TransFormWork PROJECT VS/2021/0014

****

NATIONAL REPORT – IRELAND

****

By

Kevin P O'Kelly, Project Researcher

and

Brian McGann, SIPTU Project Co-ordinator

****

This National Report is part of the Irish contribution to the European Commission, DG Employment, Social Affairs and Inclusion, funded project

TABLE OF CONTENTS

NATIONAL REPORT – IRELAND

****

By
Kevin P O'Kelly, Project Researcher
and
Brian McGann, SIPTU Project Co-ordinator

****

1 Historical trends and Development of Digital Transformation in Ireland

The *European Social Partners' Framework Agreement on Digitalisation*, in its *Introduction*, highlights the transformation of the economy as a result of the growing application of digitisation in the world economy. It states that this transformation

> *…brings clear benefits for employers, workers and jobseekers in terms of new job opportunities, increased productivity, improvements in working conditions and new ways of organising work and improving quality of services and products.* [1]

This Framework Agreement also acknowledges that there are also *challenges and risks for workers and enterprises as some tasks will disappear and many others will change.*

In this context, the world of work is experiencing, what is been called, the Fourth Industrial Revolution (4IR), a term to describe the changing world of technology, its impact on work and life and the facilitation of globalisation in trade and services. It was first used by Klaus M Schwab, the founder and executive director of the World Economic Forum (WEF), in an article to contribute to debates of this topic during the 2016 Annual Meeting in Davos. [2]

In his book, Mark Carney, the former Governor of the Bank of England, defines this era as resulting from the:

> *Applications of artificial intelligence are spreading due to advances in robotics, nanotechnology and quantum computing. Our economies are reorganising into distributed peer-to-peer connections across powerful networks – revolutionising how we consume, work and communicate. Enormous possibilities are being created by the confluence of advances in genetic engineering, artificial intelligence, nanotechnology, materials science, energy storage and quantum computing.* [3]

Carney suggests that 4IR will run from 2018 to, possibly, 2030 or beyond. [4] He points to how these ideas are in line with previous analysis of the impact of technology on work through the various industrial revolutions, including those of Adam Smith, Karl Marx, JM Keynes.

---

[1] *European Social Partners' Framework Agreement on Digitalisation* Brussels, 2020, *Introduction*

[2] See *Mastering the Fourth Industrial Revolution* Foreign Affairs, New York, December 2015 https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution
See also:
https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

[3] See *Value(s): Building a better world for all* M Carney, William Collins Books, London, 2021: page 2 and endnote p 531

[3] Carney ibid; pages 454 and 461. He lists the periods of the three previous industrial revolutions as approximately: 1IR was from the mid-1700s to 1840; 2IR from 1871 to 1914; 3IR from 1950s to early 21st century (see also https://en.wikipedia.org/wiki/Fourth_Industrial_Revolution).

Numerous Nobel Laureates, such as Joseph Stiglitz,[5] Paul Kruger, [6] and Amartya Sen [7] have also focused on the impact of technologies on employment, the growth of globalisation and the inter-connection of global economies.

The Fourth Industrial Revolution can be summed up as the continuum from steam power, electrical power, through electronics and information technology to digitalisation, communications technology, robotics and artificial intelligence.

2 Ireland and the Fourth Industrial Revolution

Ireland was an early participant in the *technology age* and in the Fourth Industrial Revolution. From the emergence of digitalisation, it has been the location of choice for computer manufacturing, providing high level employment in an emerging sector. The manufacture and assembly of hardware equipment led to the emergence of indigenous software enterprises and a key business sector which has become a world leader in software design. In more recent years the major social media companies have selected Ireland as their headquarters for the European, Middle East and Africa (EMEA).

Most of the major tech companies in the world, such as Apple, Microsoft, Dell, Intel, IBM, SAP, Facebook, LinkedIn, Twitter, HubSpot, eBay and PayPal are all located in Ireland, many with their EMEA headquarters in the country. It is estimated by the **Industrial Development Authority (IDA)** that there are almost 1,000 tech companies in Ireland ranging from the global superpowers to embryonic start-ups. The sector contributed an estimated €44 billion to the Irish economy in 2020. Incomes in the sector are approximately 50% higher than in the rest of the economy, with some 105,000 employees, [8] while it is estimated that the percentage of the Irish population using the internet on a daily basis in January, 2021 was 91%. [9]

The **IDA** was set up by the Government in 1949 to attract Foreign Direct Investment (FDI) into the economy. It was established in 1969 as a non-commercial semi-State enterprise and this status was under-pinned by the Industrial Development Acts, 1986-2019. The IDA continues to be the major agency attracting multi-national companies to establish offices and subsidiaries in Ireland. [10] The Authority made a conscious decision in the 1960s to target newly emerging technology companies, in particular US based companies. However, some of these companies were already showing interest in Ireland as a country for investment, with IBM becoming the first US technology company to set up in Ireland, when it opened its Dublin sales office in 1956.[11] Since then there has been a steady flow of FDI by technology enterprises. Some key examples of these include:

[5] *Making Globalisation Work* J Stiglitz, Allen Lane (London) 2006, pages 56-59

[6] See video masterclass by Prof Krugman: https://www.masterclass.com/classes/paul-krugman-teaches-economics-and-society/chapters/the-economics-of-technological-progress

[7] *Employment, technology and development: A study prepared for the ILO within the framework of the World Employment Programme* International Labour Review, Vol 152, (Geneva) January 2013.

[8] See *Future Needs, Future Thinking 2021* Technology Ireland, www.technology-ireland.ie

[9] https://datareportal.com/reports/digital-2021-ireland

[10] See https://www.idaireland.com/doing-business-here/industry-sectors/ict and https://www.nathantrust.com/insights/ireland-is-the-number-1-destination-for-us-tech-firms

[11] See *https://techarchives.irish/irelands-first-computers-1956-69/* The Swedish technology company, Ericsson, quickly followed in 1957

2.1 Manufacturing

The opening by **Digital Equipment Corporation (DEC)** of its mini-computer manufacturing site in Galway in 1971. At its peak, this facility employed 1,200. However, as laptop computers became more affordable and accessible, the demand for mini-computers declined and the factory closed in 1993. However, DEC continued to operate its software centre. The company was eventually taken over by **Hewlett Packard (HP)** in 2002 and this software centre has continued to grow and is now the HP European hub for its cybersecurity operations.

HP has had a presence in Ireland since the mid-1970s and it continued to grow during the following thirty years to a workforce of 4,000 in four locations across the country. Its largest campus is in Leixlip, Co Kildare, just west of Dublin, where the company invested some €21 million into an inkjet technology development centre in 2004. Hundreds more jobs were added to this campus in 2006 when HP expanded its financial services unit there for its EMEA operations.

Another major hardware investment was by **Apple**, which opened its manufacturing centre to assemble its laptop computers in Cork in 1980, initially employing 60 high-skilled workers. [12] By 2020 the workforce had grown to 6,000 employees on an extensive Apple campus. The original manufacturing facility has expanded and is now just one part of a range of activities and services that include AppleCare, Operations, Logistics and its European Headquarters. Employees from over 90 nationalities now work on the campus.

Dell Computers set up a manufacturing plant in Limerick in 1990, employing 1,900. However, with the growing global competition in laptop computers, Dell moved part of its manufacturing jobs to Poland in 2009, but continues to have a presence in Ireland, with its 'global hub' for Services, Sales, Operations, Software, Finance and Marketing and manufacturing, employing 5,000 in three locations.

2.2 Software

It is estimated that there are some 900 software companies, from the major transnational to small indigenous enterprises, employing approximately 24,000 people and generating €16 billion of exports annually. Nine out of the ten top global software companies are based in Ireland, which is now one the major research and development global centres in the financial technology sector – much of the financial, banking and insurance software used globally was or is been developed in Ireland. [13]

Some of the major success stories of Irish software development are:

- **Iona Technologies** was a spin-off from a technology campus research project in Trinity College, University of Dublin. Iona designed and marketed software that allowed for the connecting of systems and applications by creating a network of services using existing in-house technologies. It was at one point one of the world's

[12] The author attended the opening of the Apple plant in Cork by the Minister for Labour, Gene Fitzgerald TD in December, 1980. Steve Jobs, co-founder of Apple also participated in the opening ceremony.

