

Written Response by the Welsh Government to the report of the Economy, Infrastructure and Skills Committee entitled Industry 4.0 – the future of Wales

There are twelve recommendations in the report. These recommendations can be grouped into four categories: new opportunities, precision agriculture, connected and autonomous vehicles and future skills. Detailed responses to the report's recommendations are set out below.

Recommendation 1

The Committee considers it imperative that further work is carried out to ensure that Wales is the provider, not just the consumer of emerging technologies. The Welsh Government should carry out work to:

- identify the expertise and commercial strengths that exist in Wales, for example, in compound semi-conductors, insurance and healthcare;
- identify Wales' competitive advantages in the anticipated growth areas;
- support those sectors to position themselves at the forefront of global industry where strengths and competitive advantage align with predicted future growth.

Response: Accept

A series of external reviews have been carried out over the last few years including the Reid Review, the UK Science and Innovation Audits and a study by 'Be the Spark' to identify areas of expertise and commercial strength in Wales. These studies have identified a number of areas of competitive advantage and efforts are being supported by officials in order to secure development funding from a range of sources, including the Industrial Strategy Challenge Fund (ISCF) as well as through Welsh Government funding.

The existing suite of SMART operations support the development of new technologies through interventions such as grant funding for business R&D, Innovation Vouchers and support for third party advice. Research, Development & Innovation support is also provided to larger and 'Anchor' companies to develop new products and services. Examples of companies helped recently include IQE, Aston Martin, Airbus and Tata Steel.

In addition, the Welsh Government has also commissioned Professor Phil Brown to undertake a broad assessment of the technological advancements being made in automation, robotics, artificial intelligence, internet of things and large scale data and the opportunities and challenges for exploiting these technologies in the context of the Welsh economy and the future of work in Wales.

The review aims to investigate what action could be taken in order to shape the outcome and direction of digital innovation in Wales to ensure its benefits can be fully realised and shared by all, in line with the Welsh Government's commitment to a fair work nation, the focus of the Economic Action Plan and the commitments made in the Employability Plan.

Financial Implications – Mostly covered through existing funding programmes or by access to UK funding sources but more could be achieved with greater resources.

Recommendation 2

The Committee recommends that the Welsh Government should carry out a review of its support to companies in Wales who are seeking support from the UK Research, Development and Innovation Fund. The review should identify where its support could be strengthened. In addition, the Welsh Government should ensure that organisations representing businesses are aware of the support available in Wales when applying to the UK fund

Response: Accept

Officials have recently been working with a series of external stakeholders, including the CBI, Universities Wales and HEFCW to increase Wales' participation in UK RD&I funding competitions. This has led to a noticeable increase in the number of applications and also in attendances at workshops influencing the content of future funding calls.

This initiative is in addition to the existing means of support such as the Collaborative Research Innovation Support programme (CRISP) which already provides awareness raising of UK funding opportunities, including workshops, briefing events and bid and demonstrator support.

The Innovation Specialists within the SMART Innovation operation have been tasked with highlighting opportunities to exploit UK sources of funding and to use Wales specific support to build capability in those businesses not yet ready to compete on a UK level.

Officials are also exploring with external partners the possibility of introducing a new support programme for Welsh organisations seeking to bid into UK sources. This programme could include a review of the current support.

Financial Implications: None. Any additional costs will be drawn from existing programme budgets (apart from the new European Transition Fund programme whose costs are still under negotiation).

Recommendation 3

The Committee recommends that the Welsh Government should consider what more it could do to harness the expertise and contacts of the widest group of experts currently working in Wales, and among the Welsh diaspora. As part of that work, the Welsh Government should encourage universities to strengthen their alumni networks and create key links with alumni and other stakeholders to ensure that where expert links with Wales exist, opportunities to engage are not lost.

Response: Accept

HE institutions already work actively to cultivate their alumni networks within the UK and internationally. Welsh Government will discuss with sector representatives how

this can be built upon to ensure that such networks are used to their best strategic capacity in harnessing expertise.

There is a link with BeTheSpark and its role in connecting the entrepreneurial ecosystem working across the five stakeholder groups (academia, corporate business, entrepreneurs, government and risk capital). BeTheSpark could promote alumni case studies and utilise alumni at the FE/HE Event in 2019, including offering an opportunity for successful entrepreneurs from Welsh institutions to present at the event.

Financial Implications – None. Any additional costs will be drawn from existing programme budgets.

Recommendation 4

The Committee recommends that in order to help ensure Wales is at the forefront of emerging technologies, The Welsh Government should carry out a cost-benefit analysis of developing a model community in Wales, encouraging inward investment from big businesses wishing to pressure test emerging technologies and their effects on communities.

Response: Reject

Any single model community would be unable to provide all of the characteristics, demographics, topography, and so on that are necessary to pressure test many of the diverse emerging technologies.

