



Digital Economy and Society Index (DESI)

2019 Country Report

Czechia

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:

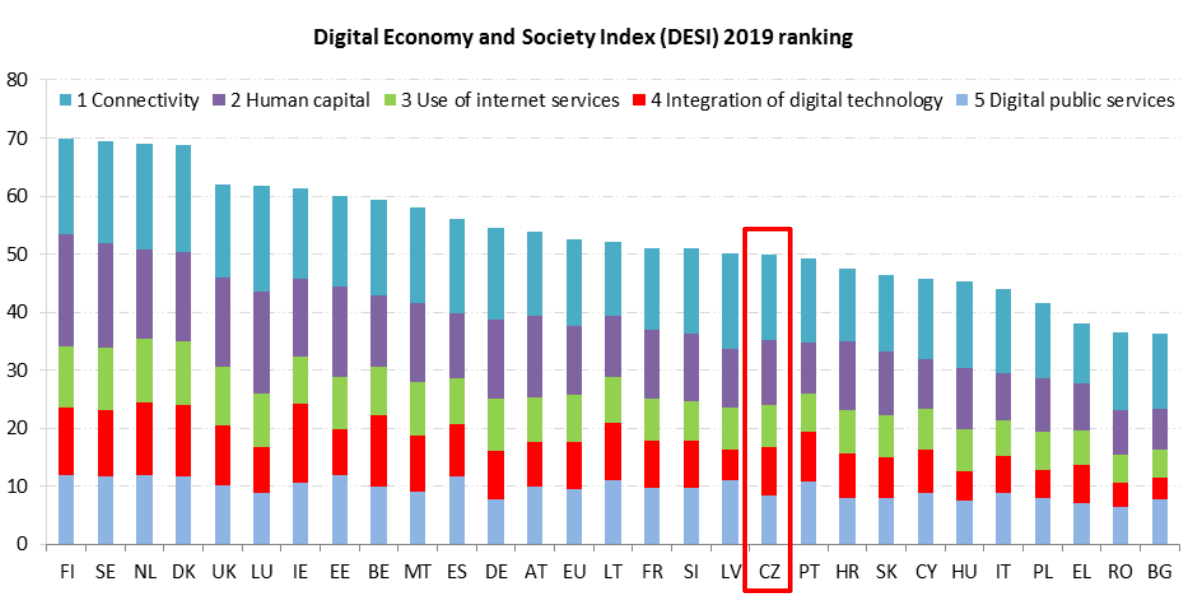
- *5G readiness,*
- *Above basic digital skills,*
- *At least basic software skills,*
- *Female ICT specialists,*
- *ICT graduates,*
- *People who never used the internet,*
- *Professional social networks,*
- *Doing an online course,*
- *Online consultations and voting,*
- *Individuals selling online,*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

Czechia overview

	Czechia		EU
	rank	score	score
DESI 2019	18	50.0	52.5
DESI 2018	17	47.6	49.8
DESI 2017	15	45.3	46.9



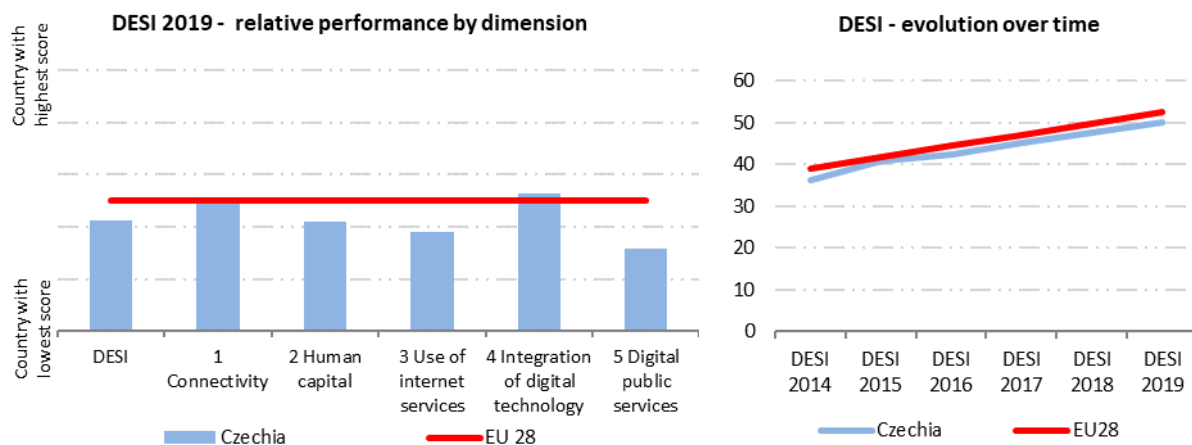
Czechia ranks 18th out of the 28 EU Member States in the European Commission Digital Economy and Society Index (DESI) 2019. Its score increased thanks to an improved performance in some of the DESI dimensions measured but in the overall ranking the country is one position lower than in DESI 2018.

