

# A Consultation on the Digital Strategy for Scotland

A consultation response from the IET.

## Introduction

We are the Institution of Engineering and Technology ('The IET'), a charitable engineering organisation working to engineer a better world by inspiring, informing and influencing the global engineering community for the benefit of society. This response has been compiled in discussion with the Engineering Policy Group Scotland (EPGS) and other stakeholders (For further information ... see 'About the IET' at the end of this response).

## Opening statement

We welcome and support 'Renewing Scotland's full potential in a digital world: consultation ("the Strategy")'. We believe, if implemented, it can form the cornerstone for Scotland's future economic growth and provide a tangible route to recovery from the impact of COVID-19.

We support the vision of the document wholeheartedly as a bold statement of how Scotland see's its digital future and offer below additional actions to ensure Scotland's growth in the short, medium and long-term.

## Q1: 1. Do you think there are opportunities to realise this collaborative approach? Y/N please explain why?

**1.1 Yes.** We fully support the Strategy's ambition of collaboration and, as an organisation of over 10,000 members in Scotland, we are keen to play our part in its implementation.

**1.2** However, we feel there is an opportunity to broaden the remit of this strategy to take advantage of existing sector specific resources such as those in the manufacturing, energy and transport sectors.

## Q2: Of the opportunities which you have identified, which do you think are the priority ones?

**2.1** The opportunities for collaboration that we have prioritised focus on **Technology's role in Education and Business and Innovation** – two areas that intersect the sections identified in the Strategy. We have outlined in more detail the actions that need further attention in Question 4, but these can be summarised as:

**2.2** Working with businesses and educators to change how digital skills and computer science is taught in schools (from Primary 1), higher education and the workforce. This includes identifying new routes for teachers to upskill themselves and highlighting teaching as a career option to those with computer science/technology degrees.

**2.3** Collaboration between the tech sector and existing tech networks to provide business support and mentorship to start-ups and SMEs lacking in digital and technical skills. The IET has recently worked with a LEP in Birmingham and Solihull<sup>1</sup> provide links to IET members from the tech sector to provide business support and mentorship. Early reports have indicated this project is successful and we would be happy to be involved in a similar delivery in Scotland.

**2.4** The Scottish Government has ratified all 34 recommendations of the recent report by Mark Logan – ‘Scottish technology ecosystem: review’ (“the Logan Report”) but the report is only mentioned in one section of Strategy. We would like a greater integration between the Logan Report and this Strategy.

**2.5** As you will see from our responses below, we support the narrative put forward for the visions of each section, as well as a lot of the actions identified. We have provided our commentary on what additional actions we believe are required to support the vision in Question 4 and these all relate to the areas for additional collaboration listed above.

**Q3: Is the vision that we have set out in the supporting narrative in each of these sections the right one?**

- **No One Left Behind**
- **Services Working for All**
- **Transforming Government**
- **A Digital and Data Economy**
- **A Vibrant Tech Sector**
- **An Ethical Digital Nation**

**3.1** We support the vision set out for each section listed above but would like to encourage the final strategy be predominantly action led.

**Q4: Do you think that the potential actions set out in each section will deliver the vision set out in the supporting narrative Y/N?**

**4.1** Whilst there are many actions, we agree with in this Strategy we are concerned that they focus too much on the medium and long-term when there is a need for urgent action in this area to stimulate the Scottish economy. Additional actions are set out by section below.

### **No One Left Behind**

**4.2** We feel the actions listed do not go far enough to **emphasise the importance of an education system that builds digital skills**. It identifies that new skills will be required to access and thrive with new types of online, mobile and digital learning but does not fully explore the ways in which the education system needs reforming to accommodate future skills.

**4.3** There is an important distinction between having the digital skills and competence to utilise and access education and acquiring the digital skills to understand the fundamentals of technology that are required for the future jobs market.