Welsh Government is aware of a number of stakeholders currently drawing up propositions to develop various new technology test beds and it would be more prudent to work in collaboration with these activities rather than initiate a fresh study.

For example, Welsh Government is engaged with a given local authority and a series of external stakeholders in a project to develop the concept and a funding source of a public services test bed.

Financial Implications – None.

Recommendation 5

The Committee recommends that the Welsh Government should share the findings of the Farming Connect review of its demonstration innovation and focus sites, setting out clear and measurable actions it intends to take as a result of its findings. The actions should include the steps it will take to work with FE and HE to grow the demonstration sites to support the development, as well as the roll out, of new technologies.

Response: Accept

A purely internal review of the Farming Connect Programme demonstration, innovation and focus sites has been undertaken by Menter a Busnes and Welsh Government. The informal review sought to identify ways in which the demonstration

network could be improved to provide appropriate support to our farmers as we transition from the EU. The process of review will continue until such time as we gain a proper insight into the basis on which the UK will leave the EU, our future trading arrangements and clarity on the long-term funding of agriculture from the UK Government. Our future approach will also be informed to a great extent by the work currently well under way on (Brexit) sector readiness and our new Economic Resilience scheme.

Financial Implications – Any changes as a result of this recommendation will be borne by the Farming Connect contract part funded through the Rural Development Programme 2014-2020.

Recommendation 6

The Committee recommends that the Welsh Government should work in collaboration with FE and HE to develop made-in-Wales precision agriculture software and hardware suitable for Wales' small farms. Such innovation would not only benefit Welsh farms, but would have strong potential to create attractive exportable products.

Response: Accept

The current EU-funded programme, SMART Expertise, runs until 2023 and is available to HE and FE to apply, in conjunction with private sector partners, for funding towards the development of precision agriculture projects. Officials will explore with academic institutions the opportunities to benefit from this programme.

The Welsh Government will also ensure Welsh HE & FE are aware of any suitable grant funding opportunities that arise from InnovateUK in this area.

Finally, other Welsh Government research & commercialisation programmes such as Ser Cymru 2 and Knowledge Transfer Partnerships are also able to support work on projects in the field of precision agriculture.

Financial Implications: None. Any additional costs will be drawn from existing programme budgets.

Recommendation 7

The Committee recommends that the Welsh Government should consider what role it could play in encouraging connected and autonomous vehicle (CAV) companies to share pre-crash data to accelerate learning and safety across the industry.

Response: Accept

The Welsh Government will consider how it might engage with connected and autonomous vehicle (CAV) companies, the wider automotive sector and industry representative bodies, to seek their views on the possibility that CAV companies be encouraged to share pre-crash data to expedite industry learning and safety. In the absence of a voluntary industry co-operation agreement, the Welsh Government will explore what means can be achieved through regulation. Regulation affecting CAV is non-devolved to Wales and therefore Welsh Government officials would

engage with UK Government via the Department for Business, Energy and Industrial Strategy / the Department for Transport and the Centre for Connected & Autonomous Vehicles to explore if this could be achieved in the interests of public safety.

Financial Implications: None. Any additional costs will be drawn from existing programme budgets.

Recommendation 8

The Committee recommends that the Welsh Government should carry out a cost benefit analysis of the creation of a 5G test bed CAV centre in Wales to support home grown industry and inward investment.

Response: Accept

The first public 5G networks are expected to roll out in the UK over the next few years, with planning and research into preliminary implementations already underway. In Wales, the importance of seizing opportunities in this emerging market has been referenced within the Cardiff Capital Region City Deal, Swansea Bay City Region Deal and the North Wales Growth Deal narratives to date. Companies, universities and Governments across the world are focussing on the potential uses that this new technology will enable. The specific use cases for this technology are numerous including the intelligent and connected vehicle space.

The Welsh Government has a direct interest in establishing Wales at the forefront of 5G development to leverage and maximise the claimed transformative opportunities this technology promises to deliver.

The Welsh Government has commissioned Innovation Point to advise on, stimulate and exploit opportunities in the emerging 5G landscape, coordinate the work of key stakeholders and delivery partners and establish an appropriate governance framework for that activity.

Innovation Point has assembled an expert advisory group to support their work on behalf of the Welsh Government that is intended to help prepare and shape a coherent national 5G programme that delivers impact, innovation and scale in a Wales that contributes to the wider 5G UK ecosystem.

This Group consists of representatives from Government, Academia and Industry and opened for the first time on 27th September. This Group will provide valuable knowledge, insight, vision, leadership and best practice identified in other regions of the UK, and internationally. The Group's objectives reflect the Welsh Government ambitions for digital economic growth, as outlined in the economic strategy 'Prosperity for All' and its underpinning "Economic Action Plan.

The 5G testbed centre recommendation in Wales is something that Welsh Government will raise with the Group during the next session.

Financial Implications – None.

