

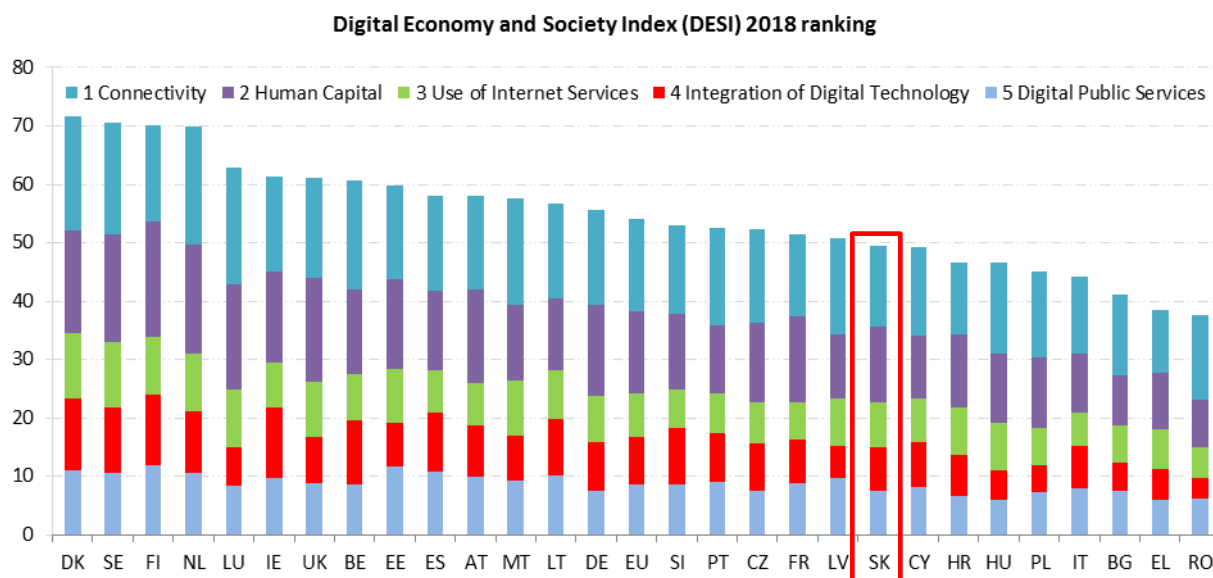
Digital Economy and Society Index (DESI)¹ 2018

Country Report Slovakia

The DESI report tracks the progress made by Member States in terms of their digitisation. It is structured around five chapters:

1 Connectivity	Fixed broadband, mobile broadband and prices
2 Human Capital	Internet use, basic and advanced digital skills
3 Use of Internet Services	Citizens' use of content, communication and online transactions
4 Integration of Digital Technology	Business digitisation and e-commerce
5 Digital Public Services	eGovernment and eHealth

The DESI was re-calculated for the previous years for all countries to reflect slight changes in the choice of indicators and corrections to the underlying indicator data. As a result, country scores and rankings may have changed from the previous publication. For further information please consult the DESI methodological note at <https://ec.europa.eu/digital-single-market/en/desi>.



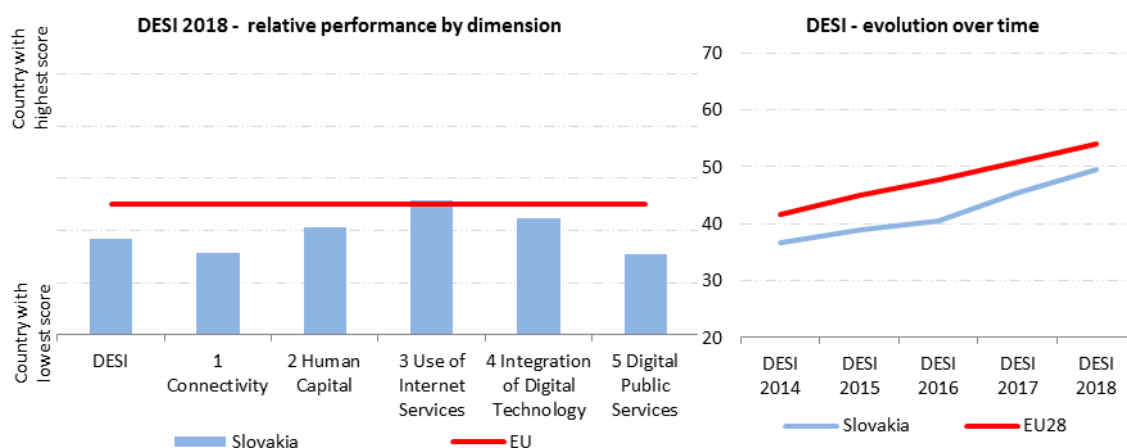
¹ <https://ec.europa.eu/digital-single-market/en/desi>

