heart of the south west

Digital Strategy

Heart of the South West Digital Strategy

Based on initial report prepared by Hatch Regeneris in November 2019 for Heart of the South West Local Enterprise Partnership

February 2021

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Executive Summary

Introduction

This document presents a new Digital Strategy for the Heart of the South West, covering the period 2021-25. It sets out the narrative and foundation for a digital future across the area – one which is founded upon the ingredients that are key to thriving, technology-driven and productive places. Collectively, these factors will underpin an economy that is evolving, competitive and primed for growth. Critically too, the document provides the basis for delivering strategic imperatives set out within the National Industrial Strategy and both the Heart of the South West Productivity Strategy and Local Industrial Strategy, accelerating the growth of key sectors and boosting productivity.

In the context of economies, institutions and communities which are undergoing rapid digital transformation, it is vital that the Heart of the South West is prepared to embrace digital technologies with a full understanding of their implications. This has been particularly highlighted during the Covid-19 pandemic, which has progressed the rate of digital transformation and adoption in businesses, dropped barriers to practices like remote working and shown that digital can be used to help businesses rapidly change traditional business models. However, it has also highlighted the digital divide across the country and the need for more work to be done to increase the availability of reliable digital connections and ensure people are able to develop their digital skills.

A strategic response, encompassing both the private and public sector, is therefore important to ensure the challenges most likely to hold back the Heart of the South West are addressed and the most prominent opportunities fully exploited. The rationale for the development of a Digital Strategy is predicated on:

- The Heart of the SW's ambition to be a digital leader: demonstrating exemplar digital application and adoption in an urban and rural context.
- The background of national, regional and local policy: places considerable emphasis on digital transformation and the importance of technology.
- The need to validate investments made in digital infrastructure: as the cornerstone to a flourishing and competitive economy.
- The opportunity to build on strong existing digital characteristics: these are key to the Heart of the SW's comparative advantages and distinctiveness.
- The need to fully exploit a digitised economy: of growing importance in a local context, as technology drives new forms of economic value.
- The value of understanding how locally important sectors interface with technology: knowing how this is applied in the present and firms' future digital needs.
- The chance to showcase wider digital technology importance: with respect to how it is influencing the prospects of people and shaping places.
- The opportunity to crystallise digital strengths and weaknesses: setting out the rationale for intervention and prioritisation of the Heart of the SW resources.

Why Digital?

The concept of digital has many connotations and means different things to different audiences. Regardless of the preferred definition, digital transformation is increasingly ubiquitous and touches on almost every aspect of daily life.

Technology has, and continues to have, a transformational impact on society, with the pace of change ever-increasing. This has led to new applications, the ability to access information immediately, established truly global connections, driven new forms of economic value, and allowed transactions and services to be delivered in a virtual space. The opportunities from this are significant, such as improving public services, progressing environmental sustainability, enabling an efficient and sustainable transport system, and helping to increase the democratisation of societies.

The digitised economy is making a growing contribution to national prosperity and this looks set to continue into the future as rapid technological development shapes the way in which people trade, interact and learn. By pursuing a strategic approach to exploiting the benefits of technology, partners across the Heart of the South West will be better able to tackle the productivity challenge head-on, which is at the core of the area's economic strategies. As well as focussing on the expansion of higher value sectors and jobs, it is important to ensure a broad spectrum of enterprise is fully able to capitalise on the benefits driven by digital technologies.

Vision and Strategic Priorities

Our Digital Strategy sets out an ambitious vision for the Heart of the South West. This vision will act as a reference point from which objectives are set and priorities established.

Our shared Digital Strategy vision is…

"We will ensure that the HotSW increases its productivity, grows its businesses, develops inclusive communities, protects and enhances the natural environment and attracts investment by embracing technology, maximising adoption and impact, being recognised as one of the UK's foremost digital leaders…"

This vision informs a series of strategic priorities that have been specified to ensure the positive effects of digital transformation are far-reaching, meaningful and position the Heart of the South West as a digital leader, on a national and international scale.

Our Digital Strategy priorities are:

Thematic Review

The priorities are informed by the thematic approach taken to baseline the area's digital capabilities and distinctiveness and demonstrating its cross-cutting relevance. The evidence base has considered current conditions and the digital characteristics of the Heart of the South West. It has also adopted a forward-facing perspective, taking stock of the rapid pace of technological change, the prospects for further digital disruption and development of new use cases which are likely to drive adoption.

A summary of the findings of the thematic review is as follows:

Digital People

- Qualifications and skills base of the Heart of the SW's population may be misaligned with the needs of key sectors, which are increasingly digitised and reliant upon a skills base with digital competencies at their core.
- Need to build on the work undertaken by the Heart of the SW Digital Skills Partnership to develop deeper digital skills insights and ensure digital skills are embedded across the curriculum and labour market.
- Demand for digital skills is not isolated to firms which are the most digitally dependent, rather many businesses trading across different sectors require a baseline of digital skills proficiency as a core employee characteristic.
- Lack of basic digital skills is a major challenge across the Heart of the SW and needs to be addressed as a matter of urgency, mitigating against a rural-urban skills divide.
- Embedded basic digital skills offer opportunities for disadvantaged/disabled people to become more economically and socially active.
- Greatest demand for skills is coming from sectors which are digitally focused but is increasingly relevant to all firms and reflects a balance of technical and general digital competencies.

- Job market dynamics suggest there are a significant number of digital vacancies across the Heart of the SW, which highlights digital employment hot spots, implies possible labour supply issues and also reinforces the importance of the digital economy.
- Need to understand more about the quality of digital jobs across the area and whether these are underperforming in terms of their salary returns and productive output.
- Vocational employment routes are an important response to vacancies and digital skills shortages, with evidence to suggest that apprenticeships will have a valuable role to play.
- Variety of excellent work is taking place across the Heart of the SW, led by education institutions and employers, and evidence suggests there is active investment in digital skills.
- Sharp focus on embedding digital skills within the curriculum will be essential in inspiring younger generations and the pace of change must be reflected in teaching and learning.
- Risks associated with digital exclusion across the Heart of the SW are significant, with digital infrastructure provision and regular access to internet being key barriers to participation and adoption.
- Link between digital inclusion and social mobility should be fully recognised, with technology effectively harnessed to enhance life prospects and overall wellbeing, whilst helping to overcome barriers associated with low incomes.
- Digital technologies introduce solutions to issues of physical access, particularly in rural communities, offering an alternative approach to the delivery of education, training (e-learning) and also apprenticeships.
- Small businesses are harnessing the economic potential of digital technologies on par with the national position but issues need to be addressed to maximise the benefits.

Digital Business

- Heart of the SW's target sectors are all subject to digital transformation in one form or another and need to be prepared to exploit maximum benefit and understand the effects of digital change, particularly smaller businesses.
- Ability to automate tasks is delivering considerable productivity gains, driven by greater efficiency, whilst also opening up new and flexible ways of working.
- Technological adoption may lead to negative economic consequences, such as the loss of employment as a result of automation and AI, however it will also open up new forms of employment and wealth creation which need to be exploited.
- Across key sectors, there are examples of digital technologies being used in innovative and powerful ways, leading to an improvement in competitiveness, productivity and global market reach.
- Heart of the SW has a significant base of digitally embedded businesses which are using the most advanced technologies and are heavily reliant on digital applications, with these firms requiring high quality connectivity to flourish.
- Heart of the SW does not exhibit notable digital sector/sub sector specialisation when compared with national trends and more could be done to improve this position.
- Spatial distribution of digitised sectors and businesses and accompanying data provides a powerful platform from which to communicate the Heart of the SW digital proposition, identify clustering and attract investment opportunities.
- Presence of digitised businesses in rural areas demonstrates the value of technology in rural communities, helping to make them more productive, economically active and attractive to younger generations.
- Promotion of rural digital employment is critical to guiding people into technology-focused careers and providing impartial advice.

- Opportunity exists to harness the power of digital technologies to further the Heart of the SW's innovation credentials and improve performance across certain innovation measures.
- Heart of the SW is fostering entrepreneurs and providing the conditions for start-ups to grow, albeit the rate of start-up formation is trailing the national picture.
- Large proportion of micro businesses across the Heart of the SW suggests the integration of digital processes within this cohort will realise some of the largest productivity benefits.
- Key challenge for smaller businesses is a lack of awareness of their latent digital capabilities and limited time and resource to invest in understanding the opportunity – impartial advice and pooling resources between large/medium/small businesses would help address this.

Digital Infrastructure

- Heart of the SW has been subject to substantial digital infrastructure coverage improvements, with fibre coverage extended to many more homes and businesses as a result of commercial and publicly funded programmes.
- Context is key and the relative connectivity and positioning versus other LEPs helps to define the distinctiveness and competitiveness of the Heart of the SW's digital offer.
- CDS programme has played a major role in securing improved fixed broadband coverage, driving fibre deeper and working proactively to secure investment and stimulate the market.
- Extensiveness and impact of existing CDS rollouts will require careful contract management to deliver outcomes which are commensurate with coverage and timescale targets.
- Fixed and mobile coverage remains mixed however, dependant on geography and the nature of technologies deployed, with 'not spots' and areas of poor connectivity significant in number and increasingly dispersed.
- 'Not spots' should be viewed in the context of actual numbers (premises affected) as well as coverage (%) to articulate the scale of remaining challenges and better understand the drivers of market failure.
- Urgent need to address the 'digital divide', balancing the importance of access to superfast services and 4G, whilst maintaining a forward-facing focus and accelerating the rollout of full fibre and 5G.
- Take-up data suggests high speed broadband is attractive to homes and businesses but the need to incentivise adoption and accelerate the exploitation of associated benefits remains high.
- Considerable scope for the private and public sector to continue to directly invest in digital infrastructure and accelerate full fibre deployments, given the strength of the national policy position and breadth of investment programmes.
- Local authorities across the Heart of the SW have an opportunity to make more effective use of market stimulation, policy making, collective buying power, estates and assets to enhance the commercial imperative and increase deployment.
- Scope exists for community capacity and a willingness to champion the digital cause to be furthered, helping to reduce commercial barriers and expose high levels of home and business demand.
- Heart of the SW needs to take a proactive role in shaping and influencing the national digital agenda, including taking a 'barrier busting' approach to issues such as wayleaves and the reintroduction of fibre tax.
- Ambitions should be orientated around the speed, resiliency and extensiveness of connectivity, rather than focusing solely on certain technologies – a flexible and agnostic approach will be key.

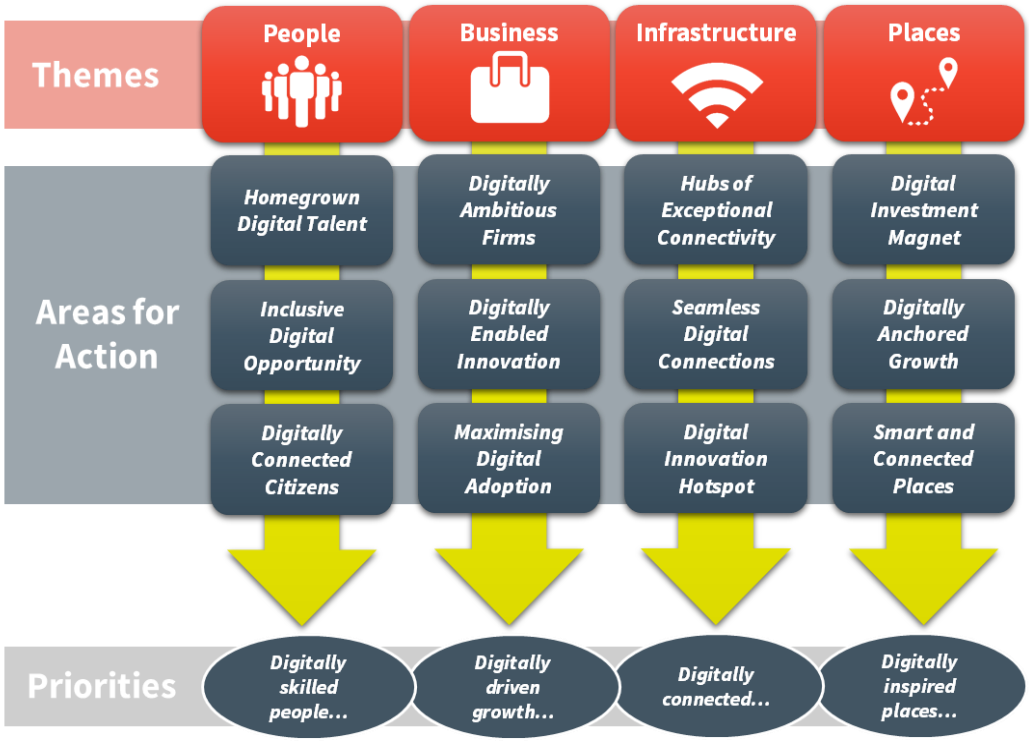
Digital Places

- Need to ensure key growth and regeneration sites capitalise on the commercial imperative to deliver full fibre infrastructure to new developments, whilst also leveraging this to extend connectivity to areas surrounding growth sites.
- Opportunity exists to use digital technology to assist with the design of new developments, driving a bottom-up approach to place-making.
- Opportunity to promote and market the distinctiveness of key growth sites based on their digital competitiveness, linking to inward investment and promotional activities.
- Need to focus digital investment and solutions in areas where deprivation is acute, embedded and long-standing, improving the socioeconomic prospects of people and communities, whilst also enhancing social mobility through improved access to skills, data and people.
- Strong rationale to further integrate digital infrastructure with smart technologies, to create smarter and better-connected communities which engage citizens, businesses and better utilise the power of big/open data.
- Heart of the SW's exceptional natural environment can be preserved and enhanced through the deployment of digital technologies, increasing its productivity and viability as a resource and tourism asset.
- Digital technologies have a central role to play in tackling the climate emergency, through the development of innovative solutions and helping to accelerate behaviour change on a grand scale.
- Opportunity to increase digital democratisation across the Heart of the SW whilst also tapping into the local digital businesses base to disrupt traditional approaches and shape the delivery of public sector programmes.
- Alternative approaches need to be found to securing the investment necessary to deliver innovative and technology driven initiatives, in the absence of European programmes.
- Digital technologies can be further exploited to help develop the next wave of transport modes and deliver solutions to the Heart of the SW's most prominent connectivity challenges, including accessing remote areas and relieving congestion.

Strategic Framework

The findings of the thematic review have directly informed a strategic framework, which sets out a case for action to influence decision-making, trigger investment and effect collaboration.

This is our Digital Strategy strategic framework:



Source: Hatch Regeneris, 2019

This frames a series of actions detailed in this Strategy that tie back to our vision and strategic priorities. It provides a starting point from which more specific interventions can be designed and business cases developed, with potential partners identified who will be fundamental to delivery and securing investment. The actions strongly advocate collective ownership, are linked to intended successful outcomes and suggest how progress can be monitored over time to enshrine accountability.

The Strategy also sets out an intervention rationale that feeds through into the updated Heart of the South West Local Broadband Plan. This plan offers a deeper view of the area's connectivity characteristics and identifies key projects and interventions that can be taken forward by partners, focusing on the opportunity to extend digital infrastructure reach.

This Digital Strategy will enable a proactive digital agenda to be set; one which is founded on a willingness to shape, inform and act, and that is outward facing and action orientated. The Heart of the South West Local Enterprise Partnership intends to publish its digital action plan in April 2021.

1. Introduction

A New Heart of the South West Digital Strategy

This document presents a new Digital Strategy for the Heart of the South West, covering the period 2021-25. It sets out the narrative and foundation for a digital future across the area – one which is founded upon the ingredients that are key to thriving, technology-driven and productive places. Collectively, these factors will underpin an economy that is evolving, competitive and primed for growth. Critically too, the document provides the basis for the delivery of strategic imperatives set out within the National Industrial Strategy and both the Heart of the South West Productivity Strategy and Local Industrial Strategy, accelerating the growth of key sectors and boosting productivity.

In the context of economies, institutions and communities which are undergoing rapid digital transformation, it is vital that the Heart of the SW is prepared to embrace digital technologies, with a full understanding of their implications. A strategic response, encompassing both the private and public sector, is therefore important to ensure the challenges most likely to hold back the area are addressed and the most prominent opportunities fully exploited.

The rationale for the development of a Digital Strategy is predicated on:

- **The Heart of the SW's ambition to be a digital leader:** demonstrating exemplar digital application and adoption in an urban and rural context…
- **The background of national, regional and local policy:** places considerable emphasis on digital transformation and the importance of technology…
- **The need to validate investments made in digital infrastructure:** as the cornerstone to a flourishing and competitive economy…
- **The opportunity to build on strong existing digital characteristics:** these are key to the Heart of the SW's comparative advantages and distinctiveness…
- **The need to fully exploit a digitised economy:** of growing importance in a local context, as technology drives new forms of economic value...
- **The value of understanding how locally important sectors interface with technology:** knowing how this is applied in the present and firms' future digital needs…
- **The chance to showcase wider digital technology importance:** with respect to how it is influencing the prospects of people and shaping places…
- **The opportunity to crystallise digital strengths and weaknesses:** setting out the rationale for intervention and prioritisation of the Heart of the SW resources...

Above all, this document provides the basis for the Heart of the SW Local Enterprise Partnership (LEP) and its partners to set a proactive digital agenda; one which is founded on a willingness to shape, inform and act.

Introducing Heart of the South West

The Heart of the SW occupies a large and strategically important geography, which has and continues to rapidly evolve. Economically diverse, industrially significant, home to revered natural landscapes and made up of historically significant settlements and new towns, the area reflects the best of the UK's heritage, whilst also being a symbol of bold and progressive economic change.

The Heart of the SW brings together seventeen councils which cover over 4,200 square miles, bounded by the following upper tier local authorities:

- **Devon County Council**
- **Plymouth City Council**
- **Somerset County Council**
- **Torbay Council**

Figure 1.1 Heart of the SW Geography

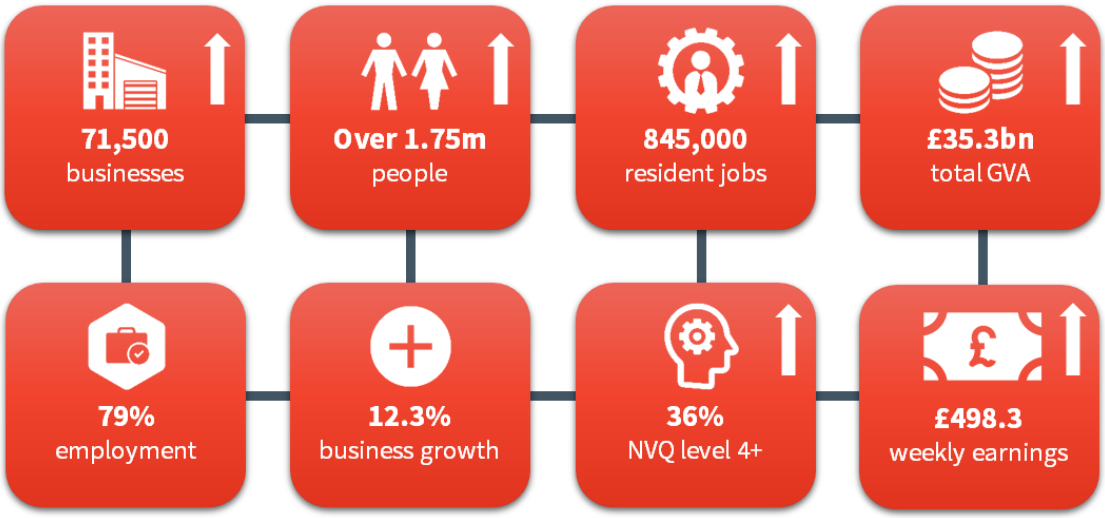
Source: Heart of the SW LEP, 2019

The Heart of the SW is characterised by an expansive and diverse geography – one which includes rural areas, historic urban centres, globally significant ports, renowned coastlines and national parks. The economy is large, diverse and shaped by the presence of natural assets, locational advantages, prominent and growing sectors, innovation and research capabilities and a captive labour market, with a distinctiveness driven by the sectors and businesses trading across different parts of the area.

Intrinsic to the characteristics of the Heart of the SW are its exceptional quality of life, culture, connectivity, heritage, international profile, entrepreneurial spirit and prominence as a visitor destination. It is also shaped by its relationship with neighbouring geographies, forming part of a larger South West region. Bounded by two coastlines, the area maintains an outward-facing outlook, which informs global trading relationships and ensures the area maintains its status as a hub for defence and maritime activities.

Heart of the SW Economic Headlines

Some key hallmarks of the Heart of the SW as an economy and place are set out below:



Headline economic trends showcasing the Heart of the SW's positive growth trajectory up until 2020 include:

- **Significant population growth** – 4% increase in total population from 2013-2018…
- **An expanding employment base** – rise of 8% in total employment from March 2014-19…
- **Rising economic activity** – more than 82% of people are economically active…
- **Increasing economic output** – experienced 2.2% growth between 2016-17…
- **Low unemployment rates** – joblessness levels lower than the Great Britain average…
- **An attractive relocation proposition** – a significant draw for people and businesses…
- **A differentiated local economy** – growth in specialised sub-sectors…
- **Emerging standout strengths** – agri-tech, advanced engineering and nuclear prospects…

Beyond this, a hallmark of the Heart of the SW is its unique blend of assets. Many of these are increasingly influenced and shaped by technology, demonstrating the cross-cutting effects of digital transformation. These are briefly summarised overleaf.

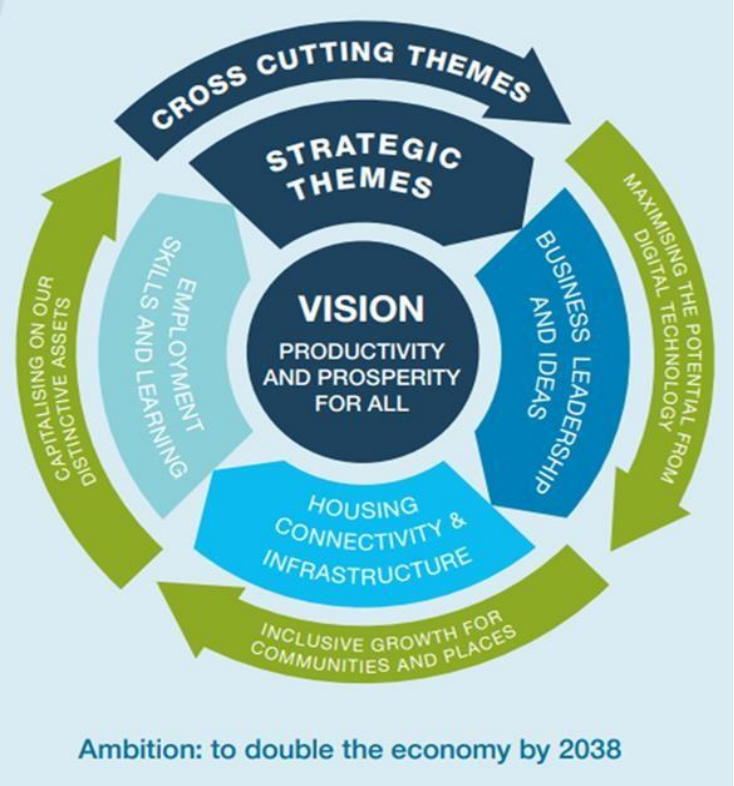
Heart of the SW – Continued Growth and Evolution

Whilst the Heart of the SW is defined by its economic assets and characteristics, as set out above, it is also undergoing a continued process of evolution. The key drivers that are shaping, and will continue to influence, the area in the future include:

- **Regeneration and growth** – a variety of regeneration schemes are helping to re-position the Heart of the SW, enhance its attractiveness and emphasise the importance of place-shaping and local character. This includes the development of new homes, commercial space and public amenity and large-scale regeneration of sites such as Devonport Docks.
- **Inward investment** – the Heart of the SW continues to attract inward investment, such as the new nuclear power plant at Hinkley Point C, providing new and expanded employment opportunity and establishing a fresh wave of firms operating across a variety of sectors and industries.
- **Infrastructure enhancements** – infrastructure improvements lie at the heart of supporting a more productive and liveable Heart of the SW, with a number of projects helping to enhance the physical and virtual movement of people, goods and services.

- **Labour force dynamics** – an appropriately educated and skilled workforce remains of paramount importance, with a number of initiatives and assets in place to enhance employability outcomes and ensure employer skills needs are met by local people.
- **Flagship projects** – ambitious investments in new and specialised facilities, such as the installation of the Met Office's new supercomputer, are setting the tone for a new economic direction, which is targeting growth in priority sectors and seeking to drive up productivity levels.

Figure 1.2 Heart of the SW – Productivity Strategy Ambitions



Source: Heart of the SW Productivity Strategy, 2018

Whilst the Heart of the SW is growing, complex and constantly evolving, it operates within an increasingly competitive globalised economy. Intrinsic to this, are the disruptive and transformative effects of technology, heralding new forms of competitive advantage, the emergence of new sectors and creation of new types of employment. Critically too, this has enabled developing nations to emerge as fierce competitors, backed by rapid first mover advantages – digital transformation is accelerating the globalisation of markets and the economy.

A full strategic consideration of these effects and development of an associated policy platform is therefore critical if the Heart of the SW is to succeed on a global stage and maximise the digital benefits for its businesses and citizens.

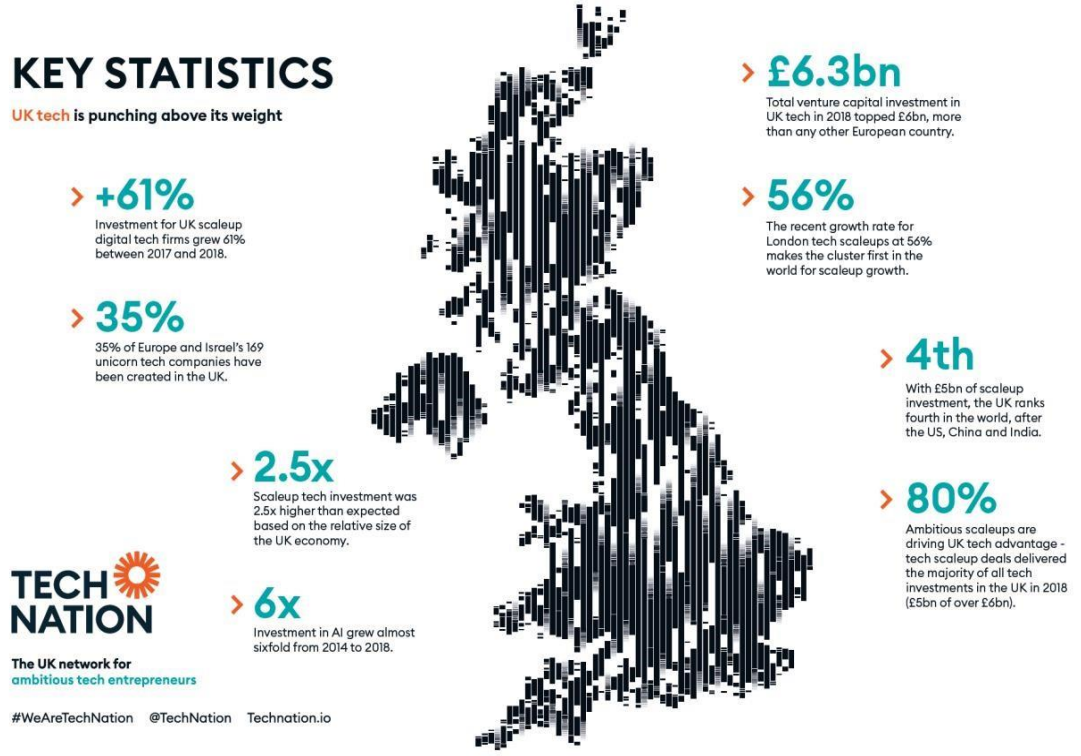
2. Why Digital?

The concept of digital has many connotations and means different things to different audiences. Regardless of the preferred definition, digital transformation is increasingly ubiquitous and touches on almost every aspect of daily life.

Technology has, and continues to have, a transformational impact on society, with the pace of change ever-increasing. This has led to new applications, the ability to access information immediately, established truly global connections, driven new forms of economic value and allowed transactions and services to be delivered in a virtual space.

The opportunities emerging from this are significant and offer solutions to some of the world's grandest problems. These trends look set to continue into the future, as rapid technological development shapes the way in which people trade, interact and learn.

Figure 2.1 UK Digital Tech Sector Significance



Source Tech Nation, 2019

The importance of digital transformation is framed in a number of ways:

- **Economic impact** – the 2018 Tech Nation report estimated the value of the UK's Digital Tech economy to be worth £184 billion, growing at a rate nearly 3 times faster than the rest of the UK economy. A digitised economy is making a growing contribution to national prosperity, leveraging significant investment, driving innovation and is the cornerstone of scale-up businesses who are experiencing rapid growth.

- **Global competitiveness** – the 2019 Tech Nation report highlights the global race to be digital and the pace of growth internationally, with the UK in close competition with the likes of the United States, Japan, South Korea, China and Germany. Technological development is synonymous with the UK, but this is not occurring in isolation.

- **Pandemic resilience and recovery** – the Covid-19 pandemic has highlighted a number of different issues. It has shown the need for good digital connectivity and that work still needs to be done to increase availability of reliable digital connections. It has progressed the rate of digital transformation and adoption in businesses, dropping barriers to practices like remote working. It has highlighted the digital divide across the nation and shown the need for people to be able to develop their digital skills. It has shown that digital can be used to help businesses rapidly change traditional business models.

- **Progressing environmental sustainability** – digital technology is driving a new wave of innovation and research, developing solutions for the world's most prominent environmental challenges in an integrated, data driven and smart way. The potential for widespread smart solutions, deployed on a grand scale, is substantive.

- **A societal leveller** – digital technologies have helped to increase the democratisation of societies, providing new and innovative ways for citizens to contribute to and shape processes, irrespective of locational and geographic limitations. In tandem with robust privacy and security measures, digital transformation can accelerate inclusive growth.

- **A cross cutting enabler** – often identified as both a cross-cutting factor and economic enabler, digital technology is increasingly embedded within a broad cross-section of industries, facilitating the development of the fourth industrial revolution (Industry 4.0). It therefore needs to be viewed across a continuum, rather than as a standalone sector.

- **Efficient public services** – government, central and local, is undergoing a continued programme of digital transformation, aimed at service delivery improvement, greater efficiency and supporting the delivery of more responsive and predictive services, placing additional power in citizens' and businesses' hands. The potential to achieve more is significant.

- **Transit systems of the future** – digital technology lies at the heart of enabling better integrated, efficient and sustainable transportation systems, which make places more liveable, sustainable and economically productive. In addition, technology is helping to accelerate the advent of a new wave of private transportation, including low emission electric automobiles and autonomous vehicles.

- **Facilitating new ways of working** – digital technology is the cornerstone of enabling workers to operate more flexibly, in terms of form, function and location. High quality connectivity and the evolution of hardware has meant that people can work from home, on the move or in the office, with material work-life-balance, productivity and environmental sustainability benefits as a consequence.

Heart of the SW's Productivity Challenge

At the core of the Heart of the SW economic development agenda is a drive towards increasing productivity. The focus for this is predicated on the need to ensure the area is matching or exceeding national levels of economic output and that growth is underlined by the expansion of higher value sectors and jobs.

Pursuing a strategic approach to exploiting the benefits of technology will help partners across the area tackle this productivity challenge head-on. The connection between digital transformation and productivity is well developed, with a variety of literature illustrating the strong links between both. Two recent examples make the case for digital intervention in order to drive productivity gains:

- **OECD** – *research suggests that productivity gains are tied closely to the widespread adoption of digital technology. However, progression has been stymied by a lack of digital diffusion amongst less productive firms, resulting in a growing productivity gap. It is vitally important that all sectors and businesses are adopting digital technologies and processes equivalently*[1].
- **McKinsey** – *in-depth investigation into the relationship between digital technology and productivity shows that links are strong and the opportunity for the UK to address its productivity challenge considerable. Uneven digitisation across key sectors and the value chain has meant that the productivity benefits of digital transformation have not be fully realised across business and society*[2].

The productivity opportunity is also framed around the tangible uplifts that could be achieved through ubiquitous digital transformation. McKinsey predicts that advanced economies like the UK have the potential for at least 2 percent productivity growth a year, over a ten-year period, if there is a sufficient focus on improving workforce skills, accelerating digital adoption.

In a Heart of the SW context, a purposeful and holistic approach to digital transformation will play a key role in addressing the productivity challenge. As a central focus for local policymaking, the area will be well-placed to develop target sectors, whilst ensuring a broader spectrum of enterprise is able to fully capitalise on the benefits driven by digital adoption. The productivity gain potential borne from digital transformation in the area is therefore pronounced.

The Heart of the SW Local Industrial Strategy published in October 2020 recognises this and identifies digital as one of three key areas for the 'Dynamic Heart' of the economy, where there are significant local assets and global potential. The digital ambition is for area to pioneer clean growth by harnessing datasets and the application of artificial intelligence (AI) to become a globally recognised centre of excellence by 2038. The specific priorities to deliver this ambition are detailed later in this Digital Strategy.

[1] OECD, Digital dividend: Policies to harness the productivity potential of digital technologies, 2019

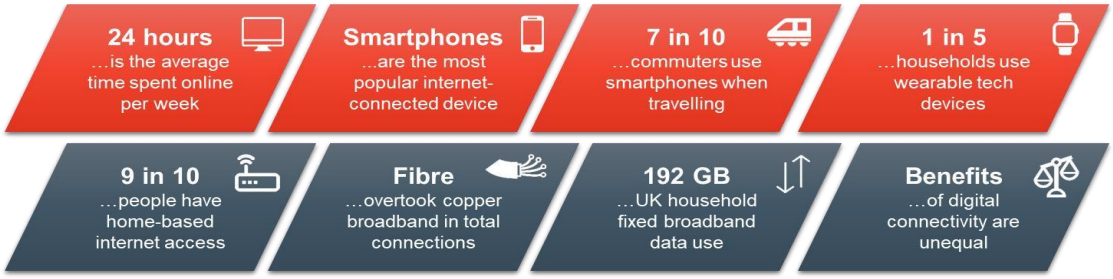
[2] McKinsey, Solving the United Kingdom's productivity puzzle in a digital age, 2018

Demand for Digital Technology

There is an ever-increasing demand for digital services and content, from businesses and consumers, making the case for technology-focused strategy even stronger. Recent trends highlight the extent to which digital mediums are used on a day-to-day basis.

