Department for Digital, Culture, Media & Sport

LOCAL DIGITAL SKILLS PARTNERSHIP

heart of the south west digital skills partnership

Heart of the South West Digital Skills Partnership

The use and provision of digital skills in the Heart of the South West LEP region

FINAL REPORT

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Devon County Council

SOMERSET County Council

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2 BACKGROUND

The HotSW Local Enterprise Partnership (HotSW LEP) has long identified digital infrastructure and utilisation as critical to the region's success and importantly, in June 2018, the LEP was named as one of only two LEP areas in England that attained pilot area status for the development of a 'Local Digital Skills Partnership' (DSP). The other being Lancashire LEP. The pilot areas are tasked in developing a 'playbook' for other LEP areas to learn from in developing digital skills in their respective areas.

In support of these goals, HotSW LEP Digital Skills Partnership identified a need for a 'digital skills needs mapping exercise' within the region, and this was carried out jointly by the University of Plymouth and University of Exeter. This was supported by a desk based review to identify existing data and literature on digital skills relevant to the HotSW LEP geography. Finally an employer survey and accompanying interviews with employers and providers were carried out to explore existing and emerging skills needs and how they are impacting on training/education supply. From this work we have identified six strategic priorities and for each a number of accompanying recommendations.

3 CONCLUSIONS

Through our review of the evidence and the feedback from employers and stakeholders including many from the Tech sector and equally, many who are digital adopters from others sectors. We have identified many strengths on which to build, including:

- A mix of innovative businesses and sectors of world class potential
- A strong learning ecosystem with good and outstanding providers
- Innovative practice in digital skills provision
- Business networks to exchange good practice

The challenge for the DSP is to provide leadership for the digital agenda and to spread good practice more widely across the two counties through:

- Collaboration
- Signposting and supporting employers and learners to find the appropriate learning, advice and guidance as the changing nature of recruitment will make it more important to be digitally literate
- Working with government (DWP, JCP, Employment Hubs etc.) to address barriers
- Drawing on new funding streams to realise the region's potential
- Where practical seeking to align activity and priorities with the other pilot within the Lancashire LEP

The DSP recognises a need both to be 'evangelical' about the potential transformative impacts of digital and to be recognised as a good practice adopter. There is also need for a communications strategy and website and the new DSP staff should prioritise this alongside signposting activities. In response to requests from its members and advance of calls from government and others, the DSP is seeking to build a list of 'worked up' fundable ideas in areas highlighted within this report.

Our Survey underlined the importance of digital technology skills across the whole economy. Most employers now require at least General or Advanced skills for productivity and growth. This suggests that those out of the labour market will find it increasingly difficult to access jobs or progress without a core set of digital technology skills.

With a clear trend towards skill levels increasing and growth in demand for Advanced skills set against a backdrop of falling interest in computer science qualifications at GCSE and A level it will be important that Careers Information Advice and Guidance takes these findings on board and emphasises the growing demand for advanced digital skills in virtually every field of work.

Digital technology is transforming how businesses operate. Smaller companies find it difficult to keep up with the pace of change. They do not know how to source training or how to make sound decisions on investment in digital technology. Independent support and guidance as has previously been delivered through the 'Get up to Speed' programme would be welcomed.

The extent of change that digital technology brings means that managers and leaders need the knowledge and awareness of how to drive through change efficiently and effectively. The newly launched Digital Leaders programme provides a way of supporting local businesses adopt new technology.

There are clear links between using digital technology and raising productivity and the work of the DSP should be central to the LEP's work to boost productivity. The DSP should be represented on any priority sector groups to boost awareness of its activities.

In the qualitative interviews there was a plea to bring similar companies together for high level networking around the digital agenda. There needs to be greater awareness of what networks exist and who they are aimed at. Strengths, as well as challenges, are shared suggesting that benefits could come from better connections that enable leaders of the LEP's most innovative companies to learn from one another and open up new opportunities through collaboration.

The clustering of businesses develops competitive ecosystems, and businesses often use the reputation of an area to attract customers and talent. In turn, once an area has a critical mass of companies in a sector, this attracts further inward investment. Interviewees considered that the LEP should do more to promote the innovation assets of Devon and Somerset and promote it on its quality of life. The proximity of the digital cluster in Bristol should be seen as an asset from which local companies can benefit rather than posing a threat. There is a need to generate a 'buzz' around digital clusters, building on the strengths Exeter is developing in this respect.

Because of the pace of change and the need for bespoke, tailored learning online learning and private training providers are key to upskilling the workforce. Funding and a lack of awareness are the main barriers to training and there need to be ways of promoting and marketing the provision which exists in the Heart of the South West as well as the more cutting edge online provision available.

Other conclusions:

- Strong links between schools and businesses will help build awareness of need.
- Coding skills such as HTML, CSS and SQL are in demand.
- Skills are the key issue impacting on business growth, in particular advanced digital skills.
- Local opportunities should be promoted to the student population to secure their skills for the local economy.
- There is interest in digital apprenticeships, but many SMEs consider that they do not have sufficient needs to take on specialist digital staff.
- There was concern about duplication of effort amongst different partnerships and a plea for genuine collaboration.

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TABLES

4 INTRODUCTION

4.1 Literature and Policy Review

In March 2017, central government published its Digital Strategy[1] which aims to create a world-leading digital economy that works for everyone. The strategy set out seven priorities for the UK to focus on:

1. Building world class digital infrastructure for the UK
2. Giving everyone access to the digital skills they need
3. Making the UK the best place to start and grow a digital business
4. Helping every British business become a digital business
5. Making the UK the safest place in the world to live and work online
6. Maintaining the UK government as a world leader in serving its citizens online
7. Unlocking the power of data in the UK economy and improving public confidence in its use

The digital skills priority aims to tackle digital exclusion, develop the full range of digital skills that individuals and companies need for the future and develop a strong collaboration between the public, private and third sector in tackling these.

The HotSW Local Enterprise Partnership (HotSW LEP) have identified digital infrastructure and utilisation as critical to the region's success. Subsequently, in June 2018 the LEP was named as one of only two LEP areas in England that attained pilot area status for the development of 'Local Digital Skills Partnerships'. The pilot areas are tasked in developing a 'playbook' for other LEP areas to learn from in developing digital skills in their respective areas.

Digital skills impact on a number of areas including: digital inclusion, productivity, attracting and retaining quality sustainable jobs and economic growth. The HotSW LEP Digital Skills Partnership has identified a need for a 'digital skills needs mapping exercise' within the region, which is to be carried out by the University of Plymouth and University of Exeter. As part of the mapping exercise a desk based review was carried out to identify existing data and literature on digital skills relevant to HotSW LEP geography. The review, presented in the sections below, looks at digital skills needs and strengths using DCMS definitions of basic, general and advanced skill levels and provides a wider context for the overall mapping exercise relating to the HotSW geography.

4.2 Bespoke Survey and Interviews

To supplement the literature review, the DSP sought to identify clear and robust evidence on the digital skills challenges currently being faced by employers across the sub-region.

An online employer survey was commissioned to better understand the extent to which digital technology is transforming business practice, goods and services in the Heart of the South West. Given that traditional industries such as manufacturing, finance, retail and engineering have already become significantly, or indeed completely, transformed by digital technology the survey aimed to find out what the key issues and opportunities were across the whole economy rather than just the digital sector.

[1] DCMS (2017) UK Digital Strategy 2017

The survey was undertaken during June and early July 2018. Invitations to participate were cascaded out through partners including, Chambers of Commerce, trade bodies and sector organisations. The survey elicited 85 responses spread across the economy and representing employers of different sizes from micro businesses to major employers with more than 250 employees (See Annex 3 for breakdown of characteristics of respondents). Whilst this sample is too small to provide findings which can be disaggregated with any statistical robustness, the data does provide up to date and valuable information on:

- Levels of digital skills within the workplace
- Drivers of change
- Recruitment
- Training
- Aspirations for the work of the Digital Skills Partnership

The survey was supplemented by a series of qualitative interviews with employers in Devon and Somerset to provide further depth to the largely quantitative findings from the online survey.

4.3 Education and Training (Supply side) Mapping exercise

The initial mapping exercise was carried out through a desk-based review of digital skills related training provision provided by private, VCSE, local authority and mainstream education providers. This review was supported by input from Digital Skills Partnership members in order to signpost to suitable training providers.

The work examined the digital skills training provision currently available and we provided a geographical representation of clusters of provision (See Annexes 4 and 5) within the LEP area based upon:

1. Digital skills provision currently provided by sector focus, these sectors being:
    a. Digital sector: including big data, photonics and creative
    b. Advanced engineering: including marine, nuclear and aerospace
    c. Healthy ageing
    d. High value tourism
    e. Construction
    f. Digital inclusion at basic level
    g. Social Enterprise
2. Digital skills training providers
3. Digital skills provision split between lower and higher-level skill levels, i.e. Entry level to level 4 and level 5 to level 8. Further details of qualification types associated with skill levels can be found in table 1 of appendices 1.

For the purposes of geographical mapping the location of where training provision is delivered was used to take into account both training providers that are based outside of the HotSW LEP area and online training providers that provide training within the LEP area.

The mapping exercise consisted of collecting information under a set of pre-described headings to provide the necessary detail to effectively assess the current digital skills provision within the HotSW LEP region (Table 9 in Annex 4).

As part of the mapping exercise, digital skills training provision that was identified throughout the LEP region was categorised by the eight key sectors acknowledged by the LEP as key sectors for future growth. These sectors include:

a. Digital sector: including big data, photonics and creative
b. Advanced engineering: including marine, nuclear and aerospace
c. Healthy ageing
d. High value tourism
e. Food & drink
f. Construction
g. Digital inclusion at basic level
h. Social Enterprise

A total of 447 courses were identified during the mapping exercise, however this does not represent a comprehensive list of all digital skills training provision within the LEP region, as certain providers are difficult to map due to limited information, e.g. digital inclusion courses being delivered within local libraries or online courses delivered nationally.

5 THEMATIC RESULTS and RECOMMENDATIONS

5.1 THEME 1. Developing world-class skills for productivity and growth

5.1.1 Summary

The Heart of the South West region has an enviable cross-section of businesses and sectors of world class potential. Although these occur in different fields - from Advanced Manufacturing to Food and Drink to Healthy Ageing - the common thread is their adoption of and investment in digital technology and their need for advanced digital skills to stay ahead of the curve.

The South West and South East Wales Science and Innovation Audit identified significant local research excellence combined with opportunities for growth in these and other sectors. Moreover, national research shows that the GVA of a digital tech worker (£103k) is over twice that of a non-digital tech worker (£50k), therefore investment in digital skills will help support the LEP in its mission to boost productivity.

Digital leadership programmes across the tech and other key sectors should be a priority to harness this potential as are developments such as SWIFT in Somerset. It should also be easier for employers to link in with the cutting edge research at the two local universities. Advanced digital skills are increasingly in demand but shortages are apparent, not least because local talent is drawn out of the area to other parts of country.

5.1.2 Analysis of the HotSW LEP Position

5.1.2.1 Access to digital: infrastructure and digital skills in the workplace

Access to digital technology and the internet has been identified as one of the key barriers to digital inclusion and capability, and a key issue in this regard is the rurality of location. In the BIS small business survey (2015), 23% of businesses in rural areas reported that their connectivity was poor, compared to just 6% in urban areas. Over 90% of the Heart of the South West LEP area is classified as rural. Although 40% of the population live in urban areas, the issue of poor connectivity in rural areas may still have a bearing on 60% of the population as well as many businesses.

However, initiatives have been established to combat the access issue for rural locations as well as others barriers, such as cost. For example, 'Connecting Devon and Somerset' plan to provide superfast broadband speeds to all premises in the area by 2020. In 2015, up to £3,000 of 'Connection Vouchers' were made available to SMEs in Plymouth, in order to support them in covering the up-front costs of connection to superfast broadband, business broadband or wireless solutions. In addition, free public Wi-Fi to the Plymouth city centre and waterfront areas has been rolled out. This is the largest public network in the UK to be delivered without public subsidy and equates to an investment of around £1 million over eight years.

SERIO's longitudinal survey of businesses connected to superfast broadband in Cornwall found that business usage of the internet increased considerably since first connecting, with between 18% and 69% of businesses using pre-specified internet functions for the first time since upgrading to superfast.

In addition, nearly half of the businesses surveyed reported that employee numbers had increased since they first connected to superfast broadband.

The UK Forum for Computing Education analysed Standard Occupation Codes that covered all those employed in the UK in 2013 and estimated the number of jobs requiring different levels of digital skills[2]. The analysis revealed that out of 29.5 million jobs only 2.2 million did not require any level of digital skill, whilst 10.8 million (37%) required basic level skills and the remaining 16.5 million required higher level digital skills (including 2.9 million that require skills to build digital technology) [3]. Based on this it could be argued that nearly everyone in the UK workforce will soon need to have a basic digital skillset. Central government also predict that within 20 years 90% of all jobs in the UK will require some element of digital skills[4].

According to the Small Business Survey, nationally, 98% of SMEs use the internet for business purposes[5]. However, as reported by the Lloyds Bank UK Business Digital Index Survey 2017, 1.6m small businesses (41%) and over 100,000 charities (52%) reported to not having all five basic digital skills, despite there being a positive link between digital skill levels and turnover growth. Furthermore, this number has increased since the previous year, with 38% of businesses and 49% of charities not having basic digital skills in 2016. This suggests that there is a need for continued support and investment in enabling SMEs to make better use of digital skills to fulfil their potential. The Lloyds report shows that the most commonly reported barrier for organisations with low-level digital skills is motivation – with 61% of charities and 43% of small businesses believing that an online presence is not relevant for their organisation. Despite this, the Government's digital strategy (2017)[6] highlights that SMEs with a strong web presence on average grow more than twice as quickly than those with minimal or no presence, export twice as much, and create twice as many jobs. The Do More Online campaign under the Business is Great[7] website is one government funded initiative aiming to support small businesses to make the most of an online presence.

A British Chambers of Commerce (2017)[8] survey of over 1,400 business also highlighted the digital skills gap for UK businesses. The survey found that over 75% of businesses are facing a shortage of digital skills in their workforce. Amongst the most important skills perceived by businesses were: basic computer skills; communicating and connecting through digital channels and management of digital information.

The 2016 Devon Workforce Skills Survey[9] found that 81% of businesses surveyed rated basic knowledge of everyday technology as either somewhat or very important. The report noted a variation

[2] House of Lords (2017) Digital Skills in the United Kingdom
[3] BIS (2015) Digital capabilities in SMEs: Evidence Review and Re-survey of 2014 Small Business Survey respondents
[4] Gov.UK (2017) UK Digital Strategy
[5] BIS (2015) Digital capabilities in SMEs: Evidence Review and Re-survey of 2014 Small Business Survey respondents
[6] Gov.UK (2017) UK Digital Strategy
[7] http://www.greatbusiness.gov.uk/domoreonline/
[8] BCC (2017) BCC Digital Survey
[9] Wavehill (2016) Devon Workforce Skills Survey

across sectors, with respondents in all sectors, except construction and administrative and support services, indicating that they felt basic digital skills are important.

In an earlier version of the Devon Workforce Skills Survey (2015)[10] more detail was provided on the type of digital skills required by employers, with basic computer skills (54%) and online marketing (20%) being the most commonly cited digital skills required. This finding was echoed in SERIO's Digital Barriers Research[11], which was based in Devon and Somerset and explored the issues faced by women returning or starting in the work place as well as employers' digital skill needs. Specifically, Job Centre Plus and recruitment agency staff felt that basic digital skills were those most commonly asked for by employers and included emailing, using a search engine, and using Microsoft Office.

As highlighted, digital skills can provide benefits for employment and social mobility for the individual, as well as being important factor in increasing business productivity. Furthermore, a number of reports and studies have highlighted the value to the economy in supporting and improving digital skills in the UK. BIS in 2016 reported that the 'tech sector' represents 6% of the UK economy with an estimated GVA per person/per annum of approximately far higher than the UK average[12], hence emphasising the importance of addressing the skills gap in digital. The European Digital Skills Survey (2016) revealed that more than a third of workplaces with digital skills gaps expressed concerns about the impact these gaps could have on workplace performance[13], with a loss of productivity (46%) being most frequently reported.

5.1.2.2 The importance of the digital sector

Most firms will mainly be users of technology, and in contrast, the creators of technology, i.e. the digital sector is relatively small in terms of employment, nevertheless it is a key contributor to the wealth, dynamism and growth of the national economy. Recent trends show that[14]:

- The turnover of the sector has grown by 22% in just five years
- In 2015 its GVA was £97bn
- The sector grew 50% faster than the economy as a whole in 2015
- Between 2010 and 2015, the number of tech business grew by 28% - twice as fast as the wider economy
- In 2016 more than two thirds of digital investment occurred outside London
- The GVA of a digital tech worker (£103k) is over twice that of a non-digital tech worker (£50k)

Overall, digital tech businesses are starting up at a faster rate than non tech businesses, creating wealth, jobs and stimulating productivity and efficiencies across the wider economy. Globally the digital economy is rapidly growing and it is forecast that it will account for 25% of the world's economy by 2020 – up from 15% in 2005.

[10] SERIO (2015) Key Findings from the Third Devon Workforce Skills Survey
[11] SERIO (2015) Digital Barriers: Understanding the Issues Faced by Women Entering or Returning to the Workplace
[12] BIS (2016) Digital Skills for the UK Economy
[13] European Commission (2016) ICT for work: Digital skills in the workplace
[14] Tech Nation Report 2018, May 2018

5.1.2.3 What does the advanced digital sector look like in the Heart of the South West?

Devon and Somerset already have a number of internationally important digital technology companies such as Gooch and Housego and Oclaro, together with significant research excellence, numerous significant sub regional assets and industrial capacity to provide the basis for further growth. The South West England and South East Wales Science and Innovation Audit found that the area has major areas of world-class potential. Areas of opportunity include:

- Environmental Risk and Data Innovation, and Sustainable Technologies and Development: Exeter has a concentration of climate and environmental science experts and Europe's most powerful supercomputer. The city-region is emerging as a cutting-edge place for enviro-technology and data analytics. Significant data analytic capacity is also provided in Taunton by the UK Hydrographic Office.
- There is potential for the growth of agri-tech throughout Devon and Somerset.
- Strengths around healthy ageing are supported by expertise and facilities in genetics, clinical trials and healthcare in Exeter, Plymouth, Torbay and Devon. The stable and ageing population presents a significant opportunity to develop digital health and life science industries in the sub region.
- The Electronics/photonics industry centred around Torbay plays an important role both as a standalone sector and in supporting a number of other key sectors, including Aerospace, Telecoms and Biomedical.
- In terms of Robotics and autonomous systems, there is a strong concentration of activity around the wider West of England area with notable Plymouth based activity in marine autonomous systems research and innovation (e.g. Applied Automation and MSubs). This is underpinned by the regional presence of major corporates within the aerospace and advanced engineering sector (Airbus, GKN, Rolls-Royce, and EDF) with an interest in robotics and autonomous systems.

Latest data shows that the digital technology sector accounts for 9,400 jobs[15] (a figure which includes all the jobs in the sector not just digital tech jobs). Most of these jobs are to be found in Exeter (29%), Plymouth (15%), Yeovil (11%) and Weston-Super-Mare (11%) which between them account for 2 out of 3 jobs in the digital sector in Devon and Somerset:

Growth has been strong, and Devon County Council's Local Economy Forecasting Model suggests that employment in IT services in Devon will grow by 21% between 2013 and 2023, 5% higher than growth in other sectors in the rest of the county.

[15] Tech Nation Report 2018, May 2018

Table 1: Employment in the digital sector by travel to work area (HotSW LEP area)

	Nos.	%
Barnstaple	275	2.9
Bideford	112	1.2
Bridgwater	492	5.2
Exeter	2690	28.7
Kingsbridge and Dartmouth	143	1.5
Minehead	68	0.7
Plymouth	1444	15.4
Taunton	866	9.2
Torquay and Paignton	492	5.2
Street and Wells	544	5.8
Yeovil	1057	11.3
Sidmouth	180	1.9
Weston-Super-Mare	1026	10.9
TOTAL	**9389**	**100.0**

Source: Tech Nation 2018, Employment in the digital sector by travel to work area, 2017

However, the standard industrial classifications used above fail to fully capture the strength, depth and breadth of the digital sector and reports by Tech Nation are useful in this respect in terms of capturing its growth and the characteristics of the businesses and infrastructure that is driving it. The 2018 report published in May 2018 has data on 2 clusters in the sub region – Exeter and Plymouth. For Exeter it reports that in 2017 the sector has:

- £271m business turnover, equivalent to £101,000 turnover by employee. This is up 72% compared with 3 years ago.
- £351m GVA.
- 2,690 jobs in the digital tech sector. Since 2014 jobs in the sector have increased by 48%.
- 10,240 digital tech jobs across the Exeter economy, i.e. almost 4 times as many tech jobs in the economy as a whole compared with the digital tech sector itself.

The sector is supported by Tech Exeter and Digital Exeter, where innovation is supported by leading incubators like SETsquared. In terms of the digital ecosystem, Exeter is well placed:

- In September 2017, Exeter College opened its Centre for Advanced Industrial Automation, a world-class robotics and engineering centre. The robotics workshop will accommodate seven Kuka robots including the KR Agilus. Consequently, Exeter College will be the leading college in the UK for robotics programming.
- Exeter College and Exeter City Futures have launched the Exeter Data Information Science Collaborative. Designed to boost the analytical skills of young people in the area, it also provides them with the essential tools to create change locally.
- The newly launched Impact Lab is a partnership of seven Devon-based organisations, including the University of Exeter, Exeter City Futures and the Met Office. The project will work with businesses to analyse data and create new products and services with a focus on safeguarding the environment.

The Exeter Digital Skills Escalator

Exeter is unusual in that for a relatively small city, it has a large cluster of companies with significant need for data analytical skills– in particular the Met Office - which is the United Kingdom's national weather service and one of the largest organisations of its kind in the world. In response to the growing need for digital skills a partnership between those in Education, Business and Local Government have developed the Digital Skills Escalator.

What is it seeking to achieve?

The principal objectives and elements of the Data Analytics Skills Escalator are currently:

1. Raise young peoples' awareness, interest and attainment in data analytics study and careers
2. Establish an Institute of Technology in Digital Skills
3. Develop an apprenticeship pathway in Data Analytics
4. Establish a Data Science Institute
5. Boost employability and graduate retention
6. Raise business awareness of the value of data
7. Deliver training to data professionals
8. Provide high-end analytical talent and support to business

Latest developments

With support from the LEP, the University of Exeter has secured £8m of Local Growth Deal funding to establish a Global Environmental Futures (GEF) Campus and Impact Lab on the Exeter Science Park. The impact lab will enable SMEs working on innovative products and services to draw on the support of partners across the HotSW LEP area, including academics at the University of Exeter. It includes a £1.5m Challenge Fund providing innovation grants to SMEs in Devon.

Recognising the need to boost analytical skills in school-age children the University of Exeter has pursued funding from the European Union. Since 2017 this has resulted in a new project 'Strategic Partner for Innovation in Data Analytics in Schools' (SPIDAS) exploring best practice in development of data analytics skills, working in partnership with schools / colleges from Spain and Turkey. The SPIDAS project began in November 2017 and is an international schools project seeking to be a platform for further activity under this priority. It includes the Met Office as a supplier of innovative data. A second international project was submitted in 2018 for funding and has been successful. This will commence in November 2018 looking at 'aquarium learning' and STEM skills. Like SPIDAS this too includes a network of local schools.

To take the Escalator model forward and to explore its potential elsewhere the University of Exeter has been successful with a bid to ERASMUS+ with the European Network for Regional Labour Market Monitoring (ENRLMM) called ESCALATE which will expressly extend and deepen the model to ensure greater provision locally for low participation groups and neighbourhoods.

In Plymouth the sector has been somewhat less buoyant. In 2017 it recorded:

- £122m business turnover, equivalent to £85,000 turnover by employee. Turnover has declined by 10% compared with 3 years ago.
- £161m GVA
- 1,444 jobs in the digital tech sector. Since 2014 jobs in the sector have remained largely static.
- 6,529 digital tech jobs across the Plymouth economy

Key developments include:

- City College Plymouth's recently developed £13 million Regional Centre of Excellence for STEM, providing new state-of-the-art facilities, aiming to be the leading provider of innovative and technical education in the South West. The Centre was developed with the input of over 200 employers and will give City College students the opportunity to work across traditional subject boundaries, developing transferable skills.
- A landmark regeneration project in Devonport, Plymouth's docklands. Once complete, the £7 million Market Hall will be a hub for digital businesses as well as community and arts groups. The project is led by local social enterprise the Real Ideas Organisation (RIO), and will also work to increase the visibility of the sector and to attract and retain talent.
- A marine business technology centre called Oceansgate opened in 2018 on a 35-hectare site on the Devonport Dockyard, one of the largest naval dockyards in Europe. It is the first Enterprise Zone in the country to bring together marine-based businesses and create a world-class hub for marine technology. The centre will provide opportunities for research, innovation and production in a collaborative environment, to support business growth.

New developments: The proposed South West Institute of Technology

The Department for Education (DfE) is awarding £170 million to establish a network of Institutes of Technology across the country. Of 35 original applications, the South West Institute of Technology (SWIoT) bid is one of 16 to progress to the final stage of the competitive process. It represents a **new value-adding collaboration of two universities, five FE colleges and business,** including strategically vital employers such as Babcock International, TDK Lambda, the Met Office, Goonhilly ES and dynamic SMEs.

The proposal will revolutionise digital technology education across the South West. It will offer top-quality training and apprenticeships in higher-level technical skills and aim to bridge skills gaps in the economy by providing the knowledge and training that employers need. It will also deliver a range of higher level courses across the digital, engineering and manufacturing sectors.

The curriculum will: provide a broad offer spanning L4/5 Higher Apprenticeships, HND (e.g. Robotics, Automation, Digital Engineering), Foundation Degrees (e.g. FdSc Electronic Technical Support, Data Analytics, Digital Technologies), Degree Apprenticeships (e.g. Technology Solutions) through to L7 Data Science Apprenticeships and new Digital and Data Science CPD and professional programmes; and combine classroom and work-based delivery and include bespoke CPD, part-time/flexible, blended and online delivery.

5.1.2.4 The local demand for advanced digital skills

The above gives an indication of the size of the sector, but this gives no indication of the demand for digital technology skills in the wider economy.

A Foresight report[16] published in 2016 stated that there will be a shortfall of 500,000 ICT Professionals across Europe by 2020, with the UK as one of the major losers. Additionally, it predicted that there will be a need for a further 50,000 additional high-tech leaders per year until 2025. There are also significant shortfalls worldwide in a number of specialist areas, especially cyber security. The current pipeline is inadequate to meet this need. With insufficient graduates in the UK each year to fill available roles in the ICT Profession, many staff are recruited with other less relevant degree qualifications or lower qualifications. Further, the Shadbolt Review[17] highlighted the fact that computer science graduates have the highest unemployment rate of any degree course. Among the report's main concerns were the findings that: "*the proportion of undergraduate computer science students who progress into low-paid or non-graduate level employment*" and the "*reliance our computer science departments have on international recruitment to fill their labs and postgraduate courses.*"

Additionally, there are extremely significant diversity issues: only 14%-17% of the ICT Professionals in the UK are female; and black and minority ethnic (BME) graduates experience far higher unemployment levels than their similarly qualified white colleagues.

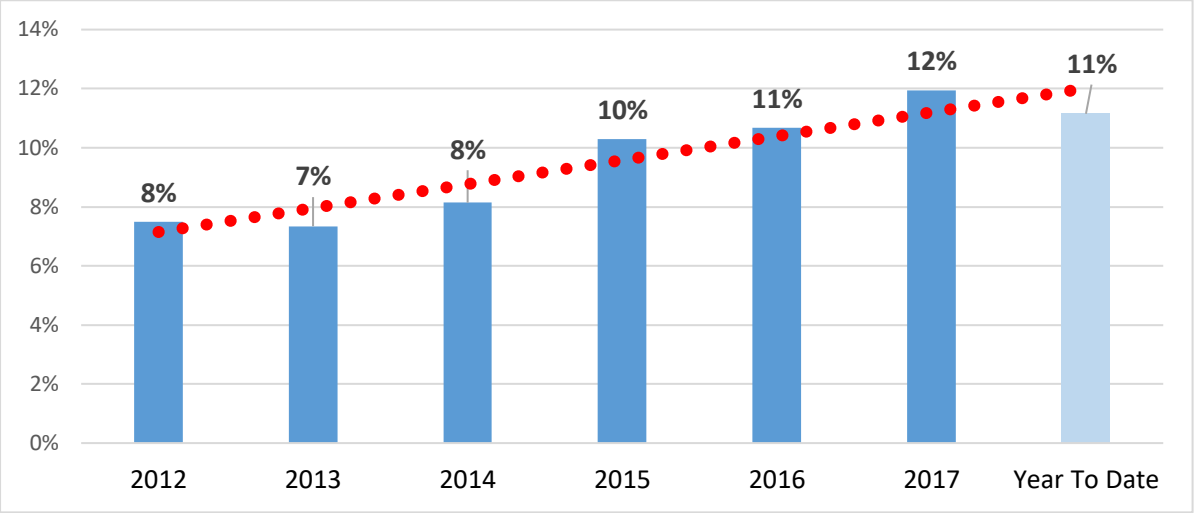
There is no detailed occupational data available at sub-regional level to assess the demand for advanced digital tech skills, but alternative data can be used to estimate trends in the numbers of advanced digital jobs in the Heart of the South West. The analysis uses data from Burning Glass on the number of job postings for advanced level digital technology skills. The data is based on high level IT jobs such as programmers, analysts and IT managers drawn from jobs which have been posted online. The findings have to be treated with caution as there can be an element of double counting with different job sites posting the same vacancy. Nevertheless the data provides a useful indicator of demand.

