



Digital Economy and Society Index (DESI)

2019 Country Report

Ireland

About the DESI

The European Commission has been monitoring Member States' digital competitiveness with the Digital Economy and Society Index (DESI) reports since 2015. The set of reports includes both country profiles and thematic chapters.

The DESI country reports combine quantitative evidence from the DESI indicators across the five dimensions of the index with country-specific policy insights and best practices. An in-depth telecoms chapter is annexed to the reports for each Member State.

The thematic chapters present a European-level analysis of broadband connectivity, digital skills, use of the internet, digitisation of businesses, digital public services, the ICT sector and its R&D spending, and Member States' use of Horizon 2020 funds.

To improve the methodology and take account of the latest technological developments, a number of changes have been made to the DESI for 2019. The DESI now covers:

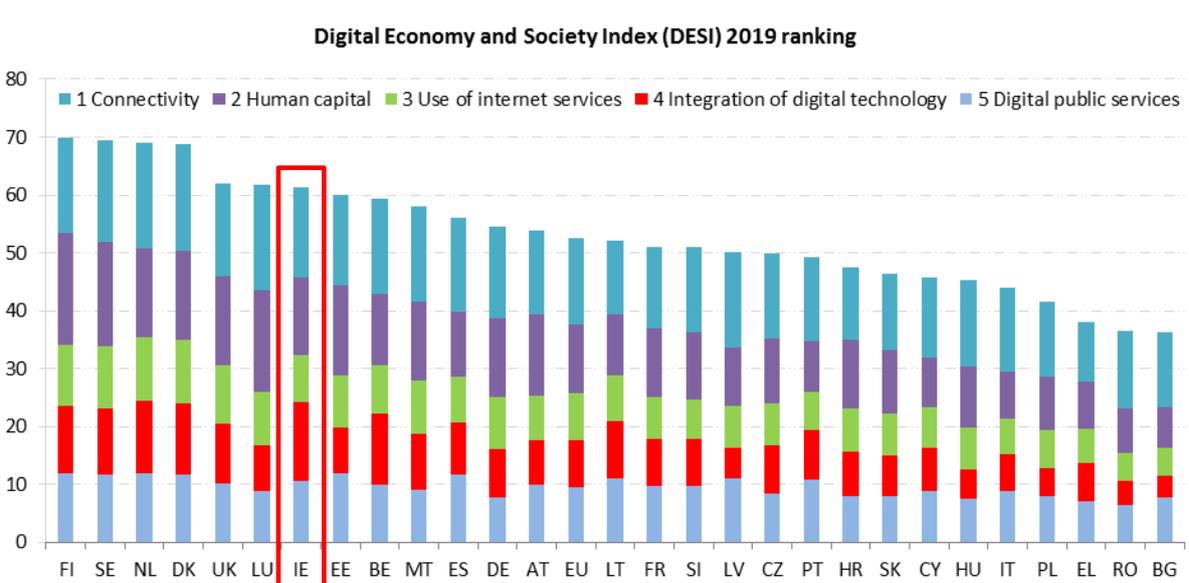
- *5G readiness,*
- *Above basic digital skills,*
- *At least basic software skills,*
- *Female ICT specialists,*
- *ICT graduates,*
- *People who never used the internet,*
- *Professional social networks,*
- *Doing an online course,*
- *Online consultations and voting,*
- *Individuals selling online,*
- *Big data,*
- *Medical data exchange and*
- *e-Prescriptions.*

The DESI was re-calculated for all countries for previous years to reflect the above changes in the choice of indicators and corrections to the underlying data. Country scores and rankings may thus have changed compared with previous publications.

For further information, please consult the DESI website: <https://ec.europa.eu/digital-single-market/en/desi>.

Ireland overview

	Ireland		EU
	rank	score	score
DESI 2019	7	61.4	52.5
DESI 2018	8	57.0	49.8
DESI 2017	10	52.8	46.9



Ireland ranks 7th out of the 28 EU Member States in the European Commission Digital Economy and Society Index (DESI) 2019.

