













Throughout the past year, techUK held a series of Digital Dialogues with leaders across the United Kingdom's nations and regions to better understand how we can harness digital innovation to build a better future in the wake of the coronavirus (COVID-19) pandemic.

Working together with stakeholders and members these conversations were intended to help understand what actions could be taken at the local level in the short, medium, and long-term to support a levelled-up recovery and build the future we need.

Ambition in the face of adversity

The COVID-19 pandemic continues to present huge challenges for the UK's nations and regions.

As we plot a course to recovery, we have an opportunity to apply technology with purpose to deliver better outcomes for people, society, the economy, and the planet.

Our mission should not be simply to get back to where we were, but to the build the future we need.

A future that empowers people, strengthens society, grows the economy, and restores the planet.



Executive summary

The Yorkshire and Humberside Digital Dialogue brought together local leaders from across the public and private sectors on 3 September 2020 to discuss the impact of COVID-19 on the region and how digital technology can support a levelled-up recovery.

The discussion revealed serious concerns about the social and economic impact of COVID-19 and the long-term ambition to level up the whole of the UK.

However, these concerns were matched with optimism about the opportunity to accelerate digital transformation and apply digital technology to address both long-standing issues and new challenges brought about by COVID-19.

There is a strong desire for greater collaboration across public and private sectors to drive digital innovation and help the region recover from the impact of COVID-19.

This report sits alongside six other national and regional reports, as well as a UK-wide report, and sets out some recommendations, based on the Digital Dialogue, about how this could be achieved in the region, focusing on the following areas:

- > Strengthening local digital capital
- > Seizing local growth opportunities
- > Innovating to tackle urgent problems



TABLE OF CONTENTS

- I. Yorkshire and Humberside Digital Dialogue
- II. The impact of COVID-19 on Yorkshire and Humberside
- III. Challenges and opportunities for Yorkshire and Humberside
- IV. Recommendations from the Digital Dialogues:
 - A. Strengthening local digital capital
 - B. Seizing local growth opportunities
 - C. Launching local innovation challenges
- V. Conclusions





Participants

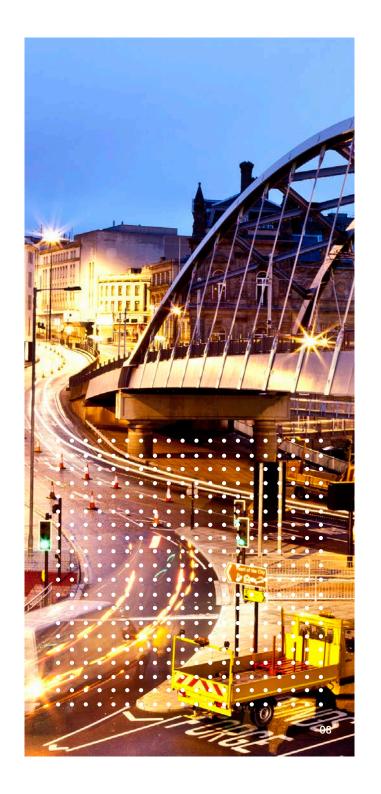
The key senior stakeholders who participated in the digital dialogue came from a variety of organisations, from the tech sector and beyond. These ranged from large corporates to small and medium-sized enterprises (SMEs); professional services and legal firms; trade organisations, cluster groups, and incubators; the public sector and government; and universities and other educational institutions.

The impact of COVID-19 on Yorkshire and Humberside

The COVID-19 pandemic and the resulting lockdowns have caused the **value of goods and services to fall by £170 million per day**, a daily drop of 37% in value.

Manufacturing contributes approximately 14.3% of the region's economy, compared to 9.2% for the UK as a whole – and manufacturing has been one of the sectors most challenged by the pandemic.

The region has been **forecast to lose 12% of gross value added** (GVA) in 2020, due to the COVID-19 pandemic.



Concerns from the Digital Dialogue

Education and digital skills: the need for better remote learning that is less easily interrupted and much more adaptable, the need to make computer science skills more desirable for students, the need to update the current computer science curriculum, and concerns about how the current education system can exacerbate digital inequalities and divides, especially for families lacking the devices and equipment to fully enable remote learning.

Need to consider longer-term plans: participants were concerned with the current focus on short-term survival and profits, at the risk of losing long-term planning and investing for the future.



THERE IS A RISK THAT WE WILL GO BACK TO THE OLD NORMAL – RISK OF OLD HABITS CREEPING IN, IF WE ARE NOT ACTIVELY PROMOTING AND SUPPORTING PEOPLE WORKING IN A NEW AND DIFFERENT WAY.

