European Commission

Report on Public Administrations' Digital Response to COVID-19 in the EU

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ISA²

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Report on Public Administrations' Digital Response to COVID-19 in the EU

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List of Acronyms

AI	Artificial Intelligence
CIO	Chief Information Officer
ECDC	European Centre for Disease Prevention and Control
eID	Electronic Identification
EIF	European Interoperability Framework
ERDF	European Regional Development Fund
ESF	European Social Fund
EU	European Union
ICT	Information and Communication Technology
INTERPOL	International Criminal Police Organisation
ISA²	Interoperability solutions for public administrations, businesses and citizens
MOOC	Massive Online Open Course
NIFO	National Interoperability Framework Observatory
SMEs	Small and Medium-sized Enterprises
VPN	Virtual Private Network

Executive Summary

The report on Public Administrations' Digital Response to COVID-19 in the EU assesses the impact of the first wave of the COVID-19 crisis on EU public administrations. Indeed, it aims at showcasing EU Member States' good practices with regard to the development and/or implementation of digital solutions to avoid the disruption of public services during the first wave of the COVID-19 crisis, from March to June 2020. Additionally, it highlights the internal factors that enabled public administrations to adapt and ensure business continuity.

When most of the EU Member States implemented lockdowns or stay-at-home orders, countries with highly digitalised public administrations showed more resilience to ensure the continuous delivery of public services. This report sheds light on the digital solutions put forward by EU Member States to guarantee access to public services, ensure the continuity of education and support businesses facing dire economic circumstances. Such digital solutions encompass, among others, mobile applications, online portals, online platforms, informative chatbots and repositories. Met with great user demand, the implementation and maintenance of these digital solutions highlighted the crucial role of agile and secure IT infrastructures. Furthermore, it emphasised the need for interoperability among systems and administrations.

While the better and faster delivery of digital public services has proven necessary in light of the COVID-19 pandemic, many EU public administrations have demonstrated their resilience and ability to adapt in times of crisis. Supported by political and hierarchical leadership, the public sector leveraged in-house digital and coding skills, cross-administration collaboration, as well as partnerships with the private sector to implement digital solutions in short timespans.

This report calls for the further sharing and reuse of solutions between public administrations, as already initiated by the European Commission through the Digital Response to COVID-19 collection[1]. Indeed, the European Commission's Recovery Plan for Europe, presented on 27 May 2020, recognised the importance of the digital transformation of the public sector for job creation and economic growth of the European Union. This is reflected in the upcoming Digital Europe Programme, which acknowledges the importance of the further development of eSkills within public administrations, as well as of interoperable digital public services across the EU.

1 Further information available at: https://joinup.ec.europa.eu/collection/digital-response-covid-19

Introduction

Since March 2020, the COVID-19 crisis has had a profound impact in the European Union (EU) from a health, societal and economic point of view. The pandemic has not only put critical strain on healthcare systems, but it has also imposed the enforcement of stringent governmental measures on civil societies such as lockdowns, curfews and stay-at home orders. These unprecedented times have forced both governments and public administrations to operate in disrupted work environments, challenging the traditional delivery of public services to citizens and businesses. In this context, EU public administrations relied on the digital delivery of their public services to ensure the continuity of their activities, emphasising the need for interoperable IT infrastructures and digital services.

As part of the ISA[2] programme[2], the European Commission's National Interoperability Framework Observatory[3] (NIFO) supports EU public administrations' interoperability activities and the development of digital public services. NIFO provides country intelligence studies to understand how technologies and interoperability enhance the digital transformation of EU public administrations and share best practices.

This report focuses on the digital response to the COVID-19 crisis in EU Member States'[4] public administrations. For the purposes of the report, digital solutions refer to online platforms, mobile applications, chatbots and other software. Based on the methodological approach detailed in Annex I, the report explores the impact of the pandemic on the provision of public services across the EU and provides an overview of the digital solutions leveraged by EU Member States to mitigate this disruption. Additionally, it analyses the factors enabling the development and/or implementation of digital solutions in response to the first wave of the COVID-19 pandemic, from March 2020 to June 2020. The report relies on data collected through desk research, a survey sent to national representatives of all EU Member States[5] and a series of three interviews.

The objectives of this report are three-fold and addressed in the first three chapters. Chapter 1 provides an overview of the pandemic's effect on the provision of public services to EU citizens and businesses during the first wave of the COVID-19 pandemic. Chapter 2 gathers insights on the digital solutions developed and/or implemented by public administrations to mitigate the disruption of the general access to public services, as well as the delivery of public services in the fields of education and economic affairs. Chapter 3 explores the specific factors that enabled the development and/or implementation of digital solutions by public administrations. Finally, Chapter 4 summarises the report's key takeaways and reflects on the impact of the COVID-19 crisis on the future of digital public services in the EU.

2 Further information available at: https://ec.europa.eu/isa2/home_en

3 Further information available at: https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory

4 EU Member States: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

5 The survey was disseminated to contact points of the NIFO contact points in the 27 EU Member States. It collected 33 responses from all Member States.

1

Impact of the COVID-19 crisis on the delivery of public services in the EU

1 Impact of the COVID-19 crisis on the delivery of public services in the EU

Understanding the **impact of COVID-19 on the provision of public services within the EU** is key to contextualise the role of digital solutions in ensuring the business continuity of public services. This chapter provides an overview of the main lockdown measures put in place by the EU Member States affecting the provision of public services, as well as the relative perceived disruption levels in the delivery of public services across the EU. This chapter also explores which sectors were most affected by the disruption of public services during the first wave of the COVID-19 crisis.

1.1 Overview of the levels of disruption caused by COVID-19 in the provision of public services in the EU

The COVID-19 pandemic has wreaked havoc across the EU and globally, with almost all governments being forced to put in place stringent measures such as lockdowns and curfews to slow down the spread of the virus. Consequently, further strain was placed on the delivery of public services as public administrations had to adapt to remote working and delivering public services digitally due to restrictions on physical access to public offices. In this context, the outbreak of the health crisis and subsequent lockdowns have highlighted how the digitalisation process of EU public administrations is key to increase the efficiency and effectiveness of public service delivery for both EU businesses and citizens.