	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	20	49,5	43,5	54,0
DESI 2017	20	45,5	40,4	50,8

Slovakia ranks 20th out of the 28 EU Member States in the European Commission’s Digital Economy and Society Index (DESI) 2018, having made progress on previous years. While its ranking remained unchanged from 2017, its score increased due to an improved performance in all of the DESI dimensions measured. Slovaks are average internet users and made good use of a variety of online services. Availability of fixed broadband and 4G services are not as widespread as would be desirable, but ultrafast broadband coverage is well above the EU average. For human capital, the supply of ICT specialists is still below the EU average despite growing demand on the labour market. On eGovernment, Slovakia is progressing well and now ranks 20th. However, the number of eGovernment users is below the EU average. Improving its broadband infrastructure will help the country reap the full benefits of digital transformation.

Slovakia belongs to the low-performing cluster of countries².

The Slovak digital strategy, entitled the “Strategic Document for Digital Growth and Next Generation Access Infrastructure (2014-2020)”³, which was drawn up by the Ministry of Finance, provides the direction to be followed on services to citizens and businesses, effective public administration and broadband access.



² Low-performing countries are Romania, Greece, Bulgaria, Italy, Poland, Hungary, Croatia, Cyprus and Slovakia.

³ http://www.informatizacia.sk/ext_dok-strategicky_dokument_2014_2020_en/16622c

1 Connectivity

1 Connectivity	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	24	55,1	55,0	62,6
DESI 2017	24	50,8	50,1	58,5

	Slovakia				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
1a1 Fixed Broadband Coverage % households	89% ↑	26	88%	27	97%
1a2 Fixed Broadband Take-up % households	70% ↓	20	72%	13	75%
1b1 4G Coverage % households (average of operators)	82% ↑	24	71%	24	91%
1b2 Mobile Broadband Take-up Subscriptions per 100 people	84 ↑	18	73	20	90
1c1 Fast Broadband (NGA) Coverage % households covered by VDSL, FTTP or Docsis 3.0	79% ↑	20	75%	18	80%
1c2 Fast Broadband Take-up % homes subscribing to >= 30Mbps	29% ↑	20	23%	20	33%
1d1 Ultrafast Broadband Coverage % households covered by FTTP or Docsis 3.0	68%	17	NA		58%
1d2 Ultrafast Broadband Take-up % homes subscribing to >= 100Mbps	9,6% ↑	21	8,3%	17	15,4%
1e1 Broadband Price Index Score (0 to 100)	88 →	10	88	12	87

Slovakia's overall performance in connectivity seems to have made slight improvements, although its overall connectivity score of 55.1 is still below the EU average of 62.6. Slovakia has made very slight progress on fixed broadband coverage with 89% of households covered (88% previously) but is still below the EU average (of 97%). Fixed broadband take-up decreased to 70% of households (72% previously) and is still below the EU average of 75%. 4G coverage increased to 82% (71% previously) but remained below the EU average of 91%. Mobile broadband take-up increased to 84 subscriptions per 100 people (73 subscriptions per 100 people previously) but is still below the EU average of 90 subscriptions per 100 people. Slovakia has made some progress on fast broadband NGA coverage with 79% of households covered (75% previously) and appears almost at the EU average of 80%. Similar progress was made on fast broadband take-up, with 29% of homes covered (23% previously), compared to an EU average of 33%. Slovakia performed very well on ultrafast broadband coverage with 68.1% of households covered, well above the EU average of 58%. Slight progress was also made on ultrafast broadband take-up with 9.62% of homes subscribing (8.3% previously). However, the country is still well below the EU average of 15.4%. The broadband price index in Slovakia confirmed its value, which is above the EU average.

