CATAPULT Digital

Annual Engagement and Impact Report 2020

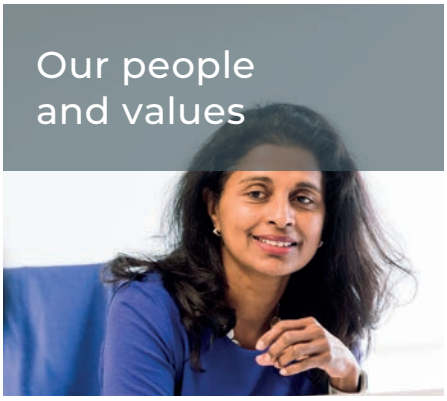
Introduction

Digital Catapult combines the energy of technology innovators with the scale of traditional industry to help the UK grow, reduce industrial carbon emissions, distribute advanced technology capabilities more evenly across the country and enable the best companies to compete globally.

Our experts have deep technology, academic and industrial knowledge to address the challenges of digital disruption directly and hands on.

We work hand in hand with our diverse partners to co-create the right conditions and facilities to develop, test, evaluate and adopt market-ready solutions.

We provide policy guidance in areas of high technical complexity and work to embed resilience in business and improve productivity to increase the UK's international competitiveness.



Read more about **our people and values** on pages 04 to 09

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Read more about **working around the world** on pages 26 and 27

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Our story

Driving ambitious innovation and creating opportunity from potential.

570+
working hand in hand with small businesses and entrepreneurs

120+
new industrial collaborations/ partnerships

£320m
Total investment raised by 141 companies after engaging with Digital Catapult

£4bn
investment funding into UK startups that have worked with Digital Catapult since 2013

> “We’re helping to develop entire new markets, new audiences and new ways of producing content for the creative industries.

DR JEREMY SILVER
CEO, DIGITAL CATAPULT

Read more online at
www.digicatapult.org.uk

Digital Catapult’s team have deep technology expertise and help industry leaders address the challenges of digital disruption.

Our growing network of cutting-edge facilities, both physical and digital, creates the ideal environment for scaleups, traditional businesses, researchers and investors to develop, test, and adopt a range of advanced digital technologies. We’re actively helping UK industry to find the best solutions to real-world challenges, to develop new business models and open up new international markets, by making the most of the talents in the UK’s vibrant startup and scaleup ecosystem, in turn boosting productivity in established traditional companies and through impact on large companies’ customers, helping to grow the UK economy.

Not only do we connect investors, startups, scaleups and traditional businesses, we take an active role in working with our partners to ensure continued success.

Our diverse list of partners ranges from long-established UK-based businesses, multinational corporations, government and local authorities, to agile, inventive startups and scaleups and world leading researchers from top UK universities. We undertake collaborative research and development, building winning proposals by bringing together partners from across the spectrum to transform research into successful products and services and to de-risk innovation for organisations of all sizes. We work with leading organisations, alongside the UK and international governments, to help build productive global partnerships and exploit the UK’s export potential.

We provide policy guidance in areas of technial complexity.

We're recognised by the UK Government as a critical voice in emerging technology innovation policy. We are an informed advisor for the development, application, adoption and innovation of advanced digital technologies at home and internationally, co-designing and delivering national and international programmes on behalf of the UK.
Our work on the DCMS 5G Testbeds and Trials Programme, for example, is coordinating UK-wide efforts to innovate, and demonstrate the value of 'Industrial 5G' in the manufacturing and logistics sectors. We also work closely with the devolved national governments, local authorities and regional organisations, to translate policy into action. This means accelerating a digital-led recovery by advising on local industrial strategies, building local facilities and partnerships and connecting technology supply and specialist regional demand, to help the UK achieve its goals of levelling up the country.

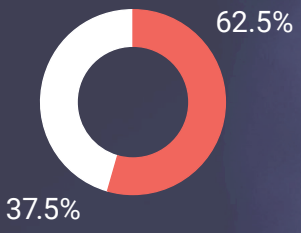
"

Digital is the key enabler for manufacturing industries to improve productivity, develop new business models and accelerate industrial net zero.

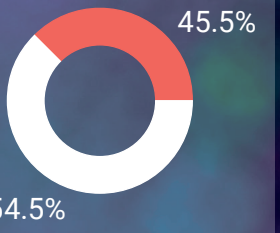
NICK WRIGHT
HEAD OF MANUFACTURING INDUSTRIES, DIGITAL CATAPULT

Our people and values

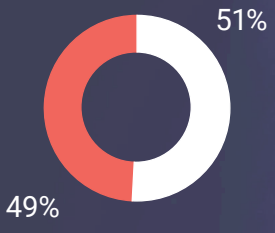
Digital Catapult management team



Digital Catapult Board



Digital Catapult team



Eight
apprentice and intern opportunities we've created in the past 12 months

17%
of our employees hold a PhD

27
Nationalities make up our team

"I joined as an intern in 2019, and was given the opportunity to use my initiative and voice my ideas. It equipped me with the essential skill of juggling several projects at once and perfectly positioned me to qualify for a permanent role at Digital Catapult. I've had the opportunity to work closely with technical experts and develop relationships with several teams.

ALISHA MUKHERJEE
RESEARCH AND POLICY ANALYST

We place great value on the diverse range of voices from different backgrounds working at Digital Catapult.

It's key to bringing out the best ideas and innovation, and forging a culture that works for everyone. As well as ensuring our team reflects the communities we serve, we are actively taking steps to ensure that our projects and programmes are as diverse and inclusive as possible to guarantee their continued success. We know we can always do more.

Our approach to creating this culture has been harnessed to form the values we all share, that are reflected in all we do at work, and in the relationships with our partners.

AMBITION

OPENNESS

OPTIMISM

CURIOSITY

We're proud to have a well-balanced and diverse Board and management team.

Talented people from 27 countries contribute their skills and expertise to our team, and our culture embraces the vibrancy and distinctiveness of those who work here.

We are committed to creating opportunities for young people by offering apprenticeships and internships that give access to a career in the tech industry in a practical and meaningful way.

Committed Member of Inclusive Employers

Ambition

What are we capable of together?

We value people's ambitions for their own careers, for the development of advanced digital technology and for the startups, corporates and other organisations with whom we partner. We help channel the ambition of UK startups into traditional industries and focus the growth of exciting new products and services.

Curiosity

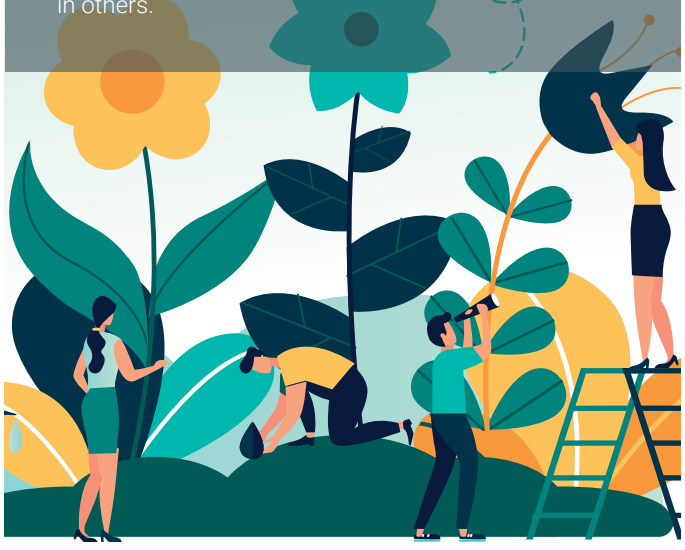
Working at the forefront of advanced digital technology often means taking a leap of faith.

Alongside many of the UK's leading universities and research organisations, we're working with a range of people who are truly curious, who take risks and push boundaries to see what's possible and how to drive it towards commercial reality.

Openness

True inspiration comes from collaboration.

Working on the biggest challenges and juggling multiple projects, we take on work that pushes the boundaries of technology. We know that only by promoting and embracing diversity and inclusion in all we do, can we truly inspire success in ourselves and in others.



Optimism

We strive to make a positive impact.

Whether it's unlocking the potential of the technologies we work with, understanding what traditional businesses and industries are capable of and willing to change, or developing our personal potential, we'll always take an optimistic approach to the challenges we take on.

Our people and values
continued

Jessica Rushworth

DIRECTOR POLICY AND STRATEGY

Jessica has over 20 years' experience working in business and government. Previous roles in DCMS, BEIS and the Cabinet Office have given her a deep understanding of the importance of innovation and emerging technologies to the UK economy. Jessica has developed new policy initiatives in the life sciences and cyber security sectors and large-scale multi-stakeholder programmes in emerging technologies.

Joe Butler

CHIEF TECHNOLOGY OFFICER

Joe recently joined Digital Catapult from Ofcom, where he was CTO for radio spectrum and director of AI and machine learning. Formerly a chief scientific advisor to DCMS, Joe was also one of the authors of the National Infrastructure Commission report on 5G and the future of mobile communications, and his extensive technical background spans working in visual fx startups to some of the UK's largest technology and infrastructure projects at the heart of government.

Geraldina Iraheta

DIRECTOR OF BUSINESS DEVELOPMENT

Digital leader, technologist and strategic thinker, Geraldina is passionate about turning innovative ideas into concrete business benefit and helps businesses drive a culture of innovation to deliver growth. Geraldina's global career spans working with Silicon Valley startups to key roles at Deutsche Telekom and T-Mobile, across a broad range of sectors from mobile telecoms, to fintech, manufacturing and digital health. She is also a strong advocate of women in digital industry leadership.

Dr Dritan Kaleshi

HEAD OF TECHNOLOGY - 5G

Widely recognised as one of the UK's leading experts in 5G, Dritan established Digital Catapult's 5G programme and has over 20 years' experience in communication networks, distributed system design and data interoperability. Dritan combines research with industrial collaboration and has contributed to practical implementations of 5G in networking, interoperability, smart energy, cities and digital health. Dritan was a Senior Lecturer in Communication Networks at the University of Bristol and is currently a Visiting Research Fellow.

Dr Anat Elhalel

HEAD OF TECHNOLOGY - AI

Anat is an experienced researcher of behaviour analysis and prediction with over 15 years' experience in real-world data and mathematical modelling. She has led global data science teams at startups including: Peak – the cognitive training app; VisualDNA – consumer profiling for fair credit card scoring; and Faroo, a distributed peer-to-peer search scheme. Anat trained in physics, statistical modelling and cognitive science, and has a PhD in modelling human memory using neural networks.

Dr Alex Gluhak

HEAD OF TECHNOLOGY - IOT

Alex leads our IoT programme, applying this technology to solve real-world problems, translating research into prototypes, demonstrators and pilots, finding early adopters, co-creating new testbeds and accelerator programmes to help leverage IoT technology. Alex has more than a decade of experience working with IoT technologies, firstly in academia and later at companies such as Ericsson and Intel Labs. He has over 80 peer reviewed papers and runs the 1,000 member strong LPWAN London Meetup.

Our people and values
continued

Jessica Driscoll
HEAD OF TECHNOLOGY - IMMERSIVE

An immersive technology leader with specialist understanding and insight into audiences and testing new broadcast technologies at scale, Jessica's hands-on experience in immersive is shaping Digital Catapult's support to industry. She has previous experience at BBC Research and Development, as well as a range of roles across each part of the immersive industry from startups and NGOs including the Cornerstone Partnership where she developed VR training for children's services, to business development and content production.

Dr Rob Learney
HEAD OF TECHNOLOGY - DISTRIBUTED SYSTEMS

Rob develops new programmes to explore the potential of distributed systems technologies. An active member of the UK Government's Blockchain APPG, Rob co-founded the Imperial College Centre for Cryptocurrency Research and Engineering to create a cross-disciplinary academic focal point for blockchain research in London. A qualified doctor, Rob returned to academia after six years of clinical practice to complete a PhD in Biomedical Engineering at Imperial College, funded by the James Dyson Fellowship.

Phil Young
HEAD OF STRATEGIC POLICY DELIVERY

Named in Forbes 30-under-30 in 2016 as the co-founder of the charity Future Foreign Policy, Phil has a background in emerging technology policy, research and strategic decision making with both domestic and international experience. At Digital Catapult he works with the UK Government, industry and startups to help design interventions that can help to reduce the technical, regulatory and business barriers in its technology programmes.

