

# Advanced Engineering & Manufacturing

In a world in need of green and digital solutions, Gloucestershire continues to be at the centre of innovation in engineering and manufacturing

**£18.8 Billion**  
Gloucestershire GVA

**£2.98 Billion**  
Generated by Gloucestershire manufacturing firms

**35,000**  
Employed in Gloucestershire's AEM sector

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**Gloucestershire and the wider region**



# Welcome to Gloucestershire: The place to innovate and grow your business

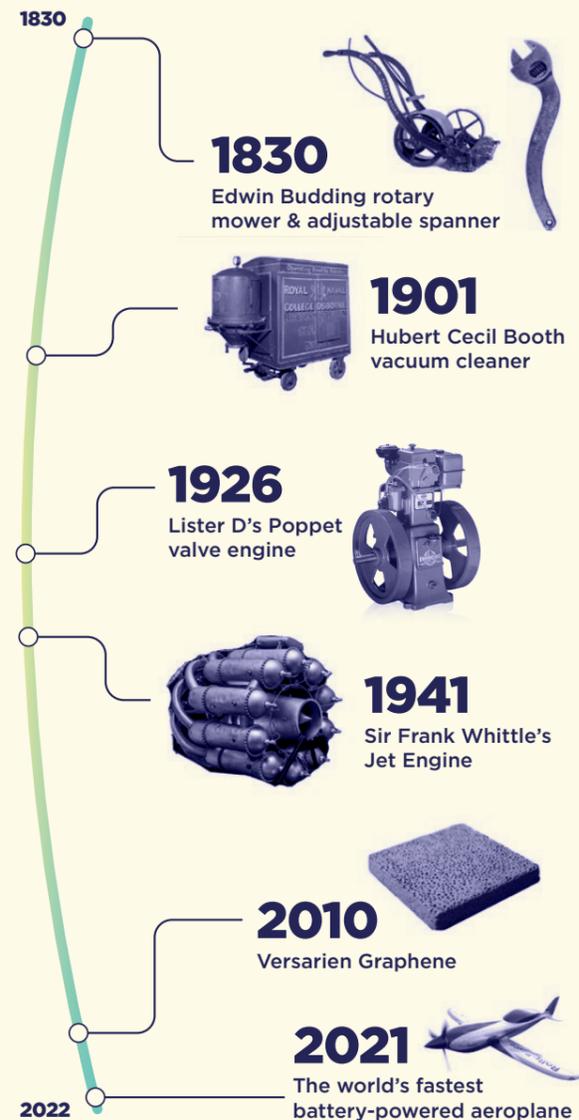
Gloucestershire, centrally located in the UK and just two hours from London, with towns and cities nestled within the famous Cotswolds, has been pushing the boundaries of engineering for over 200 years. A gateway to the South West, South Wales and West Midlands – clusters for aerospace, marine and automotive activity.

Engineering and manufacturing is a sector that is already worth £2.8 billion and employs over 35,000 people in Gloucestershire. As we rapidly utilise new digital technology and seek to develop greener products and services, the county's firms continue to innovate.

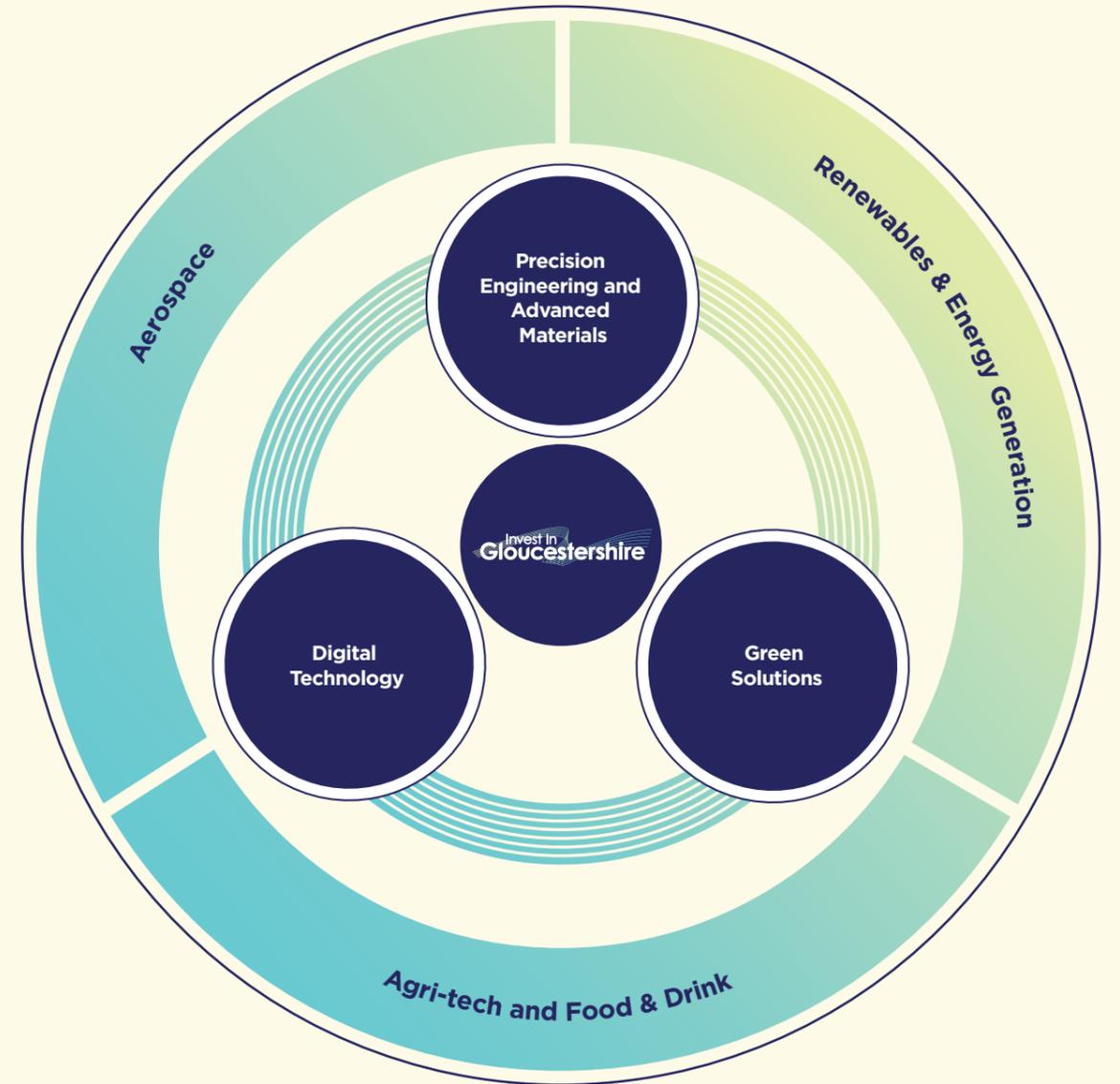
These businesses are at the forefront of technology across advanced engineering & manufacturing, including aerospace, agri-tech and renewables, whilst maintaining a green and beautiful environment.