Figure 1 Length of first-wave enforceable and non-enforceable lockdowns due to COVID-19 in EU Member States

The lockdowns considered in this figure are both the enforceable and non-enforceable lockdowns as defined by the ECDC taxonomy.[6]
*The data from Bulgaria, Denmark, Finland, Malta and Slovakia was gathered by desk research.
**Sweden did not implement lockdown measures between March and June 2020.
Source: analysis of the data gathered by the European Centre for Disease Prevention and Control (ECDC), performed by Wavestone, November 2020.

To provide insights on the magnitude of the first wave of the COVID-19 crisis, Figure 1 shows the durations of lockdown measures introduced by the vast majority of EU Member States to limit the spread of the pandemic. The figure aggregates the data collected by the European Centre for Disease Prevention and Control (ECDC)[7], an independent agency of the EU whose mission is to strengthen the European Union's defences against infectious diseases. Data gathered through desk research on publicly available information has also been included in the figure. Lockdown measures, as understood by the ECDC, are enforceable and non-enforceable governmental stay-at-home orders for the general population, excluding stay-at-home orders issued specifically for at-risk populations (e.g. senior citizens and immunocompromised citizens)[8]. On average, lockdown measures imposed in the EU Member States lasted 55 days. Ireland was the last country to lift them on 26 June 2020. This means that, on average, lockdown measures prevented citizens from physically accessing public services for almost two months, thus making their delivery a challenge for public administrations. To address such challenges, large-scale teleworking schemes were introduced within EU public administrations, oftentimes in a context where remote working methods had never been implemented before. Additionally, the digital delivery of public services to businesses and citizens was unequally developed across the EU.

In this regard, for the purpose of this report and as detailed in Annex I, a survey was conducted to gather the views of 33 representatives[9] from the 27 EU Member States. Survey respondents were asked to share their perspective on the impact of the COVID-19 crisis regarding the delivery of public services within their countries.

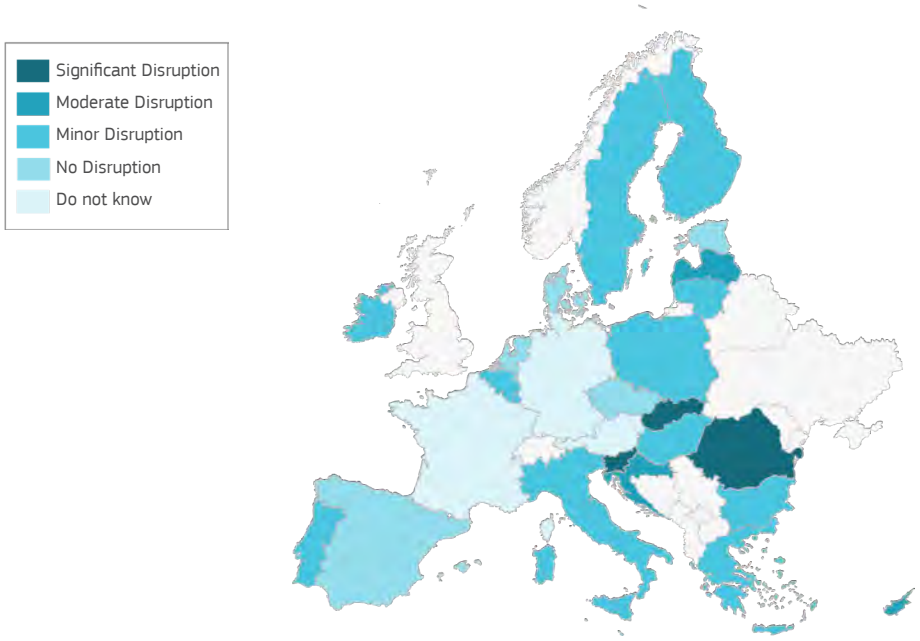
6 Further information available at: https://www.ecdc.europa.eu/sites/default/files/documents/Variable_Dictionary_and_Disclaimer_non-pharmacautical_measures_v3.pdf

7 Further information available at: https://www.ecdc.europa.eu/en

8 Further information available at: https://www.ecdc.europa.eu/sites/default/files/documents/Variable_Dictionary_and_Disclaimer_non-pharmacautical_measures_v3.pdf

9 The representatives contacted to collect the data leveraged in the report were the contact points of the National Interoperability Framework Observatory (NIFO) from national public administrations overseeing digital government matters.

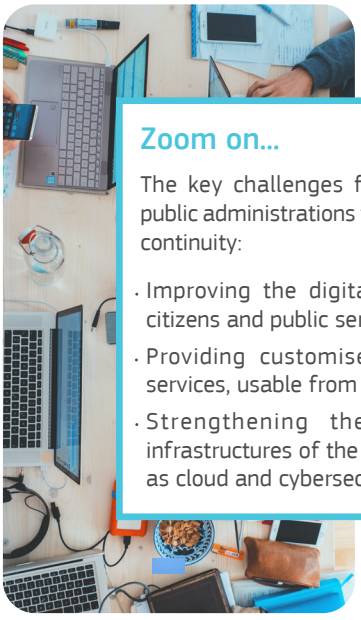
Figure 2 Reported levels of disruption to public services during the COVID-19 crisis in the EU



Source: Survey performed by Wavestone, November 2020. Response to the question: "How would you rate the negative impact of the COVID-19 crisis on the provision of public services by your public administration?"

Figure 2 above shows the survey respondents' perceived levels of disruption when it comes to the delivery of public services during the first wave of the COVID-19 crisis. The reported disruption levels ranged from no disruption, typically in countries that had a long history of delivering public services digitally, to a significant disruption (e.g. interruption of essential public services for several weeks at a time, inability of civil servants to work remotely), typically in countries where digital public services were less common.

