that power operational delivery through breakthrough research and engineering and results driven tech implementation.



NORTHERN IRELAND - NATIONAL SUPPORT ORGANISATIONS #3

Further Education (FE) Colleges

Northern Ireland's Further Education Colleges provide support to businesses, for further information follow these links:

- Belfast Metropolitan College <https://www.belfastmet.ac.uk/support-for-business/>
- Northern Regional College <https://www.nrc.ac.uk/>
- North West Regional College <https://www.nwrc.ac.uk/business>
- South Eastern Regional College <https://www.serc.ac.uk/business-services/>
- South West College <https://swc.ac.uk/about/business-services>
- Southern Regional College <https://www.src.ac.uk/>

Northern Ireland City and Growth Deals

Over the next 10 years, Northern Ireland is set to benefit from a £1.3bn package of investment from four City and Growth deals. The deal package will include funding from the UK Government, NI Executive along with local councils, and private sector funding. The deals will provide opportunities for businesses, located both in and outside Northern Ireland to collaborate and tap into the world-leading expertise of our universities to create breakthrough technologies, products and services.

The four City & Growth Deals are:

- Belfast Region City Deal
- Derry~Londonderry & Strabane - Region City Deal
- Mid-South West Growth Deal
- Causeway Coast & Glens Growth Deal

Further information found here: <https://www.investni.com/international-business/why-northern-ireland/city-deals>

The following facilities will be created as part of these deals:

Advanced Manufacturing Innovation Centre (AMIC)

Website: <https://www.brcd-innovation.co.uk/projects/amic>

The Advanced Manufacturing Innovation Centre will operate at the interface between academia and industry, by creating new opportunities for innovative manufacturing in the Belfast City Region. A state-of-the-art Factory of the Future is planned as the flagship facility of the project, with an ambition to be Northern Ireland's national centre for Advanced Manufacturing.

Global Innovation Institute (GII)

Website: <https://www.brcd-innovation.co.uk/projects/gii>

Global Innovation Institute (GII) will be a nexus for co-innovation between researchers and industry in data security, connectivity and analytics. GII is a cross-disciplinary project led by Queen's University, building on the world-class Institute of Electronics, Communications & Information Technology (ECIT) that has already put Belfast on the map in terms of digital innovation.

i4C Innovation Centre (i4C)

Website: <https://www.midandeantrim.gov.uk/business/belfast-region-city-deal/#i4c>

The i4C proposal involves the construction of a new, significant scale innovation and clean technology centre for SMEs. i4C has a Memorandum of Understanding in place with AMIC and will offer innovation programmes for SMEs in the region as well as wraparound support to tenants. The Innovation Lab (iLAB) at i4C also forms a key part of the i4C proposal allowing for an engineering staff led and well-equipped workshop that focuses on developing products, services, training and solutions for the Cleantech sector.

Centre for Industrial Digitalisation, Robotics and Automation (CIDRA)

Website: <https://www.derrycitydeal.com/projects/cidra>

The facility will provide a template model factory demonstrating agile manufacturing, integrating artificial intelligence, IIoT, robotics, automation, and digital communications into industrial manufacturing process. This will allow industry to see, evaluate and gain hands-on experience in terms of what digital technologies can do for their company (a Digital Transformation Demonstrator) as well as evaluation of designs, rapid implementation and testing.



CASE STUDIES

The following organisations are available to provide support for businesses adopting digitalisation as shown previous in this pack. Most have dedicated SME support teams and are able to identify opportunities for support funding.

Below you will find links to see for yourself what these Businesses and Organisations can do in the way of support for Digitalisation. We have selected a few examples for this pack on the following pages which are directly linked to manufacturing in Aerospace.

Made Smarter

Made Smarter is leading the UK's ambitious plans to grow manufacturing through digital technologies, innovation and skills. Made Smarter can support your business in endless ways through digital technology. Whatever goal you are working towards, Made Smarter can find a smarter solution: Improve Capacity, Maximise Efficiency, Reduce Lead Times, Increase Profits.

Find Case Studies here: <https://www.madesmarter.uk/resources/case-study/>

High Value Manufacturing Catapults – (AFRC/AMRC/CPI/MTC/NCC/NAMRC/WMG)

The HVMC's work through seven world-class centres of industrial innovation, they help accelerate new concepts to commercial reality. They help you design, develop and deliver innovation. Delivering the solutions of their customers need, where they need them. They work with their partners and clients to deliver impactful projects, products and services that help to reduce costs, improve reliability, create jobs and contribute to the UK manufacturing sector.