Wales Digital Dialogue Participant



WE NEED TO GET SENIOR LEADERS
PROFESSIONAL DEVELOPMENT
IN DIGITAL TRANSFORMATION –
UNLESS THEY ARE TALKING THE
TALK AND WALKING THE WALK,
AND UNDERSTAND WHY CHANGE
IS NEEDED, ALL OF THESE EFFORTS
WILL FAIL. MANY SENIOR LEADERS
DON'T YET UNDERSTAND THE VALUE
OF DIGITAL TRANSFORMATION
AND THERE IS A BIG GAP IN THEIR
POTENTIAL UNDERSTANDING OF
TECH. PEOPLE NEED TO THINK ABOUT
THE WHY OF ALL OF THIS.

COVID-19 as a catalyst for change in Yorkshire and Humberside

Changes to education: using digital tech to enable personalised learning, unbundling education to provide smaller, bite-sized learning and skills training, and better engagement between tech SMEs and schools to get kids excited about digital careers.

Green economy: using digital tech to help the region become a centre for renewable tech.

Better use of data: using and sharing open and public data more collaboratively to raise the awareness of the region's issues and allow new start-ups to devise innovative solutions.

Maintain digital adoption momentum: from the significant digitisation of healthcare solutions and need the to provide further funding for local schemes and programmes to help SMEs to adopt digital tech in order to weather the COVID-19 pandemic and to help them prepare for the future and the digital economy.



WE SHOULD CAPITALISE ON THE SHIFT TO REMOTE WORKING TO INCREASE THE REGION'S EMPLOYEE BASE. AS MORE PEOPLE ARE WORKING FROM HOME AND WANT TO MOVE AWAY FROM LONDON, WE NEED TO TARGET THOSE PEOPLE AND KEEP THEIR TALENTS IN THE AREA.

Wales Digital Dialogue Participant



WE SHOULD WORK ON A
COMMON DIGITAL SKILLS
CURRENCY - EXCHANGEABLE
BETWEEN EDUCATION AND
EMPLOYERS. WE NEED TO
WORK TO MAKE IT CLEAR WHAT
SKILLS PEOPLE HAVE GAINED,
WITH TRANSPARENCY, AND
ENABLE PEOPLE TO MOVE MORE
SEAMLESSLY BETWEEN EDUCATION
AND WORK, AND BETWEEN
SUBJECTS AND OCCUPATIONS AS
WELL. THAT IS KEY TO ENABLING
LIFELONG SKILLS AND LEARNING.

Recommendations

A wide range of ideas were discussed at the Digital Dialogue which have been synthesized into three broad recommendations for next steps:

Work together to strengthen local digital capital

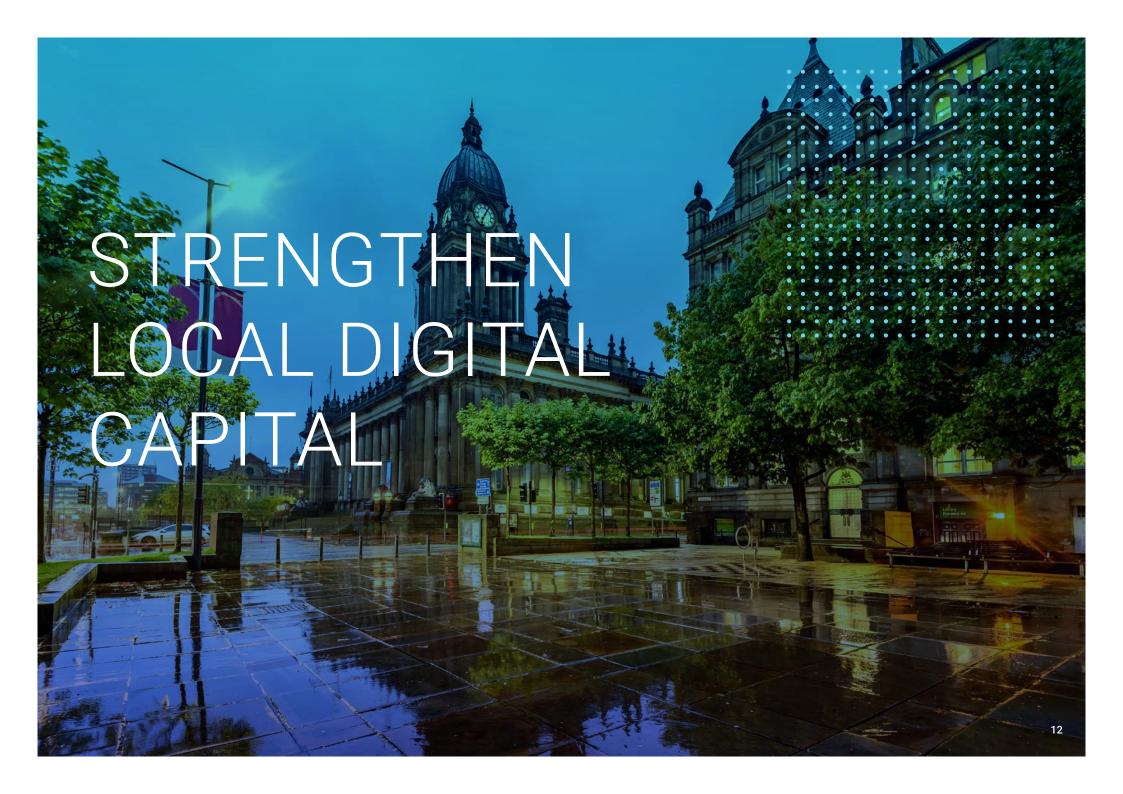
The region's potential to recover will depend upon the strength of its local digital capital. Local stakeholders from across the public and private sectors should work together to develop an integrated regional plan to strengthen the eight component parts of local digital capital.

