CATAPULT
Digital

**ACCELERATING
THE EARLY ADOPTION
OF ADVANCED DIGITAL
TECHNOLOGIES ACROSS THE UK**

—

Annual Engagement &
Impact Report
for the year ended 31 March 2019

Introduction

Digital Catapult's mission is to accelerate the early adoption and application of advanced digital technologies. We bring together the entrepreneurship of startup businesses, with large corporations and academic research.

Our energy is focused on stimulating the right market conditions for our focus technologies so that they develop for the benefit of the UK economy. By creating the demand and enabling the means to develop products to solve challenges, we find, nurture and support the best companies to get to market faster.

Working across the UK

Read more about **Working across the UK**
on pages 08 to 09

Putting the wow into future storytelling

Read more about **Creative industries**
on pages 12 to 13

Blazing a trail for future supply chains

Read more about **Manufacturing industries**
on pages 14 to 15

Exploring disruptive technologies

Read more about our **Technology Focus**
on pages 16 to 23

Open, diverse and agile culture

Read more about our **People & Values**
on pages 28 to 29

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CEO statement

> Digital Catapult has come of age in this last year, driving early adoption of the world's most advanced digital technologies.

In the last twelve months the organisation has helped over 600 early stage and scaleup businesses. We have supported over two dozen international corporations in their research, development and innovation. We have become a delivery partner to UK government, helping frame key enabling and infrastructural programmes for the Department for Digital, Culture, Media and Sport (DCMS), and as a catalyst for industrial technology adoption. We have developed a suite of world class facilities and market leading programmes, each of which is giving UK business a strategic competitive edge.

As digital technologies continue to challenge the boundaries between sectors and enable disruptive behaviours up and down value chains, Digital Catapult helps companies deliver the products, services and experiences of the future. We are building value propositions for international businesses, giving them the confidence to locate their R&D in the UK because of our excellent capabilities.

We have been building those capabilities in key partnerships both with ground-breaking startups and scaleups and with world leading academics.

As trusted business relationships come under more scrutiny, we have also taken a practical world-leading role in developing an ethical framework for deep tech AI companies and driving its adoption through our Machine Intelligence Garage programme.

Our programmes are rooted in specific practical needs of the businesses we work with, as are the unique range of testbeds and facilities that we offer. They are all defined by clear strategic objectives that deliver real value into the economy as a whole.

In the short term, we help our partner businesses adapt new technologies to their markets, develop new business plans to exploit technology opportunities, understand key ethical issues in their business models, raise private investment and grant funding, and bring new products and services to market. This year alone, we have worked with companies who between them have brought more than 100 new products and services to market. The longer term impact of our work will be visible in the customers of those new products and services and the benefits to wider society and the economy from those innovations.

Our broader economic impact also comes from the many companies who see what our partners are doing and compete with them, copy or emulate them or even seek to leapfrog them. The spillover effects of our strategic inventions ripple out far into the broader economy and society as a whole in the UK and beyond.

This past year has seen us create real momentum in the marketplace, growing our reputation through a track record of high level technical competence, leading edge innovation capability and a responsible approach to technology optimism as well as ambition for the companies we work with. We are more than excited about what we can do in the coming three to five years as our impact grows.
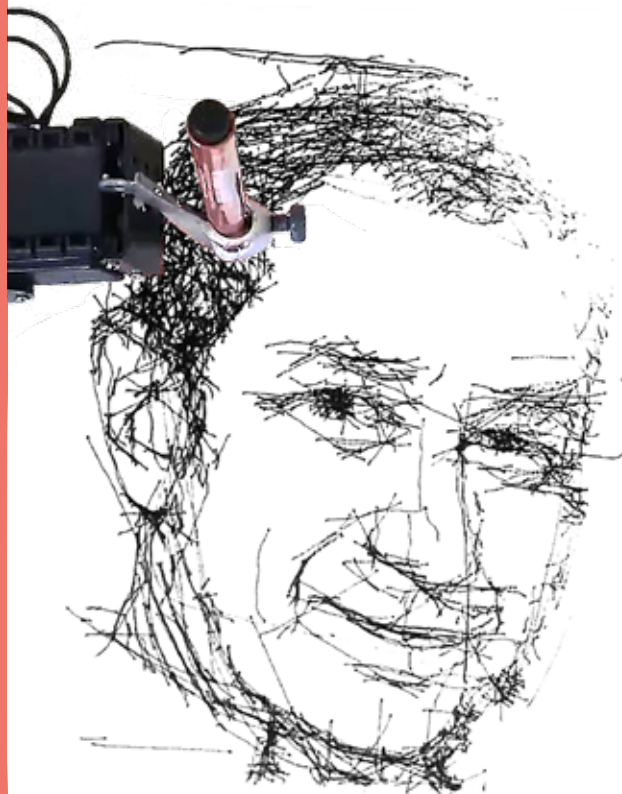
An AI-drawn aggregate portrait of Jeremy Silver based on a number of online images, by Patrick Tresset

Dr Jeremy Silver
CEO, Digital Catapult

"Our impact comes from the many companies who see what our partners are doing and compete with them, copy or emulate them, or even seek to leapfrog them. The spillover effect from these interventions ripples out far into the economy and society as a whole."

Dr Jeremy Silver
CEO, Digital Catapult

Digital Catapult at a glance

Digital Catapult drives the early adoption of advanced digital technologies to make the UK economy more competitive and productive.

We are building a culture that drives the early adoption and application of advanced digital technologies in the UK

600+
small businesses: working hand in hand with entrepreneurs

120+
industrial collaborations

+£100m
total investment raised by 90 companies after engaging with Digital Catapult in the last year

3,000
companies used our nationwide network of testbeds and labs

Creating opportunity from possibility

– Our programmes and projects drive innovation, collaboration and experimentation. Digital Catapult's facilities - both physical and digital - bring together startups, scaleups, corporates, researchers and investors to find the right solutions to industry challenges, to boost UK productivity, to open up new international markets and help develop new business models.

– We connect large corporations with agile, inventive startups and world leading researchers from top UK universities, to get the latest thinking out of the lab and into the heart of industry.

– We're working with businesses of all sizes to discover new ways to solve challenges in the manufacturing and creative industries.

– We undertake collaborative research and development that leads to commercial exploitation and helps to de-risk innovation for organisations.

– We work with world leading corporate organisations to help build productive global partnerships.

Read more online at
www.digicatapult.org.uk

Facilities
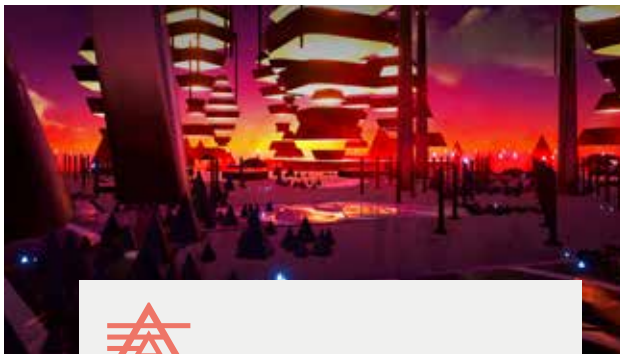
Collaboration and innovation

Research and development

Driving change

We work with the two sectors where we can support the use of advanced digital technologies to make the biggest impact: manufacturing and creative industries.

Creative industries

We're the only innovation organisation with a specific remit for the creative industries, putting the wow into future storytelling.

Read more about **Creative industries** on pages 12 to 13

Manufacturing industries

Accelerating the number of trailblazer organisations in UK manufacturing and their supply chains working with advanced digital technologies.

