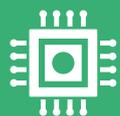
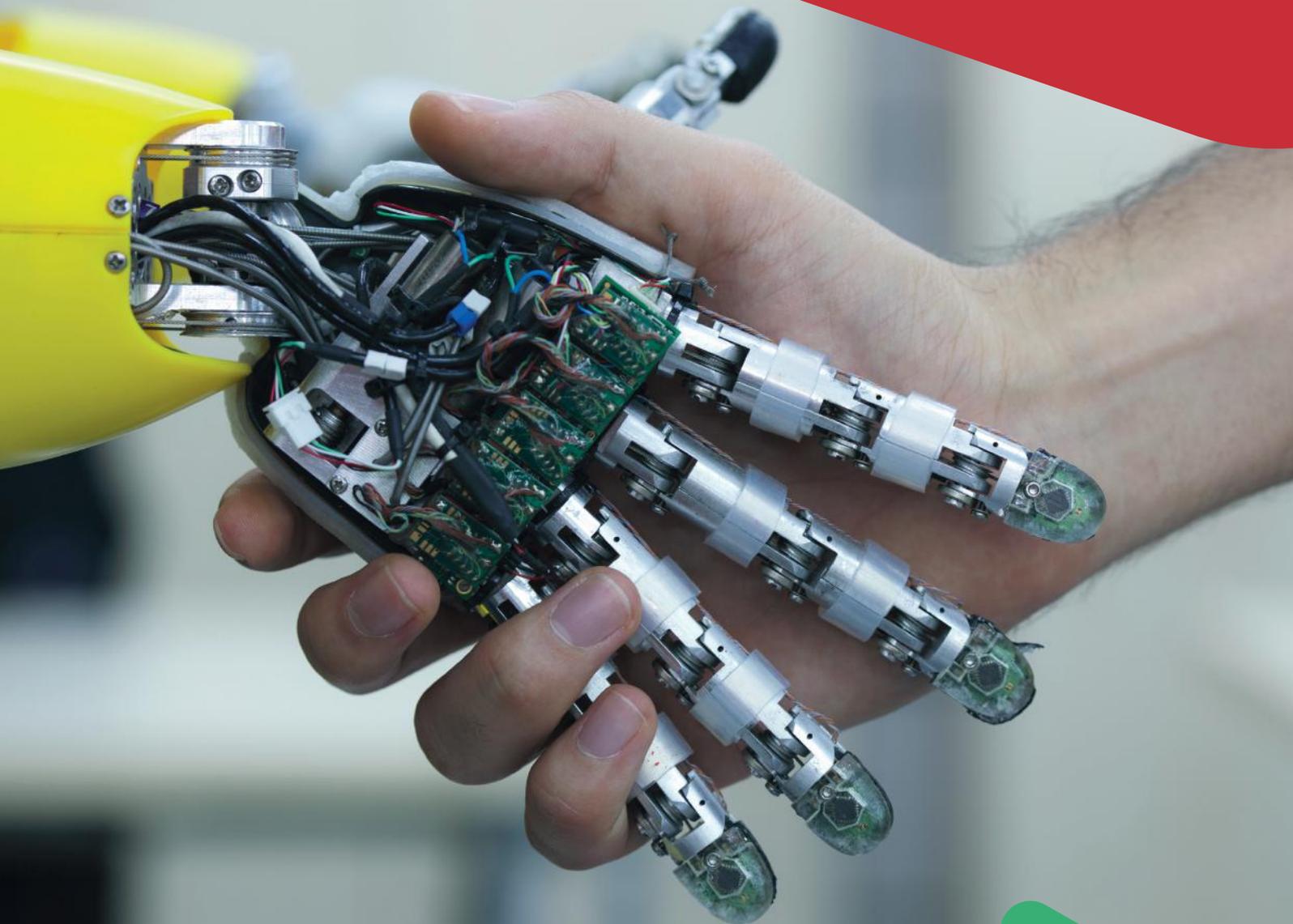


High Tech Industries
West of England Local Sector
Skills Statement 2017



Working together to develop the current
and future skills of the sector.