Notably, five countries (Czech Republic, Denmark, Estonia, Spain and the Netherlands) reported no disruption to their public services. This appears to be in line with what was outlined in the 2020 edition of the European Commission eGovernment Benchmark[10] as four of these five countries are considered to be highly digitalised when it comes to the provision of public services, scoring well above the European average[11]. The delivery of public services in four of these five countries is also considered to be highly interoperable with scores above the European average on the European Interoperability Framework[12]. This is also further corroborated by the Danish, Dutch, Estonian and Spanish national Chief Information Officers (CIOs), who stated that the already high level of digitalisation in public services delivery helped to ensure the continuity of these services throughout the first wave of the COVID-19 crisis. For each country, additional factors, many of which concern digitalisation, were highlighted by the CIOs as having helped to mitigate the disruption caused by COVID-19.In the case of Denmark, the widespread use of electronic identification (eID) contributed to the continuous delivery of Danish public services. In Estonia, the existing cooperation between public and private organisations ensured the smooth delivery of public services throughout the crisis. The Spanish CIO highlighted the existence of common infrastructures and services to support the delivery of public services and collaborative tools for public servants as some of the key elements enabling the smooth delivery of public services during the first wave of the COVID-19 crisis.



Zoom on...

The key challenges faced by **Spanish** public administrations to ensure business continuity:

- Improving the digital skills for both citizens and public servants
- Providing customised digital public services, usable from any device
- Strengthening the technological infrastructures of the public sector such as cloud and cybersecurity services.

10 European Commission, 2020. eGovernment Benchmark 2020

11 The European average of the eGovernment benchmark is 72%. The four countries scoring above the European average are: the Netherlands (78%), Spain (78%) Denmark (84%) and Estonia (92%).

12 European Commission, 2019. European Interoperability Framework 2019. The European average of thematic areas on the European Interoperability Framework is 92. The four countries scoring above the European average are: the Netherlands (96), Spain (96) Denmark (95) and the Czech Republic (94). Further information available at: https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-public-administration-factsheets-2020

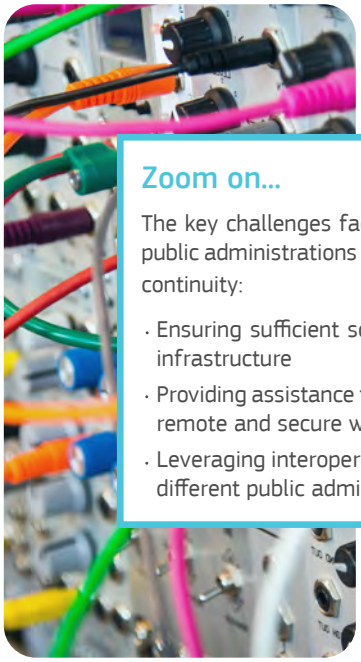
Zoom on...

The key challenges faced by **Dutch** public administrations to ensure business continuity:

- Upscaling IT infrastructure capacity
- Providing IT equipment and reliable video conferencing tools to civil servants
- Increasing cybersecurity awareness within public administrations and civil society.

For the Dutch public administrations, the high quality of existing IT infrastructure and IT support services contributed to ensuring continuity in the provision of digital public services. On the other end of the spectrum, three countries reported a significant disruption in the provision of public services during the COVID-19 crisis. These are Romania, Slovakia and Slovenia. Romania and Slovakia's level of digitalisation of public services is below the European average, while Slovenia's is considered to be average, according to the eGovernment Benchmark[13]. The remaining 16 countries, excluding the ones for which the representatives were not able to indicate a level of disruption (namely Austria, France and Germany), declared that they had experienced minor or moderate disruption to their public services during the first wave of the COVID-19 crisis. As already mentioned, the impact of the COVID-19 crisis on the provision of public services has highlighted the importance of guaranteeing the digital delivery of public services and maintaining the ICT infrastructure necessary to do so.

During the first wave of the COVID-19 crisis, several EU Member States reported, through the survey as well as through the CIO Network, an unprecedented increase in the demand for digital public services on their national eGovernment platforms. In Bulgaria, for instance, the national eGovernment portal[14] experienced a significant increase in users. According to the Luxembourgish government, the number of digital requests received by the Luxembourgish public administration increased by 60% in the first half of 2020, compared with the same period in 2019[15]. Finally, in Italy, the CIO representative reported a surge in the number of eID service users, notably due to the possibility of claiming benefits through the IO mobile app[16] and accessing other digital public services.



Zoom on...

The key challenges faced by **Lithuanian** public administrations to ensure business continuity:

- Ensuring sufficient scalability of the IT infrastructure
- Providing assistance to civil servants for remote and secure working
- Leveraging interoperable data between different public administrations.

13 The eGovernment Benchmark scores for the three countries reporting significant disruption of public services are: Romania (43%), Slovakia (61%) and Slovenia (72%).

14 Further information available at: https://egov.bg

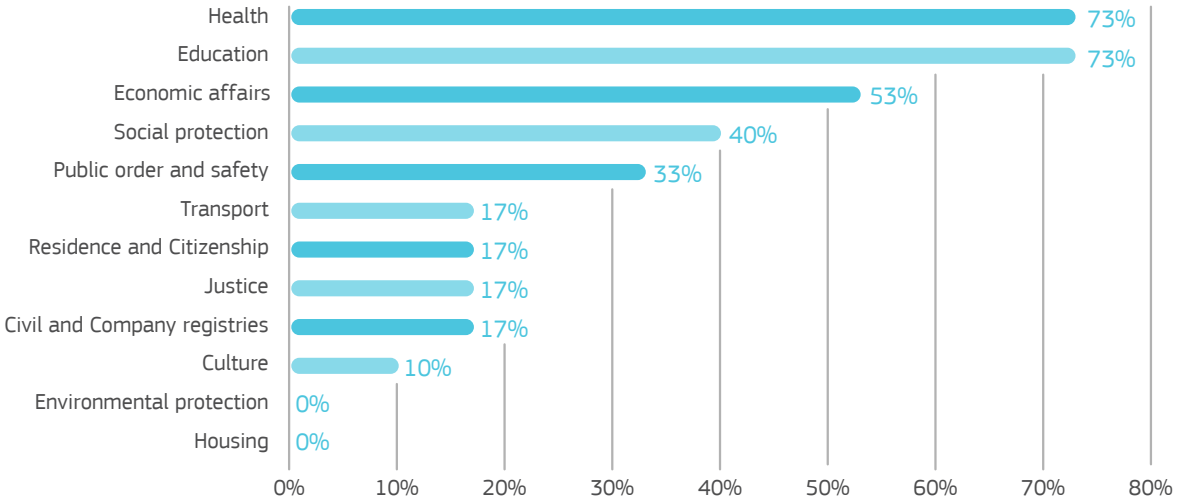
15 Further information available at: https://gouvernement.lu/fr/actualites/toutes_actualites/interviews/2020/07-juillet/14-hansen-echo.html