Dr Maria Nelson
SENIOR HEAD OF INNOVATION

With a background in innovation management, strategic communications and programme management, Maria runs a portfolio of innovation and acceleration programmes at Digital Catapult that help small companies grow, large companies innovate and innovation ecosystems flourish. Passionate about fostering collaboration between bright minds, Maria previously led collaborative innovation at Cisco's Internet of Everything Innovation Centre, and has published a book about creativity and innovation as core assets of contemporary economies.

Dr Ramona Marfievici

SENIOR IoT ENGINEER

Ramona builds proof of concepts and pilots using disruptive IoT technologies for real-world scenarios and environments. She spent 16 years at Nimbus Research Centre in Cork, Ireland, and was a faculty member in the Department of Computer Science at the Technical University of Cluj-Napoca in Romania. Ramona is an advocate for gender equality and inclusion, and established CIT Advance, a programme designed to encourage and empower young women along their technology career path.

Peter Karney

HEAD OF PRODUCT INNOVATION

Peter is a seasoned technologist and leads Digital Catapult's Product Innovation team, helping to turn ideas and concepts into tangible assets and services. Peter was instrumental in establishing the LPWAN Testbed, the UK's largest LPWAN network. He has over 20 years' experience in telecommunications services and product management of digital consumer applications, previously working for large telecoms companies including NEC and Vodafone, where he helped launch five new mobile networks across Europe, the Middle East and Africa.

Digital Catapult at a glance

Driving change

Manufacturing industries

Enabling manufacturing industries to recognise the value of advanced digital technologies for solving today's challenges and capitalising on tomorrow's opportunities.

Creative industries

We're the only innovation organisation with a specific remit for the creative industries on behalf of the UK Government, boosting the potential of the UK's creative sector by unlocking the transformative potential of advanced digital technologies.

Combining creativity with technology

Digital Catapult helps trailblazer companies to develop and demonstrate innovative and successful advanced digital technology products, services, experiences and business models for UK industry to emulate. We focus on ambitious programmes in artificial intelligence (AI) and machine learning, future networks including 5G and the internet of things (IoT), immersive technologies (virtual, augmented and mixed reality, and haptics) and distributed systems including distributed ledger technologies (DLT).

Artificial intelligence

Accelerating the ethical and responsible adoption and application of artificial intelligence and machine learning by UK industry.

Future networks

Driving the development and adoption of digital infrastructure by accelerating the understanding and experience of 5G and IoT - making the networked world a commercial reality.

Immersive

Supporting the current media production sector and paving the way for the future of the sector by enhancing skills in mixed reality applications and content.

Distributed systems

Exploring opportunities to support and develop the application of distributed systems technologies that coordinate multi-stakeholder ecosystems to increase supply chain transparency.

Digital Catapult at a glance
continued

Who benefits, and how?

SMALL BUSINESSES

Supporting innovative new technology businesses with the resources, mentorship, collaboration and support needed for success.

- Providing pivotal advice on product development and business strategy
- Using our technical experts and leading-edge facilities, we work with startups and scaleups to jointly undertake collaborative research and development (CR&D)
- Through open applications, we identify high calibre startups and scaleups and invite them to participate in innovation activities designed to accelerate the growth of new ideas
- Startups have the opportunity to meet and pitch to industry decision makers, potential partners, clients and investors
- Small businesses benefit from the events, expertise and facilities that help to remove barriers to growth
- Startups benefit from being part of a nationwide peer-to-peer innovation community

LARGE BUSINESSES

Giving a helping hand to large businesses to become early adopters of advanced digital technologies to deliver competitive advantage and commercial growth.

- Empowering large businesses to adopt technology that ultimately gains competitive advantage by improving efficiencies and increasing productivity
- We support every stage of the innovation journey, from understanding the commercial potential and value of advanced digital technologies, from partnering on CR&D projects, to developing, testing and evaluating solutions including construction of business cases, proofs of concept and strategies
- Successfully piloting, launching and rolling out solutions at scale to deliver enhanced business performance and/or growth
- Developing business models tailored to industry needs
- Providing ethical and sustainability frameworks and guidelines to drive best practices throughout UK and European industry

INVESTORS

From angel investors to corporate venture capital, we help the investment community discover more about to discover more about our innovator ecosystem for mutual benefit, to confidently improve their pipeline, increase their visibility of the wider innovator ecosystem and raise their profiles with sought-after businesses.

- Connecting the investment community to high-calibre startups and scaleups
- Helping investors to increase understanding of the investment and scaling potential of the digital technologies we work with
- Regular programme showcases enable interested investors to scout the most promising startups, as well as meet the other investors focused on the same technologies

Read more online at
www.digicatapult.org.uk

GOVERNMENT & PUBLIC SECTOR

Working with the UK Government to advise, design and deliver programmes for the UK's advanced digital technology ecosystem.

- Digital Catapult works with the UK Government and regional, national and international research and innovation organisations to drive adoption of advanced digital technologies to boost the UK economy
- We inform and advise on key initiatives to drive innovation across the UK economy, intervening to overcome market barriers and capability failures
- Helping to unlock and deliver targeted government interventions to enable growth
- We work with local authorities and local enterprise partnerships (LEPs) to advise and support the achievement of local industrial strategy goals
- Driving regional growth by enabling local ecosystems to engage with the broader national innovation landscape, delivering specialised partnership programmes, and creating state-of-the-art facilities for use by local businesses
- Commissioned by the GLA to advise on emerging digital technology over the next 10-15 years, Digital Catapult produced a report looking at how technologies will combine, the types of products, applications and services that will be built using them, and how innovation in London can connect with other UK regions to drive economic growth and meet the goals of the levelling up agenda

RESEARCH & ACADEMIA

Working with world-leading researchers from top UK universities to bring the latest thinking right into the heart of industry and increase the impact of research.

- We provide academia with the industrial context that focuses research, accelerates commercialisation and breaks down barriers to innovation
- Access to innovative small businesses for collaborative opportunities
- De-risk innovation, facilitate upscaling and delivery to market, and provide opportunities for large-scale demonstrators
- We mentor PhD students and offer placements at Digital Catapult or in our community, and offer research residencies to increase the impact of research, the exchange of knowledge and co-creation between academia and the Catapult network
- We match PhD students to startups

"Digital Catapult is excellent in providing access to the advanced technology startup ecosystem, creating new innovation value from a diverse ecosystem to enterprise industries.

HELEN DUDFIELD
CHIEF SCIENTIST FOR TRAINING, QINETIQ

"There's a wealth of technology permeating the UK music scene, from immersive audio to 5G enabled stadium scale experiences, and we're thrilled to work with Digital Catapult to harness this innovation to produce amazing content for current and future audiences.

TIM SHERRATT
STRATEGIC PLANNING MANAGER, PROFESSIONAL AUDIO, SENNHEISER

"Digital Catapult has been a great asset for both Mercia as an investor and also for our portfolio companies as well.

CHRIS KILROY
INVESTMENT MANAGER, MERCIA TECHNOLOGIES

Digital Catapult at a glance
continued

Regional engagement

Digital Catapult's national network works with partners across the UK, with centres in London, North East Tees Valley, Northern Ireland, MediaCity and Brighton to provide localised and tailored services where they are needed

Key

- Manufacturing
- Distributed systems
- Artificial intelligence
- Future networks
- Immersive
- Our centres

OPERATING REGIONALLY, RESPONDING LOCALLY

Digital Catapult drives regional and national economic growth. Each of our centres has a specific focus that responds to the needs of the local market: manufacturing in the north of England, immersive in Northern Ireland, and 5G and the creative industries in London and Brighton. Digital Catapult's growing multi-stakeholder network drives local technology innovation, while empowering local stakeholders to reach national and international markets and resources.

"

Through collaboration and knowledge transfer Digital Catapult Northern Ireland has inspired innovation across traditional sectors whilst providing support to some of the region's most innovative tech startups. Understanding sectoral technology needs enables the team to partner with local government and ensure appropriate policy and support is provided to realise the ambition of a tech driven economy.

ADRIAN JOHNSTON
DIGITAL CATAPULT
NORTHERN IRELAND DIRECTOR

County Durham & Hereford

Proving IoT technology in a live manufacturing environment to unlock productivity, streamline processes, improve yield and increase quality control

Aberdeen

Using distributed ledgers for warehouse and spare parts, worker certifications and movements of high value items with the Oil & Gas Technology Centre

Blyth

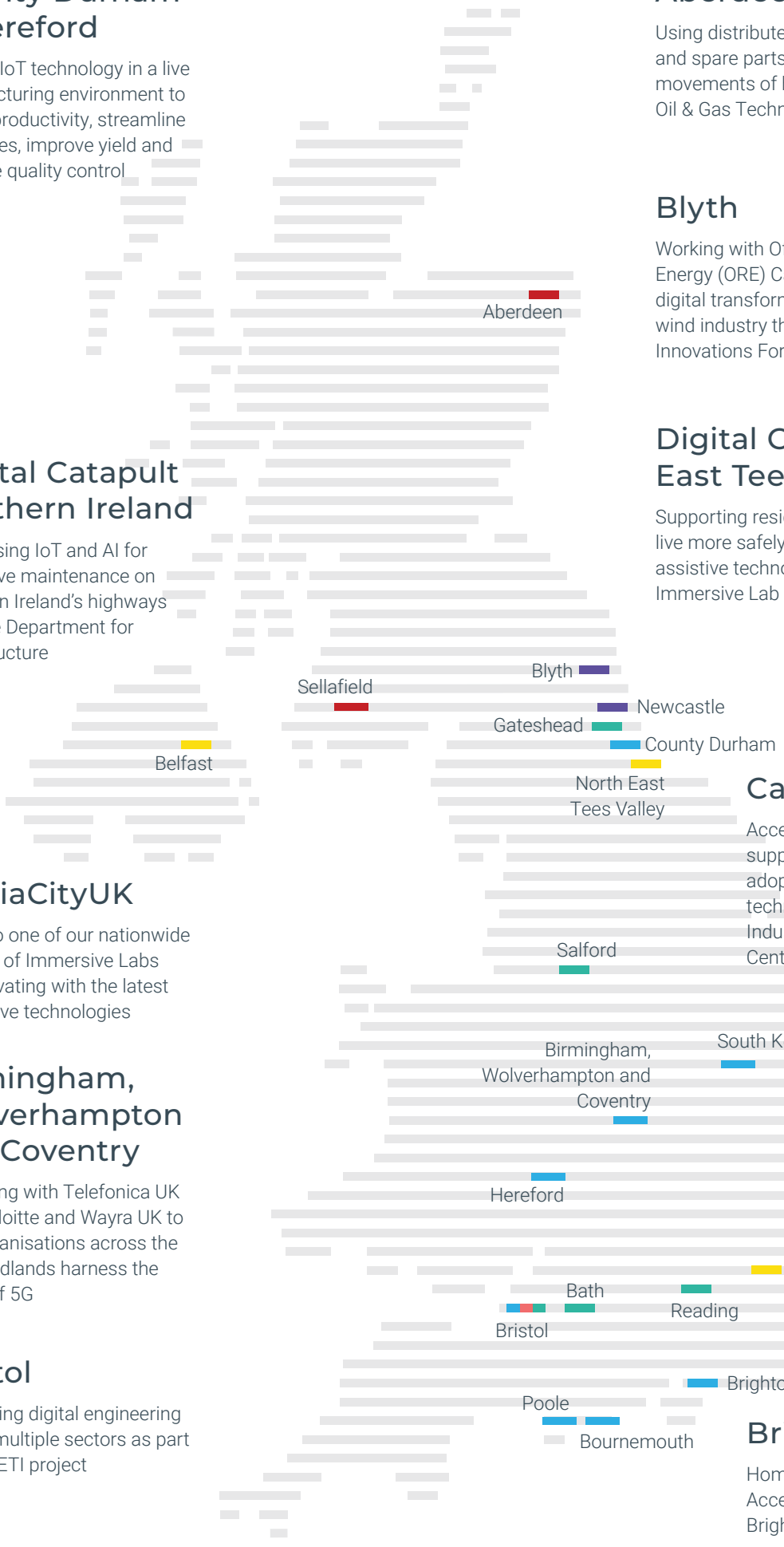
Working with Offshore Renewable Energy (ORE) Catapult to spearhead digital transformation in the offshore wind industry through the Wind Digital Innovations Forum

Digital Catapult Northern Ireland

Harnessing IoT and AI for predictive maintenance on Northern Ireland's highways with the Department for Infrastructure

Digital Catapult North East Tees Valley

Supporting residents in Sunderland to live more safely and independently using assistive technologies. Home to our Immersive Lab and PROTO Studio



Cambridge

Accelerating net zero industrial supply chains through the early adoption of advanced digital technologies with TWI and the Industrial Net Zero Innovation Centre (INZIC)

MediaCityUK

Home to one of our nationwide network of Immersive Labs for innovating with the latest immersive technologies

Birmingham, Wolverhampton and Coventry

Partnering with Telefonica UK (O2), Deloitte and Wayra UK to help organisations across the West Midlands harness the power of 5G

Bristol

Developing digital engineering across multiple sectors as part of the DETI project

Brighton

Home of the 5G Testbed Accelerator programme and the Brighton Dome 5G testbed

Chair's Q&A

Professor Juergen Maier CBE is Digital Catapult's Chair. Formerly CEO of Siemens UK, Juergen is co-Chair of the UK's national industrial digitalisation initiative Made Smarter.