High Tech Local Sector Overview

High Tech industries in the region and in particular Bristol and Bath have continued to grow; turnover has increased by 53%, and it is recognised by Centre for Cities and McKinsey & Company as one of the two globally significant digital tech clusters in the UK, with over 60,000 digital workers in the broader region.

This year's Tech Nation Report states that local networks TechSPARK and High Tech Bristol & Bath are thriving; 81% of local business owners stated collaboration as a benefit, whilst 5,000 people regularly attend tech meet-ups in the area (the third most in the UK). Hubs like Bristol Games Hub, Engine Shed, Bristol & Bath Science Park and the Bath Guild are also supporting the growth of digital tech businesses. The Bath & Bristol SETsquared programmes generated over £48million of investment in 2015 and were named the world's best university incubator by UBI Global.⁽¹⁾

With a history in aerospace and digital software, the region has a fast-growing cluster of specialisms including; cloud computing, telecommunications and networking, gaming and virtual reality. This industry provides environmentally sustainable, well-paid employment and can also spawn a generation of new start-ups developing products and services with global reach. This in turn reinforces the city's reputation as an innovation hub on the global stage, attracting more investment⁽²⁾. Aardman, JUST EAT, IMDB, Oracle, IBM, Sony and Hewlett Packard have all been attracted by the strong digital ecosystem⁽¹⁾.

Employment Areas



All data represents the West of England.

Bristol Robotics Laboratory is the largest academic centre for multi-disciplinary robotics research in the UK; home to a vibrant community of over 200 academics, researchers and businesses who lead current thinking in service robotics, intelligent autonomous systems and bio-engineering.⁽³⁾

Future Space, a dynamic new workspace for innovative start-ups and SMEs, opened its doors in September 2016. It was created to help grow businesses that specialise in robotics, bioscience, biomedicine and high tech

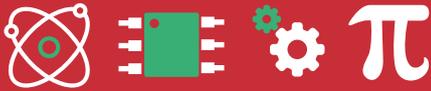
areas, and offers support through specialist centre staff and fellow entrepreneurs.

"Our pool of talent has grown as major tech firms have chosen to invest in the region over the last few years, so the recruitment of senior people has become easier."

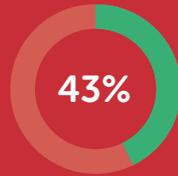
NICK STURGE, Centre Director, Engine Shed (and SETsquared)

Annual Local Sector Skills Statements report on local sector knowledge and expertise, plus wider regional and national intelligence. Gain insight about skills challenges in your sector, notable achievements and skills priorities and objectives for 2017. The themes have been defined by the West of England Local Enterprise Partnership (LEP). This report has been designed for education providers and businesses to inform decisions and identify objectives for investment in training and development of curriculums.

Key Facts



STEM OCCUPATIONS OUTSIDE THE HIGH TECH INDUSTRIES GREW FASTER (3.7% PER ANNUM), THAN STEM EMPLOYMENT IN HIGH TECH INDUSTRIES (2.5%).⁽⁴⁾



43% OF VACANCIES IN THE UK FOR PROFESSIONALS WORKING IN SCIENCE, RESEARCH, ENGINEERING AND TECHNOLOGY ARE HARD TO FILL DUE TO SKILLS SHORTAGES.⁽⁵⁾



AS OF 2017, THERE WERE **18,168 PEOPLE** EMPLOYED IN THE SECTOR, UP FROM **17,000** IN 2015.⁽⁷⁾



CYBER SECURITY SPECIALIST ROLES ADVERTISED ACROSS THE UK HAVE INCREASED BY 18% OVER THE LAST 12 MONTHS AND **BY 103% OVERALL COMPARED WITH 5 YEARS AGO**. DEMAND FOR CYBERSECURITY SPECIALISTS IN THE SOUTH WEST REGION HAS RISEN NOW TO 5% OF ROLES ADVERTISED BUT THE MAJORITY (61%) OF ADVERTISED ROLES ARE BASED IN LONDON AND THE SOUTH EAST.⁽¹¹⁾



