# ENGINEERS IRELAND

**Engineers Ireland Submission on 'The Digital Connectivity Strategy'**
For the attention of the **Department of the Environment, Climate and Communications**
31 March 2022

## 1. Introduction

Engineers Ireland is very supportive of the government's Digital Connectivity Strategy and is grateful for the opportunity to make a submission on its implementation, the success of which is critical for our future success. Ireland has positioned itself as a leader in the EU digital sphere, hosting a multi-billion-dollar technology and engineering sector in Ireland. Our economic and social ambitions require the availability of high speed, reliable digital connections covering the entirety of Ireland. The internet is no longer a luxury item; it is a basic economic and social necessity. To meet this need, the state must address commercial investment in digital connectivity, maintain its focus on the rollout of the National Broadband Plan (NBP), reinforce international connectivity, create a mobile phone and broadband taskforce, ensure appropriate levels of regulation, ensure network integrity, develop security and modernisation frameworks, foster research and innovation, and help develop smart cities/towns connected to rural communities and transport corridors.

With the increased reliance on digitalisation, issues around cyber security will continue to become more prevalent in everyday life. This was clearly illustrated in the 2020 ransomware attack on the Health Service Executive (HSE). It is not enough to design, create and build the necessary digital systems and infrastructure, we must protect them also.

Ensuring adequate resources of digitally skilled technicians and engineers will be essential in creating and protecting this infrastructure in physical and digital spheres. We must continue to produce highly skilled graduates, retrain and upskill existing workers, and attract international engineering talent. To help deliver this digital future and keep Ireland at the forefront of this technology. Engineers Ireland recommends the following key actions:

**Key actions recommended:**

- Ensure Ireland continues to maintain its position as a digital hub and an attractive location for digital investment, bridging the US, UK and EU
- Identify rural areas of low population density, where physical broadband connections are impractical and offer an alternative route like subsidised satellite broadband
- Develop a clear plan for optimised energy usage and a multi-layered communications strategy to prepare the public for behavioural and technology changes
- Plan and resource an update to Ireland's new National Cyber Security Strategy
- Prioritise and strengthen cyber security across government departments providing support to public and private sectors
- High-speed broadband should be accessible for all, a holistic review of the infrastructure needs must be considered through a lens of sustainability
- Support and facilitate the attraction of overseas talent to Ireland through the revitalisation of Tech/Life Ireland programme second phase
- Allocate resources from the national training fund to support continuous professional development to retrain people in digitalisation skills
- Ensure sufficient resources available to Skillnet Women ReBOOT program

## 2. Digital Landscape

The "Digital Connectivity Strategy for Ireland" is an ambitious plan to ensure Ireland can achieve its potential as a thought leader in digitalisation. This strategy must recognise the necessity of digital transformation for all areas of business, government, and society. Ireland is well-positioned politically, culturally and geographically as a digital bridge connecting the EU, UK, and the US. We are currently ranked the fifth most advanced digital economy in the EU on the Digital Economy and Society Index [1], placing it ahead of the European average in all four categories assessed: human capital, connectivity, integration of digital technology, and digital public services. Ireland has over 1000 digital companies operating in Ireland, including the European HQs of major multinationals like Apple, AWS, Intel, Cisco, Facebook, and Google [2]. Ireland must continue advocating its position as a secure digital investment to the EU, to retain and develop in this sector.

The digital divide between urban and rural areas remains an issue, with 25% of people surveyed by communications regulators in 2019 showing a daily problem in mobile connectivity [2]. Though improved in recent years, rural areas still have connection issues compared to urban areas. These connection issues were highlighted during the Covid-19 pandemic, making remote working more difficult for some. Ensuring that the regulatory framework promotes infrastructure and investment in rural regions and expands 5G coverage will lead to the successful fulfilment of the EU's Digital targets for 2030 set out in the EU's Digital Decade [3].

