Skills Development Scotland

Digital Economy Skills and Careers

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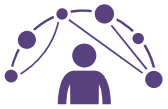
Background

- Over the last decade there has been a transition from a standalone tech sector to a digital economy which has the potential to encompass every business and every individual in Scotland.
- The Digital Economy Skills Action Plan (DESAP) acknowledges that digital economy skills are not just about digital technology jobs (e.g. programmers and web designers) but encompasses the spectrum of digital skills utilised by every employee in every business in Scotland.
- The digital economy cuts across all sectors and has resulted in the emergence of new hybrid sectors such as FinTech, AgriTech, ClimateTech and TravelTech. In all sectors, new digitally enabled roles will continue to emerge as technology develops, and jobs that were previously considered non-digital will all require digital economy skills.

Why is the Digital Economy important?



The term digital economy describes a connected economy, which includes every business that uses technology to communicate, create, consume, innovate, and trade.

- Tech skills are now needed in every sector - we have moved from a Digital Technologies focus to a Digital Economy focus.
- Industry asked SDS to develop a DESAP to recognise this change in focus and to address urgent skills shortages across the digital economy.
- It is critical that individuals are given the opportunity to develop digital economy skills that will help them to enter and progress through ‘in-demand’ tech jobs.
- These digital economy skills will support Scotland’s economic vision of becoming a wellbeing economy: thriving across economic, social, and environmental dimensions, and one that delivers economic prosperity for all Scotland’s people and place.

Digital skills and Digital literacy

Possessing digital skills is not the same as being digitally literate. DESAP highlights the need for basic digital skills across all jobs and the importance of digital literacy.

Digital Skills – focus on the knowing

- Digital skills refers to the ability to use different devices such as a smartphone or laptop. For example:
- Knowing how to send an email or open an email.
- Knowing how to use Microsoft Word.
- You can show someone how to use a database.

Digital Literacy – focus on the understanding

- Digital literacy is a combination of these digital skills as well as having the confidence and understanding to allow you to thrive in a digital society. For example:
- Knowing how to recognise a spam email and being confident in the best way to delete it and avoid spam in the future.
- Know how to use Microsoft Word to clearly and effectively communicate all the key components of an assignment.
- You can help that person understand how to create effective searches in that database and evaluate the search results.

What are Digital Economy skills?

Digital Adoption

Basic digital skills that individuals need to use and operate technology systems in the workplace confidently and securely

Digital Transition

Digital skills that support business transitions such as into e-commerce and online trade, or the ability for the business to understand the value of data

