

The Czech Republic's struggle with e-government during the COVID-19 pandemic

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Against the backdrop of the CEE region, the Czech Republic stands out when it comes to the digitisation of the country's economy and society. The achievements of its private sector in this field make it one of the leaders of digitisation in the EU. Czech programmers are among the world's most talented IT specialists, which is demonstrated by the fact that one of the world's most popular antivirus programmes was developed in the Czech Republic. However, this positive picture of digitisation is clouded by the country's major delays in the development of public services and Internet infrastructure. The oligopolistic structure of the mobile telephony market is dominated by three large operators offering services at prices that are among the EU's highest and forms a serious barrier to expansion of the infrastructure. In addition, the country's delays in developing new solutions, combined with insufficient competence on the part of Czech officials, discourage citizens from using e-government services, which they consider not to be particularly user-friendly. Although the pandemic has triggered significant progress in this field, certain key problems remain unresolved. Another obstacle slowing down the pace of digitisation involves tension within the ruling coalition, which in turn undermines the coordination of digitisation activities in the public sector as a whole.

Progress in the digitisation of public administration

In a ranking compiled by the European Commission on the basis of the Digital Economy and Society Index (DESI), in 2020 the Czech Republic was ranked 17th among EU member states (Hungary was ranked 21st, Slovakia 22nd and Poland 23rd). The Czech Republic owes its status as the Visegrad Group's leader in digitisation to receiving the highest score in categories such as human capital¹ and the integration of digital technology by businesses. There has been an increase in the proportion of citizens with at least basic digital skills (62%, while the EU average is 58%, and the figure for Poland is 44%) and of those with above basic digital skills (26%, the EU average is 33%, the figure for Poland is 21%). A similar increase was recorded for employment in the ICT sector (4.1% of the total workforce) and the proportion of ICT graduates (4.5%), which were higher than the EU average (3.9% and 3.6% respectively, the figures for Poland are 3% and 3.6%). Cities with the highest proportion of ICT specialists

¹ Digital skills, ICT specialists, ICT graduates.



include Prague and Brno, where these account for 7.9% and 4% of the workforce, respectively. These two cities are home to the country's biggest IT science and research centres. Despite this, the Czech Republic has a major backlog when it comes to the digitisation of public services – at present in this field the country is ranked 22nd in the EU (Poland is ranked 20th). The Czech Republic's position is weakened by the small proportion of Internet users who use e-government services, a lower number of pre-filled e-forms available to citizens and poorly developed online services targeted at businesses.

Until 2007, activities focused on the digitisation of public administration had been supervised by the Ministry of Information Technol-

» **EU funds accounted for a major portion of funds spent on projects involving the digitisation of public administration services carried out thus far.**

ogy established back in 2002. In 2007–2009, this ministry's competencies were transferred to the Ministry of the Interior which developed the e-Government platform. Achievements of the "Smart administration" strategy devised back then included the launch of citizen service points (known as Czech POINTs)², located e.g. in public administration offices and post offices, as well as a personal data storage system (the equivalent of Poland's ePUAP) and electronic versions of major registers which have become the basis for Czech e-government. In 2016, a separate Office of the Main Architect of e-Government (OHA) was established at the Ministry of the Interior – it serves as the main body coordinating digitisation activities. This move was modelled on similar solutions applied in countries with highly advanced e-government. Formally, the OHA's competencies stretch over various ministries, which means that it has been authorised to coordinate and manage the development of e-Government in the public sector as a whole. In addition, 2016 saw the launch of the electronic system recording revenue from sales (EET), and in 2018 an electronic authentication system using the so-called national identification and authentication point (NIA, the equivalent of the 'Trusted Profile' solution used in Poland) was created. Alongside this, electronic identity cards containing a chip (eOP) began to be issued. In addition, a Citizen's Portal was launched (the equivalent of Poland's obywatel.gov.pl platform) and the electronic prescription system was inaugurated.