Use digital to accelerate local growth opportunities

Yorkshire and Humberside has several sectors that are primed for success, particularly in green tech. Concerted action should be taken to ensure that these sectors are at the forefront of digital adoption to support and accelerate their growth.

Launch local innovation challenges to tackle urgent problems

COVID-19 has taken a heavy toll on many businesses, services and communities across the region. Regional and local governments should challenge innovators from across the public and private sector to come forward with new ideas and innovative solutions to some of its most urgent local problems, from housing and healthcare to supporting high streets, public spaces, and the creative economy.

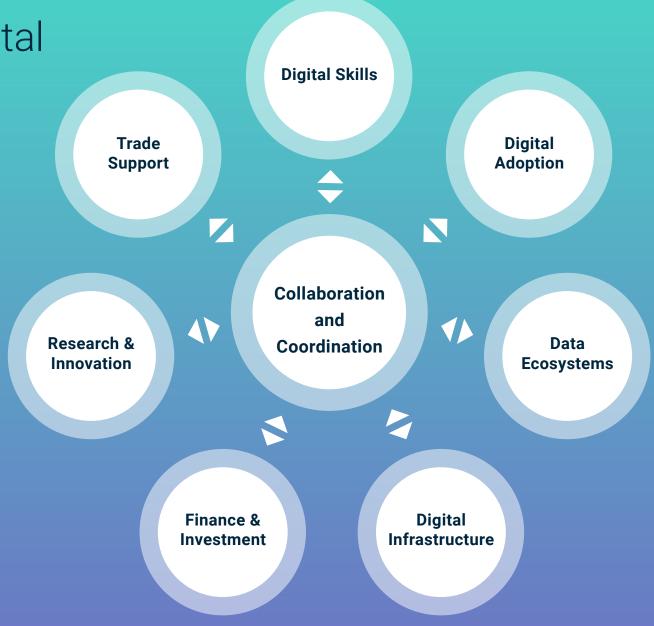


Local Digital Capital

Local digital capital describes the inputs needed at the local level to maximise the benefits of digital.

These eight components were identified by participants across techUK's Digital Dialogue events as the essential inputs necessary for a nation or region to benefit from digital innovation.

techUK believes there is real value in thinking about these inputs in aggregate and developing a strategy that focuses on strengthening digital capital at the national and regional level.



Strengthen local digital capital

While participants in the Digital Dialogue touched on many of the different aspects of local digital capital, the four that were the most frequently discussed were:

- > Digital skills
- > Digital ecosystems
- > Finance and investment
- > Collaboration and coordination

Participants discussed how tech-enabled innovative solutions to close the digital skills gap – better remote learning, personalised learning, and smaller and faster courses to enable more people to reskill and upskill.

Second, regarding data ecosystems, participants discussed the opportunity provided by collaborating and making more data open and easily shared. Data could be used to highlight issues facing the region and allow new start-ups to devise innovative solutions.

Third, the participants in the Digital Dialogue recognised the need for greater funding of local and regional incubators, accelerators, and networks, along with comprehensive digitisation programmes to help businesses adopt digital technologies.

Finally, collaboration and coordination was a common theme throughout the Digital Dialogue, with participants often stating that organisations and various government bodies throughout the region needed to communicate more clearly and ensure that they are all working towards their shared goals and learning from each other's best practices.



SMALL BUSINESSES IN THE REGION TRUST THE PEOPLE THEY KNOW AROUND THEM, AND THAT'S WHO THEY WANT TO HEAR FROM. WE SHOULD BE COLLECTING STORIES ABOUT THE COMPANIES DOWN THE ROAD, AND WE HAVE TO ACCEPT FOR MANY SMES, THAT'S HOW THEY OPERATE AND THEY DO NOT ALWAYS ENGAGE WITH NATIONAL PROGRAMMES.

Digital skills

The **Lloyds UK Consumer Digital Index 2020** found that 16% of the working population in Yorkshire and Humberside are without full basic digital skills, consistent with the national average.

Since 2013, the **digital technology sector in the Humber has seen strong employment growth** of over 1,000 jobs (+16%), exceeding the national average (12%) however the growth rate is half of the Yorkshire and Humberside equivalent (32%). The sector's growth has been mainly driven by gains in computer programming jobs. The education system will need to be responsive to Humber's changing job profile, as demand for digital skills increases.

