



where
digital
happens

DigitalCity - Catalyst for Growth

How Teesside University is boosting business
and employment in the Tees Valley



The digital opportunity for Tees Valley

“By explaining the breadth, depth and impact of our digital work in the Tees Valley and more widely, we want to inspire more individuals and businesses to see the University and DigitalCity as their partner for a digital future.”

Digital defines the way we do business today. For traditional industries, the extent to which they adapt to digital change is a major factor in deciding whether they succeed, stall or fail in the future. At the same time, digital is now the driving force powering the growth of new businesses and new sectors.

At Teesside University we see the role that digital plays in our lives as an opportunity for the Tees Valley to put real power behind its ambitious plans for the economy.

If we ensure the people who work here have the digital skills we need for the future, we can grow employment through creating new digital businesses and high value jobs.

If we support businesses in building their digital capability, we can help them evolve so they can support the growth of the existing and emerging sectors we need for a strong and productive Tees Valley economy.

And if we do each of those things well, we have the opportunity to secure a national and international reputation for a Tees Valley digital cluster with cutting edge digital skills, attracting more businesses to come here and work with us in their supply chains.

As a University, we are already working hard to seize that opportunity by helping businesses prepare for a digital future.

But to fully achieve the region's ambition for future growth in industries and jobs, there is a key role for Teesside University in working with businesses to share knowledge, support innovation and develop skills in the digital arena.

This report is part of our effort to achieve that.

By explaining the breadth, depth and impact of our digital work in the Tees Valley and more widely, we want to inspire more individuals and businesses to see the University and DigitalCity as their partner for a digital future.

Professor Jane Turner

Pro Vice-Chancellor, Enterprise and Business Engagement

DigitalCity - digital future

At Teesside University we want the Tees Valley to be known for its leading digital business cluster and the superior digital capability of its businesses.

DigitalCity is the way we are making that happen.

DigitalCity brings together all of the digital knowledge and support we have at Teesside University in one place.

Through DigitalCity, we connect businesses with the knowledge, skills and expertise they need to thrive in a digital future. We're here to support digital start-ups, help small- and medium-sized businesses who want to use digital to grow, and work with bigger companies to help put digital at the heart of their business.

We're also tackling the wider digital challenges that have the potential to hold us back regionally and nationally.

Women are under-represented in digital businesses in the UK. We're bridging that gap by encouraging

more women to come on our courses and to actively consider a career in digital, so that ultimately half of digital businesses in the Tees Valley have female leaders.

There's a risk that the rise of digital undermines the high streets which play such an important role in building attractive communities where people want to come and work. DigitalCity will harness the thinking within the University to show smaller businesses how they can use digital to thrive and grow.

We are doing this because we want Tees Valley to seize the opportunity to be a leading digital hub in the UK where our industries - new and old - can grow and play a lead role on a national and international stage.

DigitalCity - digital catalyst



1 Creating a new generation of digital businesses

We nurture digital start-ups and provide hubs where they can grow.



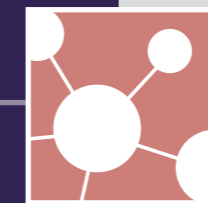
2 Supporting the growth of businesses through digital

We unlock the growth potential of traditional businesses through digital innovation.



3 Transforming sectors with digital knowledge

We provide businesses with research and expertise to improve their competitiveness.



4 Preparing businesses for Industry 4.0

We help businesses get ready for the influence of automation and digital supply chains.



5 Growing digital skills and talent

We give people and businesses the digital know-how they need for the future.



Supporting start-ups for a digital future

Increasing the number of business starts in the Tees Valley is critical to a thriving future economy.

New businesses help underpin our strength in new sectors and drive innovation and competitiveness in our existing industries.

A vibrant start-up economy also helps keep the valuable talent and skills we need in the region by creating jobs. That's why Tees Valley's target of increasing start-ups by 25% by 2025 is so important.

Inspiring start-ups is something we do well in Tees Valley. A study by Tees Valley Unlimited, the body charged with supporting local economic growth, shows that in recent years we have consistently had the highest business birth rate in the UK – and the businesses we create have a stronger than average chance of going on to succeed in the longer term.