Read more about **Manufacturing industries** on pages 14 to 15

Enabling the power of 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. To do this, we focus on ambitious programmes in artificial intelligence and machine learning, future networks, immersive technologies and blockchain.

Artificial intelligence

Our rapidly expanding AI programme accelerates adoption of artificial intelligence by industry and is helping to grow the UK's machine learning ecosystem.

Read more: Artificial intelligence on page 16 to 17

Future networks

Digital Catapult is driving the development of digital infrastructure with a programme of future networks activity that takes research from university labs to commercial reality with our projects focused on IoT and 5G.

Read more: Future networks on page 18 to 19

Immersive

Digital Catapult is making the UK the best place in the world to produce immersive content and applications using virtual, augmented, mixed reality and haptics.

Read more: Immersive on page 20 to 21

Chair's statement

> Andy Green reviews the year, reflects on his time as Chair of Digital Catapult, and picks some of his highlights from the last five years.

Introduction

This year has been another exciting one, both for Digital Catapult and for me as Chair, and the Annual Engagement & Impact Report highlights the work Digital Catapult has undertaken, our impact and our achievements.

Can you describe the journey Digital Catapult has been since it was established?

When the Catapult network was established, advanced digital technologies were still at a very early stage of their development and adoption and Digital Catapult became a key organisation in helping to lay the foundations for connecting innovative startups and industry. As these technologies have evolved further over the past five years and become part of the broad discussions across the economy, it is clear that by building upon our early work, there is a huge opportunity for Digital Catapult to help deliver economic growth and enhance productivity for the UK. We have seen this through our innovation and technology programmes, helping to drive research and development from the lab into commercial reality, supporting open innovation to foster the startup ecosystem and developing collaborative projects that push the boundaries of what emerging technologies can offer industry.

How do you summarise Digital Catapult's place in the UK tech landscape?

Since I've been Chair, I have witnessed a step change in the role that advanced digital technologies have had in business, both large and small, in the startup and scaleup community, and in society at large. Over the last five years Digital Catapult has cemented its position as a central point in the UK tech landscape, working alongside UKRI, InnovateUK, the eight other Catapults and many hundreds of stakeholders in the UK's innovation landscape.

What's been your highlight for this year?

The 120 talented and committed people who work at Digital Catapult are its biggest asset, and I'm privileged to see first-hand the impact that our business, and this dedicated group of people, are having on growing the UK economy through the application of advanced digital technologies. £100m of investment in the last 12 months spread between over 90 companies and welcoming more than 600 businesses through the doors of Digital Catapult are major highlights for this financial year.

What has been a favourite or personal highlight from the last five years?

In the beginning Digital Catapult was a startup helping startups. When I joined it had three employees and no centre. Neil Crockett and the early team built it into something real and Jeremy and the current team have taken it forward creating world class facilities across the UK. There is now a real buzz and purpose about the place and the impact on the economy is becoming obvious. Sometimes we've had to fight hard for the digital sector but it's been worth it. The highlight for me is the way the leadership and people who've worked at Digital Catapult have created a world class capability for the UK.

What's next?

At the end of last year, I decided to step down as Chair of Digital Catapult. As the founding Chair, I'm very proud to have steered the organisation through its inception and its successes in the last five years and I can see the impact that Digital Catapult has had is clear, particularly in the UK's vibrant startup ecosystem. To conclude, I'd like to extend my thanks to the other members of the Board for their support, and warmest wishes to Digital Catapult's new Chair Juergen Maier.

Andy Green
Outgoing Chair of
Digital Catapult

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

I am excited to take up the role of Chair at Digital Catapult and leverage its proven success to maximise the many opportunities that UK businesses can gain from the adoption of advanced digital technologies.

As we grow and scale Digital Catapult, we will do the same for the UK economy, driving innovation into the heart of industry.

I am passionate about – and known for my role in – UK manufacturing, so I'm especially looking forward to learning and contributing to the UK's vibrant creative industries sector, as well as establishing connections and learning from the UK's fantastic tech start-up community. Through Digital Catapult, the UK can build these connections, accelerate adoption and inspire innovators to work together and position this country as a global leader in the 4th industrial revolution.

Juergen Maier
Incoming Chair of
Digital Catapult

Working across the UK

Digital Catapult's nationwide network provides tailored, localised services in London, North East Tees Valley, Northern Ireland, MediaCityUK and Brighton.

Each of our centres has a specific focus that responds to the needs of the local market, nurturing the best and most exciting expertise to drive growth in both the regional and national economies; manufacturing in the north of England, immersive in MediaCityUK and Northern Ireland, and 5G and the creative industries in Brighton.

We're always looking for new partners to work with to deepen our existing relationships and discover ways to create fresh opportunities for all regions in the UK.

"Collaboration between local startups and corporates is vital for a region like the North East. Over the last year we've seen some incredibly successful partnerships between small technology firms and bigger brands like Nissan, Nexus and LNER, as well as an increasing interest in open innovation from a number of public sector organisations. By educating traditionally non-digital sectors on the potential of emerging technologies, we've been able to create opportunities for startups that have had a real impact. These have led to commercial contracts, international exposure and in some cases the creation of entirely new companies. The skills and experience of the North East Tees Valley team - working with technologies like ML/AI, immersive and IoT/ future networks - have played an important role in supporting companies from all sectors to become more productive and more competitive through technology adoption."

David Dunn
CEO, Sunderland Software City

Key:

primary location

secondary location

42
companies took part in NETV digital manufacturing programme

Over
3,000
companies used our Immersive Labs

Our centres across the UK

London

Digital Catapult is located in Kings Cross, part of the Knowledge Quarter in London, and the base for over 120 experts drawn from a range of industries and backgrounds. It is also home to the Future Networks Lab, Immersive Lab London and the 5G London testbed.

North East Tees Valley

In the heart of Sunderland, Digital Catapult North East Tees Valley offers a cutting-edge incubation space for startups developing new products and services using emerging technologies, all supported by a team of industry experts and academics.

The North East is a leader in immersive technologies and in 2018 PROTO, a new state of the art facility for VR and AR, opened an £8 million research and development facility, a huge opportunity for organisations to test and create digital solutions.

Digital Catapult North East Tees Valley's Digital Manufacturing Programme is an initiative designed to help manufacturers of all sizes understand the impact of advanced digital technologies and how to use them to future-proof their businesses. It has engaged with 42 small and medium sized local manufacturing businesses to date, supporting £275k of investment.

Digital Catapult North East Tees Valley supported the Great Exhibition of the North in 2018, launched an IoT testbed with Sunderland City Council, and worked with startup Reality Zero One to develop engaging immersive content which helped attract an additional 30,000 visitors to Northumberland National Park's new visitor centre.

MediaCityUK

Digital Catapult's Immersive Lab MediaCityUK is a partnership between Digital Catapult and The Landing, MediaCityUK's tech hub specialising in high growth startups. The Immersive Lab is located at The Landing alongside Vodafone's new 5G testbed and The Landing's existing user testing facilities and rapid prototyping lab, enhancing the equipment available at The Landing for startups and global companies.

Northern Ireland

Working closely with InvestNI and the Department for the Economy, Digital Catapult Northern Ireland focuses on being at the forefront of innovation by building partnerships and bridging the gap between industry and academia, helping large and small organisations work smarter and more efficiently by realising and adopting innovative digital technologies.

Its new facility at the Ormeau Baths in Belfast was opened in early 2019. A new Immersive Lab provides local businesses with a bespoke facility to demonstrate the potential of immersive technologies.