Gloucestershire is the perfect place to live, work and thrive. Local firms benefit from great connectivity, access to a rich pool of talent and research capabilities, resilient supply chains and a diverse customer base.

## Timeline of Gloucestershire's inventions



## An ecosystem to enable your AEM business to grow



We can support the growth of your business by helping you access a wealth of expertise spanning digital technology, precision engineering & advanced materials and green solutions. The following pages showcase these sectors and the cross-cutting technologies your business can tap into in order to foster innovation and business growth.



# Aerospace

## Home to continuous innovation in flight, from the Jet Age to the Jet Zero Age

- Gloucestershire has been synonymous with the aerospace industry for over 100 years, with Britain's first jet aircraft, the Gloster Pioneer
- The county is home to global aerospace giants like Safran, GE Aviation, Dowty Propellers, Ultra and Moog
- Two airports (Gloucestershire & Cotswold) provide airfield access to support innovation
- Leaders in zero emission propulsion, pioneering battery powered and hydrogen aviation through the likes of Electroflight and ZeroAvia

# Companies in Gloucestershire can tap into a comprehensive supply chain

**MOOG**

Electro hydraulics & mechanical motion controls

**babcock™**

Specialised manpower - engineers, pilots, medical staff, instructors, search & rescue

**SAFRAN**

Aircraft propulsion, interiors, equipment, space

**DOWTY**

Propellers

**GE Aviation**

Engines & avionics

**IMPCROSS**  
ENGINEERING EXCELLENCE

Machine components

**Vulcan UAV**  
MULTIROTOR AIRCRAFT SYSTEMS

Radars

**Pennant**

Training technology

**ONTIC**

OEM & MRO services

**ZEROAVIA**  
ZERO EMISSION AVIATION

Hydrogen engines



**Cabot Design**

Product design

**POETON**  
EST. 1898

Material finishes



Battery technology

**diamorph**

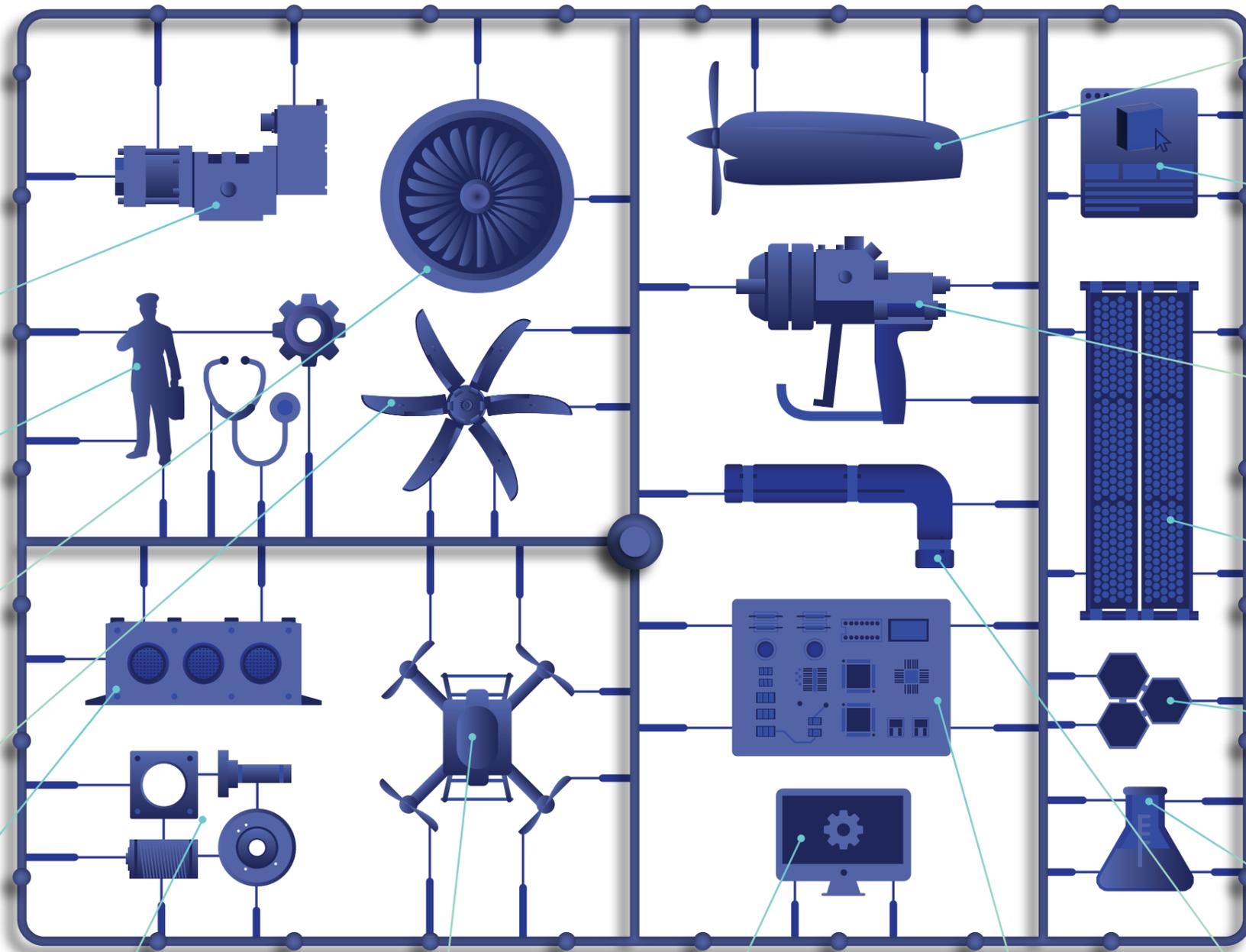
Composite and polymer materials

**QUICKMACH™**  
ENGINEERING SOLUTIONS

Material finishes

**AIS**

Composites



Gloucestershire is home to two growing regional airports. A hub for aerospace technology companies, especially those linked to zero emission innovation.



## Cotswold Airport



Largest privately owned airport in Europe



Long runway capacity to enable international flights, including to the US



New hangars to support expanding businesses, especially those needing airside access



Gold standard service for VIPs

## Gloucestershire Airport



Well-connected between Cheltenham and Gloucester, as well as the national motorway network



Charter flights between the UK and Europe



CGX Business Park offering over 300,000 sq ft (30,000 sq m) of commercial floor space