[13] https://www.idaireland.com/doing-business-here/industry-sectors/software

ten largest software-only companies and some thirty new 'spin-off' ventures resulted from its work. Iona was sold to Progress Software in 2008 for €139 million. [14]

- **Cubix** is a leading mobile app, games and enterprise software development company, with an expertise in development and integrating complex enterprise-level solutions, business intelligence analytics, advanced web and mobile solutions. With over 8 years of experience, the company, employing about 900 workers in Ireland, UK and India, has worked for a range of global clients, including individuals, start-ups and other organisations. [15]
- **SynergySuite,** founded in 2011, provides totally integrated solutions for restaurant and hospitality management, bringing together inventory and procurement, recipe management, food safety, staff scheduling and other personnel needs, and accounting into one software platform. This company is now providing its software to clients in Europe and the US. [16]
- **Payslip,** a company based in the west of Ireland (Westport, Co Mayo) provides technology for global payroll management to multinational companies around the world. Their software systems automate payroll processes and standardise payroll data, helping transnational companies to centrally manage and control their global payroll operations. [17]
- **Stripe** is an online payment company, established by two brothers from Limerick in the South-West. One of the brothers, Patrick Collison, won the Young Scientist of the Year in 2005 and they went on to develop and sell a number of software packages. In 2010 they developed Stripe, which has now become a very successful company with a value of €6.5 billion and employs some 4,000 worldwide. [18]
- Finally, while not based within the Irish Republic, another Irish software success story in **Statsport,** which is based in Newry, Northern Ireland. The company is the world leader in tracking and analytic devises for elite sports people that are used extensively by club and national teams in soccer, rugby, GAA sports, etc. Its Apex GPS trackers, which include gyroscopes and accelerometers, provide competitors and trainers with vital information on performances and is used by sports organisations worldwide. [19]

2.3 Microprocessors

Another major technology investment in Ireland is the **Intel** microprocessor chip manufacturing plant close to the university town of Maynooth, Co Kildare. Intel opened its operations in 1989 and, since then, it has invested more than €12.5 billion in developing its campus into one of the most technologically advanced manufacturing locations in Europe. Over 4,900 highly skilled employees are employed in the facility. In July, 2021, Intel announced a further expansion with 1,500 construction jobs and, on completion, a further 1,600 permanent jobs. Intel has also established a subsidiary company, Movidius, an Intel company founded to develops technology to deploy AI on devices in a power-efficient way.

[14] https://en.wikipedia.org/wiki/IONA_Technologies
[15] https://www.cubix.co/
[16] https://www.synergysuite.com/en
[17] https://payslip.com/
[18] https://stripe.com/ie/
[19] https://statsports.com/about-us/ See also Irish Times article *Irish companies play to win in competitive sports tech arena* page 19, 15 July 2021. Another new sports software enterprise, Karios, is also based in Northern Ireland, in Belfast, provides solutions for sports planning for elite teams and athletes, including the tracking of training sessions, meetings with physios and medical appointments, etc.

2.4 Telecommunications

In 1999 the Government privatised the State-owned telecommunication company, Telecom Éireann (now Eir), which opened the Irish market up to competition from major transnational information technology companies. There are now three main service providers providing both landline and mobile networks to the Irish market. The rapid development of mobile and 'smart' 'phone technology also contributes to accelerating the telecommunication sector, with 74% of adults owning a smart 'phone. The majority of owners use their 'phone to access e-mails and visit social media services. [20]

2.5 Social media

The use of social media in Ireland has shown a substantial increase in the past ten years since the major social media companies set up their EMEA offices in Dublin. **Facebook** established its office in 2008 and has the highest penetration rate (December, 2019) of all social media companies in the Irish population. By 2020 it is estimated that there were 3.3 million Irish users of Facebook, with the main users in the 25 to 35 years age bracket (25%) and the 35- to 44-year-olds (22%).

In the percentage of users, Facebook is followed by other major social media companies, **Instagram** (43%), **LinkedIn** (35%) and **Twitter** (30%). The percentage of people using social media in Ireland is estimated to have increased from 40% in 2011 to 76% in January, 2021.[21]

2.6 Top technology companies

As a result, this investment and involvement of IT companies in the Irish economy has resulted in five of the top ten companies and fourteen of the top fifty companies are all major multi-nationals, employing a total of over 42,000 workers (approximately): [22]

1 Apple Ireland (6,000 employees)
2 Google (7,000)
3 Microsoft (2,000)
4 Meta (Facebook) (6,000)
10 Dell Ireland (5,000)
15 Oracle (1,400)

[20] https://www.statista.com/statistics/494649/smartphone-users-in-ireland/
[21] https://datareportal.com/reports/digital-2021-ireland
[22] *Top 1000 Companies* Irish Times, June 2022. Rankings are based on a) turnover; b) profits; c) number of employees, etc.

3 National Framework for Digitalisation

3.1 National Social Partnership Programmes

From 1987 to 2009 a series of Social Partnership programmes were agreed between successive governments, the trade unions, employers' organisations and a number of civil society organisations. While, in the early national programmes, very little mention was made of technology and work, it became an increasingly important item for agreement in later programmes. For example, the *Programme for Competitiveness and Work (1994-1996)* set out objectives for innovations through research and development and the establishment of regional technology centres to support industries in introducing relevant technologies.[23] The *Programme for Prosperity and Fairness (2000-2003)* included a major section on the Information Society. It supported the Governments strategy, as set out in its *Action Plan of Implementing the Information Society in Ireland*, including the importance of education and a 'learning society'. [24] Finally, the last social partnership agreement – *Towards 2016 (2006-2015)* included a key Section 3 *Strategy for Science, Technology and Innovation* setting out key objectives over the ten-year framework agreement. [25]

3.2 Programme for Government 2020

Government policies continued to build on the progress made during the era of Social Partnership agreements and following the inconclusive outcome of the 2020 General Election, three parties, Fianna Fáil, Fine Gael and the Irish Green Party, negotiated a Programme for Government, which included a section on a *National Digital Strategy*, with five objectives:

- To increase the level of national connectivity, particularly in rural communities, through the implementation of the National Broadband Plan, which was launched in 2019
- To continue the digital transformation of Public Services, including a greater integration of digital services and to move to greater e-government
- To further develop Ireland's leadership in new digital technologies, including
    - Cloud computing,
    - Data analytics,
    - Blockchain,
    - Internet of Things
    - Artificial Intelligence.
- To direct the Office of Government Procurement to support the adoption of new technologies through the development of new public service frameworks.

[23] *Programme for Competitiveness and Work Government* Publications, February 1994, page 14

[24] See https://dspace.uevora.pt/rdpc/bitstream/10174/12999/31/*47ieimplementingtheinformationsocietyinirelandan*.pdf

[25] This Social Partnership Agreement was terminated by the Government in 2009 as a result of the challenges to the economy by the global financial and economic crisis and, consequently, the long sequence of tripartite national agreements came to an end.

- To explore how Ireland can be at the forefront of protecting citizens' rights with respect to facial recognition technology, access to encryption tools, and net neutrality.

This *National Digital Strategy* builds on the work of previous governmental strategies over many decades, through the relevant State companies and agencies and through educational policies, such as:

The role of **Enterprise Ireland** is to assist Irish based and indigenous enterprises to develop new export markets. It is a State agency, which was established by the Industrial Development (Enterprise Ireland) Act 1998. It provides funding, advice and introductions in key international markets. It funds perspective exporters to participate in trade shows and business events in key export markets. Enterprise Ireland took over the functions of thirty-five County and City Enterprise Boards, that were set up to promote economic development, to stimulate entrepreneurship and SMEs.[26] Local Enterprise Offices (LEOs) were set up to support the work of Enterprise Ireland at local levels. There is a LEO in each local authority area with dedicated teams offering a wide range of experience, skills, services and funding. LEOs also promote enterprise and entrepreneurship and foster a culture of enterprise. These offices provide key supports for digitalisation of SMEs and up-skilling of workers. [27]

Indeed, for the past five years Enterprise Ireland and the IDA have collaborated on and jointly sponsored market-focused strategic research and development carried out through a network of ten technology centres that allow Irish companies and multinationals to work together on R&D projects in collaboration with national research institutions. The technology centres span a range of sectors, including pharmaceuticals, food, manufacturing, microelectronics and composite materials and have access to the expertise of highly qualified researchers based in the universities and, in particular, the new technology universities (see page 12). [28]

3.3 European Commission Covid-19 Stimulus Fund and the National Recovery Plan 2021

In July 2020 the European Council adopted a historic €750 billion recovery package for Member States. [29] To draw down funds from this initiative, each country was required to draft a national recovery plan, outlining how it would invest the funds allocated to it.