Find Case Studies here: [https://hvm.catapult.org.uk/news-media/?types\[\]=case-study](https://hvm.catapult.org.uk/news-media/?types[]=case-study)

Knowledge Transfer Network

The world we live in faces ever-changing societal, environmental and economic challenges, which are felt regionally, nationally and also globally. At KTN their mission is to connect ideas, people and communities to respond to these challenges and drive positive change through innovation.

Their diverse connections span business, government, funders, research and the third sector.

Find Case Studies here: <https://ktn-uk.org/knowledge-centre/casestudy/>

Digital Catapult

We bring out the best in business by accelerating new possibilities with advanced digital technologies.

We work with a range of organisations – including startups and scaleups, established businesses, investors, government and public sector, research and academia – to discover new ways of solving industry challenges, increase productivity and open up new markets.

Find Case Studies here: <https://www.digicatapult.org.uk/news-and-insights/case-studies/>



CASE STUDY #1

ELE Advanced Technologies – Machine Condition monitoring

The Challenge:

Currently at ELE, most machines are operated manually and not managed by a digital system. When the process varies due to machine issues, the operator can easily miss the change when the tolerance levels are exceeded. Additionally, little information is available on machine performance and product quality until the cycle is finished. Although machines are serviced regularly, performance issues and mini breakages regularly occur. The lack of data means root-cause analysis relies on individual knowledge and their account of events which is not always reliable and not sustainable with growing production demand.

The Solution:

By working with Made Smarter, ELE has adopted a machine condition monitoring solution. Sensors have been fitted to six business critical machines to record a variety of signals such as spindle load, coolant pressure, temperature, and motor load. These signals are fed into a control box where they produce a baseline for optimum machine performance for each part number produced. A dashboard on the machine displays real time measurements, giving the operator a quick visual of performance. If the performance starts to deviate the dashboard will display a warning light enabling the operator to assess the situation and potentially escalate to the maintenance engineers. The engineer is then able to perform diagnostics and analyse any trends, putting the wheels in motion to repair or replace a required part before the machine breaks down.



The Benefits:

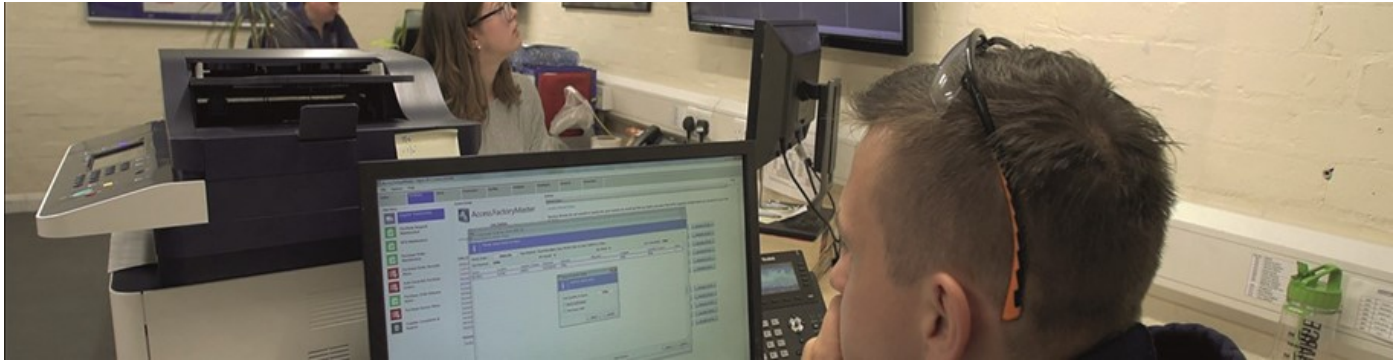
ELE forecasts improvement in machine uptime by 10%, a reduction in maintenance spend of 10% and improvements in accuracy and reliability. Additionally, opportunities have been identified to expand and upskill the maintenance team. Further benefits are expected in the overall reduction of energy consumption.

<https://www.madesmarter.uk/resources/case-study-ele-advanced-technologies/>



CASE STUDY #2

HARRIS RCS - DATA VISUALISATION AND OPTIMISATION



The Challenge:

Harris RCS is a successful family-run aerospace business. With growth in their sector and customers demanding excellence, considerable pressure was placed on their delivery performance. With MTC support, Harris RCS identified scheduling as the root-cause of wasted time and failed deliveries. Understanding that resources were limited, the project focussed on better utilising existing resources and IT infrastructure to improve scheduling and planning.