In terms of digital job roles, there have been growing job vacancies for software developers, information technology (IT) support analysts and teachers which suggests that demand for digital skills is cross-cutting across different sectors. The Employer Skills Survey (ESS) data indicates a greater need for complex analytical skills and operational skills, compared to digital skills. In tandem, survey evidence indicate that over a third (35%) of respondents in the digital technology sector cited skill shortages as a barrier to their productivity. Although digital technology companies have good access to technologies, increased competition for labour and talent is felt to be a challenge facing their business. Investment in upskilling the local workforce was most reported as a helpful intervention by digital technology businesses, and data indicates employers would benefit from transferrable skills.

A wide range of digital skills are demanded across the Humber's priority sectors, from essential skills to advanced digital skills. The emergence of industry 4.0 technologies show there are increasing digital skill needs in manufacturing, ports and logistics, energy, and food. More employers are requiring technical skills to understand and work with big data, the Internet of Things (IoT) and artificial intelligence (AI).

The ESS data suggests a greater need for complex analytical skills and operational skills, compared to digital skills. In tandem, survey evidence indicate that over a third (35%) of respondents in the digital technology sector cited skill shortages as a barrier to their productivity. Although digital technology companies have good access to technologies, increased competition for labour and talent is felt to be a challenge facing their business.



WE NEED TO RECOGNISE THE
NEED FOR MULTIPLE PATHWAYS TO
DIGITAL SKILLS. IT IS NOT ENOUGH
TO SAY THAT THESE SKILLS ARE
NEEDED AND EVERYONE NEEDS
TO PASS THROUGH ONE PIPE.
DIVERSITY OF PATHWAY MATTERS,
DIFFERENT PEOPLE NEED TO REACH
THOSE SKILLS IN DIFFERENT WAYS.

Digital Dialogue Participant

SCHOOL CURRICULUM HAS
CHANGED LITTLE IN 100 YEARS,
WHILE SOCIETY HAS CHANGED
A LOT. WE HAVE TO SEE DIGITAL
SKILLS AS A PRIORITY, AND
EDUCATION AS A WHOLE AS WELL.
WE MUSTN'T REINVENT THE WHEEL,
WE NEED TO DRAW ON EXISTING
PRACTICE AND THEORY.

Data ecosystems

Yorkshire is home to the Data Mill North, the first Open Data Institute activity outside of London.

Numerous other companies, organisations and programmes are a part of the Yorkshire data ecosystem including, PanIntelligence, DataTrainer, Leeds Digital Festival, Sheffield Digital Festival, Al North annual event and the No Code Lab.



DATA SHARING IS A BROAD ISSUE BUT A
HUGE OPPORTUNITY FOR THE REGION –
THE MORE THAT WE CAN SHARE DATA, IN
BOTH THE PUBLIC AND PRIVATE SECTOR
– WE CAN USE THAT TO GENERATE
OPPORTUNITIES WITHIN THE ECONOMY
AND HELP IT PROSPER.

Digital Dialogue Participant



THERE ARE LOTS OF INITIATIVES ACROSS THE REGION COLLECTING A LOT OF DATA - GREEN ECONOMY, TRANSPORT, AND HEALTH - AND THIS IS AN UNTAPPED RESOURCE, WE NEED TO MAKE THE DATA AVAILABLE TO LET PEOPLE THINK ABOUT HOW TO SOLVE PROBLEMS AND CREATE NEW BUSINESSES...

Finance and investment

There is a need for investment from both from central government and venture capital firms. While there are venture capital (VC) firms that seek to invest in start-ups outside of London and the South East, more investment and a greater presence in the region is needed to help SMEs scale-up and grow. More government investment is required in order to help SMEs in the region adopt digital technologies and to help raise the overall level of digital skills in the region.

In 2019, **Yorkshire and Humberside received £100 million in total VC investment**, with £74 million invested in emerging tech from 2015-2019 and £52 invested in Al over the same time period. By comparison, in the same time frames, London received £6.8 billion in total VC investment, with £5 billion invested in emerging tech and £3 billion invested in Al.