In its plan, the Irish Government set out three key priorities – Priority 2 committed to *Accelerating and Expanding Digital Reforms and Transformation* with six key investments, totalling €291 million as follows:

- *Development of a Shared Government Data Centre to support digitalisation of Government services through delivery of high-quality Data Centre facilities;*
- *Programme to Drive Digital Transformation of Enterprise in Ireland through the introduction of a new grants scheme for businesses to support digitalisation and the establishment of European Digital Innovation Hubs in Ireland;*

[26] https://enterprise.gov.ie/en/
[27] https://www.localenterprise.ie/About-Us/Services/
[28] See Irish Times report, 19 February 2019 at https://www.irishtimes.com/business/innovation/partner-profile- enterprise-ireland/tech-centres-bridging-the-gap-between-research-and-industry-1.3797872?mode=amp
[29] https://ec.europa.eu/info/strategy/recovery-plan-europe_en

- *A Programme to Provide Digital Infrastructure and Funding to Schools will see high speed broadband connectivity provided to over 1,100 primary schools and grants provided for schools to purchase ICT infrastructure;*
- *Provision of an Online Response Option for the Census of Population as part of Census 2026 which could also be used for other CSO and Government surveys;*
- *Using 5G technologies to Drive a Greener More Innovative Ireland will see Government use 5G technology to enhance connectivity and service provision;*
- *Roll out of a number of eHealth initiatives including community eHealth solutions, investment in ePharmacy and in an integrated financial management system as part of wider health system reform.* [30]

Following the assessment of the National Recovery Plan by the European Commission, Ireland was allocated just under €1 billion from this fund, which was adopted by the ECOFIN Council on 13 July, 2021. Of this, Ireland is allocating 32% (€293 million) to different aspects of the digitalisation, such as:

- *Further improvements in the digitalisation of public administration and services (€105 million)*
- *€85m to go to the digital transformation of Irish enterprises*
- *€64m for the funding of connectivity and ICT devices in schools*
- *€39m to the development of a shared Government data centre.*

The Irish Congress of Trade Unions (ICTU), in its submission to the Government's (January, 2021) consultation on the development of the post-pandemic national recovery plan, recommended that the minimum 20% for the digital transformation of Ireland's allocation under the EU Recovery and Resilience Facility be focused on upgrading the healthcare digital infrastructure and on digital education and training.[31] While the employers' organisation, Irish Business and Employers' Confederation (IBEC), set out its vision for the post-COVID workplace as:

> *… a new era of quality job creation and improved living standards. An era defined by an embrace of technological and workplace change in business, at home and right across society. An era that provides individuals and organisations with the environment and supports they need to thrive and reach their full potential.*

Including:

- *Investment in skills and employability*
- *Flexibility at all life stages*
- *A dynamic labour market*
- *Smoother career transitions.* [32]

Digital reforms included in the National Recovery Plan to address the 'digital divide', would ensure that all those in education can develop the skills to engage in the digital economy and take advantage of the digital transition. On the topic of social and economic resilience, there

[30] *Ireland's National Recovery and Resilience Plan Europe's Contribution to Ireland's Recovery* Government of Ireland, October 2020 (updates June 2021).
See https://www.gov.ie/en/publication/d4939-national-recovery-and-resilience-plan-2021/

[31] See https://ec.europa.eu/info/sites/default/files/economy-finance/rrf-factsheet.pdf Subsequently the Government allocated 32% to a range of digital related projects (see page 10 above)

[32] file:///C:/Users/okell/Downloads/SWSWCampaignBrochureWEB.pdf

is €114m for reskilling and upskilling workers in the labour market – something seen as key in the effort to get people back to work after the Covid-19 pandemic. [33]

3.4 *Security*

With so many technology companies locating their EMEA Headquarters and other facilities in Ireland, in particular software and social media companies, and with the enactment of the EU General Data Protection Regulation (GDPR) Regulation 2016/679, the role of the Irish Data Protection Commission (DPC) has taken on a particular importance within the EU and in the 'policing' of the electronic sectors.

The DPC was set up under the Data Protection Act, 2018, which also transposed the GDPR into Irish law, but it also works within the framework of earlier data protection legislation, the Data Protection Acts, 1988-2003. It is the national independent authority responsible for upholding the rights of EU citizens to have their personal data protected and it is the supervisory national authority responsible for monitoring the application of the GDPR. This includes the Law Enforcement Directive (LED), EU Directive 2016/680, which was enacted in parallel to the GDPR.

The DPC also has statutory powers related to other regulatory frameworks, including the ePrivacy Regulations (2011) which transposed the ePrivacy Directive 2002/58/EC (as amended by Directive 2006/24/EC and 2009/136/EC) into Irish law. This legislation covers any personal data transmitted by electronic communications (including, amongst other things, unsolicited electronic communications made by phone, e-mail, and texts). [34]

The European functions of the DPC include supporting the work of the following EU bodies:

The European Data Protection Board (EDPB) is an independent European body, which contributes to the consistent application of data protection rules throughout the EU and promotes co-operation between the EU's data protection authorities, which include:

- *The Customs Information System (CIS) Supervision Co-ordination Group and the Customs Joint Supervisory Authority supervise data processed within the CIS to ensure compliance with data protection legislation*
- *Europol Co-operation Board (ECB) is designated as the supervisor of personal data processing since 1 May 2017. The EDPS cooperates closely with national supervisory authorities through the ECB*
- *The Co-ordinated Supervision Committee (CSC) is a group comprised of national data protection supervisory authorities and the EDPS. The CSC was established within the framework of the European Data Protection Board to ensure co-ordinated supervision of certain large scale IT systems and EU bodies, offices and agencies.*

The EURODAC Supervision Co-ordination Group ensures that the sharing of personal data relating to asylum seekers between EU countries takes place in a manner that respects data protection rights.

[33] https://www.rte.ie/news/business/2021/0716/1235527-ireland-eu-recovery-fun/
[34] https://www.dataprotection.ie/en/who-we-are/our-international-work

> *The Schengen (SIS II) Supervision Co-ordination Group ensures that personal data within the European Schengen Information System is processed in a manner that respects privacy rights.* [35]

Another key organisation in IT security is the *National Cyber Security Centre (NCSC*) which was set up in 2011 as an office within the Department (Ministry) of the Environment, Climate and Communications (DECC). This Centre is responsible for advising Government IT and critical national IT infrastructure providers of current threats and vulnerabilities associated with network information security. It is mainly focused on the cyber security of Government networks and the security of the national infrastructure.
The role of the NCSC includes the National/Governmental Computer Security Incident Response Team (CSIRT-IE). [36]

In May 2021 a ransom attack on the national health service, the Health Services Executive (HSE) brought the need for regulation and supervision of data into sharp focus. This cyber-crime and breach of data protection was the most significant digital attack on the Irish State. It caused all of the HSE IT systems nationwide to shut down, crippling the health services at a critical time in the battle against Covid-19. The attack had a significant impact on hospital appointments across the country, with many appointments cancelled, including all outpatient and radiology services and the postponement of scheduled medical procedures.

Security researchers believe this attack was carried out by a Russian based cybercriminal group known as Wizard Spider. In a ransom note posted online, the group threatened to publish the health network's stolen data, unless a ransom of $20 million was paid. Having refused to pay, the HSE confirmed that confidential medical information for 520 patients, as well as sensitive corporate documents, were later published online, on the 'dark-web'.

It is estimated that the HSE had to replace some 30,000 laptops and that the estimated cost of restoring all its IT systems is €500 million. By early July 2021, the HSE had 'decrypted' about 80% of its servers and some 79% of its computer devises.

The DPC and the NCSC were notified immediately after the cyber-attack and both organisations have been central to the investigation.

4 The Role of the Social Partners

In March 2020, the National Economic and Social Council (NESC) produced a set of recommendations to Government aimed at addressing employment vulnerability in the delivery of interconnected green and digital transitions. [37] This report recommendations were a result of joint work between several economic and societal stakeholders including government, IBEC and the ICTU and other interested groups. [38] The NESC recommended

[35] ibid

[36] In the aftermath of the ransom attack on the HSE IT systems, it is widely agreed that the NCSC has been understaffed and underfunded for many years The high level of expertise and experience required, and the levels of Public Service remuneration on offer in comparison to that available in the private sector, makes it extremely difficult to recruit and retain staff for this office.