Hangar space to enable airside aviation research & development



## ZeroAvia



**ZeroAvia are working to manufacture zero-emission, hydrogen-electric engines - a game-changer.**

ZeroAvia retrofit hydrogen powered engines – a game-changer in the industry’s drive towards sustainable air travel. The company have seen rapid growth and significant investment since relocating to Gloucestershire, including from the UK Government and major private investors in the UK and overseas.

[www.zeroavia.com](http://www.zeroavia.com)

*“We are very impressed with Cotswold Airport as well as the local talent and support on offer. It’s a beautiful part of the country and we’re looking forward to seeing more of it from the air as we take zero emission aviation towards commercial adoption.”*

Sergey Kiselev, VP Europe:



## Electroflight



**Electroflight, pioneers in battery technology for aviation, established at Gloucestershire Airport in 2018.**

Electroflight worked with Rolls-Royce to develop the most power dense propulsion battery pack ever assembled for the aerospace industry. This helped break the world speed record for electric-powered flight.

[www.electro-flight.com](http://www.electro-flight.com)

*“Hangar facilities with airside access gave us a great ability to carry out ground testing on site – like having a test track on your back doorstep”.*

Stjohn Youngman, Managing Director Electroflight



Photo Credit: Jack Wiseall, LettUs Grow

# Agri-tech and Food & Drink

**The largest and fastest growing network of high growth agri-tech Small and Medium Sized Enterprises (SMEs) in the UK**

- Facilities include demonstration farms and agri-tech business incubators, including Farm491 and Hartpury's Tech Box Park
- One of the highest concentrations of agricultural education and research in the UK
- Institutions include the Royal Agricultural University, Hartpury University & College and Campden BRI

# Gloucestershire's facilities allow start-ups and established businesses to research, test and scale up their agri-tech propositions.

The facilities, support systems and people to help companies accelerate new products and services to market:

## Incubators and Demonstration Farms



Offices, workshop space and farm land to test and showcase new products and services

- Farm491, the UK's first and largest agri-tech incubator
- Hartpury's Tech Box Park
- Accelerator and testing sites for businesses looking to launch to market. Ability to innovate, test and launch

## Bespoke Business Support



A holistic support package to accelerate new products and services to market

- Dedicated mentors with specialist agri-tech expertise
- Access to industry networks to showcase new products and services
- Links to potential investors