**4.4** The first of these is not just linked to ensuring broadband coverage and instruction on how to use specific devices or software, it also encompasses the problem of digital poverty. The COVID-19 pandemic has forced the education sectors hand towards delivering lessons online but in lower income households’ access to a computer or tablet

has remained a barrier to education. COVID-19 has also highlighted the importance of community access to digital technology through libraries, etc.

**4.5** We acknowledge the work done by the £16million Inspire Learning programme to equip school pupils with iPads and also the £5million Digital Poverty Fund to support disadvantaged university students but would urge the Government to consider **undertaking a pupil survey across primary and secondary schools to identify where there are gaps in this provision.**

**4.6** The second issue of ensuring that pupils are taught the digital and technology skills necessary for their future employment requires a re-evaluation of the way computer science and its associated subjects are taught in Scottish schools.

**4.7** The Logan Report identifies that computer science is only taught intensively from the third year of secondary school in Scotland (S3) and the teachers undertaking these lessons do not typically have a relevance degree in Computer Science or a related discipline.

**4.8** The report also shows the clear link between technology start-ups and innovation and school-age education in computer science and digital skills highlighting the need for change in curriculum to include these subjects alongside traditional science disciplines.

**4.9** We do not condone teaching computer science over physics or maths in any circumstances as we consider that physics, maths and computer science need to be understood alongside each other – this means **a reallocation of time and resources within the education system is necessary, rather than just amending the curriculum.**

**4.10** Finally, teachers need to be afforded the time and resources to upskill themselves in digital technology – both utilising as a tool for education and the specific knowledge to be able to teach the subject.

**4.11** Coding, programming, computer research, cyber security, app development and many others are all areas that need to be taught earlier and more intensively, but the current cohort of teachers is unlikely to have the skills to do so.

**4.12** The Government could encourage this by providing free online courses to teachers over the summer as well as signposting them to further resources. In this way the Government is ensuring a level of digital competency amongst teachers whilst also encouraging ongoing personal development.

**4.13** The dual actions of **ensuring current education staff can upskill themselves and making education an attractive career route to those studying computer science and digital technology at university should be a priority of education reform** in Scotland.

### **Services Working for All**

**4.14** We also believe that there is more scope for collaboration between the public and private sectors through an integration and expansion of the CivTech programme into the recommendations of The Logan Report.

**4.15** On September 3<sup>rd</sup> the Scottish Government announced the created of five 'TechScalers' to support the next generation of Scottish start-ups and the **integration of the CivTech programme to the TechScaler network** is something we think should be made a priority by the Scottish Government.

**4.16** Regarding the action to adopt common digital and data standards – we think it is important that this work is not undertaken by the Scottish Government within the echo chamber of the public and third sector or on a solely national basis.

**4.17** The IET is supporting the work of the British Computing Society (BCS) following the publication of their report ‘Scaling up the Ethical AI MSc Pipeline (June 2019)’<sup>ii</sup> which they are using as a starting point to audit the current qualifications standards and code of ethics across the digital and computing sector.

**4.18** We would **advise the Scottish government to work with BCS if they aren’t already and the IET would be happy to provide Scottish contacts to facilitate this.**

### Transforming Government

**4.19** On the action of pooling digital and data expertise to remedy the lack of appropriate skills in the public sector, we again feel that the Scottish Government should not be considering this in the isolation of the public sector but rather as part of a larger challenge across all sectors.

**4.20** In 2018 Skills Development Scotland highlighted the need to fill 13,000 digital jobs in Scotland<sup>iii</sup> and this has been reiterated in 2019 by ScotlandIS<sup>iv</sup>.

**4.21** By working with the private sector to encourage apprenticeships and investing in skills development programmes that benefit everyone, employees will be able to move between the public and private sector more easily bringing experience and insight from the other to their new roles.

**4.22** The Logan Report proposes a ‘**Foundational Talent Pipeline**’ comprising of **school, university and ‘funnel wideners’ (those already in business looking to upskill or pivot roles)**. An approach such as this that encompasses all sectors would benefit government transformation and the future economy.