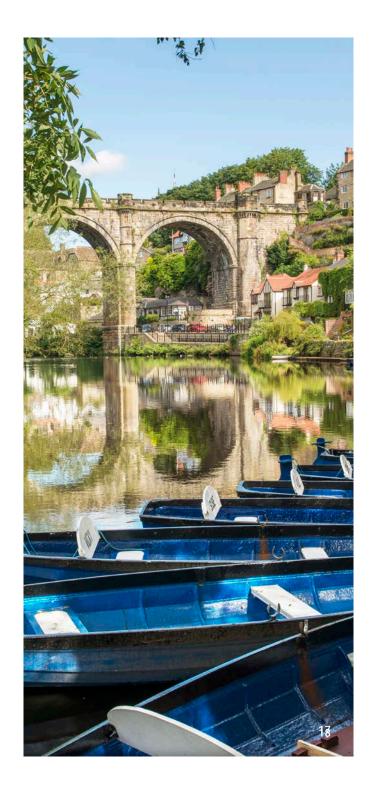
FUTURE BETS ARE OFF, AND BUSINESSES ARE FOCUSING ON SURVIVAL AND WHAT WILL MAKE MONEY NOW. INVESTORS ARE IGNORING THE FUTURE AND THIS WILL HAVE A BIG IMPACT WHEN WE GET THERE AND HAVEN'T MADE THE NECESSARY INVESTMENTS TODAY.

Collaboration and coordination

Collaboration also emerged as a key priority in the region, with participants citing it as the biggest priority action going forward, particularly deeper collaboration within the digital sector and between the digital sector, local government, universities and colleges, and other economic sectors..



WE NEED TO MAKE IT EASIER FOR BUSINESSES OF ALL SIZES TO ENGAGE WITH THE EDUCATION SYSTEM - LARGE CORPORATIONS HAVE THE TIME AND CAPACITY TO BUILD LINKS, BUT SMALLER BUSINESSES AT THE LOCAL LEVEL FIND IT DIFFICULT TO FORM THOSE RELATIONSHIPS AND TALK TO KIDS TO GET THEM ENTHUSED ABOUT TECH AS A CAREER. WE NEED A CENTRALISED HUB TO ENABLE THIS, WHICH COULD BE A GAME-CHANGER, BUT THIS NEEDS INVESTMENT



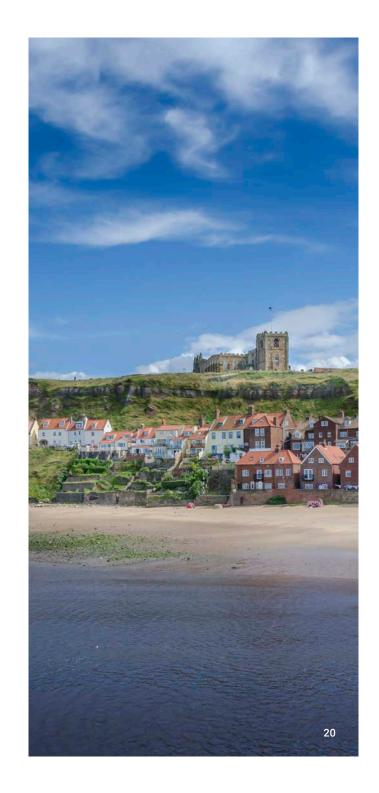


Seize local growth opportunities

The participants in the Digital Dialogue highlighted green tech as an area where digital innovation can be applied to drive the economic recovery and growth in the region. In particular, the discussion focused on how to leverage the region's current strengths in clean energy, retrofitting, and build environment to decarbonise buildings and journeys using digital tech, and helping the region become a centre for renewable energy.



WE NEED TO ACCELERATE PROGRESS TOWARDS NET ZERO AS A KEY PART OF THE ECONOMIC RECOVERY. WE ARE IN A GOOD POSITION AND WE KNOW THERE ARE LOTS OF OPPORTUNITIES TO MEET THESE MUTUAL AIMS. WE ARE VERY WELL-PLACED TO LEAD THE WAY AND HAVE SOME CUTTING EDGE WORK GOING ON ACROSS CLEAN ENERGY, RETROFIT AND THE BUILT ENVIRONMENT, AND REDUCING THE CARBON FOOTPRINT OF BUILDINGS USING IOT AND DATA TO LEARN MORE ABOUT JOURNEYS AND CARBON FOOTPRINTS.



Seize local growth opportunities

In addition to what was discussed in the Digital Dialogue, Yorkshire and Humberside has strengths in several growth sectors, as identified in the strategic economic plans of the region's local enterprise partnerships:

- > Green energy
- >Transport and logistics
- > Health
- > Engineering and manufacturing
- > Digital
- > Construction

These key sectors are ripe for innovation and growth driven by digital innovation. The COVID-19 pandemic has increased the need to double down on these key growth sectors to help the region recover and thrive post-COVID-19.

Opportunities for collaboration and coordination should be deepened by building up strong networks, to join up sectoral ecosystems and harness any potential spill over effects from the tech sector to other sectors.

New business starts should also be encouraged in the key growth sectors in the long-term, in order to better utilise the developing talent pool, encourage entrepreneurship, and raise productivity.

These sectors are the key sectors we believe have the best chance of increasing digital uptake and innovation.



