



Western Gateway Porth y Gorllewin



St Davids
Tyddewi

Carmarthen
Caerfyrddin

Swansea
Abertawe

Cardiff
Caerdydd

Newport
Casnewydd

Bristol

Weston-super-Mare

Bath

Gloucester

Swindon

Cheltenham

Salisbury

Cyber Gateway

South Wales and Western England's Cyber Super Cluster

How the UK's first two nation Cyber Super Cluster is providing a secure basis for economic growth and world leading digital excellence across the Western Gateway.

Foreword

South Wales and Western England have long been joined by trade and families with communities regularly travelling across the Severn. Today we continue to see connections with over 95,000 car journeys across the M4 bridge every day.

Western Gateway is the Pan-regional Partnership for South Wales and Western England. By bringing together business, academia and local leaders, we are growing the future economy to deliver a greener, fairer future.

Our area has long been a home for innovation, with internationally renowned universities, world leading engineering and high tech clusters. From our research, one factor shared across our geography is our strength in cyber security and digital.

With the world increasingly turning to digital solutions and AI becoming a major concern for online security, this industry is central to any future UK Economy. Through bringing together our businesses and decision makers, we are focusing ambition across the area to use our cyber strengths as a secure base to boost our burgeoning ecosystem of high-tech digital services into a world leading powerhouse for the future.

A developing cluster of activity

Across our area from South-West Wales to Swindon, from Cheltenham to Salisbury, our communities are buzzing with activity that punches above our weight.

With the help of our outstanding universities, our unrivalled quality of life and a determined look towards the future; technology and innovation is thriving across our whole geography. In Bristol, Bath, Wiltshire, Cardiff, Gloucestershire, Newport and beyond – self-starting groups of creators and tech experts have been working both with each other and their communities to transform both technology and place.

We have clusters of AI, Quantum, 5G, Fintech, Space Technology and CreaTech – and throughout the Western Gateway, our uniquely strong cyber security sector flourishes, providing these groundbreaking sectors with a secure base from which to centre new research. In fact – when it comes to cyber security, its consistency across the whole area means we exceed the national productivity average for the sector by 25%.

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Take us from great to global



Economy of **£128bn**



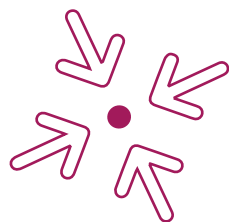
The Western Gateway exceeds the cyber productivity average by **25%** with cyber.



There are **cyber clusters** in Manchester, Belfast and the wider London area, but the **Western Gateway** was responsible for **one third** of all cyber patents issued in the UK in 2021.



The Western Gateway has the **largest and most developed** cyber cluster in Europe.



There is a **sixfold higher density of cyber firms** in the Western Gateway as compared to the rest of the UK, making us the UK's most specialised cyber economies.



Our area is all the more impressive when we consider that its evolution as a centre for the 'Future Economy' has come entirely from our people. Whether it's Open Bionics in Bristol, pioneering robotics in prosthetics, or Hartpury College, driving forward in sports performance analysis through their collaboration with Hudl, it has been built from the ground up by our innovators.

Now, we want to present this to the world. We need investment to ensure our world-changing projects reach their full potential, we want governments to see we have the talent and determination to keep our country safe from modern threats. Above all, we want everyone to see the great work going on in the Western Gateway and to truly support the potential of our innovators to create a 'super cluster' visible from space.

Cyber Security – Our foundation

The cyber security clusters of the Western Gateway are the largest and most developed in Europe. In fact, the area is responsible for one third of all cyber patents issued in the UK.

At the centre of this is GCHQ in Cheltenham. As the lead for the UK's cyber security mission, this has already attracted a growing group of innovative businesses based in and around the area. This has huge growth potential with companies attracted by the talent based in the area and a good quality of life which can help to attract new applicants from around the world to build nationally significant brands. This strength spans borders with the Cyber Innovation Hub in Cardiff, National Data Exploitation Centre in Ebbw Vale and Airbus's Cyber HQ in Newport.