16 Further information available at: https://io.italia.it/

1.2 Sectorial view of the importance of digital solutions for public services in the EU

The COVID-19 crisis heavily impacted the provision of face-to-face public services. As teleworking be the norm and national lockdown measures were put in place for several weeks or months at a time, citizens and businesses were simply unable to secure physical meetings with civil servants and access public services in person. In this regard, digital solutions became increasingly important, helping to bridge the gap between public administrations, citizens and businesses. As public services exist on a spectrum of different sectors and subject matters, the use of digital solutions is more relevant in certain sectors and depends on the possibility of providing services remotely. Figure 3 below highlights the sectors of public services[17] where digital solutions were mostly used to ensure smooth access to public services for businesses and citizens during the first wave of the COVID-19 crisis.

Figure 3 Public services for which the development and/or implementation of digital solutions has been reported as most relevant during the COVID-19 crisis



Source: Analysis performed by Wavestone, November 2020. Response to the question: "During the COVID-19 crisis, which sector(s) of public services were mostly concerned by the development and/or implementation of digital solution(s)?"

Unsurprisingly, **health-related** public services appear as the public services for which the development of digital solutions during the first wave of the COVID-19 crisis has been the most relevant, as reported by 73% of survey respondents. However, it should be noted that this report focuses on the business continuity of public services, meaning the undisrupted delivery of day-to-day public services due to digital solutions, rather than exploring the digital solutions implemented to mitigate the COVID-19 pandemic itself. For this reason, digital solutions developed and/or implemented in relation to the health sector, including contact tracing applications and self-diagnosis software, do not fall within the scope of this report.

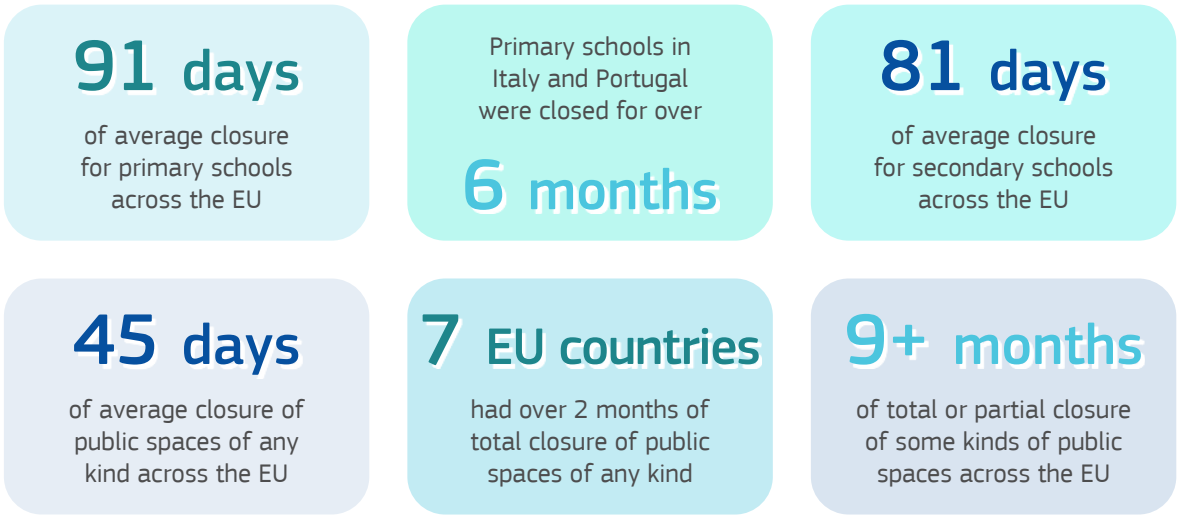
In addition to health services, the public service for which the development and/or implementation of digital solutions has been most relevant is **education**. Indeed, all 27 EU Member States closed public schools for a period ranging from one month in Denmark to six months in Italy and Portugal. The closure of public schools started as early as 4 March 2020 in Italy and lasted for a period of two and a half months for middle and high schools and six months for primary schools. The geographical coverage and length of these governmental measures are testament to the disruption experienced in EU Member States in the provision of educational services during the COVID-19 crisis. The sudden switch to remote learning for around 76.2 million pupils and students enrolled in schools and pre-schools in the EU expedited the development of new digital solutions to facilitate the continuity of education[18].

17 The taxonomy of public services used in this report is based on the COFOG classification of functions of government. Further information available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_(COFOG)

18 Eurostat, 2020. *Students and teachers in the EU*

Digital solutions have also been of crucial importance in the sectors of **economic affairs, social protection** and **public order and safety**. These public services have been greatly impacted by the lockdown measures implemented in all EU Member States but Sweden and the subsequent restrictions of circulation. The ability to remotely access digital public services has become increasingly important for businesses and citizens to access subsidies and other forms of financial assistance.

Figure 4 Governmental measures in EU Member States during the first wave of the COVID-19 crisis



Source: Analysis of the data gathered by the ECDC, performed by Wavestone, November 2020

Finally, less than 20% of survey respondents believe that public services such as transport, residence and citizenship, justice, civil and company registry, culture, and environmental protection were among the ones for which the development and/or implementation of digital solutions proved to be particularly relevant. The explanation could be twofold. On the one hand, this might be due to the pre-existence of numerous digital solutions in some of these sectors. For instance, in the case of residence and citizenship, as well as civil and company registration, these sectors are among the most digitalised public services. On the other hand, the COVID-19 pandemic might have had less impact on the provision of some other public services. Regarding transport and cultural services, for example, the national lockdown measures put in place in all EU Member States, with the exception of Sweden, and the limitations placed on public gatherings across the EU greatly impacted whether those sectors could remain open. It is therefore probable that no or little solutions have been developed to ensure the continuity of transport services and cultural events as these were not recommended or permitted by EU public authorities.