The data tells a compelling story where, in the past decade, the use of technology devices, access to digitised information, consumption of digital content and online transaction of goods and services has grown exponentially. These trends are expected to continue, buoyed by improved digital infrastructure access and technological advancements as well as the Covid-19 pandemic, introducing new use cases and enhancing the digital experience even further.

Figure 2.3 Recent UK Digital Trends



Source: Ofcom Communications Market Report, 2018

Our Vision and Strategic Priorities

Building on this strategic rationale and acknowledging the overarching importance of 'being digital', our Digital Strategy sets out an ambitious vision for the Heart of the SW. This vision will act as a reference point from which objectives are set and priorities established.

Our Vision

Our shared Digital Strategy vision is…

> ***"We will ensure that the HotSW increases its productivity, grows its businesses, develops inclusive communities, protects and enhances the natural environment and attracts investment by embracing technology, maximising adoption and impact, being recognised as one of the UK's foremost digital leaders…"***

This vision informs a series of priorities, that have been specified to ensure the positive effects of digital transformation are far-reaching, meaningful and position the Heart of the SW as a digital leader, on a national and international scale.

Strategic Priorities

Our Digital Strategy priorities are:

Why Digital? The Strategic Imperative

There are a number of national, regional and local strategies which reflect the importance of the digital economy, within a policy context. These set out a strong commitment to developing and extending national competitive advantages and outline ambitious plans which seek to position technology at the heart of a truly digitised economy. Importantly, they provide an emphatic foundation from which to develop a locally-relevant Digital Strategy, which draws upon the national, regional and local policy imperative.

Those with the greatest significance to the Heart of the SW are summarised below.

Table 2.1 Key Strategies and Polices Shaping the Digital Agenda

Policy	Overview
National	

UK Industrial Strategy, 2017
Her Majesty's Government
 
	• The Industrial Strategy aims to deliver sustained economic growth, close regional performance disparities and boost the earning power of people across the UK.
	• The strategy is rooted in 'five foundations' which are the focus for boosting national productivity and harnessing the economic value of innovation and research:
	  • **Ideas – making the UK the world's most innovative economy**
	  • **People – creating good jobs and greater earning power for all**
	  • **Infrastructure – a major upgrade to the UK's infrastructure**
	  • **Business Environment – making the UK the best place to start and grow a business**
	  • **Places – creating prosperous communities across the UK**
	• The Industrial Strategy commits to:
	  • Boosting the nation's digital infrastructure with over £1bn of public investment, including £176m for 5G and £200m for local areas to encourage the roll out of full-fibre networks.
	  • Ensuring the economy becomes driven by AI and data-to secure large-scale improvements in productivity and innovation.
	  • Driving up digital skills, through a new entitlement for adults who lack core digital skills to access specified basic digital skills training free of charge and from new digital T-levels, digital apprenticeships and degree apprenticeships.

UK Digital Strategy, 2017
Her Majesty's Government
 
	• Links to the government's Industrial Strategy, building an economy that works for everyone, and ensures that wealth and opportunity are spread across the country.
	• Part of a policy framework which is designed to secure Britain's future economic success and competitiveness, post-Brexit, with government backing businesses to invest for the long term.
	• The strategy is founded on seven key strands:
	  • **Building world-class digital infrastructure for the UK**
	  • **Giving everyone access to the digital skills they need**
	  • **Making the UK the best place to start and grow a digital business**
	  • **Helping every British business become a digital business**
	  • **Making the UK the safest place in the world to live and work online**
	  • **Maintaining the UK government as a world leader in serving its citizens online**
	  • **Unlocking the power of data in the UK economy and improving public confidence in its use**

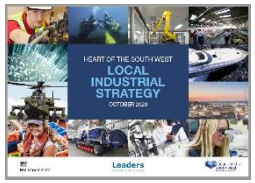
Future Telecoms Infrastructure Review, 2018
Department for Media Culture and Sport
 
	• The Future Telecoms Infrastructure Review details the changes that need to be made to the UK telecoms market and policy framework to ensure the government meets its goals of universal national fixed broadband coverage by 2033 and 5G coverage to the majority of the population by 2027.
	• The review commits to securing nationwide full fibre connectivity by making the UK globally competitive by:
	  • **Addressing deployment barriers and reducing costs**
	  • **Providing easy access to passive infrastructure in telecoms and utilities, to support market entry**
	  • **Stable and long-term regulation that encourages competitive network investment**
	  • **Full fibre connectivity for all through an 'outside in' approach to deployment**
	  • **Maximising the number of people who switch to a full fibre future**
	• To review sets ambitions for the UK to become a world leader in 5G, suggesting its deployment will be driven by competition and efficiency benefits and also create opportunities for existing and new wireless technology providers.
	• The report also notes the growing convergence of fixed and wireless technologies with an integrated approach necessary to support the deployment of 5G and offer the speed and seamless access required by end users.

Regional/Sub-Regional	

South West England and South East Wales Science and Innovation Audit, 2017
Her Majesty's Government
 
	• Mirroring forensic innovation reviews elsewhere across the UK, the report identifies areas of world-leading research and innovation, across South West England.
	• The research is designed to support LEPs and key stakeholders by setting out a deeper understanding of local characteristics, distinctiveness and a series of strategic priorities which should inform the prioritisation of investment.
	• The report notes that within South West England and South East Wales the following strengths are apparent, in a research and innovation context:
	  • **Aerospace**
	  • **Microelectronics**
	  • **Energy Generation**
	  • **Environmental Technologies**
	  • **Digital Systems**
	• There are spatial patterns observed by the research which suggests a clustering of specialisms and locations which are hubs of research and innovation activity
	• Within the Heart of the SW, the report suggests the area has capabilities linked to digital innovation (environment), has a number of digital innovation hubs and is part of significant nuclear and marine clusters.
	• The research provides the backdrop to the development of Heart of the SW policy, areas of focus and reinforces the economic opportunities afforded through the exploitation of digital technologies.

Productivity Strategy, 2019
Heart of the SW LEP
 
	• The Strategy sets out the Heart of the SW's long-term ambition to raising productivity, tying closely back to the national productivity agenda framed within the UK Industrial Strategy.
	• The aim set out within the Strategy is to accelerate the growth of the Heart of the SW, doubling the size of the economy over the next 20 years, to create a region known for its dynamic, innovative businesses, vibrant well-connected places, rewarding jobs and talented people.
	• The Strategy is built around:
	  • **A Vision – "Productivity and prosperity for all"**
	  • **Business Leadership and Ideas strategic theme**
	  • **Housing Connectivity and Infrastructure strategic theme**
	  • **Employment Skills and Learning strategic theme**

	• **Cross-cutting themes including maximising the potential from digital technology** • The Strategy notes the LEP's digital assets, clusters and innovation base and potential for this to be the foundation for future growth, specialisation and productivity gains. • The Strategy places significant emphasis on the need to improve digital connectivity and enhance the digital skills base, in order for productivity and prosperity prospects to be raised. • The Strategy makes clear the transformative and cross-cutting role of digital technology, linking closely with the LEP's wider infrastructure, economic development and place-shaping aspirations.

Local Industrial Strategy
October 2020
Heart of the SW LEP
 	
 
 	
	• The Local Industrial Strategy sets out a comprehensive plan to make the most of the distinctive opportunities within the Heart of the SW. It prioritises three areas of focus that will underpin the ambition to grow the economy in a clean, inclusive and sustainable way: energy, engineering and digital. These priorities build on the wealth of expertise and distinctive assets that the area already has, whilst seizing new opportunities to move the economy towards a greener future.
	• The Strategy has an ambition to apply its growing digital and analytical expertise to tackle key economic and societal challenges in the Heart of the SW, where digital approaches have the potential to deliver a transformative effect, namely:
	  • **Environmental Intelligence (Big data & AI)**
	  • **Agriculture & Food**
	  • **Marine Geospatial Data**
	  • **Health Technology & Healthy Aging**
	• The Strategy also recognises the contribution digital makes to developing the foundations of productivity: ideas, people, infrastructure, business environment and place. The role digital infrastructure plays in the development of networks, innovation and enterprise opportunities is particularly highlighted.

Digital Skill **2018 / 2020**
Heart of gital Skills
p
	• Developed by the Heart of the SW Digital Skills Partnership, which was established in 2018, the partnership is responsible for coordinating and delivering a strategy that raises digital skills and eradicates social and geographical imbalances to ensure everyone has access to digital services.
	• The review acknowledges the digital assets which are located in the Heart of the SW and also outlines the key challenges that are affecting digital skills provision. Within this, the document calls for:
	  • **Greater collaboration between business, educators and the public sector**
	  • **Improved signposting and support for employers and learners**
	  • **Working more effectively with government departments**
	  • **Leveraging appropriate funding streams**
	  • **Linking with national pilots and best practice**

	• The document's recommendations are orientated around series of themes:
	  • Theme 1: Developing world-class skills for productivity and growth
	  • Theme 2: Responsive skills and employment system
	  • Theme 3: Transitions to employment – young people
	  • Theme 4: Transitions to employment - inclusion
	  • Theme 5: Employer investment in digital skills
	  • Theme 6: Retaining and attracting talent

Local	

Exeter and Heart of Devon Shared Economic Strategy, 2017-2020
Exeter City, East Devon, Mid Devon and Teignbridge Councils
	• The Exeter and Heart of Devon Shared Economic Strategy draws upon the key objectives of Exeter City Council, Teignbridge District Council, Mid Devon District Council and East Devon District Council to set a common list of economic development objectives, which are:
	  • **Inward Investment**
	  • **Strategic Planning**
	  • **Employment and Skills**
	  • **Business Transformation**
	• The strategy outlines a number challenges currently facing the area, including:
	  • **A marked productivity gap**
	  • **Sectoral composition dominated by lower value sectors**
	  • **Lower than average earnings**
	  • **Geographical location makes access to key economic markets a pronounced issue**

Northern Devon Economic Strategy, 2014-2020
North Devon and Torridge District Councils
	• The document sets out a strategic imperative for Northern Devon, predicated on a review of economic conditions and the most opportunities and challenges impacting the economy.
	• It is driven by a vision to enable economic growth and job creation, based on the area's strengths and unique assets which focuses on:
	  • **Creating a diverse and resilient economy**
	  • **Adapting to challenges and maximise opportunities**
	  • **Creating an appropriately skilled workforce**
	  • **Delivering effective infrastructure**

Economic Strategy, 2017-2022 Torbay Council	• The strategy sets a vision for Torbay, where it will become a renowned UK destination defined by its unrivalled quality of life, strong connectivity and unique culture. The strategy promotes the concept of opportunities for all that lives, works and spends time in the area. The strategy sets out 4 key objectives: • **Deliver a successful town centre regeneration programme** • **Continue to create an environment in which businesses and jobs can grow** • **Accelerate the development of employment space, geared to business needs** • **Raise skills levels and broaden the skills base within the workforce**
Economic Development Strategy, 2019 South Somerset Council	• The Economic Development Strategy provides a consistent vision with clear objectives and priorities for the District's economy through a whole Council approach, delivering against a core agenda. The document sets out a vision for the local economy which is framed around: • **Ideas – innovative and productive** • **People – skilled and entrepreneurial** • **Business Environment – supportive of growing and established enterprise** • **Infrastructure – excellent transport and communications infrastructure** • **Places – prosperous and sustainable towns, villages and rural areas** • The strategy references the importance of digital technology with respect to the economy, noting the opportunity to enhance innovation, increase rural productivity, underpinned by enhanced infrastructure and investment in digital skills necessary for the modern workplace.
Mendip Economic Development Strategy, 2017-2020 Mendip Council	• Through an understanding of the current local economic conditions, the strategy focuses on several key aims across business, place and people. • **Business - To grow and develop the Enterprise Mendip programme – to support new business start-ups and business support activities across to the area's micro and SME base** • **Place – To communicate and expand the Invest in Mendip approach and continue to deliver competitive employment locations, exemplary connectivity and high-quality inward investment.** • **People – to develop Opportunity Mendip to promote career opportunities for all across Mendip**

Somerset Growth Plan, 2017-2030
Somerset County Council
	• The Growth Plan for Somerset sets out a vision for the county by the year 2020, to be highly productive and to be home to an innovative business community. To achieve this the council aims to:
	  • **Create a shared ambition and vision for sustainable and productive growth**
	  • **Support the delivery of infrastructure and housing to enable growth to take place**
	  • **Increase the scale, quality and sustainability of economic opportunity in Somerset**
	  • **Ensure participation and access to these opportunities for local residents**
	• The plan sets an objective for businesses to have strong digital skills that will be core to their activities. Moreover, there is a commitment to delivering excellent digital connectivity across the county to every business location and home, with ultrafast broadband available in key business locations.
	• The growth plan aims for all businesses to have been offered support and to have a full understanding of the potential of digital technologies and how to make best use of them.

Plymouth City Council Digital Plan
 	
2020-2023
	• Published in Jan 2021 the plan sets out Plymouths' commitment to a number of digital initiatives to benefit the Area to make the Council, Businesses, residents & students more resilient with a move to providing more online services. Want Plymouth to become an attractive proposition for business and innovation.
	• Focus on:
	  • **Connectivity**
	  • **Digital & Work Skills**
	  • **Digital Life Skills – Digital & Data Poverty**
	  • **Reduce the Digital Divide – Increase Digital Inclusion**

Role of Digital Technology in the Heart of the SW

This Digital Strategy has been developed through an in-depth review of digital technologies and their relevance to the Heart of the SW. A thematic approach is used to baseline the digital capabilities and distinctiveness, demonstrating its cross-cutting relevance, whilst balancing a compelling quantitative research base with local stakeholder perspectives.

The analysis is built around the following themes:

- **Digital People** – looking at the influence of digital on skills and the extent to which people are excluded from the wide-reaching benefits of access.
- **Digital Business** – a review of how technology is impacting on key sectors, innovation and the extent to which the area is home to the most digitally-dependent businesses.
- **Digital Infrastructure** – assessing digital connectivity across the Heart of the SW and the pipeline of investments that are to be made by the private and public sectors.
- **Digital Places** – exploring the role of digital technology and its contribution to the success and vitality of places across the area.

The evidence base considers current conditions and the digital characteristics of the Heart of the SW. It also adopts a forward-facing perspective, taking stock of the rapid pace of technological change, the prospects for further digital disruption and development of new use cases which are likely to drive adoption.

Importantly too, the document sets out an intervention rationale which feeds through into the updated Heart of the SW Local Broadband Plan (LBP). The LBP offers a deeper view of the area's connectivity characteristics and identifies key projects and interventions that can be taken forward by partners, focusing on the opportunity to extend digital infrastructure reach.

There is a clear read across between the Digital Strategy and LBP, reflected within each document's vision, priorities and suggested interventions. The LBP take cues from the Digital Strategy's strategic framework, developing the case for intervention and digital infrastructure investment in greater granularity. The richness of content within the LBP therefore provides the basis for delivery and the development of project-specific business cases.

Digital Strategy: Thematic Review

3. Making the Case: Digital People

As with other economies across the UK, the Heart of the SW is reliant upon the presence of a digitally skilled and savvy labour market. This spans a broad spectrum of skills, including an ever-increasing necessity for strong fundamental digital skills, as well as more specialised technical qualifications.

As such, digital skills are now seen as a core component of an individual's employability credentials, applicable across the full spectrum of local industries, within a wide variety of job settings and embedded in operational tasks. Digital skills are a core component of the region's productivity potential and recovery from the Covid-19 pandemic and are intrinsically linked to social mobility and higher-paid work in sectors resilient to economic downturn.

Digitally Driven: Skills

The Need for Digital Skills

The skills agenda sits at the forefront of government economic development policy, as a driver of productivity, employment opportunity and global competitive advantage. Digital skills are recognised by the government as "critical across the majority of sectors and occupations"[3], where such skills are entry requirements for as many as two thirds of UK occupations. As such, digital skills are a key foundation within the National Digital Strategy.

The ubiquitous nature of digital technology, that influences all aspects of work and life as well as the fast pace of technological change, means there are new and ever-evolving demands on people from all backgrounds and skill levels. As such, effective investment in digital skills and training will have a transformative impact on the local economy. Indeed, Lloyds bank estimates that nationally, closing the digital skills gap could unlock £85bn in turnover every year[4].

Figure 3.1 Digital Skills Headlines

Source: Lloyds Bank Digital and Consumer Index 2019

Digital technology also provides a new platform from which education and skills programmes are being delivered – the Heart of the SW is no different in this regard. Digital learning is helping to mitigate challenges that are presented across the area, such as rural accessibility issues and enabling continued adult education to be more flexibly pursued. Moreover, remote learning is enabling curricula to be more adaptive and reflect the pace change within the modern business environment.

[3] DCMS (2019) Connected Growth: Manual for Places

[4] Lloyds Bank (2018) UK Business and Charity Digital Index

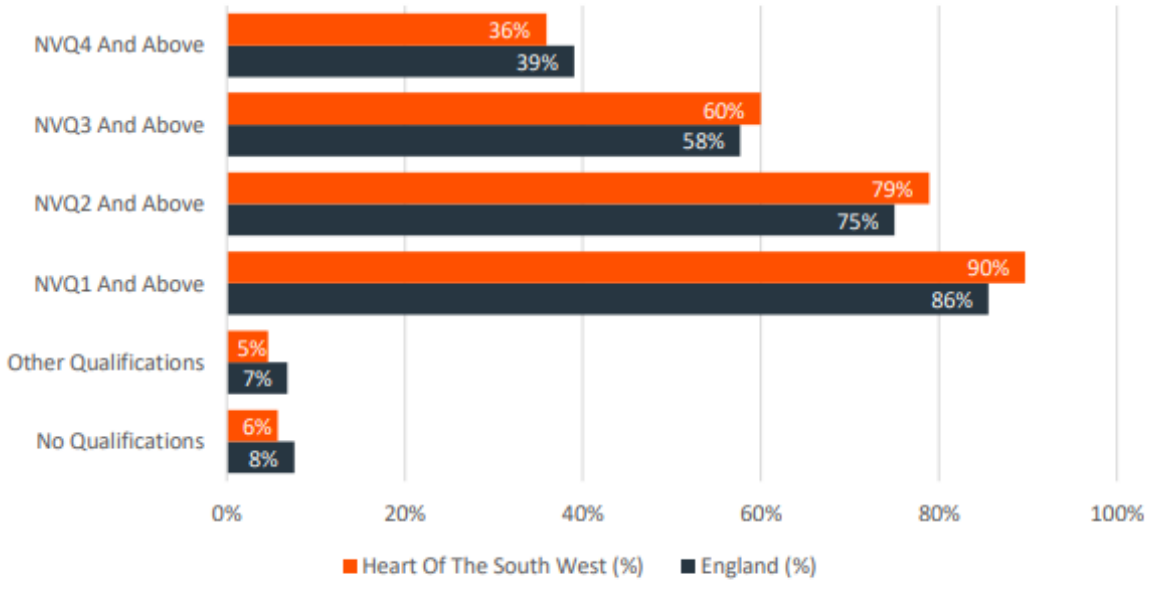
Digital Skills Supply

Whilst it is difficult to infer the degree to which skills and qualifications are truly relatable to 'digital skills', conditions across the Heart of the SW signify the capabilities of the local workforce and their employability within higher productivity and digitised roles. As employment becomes more technical in nature and the demand for more advanced digital skills pronounced, there is a broad and internationally held view that relative qualifications link with wider levels of digital literacy and that a higher level of qualification will be needed in technology-focused sectors. Obtaining qualifications and skills are not restricted to traditional academic routes. In recent years, there has been a vast uptake of online courses and bootcamps from a wide variety of suppliers such a EdX, Udemy, Code Academy, Coursera and the DFE funded Train4Tomorrow Digital & Technical Bootcamps across the area.

Qualifications Profile

Compared to the UK average, there is a shortage of high-level skills in the Heart of the SW, driven by a lower proportion of residents with NVQ Level 4 qualifications. That said, there is a slightly lower proportion of residents with no qualifications relative to the national picture. This highlights a potential high-level mismatch with a growing demand for more technically capable and adaptive workers, as technology disrupts day-to-day processes and operations.

Figure 3.2 HotSW Qualifications



Source: ONS, 2018

Occupations Profile

The occupational breakdown of residents across the Heart of the SW largely matches the labour market skills profile of the area, with a lower proportion of residents in high level occupations and a higher proportion of residents employed in elementary occupations. That said, all of these occupations, as reflected within the area's sectoral profile, will be shaped by digital technologies to

some extent. The nature of change and ongoing digital transformation of these occupations will shift the need for more embedded digital skills within the population and workforce.

Digital Skills Base

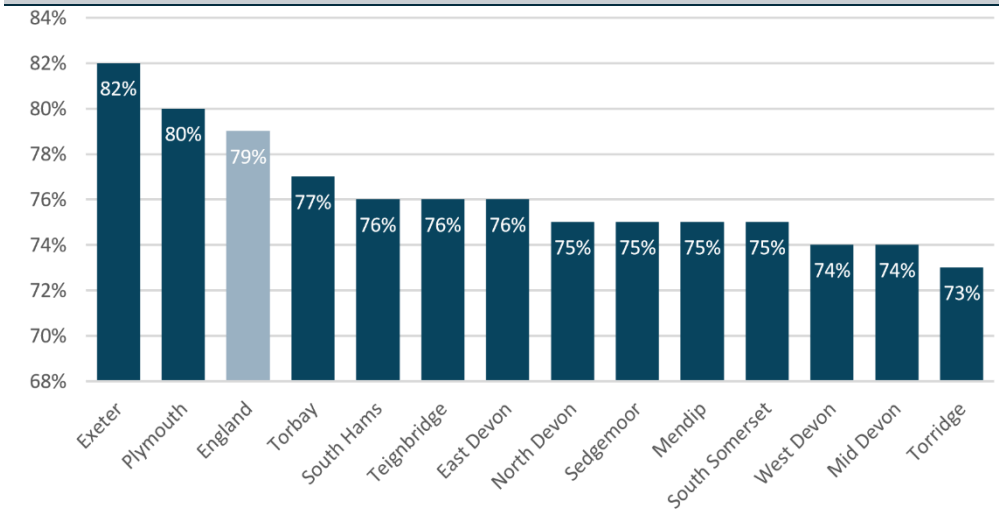
The Get Digital Basic Digital Skills UK Report (2017) provides an indication of basic digital skills levels and capabilities, which allows a more definitive view to be developed across the Heart of the SW.

Basic digital skills are made up of four basic elements[5]:

- **Problem Solving** – find solutions to problems using digital tools and services
- **Communicating** – communicate, collaborate and share online
- **Handling Information & Content** – find, manage and store digital information and content securely
- **Transacting** – apply for services, buy and sell, and manage transactions online

By this measure, there is a clear divergence in digital skills supply, between urban and rural areas. Here, each of the Heart of the SW constituent areas trail behind the national picture apart from the main urban conurbations of Exeter and Plymouth, as demonstrated below in Figure 3.3. Indeed, Torridge lags behind other local authority areas, with all but Exeter and Plymouth having 80% or more of residents with basic digital skills.

Figure 3.3 Residents with Basic Digital Skills



Source: Get Digital Basic Digital Skills UK Report 2017

Demand for Digital Skills

Digital Skills Demand Insights

The demand for skills is often reflected in the presence of skills gaps and shortages. Both represent a potential constraint on employer recruitment efforts, availability of suitably skilled labour and are liable to hinder economic growth and prosperity. Job vacancies and the buoyancy of the jobs market are also helpful indicators of digital skills demand.

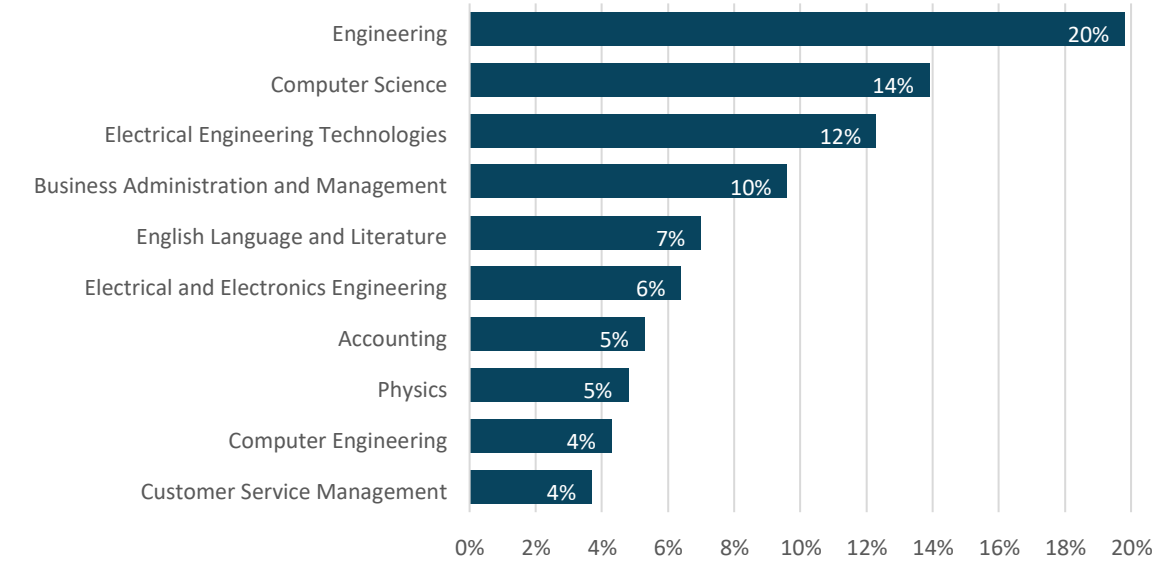
[5] Basic Digital skills are defined by Doteveryone, Lloyds bank the Department of Education and DCMS to fully reflect the range of skills people need to safely benefit from, participate in and contribute to the digital world of today and the future.

The Codiv-19 pandemic has not only accelerated the digital transformation of businesses across the world, but it has also increased the demands for relevant digital skills with many businesses turning to technology to help them operate remotely and to collaborate and sell online. Digital transformation has meant that those businesses who have been able to move quickly to adopt digital technology and processes have been more resilient to weather the lockdowns.

Demand for digital skills across different sectors is represented below in Figure 3.4. Unsurprisingly, the demand for digital skills is distributed fairly broadly across different industries, illustrating the digital transformation of sectors that in the past have been less reliant on technology. Of particular note is the fact that engineering-related disciplines account for a large proportion of demand alongside computer science, which in many respects mirrors the core sectors of the Heart of the SW, which are targeted for growth.

The demand for digital skills across the Heart of the SW, shown below, helps to frame the importance of aligning education and training with the needs of employers in these sectors.

Figure 3.4 Demand for Digital Skills by Industry



Source: Burning Glass (Heart of the SW licence), 2019

At a more granular level, the nature of the Heart of the SW jobs market provides cues as to the scale and breadth of demand for specific digital skills. This is detailed in Appendix B, using data from Burning Glass data linked to employer recruitment processes.

The data shows that there is a very strong demand for general IT skills, including Microsoft Office proficiency, which is by far the highest skill requirement captured in the data. There is also evidence of high demand for more specialised digital skillsets, which relate to coding, software development and other programming languages. The statistics hint at the broad application of technology and software solutions, driving skills demand across a multitude of activities. Many of these are likely to apply to a reasonably wide base of sectors and industries too.

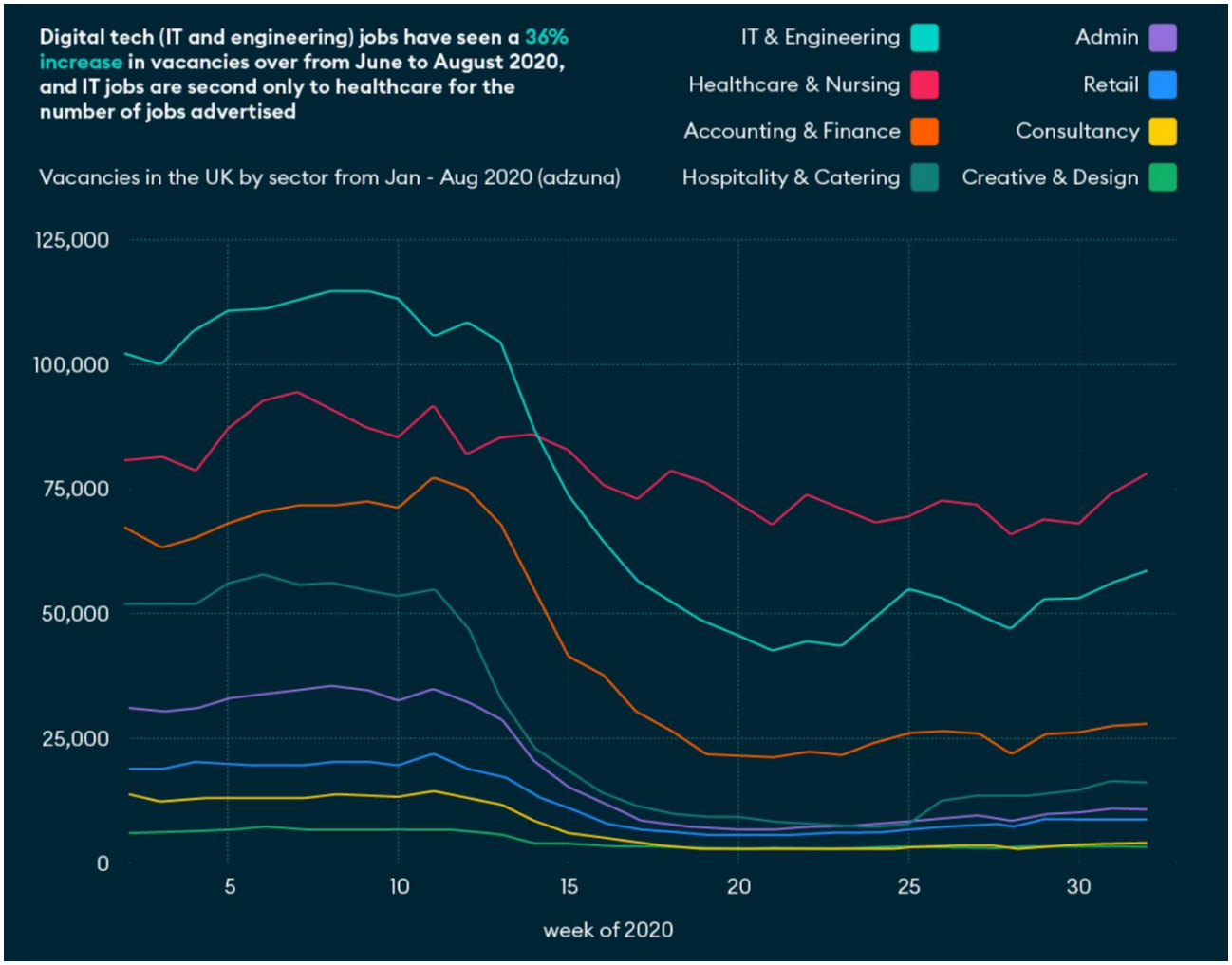
The spatial distribution of digital job vacancies, as shown in Appendix B, correlates largely with the area's largest population and business centres, in Exeter and Plymouth. Exeter is notable as it has over twice as many digital job vacancies as Plymouth and circa nine times greater than Torbay. This implies Exeter has a digitised base of businesses, as well as a wider array of companies looking to integrate more sophisticated digital approaches into their activities. The pool of vacancies in Exeter

also suggests that there may be significant pressure on the supply of suitably skilled people, which is likely to overinflate wages and constrain businesses looking to integrate digital practices at pace.

Elsewhere across the Heart of the SW, vacancies are largely proportional to the relative size and rurality of each local authority, with West Somerset and Torridge recording far lower levels of vacancies and therefore demand for digital skills. This should not undermine the presence of digital businesses in these areas (as seen in chapter 4) however, rather this is representative of the relative size of digital enterprises trading in these locations and a sparser density of settlements.

Impact of Covid-19 Pandemic on Jobs

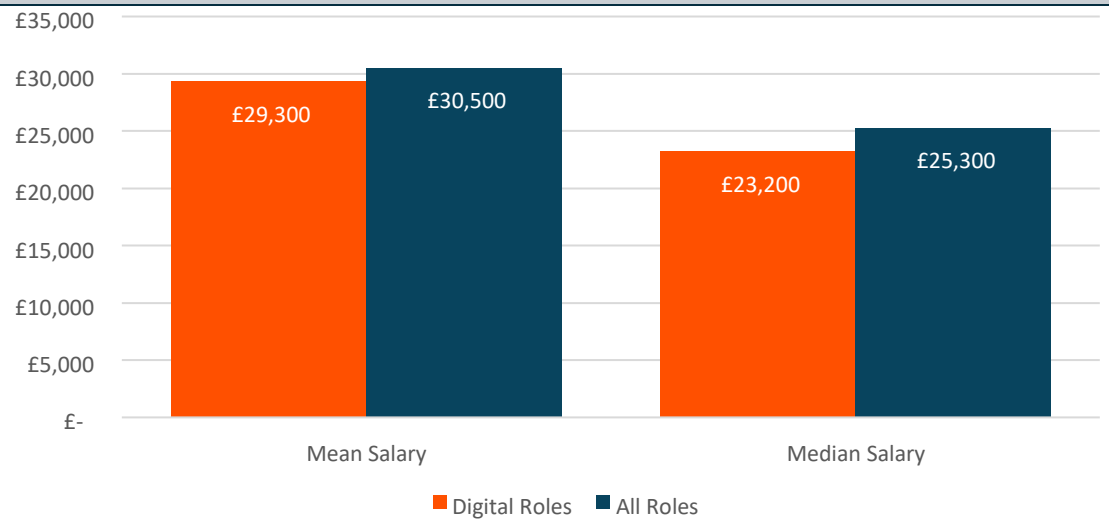
The Tech Nation South West Roundtable November 2020 showed that the Digital Tech Job weathered the Covid-19 pandemic storm better than other areas of the job market.