Cyber security has allowed our other tech sectors to thrive. Where cyber security is strong, so is FinTech in Cardiff, as is AI in Bristol and Bath and Defence in Swindon.

The Golden Valley Development, a £1bn development near GCHQ in Cheltenham provides a huge opportunity for the wider area. Not only could this be transformative for Gloucestershire, but it also offers the space and expertise to our innovators across the Western Gateway, acting as one potential base for our super cluster. It is a place for invention, both for technology specialists and those developing policy around its use and the way it shapes our world.



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Our universities: Innovation clusters

The Western Gateway hosts research institutions of exceptional strength. Through our strategic partnership with the GW4 Alliance we have seen how our academic institutions are not only driving innovation within their walls, but proactively ensuring that innovation reaches the world.

The Western Gateway area is home to more PhDs than any other region in the country, and we work alongside organisations such as SETSquared who are tireless in their efforts to bridge the route between academia and industry.

The GW4 Alliance

The GW4 Alliance brings together the research intensive universities of Bath, Bristol, Cardiff, and Exeter to work together to sit at the centre of the local knowledge-intensive economy.



The Alliance is uniquely placed to take a leading role in advancing cyber and digital transformation, from human behaviour to hardware, building on its reputation for strength in these areas.

The GW4 universities play a key role as anchor organisations with significant industry and government collaborations. Together, they have the strengths needed to deliver a step change in research and innovation, including strategic partnership with and academic leadership within the Alan Turing Institute and the PETRAS (Privacy, Ethics, Trust, Reliability, Accessibility and Security) National Centre of Excellence for Internet of Things (IoT) Systems Cybersecurity.

Their work goes beyond technical solutions, and includes how humans engage with digital systems, with new cross disciplinary teams tackling socio-technical challenges. For example, the Economic & Social Research Council Digital Security by Design Social Science Hub+ (Discribe Hub) addresses human error as a cause of cybersecurity breaches and Bristol is home to The Research Institute for Sociotechnical Cyber Security.



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Cardiff Uni Cyber Innovation Hub

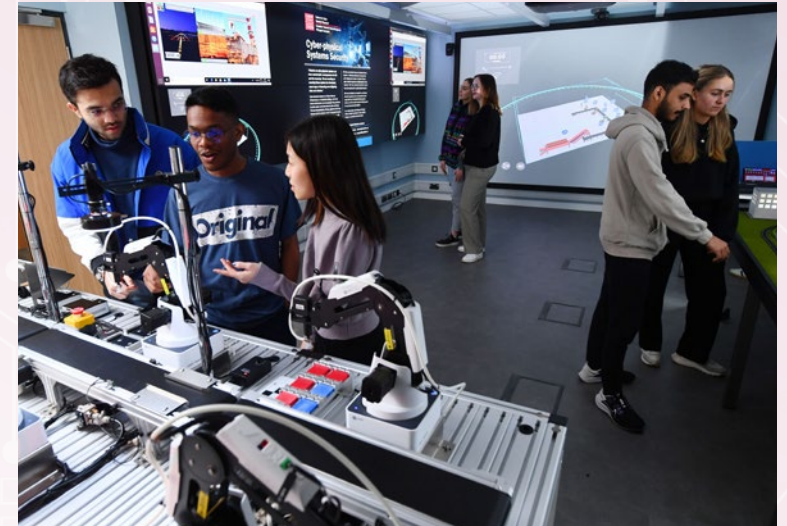
“At Cardiff Innovation Hub we bring ideas people with cyber domain expertise, together with entrepreneurs with commercial know-how, to work together, and take an idea to a fully-fledged commercial venture within 12 months.