Integrated digital skills

The integration of professional digital skills into nontechnology job roles

Professional digital skills

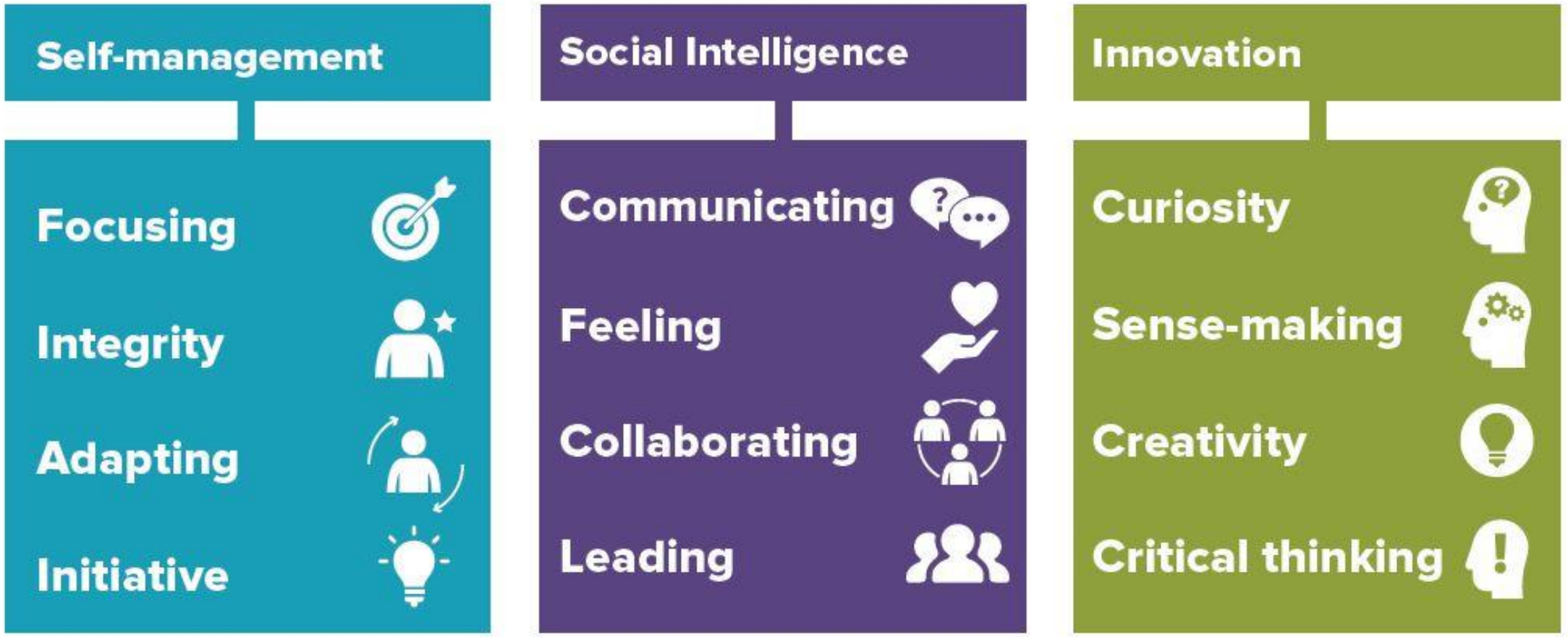
Digital skills for roles which were traditionally found only in the tech sector such as cyber security, software development, engineering and cloud security

Digital leadership

For everyone
Meta-skills
Digital agility, digital intelligence, human and computer interaction

Meta-skills

In addition to technical digital economy skills, soft skills such as meta-skills also play an important role in driving behavioural change across individuals and businesses. They can also help individuals reskill for digital economy roles.



Digital Economy opportunities

DESAP highlights five thematic areas of opportunity where the enhancement of digital economy skills will make an essential contribution to the Scottish economy.

- Supporting a vibrant technology economy will contribute to economic growth.
- Supporting growth in emerging sectors will contribute to Scotland’s prosperity.
- Increasing Scotland’s digital maturity will lead to increased productivity growth.
- Supporting a diverse digital economy will contribute to inclusive growth.
- Cross-sector collaboration to address the climate emergency.
- These opportunities align with the 5 programmes of delivery outlined in the Scottish Government's National Strategy for Economic Transformation (NSET)

Hybrid sectors that support the Digital Economy

New hybrid sectors have emerged as the digital economy cuts across all sectors. Examples include:

TravelTech

- TravelTech is the application of IT and e-commerce solutions in tourism, travel, and hospitality.
- Advantages include automating travel, saving time, reducing costs, and creating a seamless travel experience for consumers, including before, during, and after a trip.
- Types of jobs include non-tech and tech roles such as Sales Manager, Project Manager, Customer Relationships Manager, Property Manager, Data Analyst and Web Designer.

Hybrid sectors that support the Digital Economy

ClimateTech

- ClimateTech is defined as technologies that are explicitly focused on reducing GHG emissions or addressing the impacts of global warming.
- Examples of climate technologies include renewable energy technologies like solar, wind, and hydropower and carbon capture.
- Digital technologies such as artificial intelligence (AI) and data analytics can be used to mitigate the impacts of climate change across all sectors.
- Types of jobs include non-tech and tech roles such as Climate Scientist, Environmental Consultant, Energy Engineer, Wind Turbine Technician, Business Continuity Specialist, Data Analyst and Facilities Manager.