Q How has the first year in the role been?

It's been a whirlwind of a year. Firstly I'm consistently impressed by the talent at Digital Catapult and the range of exciting and innovative projects that we are working on. The diversity, energy and ingenuity of the team is impressive and inspiring and that culture is a huge selling point when I'm talking to people in the industry about what we can do for them.

Q What was your highlight from last year?

It's so hard to pick out a favourite from the hundreds of amazing projects the team help deliver. In terms of a technology theme that runs throughout many of them, I am fascinated by the potential of 5G. Many people still think it's just a faster 4G, but it is so much more than that. Seeing Digital Catapult's 5G testbed work in various projects, for example as an enabler to transforming audience experiences in creative settings and transforming how supply chains can be optimised in manufacturing, is really exciting.

Q Digital Catapult's Board has seen some changes this year.

Yes, we welcomed the troika of Keith Underwood, Priya Guha and William Priest to the Board. They bring an impressive level of expertise and experience and are already making their mark in helping the company achieve its purpose and increase its impact through the challenging conditions the UK faces now and in the near future. I'd also like to repeat my sincerest thanks to Laura Shesgren and Ian Baverstock who have been immensely valuable to the organisation since its earliest days.

Q What have you taken away from the impact of the pandemic?

We have a tremendous industrial and creative base in the UK, with incredible universities, engineers, innovators, content creators and so on. My hope as we move towards economic recovery is that the UK can take more of a long term focus on creating lasting change from the impacts of coronavirus, and embracing technology that can help make those positive, tangible changes to our business and cultural environments.

Q What's next for Digital Catapult?

There is so much great work going on, it's now all about scaling these and the impact they have on our focus industries and society. In other words, moving faster from the ground-breaking work we do, for example in the application of 5G or augmented reality projects, to industries being able to scale these to improve productivity, better customer experiences, more revenue for businesses and ultimately more jobs for people up and down the country.

Chair's statement

A major recent trend, and one that's set to grow even more moving forward, is applying a combination of advanced digital technologies to solve problems.

We're perhaps used to seeing artificial intelligence used to interpret data, or augmented reality to show us information in real-time overlaid with real life.

But what if we combine them? And add in a 5G network to boost processing time and allow instantaneous interaction with the digital world. Think of how this could change all manner of industries. It'll enhance and drive productivity and boost economic growth, aiding the recovery of our economy from the Covid-19 pandemic.

The importance of digital technology to the Covid-19 recovery shouldn't be underestimated. And I firmly believe that Digital Catapult has a crucial role to play in that. Our expertise in the technology areas of artificial intelligence and machine learning, the internet of things, 5G, distributed systems, and virtual, augmented and mixed reality, are no longer distinct as they begin to merge and add complementary value to the other to provide a unique take on how to encourage businesses in the manufacturing and creative industries - and their vast supply chains - to adapt and adopt innovative solutions that use more than one technology. Combine this with our range of industry-recognised technical insight, leading innovation and policy expertise, and Digital Catapult is now a force for sustainable and resilient, and long term, change across multiple sectors of the UK economy.

In the recently released *"London: A Global Leader in Advanced Digital Technologies Report"* that we produced for the Mayor of London, what is most encouraging is seeing the ways in which the capital is making the most of its technology ecosystem, and knowing that this can be rolled out, copied, adopted by other areas around the country, where there is a similar amount of stellar work happening.

I said in the last Annual Engagement and Impact Report that I am passionate about, and known for my role in, UK manufacturing. That much is still true and I've been lucky to spend the last 18 months getting more involved in the UK's vibrant creative industries sector and seeing the wealth of amazing projects that are happening to reach new audiences, encourage new experiences and contribute to the UK's standing around the world.

What's clear from my first year as Chair of Digital Catapult is the drive to succeed, the drive to boost the manufacturing and creative sectors to be more productive, more efficient and more sustainable for the future. Ultimately this is all about helping create a more successful fourth industrial and creative industries revolution and creating prosperity for society through that. We can do it, we are doing it, and I look forward to continuing the march forward.

> "Digital Catapult is a force for sustainable, resilient and long term change across the UK economy.

JUERGEN MAIER CBE
CHAIR

CEO statement

DR JEREMY SILVER
CEO

Digital Catapult exists to ignite the spark of curiosity that unleashes potential. We embed resilience in business and improve productivity to increase the UK's international competitiveness. We ensure ambitious projects have a positive, ethical and sustainable effect on the economy and wider society. We create new bridges between supply side innovation and demand side application.

At the time of writing, as we face successive waves and outbreaks of Covid-19, building resilience and adaptability in the face of uncertainty has never been more important. The impact of the Covid-19 pandemic has been unprecedented and has fundamentally changed almost everything and everyone in some way. Technology has played its part in the fight against the pandemic by helping find new solutions to challenges, to inspire new and exciting applications, and to contribute to rebuilding the economy for recovery. Digital adoption has been accelerated by two or three years in the space of a few months. Our ambition is to ensure that the best aspects of that technology adoption continue post-pandemic and drive new value into our economy and society.

Looking back to March 2019 and seeing the journey we have taken our partners on since then, Digital Catapult has grown in impact at an astonishing pace.

Someone told me recently that Digital Catapult was like the Tardis from Doctor Who: bigger on the inside than the outside. Because we work with such a range of stakeholders, few individual partners appreciate the extent of our reach, although each I hope gets to appreciate the depth of our expertise. The more you see of the range of projects that we're working on, the more you will understand the real impact of this business and how much we have to offer through the incredibly talented team here. Hopefully, the review will provide you with some new insights about how Digital Catapult is driving early adoption across the UK and supporting the new position of the country in global markets.

Early adopters gain market advantage by increasing their own productivity and that of their customers, they drive sector growth through competition and they increase UK global competitiveness by attracting inward investment. Early adoption occurs in startups, scaleups and established enterprises. Digital Catapult is excited to drive that early adoption across the UK's manufacturing and creative industries where there are frequent capability and market failures in technology adoption.

Over the last year, we've forged partnerships with world leading organisations and brands. From the Industrial 5G Accelerator with Ericsson, exploring international logistics challenges with Siemens and CHEP Europe, running innovation activities for BAE Systems, Thales and P&G, to establishing a new Industrial Net Zero Innovation Centre with TWI, Digital Catapult is working hand in hand with these pathfinder businesses to produce real, lasting change and direct impact on productivity, optimisation and efficiency.

In the cultural sphere, we were thrilled to continue our partnership with Arts Council England in CreativeXR as well as welcoming Epic Games and Storyfutures Academy as new partners. Working with Arcade, a creative digital production company and Oslo's Munch Museum, we have built an immersive experience exploring the creative process of one of Norway's greatest artists, and we are pushing ahead with plans to create a unique research studio facility focused on virtual production expertise in collaboration with the UK's leading broadcasters, filmmakers and visual effects companies, as part of the national levelling up and skills agendas.

Since we started business in 2014, the level of investment raised by the companies we have worked with is in excess of £4 billion, a clearly definable proxy for our contribution to the UK economy.

> Our ambition is to ensure that the best aspects of technology adoption continue post-pandemic and drive new value into our economy and society.

DR JEREMY SILVER
CEO

As we continue to encourage, stimulate and support early adopters across the manufacturing and creative sectors, we find that increasingly a blend of technologies converging to form a new technology stack is having the greatest impact. 5G combined with augmented reality to create new opportunities in virtual retail is the kind of idea we are exploring in our partnership with Verizon. In our CreativeXR programme, overshadowed by the constraints of lockdown, we are seeing various mixes of virtual reality, 5G and artificial intelligence being harnessed to bring cultural experiences to new audiences at home. In one of our best named projects, Digital Sandwich (funded via the Made Smarter programme), a combination of IoT, AI and distributed ledger technologies is revolutionising the incredibly complex sandwich supply chain for the NHS, by increasing transparency and permanently recording the provenance of ingredients.

Around the UK, our work to help level up the nation and drive economic growth into all parts of the country continues, from unlocking the potential of 5G in the West Midlands with Telefonica, Deloitte and Wayra UK, to creative partnerships with the University of Bristol that will completely transform immersive experiences, and the continued outstanding work being done by the teams in our centres in Northern Ireland and North East Tees Valley, boosting regional growth and expertise.

In addition to our work in supporting and growing UK businesses, Digital Catapult has been successful in a number of international collaborative research and development bids in the last year, leading to an increasing international role in promoting UK tech companies in key sectors. Synchronicity, HyperCRC, 5G VICTORI, CPN and DLT4EU are all examples of the complex and exciting multi-stakeholder projects that we are part of across Europe, funded by the EU's H2020 programme. As we find our new place in the global marketplace, we hope very much that we will be able to continue to contribute to this kind of pan-European and international partnership in the future. 5G Victori, for example, is a brilliant project exploring the complexities and opportunities in connecting 5G networks across national boundaries. And beyond Europe, we're helping to break world records by partnering with Amazon Web Services in supporting the Bloodhound world land speed record attempt in South Africa.

Digital Catapult looks forward to continuing to grow and scale its contribution to the UK's economic recovery, helping businesses adjust to and make the most of the emerging new normal.

Working across the UK

As well as our regional centres in the North East and Northern Ireland, Digital Catapult is involved in a wide variety of other projects around the UK that are contributing to the Government's levelling up agenda, from combining 5G and immersive technology to develop new ways for audiences to access and embrace arts and cultural experiences, to developing new skills in engineering and manufacturing that will drive innovation and digitally enabled recovery following the Covid-19 pandemic.

£8m
Value of 5G Smart Tourism project with 19 partners

2,000+
Businesses will benefit from 5G in the West Midlands

15
Startups on 5G Testbed Accelerator programme

£223m
Economic boost from the MyWorld project in Bristol

24
New industrial partnerships launched by Digital Catapult Northern Ireland

62
Company engagements with Digital Catapult North East Tees Valley

"

Understanding the needs, pains, and challenges faced by those specific sectors shaping the strengths of our region is vital to facilitating the North East's capacity for growth and innovation. By delivering dedicated, sector-specific innovation services, we've seen some incredibly successful partnerships formed between small technology firms and bigger brands, including P&G, Dyer Engineering, and Kielder Water and Forest Park. These partnerships have enabled us to create opportunities that have had a real impact for startups, leading to new commercial contracts and international exposure.

DAVID DUNN
CEO, SUNDERLAND SOFTWARE CITY

Northern Ireland

Developing long term partnerships to boost immersive and AI technology adoption.

No longer focused only on immersive technologies and the creative industries, Digital Catapult Northern Ireland's work continues to branch out into other technologies, especially AI, which is now a central pillar of engagement.