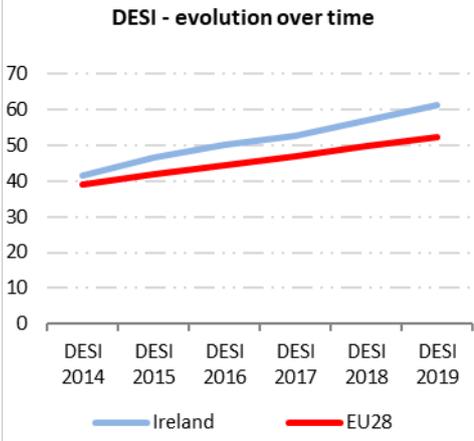
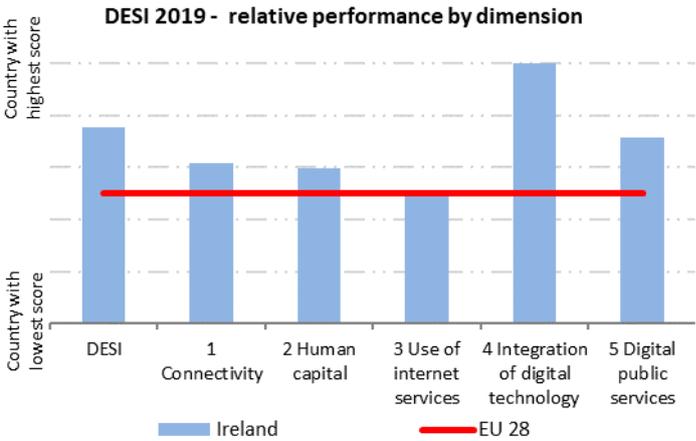
Its overall score increased due to an improved performance in all DESI dimensions measured. Ireland is number 1 in the EU in the Integration of digital technology dimension, particularly because Irish SMEs excel in the use of e-Commerce. Ireland records the highest growth in Digital public services with top ranking in open data and second place in services for business users.

While Ireland has improved its scores for Connectivity and Human capital, it ranks outside the top 10 in both of these dimensions, as well as for the Use of internet services by people. In particular, ultrafast broadband coverage is below the EU average and broadband in general is still relatively expensive. While Ireland performs above the EU average in high-level digital skills, the average digital skills of people are low: only 48 % have at least basic digital skills, well below the EU average of 57 %. It is therefore not surprising that the proportion of internet users is also below the EU average.

The Irish Digital Agenda¹ dates from 2013. It is currently under review and a new strategy is being developed. A public consultation took place in late 2018. It was also foreseen that the new strategy would cover a broad range of societal and economic areas including infrastructure and security; data,

¹ <https://www.dccae.gov.ie/en-ie/communications/topics/Digital-Strategy/Pages/default.aspx>

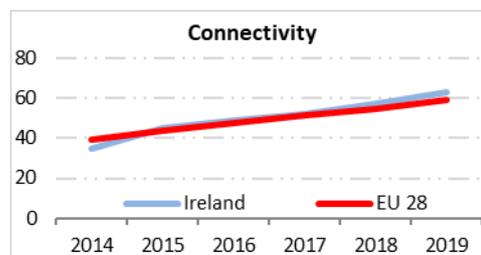
privacy and regulation; education and skills; trust, wellbeing and inclusion; digital public services, and innovation, the digital economy, and labour market changes².



² <https://www.gov.ie/en/news/69baa0-government-seeks-views-on-irelands-digital-strategy/>

1 Connectivity

1 Connectivity	Ireland		EU
	rank	score	score
DESI 2019	12	62.6	59.3
DESI 2018	12	57.2	54.8
DESI 2017	13	52.3	51.2



	Ireland		EU	
	DESI 2017	DESI 2018	DESI 2019	DESI 2019
	value	value	value	rank
1a1 Fixed broadband coverage % households	96%	97%	98%	13
1a2 Fixed broadband take-up % households	69%	74%	73%	17
1b1 4G coverage % households (average of operators)	92%	92%	96%	17
1b2 Mobile broadband take-up Subscriptions per 100 people	94	101	102	9
1b3 5G readiness Assigned spectrum as a % of total harmonised 5G spectrum	NA	NA	30%	8
1c1 Fast broadband (NGA) coverage % households	82%	93%	96%	5
1c2 Fast broadband take-up % households	41%	51%	54%	10
1d1 Ultrafast broadband coverage % households	NA	53%	56%	21
1d2 Ultrafast broadband take-up % households	14%	18%	20%	15
1e1 Broadband price index Score (0 to 100)	72	72	75	24