### A Digital and Data Economy

**4.23** The DigitalBoost programme is welcomed and we believe leveraging the existing technology networks in Scotland to deliver appropriate mentorship and business support will maximise the impact of the programme.

**4.24** As well as the IET’s local and technical networks pooled from our 10,000 Scottish members, the Logan Report notes that there are over 200 existing tech meetups in Scotland.

**4.25** In our opinion this strategy should focus on **leveraging these networks into collaboration with both the DigitalBoost programme and the CivTech** scheme in the previous section to maximise the number and variety of businesses that can be supported.

**4.26** The National Infrastructure Training Fund and the Digital Start Fund are also welcomed but we would like more clarity on how these schemes will support industry placements for both apprentices and university students.

**4.27** IET members often cite lack of experience as a key reason that they struggle to recruit to specialist engineering and technology positions. Employers and academics have also reported that COVID-19 has put work placements for students and apprentices in jeopardy as companies no longer have the capacity to support trainee positions.

**4.28** Assuming the schemes highlighted in this section will include the on the job training that employers seek, further **detail is needed on where these placements will come**

**from given limited availability** and if this will leave university students and apprentices competing further for work experience.

## A Vibrant Tech Sector

**4.29** This section of the consultation document is the only one to directly reference the Logan Report and as can be gathered from our previous comments we believe this to be an oversight.

**4.30** Much of the Logan Report has relevance to other sections as outlined above and as the Scottish Government has committed to all 34 of the report's recommendations it does not seem logical to overlook it until this point.

**4.31** Despite the Logan Report's relevance to this Strategy we do not believe that it should be the only reference point for creating a Vibrant Tech Sector.

**4.32** The Logan Report has been criticised for being too narrow in its assessment of the technology sector in Scotland – something that has been acknowledged by the Scottish Government and its author.

**4.33** We would therefore **like to see a wider assessment of the current state of the technology sector in Scotland undertaken** and further actions identified rather than relying solely on those in the Logan Report.

**4.34** Of the actions that are listed in the Strategy, the Innovation Ecosystem identifies the network of TechScalers but makes no mention of how these will interact with the other programmes and networks highlighted in the Strategy's other sections.

**4.35** If Scotland is to harness the technology expertise that already exists within industry it needs a coherent approach to the provision of technology hubs and networks that bisects the public and private sectors and works across all industries.

**4.36** These networks could be further expanded to include the provision of industry champions to schools to support the provision of a revised curriculum that focuses on digital and technology skills alongside traditional maths and science.

**4.37 The IET is well placed to support the Scottish Government in developing a cross sector networking programme, including a framework for further links between industry and the education system.**

**4.38** We welcome the emphasis of Green Data Centres as a key action and acknowledge references to the green economy elsewhere in the consultation document but feel that the digital skills shortage has not been fully explored in relation to this sector.

**4.39** There is an immediate requirement for green technology skills in Scotland that is not currently being met. The action to 'look at opportunities to expand specialist training' identified here needs more certainty and a clearer path to action given the urgent need.

**4.40** We recommend **making green technology a priority for the proposed retraining programmes in order to meet the more immediate need for digital skills in this sector.**

## An Ethical Digital Nation

**4.38** This section of the Strategy feels aspirational rather than action orientated, typified by the first action identified being 'set out a vision'!

**4.39** We would like to see more specific actions for tackling the issues of trust in data usage, digital rights and cyber security – which is not mentioned.

**4.40** Education in digital skills and data management from an early age is also to a future Ethical Digital Nation in order to ensure that the future workforce is best equipped to deal with new digital challenges.

**Q5: Are any of the potential actions more important than others? Y/N Please explain why**

**5.1 Yes.** We believe that the following actions should be undertaken as a priority.

**5.2 Education and Skills:** reallocate time and resources within the education sector and curriculum to support teaching of digital and technology skills alongside STEM from P1 onwards.