[37] National Economic and Social Council or NESC (March 2020) Paper No.149, *Addressing Employment Vulnerability as Part of a Just Transition in Ireland.* See: http://files.nesc.ie/nesc_reports/en/149_Transition.pdf

[38] The Science, Industrial, Professional and Technical Union (SIPTU), a partner in the TransFormWork project, also participated in these discussions

that government adopt further social dialogue and an inclusive approach that included continuous pre-emptive workforce development, resilient enterprises and high-impact funding to support transition, in an enterprise policy context that positions the creation of quality jobs as a top objective.

Further studies on the impact of technologies on work have been undertaken within both the trade unions and employers' organisations and there is general agreement that an all-Ireland tripartite approach is needed and, indeed, has been the norm in recent decades. For example, both ICTU and IBEC have responded to the Government's public consultation (April 2021) on the introduction of a statutory right to request remote working (see page 16). In response to the consultation the Government's policy document *Make Work Remote* [39] includes a commitment to legislate for this right during 2021. Both representative bodies also participated in the development of a Workplace Relations Commission's (WRC) Code of Practice for employers and employees on the right to 'disconnect'. [40]

The ICTU associate organisation, the **Nevin Economic Research Institute** (NERI), has also undertaken a number of research studies under the overall title of *Employment and the Future of Work,* including the effects of automation and the green transition on employment between the financial crisis in 2008-2009 and the onset of the Covid-19 pandemic in 2020, looking at aspects of new technology and work in both Northern Ireland and the Republic [41] and an analysis of the employment in the digital and technology sector. This report estimated that there were 166,800 workers in the sector in 2021. [42]

The NERI 7th Annual Labour Market Conference, held in Magee College, Ulster University, Derry, May 2019, specifically focused on different aspects of the future of work and new technology.[43]

In analysing the future of work in the digital age, the former Director of NERI, Dr Tom Healy, speculated on the impact of the speed of change - *what will the next thirty years bring?*

> *For sure, rapid changes in technology will continue to transform the way we live and the manner in which business trade and communicate. New and faster connections facilitate a rapid exchange of information as well as a consolidation of huge stores of data that transcend national boundaries and regulations. Real-time technology has transformed the way public and private services are delivered. These changes have transformed globalisation and trade and have impacted on the structure of demand for skills and knowledge.* [44]

For the employers' organisation, Technology Ireland is an sectoral association within IBEC. It is mainly a sectoral lobby group for the technology companies and enterprises in Ireland. In 2020 it published *Future Needs, Future Thinking* which sets out four key pillars to shape the future and puts forward a vision for the Technology Sector in Ireland on:

- Education and skills
- Competitiveness and constraints

---

[39] See https://enterprise.gov.ie/en/Publications/Publication-files/Making-Remote-Work.pdf
[40] See https://www.workplacerelations.ie/en/what_you_should_know/codes_practice/code-of-practice-for-employers-and-employees-on-the-right-to-disconnect.pdf
[41] ICTU is an all-island trade union confederation and NERI also operates on an all-island basis.
[42] *The Digital and Tech Sector in Ireland,* MacFlynn, P, NERI Report Series No 16 June 2022
[43] https://www.nerinstitute.net/our-work/employment-and-future-work
[44] *An Ireland Worth Working For – Towards a new democratic programme* T Healy, New Island Books, 2019, p74

- Supporting digitalisation across Ireland and managing and protecting data
- Taxation policy and investment support.

It captures the key policy priorities of the sector together with several recommendations, to secure a healthy ecosystem for the sector and enable it to continue to contribute to Ireland's success. The digitally intensive sector now directly employs over 210,000 people. [45]

4.1 *Examples of Good Practice*

From Institutes of Technologies to Technology Universities
To provide the skilled workforce for this rapidly development of the digital economy, the Government, first, focused on the provision of high qualified graduates from third-level education centres. In the 1960s fourteen Institutes of Technology were established following a Government report *Training of Technicians in Ireland* (1964), which identified significant skill gaps, including:

> *…a serious difficulty in the task of raising the standards of technicians in Ireland is the lack of a nationally recognised technician diploma. The absence of such a diploma deters many parents from considering sub-professional technician careers for their children.*

This was followed by the setting up of the *Steering Committee on Technical Education*. Its report (*The Mulcahy Report* (1967)) was an important milestone in framing the institutional structures and functions for technology education and the establishment of new Institutes of Technology. [46]

The Institutes of Technology (ITs) proved, since their establishment from 1970 on, to be extremely successful and, recognising this, within the past three years the Government has merged all the ITs into five Technology Universities.[47] To support these developments and to co-ordinate third-level education across all universities and institutions, a new Government ministry was established following the 2020 general election, the Dept of Further and Higher Education, Research, Innovation and Science.

4.2 *Skillnet Ireland*

Skillnet Ireland is a business support agency of the Government dedicated to workforce development and with a mandate to support the competitiveness, productivity and innovation of Irish businesses through enterprise-led skills development to ensure a highly skilled workforce and that businesses have the available skills they need for competitiveness in their

[45] See https://www.technology-ireland.ie/Sectors/TI/TI.nsf/vPages/About~Press~future-needs,-future-thinking-2020-04-11-2019/$file/TI+Future+Needs,+Future+Thinking.pdf
[46] See https://en.wikipedia.org/wiki/Institutes_of_technology_in_Ireland
[47] Three Institutes of Technology were merged on 1 January 2019, to form Technology University, Dublin, (TUD). Two further Institutes merged to form the Munster Technology University (MTU) (January 2021). The Technical University, Shannon (TUS), was established (October 2021) through the merger of two further Its and, finally, another two ITs merger in May, 2022, to form the South-East Technology University (SETU). See also: https://hea.ie/policy/he-reform/technological-universities/

relevant markets. This is delivered through a number of skill training programmes, such as the *Digital Skills Accelerator* and the *Future in Tech Academy.*

Skillnet supports over 21,000 businesses nationwide and provides a range of valuable learning experiences to over 81,000 trainees with training and upskilling which enhances their career mobility. Skillnet operates a joint investment model, where Government grants are combined with contributions from enterprises, thus reducing costs and other barriers for businesses. Having a key role for enterprises ensures that the training programmes are relevant to the needs of industry. This approach also enables cohesive enterprise networking and the flexibility to respond to ever-changing skills demands through both formal and informal learning. Skillnet is supported by the trade union movement at local and national levels.

4.3 Science Foundation Ireland (SFI)

SFI was set up in 2000 to administer the Government's €646 million *Technology Foresight Fund* and was put on a statutory basis in 2002. It provides awards to support scientists and engineers working in the fields of science and engineering that underpin biotechnology, information and communications technology, sustainable energy and energy-efficient technologies.

The Foundation invests in academic researchers and research teams who are most likely to generate new knowledge, leading edge technologies and competitive enterprises in the fields of science, technology, engineering and maths (STEM). Links are provided to grant and funding opportunities for STEM research. Proposals are evaluated in open competitions by a combination of international peer reviews and that they strategically fit with the SFI's objectives.

One of these programmes is the *Strategic Partnership Programme*, which supports research initiatives with strong potential for delivering economic and societal impacts. Since 2013, twenty-eight projects addressing challenges in areas such as healthcare, climate change and financial services have benefitted from €40 million in funding under the programme

Another support programme is the *Frontiers for the Future* 2021 which, in particular, supports top talent and excellent research themes. This programme will enable SFI to deliver on its target to provide grants to support 140 individual-led research projects and to work closely with and support the new Technological Universities.