Hybrid sectors that support the Digital Economy

AgriTech

- AgriTech combines science, technology and engineering to generate innovative ideas to help solve agricultural problems.

- It encompasses a wide range of technologies, including automation, biotechnology, information monitoring, and data analysis. Precision agriculture uses drones and GPS to increase the profitability of agriculture production.

- Technology companies are now designing robots (Agribots) to partake in fruit picking. With Agribots, sensors and 3D cameras can detect which fruit is ripe, as well as measuring sugar content and checking for diseases.

- Types of jobs include Agricultural Engineer, Biochemist, Dairy Technologist.

Hybrid sectors that support the Digital Economy

FinTech

- FinTech refers to ways of making financial processes and traditional financial services more accessible using software. FinTech companies are businesses that employ technology to adapt, improve or totally automate financial services e.g. trading and investment apps, mobile payments and digital loans and credits.

- Underlying all these capabilities are rapidly developing technologies that are powering the changes like machine learning, artificial intelligence (AI), robotic process automation (RPA) and blockchain – the foundational technology that powers cryptocurrencies such as Bitcoin.

- Types of jobs include FinCrime Screening Investigator, Data Scientist, Cyber Intelligence Officer, Performance Analyst and Software Engineer.

Non-tech sectors that support the Digital Economy

There are also numerous traditional non-tech sectors which require digital skills that will support the digital economy.

Health & Social Care

- The types of technology used in health and social care are numerous. They include artificial intelligence, wearable technologies, mobile applications and websites and various clinical data storing and sharing systems.
- Virtual reality (VR) and augmented reality (AR) are an interesting type of technology to use within the sector, most notably as a way of delivering staff training, as it gets as close to a real life scenario as possible.
- Diabetics can have glucose readings taken by a wearable device and tracked via an app.
- Surveillance technology which includes CCTV, cameras and microphones are used in many care homes to monitor the care of residents.
- Jobs will include AR/VR Programmer, Market Research Analyst, Data Analyst, App Developer, Software Developer ,Clinical Engineer and Organ Designer.

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Retail

- Technology used in retail includes various tools and applications that enhance the customer experience, improve operations, increase sales, and reduce costs.
- Digital inventory management uses software and hardware to automate the process of inventory management, from tracking the movement of goods to monitoring stock levels in real time.
- We can purchase pretty much anything by shopping online using our phones, tablets, or computers.
- Companies also use social media to advertise their products.
- Almost all retailers have an online presence. Having a website enables businesses to strengthen brand loyalty.
- Jobs will include Web Developers, Business Analysts, UX Designers, Digital Strategists, Market Research Interviewer, Social Media Managers, E-commerce Managers and Marketing Managers.

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Construction

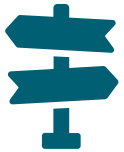
- Technology used in construction allows contractors and project managers to make more timely and informed decisions based on cost and labour data. They can also monitor the work progress remotely without having to travel to the construction site.
- Digital twins are used in the construction sector. These are virtual duplicates of a physical object or system that works with technologies like artificial intelligence, the Internet of Things, and data analytics to anticipate performance.
- Digital twins in construction are created by combining several types of data, including 3D models, sensor data, and real-time performance data, into a single platform. This platform can then be used to simulate and optimise different scenarios, such as material choices, energy usage, and maintenance schedules.
- The use of Virtual and Augmented Reality (VR and AR) can be used to prevent potential hazards.
- Jobs will include CAD Technicians, Project Managers, 3D Printing Specialists and AR/VR Programmers

Digital Economy pathways

DESAP states that digital economy skills are not only developed in schools, universities, colleges and private providers, but increasingly within extracurricular environments, third sector settings and online.