The e-Government platform is one of the three pillars of the Digital Czech Republic strategy devised in 2019, and its development is among the priority tasks in the EU-funded Czech national recovery plan. In 2019, the Czech parliament passed a law on the right to the electronic access to public services (the so-called digital constitution) which envisages the full operability of online solutions starting from 2025. On 1 January 2020, the electronic sick leave system was launched and in 2021 the Czech Republic inaugurated its electronic toll collection system (e-toll) and the Moje Daně (My Taxes) website (the equivalent of Poland's podatki.gov.pl platform; although it does not enable tax offices to automatically prepare pre-filled tax returns for citizens). In addition, on 27 March 2021 the Czech Republic launched its first ever census using an electronic data form. EU funds accounted for a major portion of the funds spent on projects involving the digitisation of public administration services carried out to date (in 2007–2020 the proportion was 80%, i.e. 686 million euros).

The digitisation of public administration services during the COVID-19 pandemic

Just as in most countries, in the Czech Republic the COVID-19 pandemic has accelerated the digitisation process. Since spring 2020, a major portion of public administration offices have implemented new technological solutions (video calls, cloud data storage) in their daily work. Over the last year, there has been an unprecedented surge in the number of online accounts created for the purpose of contacting public administration bodies (133,200, while the average number recorded in recent years was 59,600 annually). Despite major progress, the number of citizens accessing public administration

² Český Podací Ověřovací Informační Národní Terminál, Ministerstvo vnitra České republiky, mvcr.cz.

services online remains relatively small. At the beginning of November 2020, fewer than 70,000 Czechs were using the Citizen's Portal, and since the launch of the online personal data storage system back in 2009 a mere 1 million of the 6.6 million natural persons authorised to create their accounts on this platform had done so as of August 2019.

During the COVID-19 pandemic, specific ministries used their electronic platforms to distribute state aid to businesses which had posted losses due to pandemic

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restrictions. The Ministry of Industry and Trade expanded its body of electronic forms available at the businessinfo.cz website targeted at business owners, and launched an information chatbot to present information regarding government support programmes and new restrictions in the economic sector. In the first weeks following the chatbot's launch, 76,000 businesspeople consulted it. In response to a shortage of personal protective equipment in the healthcare sector, the ministry created an online platform “We are connecting the Czech Republic” (spojujemecesco.cz) to enable companies to contact public institutions and private businesses and to submit their bids for the provision of personal protective equipment. Companies that logged on to this platform could receive support offered by state agencies such as CzechInvest and CzechTrade. One of the website's successes widely reported by the Czech media involved the Czech Technical University in Prague (ČVUT) and a manufacturer of pump elements beginning to cooperate in the production of innovative FFP3 protective masks and in efforts to accelerate their certification procedure.

In cooperation with private companies and the military, the Ministry of Health developed its electronic system known as Smart Quarantine (*Chytrá karanténa*) to support state public health services in contact tracing and isolating infected individuals (e.g. on the basis of mobile phone data and transactions effected using a payment card). In addition, phone apps were developed to enable their users to call an ambulance, which reduced cases of emergency line overload. From March 2020 until January 2021, the website of the Ministry of Health included a chatbot which served as a ‘virtual nurse’. An electronic appointment booking system was the main method for making an appointment under the COVID-19 vaccination campaign.

An amendment to the law on the education system added distance learning to the list of obligatory forms of education and enabled the Ministry of Education to fund the purchase of hardware and software for a portion of teachers and pupils in primary and lower secondary schools to facilitate distance learning. Until December 2020, more than CZK 1 billion (around 38 million euros) was spent on the purchase of around 50,000 laptops. With support from the Ministry of Education, a phone and tablet app (InspIS SETmobile) was developed, targeted at students preparing for the entrance and graduation exams for secondary school. A website dedicated to distance learning, targeted at teachers, was developed and Czech state television launched a new channel to broadcast education programmes for primary school pupils.

The infrastructural bottleneck hampering digitisation

According to the report compiled by the European Commission, the Czech Republic continues to lag behind when it comes to digital infrastructure, this in particular concerns very high capacity networks. According to DESI, the country is ranked 24th in the EU (Poland is ranked 15th). Although fixed broadband connections are available in 74% of Czech households (the EU average is 78% and the figure for Poland is 62%), the situation is much worse regarding the expansion of very high capacity networks (VHCN). In 2017–2019, the VHCN coverage recorded a slight increase – from 26% to 29%

of households (in Poland it rose from 21% to 60%). Similarly, the Czech Republic recorded a small proportion of households using an at least 100 Mb/s fixed Internet connection – 20%, lower than both the EU average (26%) and the figure recorded for Poland (28%). Despite its general backwardness in expanding its digital infrastructure, the Czech Republic is considerably more efficient in preparing for the development of new generation mobile networks. According to data for March 2020, in terms of 5G readiness the Czech Republic was ranked 15th out of the 17 EU member states which have already assigned a spectrum for their 5G networks³ (Hungary was ranked 3rd, Slovakia 8th, and Poland is yet to assign a spectrum).