Among all dimensions, Czechia ranks highest in the integration of digital services domain especially thanks to high scores in e-commerce and online shopping. Czechia improved concerning digital public services but still scores below the EU average. More than half of Czech internet users use now e-government services and Czechs are among the EU leaders in reading news online. 4G coverage is one of the best in the EU and Czech SMEs still maintain one of the highest share of turnover from e-commerce in the EU.

However, the not sufficient level of digital skills in the population remains an issue and the digitisation of businesses is not progressing as fast as it could.

Czechia's new digital strategy (*'Digitální Česko'*¹) has been adopted in October 2018 and is divided into 3 chapters: 1/ Digitisation of public services, 2/ Czechia in digital Europe and 3/ Digital economy and society.

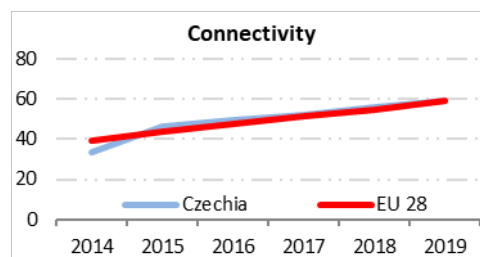
The government has appointed a new Chief Digital Officer for IT and digitisation who is in charge of coordinating actions foreseen in the strategy. For the implementation, he closely collaborates with ministries of industry and trade, interior, employment, education and healthcare.



¹ <https://www.mvcr.cz/clanek/rada-vlady-pro-informacni-spolecnost.aspx?q=Y2hudW09Ng%3D%3D>

1 Connectivity

1 Connectivity	Czechia		EU
	rank	score	score
DESI 2019	15	59.2	59.3
DESI 2018	14	56.2	54.8
DESI 2017	14	51.9	51.2



	DESI 2017	Czechia		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
1a1 Fixed broadband coverage % households	99%	98%	98%	14	97%
1a2 Fixed broadband take-up % households	71%	73%	74%	14	77%
1b1 4G coverage % households (average of operators)	94%	99%	99%	3	94%
1b2 Mobile broadband take-up Subscriptions per 100 people	77	81	82	22	96
1b3 5G readiness Assigned spectrum as a % of total harmonised 5G spectrum	NA	NA	17%	11	14%
1c1 Fast broadband (NGA) coverage % households	75%	89%	90%	12	83%
1c2 Fast broadband take-up % households	26%	32%	37%	18	41%
1d1 Ultrafast broadband coverage % households	NA	60%	63%	17	60%
1d2 Ultrafast broadband take-up % households	14%	16%	18%	16	20%
1e1 Broadband price index Score (0 to 100)	88	87	88	9	87