Digital Salary Insights

Previous Data that observed job income levels suggested that digital roles attracted lower salaries than other sectors across the Heart of the SW (Figure B.3). This is a particularly interesting finding which implies that the area is bucking national trends, where digital jobs typically command higher wages than the wider economy.

Figure 3.5 Advertised Digital Salaries in Context



Source: Burning Glass (Heart of the SW licence) 2019

The data tells a similar story when looking at salary bands (illustrated in Appendix B), where digital roles attract lower income levels than other job types. That said, looking at digital roles by size band provides some rationale for digital salaries trailing behind that of the wider economy, where it appears there is a greater degree of lower paying digital roles (£0-£29k) currently advertised, relative to all postings. That said, more bespoke skills and employment research will need to be undertaken to determine why this trend is occurring and if there is a fundamental need to push up digital employment salaries across the Heart of the SW.

However, the Tech Nation survey in 2019[6] showed that Tech is a major source of new well paid jobs with higher medial salaries in the Tech Sector compared to the medial across all roles.

[6] London-Tech-Week-2020-Tech-Nation-Dealroom.pdf

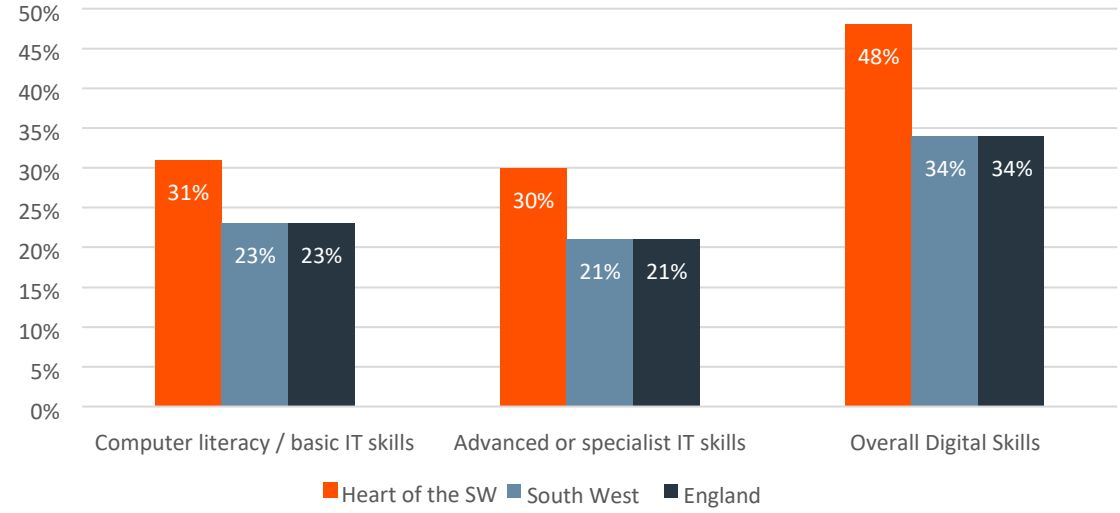
UK city	Job openings 2019	% dig tech role 2019	% dig Tech role 2018	Median dig tech salary 2019	Median dig tech salary 2018	Median salary across all roles 2019	Median salary across all roles 2018	Most advertised dig tech role	2nd Most advertised dig tech role	3rd Most advertised dig tech role
London	658,275	19%	19%	£55,000	£53,296	£35,000	£42,000	Software Developer	Java Developer	Engineer
Birmingham	46,723	19%	19%	£40,000	£37,500	£30,000	£35,000	Software Developer	Engineer	Consultant
Glasgow	33,378	22%	22%	£40,000	£39,000	£27,500	£26,000	Software Developer	Engineer	Java Developer
Edinburgh	35,786	23%	23%	£44,938	£42,500	£28,000	£37,000	Software Developer	Java Developer	Engineer
Belfast	13,687	26%	24%	£40,000	£40,000	£30,000	£34,000	Software Developer	Java Developer	Engineer
Manchester	108,859	18%	19%	£37,500	£35,000	£26,400	£34,000	Software Developer	NET Developer	Front End Developer
Bolton	37187	13%	13%	£32,500	£32,000	£23,000	£22,500	Software Developer	NET Developer	Engineer
Liverpool	99728	12%	12%	£35,000	£35,000	£25,000	£25,000	Software Developer	NET Developer	Engineer
Preston	52220	12%	11%	£33,250	£32,500	£22,850	£22,500	Software Developer	NET Developer	Engineer
Cardiff	23,334	21%	20%	£37,500	£35,000	£28,000	£33,000	Software Developer	Engineer	Front End Developer
Newcastle	18,501	21%	20%	£35,000	£35,000	£25,920	£33,000	Software Developer	Engineer	PHP Developer
Leeds	56,149	22%	23%	£36,500	£35,000	£27,500	£32,000	Software Developer	Engineer	NET Developer
Sheffield	22,000	20%	19%	£32,500	£32,500	£25,000	£30,000	Software Developer	Engineer	NET Developer
Cambridge	58,678	26%	26%	£40,000	£39,000	£30,000	£38,000	Software Developer	Engineer	Embedded Software Engineer
Bristol	76,267	24%	22%	£40,000	£35,520	£28,000	£34,000	Software Developer	Engineer	Project Manager
Bath	9,680	19%	19%	£37,500	£34,500	£26,990	£24,960	Software Developer	Front End Developer	Engineer
Reading	28,033	23%	25%	£42,500	£40,000	£30,000	£37,000	Software Developer	Engineer	Java Developer
Oxford	44,979	19%	20%	£38,000	£36,000	£27,500	£34,000	Software Developer	Engineer	Java Developer

Skills Gaps and Shortages

The Heart of the SW has a digital skills gap that is more pronounced than the national position. Of all employers surveyed by the UK Commission for Employment and Skills (UKCES) in 2017, 31% reported finding it difficult to recruit applicants with sufficient computer literacy skills, notably above the level seen nationally.

This disproportionate gap is also reflected in employers finding applicants with advanced IT skills, where 30% of employers reported issues with finding skills of this nature compared to 21% nationally. These are significant findings and illustrate the underperformance of the labour market in satisfying this demand from industry.

Figure 3.6 Skills Lacking in Applicants (% of employers)



Source: UKCES Employer Skills Survey, 2017

Vocational Skills

Vocational skills and training programmes are central to national policy and are a response to issues associated with a constrained labour supply. They are designed to facilitate clearer employment pathways and ensure employers are actively developing the skillsets that are important to their function and future growth. Apprenticeships are the centrepiece of this.

There are currently over 5,100 Information and Communication Technology (ICT) apprenticeships being delivered across the South West. This represents 5.6% of the total apprenticeship base, a larger degree than that seen nationally. Despite possessing a greater concentration of ICT apprenticeships, the growth of ICT apprenticeships has been marginally slower across the South West (+18%), relative to that seen nationally (+20%). However, the surge in popularity of those seeking skills in this area is significant, with an 18% growth in ICT apprenticeships relative to 4% growth experienced for all apprenticeships. This suggests the Heart of the SW and wider South West should have a good supply of skilled digital talent moving forward, with scope to build on this.

Table 3.1 ICT Apprenticeships

	ICT Apprenticeships		All Apprenticeship
	% of Total Apprenticeships	% Change 2012/13 - 2017/18	% Change 2012/13 - 2017/18
South West	5.6%	18%	4%
England	3.9%	20%	1%

Source: Department for Education, 2019

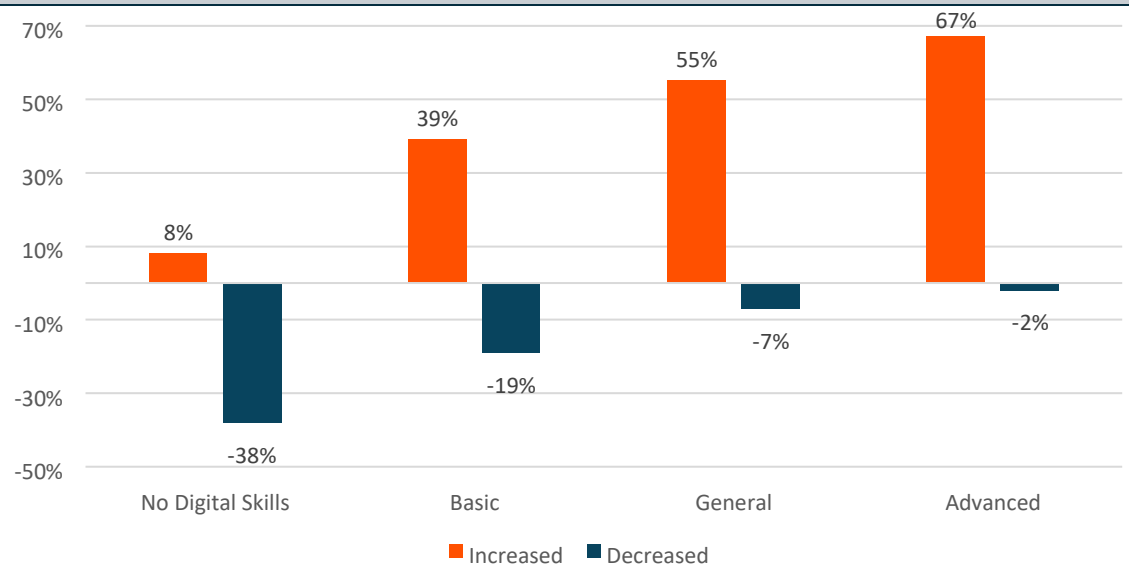
Deeper Local Insights

The Heart of the SW Digital Skills Partnership (DSP) has a central role to play in addressing the digital skills agenda. As one of a handful of such bodies across the UK, the DSP has a remit focused on the delivery of an action plan that responds to the findings of a comprehensive digital skills review. As such, the DSP has amassed a more granular picture of digital skills across the area, drawing out further some of the key challenges and opportunities as a result.

The DSP Employer Survey (2018) provides a richer view of digital skills needs, based on the views expressed by businesses operating across the Heart of the SW. In particular, this helps to position the possible trajectory of future digital skills demand and also the way by which the workforce is accessing training to raise the digital skills and acumen of their workers.

The graph below shows how the demand for digital skills has evolved in recent years. Of note is the strong general demand for digital skills, from basic to advanced levels, reaffirming the need for digital competencies across many sectors and industries. Of note too, is the greatest increase in demand being for advanced digital skills, suggesting a shift towards jobs becoming increasingly technical and reliant on more complex digital applications[7].

Figure 3.7 The changing demand for digital skills over the past 3 years (%)



Source: DSP Employer Survey, 2018

The response to this increasing demand for digital skills sets the scene for understanding how employees and employers are accessing training and developing more advanced digital skillsets. DSP intelligence helps to paint a picture here too, by developing an understanding of the types of learning that people have pursued in order to develop their digital skills base.

The results of this data show that:

- Online learning, facilitated through digital infrastructure and technology, is an important medium for accessing training.
- Employers are investing in in-house training to address digital skills deficits.

[7] Advanced digital skills are those which are more technical and complex in nature, including skills such as programming, software development, system designers and those associated with more digitally dependent sectors.

- Mentoring and less formal learning mediums are also actively used.
- Private training providers are more likely to be engaged in digital skills development than higher and further education institutions.

This suggests that businesses and workers are actively investing in digital upskilling, in acknowledgement of digital transformation, but also implies there may be room for local education institutions to play a larger role in developing local digital capability. This is set against the fluid and rapid evolution of digital skills, which may be a poor fit with traditional government funding models, which have a narrower field of view and are largely qualification focused. This is a national issue and the ability to engage industry to shape a learning and training framework remains challenging. The Government's Plan for Jobs includes boosting the nation's skills with the expertise employers need and, as part of the DFE's National Skills Fund, are funding programmes of Skills Bootcamps that include digital skills as well as technical skills like construction or engineering that are valuable and sought after for all kinds of jobs.

Progressing the Digital Skills Agenda

Given prevailing evidence, the digital skills agenda is one of the highest priorities across the Heart of the SW – reflected in sentiments expressed by the local business community and the DSP's emphasis on implementing immediate action.

There is an increasing focus on the need to embed digital competencies across the curriculum and within workplace-based training. In this context, digital skills are regularly identified as a core employee attribute, given the relevance to roles across organisations large and small.

In partnership with the LEP and government agencies, schools, colleges and universities are delivering a variety of activities to ensure future and existing workforces are digitally attuned. This includes a focus on embedding core digital skills within the curriculum, as well as introducing bespoke digital courses, designed to serve the more technical needs of employers across the Heart of the SW. Within this, digital technologies are being leveraged to:

- Provide e-courses and distance learning content to reach wider audiences.
- Develop digital apprenticeships which can be delivered remotely through employers.
- Employ real-world teaching tasks where digital technology is regularly deployed.
- Consider how digital technologies can inform planned T-level pedagogies.
- Support research, entrepreneurship and spin outs of digital intellectual property.

The extent to which education and training establishments are responding to demand drivers and noted skills gaps is certainly encouraging, based on the provision of courses that focus on digital skills and more bespoke technical capabilities. Some examples include:

- **University of Exeter** – development of the Exeter Digital Skills Escalator.
- **University of Plymouth** – Digital and Technology degree apprenticeships.
- **Exeter College** – Centre for Advanced Industrial Automation.
- **City College Plymouth** - Regional Centre of Excellence for STEM.
- **Bridgwater & Taunton College, Petroc College and South Devon College** – digital and technology-led apprenticeship programmes.

That said, evidence from employers suggests that a more consistent and coherent response is still needed from education and training providers, aligning with the digital skills that are required within an active and future-facing work setting. There is also increasing momentum (in tandem with a push towards embedding soft/employability acumen) behind the need to introduce core digital skills to a younger audience, building these into primary and secondary school curriculums. A collaborative and well-funded Careers Education, Information, Advice and Guidance (CEIAG) policy framework will be key to driving this agenda forward, with momentum.

Case Study: Digital and Technology Apprenticeships

The University of Exeter has delivered Digital and Technology Solutions degree apprenticeships since 2016/17. Apprentices start each term of the syllabus with a "residential week" on the Exeter campus, where they commence modular study, get to know fellow apprentices and meet lecturers. The remainder of the term is taught through distance learning delivered via a mix of online workshops, online lectures and guided independent study. A third residential week is held in May, where apprentices take exams.

To ensure the apprentices are provided with the best possible support throughout their apprenticeship, all companies are asked to appoint an "employer mentor". The employer mentor will regularly 'check-in' with the apprentice, monitoring progress and liaising with the University mentor regarding any issues, questions and performance concerns.

Digitally Driven: Social Inclusion

Digital Inclusivity

The inclusiveness of economies is a key area of national policy concern, with a focus on ensuring on all citizens have the opportunity to benefit from economic prosperity and a high quality of life. Digital technologies have a fundamental and increasing role to play in enabling inclusion, in different geographic and socioeconomic contexts, opening up new opportunities to access education, employment and strengthen community cohesion. This is reflected within EU policy, which acknowledges the powerful economic and social value of digital inclusion[8].

Digital inclusion is also inextricably linked to overall social inclusion and mobility, with technologies helping to address issues associated with socioeconomic inequality and physical barriers linked to geography. Nationally, this has been championed by a number of organisations, who have actively deployed digital technology to support people back to work, address wellbeing issues and improve overall education and literacy. One example is the Good Things Foundation, which continues to advocate the potential for digital technologies to tackle social mobility and improve the prospects for the most at-risk citizens in the UK.

Given the rural make-up of the Heart of the SW, digital inclusion remains an issue of paramount importance, with investments in infrastructure aimed at bridging the 'digital divide'. The area's demographic profile also draws attention to inclusiveness barriers, given the ageing nature of the population and relative remoteness of rural communities.

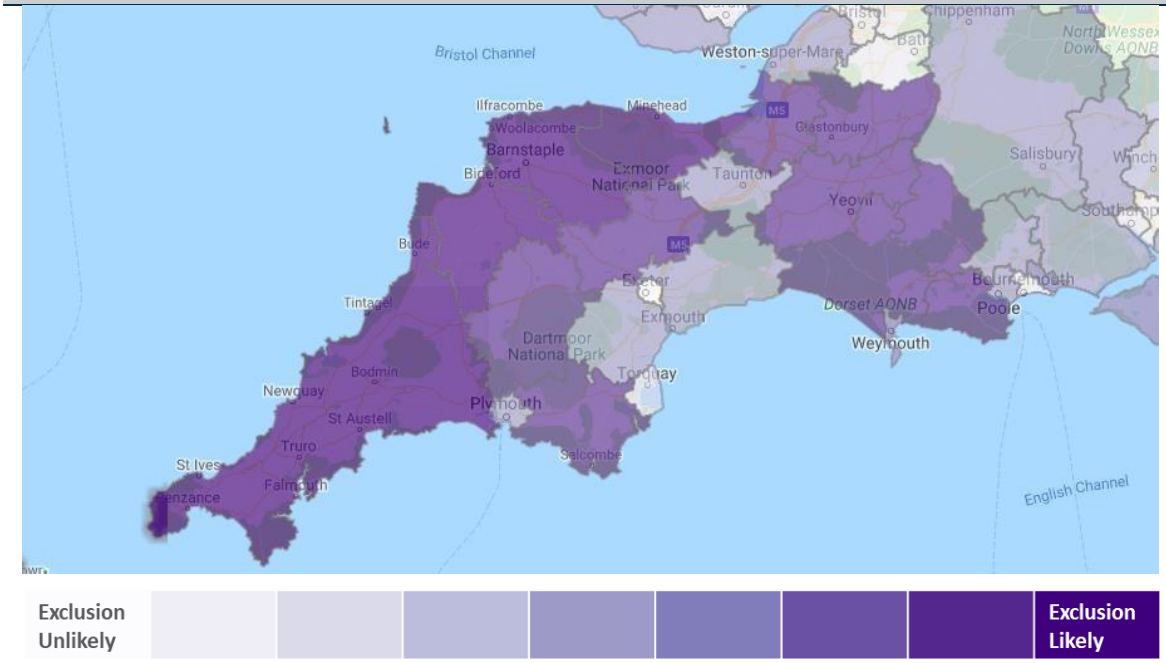
Local Characteristics

Digital exclusion represents the inability for individuals to access online products or services or to use simple forms of digital technology. This issue disproportionately affects vulnerable people, low-income groups, the elderly and the more marginalised communities in society. As such, this creates a strong correlation between digital exclusion and social exclusion.

The Tech Partnership provides intelligence looking at the likelihood of digital exclusion in a local area and the key issues driving it. Overall, the picture of digital exclusion across the Heart of the SW is varied and tied closely to geography, where the likelihood of digital exclusion is much more pronounced to the north of the area, with lower levels prevalent in urbanised areas (Plymouth, Exeter and Torquay). This is a spatial pattern that reflects the level of deprivation across the area, which is discussed in further detail in the next section.

[8] European Commission, Digital Single Market Strategy, 2019

Figure 3.8 Digital Exclusion Map



Source: Tech Partnership (2018)

The Heart of the SW is trailing behind the national and regional position in terms of the proportion of residents who have either never used the internet or have not accessed the internet in the past 3 months (see Appendix B). Whilst Torbay (6%) outperforms the picture seen nationally, Devon, Somerset, and Plymouth all have a greater proportion of residents who are regularly 'offline'. This is likely to be heavily influenced by a number of key factors:

- The reach of high speed fixed/mobile broadband infrastructure and relative presence of digital connectivity 'not spots'.
- The effectiveness of demand stimulation and digital adoption programmes, articulating incentives for business and residential users to take-up improved services.
- The Heart of the SW demographic profile and ageing population, with askew towards older generations in rural areas, who are less likely to be digitally engaged.
- Socioeconomic inequalities and the inability for residents in more deprived areas to be able to affordably access fast and reliable internet.

Small Business Inclusion

Lloyds Bank assesses the degree to which small businesses are equipped with the skills and information required to fully exploit the digital opportunities that are available, as a further measure of digital inclusion. The South West is performing broadly in line with the national performance at the top level, albeit with some areas where performance is trailing. Small businesses are lagging the national picture in terms of realising time savings from being online and investing in digital skills, however. There is a pressing need to ensure that small businesses are effectively and actively engaging with digital transformation, so they are equitably benefitting from digital inclusion.

Table 3.2 Small Business Digital Index

UK Business Digital Index	SW	UK
Small Businesses with Full Basic Digital Skills	60%	59%
On the cusp of basic digital skills	17%	16%
Trading Overseas	20%	24%
Businesses saving costs from being online	56%	54%
Saving time being online	72%	74%
Using Social media	55%	53%
See online as irrelevant to them	25%	27%
Don't invest anything in digital skills	67%	63%
Don't have their own website	43%	48%
Have the skills to prevent online fraud	42%	33%
Digital Index Score	**55**	**54**

Source: Lloyds Bank, 2017. NB – Green denotes where a metric is outperforming the national picture and red denotes where performance is trailing

Case Study: Yarlington Online

Yarlington Online is a digital inclusion programme that makes sure residents are able to access and use the internet, as well as being able to obtain information and services that they need. The programme is being delivered in conjunction with Yarlington Housing Group at a number of their housing sites across Devon and Somerset, aimed at improving digital equity and the economic prospects of residents.

It provides residents with free access to equipment and the internet through a Loan IT scheme, as well as free one-to-one training, free group training, free gadget shows, and lots more. The programme seeks to provide 20,000+ residents with the opportunity of having internet access as well as being able to confidently use the web.

People: Strategic Imperative

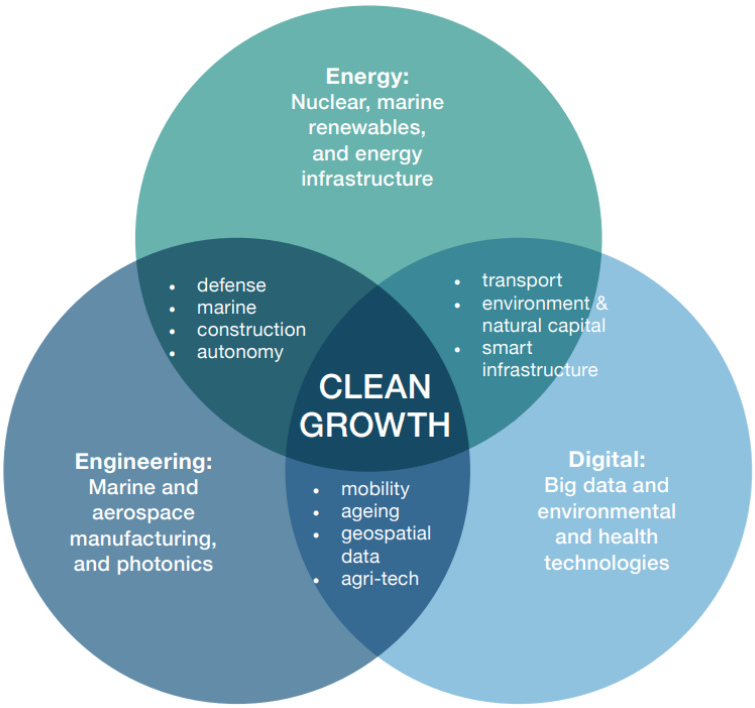
- **The qualifications and skills base of the Heart of the SW's population may be misaligned with the needs of key sectors, which are increasingly digitised and reliant upon a skills base with digital competencies at their core – this may be accentuated as the economy continues to shift towards higher value economic activity.**
- **There is a need to build on the work undertaken by the Heart of the SW Digital Skills Partnership and progress achieved to date, to develop deeper digital skills insights, including a view on the skills of the future and ensure digital skills are embedded across the curriculum and labour market.**
- **The demand for digital skills is not isolated to firms which are the most digitally dependent, rather many businesses trading across different sectors require a baseline of digital skills proficiency as a core employee characteristic.**
- **A lack of basic digital skills is a major challenge across the Heart of the SW and needs to be addressed as a matter of urgency, especially where issues are most acute, mitigating against an exaggerated rural-urban skills divide.**
- **Embedded basic digital skills offer opportunities for disadvantaged/disabled people to become more economically and socially active, with some roles being predisposed to the adoption and use of digital acumen.**
- **The greatest demand for skills is coming from sectors which are digitally focused but is increasingly relevant to all firms, with the digital skills that are in demand reflecting a balance of technical and general digital competencies.**
- **Job market dynamics suggest there are a significant number of digital vacancies across the Heart of the SW, which highlights digital employment hot spots, implies possible labour supply issues and also reinforces the importance of the digital economy.**
- **There is a need to understand more about the quality of digital jobs across the area and whether these are underperforming in terms of their salary returns and productive output.**
- **Vocational employment routes are an important response to vacancies and digital skills shortages, with evidence to suggest that apprenticeships will have a valuable role to play, building on positive momentum to date.**
- **There is a variety of excellent work taking place across the Heart of the SW, led by education institutions and employers, which is helping to tackle the digital skills deficit, and there is encouraging evidence to suggest there is active investment in digital skills.**
- **A sharp focus on embedding digital skills within the curriculum, through a progressive and well-funded CEIAG policy framework, will be essential in inspiring younger generations and making sure the pace of change is reflected in teaching and learning.**
- **Risks associated with digital exclusion across the Heart of the SW are significant, meaning people are not benefitting sufficiently, with digital infrastructure provision and regular access to internet being key barriers to participation and adoption.**
- **The link between digital inclusion and social mobility should be fully recognised, with technology effectively harnessed to enhance life prospects and overall wellbeing, whilst helping to overcome barriers associated with low incomes.**

- **Digital technologies introduce solutions to issues of physical access, particularly in rural communities, offering an alternative approach to the delivery of education, training (e-learning) and also apprenticeships.**
- **Small businesses are harnessing the economic potential of digital technologies on par with the national position, but there are also issues that need to be addressed, in order to maximise the benefits of having a strong online presence.**

4. Making the Case: Digital Business

The Heart of the SW's Local Industrial Strategy published in October 2020 provides details of sectors which are of importance to the area, in terms of their distinctiveness, specialisation and ability to generate higher productivity, increasing the area's economic output.

Whilst the current evidence base details sector strengths in a granular sense, these can be mapped back to three overarching priority sectors: Energy, Engineering and Digital – each of which encapsulate a range of business activity, many aspects of which intersect and overlap. These are represented visually below.



Each of these sectors are utilising digital processes and undergoing some form of digital transformation. Indeed, it is important to note that some of these processes and impacts are 'sector agnostic' and apply across the economy as a whole. This is arguably as pertinent in the Heart of the SW as anywhere across the UK, with 90% of all employers across the area highlighting that they require digital technology skills to operate their business[9]. To this end, the use case for deploying digital technologies is synthesised into achieving two main outcomes:

- **Doing the same things in better and more efficient ways.**
- **Providing the means to incorporate new processes and new ways of doing things.**

[9] Heart of the SW Digital Skills Partnership (2019)

Table 4.1 Industry 4.0 – Delivering Revenue, Cost and Efficiency Gains

Additional revenue from…	Lower cost and greater efficiency from…
Digitising products and services within the existing portfolio	Real-time inline quality control based on Big Data Analytics
New digital products, services and solutions	Modular, flexible and customer-tailored production concepts
Offering big data and analytics as a service	Real-time visibility into process and product variance, augmented reality and optimisation by data analytics
Personalised products and mass customisation	Predictive maintenance on key assets using predictive algorithms to optimise repair and maintenance schedules and improve asset uptime
Capturing high-margin business through improved customer insight from data analytics	Vertical integration from sensors through MES to realtime production planning for better machine utilisation and faster throughput times
Increasing market share of core products	Horizontal integration, as well as track-and-trace of products for better inventory performance and reduced logistics
	Digital transformation and automation of processes for a smarter use of human resources and higher operations speed
	System based, real-time end-to-end planning and horizontal collaboration using cloud-based planning platforms for execution optimisation Increased scale from increased market share of core products

Source: PWC, 2016

Beyond these key sectors, digital technologies also have a key role to play in the context of innovation, enterprise and entrepreneurship. The implications of digital transformation and the extent to which this can, and is, improving the Heart of the SW's economic credentials is explored below.

Sector Implications

The Local Industrial Strategy provides guidance on the prevailing sectors and those that are likely to be the focus of economic development policy. The work identifies a series of priority sectors across the Heart of the SW and the types of activities that occur across each. Here we set out the relevance of digital technologies, through the prism of these target sectors.

Recognising that these sector definitions are dynamic, and that the economy continues to undergo digital transformation as a whole, we focus our review of digital technology effects under the following sectors:

- **High Tech Engineering & Manufacturing**
- **Energy**
- **Digital Futures**

The characteristics of these sectors are detailed overleaf, setting out the key drivers and themes influencing digital transformation within each.

Focus Sector: High Tech Engineering & Manufacturing

Sector Digital Transformation

Jobs: 67,000
Annual Job Growth (2 years): 0%
GVA Contribution: £4.2bn[10]
GVA Growth (2 Years): 6%
Key Businesses: AgustaWestland, Airbus, Boeing, Flybe, BAE Systems, GE Aviation Systems, Gooch & Housego, Honeywell, Thales, Rolls Royce, GKN Aerospace

The High-Tech Engineering sector is not only a prominent employer but is also one of the most productive sectors nationally, making it pivotal for international competitiveness and economic growth. The sector is rightly viewed as an engine for job growth as it typically employs highly skilled workers who are less vulnerable to substitution from new technologies. Importantly, the sector plays a pivotal role in supporting growth in the wider economy, where it creates knowledge spill overs, which drive innovation and productivity in other industries. It also has an important role to play in tackling the climate emergency.

Manufacturing industries have embraced innovation through digital practices and invested heavily in R&D, leading to the widespread deployment of technology and automated processes. These are intrinsic to the UK's competitive advantages in advanced manufacturing and are a focus for the government's Industrial Strategy, with significant productivity potential.

The High-Tech Manufacturing industry is set to be overhauled by the introduction of Industrial Digital Technologies (or Industry 4.0) including of automation, robotics, seamless connectivity and data analytics. Automation alone has the potential to boost the UK's productivity by 22% and accelerated levels of investment in robotics could raise manufacturing GVA by 21% in the next 10 years[11].

The implications within the Heart of the SW are therefore significant. But AI and automation present significant threats to the sector too. Applying PWC's analysis to the Heart of the SW, this could see a decrease in manufacturing employment of 25% by 2037 – equivalent to 16,700 employees[12]. This is offset by the opportunity to create new forms of employment and higher skilled occupations.

At a firm level, the Heart of the SW has a number of large employers operating within the manufacturing. These businesses are at the front-line in terms of thinking smarter, applying new technologies and harnessing the power of automation to increase competitiveness.

- **Babcock International** – is an engineering services company which is increasingly looking to integrate industry 4.0 approaches into their work. Here, many of their engineering and technical services teams are using modern manufacturing techniques, processes and advances associated with Industry 4.0, including Automation, Smart Sensors, Real-time Data Capture and Analytics and Virtual/Augmented Reality.
- **BAE Systems** – is based in Somerset and the company is piloting Industry 4.0 approaches in many of their manufacturing processes, such as the use collaborative robots, designed to support people with complex manufacturing of combat aircraft. The technology allows the worker to make strategic decisions while delegating to the 'cobotic arm' repetitive, machine-driven tasks which require consistency.
- **Aero Stanrew** – specialises in the design and manufacture of ruggedised electromagnetic components and supplies a number of prominent companies such as Airbus and Boeing,

[10] Figures relate to the broad sectoral definition of Manufacturing (C)
[11] PWC, UK Economic Outlook, July 2018
[12] Her Majesty's Government, Made Smarter Review, 2017

with technologically-driven processes and smart manufacturing at the core of the company's progressive approach.

- **Gooch & Housego** – is a photonics technology business headquartered in Ilminster, with operations in the USA and Europe. The company is a world leader in optical designing, testing and manufacturing and works with customers worldwide, providing optical systems, assemblies and components for demanding applications, often for deployment in harsh and unforgiving environments.

Given the footprint of these firms, they are likely to have extensive supply chains reaching into a number of other sectors and sub-sectors. These, too, will be increasingly influenced by technology, shaping the way by which they interact with tier one contractors and the subsequent flow of people, products and services.

Digital technology is continuing to have a transformational impact on the manufacturing sector, which is shaping industry across the Heart of the SW. According to SME's Manufacturing in the New Industry 4.0 Era Survey (2018), 43% of manufacturers believe the industry is already seeing significant changes due to digital technology. In many cases, this is visceral, and the effects are already being felt by employees and customers.

It is clear that digital solutions remain very much on the agenda for the industry, with almost half of all manufacturers planning to invest in smart digital solutions within the next 2 years[13]. That said, other research points to the fact that many manufacturers are lacking in understanding around the application of Industry 4.0[14]. This reaffirms the need for an appropriately skilled workforce, who are cognisant of digital opportunities and can deliver associated benefits as a consequence of their tech savvy skills base.

Digital Technology Solutions

Industry 4.0 investments are already significant within the sector, with PWC[15] research suggesting that global industrial products companies will invest $907 bn per year through to 2020 in Industry 4.0 approaches. PWC's Global Industry Survey finds that many of these businesses expect Industry 4.0 investments to yield a return within two years or less, given investment of around 5% per annum of their annual revenue. Beyond these financial returns, other benefits coveted by manufacturing businesses as a result of smart solutions include increased productivity, improved and more efficient operations, better decision making, increased competitiveness and enhanced access to data.[16]

The major focus for investment within this sector and across the Heart of the SW is as follows.