The overall trend in the proportion of jobs requiring advanced skills (Figure 1) has been upward, with 2018 on course to be the highest proportion recorded:

[16] Government Office for Science (2016) Lifelong digital skills development, current picture and future challenges.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/634178/Skills_and_lifelong_learning_meeting_digital_skills_demand_Bacon_final.pdf

[17] Shadbolt N. (2016) Shadbolt Review of Computer Sciences Degree Accreditation and Graduate Employability

Figure 1: Trends in the proportion of digital jobs being advertised in HotSW LEP area



Source: Burning Glass, April to March each year

The top ten postings by occupation in 2017/18 are shown below, with programmers and software development professionals being in greatest demand by far:

Table 2: Top ten IT postings by occupation 2017/18

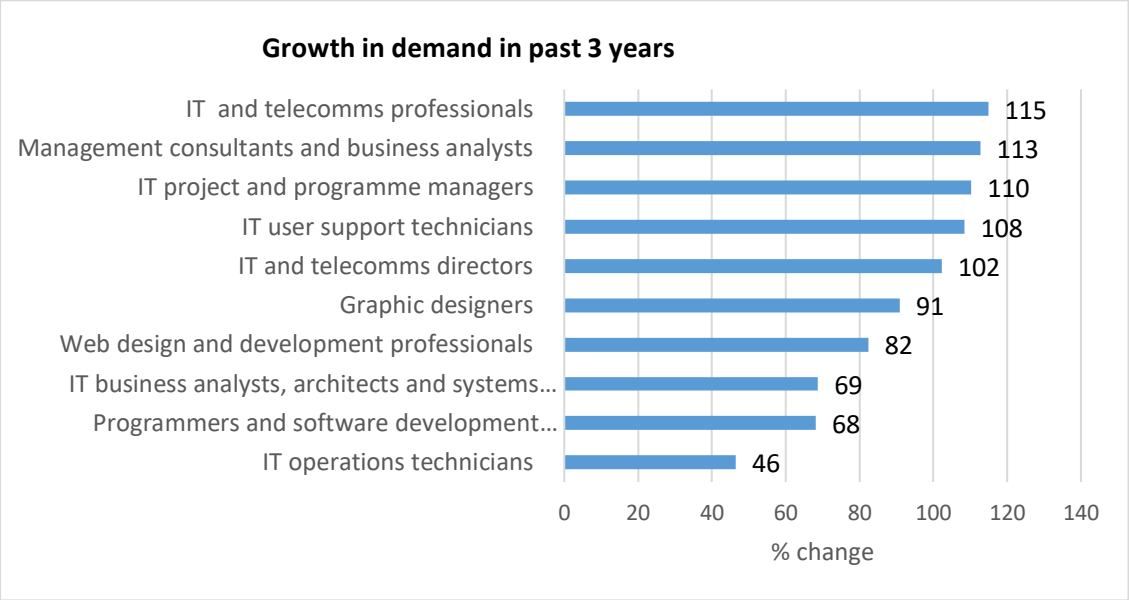
Top 10 jobs in IT	2017/18
Programmers and software development professionals	10,272
IT business analysts, architects and systems designers	3,691
Web design and development professionals	3,187
IT user support technicians	2,431
IT operations technicians	1,665
IT and telecoms professionals	1,522
IT project and programme managers	1,083
Graphic designers	439
Management consultants and business analysts	400
IT and telecoms directors	354

Source: Burning Glass, April 2017 to March 2018

Analysis of changes in the jobs being advertised shows that in 3 years the demand for some jobs has more than doubled, with strongest increases having been for:

- IT and telecommunications professionals
- Management consultants and business analysts
- IT project and programme managers
- IT user support technicians
- IT and telecommunication directors

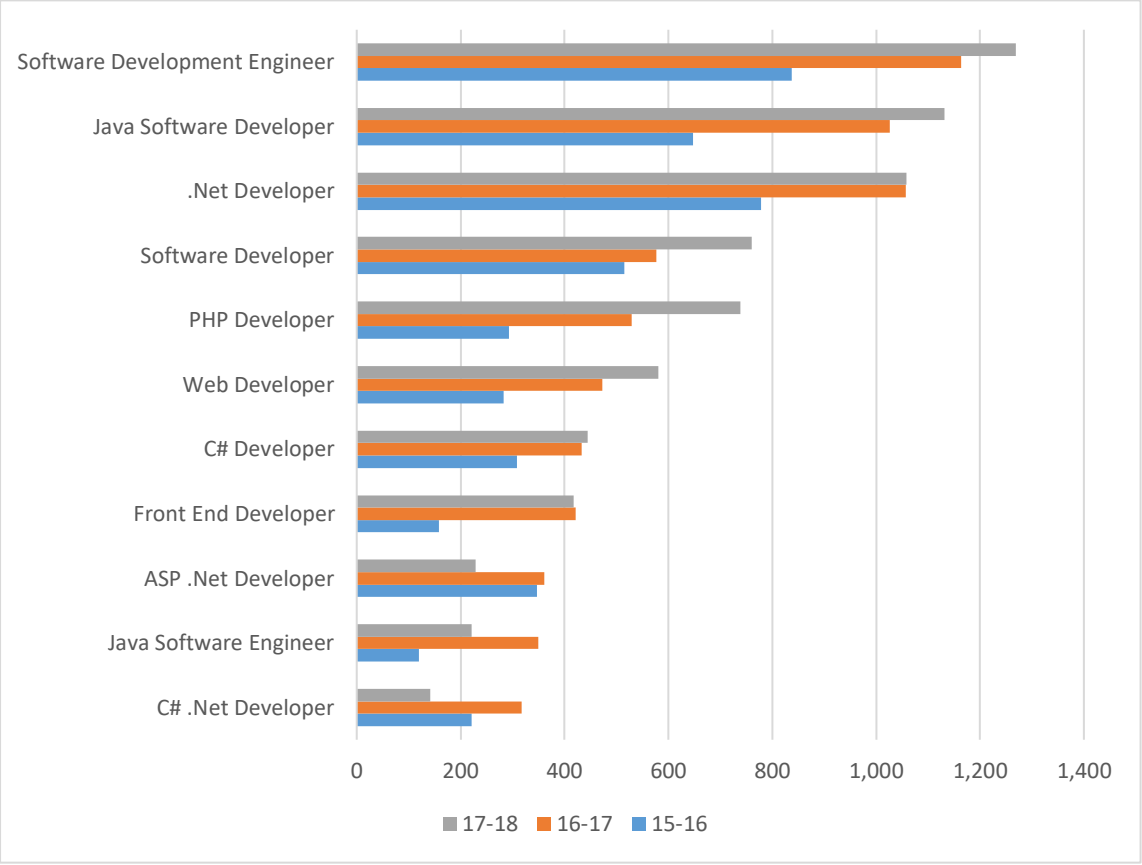
Figure 2: Growth in demand since 2015 for IT professions by occupation type



Source: Burning Glass, April to March each year

Closer analysis of job postings by job title gives an indication of the skills in demand and shows the very strong growth in demand for software development engineers, java software developers and .Net developers:

Figure 3: Trends in advertised job titles in HotSW LEP area



Source: Burning Glass, April to March each year

Whilst being less numerically significant, the greatest change has been in the demand for Front End Developers and PHP Developers.

Of the advanced digital postings, in the past year the greatest number of jobs have been advertised in Exeter, followed by Plymouth and Taunton Deane which between them account for 7 out of 10 postings:

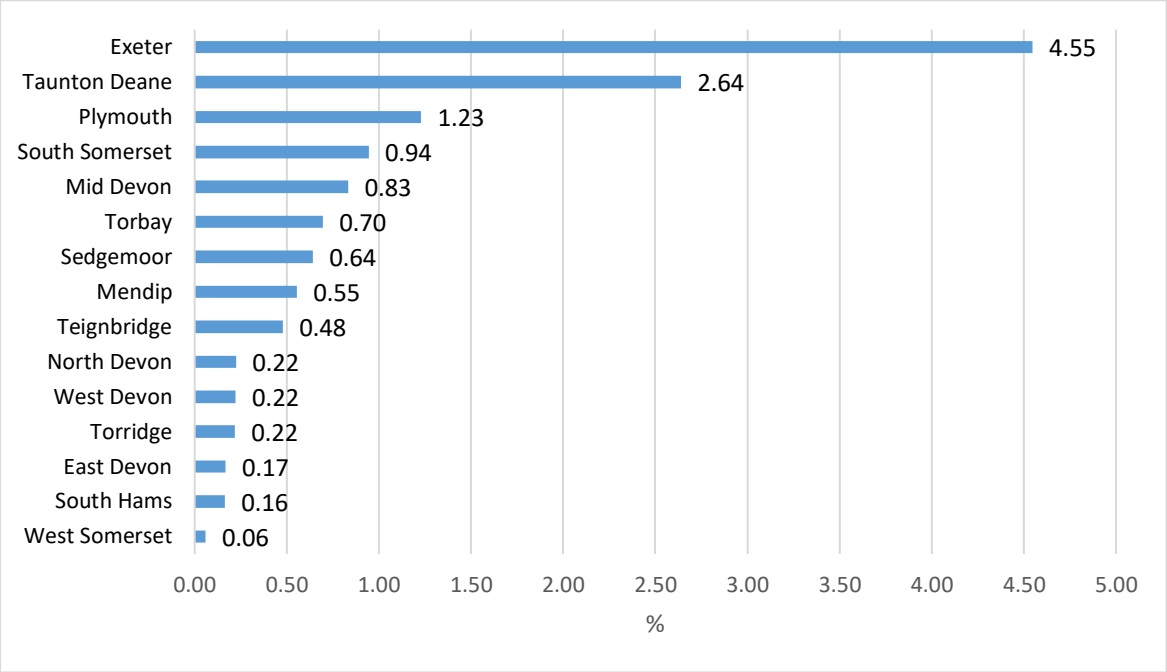
Table 3: Geographical locations of advanced digital job advertisements

LAD/UA	2017 to 18 (Nos.)	% of total 2017/18
Exeter	3,260	35.8
Plymouth	1,641	18.0
Taunton Deane	1,459	16.0
South Somerset	708	7.8
Torbay	410	4.5
Sedgemoor	339	3.7
Mid Devon	325	3.6
Teignbridge	292	3.2
Mendip	274	3.0
North Devon	105	1.2
East Devon	99	1.1
Torridge	66	0.7
South Hams	63	0.7
West Devon	53	0.6
West Somerset	9	0.1
Total	**9,103**	**100.0**

Source: Burning Glass, April 2017 to March 2018

The above data takes no account of the difference in the relative size of the economically active working age populations across the Heart of the South West. When this is factored in as a proportion of all jobs - Taunton emerges strongly - reflecting the presence of the Hydrographic Office. Thus the digital jobs advertised in Taunton account for 2.6% of all the jobs, compared with 1.2% of jobs in Plymouth and 4.6% of jobs in Exeter (Figure 4).

Figure 4: Digital job postings as a proportion of the economically active population



Source: Burning Glass data and Annual Population Survey, 2017

Emphasising the breadth of demand for advanced digital skills across the economy, the main sectors advertising for high level IT roles are:

- Education
- Health
- Public administration and defence
- Retail
- Head offices and management consultancies

The top five digital qualifications in demands in 2017/18 were:

- Cisco Certified Network Associate (CCNA)
- Cisco Certified Network Professional (CCNP)
- Microsoft Certified Solutions Associate (MCSA)
- Microsoft Certified Systems Engineer (MCSE)
- Advanced Certificate in Programme and Project Support (ISEB)

5.1.2.5 Build on and promote our strengths

The interviews and survey revealed a recognition that there is a lot of innovation in Devon and Somerset with the Hinkley low carbon cluster, BAE at Yeovilton, Met Office and Exeter Science Park etc. and a host of internationally important businesses doing innovative work. From this there was a frustration that as a region we failed to promote these strengths. The DSP therefore has a real role in changing people's opinions about the area to one that recognises the strengths here whilst not losing site of the advantages of living in an area with a high quality of life.

5.1.3 Recommendations

1. Encourage the creation of a significant (new and/or greatly enlarged) Digital Apprenticeship offer at Higher and Degree levels that encompasses sectoral strengths in Data Analytics, cyber security, robotics, artificial intelligence, machine learning, creative media and digital marketing. The LEP should seek to ensure new provision in this area has a local and regional element.
2. Target bids to funding streams including the £1 million Digital Skills Innovation Fund to scale up and capitalise on innovative programmes that are already addressing local and regional digital challenges, seeking to ensure that such innovations incorporate a strong local element of learner progression. To achieve success these should reasonably reflect the Government's Grand Challenges and have identified where the obstacles are and how they can be overcome – with a resultant boost to productivity, exports and other major government drivers. This should involve building on approaches such as the Data Analytics Skills Escalator in Exeter which brings education and training providers together to: integrate skills provision and enable people to move seamlessly between providers progressively acquiring the skills required for jobs in the growing digital economy.
3. The DSP to actively promote Digital Leaders programmes and seek to ensure representation within these within the LEP. This shared professional online space and face-to-face programme for leaders across all sectors is designed to promote effective, long-term digital transformation. This should include digital leaders across the LEP's priority sectors. This should be supported by a digital skills partnership across the priority sectors to allow for genuine collaboration and exchange of ideas.
4. The LEP to be more proactive in strengthening the image of Devon and Somerset for high tech businesses and championing success by promoting the high tech assets of HOTSW; highlighting innovation amongst businesses, excellence in local training provision and high quality of life – such as the Facebook Drone. A marketing and communication strategy should be developed to attract new talent, as well as acting as a catalyst for new investment by re-locating businesses. At the same time, relationships need to be developed across LEPs, building on success the wider Great South West initiative - as a place to do business and to invest.
5. Develop Advanced Digital Skills hubs led by Exeter and Plymouth universities and our Colleges and supported by the proposed Institute of Technology to act as catalysts for the development of advanced digital skills, developing employer networks and showcasing the cutting edge and higher level training available. Explore how best the university sector can work with the DSP and access central government funding to support the Digital Strategy. Ideally higher level qualifications should be linked to pathways and progression routes from local schools and FE rather than just focussing delivery nationally or internationally.
6. Given the significant range of funding partners, initiatives and networks there is a need for leadership of the digital agenda which can build on the work being undertaken by the DSP. There should be local leads in Devon and Somerset who can bring together Regional School Commissioners, schools, local authorities and provider networks to ensure that there are clear local digital pathways to the advanced digital skills needed by employers.

5.2 THEME 2. Responsive skills and employment system

5.2.1 Summary

Matching the provision of skills to labour market demand requires the development of labour market information to generate, analyse and disseminate reliable sectoral and occupational information to partners. There is a need for a long-term perspective to help anticipate the skills that will be needed in the future, as the DSP looks to drive innovation, investment, technological change and competitiveness. Learning institutions and training providers need to have robust connections with employers. More flexibility is needed around the spending of the Apprenticeship Levy and there is a need for the speedier accreditation of qualifications if learning delivery is to keep up effectively with the fast pace of change.

5.2.2 Analysis of the HotSW LEP Position

5.2.2.1 Analysis of the education and skills supply mapping exercise

From our mapping exercise it is clear that digital skills provision for lower level qualifications (entry level to level 4) is evenly spread across the LEP area, with clear clusters of provision in the Plymouth, Exeter, Taunton, Torbay and Bridgwater areas, whilst higher level digital skills provision (level 5 to level 8) is specifically clustered within the west of the LEP area, particularly in Plymouth, with a conspicuous lack of higher level training provision within rural areas.

There are clear clusters of private training providers (both online and vocational courses) within the Plymouth, Taunton, Tiverton and Bridgwater areas. Within the Plymouth and Taunton area private training providers deliver 70% and 69% of all courses respectively.

There is a greater diversity of provision within the Exeter area, where 80% of available provision is split relatively equally between private training providers (vocational), local authority training and further education colleges. This is significantly different than other areas within the LEP where training provision is dominated by one type of provider.

Distance learned and short courses represent the greatest proportion of digital training provision within the LEP area, with 54% and 69% respectively of all courses mapped falling into these categories.

When examining clusters of digital training provision across the LEP area as a whole, the main centres are within Plymouth and Taunton, with 39% and 34% respectively of all training provision being delivered in these areas. This is followed by Exeter at 16%, Torbay at 6% and North Devon at 5%.

The highest volume of courses provided in the LEP area are entry level courses, particularly within the digital sector and where training relates to inclusion at a basic level and having a multi-sector application.

Digital apprenticeships for ICT practitioners indicate the largest growth with 128 completions in 2016/17 (compared to 26 for ICT users in the same year). The greatest proportion of ICT practitioner digital apprenticeships focus on IT and Telecoms professionals, with only a small number of other roles, such as Cyber Security Technologist, Infrastructure Technician and Network Engineer being represented.

5.2.2.2 Results from our bespoke Survey and interviews

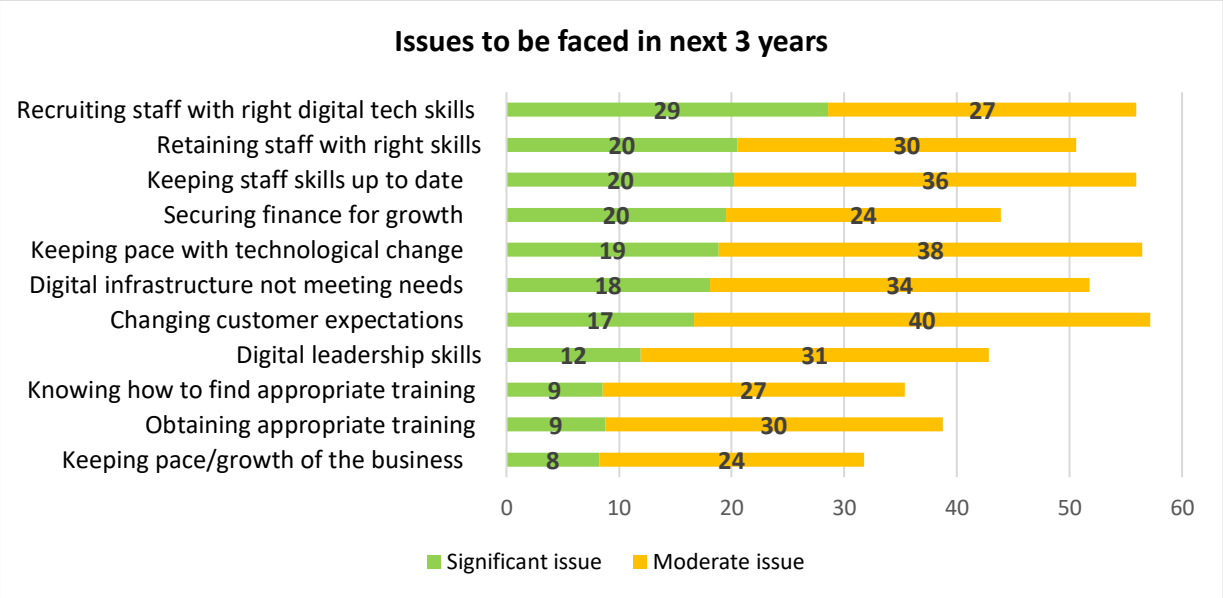
5.2.2.2.1 Skills are the number one issue

Our survey (Figure 5) revealed that employers stated the most significant issue and one that was likely to affect their business in the short term (the next 3 years) was in recruiting staff with the digital technology skills they need, with 29% identifying it as a significant issue and 56% identifying it as a significant/moderate issue (Chart 6). Other key issues from the online survey were:

- Keeping staff skills up to date (56%)
- Keeping pace with change (57%)
- Changing customer expectations (57%)

> *"Recruitment is terrible – we've got people from abroad. It might be that our recruitment methods are wrong, but there is not a large group of companies in the area with these sort of skills needs."* (Engineering firm)

Figure 5: Issues facing employers in the next 3 years; percentages



Source: DSP Employer Survey 2018

Analysis by geography, size and sector, whilst not statistically valid due to the small sample numbers showed that:

- In terms of recruitment difficulties there were no differences by geography, but firms with over 25 employees and specialist IT firms were most likely to identify recruitment as an issue.
- Getting staff to keep their skills up to date was more of an issue for firms that were not IT specialists.
- Keeping pace with technological change particularly affected micro firms with fewer than 10 employees and those not in the digital sector.

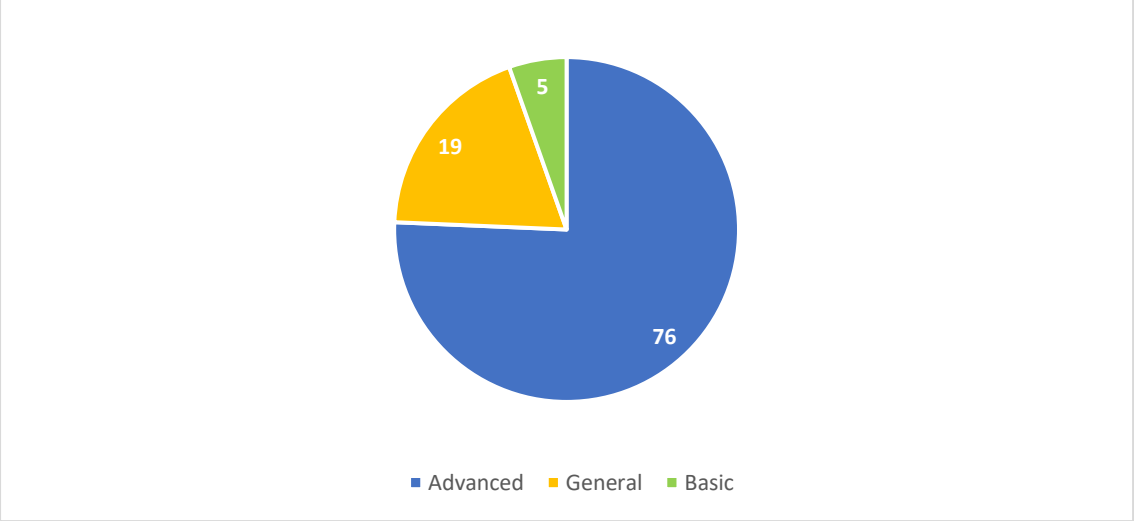
In the qualitative interviews several employers mentioned the need for digital leadership skills, and that firms were held back because their leaders lacked the confidence and skills to drive through change.

Although there are no benchmarks for the survey, the findings are in line with a survey amongst tech firms undertaken by Tech Nation 2018 which showed that access to talent was the top challenge identified by 55% of communities surveyed.

5.2.2.2.2 Recruitment

1 in 3 employers said that they had difficulty recruiting staff with the digital skills they required; this rose to a majority amongst Health and Tech employers. Advanced skills are the most difficult to recruit, with 76% of employers who had recruitment difficulties identifying this level of skill as being difficult (Figure 6).

Figure 6: Level of digital skills that employers have difficulty recruiting (% identifying each level)



Source: DSP Employer Survey 2018 Base: Employers with recruitment difficulties

The digital jobs identified were numerous (Table 5).

The reasons for recruitment difficulties varied according to the skills level sought. For basic digital skills issues revolved around:

- A lack of employability of work readiness skills
- A lack of digital technology skills/experience
- Staff looking for more pay than the employer can offer

For general digital skills the key issues were:

- Low number of applicants with the required skills
- Low number of applicants generally
- Lack of applicants with the required attitude, motivation or personality

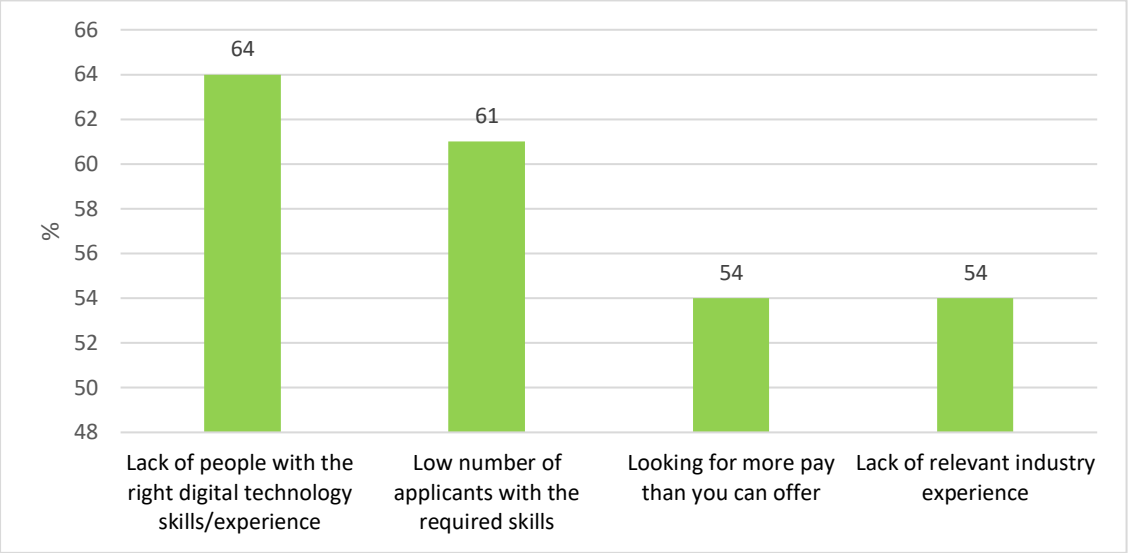
Table 4: Occupations employers have difficulty recruiting in Devon and Somerset, 2018 (Numbers of employers identifying each)

Occupations	Advanced	General	Basic	Total
IT technicians	2	1		3
PHP/Web Developer (Not Designer)	3			3
Software Developer	3			3
Web developer	3			3
3D animator	2			2
Analytics	1	1		2
IT Staff	1		1	2
Administration officers		1		1
All requiring high level technical skills	1			1
Business Support		1		1
Cloud integration	1			1
Digital marketing	1			1
Earth Observation/Remote Sensing	1			1
FHIR coder	1			1
IT Managers	1			1
Java developer	1			1
Shop assistants with digital skills			1	1
Social media	1			1
Solution Leaders	1			1
Supervisory positions/line leaders		1		1
Support Workers		1		1
Systems administrator	1			1
Automated Testers	1			1
Project Co-ordinators		1		1
Unified Communications	1			1
Unity developer	1			1
Total	**28**	**7**	**2**	**37**

Source: DSP Employer Survey 2018

For advanced digital skills issues revolved around lack of skills, pay and lack of experience (Figure 7).

Figure 7: Key issues facing employers trying to recruit advanced digital skills

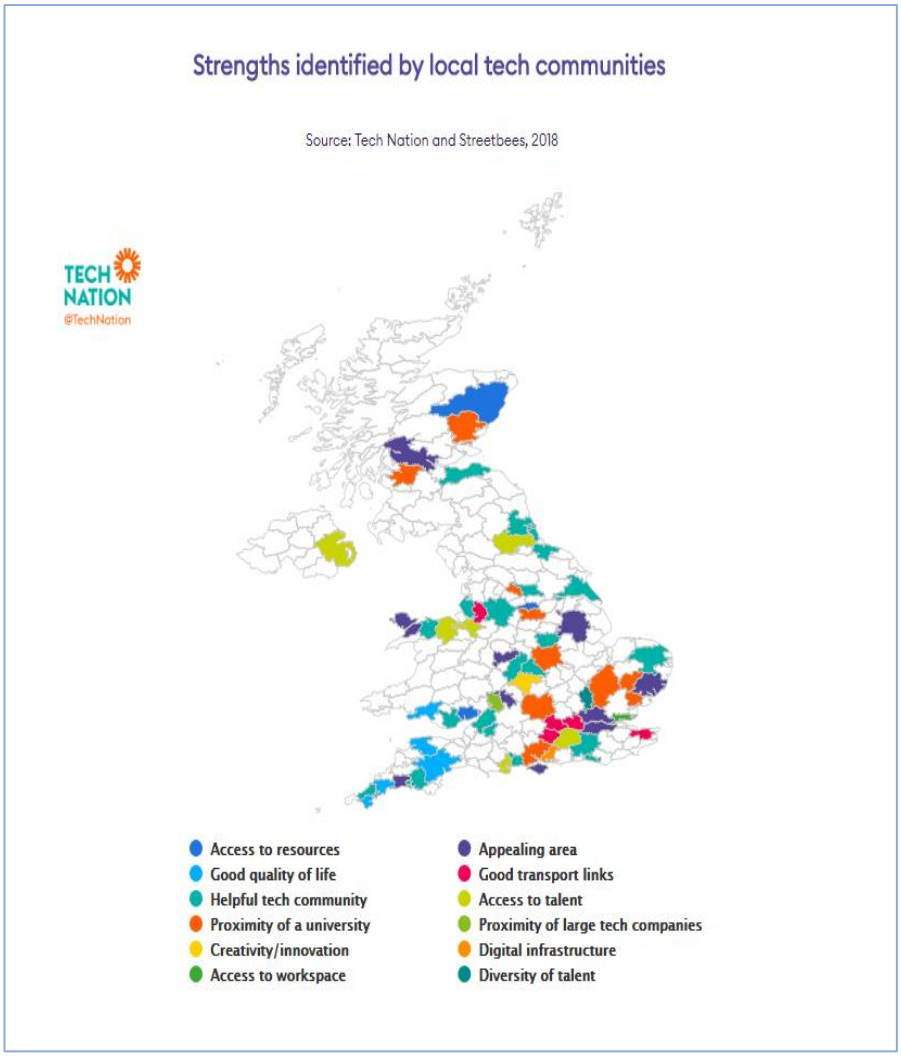


Source: DSP Employer Survey 2018

The qualitative research backed up these findings and the vast majority of interviewees were clear that recruitment was a real issue. Whilst it was said to be reasonably easy to recruit people to their first job; difficulties hinged around recruiting young people with around 5 years' experience.

One employer explained that because of skills issues they had not been able to expand in North Devon - so opened a site in Plymouth. However, as the business has grown that will not be enough and the skills they need, such as data science, are not available in quantity, so they may well open in Bristol to overcome this.

Whilst one of the employers interviewed had struggled to recruit in the past the organisation had overcome these difficulties by building relations with the local university and college and facing the reality of what pay people expected for digital tech roles. Although location was seen as a barrier for young people, as noted above, it was also seen as an advantage in terms of high quality of life for older workers. Indeed, the Tech Nation research with local tech companies showed 'quality of life' to be perceived as the main strength of both Barnstaple and Exeter Travel to Work Areas (TTWAs) as a place to do business. As can be seen this was identified as a particular strength of the South West region more generally:



Source: Tech Nation Report 2018

5.2.2.2.3 Training and skills development

61% of employers said they had provided training for their digital staff in the past 12 months, with the main methods being online learning, in house training and private providers (Table 6).

Table 5: Types of learning that employers have used for their digital training in the past 12 months (%)

Training source/methodology	%
Online learning	58
In house training delivered by your own staff	50
Private training providers	40
Internal mentoring	34
Vendor courses e.g. Microsoft	18
Professional industry bodies	16
Further Education Colleges	12
University courses	12
Conferences	2

Source: DSP Employer Survey 2018

The preference for private provision and online learning was explained in the qualitative interviews as a need for very up to date knowledge, and bespoke training. Training needs are seen as 'unique' and so cannot be delivered through further education. There is also a need for staff to be as operational as quickly as possible – to train intensively rather than for one evening a week over a year.

Accreditation of qualifications slows down colleges' ability to respond to employers' needs which contrasts with the fast pace of change of digital technology. Although accreditation is needed for labour market entrants it was not seen as important for the employers interviewed. One of the key difficulties for training providers is that the jobs do not yet exist that firms will need training for.

In the online survey, the main barriers to training staff in digital technologies were identified as difficulties in not knowing how to identify the right training, and the cost (Table 7).

Table 6: Barriers to training

Barriers to training	%
It is difficult to know whether particular courses are appropriate for our needs	43
No money available for training	36
External courses are too expensive	36
Our staff teach themselves the digital skills they need	35
Employees are too busy to undertake training and development	32
School /college leavers do not have the core skills on which to build	23
Managers lack the time to organise training	23
The courses I'm interested in are not available locally	20
The management and leadership team lack the skills to identify training needs	16
I don't know how to find the appropriate courses	15
The quality/relevance of local digital technology courses does not meet our needs	14
University graduates do not have the core skills on which to build	12

Source: DSP Employer Survey 2018 (Base = those who have not provided training in the past 12 months)

Respondents cited data analytics skills as being vital – and not just at higher levels – but as a core component of many jobs where confidence in analysing and interpreting data would be important. There was also recognition that most young people were entering the labour market with reasonably strong basic skills – but they reported that there were recruitment problems when it came to higher level skill sets:

"Data analysis, many businesses rely on consultancy/general analysis of data to detect trends and this area is not widely supported in academic subjects."

"Advanced skills: most college/school leavers have strong basic digital skills, but more complex skillsets - data analytics, programming - are hard to find."

There was also recognition that many people already within the labour market needed greater digital skills - *"Make upskilling the current workforce a priority."* This places a burden on employers and support in signposting to available appropriate delivery and help with identifying workers with specific

needs would be helpful. On the whole – and in keeping with many other findings – employers preferred modular programmes that could be combined to make training solutions tailored to their own institutional needs. They also recognised that much was happening in the digital field and that it made good sense for the LEP to - *"link with world leading providers at the cutting edge."*

There were also some mores specific requests, one employer citing a need for a stronger route to learning web-based skills through further education – "*We regularly interview people who have just finished college or are looking to undertake their sandwich year and these candidates always tend to have massive gaps in their core skill sets for a web development role. Almost none are taught any PHP and JavaScript it always overlooked with just the most basic understanding present. Given the widespread use of PHP for web development, I struggle to understand how almost all courses omit it completely. Take a look at the usage stats: "PHP is used by 83.5% of all the websites whose server-side programming language we know."*"

5.2.2.2.4 Need for digital support for SMEs

There was recognition that the needs of SMEs differ from those of larger organisations and that often a broad skill-set was necessary – as they could outsource more expert support that would not be an everyday need for them - *"Provide courses that are relevant to SMEs. Most SMEs don't need an in-house Python developer, if they have this requirement it is usually for a fixed project and is contracted out to a specialist. They do however need staff with a broad range of relevant digital business skills - data management and processing, website administration, SEO, Digital Marketing and Social Media"* and *"There needs to be a general digital skills course to support the needs of micro/small businesses, which often depend on 1-2 individuals to multitask/be a jack of all trades."*

There was particular support for a signposting and SME support service for SMEs -*"There's a need for guidance in the procurement of digital products or training"* and further support for 'try-before-you-buy' where SMEs get to access training and technology to test what fits best to their environment and market - *"Access to trial technology in a business context to determine the value-add to the business of adopting new technologies and implementing them in the business including a commitment to training and/or recruitment."*

Within the interviews there was recognition that support was needed for SMEs to help them understand what they do not know. "Get up to Speed" was a programme which worked well. Peer support is important to enable people to share their experiences.

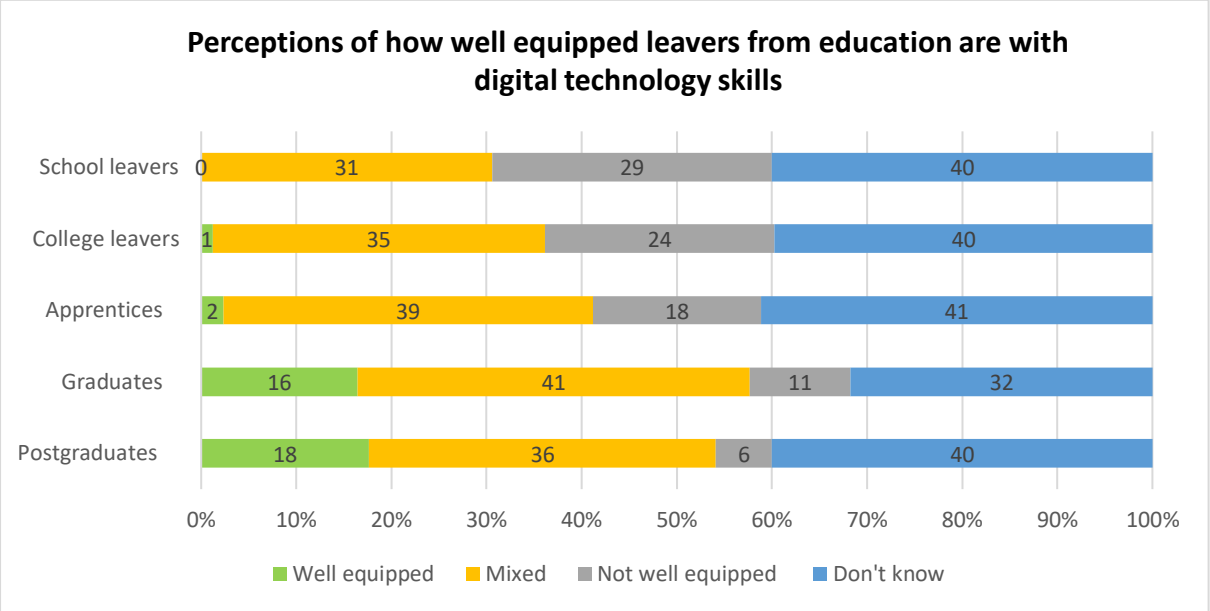
5.2.2.2.5 Management and leadership

There were expressed concerns that many managers and business owners lack the skills to evaluate a digital solution for their business and end up being sold something that potentially is not a good fit for their business. There could be *"courses on how to properly evaluate the digital needs of the business and choose an appropriate solution e.g. accounting software so that the solution helps the business achieve its objectives now and in the future. Too many businesses have poor 'legacy' systems that hold them back, but the time and cost to change is prohibitive."* Further it is important to include decision making and understanding of digital and AI within management and leadership programmes for leaders to gain the digital skills they need to effect change.