## Exceptional Talent

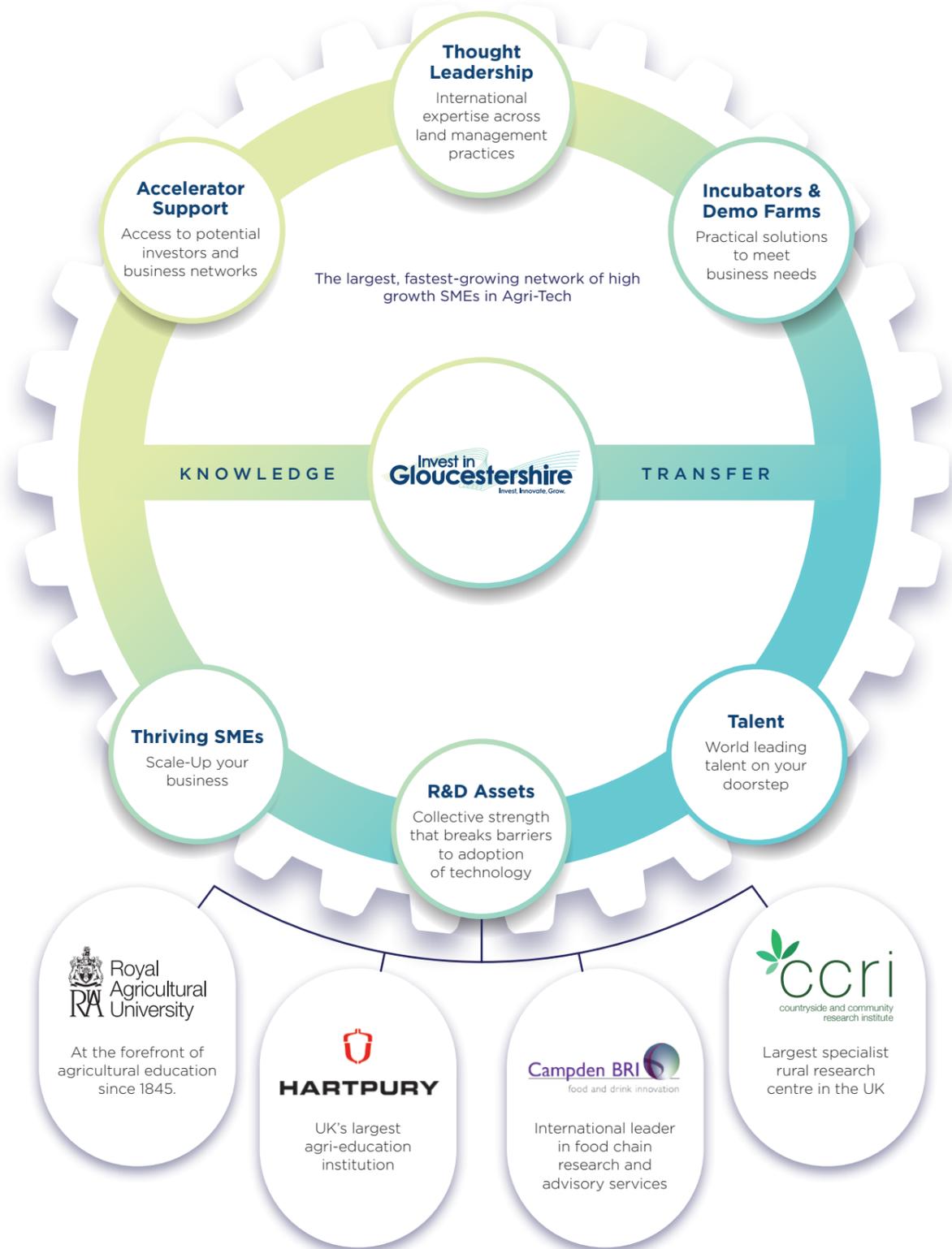
Photo Credit: Lee Hawley Photography



One of the highest concentrations of agricultural education and research in the UK

- Royal Agricultural University and Hartpury University & College
- Over 600 academics supporting nearly 5,000 students
- Helping shape the future of digital farming

## An ecosystem built for your business to thrive





Artists impression of Ecotricity's Football Stadium for Forest Green Rovers

# Renewables & Energy Generation

## One of the **greenest** places to live and work in England

- Strong cluster of green tech companies
- HQ for EDF, Britain's biggest generator of zero-carbon electricity
- Home of Ecotricity, Britain's greenest energy company
- Home to Forest Green Rovers, the world's greenest football club, powered entirely by renewable energy



## A thriving place for renewable energy companies, including community co-operatives, such as Gloucestershire Community Energy Co-op

Local industry, academia and Government are working on a range of projects that harness the county's expertise in digital technology, zero emission energy generation and agri-tech to help in our mission to become more sustainable.

Gloucestershire is keen to attract companies that utilise and enhance its natural environment. There are already a range of alternative energy projects spanning the likes of solar, wind power and tidal



**£10m**  
invested in  
Skills Centre

The Berkeley Green Skills Centre, on the edge of the Severn Estuary, is home to the Active Building Centre, with a focus on sustainable construction.

At the forefront of developing renewable technologies to heat houses, it is now established as a national centre of excellence for sustainable energy.

This will help to accelerate the UK's drive towards net-zero carbon by transforming buildings.



More sustainable land management practices through expertise at the Royal Agricultural University and Hartpury University & College



Pioneers in sustainable aviation through the likes of Electroflight and ZeroAvia



Leading the way in adopting greener energy use with exemplar firms such as Ecotricity



# Enabling Technologies



**Digital technology**



**Green solutions**



**Precision engineering & advanced materials**

# The future of advanced engineering and manufacturing is digitally enabled

Gloucestershire is at the heart of the UK's digital skills revolution. The region's academic, innovation and business network can help to build digitally enabled skills and capabilities, providing markets and talent for continued growth.