- Qualifications - find out what qualifications are available in Scotland and who offers them.
- Apprenticeships – find out more about Digital Economy apprenticeships in the Apprenticeships section of this toolkit.
- Marketplace - find opportunities from employers to experience what it's really like in the workplace. Placements are available during the school holidays or any time of year if you're not in education.
- Learn and Train - find a course or volunteering opportunity.
- Volunteering - Volunteering can help your career too. If you do not have much work experience or you're after a change, it's a way to learn new skills.

Apprenticeships



Digital economy apprenticeships are now recognised as a mainstream contributor to the supply of digital professionals. Below are some of the frameworks available.

Foundation Apprenticeships

Available for pupils in 5th or 6th year. Gain industry work experience whilst still at school.

- Software Development
- Hardware and System Support
- Creative and Digital Media
- Business Skills

Modern Apprenticeships

Available for anyone over 16. Learn in a real-world environment whilst earning a wage.

- Digital Applications
- Digital Marketing
- Digital Technology Level 6
- Digital Technology Technical Level 8 (Cyber Security, Cloud Infrastructure, Data Analytics, IT Support, Network Infrastructure, Software Development)
- Project Management Technical
- Engineering and Digital Manufacturing

Graduate Apprenticeships

Available for anyone over 16 to gain a degree qualification up to Masters while in work. Can also be used to upskill/reskill.

- Cyber Security
- IT: Software Development
- Data Science
- IT: Management for Business
- Business Management: Project Management
- Business Management (including Financial Services)
- Business Management: Business Analysis

Further information

There are many resources available to help your customers understand more about the digital economy and the opportunities this can bring.

CIAG - Schools

- Digital Technologies
- Skills Explorer
- Marketplace
- My World of Work Live
- A Guide to Cyber Security Qualifications in Scotland
- Sectoral Skills Assessments – Digital Technologies

CIAG – Parents and Carers

- MyWorldofWork
- Digital Technologies
- Parent and Carers Guide to Digital Careers
- Skills 4.0 Thriving in the Future
- Future of Jobs and Industry: Responding to the Speed of Change

Further information

There are many resources and organisations offering free training for individuals looking to upskill/reskill or move into new sectors. Below are some examples:

CIAG – Post School

- Free online courses through My World of Work.
- Skills Explorer tool will give learners an understanding of what their skills are and will help them decide which job they want and what to include in job applications to showcase the skills they have to offer.
- Skills Discovery tool will help you understand what you have to offer employers so you can decide your next steps.
- Microsoft Learn gives learners the opportunity to learn new skills and discover the power of Microsoft products with step-by-step guidance.
- Scottish Government Digital Academy provides high quality professional learning to public and third sector staff to build digital skills and talent.
- CISCO Networking Academy offer free 100% on-line self-paced courses at a time that is convenient to the learner.
- The Data Lab Academy offer a programme of workshops, networking events, masterclasses to students looking to start a career in data science.
- Open Learn through The Open University offers access to over 1000 free courses and is open to available to everyone.
- Google are offering free AI training for everyone in the UK.

Further information

There are many initiatives and support available to businesses looking to enhance their digital capabilities or engage with education to develop tomorrow's talent. Below are some examples:

Employer Support

- SCVO Digital Services provides free support to voluntary sector organisations and charities including support and advice on a range of digital topics including a free Digital Check-up.
- The ONE Agritech Programme which has been developed to support digital innovation in the agriculture sector.
- Traveltech for Scotland supports Scotland’s traditional tourism and hospitality companies to innovate and evolve their business models to help them sustainably recover and thrive in a digital world.
- Scottish Digital Academy which supports the development of digital skills and leadership across the public and third sectors.
- Find Business Support provides direction for business to Scotland's public sector support. There are many options for grants, funding, advice, help, events and more – all in a single location.
- SDS Employer Hub has a suite of skills planning tools to help you confidently manage the skills of your workforce.
- SDS Marketplace connects your business with local schools and colleges.
- Tech Industry in Schools toolkit provides information and resources for industry looking to support learners in the classroom.