We partner with leading organisations to use technology to enhance the audience experience. From shaping a £240,000 challenge fund with Arts Council NI, to working with international firms such as RivR, Virtualitics, Unity and 3Data to boost access to hardware and software for small businesses. As a partner organisation on the Future Screens NI programme, we are helping create R&D opportunities for the creative sector, helping to secure four FSNI R&D grant funded projects to enable non-extended reality startups to research, adopt and pivot their businesses with extended reality. With NI Screen we worked to connect creative and enterprise opportunities for spatial computing, securing a Unity certified training programme via an FSNI R&D fund to attract individuals with a gaming background as well as encouraging non-gaming applications from manufacturing, construction and architecture to pursue the use of immersive technology in their companies. We presented at SXSW with Axial3D and Belfast Health Trust, the success of which led to an idea - the Startle Effect - to help train surgeons and their team cope with split second decision making during an operation. A team of local surgeons, extended reality producers and psychologists will work with DCNI and an international pharmaceutical company to film a VR training simulator POC.

We provided expert advice on IoT and AI to the Department for Infrastructure (DfI) to optimise predictive maintenance of the region's highways, helping DfI reach companies outside of its usual procurement process to develop a tool that captures real time data on the condition of the highway from DfI fleet vehicles and Translink buses. 16 companies applied for the challenge, with four chosen to develop a solution. By integrating the data with AI, the tool can predict road degradation, helping to deliver a proactive repair schedule and framework for ongoing and future highways maintenance. Phase two of the project is underway to deliver a robust, practical, affordable solution suitable for use across Northern Ireland.

We're also working with a number of organisations including the Northern Ireland Advanced Composites and Engineering Centre (NIAEEC) to develop manufacturing operations demonstrators using VR. Aiming to demonstrate the efficacy of VR for training in assembly and maintenance, this project comprised three independent but related projects from Bombardier Aerospace, Thales and Denroy Plastics. Together, these demonstrators assessed state-of-the art technologies, evaluating them against the standard workflows for assembly-type tasks, giving the project partners an understanding of the end-to-end processes involved in VR deployment, evidence for the business case and value proposition of VR for training. We were lead partner on the project due to our significant expertise and understanding of immersive technologies, as well as our reach into the startup community. 16 businesses applied, of which nine presented their ideas with two selected to collaborate across the project: Yellow Design, a Northern Irish startup and global enterprise organisation Dassault Systemes.

North East Tees Valley

The North East has long been synonymous with manufacturing, from its historic ship building roots to the base for the automotive industry today. As advanced digital technologies become more ubiquitous, the North East once again has the opportunity to lead the world.

In partnership with Sunderland Council, we developed the Assistive Technology Testbed to help local residents live more safely and independently in their own homes for longer. We tested new assistive technology devices and created a platform to collect information from these devices, allowing the social services team to better plan their visits based on need. An independent evaluation found that if scaled beyond the initial pilot, Sunderland City Council could save £3.7 million over three years, with a return on investment in just seven and a half months.

We helped create an app, Sunderland Steps, that encourages local residents and employees to be more active, linked to a programme delivered throughout the city by the council. Nearly 2,400 people have downloaded the app so far, and the SME app developer has since been able to sell the IP. We helped Kielder Water and Forest Park (KW&FP) to engage a more diverse audience by working to educate partners and stakeholders on immersive technology, shape an open call brief, manage the application process and deliver remote pitching sessions for four startups. As a result, Tees Valley based company Animmersion won £10,000 to create a fly-by VR proof of concept.

We're also supporting local creative and cultural organisations, venues and practitioners to explore how tech can enhance creative practices and help these organisations reach new audiences through the Sunderland Culture Coastal Communities project. Originally a physical residential event, the sessions moved online due to Covid-19 but continue to be popular: since launching in November 2019, 46 individuals, venues and organisations have been engaged.

We continue to work very closely with a range of medium sized and large organisations in the North East.

Our Digital Manufacturing residential programme helps manufacturers that want to explore innovation and emerging technologies but don't know where to start, and has supported 22 businesses to date.

We continued our relationship with P&G, working with the Digital Catapult London team to solve three problems faced by two P&G departments in Newcastle and Reading. We helped P&G narrow down over 70 applications from companies across the globe to 16 companies shortlisted to pitch. Three companies, from Belfast, Gateshead and London, subsequently secured commercial contracts with P&G as a direct result of our activity.

West Midlands

Ambitious plans for digital innovation in the West Midlands.

Chosen by the Government as the UK's first multi-city 5G test area, the West Midlands was one of a number of 5G testbed locations announced by DCMS at the beginning of 2019. With Birmingham hosting the 2022 Commonwealth Games and nearby Coventry crowned UK City of Culture 2021, the area is perfectly positioned as the UK's first region to allow thousands of businesses and organisations to experience 5G first-hand.

In partnership with Telefonica UK (O2), Deloitte and Wayra UK, we're building three 5G facilities in Birmingham, Wolverhampton and Coventry which will comprise centrally located office and demonstration spaces with access to 5G technology, both indoors and outdoors, extending several kilometres. The consortium, known as 5pring, will run innovation and education activities in the region over the next two years to build understanding of the technology and how it will benefit businesses, how 5G can address specific industry challenges, and how businesses can develop ambitious solutions for 5G in real-world environments.

Brighton

Unleashing 5G powered creativity for the south coast.

Another city known as a centre for digital and smart technologies, Brighton is the location of two of Digital Catapult's high profile 5G projects. In April 2019 Brighton Dome became one of the first large-scale performance, arts and cultural venues to be equipped with 5G technology allowing audiences to engage and interact with artists experimenting with new work enabled and delivered over 5G infrastructure, as well as giving Brighton-based small businesses, community groups and artists the opportunity to test and develop new 5G-enabled applications.

The 5G testbed in Brighton Dome added to the existing Digital Catapult 5G testbed located in Fusebox in Brighton and provides end-to-end commercial and open sourced access to a secure 5G network, interconnected with the 5G University Test Network (5GUK) through the 5GUKExchange, for local local businesses of all sizes. This is the home of Digital Catapult's 5G Testbed Accelerator programme, a 20 week accelerator programme empowering startups to discover, develop and test next generation connectivity with 5G facilities and experts. We're discovering startup businesses in the manufacturing and creative industries, such as Mativision, VR Craftworks, Extend Robotics and Sceenic, that have incredible ideas which are being unlocked with 5G.

Bristol

Boosting the west of England innovation powerhouse.

Long recognised as one of the most innovative cities in the UK, Bristol is at the heart of the UK's creative sector and is home to a number of Digital Catapult projects. With the West of England Combined Authority (WECA) and 19 other partners, the pioneering 5G Smart Tourism was hosted by a range of venues in the city blending 5G and immersive technologies to create interactive visitor experiences for the cultural, heritage and tourism sectors.

Focused on manufacturing, the two-year DETI (Digital Engineering Technology and Innovation) project will accelerate digital engineering across multiple sectors for future generations of engineers and engineering products. It's run in partnership with the National Composites Centre (NCC), the Centre for Modelling & Simulation, the University of the West of England, the University of Bristol and the University of Bath, alongside Airbus, GKN Aerospace, Rolls-Royce and High Value Manufacturing Catapult.

In June 2020, the £46 million University of Bristol led MyWorld project was announced, bringing partners including the BBC, Aardman Animations, BT, Bristol Old Vic and Theatre Royal Trust to generate more than 700 new jobs and boost the economy by £223 million by forging collaborations to progress innovation, creative excellence, inclusive cultures and knowledge sharing.

London

Leading innovation from the heart of the Knowledge Quarter.

London is fast becoming a global hub of a new advanced digital technology stack that will transform how we live, work and play in the near future. Our London headquarters are home to over 100 of our expert people, the Future Networks Lab, Immersive Lab London and the 5G London testbed.

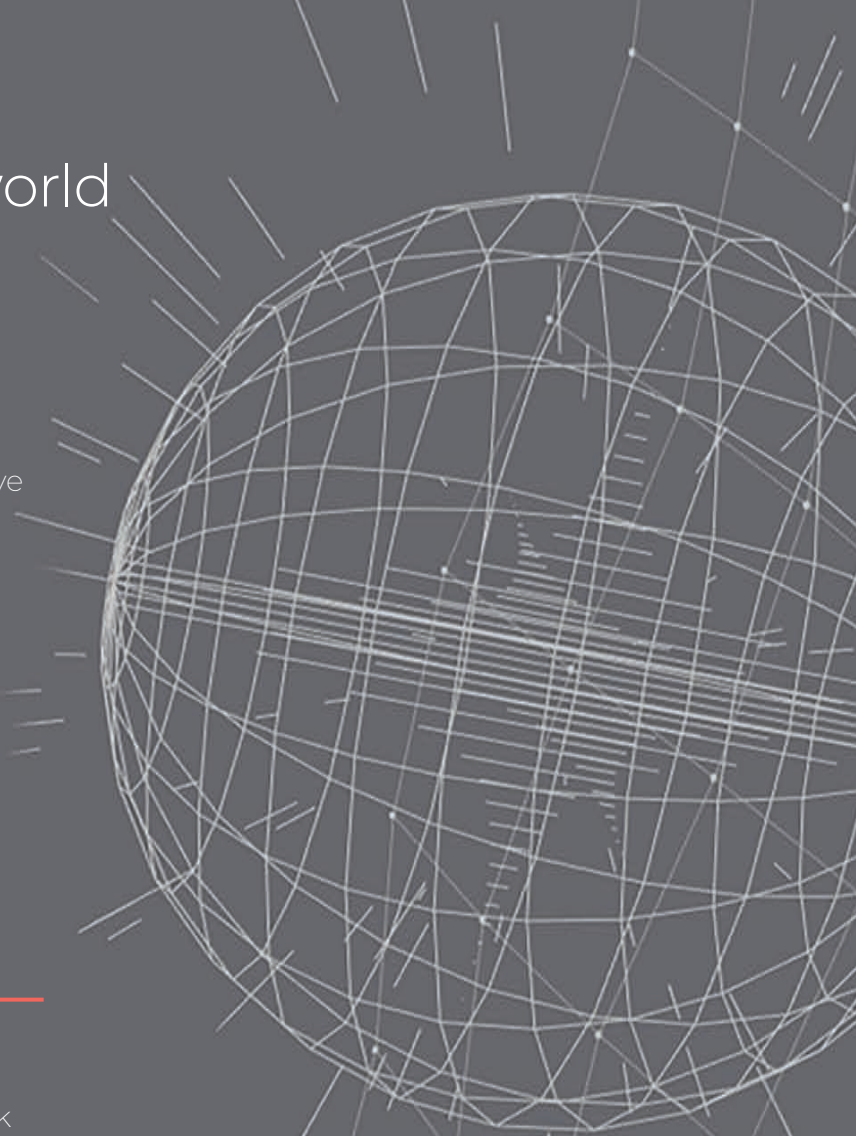
The Future Networks Lab is one of the first facilities in Europe designed to help companies of all sizes gain access to leading IoT and 5G technologies, and brings together network, services, platform and solutions providers in a technology-neutral space to de-risk innovation and show how these technologies can be rolled out in practice, not just in theory.

We partnered with the South London Partnership (the London boroughs of Croydon, Kingston upon Thames, Merton, Richmond upon Thames and Sutton) on the InnOvaTe Project, an initiative exploring the use of IoT technologies to address community challenges and deliver sustainable economic growth.

Digital Catapult was commissioned by the Mayor of London to look forward, inform and advise on technology research and innovation trends over the next 15 years, in the report "London: A Global Leader in Advanced Digital Technologies".

Working around the world

Digital Catapult's work has grown to encompass a range of industry-leading projects outside the UK. We're collaborating with partners all around the world to promote innovative UK industrial and creative businesses to an international audience; creating a crowdsourced augmented reality experience for Norweigian school children; understanding the weather to break a world record in South Africa; and future-proofing infrastructure for a 5G revolution from the Black Sea to the Atlantic Ocean.



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From helping us be more productive at work to tackling climate change, technology has incredible potential to improve all our lives. Digital Catapult will provide a platform for UK and German startups to work together and come up with cutting-edge solutions to future challenges. It's great to see big firms including Siemens and CHEP Europe back the initiative.

MATT WARMAN
UK DIGITAL MINISTER

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We are so grateful for the opportunity to collaborate with both Digital Catapult and Arcade on this inspiring project, which is generously supported by Sparebankstiftelsen DNB, Norway. Hopefully, the collaboration will result in an engagement for kids, relevant beyond the realms of school, allowing influence from users' own daily surroundings wherever they might be geographically located across our far-reaching country.

GERD-ELISE MØRLAND
DIRECTOR OF LEARNING AT MUNCH

01

Supporting the UK Government to promote UK plc internationally.