One long-term issue that has been going on for approximately 10 years in Slovakia is the provision of broadband coverage for "white spots" (i.e. uncovered municipalities). The Slovak authorities identified 207 "white spots" in early November 2017". Following public hearings to

map current broadband coverage and ascertain market players' future plans relative to the goal to achieve broadband coverage of 30 Mbps in all municipalities by 2020, Orange Slovensko and O2 Slovakia declared in 2017 their intent to cover all 207 remaining 'white spot' municipalities in Slovakia. As these declarations are not binding, another public consultation was launched in 2017 to obtain official commitments from the market players to cover all such "white spots" in Slovakia by the end of 2020. In February 2018, however, only a non-binding memorandum was signed between the relevant Slovak government department and the three major Slovak market players, Slovak Telekom, Orange Slovensko and O2 Slovakia. No binding commitments have yet been made. In the context of the revision of the Operational Programme on Integrated Infrastructure, which includes the objective of increasing broadband coverage, Slovakia will access EUR 118 million in funding from the European Regional Development Fund and the European Agricultural Fund for Rural Development for investment in backhaul and access networks. However, there are uncertainties as to whether this can be carried out with a view to bringing NGA connectivity to "white spots" areas in Slovakia. In May 2017 the Ministry of Transport and Construction cancelled a public tender for the "Atlas for passive infrastructure" project, the purpose of which was to map fixed and mobile telecom infrastructure needed for broadband deployment, and also to map road and energy infrastructure. The relevant Slovak government department has prepared a feasibility study for the intended '*WiFi for You*' demand-oriented measure to reach free WiFi coverage at municipal level which is supposed to be based on principles of the EU's Free Wi-Fi for Europeans scheme. There are however, no demand stimulation measures in place yet.

The Slovak market appears to be on the path to infrastructure-based competition. Market players tend to rely to a significant extent on their own forces and on commercial negotiations and commercial arrangements. This path has achieved solid results on ultrafast broadband coverage, which exceeds the EU average, but has not solved issues connected to total fixed broadband coverage and coverage by 4G networks. Moreover, ultrafast broadband take-up is very low relative to network availability. The issue of low ultrafast broadband take-up might be also linked to lack of demand-side programmes in Slovakia. A swift and effective implementation of the revised Operational Programme on Integrated Infrastructure will be essential for Slovak households and companies. More intense coordination between public and private stakeholders might increase the chance of efficient use of EU funds for total fixed broadband coverage and for coverage of "white spots". Establishment and operation of the single information point under the Broadband Cost Reduction Directive, which was notified by Slovakia as newly transposed, might contribute to this process. If remedies for broadband markets were implemented faster and with greater focus on practical detail, this could result in quicker progress towards the goal of more effective competition. Slovakia will also need to address the assignment of the 700 MHz band for wireless broadband, as the rights of one operator to use this band go beyond the year 2020. In addition, swift solution of the assignment of the 700 MHz band would positively influence the outlook for 5G network deployment.

2 Human Capital

2 Human Capital	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	16	51,9	42,2	56,5
DESI 2017	15	50,5	40,6	54,6

	Slovakia				EU
	DESI 2018 value	rank	DESI 2017 value	rank	DESI 2018 value
2a1 Internet Users % individuals	79% ↑ 2017	15	78% 2016	14	81% 2017
2a2 At Least Basic Digital Skills % individuals	59% ↑ 2017	12	55% 2016	12	57% 2017
2b1 ICT Specialists % total employment	2,9% ↑ 2016	19	2,8% 2015	17	3,7% 2016
2b2 STEM Graduates⁴ Per 1000 individuals (aged 20-29)	16,6 ↓ 2015	17	17,2 2014	15	19,1 2015

Slovakia's performance on human capital is below the EU average, and progress has been slower than the EU average. In 2017, 79% of the Slovak population were internet users (versus 78% in 2016), while 59% of Slovaks have at least basic levels of digital skills.

In terms of its ICT specialists, Slovakia performs below the EU average, with specialists of this kind accounting for 2.9% of total employment. Slovakia is performing below the EU average for graduates holding a degree in the fields of science, technology, engineering and mathematics (STEM), with 16.6 graduates per 1 000 individuals.

Slovakia is moving towards building the necessary capacity, using public and mainly private initiatives. In September 2017 Slovakia launched the Digital Coalition⁵ (Digitálna Koalícia) as part of the Europe-wide Digital Skills and Jobs Coalition initiative⁶, focusing on actions to improve students' digital skills and enhancing the digital literacy of employees, job seekers and entrepreneurs.

In further education, the Ministry of Education, Science, Research and Sport (MoESRS) is working together with private entities to produce programmes focusing on the development of digital skills. The programmes are then offered by secondary schools, universities and in the IT sector. For example, the IT Academy's⁷ "Learning for the 21st Century" project, launched in February 2017, is supporting the development of the IT sector through changes in the education system at primary, secondary and higher levels. The project is implemented through the European Social Fund (ESF) and the European Regional Development Fund (ERDF), and has a budget of EUR 17.8 million. Its goal is to develop a model of education and training for young people which addresses the current and prospective needs of the knowledge society and of the labour market, focusing on IT and ICT skills. The main

⁴ The most recent data has been used in DESI 2018. It may refer to 2016 or 2015 depending on the Member State. This is reflected in the 2018 DESI ranking. Historical data has been updated by Eurostat.