We believe firmly this is a strength that the University can grow even further in the future.

Converting ideas to business

A thriving start-up community relies on having the opportunity to convert new ideas into new businesses.

Teesside University has a critical role to play here: supporting our own students and alumni and ensuring the right resources are there to help individuals from our wider community.

Within the University, the Teesside Launchpad is at the core of how we help start-ups. It's a space to share, test and develop new ideas.

Our Lean Launchpad programme picks out talented aspiring entrepreneurs. It takes them from idea to start-up in ten weeks and connects them with the brightest and best business minds to help them establish and grow.

Start-ups also need the right physical space to grow and share ideas.

Through DigitalCity, we provide an environment to thrive. First at the heart of the University campus in our space dedicated to start-ups, and then in spaces like Boho One and Fusion Hive. Boho One is the building at the heart of Middlesbrough's new digital district, while Fusion Hive in Stockton-on-Tees gives space for technology companies to scale and grow, linking them to each other so they can share ideas and connect directly with the knowledge and support available at the University.



Animmersion: Going global from DigitalCity

The biggest challenge for most would-be entrepreneurs is getting the right support to turn an idea into a business.

Committed to digital start-ups

Success stories like Animmersion, part of the new generation of digital businesses born in Tees Valley (see box out) show how the University is making a difference through DigitalCity.

But if our ambition is for the Tees Valley to succeed as a digital hub of regional, national and international importance, there's a lot more to be done.

The renewed focus for DigitalCity in supporting innovative and sustainable new businesses is a key part of our commitment to creating an environment that enables companies to start and to scale up. We want to turn even more ideas into new businesses and ensure that we do everything we can to increase their chances of success. We also want to ensure these businesses have a clear path to scale up by ensuring they get the mentoring and advice they need.

For years now the DigitalCity initiative has been building up the strength of the Teesside digital cluster. With the right leadership and continued support from Tees Valley organisations and the digital sector, there's a real opportunity to continue to build the national and international reputation of the Tees Valley as a destination for digital businesses from corporates through to start-ups.

Herb Kim, Chair, Tech North

This was the issue facing Teesside University graduate Dominic Lusardi ten years ago when he and a friend at the University had the idea to use digital tools to improve the way businesses present data and processes.

It was support from Teesside University's DigitalCity that finally helped them make the leap.

Today their company Animmersion employs 17 people in its offices at DigitalCity's Boho One in Middlesbrough. It is one of the new generation of digital businesses to benefit from the University's commitment to supporting digital start-ups.

"When we first graduated from Teesside University we'd had the idea for the business, but didn't know how to go about setting it up or where to get advice from," says Dominic. "The University made a difference by offering the infrastructure, support and mentoring we needed to establish and build a start-up through DigitalCity."

In the past ten years the company has doubled its turnover year-on-year, creating 15 new jobs and consistently growing the proportion of overseas sales.

"DigitalCity has provided us with a sense of community which has been critical to our success," adds Lusardi. "It encouraged us to believe that we could fulfil our ambitions in Tees Valley, which just didn't have anything like this before. The area now has a real buzz about it, and that's why we've stayed and prospered here."



Driving growth with digital innovation

It's not just new businesses that matter to Tees Valley. Getting more of our existing businesses to scale up and grow further is just as important – if not more so.

In his 2016 report on the Tees Valley economy, Lord Heseltine suggests that if we can help our medium-sized businesses innovate and sell to new international markets we will unlock a major opportunity for growth.

The prize for this will be a significant contribution to the 25,000 jobs Tees Valley needs to create by 2025, as well as the emergence of a more resilient economy which can provide a platform for future growth.

Digital innovation

For this to happen, businesses in our region need to apply technology and digital thinking to make their products more attractive to their markets.

Providing businesses with the people who can identify and deliver those game-changing improvements is a major focus for DigitalCity and the University.

Applied Integration (see box out) is one of a number of companies where collaboration with us is contributing to future sales growth. The digital knowledge of our academics and students is helping to improve company profitability across a range of industry sectors.

Teleware, a business based in Thirsk which helps improve customer service operations, is another. The company is using our expertise in big data and machine learning to help develop a product which can tap into increasing demand for more sophisticated insight into customer experience.