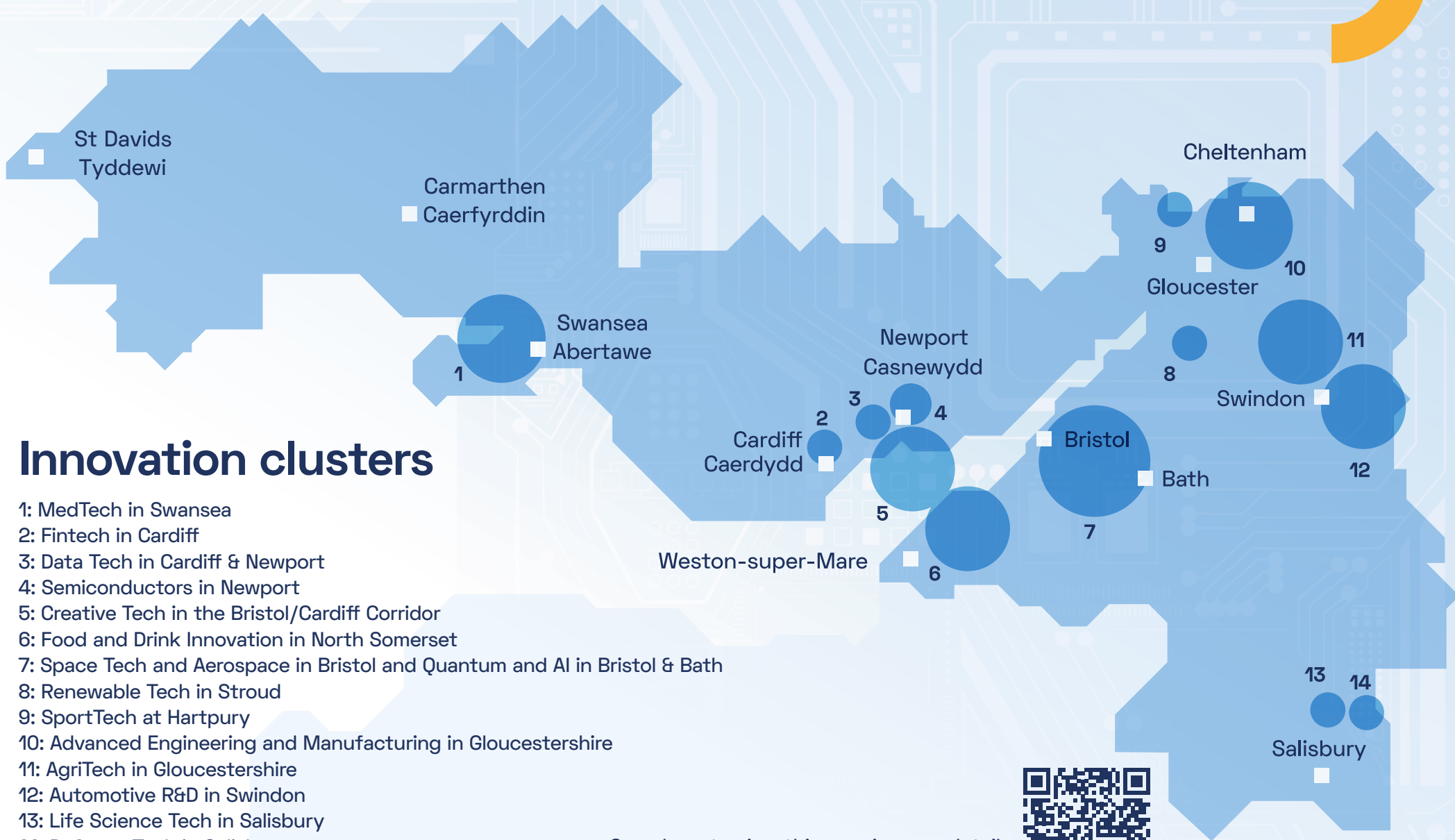
“We find the best entrepreneurial talent, and build a team around a domain expert. The expert could be a PhD student or academic – or even someone already in a cyber role and frustrated that their idea isn’t something they can buy to solve a pressing organisational cyber problem! In our commercial teams, there is a strong balance from a tech, cyber and commercial skillset to help create a viable company and attract investment.