Ireland maintains its ranking (12th) among EU countries, slightly outscoring the EU average (62.6 compared with 59.3). Its best performance comes in fast broadband, where in just 5 years it has turned from being a laggard to being a leader. Specifically, Ireland ranks 5th in fast broadband coverage with 96 %, compared with an EU average of 83 %; and 10th in fast broadband take-up, with 54 %, compared with an EU average of 41 %. Ireland outperforms the EU in most connectivity indicators. However, it lags behind in fixed broadband take-up (coming 17th with 73 %, compared with 77 %, the EU average) and in ultrafast broadband coverage (21st with 56 % compared with an EU average of 60 %). It is also one of the EU's most expensive countries in terms of fixed broadband (coming 24th, with a broadband price index of 75, compared with an EU average of 87).

The 2015 National Broadband Plan (NBP) Intervention Strategy provides for a minimum download of 30 Mbps and a minimum upload of 6 Mbps, to be provided to all premises through a mix of private and public intervention. According to the national authorities, commercial operators in the Irish market have invested over €2.75 billion in upgrading and modernising their networks over the past 5 years, with further investments planned, covering the majority of premises. The public intervention

addresses the remaining 540,000 premises. Through a procurement process, Ireland is selecting the body that will build, maintain and operate over a 25-year term a state-funded network and offer wholesale services on an open-access basis. The remaining bidding consortium is proposing an ambitious solution based on deploying a predominantly fibre-to-the-home (FTTH) network. On 7 May 2019, the Irish Government announced the approval of the appointment of a preferred bidder to the National Broadband Plan. According to this announcement, the contract will be awarded, following confirmation of State Aid Approval by the European Commission.

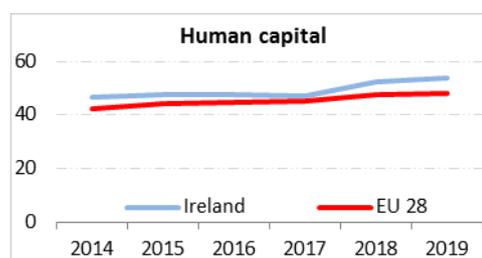
Ireland expresses its awareness of the importance of 5G infrastructure but still lacks a 5G connectivity strategy and a clear timetable for assigning the 700 MHz band. 5G trials are facilitated with the use of ComReg's Test and Trial Licensing scheme³. Ireland ranks eight on the 5G readiness indicator, as it had assigned spectrum in the 3.4-3.8 GHz band by the end of 2018, in accordance with Commission Decision (EU)2019/235, and the spectrum is expected to become available for use for 5G by 2020. The assignment process has therefore enabled large blocks of spectrum to be acquired, facilitating the provision of gigabit 5G services at reasonable prices (4.86 euro cent/MHz/pop). Transition licences allow legacy users to continue using the band, although their licences have already expired. Ireland has assigned a total of 760 MHz, which is 36 % of the spectrum harmonised at EU level for wireless broadband.

The implementation of the publicly supported broadband intervention in rural areas is essential to bridge the geographical divide and ensure that ultrafast broadband networks reach all Irish households, in line with the gigabit society targets for 2025. Persistent delays, specifically in laying down rules on the penalties for breaching the net neutrality rules and on transposing Article 8 of the Broadband Cost Reduction Directive for 2014/61, as well as the absence of dissuasive, direct sanctioning power of ComReg as regards market monitoring and regulation, might also undermine legal certainty and the further development of the electronic communications sector.