Digital Catapult Northern Ireland signed a MOU with BBC NI to create opportunities to reach new audiences, utilise emerging novel technologies and use content from the BBC Rewind archive portal. The relationship will see BBC Northern Ireland and Digital Catapult work together to share facilities, workspaces, equipment and expertise, advance projects within the immersive sector, develop talent and skills within both organisations and work together on exhibitions, workshops and events.

Brighton

Digital Catapult Brighton helps innovators bring digital services and products to market. Working closely with local business, academia, the public sector and the Digital Catapult network across the UK, Digital Catapult Brighton helps unlock value from proprietary data, generate new jobs, drive innovation and create millions in linked investment and funding.

Digital Catapult's first 5G testbed was built for the Coast to Capital LEP and launched in Brighton in 2018. The first testbed in the UK open for commercial use, it allows small businesses access to state of the art 5G technology, providing space to test and explore the potential new applications of 5G.

Alongside the 5G Brighton Testbed, Brighton is also home to Digital Catapult's 5G Testbed Accelerator Programme which supports small businesses at early stage and scaleup stage.

"Digital Catapult's presence in Northern Ireland is constantly removing barriers to digital transformation for traditional industrial sectors such as agriculture, tourism, construction and manufacturing. Our experts in AI, IoT, and immersive tech are identifying growth opportunities for innovative NI tech startups and collaborating to unlock potential and new market opportunities."

Adrian Johnston
Director, Digital Catapult Northern Ireland

Working around the world

Digital Catapult's work extends to a number of projects outside of the UK. We're collaborating with partners all around the world to drive the development of more responsible AI in partnership with Canadian researchers, to fight the illegal wildlife trade in Africa, and take the UK's best creative talent right to the heart of the world's biggest film, media and music festival.

Combatting the illegal wildlife trade

We are working with a number of partners to help tackle the illegal wildlife trade.

In 2018 the Illegal Wildlife Trade Conference brought together expertise from organisations including the Foreign and Commonwealth Office (FCO), the Zoological Society of London (ZSL), United For Wildlife, The Royal Foundation, Google, Microsoft and the Satellite Applications Catapult, to look at how expertise in varying fields could aid in the adoption of technology in three main areas:

- **In the field:** Stopping poachers killing endangered animals
- **At borders:** Vast numbers of illegal wildlife products pass through customs every day
- **Online:** Sellers use social media and parts of the dark web to create a marketplace for illegal wildlife products

This year, the WILDLABS Tech Hub (WTH) was developed alongside Digital Catapult, the FCO, WILDLABS, Amazon Web Services, Satellite Applications Catapult, United for Wildlife and six conservation partners to leverage existing solutions combating the illegal wildlife trade to get the support needed for deployment into the field and help to address any barriers to the scaling of the solution or technology. Mainly focused on IoT and AI technologies, we're hopeful that the WILDLABS Tech Hub will be the platform to provide the impetus for other solution providers to explore how their technology can be used in the conservation space and if successful could be the pilot to encourage more funding into R&D, creating an ecosystem that offers not just a viable business model but could have a global impact for the future.

Find out more at **www.digicatapult. org.uk/news-and-views/blog/using-technology-to-fight-the-illegal-wildlife-trade**

UK & Canada AI innovation challenge

How can machine learning improve aerodynamic testing for aeroplanes? Working with Bombardier, a global aerospace and transportation company based in Montreal, Canada, the UK Science and Innovation Network (SIN) and the Consortium in Aerospace and Research & Innovation in Canada (CARIC), Digital Catapult launched a challenge to the UK's AI ecosystem for ideas exploring new techniques and applications of AI in the development of ice protection systems for aircraft.

Following pitch days in Montreal and London, two winners of the challenge were DecisionLab from the UK and BI Expertise from Canada.

Find out more about our work in AI: **www.digicatapult.org.uk/ technologies/artificial-intelligence**

Mobile World Congress

It's the biggest and most influential mobile industry event of the year, and in 2019 5G took centre stage in Barcelona. Digital Catapult joined the Department for International Trade at the Great Britain and Northern Ireland Pavilion showcasing our work in 5G, and our Director of Business Development Geraldina Iraheta was part of a roundtable event discussing how to accelerate the adoption of mobile broadcast in the 5G era. It was also the third year of the Women4Tech event which is focused on reducing the gender gap and championing diversity in the mobile industry.

Following MWC 2019, we were pleased to host a special event with Women in Telecoms & Technology (WITT) for those who were unable to make it to Barcelona, bringing together speakers from DIT, DCMS, GSMA and KORE Wireless to give their expert views on the news and trends from this years' show.

Paving the road to ethical AI

Working with the National Research Council of Canada (NRC), Digital Catapult has continued to make progress towards seeing more action in responsible AI development.

There are many AI ethics guidelines but most lack comprehensive tools or processes for implementation, and those resources that do exist may still be at a research stage, or difficult to identify or access. Two events from the NRC and Digital Catapult – in Ottawa and London – helped to map the landscape of supply and demand of ethical AI tools, and lead the charge on bridging the gap between the 'what' of responsible AI and the 'how'.

Responsible AI is a process, not a thing, and building responsible AI-driven products and services is an ongoing commitment, not a tick-box exercise. Our work with the NRC continues with a consultation to test and evaluate the demand, supply, and participants needed to build a responsible AI tech testbed.

Read more on Medium: **medium. com/digital-catapult/the-road-to-ai-is-paved-with-good-intentions-87870eb609e2**

Exploring new policy perspectives with the OECD

Following 18 months work with the OECD and InnovateUK, earlier this year we launched two reports seeking to further the policy debate around innovation. The reports aimed to drive further collaboration between industry and academia, helping governments and policy makers to support and encourage industry to drive innovation forward and make the most of R&D.

The two reports from the OECD Working Party on Innovation and Technology Policy (TIP) provide insight on recent trends and dynamics regarding the impact of digital transformation on innovation and science industry knowledge exchange:

· Seizing the opportunities for digital innovation: options for innovation policy

· Exchanging knowledge between industry and science: new evidence and overview of policy options

Championing UK creative talent at SXSW

Digital Catapult teamed up with a number of organisations at SXSW this year to champion the very best of UK creative talent.

The UK immersive pitch and demo event, in partnership with Arts Council England, Arts & Humanities Research Council Creative Economy Programme and British Underground specifically targeted US and international commissioners, distributors, investors and potential collaborators. Ranging from a Dr Who VR experience, to searching for ghosts at Capital Factory in Texas, to examining artefacts from the Glasgow School of Art's iconic Mackintosh Building, the demos gave guests the first-hand opportunity to try out some of the best UK immersive content.

This pitch session brought together a range of commercial, cultural and academic organisations currently working in immersive including the Royal Shakespeare Company, ESL UK, Factory 42, Storyfutures Academy, 59 Productions, Italic Pig, Maze Theory, Raskl, FutureEverything and Kings College London.

We were also pleased to host a music meets tech networking breakfast with the Association of Independent Music (AIM) at the British Music Embassy, bringing together the independent music community with innovators in tech. Representing two parallel communities that share common traits (both are rich with innovation, entrepreneurship and energy) the event aimed to foster collaboration and experimentation across a whole range of businesses and services at the cutting edge of culture, technology and business.

Read about our CEO's experience at SXSW here: **www.digicatapult.org.uk/news-and-views/blog/experiencing-the-skeuomorph-of-sxsw-2019**

Creative industries:
putting the wow into future storytelling

Boosting the potential of the UK's creative sector by unlocking the transformative potential of advanced digital technologies.