When the SFI set out its objectives in March 2022 for the next three years, it was already involved in 5,700 international research partnerships across 84 countries. The new three-year objectives include:

- Increasing SFI individual-led research awards to 140 annually
- Attracting 20 world-leading researchers to Ireland every year (the current number is two to three annually)
- Increasing "women leaders" in research to 35 per cent
- Having 65 per cent of postgraduate and postdoctoral researchers departing to positions outside academia after six years. [48]

[48] https://www.sfi.ie/research-news/publications/SFI-Annual-Plan-2022.pdf

4.4 *Connecting and Disconnecting*

The Government had already begun to address the issues of remote working in Ireland when it published a discussion paper in December, 2019, in advance of the COVID-19 pandemic. [49] Following on from this publication and in the light of the impact the pandemic was having (and would continue to have) on working arrangements, it held an extensive consultation in 2021, which resulted in the publication of a *National Remote Work Strategy*. [50]

As part of this strategy, a *Code or Practice on the Right to Disconnect* was published by the Workplace Relations Commission (WRC) and signed by An Tánaiste (Deputy Prime Minister) and Minister for Enterprise, Trade & Employment, Leo Varadkar TD, in April, 2021. [51] This Code of Practice gives employees the right to switch off from work outside of normal working hours, including the right to not respond immediately to emails, telephone calls or other messages. There are three rights enshrined in the Code:

- The right of an employee to not have to routinely perform work outside their normal working hours
- The right not to be penalised for refusing to attend to work matters outside of normal working hours
- The duty to respect another person's right to disconnect (e.g., by not routinely emailing or calling outside normal working hours). [52]

The *Remote Working Strategy* also included the commitment to introduce legislation giving employees the right to request remote working. Draft legislation was introduced into the Oireachtas (Parliament) in January, 2022. While it has yet to be enacted, it will provide a legal framework around which *requesting, approving, or refusing a request for remote work* can be based. It will also provide legal clarity to employers on their obligations for dealing with such requests.

However, while it does not provide for a legal right that would provide for controls on 'connecting' and 'disconnecting' while working remotely, in particular, from home, it does propose to protect employment rights under existing legislation, including:

> *… (c) and unfavourable changes in conditions of employment of the employee, transfer of duties, change of location of place of work, reduction in wages or change in working hours …* [53]

4.5 *Artificial Intelligence and Robotics*

The current focus of Irish research and innovation is on artificial intelligence (AI) and robotics. According to Eurostat, Ireland has recorded the highest share of enterprises (23%) that used any of the four considered AI applications in 2020. [54] The installation of high-speed

---

[49] https://enterprise.gov.ie/en/publications/publication-files/remote-work-in-ireland.pdf

[50] https://enterprise.gov.ie/en/publications/publication-files/making-remote-work.pdf

[51] Codes of Practice are sets of written rules which define how persons or bodies must act in given situations. In Irish law they are considered a guides for adjudication in the event of a dispute, but do not have legislative force, although they can be taken into consideration by tribunal or judiciary arbitrators.

[52] https://www.workplacerelations.ie/en/what_you_should_know/codes_practice/code-of-practice-for-employers-and-employees-on-the-right-to-disconnect.pdf I

[53] https://enterprise.gov.ie/en/legislation/legislation-files/draft-scheme-of-the-right-to-request-remote-working-bill-2022.pdf

[54] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210413-1 The four AI applications used by Eurostat are: a) Machine learning to analyse big data internally; b) A chat service, where a chatbot or virtual

cyber optic cabling and more powerful semi-conductor micro-chips are providing the tools for industrial, educational and social applications of algorithms for AI, robotic and machine learning.

> *In the last ten years AI and machine learning are having a huge impact on our lives. Healthcare, security, business, finance and education have experienced the most important changes.* [55]

This article also predicts that businesses are already changing how they operate from 'communicating with customers, through automating workflows and managing network securities. The Covid-19 pandemic is speeding up the application of AI, as working-from-home employees need access to reliable and secure high-speed communications. As noted by a recent Accenture study

> *From an Irish perspective, many organisations are ramping up investment in foundational AI capacities, such as cloud platforms, data architecture and governance.*

While it is also noted that larger enterprises are

> *…embracing Industry 4.0 and most are adapting very rapidly and capitalising on the technology much sooner.* [56]

To facilitate these developments, the Government has published its national strategy which sets out a vision for Ireland as a leading centre in the use of AI through a people-centred and ethical approach to AI adoption and use.

> *Underpinning our Strategy are three core principles to best embrace the opportunities of AI – adopting a human-centric approach to application of AI; staying open and adaptable to new innovations; and ensuring good governance to build trust and confidence for innovation to flourish, because ultimately if AI is to be truly inclusive and have a positive impact on all of us, we need to be clear on its role in our society and ensure that trust is the ultimate marker of success.* [57]

The Government is also backing research, including through the Centre for Applied AI (CeADAR),[58] and Trinity College, University of Dublin, has launched a new artificial intelligence accelerator programme, while the University of Limerick is pioneering new integrated undergraduate and masters' degrees in partnership with technology and software enterprises, including Stripe, to support new AI based start-ups. [59]

---

agent generated natural language replies to customers; c) Use of service robots, which are characterised with some degree of autonomy, for example to carry out cleaning, dangerous or repetitive tasks such as cleaning up poisonous substances, sorting items in the warehouse, helping customers in shopping or at payment points etc.; d) use of natural language processing, natural language generation or speech recognition

[55] Alessia Paccagnini, Smurfit Business School, University College, Dublin, in an article by Sandra O'Connell, Irish Times, 23 July 2021: https://www.irishtimes.com/special-reports/ai-focus/ai-has-changed-the-way-the-world-works-and-offers-rewarding-careers-1.4621301

[56] Bannon D, ibid

[57] https://enterprise.gov.ie/en/Publications/Publication-files/National-AI-Strategy.pdf Foreword to the *National AI Strategy, July 2021,* by Robert Troy TD, Minister of State with responsibly for Trade Promotion, Digital and Company Regulation

[58] https://www.ceadar.ie/

[59] O'Connell, Irish Times, op cit

Other research supported by SFI (see page 13) includes developing AI for smart cities and safer transport, efficient agriculture, improved human health and a more robust understanding of the environment, and it involves people with different expertise and backgrounds, including computer science, maths, neuroscience, language and even philosophy. [60]

4.6 *Human dignity and surveillance*

The privacy rights of workers are protected under the EU General Data Protection Regulation (GDPR) which came into force across the EU, including Ireland through the Data Protection Act, 2018, in May, 2018. This Regulation significantly increases employers' obligations and responsibilities in relation to how they collect, use and protect the personal data of their employees.

The key legal requirements under the GDPR include:

- *Personal data* that relates to or can identify a living person, either by itself or together with other available information. Examples include a person's name, 'phone number, bank details and medical history
- *Data subject*: the person to whom the personal data relates. Casual workers, agency workers and other independent contractors have the same rights as any other data subject under the Regulation
- *Sensitive data (special category data)* relating to a person's racial or ethnic origin, political opinions, religious beliefs, trade union membership, health, sexual orientation and genetic or biometric data. Generally, sensitive data cannot be processed without the data subject's explicit consent. However, employers can process such sensitive data, where necessary, to carry out an employment contract or to fulfil collective agreement obligations
- *Data controllers and data processors*: organisations that collect or use personal data
- *Processing* is any operation or set of operations which is performed on personal data, for example, collecting, recording, organising, structuring, storage, adaptation or alteration, retrieval, consultation, restriction, erasing or destruction.

Employees have a range of rights under the GDPR, including the right to:

- Information about the collection and processing of their personal data
- Accessing personal data and supplementary information held about them by the data controller
- Have their personal data rectified by the data controller if the personal data they have is inaccurate or incomplete
- Have their personal data erased by the data controller
- Restrict a data controller from processing their data if they consider it is unlawful or the data is inaccurate
- Object to their personal data been processed for direct-marketing, scientific or historical research
- Data portability – this allows workers to get data from their employer and reuse it.

[60] https://www.sfi.ie/research-news/stories/ai/

Employers are required to be transparent about how employees' personal data, inside and outside the organisation, is protected and are accountable for how employee related data is used. They must be able to show how they meet the principles for data protection, including an inventory of all the personal data held by the enterprise. Indeed, an employer must have a legal basis to process employees' personal data. This includes:

- The employee has given their consent to the processing - the Regulation states that consent must be '*freely given, specific, informed and unambiguous*'
- Processing is necessary to fulfil parts of an employee's contract
- Processing is necessary in order to take steps at the request of the employee before entering into a contract. (For example, on matters of pay in an employment context)
- Complying with legal obligations (For example, a statutory requirement to keep employee records)
- Processing is necessary to comply with the employee's vital interests. (For example, where an individual's medical history is disclosed to the hospital treating them after a serious road accident)
- For the purposes of the legitimate interests of the organisation.

