



Llywodraeth Cymru  
Welsh Government

# Review of Digital Innovation for the Future of the Economy and the Future of Work in Wales

**Interim Report**  
April 2019

# Review of Digital Innovation for the Economy and the Future of Work in Wales

## Interim Report

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Mae'r ddogfen yma hefyd ar gael yn Gymraeg.  
This document is also available in Welsh.

## Introduction

In March 2018 I was approached by the Welsh Government to lead an ambitious review into the implications of digital innovation for the economy and the future of work in Wales, the full terms of reference for which have been published online<sup>1</sup>.

Since my appointment as Chair of the review I have conducted a significant number of conversations with stakeholders both inside and outside of Wales, including through the work of a specially convened Expert Panel<sup>2</sup>, a supporting Action Group<sup>3</sup>, and joint working with the Future Generations Commissioner for Wales.

This update report aims to provide a snapshot of where the review has reached. It is by no means conclusive but rather indicative of the direction of travel and there is more work to be done over the remaining months to explore further the areas where we need to take action. I'm very keen to continue the constructive dialogue I have enjoyed with stakeholders before publishing my final recommendations in the summer.

## The scale of the challenge

Digital innovation is having a major influence on Wales' economy and labour market and will continue to do so as we look ahead. Concerns about technological unemployment resulting from automation, gig platforms and zero hours contracts, are interwoven in the debate about how technology will shape our lives in the future, including the type and quality of jobs on offer.

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What is clear is that we are also dealing with a moving target. Technology is advancing at an exponential rate, particularly as developments in areas such

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<sup>1</sup> <https://gov.wales/review-digital-innovation-economy-and-future-work-wales>

<sup>2</sup> <https://gov.wales/review-of-digital-innovation-for-the-economy-and-the-future-of-work/membership>

<sup>3</sup> With membership drawn from key social partners in Wales.

as Artificial Intelligence (AI) become more widely applicable and are underpinned by more progressive architecture through 5G connectivity, blockchain (distributed ledgers), and further ahead, quantum computing. Being dynamic and agile will be critical factors in our ability to anticipate and shape technological change in order to drive the economy and improve the quality of working and everyday life.

## What we mean by digital innovation

A key question for the review has been how we define digital innovation. It is difficult to pin down a precise answer other than to say that digital innovation includes, for example, technologies relating to the use of Artificial Intelligence (AI), the Internet of Things (IoT), elements of robotics, and the manipulation of big data sources. These technologies can be characterised as 'general purpose' technologies, not restricted to particular industries but impact across the whole economy, enabling new ways of doing existing things as well as creating new industries, such as gaming, robotics and wearable technologies.

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mostly change jobs*

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Despite this definition, I have avoided using digital innovation to exclusively define the scope of this review as it risks failing to understand that new technologies are an enabling, rather than determining, factor in shaping the future of work and the economy in Wales. Moreover, these technologies are no longer restricted to a standalone 'ICT sector', they are increasingly breaking down our historic view of sectors and occupations, such as in the case of the banking sector with the rise of new FinTech disruptors such as Starling, Monzo and Atom.

## Are robots taking our jobs?

There have been a number of headlines which fuel the perception that robots will take our jobs. Informed by my research I believe that the claims of digital innovation – particularly with regards to automation and AI – causing large-scale technological unemployment in 10-20 years are greatly exaggerated. The 'robots' will take jobs, make jobs, but *mostly change jobs*, however it will not be the robot apocalypse portrayed in some parts of the media.

I say this for a number of reasons. Firstly, the timelines put forward in a number of research studies are often vague and there is a big difference between Wales losing tens of thousands of jobs over the next decade versus over twenty to thirty years.

Secondly, many of the findings suffer from problematic research design, with figures varying depending on whether the method of analysis is on occupations or job tasks. Both approaches suffer from a somewhat simplistic 'substitution' model of what aspects of human labour can be automated. These approaches are inadequate because they take little account of differences in business strategies and the fact that employers will deploy technologies in different ways.

Thirdly, and finally, much of the existing research has focused on the prospects of 'technological unemployment' rather than on job creation. Most new job openings are likely to be 'replacement' jobs, although this does not mean that these jobs will remain the same.

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*Technology is not fate*

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Despite my scepticism, we should not ignore the fact that there is evidence to suggest digital innovation *is transforming work* and is doing so at all levels of the occupational structure. I also believe that many so called 'routine' jobs will remain a key part of the labour market. The future of work is therefore not simply skill-biased, and the middle of the occupational structure is not being 'hollowed out', but is changing its character.

## **How should Wales respond?**

Firstly, technology is not fate. We can make choices now which can shape our future relationship with technology. In making these choices we must avoid the trap of technological determinism with the belief that change will happen to us anyway and somehow technology is in control.