The creative industries are fundamental to the UK's cultural identity and their contribution to the UK is significant: the industry is the fastest growing sector of the economy. Built on a foundation of expert storytellers across a range of mediums, the UK produces some of the most unique, original and authentic content which resonates with audiences worldwide.

Storytelling is not unique to the creative industries; it has integral value for every sector. However, as audiences are changing, the way they engage with content changes too and advanced digital technologies provide a new means of engagement, for audiences and industry alike. Embedding these technologies into the UK's vibrant creative industries will help future proof the sector, enabling it to do what it does best, better.

Digital Catapult is the only innovation organisation that has a specific remit for the creative industries on behalf of government. Our internationally recognised programmes and facilities exist to boost productivity and competitiveness, as well as drive innovation and application of advanced digital technologies into the sector.

To make sure the UK continues to punch above its weight in these industries as habits for consuming stories and creative content continue to evolve at pace, Digital Catapult works with a range of partners including Arts Council England, the Department for Digital, Culture, Media and Sport (DCMS), the Creative Industries Federation and Creative Industries Council, to help ensure UK creative businesses make the most of these opportunities.

It's not just immersive tech that's making a difference in creative industries. The applications for IoT, 5G, AI and machine learning, and blockchain are just as prevalent for the creative industries as they are in manufacturing, helping to drive the emergence of tech in the sector and open up new markets and business opportunities for savvy entrepreneurs.

Arts & culture contributes more than
£10.8bn
GVA to the UK economy

+20%
employment in the UK creative industries has increased by more than 20 per cent in the past five years

Fastest
growing sector of the UK economy

15
trends in Digital Catapult's Immersive Content Formats for Future Audiences report

"Augmentor brought focus to our company and helped us get ready for and secure our recent investment round."

Oluwaseyi Sosanya
Founder, Gravity Sketch

CreativeXR

In collaboration with Arts Council England, CreativeXR is a globally recognised accelerator programme supporting the development of new forms of creative content enabled by immersive tech. It gives cohort teams a platform to focus on R&D that allows them to create riskier, content-driven projects, opening up novel ways of engaging audiences and telling new stories. As well as providing funding, CreativeXR helps teams to develop skills and contacts to finance their projects and create commercially viable content, with workshops on pitching skills, developing business plans, and distribution and partnership strategies.

Read more online at
www.creativexr.co.uk

CreativeXR cohort companies

Mativision

Harnessing 5G to transform immersive content

Mativision delivers 360° content and immersive applications for a range of high-profile clients. Starting in the music industry over 10 years ago, Mativision wanted to ensure it was ready to capitalise on 5G and turned to Digital Catapult.

One of the original cohort on Digital Catapult's 5G Testbed Accelerator Programme, Mativision got access to 5G technical expertise and business support, receiving £60,000 in funding as a result and invitations to join three other projects including the Bristol-based 5G Smart Tourism project. Mativision worked with 18 other organisations to explore how immersive cultural experiences will benefit from 5G.
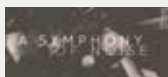
Mativision pioneered the integration of 5G with VR to produce a 4K 360° VR experience of Bristol Pride Day and Harbour Festival events which could be played simultaneously through multiple devices. This allowed multiple users to experience shared content in sync and demonstrated how 5G will overcome current barriers to this, such as delay through latency.

The project was a resounding success, demonstrating the huge potential of immersive content powered by 5G, and the broader role that 5G will play in the creative industries.

"[Digital Catapult] served as a continuous source of information and market knowledge for us, and an invaluable provider of technical support and business expertise which allowed us to aim for growth and expansion to new market sectors."

Anthony Karydis
Founder and CEO, Mativision

Manufacturing industries:

blazing a trail for future supply chains

> Accelerating the number of trailblazer companies in UK manufacturing working with advanced digital technologies.

Digital Catapult is uniquely placed to blend the skills and ingenuity of the UK's innovative tech sector with the opportunities and challenges faced by the manufacturing industries. With more investment going into digital technology in the UK in the last two years than France, Germany and Sweden combined, British manufacturing industries are on a huge growth curve.

Our focus is on the manufacturing industries across the end to end UK supply chain where the UK has typically lagged behind other countries in adoption. Digital Catapult's goals are to:

– **Develop effective leadership**
Lead in industrial digitalisation across the advanced digital technology areas we focus on

– **Increase advanced digital technology application and adoption**
Our innovation and acceleration programmes match startups and scaleups with our network of experts, researchers, corporates and investors.

– **Build an extensive network of innovative businesses**
Combined with our industry leading innovation programmes, this network attracts and supports startups that are developing transformative solutions for UK manufacturing and their supply chains, helping to extract maximum value for the benefit of industry and the wider economy.

Adoption of advanced digital technologies should grow the UK economy by

£455bn

UK employees in the manufacturing sector

2.7m

manufacturing accounted for

45%

of UK exports in 2018

Key projects

Connected Factory Demonstrator

Digital Catapult, Dyer Engineering and Special Metals Wiggin have teamed up on an industry-first project to prove the potential of leading-edge networks technologies which can unlock productivity, streamline processes, improve yield and increase quality control.

The Connected Factory Demonstrator brings together Digital Catapult with two innovative manufacturing businesses and the UK startup community to explore how future networks technologies including LPWAN (low-powered, wide area networks) can drive improvements throughout the product lifecycle.

Read more online at
**www.digicatapult.org.uk/
news-and-views/press/digital-
catapult-creates-industry-leading-
connected-factory-demonstrator**

Elements Technology

Digital manufacturing startup, Elements Technology, had an idea to use consumer tech in the manufacturing industry. After winning a Digital Catapult innovation competition, it subsequently won £250k seed funding, pivoted its business towards order management and built an invaluable network of experts helping to make the business a success.

The Elements platform is a simple plug-and-play system that uses consumer technologies to track manufacturing processes, display work-in-progress, and automate the generation of documents and certificates.

Digital Catapult's innovation competition was an opportunity to work with Rolls-Royce and demonstrate how Elements Technology's simple and effective way of automating manufacturing processes could solve the IoT-related challenge Rolls-Royce had put forward. Digital Catapult's direct involvement helped Elements Technology, develop and launch a product and attract significant investment.

> *"Connecting with Digital Catapult has been a game-changer. As a direct result we have honed our value proposition and pitch, secured funding and created an advisory group of industry leaders. We've gained the support and connections we need to succeed"*
>
> **Joe Handsaker**
> CEO and Founder, Elements Technology

Read more online at
**www.digicatapult.org.uk/success-
stories/elements-technology/**

Flexciton

Flexciton uses artificial intelligence to solve production and scheduling challenges in a manufacturing environment. Its solution helps reduce bottlenecks by building a digital twin of the factory to create a sophisticated optimisation model – this allows the AI to solve complex problems across the entire factory, rather than in one area (which can lead to bottlenecks in others).

Voted one of the UK's most disruptive companies in 2019 by Disruption50, Flexciton's work with Digital Catapult led to £2.5m equity investment and enabled it to double the size of its team.

Artificial intelligence:

accelerating the UK's deep tech AI ecosystem

Our work in artificial intelligence and machine learning is accelerating the ethical and responsible adoption and application of AI and ML by UK industry.

Artificial intelligence (AI) and machine learning (ML) technologies are already transforming the global economy. These technologies may use huge datasets to find better ways of completing complex tasks and range from simple process automation to deep machine learning.