Overall growth in Connectivity has slowed, falling to just below the EU average. However, Czechia has almost met its target for fixed broadband full coverage, while next generation access (NGA) coverage has expanded to such an extent that it now exceeds the EU average. Reasons for this increase include the deployment of fibre by alternative operators and the incumbent's upgrade of its copper network to very high speed digital subscriber line (VDSL). Subscriptions to fixed broadband have increased mainly in urban areas, which are well developed. They now stand at 74 % of households, which is still below the EU average of 77 %. Czechia's performance as regards ultra-fast broadband coverage is slightly better, at 63%, than the EU average (60 %). However, Czechia's urban-rural digital divide is illustrated by the figures for FTTP coverage; under 8 % of rural areas are covered (half the EU average of 14 %), while overall coverage stands at 38 %, above the EU average of 30 %. Czechia's take-up of fast broadband (37 %) and ultrafast broadband (18 %) is below the EU average (41 % and 20 % respectively), showing a significantly slower pace of growth. The ultrafast broadband take-up is catered for by new entrants, with a marginal deployment on the incumbent's network. 4G coverage of mobile broadband is almost ubiquitous (99 %). Mobile broadband take-up (82 %) increased slightly over the past year, but is well below the EU average of 96 %. The reason for this relatively low take-

up may be that prices for mobile phone users are among the highest in Europe. Mobile broadband prices for handset offers² (€42.6) are almost double the EU average of €22.3. The fixed broadband price index, however, is very close to the EU average.

The national broadband plan has not yet been updated to reflect the 2025 strategic targets proposed by the Commission. Under the current strategy, deployment in market failure areas will benefit from public support co-financed with European Structural and Investment Funds (ESIF) under the Operational Programme 'Enterprise and Innovations for Competitiveness' (OPEIC). OPEIC support for broadband rollout has been reduced from the €521 million that were initially planned to €281 million, owing to a reduction in the intervention areas with no NGA coverage and lower demand for funding by operators than was initially expected. These funds will support the award of grants under a new call for projects in areas with no NGA coverage, based on a new map prepared by the national regulatory authority (CTU). The Czech authorities are also assessing a new measure to reinforce backhaul networks. The remaining funds will be used to create an infrastructure atlas, to facilitate the reuse of existing infrastructure that can support the deployment of electronic communications networks. The OPEIC is also expected to contribute to setting up a demand support scheme which is currently under preparation and a programme of loans to support SMEs' activities in the provision of electronic communication services.

In Czechia, 42 % of the 2090 MHz of spectrum harmonised at EU level for wireless broadband has been assigned. August 2018 saw further progress towards the proposed auction of the 700 MHz spectrum in Czechia, with the Czech Telecommunication Office (*Cesky telekomunacni urad*, CTU) issuing its 'framework position' after completing the first stage of its industry consultation. The auction, which is expected to take place in the second half of 2019, will offer those interested the remaining 3.4-3.6 GHz band licence, followed by a refarming on the 3.4-3.8 GHz band by 2020. On 22 November 2018, the national roadmap for the 700 MHz frequency band was published on the website of the Ministry of Industry and Trade³, five months after the legal deadline.

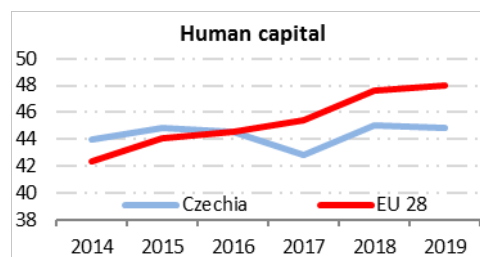
Greater market-led deployment than previously anticipated means that Czechia's direct public investment needs to close the urban-rural divide as regards NGA networks have been reduced. All the remaining measures provided for by the OPEIC should be swiftly implemented. The forthcoming auction of 5G spectrum auction needs to be held soon if 5G is to be deployed in good time.

² Offers from February 2017 including 1 GB, 300 calls and 225 SMS. Source: Mobile Broadband Price Study (Van Dijk and Empirica). Prices expressed in €/PPP, VAT included. Data: February 2019.