³ www.testandtrial.ie

2 Human capital

2 Human capital	Ireland		EU
	rank	score	score
DESI 2019	11	53.8	48.0
DESI 2018	11	52.2	47.6
DESI 2017	12	47.0	45.4



	DESI 2017	Ireland	DESI 2019	EU
	value	DESI 2018	value rank	DESI 2019
2a1 At least basic digital skills % individuals	44% 2016	48% 2017	48% 23 2017	57% 2017
2a2 Above basic digital skills % individuals	25% 2016	28% 2017	28% 19 2017	31% 2017
2a3 At least basic software skills % individuals	46% 2016	49% 2017	49% 23 2017	60% 2017
2b1 ICT specialists % total employment	4.0% 2015	4.3% 2016	4.4% 8 2017	3.7% 2017
2b2 Female ICT specialists % female employment	1.7% 2015	1.9% 2016	2.0% 4 2017	1.4% 2017
2b3 ICT graduates % graduates	5.4% 2014	6.5% 2015	7.0% 2 2016	3.5% 2015

Ireland ranks 11th in the Human capital dimension, scoring above the EU average. It performs well when it comes to high level ICT skills: it has the 2nd largest share of ICT graduates and the share of ICT specialists in the workforce (4.4 %) is also above the EU average (3.7 %). Yet there is a significant shortage of ICT specialists.⁴ The 2 % share of ICT specialists in total female employment is the 4th highest in the EU. However, Ireland performs rather poorly when it comes to the average digital skills of the wider adult population, including the workforce. Less than half of the adult population has at least basic digital skills, well below the EU average (57 %). Only 28 % of people have digital skills above a basic level, below the EU average of 31 %. This general gap in digital skills is also confirmed by the OECD PIAAC survey of adult learning.

The need to step up upskilling initiatives to respond to digital transformation is also recognised in two policy analysis papers published by the Irish authorities in 2018⁵. This does not only concern high-level or specialised ICT skills (addressed under the Springboard+ upskilling programme or the apprenticeship schemes), but also general, non-specialist digital skills which are increasingly needed for all types of jobs across different sectors and qualifications.

⁴ National Skills Bulletin 2018, SOLAS, The Further Education and Training Authority

⁵ Progress Review of the Further Education and Training Strategy 2014 – 2019, SOLAS The Further Education and Training Authority/Department for Education and Skills, June 2018]; ‘Digital Transformation: Assessing the Impact of Digitalisation on Ireland’s Workforce’ Expert Group on Future Skills Needs, 7 December 2018.

The most relevant policy initiative to address high level ICT skills shortages was the adoption of Technology Skills 2022, the third ICT skills action plan⁶. Since the adoption of the first action plan in 2012, the number of ICT graduates has increased by 70 %. As of 2018 57 % of demand for high level ICT specialists is expected to be met from 'home-grown' ICT graduates. This still falls short of previous targets (74 % for 2018), and is even below the starting point for the previous ICT skills action plan (60 %). This is because the demand for high level ICT skills has substantially exceeded the forecasts used as a basis for setting previous targets. The new action plan therefore assumes very high growth for demand for high level ICT skills and sets the ambitious target of increasing the number of graduates from Ireland's own education and training system by 65% by 2022. This represents an additional 5,000 graduates per year over existing numbers, allowing Ireland to meet up to 70 % of annual expected demand from its own education and training system. While most of this will come from the 'standard' tertiary education path, reskilling will also play an important role. To fill the demand gap, the new action plan also contains measures to keep attracting ICT specialists from abroad.

Ireland has continued implementing previous initiatives on education (in particular the 2018 Action Plan on Education), which included concrete actions on digital skills. Notably, in September 2018, Leaving Certificate courses in Computer Science were launched for the first time in selected schools. Students from 40 secondary schools are expected to sit, for the first time, for Leaving Certificate exams in computer science in 2020.

Ireland has also taken steps to improve the general (non-specialist) digital skills of adults. In 2018, Ireland put forward a new policy framework⁷ to promote the upskilling of the workforce (including digital, but also other skills), focusing especially on employees needing it the most. A new pilot upskilling programme, EXPLORE, was also launched to improve, in particular, the digital skills of over 35s working in the manufacturing sector. As in previous years (since 2008), funding continued to be made available for introductory courses to bring people online who would not otherwise use the Internet.