The government has made ambitious plans to increase society's access to VHCN⁴ networks by 2027 by amending the relevant law and co-funding the deployment of this infrastructure to small municipalities (with fewer than 5,000 in-

habitants) and to areas with lower population density. To implement these plans, in March 2021 the government adopted the National Plan for the Expansion of the Very High Capacity Networks, which is to be co-funded from EU funds offered to the Czech Republic under the National Recovery Plan (more than 220 million euros). However, the high cost of the optic fibre network expansion forms an obstacle to the implementation of these initiatives. This is because this cost is largely determined by fees that need to be paid for installing elements of this network on state-owned plots of land which account for as much as 90% of areas in which the network is to be deployed.

Problems have emerged not only regarding infrastructure availability, but also regarding the price of its utilisation. According to the DESI ranking, in 2020 the broadband price index recorded for the Czech Republic was 57 (the EU average is 64), which placed the country 21st in the EU ranking. According to the report compiled by the European Commission, due to prices of mobile broadband offers recorded in Q4 2019, the Czech Republic (alongside Cyprus) was considered one of the EU's most expensive countries.⁵ The prices of Czech mobile broadband offers ranged from 22% higher than the EU average price (in the case of the cheapest offer for 1 GB data transfer) to as much as 90% higher than the EU average price (in the case of a 20 GB data transfer package). One major reason behind such high prices is the relatively weak competition on the Czech mobile operator market, which is affected by an oligopoly formed by three companies (in 2019 T-Mobile had a 38% market share, O2 had 29%, and Vodafone had 26%).⁶ Consecutive governments have attempted to tackle this problem. Efforts to remedy the situation are additionally hampered by the fact that members of the Czech government have close ties with some oligarchs (e.g. O2 is controlled by the heirs of Petr Kellner, the richest Czech who died several months ago). Public statements from some Czech politicians downplaying the problem of excessive mobile Internet prices (when compared to the offers in neighbouring countries) sparked public outrage, which resulted in two ministers of industry and trade stepping down in 2017 and 2019. In February 2021, Czech newspapers reported that plans have been made for the ČEZ energy company (70% of its shares are state-controlled) to take over the Czech Republic's third largest mobile operator – Vodafone – from its British parent company; this is expected to result in a decrease in the price of mobile services.

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³ These spectrums are: 700 MHz, 3.6 GHz and 26 GHz.

⁴ *Národní plán rozvoje sítí s velmi vysokou kapacitou*, Ministerstvo průmyslu a obchodu, 2 March 2021, mpo.cz.

⁵ *Mobile and Fixed Broadband Prices in Europe 2019*, European Commission, 2020, ec.europa.eu.

⁶ *Výroční zpráva Českého telekomunikačního úřadu za rok 2019*, Český telekomunikační úřad, ctu.cz.

Structural barriers to the development of e-government

One major barrier to the process of digitisation of public services involves the public administration and the related legislation being insufficiently adjusted to the pace of development of new technologies. According to the Czech Supreme Audit Office, although a law in the field of digitisation has been passed, frequently the relevant executive provisions are not issued or are issued after a major delay. One example involves the establishment of the Office of the Main Architect of e-Government in 2016, i.e. seven years after the launch of the e-Government project. An audit focused on this system's implementation showed that the public administration continues to use technological solutions developed back in the 1990s, which are being upgraded at an excessively slow pace due to the fact that public institutions need to rely on external service providers. The problem is clear in large state institutions and bodies, including: the Fiscal Administration, the General Directorate of Czech Railways, the Road and Motorway Directorate of the Czech Republic, Czech Post, health and social insurance institutions, ministries, and the Forests of the Czech Republic (which uses several IT systems provided by different contractors).