To conclude, the delivery of face-to-face public services has been severely impacted by the COVID-19 crisis, especially in the EU Member States that could not leverage an extensive range of pre-existing digital solutions to deliver such services. Indeed, the ability to prevent disruption in the provision of public services, as demonstrated by certain EU Member States, appears to be correlated to a higher score in the eGovernment Benchmark and European Interoperability Framework. This suggests that the more digitalised a public administration is thanks to the availability of digital interoperable public services, shared IT infrastructures and reusable common components, the more likely it is to be able to mitigate the effects of an unforeseen crisis which prevents the delivery of face-to-face public services, such as the COVID-19 pandemic. Looking at the first wave of the crisis, education and economic affairs services, emerged among the public services for which the swift development and implementation of digital solutions has been most relevant in order to guarantee their accessibility.

In light of this, the following chapter of this report will look more closely at the digital solutions that have been developed and implemented by EU public administrations to ensure the continuity of these public services, as well as the continuity of the access to general public services.

2

Solutions leveraged by EU public administrations to avoid the disruption of public services

2 Solutions leveraged by EU public administrations to avoid the disruption of public services

The use of **digital solutions has helped EU public administrations to overcome the disruption of their public services during the COVID-19 crisis.** This is particularly the case for services related to education and economic affairs. In light of this, this chapter explores some of the digital solutions that have been leveraged across the EU throughout the first COVID-19 wave to mitigate disruption in the general access to public services, education, and economic affairs.

2.1 Digital response to COVID-19 in the overall access to public services

To mitigate the disruption caused by the first wave of the COVID-19 crisis, EU public administrations had to swiftly turn to digital solutions to enable the remote delivery of their public services. This section analyses the challenges faced by EU public administrations in **ensuring the remote provision of public services** during the first wave of the COVID-19 crisis. More specifically, the challenges faced in enabling the exceptional movement of citizens during lockdowns, providing comprehensive information on public services availability, ensuring the access to secured electronical identification services to citizens, and improving citizens' and businesses' digital skills are examined in this section. For each of the challenges highlighted in our research, we have also analysed examples of digital solutions implemented to mitigate the disruption brought by the pandemic when it comes to general access to public services. This section then explores an example of such solutions: the ePass solution[19] developed by the Croatian Central State Office for the Development of the Digital Society[20].

To guarantee the overall access to public services, EU Member States relied on digital solutions to address four main challenges:

Enable the exceptional movement of citizens during lockdowns

Some countries, such as France and Croatia, developed digital solutions to give citizens the possibility to exceptionally move from their homes while lockdown measures were in place to limit the spread of the pandemic. In many cases, this allowed citizens to access public services that required their physical presence and were not yet digitalised.

Examples from...

Croatia - **ePass**

ePass is an online solution of the Croatian Central State Office for the Development of the Digital Society enabling Croatian citizens to request authorisation forms to move outside their municipality in order to reach a specific place. Such forms can be granted to access public services that require physical presence.

France - **Déplacement COVID-19**

Déplacement COVID-19 is an online solution of the French Interior Ministry to enable citizens to obtain a form to circulate during lockdown. This digital solution provides users with the appropriate form depending on the reason of their movement. Déplacement COVID-19 can be used to access public services that require physical presence.

19 Further information available at: https://epass.gov.hr/Login.aspx

20 Further information available at: https://rdd.gov.hr/

Provide comprehensive information on public services availability

During the pandemic and the lockdowns, several EU Member States such as Lithuania and Portugal developed and implemented digital solutions to better manage access to public services that could not be delivered physically while enforcing social distancing measures. Examples of such digital solutions include maps highlighting the public services physically accessible during the lockdowns and integrated chatbots on public services' websites to provide users with up-to-date information on the availability of online and physical public services.

Examples from...

Lithuania - **viLTé chatbot**

ViLTé is a chatbot made available by the Lithuanian government. It can be integrated in several public administration websites to provide instant and up-to-date information to citizens and business on the availability of public services.

Portugal - **Citizen Map**

The Portuguese Citizen Map is a digital solution, available online and as a mobile app, which provides Portuguese citizens with georeferenced information on all public services available in an area. Citizens can visualize in a map public services available, and the information required to access them. The Citizen Map solution enables users to get digital queue tickets for onsite public services in order to avoid physical queuing on location.

Ensure secured electronical identification of citizens

To guarantee secure access to digital public services, several EU Member States leveraged on the electronic identification (eID) solutions for citizens. Even though eID solutions were already available in many EU Member States prior to the COVID-19 crisis, the increased need to digitally access public services during the pandemic made it clear that such solutions should be embedded in the design of digital public services.

Examples from...

Finland - **Digital Authorisation service**

This Digital Authorisation Service of the Finnish government was launched in 2017 to deliver e-authorisations to grant another person, company or organisation a mandate to access public services on one's behalf. The solution became particularly relevant during the COVID-19 crisis as its users almost doubled.

Greece - **e-Exousiodotis** and **e-Dilosi**

e-Exousiodotis and e-Dilosi are used by the Greek government to provide citizens with the possibility to electronically sign and share official documents in a secured manner. Alternatively, e-Exousiodotis can rely on bank account credentials to enable identification.

Propose solutions and trainings for eSkills

A minimal level of eSkills and access to equipment is required to ensure that citizens can access and use the digital public services available to them. To that end, some countries developed and/or implemented on- and offline solutions and trainings to support citizens with lower digital skills in accessing digital public services during the COVID-19 crisis as the traditional face-to-face delivery of public services was challenged.

Examples from...

Sweden - **Digital support for the elderly**

The Swedish Government has commissioned the Swedish Post and Telecom Agency (PTS) to implement initiatives and solutions to ease the access of senior citizens to digital tools and services for communications, both personal, and with the Swedish public administrations.