IN THE PUBLIC SECTOR, WF ARF USED TO RESPONDING TO FREEDOM OF INFORMATION REQUESTS TO PROVIDE TRANSPARENCY, BUT WE NEED TO ENCOURAGE ORGANISATIONS FROM ALL SECTORS TO OPEN UP DATA OR AT LEAST SHARE DATA IN EASIER WAYS, SO WE CAN ALL COLLABORATE MUCH MORE FASILY IN THE FUTURE

Green energy

Sheffield has committed to achieving a net zero carbon economy by 2040, ten years before the UK-wide target, providing a strong focus on sustainability and driving the shift to low carbon energy generation, improving energy efficiency, and the transition to zero emission transport.

ITM Power, based in Sheffield, has the world's largest electrolyser manufacturing site, giving the region an unrivalled advantage in the production of "green hydrogen" which will create opportunities in the future to fuel buses and lorries, heat homes, and more.

66

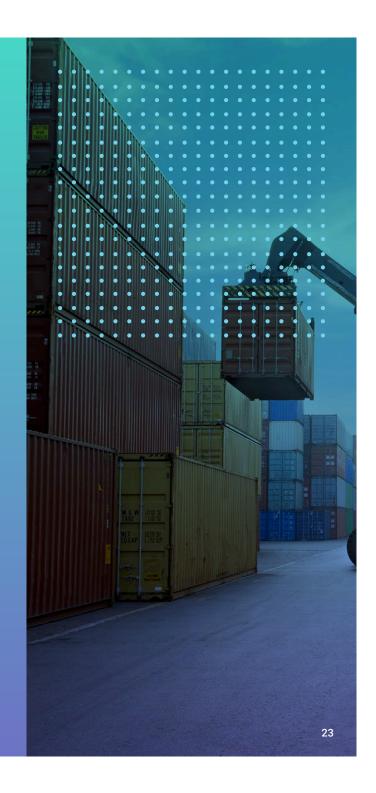
THE NEED TO CHANGE BEHAVIOURS TO MEET NET ZERO GOALS WILL MEET RESISTANCE TO PROGRESS. THIS DOESN'T MEAN THAT WE SHOULD NOT HAVE THE LONGER TERM AMBITIONS, BUT WE NEED TO WEAVE THE **ECONOMIC DEVELOPMENT** AGENDA INTO THE GREEN ECONOMY AND KEEP THE BIGGER PICTURE IN MIND.

Transport and logistics

Doncaster has a particular strength in railways, exploring what intelligent mobility utilising digital tech and future infrastructure may look like, and specialising in digital design and engineering.

The region is home to five major ports: Immingham, Grimsby, Hull, Goole, and Killingholme, with Immingham the largest port in the UK by annual tonnage handled. Digital technology can help drive efficiency and safety gains, using tech like 5G and IoT to enable predictive maintenance, real-time monitoring, as well as improved communications and data analytics.

As the demand for green energy grows, and the offshore renewables sector grows correspondingly, these ports will only grow in importance. The region should develop plans to fully integrate digital tech into its ports.



Health

Sheffield has a long history of excellence in the development of innovative healthcare solutions, and is home to a number of world-leading healthcare tech companies. It is also host to the National Centre for Sport & Exercise Medicine and Sheffield Hallam University's Advanced Wellbeing Research Centre, working to develop collaborative approaches to integrating tech into innovative products, interventions, and services to transform the social, behavioural, and environmental determinants of health.

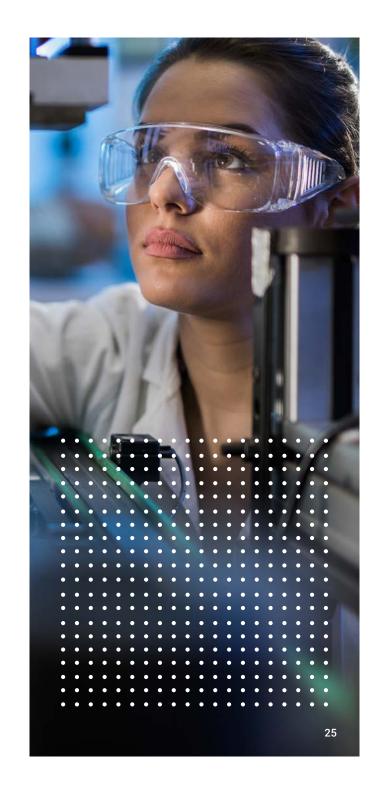


WE NEED TO DIGITISE PROVEN FACE-TO-FACE MODELS TO REDUCE MENTAL HEALTH ISSUES AND LOOK AT APPLYING XR TECH TO HEALTH SOLUTIONS. WE HAVE PROVEN MODELS TO REDUCE SELF-HARM, BUT WE HAVE THE OPPORTUNITY TO TAKE OTHER PROVEN HEALTH MODELS OUT THERE AND DIGITISE THEM, INCREASING ACCESSIBILITY.

Engineering and manufacturing

Sheffield is home to the Advanced Manufacturing Innovation District, bringing together business and science parks with research and development (R&D) and other innovative assets, changing the area's economy from low-cost production to high-value, knowledge-driven engineering and manufacturing research.