- **Industrial digitalisation** – the Made Smarter Review highlighted how digital technologies can unlock productivity from the UK's manufacturing sector through automation and harnessing data. Industrial digital technologies are known to improve industrial productivity by more than 25 per cent, but the opportunity to apply digital technologies to the area's industrial sectors has not been exploited.

[13] SME, Smart Manufacturing Report 2018

[14] Irwin Mitchell, Industry 4.0 Insights into the next industrial revolution 2017.

[15] PWC Global Industry 4.0 Survey 2016

- **Digital technologies** - such as sensors or connectivity devices:
  - Integrated planning & scheduling for manufacturing – systems combining data from within the enterprise, from sensors all the way through to resource planning systems, improving asset utilisation and product throughput time.
  - Predictive maintenance of key assets – using predictive algorithms to optimise repair and maintenance schedules and to improve asset uptime.
  - Cloud based planning systems – providing real-time end-to-end planning and horizontal collaboration, improving efficiencies and reducing inventories.
  - Track and trace devices – technology embedded throughout leading to better inventory performance and reduced logistics cost.
- **Software and applications** – such as manufacturing execution systems (MES) which are used to track the transformation of raw materials to finished goods.
- **Training employees and driving organisational change**

Local Case Study: Honeywell Aerospace UK

Honeywell is deploying connected aircraft solutions for aircraft operators, presenting a new set of operational, efficiency and comfort benefits that were previously unavailable to operators, engineers and passengers. This connectivity is helping to revolutionise modern-day flying, dramatically improving fleet management, flight safety, passenger and crew experience, mission effectiveness, maintenance, flight operations, aircraft turnaround time and costs.

Using big data, analytics, and secure communications technology, aircraft operators are now better able to anticipate opportunities – to avoid inclement weather, disruption, excess cost, and to drive faster turnaround times. Honeywell's breadth of digital technologies make this happen, such as the deployment of their Aircraft Data Gateway, GoDirect Router and JetWave satellite communications system.

Focus Sector: Clean Energy

Sector Digital Transformation

Jobs: 67,000
Annual Job Growth (2 years): 0%
GVA Contribution: £4.2bn

GVA Growth (2 Years): 6%[16]
Key Businesses: AgustaWestland, Airbus, Boeing, Flybe, BAE Systems, GE Aviation Systems, Gooch & Housego, Honeywell, Thales, Rolls Royce, GKN Aerospace

Despite the innovations that have taken place in clean energy in recent decades, more than 78% of global energy consumption is delivered by fossil fuels, highlighting that there is still much to be done in moving to more sustainable solutions and tackling one of the biggest challenges facing humanity today. Industry 4.0 has been touted as a key means to contribute to the progression of environmental technologies and sustainable energy generation. The UN suggests that the fourth industrial revolution in sustainable energy could present "new ways of dealing with major global challenges, such as climate change, lack of clean energy access, economic stagnation and reducing the digital divide" [17].

The digital transformation of energy systems has received widespread attention in recent years and has been integrated by the leading companies in this field. Here companies have seized upon the opportunities presented by rapid developments in information and communication technologies, the spread of internet access and mobile devices such as smartphones, and the development of blockchain technology, driving a more sustainable approach.

Digital technologies have provided solutions to address the challenges of integrating renewable energy sources into small and large power grids which require new approaches to grid management as well as creating more intelligent means of energy distribution. 'Big' and open data has also had a major influence on decision-making and design processes, with Heart of the SW being home to organisations at the forefront its adoption, such as the Met Office, Exeter University and Rothamsted Institute. Technology has also enabled rapid developments in processing power and the cyber security measures needed to leverage maximum benefit from open data sources.

Research by the World Economic Forum on the energy sector indicates the key trends that are set to drive sectoral growth over the next five years, as well as the main barriers that are likely to impede its expansion. These are summarised in Table 4.2, which highlights the prominence of digital technology in securing sustained sectoral growth.

[16] Figures relate to the broad sectoral definition of Manufacturing (C)

[17] United Nations IDO (2017) Accelerating clean energy through Industry 4.0 Manufacturing the next revolution

Table 4.2 Energy Utilities & Technologies – Growth Trends and Barriers

	Trends driving industry growth	Greatest barriers to adoption (% of organisations)
1	Advances in new energy supplies and technologies	Skills gaps, local labour market (64%)
2	Increasing availability of big data	Don't understand opportunities (60%)
3	Advances in artificial intelligence	Skills gap, leadership (40%)
4	Advances in cloud technology	Shortage of investment capital (40%)
5	Advances in computing power	Lack of flexibility, hiring and firing (28%)

Source: World Economic Forum, 2018

Across the Heart of the SW there are a number of notable employers and projects operating within the clean energy and environmental futures sector. These businesses and initiatives are at the front-line in terms of thinking smarter, applying new technologies and harnessing the power of automation to increase competitiveness.

- **OTA Water** – OTA Water are a sustainable water management company whose main focus is developing smart rainwater management systems that enable the capture, control and understanding of rainwater. In so doing, their work tackles the growing global problems of flooding and drought. They are pioneering internet-enabled rainwater harvesting systems that provide data on rainfall and water-use and how to better manage water for a more sustainable world.
- **Breedr** – Breedr is a productivity and marketing platform for the livestock industry and is working with the Impact Lab and Rothamsted Research on a 'Field to Yield' trial to help farmers improve retail value. The key aim of the 'Field to Yield' project is to work with farmers to develop new metrics that will enhance the current grid system. Breedr's initial findings have shown that livestock farmers could save up to a year's expense on feed and increase financial returns. The project also supports REAP (the Retailers' Environmental Action Programme), which commits retailers to reducing their environmental impact.
- **RegenFARM** – is a partnership between Rothamsted Research and the University of Exeter who are working together on a project that applies a regenerative agriculture approach to farming, enabling farmers to optimise their practice, both environmentally and economically. It is hoped that this proven approach will ultimately change the way that food is produced globally, delivering significant environmental stewardship benefits as a result.

Digital Technology Solutions

- **Smart Grids** – are probably the most cited technology where both clean energy and digitised approaches have intersected. Smart Grids use digital technologies to monitor and efficiently manage the generation, delivery, and consumption of electricity from different – potentially decentralised – sources of electricity to meet the varying electricity demands of end-users.
- **Virtual Power Plants (VPP)** – are cloud-based distributed power plants that bring together a range of energy resources. They make use of IoT devices to aggregate the capacities of

each of the energy resources it draws upon and tap into existing grid networks to tailor electricity supply and demand services for the customer to maximise value for the customer and distribution utility. Big industry players have already taken up the development of solutions for virtual power plants, such as the cloud-based energy management system DEMS of Siemens' Smart Grid division.

- **Blockchain** – Blockchains are distributed databases and ledgers made of blocks stored on a large number of machines, allowing any changes made to the database to be permanently recorded, and any record is made publicly available thanks to the distributed design (Crosby et al. 2016). Blockchains are expected to bring about unprecedented changes in traceability and data robustness and are set to have transformational impacts on energy delivery. Using blockchain technology, the need for a intermediaries is eliminated, with the distribution of certified renewable energy undertaken from one trusted and unified source.

The major focus of activity and investment within this sector and across the Heart of the SW is:

- **The Met Office** located in Exeter provides world leading environmental analytical services as well as being home to the Cray XC40 supercomputer. Exeter is also home to the head-quarters of South West Water and the Environment Agency. The latter employs 450 staff in the area, including Climate South West, which has a remit to ascertain the impacts of climate change in the region and develop adaption responses with industry.
- **Hinkley C Power Station** is sited in West Somerset. It is subject to a major expansion project – a £20 billion, twin-reactor station is the first UK nuclear power station to be built in more than 20 years and is set to create 25,000 job opportunities over its lifespan.
- The **Universities of Plymouth and Exeter** have recognised strengths in low carbon / environmental fields and are major centres for activity in the sector. To this end Exeter University:
  - Is leading DEFRA's landscape scale Sustainable Intensification Platform Project.
  - Has invested in a £9m state of the art aquarium which supports a research strength in aquaculture as a source of protein production.
  - Holds a long-standing strategic partnership with the Met Office with both working together to establish a Global Environmental Futures Campus on the new Exeter Science Park. The Centre for Business and Climate Solutions (CBCS) is also supporting South West SMEs to adapt and mitigate against future climate change. The facility helps SMEs to tackle extreme weather, support carbon reduction targets and take advantage of commercial opportunities from climate change, as well as supporting the innovation of climate change related technologies.
- The **University of Plymouth** is also key hub for clean energy activity:
  - The Centre for Agricultural and Rural Sustainability (CARS) at Plymouth University provides key analytical facilities (genomics, aquaculture, ecotoxicology and ISO9000 accredited chemical analytical laboratories) and is also home to a cutting-edge Nanotechnology centre.

Local Case Study: The Environmental Futures Campus and Big Data Impact Lab

Based in the Met Office HPC Complex, the Impact Lab is a partnership of seven world-class Devon based organisations – the University of Exeter, Exeter City Futures, Met Office, University of Plymouth, Plymouth College of Art, Plymouth Marine Laboratory, Rothamsted Research. The Impact lab provides a wide range of valuable support for businesses in Devon.

Each company that works with the Impact Lab receives a bespoke package to suit their needs, with services provided free of charge. These services include grants for products and services, a collaborative working space, mentorship, as well as advice and referrals. The campus is home to several innovative firms, such as Breedr (a productivity and marketing platform for the livestock industry) and OTA Water (a sustainable water management company that develops smart rainwater management systems that enables the capture, control and understanding of rainwater).

Broad Sector: Digital Futures

Sector Digital Transformation

Jobs: 18,000

Annual Job Growth (2 years): 10%

GVA Contribution: £1.1bn[19]

GVA Growth (2 Years): 12%[15]

The UK is also one of the most developed digital economies globally. Related activity generates in excess of £180 billion for the UK economy and is a driver of national competitive advantages[18]. The sector continues to flourish, attracting talented people and businesses from across the globe. A rich ecosystem, supportive policy agenda and talent pipeline have combined to fuel considerable growth, with tech investment levels which are two times higher than any other European country (£6.8bn in 2016)[22].

Digital technologies are an important enabler of growth with strong scope to impact on all sectors of the economy. The significant policy focus being placed on the Digital Tech Sector nationally (within the government's Industrial and Digital Strategies in particular), reflects the strong expectations regarding the future potential of the sector. It is clear that the future competitiveness of the Heart of the SW economy will be strongly influenced by technology and the extent to which it is successfully embedded within wider growth agendas and key sectors.

As well as having catalytic effects across the wider economy and driving productivity across all sectors, the Digital Tech Sector itself is a highly productive and growing component of the Heart of the SW economy. The sector workforce is more than twice as productive as the non-tech worker equivalents. Here, digital workers generate £103k of GVA per worker, relative to £50k of GVA per worker across the rest of the economy[20].

The World Economic Forum provides an understanding of the key trends that are set to drive growth in the Information and Communication Technologies sector over the next five years, as well as the main barriers that are likely to impede sectoral growth. These are summarised below – it is apparent that the main driver of growth in the sector is the adoption of new technology. In many respects this reinforces the far-reaching nature of the digital disruption, in that a large part of the sector's future growth is based upon the uptake of new technology across other industries.

Table 4.3 Information and Communication Technologies– Growth Trends and Barriers

	Trends driving industry growth	Greatest barriers to adoption (% of organizations)
1	Increasing adoption of new technology	Skills gaps, local labour market (74%)
2	Advances in cloud technology	Don't understand opportunities (58%)
3	Increasing availability of big data	Skills gap, leadership (49%)
4	Advances in mobile internet	Shortage of investment capital (40%)
5	Advances in computing power	Lack of flexibility, hiring and firing (30%)

Source: World Economic Forum, 2018

[18] Tech Nation, 2018

[19] 1 Relates to the broad sector definition of Information and Communication (58-56)

[20] Heart of the SW Digital Skills Partnership (2019)

Digital Technology Solutions

With the digitalisation of health care improving outcomes, minimising avoidable service use and promoting patient independence, there is a significant opportunity for local health care providers to embrace and benefit from these technological advancements, so long as they have the right tools, knowledge and infrastructure to do so. The UK digital health sector is estimated to be worth around £2bn and forecast to rise to £2.9bn this year, representing a significant opportunity for Heart of the SW.

Artificial Intelligence (AI) is the ability of machines to acquire and apply knowledge and carry out intelligent behaviour. The OECD predicts that AI is likely to transform prominent sectors such as Agriculture, Chemicals, Rubber and plastics, Manufacturing, Transport, Construction, Defence, Surveillance and security. AI will also be deployed in a wide range of services, including healthcare, entertainment, marketing and finance, driving the demand for knowledge workers able to develop AI or undertake tasks that complement AI.

Investment and activity in the sector is not particularly focussed in one particular location, reflecting the more ubiquitous nature of digital activity. That said, the asset review presented in the following section shows a degree of workspaces and coworking spaces in more urban locations, which are likely to generate agglomeration benefits.

The Heart of the SW has a number of prominent employers operating within the digital sector. These businesses are at the front-line in terms of thinking smarter, applying new technologies and harnessing the power of digital to increase competitiveness and productivity.

- **ATASS group** – a statistical research consultancy providing world-leading modelling and forecasting services to the sports industry. The company boasts one of the largest commercial statistical research teams in Europe and is a leader in the field of the application of statistical modelling in sports. The firm have produced statistical and mathematical models that allow sporting outcomes to be predicted with great accuracy.
- **Spirent** – is the leading global provider of testing, assurance, analytics, and security solutions. These solutions range from physical and virtual service provider networks and enterprise data centres to mobile communications and connected vehicles. Spirent works with leading innovators to improve global communications and collaboration to provide a superior user experience.
- **Crowdcube** – is a British investment crowdfunding platform established in Exeter. It operates on the "all or nothing" model, thus when a pitch reaches its investment target, the business receives the funding raised. If it doesn't, no funds are taken from investors. The platform makes extensive use of online platforms and social media to alert potential investors about an offering and has kick-started notable national business brands including Camden Town Brewery and the E-Car Club.

Local Case Study: Sponge UK

Founded in 2004 and with a presence in Plymouth Science Park, Sponge UK has become one of the UK's best-known e-learning development companies. Rooted in digital technology, they deliver services including training games and gamification, 360-degree experiences, virtual reality (VR) and augmented reality (AR) and interactive video creation.

The firm offers an immersive learning product which harnesses the power of virtual reality, augmented reality and 360° videos to develop bespoke learning tools. In doing so, they are able to immerse learners in experiences that can rapidly accelerate expertise, knowledge and empathy. The company also offers e-learning solutions, such as microsites and video content, designed to engage learners in a more interactive and stimulating way.

Wider Sector Implications

Whilst the growth sectors set out in the Local Industrial Strategy are of great value to the Heart of the SW and pivotal to its economic future, it is important to note that digital processes are key to driving productivity across all sectors. To this end there are several other well-established sectors where digital technology is and will continue to have far-reaching implications. Of particular note are the Agriculture and Visitor Economy sectors.

The Agriculture and Mining sector employs circa 26,000 people across the Heart of the SW and is home to around 6,100 businesses. The table below summarises the current position of the sector, which clearly shows its high level of specialisation. The sector is also growing at a more rapid rate than that observed nationally – this translates to an increase of 19% over the past five years, relative to the sector being almost stagnant at the national level.

Table 4.4 Agriculture and Mining Overview

	% of Total Employment	Location Quotient	Employment Growth (2012-2017)
Heart of the SW	4%	2.6	19%
South West	2%	1.3	1%
England	1%	1.0	-1%

Source: BRES 2017, 2012

The Visitor Economy[21] is an important sector in the Heart of the SW, employing around 79,000 people across the area within 5,600 businesses. Employment and business activity are tied closely to the area's natural assets, including its coastlines, national parks and heritage sites, making it a popular draw for visitors, domestically and internationally. The current position of the sector is summarised in the table below, which broadly reflects the national picture.

[21] Sectors defined by Hatch Regeneris in-house economic segmentation model applying a SIC code methodology.

Table 4.5 Visitor Economy Overview

	% of Total Employment	Location Quotient	Employment Growth (2012-2017)
Heart of the SW	22%	1.1	22%
South West	23%	1.0	24%
England	17%	1.0	17%

Source: BRES 2017, 2012

Here, digital processes have the ability to improve the efficiency and productivity of agriculture and the reach of the visitor economy offer in a number of ways. The prominence of agri-tech is a prime example of technology being used to transform large-scale farming practices, introduce robotics and automation to processing and also assist in a more scientific approach to land management, with positive consequences for environmental stewardship. Some of the most prominent are summarised below[22].

Table 4.6 Digital Transformation Examples

Digital Influences	Digital Opportunities
• Sensor technology • Intelligent labelling and packaging design • Automation Technologies • Connected tractors • Single unit specialisation • Transparency of production • Augmented and virtual reality • Cloud based services	• Preventative maintenance • Provision of additional services • Emergence of new platforms • Enhanced data analytics • Virtual destination experiences

[22] Digitalisation in Tourism In-depth analysis of challenges and opportunities (2018) Aalborg University

Cyber Security

A key consideration for all businesses is the growing presence of cyber threats. As a consequence of technological progress and more day-to-day business activity moving to online platforms, cyber security risks are a prescient concern for businesses operating across many sectors, but particularly for those that are most digitally dependent. The importance of effective cyber security measures to the national economy and businesses trading within the Heart of the SW is considerable, with a national strategy in place to ensure the country's cyberspace presence is secure and resilient[23].

The strategy is positioned around a series of overarching themes:

- **Deter** – taking offensive action to ensure the UK is impenetrable to cyber criminals.
- **Defend** – ensuring government, business and citizens can defend cyber-attacks.
- **Develop** – utilising national expertise and skills to address future cyber threats.
- **Governance** – UK government policies, organisations and structures are coherent.

Within the Heart of the SW, threats to businesses include theft of intellectual property, installation of insidious malware or spyware, targeted spamming and interference with systems and processes which are reliant on IT and online/cloud-based services. Such threats are skewed towards smaller businesses, who may be ill-prepared for increasingly sophisticated cyber-attacks.

The Heart of the SW is developing a growing cyber security presence, with the development of a North Somerset Cyber Cluster. This partnership seeks to bring together web and cyber related businesses based in the North Somerset area to foster collaboration, networking and best practice. In doing so, it will promote North Somerset as a great place for cyber related companies to locate, feeding into a wider economic growth and investment agenda.

More generally, and in light of a number of high-profile cyber security breaches, awareness is increasing and a less reactive approach to cyber security is becoming more apparent. More needs to be done, however, in accelerating acknowledgement and encouraging businesses to actively invest in cyber security technologies and policies.

[23] Her Majesty's Government, UK National Cyber Security Strategy, 2016-2021

Embeddedness of Digital Enterprise

To better understand the nature of core digital companies that are likely to be early adopters, vanguards and at the forefront of new technology, it is valuable to consider the size, growth, specialisation and spatial distribution of the area's most digitised businesses. This helps to paint a more in-depth picture of digital transformation across the Heart of the SW.

The Heart of the SW's digitally embedded sector footprint in numbers (2017):
A total of **2,550** trading digital businesses…
Employing some **13,825** people…
Achieving digital employment growth of **29%** over the past five years…
And growth of **16%** in digital businesses over the past five years…

As seen within the area's most prominent and valuable sectors, there are important digital practices occurring across the entire economy. However, there are also a sub-set of sectors which are considered to be at the forefront of digital adoption[24]. These are:

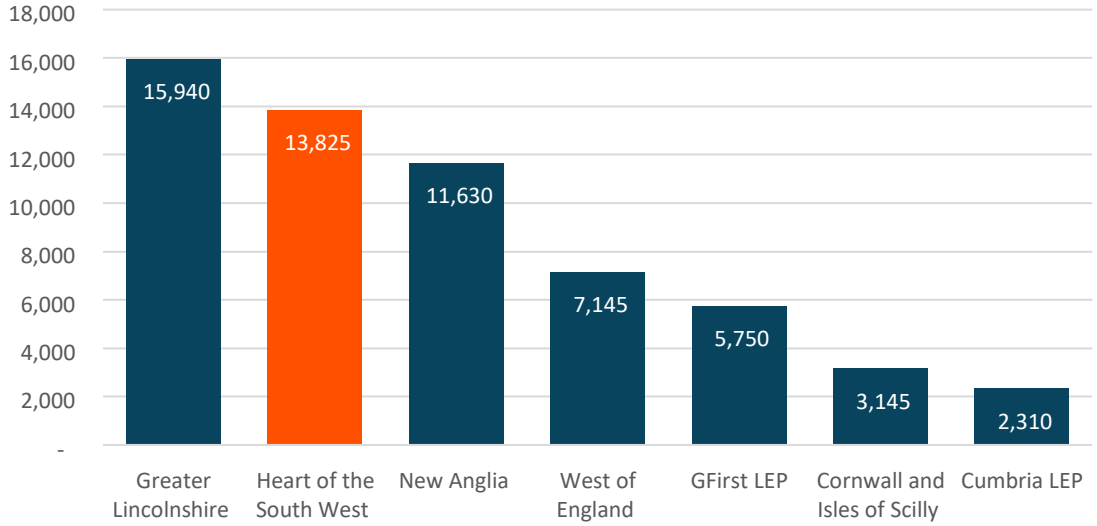
- **Data Services**
- **Digital Consulting**
- **Digital Publishing**
- **Digital Hardware Manufacturing**
- **Software Development**
- **Telecommunications**

Digitally Embedded Employment

There are currently 13,825 people employed by the most digitally dependent businesses across the Heart of the SW. The scale of this digital activity in the Heart of the SW, is sizable relative to the comparator areas, where it is the second largest digital economy, well ahead of neighbouring West of England and GFirst LEPs and lagging only Greater Lincolnshire LEP.

[24] Sectors identified using Tech Nation's Digital Tech definition

Figure 4.2 Total Digital Employment



Source: BRES (2017)

However, the Heart of the SW is trailing behind the majority of comparator areas and is in line with the national picture in terms of digital employment growth. Over the past five years, those employed in the digital sector have grown by 29%. That said, this is a level of growth that has far outstripped the pace of change seen across the rest of the Heart of the SW economy (8%) (see Appendix B), meaning the relative performance of the sector within the area has been strong.

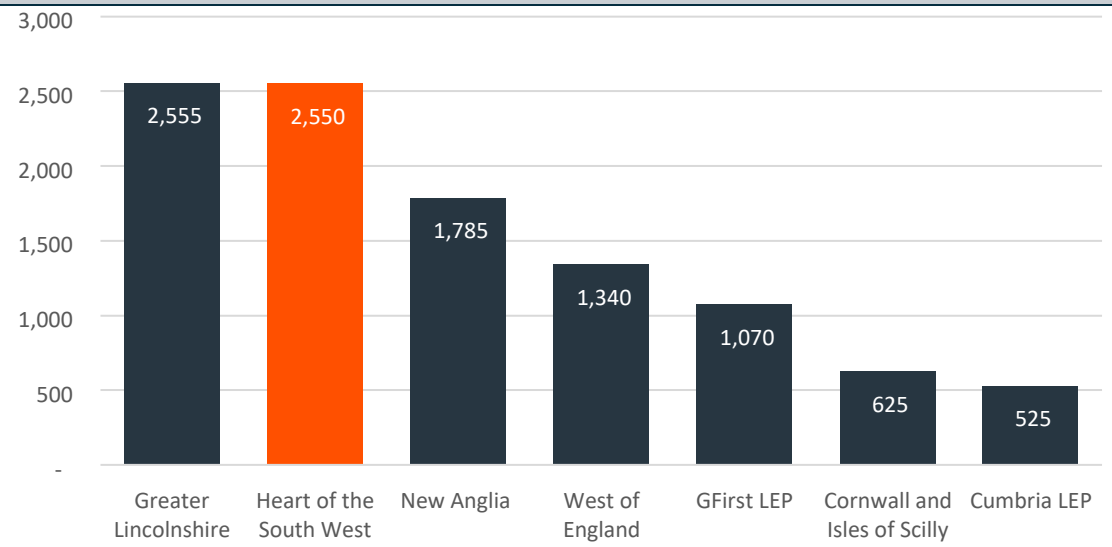
The level of specialisation observed across the Heart of the SW also helps to position the area's digital dependence, as seen in Appendix B[25]. By this measure, each of the LEP areas have a less concentrated digital sector than the national position, with the Heart of the SW possessing an LQ of 0.5 – a lower concentration of activity than the regional average and the fifth highest amongst all comparators.

Digitally Embedded Businesses

There are currently around 2,550 digital businesses trading across the Heart of the SW, which means in gross terms the Heart of the SW has the second largest digital economy across all comparators. Again, only Greater Lincolnshire LEP has a larger base of digital businesses.

[25] Location Quotient (LQ) is a helpful measure of concentration of activity in one area, compared to another. In this case sector characteristics in the respective areas have been compared to England where a LQ higher than 1.0 indicates a greater degree of specialisation to the national average.

Figure 4.3 Total Digital Businesses



Source: UK Business Count (2018)

There has been 16% growth in the digital business base across the Heart of the SW, which is broadly in line with the entire economy as a whole (14%), as illustrated in Appendix B. That said, digital business growth is trailing well behind the national (33%) and South West region (27%) position. Given that digital businesses have grown by a more modest 16%, whilst employment has risen at a greater level (29%), it is likely that much of the growth in the digital economy has been driven by larger SME businesses. There is also a danger that the area may be losing momentum and therefore, some of its competitive advantages.

The Heart of the SW also has a lower concentration of digital businesses relative to the national position (as seen in Appendix B). That said, it has a more favourable position in LQ terms relative to several comparator geographies, where the Heart of the SW has the third most concentrated digital business presence.

Digitally Embedded Business Locations

Whilst the majority of digital businesses across the Heart of the SW are located in urban areas, a unique characteristic of the area is the degree to which digital business activity takes place in a rural setting. Indeed, some 41% of digital companies are located in rural areas, over three times the level seen nationally. This is of particular note given the SW Rural Productivity Commission (2017) found that across the region, rural communities were on average 8% less productive than urban areas (GVA / workforce job) and 10% below the national average for rural areas. Digital business activity provides an opportunity to redress this balance.

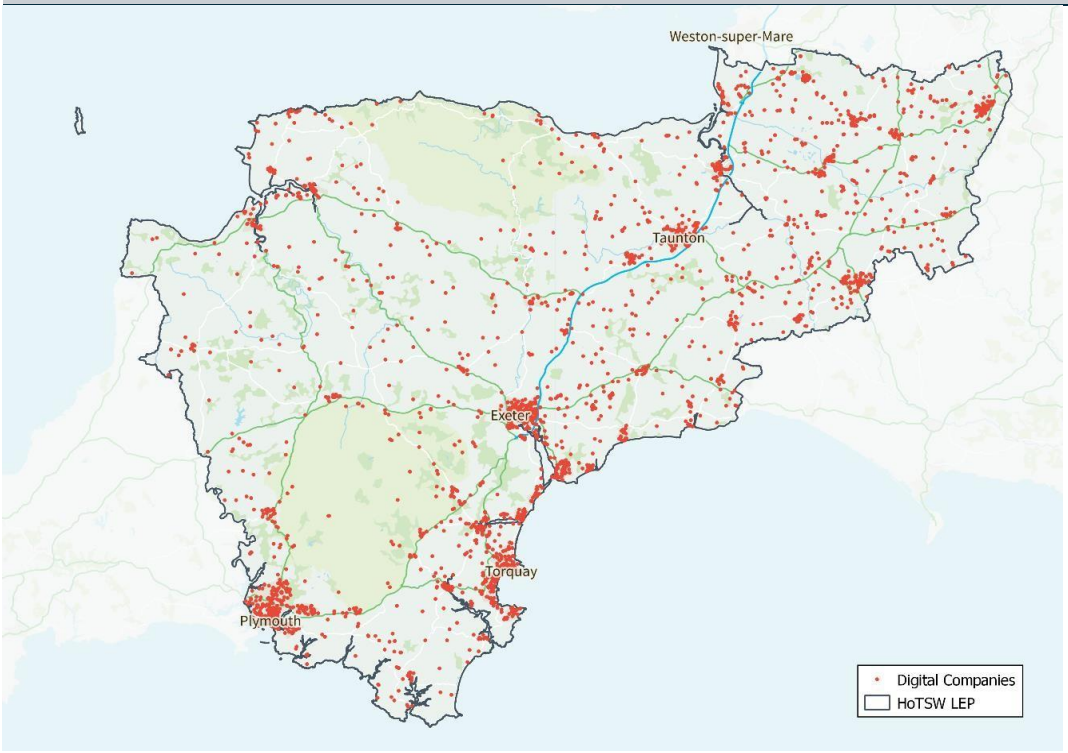
Table 4.7 Digital Economy - Urban/Rural S plit

	Digital Companies	Heart of the SW	England
Rural	1,526	41%	13%
Urban	2,220	59%	87%
	3,746	100%	100%

Source: Companies House, 2019

Major clusters of digital activity across the Heart of the SW are seen within the main urban areas of Plymouth, Exeter, Torquay and Taunton. As suggested in the table above showing the urban/rural split of digital companies, there is a notable degree of distribution of activity across the rural areas. The extent to which these are businesses with strong growth potential is difficult to determine, however, they have the potential to play an important role in raising rural productivity, attracting a new generation of people away from urban centres and positioning rural locations as a home for progressive and tech-focused companies.

Figure 4.4 Heart of the SW – Location of Digitally Embedded Businesses



Source: Companies House 2019

Digitally Embedded Sub Sectors

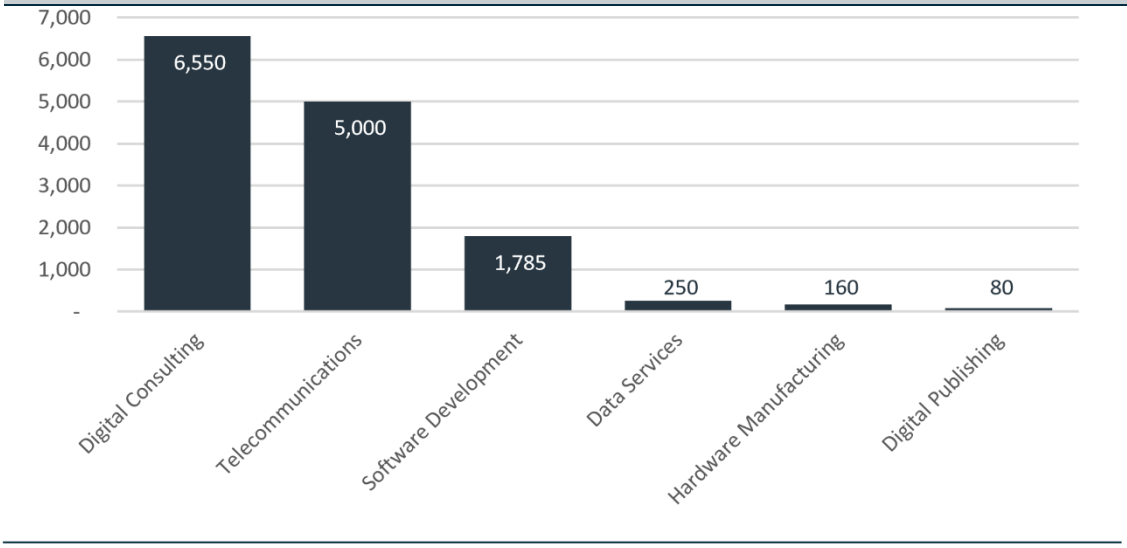
This section provides a summarised analysis of the Heart of the SW's digital sub-sectors. These have been identified using Tech Nation definitions and are summarised in Table 4.8.

Table 4.8 Sub-Sector Groupings

Sub-Sector	Overview
Digital Consulting	• Planning and design of computer systems
Software Development	• Development, production, and supply of interactive software
Telecommunications	• Operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using telecommunications infrastructure
Hardware Manufacturing	• Includes the manufacture, assembly and repair of electronic computers
Data Services	• Operation of web sites and search engines and provision of data hosting infrastructure
Digital Publishing	• Publishing of computer games for all platforms and publishing of ready-made (non-customised) software

The digital sub-sector with the greatest level of employment is digital consulting, which employs 6,550 people, representing almost 47% of all digital jobs across the Heart of the SW.

Figure 4.5 Heart of the SW Digital Sub-Sector Employment



Source: BRES, 2017

None of the Heart of the SW's sub-sectors have a greater concentration of activity relative to the national picture. Here, telecommunication is the most specialised sector, albeit with a level of activity that is proportional to the national picture (1.0).

In terms of growth in the digital sector, this has in a large part been driven by the digital publishing, digital consulting and software development sub-sectors over the past five years (see Appendix B). Over the same period hardware manufacturing and data services have seen a retraction in employment numbers, showing uneven growth across the digital sector as a whole.