³ Národní plán realizace rozhodnutí Evropského parlamentu a Rady (EU) 899/2017: <https://www.mpo.cz/cz/e-komunikace-a-posta/dvb-t2/narodni-plan-realizace-rozhodnuti-evropskeho-parlamentu-a-rady-eu-899-2017--241553/>

2 Human capital

2 Human capital	Czechia		EU
	rank	score	score
DESI 2019	16	44.8	48.0
DESI 2018	16	45.0	47.6
DESI 2017	16	42.8	45.4



	Czechia		EU	
	DESI 2017 value	DESI 2018 value	DESI 2019 value	DESI 2019 rank
2a1 At least basic digital skills % individuals	54%	60%	60%	11
2a2 Above basic digital skills % individuals	20%	24%	24%	22
2a3 At least basic software skills % individuals	57%	62%	62%	11
2b1 ICT specialists % total employment	3.7%	3.5%	3.6%	15
2b2 Female ICT specialists % female employment	0.8%	0.9%	0.7%	24
2b3 ICT graduates % graduates	4.2%	3.9%	4.0%	13

On Human capital dimension, Czechia ranks 16th and below the EU average. 62 % of Czechs have at least basic software skills. The proportion of ICT specialists (3.6 %) stagnated and dropped below the EU average (3.7 %). Women ICT specialists represent only 0.7 % of total employment, which is the 5th lowest score in the EU. The insufficient supply of ICT graduates could become a bottleneck for the economy: 79 % of enterprises that recruited or tried to recruit ICT specialists in 2017 reported difficulties in filling these vacancies⁴.

Three national strategic documents aim to improve digital skills. The most recent strategy '*Digitální Česko*'⁵ (adopted in 2018) focuses primarily on the workforce, labour market and education. Concrete implementation plans with actions and deliverables are expected to be published in 2019. The Strategy for Digital Literacy⁶ is entering its final phase with approximately half of the foreseen actions progressing. However, there are delays mainly in the introduction of digital technologies to classrooms or digital inclusion of the low-skilled and socially excluded groups. The Strategy for Digital Education⁷ adopted in 2014 foresees actions to lower the inequalities, support quality teachers, and

⁴https://ec.europa.eu/eurostat/statistics-explained/index.php/ICT_specialists_-_statistics_on_hard-to-fill_vacancies_in_enterprises

⁵<https://www.mvcr.cz/clanek/rada-vlady-pro-informacni-spolecnost.aspx?q=Y2hudW09Ng%3D%3D>

⁶https://www.mpsv.cz/files/clanky/21499/Strategie_DG.pdf

⁷<http://www.msmt.cz/vzdelavani/skolstvi-v-cr/strategie-digitalniho-vzdelavani-do-roku-2020>

effectively manage digitisation of education. This strategy faces delays especially in equipping schools with digital infrastructure and providing support materials and training for teachers.

Czech students do not have sufficient level of digital media literacy⁸. Only 43 % of high school students are aware of algorithms that select posts in social media news feeds. They also do not fully understand how search engines work and have difficulties to critically assess articles and media announcements. Low level of digital media literacy makes the population vulnerable to the spread of online disinformation, propaganda and misleading commercial practices. To solve this issue, Czech NGOs and public institutions organise contests for young people in cybersecurity, coding or web design⁹.

In 2018, the Czech Digital Skills and Jobs Coalition¹⁰ focused on improving communication with its 134 members. On its new and regularly updated website, the Coalition lists supported projects, key upcoming events and presents success stories. It launched new working groups to prepare a basis for a new think-tank that will improve monitoring and sharing of best practices and support networking.

In 2018, Czechia joined the EU Code Week with 151 events and over 9,000 participants. In December 2018 a Czech project, “Coding Bootcamp Praha”¹¹ won one of the five European Digital Skills Awards¹².

Czechs are not improving their digital skills fast enough. However, public authorities, associations, NGOs and the private sector organise activities to address this issue. Better coordination, strict compliance with the national strategic documents, closer cooperation between initiatives and a more direct contact with the target audiences would make the actions more efficient and help more Czechs to boost their level of digital skills.