Gloucestershire is the UK's hub for cyber and digital technology. Home to GCHQ and the National Cyber Security Centre.



The county boasts a range of digital innovation centres to cater for new start-ups and established larger businesses.



Well-connected with a super-fast fibre network that covers more than 90% of the county.



New major schemes include Minster Exchange, The Forum and the Golden Valley development (the UK's first dedicated cyber business park).

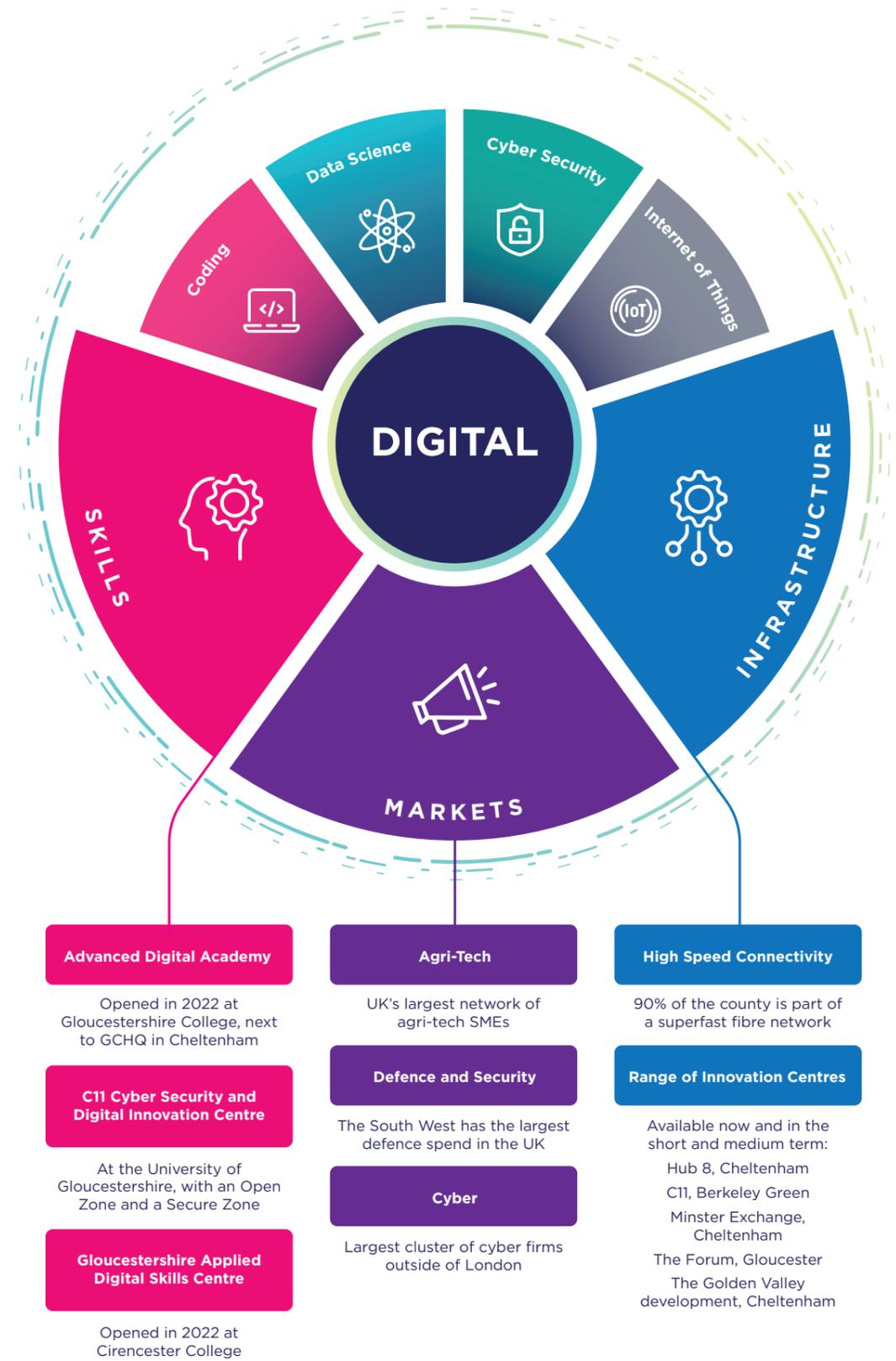


Nationally significant clusters in Agri-tech, defence and cyber.



At the heart of the UK's digital skills revolution.

## Digital Eco System



# Develop green solutions in an incredibly inspirational environment



Gloucestershire is known throughout the world for the Cotswolds Area of Outstanding Natural Beauty. Its natural assets make the county one of the greenest places to live and work in England.

It is already home to leaders in recycling, zero emission energy and transportation, heating and construction. So where better to develop and grow your sustainable products for the world's net zero future?

Gloucestershire has put clean growth at the heart of its economic development strategies that support business expansion and further investments in infrastructure.

Growing market opportunities include green transportation, de-carbonisation of manufacturing processes, construction of sustainable homes and green energy production.