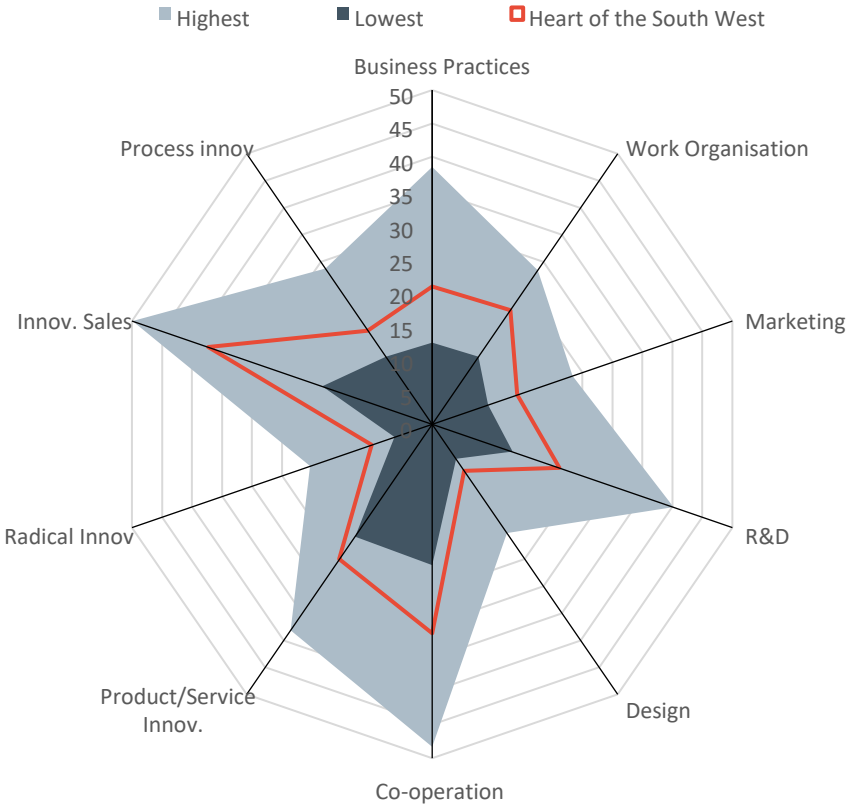
Enterprise and Innovation

Digital technologies are increasingly fundamental to established businesses, driving growth and new market opportunity. They are also a stimulant of innovation and research, enabling a new wave of start-ups and entrepreneurs to emerge and play an important economic function. In the context of a national push towards innovation and the rebalancing of sub-regional economies, digital technologies have a hugely important role to play[26].

Innovation Benchmarking

The Enterprise Research Centre research provides a relative measure of innovation for each of England's LEP areas. Looking at performance against all 10 innovation measures, the Heart of the SW is either middling or trailing in innovation terms, with no clear competitive advantages.

Figure 4.6 Heart of the SW – LEP Innovation Benchmarks: 2014-16



Source: Enterprise Research Group, 2019

[26] Deloitte, Innovation in Europe, 2019

The Heart of the SW's best performing areas in terms of innovation (and most prime opportunity areas for the further exploitation of digital technologies) are:

- **New Methods of Work Organisation**: *Rank 14 of 39* This metric relates to firms' adoption of new methods of organising work responsibilities and decision making. Typical examples of this include a firms' first use of a new system of employee responsibilities, teamwork, decentralisation, integration or de-integration of departments, education / training systems.
- **New to the market 'radical' innovation**: *Rank 13 of 39* This provides an indication of the percentage of firms which reported introducing new to the market innovations (either products or services).

Enterprise and Start-Ups

Digital technologies also offer a platform from which small businesses can evolve and entrepreneurs thrive, in sectors and industries that are not necessarily those which are considered to be digitally dependent. In many cases, technology is enabling early-stage firms to operate more efficiently, retain flexibility and grow rapidly[27]. It can also be a differentiator driving university spin outs and helping rapidly growing businesses (scale-ups) to gain market share and expand to international markets.

The Heart of the SW is characterised by lower levels of start-up rates relative to the national picture. Here, the start-up rate is around 10%, below both the regional (13%) and national (12%) average (see Appendix B). Notably and somewhat unsurprisingly, the start-up rate across the area is driven by the more urbanised local authorities (Plymouth, Exeter and Torbay), where there is the greatest agglomeration of economic activity, technology-orientated firms, anchor institutions and digital assets.

Small Business Base

It is also important to note that the Heart of the SW is an economy characterised by small businesses – where there are around 209,000 micro businesses operating in 2019. The productivity challenges of small businesses have been well documented (OECD, 2019[28]), where there are considerable barriers holding back the uptake of digital technologies relative to larger and more established businesses. This is of particular pertinence in the Heart of the SW, where 90% of all its businesses employ under 10 people[29]. With that in mind, policies which target digital uptake amongst this sizable micro business base are likely to realise some of the greatest uplifts in productivity and may also help to stimulate a new wave of start-ups in the area's rural communities.

[27] Forbes, Technology Is Driving Entrepreneurial Growth, And We're Not Just Talking About Silicon Valley, 2017

[28] OECD, 2019 Digital dividend: Policies to harness the productivity potential of digital technologies

[29] UK Business Count, 2019

Business: Strategic Imperative

- **The Heart of the SW's target sectors are all subject to digital transformation in one form or another and need to be prepared to exploit maximum benefit and understand the effects of digital change, particularly smaller businesses.**
- **The ability to automate tasks is delivering considerable productivity gains, driven by greater efficiency, whilst also opening up new and flexible ways of working.**
- **Technological adoption may lead to negative economic consequences too, such as the loss of employment as a result of automation and AI, however it will also open up new forms of employment and wealth creation which need to be exploited.**
- **Across key sectors, there are examples of digital technologies being used in innovative and powerful ways, leading to an improvement in competitiveness, productivity and global market reach – the Heart of the SW is home to a number of global leaders.**
- **The Heart of the SW has a significant base of digitally embedded businesses which are using the most advanced technologies and are heavily reliant on digital applications, with these firms requiring high quality connectivity to flourish.**
- **The Heart of the SW does not exhibit notable digital sector/sub sector specialisation when compared with national trends and more could be done to improve this position in the future.**
- **The spatial distribution of digitised sectors and businesses and accompanying data provides a powerful platform from which to communicate the Heart of the SW digital proposition, identify clustering and attract investment opportunities.**
- **The presence of digitised businesses in rural areas demonstrates the value of technology in rural communities, helping to make them more productive, economically active and attractive to younger generations.**
- **Linked to the above, this provides a platform from which to promote rural digital employment and align this with CEIAG initiatives, which are critical to guiding people into technology-focused careers and providing impartial advice.**
- **There is an opportunity to harness the power of digital technologies to further the Heart of the SW's innovation credentials and improve performance across certain innovation measures, including radical innovation, product/service innovation and R&D.**
- **The Heart of the SW is fostering entrepreneurs and providing the conditions for start-ups to grow, albeit the rate of start-up formation is trailing the national picture.**
- **The large proportion of micro businesses across the Heart of the SW suggests that the integration of digital processes within this cohort will realise some of the largest productivity benefits moving forward.**
- **A key challenge for smaller businesses is a lack of awareness of their latent digital capabilities and limited time and resource to invest in understanding the opportunity – impartial advice and the pooling of resources between large/medium/small businesses would help to address this issue head-on.**

5. Making the Case: Digital Infrastructure

The quest for globally competitive and future-proof digital connectivity has been a high priority agenda for some time, with a blend of private investment and public stimulus accelerating the rollout of fixed fibre-based technologies and the latest incarnation of mobile services. Governmental and commercial focus on extending coverage is stronger than ever, with an emphasis on closing the 'digital divide' and leveraging the potential of public sector assets, beyond traditional direct investment models.

Whilst access to high speed and seamless connectivity is now the expected norm, utilisation is also key. The benefits of digital infrastructure access can only be maximised through the widespread adoption of connectivity, including the take-up of fixed and mobile broadband[30].

Fixed Broadband

Fixed broadband is the cornerstone of digital infrastructure connectivity across the Heart of the SW. Reaching homes and businesses, it also backbones mobile networks and wireless connectivity, which service communities across each of the local authority areas.

The Heart of the SW and its constituent local authorities have played a progressive and active role in securing investment to extend superfast and gigabit capable broadband coverage, through co-investment with Building Digital UK (BDUK), voucher-led grant programmes, European funding and extensive work to stimulate commercial activity[31]. This has yielded significant rewards, delivering fibre into unviable areas and pushing it deeper into rural locales. As a consequence, thousands of businesses and homes have benefitted from such connections to date.

Fixed digital infrastructure remains an integral part of the connectivity mix, shifting towards the rollout of full fibre networks, which deliver gigabit speeds and underpin next generation mobile and wireless connectivity[32].

[30] Note – this chapter is supplemented by a more detailed review of the area's digital infrastructure capabilities within the Heart of the South West Local Broadband Plan. This sets out local characteristics, an investment pipeline and priorities, feeding into a series of key actions. Information presented here is designed to set the scene and showcase the Heart of the South West's digital infrastructure position in headline terms, complementing the LBP and with a clear read across.

[31] BDUK was formerly known as Broadband Delivery UK. The team still sits within the Department for Culture Media and Sport and performs a similar role with a broader programme delivery remit.

[32] Note – whilst full fibre remains an accepted technology term, the UK government has shifted its policy position towards support for gigabit capable networks, in line with a more technology-agnostic approach. Regardless of this change, full fibre is likely to be the centrepiece of the next generation of gigabit capable networks, delivering scalable capacity which will meet the needs of homes and businesses well into the future.

Table 5.1 Heart of the SW Broadband Project – Connecting Devon and Somerset	
Connecting Devon and Somerset	Connecting Devon and Somerset (CDS) is delivering next generation broadband infrastructure to areas where there is no commercial appetite to invest.
	CDS is a public-private partnership implementing a cost efficient plan to bring superfast broadband, via a series of phased supplier contracts, to homes and businesses. CDS's stated ambition is to provide superfast broadband speeds to all areas by 2020, with over 290,000 premises connected under phase 1 to date.

Source: CDS, 2019

Existing Connectivity

Current fixed broadband connectivity can be analysed by looking at coverage and access in the following terms:

- Superfast broadband – premises which can obtain speeds of 30 Mbps (download) or greater.
- Ultrafast broadband – premises which can obtain speeds of 300 Mbps (download) or more.
- Full fibre broadband – premises which deliver continuous fibre connectivity, capable of gigabit (download/upload) speeds.

Current fixed connectivity data paints a mixed picture across the Heart of the SW, yet in reality this is in a constant state of flux:

Table 5.2 Fixed Broadband Coverage (% Premises)

Local Authority	Superfast Coverage ≥30 Mbps	Ultrafast Coverage ≥100 Mbps	Full Fibre Coverage
Devon	90%	24%	9%
Plymouth	99%	92%	1%
Somerset	90%	17%	3%
Torbay	97%	55%	1%
Heart of the SW	**94%**	**47%**	**4%**
England	96%	61%	9%

Source: Thinkbroadband, September 2019

Fixed connectivity across the Heart of the SW is, on the surface, reasonably strong, yet in the context of comparator areas, its performance is somewhat lessened, exposing the quality of digital infrastructure in other locations. Despite this, the coverage position has been influenced by a strong commercial supplier presence and the effect of substantial and continued public sector investment (i.e. CDS).

In headline terms, the Heart of the SW's fixed digital infrastructure position is:

- Coverage lags England in terms of superfast and ultrafast provision, with the latter being 14% lower – a substantial relative deficit.
- In terms of the balance of speeds, superfast coverage predominates, hinting at the area's higher level of rurality and lower settlement density, driving down ultrafast coverage. This has also been driven by Connecting Devon and Somerset investments.
- Full fibre coverage is low and some way behind England's position, although nationally this is starting from a low base. Torbay bucks the trend, with coverage in line with the national average.
- There is considerable variation within the local authorities, with urban areas (Plymouth and Torbay) better served by ultrafast connectivity. By comparison. rural Devon and Somerset's figures reflect the physical challenges of terrain and topography, acting as barriers to commercial investment.
- There is an apparent paradox in full fibre connectivity with Devon and Somerset having seen the greatest advances in coverage, as a result of CDS investment and the deployment of full fibre technologies in highly challenging locations.
- Over 90,000 premises remain without access to superfast broadband across the Heart of the SW, accepting that this is a continuously shifting position and subject to active market dynamics. This showcases the scale of remaining 'not spots' in totality.
- In full fibre terms, nearly 800,000 premises remain without access, highlighting a significant deficit, the risk of a deepening 'digital divide' and the lack of infrastructure in place to support the deployment of future digital and 'smart' technologies.

Table 5.3 Fixed Broadband Coverage (% Premises)

LEP	Superfast Coverage ≥30 Mbps	Ultrafast Coverage ≥100 Mbps	Full Fibre Coverage
Cornwall and the Isles of Scilly	92%	41%	37%
Cumbria	93%	11%	5%
Gloucestershire	94%	52%	12%
Greater Lincolnshire	92%	28%	3%
Heart of the SW	**94%**	**47%**	**4%**
New Anglia	94%	29%	3%
West of England	96%	76%	16%

Source: Thinkbroadband, September 2019

Comparatively, Heart of the SW is lacking in overall competitiveness when comparing its fixed broadband connectivity with other LEPs. The data illustrates:

- The area trails a number of comparator LEPs when looking at full fibre coverage, with this being some 12% lower than West of England LEP and 33% lower than Cornwall and the Isles of Scilly.

- Ultrafast coverage is more promising but is distant in terms of coverage at a regional (West of England) level and compared to adjacent Gloucestershire.
- Superfast connectivity levels are competitive however, with this having benefitted greatly from a considerable inflow of public funding, with this being lower only than the regional average.

The overriding message presented within the above data is that fixed broadband coverage is dynamic, evolving and subject to highly localised factors. With digital infrastructure a high priority for LEPs and local authorities across the UK, relative positioning is likely to change, and other areas will continue to pursue ambitious digital improvement programmes. Important, too, is the presentation of connectivity figures in actual terms, illustrating actual scale.

Areas struggling with the poorest connectivity are those which are likely to be subject to the government's Universal Service Obligation (USO)[33]. They offer a reasonable proxy for 'not spots' and locations where the quality of broadband provision is below acceptable levels. Recent data shows the extent to which this is a challenge across the Heart of the SW (see Appendix B).

Key messages from the USO analysis shows the following:

- The Heart of the SW faces a significant connectivity challenge, on par with Gloucestershire and Cumbria, in terms of the proportion of premises out of reach of a decent standard fixed broadband connection.
- In absolute terms, this means over 30,000 premises are unable to access USO speeds across the Heart of the SW – a significant number who will be reliant on future public programmes, with some premises subject to costs which will likely exceed the USO subsidy cap by a significant margin.

Mapping Fixed Broadband Coverage

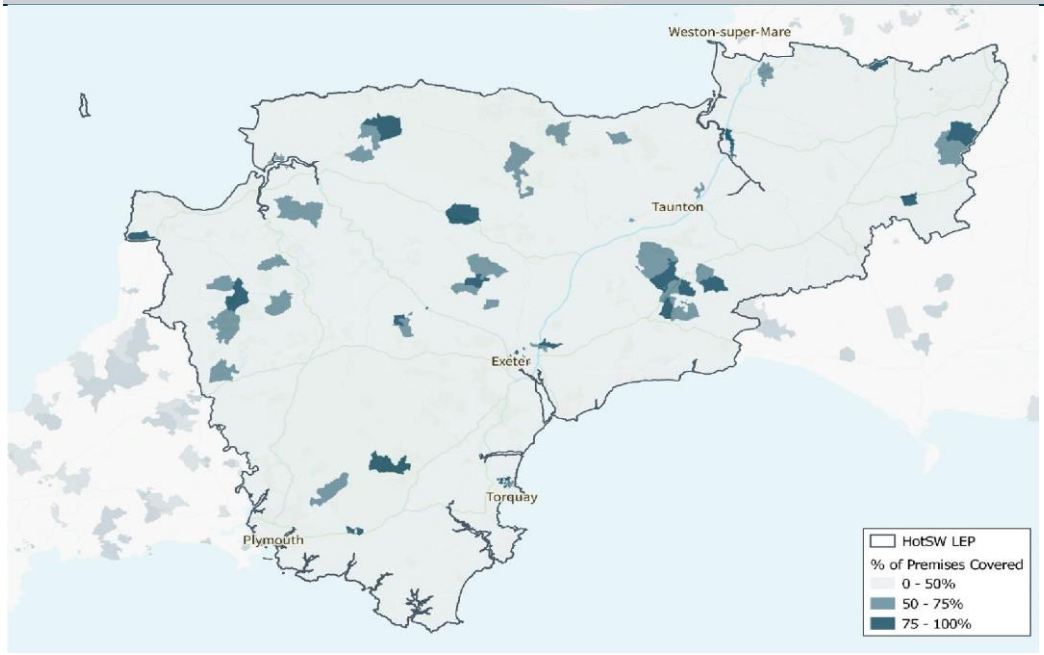
Whilst headline coverage figures provide a sense of premise level connectivity and the relative positioning of Heart of the SW, they do not illustrate the physical distribution of fixed broadband. Figure 5.1 sets out fixed broadband coverage across the area and highlight the areas where fixed connectivity is strongest and weakest.

Full fibre coverage is both patchy and disparate, with full fibre networks largely present in rural locations (mostly driven by CDS investments). There is, however, very little urban presence, with the likes of Exeter, Plymouth and Taunton having generally low levels of provision and limited home and business access.

Ultrafast coverage across the Heart of the SW in many respects mirrors the full fibre footprint, although there is a stronger urban footprint in place. This is driven by Virgin Media's network presence in Torbay and Plymouth, in combination with Openreach G.fast deployments which are also ultrafast capable and build on existing hybrid fibre-copper assets.

[33] The USO will give people in the UK the right to request a decent and affordable broadband connection with eligible homes and businesses able to request a connection, where the cost of building it is no more than £3,400. The USO threshold speed is 10 Mbps (download).

Figure 5.1 Heart of the SW Full Fibre Coverage (Output Area Level)



Source: Ofcom, Connected Nations, 2019

Superfast mapping clearly denotes the extensive presence of networks capable of delivering 30 Mbps (download) speeds, with far greater penetration in the Heart of the SW's rural communities. There are, however, significant areas where network penetration remains low, with large parts of Devon and Somerset particularly affected.

While superfast 'not spots' remain substantive in terms of scale, the increased presence of fibre in rural areas provides a strong basis from which to drive this deeper into more challenging areas (i.e. the case for investment is enhanced as a result of fibre assets being in closer proximity to 'not spot' areas). This is evident within the government's gigabit connectivity programmes, which are expected to leverage significant commercial coverage on the back of public subsidy, as a result of fibre assets being pushed closer to target communities.

The maps, whilst helping to build up an overall picture of geographical coverage and accessible speeds, need to be caveated based on some key limitations:

- They do not adequately highlight smaller areas of poor connectivity, such as 'infill' gaps and isolated 'not spots' in urban areas, which may present a significant challenge and act as a constraint on economic activity (i.e. lower density business parks).
- It is not clear if new developments (residential and commercial) are being connected to fibre-based broadband, which are a significant threat to the Heart of the SW's digital ambitions should they be left in the 'slow lane'. These are an important consideration in terms of future-proofing connectivity.

Despite significant connectivity improvements and the considerable efforts of the public sector to address market failures, a considerable number of areas still suffer from poor fixed broadband speeds. In some cases, these 'not spots' are at risk of a more exaggerated 'digital divide', as full fibre investment increases network capability in areas where existing performance is already strong. This picture sets the scene for future intervention and the focus of the LBP.

Fixed Broadband Take Up

Whilst service availability is an important factor in determining how businesses and citizens are likely to benefit from high speed broadband connectivity, it is important to acknowledge actual service take-up across the Heart of the SW. Actual adoption will drive new digital applications, processes, benefits and ultimately, impacts. Although the incentive to sign-up to high speed broadband is stronger than ever, the decision to connect remains subject to individual choice.

A variety of campaigns have been initiated (to significant success) helping to increase awareness of service availability and promote the benefits of using higher speed broadband, led by Internet Service Providers (ISPs) and CDS. Whilst not a definitive view of adoption, these have yielded strong broadband take-up across the Heart of the SW (particularly phase 1 deployments) and are a reasonable proxy for assessing fibre-based broadband take-up in homes and businesses[34].

- **BDUK Phase 1**:

  Connecting Devon and Somerset – 55%
  All England BDUK project average – 58%

- **BDUK Phase 2**:

  Connecting Devon and Somerset – 10.18%[35]
  All England BDUK project average – 39%

There is an opportunity to more fully understand take-up levels and patterns across the Heart of the SW, including a deeper view of commercial deployments. This can be leveraged to stimulate further commercial investment, develop business cases, as well as to understand which locations and end users have yet to access higher speed services and target interventions appropriately.

Future Network Upgrades

Across the Heart of the SW, both the public and private sectors continue to respond to the need for connectivity improvements – it remains a high priority agenda. Driven by technological advancements, a reemphasised policy stimulus, evolving use cases and a supportive regulatory environment, investment continues apace, including the accelerated deployment of full fibre.

The appetite to deliver further connectivity (fixed and mobile) improvements to homes and businesses across the Heart of the SW remains exceptionally strong, spearheaded by the CDS partnership and in certain locations, commercial supplier plans. A number of activities are likely to be shaped by this strategy and the accompanying LBP, reflecting the need for a holistic approach, balancing investment with progressive policy measures and establishing appropriate links with government investment programmes[36].

[34] BDUK Q4 2018 take-up figures, published by ISP Review, April 2019. In some cases, these figures will be influenced by the timing of delivery and respective rollout progress.

[35] Figures reflect multiple CDS contracts and relative stages of progress as of Nov 2019

[36] Note: The Heart of the SW Local Broadband Plan accompanies this strategy, taking a direct read from the strategic framework and developing more detailed plan of action to address digital infrastructure challenges.

A summary of investment activity and interventions, which are underway or proposed, is summarised below. This reflects the dynamics of the market as well as an expansive programme of activity being developed by the CDS partnership[37].

It is also important to note that a number of challenges may hinder progress across each of the initiatives. Prime examples are perpetual wayleave issues and the potential reintroduction of a fibre tax (which has been subject to time limited relief), as well as deviations in policy linked to government changes and the UK's departure from the European Union. The capacity of the market to deliver is also a critical factor – there are limited resources within suppliers and their supply chains, and the immediacy of delivery is likely to be constrained by this.

[37] The CDS partnership is working to develop an expanded and ambitious programme of activity, focused on maximising value from existing supplier contracts, balancing the need to extend superfast and full fibre coverage and making best use of other policy and investment instruments, with the support of government and the private sector. The basis for this and priorities is set out within the Heart of the SW LBP.

Table 5.4 Planned and Contracted Broadband Activity

Commercial Activity	**Openreach**	• **Fibre First programme** – delivering accelerated and more widespread rollout of full fibre networks nationwide, targeting 3 million homes and businesses by 2020. This is having an impact in the Heart of the SW with locations such as Exeter benefitting from a full fibre future. • **New build programme** – seeking to make it easier and cheaper for developers to deploy full fibre on new build sites, with developments of 30 dwellings or more being the focus. Redrow Homes signed a deal with Openreach to deliver fibre broadband, benefitting developments across the Heart of the SW. • **Community Fibre Partnerships** – a scheme aimed at connecting communities that remain out of reach of commercial and public sector deployments, leveraging co-investment. Heart of the SW communities have benefitted from contracted deployments, such as Compton Pauncefoot and Blackford in Somerset.
	Virgin Media	• **Project Lightning** – an ongoing programme delivered nationally with an emphasis on existing network extensions, rather than standalone network builds, using DOCSIS (fibre/cable hybrid) technologies capable of speeds in excess of 350 Mbps. • Aims to connect 4 million additional properties by 2020, funding by £3bn of investment and is impacting areas within the Heart of the SW, such as Torquay. • Includes some new build elements, where Virgin will deploy full fibre technologies.
	Other	• **Open Fibre Networks Limited** – full fibre provider targeting new build development sites, with a small footprint around Exeter. Circa 20-30,000 premises connected in the UK, but little known about future expansion plans. • **Rural Comms** – a Devon based wireless provider, serving areas out of reach of fixed network coverage. Operates from Ivybridge covering locations such as Loddiswell, Moreleigh, Avonwick and Brownston, servicing homes and businesses up to 40 Mbps.
Public Sector Activity	**BDUK contracts**	• **CDS** – has let several contracts with suppliers to extend the reach of superfast broadband to areas which are commercially unviable. These are in various stages of delivery. • **Phase 1** – BT contracted to deliver 275,000 superfast connections, with deployment now complete and further extensions reinvesting early clawback sums are underway. • **Phase 2** – Airband are delivering a blend of full fibre and wireless connections across the Heart of the SW, intended to extend ultrafast and superfast speeds to 21,000 premises, with a devoted rollout across the area's national parks. Additionally, six new contracts were agreed at the end of 2020 and will deliver full fibre to a further 56,000 homes and businesses by the end of 2024.

Local Full Fibre Networks and Rural Gigabit Connectivity Programme	• **Local Full Fibre Networks (LFFN)** – government backed programme seeking to accelerate the deployment of full fibre networks across the UK, leveraging public sectors sites and assets to deliver commercial investment. £740m of total funding available to support challenge fund projects and voucher schemes to secure full fibre connections. To date, Plymouth undertook a programme to deliver a range of new connections to public buildings under this funding opportunity (See case study below). This programme has now finished but could be considered as an option to help extend Fibre in rural areas. **Rural Gigabit Connectivity Programme** – commenced in May 2019, running until March 2021, informed by the Future Telecoms Infrastructure Review. Adopts an 'outside in' approach, which seeks to ensure the final 10% of premises (nationally) are addressed at the same pace as the rest of the UK. Includes a series of investment strands, including a voucher scheme (up to £3,500 per SME and £1,500 per residential premise) and community hub strand. Future Heart of the SW bids are under consideration.
Gigabit Voucher Scheme	• **Gigabit Broadband Voucher Scheme** – is designed to support the delivery of full fibre connectivity in urban and rural areas. Eligible homes may apply for funding towards the cost of installing full fibre broadband to their premises when part of a group project. Applicants can use vouchers worth up to £2,500 for each SME and £500 per residential premise to deliver a minimum speed of 100 Mbps.
Better Broadband Scheme	• Finished in December 2019, the scheme offered a subsidised basic broadband connection to anyone unable to get download speeds of at least 2 Mbps, and who will not benefit from superfast broadband roll out within the next 12 months. Eligible premises that can, had the costs of their connection subsidised, so their first-year costs were no more than £400.
Market Stimulation and Policy Work	• A blend of strategic work aimed at stimulating the digital infrastructure marketplace and developing policy that leads to commercial investment. All Councils are active in this capacity, working to maximise enhanced connectivity through new build projects, revised planning policies, statistical coverage analysis and proactive supplier engagement. This work is consistent with the government's strong focus on a 'barrier busting' approach, which is aimed at removing commercial barriers to deployment.
USO	• The USO will provide a significant number of homes and businesses across the Heart of the SW with the opportunity to request access to a broadband connection capable of speeds (download) of 10 Mbps or more. Subject to consultation, legislation and implementation by Ofcom, applicants will be able to access up to £3,400 to help connect their premises, covering the whole or partial cost. It is likely that technologies deployed (and speeds achieved) will be on a case-by-case basis.

Prime Ministerial Announcements	The election of a new Prime Minister in 2019 triggered a renewed commitment to accelerating the digital agenda, including further digital infrastructure investment with a desire to see the UK fully fibred by 2025. Whilst the announcement has been received with a degree of optimism, the implications of the announcement are not yet known. Of particular relevance is the response from broadband providers, which highlights four key challenges which need to be overcome in order for the target to be deliverable (planning reform, removal of the fibre tax, new build connections and resolving labour supply constraints).

Local Case Study: Plymouth Local Full Fibre Network Project

In 2019, Plymouth City Council secured £3m of funding from the UK Government's Local Full Fibre Network (LFFN) programme, which will result in a gigabit capable fibre broadband network being developed to connect 227 public sector (schools, council etc) across Plymouth. This followed a competitive bidding process and development of a comprehensive investment case to secure government funding.

In line with the objectives of the LFFN programme (Challenge Fund Wave 3), the project does not only aim to improve public sector connectivity – it will significantly extend access to full fibre networks making it easier and cheaper for businesses and homes to connect, providing people with the future proof connections they need.

The new network build is subject to a council-led procurement with the intention of securing a supplier to conduct the roll-out. Subject to successful contracting, the project also hopes to attract more private investment into the area as a consequence of deploying open access fibre infrastructure, which extends deeper into 'not spot' locations.

Digital Connectivity: Mobile

Mobile connectivity is an integral component of the Heart of the SW's digital infrastructure offer. It provides the basis for seamless communication and increasingly, access to broadband speeds equivalent to those achieved through fixed networks. For the end user, the issue of technology is less of a consideration – robust speeds and connectivity are now the expected norm. They are also converging with fixed digital infrastructure, reliant upon fibre points of presence to backbone mobile networks.

Whilst coverage has been largely determined by commercial operators and the conditions of regulation, the government has taken on a more prominent role in plugging mobile 'not spots' and advancing the rollout of 5G.

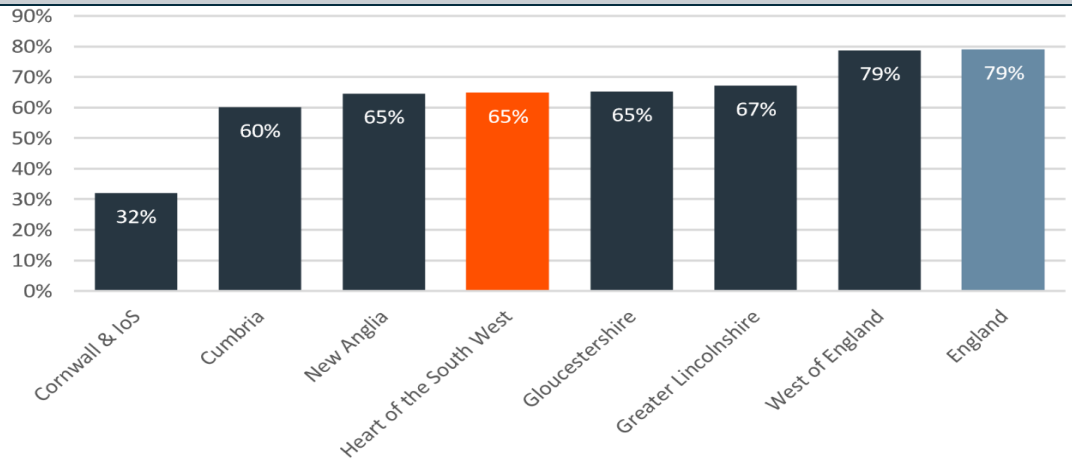
Existing Coverage

The latest statistical release from Ofcom provides an up-to-date view of 4G mobile connectivity across the Heart of the SW. This can be analysed in a number of different ways, to assess the quality and extensiveness of mobile broadband coverage. Here, the following measures are used as a robust reflection of mobile coverage:

- **Indoor 4G premises coverage (all 4 operators)**[38]
- **Indoor data services premises coverage (all 4 operators)**

Around 65% of Heart of the SW premises are currently served by 4G indoor coverage, which means the area trails behind the national and regional averages and several comparator LEPs. In actual terms, this suggests that around 290,000 premises across the area are currently unable to receive indoor 4G reception, which denotes limitations placed on end users in mobile 'not spots'.

Figure 5.2 Indoor 4G Premises Coverage



Source: Ofcom, 2019

[38] Indoor 4G coverage provides the best proxy for an acceptable quality mobile service needed for everyday use.

In terms of data services coverage indoors (which captures 2G, 3G and 4G data capabilities), Heart of the SW again trails behind the national and regional averages as well as lagging behind all but one comparator LEP (Cornwall and the Isle of Scilly). In these terms, 93% of premises can receive a data services indoors, meaning that around 58,000 premises cannot receive access to even the most basic data connection (see Appendix B).

Again, mapping helps to show the extent to which areas remain out of reach of mobile services including fast and reliable 4G coverage, and the locations where issues are most pronounced.

	Very good chance of indoor 4G data reception
	Good chance of indoor 4G data reception
	Possible chance of indoor 4G data reception
	No coverage

Figure 5.3 Indoor 4G Data Coverage (EE)

Source: Ofcom, 2019

Across the Heart of the SW, coverage is strongest in urban and densely populated areas (denoted by dark green shading), whilst many rural locations suffer from relatively poor coverage (orange and white shading). This largely mirrors fixed broadband coverage patterns, although there is some discrepancy across different mobile providers, meaning user experiences are subject to considerable variability.

Unsurprisingly, mobile connectivity is poorest in topographically challenging areas, including Dartmoor and Exmoor national parks, where service is patchy and, in some cases, non-existent.

Despite these challenges, mobile operators are continuing to make investments, upgrade equipment and in some cases share infrastructure, leading to incremental coverage improvements and even investment in rural areas. This includes commitments associated with spectrum licences, ongoing 4G infill investments and the deployment of technological solutions to boost existing signal quality (i.e.

aerials and boosters). The recent Shared Rural Network agreement, announced by mobile operators with the support of Ofcom is also a significant development, with a key role for local authorities in expediating this and making the area an attractive investment proposition.

Despite this, homes and business across the Heart of the SW are constrained by issues such as signal latency and a lack of consistent operator coverage. Indeed, this remains a national issue and the UK's competitiveness based on mobile speeds still lags some European competitors[39].

Looking Ahead

The UK is now preparing for a shift towards the switch on of 5G, as the next incarnation of mobile technology. With support from the government, regulator and commercial impetus, 5G is beginning to make an impact. Recent spectrum auctions have positioned mobile operators to deliver 5G networks and also increase the reach and capacity of 4G, with the latter remaining a matter of importance when considering mobile 'not spots' and its supplementary role to fixed broadband connections.

The role and future coverage of 5G across the Heart of the SW has yet to be defined, albeit it is likely that deployments will be prioritised in urban locations first. These 5G networks will also be reliant on a deeper density of full fibre infrastructure, highlighting the interdependency of fixed and mobile technologies and the need to consider both symbiotically. In the midst of this, the need to enhance current 4G service provision is also significant. There is a role for the public sector here.

The government is actively accelerating the delivery of 5G. To date, this has led to the funding of 5G testbeds and trials, to assess feasibility and further develop the use case. This follows an initial wave of investments, which sought to understand 5G deployments in a variety of contexts. The government is also undertaking a large-scale exercise to free up 700 MHz spectrum for future 5G repurposing and mobile use.