By working with Teesside University academics, Teleware is creating a product that will look across all customer communication channels – from phone calls to social media and email – to identify short- and long-term problems which could cost businesses money. It's a piece of work which, according to Chief Innovation Officer Paul Millar, will play a major role in helping to double revenues over the next two years.

Committed to growth through digital

The availability of a digital knowledge base is key to ensuring existing and new businesses see our region as a place to grow.

We know that within Tees Valley there are many businesses who would scale up more quickly if they harnessed that knowledge.

Our pledge as a University is to make it easy for businesses to find people with the higher skills and know-how to help them become more productive.

“Teesside University is a driving force behind the digital transformation of the Tees Valley's economy, playing a vital role in connecting our region to new opportunities and networks.”

Andrew Lewis, Managing Director,
Tees Valley Combined Authority



Applied Integration: Better product development brings £5m benefit

Automated control systems are critical to the petrochemical, oil and gas and nuclear sectors.

But the process of designing the right system is currently an expensive and labour-intensive one. This is due to the scope for inconsistencies to creep in when interpreting client requirements and the work involved in ironing them out and then testing them.

Applied Integration is one of the leading UK suppliers of these control systems. It is working with Teesside University academics to radically redesign its project development framework and create new software which will reduce costs and the development time associated with the production of hybrid critical systems.

“This is a cutting-edge programme, not just within our industry but any industry. It will provide us with a business tool that will give us a real advantage over our rivals,” says Garry Lofthouse, Director at Applied Integration.

“It will not only strengthen our existing customer relationships in the defence sector, where quality assurance is a particularly critical aspect, but will potentially help us seal major deals in future.”

There's also a significant financial benefit for the company in the short term: Applied Integration estimates that the positive commercial impact of the project will exceed £5m over the next three years through increased turnover and efficiency savings.



Transforming sectors with digital knowledge

The need to harness digital knowledge and skills to improve productivity and efficiency applies to entire industry sectors as well as individual businesses.

This is the case for the traditional industry sectors which underpin the local and national economy as much as the newly emerging ones where we are carving out a leading role.

The Tees Valley currently leads the UK in the level of innovation funding that it attracts, according to analysis by the UK Government.

The big opportunity is to better deploy our innovation capability within business to identify new ways of working across sectors so we can help companies in Tees Valley and across the UK thrive in an ultra-competitive global marketplace.

Digital at the heart of industry

Solving competitive problems faced by entire sectors is something that individual businesses are typically ill-equipped to do. This is because the blend of investment, fresh knowledge and capacity is rarely available within an individual business.

Teesside University has an important role to play in taking action to fill that gap, applying academic expertise to find digital solutions which can help industries to stay ahead.

Our Technology Futures Institute is already making a difference in this area by partnering with businesses to find practical solutions to the issues that are holding back their efficiency.

By using research to apply cutting-edge digital thinking to real-world problems, our work is helping build the sustainability of a range of industries from power generation, where we are increasing the efficiency of coal-fired power stations, to energy supply, where we are helping businesses use resources more sustainably.

In the construction industry, the stand-out work of Teesside University experts will reduce costs by an order of millions of pounds through the elimination of a structural inefficiency in the way the sector works (see box).

We're also supporting other industries on a national stage.

The new National Horizons Centre will ensure Teesside University (see box out in skills section) helps with the application of digital technologies to the emerging bio-industries as well as to the wider advanced manufacturing sector.

Committed to collaboration

The key to success in helping industries find digital solutions to improve efficiency lies firmly in collaboration between universities and business.

Teesside University and DigitalCity will power that collaboration, listening to and understanding the big challenges faced by industry and providing solutions that enable Tees Valley to strengthen its claim as a centre of excellence and innovation for the sectors of the future.



Effective collaboration between the higher education sector and business has a crucial contribution to make, not only to individual firms' competitiveness but also to UK regional and national economic growth. For Tees Valley businesses to thrive it is critical that they tap into the proven skills and expertise at Teesside University so they can prepare for a digital future.

Sarah Glendinning, North East Regional Director of the CBI

Working in partnership with businesses, our experts have created a new software tool which improves planning and project management by reducing delays and waste in construction projects.