**5.3** Create route for current teachers to upskill to enable teaching of new subjects and advertise teaching as a career to university students studying digital technology and computer science.

**5.4 Business and Innovation:** reach out to existing networks of professionals through organisations such as The IET to deliver business support and mentorship function of new TechScaler network.

**5.5** Develop a framework to coordinate all the tech and digital business support networks and hubs across the public and private sector, including the provision of tech industry champions to schools.

**5.6** Align all sections of the Digital Strategy for Scotland with the 34 recommendations of The Logan Report as these have already been ratified by the Scottish Government and can act as a guide for the Strategy's actions.

**Q6: How realistic do you think it will be to deliver these potential actions?**

**6.1** All of the aspirations and actions identified in the Strategy and in this response are contingent on two factors: a strong economic base and public funding.

**6.2** In our opinion the Strategy does not contain enough actions that will immediately stimulate the economy without which many of the other medium and long-term actions will not be possible.

**6.3** Programmes geared towards providing tools such as rural broadband for SME development, digitalisation in manufacturing, logistics and health and providing support for start-up businesses that develop through to large businesses in Scotland (to prevent them being sold-on to multi-nationals and run elsewhere) stand far more chance of stimulating the economy in the short-term.

**6.4** The strain of COVID-19 and rising unemployment on the economy *should* provide the motivation to direct limited public funding towards the development of a vibrant tech economy in Scotland.

**6.5** It is our conviction that by incorporating more short-term actions into the final document The Digital Strategy for Scotland can be a cornerstone in Scotland's successful economic future.

**Q7: Is there anything else you wish to comment on that has not been covered elsewhere?**

**7.1** This Strategy comprises of visions and actions that the IET is happy to support but we would like to see some areas given more attention and the scope of the document broadened.

**7.2** The consultation does not consider how some of the issues identified such as the need for reskilling, digital adoption and business support models will affect different sectors such as manufacturing, the built environment, transport or healthcare to name a few.

**7.3** The strategy and its proposed actions will impact different sectors in different ways and only a few are considered in this document (education, green technology, tech businesses) – we would like to see a broader consideration of the strategy’s reach once it is implemented.

**7.4** If more work is planned in these areas the IET would be delighted to contribute our unique perspective of cross sectoral expertise and extensive representation in Scotland.

## About the IET

We are the Institution of Engineering and Technology (The IET), a charitable engineering organisation working to **engineer a better world** by inspiring, informing and influencing the global engineering community for the benefit of society.

We have engineer and technician members based all over the world (some 167,000 in total) working in **industry and academia** across energy, transport, digital, healthcare, construction, and manufacturing.

We promote STEM and careers in engineering. We provide a **professional home for life** to our members offering a wide range of knowledge services, membership and professional development.

We champion the expertise of our members, promote technology innovation with industry and create policy input for governments. We have an **active and passionate** membership in both the manufacturing sector and in Wales.

Our Board of Trustees has identified five societal themes which will provide a **focus for the charity** over the next decade. These will also help to inform our support and future engagement with you in developing and delivering the Framework.

These are:

- Sustainable planet
- Digital futures
- Healthy lives
- Productive manufacturing
- People-centric infrastructure

## Thank you

We welcome this opportunity to submit this response. We would greatly welcome the opportunity to talk to you in more detail about our ideas and the various ways in which the IET can support the Government, in this regard. Do please get in touch!

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<sup>i</sup> <http://smes.digitalwelcome.org/>

<sup>ii</sup> <https://www.bcs.org/media/3047/ethical-ai.pdf>

<sup>iii</sup> <https://www.skillsdevelopmentscotland.co.uk/news-events/2018/november/shortage-of-digital-skills-a-danger-to-the-scottish-economy/>

<sup>iv</sup> <https://www.bbc.co.uk/news/uk-scotland-scotland-business-48034202>