Digital Catapult's Machine Intelligence Garage programme is unique: it addresses the challenges today's AI startups face, providing the tools and expertise to turn potential into reality. Over 40 AI and ML startups which demonstrated the biggest opportunity for growth and success joined Machine Intelligence Garage in its first year.

We are increasing the development and adoption of AI technologies in four ways:

1. Providing much-needed access to compute power for small innovative businesses to train their algorithms on large data sets.

2. Providing access to expertise and experimentation space for companies of all sizes, which helps increase understanding of the different computation resources and supporting technologies through experience.

3. Collaborating with large businesses to speed up the adoption of AI through open innovation and acceleration programmes.

4. Working with policymakers and academics to ensure the UK takes the lead in responsible and ethical AI applications.

40

top British companies poised for growth accepted in the first year of Machine Intelligence Garage

14

industry partners and collaborators

"I don't think ChAI would exist without Digital Catapult. It provided the first external validation of our ideas, raised our profile and introduced us to an investor community that led directly to successfully closing our first round of funding."

Dr Tristan Fletcher
Founder and CEO, ChAI

Machine Intelligence Garage

Digital Catapult's Machine Intelligence Garage provides startups with access to computation power and expertise to accelerate their development. For many small companies access to compute power and hardware is a major barrier to growth: this programme helps companies with a well-defined business idea and technical capability to overcome these challenges.

Giving thought to ethical and responsible development, alongside the desire for business growth, is a central consideration for any business that is developing AI or ML products or services. Shaping the technology so that it's used appropriately and creates positive meaningful change for society will also give a competitive advantage.

Ethics Framework and Ethics Committee

Digital Catapult created an Ethics Framework specifically for small businesses. Made up of seven guiding principles, the framework is a practical guide to help startups and scaleups understand how to apply responsible and ethical concepts in practice.

It's hard for startups and scaleups to test ethical solutions because their time and resources are limited, but they can reap the rewards more easily because they don't have legacy infrastructure to hold them back from embedding ethical practices at the start.
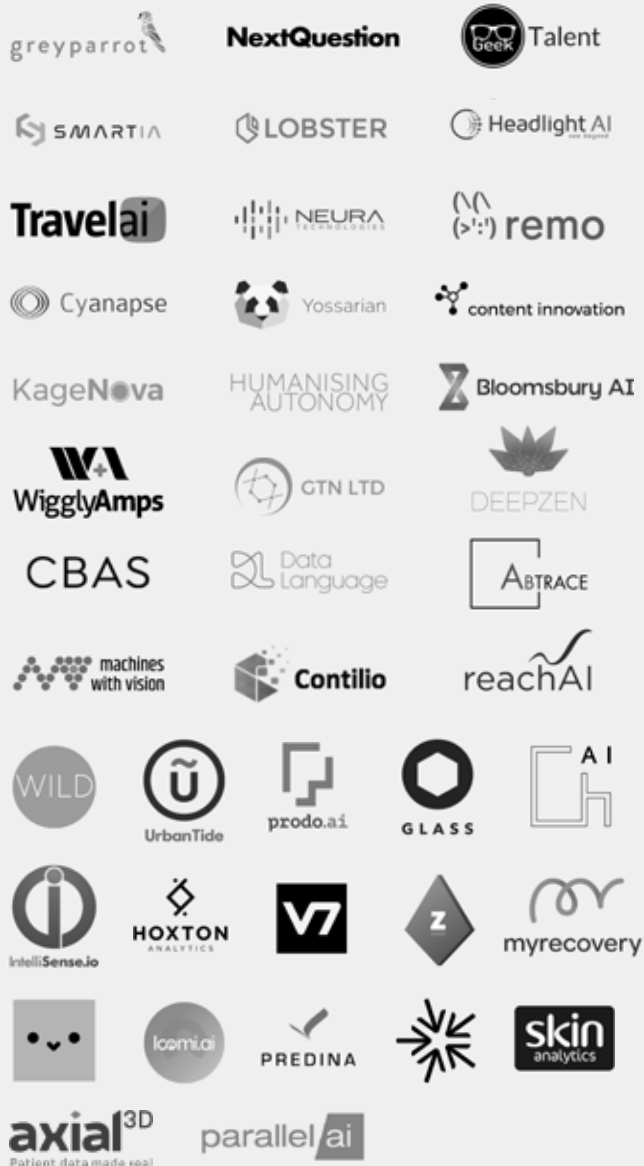
To manage the practical roll out of the Ethics Framework and support startups and scaleups to embed ethical tools into their work, Digital Catapult established the Machine Intelligence Garage Ethics Committee, chaired by Luciano Floridi, Professor of Philosophy and Ethics of Information & Digital Ethics Lab Director at University of Oxford.

This group of some of the foremost minds in AI and data ethics works directly with companies that are part of the Machine Intelligence Garage overseeing the development of principles and tools to facilitate responsible AI in practice – to bridge the gap between theory and practice, between the 'what' of responsible AI and the 'how'.

Read more online at
www.migarage.ai/ethics-framework

Machine Intelligence Garage cohort companies

greyparrot NextQuestion Geek Talent
SMARTIA LOBSTER Headlight AI
Travelai NEURA TECHNOLOGIES remo
Cyanapse Yossarian content innovation
KageNova HUMANISING AUTONOMY Bloomsbury AI
WigglyAmps GTN LTD DEEPZEN
CBAS Data Language ABTRACE
machines with vision Contilio reachAI
WILD UrbanTide prodo.ai GLASS AI
IntelliSense.io HOXTON ANALYTICS V7 z myrecovery
Icomi.ai PREDINA skin analytics
axial 3D Patient data made real parallel ai

Steering Board

Mentoring and advice for the Advisory Group; establishing and updating Committee principles

Members:

Prof Luciano Floridi, Dr Jo Twist, Dr Jeni Tennison, Dr Hayaatun Silem, Prof Dame Wendy Hall, Sir William Blair

Advisory Group

Assessing Machine Intelligence Garage applications, practical guidance and advice for companies, maintaining Ethics Committee principles

Members:

Hetan Shah, Burkhard Schafer, Laura James, Christine Henry, Josh Cowls, Shahar Avin

Future networks:

making the connected world a commercial reality

> Our role is to increase understanding of the applications of future networks technologies and accelerate their wider adoption by UK industry.

Digital Catapult's work with IoT and 5G technologies is helping enable better connectivity between the physical and digital worlds. Successful and widespread implementation of IoT technologies is already demonstrating productivity gains and optimisation of processes. 5G is a truly transformative technology: with world-first following world-first, 5G is a quantum leap in wireless technology that promises to affect every part of our lives.

The value of connectivity

World class digital infrastructure is the building block for the modern industrial economy. As the quantity and importance of data increases, organisations need secure, efficient and resilient technologies to collect, manage and interpret it. IoT and 5G provide advanced, highly configurable connectivity that's faster, cheaper, more reliable, secure and flexible, whilst also using less energy. They will be the foundation for new business models, applications, experiences, products and services.

IoT, including LPWAN and LoRaWAN, connects a range of physical devices such as sensors or appliances to track, monitor and manage them remotely and efficiently. IoT is fast becoming more prevalent as more products - ranging from sophisticated industrial machines to simple sensor units - become 'connected'.

The impact of 5G, a key network technology, is hard to overestimate. As a key enabler of innovation in the UK economy, 5G is expected to bring significant economic benefits across multiple sectors. With 5G offering so many opportunities, much of the work Digital Catapult does helps industry purposefully and meaningfully incorporate 5G into its activities. We work with large and small organisations to increase their understanding of 5G and show them what challenges 5G can address, and how.