WORKFORCE FIGURES SHOW WOMEN WORKING IN CORE STEM OCCUPATIONS INCREASED BY 13,000 TO 802,848 IN 2016, WHICH IS 22% OF THE WORKFORCE. THIS IS 1% LOWER THAN 2015 INDICATING THAT THE RATE OF JOB TAKE-UP IS FALLING BEHIND THAT OF MEN.⁽¹²⁾



IN 2014 THE GLOBAL SEMICONDUCTOR MARKET WAS WORTH **\$335bn**; THE VALUE IN SYSTEMS AND SOFTWARE (**\$14tn MARKET** FOR THE INTERNET OF THINGS DEVICES & SERVICES) IS BASED ON THE EXPERTISE AND SKILLS AVAILABLE IN THE MICROELECTRONICS MARKET.⁽⁶⁾

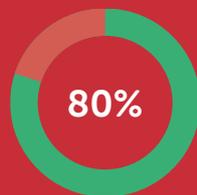


THE TOP 5 MOST IN DEMAND AND REQUESTED CYBERSECURITY SKILLS FROM EMPLOYERS ARE: INFORMATION SECURITY (**41%**), FIREWALL (**26%**), NETWORK SECURITY (**17%**), PAYMENT CARD DATA SECURITY (PCI DSS) (**15%**), AND IT SERVICE MANAGEMENT (ITIL) (**14%**).⁽¹¹⁾

87% OF HIGH TECH SECTOR RESPONDENTS TO THE WEST OF ENGLAND EMPLOYER SKILLS SURVEY (2016) INDICATED TECHNICAL SKILLS AS MOST IMPORTANT TO BUSINESS GROWTH COMPARED TO **65%** OVERALL. **92%** OF RESPONDENTS CITED THAT EVERYDAY DIGITAL SKILLS WERE VERY IMPORTANT FOR EMPLOYEES.⁽⁸⁾



THE REGION HAS **OVER 700 HIGH TECH COMPANIES** AND HAS SEEN **£4bn** INVESTMENT OVER THE LAST DECADE.⁽⁸⁾



80% OF RESPONDENTS CITED A NEED FOR POTENTIAL EMPLOYEES TO HAVE ADVANCED IT SKILLS.⁽⁸⁾



ONLY **10%** OF RESPONDENTS ARE PLANNING TO RECRUIT APPRENTICES IN THE NEXT **12 MONTHS** AND ONLY **4%** ARE PLANNING TO UPSKILL EMPLOYEES THROUGH AN APPRENTICESHIP PROGRAM.⁽⁸⁾

IN 2013 THE UK'S HIGH TECH ECONOMY HAD **3.2 MILLION JOBS** (10.3% OF THE WORKFORCE); **2.4 MILLION WERE JOBS IN HIGH TECH INDUSTRIES** (825,000 IN SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (STEM) OCCUPATIONS AND 1.6 MILLION IN OTHER ROLES). 806,000 JOBS IN STEM OCCUPATIONS WERE OUTSIDE OF HIGH TECH INDUSTRIES.⁽⁴⁾



BRISTOL AND BATH IS RECOGNISED AS THE MOST PRODUCTIVE CLUSTER IN THE UK EVEN RANKED ABOVE LONDON. WITH SPECIFIC EXPERTISE IN SOFTWARE ENGINEERING, SYSTEMS DESIGN AND INTEGRATION, ROBOTICS, SILICON DESIGN AND EMBEDDED SOFTWARE.⁽¹¹⁾

Notable Local Sector Achievements



SETsquared, with bases in Bristol and Bath, (the partnership of the universities of Bath, Bristol, Exeter, Southampton and Surrey) ranked as the top university business incubator in Europe and best performing university incubator globally.