The Regulation also requires enterprises to protect employee data by *appropriate technical and organisational measures*. Data must be kept secure, for example, by using anonymisation, encryption, anti-virus security measures, or by backing up data. Employers must be able to show that these secure measures comply with the Regulation security obligations and records can only be kept for the duration of the task for which it was collected. Employees also have the right to know what data their employers have 'on file' about them. [61]

Apart from the GDPR, Irish workers are further protected by the Data Protection Act 2018, with regard to:

- *Monitoring emails and internet use*
  - Who is monitoring
  - What they are monitoring
  - How they are monitoring
  - When they are monitoring.
- *This monitoring must be:*
  - Necessary – the monitoring must be proved to be necessary
  - Legitimate – it must have a legal basis
  - Proportionate to the perceived threat – it must be fair and reasonable in terms of its objectives.
- *Using CCTV in the workplace*
  - Employer must give reasons for using CCTV
  - Signs must be displayed indicating where camaras are located
  - The workplace must have a written policy on the use of CCTV.

[61] See: https://www.citizensinformation.ie/en/employment/employment_rights_and_conditions/data_protection_at_work/data_protection_in_the_workplace.html

COVID surveillance - it is against the law to collect someone's data or monitor them without them knowing. COVID surveillance is only allowed in very special circumstances where the data will be used to detect, prevent, or investigate crime, or to catch and prosecute offenders and a written policy must be put in place to allow for such covert surveillance.

Personal devices at work – an employee using their own device for work (such as a laptop, smartphone, or tablet) can raise issues for data protection compliance, as personal devices would have information about the owner's personal life that an employer would not normally have access to. However, an employer might also have reason to be concerned about personal devices because of information about the business that he/she wants to protect. Enterprises should, therefore, have a *bring your own device* policy, know where the device's processed data is stored and what measures are been taken to keep the data secure.

Monitoring activities when working from home - When working from home (*remote working*), an employer should also follow these rules in relation to the monitoring of employees.

5 Results of the empirical study of the project target groups

5.1 The Irish experience

The Irish partners in the TransFormWork European Commission funded project are SIPTU and IBEC (as an associated partner). SIPTU is the largest trade union within the Irish trade union movement, with 180,000 members (7,000 in Northern Ireland). These members are working in virtually every category of employment across almost every sector of the Irish economy, both North and South of the island of Ireland.

IBEC is the major organisation representing employers in the labour market. Its membership included some 7,500 businesses and enterprises organised through 40 business and sectoral associations, employing some 70% of private sector workers in Ireland.

As shown in this national report, new technologies and digitalisation has been an integral part of the Irish labour market, in every business sector and employment since the 1960s and recent studies indicate that the COVID-19 pandemic has accelerated this digital transformation. [62]

> *Ireland is already home to high-performing sectors that intensively use digital tools and data, not just direct ICT and services, but in life sciences, financial and professional services and advanced manufacturing, employing 240,000 people* and *a recent IBEC survey indicated that almost nine out of ten Irish chiel executives surveyed feel that been prepared for technological change is a key priority in their role.* [63]

Consequently, undertaking the survey, as part of the TransFormWork Project, proved to be difficult as all the survey target populations, trade union, employers and human resource managers, considered the focus of the project as currently not relevant for their businesses or sectors.

Taking these reservations into consideration, the responses to the questionnaire, which was circulated widely, were limited with the following returned questionnaires (and not all were fully completed):

A. Employers: none
B. Trade union members: 3
C. Trade union officials: 3
D. HR managers: 5
E. Board-level Employee Representatives (Worker Directors [64]); 3

5.2 General Information from the project survey

B <u>Trade union members</u>:
Two of the three respondents described themselves as 'General Operatives' and the third work in the aviation sector. The three workplaces are unionised by 'more than 50% (in two) and less that 50% in the third workplace. Working conditions are covered by collective

[62] Barron D *Fourth industrial revolution set to transform the way we live*, Irish Times Content Studio July 2022: https://www.irishtimes.com/special-reports/2022/07/21/fourth-industrial-revolution-set-to-transform-the-way-we-live/

[63] Op cit. quote from Eric O'Donovan, IBEC Head of Digital Economy Policy

[64] Worker Directors in Irish semi-State enterprises and State Agencies were introduced by the Worker Participation (State Enterprises) Acts of 1977 and 1988. Worker Directors were also included in legislation for a number of subsequent semi-State enterprises and State agencies, such as An Post, the Irish Postal company.

agreements in all three workplaces. The collective agreement in the aviation sector covers issues relating to 'digital transformation' and artificial intelligence'.

C Trade union officials:
Two of the respondents are SIPTU officials and one is on the staff of ICTU. All three are involved in 'national cross-industry organisations'.

D. HR managers:
The responses are from HR managers in a range of business sectors and employment levels;

1 Aviation services (170 – 35% unionisation)
2 Consulting (22)
3 Pharmaceuticals (1500)
4 Manufacturing (240 – 70% unionisation)
5 Information technology (1200).

The two unionised enterprises are covered by collective agreements, but neither these nor the other three enterprises have agreements related to new technologies.

E. Board-level Employee Representatives (Worker Directors);
The three responses from this group are from a) the semi-State electricity company, ESB; and b) two from the national postal service, An Post.

The workforces in both companies are unionised – less than 50% in the ESB and more than 50% in An Post and have collective agreements in place. The ESB collective agreement does not cover 'digital transformation', while the An Post agreement does, which includes:

- Digital skills and secure employment
- Modalities of connecting and disconnecting
- Respect for human dignity and surveillance.

5.3 Digital Skills and Securing Employment - The Survey Responses

B Trade union members
The workplaces of two of the three respondents have introduced new technologies within the past five years, in particular in 'communications', 'software' and 'computer hardware'. As a result there were some changes in 'health and safety rules' and 'working time arrangements'. There were no changes to the organisation of work as a result of these new technologies.

In the aviation sector reply, the trade unions were involved 'at every stage of the process' of the introduction of these new technologies, but not in one of the 'general operative' employments. However, the second 'general operative' respondent noted that with new technologies, 'working time arrangements were changed' and there is 'less collective action/solidarity in industrial relations', but there was a perceived view that 'work-life balance' improved.

Regarding training for the new technologies, in the aviation response employees were allowed to indicate 'what kind of training they would like to participate in', 'the introduction of new technologies was accompanied with related training' and the company organises and pays for both internal and external training. Furthermore, non-diploma type 'informal skills' are recognised in this workplace.

Neither of the 'general operatives' were aware of training / up-skilling related to the introduction of new technologies.

C Trade Union Officials

It is the view of the two SIPTU respondents that 'training, upskilling and/or re-training is an enterprise-level activity' and there are no sectoral-level agreements on this issue.

The ICTU respondent notes that the trade unions at the national-level address:

> *… these issues primarily through our engagement with Government in tri-partite and bi-partite social dialogue fora, such as the Labour Employer Economic Forum (LEEF) and the National Economic Dialogue, through membership of a range of advisory bodies to Government … and through responses to public consultations at national level and European level, such as through the European Semester process.*

D HR managers:

All these enterprises have introduced some form of the new technologies listed in the questionnaire within the past five years. These new technologies have resulted in changes to:

b) qualification and/or skill requirements in the aviation services and consulting respondents; and

c) health and safety rules and procedures in both the pharmaceuticals and consulting enterprises.

The 'manufacturing' respondent was the only one, out of the five, to indicate that, *as a result of the introduction of new technologies new forms of production systems and/or changes to the organisation of work* there were changes, in particular to:

A Production systems: a) lean production and d) workplace innovation

B Work organisation: c) job rotation.

E Board-level Employee Representatives (Worker Directors)

Both companies (ESB and An Post) have a digital strategy and have introduced new technologies within the past five years. The digital strategy in the ESB specifically covers communications, while in An Post its application is much wider, covering:

- Automation
- Communications
- Computer hardware
- The internet
- Software

… resulting in changes to:

- Employment levels
- Qualifications and/or skill requirements
- Health and safety rules (also in the ESB)
- Working time arrangements (also in the ESB).

These changes and introduction of new technologies were agreed with the involvement of the trade unions at every stage of the process through formal collective negotiations. The changes also resulted in 'new forms of work organisation' through the introduction of 'team working' and 'job rotation'.

With regard to any negative impacts resulting from the introduction of new technologies, responses from both companies indicate that it resulted in 'increased workplace stress', while within An Post 'increased work intensity' and 'changed working time arrangements' were additional changes. From a 'positive' perspective, the ESB respondent indicates that 'improved work-life balance' and 'improved working conditions' resulted from the introduction of new technologies, while in An Post just 'improved work organisation' was considered a positive result.