5.2.2.2.6 Perceptions of leavers from education

Employers were asked how well equipped different leavers from education were in respect of their digital skills. Findings should be treated with caution since significant minorities (c4 out of 10) had no experience of leavers from school, college or university leavers. Otherwise the findings show that employers were more satisfied the longer that people had spent in education (Figure 8).

Figure 8: Perceptions of how well equipped leavers from education are with digital skills



Source: DSP Employer Survey 2018

5.2.2.2.7 Apprenticeships

59% of employers were aware that digital technology apprenticeships were available up to degree level. If they were to take on a digital apprentice, preferred areas were in digital marketing and creative and digital media (Table 8).

Table 7: Types of digital apprenticeships in which employers expressed an interest

Types of digital apprenticeships in which employers expressed an interest	%
Digital marketing	44
Creative and digital media	44
ICT software	20
IT and Telecommunications	20
ICT professionals	16
Cyber security	15
IT consultancy/management	12
None of the above	25

Source: DSP Employer Survey 2018

Those who were not interested in digital technology apprentices were most likely to say that they had no vacancies; digital skills were incidental to their business, i.e. they did not have sufficient work for a digital specialist; and a lack of capacity to support them.

This latter point was picked up on in the qualitative interviews with a digital firm saying that because they operated out of very small premises (which is fairly typical of tech start-ups), they did not have the physical space to accommodate any additional trainee staff:

> "*There is a need to make spaces available for smaller companies to grow and take on apprentices, a lot of digital companies are small or work from home offices and don't have space for trainees, cheaper offices or communal shared spaces would help.*"

Another point was made by a major employer that whilst they are able to use the Apprenticeship Levy, they do not have the staff capacity to support more than a certain number of apprentices at any one time and would like far greater flexibility to use the funding for training in priority skills needs such as digital. Those employers with experience of digital apprentices spoke highly of them.

5.2.2.2.8 Concerns and Priorities for Learning Providers

Discussions with a range of different learning providers identified a number of challenges and opportunities around the provision of digital learning:

5.2.2.2.8.1 Challenges raised by Learning Providers

Learning providers raised issues concerned with funding, guidance, support and signposting and connectivity and expertise. Their points can be summarised thus:

Funding

- People who want the skills but want learning to be free, this is especially the case for the over 60s.
- There is lack of funding for digital inclusion but a large potential market for basic IT skills especially amongst 35-40 year olds.
- There is a market for ESOL and IT learning but a lack of resources.
- Provision is very difficult in the rural areas because of the cost of delivery away from learning centres means that such provision is not viable.

Guidance, support and signposting

- There is a dizzying array of provision at a basic level and hence difficulty in learners knowing what is right for them.
- In response, there is a preference to 'try before you buy' and a need for guidance.
- People need face to face interventions at the start of their learning as they lack the confidence to embark on online learning without initial support, they can then move on to blended learning.
- A lack of confidence/sense of embarrassment amongst middle-aged men was identified as a challenge to engagement by more than one provider.
- Learner networks are important in providing peer support.
- There is a need for progression opportunities from the basic level
- More needs to be done to develop an understanding of the digital roles required: there is a lack of understanding of business needs on the part of teaching staff, parents and students.

Connectivity

- Many rural areas do not even have 3G broadband so cannot work/learn from home

Expertise

- For local colleges seeking to embed digital skills across all courses there is a need for CPD to develop the skills of tutors.
- In relation to digital inclusion the need is less about digital skills and more about a lack of skills to support learners who are furthest away from the labour market, e.g. those in recovery or homeless.

5.2.2.2.8.2 Opportunities raised by Learning Providers

Learning Providers cited a number of opportunities and were aware of recent developments such as the Institute of Technology application.

- There is a real opportunity for change when the basic skills entitlement (<level 2) is introduced from 2020. This will require collaborative work amongst providers to prepare for the delivery of free learning which will transform the availability of basic skills provision.
- There is an opportunity for digital pop ups to provide short workshops to get people started on the learner journey in more remote areas.
- The proposed Institute of Technology will help support the development of more advanced digital skills needs locally.
- More needs to be done to harness inward investment e.g. the Audit Office and the opportunity to market the area's potential and retain talent.
- There is a need to develop a network of volunteers who can pass on their skills through a whole range of programmes including Code Clubs, Careers Enterprise Company Ambassadors, Learn Devon.

5.2.2.3 Digital skills in education

A report on Computing Education in schools from the University of Roehampton (2018)[18] highlights that although an increasing number of schools are offering Computer Science at GCSE and A Level, only a small number of students are taking them, resulting in fewer young people attaining the digital skills that employers and the government argue are critical. Although the numbers of students taking the subjects is gradually rising, the increase is not as rapid as seen in the past. In 2017, just 11.9% of students took Computer Science at GCSE, and even fewer at A Level (2.7%). The report also reveals that there is a considerable gender gap; with 25 local authorities reporting all Computer Science entries at GCSE level being received from boys. Overall, in the UK, entries from female students for Computer Science at GCSE level only account for 20% of entries and just 10% at A Level.

Levels of under-qualification amongst teaching staff has been cited as a barrier to encouraging the uptake of computing courses and promoting government-led digital initiatives. Hernandez (2018)[19] suggests that digital skills are one area in which we can realistically expect students to be more

[18] University of Roehampton (2018) The Roehampton Annual Computing Education Report
[19] Hernandez, F. (2018) Education Technology Teaching teachers: the answer to the digital skills gap

knowledgeable than their teachers, highlighting that only 35% of ICT teachers currently have a relevant degree. Furthermore, YouGov research has found that 54% of people believe teaching code will help the UK economy grow, but according to 70% of 18-24 year olds, they did not receive education of this type at school[20].

At Petroc College the need to build the digital expertise of all staff has been recognised and the College is aiming to get all staff to Google Level 1 through CPD. It has introduced a mandatory requirement for tutors to deliver a minimum of an hour's learning per week online.

In recognising the need to upskill teachers in digital technology, a House of Lords report (2015) recommends that the computing curriculum is seen as a priority and more investment should be made in training new and existing teachers[21]. Programmes like BT's Barefoot Challenge[22] are supporting primary school teacher's primary with resources to build confidence, knowledge and skills to teach computer science.

It is recognised that young people often turn to their parents and teachers when making decisions about their careers and which subjects to pursue. Hernandez (2018) highlights that over half of parents feel that they are uninformed about the benefits of STEM subjects, resulting in them often guiding their children towards more traditional careers.

Building the digital skills of young people will not only be beneficial for the individual but it will also impact on businesses and boost the UK economy. A report from BT and Accenture (2017), '*Tech Know-how: the new way to get ahead for the next generation*'[23], suggests that improving young people's technology skills could boost the UK economy by £11 billion over the next five years.

Programmes to support the development of digital skills amongst school-aged (and above) students are available, some examples of which are provided below:

- **Cyber Schools Programme (DCMS):** Students aged 14 to 18 can apply to undertake a four year programme on cyber security alongside secondary education. The programme aims to support and encourage schoolchildren to develop some of the key skills they would need to work in the growing cyber security sector. SANS, BT, FutureLearn and Cyber Security Challenge UK are partners on the programme. The programme includes a nationwide network of extracurricular clubs, instructor-led classroom and online teaching, work experience, activities and online games. The programme aims to train at least 5,700 teenagers by 2021.
- **CAS – Computing at School community:** A community of individuals promoting education in computing. Community members and champions run over 150 regional hubs, exchanging ideas and sharing resources. University of Plymouth's School of Computing, Electronics and Mathematics (SoCEM) supports the CAS hub in Plymouth.
- **The Code Club:** A nationwide network of volunteers and educators who run free coding clubs for young people aged 9-13. Founded in 2012 (joined with Raspberry Pi Foundation in 2015). There

[20] Hernandez, F. (2018) Education Technology Teaching teachers: the answer to the digital skills gap
[21] House of Lords (2015) Make or Break: the UK's Digital Future
[22] BT's Barefoot Computing Challenge https://barefootcas.org.uk/
[23] BT and Accenture (2017) Tech know-how: the new way to get ahead for the next generation

are over 6,500 clubs in the UK and more than 10,000 all over the world (see Code Clubs Case Study)

- **Institute of Coding:** University level. Involves 25 universities and a number of businesses and industry experts. Courses will be made available at undergraduate and masters level for learners in universities, at work and in previously under-supported groups across the country. £20million was made available from government, which was matched with a further £20m
- **ADA, the National College for Digital Skills:** Offers BTEC and A Level qualifications, as well as apprenticeships in digital skills, such as computer science, programming and data analytics.

Code Clubs and volunteering in the Heart of the South West

Young people are enthusiastic to develop their digital skills through practical activity where young people create solutions to real problems ('digital making'), rather than simply passively consuming digital products.

According to the Tech Partnership 82% of school age children are interested in digital making and over 80 per cent of parents think digital making is a worthwhile activity. Code Clubs seek to harness this enthusiasm through a network of volunteers who fun free coding clubs for young people aged 9-13. In the South West region there are around 700 Code Clubs, equivalent to 1 in 5 schools.
The programme is designed to be as easy for schools to engage with as possible with clubs taking place at lunchtime or after school. The challenges for schools are:

- The skills of the teachers – many lack the skills and therefore the confidence to engage
- Time – the curriculum is crowded

For Code Clubs the key challenge is in attracting the volunteers they need. These can come from all walks of life from sixth form students and the long term unemployed to expert volunteers from industry. These volunteers can do much to help inspire and motivate young people and often, it is through employers that young people learn first-hand about the sort of jobs that are available in the sector locally.

For companies supporting Code Clubs and other initiatives the work can align Corporate Social Responsibility (CSR) efforts with investment in a future digital workforce. Code Clubs are currently short of volunteers. If young people and their teachers are to be inspired by digital and the opportunities it offers then it needs to be easy for volunteers from industry to engage with Code Clubs as well as other activities such as Barefoot Computing; STEM Ambassadors and Apps for Good.

5.2.3 Recommendations

1. Government ask: To enable underspend by levy payers within the Heart of the South West to be retained and invested in local programmes to develop the digital skills of the workforce.
2. Government ask: Currently a number of regional providers are not delivering data Analyst qualifications at Level 6. This is driven entirely by the relatively small returns form this qualification compared to other similar ones. LEP should lobby for more sensible remuneration associated with this priority qualification and to similarly lobby where other blocks to key delivery subjects that are being requested by employers, is found.

3. Government ask: The pace of change means that it is difficult for providers to keep courses up to date because of the length of accreditation processes. Accreditation processes need to be speeded up, this includes the development of current and future apprenticeship standards.
4. The LEP should seek to improve the coherence of digital skills provision by setting targets for increasing the numbers of people within the LEP area who are accessing certain types of training on offer (e.g. digital apprenticeships and digital inclusion provision) targeting this where employers and service providers perceive the greatest need.
5. Launch a HotSW Digital Schools Programme/Network for primary and secondary schools to showcase the range of funding and support available to schools to promote the digital agenda; support the uptake of different school activities such as Code Clubs and Digital Leaders, Careers and Enterprise Company and the Enterprise Advisor Networks in Somerset; and provide teachers with resources and staff development to enhance their teaching. The Programme would support groups of schools to work on common challenges, help them develop and share resources and support them to keep pace with employers' evolving skills requirements. Links should be forged with the Met Office for Schools programme. An evaluation of school initiatives in Somerset will help develop an evidence base of what works in embedding digital skills at school level.
6. As part of 5 (above) develop a series of ENTHUSE Pilots with STEM LEARNING to support CPD for teaching staff to develop their skills in digital technologies across the school and Further Education network. Start with existing networks of linked schools and then seek to spread practice across the region through a second phase of Pilots.
7. Use links with external organisations offering support (Google, Barclays etc.) to inform the approach of the DSP and to provide innovative provision that adds to the regional offer.
8. It is critical that 'digital' forms an important element within management and similar qualifications delivered in the region. For example, incorporating topics such as cyber-security and AI.
9. Providers should be encouraged via the DSP to include 1 or 2 questions within chamber of Commerce/FSB surveys (and similar) to help inform where there are gaps and issues in provision.
10. There is a need to promote the awareness of the potential of levy transfer within the LEP's larger employers, and the DSP could help ensure this has a digital focus.

5.3 THEME 3. Transitions to employment – Young People

5.3.1 Summary

If the DSP is to successfully drive up digital skills it needs to start with encouraging more young people to take up computing qualifications at GCSE, A level and Further Education. But with the pace of change it is difficult for schools and colleges to keep on top of the opportunities in digital careers and to fully understand how the jobs market is changing. There is a need for improved links between employers and schools/colleges for work experience and internships and the development of relevant materials for careers resources.

5.3.2 Analysis of the HotSW LEP Position

Unlike older age groups nearly all 15-24 year olds (97%) have basic digital skills[24]. The Prince's Trust Digital Literacy Survey (2013)[25] found that young people not in work or education (NEETs) have lower levels of digital skills, with 10% unable to send a CV online and 18% feeling that their computer skills were not good enough to use in the job they want.

Our survey revealed that while digital skills are important for employers, the majority of businesses are not experiencing difficulty in recruiting young people with the required digital skills, with 57% indicating no difficulty and 18% not much. Though they recognised the importance of early engagement with digital skills - one interviewee stated that there should be – *"More effort to engage schools with businesses and involve children with computers much earlier."*

Plymouth City Council's Skills Analysis (2015) revealed that basic computer literacy was one of the lowest rated skills gaps for young people entering employment, at 16% in the Heart of the South West LEP area (compared to technical or job specific skills at 52%).[26]

Section 5.2.2.3 has already looked at the availablility of a number of national schemes within the LEP area, so below we look at a number of priorities and local schemes that the LEP could focus on.

5.3.2.1 Apprenticeships

Norfolk County Council have developed a pilot – TrAC - designed to help 30 young people to obtain and achieve an apprenticeship. This has been done by Norfolk County Council transferring its levy to TrAC to support these apprentices. All of these apprentices are referred by the Council and will be employed by TrAC who will place them with other host employers throughout their programme. Both the apprentice and the host employer receive additional bespoke support throughout the programme.

5.3.2.2 South West Institute of Technology

Plans are currently under development to apply for the second stage application to create a new South West Instutute of Technology (SWIoT). This forms a pillar in a strategic effort to address regional disparities impacting UK productivity by enabling the South West to play a potent role in Britain's technology powered renaissance and new global leadership. Uniting employers, education providers and strategic agencies, it will create a new cadre of highly skilled, qualified and ambitious technical

[24] Office of National Statistics (2017) Internet Users in the UK: 2017
[25] Prince's Trust Digital Literacy Survey (2013)
[26] Plymouth City Council (2015) Plymouth Skills Analysis

staff to drive productivity-led growth in the digital, engineering and manufacturing sectors, across Cornwall, Devon and Somerset.

SWIoT will combine DfE capital funding with substantial other investment to establish:

- new buildings in Exeter, providing a purpose-built, professional environment for teaching a range of digital subjects
- a new building in Cornwall, focused on both the engineering and digital sectors, including an electronics laboratory and advanced welding equipment
- a range of new facilities and equipment, within refurbished buildings, in Barnstaple, Bridgwater/Cannington and Plymouth

SWIoT will deliver a range of courses across its sector specialisms with three quarters of planned provision at levels 4 and 5, but also including degree apprenticeships up to level 7. By academic year 5, it will have over 1,500 learners. An example of a degree apprenticiceship curriculum is included as Annex 6.

SWIoT's Employer Leadership Group will ensure that provision is tailored to employers' needs and meets industry standards. Drawing on the expertise of two universities, SWIoT will also establish the SWIoT Observatory, ensuring that its curriculum is directly matched to current and future occupations and skills needs, through market intelligence, horizon scanning and primary research. The SWIoT proposal is being developed by the following 'anchor' partners:

Further education colleges

- Bridgwater & Taunton College
- City College Plymouth
- Exeter College
- Petroc
- Truro & Penwith College

Universities

- University of Exeter (lead applicant)
- University of Plymouth

Employers

- Babcock
- Met Office
- Oxygen House
- TDK Lambda
- Watson Marlow

SWIoT will work collaboratively with other education providers across the South West region. SWIoT will also engage a wider group of employers in steering its direction and shaping its curriculum, and will look to develop strong relationships with existing employer groups in Cornwall, Devon and Somerset.

5.3.2.3 Other developments in the LEP

An Exeter Digital and Data hub (EDDE) has been proposed to government. This will bring Exeter's schools together with employers, educational technology innovators, FE and Schools of Education together to produce innovative new teaching materials.

Exeter College and Exeter City Futures have launched the Exeter Data Information Science Collaborative. Designed to boost the analytical skills of young people in the area, it also provides them with the essential tools to create change locally.

A programme in Somerset supports the development of digital skills in schools in the area. Primary schools in Somerset have adopted Digital Leaders, an initiative that encourages using the skills, knowledge and experience of pupils (and staff) to develop the strategic use of technology in their school. Digital Leader groups typically provide technical help to other pupils or staff, support staff in their lessons, run staff development sessions for teachers, and guide the vision for learning with technology . The groups in Somerset have undertaken tasks such as trialling software before its release to the whole school, or educating pupils about online safety and cyberbullying. Through the Digital Leaders network schools can also connect and discuss topics with other Digital Leader groups across the country. The initiative argues that by giving the children (and teachers) official roles and a title of 'Digital Leader', it will benefit all involved .

Research suggests that it is important for pupils to become more knowledgeable on the subject and aware of what it could offer them. A recent survey from CAS (Computing at School) asked 14-18 year old girls questions regarding their perceptions of computing and computer science. Of those who did not study computer science, over two thirds felt that they did not know what topics a computing course at GCSE or A-Level offered .

5.3.3 Recommendations

1. There is an urgent need to develop clear and useful resources to help young people, their parents and teachers understand the growing workforce need for digital roles/skills and to help overcome a broader lack of understanding of business needs. Supporting local innovative employers to work with schools is a central element of this. The proposed South West Institute of Technology is an obvious potential source of materials of this kind. SWIoT is envisaged to be establishing a SWIoT Observatory, ensuring that its curriculum is based on market intelligence, horizon scanning and a wide range of primary research.
2. Local EBPs and/or the Careers Enterprise Company should be supported to develop a Digital Group which can take a lead in establishing relationships between local employers, schools and the voluntary sector to develop careers materials and promote local linkages and keep schools informed of emerging opportunities with local businesses for work experience and internships.
3. The LEP should monitor th development of the EDDE with a potential to extending the outputs across a wider geography.
4. It is important to focus on young people who have (for a variety of reasons) missed out on education (e.g. NEETs) to ensure they can access services and future employment. Working closely with JCP and DWP. Linked to this there will be merit in exploring the potential of the TrAC model delivered in Norfolk to help young people onto apprenticeships.

5.4 THEME 4. Transitions to Employment – Inclusion

5.4.1 Summary

For those out of the labour market, the expectation amongst learners is that learning will be free and in order to build confidence learners need to be able to have taster sessions to see if different courses are right for them.

Gender remains a pressing issue, with females' considerable under represented on many ICT and digital courses. With the move of benefits and health support increasingly online there is a growing need for digital confidence amongst anyone seeking to access public services.

The LEP has much good practice on which to build and many private resources are available to support learning. It will be important to draw on these where they add value to existing provision and fill gaps in the market. There is scope to share best practice and, in particular, to make it easier for schools to identify what programmes best suit their needs.

5.4.2 Analysis of the HotSW LEP Position

5.4.2.1 Basic level digital skills

Basic digital skills are defined as skills needed by every citizen to become digitally literate[27]. This level of skill includes managing information, digital communication and IT management, security, and safety. DCMS (2018) refer to basic digital skills as those everyone needs to participate in the digital economy[28]. The Digital Skills Taskforce framework describe those with basic digital skills as a digital citizen, having the ability to use digital technology purposefully and confidently to communicate, find information and purchase goods/services[29]. As part of our work we explored the literature and evidence base for basic digital skills, outlining the national picture; regional activity; access to digital inclusion; and basic digital skills in the workplace.

Research suggests that there are four key barriers which may affect individuals lacking basic digital capability, including: access (ability to connect to the internet and go online); skills (ability to use the internet and online services); confidence (a fear of crime, lack of trust or not knowing where to start online); and motivation (understanding why using the internet is relevant and helpful).[30] Addressing these barriers is a key step in supporting digital inclusion. In support of this, within its digital strategy, the government has pledged to:

- Explore whether there are new ways to galvanise the sector to tackle digital exclusion.
- Develop the role of libraries in improving digital inclusion to make them the 'go-to' provider of digital access, training and support for local communities.
- Use the newly created Council for Digital Inclusion to increase collaboration and deliver initiatives to help more citizens to confidently go online and take advantage of the internet.

[27] Government Office for Science (2016) Lifelong digital skills development, current picture and future challenges
[28] DCMS (2018) Local Digital Skills Partnerships
[29] House of Lords (2017) Digital Economy in the United Kingdom
[30] Gov.UK (2017) UK Digital Strategy

- Invest £1.1 million through the NHS on projects to support digital inclusion[31].

Basic digital skills are a powerful social enabler, providing opportunities in education, better health care services, helping adults find work, and connecting people to their communities.[32] Furthermore, digital skills can help boost the economy by increasing employment and giving small businesses the confidence to do more business online.

5.4.2.2 Current national skill levels

The 2017 release of the Lloyds Bank UK Consumer Digital Index revealed a number of key indicators outlining the situation of the UK's basic digital skills. Although the report stated that 21% of the UK population is classified as not having basic digital skills[33] (a skillset of 5 digital skills), this is a reduction of 1.1m people since 2015[34]. According to the Lloyds Bank research, within the basic digital skillset, problem solving is a skill acquired by the least amount of people (82%), whereas managing information is a skill held by nearly all adults (90%).

Central government predict that within 20 years 90% of all jobs in the UK will require some element of digital skills. There are a number of schemes to drive social inclusion including the Good Things Foundation (see case study).

Case Study: The Good Things Foundation

Launched in 2010, the Good Things Foundation is an independent charity that supports digitally and socially excluded people to improve their lives through digital.

Good Things Foundation is funded by the Department of Education as a Future Digital Inclusion programme and facilitates projects through the Online Centres Network on behalf of multiple UK government departments and local authorities.

The organisation has developed over 30 basic digital skills courses that teach skills such as using a digital device, job seeking and accessing public services online. Good Things Foundation has also developed a curriculum to train tutors and volunteer Digital Champions.

Outcomes so far: Since April 2010, over 2.3 million people have been helped to use the internet and learn basic digital skills.

(Nesta, 2018)

Other examples of initiatives supporting digital inclusion include:

- Lloyds Banking Group as part of its Helping Britain Prosper Plan has pledged to provide face-to-face training to 2,500,000 individuals, SMEs and charities on digital skills, including internet banking, by 2020.

[31] Gov.UK (2017) UK Digital Strategy
[32] House of Commons (2016) Digital skills crisis. Second report of session 2016-17.
[33] Basic Digital Skills is defined by Lloyds Bank as having a skillset of five digital skills: Managing Information; Communicating; Transacting; Problem Solving; and Creating (Based on the Go-On-UK's Basic Digital Framework)
[34] Lloyds Bank Consumer Digital Index 2017

- Google has pledged to launch a Summer of Skills programme in coastal towns across the UK. It will develop bespoke training programmes and bring Google experts to coastal communities, tourist centres and hospitality businesses around the British coast.
- The HP Foundation has pledged to bring to the UK a free online learning platform, HP LIFE, to improve business, IT and digital skills for disadvantaged groups in the UK. It aims to reach 6,000 new UK users over the next 5 years.

The ONS (2017) release, *Internet Users in the UK*[35], found that in the first quarter of 2017 9% of adults, or 4.8 million people in the UK had never used the internet. If this figure holds true for the Heart of the South West region, this would equate to an estimated 93,000 adults.

5.4.2.3 Variances between different demographic groups

Age, gender and social class all appear to be factors determining basic digital skill levels. Twenty-nine per cent of those aged 65 and over reported to have no basic digital skills, although this has improved since 2015 (32%)[36]. ONS (2017)[37] reported that in 2017, of the 4.8 million adults who had never used the internet, 2.6 million were aged 75 years and over. In comparison, nearly all 15-24 year olds (97%) have basic digital skills. The Prince's Trust Digital Literacy Survey (2013)[38] found that young people not in work or education (NEETs) have lower levels of digital skills, with 10% unable to send a CV online and 18% feeling that their computer skills were not good enough to use in the job they want.

In terms of gender, the 2017 report from Lloyds highlighted an increasing gap between the skill levels of men and women. 84% of men compared to 75% of women held basic digital skills in 2017 (2015 figures were 80% and 74% respectively). In addition, a BBC survey (2014) reported that women are less likely to have basic online skills (57%, compared to 43% of men).[39] Although internet use amongst women is also lower than that of men (10.5% of women compared to 7.8% of men had never used the internet), it has been found that recent internet use amongst women aged 75 and over almost trebled between 2011 and 2017[40].

Lloyds Bank research observed that when using the National Readership Survey classification system on social grade, those classed in the ABC1 categories were more likely to have all five basic digital skills (88%), in comparison to those in the C2DE categories (69%)[41]. Moreover, Ofcom's Adults' Media Use and Attitudes Report (2018) found that the proportion of adults in DE households who do not go online is almost double the UK average (22% and 12% respectively).[42]

[35] Office of National Statistics (2017) Internet Users in the UK: 2017
[36] Lloyds Bank Consumer Digital Index 2017
[37] Office of National Statistics (2017) Internet Users in the UK: 2017
[38] Prince's Trust Digital Literacy Survey (2013)
[39] BBC (2014) BBC Basic Online Skills May 2014 research
[40] Office of National Statistics (2017) Internet Users in the UK: 2017
[41] Lloyds Bank (2017) ABC1: Higher/intermediate/supervisory, clerical and junior managerial, administrative and professional. C2DE: Skilled/semi-skilled/unskilled manual workers; state pensioners, casual and lowest grade workers, unemployed with state benefits only
[42] Ofcom (2018) Adults' Media Use and Attitudes Report

5.4.2.4 Delivering basic digital skills training and support

The Tinder Foundation (2014)[43] estimates that based on current trends and programmes (in 2014), around 6.2 million people in 2020 will not have the basic online skills they need to use the internet regularly for themselves and argue that additional investment is needed to reach these remaining people. A report for the Tinder Foundation and Go On UK (2015) suggests that the benefits to training those without basic digital skills far outweigh the costs involved.

Nesta have released a guide to help and guide those addressing the digital skills gap, *Delivering digital Skills: a guide to preparing the workforce or an inclusive digital economy (2018)[44].* The guide includes case studies of national and international examples of programmes providing digital skills.

5.4.2.5 HotSW LEP regional activity

Digital skill levels have been found to differ across different geographical areas. For example, a BBC survey (2014) reported that 20% of UK adults lack four basic online skills (sending and receiving emails, general browsing, using a search engine, and completing online application forms), whereas this figure is 23% amongst adults in the South West.

In line with the government's digital strategy pledge in making libraries the go-to provider of digital support, it has been noted that libraries are a key enabler to digital inclusion. Libraries can play an important role in providing the skills, access, motivation and trust people need to go online and participate digitally.[45] Libraries in the Heart of the South West LEP area provide a range of events to support basic digital skills, from drop-in help sessions, to computer courses for beginners and 'tea and IT' groups.

A digital inclusion partnership project, 'Get IT Together Plymouth' was launched as the largest digital inclusion project of its kind in the UK, putting 2250 people through training in its first two years.[46] The programme was established through a national partnership involving BT and Citizens Online, along with key local partners.

Training for digital inclusion at a basic level is evenly spread across the LEP area, however there are greater concentrations of training provision around the Plymouth and Exeter areas and a lack of provision within the east Somerset area.

Within the sector there are extremely significant diversity issues: only 14%-17% of the ICT Professionals in the UK are female; and black and minority ethnic (BME) graduates experience far higher unemployment levels than their similarly qualified white colleagues.

The qualitative interviews explored providers' views in this area, the primary point made by the interviewees was that there is a need to focus on the needs of the long term unemployed, women returners and middle aged men whose skills have become outdated.

[43] The Tinder Foundation (2014) A leading digital nation by 2020: calculating the cost of delivering online skills for all
[44] Nesta (2018) Delivering Digital Skills: a guide to preparing the workforce for an inclusive digital economy
[45] Cilip (2014) Driving digital inclusion: the role of library and information professionals
[46] Plymouth Growth Board (2015) Digital Economy

5.4.3 Recommendations

1. Access the Digital Inclusion Fund to support the work of the library service, Unionlearn and voluntary providers to deliver the first steps support people need to build their digital skills and confidence. Particularly in terms of:
    a. The needs of women returners
    b. Addressing gender under-representation
    c. Supporting the unemployed
    d. Developing provision that will build confidence of all those in the workforce who lack digital skills
2. Encourage local providers to bid to/access the new National Retraining Scheme to test the use of artificial intelligence and innovative education technology in online digital skills courses, so students can benefit from this emerging technology. Also use the same scheme to target Construction Training - linking with the LEP's emerging construction sector priorities to both expand "innovative" construction training programmes and new state-of-the art training facilities within the LEP.
3. Subsidise a programme of basic IT training, support and guidance so that people can try courses before committing to them and be signposted to courses at the appropriate level. This could link with adult guidance provision such as the TUC's Rainbow Years project which encourages older workers to examine the skills they will need to continue in employment.
4. Develop a network and database of Digital Champions. Many organisations rely on volunteers to support their work and there is a need to expand the number of volunteers available and provide training to build their confidence and ensure that they have the skills to work with different groups including school children and those furthest from the labour market.
5. Develop a programme of workshops to bring together charities, providers and funders to raise awareness of the range of initiatives and funds available to support local communities to develop their digital skills. Workshops could also support providers in accessing the funds available.
6. Work with training providers to ensure that when the basic digital skills entitlement is introduced from 2020 that providers collaborate to ensure that there are no gaps in provision or duplication of effort. Build on the wide range of expertise and capacity locally to ensure there are links generated with existing employability programmes in the LEP region, e.g. the Positive People 'Building Better Opportunities' programme.
7. Work with Government to ensure the post-Brexit Prosperity Fund allows a local focus on digital inclusion.

5.5 THEME 5. Employer investment in digital skills

5.5.1 Summary

One of the barriers faced by SMEs in accessing digital learning is knowing what is right for them and their firm. There is an understandable reluctance to commit investment because of a lack of confidence in identifying relevant training. Building on successful programmes that have run in the past, SMEs need support to understand their needs and signposting to appropriate initiatives/training programmes.

Peer support is important to enable managers to share their experiences and in this respect events/workshops are a particularly effective way of supporting employers especially when they are enhanced by face to face follow-on support. Subsidies may encourage employers to take first steps to skills development.

Learning directories are difficult to keep up to date but the DSP may wish to consider mapping the progression pathways available and providing some guidance through the maze of provision.

There are many sources of support through the private sector e.g. Barclays, Lloyds and Google and again, there is a need for employers and their employees to better understand which provider best suits their needs.

5.5.2 Analysis of the HotSW LEP Position

5.5.2.1 Digital skills in the work place

The UK forum for Computing Education analysed Standard Occupation Codes that covered all those employed in the UK in 2013 and estimated the number of jobs requiring different levels of digital skills[47]. The analysis revealed that out of 29.5 million jobs only 2.2 million did not require any level of digital skill, whilst 10.8 million (37%) required basic level skills and the remaining 16.5 million required higher level digital skills (including 2.9 million that require skills to build digital technology) [48]. Based on this it could be argued that nearly everyone in the UK workforce will soon need to have a basic digital skillset. Central government also predict that within 20 years 90% of all jobs in the UK will require some element of digital skills[49].