Digital Catapult is actively involved in supporting the UK Government's GREAT campaign to promote the innovative work of UK businesses to an international audience. We worked with the Office for AI, the Department for International Trade and the GREAT campaign at Web Summit 2019 in Portugal, where we showcased animated VR film "When Something Happens" by CreativeXR company Boom Clap Play. Digital Catapult also enlisted Augmentor alumni company Gravity Sketch to demonstrate UK immersive innovation to 700 high profile government officials from 29 NATO countries at the 2019 London NATO Summit.

02

Creating a crowd-sourced immersive experience inspired by Norway's greatest artist.

Working with MUNCH, Oslo and immersive technology specialists Arcade, we are developing a prototype AR experience for students in Norway to engage with Edvard Munch, understand his body of work, his connection to Norway's countryside, and his unique way of thinking and creating. The project will enable students to create their own works inspired by Munch and upload them into a searchable geo-located map, allowing users and contributors to interact with each other's artworks throughout Norway, exploring different creative methods and eventually creating an AR, crowd-sourced, nationwide piece of art.

03

Using advanced sensor technology to help break world land speed record.

Digital Catapult built an advanced weather monitoring system using IoT and Amazon Web Services (AWS) to monitor a variety of conditions in the Kalahari desert in South Africa during the Bloodhound Project's testing ahead of their attempt at a world record. Located every 1km along the 12 mile race track, the battery powered devices recorded wind speed and direction, temperature, humidity and barometric pressure. The wireless sensors operate with very little infrastructure, and because they are run entirely on the AWS Cloud, can be instantly scaled up during high demand, and scaled back when the system is not in use.

04

Promoting UK creative content and talent at prestigious film festivals.

We take an active role in promoting the creative businesses we work with at international film festivals. Celebrating the achievements of the UK cultural sector, Digital Catapult has supported companies which have been part of its CreativeXR programme, developed with Arts Council England, at over 35 high profile and world leading festivals across the world including: Tribeca Film Festival, Venice Film Festival, South by SouthWest, Amsterdam Film Festival and Sundance.

05

Driving collaboration between the UK and Germany to boost industrial innovation and sustainability.

In partnership with Deutschland - Land der Ideen, Siemens and CHEP Europe, the UK & Germany Global Challenge connects high growth potential startups in the UK and Germany with industry, forging international collaboration and sharing knowledge to address key challenges and opportunities facing the industrial sector using artificial intelligence and distribution ledger technologies. The Global Challenge was developed with the Department for Business, Energy and Industrial Strategy (BEIS), the Department for International Trade (DIT), with support from the Foreign & Commonwealth Office (FCO) Science and Innovation Network (SIN). Partners include the Royal Academy of Engineering, CBI, MTA, Innoloft, London & Partners and NVIDIA.

06

Showcasing how 5G can transform diverse and dynamic environments across Europe.

Digital Catapult is a partner in 5G-VICTORI, a pan-European project which will establish future-proofed infrastructure that supports 5G across different sectors including transportation, energy, media and manufacturing. We are supporting the interdomain orchestration for the project, working with 5G testbeds in Bristol, Berlin, Alba-Iulia (Romania) and Patras (Greece) to demonstrate how dynamic 5G pop-up networks can support high quality media services that meet increases in demand at congested locations such as railway stations.

Virtual production

Digital Catapult helps businesses create. Whether that's by demonstrating the effectiveness of adopting advanced digital technologies individually or in combination to produce stunning, award-winning immersive experiences, or showing how these technologies can optimise in-factory processes to improve efficiency, yield and the bottom line, our work is focused on boosting UK production to benefit the manufacturing and creative industries.

Digital Catapult plays a critical, hands-on role in helping large organisations on their innovation journey. We know that it's not always an easy path to tread, so we partner with businesses - from medium sized specialised manufacturers to multinational telecoms providers and world renowned cultural institutions - to scope, refine, guide and implement advanced digital technology solutions that help to solve their challenges and answer business critical questions. We also introduce these large businesses to the UK startup scene, helping industry to understand and explore technology with startups and scaleups for mutual benefit. Because we own the challenge with our partners, we're dedicated to delivering impact and demonstrating how advanced digital technology can unlock value.

The UK continues to have one of the most vibrant creative scenes in the world - we're master storytellers and we produce some of the most unique, original and authentic content which resonates with audiences worldwide. Digital Catapult is helping businesses of all sizes figure out how to reach new audiences whilst also producing content that caters for their existing audiences. For the audience itself, our work on programmes like Audience of the Future or partnerships with organisations such as MUNCH, as well as our acceleration programmes like CreativeXR and our world-leading facilities at Dimension and The Imaginarium, are all creating bold, interesting, ambitious experiences that push the boundaries of what's technically and creatively possible.

Ethical and sustainable practices are a major focus of our work across our sectors and technologies. Our AI Ethics Framework and AI Ethics Committee were created to provide practical advice and guidance for startups and scaleups developing the next generation of products and services powered by artificial intelligence and machine learning. The recently published report on ethics in XR, "The ethics of realism in virtual and augmented reality", was created with UCL, BBC, HTC Vive and Google among others and explores a range of interesting and important ethical questions about VR and AR. For Digital Catapult, sustainability means thinking ahead. It's about making sure our work helps make sustainable, long term business models, creating sustainable and long term jobs, as well as ensuring its as environmentally responsible as possible.

Read more online at
www.digicatapult.org.uk

Tailored acceleration programmes for trailblazing startups

Dedicated to the UK's startup community.

Our acceleration programmes discover and nurture the best startup talent, and provide funding, mentoring and guidance, access to hardware, software and facilities, as well as access to the UK and international investment community, and large multinational businesses that most small companies would never get the chance to pitch their ideas to.

To date, we've welcomed over 200 startups onto these acceleration programmes and, as a result, more than 140 of them have raised over £320 million total investment after engaging with Digital Catapult.

Originally created to focus on their core technology areas, these acceleration programmes have expanded as they have grown, often in direct response to the needs of the startups taking part, and now increasingly look at how technologies can be combined to complement each other.

The most recent CreativeXR cohort includes 5G and AI streams, Machine Intelligence Garage has had an IoT focused cohort fusing AI with IoT, and the 5G Testbed Accelerator programme is increasingly looking for companies in the creative industries to blend their ideas with the most advanced future networks technology on offer.

CreativeXR

Creating immersive experiences that may be too risky to get mainstream funding in partnership with Arts Council England

60
Since 2017

Augmentor

Making commercially viable immersive solutions addressing enterprise-level challenges investment ready

26
2017

5G Testbed Accelerator

Empowering discovery, development and testing for innovative products and services with 5G

15
2018

Future Networks Lab Accelerator

Raising established industrial IoT startups to the next level to rapidly grow and develop their business

6
2020

Machine Intelligence Garage

The only UK AI accelerator that offers business mentoring, technical advice and ethics guidance

100+
2017

"Working with Digital Catapult has supported our growth and given us a different level of access to potential clients and experts who provided invaluable feedback on our solution ideas and pitches.

DARRELL JAYA-RATNAM
MANAGING DIRECTOR,
DIEM ANALYTICS LTD

"Since we joined Digital Catapult's programme, Smartify's valuation has increased by approximately 300%. We attribute at least 30% of this increased value to Digital Catapult.

ANNA LOWE
CO-FOUNDER, SMARTIFY

CASE STUDY

Creating better cultural experiences

The pioneering 5G Smart Tourism project in Bristol and Bath was one of the first large-scale demonstrations of the combined power of 5G and immersive technologies to revolutionise how we socialise and interact with cultural experiences.

The multimillion pound project led by the West of England Combined Authority and funded by the Department for Digital, Culture, Media & Sport, brought together 19 organisations including Digital Catapult, to change how the cultural, heritage and tourism sectors create interactive immersive experiences in a way never seen before by launching a virtual and augmented reality tour of 2,000 year old Roman Baths, 360 degree immersive experiences, and an entirely new way of looking at art enabled by 5G.

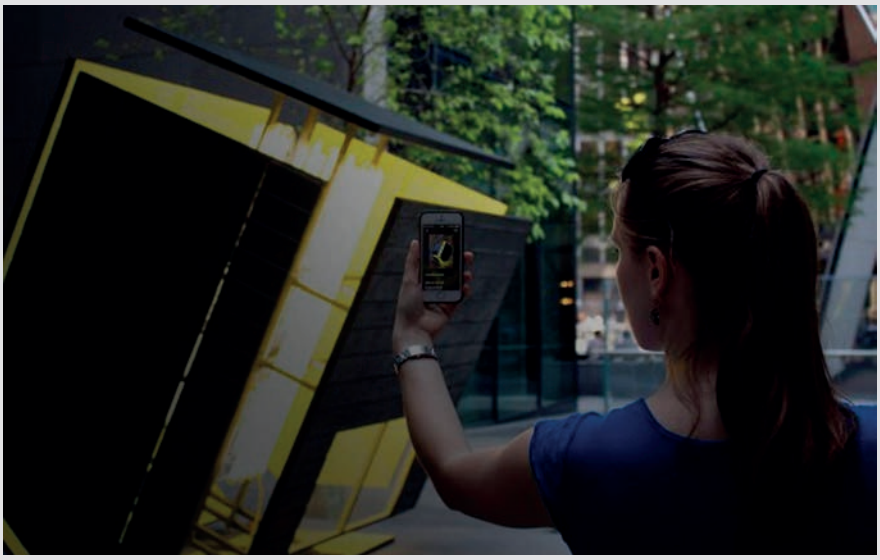
This kind of cultural experience would have been unimaginable with previous iterations of network technology, and that's mainly because it's hard to strike a balance between the technology advances in infrastructure and the real impact on improving where we live, work and play. 5G lets us bring it to life.

Using the most advanced network infrastructure at the University of Bristol 5G testbed and demonstrating exactly how immersive cultural experiences will benefit from 5G, and how the experience of the ordinary visitor will change with it, companies large and small showcased their experiences in Bristol and Bath.

BBC R&D blended 5G with virtual and augmented reality to bring the 2,000-year history of the Roman Baths in Bath, to life. Innovators Landmrk gave visitors an interactive, 360° video-guided tour around Bristol highlighting just the vast contrast between 4G and 5G capabilities. Mativision presented simultaneous 360° VR experiences, revealing how 5G removes barriers to multiple users experiencing shared synced content. Smartify is using 5G to enhance its app, which provides information on artworks from around the world, via bonus content including audio stories and videos.

The stark contrast between current networks technologies and the potential of 5G to cultural experiences carries on behind the scenes as well with other partners including the University of Bristol Smart Internet Lab, King's College London, Zeetta Networks, CCS, BT and Bristol City Council demonstrating how interconnecting 5G testbeds and network slicing unlock numerous benefits, from better shared experiences across different locations, to support large-scale events making them safer and better managed.

These experiences in venues including M Shed, Millennium Square and We The Curious demonstrated the momentous and transformative change 5G is having, not just on the infrastructure that you don't see, but on the art, historical and cultural experiences you might visit on a normal weekend.



Shaping the practical deployment and integration of 5G into UK industry

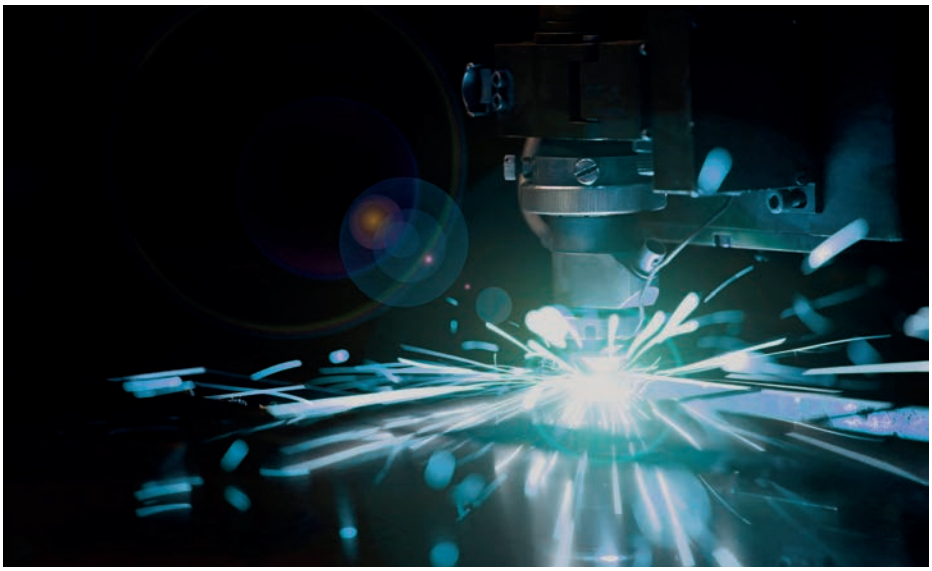
5G is an essential component of advanced digital infrastructure and our digital economy.

