



Gyrfa Cymru
Careers Wales



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Feature: IT Jobs and Skills in Wales



Introduction

Technology experts would argue that 2020 was a transformative year for the UK’s technology jobs, skills and companies. As the entire workforce was thrust into working out of bedrooms and living rooms a complete reliance on technology and technologists was an immediate priority to keep everyone communicating, collaborating, building, buying and selling. It’s estimated by [Tech Nation's Report for 2021](#) that digital transformation accelerated 10 times quicker than the predictions in 2019.

This digital acceleration has:

<p>Increased business growth</p> 	<p>Generated investments in new start up in the tech sector</p> 	<p>Increased competition</p> 
<p>Affected all sectors</p> 	<p>Increased job opportunities</p> 	<p>Exposed growing skills gap</p> 

Background and Context

Despite the different computing expertise required in specific job roles, what we know for sure is that they all build on the basic foundations that children and young people learn in the education system from the age of 3. Experiences in school ignites and inspires career ideas for children, who begin to understand and shape their career ideas from the age of 7. Whilst literacy and numeracy have been drilled for decades, digital skills is now playing catch-up as one of the essential skills. According to [The ICT steering group's report](#) to the Welsh Government in 2018,

‘There is a lack of awareness from parents and learners about the diversity of possible careers within the IT industry and other related industries. The different types of people and the multitude of roles involved in delivering IT projects are not highlighted, and many people are unaware of the opportunities that exist for technical apprenticeships as an alternative to a purely academic route into industry.’



The report also recognised that alongside the curriculum and qualifications reform, it is also hugely important to change the wider public perception of both Computing's role as an economic driver and its wider education benefit to all students; not only to create more computer scientists and specialist IT roles but to feed the wider cross cutting IT skills needed for the growing digital economy.

The [No Longer Optional report](#), published in 2019, revealed that around 82% of all jobs in the UK list 'digital skills' as a requirement. Jobs requiring specialised digital skills also pay 29% more on average (£37,000 vs £28,000 a year) and by choosing a career path that requires specific digital skills, workers can reduce their risk of automation by a dramatic 59%. Despite this, employers struggled to fill one-third of vacancies back in 2018 due to lack of digital competency, highlighting a significant discrepancy between skill supply and demand in the UK. These stark findings were revealed pre pandemic, which have now been further exacerbated.

The evidence and recommendations of the Welsh Government ICT steering group report, amongst numerous calls from industry and other research, has led to curriculum reforms now being delivered in Wales in the new Computer Science and Information Technology GCSE and A Levels as well as the Digital Competency Framework from the age of 3.

The [World Economic Forum](#) reports that automation, driven by Artificial Intelligence (AI), may lead to a net increase of 58 million jobs globally. They suggest that a good place to start is with computer science in school, getting familiar with the basics of data science, machine learning and programming at an earlier age, when it's less specialised. 'Normalising' these IT skills and qualifications is an essential step change already taken in Wales, as noted earlier.

What do we mean by IT Jobs?

This feature is a snapshot of the Information Technology jobs and skills in Wales. There are limitations to this feature in that we do not capture the 'digital' sector as a whole.

The wider digital sector, or digital economy, captures all aspects of how IT skills and knowledge are applied across different sectors and the impact of technological growth in sectors such as financial services, manufacturing or construction.

However, it's important to note that to sustain and strengthen the needs of the wider digital economy it relies on the supply of people with the right foundation IT skills and capabilities from school, FE and HE qualifications; as well as people upskilling and reskilling in the workplace.

Using Emsi analysis, this feature focusses on the following 10 IT occupations in Wales according to their Standard Occupational Classification (SOC), to illustrate a snapshot of the specialised IT sector:

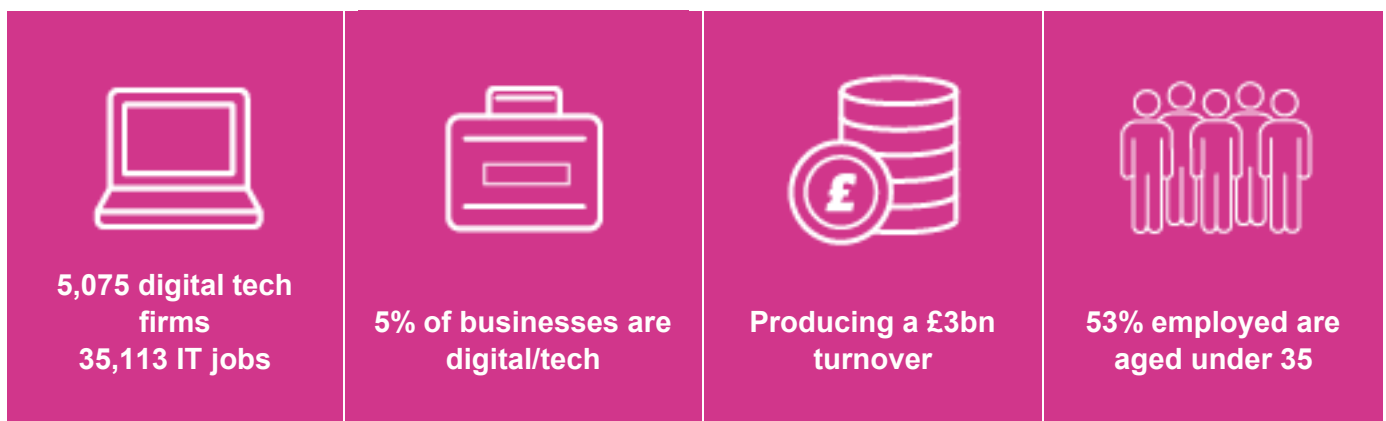
- **Information Technology and Telecommunications Directors**
- **IT Specialist Managers**
- **IT Project and Programme Managers**
- **IT Business Analysts, Architects and Systems Designers**
- **Programmers and Software Development Professionals**
- **Web Design and Development Professionals**
- **Information Technology and Telecommunications Professionals**
- **IT Operations Technicians**
- **IT User Support Technicians**
- **IT Engineers**