In both companies' new technologies resulted in related training, both organised internally and through external organisations, paid for by the companies. In the ESB employees could also report (suggest??) what kind of training they would require and the ESB respondent indicated that quality and effectiveness of the training was 'rather positive'.

5.4 Connecting and Disconnecting – The Survey Responses

B Trade union members

Just one of the respondents indicate that there is a control system for 'connecting / disconnecting' in place in their workplace. In the aviation workplace 70% of the staff are rostered, while other staff are assigned to administrative type work and can self-manage their work hours, consequently, 'working time arrangements' are not discussed with workers. Also, only in the aviation response are 'rules on the use of digital tools for private purposes during working hours' in place.

C Trade union officials

The ICTU has engaged with its constituent trade union members, has made submissions to Government on the right to request remote working and

> *… in relation to the transposition into Irish law of the Work-life Balance Directive (Directive 2019/1158) and has put forward suggested changes to the draft Government legislation on these issues.*

Furthermore, *the ICTU is engaged through our membership of the EU Social Dialogue*

> *Committee in the process to review and update the 2002 Autonomous Agreement on Teleworking as per the commitment in the recently agreed 2022-2024 Social Dialogue work programme.* [65]

With regard to internal working time arrangements both ICTU and SIPTU respondents indicate that there are working time rules on 'the right to disconnect'. Indeed,

> *… ICTU has adopted a policy that normal working hours are from 09.00am to 5.30pm and that message will be responded to when staff are back at work and that if a staff member is working flexibly it may suit them to send an email at that time but that they do not expect a response outside the recipient's working time.*

D HR managers

There are systems in place for the control of regular working time in the workplaces of four of the five HRM responses – in aviation services; consulting services; pharmaceuticals; and manufacturing. Working time arrangements, including 'the right to disconnect', are discussed

[65] See - https://www.worker-participation.eu/EU-Social-Dialogue/Interprofessional-ESD/Outcomes/Framework-agreements/Framework-agreement-on-telework-2002

with employees and there are also policies and rules in place on the use of 'digital tools for private purposes' in two of the five responses – in consulting services and pharmaceuticals.

While the aviation services enterprise also has working time arrangements and 'rules regarding the use of digital tools for private purposes' in place. However, these were not discussed with employees. While in the manufacturing response these workplace arrangements are in place, it does not have 'rules regarding the use of digital tools for private purposes'.

The *outlier* in the HRM responses is from the IT enterprise where there are no controls or rules in place for working time, or for 'the use of digital tools for private purposes'. With regard to policies / rules to 'prevent isolation at work', only the consulting services company have policies to address this problem (but does not elaborate, as requested to do so in the questionnaire!).

E Employee Board-level Representatives (Worker Directors)
There are control systems for working time, including teleworking, in both An Post and the ESB. Working time arrangements, including rules on the 'use of digital tools for private purposes during working time' are part of the collective agreement in An Post.

5.5 Artificial Intelligence (AI) and Guaranteeing the 'Humanin Control' Principle - The Survey Responses

B Trade union members
Two of three respondents know what AI is!! However, they say it is not used in any of their workplaces

C Trade union officials
None of the respondents' workplaces have AI

D HR managers
All respondents know what AI is.

In the pharmaceutical company the following AI tools are used:

- Manufacturing robots
- Smart assistants
- Proactive healthcare management
- Virtual travel booking agent
- Social media monitoring
- Inter-team chat tool
- Natural language processing tools

This responses notes that AI:

> *…frees up employees to work on more meaningful work and have greater impact by moving up the value chain and it allows for quicker processing times and greater data analysis.*

The manufacturing response also has AI in place, using manufacturing robots and inter-team chat tools. AI allows for:

> *… less handling of the product for the operator.*

In both these enterprises

- AI rules comply with GDPR and related Irish legislation
- Work tasks have changed
- There are internal occupational health and safety rules relating to AI
- Final decisions are taken by humans and not by AI.

However, AI is not used for HR procedures in either company.

E Employee Board-level Representatives (Worker Directors)
All three respondents knew and were aware of AI and the ESB use aspects of AI in its National Control Centre. The An Post respondents were not aware of AI within that organisation.

5.6 Respect of Human Dignity and Surveillance - The Survey Responses

B Trade union members
In none of the three workplaces have the employers adopted policies 'related to work monitoring' and trade unions have not been consulted on such polices.

C Trade union officials
One of the SIPTU respondents note that there is a Data Protection Unit within the union

D HR managers
The aviation services organisation, the consulting services and the pharmaceutical enterprise all have policies in place on work monitoring using digital tools and:

- Employees and/or their representatives are consulted
- They are also consulted on issues related to data privacy protection
- There are measures in place in all three enterprises to limit the risk of intrusive monitoring and the misuse of personal data.

Regarding facilities for employee representatives, only the aviation services company does not provide such facilities.

E Employee Board-level Representatives (Worker Directors)
Neither company have a policy to address 'isolation at work', nor do they have policies on surveillance through AI or other digital tools. However, An Post does have a process of informing and consulting with the trade unions on issues related to 'data privacy protection'

6 Recommendations for European Institutions

As noted in the *Introduction* to this national report, the world of work is changing and evolving and the main challenge arising out of the rapid advances in the application of new technologies are the unknown impacts for economic, employment and social developments of robotics and artificial intelligence (AI) into the future. What will the workplace of the future look like? How will workers and jobs be affected? How can the commitment to '*Guarantee the Human in Control'* principle, in line with the aspirations in the *Framework Agreement* to *Respect for Human Dignity and Surveillance* be ensured*?*

- With these challenges in mind, the European Commission and European Parliament should consider, in conjunction with the EU-level social partners, how this commitment can be met through some form of policy initiative, initially through a Recommendation, but, in the longer term, legislated for through an EU Directive;

- Constant monitoring of AI for its (yet unknown) effects on workplace safety and health is required through the relevant EU agency, the European Agency for Occupational Safety and Health (EU-OSHA). [66] While many specific Directives have been enacted since 1989 and the OSHA has undertaken a wide range of studies, proposed guidelines and set standards, there is an urgent requirement to update and bring the 1989 Framework Directive (89/654/EEC) in line with the expected impacts of automation, robotics and AI on the EU workplace.

  - As indicated in Chapter 4 (page 18), surveillance of employees by their employers is illegal under the GDPR. However, there are a growing concern, with the increase in remote/hybrid working, about the increased electronic surveillance of workers, in particular in the USA. [67]

    The European Parliament has highlighted these concerns in its Resolution adopted in July, 2022 – Paragraph 13 cautions

[66] https://osha.europa.eu/en

[67] *Workplace surveillance is becoming the new normal for U.S. workers* by Kathryn Zickuhr, Senior Policy Analyst, see https://equitablegrowth.org/people/kathryn-zickuhr/
Also the NY Times podcast:
https://www.nytimes.com/2022/08/24/podcasts/the-daily/workplace-surveillance-productivity-tracking.html
and a Financial Times article: https://www.ft.com/content/92ebeaa8-ccec-4ad3-bab2-a6690013113a

> *… that AI also gives rise to concerns over privacy and occupational health and safety, such as the right to disconnect and can lead to the disproportionate and illegal surveillance and monitoring of workers, infringing on their dignity and privacy;*
> and it *… stresses that AI solutions in the workplace must be transparent, fair and avoid any negative implications for workers and must be negotiated between employers and workers' representatives including trade unions.*

Consequently, this European Parliament Resolution calls on the Commission and the Member States, to devise a legislative proposal on AI in the workplace to ensure appropriate protection for workers' rights and well-being, including their mental health and fundamental rights, such as non-discrimination, privacy and human dignity in an increasingly digitalised workplace. [68]

It is essential therefore, that specific EU-level legislation be enacted to deal with the use of workplace surveillance that new technologies, such as AI, now make possible.

- Finally, within the Ireland context, the monitoring of the implementation of the *Framework Agreement* should be formalised within a joint Labour, Employer Economic Forum (LEEF). This body could have the responsibility to report back to the European social partners joint monitoring group for the Agreement and continue to support and encourage its implementation across Irish workplaces.

[68] European Parliament Resolution of 5 July 2022 on mental health in the digital world of work (2021/2098(INI)) https://www.europarl.europa.eu/doceo/document/TA-9-2022-0279_EN.pdf

7 To conclude

Over more than six decades the Government of Ireland and its agencies have identified the electronic, digitalisation, automation and AI developments as essential for the economic prosperity and employment potential in Ireland. All arms of Government are directed towards this objective, through the educational and research institutions and through the specialist State agencies for business support and development and inward investment through FDI (foreign direct investment).