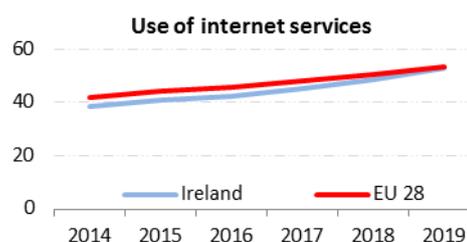
In conclusion, Ireland continues to work towards specific targets when it comes to digital skills education in schools and universities, in particular high-level and specialist ICT skills. It is also taking steps to improve upskilling and participation in adult learning in general, which may include digital skills. Basic online literacy training sessions are available for the least digitally literate adults. Ireland therefore has a number of strategies and initiatives in place which are relevant for digital skills. However, there is no coordinated and targeted strategy specifically for digital skills, which would cover all the different levels of skills and different stages of life, and which would provide a specific roadmap to close the digital skills gap with the rest of the EU.

⁶ <https://www.education.ie/en/Publications/Policy-Reports/technology-skills-2022.pdf>

⁷ "Supporting Working Lives and Enterprise Growth in Ireland"

3 Use of internet services

3 Use of internet services	Ireland		EU
	rank	score	score
DESI 2019	12	53.1	53.4
DESI 2018	13	48.6	50.7
DESI 2017	15	45.3	47.8

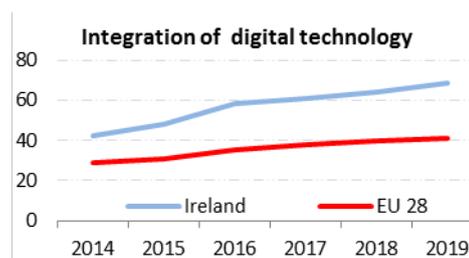


	DESI 2017	Ireland		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
3a1 People who never used the internet % individuals	15%	16%	16%	17	11%
3a2 Internet users % individuals	79%	79%	80%	17	83%
3b1 News % internet users	49%	65%	65%	25	72%
3b2 Music, videos and games % internet users	73%	73%	80%	16	81%
3b3 Video on demand % internet users	24%	24%	48%	6	31%
3b4 Video calls % internet users	42%	48%	46%	23	49%
3b5 Social networks % internet users	70%	72%	73%	14	65%
3b6 Professional social networks % internet users	17%	17%	17%	10	15%
3b7 Doing an online course % internet users	6%	5%	5%	19	9%
3b8 Online consultations and voting % internet users	4%	6%	6%	19	10%
3c1 Banking % internet users	64%	71%	70%	12	64%
3c2 Shopping % internet users	71%	64%	70%	10	69%
3c3 Selling online % internet users	13%	22%	29%	7	23%

Ireland ranks 12th in the Use of internet services dimension, one place up from DESI 2018. Its overall score is just below the EU average. The share of internet users in Ireland is below the EU average without any significant improvement. People who use the internet are keen to engage in a variety of online activities, in line with the rest of the EU. The most popular online activities are entertainment (music, videos and games), social networks, shopping and banking. People in Ireland are less likely to read news online or to take an online course than people in the rest of the EU. However, they are more likely to watch video on demand or use social networks for example.

4 Integration of digital technology

4 Integration of digital technology	Ireland		EU
	rank	score	score
DESI 2019	1	68.7	41.1
DESI 2018	1	64.0	39.6
DESI 2017	1	61.2	37.6



	DESI 2017	Ireland		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
4a1 Electronic information sharing % enterprises	25% 2015	28% 2017	28% 2017	19	34% 2017
4a2 Social media % enterprises	36% 2016	36% 2017	36% 2017	4	21% 2017
4a3 Big data % enterprises	NA 2016	NA 2016	20% 2018	4	12% 2018
4a4 Cloud % enterprises	24% 2016	NA 2017	33% 2018	5	18% 2018
4b1 SMEs selling online % SMEs	30% 2016	30% 2017	30% 2018	2	17% 2018
4b2 e-Commerce turnover % SME turnover	22% 2016	23% 2017	26% 2018	1	10% 2018
4b3 Selling online cross-border % SMEs	16% 2015	17% 2017	17% 2017	1	8% 2017

In the Integration of digital technology dimension Ireland retains its top ranking among EU countries. Irish SMEs continue to excel in the use of e-commerce. 30 % sell online and 17 % sell cross border, well above the EU average of 17 % and 8 % respectively. 26 % of the total turnover generated by SMEs comes from online sales, more than double the EU average of 10 %. Irish companies also rank relatively high on the use of big data (20 %), cloud services (33 %) and social media (36 %).