The University of Bath's **Centre for the Analysis of Motion, Entertainment Research and Applications (CAMERA)** is one of six world-leading research centres funded by the £23m EPSRC and AHRC led Digital Economy Programme. CAMERA works closely with industry at a national and regional scale to accelerate the application of motion analysis research to the creative, healthcare technologies and elite sports sectors.



Oracle has chosen Bristol as European headquarters for its Oracle Cloud Start-ups Accelerator programme providing mentorship, cloud services and support for start-ups. The new incubator service will be based within the Engine Shed – the pre-existing business incubator run by SetSquared, and will be led by members of the Oracle research and development team.



Voxxed Days Bristol was held in March 2017 and welcomed speakers from Brazil, India, Seattle, as well as the West of England region.



OpenStack Days initial event which took place in September 2016 in Bristol, was hosted by HP. OpenStack days bring together hundreds of IT executives, cloud operators and technology providers to discuss cloud computing and learn about OpenStack.



Bath hosted its biggest ever tech conference as 500 Ruby developers attended the UK's largest Ruby events, the Bath Ruby Conference 2015. The conference, specifically curated for Ruby developers, was so successful it raised £3,500 for the charity Shelter and returned in 2016. The next conference is scheduled for March 2018.



In April 2016 Bristol hosted the first **VR World Congress (VRWC)** organised by Opposable VR. VR World Congress brought over 750 buyers, sellers and developers from VR and its surrounding industries from across the globe to Bristol. Over 750 attendees from 20-plus countries were inspired by 36 world-leading speakers and 27 outstanding exhibitors; making it the leading international VR event. In April 2017 the event continued to expand, taking over Millennium Square in the centre of Bristol VRWC attracting over 2,000 attendees.



The Tech Partnership is in the final stages of development of a new degree apprenticeship in cyber security, reflecting strong demand from employers for this innovative approach to developing specialist tech talent. Six universities, including the University of the West of England, have been closely involved in developing the programme, working with the trailblazer employers to ensure that the academic and employment elements of the apprenticeship work together seamlessly.



Bristol Robotics Laboratory is the largest academic centre for multi-disciplinary robotics research in the UK. A collaboration between the University of the West of England (UWE Bristol) and University of Bristol, the laboratory is home to vibrant community of over 200 academics, researchers and businesses who lead current thinking in service robotics, intelligent autonomous systems and bio-engineering.



Bath-based business **Mayden** received funding from BIS as part of a pilot programme which encouraged businesses to resolve their own skills shortages. **Mayden Academy** offers private software developer training with all graduates to date having been employed by local businesses.



MAAXX Europe in March 2017, is the world's only fully autonomous drone racing event, wheels up - hands off! It represents a 5 year partnership developed between HBB & UWE, Bristol.

Bristol has been named one of the UK's top smart cities in a study commissioned by Huawei, highlighting the use of digital technology in the development of everything from transport to refuse collection. Huawei's Smart Cities Index named London, in first place, and Bristol, in second, as "leaders". Birmingham, Glasgow, Manchester, Milton Keynes, Leeds and Peterborough were named "contenders".



Bristol Is Open is developing an 'open programmable city', a collaboration between the technology, media & telecommunications industry, universities, local communities, and local and national government. The project is governed by a joint venture between University of Bristol and Bristol City Council. Long term partners join an advisory panel that guides the joint venture on the evolution of the network, the creation of multi-partner experiments, the services that underpin the project and publicity and events surrounding the project.



The sector has cultivated strong partnerships with organisations like **TechSPARK**, whose mission is to shine a light on tech innovation and celebrate the brilliant people that power the companies and products based in the West of England. They aim to connect and inform all of those who work in tech in the region by providing news, profiles and resources like events calendars, jobs boards and a lot more.



The sector has worked closely with HBB whose main aims are to collaborate, innovate and disseminate. By setting up special interest groups (SIGs) involving companies, universities and research institutions. This includes examples like **DigiLocal@**, who identified a gap in the provision of high quality, regular tech clubs for kids outside of school hours.