Portugal - **Contact Centers**

Contact centers were introduced by Administrative Modernization Agency (AMA) to provide support to citizens in using the digital public services available in the national portal ePortugal. These centers provide telephone, email and AI-based (chatbot) support to citizens.

A closer look at Croatia's digital response to COVID-19

ePASS (E-PROPUSNICA)

This case study on the Croatian digital solution ePass (e-Propusnica) has been written following the insights provided by Mr Igor Ljubi from the Central State office for the Development of the Digital Society in Croatia.

Igor Ljubi is the Head of Unit within the Central State Office for Development of the Digital Society and is responsible for the horizontal application solutions used in Croatian government. His professional interests include information security and interoperability between information systems.

Impact of the COVID-19 on public services delivery in Croatia

The delivery of public services in Croatia during the COVID-19 crisis has been hindered by stringent lockdown measures coming into force in March 2020. The traditional way of delivering public services, with citizens going to public administrations' offices and having face-to-face interactions with public servants, was no longer possible as citizens across the country were asked to remain at home. These measures made the use of digital public services essential to ensure continuity in their delivery.

Therefore, Croatian public administrations incentivised the use of ICT tools to mitigate the disruption of their services, for instance, by giving the possibility to citizens and businesses to submit their requests to public administrations via email and setting up teleworking schemes for civil servants.

ePass inception to enable the general access to public services

In March 2020, the Croatian government imposed a national lockdown, preventing Croatian citizens from leaving their municipality of residence. Such a scheme required granting exceptions for special needs, for instance for essential workers and citizens who had to access face-to-face public services in another municipality. In order to manage this process, the Croatian Civil Protection Office[21] drew a list of valid exceptions for citizens across the country to exit their municipality. It is worth noting that this list has been adapted throughout the crisis to meet evolving needs; however, accessing public services that requested physical presence has been included as a valid reason since the beginning of the lockdown measures. This authorisation was delivered via passes that were given to citizens who were deemed as having a valid reason to freely leave their municipality. The delivery of the passes was originally managed manually by civil servants checking the validity of the requests and either accepting or denying them. Due to the very high volume of requests, however, an automated solution appeared to be essential to manage this process. This issue pushed the Croatian government to develop an IT solution to automate the delivery of passes: ePass.[22]

Development of ePass within the Croatian administration

The development of ePass was launched as a response to the Croatian Civil Protection Office's need to automatise the delivery of passes during the COVID-19 lockdown across the country. Due to the very high volume of requests, the Ministry of Justice and Administration[23], then in charge of developing digital public services prior to the transfer of responsibilities to the Central State Office for the Development of the Digital Society[24], tasked a team of 30 people to quickly develop a digital solution to automate the delivery of the passes and alleviate the burden on civil servants.

Additionally, the team included advisors to the Minister in charge of ensuring direct contact to government officials as well as ICT experts (e.g. IT architects and developers). Some of the experts involved in the development of ePass were consultants from a private consulting company specialised in software development and contributing pro bono to the development of the solution. This cross-organisational team first focused on identifying the correct data sources in base registries across public administrations' IT systems. To expedite the development of ePass, the team reused components to save development time.

21 Further information available at: https://civilna-zastita.gov.hr/

22 Further information available at: https://epass.gov.hr/Login.aspx

23 Further information available at: https://mpu.gov.hr/

24 Further information available at: https://rdd.gov.hr/

For example, the eCitizens system[25], which unifies Croatia's citizens' access to eGovernment services has been leveraged along with the country's Shared Service Centre[26], which contains an enormous quantity of government data.

The development of ePass spanned over the course of three weeks and was launched on 1 April 2020. This was the first time the Croatian public administrations developed a digital solution targeting the entire Croatian population in such a short timeframe.

Following the launch, the team split in two: one half of the team was put in charge of user support (i.e. help desk) to follow up with any requests or claims and the other half continued to further upgrade the solution (i.e. development of new features and bug fixing).

Features and uses of ePass

ePass is a digital solution, available via an online browser, enabling Croatian citizens to request authorisation forms to move outside their municipality to reach a specific place. ePass became the central solution for requesting and obtaining this electronic pass as the requests were checked by the system and automatically denied or accepted. Acceptance of the circulation request by the ePass system allowed citizens to download their electronic pass (containing a QR code) in PDF format and print it. Alternatively, they could download the pass in an electronic format and save the document on their mobile phones, although no specific mobile application for ePass was available. To ensure the accessibility of the solution to all Croatian citizens, people with a limited access to digital means could still obtain the electronic pass by physically going to the Civil Protection Office of their municipality and making a request. The Civil Protection Officer would then use the ePass system to submit a request on behalf of the citizens and print the pass for them.

Police forces could also leverage ePass using a dedicated mobile application, which allowed them to scan citizens' passes and check their validity to ensure they were travelling in compliance with the pass they were granted.

Key takeaways from Croatia on the rapid digital response to COVID-19

The development and implementation of ePass in Croatia was very quick, with the first version of the solution available in three weeks. The main takeaway from this implementation is that public administrations can implement complex digital solutions in a short timeframe by leveraging existing reusable and interoperable components in order to quickly respond to emergency situations.

The team behind ePass pinpoints the quick development to already available data from interconnection of base registries following the Once Only Principle[27] and close collaboration with the hierarchy, made possible by cabinet members being part of the team, as key elements in the success of ePass. Indeed, the involvement of cabinet members was a strong asset allowing developers to quickly escalate issues and solve them in less than 24 hours. Additionally, good knowledge of the government's IT architecture proved valuable to quickly leverage existing data and tools to respond to the emergency state imposed by the COVID-19 crisis.

Quick development and implementation of complex digital solutions within the public administration is possible thanks to the reuse of existing components and interoperable systems.

25 Further information available at: https://vlada.gov.hr/the-e-citizens-system/15215

26 The Shared Service Centre is the Croatian governmental cloud IT infrastructure which can combine a large quantity of data to facilitate data management across public administrations.