⁸Study by “People in Need”:

<https://docs.google.com/viewerng/viewer?url=https://www.irozhlas.cz/sites/default/files/documents/64ab57a97c85701abb5652ffc15f117c.pdf&pid=explorer&efh=false&a=v&chrome=false>

⁹ <https://digikoalice.cz/inspirations/>

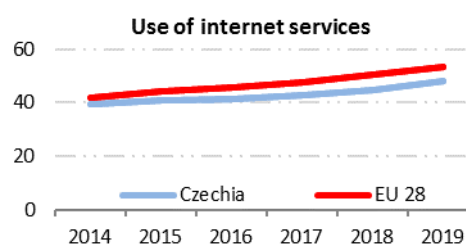
¹⁰ <https://digikoalice.cz/>

¹¹ <https://digikoalice.cz/inspirations/coding-bootcamp-praha/>

¹² <https://ec.europa.eu/digital-single-market/en/news/winners-european-digital-skills-awards-2018>

3 Use of internet services

3 Use of internet services	Czechia		EU
	rank	score	score
DESI 2019	19	47.9	53.4
DESI 2018	20	44.7	50.7
DESI 2017	20	42.7	47.8

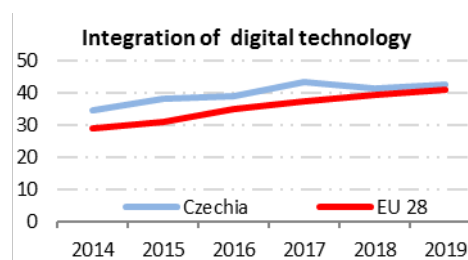


	Czechia			EU
	DESI 2017	DESI 2018	DESI 2019	DESI 2019
	value	value	value rank	value
3a1 People who never used the internet % individuals	13%	11%	10% 11	11%
3a2 Internet users % individuals	79%	81%	84% 12	83%
3b1 News % internet users	NA	91%	91% 3	72%
3b2 Music, videos and games % internet users	72%	72%	70% 25	81%
3b3 Video on demand % internet users	4%	4%	5% 28	31%
3b4 Video calls % internet users	40%	42%	49% 18	49%
3b5 Social networks % internet users	55%	57%	64% 23	65%
3b6 Professional social networks % internet users	5%	5%	5% 26	15%
3b7 Doing an online course % internet users	3%	4%	4% 26	9%
3b8 Online consultations and voting % internet users	6%	3%	3% 27	10%
3c1 Banking % internet users	63%	67%	72% 10	64%
3c2 Shopping % internet users	57%	65%	67% 14	69%
3c3 Selling online % internet users	15%	13%	16% 16	23%

The use of internet services in Czechia is growing but remains below the EU average. 84 % of Czechs use the internet at least once a week. Reading news is one of the most popular online activities (3rd highest score in the EU). More and more Czechs (72 % of internet users) also use online banking and in this domain, Czechia is the best performing country of Central Europe. However only 5 % of Czech internet users have a video-on-demand subscription (EU average: 31 %) and only 3 % participate in online consultations and voting (EU average: 10 %) which puts the country at the bottom of the EU ranking. Online shopping grew by 10 percentage points between 2016 and 2018.

4 Integration of digital technology

4 Integration of digital technology	Czechia		EU
	rank	score	score
DESI 2019	12	42.5	41.1
DESI 2018	12	41.3	39.6
DESI 2017	9	43.4	37.6



	Czechia		EU	
	DESI 2017 value	DESI 2018 value	DESI 2019 value	DESI 2019 rank
4a1 Electronic information sharing % enterprises	30%	28%	28%	20
4a2 Social media % enterprises	12%	13%	13%	23
4a3 Big data % enterprises	9%	9%	8%	21
4a4 Cloud % enterprises	10%	14%	16%	16
4b1 SMEs selling online % SMEs	26%	23%	23%	5
4b2 e-Commerce turnover % SME turnover	22%	16%	18%	3
4b3 Selling online cross-border % SMEs	12%	12%	12%	4

On the Integration of digital technology by businesses, Czechia ranks 12th among EU countries, slightly above the EU average. Czechia reports top results in SMEs selling online (23 %) and the share of e-Commerce on SME total turnover (18 %). However, both indicators are in a modest decrease since 2016. The use of cloud software increased since 2016 but remains below the EU average. Czech enterprises are among the lowest EU performers in the use of social media.