According to the Small Business Survey, nationally, 98% of SMEs use the internet for business purposes[50]. However, as reported by the Lloyds Bank UK Business Digital Index Survey 2017, 1.6m small businesses (41%) and over 100,000 charities (52%) reported to not having all five basic digital skills, despite there being a positive link between digital skill levels and turnover growth. Furthermore, this number has increased since the previous year, with 38% of businesses and 49% of charities not having basic digital skills in 2016. This suggests that there is a need for continued support and

[47] House of Lords (2017) Digital Skills in the United Kingdom
[48] BIS (2015) Digital capabilities in SMEs: Evidence Review and Re-survey of 2014 Small Business Survey respondents
[49] Gov.UK (2017) UK Digital Strategy
[50] BIS (2015) Digital capabilities in SMEs: Evidence Review and Re-survey of 2014 Small Business Survey respondents

investment in enabling SMEs to make better use of digital skills to fulfil their potential. The Lloyds report shows that the most commonly reported barrier for organisations with low-level digital skills is motivation – with 61% of charities and 43% of small businesses believing that an online presence is not relevant for their organisation. Despite this, the Government's digital strategy (2017)[51] highlights that SMEs with a strong web presence on average grow more than twice as quickly than those with minimal or no presence, export twice as much, and create twice as many jobs. The Do More Online campaign under the Business is Great[52] website is one government funded initiative aiming to support small businesses to make the most of an online presence.

A British Chambers of Commerce (2017)[53] survey of over 1,400 business also highlighted the digital skills gap for UK businesses. The survey found that over 75% of businesses are facing a shortage of digital skills in their workforce. Amongst the most important skills perceived by businesses were: basic computer skills; communicating and connecting through digital channels and management of digital information.

The 2016 Devon Workforce Skills Survey[54] found that 81% of businesses surveyed rated basic knowledge of everyday technology as either somewhat or very important. The report noted a variation across sectors, with respondents in all sectors, except construction and administrative and support services, indicating that they felt basic digital skills are important. The survey also revealed that while digital skills are important for employers, the majority of businesses are not experiencing difficulty in recruiting young people with the required digital skills, with 57% indicating no difficulty and 18% not much.

In an earlier version of the Devon Workforce Skills Survey (2015)[55] more detail was provided on the type of digital skills required by employers, with basic computer skills (54%) and online marketing (20%) being the most commonly cited digital skills required. This finding was echoed in SERIO's Digital Barriers Research[56], which was based in Devon and Somerset and explored the issues faced by women returning or starting in the work place as well as employers' digital skill needs. Specifically, Job Centre Plus and recruitment agency staff felt that basic digital skills were those most commonly asked for by employers and included emailing, using a search engine, and using Microsoft Office.

As highlighted, digital skills can provide benefits for employment and social mobility for the individual, as well as being important factor in increasing business productivity. Furthermore, a number of reports and studies have highlighted the value to the economy in supporting and improving digital skills in the UK. It is reported that the 'tech sector' represents 6% of the UK economy[57] and the GVA of a digital tech worker (£103k) is over twice that of a non-digital tech worker (£50k)[58], hence emphasising the importance of addressing the skills gap in digital. The European Digital Skills Survey (2016) revealed

[51] Gov.UK (2017) UK Digital Strategy
[52] http://www.greatbusiness.gov.uk/domoreonline/
[53] BCC (2017) BCC Digital Survey
[54] Wavehill (2016) Devon Workforce Skills Survey
[55] SERIO (2015) Key Findings from the Third Devon Workforce Skills Survey
[56] SERIO (2015) Digital Barriers: Understanding the Issues Faced by Women Entering or Returning to the Workplace
[57] BIS (2016) Digital Skills for the UK Economy
[58] Tech Nation Report (2018)

that more than a third of workplaces with digital skills gaps expressed concerns about the impact these gaps could have on workplace performance[59], with a loss of productivity (46%) being most frequently reported.

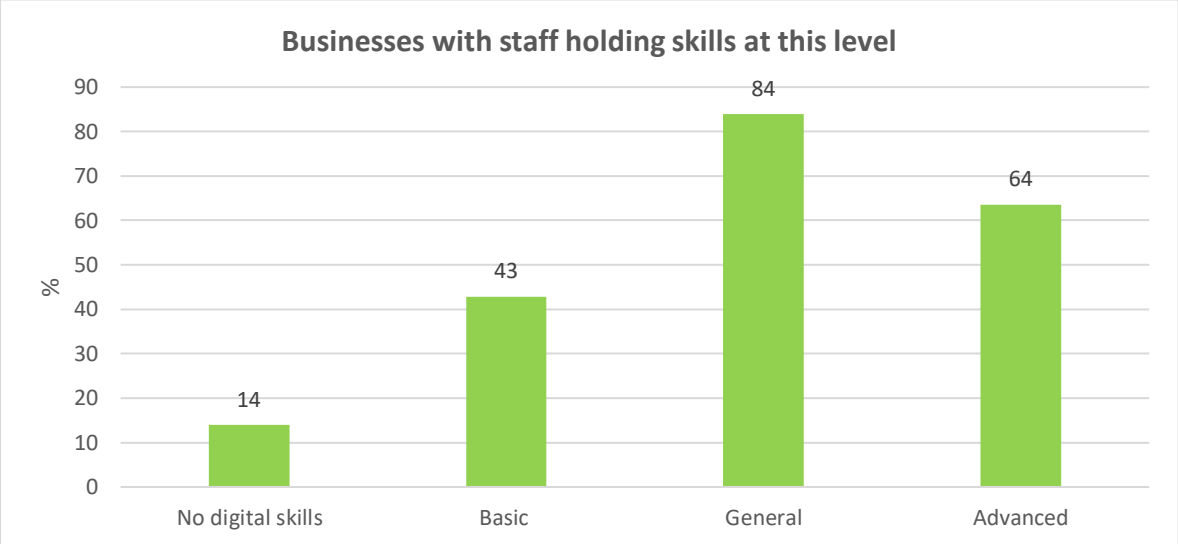
5.5.2.2 Results from our survey

The starting point for our HotSW LEP survey was to explore what level of skills employers currently have within their workplace, how that pattern is changing and what changes are expected in the near future. The questionnaire used the DCMS definition of skills:

- **Basic digital literacy skills**: Skills needed by every citizen to become 'digitally literate'. These are the skills needed to carry out basic functions such as using digital applications to communicate and carry out basic internet searches.
- **General digital skills for the workforce:** Skills needed in a workplace and generally linked to the use of applications developed by IT specialists. While the digital skills needed by the workforce are likely to differ across sectors, there will be some minimum requirements linked to processing information that will be applicable across all sectors.
- **Advanced digital skills**: Digital skills for specialist digital roles linked to the development of new digital technologies and new products and services.

Employers were asked to estimate what proportions of their workforce had these different skill levels (Figure 9). Perhaps the most striking finding is the extent to which digital technology has become ubiquitous across the economy. Only 14% of employers stated that their workforce did not possess any digital skills at all, i.e. almost 9 out of 10 employers in HOTSW require digital technology skills whether they are in agriculture or accountancy, health or wholesale. Almost 2 out of 3 employers had some staff with advanced skill levels:

Figure 9: Digital skills in the workforce; percent of employers having staff at each level



Source: DSP Employer Survey 2018

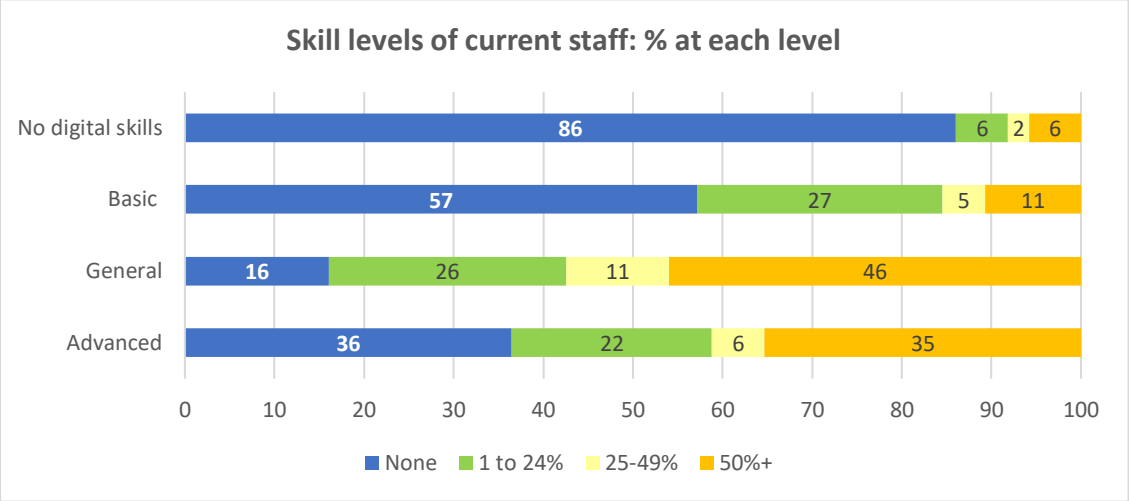
In more detail the findings show that:

[59] European Commission (2016) ICT for work: Digital skills in the workplace

- Even in firms where staff have basic skills, generally this applies to minorities of the staff; only 11% of employers had more than half of their staff at this level.
- For 46% of employers, more than half their staff have general digital skills.
- For 35% of employers, more than 50% of staff possess advanced digital skills.

These findings underline the need for labour market entrants to possess at least basic level skills if they are to successfully compete for work.

Figure 10: Digital skills in the workforce; percent of employers with share of staff at each level



Source: DSP Employer Survey 2018

Those employers with advanced digital skills were asked more specifically about any particular coding skills their employees used (though of course, not all those with advanced skills are coders). As can be seen, the main ones used were HTML, CSS and SQL

Table 8: Coding skills possessed by staff with Advanced Digital Skills; % of employers identifying each

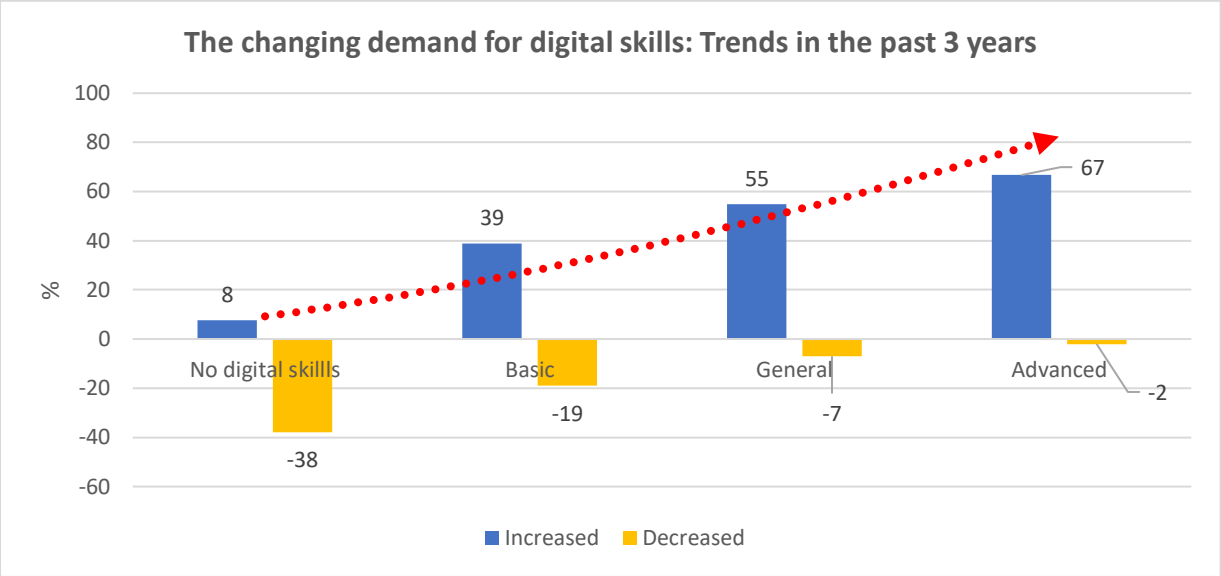
	Nos	%
No particular coding needs	39	46
HTML	29	34
CSS	22	26
SQL	22	26
Java	20	24
Python	16	19
SQL server	16	19
C++	14	16
C#	13	15
.NET	12	14
MVC	11	13
PHP	7	8
Hadoop	2	2
Visual Basic	2	2
Javascript	2	2

Other misc. (E.g. Node, Coldfusion, API)	9	11

Source: DSP Employer Survey 2018

Asked how staffing had changed in the past 3 years, the data showed a clear trend towards digital skills needs *increasing* with 67% saying their need for advanced skills had risen contrasting with 38% who said that the numbers of staff with no digital skills had fallen (Figure 11.)

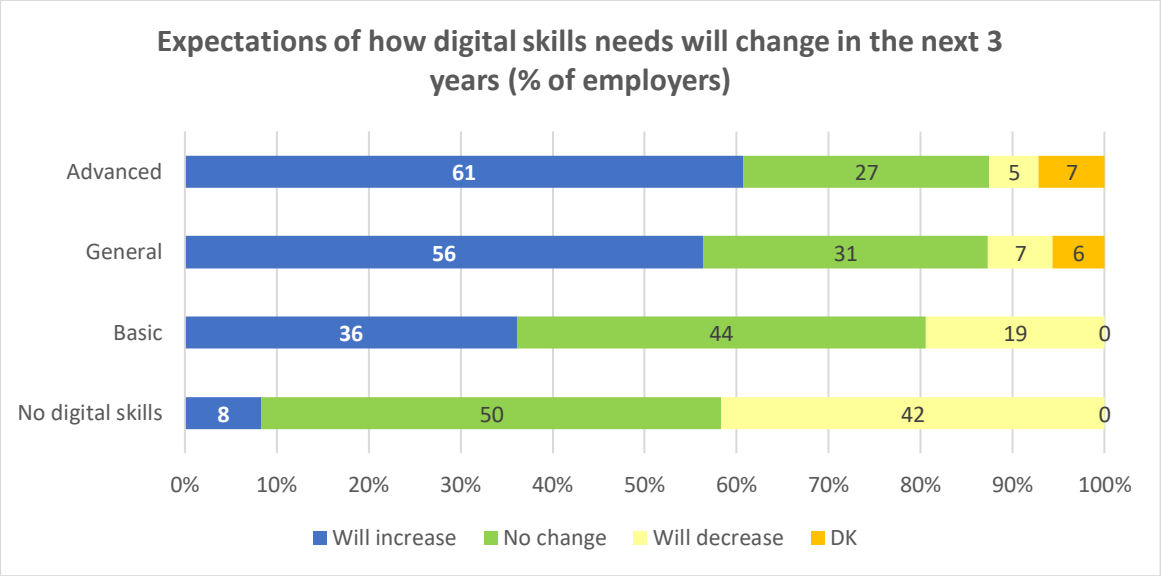
Figure 11: The changing demand for digital skills over the past 3 years; percentages



Source: DSP Employer Survey 2018

Looking ahead, a continuation of past trends is expected, with 61% expecting their staff with advanced digital skills will increase; and 55% expecting their staff with general digital skills to rise (Figure 12).

Figure 12: Expectations of how digital skills will change in the next 3 years; percentages



Source: DSP Employer Survey 2018

A series of qualitative interviews helped illuminate these findings, and employers identified the following jobs as being in greater demand:

- Data scientists
- Software engineers
- UI/UX designers
- Strategic skills for digital transformation
- Senior java developers
- Azure skills
- Cyber security staff
- Data analytics
- Experienced staff in cloud integration
- Computational Fluid Dynamics (CFD)/CAD and Computer Aided Engineering (CAE)

As one employer explained, "*The blend and mix of skills has changed, we now want data knowledge sometimes with domain knowledge. We need staff who can write code and algorithms*." A number of interviewees mentioned the importance of 'cultural fit' and the importance of having the foundation skills on which to build: "*The business has changed and the market has changed, we used to need technical skills now it is more about attitude and creativity and fitting with the culture of the company."* Skills needs are changing so fast that adaptability and a willingness to learn is key.

5.5.2.2.1 Drivers of change

Our survey asked employers about the drivers of change and each emphasised that the impact of digital technology has been transformational. From small to large businesses, digital technology is being integrated into all parts of the business, fundamentally changing how they operate

> *"We've had to re -engineer the whole business. Technology is pretty much running the show, it features in everything we do."* (Research organisation)

> "*Digital technology has changed our firm dramatically and the environment we operate in. We are doing a project around AI and that has re-engineered the whole business.*"(Software Company)

> *"Digital has changed our business out of recognition"* (Architectural firm)

As a result, digital technology is impacting on the ways in which businesses operate, their culture and their leadership:

> *"It has required cultural change. Digital is about driving productivity. It's only possible to justify the overheads if we can increase the value of our products." (Manufacturing Company)*

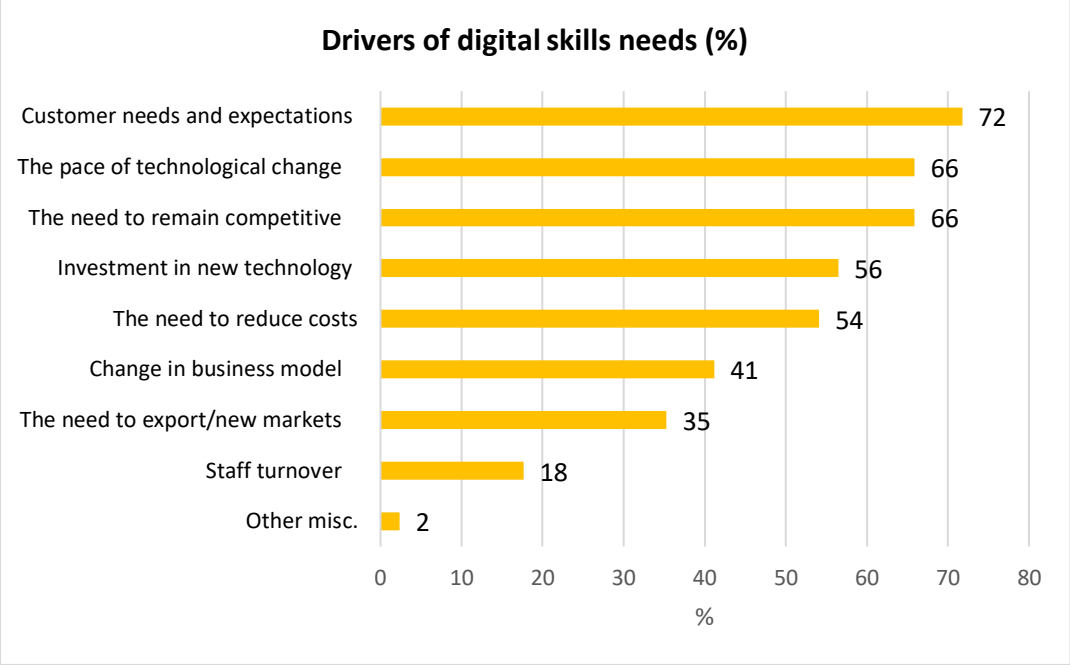
Employers spoke of how digital technology was breaking down silos between different parts of the organisation, enabling smarter working and giving them "*pace and accuracy*". Supporting staff

through the change to enable them to take on new roles is important, particularly given the fast pace of change.

These views were reflected in the findings of the online survey. This showed that the main driver of change is *customer demand* – people expect technology to be embedded in products, to buy goods online, make appointments and bookings etc. In turn, those demands impact on the ability of firms to remain competitive and drive the need to invest in new technology. The pace of change is another significant driver of change.

The impact of digital technology on productivity is evident with 54% embracing digital technology in order to reduce costs and enter new markets/export. 4 out of 10 said that change to their business model was changing their need for digital skills (Figure 13).

Figure 13: Factors driving the need for digital skills in Devon and Somerset; percentages



Source: DSP Employer Survey 2018

5.5.2.3 General level digital skills

As outlined by DCMS[60], general digital skills are those required for all job roles across the economy. While the digital skills needed by the workforce are likely to differ across sectors, it is said that there will be some minimum requirements linked to processing information that will be applicable across all sectors[61]. A digital worker, as described by the Digital Skills Taskforce framework requires skills, at the higher end, to evaluate, configure, and use complex digital systems[62]. This section of the review pulls together literature and policy surrounding general level digital skills.

[60] DCMS (2018) Local Digital Skills Partnerships
[61] BIS and DCMS and Ecorys (2016) Digital Skills for the UK economy
[62] House of Lords (2017) Digital Skills In the United Kingdom

Research from Barclays (2017)[63] indicates that 63% of UK jobs require above-basic levels of digital skills (like proficiency in word-processing, database and spreadsheet packages, as well as the use of social media and other communication tools), with 15% requiring advanced skills (such as graphic design, advanced data analysis or 3D modelling).

In terms of when general digital skills should be developed or taught, research conducted for BIS and DCMS[64] found that stakeholders at policy level considered that GCSE age would be most appropriate, so that young people had the necessary skills to prepare them for future employment. However, it was also noted that the appropriate time depended on the context in which these skills were needed.

Connecting Devon and Somerset, who are currently rolling out superfast broadband in Devon and Somerset, delivered support through the 'LOVE Digital' project. This project aimed to increase the confidence, skills and ability of women to use digital within their businesses and the workplace. An evaluation of the support provided[65] found that the project had encouraged the development of their online presence and increased the overall digital confidence of the participants. In terms of general digital skills, it was reported that the 'LOVE Digital' project had increased confidence overall in all of the skills assessed. For example, using design tools such as Canva, using social media platforms, delivering a presentation using digital technology; and using cloud technology for file storage, sharing and collaboration.

SERIO's Digital Barriers[66] research also highlighted that employers are placing an increasing importance of social media skills to support e-marketing and develop an online presence. In addition, the research revealed that employers felt women returning to work after a career break needed to update their digital skills. In the absence of up-to-date digital skills, it was also suggested that women returned to their jobs at a lower level than they had held prior to their career break.

5.5.2.4 Advanced digital skills

Advanced digital skills are the skills needed for ICT professions (digitally innovative and creative individuals, organisations and businesses) and those needed to work across the diverse IT sector. They include digital skills linked to the development of new digital technologies, and new products and services. Such skills are needed if the UK is to compare favourably with other nations in relation to ICT investment and utilisation.

Digital technology is changing the face of business processes from invoicing to sales to big data analytics, advanced manufacturing and robotics. The increasing availability of digital technology has shifted its role from a business support service to an integral part of business operations. In particular, the rise of technologies such as cloud computing, mobile apps and the introduction of 4G are having a significant impact on the way businesses operate. Technology is enabling entry into new markets and products and supporting the delivery of new processes and services to customers. Smart working

[63] Barclays UK Digital Development Index 2017
[64] BIS and DCMS and Ecorys (2016) Digital Skills for the UK economy
[65] SERIO (2016) Evaluation of the Women and Broadband Project
[66] SERIO (2015) Digital Barriers: Understanding the Issues Faced by Women Entering or Returning to the Workplace

boosts productivity and businesses are at risk of being left behind if they do not keep up with advancing technology.

To seize the benefits of digital advances, the HOTSW economy needs ICT specialists with advanced skills such as workers who can code, develop applications, manage networks and manage and analyse Big Data. These skills enable not only the tech sector to thrive, but are also needed to support the growth, innovation and productivity of many other sectors across the economy, including sectors that have either traditionally been non-digital, or in occupational areas that have been automated as a result of new technologies.

Tech City estimates that there are at least twice as many digital tech jobs in the wider UK economy as there are in the sector itself. A British Chambers of Commerce UK-wide Survey in April 2017[67] found that 84% of firms think digital and IT skills are more important to their business than just two years ago. Examples of the use of digital tech in the LEP's priority sectors include:

- Food & drink: for example, automated milking on farms, the use of programmable precision planting machines
- Advanced engineering (including marine, nuclear and aerospace) – including for instance, skills needs in Computer Aided Design, Artificial intelligence, 3D printing
- Healthy ageing – virtual and augmented reality play a role in diagnostics and other interventions, including robotic and remote surgery, there will be an increasing use of AI to create new targeted drugs
- High value tourism – including online bookings, digital marketing, CRM and virtual reality
- Construction – skills increasingly needed for Building Information Modelling

Emerging sectors such as Health Tech and Fin Tech embody this integration of business and digital technology. The OECD[68] identifies 2 main drivers of change in the economy which are propelling the need for advanced digital skills:

1. **Connectivity**
   Although there are large differences in digital intensity across sectors, every firm in every sector of the economy is now being affected by high speed connection to the internet, which is expanding its scope and potential benefits. The 'Always connected' smartphone has strengthened this trend. As a result, vast amounts of data are being generated which is leading to data-driven innovation. Online activity and networked things generate 'big data' which feed machine learning that enables artificial intelligence, which in turn leads to advances in intelligent machines (e.g. robotics). The growth in the volume, range and speed of data and the ability to analyse it is a significant driver of change.
2. **Complementary investments**
   Digital technology is creating the need to completely re-engineer businesses requiring firms to make changes to their organisations, skillsets, processes and introduce new systems and

[67] http://www.britishchambers.org.uk/press-office/press-releases/bcc-shortage-of-digital-skills-hampering-business-productivity-and-growth.html
[68] OECD (2018) Transformative Technologies and Jobs of the Future, Background report for the Canadian G7 Innovation Ministers' Meeting. https://www.oecd.org/innovation/transformative-technologies-and-jobs-of-the-future.pdf

new business models. This makes digital transformation a challenge for many firms especially those without the necessary skills in the management and leadership teams.

The OECD identifies three technologies which are expected to have widespread impacts that have the potential to be particularly far-reaching. These are:

1. **Artificial intelligence (AI)**
   AI is the ability of machines and systems to acquire and apply knowledge and carry out intelligent behaviour. The OECD predicts that sectors likely to experience AI-based transformation include: Agriculture, Chemicals, Rubber and plastics, Shoe and textile 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.
2. **The Internet of Things (IoT)**
   The IoT comprises devices and objects whose state can be altered via the Internet (or in local networks), with or without the active involvement of individuals. While the IoT has many implications for all aspects and sectors of the economy, the largest impacts are expected in healthcare, manufacturing, network industries and government.
3. **Blockchain**
   Blockchain is a distributed database that acts as an open, shared and trusted public ledger that nobody can tamper with and everyone can inspect. Blockchain technology was originally conceived for Bitcoin, but the expected impacts of blockchain technology go beyond digital finance and may significantly affect any activity involving authenticating a transaction. Applications include financial transactions; record and verification systems and smart contracts.

These changes and their widespread adoption across sectors mean that jobs requiring more advanced digital skills also require a range of technical, professional and other occupation-specific skills, a solid foundation of information-processing skills, as well as the ability to collaborate, share information, give presentations, provide advice, work autonomously, manage, influence and solve problems.

Across the UK it is estimated that 1.2 million people will be needed with advanced technical skills by 2020.

5.5.3 Recommendations

1. There is a need to draw down funds to develop and subsidise a programme to support SMEs to improve their data analytics, digital awareness and skills - along the lines of the successful “Get up to Speed” programme. This could include awareness-raising, training, workshops, 'digital health checks', and referrals to private providers, online information provision and support targeted on specific groups, i.e. a menu of options from which businesses can select which will enable progression. Workshops are an ideal way of enabling employers to network and signposting them to next steps provision. The newly launched (Innovate UK) Business Basics Fund could provide useful resource in this respect.
2. It is important to link-in with existing local infrastructure such as the Growth Hub.

3. There is a long tail of SMEs adopters – the LEP should encourage or develop benchmarks so that SMEs can see where they are on a digital maturity scale.
4. Develop a DSP platform to illustrate that the LEP represents good practice – perhaps in line with activities such as SMART North West.
5. With the imminent arrival of T-levels – there is a need to ensure digital skills are embedded within this delivery.
6. Employers need to be aware of the importance of digital skills in relation to productivity. There needs to be a communication programme through the LEP, DSP and wider partners to demonstrate the productivity gains that can be made from investing in digital skills.
7. The LEP should encourage its larger employers (including local authorities) to focus elements of their Training Levy on digital and digitally-related apprenticeships – including within their supply chain businesses/employers that are within the LEP area.

5.6 THEME 6. Retaining and attracting talent

5.6.1 Summary

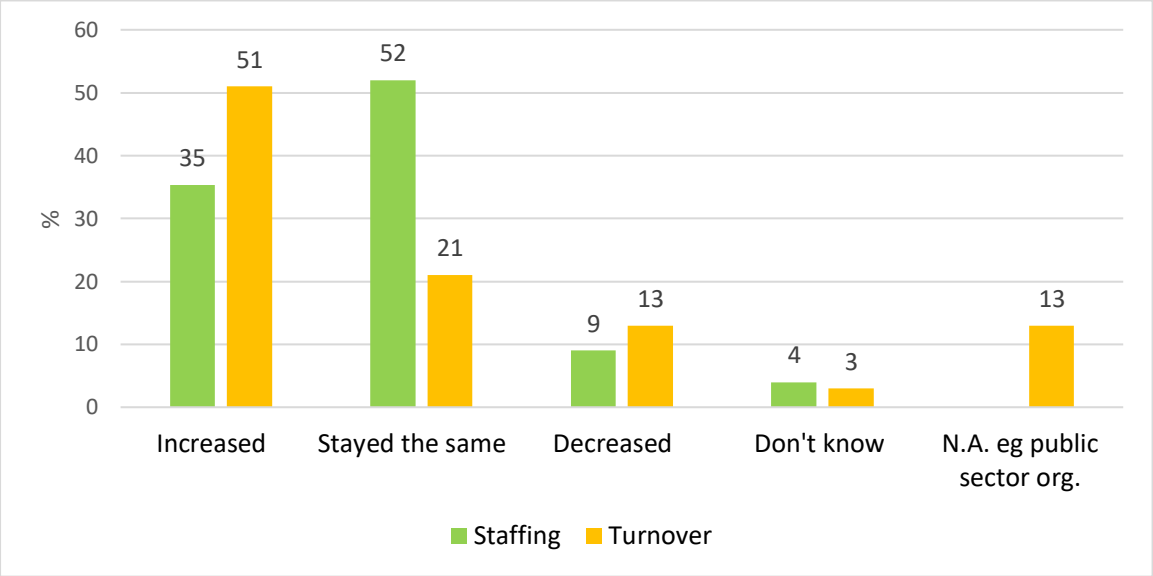
Devon and Somerset have an enviable supply of high quality learning provision and a current bid to develop this further through an Institute of Technology, but employers report that it is difficult to retain young people in the local economy because the area lacks the 'buzz' of other larger digital clusters. Closer links between the universities and employers to help promote local vacancies, careers and internships could do much to help retain graduates within the local economy. Furthermore, the DSP should explore the scope for cross-LEP working with Bristol and others in the south west to identify areas for co-operation and exchange of good practice. There is a need to work to promote the region for its quality of life in much the same way as other digital clusters have done like Bournemouth and Brighton.

5.6.2 Analysis of the HotSW LEP Position

5.6.2.1 Results from our survey

Growth in the past 12 months has been generally positive with more employers increasing staff and turnover than decreasing it. As can be seen, turnover has risen more strongly than employment (Figure 14).

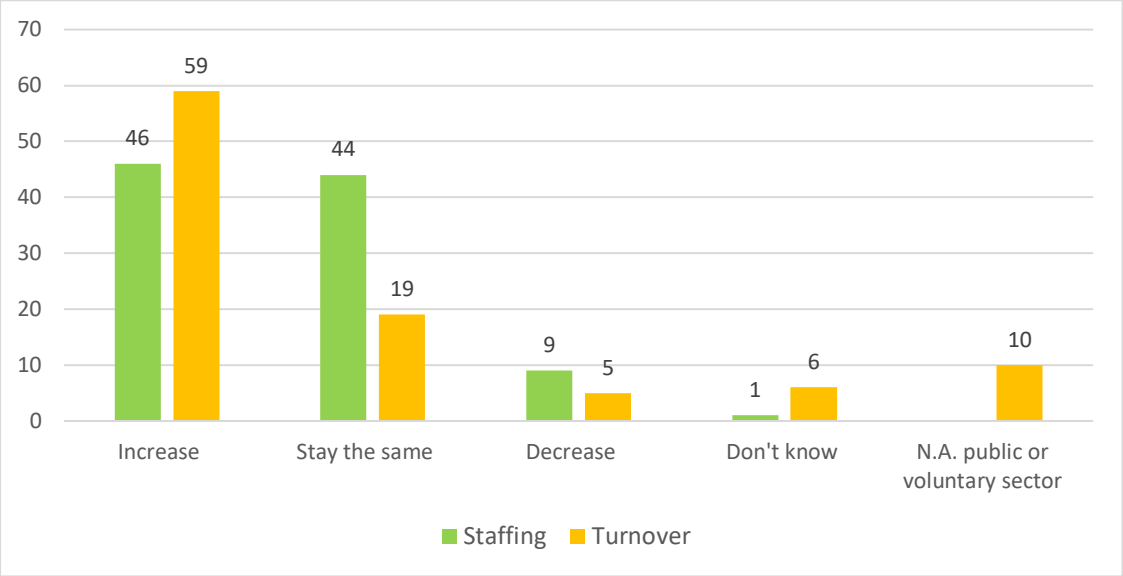
Figure 14: Change in staffing and turnover in the past 12 months (%)



Source: DSP Employer Survey 2018

Expectations for the next 12 months are positive with 90% expecting staffing to stay the same or grow and 59% predicting an increase in turnover (Figure 15).