Recommendation 9

The Committee recommends that in developing its vision for post compulsory education, the Welsh Government should refocus and redevelop its support for lifelong learning, creating new and accessible ways for workers at risk of displacement by automation in the first waves to retrain and upskill.

Response: Accept

As a result of the rapidly changing economy (including automation, digital and STEM) and Brexit, there are and will continue to be different skills requirements and skills shortages in the future. This has meant that we have had to think differently about our learning support to individuals to meet these future needs. The Employability Plan sets out how Welsh Government plans to pilot Personal Learning Accounts for workers to fund personal vocational retraining in sectors where there is a skills shortage.

The Personal Learning Account pilot aims to instigate a renewed interest in learning, empowering individuals to take responsibility for their learning and insulating them from the shocks that they are likely to face in the economy, for example as a result of automation. Developing a culture of lifelong learning is key to helping people make the transition between job roles and aid career progression. The Personal Learning Account Pilot plans to test a new approach to understanding and meeting the needs of the local labour market in a more responsive way. It will provide a flexible learning entitlement model to support employed individuals to gain the right skills to either change careers or progress in employment at a higher level and address vocational training in sectors where there is a skills shortage to ensure the future skills needs of the economy are met. The pilots are currently being developed with the aim of launching in April 2019.

The recommendation has been accepted, pending further developments on the personal learning account and potential outcome of the pilots.

Financial Implications – £5m over 3 years. A bid has been submitted to the European Transition Fund, but has not yet been approved.

Recommendation 10

The Welsh Government should review how it can upskill and build confidence in the teaching workforce to incorporate digital tools into learning, ahead of the introduction of the new curriculum.

Response: Accept

Welsh Government is currently working with consortia digital leads and the National Digital Learning Council (NDLC) to refine a Digital Professional Learning Framework (DPLF) developed by pioneer schools and regional consortia. The DPLF has been designed to support and guide teachers and leaders to develop effective digital learning experiences for learners. The framework also aligns with the new professional teaching and leadership standards and will enable schools to demonstrate digital progression. The framework is currently going through final

iteration in readiness for full publication in an online interactive form. A phased approach to launching the fully interactive version will align with the launch of the National Professional Learning Model in the autumn.

Financial Implications – None. Any additional costs will be drawn from existing programme budgets.

Recommendation 11

The Committee recommends that the Welsh Government should establish a scheme to fund further Post-Doctoral learning in automation and AI-related fields, with the intention of retaining those skills in Wales.

Response: Accept

In 18/19 the Welsh Government commenced providing non-means tested loan support for doctoral degree study to eligible students ordinarily resident in Wales and EU students studying for a doctoral degree. This will include degrees in automation and AI-related fields.

The most common form of doctorate in the UK is the PhD or DPhil. The Engineering Doctorate or ENgD is also taken in significant numbers – a higher degree with a more direct link into industry. Providing support for designated postgraduate doctoral degree courses ensures that finance is a less significant barrier to study, allowing students to pursue their studies to the very highest level. Increased higher level skills for the economy, in a way which provides value for money for the taxpayer and results in economic growth and a more highly skilled workforce, provide the rationale for this support.

The maximum amount of loan an eligible student can receive is £25,000 over the period of the doctoral course. The loan is intended as a contribution to the cost of study, rather than to cover tuition fees or living costs specifically. Students may use this to support their studies as they see fit.

Wales' universities have an encouraging number of AI-related researchers already – working on AI applications ranging from disease predication to transport systems. Several of our major companies are already making regular and routine use of AI in their production facilities. A number of the Fellows appointed through the Sêr Cymru scheme are using AI or researching further into AI and its wide range of applications. We are keen to keep this expertise in Wales wherever possible.

Financial Implications – Any costs related to the non-means tested loan support will be met from within existing resources. Should we launch a fund to retain AI-related researchers at Post Doctoral level, there would be financial implications and this is something that is currently being considered.

Recommendation 12

The Committee recommends that the three Regional Skills Partnerships should review their plans for future requirements in light of the opportunities and challenges anticipated as a result of automation and AI.

Response: Accept

Following the attendance by the Minister for Welsh Language and Lifelong Learning at the Committee on the 7th June a letter was issued to the three Regional Skills Partnerships by the Minister on the subject of digital innovation and the Welsh economy.

RSPs have been asked to give consideration to digital innovation in this year's annual reports, expanding upon the work they undertook last year. This includes highlighting regionally important sectors where the issues of automation and AI are most prevalent and assessing any future impact in terms of the workforce. The Welsh Government is currently assessing their 2018-19 plans to inform the deployment of adult skills provision.

Financial Implications – None. There should be no additional costs associated with this work given that it can be incorporated within the existing work programme of Regional Skills Partnerships. Should gaps in evidence be identified there may be a requirement to commission further research which may incur additional costs.

Ken Skates AM, Cabinet Secretary for Economy and Transport