Department for Work & Pensions

The Careers Education Information Advice and Guidance (CEIAG) is under development for the high tech sector. This enables labour market and careers information to be issued to all secondary and post-16 careers advisers and the **Department for Work and Pensions** advisers within the West of England.

Skills Priorities 2017

1. Improve Careers Education Information Advice and Guidance (CEIAG)



Issue:

Career pathways into the sector are not clearly defined and targeted at a highly skilled graduate and post-graduate market. Those advising young people on careers are not aware of current opportunities, roles and variety of careers pathways, or have experience to support potential entrepreneurs. One in four of the 1,509 responding businesses to the West of England Employer Skills Survey (2016) engage with schools, colleges or universities to support the development of employability in young people.

Objectives:

- Industry to work with education providers, sector skills councils and partners to map and provide access to labour market and careers pathways information, initiatives, opportunities and resources to schools, colleges and universities.
- Develop a recruitment strategy for education and industry that aligns with the advanced engineering and creative and digital sectors.
- Provide industry-led Continuing Professional Development (CPD) programmes for careers advisers/lecturers and innovative work experience/placement opportunities for students and teachers. The West of England LEP have been recruiting Enterprise Advisers to work closely with leadership teams in schools and colleges to promote a better understanding of the local business market, widen students' careers options and assist in making personal career path plans for young people.

2. Improve the quality and local responsiveness of education and training



Issue:

There is a problem with short to mid-term skills priorities in advanced IT software skills, business and customer awareness, technical, practical or job specific skills and intellectual property. In addition to this, the high tech sector has skills gaps related to new technologies including; 'Internet of Things', capturing, storage, analysis and application of data, cyber-security, cloud computing, big data analytics, virtual reality, robotics and 3D fabrication. There is also a need to create a 'fusion' of skills in the high tech industry; the most cited reason for vacancies being hard to fill in the West of England LEP Skills Survey (2016) is the lack of applicants with the correct skills. Technical skills were also stated as very important with high tech companies, expressing technology is crucial to their growth.

Objectives:

- Quality and relevant training across all sectors.
- Constant and relevant dialogue between local training providers and the industry to ensure provision is up-to-date, relevant, accessible and cost effective.
- Closer partnerships between employers, sector skills councils, awarding bodies, Higher and Further Education to identify funding, support curriculum development and develop advanced training skills packages.
- Ensure a quality range of STEM related subjects are on offer across all post-16 provision.

3. Increase apprenticeship starts and availability of higher apprenticeships



Issue:

Apprenticeship starts remain very low for the sector with a lack of employer engagement. Apprenticeships are not seen as a valid pathway (by industry and careers advisers) and only 13.9% of high tech related apprenticeships in the region during 2015/16 were women.

Objectives:

- Provide clear, accessible apprenticeship advice and guidance to individuals and employers with clear pathways and entry points.
- Increase employer engagement with educators and create partnerships to ensure development of quality high tech related apprenticeships.
- Promote apprenticeships as a valid recruitment pathway and encourage industry to shape the pathways.
- Develop partnerships with industry, Further and Higher Education, training providers and sector skills councils to develop and provide higher level apprenticeships for the sector.

4. Engage SMEs to boost productivity and build capacity for growth



Issue:

SMEs in the sector face severe competition for talent, at the same time as being expected to introduce new digital business practices across all areas of their business. Many struggle with succession planning, but a number of SMEs have proven the value of taking on apprenticeships and we need to communicate this model more widely. Some areas within the sector face declines in employment levels due to automation and technological advances. In order to grow, businesses must create and react to new opportunities.