A local example of this in action is the 5G Rural First project (led by Cisco and lead partner University of Strathclyde). The project seeks to develop the use case for 5G (and the speed and quality of connection it offers) in the context of smart farming techniques, radio broadcasting, utilities and environmental management (IoT) and development of Dynamic Shared Spectrum.

Digital Connectivity – Satellite

Satellite coverage across the Heart of the SW has been provided by a number of commercial suppliers and indeed CDS subsidised connections as part of the Better Broadband Scheme in 2017.
Satellite connectivity traditionally had issues regarding latency so wasn't suitable for services such as Video Conferencing and gaming. (Usage of which as rocketed due to the pandemic).

In 2021 the StarLink satellite broadband service from SpaceX is being rolled out across the UK. It is already available in some rural parts of Devon. It offers low latency fast connections (up to 150Mbps) with a simple plug & play set up. The arrival of this service on the market would be able to fill the gaps in the provision of Superfast internet in rural areas waiting on the Fibre Rollout to reach them.

[39] OpenSignal, State of Mobile Networks (UK), 2018

Local Case Study: Connecting Dartmoor and Exmoor

The 'Connecting Dartmoor and Exmoor' programme has delivered superfast and improved broadband coverage across Dartmoor and Exmoor National Parks. In partnership with the public and private sectors, this has enabled some of the Heart of the SW's remotest homes and businesses to get better connected and significantly boost access to superfast broadband.

The project has been delivered by Airband Community Internet – a specialist in delivery of highspeed wireless broadband solutions for remote rural areas. The network uses a hybrid of wireless technologies and fixed infrastructure to distribute radio signals to homes and business to remote and rural communities. The project has led to the successful connection of some 5,000 premises, who now enjoy speeds of 30 Mbps or more.

Other Networks and Assets

The Heart of the SW also benefits from the presence of other assets, which facilitate online access. This includes Wi-Fi hotspots across cities, towns and villages. These networks allow businesses to communicate with customers and provide access to bespoke local information. Other public Wi-Fi networks are backboned by the likes of BT, Virgin Media and local Councils, with some being free to access. There is a clear need to ensure these are upgraded and extended over time.

The Heart of the SW is also punctuated by a patchwork of leased lines and ethernet circuits, largely serving business customers, seeking more secure and stable connections. These are difficult to map, and the true extensiveness is unclear but provide further capacity which may be harnessed for the benefit of communities and residential customers. These assets will continue to service end users who have high capacity and secure connectivity needs.

Local Authorities across the Heart of the SW also harness digital infrastructure to deliver key services. This includes area wide public sector networks, which connect schools, libraries, health services, traffic management infrastructure and emergency services provision. These are subject to specific contractual requirements and meet differing needs, limiting their external value.

At present, local authorities across the Heart of the SW do not own significant digital infrastructure assets (such as ducting, dark fibre etc). However, there remains scope for public assets (such as estates and street furniture) to be leveraged to support the rollout of fixed and mobile infrastructure.

Infrastructure: Strategic Imperative

- **The Heart of the SW has been subject to substantial digital infrastructure coverage improvements, with fibre coverage extended to many more homes and businesses as a result of commercial and publicly funded programmes.**
- **Context is key and the relative connectivity and positioning versus other LEPs helps to define the distinctiveness and competitiveness of the Heart of the SW's digital offer, with comparators making significant gains in speed and coverage, in parallel.**
- **The CDS programme has played a major role in securing improved fixed broadband coverage, driving fibre deeper and working proactively to secure investment and stimulate the market, developing strong and rich partnerships.**
- **The extensiveness and impact of existing CDS rollouts is subject to contract performance review and will require careful contract management to deliver outcomes which are commensurate with coverage and timescale targets.**
- **Fixed and mobile coverage remains mixed however, dependant on geography and the nature of technologies deployed, with 'not spots' and areas of poor connectivity significant in number and increasingly dispersed.**
- **'Not spots' need to be viewed in the context of actual numbers (premises affected) as well as coverage (%) in order to articulate the scale of remaining challenges and better understand the drivers of market failure.**
- **There is an urgent need to address the 'digital divide', balancing the importance of access to superfast services and 4G, whilst maintaining a forward-facing focus and accelerating the rollout of full fibre and 5G.**
- **Take-up data, whilst constrained, suggests that high speed broadband is attractive to homes and businesses but the need to incentivise adoption and accelerate the exploitation of associated benefits remains high.**
- **There is considerable scope for the private and public sector to continue to directly invest in digital infrastructure and accelerate full fibre deployments, given the strength of the national policy position and breadth of investment programmes.**
- **Local authorities across the Heart of the SW also have an opportunity to make more effective use of market stimulation, policy making, collective buying power, estates and assets to enhance the commercial imperative and increase deployment.**
- **There is also scope for community capacity and a willingness to champion the digital cause to be furthered, helping to reduce commercial barriers and expose high levels of home and business demand.**
- **There is a need for the Heart of the SW to take a proactive role in shaping and influencing the national digital agenda, including taking a 'barrier busting' approach to issues such as wayleaves and the reintroduction of fibre tax.**
- **Moving forward, ambitions should be orientated around the speed, resiliency and extensiveness of connectivity, rather than focusing solely on certain technologies – a flexible and agnostic approach will be key.**

6. Making the Case: Digital Places

Technology is already playing an integral part in the design and function of places, making them more dynamic, interactive, future-proof, democratic, sustainable and safer.

Digital transformation also opens up new opportunities to address challenges in different geographies and locations, harnessing the power of technology to mitigate impacts, design new solutions and democratise government and decision-making processes. There is also a compelling base of evidence emerging internationally, adding further weight to this argument and the need to press forward with greater urgency[40].

Digitally Driven: Growth and Regeneration

The Digital Opportunity

The Heart of the SW is evolving – growing and changing the physical composition of urban and rural places across the constituent local authority areas. This evolution is seen most tangibly through:

- **Growth** – the creation of new settlements and expansion of existing communities, primarily driven by new housing and commercial development.
- **Regeneration** – the revitalisation and re-use of existing sites, creating new identities, spaces, mixed uses and economic functions.

Within this shaping of new and revived places, the role of digital technology is intrinsic. Its function is observed from design to delivery, facilitating best practice, stimulating innovation and supporting the deliberate curation of residential, business and public realm spaces. The delivery of such sites provides an opportunity for these to adopt a best-in-class digital offer, helping the area to set itself apart from its competitors.

Some examples of how digital technology can be integrated as a key component of growth and regeneration across the Heart of the SW include:

- **Delivering the highest quality digital infrastructure to new development sites** – installing high specification fixed and mobile connectivity to serve new homes and commercial developments, increasing attractiveness, commercial viability and introducing the potential to extend connectivity to wider areas[41].
- **Harnessing the potential of smart technologies** – integrated with high speed digital infrastructure, the implementation of smart technologies, including IoT, sensors and use of open data, supporting more inclusive, sustainable and productive neighbourhoods[42].

[40] Nesta, Six pioneers in digital democracy, 2019
[41] DCMS, New Build Developments: Delivering gigabit-capable connections, 2018
[42] McKinsey, Smart cities: Digital solutions for a more liveable future, 2018

- **Using technology to adopt a more democratic approach to place making** – digital technologies offer the chance to increase civic participation in new development and regeneration design and consultation, reflecting real-time local views whilst promoting greater accountability at key points along the design and planning process[43].
- **Embedding smart solutions in social housing** – ensuring affordable and social housing stock is connected to digital infrastructure, enabling residents the chance to make equitable use of digital information, services and smart technologies[44].

The digital characteristics of a place therefore determine their relative attractiveness to residents and businesses and the extent to which these locations are distinct. Their value is also increasingly recognised within the national planning system, where there is a strong recognition of the importance of digitised citizens and communities and the need to develop policies which incentivise digital infrastructure investment.

Heart of the SW's Growth Agenda

There is an active programme of regeneration and new development underway across the Heart of the SW, in each of the local authority areas, including brownfield and greenfield sites. Local Plans and the growth objectives set out within the Local Industrial Strategy illustrate the scale of development that is underway or planned, especially within key urban centres, market towns and the three Enterprise Zones.

Across each of these locations, there is a desire to balance growth with sustainability and the protection of the area's natural assets. The thrust of economic development policy is therefore orientated around key sectors, driving up levels of productivity, creating higher value employment and ensuring local people are well-placed to benefit from growth.

Physical regeneration is integral to this, through the creation of new employment space, improvements to the public realm, upgrading infrastructure and enhancements to natural amenity. The delivery of housing is of centre stage too, emphasising the opportunity to attract new and skilled people to the Heart of the SW through a combination of affordable, high quality and sustainable homes.

Key growth and regeneration sites across the area are summarised in the table below and help to position the opportunity to embed digital infrastructure and solutions within each. In some instances, this is already underway. In others which are less advanced, digital technologies offer a chance to create places that are more distinct and liveable.

[43] Nesta, Six pioneers in digital democracy, 2019
[44] Cyan Technologies, Digital Transformation Of Social Housing – Top Five Trends, 2019

Location	Summary
Exeter	Framed by the Greater Exeter Strategic Plan, proposals are afoot which will see the creation of up to 57,000 new homes in and around Exeter, to be delivered by 2040. In parallel, a series of flagship projects will spearhead the regeneration of the city and enhance its economic development proposition, including the City Point project, plans to expand Exeter Airport and redevelopment of South Street.
Plymouth	The city is subject to an expansive regeneration agenda, incorporating a number of projects which are being led by the local council. High profile schemes include the redevelopment of the central railway station, city centre mixed use developments, regeneration in Millbay and Oceansgate as well as the large-scale revitalisation of land formerly occupied by the Ministry of Defence (MoD) in Devonport.
Taunton	As the South West's first designated Garden Town, Taunton's growth ambitions are founded on the principles of sustainability and citizen-orientated development. Growth will be fuelled by housing and large developments in the town centre, such as Staplegrove and Comeytrowe and Trull Garden Communities (over 4,000 homes combined), as well regeneration centred on the Railway Station Improvement and Regeneration Corridor.
Torquay	The town is subject a number of ongoing schemes aimed at reinforcing the area's status as a tourism and commercial destination. Examples of developments set to alter the town's fabric include waterfront improvements, mixed use Torwood Street regeneration, the construction of a new harbourfront hotel and Renovation of the Palace Hotel. The council is also progressing with Future High Street Fund bids which incorporate digital training programmes for local retailers.
Devon Market Towns	Devon is served by a number of historic market towns which are playing an important role in delivering growth and an improved economic development offer. Examples include Newton Abbott (creation of up to 1,800 new homes, Market Walk Shopping Centre redevelopment), Tavistock (Guildhall restoration, new hotel developments) and Axminster (creation of 850 new homes as part of the North Eastern Urban Extension and activity built around reinvigorating the town's High Street).
Somerset Market Towns	Being widespread investment in its market towns, with an emphasis on improving their viability and attracting new and younger residents to each. Examples include Bridgwater (Bridgewater Vision/Celebration Mile creating a new innovation and collaboration space and 40,000 square foot town centre regeneration and leisure scheme), Yeovil (construction of up to 4,000 new homes by 2036 and the Western Corridor road improvement scheme), Ilminster (revitalisation of brownfield land to create 85 new homes) and Chard (flagship redevelopment of the town centre).

Exeter and East Devon Enterprise Zone	**Exeter and East Devon** is a four-site Enterprise Zone featuring a wide range of employment space options and anchor tenants, such as the Met Office at the Science Park Centre. The zone has been subject to considerable investment, with multi-million-pound projects focusing on upgrading enabling infrastructure such as public transport links and a new M5 bypass.
Gravity Enterprise Zone	**Gravity** is subject to considerable investment to transform a brownfield site into a contemporary and flexible business park. The centrepiece of this is a 222-acre immersive innovation campus which is expected to generate up to 4,000 jobs around 2 million square foot of commercial space, targeting sectors operating in low carbon and energy generation sectors.
Oceansgate Enterprise Zone	**Oceansgate** is the first marine Enterprise Zone in the UK, occupying a 35-hectare site on the edge of one of the largest dockyards in Europe. The zone is due to be repurposed through three phases of development, driven through the creation of 270,000 square foot of flexible employment space aimed at businesses operating in the marine and advanced manufacturing sectors.

Local Case Study: iMayflower Project

The iMayflower Project is a three-year programme that will support transformative culture-led economic growth and productivity through investing in digital creative industries. As one of only five such projects across the UK, iMayflower will:

- Deliver large-scale cultural and creative events to inspire and enrich lives.
- Grow digital creative industries, focusing on Immersive Tech and Digital Fabrication through targeted business support.
- Increase the creative and business skills of young people, communities, graduate and professionals, creating smart citizens.
- Provide accessible start-up and scale-up funding for businesses in the area's creative economy.

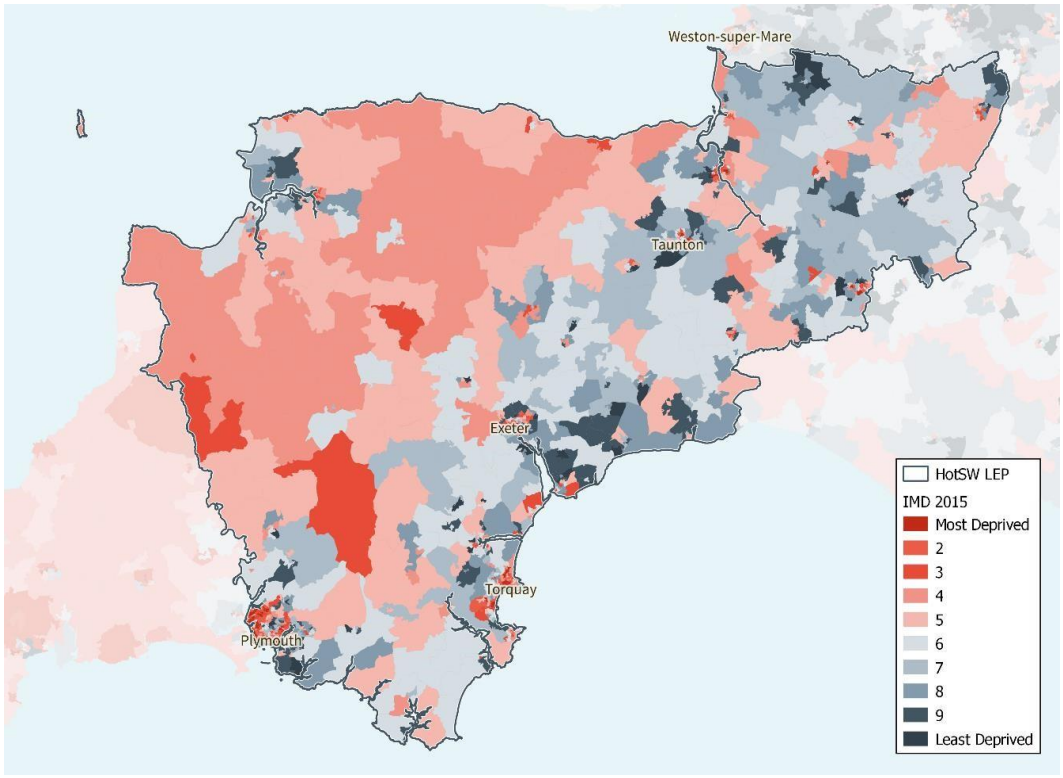
Digital technology lies at the heart of the project and it will help to develop a future wave of businesses focused on immersive technologies and digital fabrication, creating a new hub and specialisms in Plymouth.

Regenerating Deprived Areas

The continued presence of acute deprivation across the Heart of the SW is of critical concern and in some cases, tied directly to active regeneration efforts (physical and otherwise). The drivers of this are varied, with a number of factors influencing individual prospects and quality of life.

Across the Heart of the SW, there are pockets of high and very high deprivation, found within urban and rural settings, with some communities (5% of LSOAs) featuring within the 10% most deprived areas nationally. These are dispersed across the area and encapsulate a number of urban areas (particularly Plymouth and Torbay). Of note too, is the presence of severe deprivation issues in rural areas, with notable pockets in the north and centre of the area, as well as communities adjacent to Cornwall.

Figure 6.1 Heart of the SW Deprivation Map



Source: UK Indices of Multiple Deprivation, 2015

There are opportunities to apply digital connectivity and technology to mitigate against deprivation challenges and enhance the quality of life for people in these locations[45]. Most immediately, this informs the rationale to address connectivity 'not spots' and close the 'digital divide', targeting locations where connectivity levels are poor and deprivation challenges acute.

Potential responses to the Heart of the SW's deprivation issues, underpinned by the deployment of innovative and 'smart' digital technologies, include:

- **Improved online access to essential services** – particularly those delivered by public bodies, such as healthcare (NHS, Clinical Commissioning Groups), general advisory services, HMRC and the DVLA, enabling improved access to information and decision making.

[45] NHS, Digital inclusion project brings healthcare technology to the homeless, 2019

- **Improved access to training** – including courses offered exclusively via online platforms, which provide upskilling opportunities and serve people who are seeking to continue their professional development and pursue new careers.
- **Improved access to employment** – including job vacancy and recruitment data and the ability to apply for jobs remotely, increasing scope for gaining meaningful employment.
- **Improved community cohesion** – through access to community-based information, services and peer-to-peer support, including jobs clubs, special interest groups and more bespoke information, such as the incidence of crime and environmental quality data.

Case Study: Digital Health Devon

Originally a pilot project in Torbay, the Digital Health Devon has now been rolled out across the county after it won the 'Highly Commended' award at the 2018 National Healthwatch Excellence Awards. It is a partnership of organisations offering free digital training in Devon to show people how to use the internet to access local health, social care and wellbeing services. One of the partners are Local Healthwatch – the people's champion of health and social care.

The project has trained around 300 people via public 'digital drop in' sessions held at various public venues, including GP Practices, libraries and community centres and distributed over 600 training booklets to the local community. Following a successful bid for European Regional Development Funding, Digital Health Devon are expanding the project, hosting drop-in sessions at GP Practices and select community venues.

Digitally Driven: Public Sector Services

Digital by Default

The large majority of public sector institutions have been or are actively pursuing a digital transformation agenda, orientated around the from realisation of internal and external benefits.

The Heart of the SW is no different and the rationale to invest in digital processes and services is stronger than ever. Broadly, the adoption of technology offers the chance to[46]:

- **Rethink the design and delivery of services** – in the context of changing end user needs, behaviours and communication and transaction mediums.
- **Achieve efficiencies through the digital transformation of services** – by implementing technology driven approaches, yielding direct costs savings.
- **Better integrate complementary services** – to improve efficiency, lower costs and avoid increase organisational resiliency.
- **Enhance the end user experience** – by providing tailored and reactive services which provide transparent and immediate access to information and key services.
- **Operate as a disruptor** – leading agendas, challenging traditional delivery models and developing the next wave of game-changing public goods and services.

[46] Accenture, Digital Technologies: The future of public services, 2016

- **Encourage and develop an entrepreneurial workforce** – which are up-skilled, empowered, willing to experiment and outcome driven.

Digitised Local Services

Public sector bodies across the Heart of the SW actively driving forward the digital imperative, with a focus on commercialisation of assets, increasing the transparency of decision-making and in response to central government directives. This is evident across local authorities and Clinical Commissioning Groups in particular, illustrating a commitment to digital disruption.

In some cases, these organisations are acting as vanguards, championing innovation and working collaboratively with private sector partners. The rationale for furthering digital transformation efforts remains strong, with efficiency and quality of public services at the core. The extent to which public bodies across the area have developed a digitally orientated approach is reflected within the select examples below.

Table 6.1 Example Digital transformation Activities

Organisation	Example Activities
Devon County Council	**Smarter Devon Strategy** represents the Council's approach to making more effective and efficient use of data and information that it collects and has access to, in order to enhance decision-making and public service delivery. **Digital Devon** crystallises the Council's digital activities, orientated around skills and knowledge, connectivity and infrastructure, democracy and engagement, tools and transactions and data and intelligence, with a commitment to always measuring and improving performance. **Devon Digital Carers** focuses on the development of an extensive digital video library designed to support carers across Devon with access to information needed to support informed decision-making and care, as part of the Innovation in Healthy Ageing Programme **Open data platform** provides access to a variety of Council information, made available through the Open Government Licence.
Somerset County Council	**Somerset Intelligence** is an online repository and one-stop shop for data relevant to Somerset, including information linked to the economy, health and wellbeing, crime and housing. **Somerset Digital Transformation Programme** – aimed at digitising council services, to aid efficiency, timeliness of delivery and make services increasingly user responsive**.** efficiency and reducing downtime of staff by deploying new software architecture and cloud-based services. **Somerset Library Digital transformation** is being driven through the introduction of digital products, resources and learning opportunities, including online business tool subscriptions to health and wellbeing services.

Plymouth City Council	**Connected Plymouth** is a steering group drawn from the public and private sector across Plymouth that works to enhance the quality of digital connectivity and its exploitation by citizens and businesses across the city, delivering action governed by the Plymouth Growth Board. **Smart Cities Working Group** is a mix of private, public and third sector stakeholders with an interest in the Smart Cities agenda and an appetite for taking projects forward and supports the development of pilot projects and collaborations between the University of Plymouth and private and public sector organisations. **Open data platform** provides access to a variety of Council information, made available through the Open Government Licence and incorporates the Council's Data Plymouth and Data and Data Play initiatives.
Torbay City Council	**Open data platform** provides access to a variety of Council information, made available through the Open Government Licence, including socioeconomic, environmental, health and well-being data.
Heart of the SW District Councils	**Digital Northern Devon Strategy** sets out the digital rationale for North Devon Council and Torridge District Councils to adopt a digital approach, orientated around three strategic priorities ('getting people digital', 'the right kind of economic growth' and 'unlocking potential though collaboration'). **Digital High Streets** is a fund established by South Somerset District Council which provides help to small businesses to improve their online capacity, profile and therefore encourage greater footfall across the area's market towns, with grants of up to £500 available. **Open data platforms** are made available to external users across North and West Somerset providing access to a variety of Council information, made available through the Open Government Licence.
Devon Clinical Commissioning Group	**Local Digital Roadmap** sets out a multi partner approach to using digital technologies to enhance the patient experience, improve care, protect patient data, improve the integration of data and increase efficiencies.
Somerset Clinical	**Somerset Digital Roadmap** is similarly focused to Devon's Commissioning Group digital roadmap and is orientated around 4 primary workstreams – 'A Paperless System', 'People Facing Services', 'Real-Time Data Analytics at the Point of Care' and 'Whole Systems Intelligence'.
Torbay and South Devon NHS Foundation Trust	**Technology Enabled Care** provides a range of technology enabled care services and is looking to transform the way that technology supports health and wellbeing. Services are focused on telecare and the use of equipment which can help to track fitness, poor health and monitor conditions, keeping people at home and reducing the need for hospital care.
Devon and Cornwall Police	**Digital Dog Training** has been implemented by the police force to assist in tackling cyber-crime and those undertaken through technological means, such that dogs can identify computers, mobile phones, USB sticks and SD cards to prevent serious crime and terror offences.

Avon and Somerset Police	**Police Digital Services** is helping the force to deliver comprehensive digital transformation and support operational policing, including a focus on the TrackMyCrime portal, building campaign microsites and specialist software and mapping and optimising user journeys. **Office for Data Analytics** is a virtual hub facilitated through a cloud-based platform and is supported by a physical hub. Avon and Somerset Police act as the lead/host organisation and using data science, predictive analytics and data visualisation it is helping to improve outcomes for citizens while also reducing costs.

Source: Devon County Council, Somerset County Council, Plymouth City Council, Torbay City Council, North Somerset Council, South Somerset District Council, Torridge District Council, West Somerset Council, University of Plymouth, Devon Clinical Commissioning Group, Somerset Clinical Commissioning Group, Devon and Cornwall Police, Avon and Somerset Police, 2019

Case Study: Commonplace

Commonplace has developed a sophisticated online platform that has been created to facilitate a deeper level of interaction with local people. The focus of this community engagement varies and includes assessing sentiments regarding developments, projects, and initiatives that are liable to impact the characteristics of places and neighbourhoods.

To date, the software has allowed over 1 million people to offer candid and timely views on the places they live, key challenges and opportunities for change. A primary client in UK context have been local authorities, who have used the platform to inform decision-making, shape strategies and influence policy making.

A classic example of this is within a planning context, where the software has acted as a vehicle for gathering real-time place-based data in response to development proposals and consultations. The technology has given councils a broader reach with its residents and helped to strengthen community relationships.

Digitally Driven: Natural Environment

The Heart of the SW is predominantly rural in landmass, punctuated by sizeable and important urban centres, historic market towns and a patchwork of villages. Within these rural areas are prized landscapes, protected natural ecosystems, a wealth of natural resources and a productive landmass which underpins agriculture and land management activities.

The increasing influence of digital technology is observed through the ways by which rural businesses, across a broad spectrum of sectors, function and how technology has become increasingly interwoven within day-to-day operations. Digital technology therefore has a broad spectrum of applications relevant in a Heart of the SW context:

- **Enabling more efficient use of energy** – such as the adoption of smart grids, installation of sensors and integration IoT devices to conserve, monitor and promote more reactive use of heating and electricity.

- **Increasing the cost effectiveness and attractiveness of sustainable energy** – advancements in digital technologies are helping to drive down the costs of sustainable energy sources (such as heat pumps, wind and solar).
- **Driving more effective land management** – through the use of data, analytics and technology-enabled applications, the conservation of natural assets and landscapes can be improved, introducing a greater degree of accuracy and preventative measures.
- **Increasing citizen and business engagement levels** – digital technologies are making information and data more accessible, facilitating positive behavioural change and through increased awareness of environmental issues.
- **Promoting the natural environment as a tourism resource** – digital mediums are helping to communicate the virtues of the natural environment, opportunities to access local attractions and the importance of conservation.

Addressing the Global Climate Emergency

In 2019, the UK government declared a national climate emergency. This was prompted by the need to work towards rapidly reducing carbon emissions and reach a point where emissions are at net zero, driven by the global need to address climate change and the very real existential threats associated with continued global heating. This is backed by the United Nations, who have suggested that the planet has little more than a decade before a climate change will have reached catastrophic proportions.

The degree of concern is reflected across the UK, at a local level and through the endorsement of a climate emergency campaign across the Heart of the SW. This wide-reaching recognition of climate change and the need for action illustrates the importance of environmental issues in the Heart of the SW, linking with the area's ambitious sustainable growth agenda and the need to preserve and enhance its valuable natural resources.

The threat of a climate emergency places digital technologies centre stage, as a driver of innovative solutions and as a means to drastically reduce carbon footprints. Technological solutions may range in scale and leverage local assets with the intention of driving behavioural change and materially lowering carbon emissions. Governments are responding in kind and the role of technology is intrinsic to policy commitments. Examples of this include:

- **The modernisation of farming and emergence of agri-tech applications**
- **Introduction of digitally-monitored emission free zones**
- **Delivering energy efficient homes and buildings backed by technology**
- **Widespread use of battery technologies to store energy**

Locally, the Heart of the SW has an opportunity to make use of its assets and capabilities to address climate change. Assets such as South West Partnership for Environmental and Economic Prosperity (SWEEP), will be critical to developing a digitally-led approach.

Case Study: North Devon Biosphere

North Devon Biosphere Reserve was the first in the UK to be extended to meet UNESCO's new criteria for biosphere reserves. The biosphere reserve is located on the estuary of the Taw and Torridge Rivers, which remains active in the manufacturing, agriculture and fishing industries. The biosphere reserve also has coastal dune systems, marshland and woodland.

The reserve plays a special role in developing an approach to a more sustainable future, delivering a whole set of benefits. It addresses challenges such as climate change, food security and energy security choices, the structure of the economy and how society can benefit. Within the reserve, a variety of technologies are being deployed to explore more sustainable practices and develop approaches that can be delivered on a much larger scale.

Local Digital Applications

The Heart of the SW's natural environment is diverse, complex and protected. It is covered by two national parks (Dartmoor and Exmoor), areas of outstanding natural beauty (AONB) and is home to UNESCO World Heritage Sites. A complex ecosystem of rivers and coastline are key assets and shape the surrounding landscapes and maintain an important role in the context of energy, transport and tourism.

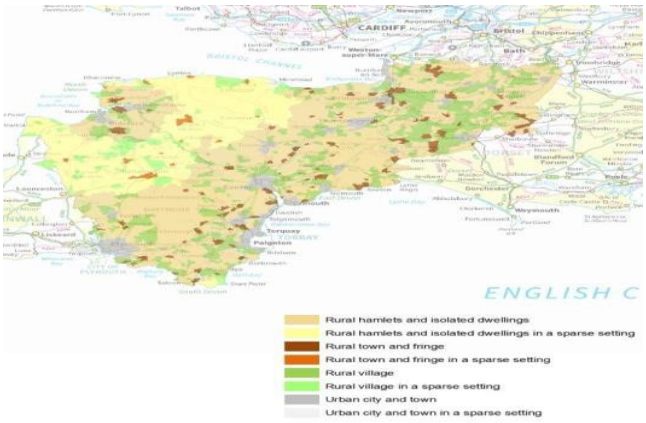


Figure 6.2 Heart of the SW – Rural Classification 1

The area is also home to a variety of renewable energy installations, including solar, wind, and renewable sources of heat. These are playing a significant role in lowering carbon footprints, delivering energy security and reducing greenhouse gas emissions.

Local authorities across the Heart of the SW are also pursuing a progressive waste agenda, leading to disposal shifts and greater levels of recycling amongst homes and businesses.

There are a number of initiatives occurring across the Heart of the SW which signify the important role that digital technologies are playing, linked to tourism, conservation and enhancement of the natural environment. These include:

- **Visit Exmoor** – an online platform used to promote Exmoor to visitors, governed by a non-political body. The website is the official tourism website for the area and delivers Visit Exmoor's key aims including maximising the benefits of sustainable tourism with reference to the local economy and communities. The website also offers support to trade members, including access to toolkits and a programme of support and events designed to maximise the economic impacts of Exmoor's tourism offer.
- **Energy Company Obligation** – councils across the Heart of the SW are providing grants to homeowners to help improve efficiency and mitigate issues associated with fuel poverty. The package of support obligates energy companies to pay for home improvements (such as heating measures and insulation) that will help them meet government energy performance targets. Digital platforms are used to support associated application, eligibility and monitoring processes.

- **South Dartmoor Community Energy** – a not-for-profit company helping local communities become more energy efficient and involved in renewable energy projects. The organisation aims to supply heat/electricity from renewable and low carbon sources, reduce fuel poverty, generate income to support community projects, provide funding for further community renewable energy generation schemes and increase community awareness of the prospects for renewable energy generation. The organisation has been active in raising awareness of smart energy meters.
- **South West Energy Partnership** – a collaborative which has successfully applied for funding (awarded as part of the EU's European Local Energy Assistance initiative), which is helping to deliver a variety of projects aimed at boosting the low carbon sector and reducing low carbon footprints across Devon County Council and Plymouth City Council local authority areas. The projects will focus on energy efficiency, renewable energy, sustainable transport and heat networks. Digital technologies and smart applications are at the heart of supported initiatives, which ultimately aim to reduce energy consumption.

Digitally Driven: Transport

Transportation – personal and mass transit – has been shaped greatly by advances in digital technology. This is seen in the development of transport modes, delivering greater reliability, efficiency and the ability travel longer distances. It is also facilitating the deployment of digital solutions, which support improved safety, sharing of real-time information and the growth of app-based services, which can be accessed remotely via digital devices.

In parallel, the internet has helped to reduce the need to travel and introduce a wave of flexible and home-based working patterns, reducing strain on transit networks and helping to lower harmful environmental consequences.

Within the Heart of the SW, accessibility and the effectiveness of the transport network is of critical importance to the vitality of the economy. Transport infrastructure is under increasing pressure from user demand and the capacity of existing networks, in conjunction with accommodating growth that is underway or earmarked across the area, is constrained.

Areas across the Heart of the SW exhibit specific issues and there is a role for digital technology to help address these and improve connectivity, journey times and reduce congestion. This is of particular importance when considering the largely rural and dispersed nature of the area, where physical access can be problematic and the commercial returns on running public transport networks are often extremely challenging.

Some of the key trends observed within the transport sector include[47]:

- **User centred mobility services** – travellers have increased control over public transport services, including more demand-responsive services that are underpinned by new business models.
- **Integrated and intelligent transport networks** – which sense demand, provide realtime information and offer optimised performance and asset monitoring capabilities.
- **Pricing and payments** – most evident in the digitalisation of tickets, e-payments and the introduction of pay-as-you-travel options.

[47] Deloitte, Transport in a Digital Age: Disruptive Trends for Smart Mobility, 2015

- **Automation and safety** – improvements will drive cognitive technologies and machine learning, increasing safety, preventative solutions and liability ownership.
- **Public and private innovation** – increased collaboration to meet the mobility challenges of the 21st Century, with private sector entrants taking advantage of digital technologies to scale globally.

Local Digital Applications

Across the Heart of the SW, digital solutions are being deployed in a transport context, introducing smart capabilities and harnessing improvements made in fixed and mobile infrastructure coverage. Some examples are summarised below, highlighting the spectrum of applications and different use cases for digital technologies:

- **A smarter M5 motorway** – plans are afoot as part of Sedgemoor District Council's Transport Strategy to phase in smart technologies onto the M5 in order to reduce congestion and increase capacity at peak usage times, which will make use of sensors, CCTV and electronic messaging.
- **FirstGroup bus app** – the app provides users of FirstGroup's bus services across the Heart of the SW with access to real-time information, including route maps, a trip planner, live maps, timetables, electronic ticketing and general service updates, harnessing the ability for people to connect using their mobile devices.
- **Railway Wi-Fi** – the large majority of train services running on Great Western Railway, Southwestern Trains and Cross Country Trains networks offer complementary Wi-Fi to passengers, providing internet access to business and leisure users, access to real-time journey information and a variety of online content.
- **Driverless vehicles** – backed by the Heart of the SW's photonics and microelectronics strengths, there is an opportunity to invest in autonomous vehicles in areas where congestion issues remain paramount, with driverless vehicles interoperating seamlessly with sensors and IoT technologies, offering a new form of automated transport.