Another barrier involves the shortage of staff in administration departments. In 2018, in 20 ministries and state agencies the share of full-time IT employees in the total workforce was 3.3%, while

the global standard is around 5%. Most IT specialists working in public institutions are offered below average salaries, which in turn results in a situation in which public institutions are less attractive employers for IT specialists than the private sector in which salaries are at least four times higher.

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Reluctance on the part of some politicians and officials regarding digitisation and open access to data is another barrier hindering the development of e-government. It is accompanied by these individuals' concerns that they may be accused of overspending and protectionism. In January 2020, the minister of transport was dismissed when it was revealed that his ministry had ordered an electronic toll collection system at an excessively high price – CZK 401 million (around 15 million euros). Since then, the Main Architect of e-Government has inspected IT procurement projects in excess of CZK 6 million (229,000 euros), in order to prevent overspending in ministries and to streamline inter-ministry cooperation in joint procurement efforts. A further problem involves the insufficient centralisation of the digitisation process, which is considered the source of success in digitisation efforts in Estonia, the United Kingdom and Denmark. Tension in the ruling camp is undermining any attempts in this field. When the ANO–ČSSD coalition came to power in 2018, the office of the government's plenipotentiary for digitisation and IT was created and a loyal collaborator of the prime minister was appointed to this post. This was a sign of distrust of the Ministry of Internal Affairs, at that time supervised by ČSSD, which was coordinating the e-Government project. This ministry repeatedly emphasised the reluctance of the Ministry of Finance, which was supervised by the Prime Minister's party, to increase the Interior Ministry's spending on digitisation.

The staff shortages in the IT industry are related to an increase in the number of cyberattacks on public institutions observed in the Czech Republic. Increasingly aware of the importance of cyber security, in 2017 the Czech Republic established an independent National Cyber and Information Security Agency (NÚKIB) to take over the tasks which were formerly carried out by one of the units of the National Security Authority. Since 2020, NÚKIB's head has been Brigadier General Karel Řehka. In its most recent operational report, NÚKIB emphasised an increase in both the number of cyberattacks and their harmful effect. The number of reported incidents increased from 164 in 2018 to 468 in 2020.

In 2018, the targeted institutions included a hospital in Benešov and the OKD mining company. Losses suffered by the hospital as a result of the cyberattack were estimated at CZK 40 million (1.5 million euros). As regards the coal mines, their mining activity was suspended for a week due to the fact that their methane detectors were disabled. In 2020, during the pandemic, hacking attacks were carried out against at least another seven provincial and university hospitals, as well as the IT systems used by the Václav Havel Airport in Prague. Several similar incidents were identified in Q1 2021 as well. These targeted several hospitals, the Ministry of Internal Affairs, the Ministry of Labour and Social Affairs, Czech Railways (České dráhy) and the Office for Rail Infrastructure (Správa železnic). The most popular methods for carrying out cyberattacks included spamming, phishing and sending e-mail messages containing viruses, all of which exposed the targeted institution to a risk of disruption. According to NÚKIB, the perpetrators of these attacks were mainly home-grown criminals acting on their own and seeking financial gain. Another category involved attacks carried out from abroad. Most of these were perpetrated by non-professionals and failed to disrupt the state's operation in any significant way, merely causing temporary disruptions in the availability of certain services.

Society and business are open to digitisation

Czech society's openness to digital solutions and the strong position of Czech companies in the IT sector indicate that the country has major potential for continuing the process of the digitisation of its public services and its economy. An opinion poll conducted in 2019 showed that 80% of Czechs would be willing to use online services in the healthcare sector, if they were offered. The vast majority of Czech citizens (78%) have been using online banking solutions, which are considered pioneering services (according to the Czech Banking Association 97% of Czech Internet users use these services). The level of the technological advancement of online banking services considerably exceeds the level of advancement of IT systems implemented in public administration offices. According to the Ministry of Internal Affairs, one barrier to the more widespread use of e-government solutions involves the fact that users are required to visit a public office (the Czech POINT) in person to confirm their identity. As a consequence, plans have been made to integrate users' profiles on the e-Government platform with their bank accounts – a similar solution to what has been applied in Poland. It is estimated that the operation of the identity authentication system integrated with online banking solutions (EBI), launched in 2021 as another authentication method, will result in increasing the number of e-Government platform users to 5.5 million (this is the number of active online banking users). As of May 2021, this solution was offered by five Czech banks (Air Bank, Česká spořitelna, ČSOB, Komerční banka, Moneta Money Bank) and used by 160,000 users. In addition, Czech citizens have expressed their openness to the implementation of digital technologies in their workplace. Most of them (71%) argue that they have sufficient competence to work in a digital environment⁷ (the figure for Poland is 81%), and more than half (56%) believe that their employer should invest in the development of their staff's digital skills. Since 2004, the programming profession has been among the top ten most prestigious professions (however by 2019 it fell from 5th to 10th place in the ranking).