The Solution:

The MTC constructed a shared vision of a visual workplace, where the schedule was planned and communicated to the shop-floor via large plasma screens. User-specific dashboards were installed on the shop-floor displaying daily plans, performance and business intelligence in real time. The order status is communicated in a visual colour-coded system. The data is generated automatically, communicating accurate and reliable delivery dates to their customers.

The Outcome:

- Data has been transformed into an understandable format, assisting staff in good decision making
- The innovation has gone beyond supporting the scheduling process. The team are using the digital information to validate costs, pricing and identify opportunities for improvements. They are now able to verify the true impact of new investments
- The project has brought a new energy to the factory and employees are bringing ideas to the management team for further optimisation

The Benefits:

- Achieved a 20% increase in productivity
- Improvement of On Time In Full (OTIF) to 98.3%
- Received a performance award in November 2017 from their customer, Incora
- Up-skilling of staff

<https://www.the-mtc.org/case-studies/harris-rcs-digital-solution-drives-productivity-efficiency-and-waste-reduction/>



CASE STUDY #3

Beverston Engineering – Machine and system connectivity

The Challenge:

Beverston began its digitisation journey three years ago after embarking on a knowledge transfer partnership with Liverpool John Moores University to deep dive into how technologies could help it achieve its business goals.

Beverston's challenge was its lack of connectivity between its ERP system and 18 machines on the factory floor.

Rod Wah, MD says “...we didn't have real-time visibility for monitoring production. We monitor production based on manual inputs of jobs, production and labour in a manufacturing execution system on the factory floor. So manual intervention opens us up to human error. We want a system that automatically captures the data being produced by our machines and processes, and then tells you what you need to know then and there, not weeks after the event.”



The Solution:

The company introduced IIoT connectivity by installing the iSmart Smooth Monitor AX System that collects data from its range of machinery and transmits it to the central database.

The real-time status of each machine is presented on a platform to give Beverston overall visualisation of factory status. This can also be monitored remotely via a smartphone or tablet.

The next phase is to create a digital manufacturing management system, bringing together all production processes for monitoring and enabling the automation of repetitive activities.

The Benefits:

By introducing the 'productivity control room' and making operators aware of how their time management affects machine use, Beverston aims to increase productivity efficiency. It estimates that it can increase the current machine use rate in the factory floor, currently 38,640h/year and 70 percent of machine available hours, by 5%, the equivalent of 2,760h/year.

Beverston forecasts that using the sensors for real-time monitoring it will be able to measure efficiency more accurately and further improve it by 15%.

Beverston also plans to monitor and display environmental conditions, energy consumption and CO2 footprint in the factory in real-time.

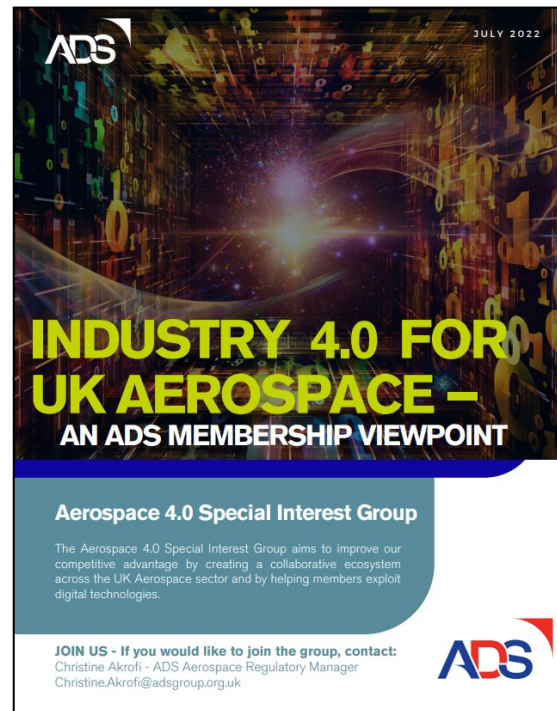
<https://www.madesmarter.uk/media/30jd233f/beverston-case-study.pdf>





Reference ADS Document

The ADS Aerospace 4.0 Special Interest Group has recently surveyed the supply chain to assess the adoption of digital technologies in the manufacturing industry today. From these results they have compiled a detailed report, 'Adopting Industry4.0 – An ADS membership viewpoint'.



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