27 Further information available at: https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Once+Only+Principle

2.2 Digital response to COVID-19 in Education

Across the EU, **educational services** have been greatly impacted by the implementation of lockdown measures in response to the spread of COVID-19. As a result, teachers and students had to leverage on digital solutions to ensure continuity in the provision of educational services. This section analyses the challenges faced by EU public administrations to guarantee access to education during the COVID-19 crisis, namely, to ensure the continuity of online classes, provide access to educational content, give access to digital equipment, and provide support for educators. Finally, the current section further looks at the Eduthek solution[28] developed, among others, by the Ministry of Education in Austria.

The various lockdown measures and school closures across the EU had the immediate effect of preventing teachers from delivering face-to-face classes. With the aim of ensuring the provision of educational services, EU Member States had to turn to digital solutions to address four main challenges:

Ensure the continuity of classes online

Teachers organising the remote delivery of classes needed to access videoconferencing and knowledge sharing tools to ease communication with their students. Several public administrations across the EU have launched custom-made online platforms to meet such needs, with Belgium and France developing online platforms with integrated videoconferencing tools and/or collaborative edition tools to create educational content and organise online classes.

Examples from...

Belgium - **Ma Classe**

The Pedagogical Resource Center of the Wallonia-Brussels Federation launched a new online learning platform called "My class". The online platform allows teachers to access learning activities together with their students and organise interactive sessions. Use of the platform is free, on a voluntary basis and after agreement from the school management.

France - **Apps.education**

Developed by the Ministry of Education in France, the online portal Apps.education features an integrated Jitisi-based videoconferencing tool allowing teachers to create online classrooms with their students, and collaborative tools such as the document editing tool EtherPad.

28 Further information available at: https://eduthek.at/schulmaterialien

Provide access to educational content

As teachers needed to quickly adapt the content of their classes to a digital format, many EU Member States created online repositories of ready-made educational content. Often peer-reviewed and approved by governmental authorities, the repositories offer a variety of digital content ranging from exercise sheets and audio files to presentations and videos.

Examples from...

Luxembourg - **Schouldoheem**

In Luxembourg, the Ministry of Education launched the schouldoheem platform which offers educational content for students of all levels. Schouldohem gathers information sheets, videos and audio recordings on every school subject.

Bulgaria - **eLearn**

The Ministry of Education and Science in Bulgaria created a National digital library for teachers. This repository of digital content provides the possibility for uploading and sharing copyright educational, didactic and methodological material for online work such as video lessons, training programmes, innovative methodologies, text, films, practical sessions, pedagogical materials, presentations and projects.

Give access to digital equipment

Some EU Member States focused on solutions aimed at reducing inequalities regarding the provision of digital equipment among students (e.g. laptops, Internet connection). Some EU Member States, such as Austria, opted for the direct provision of equipment to students from low-income families. Others, like Spain, partnered with private companies to provide essential digital equipment to students.

Examples from...

Spain - **Movistar mobile lines**

The Ministry of Education and Vocational Training (MEFP) in Spain provided 20,000 Movistar mobile lines by sending 40 Gbs SIM cards per month per line to middle and high schools students from low-income families. This initiative was launched thanks to the support of private companies such as Telefónica, Cisco and IBM.

Austria - **Material Loans**

In Austria, the Federal Ministry of Education, Science and Research loaned up to 12000 digital devices to pupils of federal schools (lower and upper secondary schools) until the end of the school year.

Provide support for educators

To prevent any disruption of educational services, several governments across the EU supported educators in adapting to the changing context of the COVID-19 crisis requiring a remote delivery of classes. This support took the form of online training sessions, guidelines and other materials to provide teachers the necessary knowledge to deliver courses remotely, leveraging on digital solutions.

Examples from...

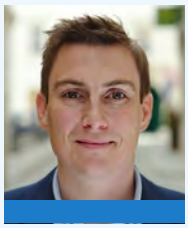
Croatia - **Online Education Action Plan**

The Croatian Ministry of Education published several documents to accompany teachers in the switch to online teaching such as the 'Action Plan for the Implementation of Distance Education', the 'Guidelines for Primary and Secondary Schools Concerning the Organisation of Distance Education using Information and Communication Technology' and the 'Recommendations on the Organisation of Student Working Day and Instructions for Evaluation during Distance Education'.

Romania - **Educred**

In Romania, the Educred platform gives teachers the opportunity to find training material on online teaching methods and exchange good practices with colleagues.

A closer look at Austria's digital response to COVID-19



EDUTHEK

This case study on the Austrian digital solution Eduthek has been written following the insights provided by Dr Robert Kristöfl and Mag. Stefan Schmid from the Federal Ministry of Education, Science and Research in Austria.

Dr. Robert Kristöfl is the head of the Department of IT Infrastructures and Educational Technologies, Austrian Ministry of Education, Science and Research. He is a software engineer and has worked as a project manager for New Public Management at the Ministry of Science and Research.

Mag. Stefan Schmid works in the IT Didactics Department at the Austrian Ministry of Education, Science and Research. He has been leading the Virtual High School project for two years and has been part of the Ministry's eLearning initiatives for 10 years. Together with Dr. Robert Kristöfl, Stefan Schmid is in charge of the further development of the Eduthek platform.

Impact of the COVID-19 crisis on education in Austria

As of 16 March 2020, due to the lockdown measures adopted by the Austrian government, schools in Austria were closed for a period ranging from a month and a half for high schools to two months for primary schools. These measures prevented students and teachers from engaging in face-to-face classes as traditionally done. However, the existence of digital educational tools prior to the crisis allowed teachers to ensure the continuity of educational services. Indeed, before the COVID-19 crisis, the Austrian Federal Ministry of Education, Science and Research[29] was already offering a wide range of digital solutions for students, teachers and parents at all levels of education, such as:

- Eduvidual[30], a Moodle-based eLearning platform enabling Austrian teachers to create interactive educational content;
- Learning with a System (LMS)[31], a learning and content-creation platform enabling Austrian teachers to create content and make visual exercises with the students;
- Virtuelle-ph[32], an eLearning platform for teachers;
- Digi4School[33], an online platform offering a wide range of eBooks.