7

industry leading connectivity partners in the Future Networks Labs

90+

Digital Catapult 5G partners

Digital Catapult and 5G

Here's how we're helping to stimulate UK innovation in 5G.

– Building and operating 5G testbeds in London and Brighton, purposely designed for commercial use.

– Launching a 5G Testbed Acceleration Programme to guide startups and scaleups in how to harness the power of 5G to complement or enable their product or service, and providing expert technical support to help them succeed.

– Acting as a trusted partner to UK industry

– Providing expert technical support to initiatives such as the DCMS 5G Trials and Testbeds

programme: we are designing and developing a three year, multi-million pound programme of 5G activity in manufacturing and logistics to demonstrate and showcase the transformational power of 5G.

– Working closely with the academic community to ensure that UK research remains at the forefront of technology advances.

– Collaborating with partners from around the UK on projects such as 5G Smart Tourism which aims to change how the cultural, heritage and tourism sectors create interactive immersive experiences in a way never seen before using 5G.

Supporting the development and adoption of future networks technologies

The first commercially available testbeds

Creating and operating test networks and providing access to hardware and services for commercial use, including large scale 5G testbeds in London and Brighton.

The Things Network

Partnering with The Things Network, Digital Catapult established Britain's largest free-to-use LoRaWAN network and innovation community. With access to a network of over 400 base stations Things Connected has supported over 70 startups to create a range of IoT solutions to meet the needs of corporate challenge owners. It is a free-to-use network for experimenting and prototyping new IoT products and services which will benefit from the unique features of LoRaWAN and SigFox. Over 1,100 businesses are using the 2,500 square kilometre network to experiment and prototype.

Future Networks Lab

Alongside Siemens, BT, PTC, IBM, Servicenow, Semtech, Texas Instruments and Arrow, we are supporting the future networks ecosystem in the UK. The Future Networks Lab is one of the first facilities in Europe specifically designed to experiment with 5G and IoT technologies, and brings together network, service, platform and solutions providers in a technology agnostic space to collaborate and scale the use of future networks technologies.

Future Networks Lab partners

ARROW   BT   IBM

ptc   SEMTECH   servicenow

SIEMENS   TEXAS INSTRUMENTS
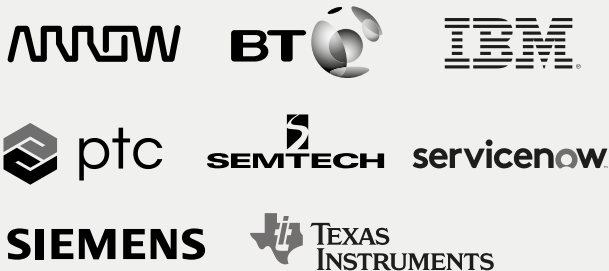
Read more online at
www.digicatapult.org.uk/technologies/
future-networks/

Immersive:
augmenting Britain's cultural icon status

> Making the UK the best place in the world
> to create immersive content and applications.

Digital Catapult has been instrumental in establishing programmes and facilities that reach into the UK's creative immersive startup community and has made a tangible difference in the UK's ability to maintain its world leading edge in art and culture.

CreativeXR was the very first UK publicly funded accelerator programme designed specifically for immersive tech companies creating artistic content which relied on a technological component. It is recognised on the global stage as an example of how public and private organisations can work together not only to create the groundwork for others to draw inspiration from, but also to embed innovative experimentation with technology into the arts and culture scene in the UK. Our Augmentor programme continues to raise the bar for eligibility each year since it started.

The facilities we have built, or had a hand in bringing to market, are recognised global leaders in performance and volumetric capture, setting a standard that the rest of the world is now racing to compete with.

Encompassing a whole ecosystem of technologies from virtual (VR) and augmented (AR) reality through to haptic technology and other forms of human-computer interface, immersive technology is fast becoming commonplace in the creative space – for example in gaming, film & TV, and advertising – and in manufacturing and other industrial sectors for training and data visualisation.

Immersive technologies quite simply revolutionise how people interact with their environment. UK immersive companies represent almost 10% of the global market, and as more companies move into this space from a range of sectors, there's a big challenge to build upon the UK's wealth of knowledge and skills to bring together this growing ecosystem. This will drive forward the game-changing innovations that make the UK the best place in the world to create immersive content and applications.

500
applications to CreativeXR
in the first two years

Augmentor graduate HoloMe
signed deals with ASOS and H&M
and raised close to

£1m

3
Digital Catapult funded projects
at Tribeca Film Festival 2019

Digital Catapult provides unrivalled access to the latest developments in virtual, augmented and mixed reality supporting the development of a strong and vibrant UK immersive community.

Dimension Studio, Imaginarium Studios and Immersive Labs

Dimension Studio

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.

Read more online at
www.dimensionstudio.co

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.
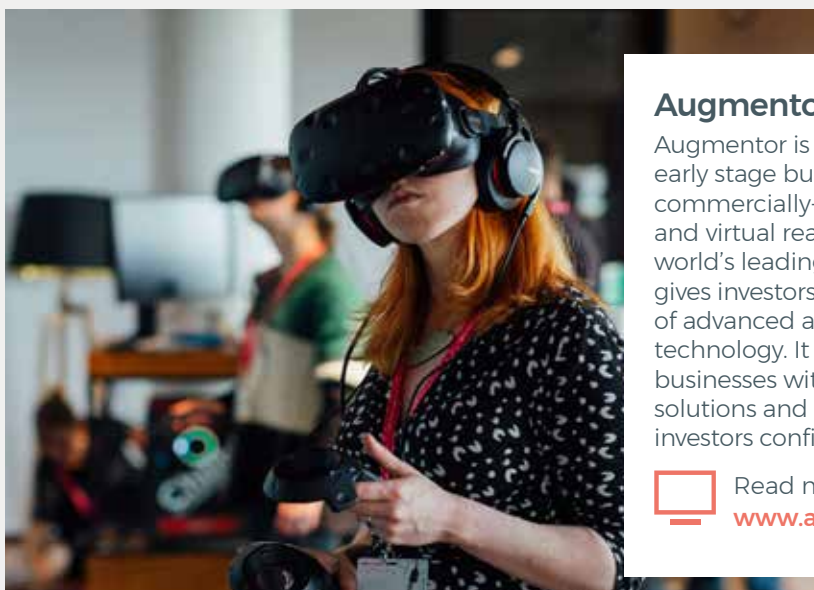
Read more online at
www.imaginariumstudios.co.uk

Immersive Labs

Digital Catapult's Immersive Labs provide a network of cutting edge innovation facilities equipped with the latest specialist hardware for testing and showcasing virtual and augmented reality solutions and content.

Read more online at
www.digicatapult.org.uk/projects/immersive-labs/

Augmentor

Augmentor is a 10-week programme supporting early stage businesses developing innovative and commercially-focused applications of augmented and virtual reality. In partnering with some of the world's leading investment funds, Augmentor gives investors a much greater understanding of advanced augmented and virtual reality technology. It enables Digital Catapult to discover businesses with the most commercially viable solutions and gives them the skills to approach investors confidently.

Read more online at
www.augmentor.co.uk

Future focus:

exploring disruptive and cross-sector technologies

We are actively exploring emerging and disruptive technologies that demonstrate great potential for UK industry. Two current areas of exploration are blockchain and cyber security.

Substance to the hype:

Blockchain and distributed ledger technology (DLT)

The blockchain and DLT landscape in the UK is evolving rapidly and we are in a particularly advantageous position to thrive globally. These technologies have huge potential to disrupt markets, changing the way people work, collaborate and do business together. For example, both the manufacturing and creative industries have challenges in asset tracking and this is where DLT can play a crucial role in providing a trusted, decentralised audit trail across supply chains.