Places: Strategic Imperative

- **There is a need to ensure key growth and regeneration sites capitalise on the commercial imperative to deliver full fibre infrastructure to new developments, whilst also leveraging this to extend connectivity to areas surrounding growth sites.**
- **There is an opportunity to use digital technology to assist with the design of new developments, driving a bottom-up approach to place-making.**
- **There is an opportunity to promote and market the distinctiveness of key growth sites based on their digital competitiveness, linking to inward investment and promotional activities.**
- **In parallel, there is a need to focus digital investment and solutions in areas where deprivation is acute, embedded and long-standing, improving the socioeconomic prospects of people and communities, whilst also providing a platform from which to enhance social mobility through enhanced access to skills, data and people.**
- **There is a strong rationale to further integrate digital infrastructure with smart technologies, to create smarter and better-connected communities which engage citizens, businesses and better utilise the power of big/open data.**
- **The Heart of the SW's exceptional natural environment can be preserved and enhanced through the deployment of digital technologies, increasing its productivity and viability as a resource and tourism asset.**
- **Digital technologies have a central role to play in tackling the climate emergency, through the development of innovative solutions and helping to accelerate behaviour change on a grand scale.**
- **There is an opportunity to increase digital democratisation across the Heart of the SW, building on progress to date, whilst also tapping into the local digital businesses base to disrupt traditional approaches and shape the delivery of public sector programmes.**
- **Alternative approaches need to be found to securing the investment necessary to deliver innovative and technology driven initiatives, in the absence of European programmes.**
- **Digital technologies can be further exploited to help develop the next wave of transport modes and deliver solutions to the Heart of the SW's most prominent connectivity challenges, including accessing remote areas and relieving congestion.**

7. Making the Case – Digital Assets and Projects

Helping to define the Heart of the SW's digital distinctiveness, are its key assets and existing or emerging projects. These demonstrate the extent to which the private and public sectors are investing in digital technology and provide a foundation from which to grow the area's digital capabilities. They also illustrate the sheer breadth of activity taking place across the Heart of the SW and represent a cross-cutting commitment to further the adoption of digital technology.

The tables below summarise noteworthy assets and projects which capably articulate digital strengths. It is not an exhaustive list and the true extensiveness of digital technology capability across the Heart of the SW is in all likelihood, much deeper.

Table 7.1 Heart of the SW – Digital Assets and Planned Investments

	Assets
Digital Skills and Training	• **University of Exeter** – the University of Exeter is a Russell Group institution and has invested in more than £350 million worth of new facilities across its campuses in the last few years. The university offers several important digital courses including a Digital Humanities course, which provides teaching and research specialisms in geospatial technologies, 2D and 3D imaging, text editing and encoding and digital archiving and data management. • **University of Plymouth** – the University of Plymouth is a renowned institution for high quality, education, research and innovation. The university has several important digital courses including digital design innovation, digital media design, and digital and social media marketing. • **University Centre South Devon** – the college provides several important vocational digital courses including creative digital design, digital marketing and digital and technology solutions. • **University Centre Somerset** – the university provides vocational learning opportunities including a foundation degree or full honours in computing and digital technologies. • **Heart of the SW Digital Skills Partnership** – launched in June 2018, bringing together the public, private and third sector to tackle the digital skills divide in Somerset, Devon, Plymouth and Torbay. The partnership is responsible for coordinating and delivering a digital strategy that raises digital skills for our community, working to eradicate social and geographical imbalances to ensure everyone has access digital services. • **Somerset Digital Skills Talent Academy** – delivered within the Glassbox in Taunton, local pupils are given insights into 'creative digital' enterprise delivered in a workshop setting by local digital businesses and partners. Eight three-hour sessions provide information on digital technology careers, skills development and work experience. • **Exeter Technologies Group (ETG) (previously Centre for Additive Layer Manufacturing)** – part of the University of Exeter, this group combines its knowledge of materials science and manufacturing processes and holds specialisms in research in terms of additive manufacturing.

	‣ **Composites Engineering, within the MAterials and STructures (MAST)** – a leading composites R&D facility at the University of Plymouth works closely with companies in all areas of polymer composites engineering, enabling them to benefit from research, contacts and experience. ‣ **Digital Learning Campus** – a new project to turn Plymouth into a 'digital learning campus'. The scheme is based on an idea from the US that aims to widen students' learning opportunities through an integrated digital system. The project will bring together local businesses, organisations, networks and communities across Plymouth to develop learning opportunities for use on a digital platform. ‣ **Further Education Institutions** – a network of Colleges and Sixth Forms offering courses which are digitally focused and orientated around local sector requirements. ‣ **Private training providers** – an active presence of private training providers who are offering a valuable digital skills resource which is well used by employers and employees, particularly in the form of continued professional development.
Business Support Provision	‣ **Growth Hub** – the Growth Hub is the Heart of the SW's primary mechanism for engaging with digital businesses across the area. The Growth Hub provides independent diagnosis and referrals to existing business support services and seeks to be the first port of call for local businesses wishing to grow or develop. ‣ **Enhance Social Enterprise** – delivers business support and advice to new and established social enterprises within the Heart of the SW aiming to accelerate their growth prospects. ‣ **Chambers of Commerce** (Devon & Plymouth/Somerset/Torquay) – works to support the local business community and its membership base, including digital and tech enterprise, via targeted business support. ‣ **Federation of Small Businesses** – acts on behalf of small business members and is an active advocate of digital transformation and analysing the benefits of business technology adoption. ‣ **Country Land and Business Association** – member-led business support organisation representing rural interests, with a strong legacy of championing digital connectivity and rural business access. ‣ **Network of libraries** – offering access to business support, flexible workspace and IT facilities and locations across the Heart of the SW.
Networks and Events	• **ExISta (Exeter Initiative for Statistics and its Applications)**, based at the University of Exeter – a membership organisation which brings together statisticians within the University, the local public and private sector to foster and promote inter-disciplinary statistical activity; • **South West Internet of Things Network** – an independent organisation working in conjunction with key partners, to develop & support IoT in the Southwest. It offers a Low Power Wide Area Network (LPWAN) accessible via a web portal. • **Tech Nation (South West)** – access to Entrepreneur Engagement Managers, events, stories and useful resources relevant to the South West of England's significant tech cluster.

	Digital Talent Academies – run by Somerset County Council, these target young people across the county and provide opportunities to visit companies operating in sectors that are of interest to them (i.e. digital). **Digital Taunton** – focuses on events which aim to create a community of successful digital businesses and culture of collaboration and innovation in Taunton and the surrounding areas. **Coding clubs** – facilitated across the Heart of the SW through schools, libraries and local interest groups, developing coding skills across age groups. **Meet-ups** – formal and informal digital and tech meet-ups taking place across the Heart of the SW, marketed through Eventbrite and other forums.
Cluster Growth Locations	**Exeter Science Park /University Cluster** – an asset that provides a considerable differentiator in the field of 'big' data, with a deep and concentrated pool of experienced employees. The cluster is centred around the Met Office's new £97 million Supercomputer. **Gravity** – a 635-acre site in Somerset which will be transformed into an innovation campus – a new form of Enterprise Zone. Gravity will be an immersive, connected, intelligent and sustainable environment that will attract some of the world's most innovative businesses, drawing inward investment internationally and nationally. The redeveloped site will create around 4,000 new jobs and it anticipated the first tenant will be on site from mid-2020. **Oceansgate/Plymouth** – Oceansgate is a marine industry hub that brings together marine-based businesses to create a world-class hub for marine industries, with opportunities for research, innovation and production in a collaborative environment. The area is the first Marine Enterprise Zone and is the UK's number one location for marine and maritime capability. The zone is home to several prominent companies such as ASV, Babcock, Burgess Marine, Magma Structures, Princess Yachts International, Rolls Royce Marine Electrical Systems and Valeport. There is also a significant Ministry of Defence presence which also offers supply chain opportunities.
Workspaces	**Electronics and Photonics Innovation Centre (EPIC)** – an £8m facility in Paignton offering state-of-the-art offices and laboratories to high tech firms around the Heart of the SW. It provides open market access to cleanroom and laboratory facilities with specialist equipment to support R&D, prototyping, innovation and testing in emerging technologies. **Ocean Studios, Plymouth** – a Grade 1 listed factory operated by a Community Interest Company providing a unique managed workspace to the creative community. As well as artist studios, workshops, exhibition space and retail units the space also has two education spaces. **Exeter Science Park Open Innovation Building -** Exeter Science Park Ltd will develop a 20,000sqft three storey Open Innovation Building which will provide grow-on accommodation for existing tenants on the park and also attract new businesses. The flexible open plan office/lab accommodation is adjacent to the Met Office supercomputer campus and will accommodate tenants in the environmental science sector. • **Millfields, Plymouth** – a new state-of-the-art building (Genesis) that comprises flexible workspaces, meeting rooms, a full height internal atrium and Plymouth's first living walls.

- **The SETsquared Partnership**[48] – SETsquared operates over two main locations: the University of Exeter Innovation Centre on the Streatham campus and the Exeter Science Park Centre respectively, providing 3,440 m^2 and 1,750 m^2 of office and laboratory space. Each site offers dedicated business and technology support staff providing business acceleration services to tenants at all stages of development.
- **Glassbox** – established in 2016 and forms part of Taunton Library. It is an innovation and enterprise space, showcasing new technology and helping the community to develop digital skills, offering space for study, research, workshops, events and collaboration.
- **Devon Work Hubs** – Devon Work Hubs is an independently run community of flexible workspaces, aimed at home-based and mobile workers, business start-ups, freelancers and entrepreneurs. As well as workspace Devon Work Hubs offer tailored business support and mentoring to hub users.
- **THINQTANQ** – Located in Plymouth, Thinqtanq is a coworking space that has been operating for over five years. The space is home to a range of business and individuals, including several firms in tech and web-based industries as well as digital creatives and social entrepreneurs.

Some Key Digital Projects	
South West Institute of Technology	South West Institute of Technology (SWIoT), if approved, will be a new partnership between two universities, five colleges and business. It will revolutionise digital technology education across the South West and will offer top-quality training and apprenticeships in higher-level technical skills and aim to bridge skills gaps in the economy.
Digital Health Devon	An e-learning tool created to support the people of Devon to navigate the growing digital services available provided by local GPs. Provides the information to access online services, support health and wellbeing more effectively and navigate the most popular internet-based services.
Broadband Deployment	Variety of initiatives occurring across the Heart of the SW, led by local authorities, focusing on investment, policy and market engagement activities[49].
Creative Technology Network	The University of Plymouth is part of a consortium which is to deliver a project aimed at expanding the use of digital technologies throughout the region's creative, health and manufacturing sectors. The partnership is designed to respond to industry needs across these key sectors and drive increases in productivity and resilience.
Heart of the SW Enhance Social Enterprise Programme	Supports social enterprises to develop and launch new products and services as well as entering new markets. Also supports voluntary and community sector groups that want to transition into trading social enterprises as well as budding social entrepreneurs. Includes training with a tech focus, including digital marketing.
Growth Support Programme	Programme of support targeting businesses which are looking for new ways to increase turnover and find new customers. Up to twelve hours of free support includes one-to-one advisor engagement and guidance relating to finance, HR,

[48] SETsquared is a collaboration between five leading research-intensive universities – Bath, Bristol, Exeter, Southampton and Surrey. It has been ranked as the global number 1 business incubator and enterprise partnership.

[49] See digital infrastructure chapter for more information.

	innovation, marketing and business planning. The scheme has an emphasis on leveraging digital technology to deliver growth and business efficiency.
i2s Programme	The innovate2succeed programme helps businesses to develop new products or technologies or take existing products or services to new customers or markets. Innovation experts assist applicants with six areas focus, such as digital marketing, sales, lean processes, bid writing, finance and intellectual property.
Healthwatch Torbay	Building on an initial pilot project, the Healthwatch Torbay Digital Inclusion Project is to be expanded to reduce social isolation in older people by showing them how they can use the internet to access health and social care services such as online appointment-booking, prescription-ordering and self-referral systems.

Case Study: Smart Sound Plymouth

Smart Sound Plymouth is a first-of-its-kind within the UK, facilitating the design, testing and development of new products and services for the marine sector. Central to its offer is access to circa 1,000 square kilometres of authorised and de-conflicted water space, helping to pioneer marine technology development.

Smart Sound facilitates trials, validation and proving of marine-based innovative technologies across a diverse marine environment. It will facilitate missions through a dedicated team and is augmented by the Western Channel Observatory – a smart platform aiding technological and scientific development, supporting industry and advancing UK marine expertise.

Smart Sound is backed by Plymouth City Council, The Marine Biological Association, Plymouth Marine Laboratory and the Universities of Exeter and Plymouth.

Assets and Projects: Strategic Imperative

- **The Heart of the SW is home to digital technology assets which are truly distinct and mean the area has genuine global significance, providing a platform from which to celebrate success and promote the area's virtues.**
- **These assets also form the basis for a targeted growth agenda, infrastructure upgrades and inward and foreign direct investment.**
- **Known digital challenges across the Heart of the SW need to be matched with assets and projects, which have the capability to address these issues but may currently have a limited reach.**
- **There is a need to better 'connect the dots' and make stronger links between local institutions and assets, including those in neighbouring areas which have a prominent digital technology presence (i.e. Bristol and Bath tech clusters).**
- **The public sector has a key role to play in the delivery of supply side interventions, particularly around business support, access to finance and noted gaps in learning.**
- **The funding of projects and successful initiatives needs to be considered in the context of political change and the introduction of new investment programmes, to ensure continuity and build on projects that have had significant impacts to date.**

Digital Strategy: Action-Focused

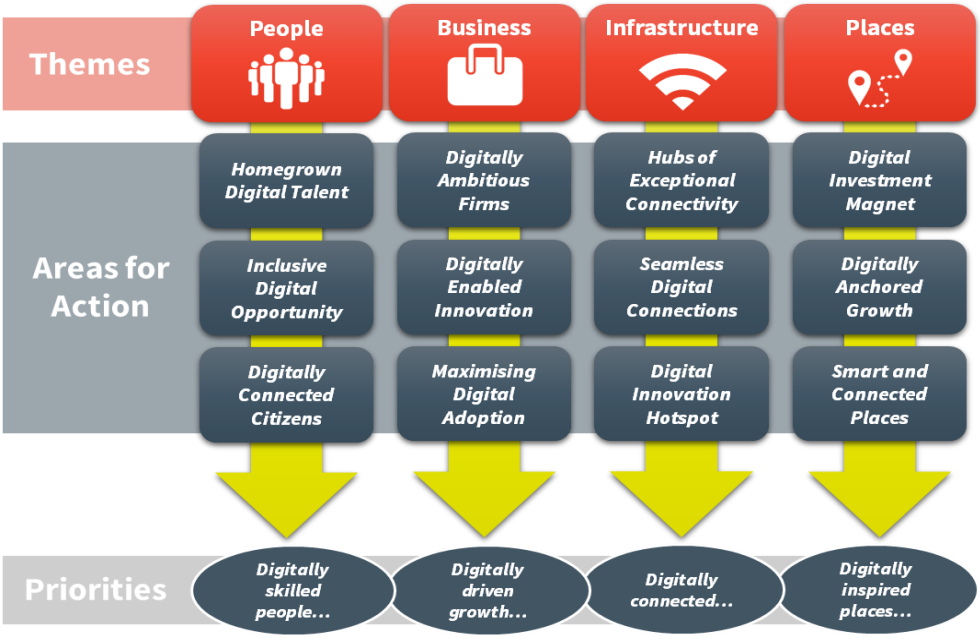
8. Case for Action – Delivery Framework

Earlier chapters of this document set out a compelling base of evidence, describing the relevance of digital technologies across the Heart of the SW, relative to infrastructure, business, people and places. Through its cross-cutting influence and the tangible benefits derived from digital transformation, the rationale for the Heart of the SW to intervene is both clear and emphatic.

Strategic Framework

In order to facilitate change, the Heart of the SW must take an outward-facing and action-orientated approach, underpinned by a series of interventions which tie back to the strategy's vision and priorities. Here, the case for action is taken a step further, orientated around a strategic framework, which will influence decision-making, trigger investment and effect collaboration. Critically, the framework is centred on the intended role of the Heart of the SW and where it can most effectively facilitate change. Interventions are therefore built around where organisations will be able to influence, directly and indirectly, within the parameters of partnership and collaboration.

Figure 8.1 Digital Strategy – Strategic Framework



Source: Hatch Regeneris, 2019

This frames a series of actions which are set out below. These provide a starting point from which more specific interventions can be designed, business cases developed and identifies potential partners, who will be fundamental to delivery and securing investment[53]. The actions strongly advocate collective ownership, are linked to intended successful outcomes and also suggest how progress can be monitored over time, to enshrine accountability.

[53] Note: Actions set out within the digital infrastructure theme align with interventions specified within the LBP. The LBP builds on the detail provided here and develops the rationale for action, setting out the evidence needed for an investment case.

People			
Homegrown Digital Talent – Immediate Priority			
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)			
Suggested Actions	• Focus on the delivery of the recommendations within DSP Action Plan and review performance over time • Address basic digital skills deficiencies as a matter of urgency to ensure all residents have proficiency • Broker engagement between employers, education institutions and the labour • market to develop a digitised curriculum and communicate vocational learning routes • Highlight digital employment opportunity in rural/coastal areas to attract entrepreneurs and retain younger people • Harness the research capabilities of the DSP to understand the digital skills needs of the future and design appropriate solutions with local education providers • Promote the breadth and diversity of digital courses and training providers across the Heart of the SW to secure greater digital skills penetration		
Heart of the SW Role	• Brokerage • Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Commissioning • Direct investment		
Partners and Funding Sources	• DSP • DfE • Heart of the SW LEP • Local authorities	• Private sector • Catapults • Research Councils • Universities	• Further Education • Schools • Training providers • Job Centre Plus
What Does Success Look Like	• Increase in basic digital skills levels across the Heart of the SW • Increased take-up of apprenticeships relative to key and digitally embedded sectors • Delivery of research which identifies future skills requirements of local employers • Ongoing development of digital curriculum which permeates schools, further education and universities • Rural communities are benefitting from digital start-ups		
Measuring Success	• Digital skills levels (number) • Digital T-Levels (Number) • Apprenticeship take-up (number) • Apprenticeship providers (number)	• Research published (number) • Digital Learners Courses Completed (number) • Rural digital business start-ups (number)	

People				
Inclusive Digital Opportunity – Immediate Action				
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)				
Suggested Actions	• Support outreach efforts and deliver programmes which target locations (urban and rural) where digital inclusion levels are poor and limiting economic activity • Ensure digital infrastructure rollouts extend to areas suffering from highest levels of deprivation as a priority – including Rural areas • Develop community work hubs as a focus for digital engagement, that act as centres for services, education and community interaction • Ensure publicly owned/housing association homes have a high standard of digital connectivity			
Heart of the SW Role	• Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Direct investment			
Partners and Funding Sources	• Heart of the SW LEP • Local authorities • Catapults	• Research Councils • Universities • Further Education	• Schools • Training providers	• Job Centre Plus • DSP developing in Digital Group
What Does Success Look Like	• Digital inclusion levels are improving as a result of intervention and greater participation with technology Areas of acute deprivation have access to improved connectivity			
Measuring Success	• Digital inclusion projects (number) • Digital inclusion performance • Tech Talent Charter Campaign (no. of businesses signed up)	• Deprivation level mapping • Fixed and mobile broadband coverage (%)		

People	
Digitally Connected Citizens– Commit to Action	
Partners should commit to delivering suggested actions over the life of the Digital Strategy	
Suggested Actions	• Deliver public sector digital transformation programmes aimed at improving service delivery, extending reach and increasing democratisation. • Advocate the Heart of the SW as a vanguard for developing innovative approaches to public service delivery, harnessing the capacity of the local digital business base • Maintain and enhance public Wi-Fi networks, aiding quality of connectivity and access to information and services
Heart of the SW Role	• Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Direct investment
Partners and Funding Sources	• Heart of the SW LEP • Local authorities • Universities • Further Education • Schools • Training providers • DSP Citizen Group
What Does Success Look Like	• Councils and public sector bodies have implemented innovative digital service delivery solutions • Fast and reliable public WiFi is hotspots serve users across public estates
Measuring Success	• Delivery of digital transformation programmes (number) • Public Wi-Fi networks operational (number) Public Wi-Fi network usage (number)

Business	
Digitally Ambitious Firms – Immediate Priority	
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)	
Suggested Actions	• Foster enhanced relationships between digitised businesses to stimulate research and investment opportunities. • Position a decentralised Heart of the SW Growth Hub front and centre as the conduit for digitally focused business support, advice and finance. • Engage small businesses so they recognise the virtues of digital transformation when considering growth and productivity ambitions. • Develop a programme of activity aimed at helping businesses to maximise opportunities to extend trading relationships to new markets through improved digital adoption. • Focus on developing a strong cluster proposition around sectors with greatest growth potential, distinctiveness, and ability to deliver clean growth – in particular around Agri-Tech, Big Data, AI, Digi-Health and Cyber Security • Progress the development Industrial Digital Technology Hub to unlock engineering productivity through industrial digitisation, aligned with ambitions in the AI Sector
Heart of the SW Role	• Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Direct investment
Partners and Funding Sources	• DCMS • Heart of the SW LEP • Local authorities • Growth Hub • Universities • HMRC • BEIS • DIT • DSP Professional Group
What Does Success Look Like	• Increased digital business engagement leading to new services and products • Growth Hub at the heart of a digital business support ecosystem • Suitable business support offer in place
Measuring Success	• Evidence of business collaboration/co-investment • Growth Hub digital support programme access (analytics) • Digital business external funding secured (£)

Business	
Digitally Enabled Innovation – Commit to Action	
Partners should commit to delivering suggested actions over the life of the Digital Strategy	
Suggested Actions	• Provide a platform from which to strengthen partnerships between universities, the public sector and digital vanguards to drive digital innovation and research – Investigate development Technopole to foster the creation of an effective innovation ecosystem. • Target digital initiatives to ensure start-ups, small businesses and those showcasing innovation deficiencies to accelerate the adoption of innovative systems and processes. • Further develop the area's Enterprise Zones to be the focus for medium/large-scale digitally focused innovation (Exeter and East Devon, Oceansgate and Gravity) • Engage and energise university graduates with digital and tech spin-off potential to start-up and grow in the Heart of the SW, leveraging digital assets, spaces and the labour market, to do so • Development of Exeter Science Park and work to secure funding for the proposed Environmental Intelligence Accelerator • Continue plans for the development of Geospatial Innovation Centre (UKHO) and Digital Innovation Hub • Create programme for the development, commercialisation and dissemination of data analytics and AI technologies to reduce emissions from agriculture whilst increasing productivity and sustainability. • Continue development of Healthy Ageing Demonstrator Programme, focussed on better use of data and AI.
Heart of the SW Role	• Strategic influencing • Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Direct investment
Partners and Funding Sources	• DCMS • Heart of the SW LEP • Local authorities • Private sector • Catapults • Research Councils • Universities • BEIS • DSP developing in Digital Group
What does Success Look Like	• Public private partnerships are driving projects and initiatives underpinned by technology • Evidence of digital adoption across all business sectors driving innovation • Heart of the SW Enterprise Zones are established hubs for world leading digitally-led research and innovation, attracting significant inward investment
Measuring Success	• Active consortium digital innovation projects (number) between private and public sector • Improvement in business base innovation characteristics • Enterprise Zone tenant businesses (number)

Business	
Maximising Digital Adoption – IMMEDIATE PRIORITY	
Partners should commit to delivering suggested actions over the life of the Digital Strategy	
Suggested Actions	• Advocate and promote the impacts and benefits of digital exploitation to the Heart of the SW business base through a multi-channel approach • Incentivise SMEs and start-ups to make active investments in technology to improve productivity, through information and finance • Promote availability of fixed and mobile infrastructure upgrades in such locations • Develop technology showcases which illustrate technology adoption value
Heart of the SW Role	• Strategic influencing • Partnership assembly • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Direct investment
Partners and Funding Sources	• DCMS • Heart of the SW LEP • Local authorities • ISPs • Growth Hub • BDUK • Universities • UK5G
What Does Success Look Like	• Promotional campaigns underway advocating digital transformation benefits and communicating infrastructure availability • Early stage businesses implementing digitally enabled solutions • Strong and increased business take-up of highspeed broadband
Measuring Success	• Penetration of campaigns (social media analytics) • Funding awarded to SMEs (£) • Business digital infrastructure service take-up (%)

Infrastructure	
Hubs of Exceptional Connectivity– IMMEDIATE PRIORITY	
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)	
Suggested Actions	• Secure full fibre and 5G connectivity in key urban centres, market towns and growth locations to drive economic development and competitiveness • Build on rural full fibre footprint where feasible, enabling a rapid step-change in connectivity and vitality of the rural economy • Adopt a 'barrier busting' approach, seeking to remove commercial investment barriers and better coordinate infrastructure delivery Leverage publicly owned assets to secure investment
Heart of the SW Role	• Data analytics and market review • Commercial provider engagement • Business case development • Partnership assembly • Demand stimulation and aggregation • Lobbying • Direct investment
Partners and Funding Sources	• DCMS • Heart of the SW LEP • Local authorities • BDUK including voucher schemes • Private sector (fixed and mobile broadband • Public Works Loan Board
What Does Success Look Like	• Commercial commitment for full fibre coverage • Government funding accessed • Accelerated delivery of full fibre across urban and rural areas • 5G service deployment initiated across all providers • Adoption of full fibre and 5G services increasing
Measuring Success	• Full fibre coverage (%) • 5G coverage (%) • Service take-up (%) • Investment/contract future commitments (premises numbers) • Commercial provider future commitments (premises numbers) • Satellite Coverage (%)

Infrastructure	
Seamless Digital Connections – IMMEDIATE PRIORITY	
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)	
Suggested Actions	• Implement Heart of the South West Local Broadband Plan, (See Below) • Plug remaining fixed superfast speed gaps where market failures persist, and communities remain out of reach of fibre networks • Influence extended 4G rollout and encourage a clear upgrade path for future technologies (5G) • Support industry's Shared Rural Network proposals • Adopt a 'barrier busting' approach seeking to remove commercial investment barriers and better coordinate infrastructure delivery • Leverage publicly owned assets to secure investment • Augment fixed and mobile network coverage with accessible public Wi-Fi hotspots which provide free and reliable access • Fibre connection hubs, building on the Rural Gigabit Connectivity Programme and Local Full Fibre Network Programme and testing alternative approaches to improve coverage • Pilot 5G solutions across urban and rural areas, building on the work of Rural First programme in DCMS, targeting specific business clusters and bidding into relevant national competitions.
Heart of the SW Role	• Existing contract management review • Data analytics and market review • Commercial provider engagement • Business case development • Partnership assembly • Demand stimulation and aggregation • Lobbying • Direct investment
Partners and Funding Sources	• DCMS • Heart of the SW LEP • Local authorities • BDUK including voucher schemes • Private sector (fixed and mobile broadband • Public Works Loan Board
What Does Success Look Like	• Rollouts to eliminate superfast 'not spots' across the Heart of the SW underway (commercial and publicly funded) • Government funding accessed • Mobile (4G) access available across all providers • Adoption of superfast and 4G services increasing
Measuring Success	• Superfast coverage (%) • Satellite Coverage (%) • Service take-up (%) • Mobile (4G) available across all 4 providers across land mass (%) • Investment/contract future commitments (premises numbers) • Commercial provider future commitments (premises numbers)

Infrastructure	
Digital Innovation Hotspot – Commit to Action	
Partners should commit to delivering suggested actions over the life of the Digital Strategy	
Suggested Actions	• Establish a series of digital innovation trials which support the needs of locally important sectors, such as Marine, Tourism, Advanced Manufacturing and Agri-Tech • Encourage standalone commercial investment in the Heart of the SW, establishing it as a hub of digital innovation in Marine, Agri-Tech, Health Tech, Cyber Security, Environmental Intelligence & Geospatial • Ensure key local institutions and growth locations are integrated into pilots, including high profile projects such as Plymouth Smart Sound and iMayflower
Heart of the SW Role	• Development of challenge and trial rationale • Commercial provider engagement • Business case development • Partnership assembly
Partners and Funding Sources	• DCMS /BDUK • Heart of the SW LEP • Local authorities • Catapults • Universities • UK5G • Private sector (fixed and mobile broadband
What Does Success Look Like	• At least one technical trial underway, with links to local businesses, public sector bodies and universities • Proof of concepts emerging with scope for wider adoption • Demonstration to sector and wider business community of opportunities
Measuring Success	• Trials underway (number) • Trial progress status (%) • Commercial investment secured (£)

Place	
Digital Investment Magnet – Commit to Action	
Partners should commit to delivering suggested actions over the life of the Digital Strategy	
Suggested Actions	• Develop compelling inward investment messaging, orientated around digital assets, hubs of connectivity Enterprise Zones and key growth locations (i.e. Gravity, Plymouth Marine Digital technology Centre, COTIE etc as bridgeheads to Heart of the SW) • Build on existing events and initiatives to showcase the Heart of the SW digital business base, anchor institutions and local innovative capacity • Work closely with regional and national bodies to secure foreign direct investment tied to locally important sectors and digitally connected growth locations • Make effective use of Tech Nation's South West resources and Entrepreneurship Engagement Managers, to secure interest and investment in the Heart of the SW • Develop proposals for a Technopole to help high growth tech businesses get to a stage where they can secure appropriate investment
Heart of the SW Role	• Influencing • Sharing of research, data analytics and case studies • Promotion and marketing • Business case development • Commissioning • Direct investment
Partners and Funding Sources	• BEIS • Heart of the SW LEP • Local authorities • Growth Hub • Universities • DIT • Private sector
What Does Success Look Like	• The Heart of the SW digital offer is woven into inward investment material and messaging • Successfully attracting new digital companies and existing firm expansion • Significant foreign direct investment 'wins' targeting key growth locations and Enterprise Zones
Measuring Success	• Inward investment secured (£) • Foreign direct investment secured (£) • Firm relocation and expansion (numbers) • Digital technology events hosted (number)

Place	
Digitally Anchored Growth– IMMEDIATE PRIORITY	
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)	
Suggested Actions	• Ensure new developments across all brownfield and greenfield sites are connected at the highest specification, with a particular focus on Enterprise Zones • Develop intelligence substantiating demand and use cases for best-in-class digital connectivity on new and regeneration sites • Advocate a barrier busting approach to digital policy setting (particularly planning), to ensure technology is deployed as cost effectively as possible and at minimum public expense • Ensure digitally led clean growth lies at the heart of all new developments, in acknowledgement of the technological opportunity to address the climate emergency
Heart of the SW Role	• Influencing • Partnership assembly • Brokerage • Sharing of research, data analytics and case studies
Partners and Funding Sources	• Heart of the SW LEP • Local authorities • CDS
What Does Success Look Like	• All new developments are fully fibred and have access to seamless mobile connectivity • Data collated supporting demand for high speed digital connectivity • Consistent approach to supporting digital infrastructure deployment across council teams
Measuring Success	• New premises receiving full fibre (number) • Full fibre coverage (%) • Pipeline developer commitments • Planning consent data

Place	
Smart and Connected Places – IMMEDIATE PRIORITY	
There is a need to address suggested actions at the earliest opportunity (in the next 1-2 years)	
Suggested Actions	• Consider the development of an integrated smart strategy which supports the deployment of digital technologies across Heart of the SW • Implement robust policies to coordinate the use of open data with trust and security • Public sector driving smart technology deployment (hackathons/procurement) • Increased focus on public sector big data potential to solve pressing challenges (environment, transport etc) • Ensure the threats posed by cyber security are understood by businesses and citizens, to ensure data and intellectual property is protected
Heart of the SW Role	• Influencing • Partnership assembly • Brokerage • Sharing of research, data analytics and case studies • Direct Investment
Partners and Funding Sources	• Heart of the SW LEP • Local authorities • CDS • DCMS • Private Sector • Universities
What Does Success Look Like	• Smart strategies in place across key public sector agencies • Open data platform and governance model agreed and implemented • Public sector leveraging local digital firms to develop technical solutions
Measuring Success	• Open data access (number) • Hackathons run (number) • Procurement contracts awarded (number) • Big/open data usage (analytics)

Local Broadband Plan Actions - - Full Fibre - Gigabit

Milestone	Funding Sources	What does success look like	Measuring Success
Outcome of the extended NGA Broadband and Gigabit access procurement (end of Q3 fy 2020/2021)	BDUK/DCMS HotSW LEP Local Authorities Private Sector	Successful appointment of Bidders submitting the most economically advantageous (MEAT) tender to deliver a Speed and Coverage outcome within funding levels	Contract Award/Implementation Plan agreed NGA connections (premises) Gigabit capable connections (premises) NGA coverage (%)
Leverage the Outside In programme, the Rural Gigabit Connectivity programme and any additional funding announcements in line with targets within the period of this LBP	BDUK/DCMS HotSWLEP Local Authorities Private Sector	Funding leveraged Accelerated delivery of Gigabit/full fibre	Gigabit connections (premises) Full fibre coverage (%) Level of funds leveraged (£)
Comprehensive list of assets and strategic case (end Q2 fy 2021/2022)	HotSWLEP Local Authorities	Comprehensive mapping of assets Strategic Case delivered	Leverage assets to reduce barriers
Community Challenge Programme Phase 1 (end Q3 fy 2020/2021)	HotSW LEP Local Authorities Private Sector	Challenge Fund available to support community solutions	Funds leveraged (£) Number of community projects underway

Local Broadband Plan Actions – Superfast

Milestone	Funding Sources	What does success look like	Measuring Success
Outcome of the extended NGA Broadband and Gigabit access procurement (end of Q3 fy 2020/2021)	BDUK/DCMS HotSW LEP Local Authorities Private Sector	Successful appointment of Bidders submitting the most economically advantageous (MEAT) tender to deliver a Speed and Coverage outcome within funding levels	Contract Award/Implementation Plan agreed NGA connections (premises) Gigabit capable connections (premises) NGA coverage (%)

4G

Milestone	Funding Sources	What does success look like	Measuring Success
Identify true not-spot locations (end Q3 fy 2020/2021)	Local Authorities	Not spots identified	Understanding of true not spots and implications
Engagement with MNOs and ESN on coverage opportunities and engagement with Ofcom on local licensing opportunities (end Q4 fy 2020/2021)	Local Authorities	Established position on coverage opportunities and local licensing	Understanding of opportunities for resolving not spots
Completion of Mobile Booster programme December 2021	HotSW CDS Individual beneficiaries	Business and homeworkers supported to communicate more efficiently	Number of installations completed by December 2021

5G

Milestone	Funding Sources	What does success look like	Measuring Success
Assessing the opportunity 5G presents and understand the economic impacts for the region. Q2 2021/22	CDS	Agreed approach for the collaboration	
If investigations into opportunities of 5G prove positive to engage with marine cluster and suitable partners to identify potential for 5G. Engagement should also include MNOs on 5G deployment plans and potential barriers, highlighting the opportunity for specific use cases to be trialled in the HotSW and with DCMS on 5G innovation/testbeds (end Q4 fy 2020/2021)	BDUK/DCMS HotSW LEP Local Authorities Private Sector Catapults Universities UK5G	At least one technical trial underway, with links to local businesses, public sector bodies and universities Proof of concepts emerging to address local needs with scope for wider adoption Demonstration to sector and wider business community of opportunities	Trials underway (number) Trial progress status (%) Commercial investment secured (£)

Appendix A - Consultation

This report has been shaped by a variety of organisations and individuals, who maintain a key interest in the application of digital technologies across the Heart of the SW.