“The team all receive a monthly stipend and access to physical space and world class testbed at Cardiff University – allowing them to immerse themselves in the entrepreneurial journey without financial constraints. Together they take the spark of a concept to a fully-fledged commercial venture within 12 months, that can grow and scale across the world.

“We believe this is a unique approach that will see more of ideas get from people’s heads to commercial success.”

Prof. Pete Burnap, Professor of Data Science & Cybersecurity at Cardiff University





Innovation clusters

- 1: MedTech in Swansea
- 2: Fintech in Cardiff
- 3: Data Tech in Cardiff & Newport
- 4: Semiconductors in Newport
- 5: Creative Tech in the Bristol/Cardiff Corridor
- 6: Food and Drink Innovation in North Somerset
- 7: Space Tech and Aerospace in Bristol and Quantum and AI in Bristol & Bath
- 8: Renewable Tech in Stroud
- 9: SportTech at Hartpury
- 10: Advanced Engineering and Manufacturing in Gloucestershire
- 11: AgriTech in Gloucestershire
- 12: Automotive R&D in Swindon
- 13: Life Science Tech in Salisbury
- 14: Defence Tech in Salisbury

Scan here to view this map in more detail



A Centre for the Future Economy – our tech sectors

Cyber forms a central part of our area's shared strengths and underpins many of our most successful industries.

AI – A Government 'innovation survey' saw south Wales and the west of England as leading the UK in AI and data systems research.

Recently, a £225m investment has been awarded to Bristol University by the UK Government to create the UK's most powerful supercomputer. Isambard-AI will be 10 times more powerful than the UK's current fastest supercomputer and will be used for scientific discovery in fields such as robotics, big data, climate research and drug discovery as part of national efforts to make the UK a world leader in AI.

This follows years of groundbreaking technological research in the area which has coincided with the area's growing status as cyber superpower ensuring a safe secure environment.

Professor Ian White, Vice Chancellor for the University of Bath, said:

"The AI & Machine Learning Research Group at the University of Bath is home to internationally recognised experts, including Professors Nello Cristianini, Simon Prince, Özgür Şimşek and Mike Tipping, and energetic early career researchers, all contributing to a rich, inclusive and highly collaborative environment. They deliver a broad range of fundamental research in cutting edge theory and highly topical applications, including generative AI, large language models, reinforcement learning, Bayesian inference, ethics of algorithms and the implications for society of AI systems. The group launched Bath's MSc Data Science, ranked in the top 10 worldwide."

Advanced Manufacturing & Engineering – The Western Gateway is a leader in design and engineering. Our centres in Newport and Cardiff are responsible for a staggering 55% of the world's global market share compound semi-conductors. This tech is the foundation of modern life – they are needed for smartphones, Wi-Fi, LED lighting and many, many more 21st century essentials.



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Space Technology – With support of our universities, our area is progressing rapidly in this exciting, advanced future technology sector. Like our other tech clusters, the innovators are proactive in joining together across our border:

Becky Huffe, Space West Cluster Manager, one of seven new Space Hubs established by the UK Space Agency (UKSA) in November 2020, said: “The National Composites Centre [in South Gloucestershire] is now host to the Space West programme, a collaboration of



research, innovation, and industry leaders at the forefront of work to grow the region’s space sector. With significant capabilities in secure and resilient communications as well as intelligent systems and robotics, Space West is focused on meeting next generation challenges like dynamic networking, space based solar power, and in-orbit servicing.”

FinTech – The Western Gateway has two active FinTech clusters and indeed hosts the only two fintech accelerators in the UK in South Wales and Bristol.

The UK Government 2021 Khalifa Review of UK fintech identified Cardiff Capital Region as one of the fastest growing fintech clusters outside of London. Cardiff Capital Region currently employs approximately 16,000 professionals and enjoys a deep strength and depth in financial services with a vibrant fintech start-up ecosystem and three leading universities providing both R&D and training pathways.