Secondly, we must see technology as a key enabler and recognise that in itself technology does not define what is to be enabled. Many companies in Wales are using different technologies in different ways. It is never simply a question

of substituting robots for people because it depends on the cost and quality advantages each pose. Moreover, rather than technology being used to control and monitor the workforce it has the capability to enhance the quality of work, such as in providing more flexible working arrangements.

Thirdly, and uniquely for Wales, we already have the legal framework under the Well-being of Future Generations Wales Act which gives us the permission to think and act differently in taking decisions on the tough policy challenges ahead. The Act, through the five ways of working<sup>4</sup>, provides a ready-made model for shaping our thinking and action in harnessing digital innovation.

## Opportunities for Wales

There are already a number of great initiatives taking place in Wales which I have been made aware of as part of this review and too many to list within this short update report. Part of my final recommendations will explore how these initiatives can be mainstreamed and scaled in order to meet the demands of the future. I will also be taking account of what digital innovation means for the people and communities of Wales not just the high tech innovative firms of the future. Specifically I will be considering the following areas:

### **1. Engaging citizens and international experts**

There is scope within our industrial policy for the Welsh Government to enhance its approach to advisory panels and groups, moving to a system which combines the views of citizens and experts who have international expertise on matters relating to new and emerging digital technology. This input will allow Wales to seek to redefine itself for a new global and rapidly changing digital landscape.

### **2. Utilising data analytics and AI**

Data analytics is a central feature in driving a more dynamic and responsive industrial and skills policy. Sophisticated analytics software can provide significant new insights augmenting industrial and labour market surveys. There is a real potential for Wales to harness new AI-driven data analytics technology to position itself as a world-leading centre for economic, labour market and business intelligence.

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<sup>4</sup> See <http://futuregenerations.wales/about-us/future-generations-act/> for further information on the Act.

### **3. Mainstreaming digital**

There are already significant initiatives evident in Wales supporting digital innovation. Exploring how best to join these up in a sustainable approach consistent with the Well-being of Future Generations Act will be critical to their future success. Underpinning the approach is a simple idea but complex task of 'mainstreaming digital'.

### **4. Re-presenting Wales to the World**

In order to respond to the challenges ahead we will need an ambitious outward facing (but inward serving) approach when it comes to digital innovation. One which takes a different approach in promoting Wales to the World and highlighting Wales' technological assets in areas such as cyber security, AI and data.

### **5. Strengthening non-routine cognitive skills**

Key meta skills such as non-routine cognitive tasks, problem-solving, emotional intelligence, creativity and philosophy, will become a key feature of our future workforce. These are the skills which AI technologies will find it difficult to replicate (and therefore automate), and are fundamental in putting technology to effective, and ethical, use. They are also essential to building the human capabilities for people to live fulfilling and meaningful lives.

### **6. Boosting business innovation and improving job quality**

Digital innovation will play a role in creating jobs however it is not just a question of creating these jobs at any cost but finding ways to improving the quality of work life (including wage rates) along the way. This will depend on how Wales can develop the business support mechanisms and methods for boosting business innovation in ways that serve the interests of both employers and employees in the process of job redesign and business transformation.

## **7. Supporting digital disruption and transformation**

Firms seen as digital disruptors appear more agile with 'digital' hotwired into their DNA thereby giving them the ability to quickly identify where they can utilise technology; not just from a business productivity perspective, but also taking into account quality of work issues and the work-life balance of their staff. This is not true for all firms in Wales and we will therefore need to explore further the industrial transformation process<sup>5</sup> which will be needed to move a larger proportion of firms closer to the ever-advancing digital frontier.

### **Next steps and final report**

There is a real opportunity to amplify the great work taking place in Wales and to present digital innovation as enabling a new social and economic partnership for Wales; one which builds on the Economic Action Plan and is aimed at transforming key industries and grassroots economic activity to deliver a productive, sustainable and inclusive society, building on our national commitment to improve the well-being for all, rather than to enrich a few. It is with this opportunity in mind I would like to explore further the notion of 'Wales 4.0' as a way of bringing together Wales' capabilities under the auspices of the fourth industrial revolution.

Further work is taking place in order to understand how some of my initial ideas presented in this report can be adapted for Wales. This will include scoping the action needed to build the capacity and capability of government, delivery and social partners, businesses and the workforce in pursuit of a working model for 'Wales 4.0'.

I would like to express my thanks to all those who have contributed to this review to date, especially members of the Expert Panel and the authors of the various briefing papers which I hope to publish alongside my final report. I also value the contribution of key social partners who continue to engage with the review

**Professor Phil Brown**  
**Chair, Review of Digital Innovation**

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<sup>5</sup> See later proposals on Industrial Transformation Maps building on the Singaporean model for industrial transformation.