To show the scale of the advantage DLT can offer, Digital Catapult's industry-first research investigated the current state of the UK landscape. "Blockchain in Action" is the first to survey the UK's vibrant DLT community, offering a snapshot of the industry and reaching a significant proportion of blockchain companies operating in the UK.

The report also kicked off DLT Field Labs, an initiative that brings together technology businesses, industry and researchers to deploy and test the latest distributed ledger technology in the real world (and close to real world) environments.

Read more online at
www.digicatapult.org.uk/news-and-views/press/ giving-substance-to-the-hype-blockchain/

74%

of DLT companies have products ready to demonstrate and are already generating revenue

The two statistics on this page are from the "Blockchain in Action" report

40%

number of interviewed blockchain companies who felt their tech could be applied to multiple industries

Cyber101:

Underpinning technology UK-wide

Digital Catapult's Cyber101 programme is part of DCMS funded activity to grow the UK's cyber security industry and the capability of cyber security startups and scaleups.

This programme is linked to the Develop strand of the UK Government's National Cyber Security Strategy, a series of activities that will be supported by £1.9 billion in public investment over five years. Established in 2017, Cyber101 has supported over 100 cyber security startups through 17 Business Skills Bootcamps held around the country, and is delivered in partnership with The Accelerator Network, CSIT and Inogesis.

Between them, these 100 organisations have raised investment totalling over £20 million and of the startups involved, every single one is still operational. The average revenue increase of each company is 300%, demonstrating the huge economic opportunity presented by the sector and business opportunity open to those with the skills to grasp it.

Existing and new future networks, artificial intelligence and immersive technologies depend on a strong foundation of secure systems. Cyber101 is creating a thriving and dynamic cyber security sector, encouraging growth and establishing new markets for cyber security companies.

100+
cyber security
startups supported

300%
average revenue increase per
company as a result of Cyber101

Read more online at
www.digicatapult.org.uk/projects/cyber-101/

Giving industry the means to succeed

Digital Catapult provides the tools and knowledge to support small and large businesses to succeed by unlocking investment and helping entrepreneurs gain confidence, creating safe spaces to experiment with new technologies, and boosting the UK economy.

Inspiring investor confidence

We help investors and venture capitalists gain visibility of the innovator ecosystem to help understand the investment and scaling potential of the advanced digital technologies we work with. We introduce investors to high-calibre businesses with solutions that have genuine commercial applications.

Bringing research out of the lab

Digital Catapult works with academics and researchers to get research out of the lab and into the heart of industry. We connect businesses and researchers to provide the industrial context that focuses research, speeds up commercialisation and breaks down barriers to innovation. Digital Catapult is a founding participant of the RCUK funded Researcher in Residence initiative, and has hosted 19 researchers from 17 universities since 2015.

Collaborative research and development (CR&D)

Using our extensive networks, we're able to bring together industry-leading teams to work on international projects.

– The **C3ISP** project, a collaboration between 11 partners from the UK, Italy, Germany, Poland and France, is creating a platform for data analysis to support cyber security management.

– **F-Interop**, a three year project looking at researching, developing and supporting the emerging standards and technologies for IoT, and involves companies from six European countries.

– **SynchroniCity** is all about scaling up IoT solutions for smart cities and communities. Digital Catapult is driving the design principles and guidelines for the project as part of a consortium of over 35 partners.

   Read more: synchronicity-iot.eu/

– **Content Personalisation Network**, or CPN, works towards an improved personal news offering enabling economic impact for small and large news publishers via an open, DLT enabled platform. 10 partner companies, including leading news organisations in Italy, Germany and Belgium, are involved in the project.

Helping startups become scaleups

We accelerate the sustainable growth of innovative businesses and support them to develop new business models, products and services using advanced digital technologies, helping to remove barriers to successful growth.

Our technical experts work with startups and scaleups to undertake collaborative research and development (CR&D). We identify high calibre startups and scaleups and invite them to participate in innovation workshops and competitions, including access to our leading-edge digital and physical facilities. The businesses we work with have the opportunity to meet and pitch to industry decision makers, potential partners, clients and investors.

Driving change in traditional environments

By bringing entrepreneurialism to traditional industries, we help larger organisations access advanced digital technology experts and noteworthy innovators to help them develop transformative solutions which meet industry challenges.

We support every stage of the innovation journey, from developing a strategy, to engaging in open innovation, from partnering on collaborative research and development projects, to delivering scalable technology sprints and proofs-of-concept. Digital Catapult offers short and long-term innovation services, which are tailored to business challenges. We have delivered successful innovation activities for Unilever, Rolls-Royce, Sellafield, P&G, Thales, BAE Systems and the Armed Forces amongst others.

"Digital Catapult gave us invaluable access to business mentors from other fields. The advice we received was gold dust"

Jerome Joaug
Nymbly, Co-founder

Case studies – AI

Bloomsbury AI

Bloomsbury AI is a UK startup that specialises in building AI solutions that read and understand text documents and answer questions about their contents.

Bloomsbury AI received early access to cutting edge hardware and expertise from Digital Catapult resulting in increased productivity and faster product development. The Bloomsbury AI team was recruited by Facebook as part of its efforts to grow natural language processing research and further understand its applications.

Through Digital Catapult's Machine Intelligence Garage, Bloomsbury AI has been able to compete with big established players in the tech industry.

Read more online at
www.digicatapult.org.uk/success-stories/bloomsbury-ai/

"Digital Catapult gave us access to leading edge hardware and specialist expertise that isn't easily available to startups: we were able to significantly accelerate the development of our technology and product."

Guillaume Bouchard
Co-Founder and CEO, Bloomsbury AI

Predina

Predina is an innovative startup leveraging AI and machine learning to use contextual data to dynamically predict risk in real time. Its vision is to use AI to dramatically reduce the incidence of road accidents for the transportation industry.

Participating in the Machine Intelligence Garage programme gave Predina access to valuable expertise and computation power, enabling it to train its algorithm on large data sets and accelerate product development to a degree that would not have been possible otherwise.

Read more online at
www.digicatapult.org.uk/success-stories/predina/

Winning a contract for solution trials worth

£50k

"Engaging with Digital Catapult has been an amazing opportunity for us. Machine learning companies have unique challenges that not many startups face."

Bola Adegbulu
Co-founder and CEO, Predina

Case studies – future networks

Airbus

In collaboration with DFKI (the German Research Institute for Artificial Intelligence) and Neocosmo GmbH, Digital Catapult supported Airbus to access European funding from the European Institute of Innovation & Technology (EIT), developing a training rig that demonstrated how IoT and LPWAN technologies can optimise processes and drive greater efficiency.

Deploying a multi-network solution in Airbus' factory of the future allowed it to communicate in ways not previously possible. The range of technologies led to better training for new employees in a low risk environment: this results in reduced training times - from months down to weeks - away from the live assembly floor.

The ability to capture data from experienced workers in near real time helps to identify best practice.

RAF

The RAF needs to keep track of high-value assets whilst in storage and during transit, often in extreme and challenging safety-critical environments. Understanding the conditions an asset is exposed to is essential to ensure it is stored and maintained appropriately, and that it is fit for purpose.

The RAF's Rapid Capabilities Office (RCO) wanted to prove the concept of using environmental data logging sensors in conjunction with low power wide area network (LPWAN) infrastructure to monitor assets within an operational military airfield environment.