An option for more challenging rural areas and coastal islands is the use of low earth orbit (LEO) satellite broadband. This technology works well for low population density areas and could be used in these communities. At the moment there is a high individual cost to the consumer to set up such an LEO broadband connection. Offering a subsidised route to the consumer could be a more practical and cost-effective option than installing expensive infrastructure.

Digital connectivity is a key tool for a sustainable energy future. Ireland must be ambitious and identify opportunities to use digital data to optimise energy use and utilise green energy at the optimal time. The roll-out of the smart meters is an excellent step to digitalisation, this coupled with the Internet of Things (IoT), efficient use of energy. Implementing energy management in commercial buildings will be the first step then in residential homes. The digitalisation of home energy use will be one of the most complicated challenges for a digital future due to variations in individual human behaviour. A clear plan for digitalisation of energy use and the value of automation in a sustainable way must be created and communicated to the public through a multi-layered outreach strategy, focusing first on managed properties and secondly on residential properties. Energy management is key to achieving net-zero energy by 2050, and the digitalisation of the IoT can accomplish this goal.

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- Develop a clear plan for optimised energy usage and a multi-layered communications strategy to prepare the public for behavioural and technology changes

## 3. Key Strategic Enablers

The "Digital Connectivity Strategy for Ireland" highlights seven strategic enablers to deliver digitalisation to Ireland.

- Commercial investment in digital connectivity
- The National Broadband Plan (NBP)
- International connectivity, mobile phone, and broadband taskforce
- Regulation
- Network integrity, security, and modernisation
- Research and innovation
- Smart cities/towns, rural communities, and transport corridors

Each of these strategic enablers is highly important, and could perhaps be augmented by a separate eighth enabler on cyber security, which is critical to the success of the other enablers. Ireland's government bodies must lead the way in digital security, protecting from malicious software attacks and ensuring reliable energy supply and security for data centres. This will be needed to continue attracting the best digital companies to Ireland and to ensure that the reliance on the IoT is secure. The limitations of Ireland's digital security were highlighted in the HSE attack in May of 2021. The state structures must provide oversight of cyber security and data protection by updating the National Cyber Security Strategy with lessons learned from this incident.

However, it is important that increasing digital security doesn't spill over into protectionism. Internet access must be open and accessible to all to ensure that innovation in digitalisation can occur. To achieve these conflicting requirements, a careful plan must be created with a clear strategy for communication to all commercial and non-commercial stakeholders, and the general public on the importance of cyber security and how to prioritise and strengthen it.

High-speed broadband access must be as accessible as other essential utilities like electricity and water, providing basic security and reliabilities. The NBP and 5G are critical enablers of this, but additional infrastructure must be considered, such as increased data centres and the impact of this infrastructure on Ireland's sustainability goals. Ireland currently has 70 operational data centres which require continuous electricity supply, with more under construction. EirGrid [4] predicts that by 2029 data centres will need 27% of all demand for Ireland of electricity. This will likely contribute to a shortfall in electricity supply between 2021 and 2026, requiring additional power plants. The energy needed for future digitalisation will need to align with the climate action plan [5] and be obtained from sustainable sources. This can be done by designing sustainable energy sources into future digital infrastructure designs utilising solar and wind to make data centres almost energy independent.

**Key actions:**

- Plan and resource an update to Ireland's new National Cyber Security Strategy
- Prioritise and strengthen cyber security across government departments providing support to public and private sectors

- High-speed broadband should be accessible for all, a holistic review of the infrastructure needs must be considered with a lens of sustainability

## 4. Education and skills

A significant challenge for the ongoing digitalisation of Ireland will be ensuring the infrastructural frameworks, both digital and physical, are sufficient for Ireland's growth in this sector. A steady supply of digital and engineering talent is vital to this continued growth.