These policies have been fully supported by industry and business organisations, by the trade union movement and by civil society and have resulted in the provision of high-skilled employment and successful Irish spin-off global enterprises in hardware, software and, more recently, automation and robotic developments. In this ever-growing complex workplace, Irish legislation, including the transposition of the GDPR, provides some protection from monitoring and surveillance for employees, while allowing employers' discretion when there is a perceived security or commercial threat to the business.

A further challenge for the Irish and EU enterprises and workforces is the shift in sentiment, post-COVID-19 pandemic, to 'globalisation' and the necessary realignment and re-establishment of fractured supply-lines. However, while working within the EU framework, these challenges for the small Irish open economy, exposed to the challenges of disruption to international trade, are to ensure continued indigenous research and development which will lead to continued development of ever newer technologies and new employment opportunities in the Irish labour market. To do this the pool of high-skilled researchers, innovators and entrepreneurs has to be maintained and the replacement of jobs overtaken by automation, robotics, AI, and globalisation have to be constantly reviewed and addressed. These challenges can be summed up as follows:

> *Huge changes in manufacturing, outsourcing, offshoring and the rise of borderless companies transferring activities across frontiers and booking their profits and tax bills in different locations have greatly complicated the nature of production and political control. Globalisation in trade, finance and knowledge has had mixed effects. In some cases it has transformed for the better living standards and conditions of education and health for large populations. In other cases, it has triggered rising inequalities, displacement of workers, impoverishment of particular regions and countries as well as causing long-term environmental damage.* [69]

Kevin P O'Kelly, Project Researcher
Brian McGann, SIPTU Project Co-ordinator
October, 2022

[69] Healy op. cit. P 75

BIBLIOGRAPHY

Carney M, *Value(s): Building a better world for all* William Collins Books, (London), 2021

Centre for Applied AI (CeDAR) https://www.ceadar.ie/

Citizens Information https://www.citizensinformation.ie/en/employment/employment_rights_and_conditions/data_protection_at_work/data_protection_in_the_workplace.html

Cubix https://www.cubix.co/

Data Protection Commission https://www.dataprotection.ie/en/who-we-are/our-international-work

Datareportal.com https://datareportal.com/reports/digital-2021-ireland

Enterprise Ireland https://enterprise.gov.ie/en/ https://www.localenterprise.ie/About-Us/Services/

European Agency for Occupational Safety and Health (EU-OSHA) https://osha.europa.eu/en

European Commission, 2020, https://ec.europa.eu/info/strategy/recovery-plan-europe_en

European Commission, 2021 https://ec.europa.eu/info/sites/default/files/economy-finance/rrf-factsheet.pdf

European Trade Union Confederation, BusinessEurope, CEEP, SME united *European Social Partners' Framework Agreement on Digitalisation 2020* Brussels https://www.etuc.org/system/files/document/file2020-06/Final%2022%2006%2020_Agreement%20on%20Digitalisation%202020.pdf

European Trade Union Institute https://www.worker-participation.eu/EU-Social-Dialogue/Interprofessional-ESD/Outcomes/Framework-agreements/Framework-agreement-on-telework-2002

Eurostat https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210413-1

Foreign Affairs, *Mastering the Fourth Industrial Revolution*, New York, December 2015 *https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution*

Foroohar R, Financial Times, 23 October 2022: https://www.ft.com/content/92ebeaa8-ccec-4ad3-bab2-a6690013113a

Government of Ireland *Programme for Competitiveness and Work* Government Publications, February, 1994

Government of Ireland *Ireland's National Recovery and Resilience Plan Europe's Contribution to Ireland's Recovery,* October 2020 (updates June 2021). https://www.gov.ie/en/publication/d4939-national-recovery-and-resilience-plan-2021/

Government of Ireland, Dept of Enterprise, Trade and Employment, 2021 https://enterprise.gov.ie/en/Publications/Publication-files/Making-Remote-Work.pdf

https://enterprise.gov.ie/en/publications/publication-files/remote-work-in-ireland.pdf

https://enterprise.gov.ie/en/publications/publication-files/making-remote-work.pdf

https://enterprise.gov.ie/en/legislation/legislation-files/draft-scheme-of-the-right-to-request-remote-working-bill-2022.pdf

https://enterprise.gov.ie/en/Publications/Publication-files/National-AI-Strategy.pdf

Healy, T *An Ireland Worth Working For – Towards a new democratic programme* New Island Books, (Dublin) 2019

Higher Education Authority https://hea.ie/policy/he-reform/technological-universities/

Industrial Development Authority, Ireland, https://www.idaireland.com/doing-business-here/industry-sectors/ict

https://www.idaireland.com/doing-business-here/industry-sectors/software

Iona Technologies https://en.wikipedia.org/wiki/IONA_Technologies

Irish Times *Irish companies play to win in competitive sports tech arena* 15 July 2021.

Irish Times *Top 1000 Companies, June 2022*

Irish Times Content Studio, Barron D. *Fourth industrial revolution set to transform the way we live*, July 2022: https://www.irishtimes.com/special-reports/2022/07/21/fourth-industrial-revolution-set-to-transform-the-way-we-live/

Irish Times, 23 July, 2021, article by O'Connell, S. in https://www.irishtimes.com/special-reports/ai-focus/ai-has-changed-the-way-the-world-works-and-offers-rewarding-careers-1.4621301

Irish Times, 19 February 2019 https://www.irishtimes.com/business/innovation/partner-profile- enterprise-ireland/tech-centres-bridging-the-gap-between-research-and-industry-1.3797872?mode=amp

Krugman P, Video masterclass: See https://www.masterclass.com/classes/paul-krugman-teaches-economics-and-society/chapters/the-economics-of-technological-progress

MacFlynn, P *The Digital and Tech Sector in Ireland,* Nevin Economic Research Institute (NERI) Report Series No 16, 2022

Nathan Trust
https://www.nathantrust.com/insights/ireland-is-the-number-1-destination-for-us-tech-firms

National Economic and Social Council, *Addressing Employment Vulnerability as Part of a Just Transition in Ireland.* Paper No.149,March 2020
http://files.nesc.ie/nesc_reports/en/149_Transition.pdf

New York Times podcast:
https://www.nytimes.com/2022/08/24/podcasts/the-daily/workplace-surveillance-productivity-tracking.html

Nevin Economic Research Institute (NERI), 2019
https://www.nerinstitute.net/our-work/employment-and-future-work

PayPal https://payslip.com/

RTÉ (Raidió Teilifís Éireann) https://www.rte.ie/news/business/2021/0716/1235527-ireland-eu-recovery-fun/

Science Foundation Ireland
https://www.sfi.ie/research-news/publications/SFI-Annual-Plan-2022.pdf

https://www.sfi.ie/research-news/stories/ai/

Sen A. *Employment, technology and development: A study prepared for the ILO within the framework of the World Employment Programme* International Labour Review, Vol 152, (Geneva) January 2013.

Statsport https://statsports.com/about-us/

Statista.com https://www.statista.com/statistics/494649/smartphone-users-in-ireland/

Stiglitz J *Making Globalisation Work*, Allen Lane (London) 2006

Stripe https://stripe.com/ie/

Synergy Suite https://www.synergysuite.com/en

TechArchives / Archives Notebook https://techarchives.irish/irelands-first-computers-1956-69/

Technology Ireland *Future Needs, Future Thinking 2021*, www.technology-ireland.ie

https://www.technology-ireland.ie/Sectors/TI/TI.nsf/vPages/About~Press~future-needs,-future-thinking-2020-04-11-2019/$file/TI+Future+Needs,+Future+Thinking.pdf

Workplace Relations Commission (WRC)
https://www.workplacerelations.ie/en/what_you_should_know/codes_practice/code-of-practice-for-employers-and-employees-on-the-right-to-disconnect.pdf

https://www.workplacerelations.ie/en/what_you_should_know/codes_practice/code-of-practice-for-employers-and-employees-on-the-right-to-disconnect.pdf

World Economic Forum, 2016
https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

Zickuhr K, Senior Policy Analyst, Equitable Growth *Workplace surveillance is becoming the new normal for U.S. workers* https://equitablegrowth.org/people/kathryn-zickuhr/