In addition to the relatively long-running scheme to help SMEs trade online (Trading Online Voucher Scheme), a new pilot (pilot Online Retail Scheme) was launched to help retail SMEs specifically to boost their online sales. More generally, the digitisation of SMEs has been singled out as the priority for the first programmes to be launched by the European Investment Advisory Hub. It was agreed that EIB experts together with the Irish authorities would identify the knowledge and funding gaps preventing the digitisation of Irish SMEs and would develop funding mechanisms to address these gaps⁸. The Government also committed to implementing a strategic approach to maximise the benefits from digitisation and incentivising SMEs to invest in new technologies⁹.

⁸ The EIB subsequently delivered its respective report in March 2019 (<https://www.eib.org/en/infocentre/publications/all/the-digitalisation-of-smes-in-ireland.htm>)

⁹ Government of Ireland, *Future Jobs 2019 – Preparing now for tomorrow's economy* (<https://dbei.gov.ie/en/Publications/Future-Jobs-Ireland-2019.htm>)

Irish ICT start-ups continue to feature prominently among the beneficiaries of Ireland's start-up support schemes. Deeptech and Fintech in particular are priority areas for start-up funding. The first calls under the EUR 500 million Disruptive Technologies Innovation Fund ran in 2018. More than 10 out of the first 27 approved projects related to ICT. Ireland ranks 7th (6th in the EU) in Startup Europe's ranking of European scale-up ecosystems¹⁰.

Ireland is committed to advancing new digital technologies and to investing strategically in digital technologies through EU-coordinated programmes. For example, Ireland is signatory to the Declaration of Cooperation on Artificial Intelligence and to the Declaration on European Blockchain Partnership. However, it has not yet joined other key EU initiatives relating to high-performance computing and sequenced genomes.

As for domestic initiatives, there are now four ICT-related Technology Centres (advanced manufacturing, AI/machine learning and microelectronics). These centres provide a bridge between research and business by allowing Irish companies and multinationals to work together on market-focussed strategic R&D projects in collaboration with research institutions. Both the AI and advanced manufacturing technology centres have in the region of 100 research partners. The AI centre "CeADAR" was approved for a second five-year cycle of funding. Based on innovative research, it offers concrete tools and solutions that companies can integrate and use in their operations. Five of Ireland's 15 Technology Gateways (based in the Institutes of Technology) also formed an Applied Internet of Things Cluster, through which industry can avail of full-time researchers and engineering professionals in the relevant areas. Science Foundation Ireland research centres also link scientists and engineers in partnerships across 19 research bodies, including all seven universities, and over 325 companies across Ireland. Their areas of focus include Big Data Analytics, Nanotechnology Materials, Software, and Digital Content.

These initiatives are likely to be boosted by Ireland's strategy to secure high-level and specialist ICT talent and its increasing focus on digital skills in schools. This notwithstanding, it is also important to improve the wider ecosystem for the integration of digital technologies by ensuring sufficient, future-proof connectivity and by improving the average digital skills of the current workforce.

Highlight 2019: Knowledge Transfer Ireland

Knowledge Transfer Ireland (KTI) aims to help business to connect and engage with Ireland's research base (universities, institutes of technologies and research centres). The KTI web portal¹¹ provides an overview of Ireland's research landscape and allows users to obtain a detailed picture of the research capabilities of the country's research base. KTI's mission is *"to support business and the research base to maximise innovation from State funded research by getting technology, ideas and expertise into the hands of business, swiftly and easily for the benefit of the public and the economy"*¹². KTI's web portal also provides practical help and technical advice to its users, for example when it comes to intellectual property and licencing arrangements.