Czechia is committed to the advancement of new digital technologies and to strategically invest in digital technologies, via EU coordinated programmes (e.g. the country is a member of the EuroHPC Joint Undertaking; it has also signed the Declaration of European Blockchain Partnership as well as the Declaration on cooperation on Artificial Intelligence). The country is home to five digital innovation hubs based in Prague, South Moravia and Ostrava¹³. In 2019, the government adopted a new innovation strategy¹⁴ and is expected to announce a national strategy for Artificial Intelligence.

The national digitisation strategy (*'Digitální Česko'*, adopted in 2018)¹⁵ lists 8 priority areas and 58 corresponding actions that aim to create more favourable conditions for digital transformation. The

¹³ <https://europa.eu/!kB94nt>

¹⁴ Innovation Strategy of the Czech republic 2019-2030: The country of the future <https://www.vyzkum.cz/FrontAktualita.aspx?aktualita=867990>

¹⁵ <https://www.mpo.cz/cz/podnikani/digitalni-spolecnost/program-digitalni-cesko---243487/>

strategy underlines the need to invest in research and innovation, support the adoption of digital technologies such as artificial intelligence or big data by businesses, strengthen cybersecurity in private and public sector and ensure appropriate financing.

For an economy dependent on engineering, automotive industry and metallurgy it is vital to help businesses, especially SMEs adapt to the technological change. According to the a study by Czech Chamber of Commerce¹⁶, big data is the most popular technology among companies and they expect governmental support in deploying state-of-the-art shared digital infrastructure.

Czech start-ups are in average less than three years old. The government agency CzechInvest offers¹⁷ co-financing from the EU regional development funds for young enterprises. However, according to the “Start-up Report 2017/2018”¹⁸ only one third of start-ups sought public financing. Early stage companies also seek support in regional innovation centres. One of the most successful is the JIC¹⁹ in Brno, which since 2014 has supported 328 enterprises and contributed to the creation of 2160 jobs.

Czechia reports strong results in e-commerce and has an active start-up scene. However, businesses are not adopting digital technologies fast enough. Increasing the number of ICT experts could help bridge the adoption of digital technologies.

Highlight 2019: IT4Innovations – Most powerful Czech supercomputer and a digital innovation hub from Ostrava

In the last decades, this region’s economic power originated from mining, engineering and heavy industry. Digitisation and innovation can represent a new economic and social opportunity. IT4Innovations aims to offer world-class supercomputing infrastructure and increase competitiveness and innovation potential of Czech research and industry. The center’s main device is Salomon:

- 214th most powerful supercomputer in the world
- 76,896 cores
- able to perform 2 petaFLOPS per second

The hub manages the most advanced national HPC infrastructure and represents Czechia in international HPC networks (e.g. EuroHPC). It also conducts its original research in HPC, computer simulations, numerical modeling or artificial intelligence. The hub helps big businesses and SMEs to reap the benefits of HPC and it trains new HPC specialists.

IT4Innovations cooperates with Europe’s main HPC institutions and participates in the key international initiatives such as PRACE or CloudiFacturing. IT4Innovations positively influences the region’s economy. It employs 200 people mainly in the fields of research and supercomputing services. It also collaborates with the Technical University in Ostrava and offers jobs and traineeships for students. In 2018, the center’s budget was CZK 188 million (€4.8 million). In 2020, the centre plans to install a new supercomputer, which should be one of the most powerful in Europe. With the regional innovation centre in Ostrava (MSIC) it aims to create a one-stop-shop digital innovation hub, which will expand the offer of services.