A range of organisations support the introduction of new sustainable practices:



### The Active Building Centre

- Active buildings generate and store electricity to meet their own needs
- Centre of Excellence to accelerate more efficient ways to power and heat buildings
- On-site R&D facilities and expertise to support new product development
- Training and mentoring



## Spirax-Sarco



**Spirax-Sarco Engineering, steadfast in their commitment to sustainability and innovation, specialise in providing steam and thermal energy solutions to a global customer network.**

Spirax-Sarco are long-established in Gloucestershire, with their global HQ in Cheltenham, including research and training facilities, as well as their UK manufacturing operations. They have invested heavily in their UK facilities and personnel. This has resulted in a world-class research and testing facility and broader business development functions.

These include the GreenTec business unit which focuses on developing and delivering new innovative solutions for sustainability. This innovation has enabled customers to decarbonise steam generation and provide sustainable thermal energy solutions.

As a proactive and forward-thinking organisation, Spirax-Sarco have partnered with other local organisations including the Active Building Centre and Eastwood Park, which has enabled them to develop innovative renewable storage solutions and low carbon technologies for storing and leveraging

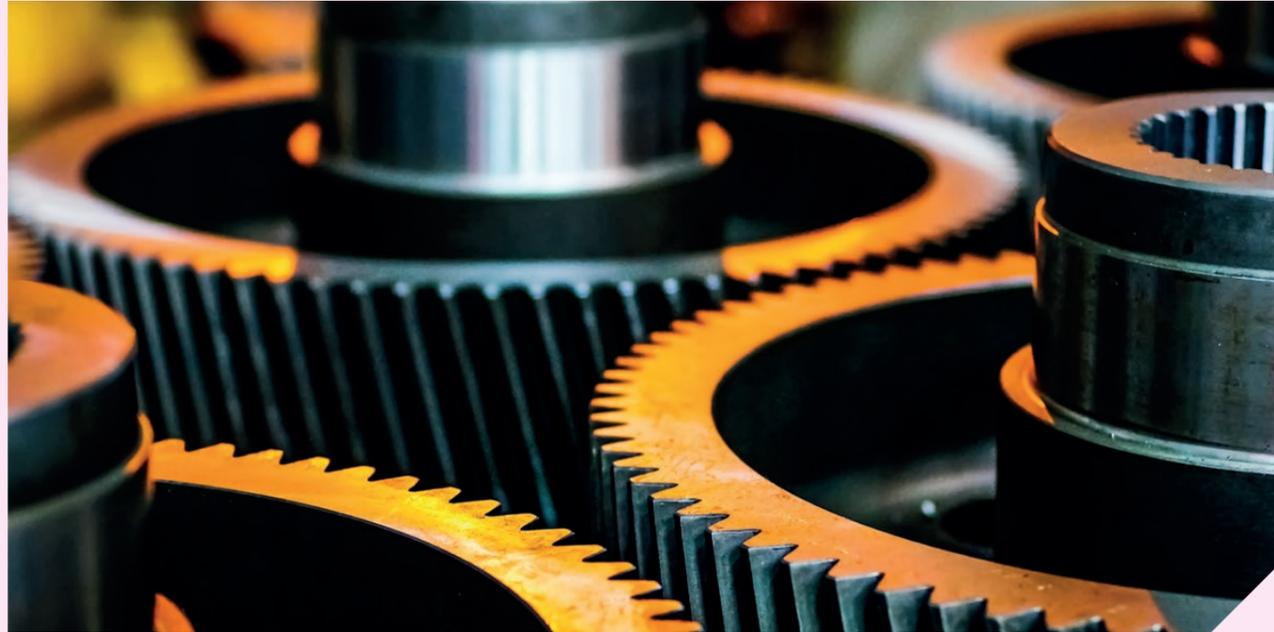
renewable energy which supports the UK's roadmap for net zero by 2050.

These projects have benefitted from the strong local talent available in Gloucestershire, as well as collaboration from other global stakeholders. It has also enabled future talent to make an impact on the current climate crisis.

[www.spiraxsarco.com](http://www.spiraxsarco.com)

*"Spirax-Sarco Engineering believe in its people – they lay at the core of the business. Attracting local and global talent is fundamental to our success. The company is always on the look-out for new, future talent which is why we offer the Year in Industry as well as apprenticeship and graduate schemes."*

Rebecca Bowen, Project Manager  
Spirax Sarco



**Over 70% of Gloucestershire's businesses are actively engaged in innovation, 25% more than the national average**

 <p><b>2,600</b> PATENTS</p> <p>Over 2,600 patents filed in Gloucestershire, across sectors from Electronics and Hydraulics to Medical Instruments</p>	 <p><b>£168m</b> CO-INVESTMENT</p> <p>£168m co-investment from Innovate UK in the last two decades</p> 	 <p><b>35,000</b> EMPLOYED</p> <p>35,000 employed in Gloucestershire AEM sector</p>	 <p><b>12%</b> OF TOTAL EMPLOYEE JOBS</p> <p>(4.1% above national average)</p>
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**Innovation-focussed cluster, supplying the world's key engineering and manufacturing markets**





## Versarien<sup>®</sup> PLC

The world's first verified graphene producer. Servicing a diverse client base, including aerospace, automotive and biomedical.