The Humber has particular strengths in the manufacturing of steel and glass as well as marine engineering and specialist sectors allied to its historic strength in shipbuilding. All of these sectors will only grow in importance as renewables and the associated supply chain grow in importance, and it will be vital to utilise digital tech to drive innovation and respond to future opportunities.





The region has significant digital clusters in Leeds and Sheffield, with both offering a lot to entrepreneurs. The region's digital sector is helping to change how education, engineering, and manufacturing in the region are operating, and those collaborative efforts should be deepened to drive further innovation and productivity gains.

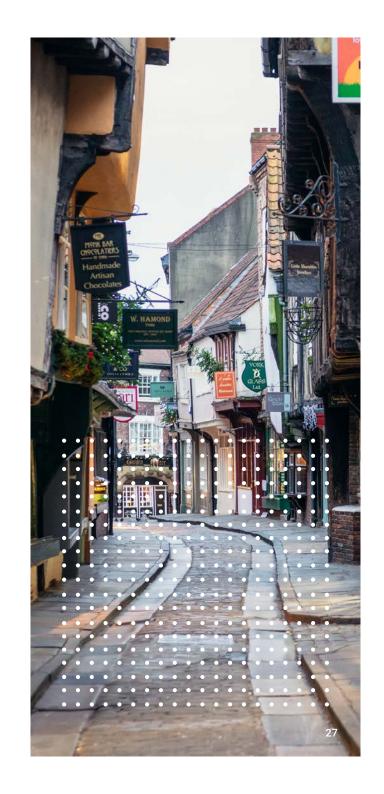
Digital is the future and Yorkshire and Humberside should double down on its existing strengths in this sector and seize the opportunity provided by COVID-19 to drive increases in digital skills and the adoption of digital technology by firms in all sectors of all sizes.



THE LEEDS CITY REGION HAS A SCHEME CALLED DIGITAL ENTERPRISE, WHICH PROVIDES **VOUCHERS TO BUSINESSES TO** INVEST IN DIGITAL HARDWARE AND SOFTWARE BUT ALSO HELPS THEM WITH BEST PRACTICES. MANY SMES TRUST THE ECOSYSTEMS AROUND THEM, AND RELATIONSHIPS ARE KEY - THAT'S WHY NATIONAL SCHEMES DON'T ALWAYS PENETRATE INTO THOSE LOCAL NETWORKS. THERE ARE LOTS OF SUCCESSFUL SCHEMES NOW, AND THEY NEED TO BE FUNDED AND CONTINUE TO EXPAND, IN ORDER TO MAXIMISE THEIR IMPACT.

Construction

The construction sector is a key asset in the region, and can potentially further the region's ambitions to reduce carbon emissions by retrofitting existing buildings and using digital tech to build net zero new buildings. The University of Sheffield's Integrated Civil and Infrastructure Research Centre specialises in bringing tech from other sectors, like advanced manufacturing, robotics, and autonomous systems in order to transform the intelligence, resilience, and efficiency of buildings and infrastructure.



Digitising key growth sectors

The best way to enable the digitisation of the region's key growth sectors is to do two things:

- > Ensure that the strategic economic planning for key growth sectors has a strong digital underpinning.
- Foster greater collaboration, crossover, and links between local tech firms and firms in the key growth sectors, to best utilise digital technology to supercharge growth sectors. This could take the form of events to generate collaboration or the creation or expansion of cross-sectoral groups and organisations.



IN SHEFFIELD WE HAVE STUDENT
ENTERPRISES THAT WORK WITH INDUSTRY,
HELPING INDUSTRY FIND SOLUTIONS TO
PROBLEMS, BUT THERE COULD BE MUCH
MORE THAN THAT. STUDENTS COULD
ACT AS SHORT-TERM CONSULTANTS TO
INDUSTRIES THAT ARE NOT DIGITAL YET,
WHICH COULD HELP AS A STOPGAP.

Digital Dialogue Participant



WE NEED TO MAINTAIN THE
MOMENTUM OF DIGITAL ADOPTION,
AND SHARE CASE STUDIES OF HOW
COMPANIES HAVE BENEFITED. WE
HAVE SEEN A HUGE ACCELERATION
OF DIGITAL ADOPTION, AND PRECOVID WE SAW THE BARRIERS TO
ADOPTION. BUT AS A RESULT OF
COVID, WE HAVE MANY EXAMPLES
OF HOW BUSINESSES HAVE
ADOPTED DIGITAL. WE CAN SHARE
THEIR EXPERIENCES TO MOTIVATE
AND SHOW OTHER BUSINESSES
HOW THIS CAN BE ACHIEVED.



Launch local innovation challenges

Digital technology is not a panacea to deep-rooted issues but can help support new approaches and solutions.