The new tool, called LEWIS, is being adopted by major UK construction players and the process savings already achieved in construction projects are between 20-30%, according to the UK BIM Task Group which delivers the objectives of the Government Construction Strategy.

Ryder Architecture, the firm who partnered with us to explore how this could be applied to their business, has as a result won international business in the Far East on the strength of our joint work. The work also spurred the company to form a new business, BIM Academy, which helps other firms implement the methodology in their work.

"Our work with Teesside University has shown how businesses can tap into academic knowledge to research new areas of innovation, which in our case will ultimately lead to business growth and commercial success," says Peter Barker, Director at Ryder Architecture and Managing Director of BIM Academy.

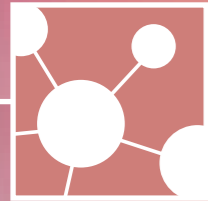
The work has also increased the University's international reputation in the construction sector, with the lead academic receiving a \$900,000 grant from the Qatar Foundation to support further research aiming to save the Qatari economy billions of dollars in unnecessary building costs.

UK Construction: Digital thinking increases competitiveness for a whole sector

The high cost of delivering building projects is a major competitive issue holding back the success of UK construction firms.

Reducing these costs so that UK firms can win more business is one of the main objectives of the Government's strategy to improve the sector.

Teesside University is playing an influential role in turning that situation around by applying its research expertise in Building Information Modelling (BIM) techniques that transform the way firms approach construction projects.



Getting supply chains ready for Industry 4.0

Global organisations look at our strengths in areas like the process industries, sub-sea engineering or bio-manufacturing and decide they want to come here to do business. That's because they know we have the knowledge and skills they need within these industry clusters.

Much of this capability is found in the small- and medium-sized businesses within the supply chains who support the industries that matter to Tees Valley.

We want these businesses to thrive in the future. But for that to happen, many need to reshape the way they operate in order to meet the digital demands of Industry 4.0. This transformation – also known as the fourth industrial revolution – focuses on increasing automation and data sharing across manufacturing supply chains to improve productivity, safety and quality.

Fit for the future

While many businesses understand this shift, it is only a minority who have the knowledge and capability to implement the changes which will transform into traditional business models to digitally-enabled ones.

In our experience, some manufacturing businesses believe that achieving this kind of transformation requires huge investment in enterprise resource planning software and that extensive people resources or costly management consultants are required to implement it.

Teesside University helps make that change happen by working with small- and medium-sized manufacturers to identify and capitalise on digitised processes.

Our academic experts deliver consultancy which identifies the priorities for digital working and provides undergraduates with the right knowledge to work in business to help incorporate the changes they need. This is typically done through Knowledge Transfer Partnerships – a formal arrangement between businesses and the university.

Through this work we eliminate disjointed or labour-intensive processes by putting new digital ways of working at the heart of their operations. This means these businesses are in better shape for the future because they are more productive and competitive.

As the experience of QA Weld Tech and Mech Tool Engineering shows (see box), it also frees up time and resources to invest further in digital business improvement.

In the North East our strong industrial base gives us a place on a global stage.

Committed to transformation

We have already supported a great number of businesses in the Tees Valley and within the North East to prepare for a digital future. However, there are many more who could benefit from working with us.

As technology demands on small- and medium-sized businesses increase, along with the pace of change and complexity of operating in a digital environment, our priority is to ensure our knowledge and expertise help even more businesses get ready for Industry 4.0.

“The fourth industrial revolution is a critical challenge facing manufacturers, transforming the way that every business will work. With its expertise in digital, Teesside University has an important role to play in helping businesses in the Tees Valley, and the region, address the opportunities to use technology to boost productivity and ensure they are ready to compete in the digitally connected marketplaces of the future.”

Liz Mayes, North East Regional Director, EEF, The Manufacturer's Organisation

Case study



Digital expertise unlocks growth and increases efficiency

Modernising manufacturing operations at QA Weld Tech

For any manufacturing business, accurate capacity planning is critical to managing costs and growth effectively.