Czech programmers are among Europe's and the world's best programming professionals (according to HackerRank, this also involves IT sector specialists from other V4 states).⁸ Moreover, in 2020 the Czech Republic was ranked 5th in the ranking of 50 most attractive IT outsourcing countries (it included 13 criteria such as market competition, operational risk, and command of the English language).⁹ The Czech Republic is home to the producer of one of the most popular antivirus programmes, Avast. Since 1998, this company has been listed on the London Stock Exchange and since 3 June 2020

⁷ *Global report Randstad Workmonitor Q2 2019. Future job skills and sourcing talent.*

⁸ F. Lasnier, 'IT Ranking: Where to Find the Best Developers?', PentaBlog, 6 May 2019, pentalog.com.

⁹ *Executive Brief. Outsourcing 2020*, 7N, 25 June 2021, 7n.com.

it has been included in the prestigious FTSE 100 index (as the first Czech company). In addition, the company was among those businesses that benefited from the increased popularity of remote working, related to the pandemic, which triggered increased demand for its services. Over the last year, Avast's turnover increased by 2.3%.

The *EIB Investment Survey 2020* compiled by the European Investment Bank indicates that in 2020 the Czech Republic was ranked 3rd in the EU in the implementation of digital technologies (Poland was ranked 26th).¹⁰ More than 76% of Czech companies, an increase from 2019, have implemented at least one of the following technologies: new software, automation, 3D printing and artificial intelligence (AI) solutions (the EU average is 63%). This was largely facilitated by investments in software and data processing solutions (technological platforms) carried out in the service sector, as well as by automation and 3D printing solutions in the industrial sector. Czech investments in AI were below the EU average,¹¹ although the Czech government views AI as its future area of specialisation and has attempted to convince EU bodies to locate one of the EU centres of excellence dealing with AI in the Czech Republic. Furthermore, the pandemic has contributed to the continued development of the Czech e-commerce market which in 2020 recorded an unprecedented increase in turnover (of 26%) and in the number of online stores (up by 8,000). The online food stores Rohlík.cz and Košík.cz¹² have recorded the most spectacular (two-fold) increase in their turnover. In addition, certain general trends, which were already present before the pandemic, have become more established. These included the expansion of the offer of the biggest online stores (Alza.cz, Mall.cz), faster delivery and increased opportunities for the collection of purchased goods in customer service points and parcel lockers. In 2020, the share of e-commerce in retail trade increased by 3 percentage points to 16% (in Poland by 3 percentage points to 14%).

One challenge the Czech Republic faces involves transferring the achievements of the private sector to the public sector and harnessing society's potential and its enthusiasm for digitisation so that an efficient e-government system may be developed. There remains a stark disparity between the achievements of Czech companies in the field of digitisation and the relatively insignificant progress in the ongoing implementation of the e-Government project.

APPENDIX

Table 1. Examples of digital public administration services implemented in the Czech Republic and Poland

Electronic service	Year implemented in the Czech Republic	Year implemented in Poland
Electronic signature	2002	2002
Electronic inbox	2009	2015
Trusted profile / e-identity	2018	2015
Prescription	2018	2020
Sick leave	2020	2016–2018
Tax portal	2021	2016
Identity authentication via online banking	2021	2016

¹⁰ *EIB Group survey on investment and investment finance 2020. European Union overview.*

¹¹ *EIB Group survey on investment and investment finance 2020. Country overview: Czech Republic.*

¹² K. Wolf, 'E-commerce v roce 2020: Dvou- i trojciferné růsty na vlnách pandemie', *Lupa.cz*, 30 December 2020, lupa.cz.