⁵ <https://ec.europa.eu/digital-single-market/en/news/digital-coalition-launched-slovakia>

⁶ <https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition>

⁷ <http://itakademia.sk/sk/domov/>

outcome is to generate at least 1 000 new specialists per year in line with the requirements of the IT sector. To achieve this, the project targets students from at least 24 000 elementary schools, 9 000 secondary schools and 3 000 universities.

MoESRS is also working, in cooperation with the Association of Universities of the Third Age, towards the inclusion of people with less digital skills than others (eInclusion). Promotion of eInclusion is one of the objectives in the “Strategic Document for Digital Growth and Next Generation Access Infrastructure (2014-2020)”⁸. This initiative, which has not been launched yet, will target people over 45, encouraging them to take part in digital training courses. The courses range from basic ICT skills to more advanced skills in the use of ICT for creative purposes and web design (e.g. courses for operating ATM machines or using internet banking).

Shortages of digital skills in both the public administration and the business sector are an obstacle to achieving the digital transformation and innovation in ICT. To exploit the opportunities offered by digital technology, it would be beneficial for Slovakia to increase the number of ICT specialists and STEM graduates through retraining initiatives and awareness-raising campaigns.

Highlight 2018: Women and IT

The “Aj Ty v IT”⁹ project is an initiative to increase awareness and encourage women to study IT. The project provides a portal that informs female students, their parents and the public about the need for more women in IT. The portal works as a web repository that brings together and presents the profiles of computer scientists who did not study in the IT faculty of a Slovak university, but who gradually developed their IT skills and are now working in IT-related positions in different companies. It also provides information about ICT events specifically for women.

The aim of the project is to present computer science as a suitable field of study and a future career path for women. The next step is to help women to enter IT faculties and later gain employment in this field. This project was initiated by the Faculty of Informatics and Information Technologies (FIIT¹⁰) of the Technical University of Bratislava when it was noticed that female students in IT faculties represent only 3% to 5% of the total number of students. Over the first two years of the “Aj Ty v IT” project, the number of female students went up from 3% to 10%.

⁸ http://www.informatizacia.sk/ext_dok-strategicky_dokument_2014_2020_en/16622c

⁹ <http://www.ajtyvit.sk/>

¹⁰ <https://www.fiit.stuba.sk/>

3 Use of Internet

3 Use of Internet	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	16	51,3	41,0	50,5
DESI 2017	15	49,4	38,7	47,5

	Slovakia				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
3a1 News % individuals who used Internet in the last 3 months	77% ↑	18	74%	18	72%
	2017		2016		2017
3a2 Music, Videos and Games % individuals who used Internet in the last 3 months	69%	25	69%	25	78%
	2016		2016		2016
3a3 Video on Demand % individuals who used Internet in the last 3 months	7%	25	7%	25	21%
	2016		2016		2016
3b1 Video Calls % individuals who used Internet in the last 3 months	55% ↓	10	57%	5	46%
	2017		2016		2017
3b2 Social Networks % individuals who used Internet in the last 3 months	72% ↑	13	71%	12	65%
	2017		2016		2017
3c1 Banking % individuals who used Internet in the last 3 months	63% ↑	15	56%	17	61%
	2017		2016		2017
3c2 Shopping % internet users (last year)	70% ↑	9	68%	10	68%
	2017		2016		2017

Many Slovaks are active internet users, engaging in a wide range of online activities such as reading news online, participating in social networks and using the Internet to communicate via voice or video calls. In all these activities, Slovak internet users are more active than in the EU overall. On the other hand, Slovaks are less active on the web when it comes to listening to music, watching videos on demand and playing video games online, scoring 69%, while the EU average stands at 78%.

63% of Slovaks use eBanking and 70% use online shopping services, scores above the EU average. The main factors that contribute to this are initiatives that promote citizens' awareness of such opportunities. The eInclusion projects described above in the section on human capital are an example of such initiatives.