The region's governments should set out "local innovation challenges" in the model of "The Grand Challenges" in order to spur new local innovation, with a commitment to scale successful ideas.

Participants discussed how digital technology can be used to reshape the education system beyond simply offering remote learning during the pandemic lockdown. An updated curriculum emphasising digital skills and digital careers, alongside using technology to enable personalised learning for different styles and the creation of programmes to build digital skills that do not require a university degree were all discussed as opportunities.

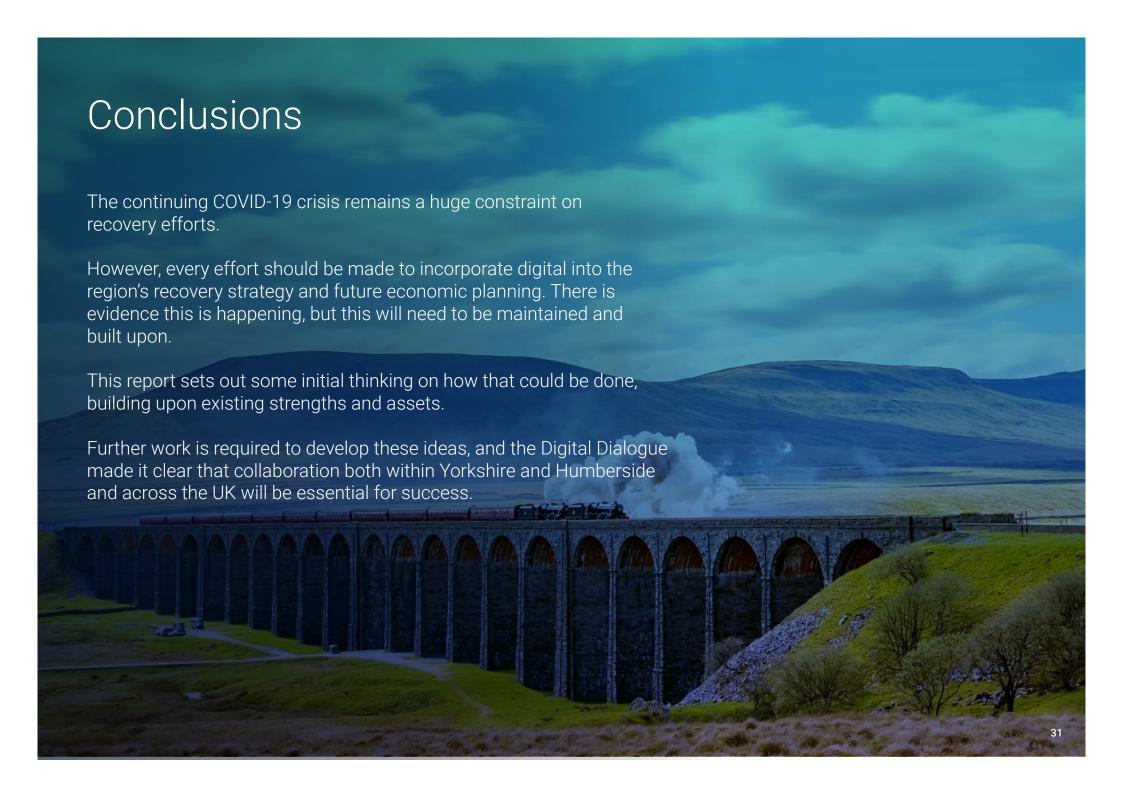
This is just an example of many local innovation challenges where digital solutions should be considered.



WE NEED TO ENABLE INDIVIDUALS
TO RESPOND TO A QUICKLY MOVING
ECONOMY, AND WE HAVE THE TECH
TO ENABLE ONLINE LEARNING – IT
JUST NEEDS TO BE CATERED TO
THE INDIVIDUAL.

Digital Dialogue Participant

EVERYONE UNDERSTANDS
DEGREES, BUT ONCE YOU GET
TO THE SUB-DEGREE LEVEL,
EMPLOYERS DO NOT UNDERSTAND
IT. THIS IS THE KIND OF TRAINING
AND PEOPLE WANT – SMALLER,
BITE-SIZED – BUT IT IS DIFFICULT
FOR EMPLOYERS TO FEEL ASSURED
ABOUT THE QUALITY OF THE
LEARNING AT THAT LEVEL.



Survey of participants

techUK recently surveyed the participants of the Yorkshire and Humberside Digital Dialogue, a few months after the event, asking them how optimistic they were about the potential for digital innovation to drive the economic recovery in the region, and where they felt digital transformation efforts could make the biggest difference.

Of the respondents, 50% were somewhat optimistic, 50% were very optimistic since taking part in the Digital Dialogue.

Respondents felt that digital could make the biggest difference in the following areas:

- > Improving public service delivery by helping to identify challenges and use data to make better decisions.
- > Enabling greater levels of mobility and overcoming the challenges of isolated living.