Figure 15: Expected change in staffing and turnover in the next 12 months (%)



Source: DSP Employer Survey 2018

5.6.2.2 Innovating Communities of Practitioners

Unlike some other sectors, digital tech workers put a high value on networking to be able to exchange ideas and share experiences. In turn this generates a 'buzz' or community which in itself attracts further inward investment or clustering. Devon and Somerset were seen as lacking these assets – or people were unaware of them – as one interviewee said, there are plenty of network events but they are not always easy to get to and it is difficult knowing which one is the 'gold dust'. Typical comments were:

"There's a sheer lack of candidates in the price range and female interest is not good"

"It's easy to get people from a marketing/creative arts background who want to do social media, but it is very difficult to get web developers and we have had to outsource to Hungary" Tech firm

"Finding good quality people is a challenge and being in Exeter doesn't help much. We've just given up on recruiting for a while." Tech firm

"Not everyone wants to live in Somerset, especially when they're young. It takes quite a lot to get people to move here. Location is the key thing that puts people off." Research organisation

"It's a nightmare getting specialist tech skills such as cloud integration, it's such an emerging field. The skills are in the cities, we will have to grow remotely. We want people with experience and don't have the resources to train, you have to think how much time you can divert to training." Tech Support Company

5.6.2.3 The role of the Digital Skills Partnership

The survey closed with an open question as to what the DSP should prioritise to improve the availability of digital technology skills. Responses were many and varied but could be grouped into a number of themes, with a clear majority relating to training.

There was a desire for the LEP to join in with and promote the Digital Leaders national programme. It is a shared professional online space and face-to-face programme, for leaders across all sectors promoting effective, long-term digital transformation. It helps leaders:

- Digitally transform their organisations
- Run programmes and events in 12 UK regions
- Equip individual leaders with the skills they need to work in digital or start a business
- Share insightful data, knowledge, insight and stories on the sector to inspire cultural change
- Connect leaders to the support and services they need
- Build networks across sectors to encourage non-siloed innovation
- Champion success

5.6.2.4 Funding

There were concerns over affordability of training and digital equipment and suggestions for the LEP to involve themselves in this area:

"Offer grants or interest free loans for digital equipment for start-up companies, or set up training venues encouraging local digital workers to train others."

"Provide courses at a cost that is achievable for micro/small businesses, given that by sending a member of staff on a course, production/work may stop/be reduced, thus extra expenses incurred."

5.6.2.5 Partnerships

Partnership working is clearly a priority for the DSP and this was reflected within the feedback from the survey and the interviews. Respondents suggesting the LEP forge partnerships across different sectors, not just digital. There was also a continuing emphasis on SME support:

*"Work *with* local partners, trainers and providers in a collaborative way. Lots of business support and other programmes introduce duplication, courses that people aren't interested in, are not community-minded etc. - this could be an opportunity to create something that's truly useful, unique and meaningful."*

"Better connections between small business community and education to ensure the businesses know of talent available, and the students know more about potential opportunities."

There was also a recognition that communities of practice and local business groups had a role and a suggestion that the LEP could play a role with others to - *"Encourage local businesses to pledge their commitment to work together to grow digital skills in the SW."*

In terms of geography there was desire not to be limited by county or LEP boundaries – "*Don't confine work to Devon and Somerset, boundaries do not matter. Tackle the image of the area. Promote the area for tech and lifestyle. Whilst it lacks the buzz to appeal to younger generations those over 40 are positive."* These strike a chord with the Great South West activities already taking place.

5.6.2.6 *Infrastructure*

The provision of effective infrastructure and wide coverage was seen as essential and many felt this had been a handicap for too long within the region. If we are serious about being a leading digital region then there were some very simple things we had to get right:

"Better broadband provision is more important than anything else."

"Better digital connectivity in all areas and on trains."

5.6.2.7 *Reverse the brain drain*

The region has long been one that suffered from movement of young highly skilled people to other largely urban areas – particularly London. Whilst this to an extent is inevitable and that changes were already happening – with increasing numbers remaining for a time after their degree - there was recognition that more could still be done to keep talent in the region and to link talent into our businesses – particularly in partnership with our the universities.

"Make graduates aware of the local opportunities."

There was a sense that bright young people want to be somewhere 'exciting' and that it is possible to transform how places are seen, for example Bristol wasn't a digital centre 10 years ago. Interviewees cited a need for – "an Advanced Skills Hub for people to exchange ideas – for instance who in the area is working in AI? Can they be connected? – There's a need for something structured, cutting edge and high level."

One interviewee cited support for business development specialists for high growth businesses in the tech sector – *"which is currently growing 2.6 times faster than the general economy. The SW should be best placed to capitalise on this as the quality of life is high and this should attract top talent."*

5.6.3 Recommendations

1. The emerging Local Industrial Strategy should include significant 'digital elements' such As Big Data and Data Analytics with a core ask around supplying our innovating employers and those with considerable exporting potential to access the skills they need locally.
2. The LEP's FE institutions and universities should be encouraged to take a lead in sharing a commitment to boosting employer engagement and graduate retention - good examples can be found in Cornwall and Ireland (e.g. https://www.unlocking-potential.co.uk/).
3. An App or website should be developed to enable local employers to promote their employment opportunities, work experience and internships to local undergraduates and postgraduates. Targets should be set to drive placements into local employers (particularly SMEs). Linking digitally skilled placements and graduates into SMEs should also be a priority for the future Prosperity Fund.
4. Seek to use the Digital Skills Innovation Fund to map local digital training provision, link providers at all levels and seek to create new pathways and new and enhanced provision.
5. Build greater training provision at higher levels into the existing work around Analytical Cities, AI and Data that is already happening in our LEP cities.

Annex 1: Digital skills provision mapping

5.7 Context and background

As part of the overall research being undertaken to establish a business case for investment in digital skills within the Heart of the South West (HotSW) LEP region, the following section examines the digital skills training provision currently available and provides a geographical representation of clusters of provision within the LEP area based upon:

4. Digital skills provision currently provided by sector focus, these sectors being:
    a. Digital sector: including big data, photonics and creative
    b. Advanced engineering: including marine, nuclear and aerospace
    c. Healthy ageing
    d. High value tourism
    e. Construction
    f. Digital inclusion at basic level
    g. Social Enterprise
5. Digital skills training providers
6. Digital skills provision split between lower and higher-level skill levels, i.e. Entry level to level 4 and level 5 to level 8. Further details of qualification types associated with skill levels can be found in table 1 of appendices 1.

5.8 Methodology and assumptions

The following section sets out the methodology undertaken for the mapping of digital skills provision within the HotSW LEP area and provides a list of assumptions that were made in developing the database that was utilised to create the geographical mapping.

5.9 Methodology

The initial mapping exercise was carried out through a desk-based review of digital skills related training provision provided by private, VCSE, local authority and mainstream education providers. This review was supported by input from Digital Skills Partnership members in order to signpost to suitable training providers. A full list of sources can be found in table 2 in appendices 1.

The desk-based review included collecting relevant information regarding digital training provision, including the location of the training provider and the location where the training provision was delivered. For the purposes of geographical mapping the location of where training provision is delivered was used to take into account both training providers that are based outside of the HotSW LEP area and online training providers that provide training within the LEP area.

The mapping exercise consisted of collecting information under a set of pre-described headings (see Table 16) to provide the necessary detail to effectively assess the current digital skills provision within the HotSW LEP region:

Table 9: Digital skills training provision – mapping search terms

Name of provider	Provder type (including)	Address of course provider	Postcode of course provider	Location of course provided	Postcode where course provided	Name of course	Course type	Level*	Qualification type	Course length	Eligibility	Sector Focus	For Individuals	For Organisations
e.g. University Centre Somerset	Further Education college	e.g. Wellington Road, Taunton, Somerset	e.g. TA1 5AX	Devon	e.g. TA1 5AX	e.g. BSc(Hons) Computing & internet Techonologies Top-Up. OU awarding body	Short course	Entry level	Ranging from Entry Level to Level 8 Doctorate, e.g. (PhD or DPhil)	<1 month	<16 years old	Digital sector: including big data, photonics and creative	Yes	Yes
	Private Training Provider (Vocational)			Somerset			Vocational course	Level 1		1-6 months	16-18 year olds	Advanced engineering: including marine, nuclear and aerospace		
	Private Training Provider (Online)						Distance learned	Level 2		6-12 months	18-24 year olds	Healthy ageing		
	VCSE						Degree apprenticeship	Level 3		1-2 years	>24 year olds	High value tourism		
	Local Authority			Plymouth			Digital apprenticeship	Level 4		2-3 years	19 +	Food & drink		
	University						Tech Degrees	Level 5		>3 years	50+	Construction	No	No
							Guaging interest	Level 6		Other	Anyone 18 & above	Inclusion at basic level		
							Industry Accreditation	Level 7				Social Enterprise		
				Torbay			A-Levels					Multi-sector application (Lower level =<4)		
	Other						Foundation Degree	Level 8				Multi-sector application (Higher level >5)		
							Other							

*A full list of skill level definitions can be found in Table 14, Annex 4

Following the desk review of digital training provision, 447 digital courses were identified within the LEP area. The details of this database were then transposed into data visualisation software to generate geographical maps of training provision clusters based on the three areas of analysis as set out in section 6.1. This software allows for the generation of heat maps using postcode data, which indicate both the type and number of courses provided within a geographical area, including the sector focus of the training on offer. It also allows for the generation of heat maps which provide information on clusters of digital skills providers based on postcode location. Further details can be found in section 7.0.

List of assumptions

The following list of assumptions were made during the mapping exercise, and therefore should be considered when assessing digital training provision:

1. Where the address and postcode of course delivery was unable to be identified, it was assumed that the postcode of the training provider location was the site of delivery, with the exception of training providers located outside of the LEP area and online training providers. In these cases, it was not possible to map the training provision and they were excluded from the mapping exercise.
2. Where there was no clear indicator of training provision being directly associated with one of the key sectors as indicated in section XX, it was assumed that the provision has a multi-sector application. Multi-sector application training was then split between higher and lower level courses, i.e. Entry level to level 4 and level 5 to level 8.
3. It is assumed that the mapping exercise is not exhaustive, but represents the majority of digital training provision within the LEP area. This assumption was taken to consider the anticipated number of online or localised VCSE and local authority training provision which is difficult to identify through a desk-based review and within the timeframe of the research.

5.10 Digital skills training provision by sector focus

As part of the mapping exercise, digital skills training provision that was identified throughout the LEP region was categorised by the eight key sectors acknowledged by the LEP as key sectors for future growth. These sectors include:

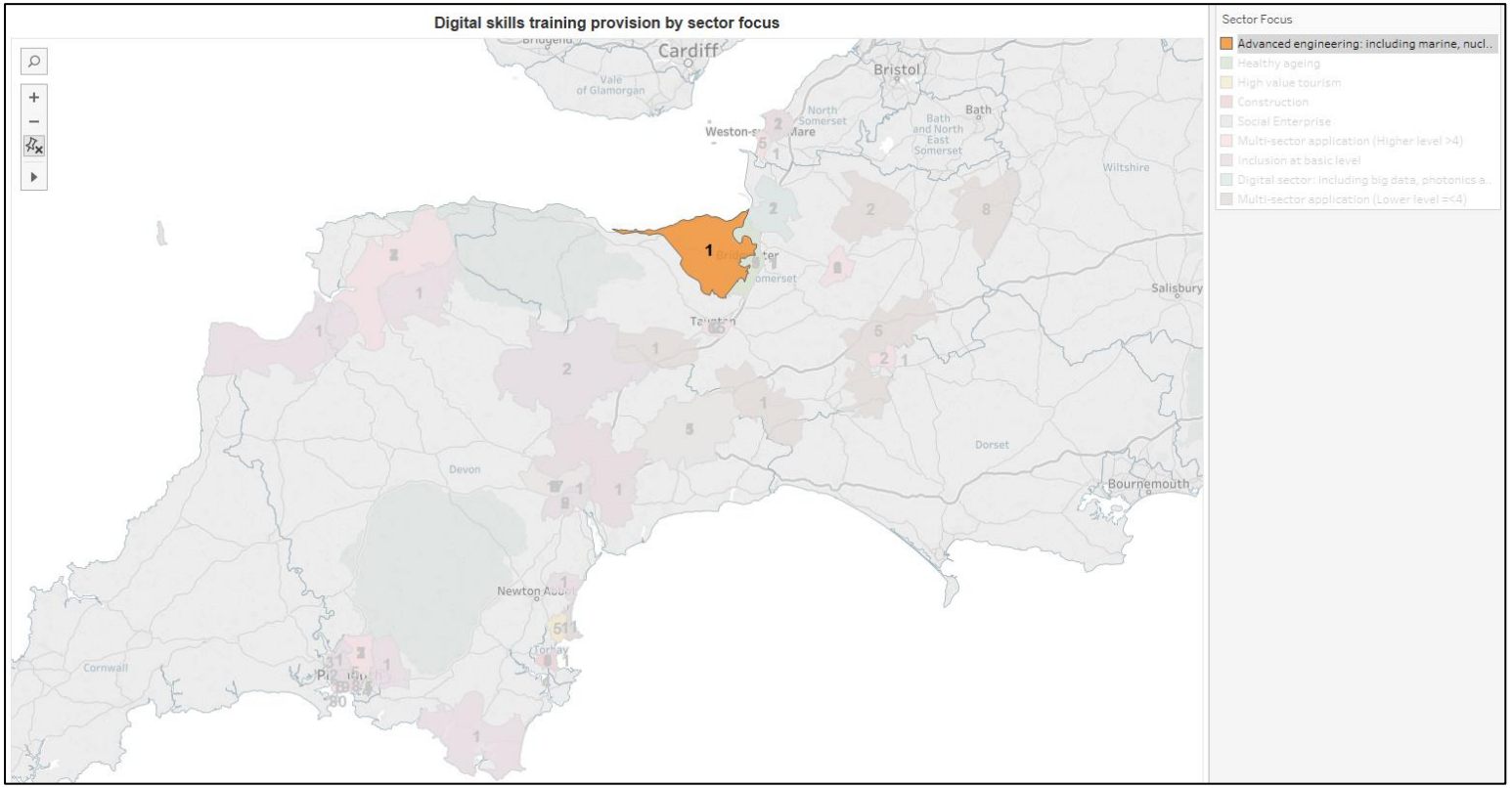
a. Digital sector: including big data, photonics and creative
b. Advanced engineering: including marine, nuclear and aerospace
c. Healthy ageing
d. High value tourism
e. Food & drink
f. Construction
g. Digital inclusion at basic level
h. Social Enterprise

A total of 447 courses were identified during the mapping exercise, however this does not represent a comprehensive list of all digital skills training provision within the LEP region, as certain providers are difficult to map due to limited information, e.g. digital inclusion courses being delivered within local libraries or online courses delivered nationally.

5.11 Advanced engineering, including marine and nuclear

Mapping of digital skills training within the context of the advanced engineering sector found there to be only one course that could be clearly identified as relating directly to the sector. This course is provided in the Bridgwater area, which is expected given the nearby development of Hinkley Point nuclear power station. However, it is reasonable to assume that other multi-application digital training provision, mapped as part of the research (see figures 23 and 24), is also relevant to the advanced engineering sector as there is likely to be a significant crossover of digital skills demand. Therefore, consideration of the low level of training provision related directly to the advanced engineering sector should take this into account.

Figure 16: Digital skills training provision by sector focus (location and number of courses) – Advanced engineering, including marine and nuclear

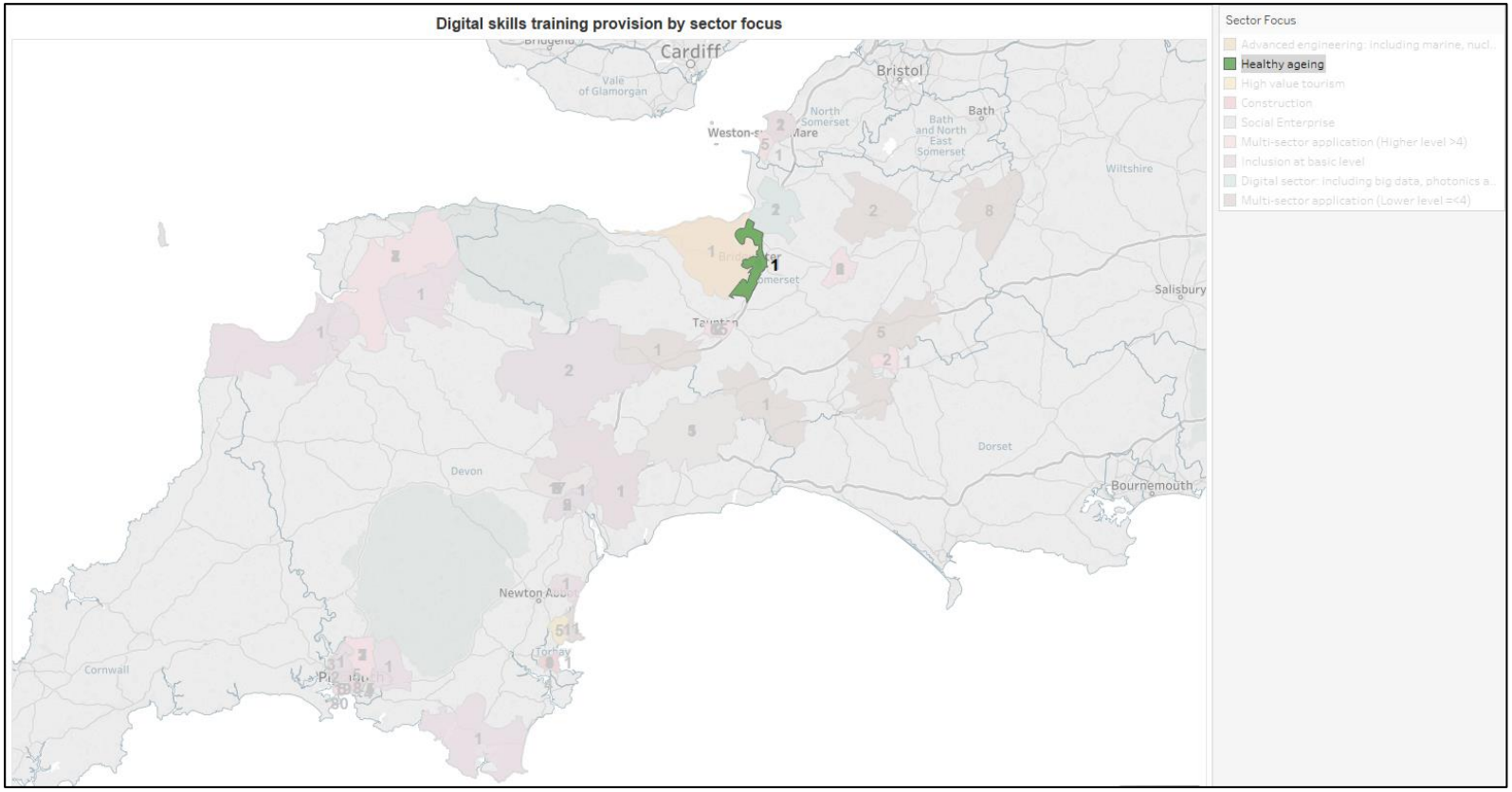


(N=1)

5.12 Healthy ageing

Only one digital related course linked directly to 'Healthy Ageing' was identified during the mapping exercise. This highlights the limited provision of specialist digital training for health professionals within the LEP region. However, as per the advanced engineering sector, a large number of multi-application digital skills training were identified as part of the mapping exercise, and it is reasonable to assume that these courses will also have relevance to the digital health sector (see Figures 23 and 24). However, it is difficult to assign a specific proportion of this provision to the Healthy Ageing sector without a clear understanding of the sectors digital needs.

Figure 17: Digital skills training provision by sector focus (location and number of courses) – Healthy ageing

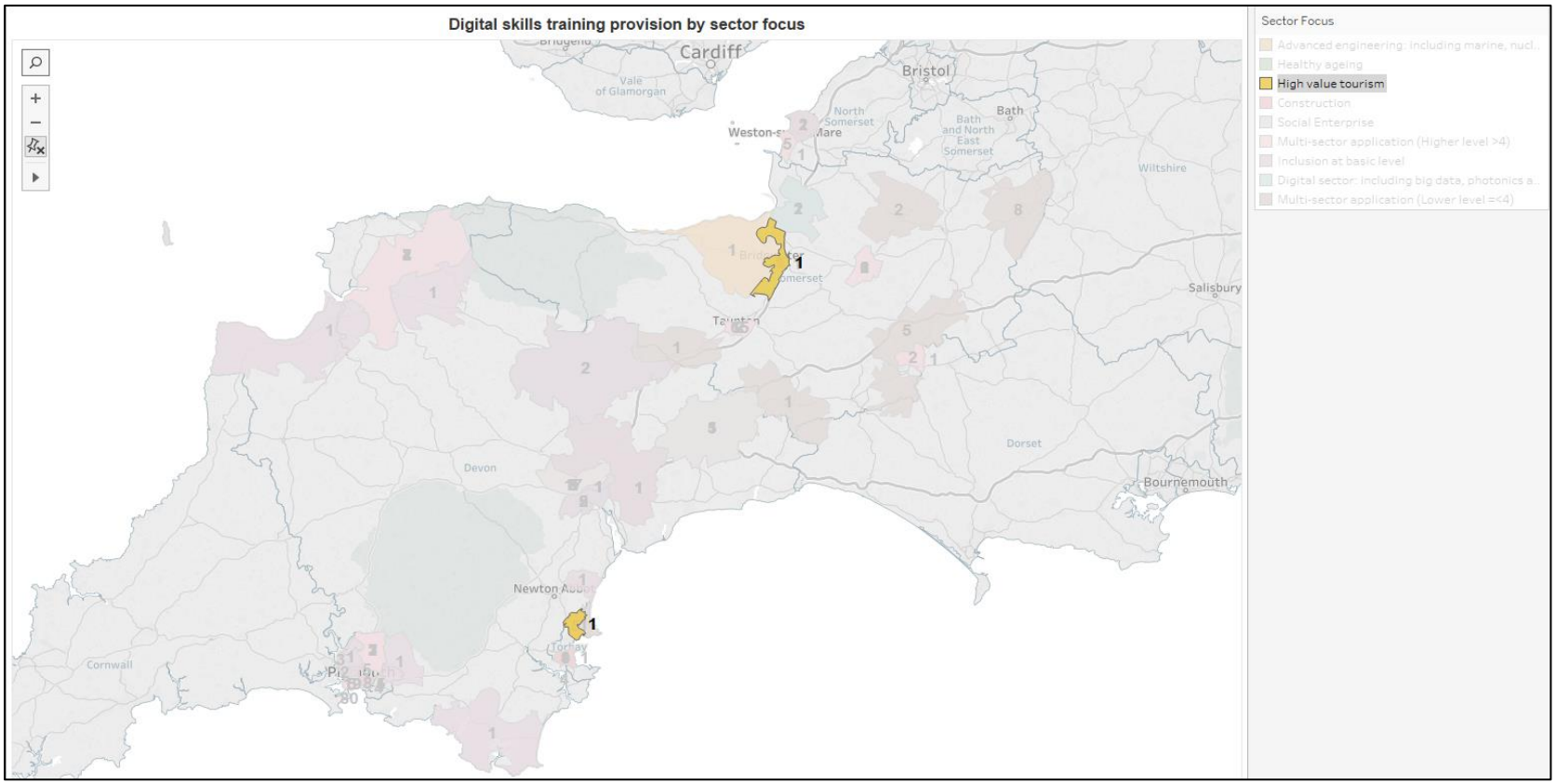


(N=1)

5.13 High value tourism

There is limited specialist digital skills training provision for the high value tourism sector within the LEP area, with only two courses being identified within the Torbay and Bridgwater areas. Given the scale of the tourism sector within the LEP area this finding is unexpected, as it is reasonable to assume that there would be a greater demand from the tourism sector across the LEP area. However, as per the previous two sectors, multi-application training will also apply to the high value tourism sector, and therefore it is likely that a high proportion of multi-sector training provision is used by high value tourism businesses

Figure 18: Digital skills training provision by sector focus (location and number of courses) – High value tourism

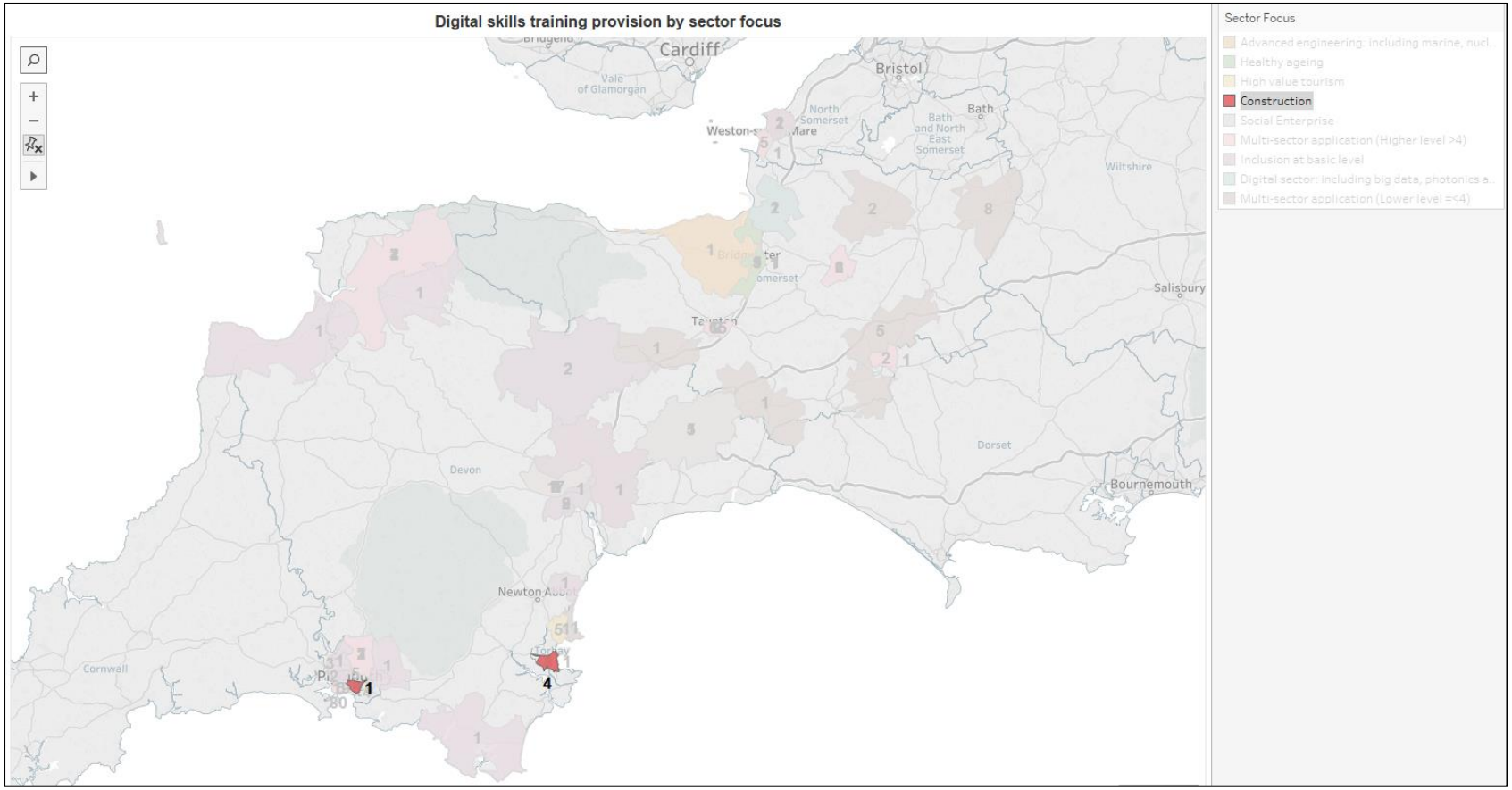


(N=2)

5.14 Construction

Digital skills provision within the construction sector has a clear focus in the south of the LEP area, with identified provision being attributed to two further education colleges, i.e. City College Plymouth and South Devon College, who both have a strong focus on providing construction skills training. However, as per the high value tourism sector, it is surprising that specific digital skills training within the construction sector is not more prevalent given the increasing demand for highly trained construction professionals within the sector.

Figure 19: Digital skills training provision by sector focus (location and number of courses) – Construction

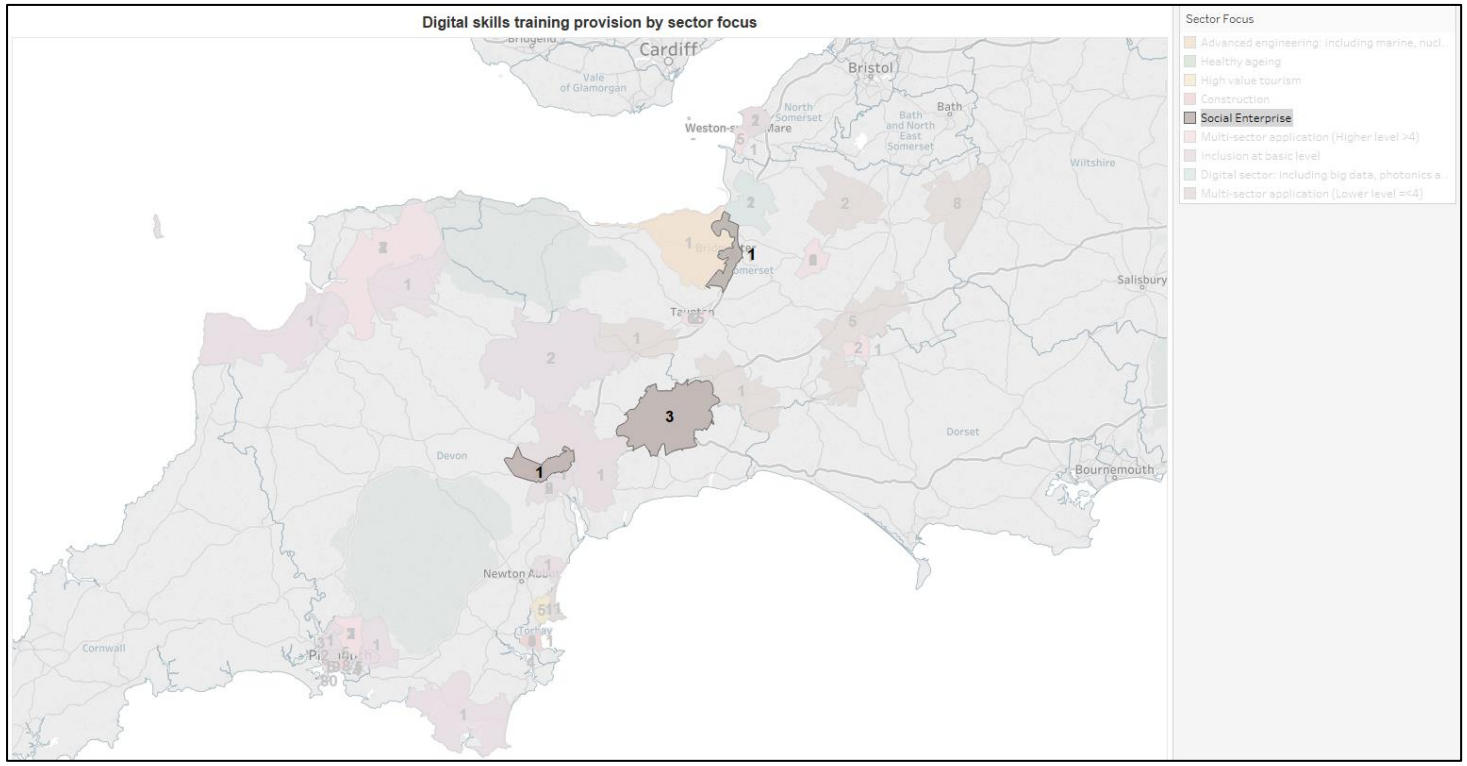


(N=5)

5.15 Social enterprise

The number of specialist digital skills courses within the social enterprise sector is very limited within the LEP area, with the main cluster of provision being to the east of Exeter, and attributable to Cosmic. However, it is likely that most of the multi-application training (as indicated in figures 24 and 24) is also applicable to social enterprises. Therefore, the breadth of the provision which is utilised by the social enterprise sector is likely to be far greater than identified in the mapping exercise.