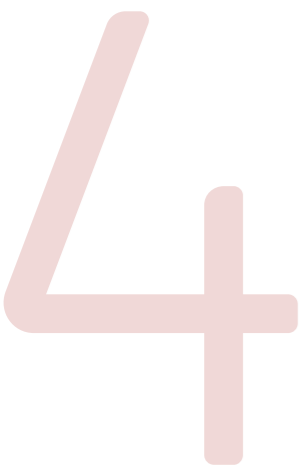
Middlesbrough-based QA Weld Tech understood this when it chose to modernise the way it worked with new enterprise planning software. But a lack of internal knowledge and capacity stopped the business from achieving the full benefits of that investment.

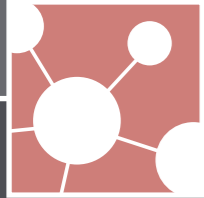
A partnership with Teesside University provided the company with expertise and resource to put the software to work effectively.

Linking finance, manufacturing and other systems for the first time has allowed the company to use data to understand the production process and build a better understanding of its capacity needs.

Paul Langley, Finance Director at QA Weld Tech, says the partnership with the University has been critical in helping manage a period of rapid growth.

“In the last few years we've increased turnover from £9m to £16m. Our partnership with Teesside University has enabled us to manage that expansion based on proper capacity and knowledge.”





Data management cuts costs at Mech-Tool Engineering

Darlington-based Mech-Tool Engineering is thriving as a specialist manufacturer of protective equipment for a range of high-risk industries like petrochemicals, oil, gas and nuclear.

However, demand for one-off projects with bespoke requirements was causing the company problems when it came to costing them accurately and providing manufacturing audit trails needed for regulatory compliance.

By working with Teesside University, the company has taken methods used in high-volume manufacturing to improve business operations.

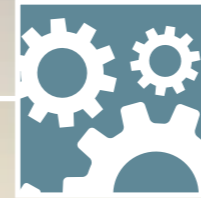
Using software to capture and manage production data, the company is able to reflect manufacturing costs more accurately in customer pricing. It has also saved production time by removing the need

for manual data capture. The company estimates that its savings equate to £300,000 per year and in 2016 the company was ranked 26th in The Sunday Times annual list of private companies with the fastest-growing profits.

Barry Moore, Business Improvement Manager for Mech-Tool Engineering, says that the work has given the company the platform it needs to grow.

“We are currently going through a period of expansion that would be hard to sustain without the efficiencies that digital technology has brought to the company,” says Moore. “ We are now more efficient and competitive which is vital given that we bid for the majority of our work from clients overseas.”

The programme was shortlisted in the knowledge transfer awards at the end of 2016 and the year before, Barry won the award for Business Leader of the Future.



Providing skills for a digital future

A digital skills gap costs the UK economy £63bn a year in lost GDP. This national challenge presents an important opportunity for Tees Valley.

If we can continue to build and grow our digital skills we can increase the pace of transformation in our economy and better support future business growth.

By developing more specialist digital skills in Tees Valley we can build the reputation of the region as a destination for businesses seeking this kind of expertise. We can also capture our place in national and international supply chains.

Skills for a digital world

Teesside University is already helping the region seize the opportunity presented by the skills challenge.

Our strength in specialist graduate degrees in digital and computing provides the talent that traditional businesses need in order to grow. That talent can also underpin the growth of our digital cluster by fuelling start-ups and providing them with the employees they need.

We are also working to bridge the digital skills gap in different areas.

A fresh focus for DigitalCity will address the lack of female leaders in the digital and technology sector. By seeking to increase the number of women on our digital courses, while also explicitly promoting the role of women in tech companies across a range of disciplines, we want to help grow female representation in the Tees Valley industry to 50%..

For those currently in the workforce, we are launching a Digital and Technology Solutions professional degree apprenticeship.

Internationally, over 200 people have improved their digital skills through the University’s Digital Management MA, delivered in partnership with Hyper Island, a global business which provides digital skills development for leaders and aspiring leaders in blue chip companies across the world.

The strength of our digital skills is already attracting businesses from outside the region to come and do business here.





This was the case for Ampliance, a London-based retail ecommerce business, which chose to locate its development centre at DigitalCity's Boho One because of the access it has to excellent digital skills. It now employs 45 people, including a number of Teesside University graduates.