4 Integration of Digital Technology

4 Integration of Digital Technology	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	18	37,4	29,2	40,1
DESI 2017	21	30,2	26,7	36,7

	Slovakia				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
4a1 Electronic Information Sharing % enterprises	31% 2017	↑ 16	30% 2015	17	34% 2017
4a2 RFID % enterprises	5,7% 2017	↑ 8	3,0% 2014	20	4,2% 2017
4a3 Social Media % enterprises	17% 2017	↑ 17	13% 2016	22	21% 2017
4a4 eInvoices % enterprises	17,9% 2017	↑ 16	14,5% 2016	17	NA 2017
4a5 Cloud % enterprises	15,0% 2017	↑ 14	11,9% 2016	15	NA 2017
4b1 SMEs Selling Online % SMEs	14,6% 2017	↑ 19	11,3% 2016	21	17,2% 2017
4b2 E-commerce Turnover % SME turnover	12,2% 2017	↑ 7	10,5% 2016	9	10,3% 2017
4b3 Selling Online Cross-border % SMEs	7,6% 2017	↑ 18	6,3% 2015	17	8,4% 2017

Slovakia made good progress on the integration of digital technology. 31% of enterprises have ERP (enterprise resource planning) software packages to share information between different parts of their operations. 17% of enterprises are using two or more types of social media to interact with their customers, 4 percentage points higher than last year. More and more enterprises are selling online (14.6% v 11.3% in 2016). This has translated into an increase in the e-commerce turnover of those SMEs to 12.2%, while the EU average is 10.3%. Although online cross-border sales and the use of cloud services also increased to 7.6%, and 15% respectively, Slovakia still scores below the EU average in these areas.

One of the key priorities of Slovakia is the creation of conditions and opportunities for the development of e-commerce. The “Strategic Document for Digital Growth and Next Generation Access Infrastructure (2014-2020)”¹¹ underlines the importance of trusted cloud services that can support SMEs when selling online. The development of electronic and mobile payments is also a clear priority (including in the public administration), with eInvoices planned to be made available in all areas of business.

For SMEs to improve their performance, it is important that they become more aware of the advantages that digitisation can bring.

¹¹ http://www.informatizacia.sk/ext_dok-strategicky_dokument_2014_2020_en/16622c

5 Digital Public Services

5 Digital Public Services	Slovakia		Cluster	EU
	rank	score	score	score
DESI 2018	20	50,4	48,0	57,5
DESI 2017	24	44,6	44,2	53,7

	Slovakia				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
5a1 eGovernment Users¹² % internet users needing to submit forms	55% ↓	17	65%	13	58%
	2017		2016		2017
5a2 Pre-filled Forms Score (0 to 100)	34 ↑	20	28	21	53
	2017		2016		2017
5a3 Online Service Completion Score (0 to 100)	77 ↑	22	67	24	84
	2017		2016		2017
5a4 Digital Public Services for Businesses Score (0 to 100) - including domestic and cross-border	73 ↑	22	57	27	83
	2017		2016		2017
5a5 Open Data % of maximum score	77% ↑	11	74%	9	73%
	2017		2016		2017
5b1 eHealth Services % individuals	16%	15	NA		18%
	2017				

Slovakia made good progress in this field, leaping from 24th to 20th in the DESI 2018 thanks to improvement in almost all categories measured. Slovakia performed better on 'pre-filled forms', scoring 34 compared to 28 last year, although well below the EU average. Its performance on the 'online service completion' and 'digital public services for businesses' indicators also improved, from 67 to 77 and from 57 to 73 respectively. Although Slovakia's performance on the Open Data index increased by 3 percentage points, it dropped two places in the ranking (from 9th to 11th) because the EU average increased from 59% to 73%. Slovakia performs below the EU average on eGovernment users, with 55% of internet users who needed to submit forms doing so.

In October 2017, the "Detailed Action Plan on Digitisation of Public Administration"¹³ was published. The aim of the action plan is to develop an eGovernment system that is useful for citizens, public administration, businesses and academia. In addition, the "eHealth Implementation Programme" is under way, aiming at enabling central provision of public health relevant information, electronic booking mainly of laboratory treatment and vaccination, electronic prescription and medication processes and provision of patient health information. The estimated cost for finalising the eHealth system is around EUR 30 million.

Slovakia is taking steps towards modernising its public administration. An adequate level of coordination between different public administrative authorities is needed to achieve successful implementation of the action plan and thus bring significant changes to citizens, entrepreneurs and to the public administration itself.

¹² The definition of this indicator has been changed. The new indicator measures eGovernment users as a percentage of those internet users needing to submit forms to the public administration

¹³ http://www.informatizacia.sk/ext_dok-detailny_akcny_plan_schvaleny/26030c