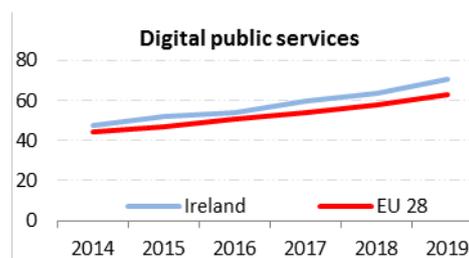
¹⁰ *Tech Scaleup Europe 2018 Report*, Startup Europe Partnership, 2018

¹¹ <https://www.knowledgetransferireland.com/>

¹² <https://www.enterprise-ireland.com/en/Research-Innovation/Companies/Collaborate-with-companies-research-institutes/Knowledge-Transfer-Ireland/>

5 Digital public services

5 Digital public services	Ireland		EU
	rank	score	score
DESI 2019	10	70.2	62.9
DESI 2018	10	63.5	57.9
DESI 2017	11	59.4	54.0



	DESI 2017	Ireland		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
5a1 e-Government users % internet users needing to submit forms	71%	77%	72%	12	64%
	2016	2017	2018		2018
5a2 Pre-filled forms Score (0 to 100)	35	39	67	13	58
	2016	2017	2018		2018
5a3 Online service completion Score (0 to 100)	89	89	88	15	87
	2016	2017	2018		2018
5a4 Digital public services for businesses Score (0 to 100) - including domestic and cross-border	97	99	99	2	85
	2016	2017	2018		2018
5a5 Open data % of maximum score	NA	NA	88%	1	64%
			2018		2018
5b1 e-Health services % individuals	NA	11%	11%	21	18%
		2017	2017		2017
5b2 Medical data exchange % of general practitioners	NA	NA	63%	8	43%
			2018		2018
5b3 e-Prescription % of general practitioners	NA	NA	8%	25	50%
			2018		2018

Ireland ranks 10th among EU countries in the Digital public services dimension, above the EU average. Ireland ranks 1st in Open data and 2nd in Digital public services for businesses. While above the EU average, the indicators which include private users are less impressive (e-government users, pre-filled forms, online service completion). However, the lowest rankings are in e-health. While 63 % of general practitioners exchange medical data (well above the EU average of 43 %), only 8 % of them use e-prescription (well below the EU average of 50 %). When it comes to use of e-health services, Ireland ranks only 21st (11 %, below the EU average of 18 %).

In line with the objectives of the e-Government strategy 2017-2020¹³, the Public Service Data Strategy 2019-2023¹⁴, published in December 2018, introduces a number of privacy, security and data protection measures. These relate to the data provided both by private and business users. The strategy aims to provide more transparency and more control to citizens over the use of their data. At the same time, it will also promote the reuse of data, where possible, so that citizens and businesses do not have to provide the same information over and over again (if successfully

¹³ <https://egovstrategy.gov.ie/>

¹⁴ <https://www.per.gov.ie/en/minister-of-state-odonovan-launches-the-public-service-data-strategy-2019-2023/>

implemented, these measures should therefore help Ireland improve its position in the relevant DESI indicator on pre-filled forms).

An interesting initiative to secure ICT specialists for the public sector is a new ICT apprenticeship scheme. During the two year programme successful candidates will be trained as ICT specialists at different public bodies.

e-Health is considered a critical element of healthcare reform Following the recommendation of the 2017 cross-party report on healthcare reform (the "Sláintecare Report"), the '*Sláintecare*' Implementation Strategy and the National Development Plan 2018-2020¹⁵ committed to provide the necessary investment for e-health. This will focus particularly on the nationwide rollout of the Electronic Health Records system (the foundation for a successful eHealth ecosystem) in the next 10 years, also with the help of EUR 225 million funding from the EIB.

Addressing the digital skill gaps and ensuring an adequate, future-proof nationwide broadband connectivity are both of course prerequisites for effective digital public services and a successful e-health system.

¹⁵ <https://www.per.gov.ie/en/national-development-plan-2018-2027/>