Nifco Group, a major Japanese automotive component manufacturer, has worked closely with the Teesside University on skills, R&D and innovation. This has helped the Stockton-on-Tees facility grow its order book and Nifco has recently chosen to open its first R&D centre outside of South East Asia in Tees Valley.

We're also taking a lead in the development of new and emerging industries. A prime example is the prestigious National Horizons Centre (see box out), a ground-breaking multidisciplinary skills and innovation facility for the national bioscience sector that will deliver new jobs and economic growth for the region. Developed in consultation with industry, this centre of excellence will cement Tees Valley's reputation as the place to come for forward-looking businesses.

5

Committed to digital skills

The ability for Tees Valley to develop digital skills in its workforce is without doubt the defining factor in our ability to build a successful future economy: every aspect of business growth depends on it.

Teesside University makes it a key priority to provide businesses with those skills, supporting those preparing to enter the workforce and providing ways for those already in the workforce to develop digital skills.

“It is clear that Teesside University understands the digital challenge facing businesses in the region and, through DigitalCity, the kind of support they need. It's important that businesses look to the University as a partner who can help them make the changes they need and build the capability for the future.”

James Ramsbotham, Chief Executive,
North East Chamber of Commerce

Case study



National Horizons Centre: A hub for digital skills and know-how in emerging industries

When the National Horizons Centre (NHC) opens its doors in 2019, this centre for bioscience training excellence will also be playing a key role in the digital transformation of the bioeconomy.

Bringing digital skills and capabilities to the biologics, biotechnology and health sectors will be a core focus of the University's work at the NHC. Capitalising on our expertise in areas like Artificial Intelligence, informatics, visualisation and simulation, academics and students will collaborate with industry partners to develop creative multidisciplinary solutions to business challenges.

Examples include techniques to organise and abstract key data from complex systems (Big Data translation and analysis), development of smart systems, and using ICT to increase manufacturing efficiency, product quality and training services.

From apprenticeships and new undergraduate and postgraduate programmes to a wide portfolio of industry-specific courses, the NHC will drive the embedding of digital skills in bio-industry training provision.

A digital suite, providing production, modelling and simulation facilities in a collaborative working environment, will be the engine room of NHC's digital skills and innovation.

The real power behind the NHC is its strong business focus. Bringing industry together, alongside students, graduates and academics, to find creative, multidisciplinary solutions to the challenges faced by growing businesses, will keep the NHC, and the University, at the cutting edge of bioindustry needs and developments.

“The National Horizons Centre is a major catalyst for growth in the region. Not only is it set to address a current national skills gap, but it will also spearhead the development of new hybrid skills and capabilities that drive the growth of key emergent sectors like biologics. Digital is absolutely central to this hybrid skillset,” says Laura Woods, Director of Academic Enterprise at Teesside University. “It's instrumental in ensuring the Tees Valley plays a national role in developing the industry sectors of the future.”

Moving forward faster: A call to action

As the Tees Valley strives to seize the opportunities for economic growth ahead, Teesside University will play a key role in developing digital skills, supporting business innovation and helping businesses in our emerging and traditional sectors scale-up for the future.

But if the region is really to make the most of what Teesside University can offer as a driver for growth, we need our partners to engage more closely with us too.

- **At government level** – we will strive to ensure that politicians and policymakers recognise the strategic role we play in the future of the Northern Powerhouse. We have the capability to help deliver the Industrial Strategy and we are the ideal vehicle to support digital knowledge exchange with business, new business creation and scale-up, and skills development. We must be seen as integral to the government's investment strategy.
- **At regional level** – we will work even more closely with partners to influence and support the economic transformation of Tees Valley and the region. We

will be at the heart of new economic strategy development, and our partners will see us as a key driver of growth and a university that is the bridge between business and academia. This must be backed with investment and a commitment from partners in the region to promote and champion our strengths.

- **For business** – business groups, industry networks and individual businesses will continue to look to Teesside University as a partner who can support their growth while championing DigitalCity and the wider efforts we are making to drive the development of a digital economy.

We believe that it is only by working together that we can really fulfil the potential we see for the Tees Valley.

Professor Jane Turner

Pro Vice-Chancellor, Enterprise and Business Engagement



where
digital
happens

We are here to help make your digital ambitions happen in your business.
Get in touch with our team to find out how on **01642 384068**.