IT jobs in Wales

Despite recent challenges posed by COVID-19, the UK's information technology (IT) sector has shown its resilience through continued growth, with skilled workers needed to fuel this momentum. The evidence of need and growth in the UK's technology jobs is well documented in the annual [Tech Nation Report for 2021](#) published in December 2021.

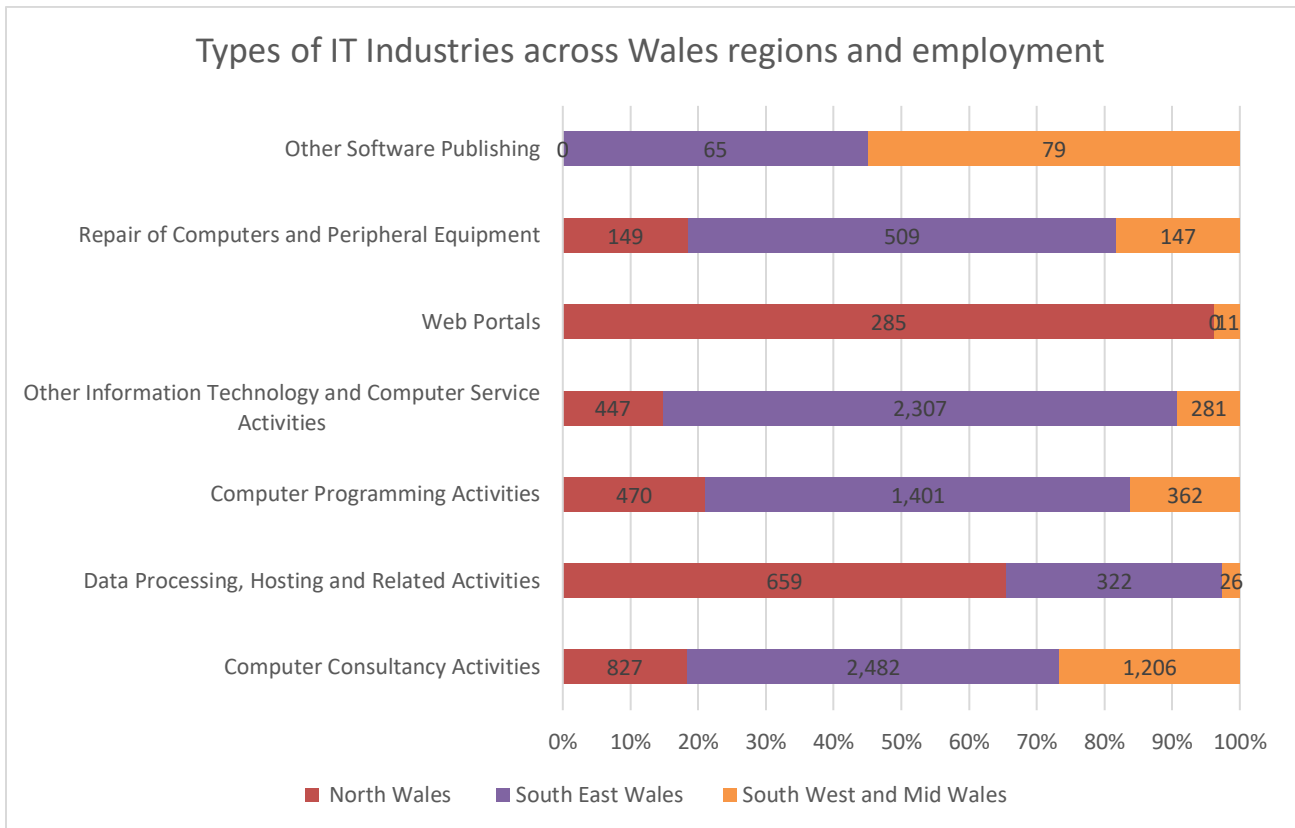
According to Tech Nation's latest report, the Wales tech industry headlines show:



Source: [Tech Nation Report for 2021](#)

These 10 IT occupations account for 35,113 jobs across Wales, with Cardiff having the highest concentration of jobs from the 10 occupations listed at 8,043. However, in terms of growth over a two-year period 2019-2022, Anglesey saw the highest growth of 15%, followed by Blaenau Gwent at 8%. There has been a noticeable increase in other rural areas during the last two years also, Powys saw an increase of 6%, and Pembrokeshire 5%. Conversely, there was only a 1% growth in Cardiff for the same period. Could this be due to early signs of remote working and a move from urban locations?

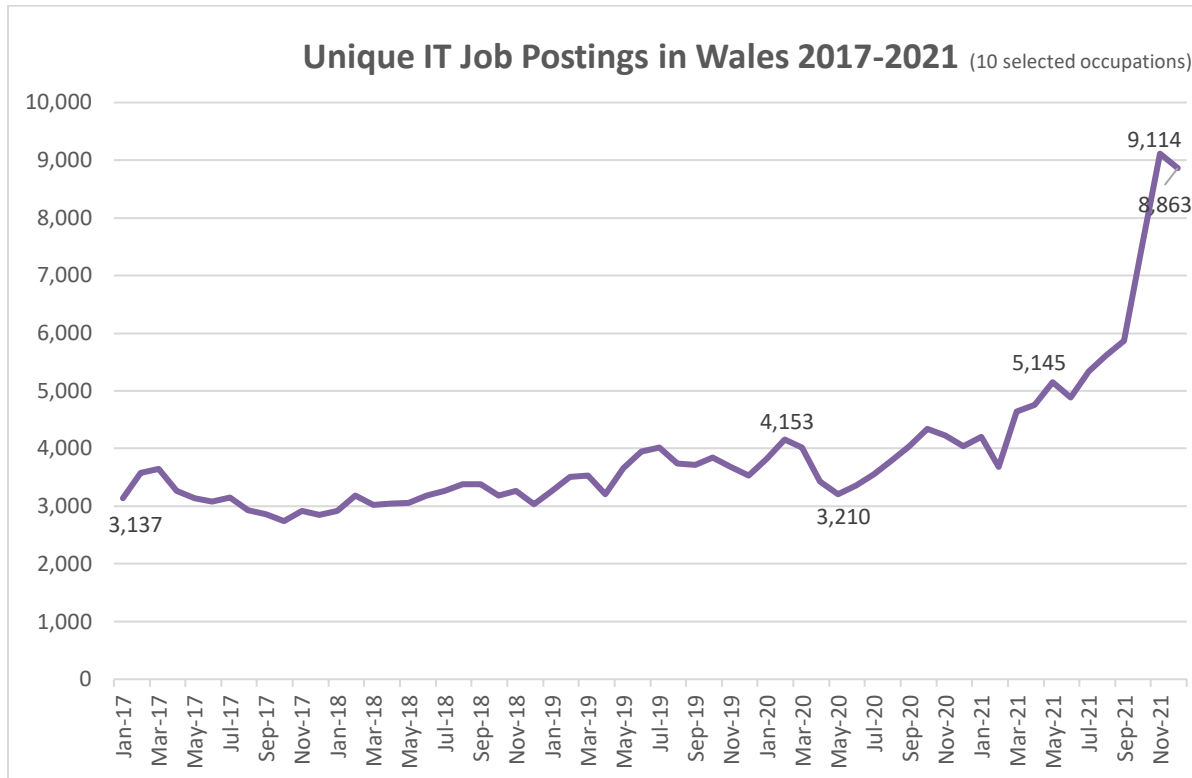
The table below shows the different strengths across the regions of Wales related to the type of IT industry, according to their Standard Industry Classification (SIC). This measure shows that even when the largest concentration of jobs and total number of industries are located in the South East of Wales, proportionally there are particular concentrations and strengths across the regions of Wales.