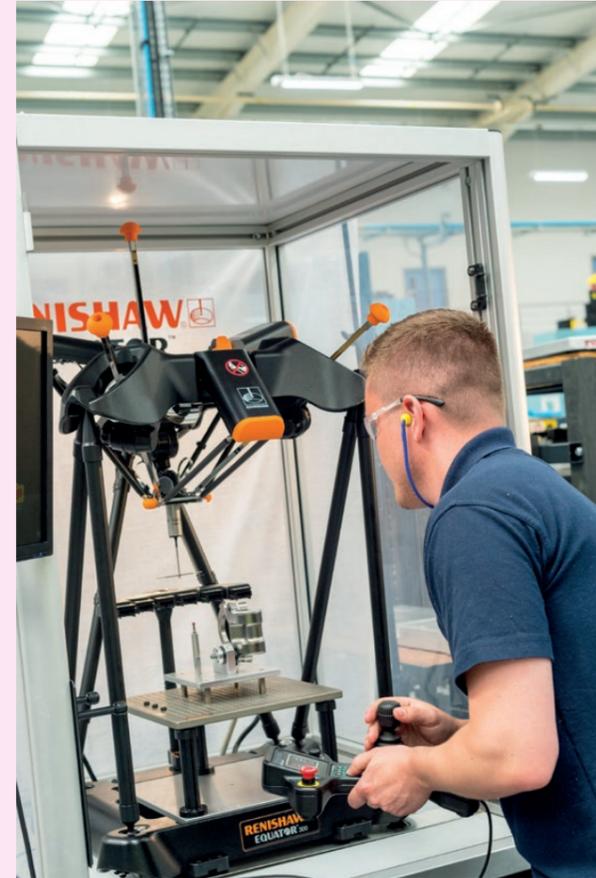
[www.versarien.com](http://www.versarien.com)



## TRACKWISE CONNECTING TECHNOLOGY

Manufacturer of specialist products using printed circuit boards, including the world's largest flexible multi-layer PCBs.

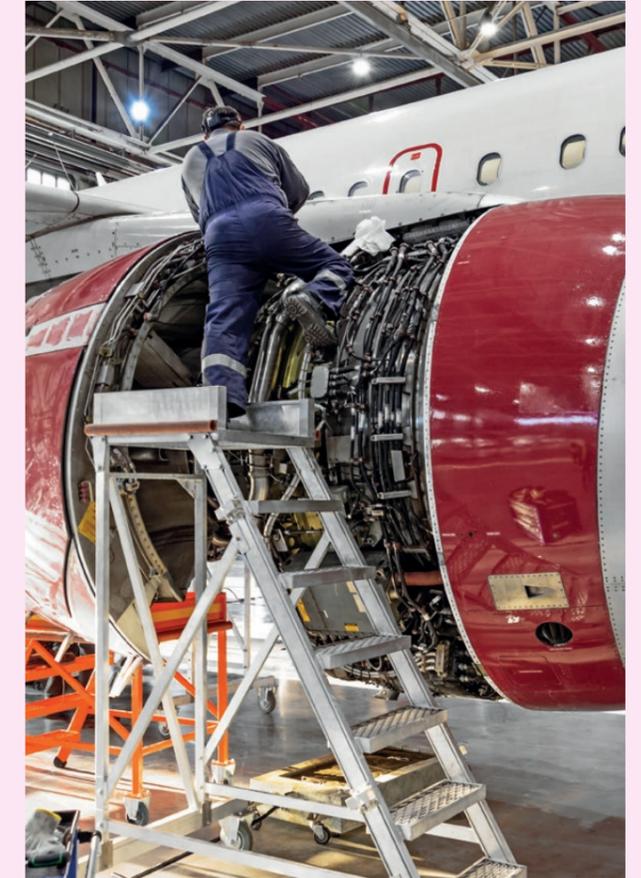
[www.trackwise.co.uk](http://www.trackwise.co.uk)



## RENISHAW<sup>®</sup> apply innovation™

A world leader in precision measurement and healthcare technologies, Renishaw also manufactures industrial metal 3D printing machines that 'print' parts from metal powder.

[www.renishaw.com](http://www.renishaw.com)



## PERMALI

Permali (owned by Diamorph Group), specialise in composite and polymer materials. They are making a significant investment in their manufacturing capacity and in a new innovation centre and supply into motorsport (F1), aerospace, defence, marine and rail.

[www.permali.co.uk](http://www.permali.co.uk)



# Accessing Talent & Expertise

**A local talent pipeline connected to the UK's Advanced Engineering R&D centres of excellence**

- Gloucestershire is focused on the development of a digital and science skills base
- Strong partnerships with industry
- Activities aligned with the move towards net-zero
- Local talent pipeline supported by significant investment in STEM across educational organisations
- Eight Leading UK engineering universities within an hour and a half

# Gloucestershire is focused on the development of a digital and science skills base

Local pipeline for engineering and manufacturing talent is supported through continued significant investment in Science, Technology, Engineering and Maths (STEM) focused education across our schools, colleges and Universities:




**University of Gloucestershire**

- Undergraduate & post graduate degrees across Engineering & Computer Science, designed with close co-operation with industry
- Shared vision with industry partners so students fully engage in real applied research and problem-based learning
- Applied learning topics include Renewable & Sustainable Energy; Industrial Technology, Industry 4.0 & the Internet of Things and Biomedical & Health Technologies

[www.glos.ac.uk](http://www.glos.ac.uk)




**South Gloucestershire and Stroud College - Berkeley Green UTC**

- University Technical College and STEM specialist, dedicated to giving young students the best possible foundations to a career in engineering & digital tech
- Working closely with local businesses to shape the curriculum and give students experience of business
- In 2021 - 98% of graduates went onto either education, training or employment. 25% of those went into apprenticeships and 42% entered university to study STEM based subjects