Objectives:

- Provide SMEs with the opportunity to identify skills requirements to enable growth.
- Support SMEs in exploring the best use of new apprenticeship standards and provide the opportunity for businesses to influence future skills and training provision.
- Encourage businesses within the sector to work alongside education and training providers to create a strong agile workforce that is able to adapt and grow with industry changes.
- Build skills within the West of England to create a strong, connected regional centre with clear specific expertise.
- Build on industry clusters to enable SMEs to benefit from shared resources and encourage the sharing of best practice, particularly in the area of skills and training.
- Identify models of successful employee development to enable SMEs to adopt more efficient succession planning.

5. Enhance equality and diversity through multiple career pathways



Issue:

The high tech sector, in common with the West of England region as a whole, is dealing with a social mobility and diversity challenge, with ground to make up in comparison to other Core Cities. Only 17% of the 1.18m IT specialists working in the UK in 2014 were women, comparative with a figure of 47% for the workforce as a whole. At higher education level, women account for only 12% of those applying for computer science degrees. Potential challenges resulting from the UK's decision to leave the European Union could make it harder to attract international talent. Employers must attract and retain talent from a broad pool. Barriers to career progression should be addressed in order to retain talent.

In the West of England LEP Employer Skills Survey (2016) high tech are the lowest ranking (21%) of all sectors with an equality and diversity recruitment policy compared to 36% overall.

Objectives:

- Continue to focus on the improvement of inclusion, social mobility and diversity in the sector, through defined actions developed in collaboration between businesses and the government and education sectors.
- Businesses should be encouraged to work across school and community groups in the most deprived areas of the West of England to illustrate the various career paths and entry routes into the high tech sector.
- Develop education and training provision which spans a range of abilities to ensure that jobs and careers within the sector are open and accessible to all.
- Businesses should be encouraged to explore the benefits of flexible working patterns in order to broaden the talent pool within the sector.

Regional Centres of Excellence and Research

- Bath Centre for Digital Entertainment
- Bath Innovation Centre
- Bristol BioEnergy Centre
- Bristol Robotics Laboratory
- Bristol & Bath Science Park
- Bristol Advanced Computing Research Centre
- Bristol Centre for Quantum Photonics
- Bath Centre for Nanoscience and Nanotechnology (BCNN)
- Pervasive Media
- Set Squared–Engine Shed

Key Providers

- University of Bath
- University of Bristol
- University of the West of England (UWE Bristol)
- Bath Spa University
- Bath College
- City of Bristol College
- South Gloucestershire and Stroud College
- Weston College

Professional Networks and Organisations

- BRISTech
- Bristol Games Hub
- Girl Geeks
- High Tech Bristol & Bath
- Invest Bristol & Bath
- PHPSW
- SW Mobile
- SWUX
- Tech Partnership UK
- TechSPARK

Endorsed by

Mike Bartley, High Tech Sector Group Chair, West of England LEP

Reference Documents

- 1) Tech Nation Report, 2016
- 2) Phil Bates from Oracle's Bristol Cloud Development Centre (website) www.bristol247.com/channel/business/features-3/feature/welcome-to-the-cloud-bristol
- 3) Bristol Robotics Laboratory in the News
- 4) UKCES High Level STEM skills requirement in the UK labour market, 2015
- 5) Institute for Engineering and Technology Skills and Demand in Industry Survey, 2014
- 6) Global Semiconductor Industry Posts Record Sales in 2014: Semiconductor Industry Association
- 7) Tech Nation Report, 2016
- 8) West of England LEP Skills Survey, 2016
- 9) SFA Data Cube – Apprenticeships
- 10) Tech Partnership Score, BCS, The Chartered Institute for IT: Women in IT Scorecard, 2015
- 11) Tech Partnership Cyber Security Research and Factsheet, February 2017
- 12) WISE - Women in Workforce STEM Survey, 2016

Employment Areas Chart – NGaged Training / LMI Statement 2017 based on Labour Insights, May 2016 - May 2017 & EMSI

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**WEST OF
ENGLAND**

Combined Authority

The West of England Combined Authority (WECA) covers Bath & North East Somerset, Bristol and South Gloucestershire. WECA also supports the Local Enterprise Partnership, which includes North Somerset.