Digital Catapult and RCO designed, deployed and ran a trial to help prove the potential of LPWAN technologies in this scenario.

The success of the RAF trial led to approaches by the Royal Navy and the Army for Digital Catapult to deliver similar proofs of concept to meet their specific asset monitoring needs. The RAF's trial objectives have now been broadened to test the technology in even more challenging conditions, including at sea.

Read more online at
**www.digicatapult.org.uk/
success-stories/raf/**

10km^2

area covered by the
RAF LPWAN network

Case studies – immersive

Gravity Sketch

Gravity Sketch is an intuitive multi-platform 3D creation tool that allows users to create amazing models, scenes and art work. Aware that it had a great solution to take to market, Gravity Sketch first needed to address certain key challenges including securing funding.

To stand out against other players, Gravity Sketch needed to make investors aware of the current status quo of the VR hardware space, what core technologies support its product and the niche that the solution would occupy once launched.

As a result of joining Digital Catapult's Augmentor programme and working with the programme's mentors, Gravity Sketch was introduced to potential funders such as Innovate UK, Wacom (Japan) and Super Ventures (USA). As a result, Gravity Sketch found itself in a far better place than before, and was able to further develop the platform and approach potential customers.

Read more online at **www.digicatapult.org.uk/success-stories/gravity-sketch/**

Secures

£1.25m

funding

Reality Zero One

Reality Zero One's mission is to design and create a world class end-to-end reality capture and digital delivery platform.

A big problem facing VR and AR creators and the broader 3D industry is the cost and time associated with modelling and creating content from scratch.

Recognising the potential of the platform and its positive impact on the immersive industry, particularly the reality capture segment, Digital Catapult accepted Reality Zero One into the cohort for its Augmentor programme. As part of their involvement in Augmentor, Reality Zero One's directors received vital insight into how to address key business challenges and adjust their go-to-market strategy.

Since the Augmentor programme, Reality Zero One was invited to demo its platform at Digital Catapult's Augmentor showcase event. It has received strong levels of early market interest for immersive projects with Virgin Atlantic and Microsoft in partnership with Radio Design.

Reality Zero One has also secured a new founder.

Read more online at **www.digicatapult.org.uk/success-stories/reality-zero-one/**

Closed a

£285k

round of seed funding

People & values

Digital Catapult's open, diverse and agile culture

Our brilliant people inspire, drive and deliver change across the UK and around the world. We empower innovators, entrepreneurs, businesses and academics to succeed in creating UK economic growth and to compete on the global stage.

From our interns and apprentices to the 20% of our employees who have a PhD, Digital Catapult's talented team of experts is drawn from the best of industry and academia.

We place great value on the diverse range of voices from different backgrounds which is key to bringing out the best ideas and innovation.

We're proud that women make up over half of our Management Team. Our team brings together talent from over 25 countries, and our culture embraces the vibrancy and distinctiveness of our people mixed with the agile, innovative mindset of the tech startup community.

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

Curiosity

Openness

Optimism

Our Values

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.
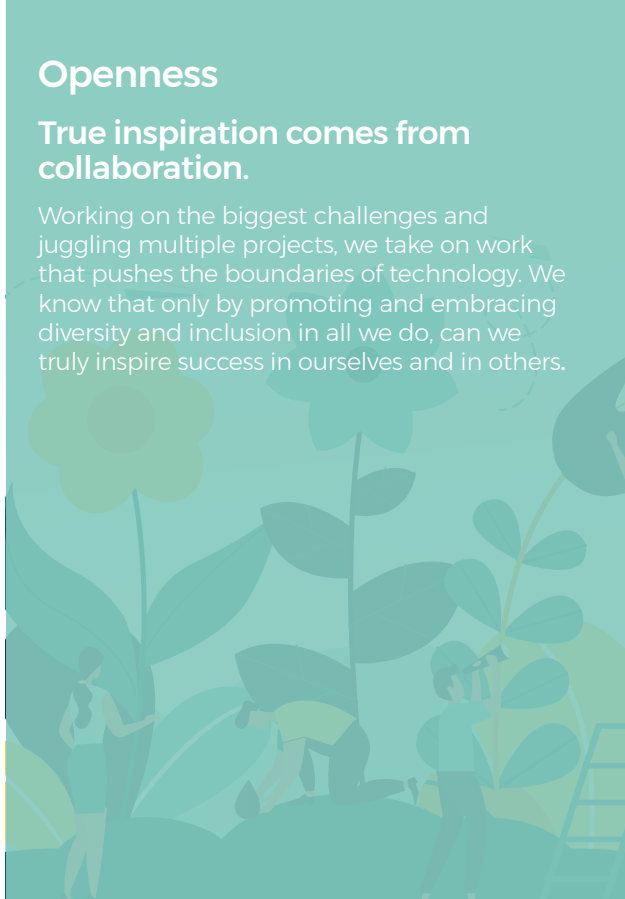
Optimism

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.
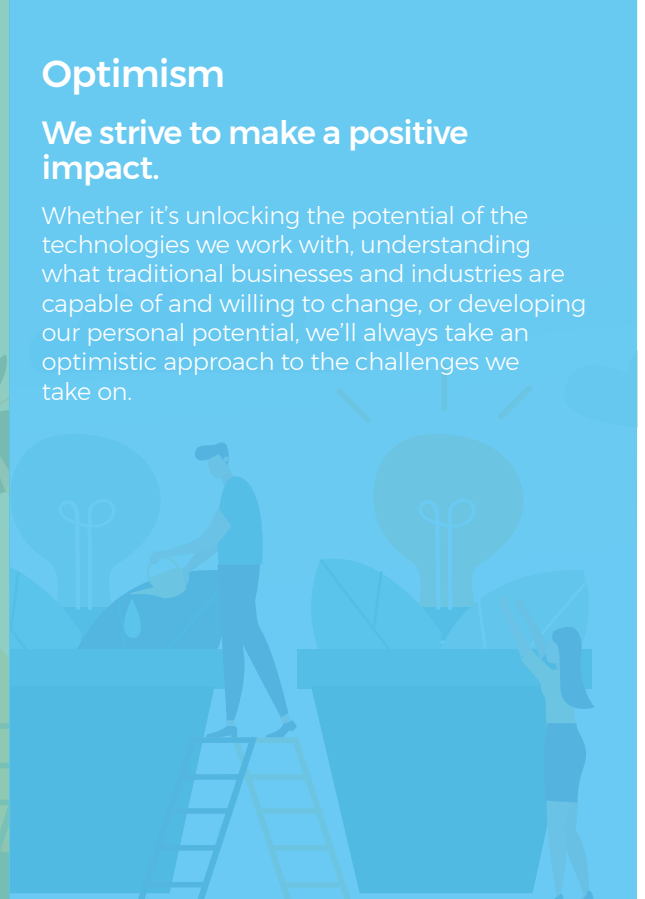
Financial highlights*

for the year ended 31 March 2019

Turnover

For the year ended 31 March 2019	2019 £'000's	2018 £'000's
Innovate UK core revenue grant funding	**12,620**	10,939
Collaborative research and development and other grant income	**4,045**	4,664
Commercial income	**2,279**	1,732
	18,945	17,336

Capital funding: N/A to DC

Consolidated balance sheet

As at 31 March 2019	2019 £'000's	2018 £'000's
Fixed assets	**5,096**	5,743
Net current assets	**2,979**	1,872
Creditors amounts falling due greater than one year	**7,729**	7,437
Net assets	**345**	178
Capital and reserves	**345**	178

* Draft accounts.