We are privileged to be part of a network of companies across Europe leading in 5G. Our significant technical expertise is fundamental in orchestrating a wide range of projects that will define the rollout of 5G across UK industry in the coming years. We've been active in the development of 5G since Digital Catapult was established and have been involved on some of the most important industrial 5G projects in the UK and Europe, from the world's first 5G low latency multi-site live orchestral performance with the University of Bristol Smart Internet Lab and Kings College London, to our unique 5G Testbed Accelerator programme that gives innovative startups, such as Mativision, Sceenic and VR Craftworks, a boost on their 5G journey.

We're a neutral broker and a trusted partner and technical authority to organisations across the UK's 5G ecosystem, from those developing 5G to the government with whom we're playing a key role in the delivery of the DCMS funded 5G Sector Testbeds and Trials Programme.

Our report, "Made in 5G", launched in 2019, identified the major challenges and opportunities of adopting 5G in the UK's manufacturing industries and since it was published there has been a significant increase of 'Industrial 5G' adoption in the UK, funded publicly (by the DCMS 5G Testbeds and Trials Programme that includes the 5G-ENCODE and 5GEM-UK consortium projects) and privately through direct industry investment, including the Industrial 5G Accelerator run by Ericsson and Digital Catapult. This project will create tangible demonstrators of 5G's unrivalled capability to address important industry use cases, and help companies to understand how 5G can transform products and services.

We operate and own leading 5G testbeds in the UK in London and Brighton that provide open access to commercial level infrastructure and technology that's usually inaccessible to most organisations. This enables businesses of all sizes to better understand 5G and validate business case assumptions by testing and developing new 5G-enabled products and services. We're working to create more 5G testbed facilities around the UK, from the West Midlands as part of the 5pring consortium, to Nottingham and the North East.



"Technologies like IoT, robotics and AI, are transforming UK businesses, but the lack of consistent, high-quality connectivity is preventing them from realising Industry 4.0's full potential. With its super-fast data rates, ultra-low latency and vastly increased network capacity, 5G provides the solution to this challenge. Ericsson is a world leader in communications technology and we are collaborating with mobile network operators, businesses and agencies such as Digital Catapult to ensure Industry 4.0 is capable of delivering on its promise.

MARIELLE LINDGREN
CEO, ERICSSON UK & IRELAND

FUTURE NETWORKS

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Adopting industrial digital technology is of paramount importance to safeguard UK manufacturing for generations to come. We have benefited from the technological pioneers before us and now feel it is our time to pick up the mantle.

RICHARD LARDER
OPERATIONS MANAGER,
DYER ENGINEERING

“

We are excited about the opportunities this will bring to our facility and anticipate that we will make significant advancements to enhance our position in a highly competitive worldwide market for the supply of nickel alloys.

DR JONATHAN SILK
QUALITY AND TECHNICAL DIRECTOR,
SPECIAL METALS WIGGIN

FUTURE NETWORKS

The Connected Factory

Demonstrating ROI for IoT in manufacturing.

We created the Connected Factory Demonstrator with Dyer Engineering in County Durham and Special Metals Wiggin in Hereford to explore how future networks technologies can unlock productivity, streamline processes, improve yield and increase quality control.

Examples of using internet of things (IoT) technologies for asset tracking within manufacturing are rare, and those that do exist are from larger businesses instead of the medium-sized businesses that make up the majority of the UK's manufacturing sector. Missing or mislaid parts can result in costly production delays so our real-world demonstrator aimed to show how an asset tracking solution using emerging IoT technologies can be implemented to address and solve this critical business challenge, as well as proving that an IoT network was viable to set up in a factory environment, and provides a return on investment.

Both of these factories cover a significant footprint so understanding the precise location of components is essential; we needed to ensure an accuracy of one metre in order to locate the assets. Both factories also had outdoor storage areas so the sensors and the beacons needed to withstand the weather conditions. Working with ThinkInside, a specialist in indoor intelligence, we installed the beacons and more than a thousand tracking devices. It was also important to make the solution accessible for those who operate the facilities daily so we created a digital display dashboard, and provided scanning devices and training to ensure they could seamlessly integrate the new tracking solution into their day-to-day activities.

Since implementation, both factories have reported productivity benefits through the time saved in locating items - skilled staff can now focus on their tasks rather than spend time searching for misplaced assets. Special Metals Wiggin estimated savings of £2 million per year as the asset tracking solution meant less need for remanufacture of parts. Dyer Engineering estimated a five percent improvement in productivity overall, equivalent to the work of eight people.

Building trust and resilience with DLT

Undertaking pioneering work to explore the potential of distributed ledger technologies.

We're focused on discovering and developing DLT, such as blockchain, to show how this technology can help to create a shared infrastructure by helping companies move away from data ownership and management to understand the shared value of data. Data is worthless without the ability to do something with it, and DLT in combination with AI and 5G can help with better, more robust governance, improved trust and visibility in supply chains, as well as helping to create new business models.

We've run three individual, specifically tailored DLT Field Labs for the Oil & Gas sector with the Oil & Gas Technology Centre (OGTC) in Aberdeen, in the nuclear sector with the Nuclear Decommissioning Authority (NDA) in Sellafield, and for UK construction with various major players from across the construction industry.

In order to separate fact from fiction around this technology, and break down barriers to adoption, Field Labs help industry understand the technology and deploy successful DLT-based systems where appropriate, exploring how DLT can address commercial and operational challenges, ranging from tracking assets in a warehouse or for movements of high value items such as hazardous waste, keeping an immutable record of spare parts, and for worker certifications to approve and validate competencies.

The Field Labs are a truly collaborative process created to merge commercial, regulatory and research thinking to form a practical roadmap that derisks innovation and sets out how to implement change with DLT as part of the advanced digital technology stack. As part of the Field Labs process, we've brought onboard expert support from large legal firms like Mischon de Reya, and the vital input of the UK's strong DLT startup and scaleup community with companies including Applied Blockchain, Wallet Services, Marine Transport International, Gospel Technology and Blockpass.

> "We're thrilled to support Digital Catapult in its exploration of the practical applications of blockchain and other distributed ledger technologies, not just in the legal profession but throughout any number of industries where there is opportunity for impact.
>
> **DR ALASTAIR MOORE**
> HEAD OF ANALYTICS AND MACHINE LEARNING, MISHCON DE REYA

DISTRIBUTED SYSTEMS

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One of the key things for us is the ability to build trust. Being part of the Ethics Committee deep dive was an imperative for us, as ethics forms a core part of the essential value of our product.

AL RAMICH
FOUNDER & CEO, LOOMI

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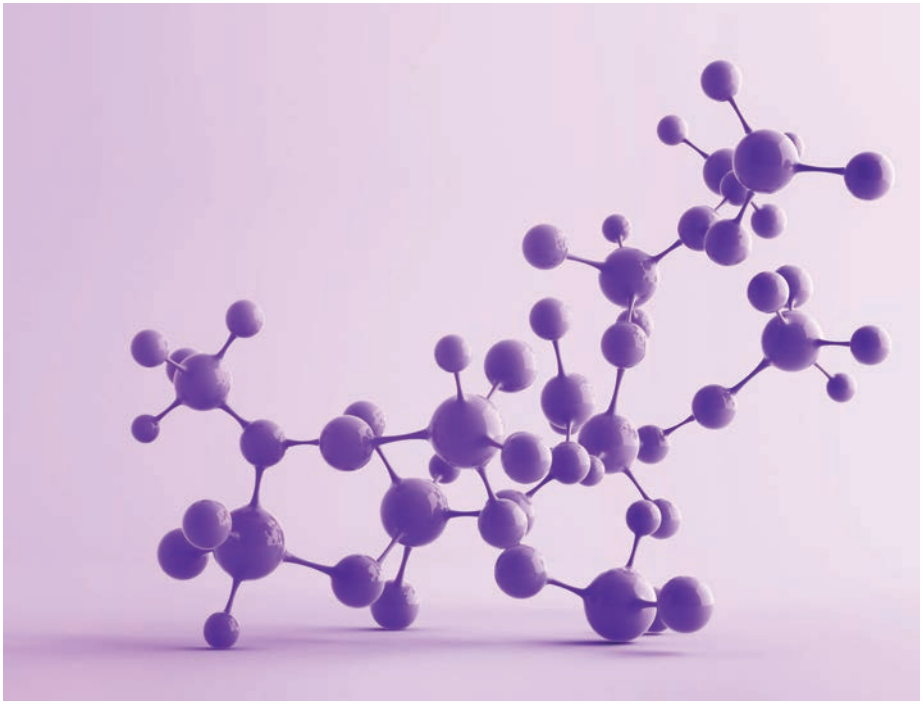
Digital Catapult gathered quality investors who were genuinely interested in Greyparrot and our solutions. It was the right audience.

ALISA PRITCHARD
MARKETING & OPERATIONS, GREYPARROT



Ethical and sustainable AI

Machine Intelligence Garage cohort companies are taking the lead in using artificial intelligence to answer ethical questions in managing personal data, and rapid recognition machine learning to boost global recycling rates.

Loomi built an AI personal assistant but unlike most existing AI helpers, it's not just another voice search engine. Loomi automates the tasks that a real personal assistant would carry out, making a high level of personalised service available, and helping to manage information better. With access to an individual's personal information, it was essential that Loomi could be trusted to take care of user data with the highest level of information security. Taking part in an AI Ethics Committee deep dive helped inform the product's development and build, and to make sure that the platform is demonstrably ethical and secure. Loomi now has transparency built into its AI algorithms, so that users can understand at a glance why something is being shown to them.

Greyparrot joined Machine Intelligence Garage to help develop its machine learning algorithms. It uses AI-powered computer vision to rapidly recognise and sort waste by analysing waste streams, monitoring and automating operations to help drive efficiency and profitability for waste managers. Its solution can be used in smart systems and hardware, such as bins, trucks and robotics. It helps to maintain quality levels of recycled materials, mitigate risks by recognising and managing contaminants, and uses insight and analytics to help improve global recycling and recovery rates. Following the 12 months working with the Digital Catapult AI team, Greyparrot has grown from six to eight employees and has so far raised £2.7 million investment.

We were delighted to receive the Best Paper award at the prestigious Neurips 2019 conference for our work on AI for social good. We reviewed a range of tools developed to help adhere to and monitor good ethical practices when developing and deploying AI-driven products and services, with the intention of helping developers, engineers and designers of AI 'apply ethics' at each stage of development and to signal to researchers where further work is needed.

ARTIFICIAL INTELLIGENCE

Reaching new audiences

Mixing art and augmented reality with MUNCH and Arcade.

We are collaborating with MUNCH, Oslo and immersive technology specialists Arcade to create a prototype augmented reality, crowd-sourced immersive experience inspired by Norway's greatest artist, Edvard Munch, and his approach to art, to inspire children to get creative.