Rhys Thomas, Cardiff Capital Region’s COO notes: “Our long-term ambition is to build on the firm foundations we already have in place and create a UK-leading fintech cluster as well as establishing Cardiff Capital Region as a global leader in the digital insurance marketplace.”

CreaTech – The area has long had huge strengths in the creative sector with national and international film and TV programmes coming out of places like Bottleyard Studios, Bad Wolf Studio and BBC Natural History Unit. The Western Gateway is also home to two of the nine national Creative Clusters with Bristol + Bath Creative R&D and Clwstr programmes the area is also an experimental centre for creative technologies through Bristol’s MyWorld and Creative Wales.

Mark Leaver, MyWorld Head of Business Partnerships and Inward Investment, said: “In recent years the Creative Industries across the West of England and Cardiff Capital Region have grown at a significant pace – 52% growth between 2010 and 2019 versus a national creative industries figure of 32%, and 20% for all wider national industries. A contributing factor has been the ability of the creative clusters, particularly in Bristol, Bath and Cardiff, to both build on existing world class strengths and positively adapt to the emerging opportunities generated by new creative technologies.

“The result is a hub of innovation in creative technologies with international reach and profile, incorporating facilities, skills and knowledge and with academic/commercial collaboration at its core.”

➤ **Defence** – Not only do we have GCHQ and the National Cyber Security Centre based out of Cheltenham, but we have a burgeoning tech defence cluster in South Wales and MoD Corsham, in Wiltshire, which hosts the Business Cyber Centre.

“Since opening in May 2022, the Business Cyber Centre has become the go to venue for organisations supplying services to Ministry of Defence (MOD) in Corsham, as well as being utilised by MOD for supplier engagement events and team away days. From January 2024, the Business Cyber Centre will be home to over 175 staff across SMEs and primes who are delivering cutting edge services to UK government and MOD in the interests of national security.” Tom Marshall, Head of Capital Operations for Swindon and Wiltshire Local Enterprise Partnership.



@JonCraig

Making tech work for our communities



” The Western Gateway area has already begun to attract talent, boosting our academic and industrial institutions – but there is talent already here, this is where invention, culture and countryside intersect. It is our diverse, friendly and welcoming communities which created the conditions that make this such an appealing place to live.

We are proud to support the cyber skills programmes across our area, equipping our residents with all they need to fully participate in the future economy. We can see how much a resilient tech sector brings to our foundational economies, boosting our culture and protecting our jobs.



The National Digital Exploitation Centre

The National Digital Exploitation Centre (NDEC) is a collaborative project delivered by Thales and University of South Wales in partnership with Welsh Government. The NDEC is a Centre of Excellence for Cyber Security, recognising the current and future challenges of, and building specific capability in relation to, Operational Technology in critical national infrastructure.

Launched in 2019, the NDEC is Thales’ global hub for the delivery of Operational Technology security transformation. As a key economic development and growth catalyst project in South Wales, the NDEC is also delivering: research and development projects with universities and local businesses; support to local businesses (specifically start-ups and SMEs); cyber-hygiene awareness within local communities; and support to

individuals, schools, academic and business organisations to encourage interest in the cyber industry and grow the pipeline of talent in South Wales.

Sitting within the Western Gateway geography in Ebbw Vale, the NDEC is an example of how high-tech business can make real change within communities if partnered with the right long term investment programme.

Using this combination of knowledge and entrepreneurship, we want to boost our economy and help create new opportunities for our communities.

Using our nationally significant status as a two country Cyber Super Cluster, we are mapping the scale of activity across the area to help attract further investment and build cross sector connections.

The breadth of our technology sector, the talent of our people and the scale of innovation happening across our area, cements the Western Gateway as a true centre for the future economy. To understand how you can play a part, get in touch.

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