Source: EMSI Analytics January 2022

NOTE: It's not possible to correlate the same total number of jobs clustered in these industry activities with the total number of IT jobs noted previously. The total number of IT jobs across the 10 occupations will include jobs from industries wider than the IT cluster selected.

An indication of growth in demand for IT jobs can be measured by the increase in the number of jobs posted online. As a snapshot indicator, there were 52,767 unique job postings for the selected IT occupations between January 2019-December 2021. This represents a 5.5% share of the total unique job postings in Wales for the same period.

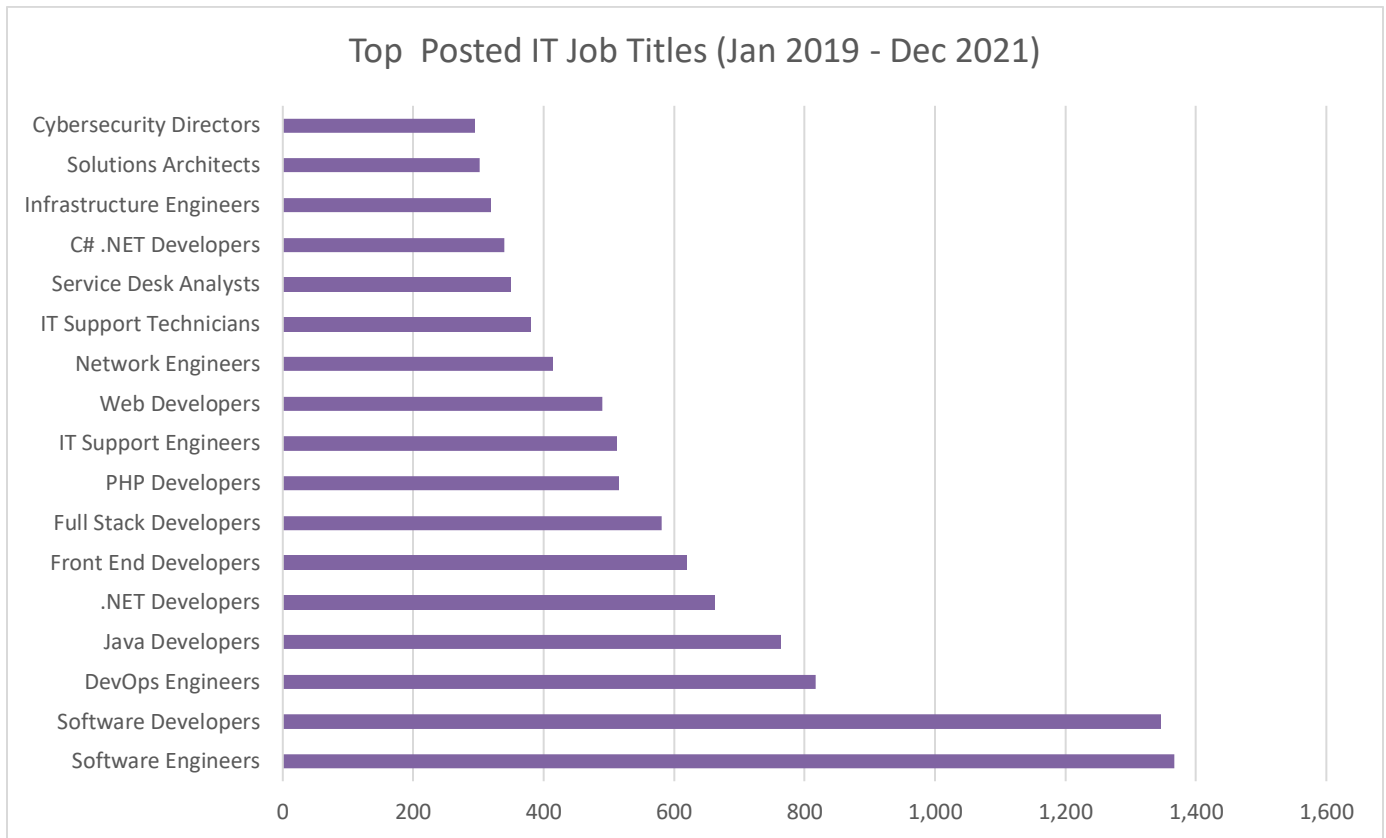


Source: EMSI analytics January 2022

The graph above shows a steady increase of IT job postings during 2017-21 with a slight decline in 2020 when lockdowns were enforced and recruitment across all sectors decreased sharply. Although, the decrease for these occupations was not as sharp, nor as long, as for many other occupations. At their lowest, postings for these IT jobs hardly fell below pre pandemic levels in May 2019.

Since May 2020, there have been sharp increases in job postings each month, reaching its peak in November 2021 with a record 9,114 job postings. Putting this number in perspective against all job postings for the same period, programmers and software development professionals are currently 12th in the top posted occupations in Wales.

The graph below provides a deeper view and understanding of the range of job titles used in postings. This is the top 20 total IT job titles used in online job postings in the two-year period. It shows us that Software Developers and Engineers are the two job titles posted most frequently. The .NET Developers were 5th in the chart below, but had the highest posting intensity at 10:1, an indication that employers are putting more effort to fill posts. The average for all other occupations being 5:1.



Source: EMSI analytics January 2022

Analysing the job postings further provides a list of specific technical skills for the various IT job titles. It's noted that 4 of the top 10 specific skills demands below were related to programming languages, which links back to the World Economic Forum recommendations on page 3 to 'start computer science early in school, getting familiar with the basics of data science, machine learning and programming at an earlier age, when it's less specialised.'

Top IT specialist skills noted in the unique job postings 2019-2022

- **Agile Methodology**
- **SQL (Programming Language)**
- **JavaScript (Programming Language)**
- **Software Development**
- **C# (Programming Language)**
- **Microsoft Azure**
- **Amazon Web Services**
- **Cascading Style Sheets (CSS)**
- **Software Engineering**
- **Java (Programming Language)**



Future workforce in Wales and skills projections

It's a well-documented, and controversial, quote from Dell Technologies and IFTF report in 2018 [Realizing 2030 future of work](#), that '85% of jobs that will exist in 2030 haven't been invented yet.' This couldn't be truer when applied to IT and technology roles.