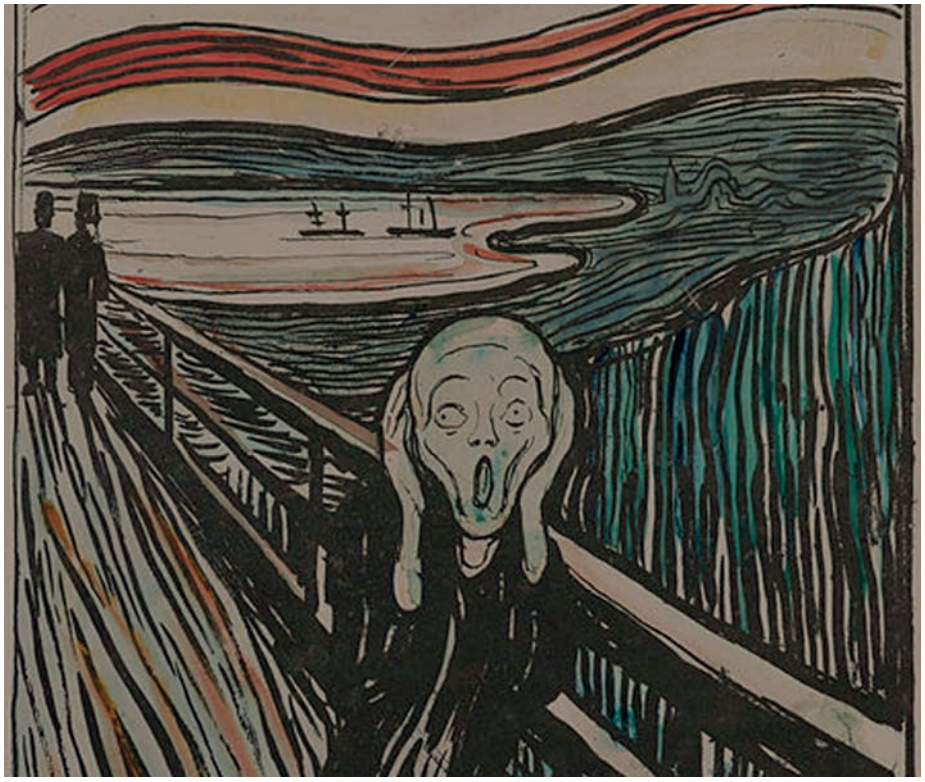
Using cutting-edge AR tech, students aged between nine and 11 can capture their own original artwork via the app, and place their image, through AR, into the physical world in a location or environment that has meaning for them or is related to the artwork itself.

This experience is built around the idea of place, an idea very important to Munch himself, inspiring students to engage with Edvard Munch's body of work, as well as his unique way of thinking and creating. The app will amalgamate all of the AR art into a searchable geo-located map, allowing users and contributors to interact with each other's artworks throughout Norway, exploring different creative methods and eventually creating an augmented reality, crowd-sourced, nationwide piece of art.

This project addresses the challenges of how to bring a wider sense of Edvard Munch's work and ideas directly to audiences and to do so outside of the traditional bounds of a museum space; that has become even more meaningful during the course of the project.

Digital Catapult's deep connections across the UK immersive and wider cross-technology innovation communities provided MUNCH with access to the UK market, and the museum was keen to tap into the strengths of the UK ecosystem for this project. We worked closely with MUNCH to define the scope of the project, bringing immersive industry specialists Arcade in to create the augmented reality experience.

The new museum is planned to open in Oslo in autumn 2020 with the app ready for download for pilot-groups around the same time.



> "During our research we discovered Arcade shares one of Edvard Munch's core philosophies, of using creativity to connect people to place. Our mediums may differ, but that link was just one reason that we were so thrilled to partner with MUNCH and Digital Catapult to bring this idea to life.

ALEX BOOK
CHIEF STRATEGY OFFICER, ARCADE

IMMERSIVE

The networked world

We live in an increasingly networked world. Whether it's a private 5G network, a distributed record of a complex interlinked food supply chain, or simply a group of people in an audience, this 'networked' society reaches into many parts of our personal and professional lives.

Digital Catapult is an active partner in creating this networked world, through a number of industry-leading, pioneering projects that are creating distributed, sustainable and resilient environments.

In manufacturing industries, this is not just about operational efficiency and the flow of goods and services. Adoption of advanced digital technology will have a ripple effect throughout entire supply chains, helping to create a shared infrastructure that improves trust and traceability, as well as enabling remote operations and new ways of training and communication. Connected products in the in-service lifecycle provide an opportunity to build new sustainable business models for the manufacturing and wider industrial sector that are based around service. These 'servitisation' business models bring manufacturers closer to the end user by giving them access to usage data, and we're working with a major manufacturer to do just this.

For the creative industries, creating new networks of contacts in different sectors is helping to bring fresh thinking into the sector. Lessons learned from using advanced digital technologies, like 5G and AI, are being incorporated into creative thinking. In our acceleration programmes, we're seeing more and more how the advanced digital technology stack is expanding the potential for audiences to experience incredible content in new ways, and the Reality Emulator in Bristol is a visionary project taking inspiration from various digital twin facilities. The connectedness of our social media lives, and the impact of the Covid-19 pandemic, has also forced us to reevaluate how we can use existing networks to produce experiences that can be enjoyed from home but still give us a feeling of being together - several startups that are part of CreativeXR, Augmentor and the 5G Testbed Accelerator programme are getting the funding, mentorship and expertise from Digital Catapult to help achieve this.

Read more online at
www.digicatapult.org.uk

Proving the real world impact of 5G

We're continually looking for ways to bring 5G to life, to prove its potential in real-world environments and to revolutionise the sectors where it is applied.

Working with Verizon, we've created a programme that aims to use 5G as a core part of the new consumer retail experience, helping to pave the way for the future of retail. Mixing 5G with immersive, the retail accelerator programme will enable a select number of retail and brand partners to work directly with leaders in the UK startup and innovator community, alongside other technology innovators to explore how 5G-enabled solutions can solve their real-world business challenges, using Verizon's 5G and edge computing capabilities to develop prototypes.

5G's super-fast speeds, massive bandwidth and ultra-low latency can transform industry experiences, and Verizon is already showcasing an augmented shopping experience, virtual events and experiences, smart retail shelving, intelligent asset management and AR-enabled workspace reimagining at Verizon's London 5G Lab.

We're empowering startups to discover, develop and test next generation connectivity through the 5G Testbed Accelerator programme. Successful adoption of 5G is all about meaningful and purposeful adoption, giving the right answer to the question of how 5G will specifically help a business. With a clear understanding of how 5G will drive a business forward to create a boundary-pushing and customer-focused outcome, the 5G Testbed Accelerator programme provides a significant boost and potentially opens up entirely new business models.

Participants like Mativision pioneered interactive live-streamed 360° VR for live events using 5G to reduce broadcast latency from 45 to just four seconds and raised over £60,000. Sceenic developed an app called Watch Together that brings audiences together in a unified experience enabling them to watch and communicate using the same app, and has since worked with BT Sport and La Liga, and ori, which used the 5G testbed to accelerate the development of its solution that makes edge computing more accessible to the wider development community, enabling organisations to harness the advantages mobile edge computing provides.

> "More than ever, industries are looking to rapidly innovate out of business necessity - and in months instead of years. Next gen digital channels, remote experiences, immersive content at home and on the go... these are new ways to better serve customers, all unlocked by 5G.

CHRISTIAN GUIRNALDA
DIRECTOR OF 5G LABS AND INNOVATION CENTERS, VERIZON

> "Everything they do is for our benefit – they have an unselfish passion and enthusiasm for what they do! Thanks to their support, we can now show our clients and potential investors what we can do for them.

AHARON YECHEZKEL
CTO, SCEENIC

FUTURE NETWORKS

CASE STUDY

Innovating across the manufacturing value chain

We're working across the manufacturing value chain, and on projects across the UK that are helping to develop pockets of capability harness advanced digital technologies.

Two major projects we're currently undertaking are centred around Cambridge (INZIC) and Bristol (DETI) and target multiple parts of the manufacturing value chain. What both also have in common is that the lessons and outputs are not confined to the region where these projects are based.

We're also working on projects with large organisations like Thales, NSG Group, and BOC to create proofs of concept that can be scaled for real business impact. This focus on helping to grow the capabilities of UK manufacturing has helped Digital Catapult to grow significantly from the same time last year.

INZIC

The new Industrial Net Zero Innovation Centre (INZIC) will target asset and energy intensive industries such as aerospace, utilities and energy. Digital technology has a key role to play in improving sustainability and efficiency in order to reduce both the carbon footprint of industrial processes and supply chain logistics, through better optimisation of resources.

INZIC will help organisations tackle industrial net zero challenges by exploiting advanced digital technologies and deep industrial domain expertise in areas such as digital twin and asset life extension, creating new market opportunities for UK tech startups and industrial businesses alike.

> "We are delighted to partner with Digital Catapult on this new venture to drive new regional research and technology capability for the acceleration of digitally enabled industrial net zero, and reducing the UK's CapEx by creating new business service models in maintenance, repair and overhaul to extend the life of industrial assets.
>
> **AAMIR KHALID**
> CHIEF EXECUTIVE OF TWI

DETI

The West of England is home to the UK's largest advanced engineering and aerospace cluster and a vibrant digital community. As such, the region delivers the expertise, living labs and a technology test bed that companies need to progress.

We're thrilled to be working on the Digital Engineering Technology & Innovation (DETI) project to push the boundaries of digital engineering for the future, to help UK businesses maintain engineering leadership. DETI is a strategic programme of the West of England Combined Authority (WECA), delivered by the National Composites Centre (NCC) the Centre for Modelling & Simulation, the University of the West of England, the University of Bristol, the University of Bath, Airbus, GKN Aerospace, and Rolls-Royce.

Tackling urban challenges with IoT

Helping to create a universal approach to developing, procuring and deploying new services that tackle urban challenges using IoT and AI.

How do city authorities make sense of all the information they collect, and ensure they make best use of it for the benefit of their citizens, especially when there are no standardardised, universal solutions on the market? This makes it increasingly complex to deploy smart city services across multiple cities, which can be a major barrier to growth.

Funded by Horizon 2020 as a collaborative R&D project, SynchroniCity connects 34 partners from 11 countries over four continents. SynchroniCity is opening a global market, where cities and businesses develop services enabled by the internet of things and artificial intelligence improve the lives of citizens and to grow local economies.

Blending these technologies, SynchroniCity helped cities simplify the creation of new services that tackle the urban challenges they are facing, creating a harmonised marketplace for urban data and IoT enabled services. This synchronised marketplace linked 50 pilot projects and demonstrators projects in 21 cities, focusing on citizen engagement, environment and wellbeing, and sustainable mobility. Both small and large businesses with successful business models were chosen to deploy their digital solutions across digital markets.

The pilots demonstrated that by using this framework, it is possible to transfer social and environmental impact to local economic activity, as well as opening new market opportunities for both local authorities and technology service providers.

The pilot work has enabled Digital Catapult to test and mature our prototype IoT data marketplace, Urban Data Exchange, which was launched at the Smart City World Congress in Barcelona, and has now won funding to commercialise it into a business.

> The internet of things is the digital skin of our planet. By measuring the real state of the world through sensors, we become aware of existing issues and can track them over time as we use specific interventions to combat these issues.

ALEX GLUHAK
HEAD OF TECHNOLOGY - IOT, DIGITAL CATAPULT

FUTURE NETWORKS

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Digital Catapult has been really helpful in providing contacts and exposure. The CreativeXR process has lived on way beyond the initial year. They couldn't be more supportive. Without Digital Catapult's involvement, this wouldn't have happened.

OLIE KAY
EXPERIENCE DESIGNER,
ALL SEEING EYE

“

You need to know what story to tell, and how to tell it. Digital Catapult helped us to take the right approach and become pitch perfect. The mentorship from Digital Catapult is one of the best experiences I have had – and this lies at the core of its success.

CHRISTOPHE MALLET
FOUNDER, BODYSWAPS

IMMERSIVE

Supporting digital futures in Bristol

The Bristol Digital Futures Institute offers significant opportunities for collaboration to create transformative digital technologies for the future.

Digital Catapult is a supporter and funder of the Bristol Digital Futures Institute, a world leading institute that combines academic excellence from the University of Bristol with tech business expertise, working closely with local government and the community, to understand how technology will be developed, used and experienced in the future. The BDFI will build on a wide range of expertise to explore groundbreaking advances in many technology areas.

The Reality Emulator combines 5G and immersive technology in an open access facility. Built around the idea of data visualisation, the Reality Emulator will model data and use immersive technologies to enable users to 'experience' the data within a 3D virtual or augmented reality environment. This visionary idea to plug data sets into an immersive experience will allow users a unique, and incredibly future-looking opportunity to interpret, understand and use the data in an entirely new way: the idea has taken inspiration from various digital twin facilities that are used in some areas of manufacturing, but no one is doing anything to the extent of the Reality Emulator. As one of the number of partners, we're working on scoping and stakeholder input, procurement and system design.