Through a series of meetings and workshops, stakeholder views have been captured and subsequently reflected within the Digital Strategy.

Th Digital Strategy's recommendations and call for action are therefore built on consensus, providing a robust platform from which to deliver moving forward.

The Digital Strategy was shared and discussed with the following groups:

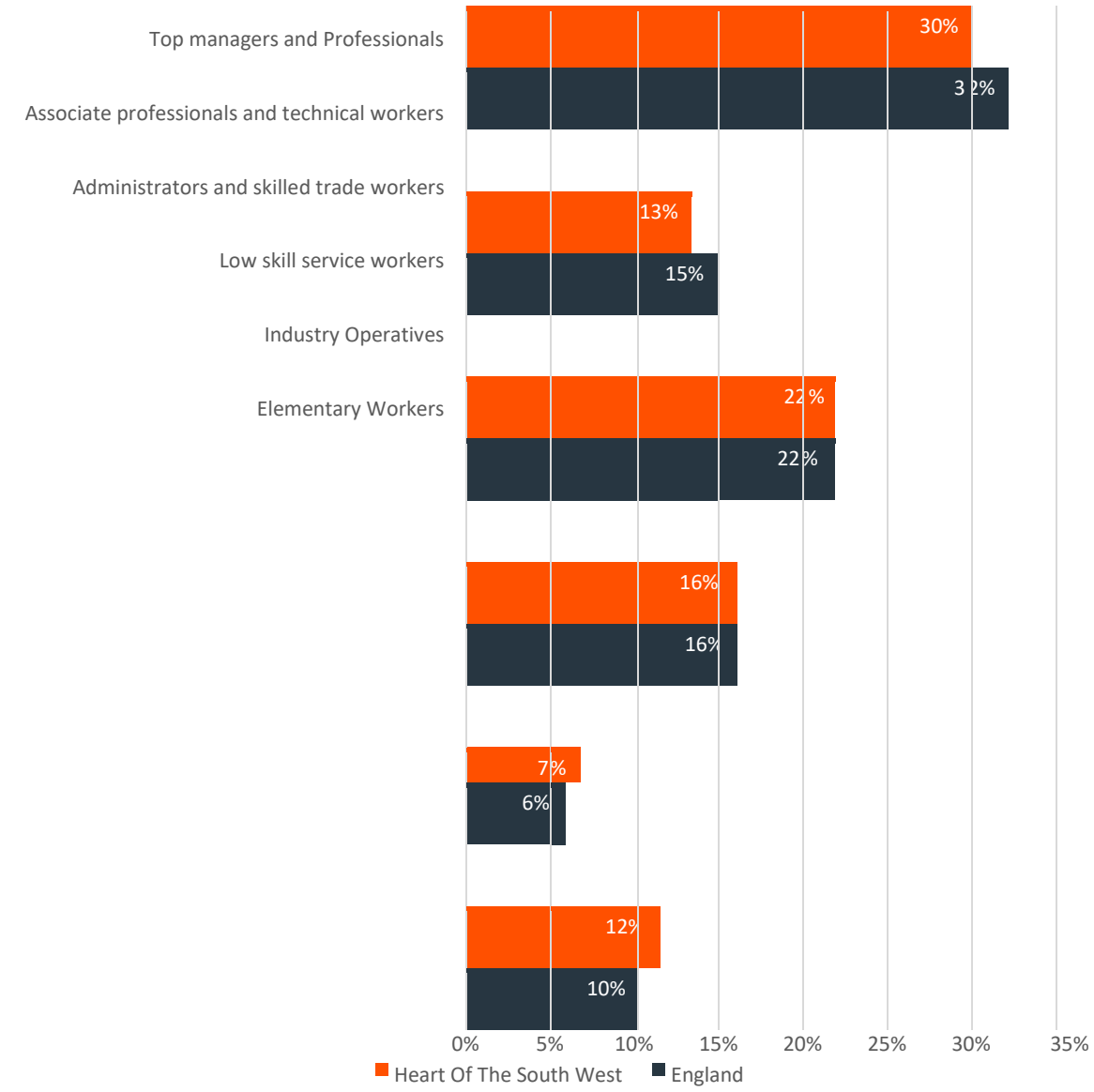
- Heart of the SW LEP Strategic Investment Panel
- Heart of the SW LEP Business Leadership Group
- Heart of the SW Digital Skills Partnership

The Digital Strategy was also shared with a number of local authority teams, including Economic Development Officer Groups, all of whom have helped to shape the final product.

Appendix B - Supporting Evidence

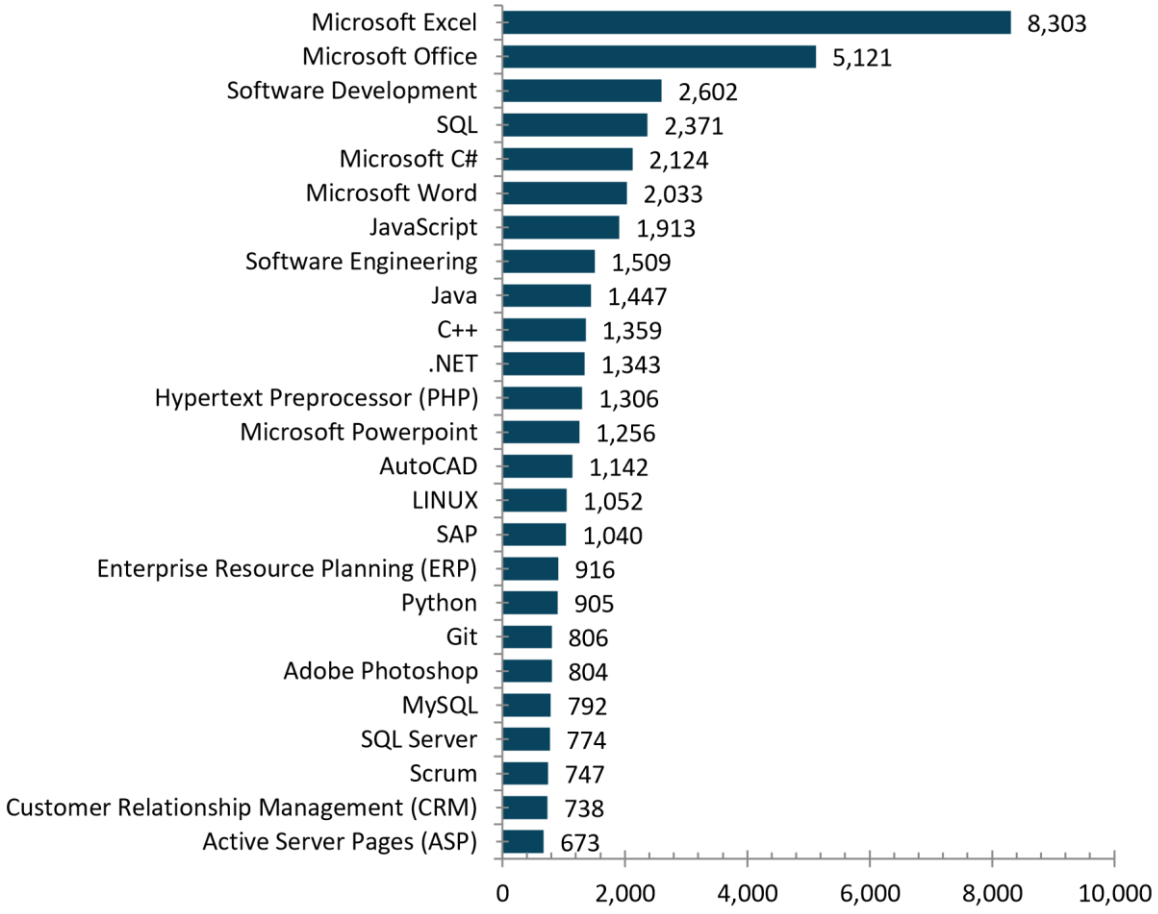
B.1 The following charts and data set out the evidence base that underpins the findings and recommendations elsewhere in the report.

Figure B.1 Occupations Profile



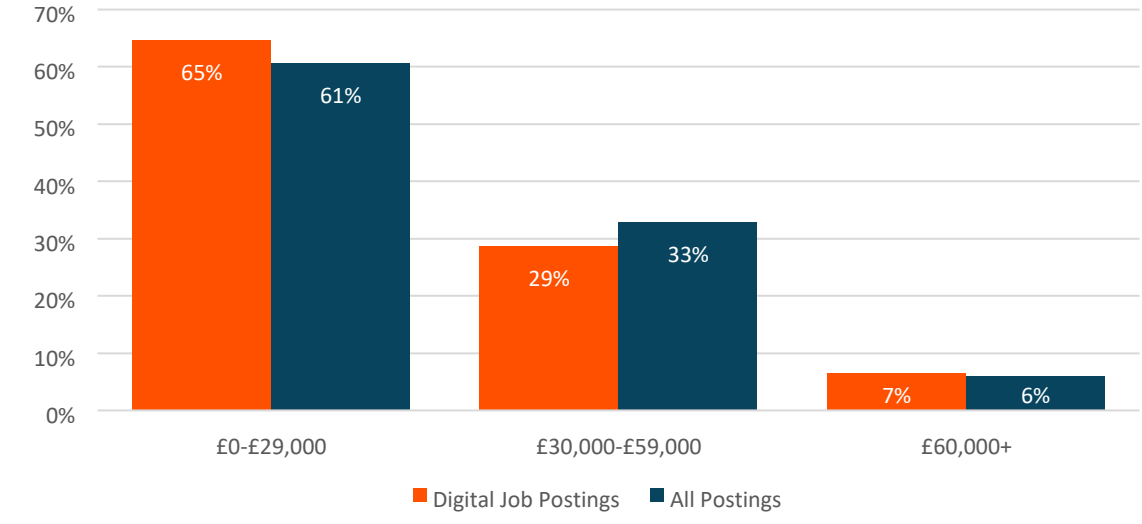
Source: ONS, 2018

Figure B.2 Digital Skills in Highest Demand



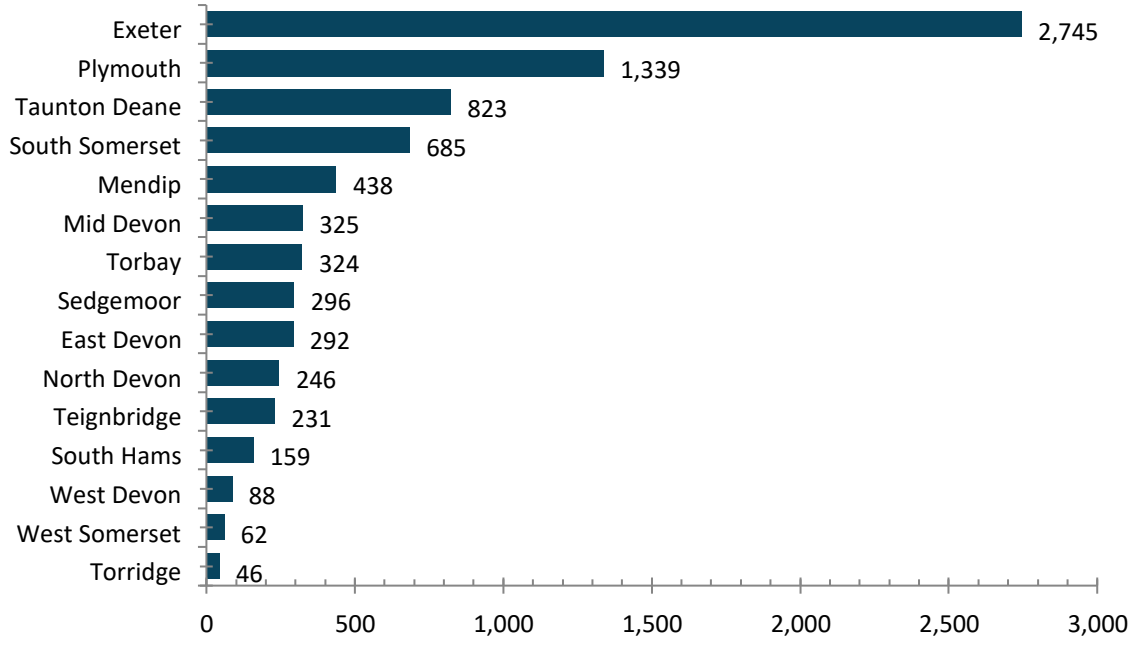
Source: Burning Glass (Heart of the SW licence), 2019

Figure B.3 Advertised Digital Salaries by band



Source: Burning Glass (Heart of the SW licence), 2019

Figure B.4 Digital Vacancies by Location (2012-2018)



Source: Burning Glass (Heart of the SW licence), 2019

Figure B.5 Types of learning that employers have used for their digital training in the past 12 months

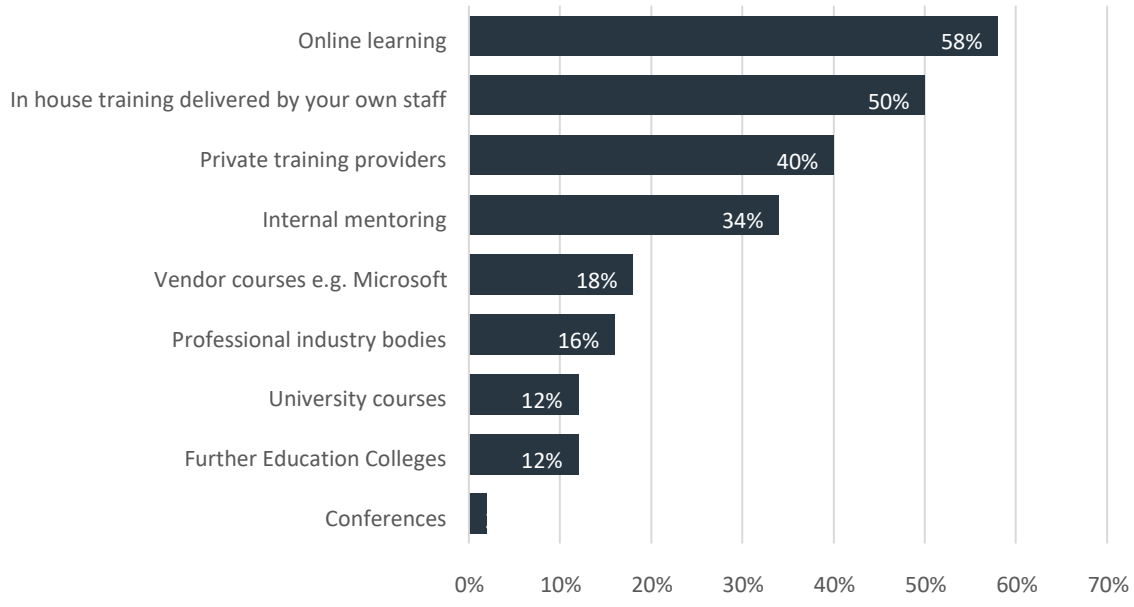
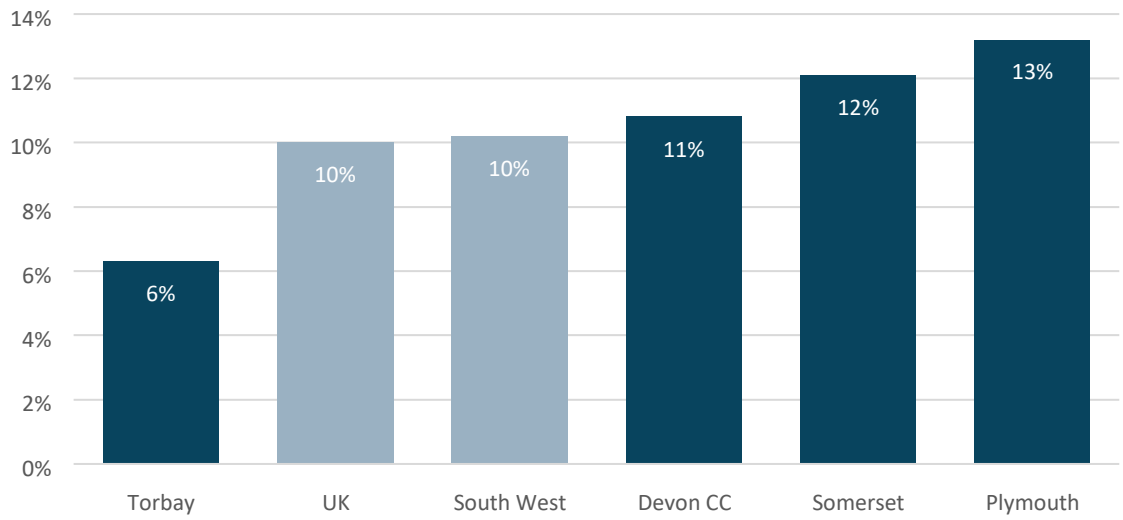
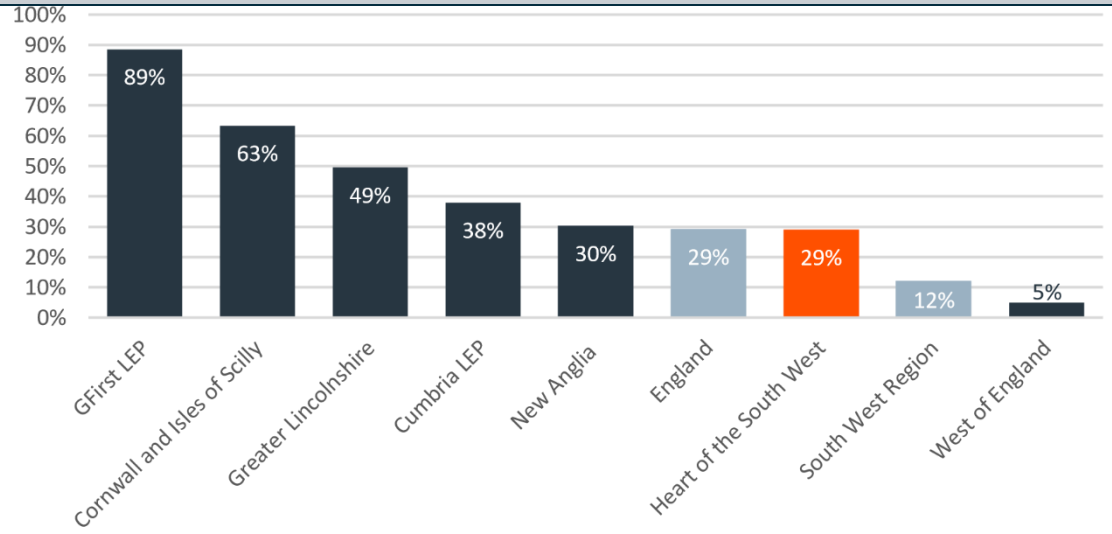


Figure B.6 Proportion of Residents who last used the internet over 3 months ago/Never used



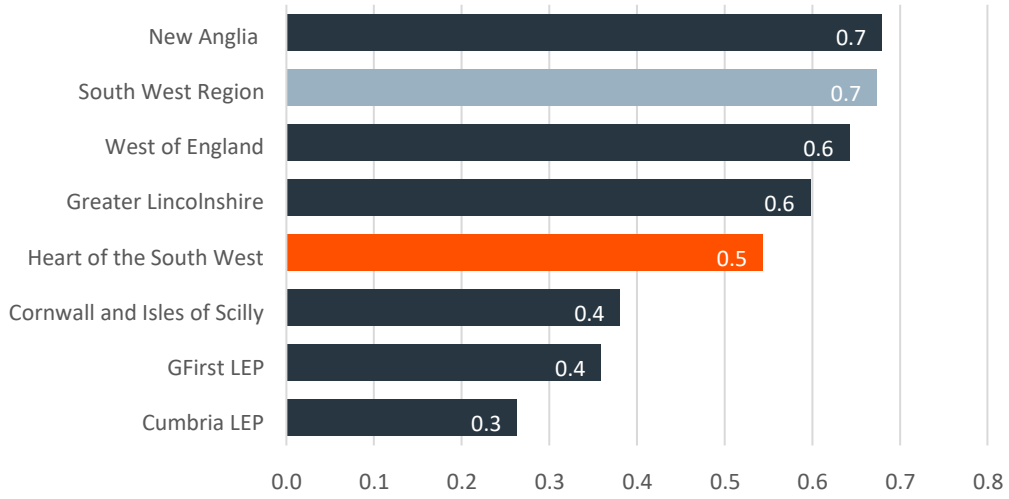
Source: ONS, 2019

Figure B.7 Digital Sector Employment Growth (2012-17)



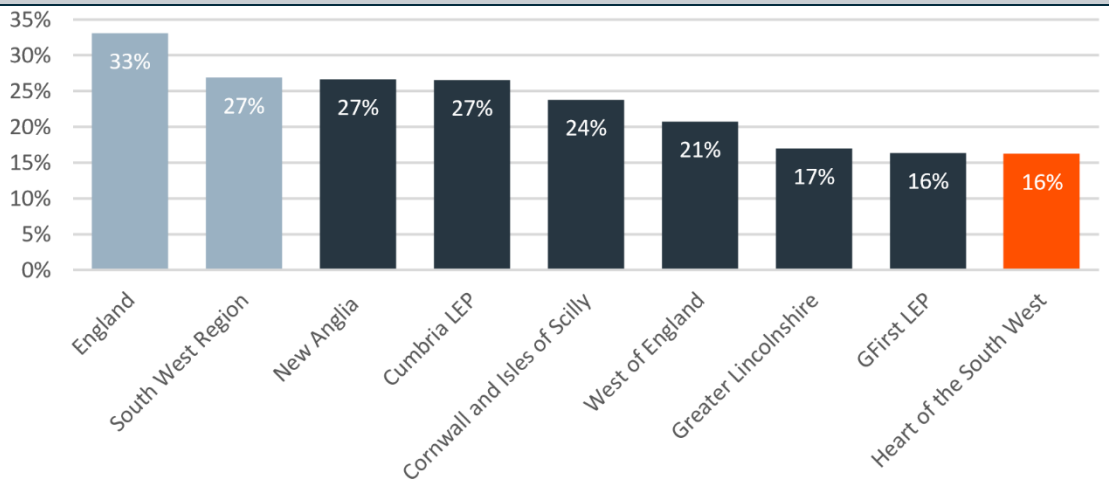
Source: BRES, 2017-2012

Figure B.8 Digital Sector Specialisation (LQ)



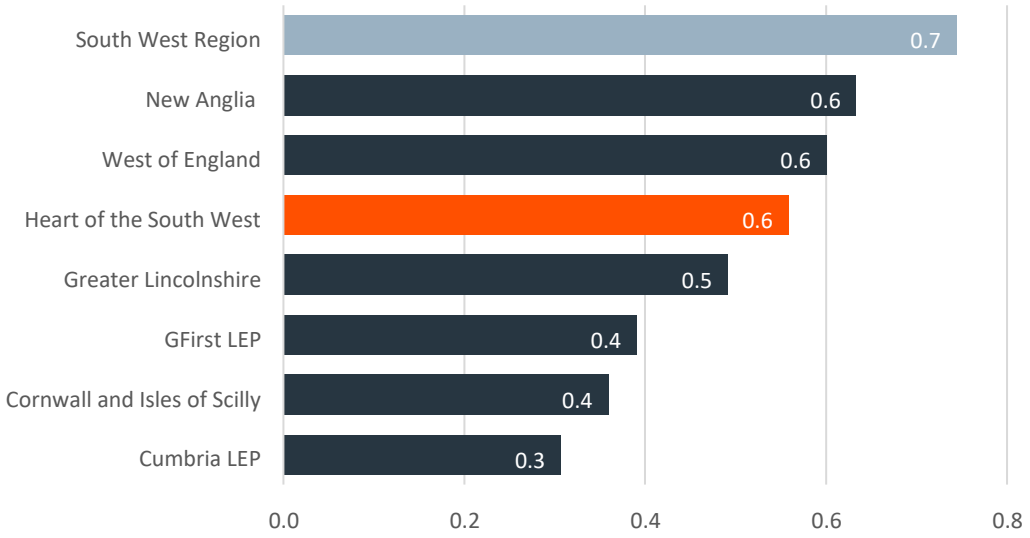
Source: BRES, 2017-2012

Figure B.9 Digital Sector Business Growth (2012-17)



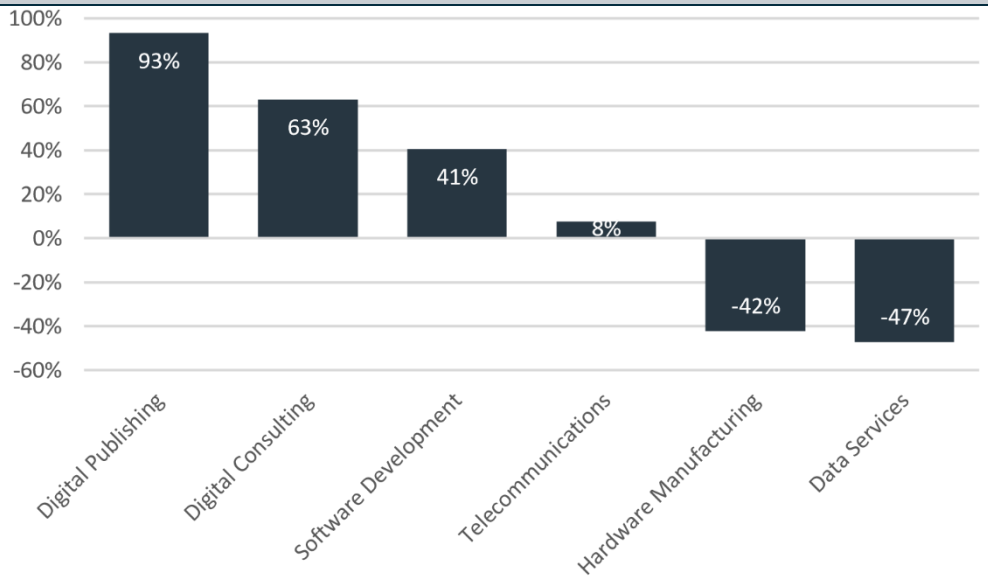
Source: UK Business Count (2018, 2013)

Figure B.10 Digital Sector Specialisation (LQ)



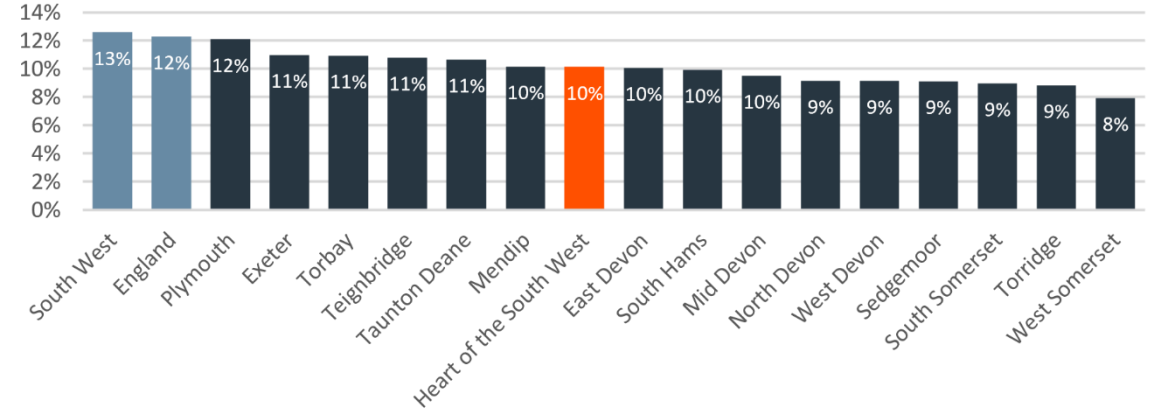
Source: UK Business Count (2018)

Figure B.11 Heart of the SW Digital Sub Sector Growth (2012-2017)



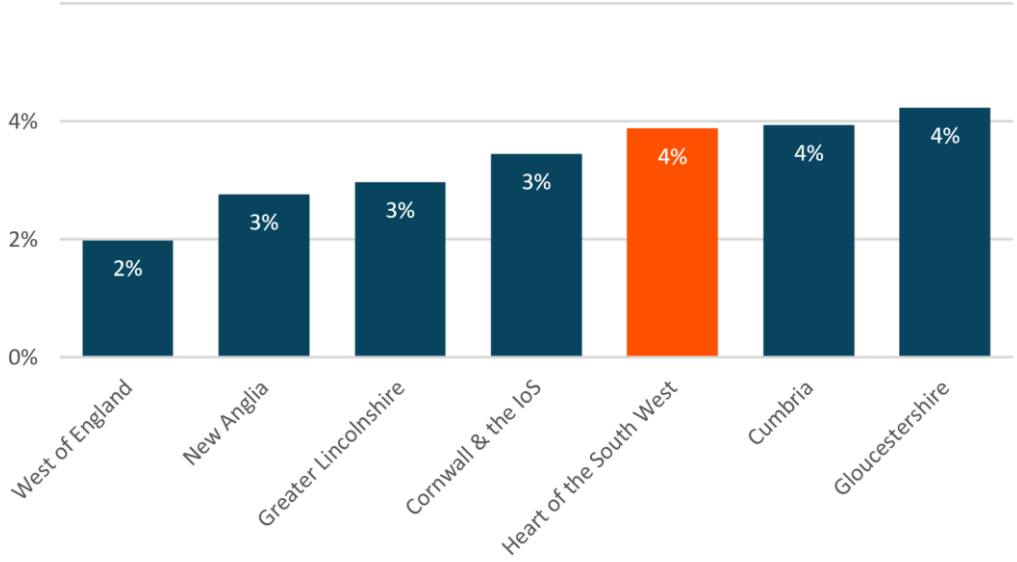
Source: BRES, 2017

Figure B.12 Heart of the SW – Start Up Rates



Source: ONS Business Demography, 2018

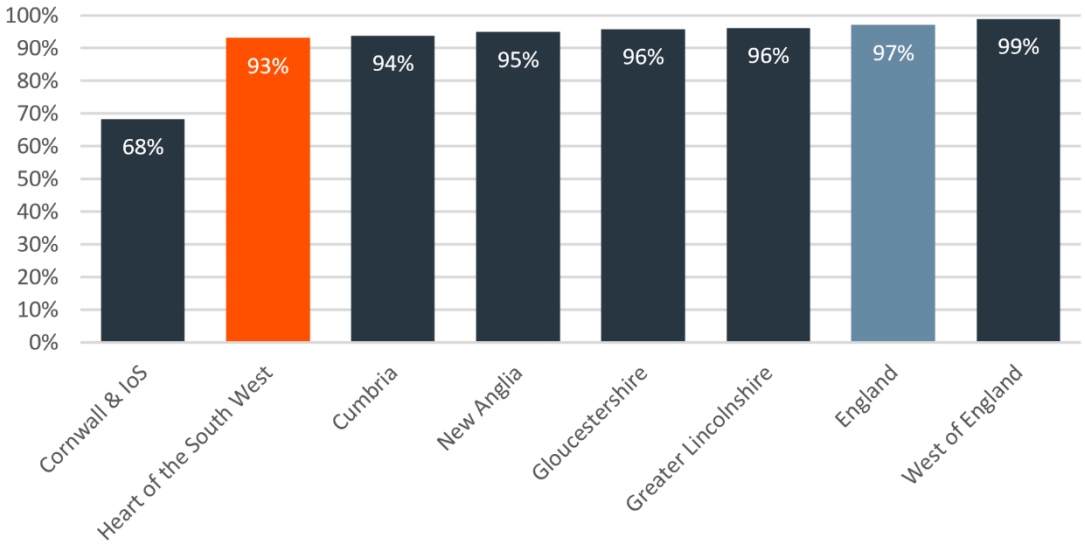
Figure B.13 Premises Unable to receive the USO



Source: Thinkbroadband, September 2019

6%

Figure B.14 Indoor Data Services Premises Coverage



Source: Ofcom, 2019