Figure 20: Digital skills training provision by sector focus (location and number of courses) – Social enterprise

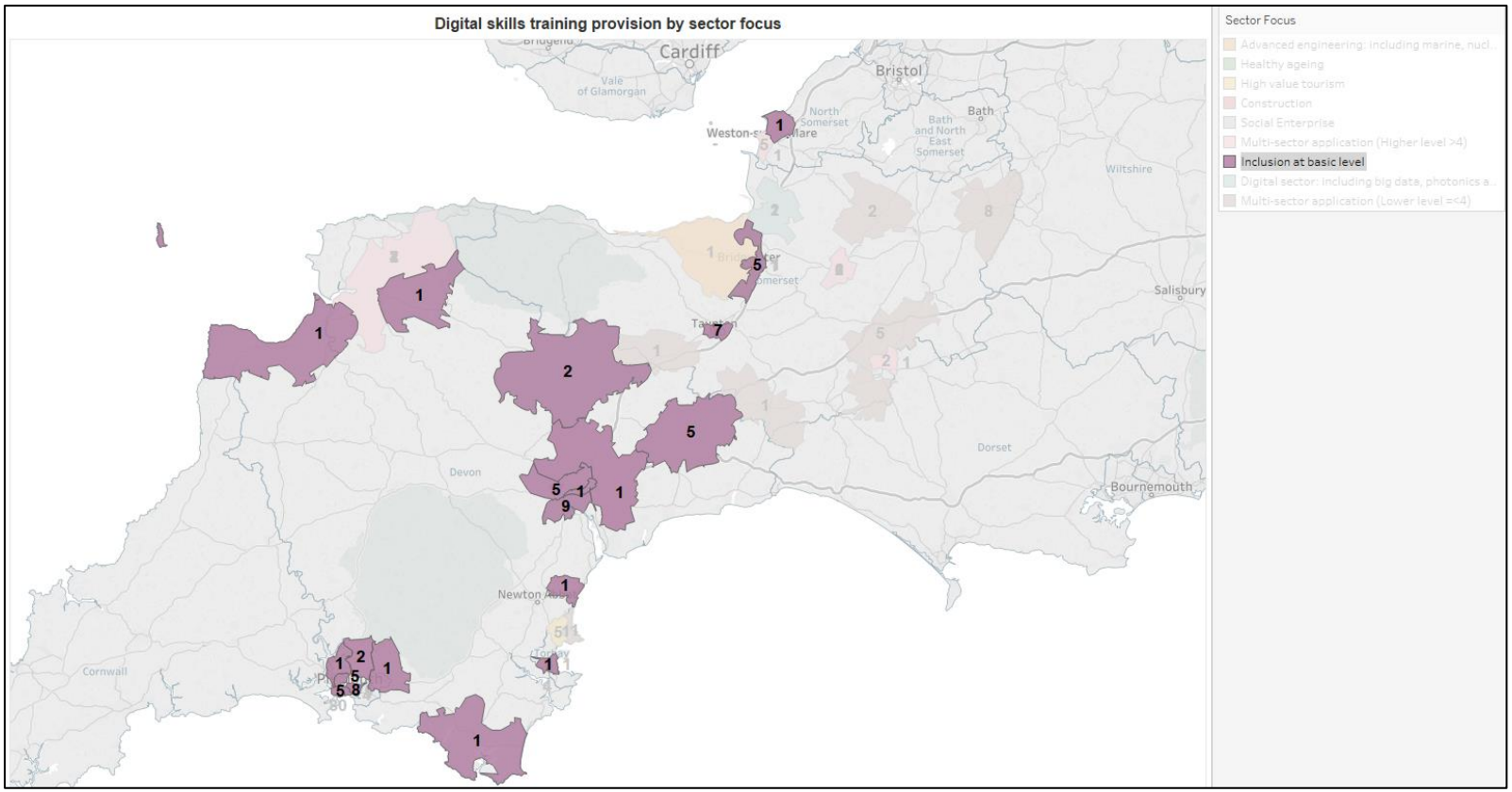


(N=5)

5.16 Digital inclusion at a basic level

Training for digital inclusion at a basic level is evenly spread across the LEP area, however there are greater concentrations of training provision around the Plymouth and Exeter areas. Of note is the lack of provision within the east Somerset area, however the mapping data does not consider the provision that is likely being delivered by local libraries for example, as this level of detail was not feasible to identify within the timescales of the research. Therefore, it is reasonable to assume that inclusion at a basic level is far more widespread than the mapping would suggest.

Figure 21: Digital skills training provision by sector focus (location and number of courses) – Inclusion at a basic level

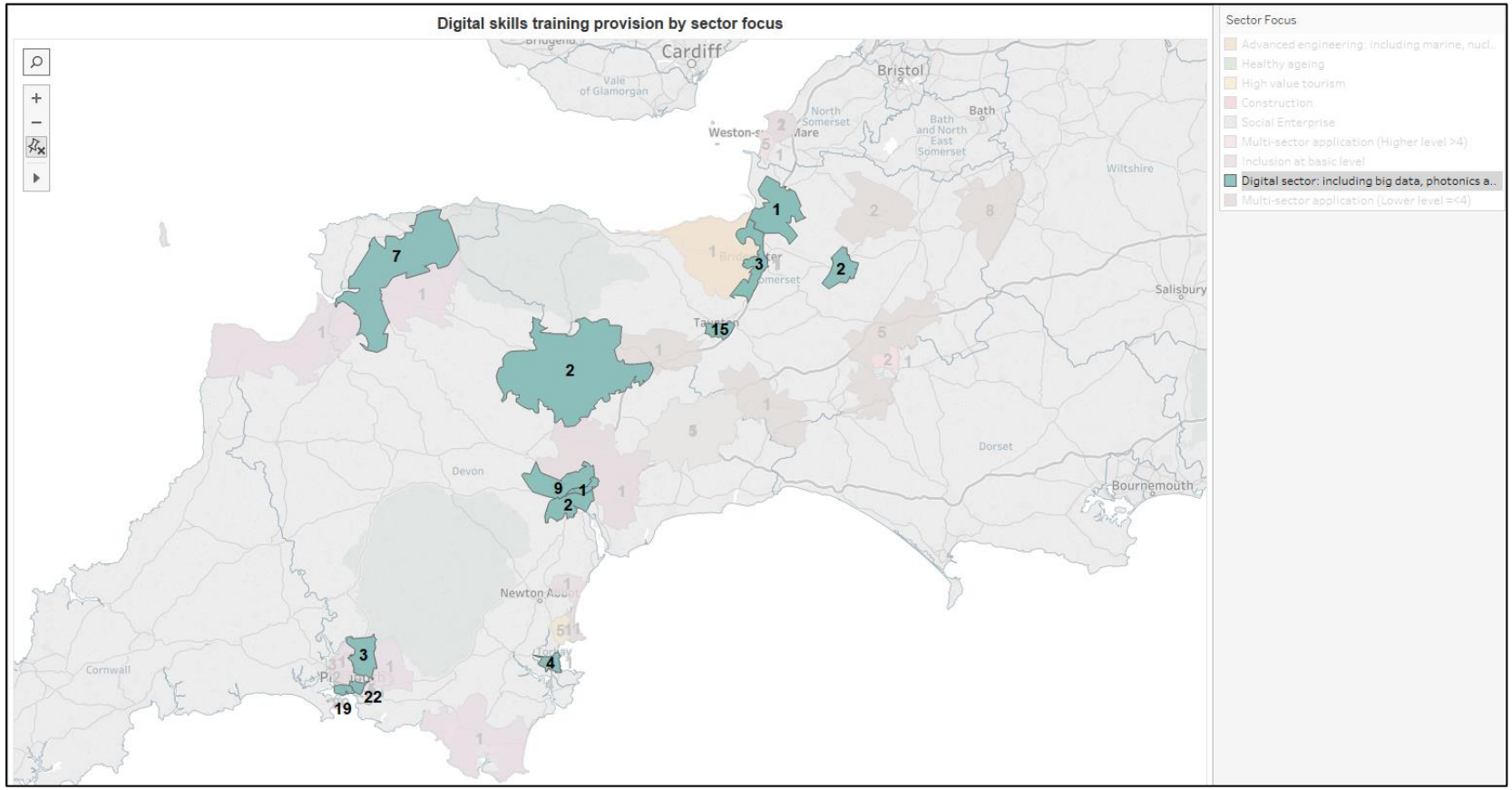


(N=63)

5.17 Digital sector, including big data, photonics and creative

Specialist training provision for the digital sector is clustered in the west of the LEP area, with the majority of provision provided in Plymouth. However, other clusters of provision can be seen in Exeter and Taunton which suggests that specialist training for this sector has a particular focus within urban centres.

Figure 22: Digital skills training provision by sector focus (location and number of courses) – Digital sector, including big data, photonics and creative

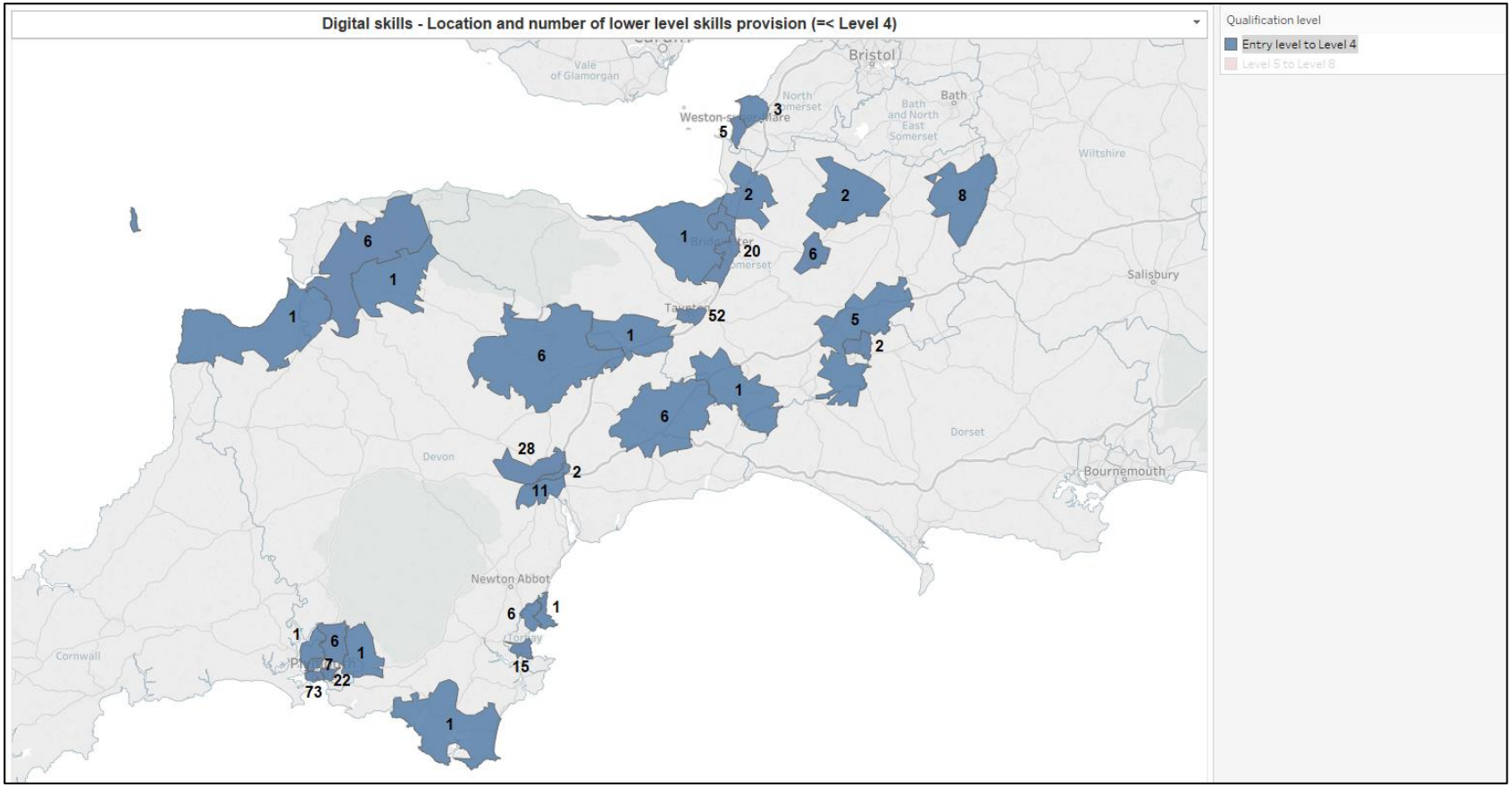


(N=90)

5.18 Lower level (=<4) multi-application digital courses

Digital skills provision for lower level qualifications (Entry level to level 4) is evenly spread across the LEP area, however there are clear clusters of provision in the Plymouth, Exeter, Taunton, Torbay and Bridgwater areas, which is to be expected given the concentrations of population within these urban centres. However, there is also reasonable provision of lower level training within rural areas, indicating that the lower level skills demand is well served across the LEP area.

Figure 23: Digital skills training provision – Area and number of Lower level (=<4) multi-application digital courses

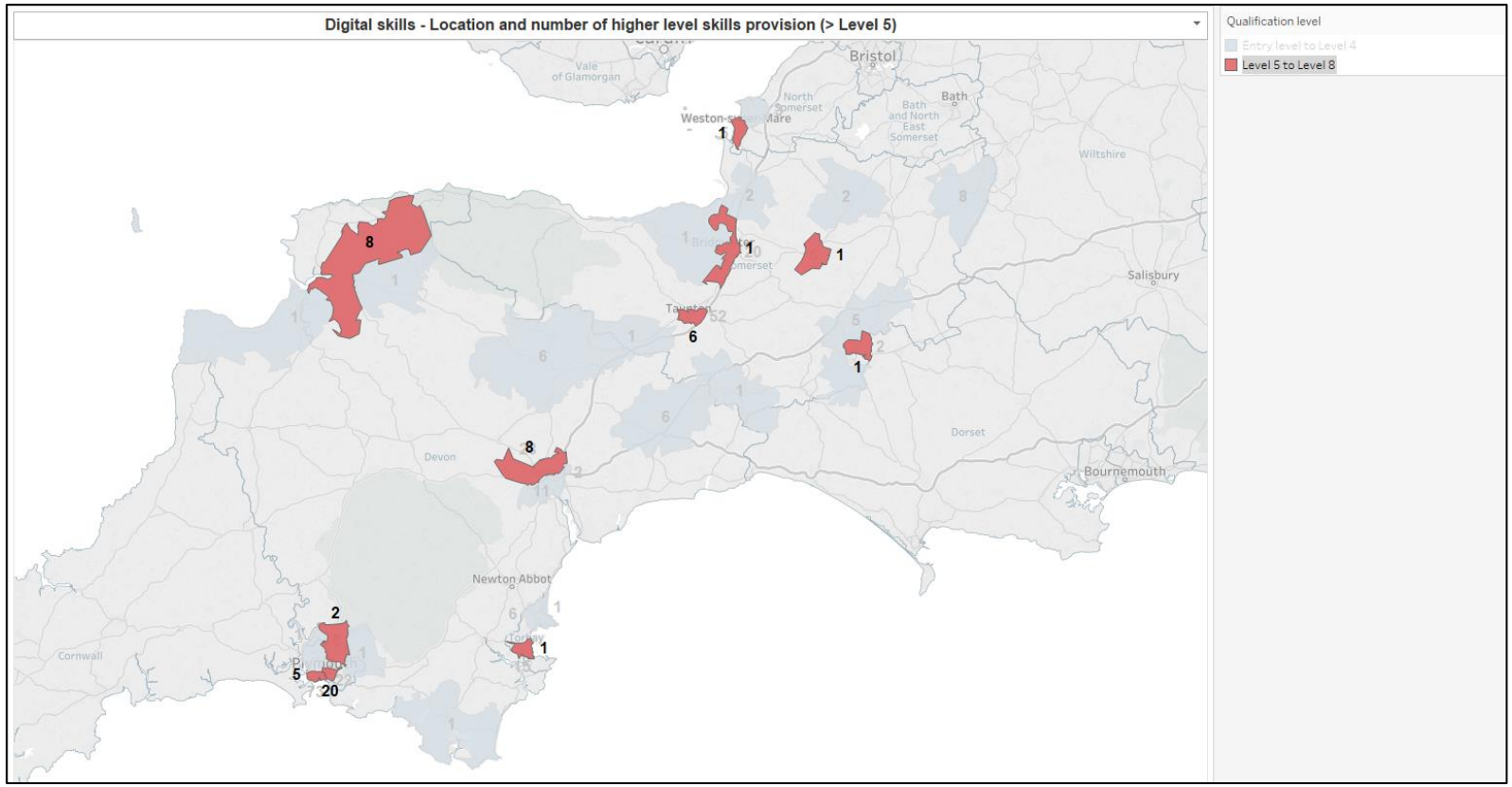


(N=302)

5.19 Higher level (>5) multi-application digital courses

Higher level digital skills provision is specifically clustered within the west of the LEP area, with the University of Plymouth accounting for the highest number of higher level courses. Other clusters of provision can be found in the North Devon, Exeter and Taunton areas. What is highlighted from the mapping of higher level provision is the lack of availability within rural areas. However, this may be expected given the nature of higher level training, i.e. level 5 and above, and the location of universities and further education colleges that are accredited to deliver courses at this level.

Figure 24: Digital skills training provision – Area and number of higher level (>5) multi-application digital courses



(N=54)

Annex 2: Digital skills training provision by course and provider type

Further analysis of the data collected during the mapping exercise included geographically mapping course type and training provider type across the LEP area. Detailed maps can be found in Annex 1. The following section provides an analysis of these maps.

5.20 Digital skills training provision by training provider type

Digital skills training providers were broken down into the following sub-sets to provide an overview of the available training provision within the LEP area, these being:

- Other (where a training provider does not fit within a standard classification, e.g. a bespoke industrial accreditation courses)
- Local authorities
- Universities
- VCSE providers
- Private training providers (vocational courses)
- Further education colleges
- Private training providers (online delivery)

As indicated in Figures 30 to 34 in the type of provider and number of courses delivered by each provider type is based on the postcode location of where the training provision is provided, rather than where the training provider is based. By assessing the location of training provider type across the LEP area there are several clear themes to emerge from the data. First, there are very clear clusters of private training providers (both online and vocational courses) delivering training within the Plymouth, Taunton, Tiverton and Bridgwater areas (see Figures 30 and 33 in Annex 4). For example, from all digital training provision available within the Plymouth and Taunton area, 70% and 69% respectively is delivered by private training providers. When compared to north Devon and Torbay, private training providers only account for a small proportion of training provision. In these geographical areas the greatest clusters of provision are provided by further education colleges, with 55% and 87.5% of available training being delivered in Torbay and north Devon respectively.

Secondly, there is a greater diversity of provision within the Exeter area, where 80% of available provision is split relatively equally between private training providers (vocational), local authority training and further education colleges. This is significantly different than other areas within the LEP where training provision is dominated by one type of provider as highlighted earlier.

Thirdly, what is clear from examining the available types of training provision is that the LEP area is well served in, or close to, areas of dense population, with reduced availability in the east of Somerset and north Devon. This may be considered reasonable given the location of training centres or education providers, however it is clear that there is also little online or distance learning provision in these areas and therefore this represents a gap for future development.

New developments: Optix Digital Academy, Exeter

Optix Solutions is a digital marketing and web design company in Exeter. In recent years they have become aware that the number of their clients employing people with digital skills is growing rapidly *and* that there is a significant gap in the skills businesses want and the available talent pool. To address this they are establishing an academy to:

- Provide in depth training in all areas of digital
- Give short tests and exams
- Provide homework (that the student will carry out on your web presence)
- Provide time for reflection and accountability on students homework
- Help students gain Google qualifications

The academy will also give the opportunity for students to network with individuals from other businesses who are doing similar roles. The curriculum is aimed at Marketing Managers, Executives and anyone who wants to improve their tactical digital skills.

5.21 Digital skills training provision by course type

Digital training course types were broken down into the following sub-sets to provide an overview of the range of training provision currently being provided across the LEP area, these being:

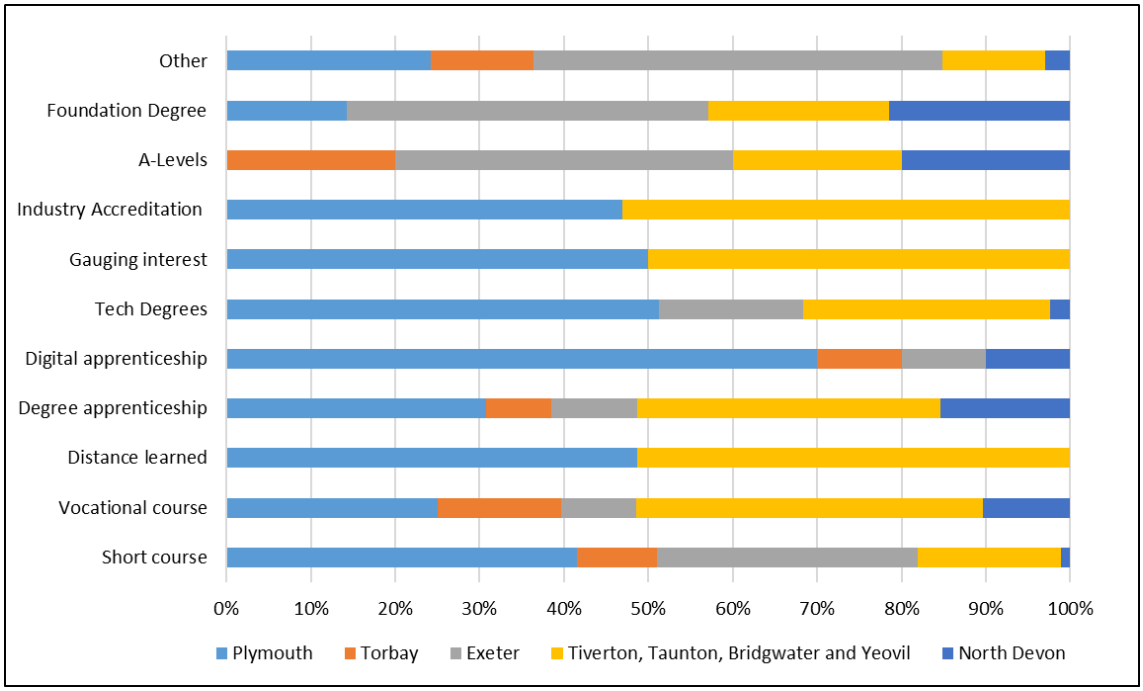
- Short courses
- Vocational courses
- Distance learned courses
- Degree apprenticeships
- Digital apprenticeships
- Tech Degrees
- Gauging interest (i.e. where a training provider has indicated they are assessing the feasibility of providing a course)
- Industry Accreditation courses
- A-Levels
- Foundation Degrees
- Other (where a course type does not fit within any other classification)

As indicated in Figures 36 to 40 in Annex 4, distance learned and short courses represent the greatest proportion of digital training provision within the LEP area, with 54% and 69% respectively of all courses mapped falling into this category. Provision of these course types are also clustered in the Plymouth and Taunton areas, providing a clear correlation with the number of private (vocational and online) training providers located in these areas as discussed in the previous section.

The geographical range of the other course types mapped is then evenly spread across the rest of the LEP region, with no discernible trends of particular course types being prevalent in any one geographical area. However, as can be seen in Figure 25 below, when examining clusters of digital training provision across the LEP area as a whole, it is clear that the main centres are within Plymouth and Taunton, with 39% and

34% respectively of all training provision being delivered in these areas. This is followed by Exeter at 16%, Torbay at 6% and North Devon at 5%.

Figure 25: Course type provision by geography within LEP area

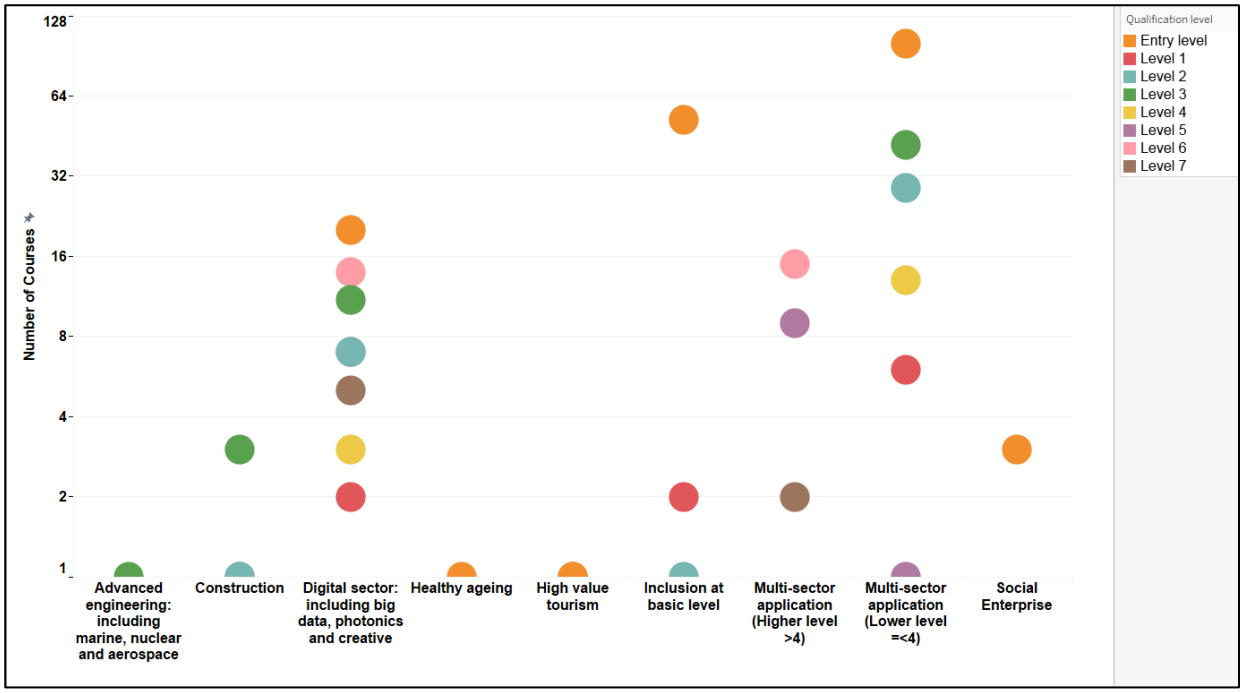


(N=447)

5.22 Digital skills training by skill level and sector focus

Further analysis was undertaken to examine the number of digital training courses available by sector and skill level. As can be seen in figure 26, the highest volume of courses provided in the LEP area are entry level courses, particularly within the digital sector and where training relates to inclusion at a basic level and having a multi-sector application. However it is interesting to note that with the exception of the digital sector, the remaining sectors have low numbers of digital specific training courses at lower levels. This is particularly the case within the advanced engineering and construction sectors. However, as discussed previously, this could be misleading as it is likely that a number of the multi-application courses are also relevant for these sectors.

Figure 26: Number of digital courses by skill level and sector focus



(N=358, null=89)

5.23 Completed digital apprenticeships by geography

As part of the mapping exercise the number of completed digital apprenticeships within the LEP area was also examined to provide some context as to the engagement of employers in digital skills training. Data was sourced from the Education and Skills Funding Agency Data Cube service for the years 2014 to 2017 and geographically mapped to identify clusters of digital apprenticeship training, as can be seen in figures 27 to 29.

The location of the digital apprenticeships was assumed to be the location of the employer where it was achieved, as location data of employers who undertake digital apprenticeships is currently not available. As can be seen from figures 27 to 29 the number of apprenticeships delivered has grown slightly over the three year period, with the number of apprenticeships for ICT practitioners indicating the largest growth from 90 completions in 2014/15 to 128 in 2016/17. Conversely, the number of apprenticeships for ICT users has declined slightly, with 37 completions in 2014/15 to 26 in 2016/17.

There are also clear clusters of apprenticeships being delivered in the Plymouth, Exeter, Taunton/Bridgwater, Torbay and Yeovil areas, which may be expected given the proximity of employers and suitable training providers in these predominantly more urban areas. To examine in further detail the types of digital apprenticeships being undertaken in the LEP area, ICT users and practitioners were broken down into specific digital roles to indicate the types of digital skills being developed (see Table 10):

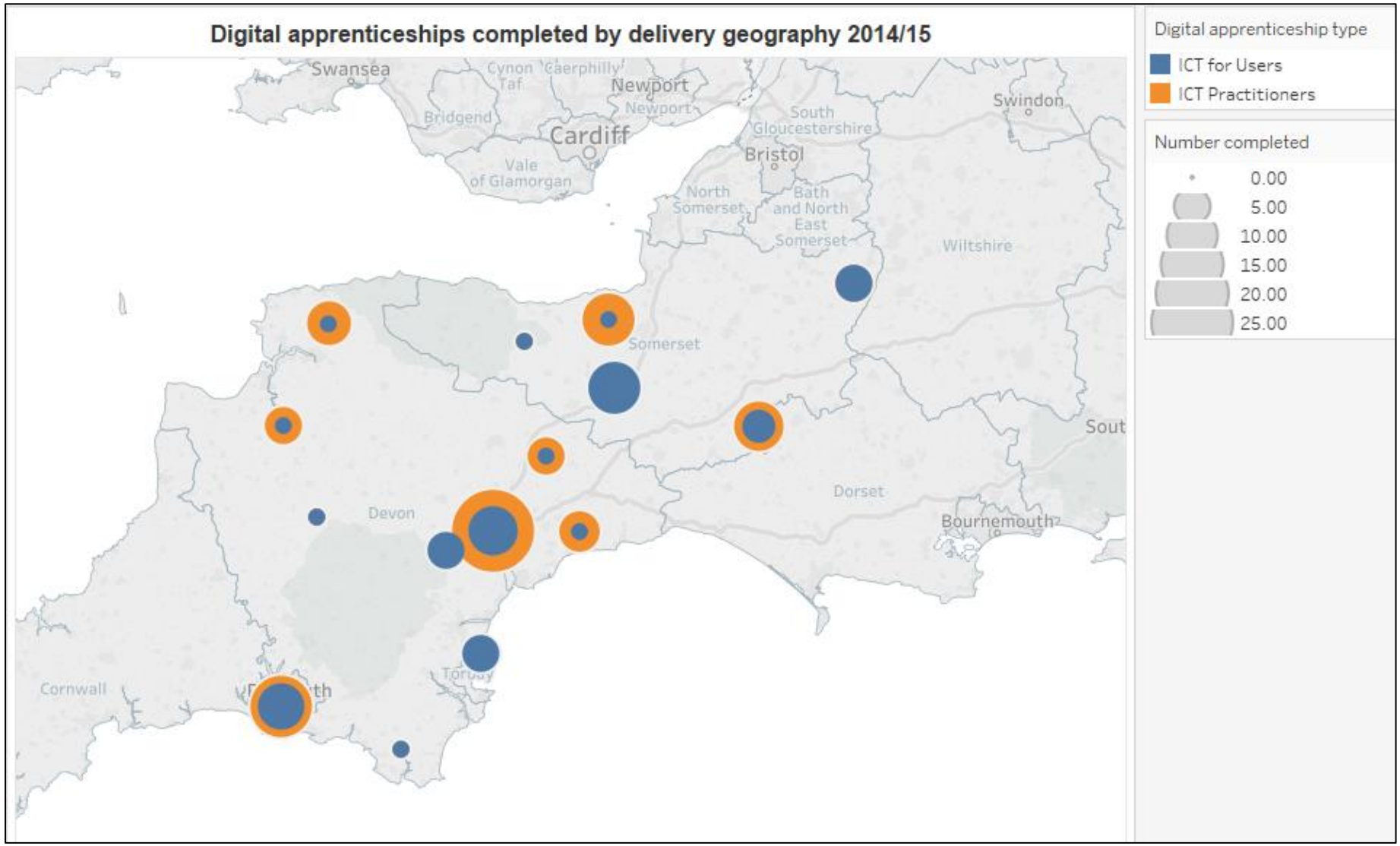
Table 10: Digital apprenticeships by roles 2014/15 to 2016/17

	2014/15		2015/16		2016/17	
	Starts	**Achievements**	**Starts**	**Achievements**	**Starts**	**Achievements**
Information and Communication Technology (Total)	**212**	**127**	**203**	**144**	**257**	**154**
ICT for Users (Total)	**44**	**37**	**42**	**30**	**33**	**26**
IT User	44	37	42	30	30	26
Software Developer					<5	
ICT Practitioners (Total)	**168**	**90**	**161**	**114**	**224**	**128**
Cyber Security Technologist					<5	
Digital and Technology Solutions Professional			<5		8	
Digital Marketer					<5	
Infrastructure Technician					19	
IT and Telecoms Professionals	164	90	158	114	189	128
Network Engineer	<5		<5		5	

(Source: Datacube)

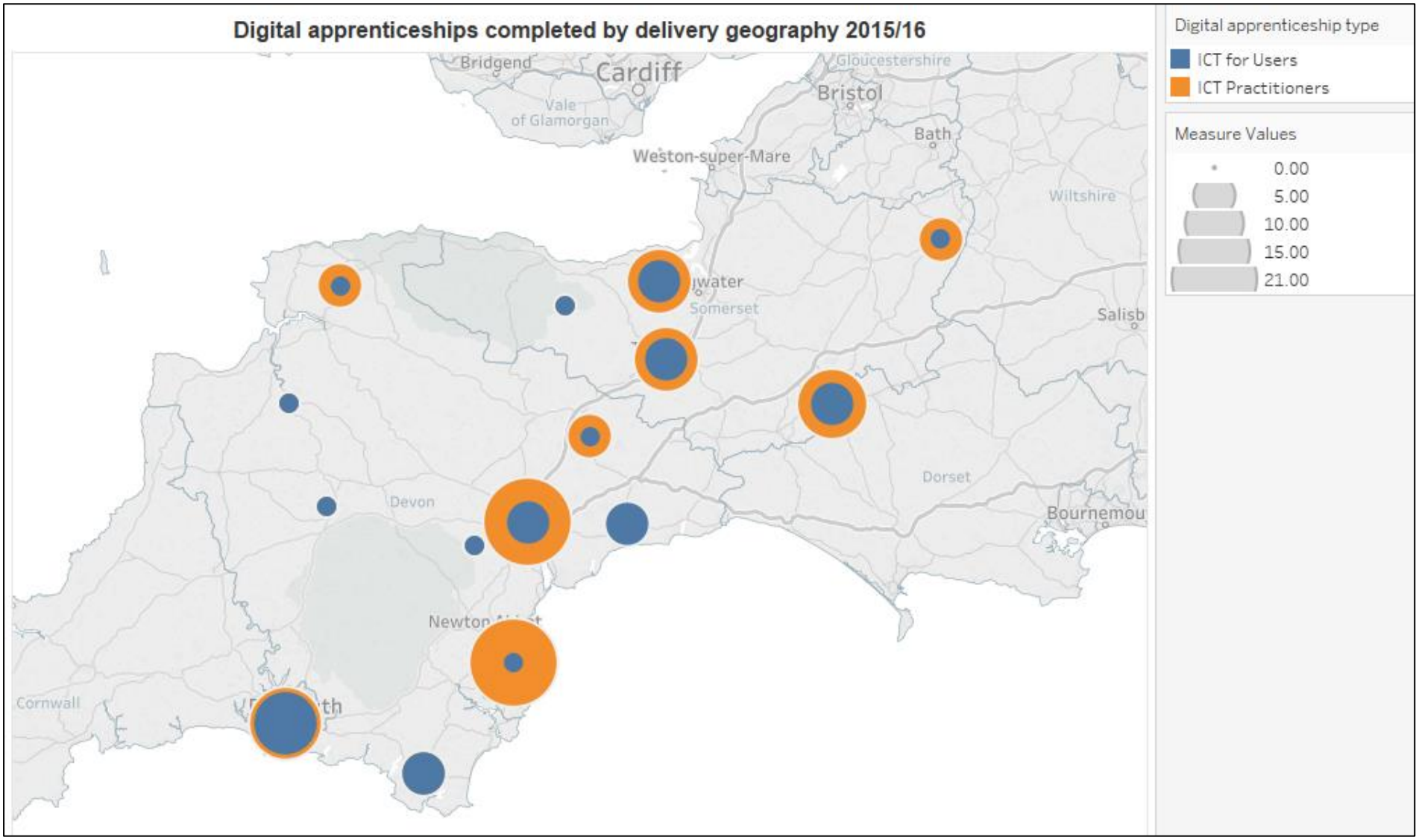
As can be seen in Table 10, the greatest proportion of digital apprenticeships are focussed on IT and Telecoms professionals and IT users, with only a small number of other roles being represented in 2016/17. It is not possible within the confines of this research to determine exactly why this may be the case, but it is reasonable to assume that these numbers reflect both industry demand and the type of businesses that require digital apprentices within the LEP area.