The target of 12,400 graduates with higher-level digital skills by 2022 [6] is ambitious but broad as many graduates of higher-level courses will have advanced digital skills in fields like business, engineering manufacturing and construction, natural sciences, mathematics and statistics, and information and communication technologies (ICT). ICT will be of particular importance for Ireland's digital future, but in 2020 only 5,651 students graduated from ICT programmes [7], and about 3000 students entered; this shows a predicted shortfall of over 6000 graduates to the target. Ireland will need to obtain people with these digital skills through other routes such as attracting overseas talent upskilling and retraining existing workers.

Ireland must attract skilled talent from overseas to meet the increase in demand and requirement for digitalisation in Ireland, Barriers such as undue delays in processing of visas and working permits can impede talent entering the country, with six-month holdups being reported by some companies. These processes should be streamlined to match "best in class" international standards.

Additionally, we need to actively attract and help talent to settle in Ireland. Tech/Life Ireland [8] began to address this. However, due to Covid-19, the project was delayed moving into its second phase. Implementing the second phase of this plan to attract and facilitate overseas talent is needed to combat this skills shortage.

People, who have taken career breaks and left the engineering or technical fields must be supported to re-enter the workforce. This is particularly prevalent in women who traditionally take a career break to take on childcare responsibilities. Approximately 20% of engineering graduates are female, but only about 10% of active engineers are female. Attracting these highly skilled people back into the market workplace is needed to ensure sufficient capability. National level retraining programs must be resourced, such as the "Skillnet" women ReBOOT program [9].

Ireland needs to be prepared to identify and lead future digital innovations and support academic research and development in future growth areas such as 6G, quantum computing, DNA digital data storage, AR and VR technology, etc. Ireland will need to attract the best to provide the best talent to achieve these challenges. Ireland needs to investigate these areas of study and focus on using technology to fight climate change and environmental challenges.

Key actions:

- Support and facilitate the attraction of overseas talent to Ireland through the revitalisation of Tech/Life Ireland programme second phase
- Allocate resources from the national training fund to support continuous professional development to retrain people in digitalisation skills
- Ensure sufficient resource available to Skillnet Women ReBOOT program

## 5. Conclusion

As stated, Engineers Ireland is very supportive of The Digital Connectivity Strategy and is anxious to support its successful implementation. We look forward to working with the Department on any future consultations or workshops that the Department may hold in the future.

Submitted by:

References:

[1] European Commission, "Digital Economy and Society Index (DESI) 2021".

[2] Engineers Ireland , "State of Ireland 2021".

[3] European Commission, "2030 Digital Compass: the European way for the digital decade," 2021.

[4] EIRGRID, "All-island Generation Capacity Statement," 2020.

[5] Department of Environment, Climate and Communications, "Climate action plan," 2021.

[6] Government of Ireland, "Harnessing Digital The Digital Ireland Framework," 2022.

[7] HEA, "Enrolements," [Online]. Available: https://hea.ie/statistics/data-for-download-and-visualisations/enrolments/key-facts-figures-2020-2021/.

[8] Tech/Life Ireland, [Online]. Available: https://techlifeireland.com/.

[9] Skillnet, [Online]. Available: https://www.digitalskillnet.ie/techstart/.

**Background to Engineers Ireland**
With over 25,000 members from every discipline of engineering, Engineers Ireland is the voice of the engineering profession in Ireland. Engineers Ireland was established in 1835 making us one of the oldest and largest professional bodies in the country. Members come

from every discipline of engineering and range from engineering students to fellows of the profession.

**Our responsibility is to**
- Promote knowledge of engineering
- Establish and maintain standards of professional engineering and engineering education
- Provide opportunities for Continuing Professional Development (CPD)
- Maintain standards of professional ethics and conduct
- Ensure that professional titles are granted to qualified candidates
- Act as the authoritative voice of the engineering profession in Ireland

**Our Vision Statement**
Engineers Ireland: a community of creative professionals delivering sustainable solutions for society.

**Our Mission Statement**
Engineers Ireland is an institution that enables the engineering community to progress their professional development and make a sustainable impact on society, advocates for the profession, quality assures education and encourages the future generations of engineers.