¹⁶[https://www.ey.com/Publication/vwLUAssets/Pr%C5%AFmysl_4.0_2018/\\$FILE/Pruzum_Prumysl_4_0_HK_EY_2018.pdf](https://www.ey.com/Publication/vwLUAssets/Pr%C5%AFmysl_4.0_2018/$FILE/Pruzum_Prumysl_4_0_HK_EY_2018.pdf)

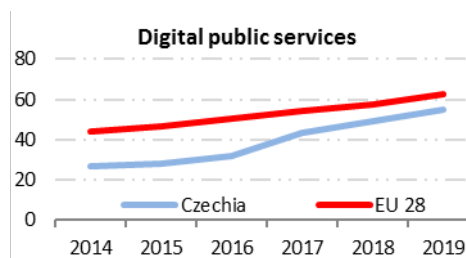
¹⁷ CzechStarter, CzechAccelerator, CzechMatch, CzechDemo - <http://www.podporastartupu.cz/projekty/>

¹⁸ <https://mailchi.mp/1b20a1451ef7/startupreport>

¹⁹ <https://www.jic.cz/en/>

5 Digital public services

5 Digital public services	Czechia		EU
	rank	score	score
DESI 2019	20	55.2	62.9
DESI 2018	21	49.1	57.9
DESI 2017	23	43.5	54.0



	Czechia				EU
	DESI 2017	DESI 2018	DESI 2019	rank	DESI 2019
5a1 e-Government users % internet users needing to submit forms	35%	33%	52%	22	64%
	2016	2017	2018		2018
5a2 Pre-filled forms Score (0 to 100)	43	49	51	18	58
	2016	2017	2018		2018
5a3 Online service completion Score (0 to 100)	77	82	82	21	87
	2016	2017	2018		2018
5a4 Digital public services for businesses Score (0 to 100) - including domestic and cross-border	73	81	82	19	85
	2016	2017	2018		2018
5a5 Open data % of maximum score	NA	NA	62%	21	64%
			2018		2018
5b1 e-Health services % individuals	NA	15%	15%	16	18%
		2017	2017		2017
5b2 Medical data exchange % of general practitioners	NA	NA	17%	25	43%
			2018		2018
5b3 e-Prescription % of general practitioners	NA	NA	48%	17	50%
			2018		2018

On Digital public services, Czechia climbed to the 20th position in the EU. Despite important improvements, the country does not yet reach the EU average in any of the monitored indicators. After a stagnation in 2017, the share of e-government users grew significantly by 19 percentage points to 52 %. There was also a modest improvement in digital public services for businesses (82 with an EU average 85) and pre-filled forms (51 with an EU average 58). Regarding e-health, almost half of general practitioners use e-prescription; however, only 17 % of them exchange medical data, which is the 4th lowest score in the EU.

The new e-government strategy (*'Digitální Česko: Informační koncepce České republiky'*) was adopted in 2018²⁰. It lists five objectives: 1) more effective and user friendly online services for citizens and businesses; 2) digital friendly legislation; 3) favourable conditions for the use of digital technologies in public services; 4) digital skills for public officials; and 5) central coordination of public services' ICT development. As of July 2018, Czechs can use new e-ID cards with chips and receive certain public services over the internet. 570,000 people owned the new e-ID card at the end of 2018.

²⁰ <https://www.mvcr.cz/clanek/rada-vlady-pro-informacni-spolecnost.aspx?q=Y2hudW09Ng%3D%3D>

The related Citizen's Portal (*'Portál občana'*²¹) currently offers 60 services, inter alia, access to the national citizens' register, extract from the criminal record or the data from the trade licensing register. When fully operational, the portal should offer over 700 services.

As of 2016, Czechia has a National e-Health Strategy²². It introduced mandatory e-prescriptions from January 2018. In 2018, Czech doctors issued 58.5 million of them and the Central e-prescription repository registered over 276 million interactions. As of July 2018, patients with the e-ID card can access their drug record online. In 2019 the Ministry of Healthcare plans to launch the National e-Health Contact Point and introduce additional measures to make the use of drugs more efficient and help doctors better follow their patients' medication plans.

In digital public services, Czechia scores below the EU average but the measures that the government is introducing promise progress. In order to increase the number of e-government and e-health users it is also important to make sure people have the right skills and incentives to use public services digitally.

²¹ <https://obcan.portal.gov.cz/prihlaseni>

²² <http://www.nsez.cz/>