Figure 27: Digital apprenticeships completed by delivery geography 2014/15



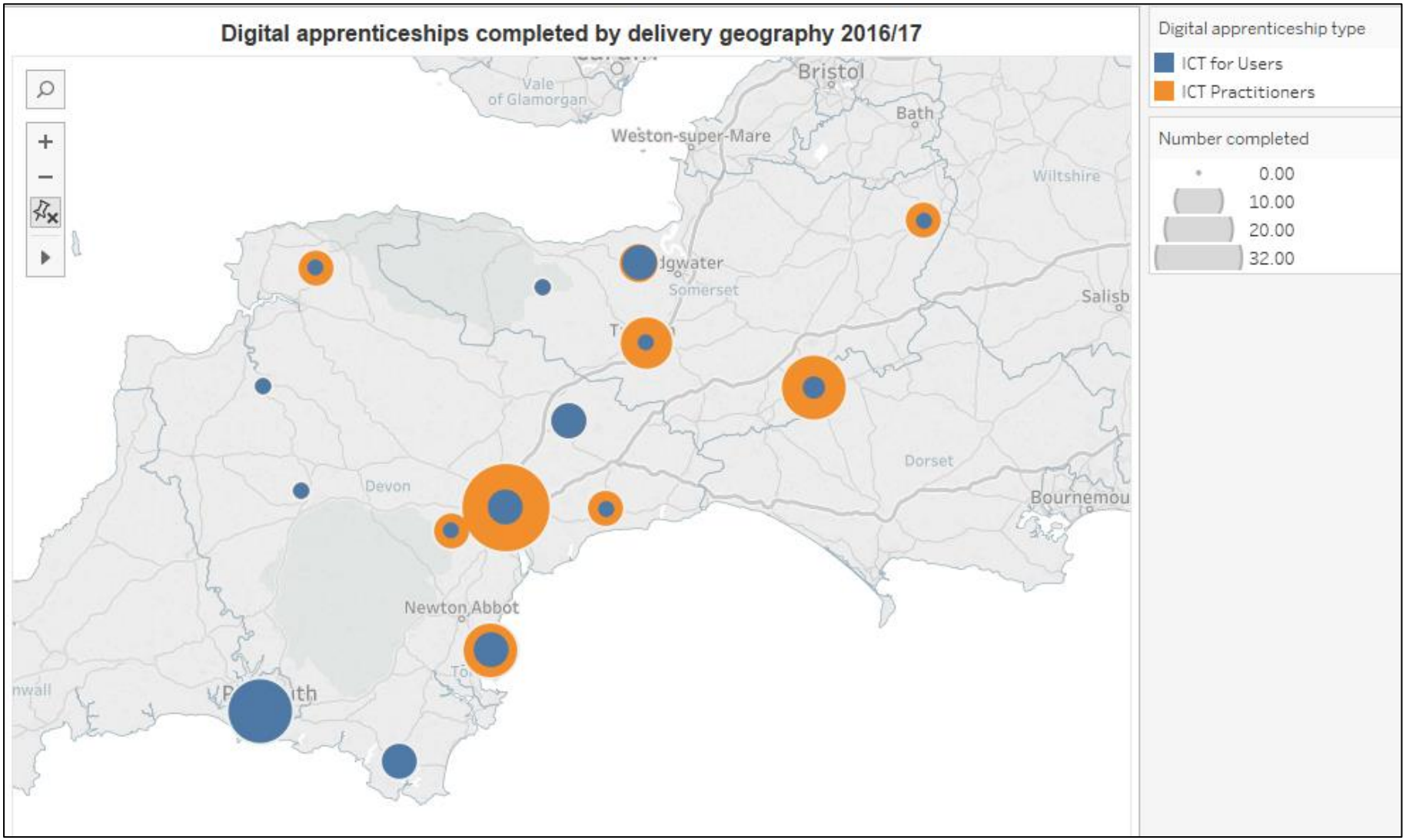
(Source: Datacube) N=127

Figure 28: Digital apprenticeships completed by delivery geography 2015/16



(Source: Datacube) N=144

Figure 29: Digital apprenticeships completed by delivery geography 2016/17



(Source: Datacube) N=154

5.24 Digital apprenticeships case studies

University of Exeter – Four year Digital and Technology Solutions degree apprenticeships

The University of Exeter has delivered Digital and Technology Solutions degree apprenticeships since 2016/17. Degree apprentices' start each term of the syllabus with a "residential week" on the Exeter campus, where they start their new modules, get to know their fellow apprentices and meet their lecturers. The remainder of the term is taught via distance learning at 1 day per week, 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. As per ESFA Guidelines, apprentices are required to spend 20% of their employed time on their studies.

The first two years of the apprenticeship programme focus on core knowledge and skills, while the remaining two years allow for a choice of a primary and secondary specialisms in one of the following 6 subjects:

- Software Engineering
- Data Analysis
- Cyber Security
- IT Consultancy
- Business Consultancy
- Network Engineering

To ensure the apprentices are provided with the best possible support throughout their apprenticeship, all companies are asked to appoint an "employer mentor", which ideally is not the line manager of the apprentice. The employer mentor will regularly 'check-in' with the apprentice, monitoring progress and liaising with the University mentor regarding any issues, questions at the tripartite review sessions.

University of Exeter – Digital and Technology Solutions degree apprenticeship numbers:

Intake year	Cohort numbers
2016/17	13
2017/18	45
2018/19	50+ (to be confirmed)

Further details regarding University of Exeter degree apprenticeships can be found at: http://www.exeter.ac.uk/undergraduate/degrees/computerscience/digital-technology-apprenticeship/ and a high level syllabus of the Digital and Technology Solutions degree apprenticeship can be found in Annex 4.

University of Plymouth – Four year Degree Apprenticeship: BSc (Hons) Digital and Technology Solutions

The Digital and Technology Solutions degree apprenticeship offered by the University of Plymouth has been specifically designed by employers working in close collaboration with the University. The course provides a uniquely flexible alternative to traditional university study and has been devised to provide a highly practical programme of modules that balance core knowledge, specialist skills and work-based learning which is totally applicable to the needs of industry.

For the first three years, study is based at one of the University of Plymouth four regional partner colleges: Bridgwater & Taunton College, Petroc (Barnstaple), South Devon College or City College Plymouth. Apprentices will spend one day per week attending classes, often on the same day each week to help manage workloads. The final year is delivered at the University of Plymouth. The number of taught hours is lower in the final year to allow work on a final year project.

The degree apprenticeship requires the completion of a set of core modules in addition to one of four specialist elective modules that will equip apprentices with precise skills needed to excel in some of the most in-demand careers in the UK. An overview of core and specialist elective modules are provided below:

Core modules	
Introduction to Object-Oriented Programming	Business Organisation
Databases: Analysis, Design and Development	Secure Systems Architectures and Mechanisms
Fundamentals of Computer Networking	Work-Based Learning: Operational IT
Work-Based Learning: IT in the Business	Project Management
Analysis and Design	Work-based Learning: Synoptic Project
Work-based Learning: Integrated Project	

Specialist elective modules
Cyber Security Analyst
IT Consultant
Network Engineer
Software Engineer

Employers are expected to support apprenticeship study by providing company based workplace tutors, and facilitating meetings and assessments with academic tutors. They may also allow the allocation of usual work time to study, which can be discussed with the employer and University Account Manager before the apprenticeship begins.

Twenty one Digital and Technology Solutions apprenticeships are currently actively enrolled from 2018/18 and a further two apprenticeships are registered to start from January 2019.

Further details regarding University of Plymouth degree apprenticeships can be found at: https://www.plymouth.ac.uk/study/apprenticeships/digital-technology

Annex 3: Characteristics of Employer Survey respondents

Table 11: Sectoral distribution of respondents

	Nos	%
Agriculture, forestry & fishing	2	2
Mining, quarrying & utilities	3	4
Manufacturing	3	4
Construction	4	5
Motor trades	0	0
Wholesale and retail	2	2
Transport & storage	1	1
Accommodation & food services (inc. tourism)	3	4
Information & communication	11	13
Financial & insurance	3	4
Professional, scientific & technical	14	16
Business administration & support services	6	7
Public administration & defence	3	4
Education	4	5
Health and social work	6	7
Arts, entertainment, recreation	5	6
Other services	13	15
Not answered	2	2
Total	85	100

Table 12: Location of respondents

	Nos	**%**
Devon	45	53
Plymouth	5	6
Somerset	28	33
Torbay	4	5
Not given		4
Total	85	100

Table 13: Size of respondents (nos. of employees)

	Nos	**%**
1	12	14
2 to 9	39	46
10 to 24	9	11
25-49	10	12
50-99	0	0
100-249	3	4
250+	10	12
Not stated	2	2
Total	**85**	**100**

Annex 4: Qualification type against skill level and digital skills mapping sources

Table 14: Qualification type mapped against skill level

<table>
<tr><th colspan="8">Qualification type mapped against skill level</th></tr>
<tr><th>Entry level award</th><th>Level 1</th><th>Level 2</th><th>Level 3</th><th>Level 4</th><th>Level 5</th><th>Level 6</th><th>Level 7</th><th>Level 8</th></tr>
<tr><td rowspan="2">Entry level certificate (ELC)</td><td>First certificate</td><td>CSE - grade 1</td><td>A level</td><td rowspan="2">Certificate of higher education (CertHE)</td><td rowspan="2">Diploma of higher education (DipHE)</td><td>Degree apprenticeship</td><td>Integrated master's degree, e.g. (MEng)</td><td rowspan="3">Doctorate, e.g. (PhD or DPhil)</td></tr>
<tr><td>GCSE - grades 3, 2, 1 or grades D, E, F, G</td><td>GCSE - grades 9, 8, 7, 6, 5, 4 or grades A*, A, B, C</td><td>Access to higher education diploma</td><td>Degree with honours - e.g. (BA) Hons, (BSc) Hons</td><td>Level 7 award</td></tr>
<tr><td rowspan="2">Entry level diploma</td><td>Level 1 award</td><td>Intermediate apprenticeship</td><td>Advanced apprenticeship</td><td rowspan="2">Higher apprenticeship</td><td rowspan="2">Foundation degree</td><td>Graduate certificate</td><td>Level 7 certificate</td></tr>
<tr><td>Level 1 certificate</td><td>Level 2 award</td><td>Applied general</td><td>Graduate diploma</td><td>Level 7 diploma</td></tr>
<tr><td rowspan="2">Entry level English for speakers of other languages (ESOL)</td><td>level 1 diploma</td><td>Level 2 certificate</td><td>AS level</td><td rowspan="2">Higher national certificate (HNC)</td><td rowspan="2">Higher national diploma (HND)</td><td rowspan="2">Level 6 award</td><td>Level 7 NVQ</td><td rowspan="5">Level 8 award</td></tr>
<tr><td rowspan="2">Level 1 ESOL</td><td>Level 2 diploma</td><td>International Baccalaureate diploma</td><td rowspan="3">Master's degree, e.g. (MA), (MSc)</td></tr>
<tr><td>Entry level essential skills</td><td rowspan="2">Level 2 ESOL</td><td>Level 3 award</td><td>Level 4 award</td><td>Level 5 award</td><td>Level 6 certificate</td></tr>
<tr><td rowspan="2">Level 1 essential skills</td><td>Level 3 certificate</td><td rowspan="2">Level 4 certificate</td><td rowspan="2">Level 5 certificate</td><td rowspan="2">Level 6 diploma</td><td rowspan="2">Postgraduate certificate</td></tr>
<tr><td rowspan="3">Entry level functional skills</td><td>Level 2 essential skills</td><td>Level 3 diploma</td><td rowspan="3">Level 8 certificate</td></tr>
<tr><td>Level 1 functional skills</td><td>Level 2 functional skills</td><td>Level 3 ESOL</td><td rowspan="2">Level 4 diploma</td><td rowspan="2">Level 5 diploma</td><td rowspan="2">Level 6 NVQ</td></tr>
<tr><td rowspan="3">Level 1 national vocational qualification (NVQ)</td><td>Level 2 national certificate</td><td>Level 3 national certificate</td><td rowspan="3">Postgraduate certificate in education (PGCE)</td></tr>
<tr><td rowspan="3">Skills for Life</td><td>Level 2 national diploma</td><td>Level 3 national diploma</td><td rowspan="3">Level 4 NVQ</td><td rowspan="3">Level 5 NVQ</td><td rowspan="3">Ordinary degree without honours</td><td rowspan="3">Level 8 diploma</td></tr>
<tr><td rowspan="2">Level 2 NVQ</td><td>Level 3 NVQ</td><td rowspan="2">Postgraduate diploma</td></tr>
<tr><td>Tech level</td></tr>
</table>

Source: https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels

Table 15: List of digital skills mapping sources

Source name	Date accessed	Weblink
University Centre Somerset (Somerset College of Arts and Technology)	27/04/2018	http://www.somerset.ac.uk/courses/
Bath College	27/04/2018	https://www.bathcollege.ac.uk/
Bridgewater & Taunton College	27/04/2018	http://www.bridgwater.ac.uk/
Strode College	30/04/2018	https://www.strode-college.ac.uk/
Weston college	30/04/2018	https://www.weston.ac.uk/what-can-i-study
Yeovil College	30/04/2018	http://www.yeovil.ac.uk/
Yeovil College University Centre	01/05/2018	http://www.ycuc.ac.uk/
University Centre Weston	01/05/2018	http://www.ucw.ac.uk/
Richard Huish College	01/05/2018	http://www.huish.ac.uk/he-adult-courses
Farleigh FE	01/05/2018	https://www.priorychildrensservices.co.uk/find-a-location/farleigh-further-education-college-frome/
COSMIC	01/05/2018	https://www.cosmic.org.uk/
Somerset Web Services	01/05/2018	https://www.somersetwebservices.co.uk/digital-marketing-training-courses/
Crisp Professional Development	04/05/2018	https://www.crisp-cpd.com/
Devon and Cornwall Business Council	04/05/2018	https://www.dcbc.co.uk/
South West Cyber Security Cluster	04/05/2018	https://southwestcsc.org/
Somerset County Council	04/05/2018	http://www.somerset.gov.uk/libraries-and-heritage/libraries-facilities/computer-courses-in-somerset-libraries/
Sen5e IT	04/05/2018	https://www.sensetraining.co.uk/
SJM Training	04/05/2018	http://www.sjmtraining.co.uk/
University of Exeter	08/05/2018	http://www.exeter.ac.uk/undergraduate/degrees/computerscience/comsci/
Exeter Phoenix	08/05/2018	https://www.exeterphoenix.org.uk/training/
Devon Communities Together	09/05/2018	https://www.devoncommunities.org.uk/Pages/Events/Category/business-skills
Ignite Academy & Training	09/05/2018	https://www.ignite.ac.uk/
South Devon College	09/05/2018	https://www.southdevon.ac.uk/course?course_category=computing
Exeter College	10/05/2018	https://www.exe-coll.ac.uk/
Petroc College	10/05/2018	https://www.petroc.ac.uk/
University of Plymouth	11/05/2018	https://www.plymouth.ac.uk/subjects/computing-mathematics-statistics
City College Plymouth	14/05/2018	https://www.cityplym.ac.uk/

University of St Mark & St John/MARJON University	14/05/2018	https://www.marjon.ac.uk/
Plymouth Community Homes	14/05/2018	https://www.plymouthcommunityhomes.co.uk/our-community/events/
We are into digital	15/05/2018	http://www.weareintodigitalhealth.com/
ETS Group	16/05/2018	http://www.etsgroup.co.uk/our-courses/cpd-courses
SERCO	16/05/2018	https://www.serco-ese.com/skills-support-for-the-workforce/regions/heart-of-the-south-west
Scroll UK	16/05/2018	https://www.scroll.co.uk/digital-content-training/
Exeter City Futures	16/05/2018	https://www.exetercityfutures.com/news/applications-open-e-disc-data-analytics-apprenticeship-exeter-city-futures/
We Are Digital	16/05/2018	https://www.we-are-digital.co.uk/training-courses
AGE UK-Devon	16/05/2018	https://www.ageuk.org.uk/devon/activities-and-events/south-hams/
Somerset Skills & Learning	16/05/2018	https://sslcourses.co.uk/courses/courses?keyword=ecdl
Pitman Training	17/05/2018	https://www.pitman-training.com/our-courses/aplus-series-2016/
Devon County Council	21/05/2018	https://new.devon.gov.uk/schcomms/sc/062015-2692/
Pinpoint Community Services in Devon	22/05/2018	https://services.pinpointdevon.co.uk/kb5/devon/services/results.page?ageranges=7&communitychannel=8_10
Aidis Trust	22/05/2018	http://www.everyonecan.org.uk/
The Allice Cross Centre	22/05/2018	http://thealicecross.co.uk/activities
Jobcentre Plus- Somerset Choices	24/05/2018	https://www.somersetchoices.org.uk/adult/information-and-advice/education-and-training/jobcentre-plus/
National Career Services	24/05/2018	https://nationalcareersservice.direct.gov.uk/course-directory/course-details?courseid=54162588
Farleigh FE	24/05/2018	https://nationalcareersservice.direct.gov.uk/course-directory/course-details?courseid=54811029
Learndirect	04/06/2018	http://www.learndirect.com/maths-english-it/it
CMT	05/06/2018	http://www.cmtservices.co.uk/training/skills-for-work/
On course South West	06/06/2018	http://www.oncoursesouthwest.co.uk/
learndevon	06/06/2018	https://www.learndevon.co.uk/all-courses/
PLUSS	06/06/2018	http://www.pluss.org.uk/services/learning-disability-services-training
Eat that Frog	06/06/2018	http://www.eatthatfrog.ac.uk/community-training-recruitment/educational-courses-devon/index.html
Paignton Sec	06/06/2018	http://www.paigntonsec.com/itq.html

Outset: The business start-up experts	06/06/2018	https://www.outset.org/start-up-and-grow/events/
Torbay Community Development Trust	06/06/2018	https://www.torbaycdt.org.uk/whats-on/
A-plus Training	07/06/2018	http://www.aplustraining.co.uk/learners/16-18/course/qcfs-office-skills/
Shekinah Mission-Plymouth	07/06/2018	https://www.shekinah.co.uk/about-us/resolve-training/

Annex 5: Digital skills training provision by training provider type and digital skills training provision by course type

Figure 30: Digital skills training providers – Location heat map by provider type and number of courses: Plymouth

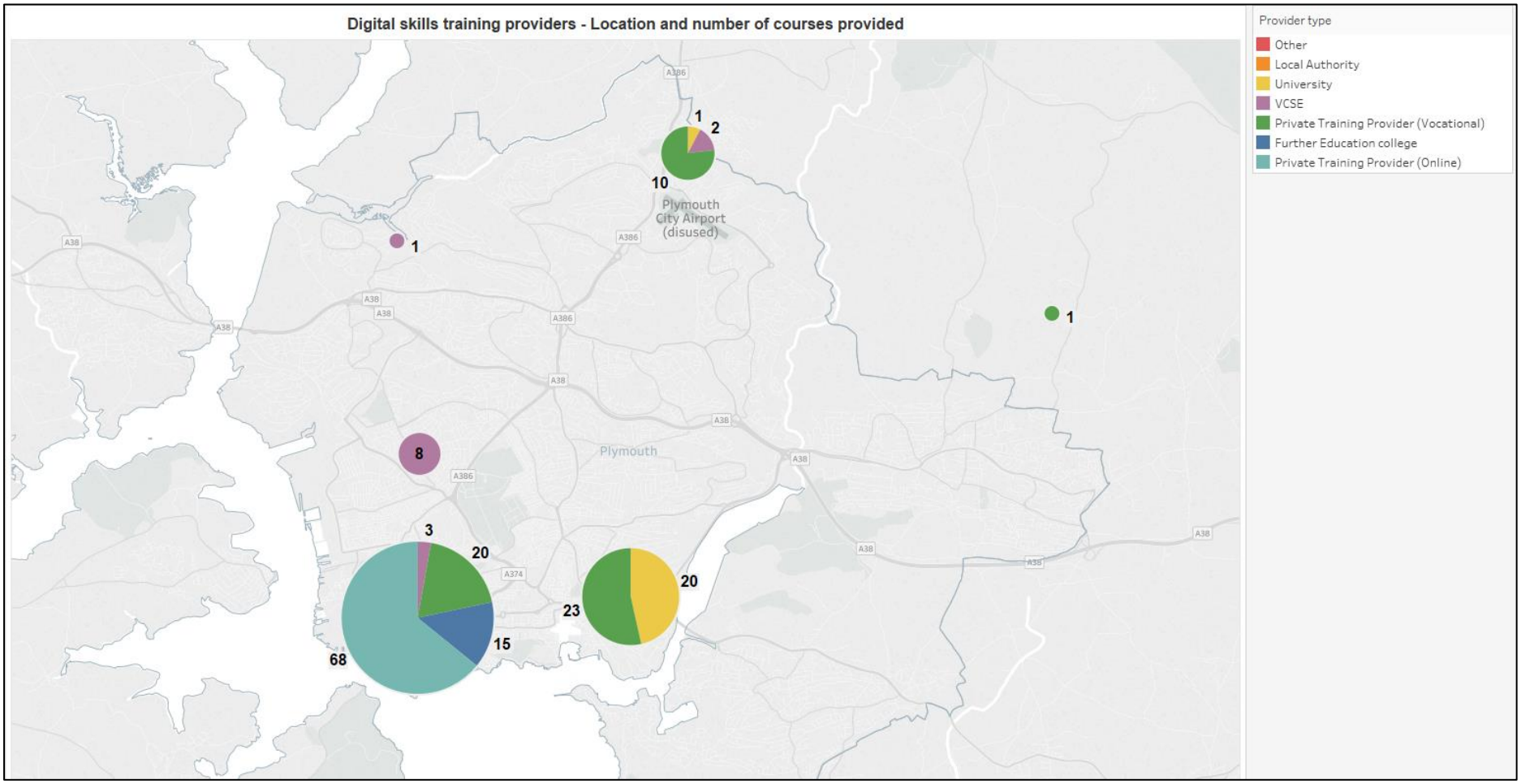


Figure 31: Digital skills training providers – Location heat map by provider type and number of courses: Torbay

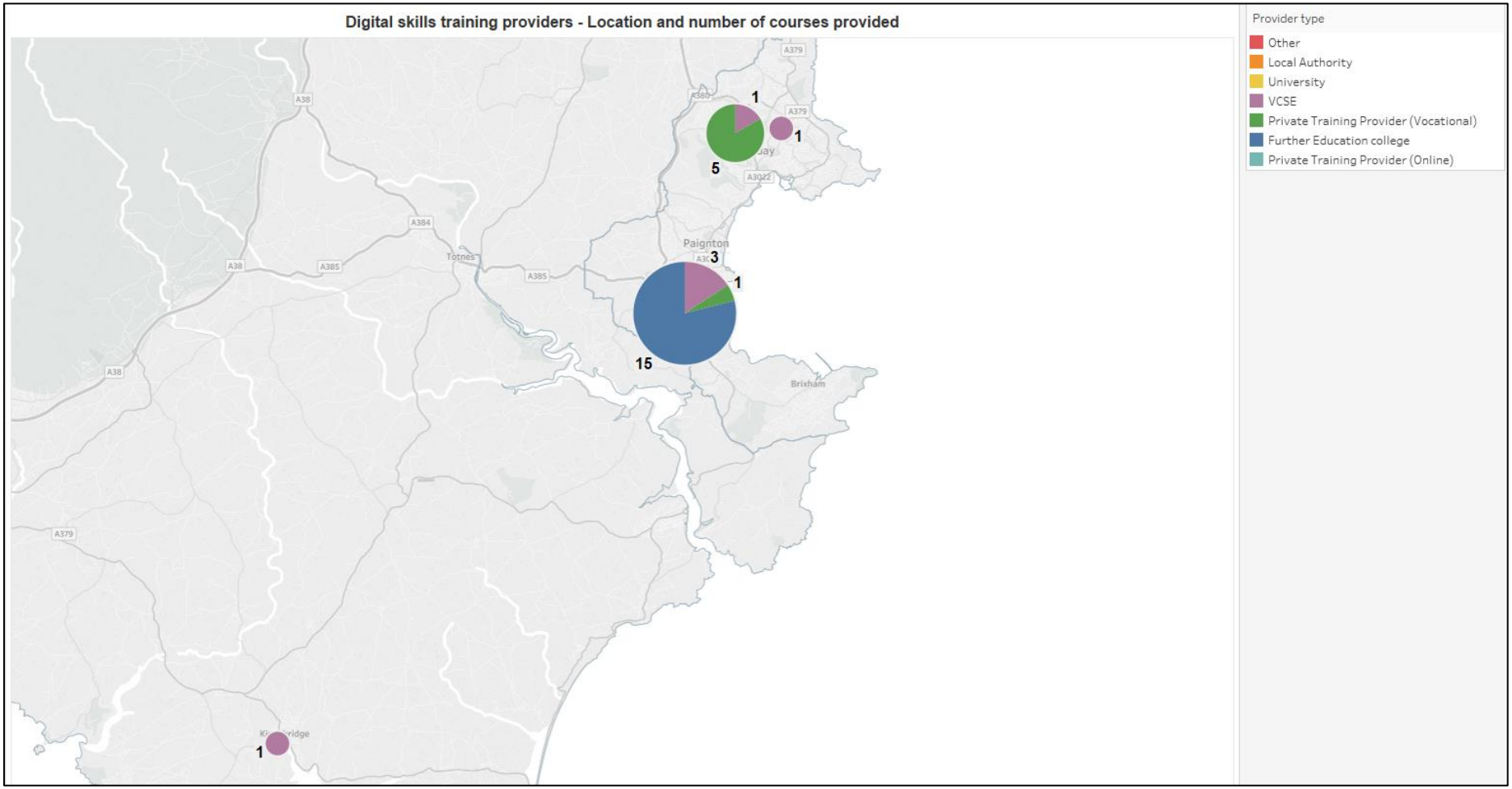


Figure 32: Digital skills training providers – Location heat map by provider type and number of courses: Exeter

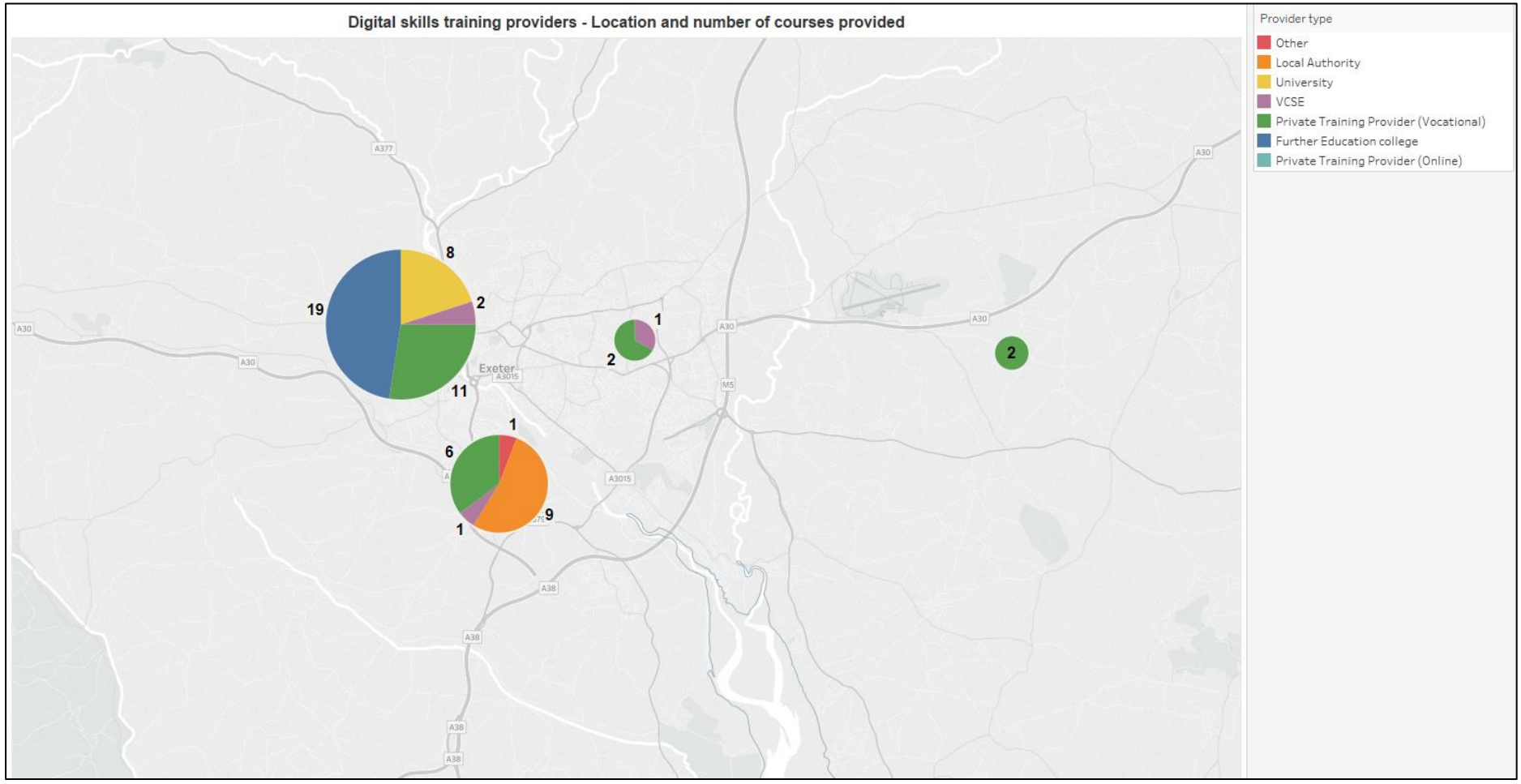


Figure 33: Digital skills training providers – Location heat map by provider type and number of courses: Tiverton, Taunton, Bridgwater and Yeovil