MyWorld is another project led by the University of Bristol, where we have a key role in a consortium of 27 leading tech, academic and creative partners. Many companies in the UK's creative industries lack access to research and development opportunities and knowledge. MyWorld will create an opportunity in Bristol to build on the creative media production, technology and research strengths of the local region by creating new collaborative facilities to explore and exploit immersive technologies like motion and volumetric capture, funding innovative R&D and acceleration programmes and exploiting digital formats to create new experiences across fiction, documentary, games and live performance.

CASE STUDY

Cutting edge immersive facilities and accelerators

Our facilities at Dimension and the Imaginarium are leading edge pioneers in volumetric and motion capture for the film and TV industry, and the expertise that resides in these facilities is truly leading the way in global virtual production developments. Most recently, Dimension has been involved in helping people get back to work in Covid-safe ways and aiding economic recovery, whilst our immersive acceleration programmes continue to help startups reach investors and commercial partners, or pivot to create at-home experiences to be accessed by audiences on their phones or computers.

CreativeXR and Augmentor

Hundreds of immersive teams have applied to take part in our immersive acceleration programmes. CreativeXR, now in its third year, has recently selected 20 new teams to test the boundaries of how immersive technology can be used and experienced. The programme allows for freedom to raise new forms of art, storytelling and entertainment using content delivered through VR, AR, haptics or immersive audio technologies. 60 teams have taken part in CreativeXR raising £2.7 million since leaving the programme.

Augmentor focuses on boosting investment readiness, commercial viability and product market fit for immersive startups. Success stories from this programme include HoloMe, the technology provider behind Asos' 'Virtual Catwalk'; Arcade which has since worked with Digital Catapult and MUNCH; Somewhere Else which developed the BodySwaps immersive training platform that recently received funding and business support from HTC VIVE X; and Kagenova, which raised over £400,000 for its interactive realism products.

Dimension

Dimension is a world-class volumetric video capture studio. One of the most advanced facilities of its kind, Dimension has given a significant contribution to the UK's capability to produce volumetric video which enables an array of new audience experiences.

The Imaginarium Studios

Imaginarium is the UK's leading performance capture studio, and is revolutionising storytelling by applying the latest innovations in performance capture technology, helping to cement the UK's global leadership in creating immersive content. Based in Ealing, London, the studio constantly explores new platforms, technology, and ways of using motion and performance capture to tell stories - from a major Hollywood feature, a live theatrical performance, children's TV or an emerging platform such as mixed reality.

Exploring DLT in additive manufacturing

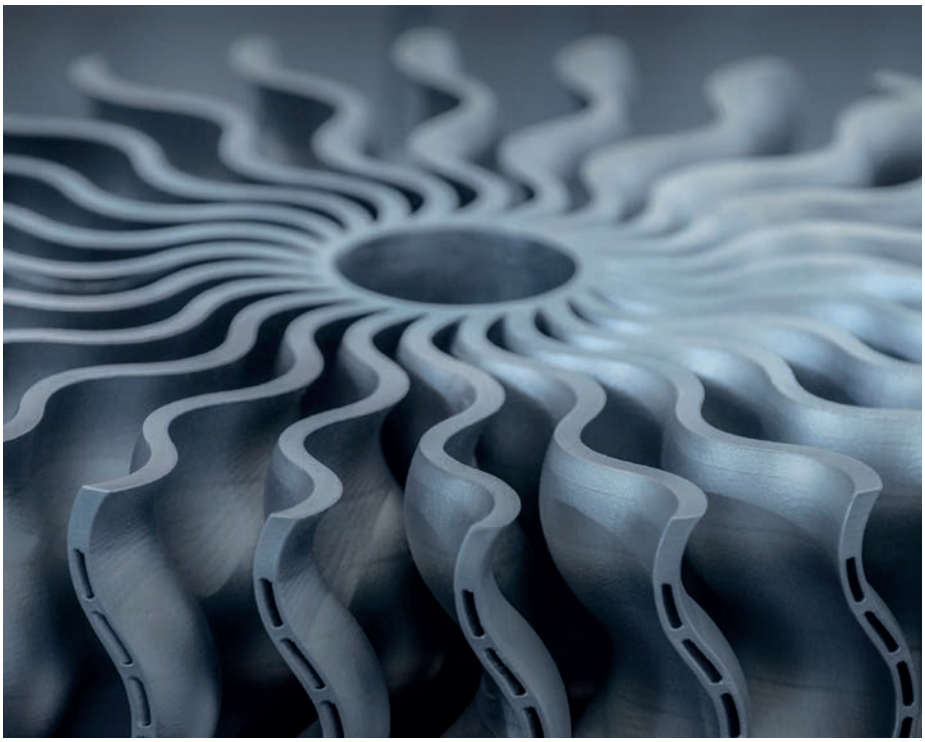
Discovering how distributed ledger technology can securely and accurately share data from additive manufacturing (AM).

Funded by the UK's Aerospace Technology Institute, we're partnering with Valuechain to deliver VITALam, a project set to revolutionise how information gathered during the additive manufacturing process is securely captured and shared throughout the aerospace supply chain between digital aerospace factories, accelerating AM uptake in the UK.

Commonly known as 3D printing, additive manufacturing uses powder to build parts. The quality of the powder has a massive impact on the quality of the parts, so it's crucial to understand the journey of the powder, and the subsequently manufactured part through the aerospace supply chain.

To do this, we're providing our expertise in distributed systems technologies to develop the underlying infrastructure for the secure real-time sharing of digital AM data, which feeds into Valuechain's new AI analytics tools. The VITALam project will develop and commercialise a shared digital platform to optimise additive manufacturing by reducing waste, improving material utilisation, reducing the amount of testing on the powder and to support certification.

The entire supply chain, from aerospace original equipment manufacturers and additive manufacturing agencies, plant vendors, materials vendors and post-processing suppliers, will be able to securely exchange and benefit from real-time intelligence and performance monitoring to optimise product quality and productivity levels. This will accelerate aerospace's game-changing AM technology advances, which have the potential to disrupt all advanced manufacturing sectors with more economical and environmentally friendly component design and production techniques. The project will develop a working prototype that will be piloted by Airbus and several small businesses.



DISTRIBUTED SYSTEMS

International collaboration for industrial innovation and sustainability

The UK Germany Global Challenge focused on AI and DLT to draw maximum benefit from data in industrial settings and reduce carbon emissions in logistics.

This year we launched the Digital Catapult Global Challenge for the UK and Germany in partnership with Deutschland - Land der Ideen, Siemens and CHEP Europe to drive international collaboration for industrial innovation and sustainability. Working with our partners, we set two challenges to the startup and scaleup communities in the UK and Germany, looking for solutions that used artificial intelligence and distributed ledger technologies to interpret and share IoT sensor data from industrial manufacturing, and how to minimise carbon footprints by optimising supply chain logistics with early flexible forecasting of resources.

We established the programme to drive new opportunities for bilateral cooperation and growth, and to build strong relationships between the UK and German innovation ecosystems. Both countries are global leaders in the supply and demand of transformative industrial applications of advanced digital technologies like AI and DLT.

Siemens wanted to use AI and machine learning to gain operational insights, gain better understanding of customer usage and behaviour, and to inform predictive maintenance.

CHEP Europe, a Brambles company, set a challenge revolving around grocery freight. The company provides a 'pallet as a service' concept to a high proportion of the flow of goods from grocery suppliers into retailers across Europe, and wanted to use its transport scale and visibility to help customers improve truck fill and take unneeded capacity off the roads, with consequential benefits in cost, CO2, pollution, congestion and drivers' time.

The UK Germany Global Challenge is currently underway with final to be held later in 2020

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> Innovation is the motor for solving social challenges. In this respect, Germany is highly dependent on the exchange with other countries. We can only maintain our position in global competition through international dialogue, especially when it comes to modern technologies. The Global Challenge is the ideal platform for this.
>
> **UTE E. WEILAND**
> CEO OF DEUTSCHLAND – LAND DER IDEEN

Response to and recovering from the Covid-19 pandemic

A resilient, agile approach to economic recovery

Like almost every other part of our lives, Covid-19 has had a significant impact on the technology industry. As we've seen since March 2020, technology has played its part in the fight against the pandemic by helping find new solutions to challenges, to inspire new and exciting applications, and to contribute to rebuilding the economy for recovery.

We are carrying on with business as usual insofar as possible, running a large programme of industry events and business support activities and contributing actively to the innovation strategies of many UK companies. We've also been working closely with the UK Government and industry bodies to help shape digital technology led recovery and tackling challenges that have come to light because of the pandemic to help build greater resilience. This support continues.

Despite the impact of the pandemic on investment, and research and development, we are working closely with the cohorts of our flagship programmes for startups (CreativeXR, Augmentor, Future Networks Lab Accelerator, Machine Intelligence Garage, and the 5G Testbed Accelerator programme) to encourage these small businesses to think about ways in which the applications, products and experiences they are creating can be used in a new world impacted by social distancing, remote working, lack of access to technology, and boarded up venues and working spaces.

Times like these reveal the power of collaboration and mutual support to overcome the most extreme and unexpected challenges. We're committed to supporting national initiatives in response to the outbreak, using in-house expertise and our ecosystem connections to assist these efforts and more.

We are encouraged to see such an overwhelming response from startups, large businesses and individuals in the UK, working together and innovating to help save lives, banding together to help the most vulnerable and doing what they can to keep businesses afloat.

As we start to look beyond the immediate crisis, we hope that we can retain some of the positive elements that have emerged from these extraordinary challenges.

We will eventually return to a new normal with a focus on supporting UK economic recovery, developing a new resilience and finding new ways to reduce carbon emissions in the longer term. Hopefully we will retain some of the best aspects of recent technology adoption and create new agile ways of adapting and operating as the economy is restored to growth.

Mixed reality training for healthcare workers

Digital Catapult worked with a consortium of digital creators, including Dimension, Microsoft, VISR, Fracture, Make Real, University of Leeds, and UCL, under the supervision of Health Education England (HEE) to create mixed reality training resources for healthcare workers in response to Covid-19.

Within a few weeks the consortium developed and deployed interventions to meet these needs including 2D videos, volumetric holographic videos, resources and a platform for global distribution of the content. The immersive training content is curated by HEE and distributed through its channels where it is available for open access to all 1.3 million users of the e-LfH system. The training is being used by many thousands of trainees, with more than 15,000 unique logins per day since the start of the crisis.

A planned Phase two of this project will aim to fill additional training needs for employers while also contributing to the overall body of research on the use, efficacy and user experience of the technology in crisis management. Partners include a chain of restaurants, care homes and a national retail chain who will use the training resources and act as subject matter experts on the content development for industry.

Workplace social distancing using IoT

We joined an international group of companies, funded by EIT Digital's Covid-19 response fund, to test a wearable token that provides accurate information needed to maintain social distancing requirements.

Working together with Reply Italy, the University of Trento and Fondazione Bruno Kessler, this device will help workers maintain social distancing, and has the potential to help with 'track and trace', while being GDPR compliant. It has several advantages over existing solutions including its low power consumption, cost efficient design, centimetre level precision and that it does not manage personal data, only anonymised data streams. Plans are in place to rapidly test and deploy.

> Times like these reveal the power of collaboration and mutual support to overcome the most extreme and unexpected challenges.

Dr Jeremy Silver
CEO, DIGITAL CATAPULT

600+

startups attended Digital Catapult's two investment webinars around the Future Fund

15,000

unique users per day of Covid-19 immersive training content for healthcare workers

Financial highlights*

for the year ended 31 March 2020

Turnover

	2020 £'000's	2019 £'000's
Innovate UK core revenue grant funding	**12,401**	12,620
Collaborative research and development and other grant income	**3,020**	4,045
Commercial Income	**2,995**	2,279
	18,416	18,945

Consolidated balance sheet

	2020 £'000's	2019 £'000's
Fixed assets	**3,723**	5,096
Net current assets	**3,690**	2,979
Creditors amounts falling due greater than one year	**6,684**	7,729
Net Assets	**729**	345
Capital and reserves	**729**	345

* Draft accounts.

Consultancy, design and production by:
jonesandpalmer.co.uk

Digital Catapult
101 Euston Road
London
NW1 2RA
www.digicatapult.org.uk

@digicatapult