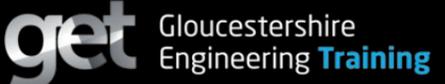
[www.sgscol.ac.uk](http://www.sgscol.ac.uk)




**Gloucestershire College**

- Dedicated Engineering Department providing training and apprenticeships up to degree level
- Working with local businesses to provide training and qualifications for future employees
- STEM provider, high quality learning facilities, providing teaching that aligns with the fast-moving technologies, materials and processes

[www.gloscol.ac.uk](http://www.gloscol.ac.uk)




**Gloucestershire Engineering Training**

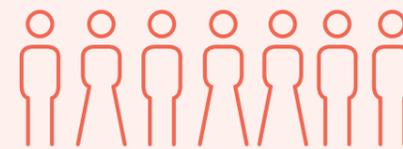
- Providing work-based training for over 45 years with a diverse range of engineering
- Specialisms; from aeronautical to intelligent communication systems; from production of drill bits to credit cards
- Training apprentices in mechanical and electrical engineering, maintenance, welding and fabrication
- Training provider to the largest engineering and manufacturing firms within Gloucestershire

[www.get-trained.org](http://www.get-trained.org)

# Access to University talent



Engineering-focussed Universities such as Bristol, Bath, Warwick, Oxford and Cardiff within 90 minutes



337,000 university students within 60 miles, including over 23,000 studying engineering

# Access to technology centres of excellence in engineering and advanced manufacturing



**CATAPULT**  
Compound Semiconductor Applications

**Compound Semiconductor Catapult (CSA)**  
**Newport** 1hr 10 minutes

The CSA supports businesses looking to develop technologies and commercialise new products in the field of compound semi-conductors. Applications include power electronics, photonics, radio-frequency (RF) and microwave electronics.

**brl**  
Bristol Robotics Laboratory

**Bristol Robotics Lab**  
**Bristol** 45 minutes

Bristol Robotics Laboratory (BRL) is the most comprehensive academic centre for multi-disciplinary robotics research in the UK.

**NATIONAL COMPOSITES CENTRE**

**National Composites Centre (NCC)**  
**Bristol** 50 minutes

The NCC specialises in composite material technology.

**IAAPS**  
ADVANCING PROPULSION

**Institute for Advanced Automotive Propulsion Systems (IAAPS)**  
**Bristol** 50 minutes

IAAPS is a new world-class facility created to offer a unique combination of academic and industrial expertise in all propulsion types.

**WMG**  
THE UNIVERSITY OF WARWICK

**Warwick Manufacturing Group (WMG)**  
**Coventry** 1hr 20 minutes

The lead catapult centre for Vehicle Electrification and Connected and Autonomous Vehicles (CAV).

Focuses on the deployment of digital manufacturing technologies to improve supply chain competitiveness.

**mtc**  
Manufacturing Technology Centre

**Manufacturing Technology Centre (MTC)**  
**Coventry** 1hr 20 minutes

Home to the UK National Centre for Additive Manufacturing (NCAM), supporting technologies and manufacturing systems for advanced manufacturing across all sectors and technologies:

- Component Manufacturing
- Advanced Tooling and Fixturing
- Automation
- Digital Manufacturing
- Business Transformation



# Business Support

## A bespoke programme of support, tailored to your needs

- Open to those setting up a business in Gloucestershire, as well as existing firms
- Services include:
  - Sourcing commercial premises
  - Accessing skilled talent
  - Links to training provision
  - Unlocking financial support
  - Legal and accounting referrals
  - Supply chain signposting
  - Bespoke staff relocation service

# Building your business in Gloucestershire gives you support from organisations and networks across the county as well as the UK



## Inward Investment Team

The Invest in Gloucestershire Team provide a range of services to assist in the setting up of your business, as well as ongoing support to enable your business to thrive.

- Confidential site and property finding service
- Access to financial assistance
- Introductions to potential partners
- Assistance with recruitment and training
- Business, academic and Government links
- Arranging tours of the area



## The Growth Hub

The Growth Hub is Gloucestershire's single front door for business support. Here to make sure none of your questions go unanswered, The Growth Hub team can provide fully-funded independent and impartial advice, signposting and consultancy to help grow your business.

- Co-working facilities, hot desking, meeting rooms and office hire
- Support to launch new products and services
- Accessing new markets in the UK and overseas
- Developing your team
- Leadership training and workshops to upskill
- Networking opportunities



## GFirst Local Enterprise Partnership

Connect with the county's firms, large and small, in the following Sector Groups:

- Advanced Engineering & Manufacturing
- Cyber-Tech
- Agri-Tech
- Energy



## South West Manufacturing Advisory Service

Government-funded experts that design and deliver programmes for manufacturers:

- Designing new factory layouts
- Supply chain assessments
- Developing strategy
- Improving productivity

**Innovation and Ingenuity - that's what Gloucestershire's Advanced Engineering and Manufacturing businesses are known for**

With some of the world's leading companies already making their home here, Gloucestershire is a hotbed of talent, productivity and opportunity.

If you are looking to establish or expand your Advanced Engineering & Manufacturing business, contact the Invest in Gloucestershire team.

**E: [investinglos@gfirstlep.com](mailto:investinglos@gfirstlep.com)**



[www.investingloucestershire.com](http://www.investingloucestershire.com)

Please get in touch with our Inward Investment Team.  
Email us at [investinglos@gfirstlep.com](mailto:investinglos@gfirstlep.com)



@investinglos



investinglos