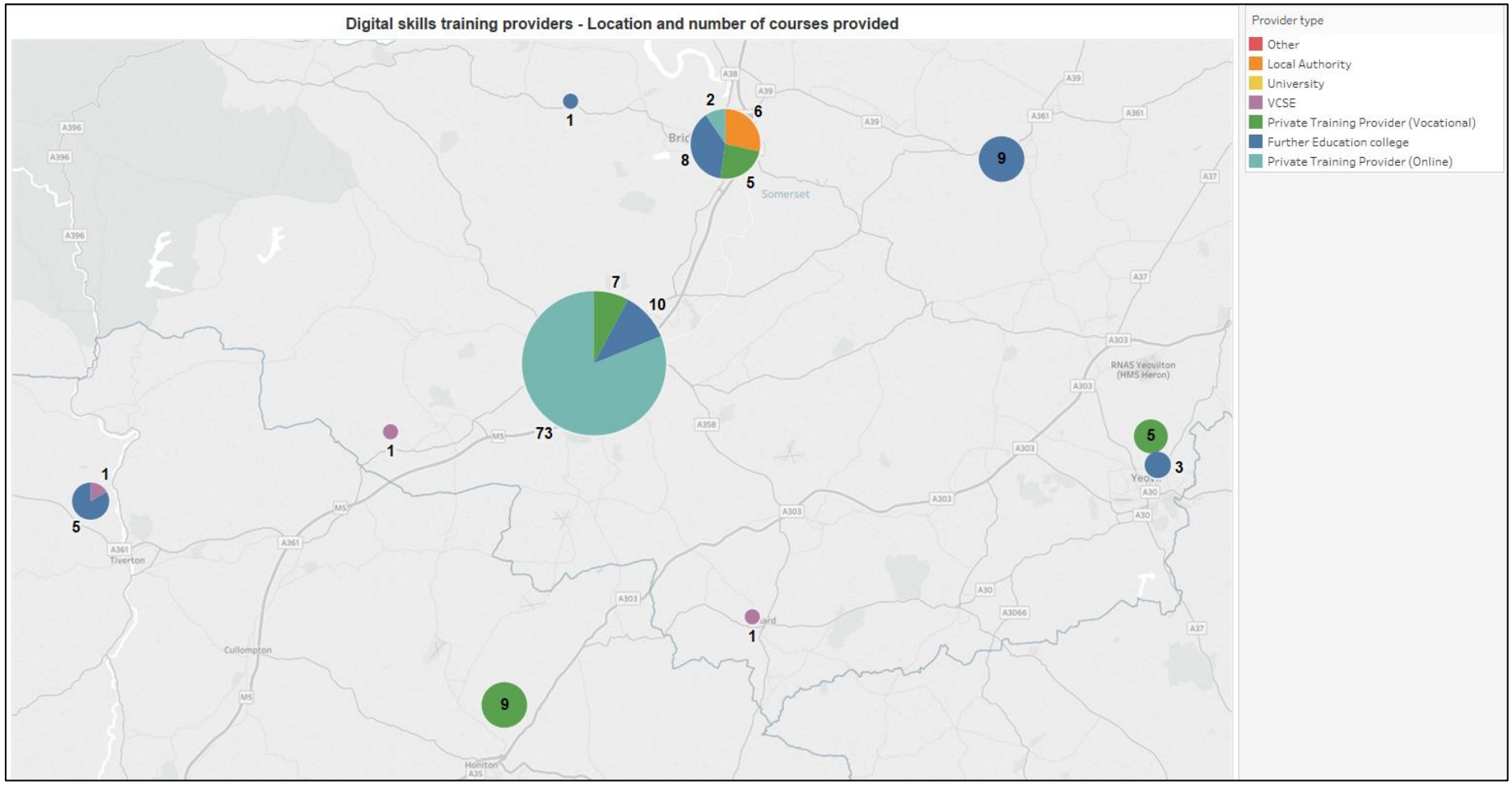


Figure 34: Digital skills training providers – Location heat map by provider type and number of courses: North Devon

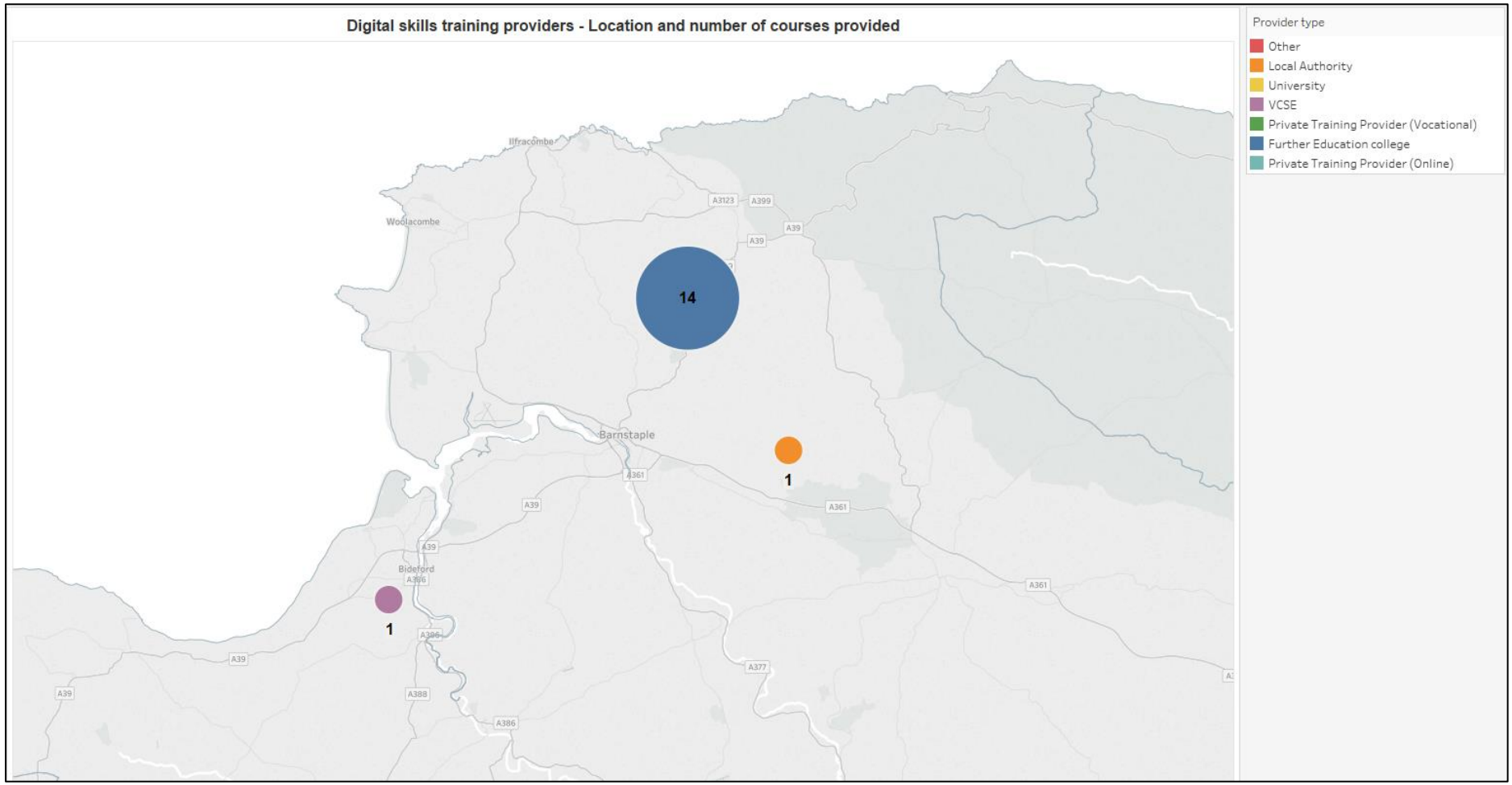


Figure 35: Digital skills training – Location heat map by course type and number of courses: Plymouth

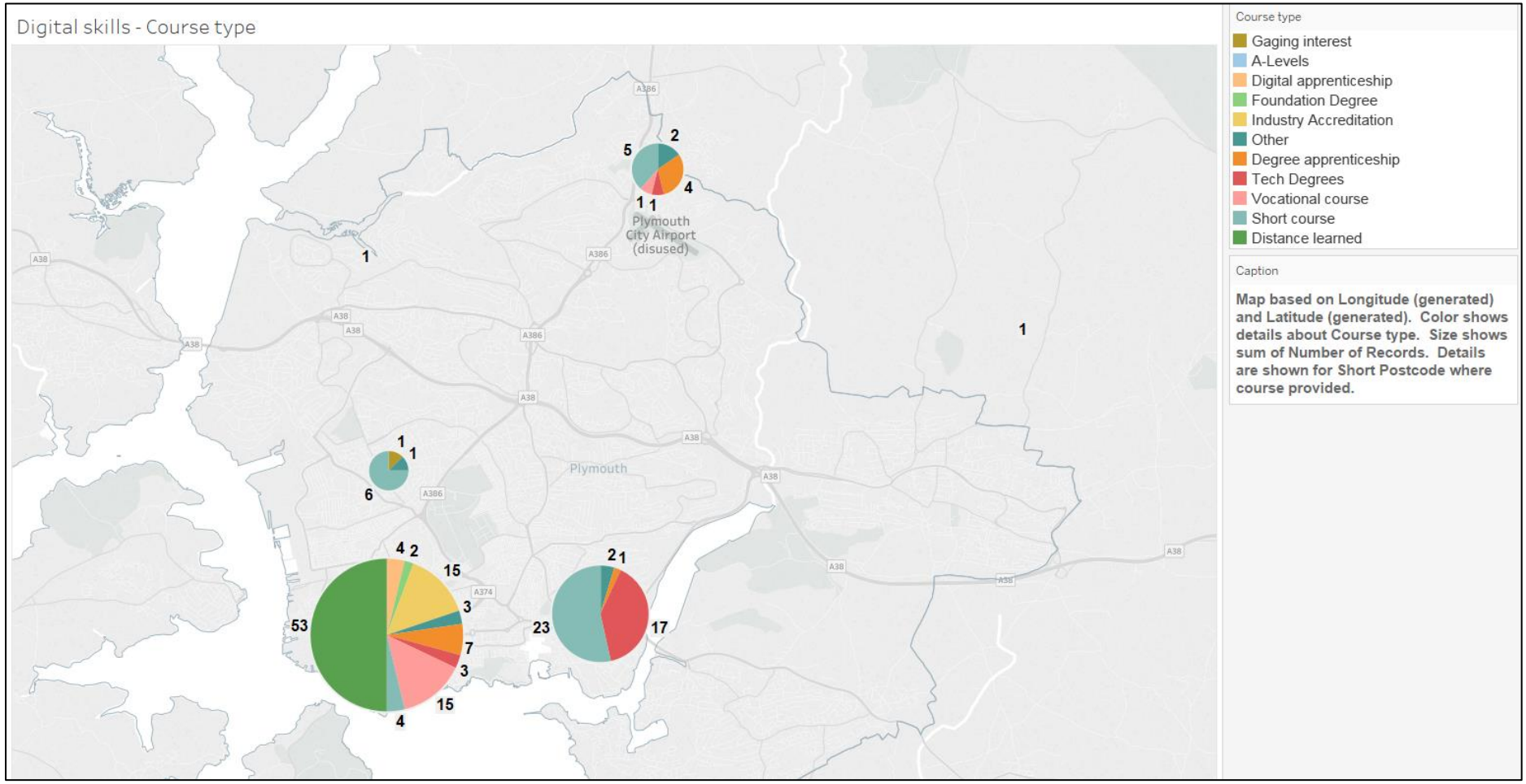


Figure 36: Digital skills training – Location heat map by course type and number of courses: Torbay

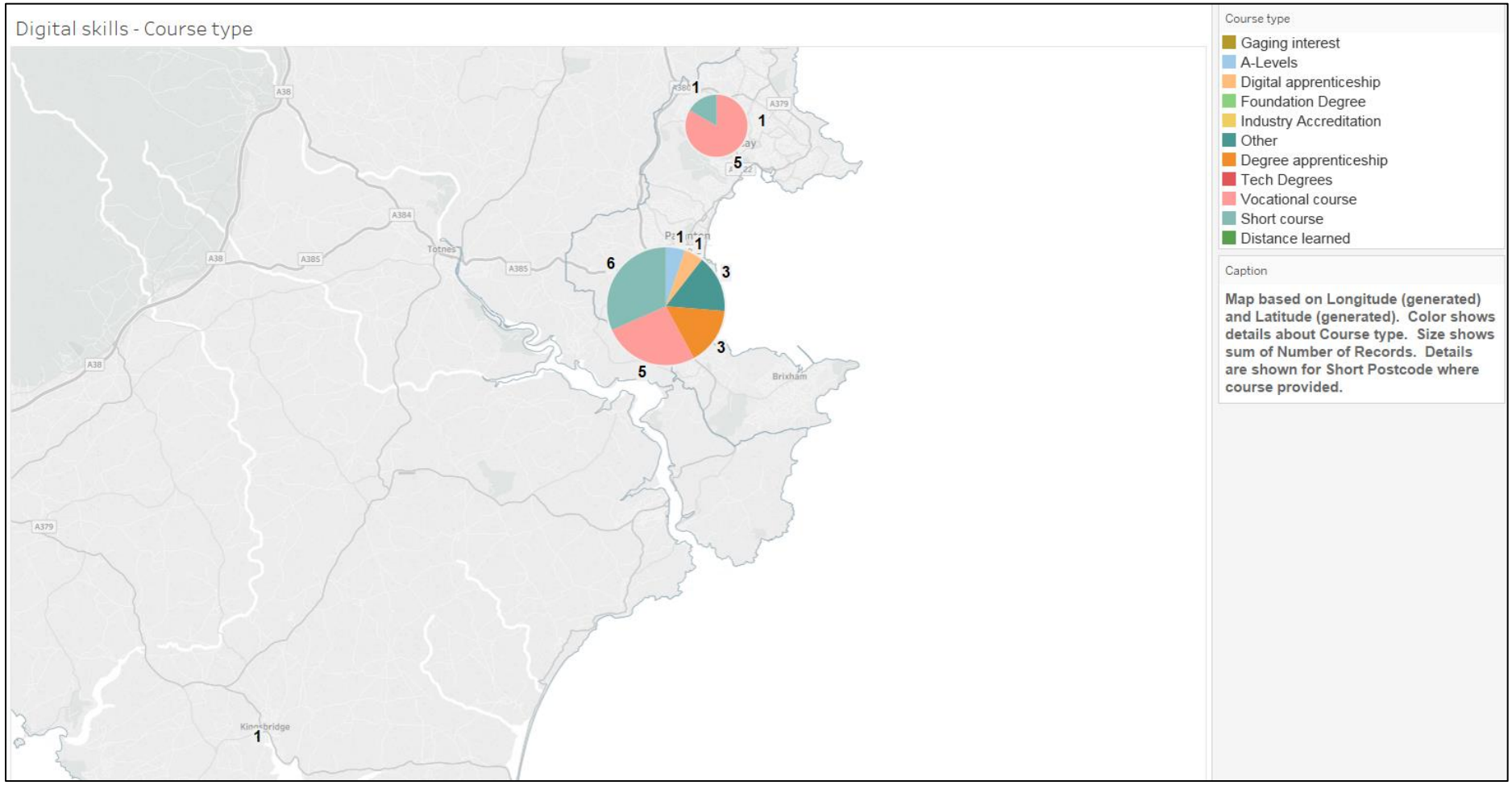


Figure 37: Digital skills training – Location heat map by course type and number of courses: Exeter

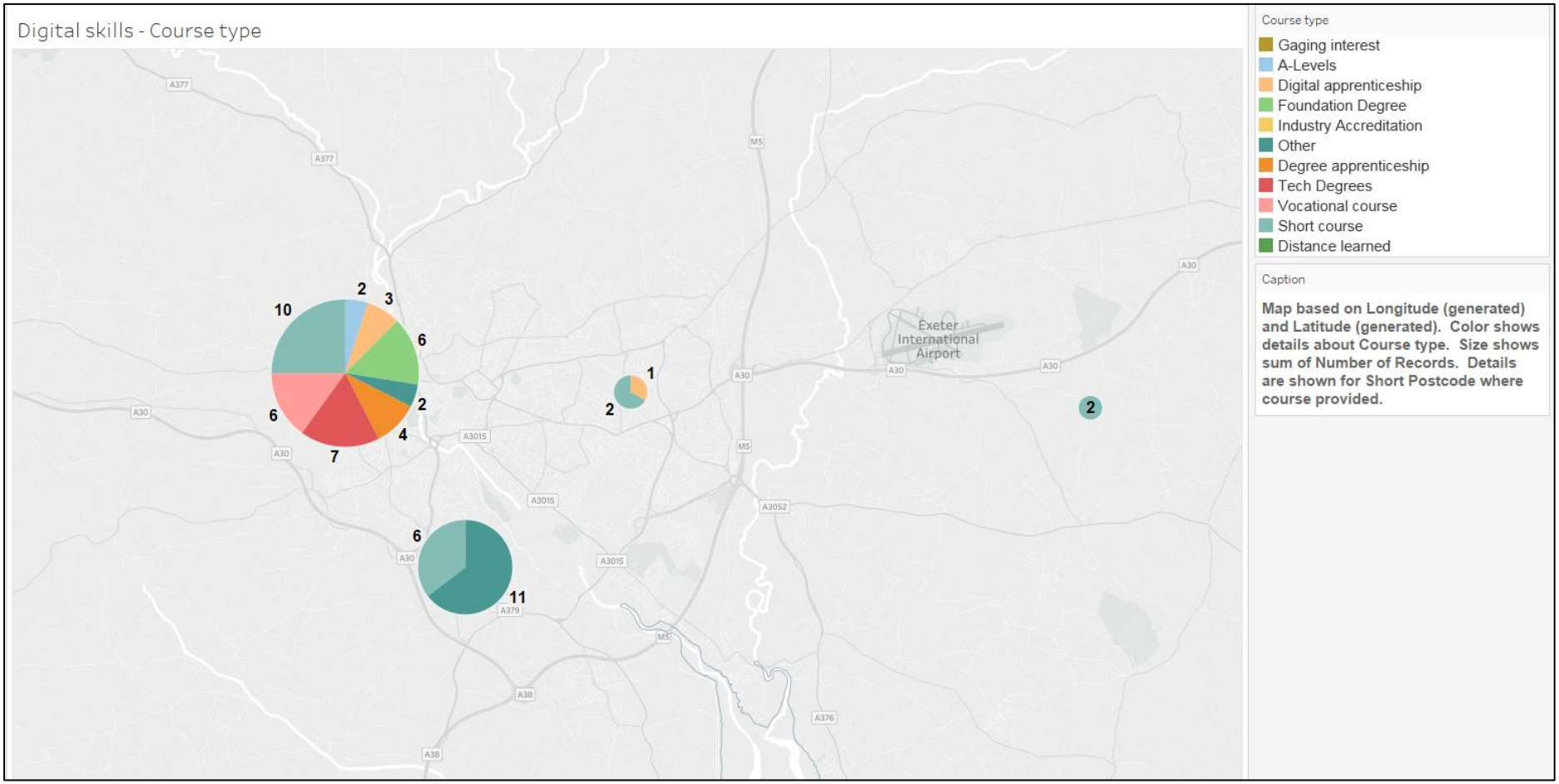


Figure 38: Digital skills training – Location heat map by course type and number of courses: Tiverton, Taunton, Bridgwater and Yeovil

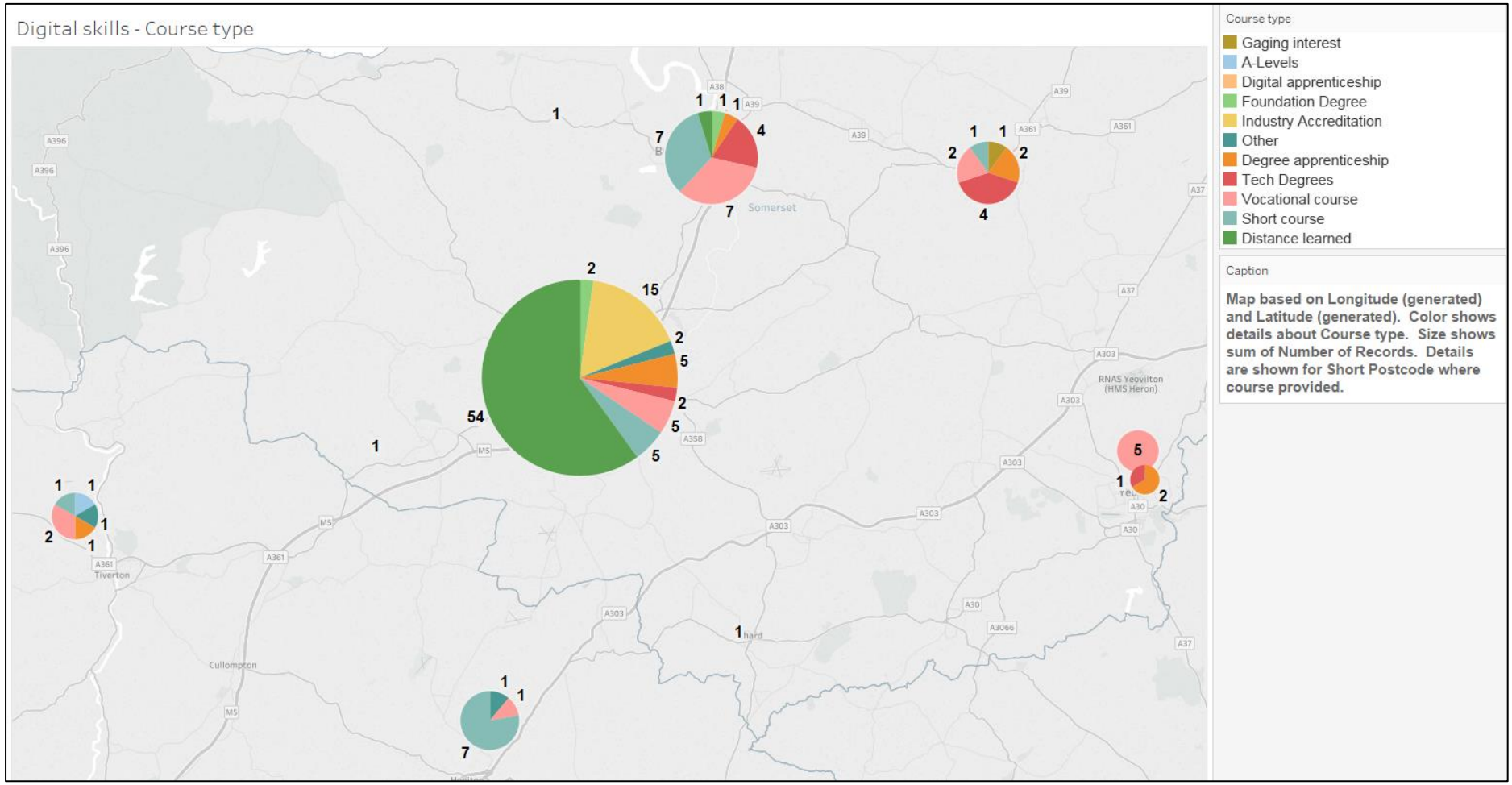
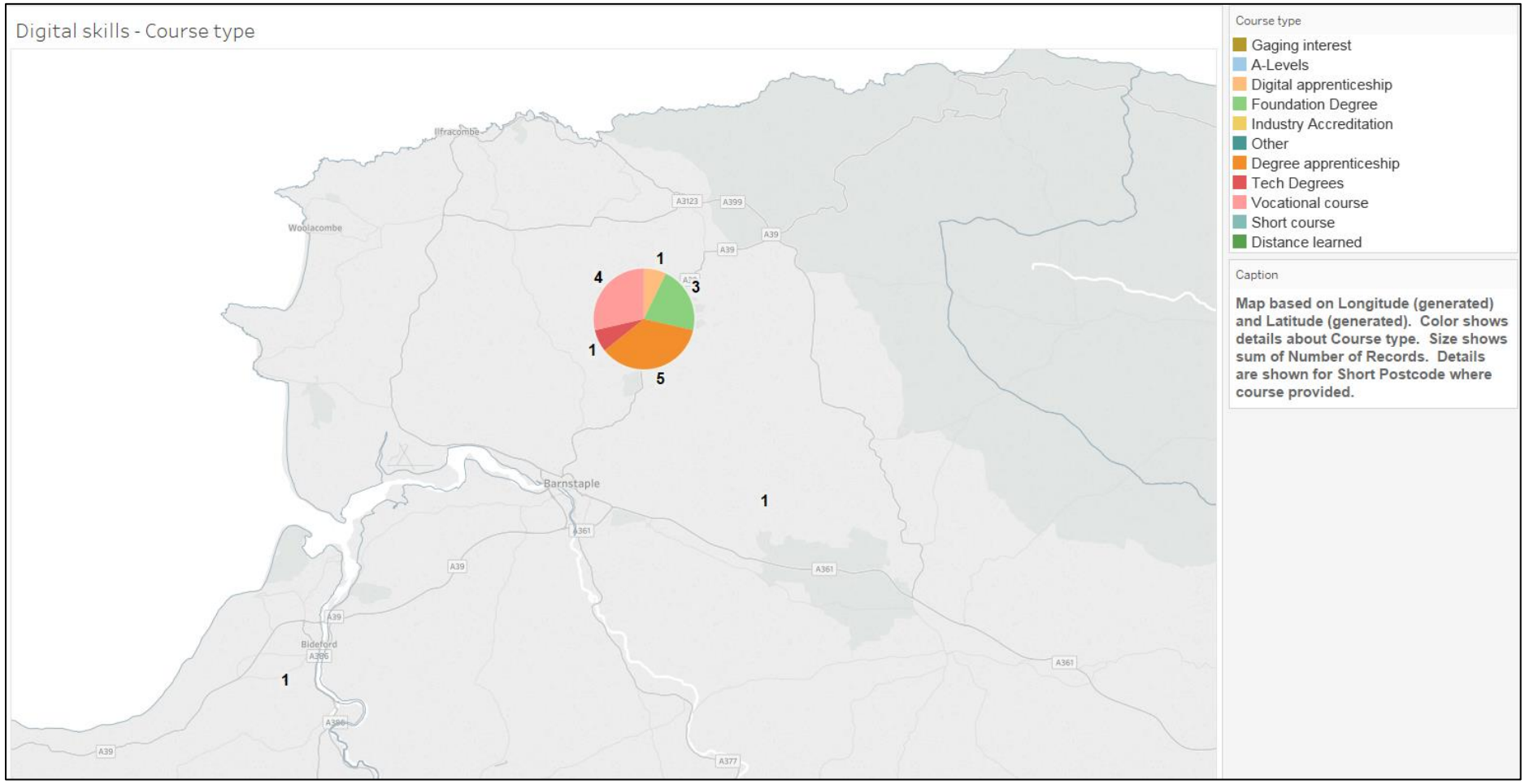


Figure 39: Digital skills training – Location heat map by course type and number of courses: North Devon



Annex 6: University of Exeter – Digital and Technology Solutions degree apprenticeships high level syllabus

UNIVERSITY OF EXETER

High-Level Summary:
BSc (Hons) Digital and Technology Solutions Degree Apprenticeship

This document should be read in conjunction with the programme flowchart which shows how individual modules fit into the programme as a whole. The syllabus entry for each module will be incorporated into the module's formal descriptor in due course.

YEAR 1

ECM1418 Business Organisation	• Introduction to business and government organisations (3 weeks) • The impact of ICT in business and government organisations (1 week) • IT business analysis (4 weeks) • The IS function (IT department) (2 weeks) • Role of IT management and the CIO/CTO (1 week)
ECM1419 Interpersonal and Foundation Skills	• Communication (2 weeks) • Leadership and collaboration (2 weeks) • Analytical thinking, critical thinking and creativity (2 weeks) • Mathematics (5 weeks)
ECM1420 Information and Data	• Introduction to data and information management (3 weeks) • Conceptual data modelling (3 weeks) • Database design and implementation (2 weeks) • SQL (3 weeks)
ECM1421 Systems Development 1	• Basic programming concepts and techniques (6 weeks) • More advanced concepts and techniques (4 weeks) • Introduction to program design (1 weeks)
ECM1422 Reflective Practice 1	• Introduction to reflective practice (work-based learning)

YEAR 2

ECM1423 Digital Technology Infrastructure	• Computer architecture, components and functions (3 weeks) • Software (3 weeks) • Networks (3 weeks) • Network performance (1 week) • Network planning and design (1 week) • Enterprise technology (1 week)
ECM1424 Information Security	• Introduction (2 weeks) • Threats, hazards and vulnerabilities (3 weeks) • Risk (2 weeks) • Assurance (3 weeks) • Management implications (2 weeks)
ECM2428 IT Project management	• Introduction to IT project management (2 weeks) • Initiating projects (1 week) • Project planning (2 weeks) • Project execution (3 weeks) • Closing projects (1 week) • Advanced themes (3 weeks)
ECM2429 Systems Development 2	• Introduction (1 week) • Requirements (2 weeks) • Design (2 weeks) • Programming (5 weeks) • Debugging, testing and error correction (1 week) • Implementation (1 week)
ECM2430 Reflective Practice 2	• Reflective practice (work-based learning)

YEAR 3

ECM2431 Information Systems	• Introduction (3 weeks) • Case studies of IS in practice (3 weeks) • IS acquisition (2 weeks) • Management and IS (2 weeks) • Social information systems (1 week) • Emerging technologies (1 week)
ECM2432 Reflective Practice 3	• Reflective practice (work-based learning)
ECM3431 IT Law and Ethics	IT law (6 weeks) • Introduction: civil and criminal law (1 week) • Intellectual property (1 week) • Confidentiality and privacy (1 week) • Computer crime (1 week) • Contracts and legal liability (1 week) • Defamation; incitement (1 week) IT ethics (6 weeks) • Introduction (1 week) • Case studies in IT ethics (1 week) • Automation (1 week) • Information warfare (1 week) • Software and hardware reliability; dependence (1 week) • Professional standards (1 week)
ECM3432 Software Engineering 1	• Introduction and context (1 week) • Analysis (2 weeks) • Design (2 weeks) • Development (3 weeks) • Testing (2 weeks) • Advanced programming techniques (1 week) • Deployment (1 week)
ECM3433 Data Analysis 1	• Introduction (2 weeks) • Revision: database (2 weeks) • Data preparation (3 weeks) • Analysing data to derive inferences and to identify and predict trends and patterns (5 weeks)
ECM3434 Business Analysis 1	• Introduction (2 weeks) • Introduction to requirements gathering and analysis (3 weeks) • Introduction to data and process modelling (5 weeks) • The transition to design and development (2 weeks)
ECM3435 IT Consulting 1	• Introduction (1 week) • Engaging with the client (3 weeks) • Solving business problems (4 weeks) • Requirements gathering (4 weeks)
ECM3436 Network Engineering 1	• Computer networks and the Internet (3 weeks) • Network planning (2 weeks) • Designing and constructing simple networks (5 weeks) • Managing networks (2 weeks)
ECM3437 Cyber Security 1	• Introduction (2 weeks) • Detecting and analysing security incidents (3 weeks) • Assessing security risk for different types of information system (3 weeks) • Implementing network security controls in line with policies and standards (4 weeks)

YEAR 4

ECM3438 Synoptic Project	• Synoptic project (work-based learning)
ECM3439 Independent Study	• Supervised independent study
ECM3440 Software Engineering 2	• Software architecture (2 weeks) • Code quality (1 week) • Methods and tools (2 weeks) • Software design (2 weeks) • Advanced programming (2 weeks) • Testing (2 weeks) • Deployment in enterprise environments (1 week)
ECM3441 Data Analysis 2	• Data storage (2 weeks) • Analysing data to derive inferences and to identify and predict trends and patterns (6 weeks) • Communicating results (2 weeks) • Quality and controls (2 weeks)
ECM3442 Business Analysis 2	• Analysis of business scenarios/problems (2 weeks) • Advanced business process modelling and analysis (2 weeks) • Advanced data modelling and analysis (2 weeks) • Advanced requirements gathering (2 weeks) • Working with designers and developers (2 weeks) • Advanced topics in business analysis (2 weeks)
ECM3443 IT Consulting 2	• Introduction (2 weeks) • Business process and workflow improvement (4 weeks) • Managing client relationships (2 weeks) • Influencing (3 weeks) • Supporting system use (1 week)
ECM3444 Network Engineering 2	• Introduction (1 week) • Capacity planning (3 weeks) • Designing and constructing distributed networks (5 weeks) • Improving network performance (3 weeks)
ECM3445 Cyber Security 2	• Cyber security in practice (2 weeks) • Reacting to security incidents (3 weeks) • Developing a security threat response plan (2 weeks) • Implementing additional security controls (3 weeks) • Demonstrating security control effectiveness (2 weeks)