12 years ago, and disappearing	IT jobs we hear about today	Jobs in 2030?
Meter Reader	Blockchain Engineer	Quantum Programmer
Switch Board Operator	Mobile App Developer	Immersive experience designer
TV/Video Recorder repair worker	Cloud Computing Specialist	Rocket Design architect
Electronics Assembler	AI Solution Architect	Spacecraft Pilot
Assembly line workers	Big Data Analyst	Autonomous Vehicle Designer
Video rental shop manager/workers	Autonomous Vehicle Designer	Blockchain Crypto Specialist
Dictaphone operators/typists	VDC-BIM Consultant	Cultured Meat farmers
Film projectionists	Cybersecurity Analyst	Space Travel Operators

Source: [LinkedIn](#)

The [Working Futures 2017-27](#) report for Wales, published in June 2020 estimated that the Information Technology industry was projected to grow by 4.1% by 2027. This 5 year growth projection is related to an expansion and replacement demand in employment of 9,600. The report also noted a 5% increase in women entering the Information Technology sector, currently only 17.7% of the IT workforce. These were optimistic and modest growth projections pre-pandemic. The [McKinsey Global Survey in 2020](#) reports that tech development, use and adoption over the last two years has been accelerated by up to 7 years, intensifying the digital skills gap.

The continuing pace of IT interventions and digitalisation across all work sectors brings a wealth of opportunities, but also risks, to the future workforce, such as:

- **Success in a fast paced and competitive digital world relies on investing in people, not just technology, with education and lifelong learning at the core. As noted in Prof Philip Brown's report, [Delivering Economic Transformation for a Better Future of Work](#).**
- **Women, BME workers, young workers and migrants are overrepresented in lower-level jobs that are very liable to automation or digitisation.**
- **Estimations from the TUC's [Digitisation Report](#) suggests that in 60% of public sector jobs, at least a third of tasks can be automated.**
- **Reskilling and upskilling the current workforce is essential for employers to offer as well as the employees' responsibility to take up offers and seek out new training and retraining to keep up with expectations.**

The Tech Nation 2021 report notes that the use of primary technology is pivotal when building new innovative platforms. One of these technologies is Artificial Intelligence and Machine Learning (AI and ML). The other vital technologies for innovation are robotics, drones, augmented reality and virtual reality (AR and VR); Internet of Things (IoT) and blockchain and cryptocurrency. Technology and IT is a specialised industry with niche capabilities and skills but also a necessary and enabling skill which is adding value and transforming other sectors to keep pace, not only with the competition but wider expectation.



Here's a sample of how technology and IT are an essential, and growing, skill asset across other sectors:

Mobility tech companies are creating solutions within the automotive, transportation and shipping industries. Innovations driven by the digital economy open up opportunities to provide products that are more cost-efficient, like electric vehicles, autonomous driving technologies and mobile connectivity. 2020 was a record year for global investment, and in the UK, investment grew from \$681m in 2019 to \$2.2bn in 2020. Mobility tech requires a complete set of cross sector skills which draw on the principles of physics, robotics, maths and Artificial Intelligence (AI).

Despite the pandemic **Travel tech** investment has continued to accelerate in the UK during 2020 with a 12% increase in investment. Tech is used for automated booking and payment services for flights, accommodation and other travel related activities.

Food technology (**food tech**) also saw a record year of technology investment in 2020. Companies are developing products and services for applications like food waste, meal kits, recipe boxes and restaurant technology.

As part of the expanding Fintech sector in Wales, Insurance technology (**insurtech**) companies are improving the processes across the insurance value-chain and marketplace. The services provided include quote comparison websites, insurance telematics, home automation, peer-to-peer insurance, online brokers, cyber insurance, underwriting software and claims software.

'In the next 10 years, we'll reinvent every industry.'

Peter Diamandis, entrepreneur and futurologist

More information from Careers Wales about [38 different IT jobs](#) can be found on our web site

Cautionary notes on the use of data sources in the current environment

Job posting figures are one of the first data sets to give an immediate indication of the impact on the labour market but are only an indication given:

They only reflect a proportion of all job vacancies, excluding informal recruitment.

The absolute numbers should be used with caution as they provide only a snapshot of the total recruitment picture, and the method of collection is constantly being improved but the general trends seen can give us an idea of how job opportunities in Wales are being impacted.

Projections of employment which we usually use from our data suppliers such as EMSI are 'estimates of future trends based on past and current trends' so where projections are used, they may be based on pre-crisis trend data, until economic forecasting is available that models forecast scenarios of the impact of current events.

We continue to welcome feedback on the relevance of the data and key messages included in our Bulletins. Please send your feedback to information@careerswales.gov.wales.