Eduthek inception to gather quality educational content

Although digital solutions such as Eduvidual and LMS were already offered by the Ministry of Education, Science and Research prior to the COVID-19 crisis to assist in the digital delivery of education, an additional digital solution was needed to meet the strong demand of Austrian teachers for quality digital educational material.

The Eduthek platform[34], a repository of educational content, was a project initiated by the Ministry of Education, Science and Research prior to the crisis and made available in Beta version prior to the enforcement of a lockdown in Austria. Forecasting the closure of schools, the Ministry accelerated its efforts on the development of Eduthek. Benefitting from important hierarchical and political support due to the state of emergency, Eduthek was finalised within seven days and released on 14 March 2020.

29 Further information available at: https://www.bmbwf.gv.at/en.html

30 Further information available at: https://www.eduvidual.at/local/eduvidual/pages/login.php

31 Further information available at: https://www.lms.at/

32 Further information available at: www.virtuelle-ph.at

33 Further information available at: https://digi4school.at/

34 Further information available at: https://eduthek.at/schulmaterialien

Development of Eduthek within the Austrian administration

In order to swiftly develop and release a useable version of the platform, the project team behind Eduthek had to address two main challenges:

The first challenge was the definition and order of the metadata to be included on the platform, for which the project team received support from several universities such as KU Leuven (Belgium) and WU-Wien (Austria). The second challenge was the technical development and testing of the platform, as well as the collection of quality content to be offered on it. Regarding content collection, the Eduthek team collaborated with external educational platforms willing to share their content on Eduthek and benefitted from the help of a group of about 40 teachers and university professors who contributed to the review and approval process.

The development of the Eduthek solution within a week was made possible thanks to the collaboration of actors from the public and the private sector. The management of the project was overseen by the employees of the Ministry of Education, who were also part of the steering committee. However, the technical development of the solution was carried out by several Austrian companies specialising in digital education, including Knowledge Markets[35]. Once the solution was developed, the eEducation school network[36], which is specialised in raising awareness on digital topics in Austrian schools, supported the Ministry of Education, Science and Research in disseminating information about Eduthek.

Features and uses of Eduthek

The Eduthek platform aims at providing an easily searchable repository of quality educational content for all school levels. The platform offers a wide range of 6 000 learning materials on all subjects, approved by a pool of teachers and professors to ensure its quality.

Teachers, students, parents, and any other interested user can have a direct access to Eduthek's online material, without a password or login. Additionally, the content included in Eduthek can be continuously integrated into the LMS and Eduvidual learning platforms.

The demand for the Eduthek content quickly scaled up, with up to 85% of all Austrian schools using the Eduthek content during lockdown. Such high demand was possibly due to the availability of a Massive Online Open Course (MOOC), a free and open online course, on digital learning that was developed by the Austrian Ministry of Education. The MOOC, followed by 15% of Austrian teachers, comprises information on good practices when using Eduthek's content for the teaching of all subjects. After the first lockdown, the user rate of Eduthek went down to 50%.

Key takeaways from Austria on the rapid digital response to COVID-19

The three-week development of the Eduthek solution was the result of the swift set up of a project team within the Ministry of Education, Science and Research. The strong political and hierarchical support, complemented by a clear mission and mandate, allowed the project team to quickly release the final version of the Eduthek platform. The success of Eduthek is a sign of the completion of its primary objective: offering quality and peer-reviewed educational content. In Mag. Stefan Schmid's opinion, this objective was the driving-force behind the Eduthek project as content requirements need to drive the technical development of the solution.

The content requirements should drive the technical development of the solution, and not vice versa.

35 Further information available at: https://www.km.at/

36 Further information available at: https://eeducation.at/en/

2.3 Digital response to COVID-19 in Economic Affairs

With regard to the private sector, the first wave of COVID-19 had a great impact on the continuity of their activities as most companies had to switch to teleworking schemes and/or face the closure of physical offices and stores. Following these unforeseen challenges, the delivery of public services to businesses was more necessary than ever to ensure business continuity. Therefore, EU public administrations turned to digital solutions to mitigate the effect of the COVID-19 crisis on the delivery of public services related to **economic affairs**. According to the OECD's Classification Of the Functions Of Government (COFOG)[37], economic affairs are understood as the services delivered to support the economy, and thus national businesses encompassing a broad range of industries. This section analyses the challenges faced by EU public administrations to help businesses in their digital transformation, financially support the citizens and businesses most impacted by the crisis and ensure businesses are aware of the public services and subsidies available to them. Finally, an example of such solutions is explored through the case study of the Acelera PYME solution developed by the Red.es public agency in Spain.

With the aim of ensuring the provision of public services related to economic affairs, EU public administrations had to turn to digital solutions to address three main challenges:

Provide businesses with repositories of solutions to support their digital transformation

To overcome the restrictions caused by the first wave of COVID-19, businesses had to digitalise their processes and introduce remote working conditions to ensure business continuity. In order to help businesses with this digital transformation, public administrations across the EU launched platforms and portals to provide businesses with digital solutions and provided online training sessions.

Examples from...

Spain - **Acelera PYME**

Developed for Spanish SMEs and self-employed citizens by Red.es, in collaboration with the private sector, Acelera PYME provides resources and digital solutions to support their digital transformation and ensure their adaptation to the challenges brought by the COVID-19 measures.

Austria - **Digital Services**

The Digital Team Austria supports employees and businesses who require digital solutions to overcome new challenges. These are various services and training courses to support remote working and learning.

37 Economic affairs include: General economic, commercial and labour affairs; agriculture, forestry; fishing and hunting; fuel and energy; mining, manufacturing and construction; transport; communication; other industries, R&D related to economic affairs; economic affairs n.e.c. Further information available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_(COFOG)

Support citizens and businesses whose economic activity decreased due to the COVID-19 crisis

The hardships brought by the COVID-19 crisis challenged businesses and decreased economic activity throughout the EU. This resulted in an increase in the unemployment rate from 6.6% in March 2020 to 7.8% in July 2020.[38] In order to support the citizens who lost their job and the businesses whose economic activity decreased due to the crisis, several EU Member States, including Ireland and Malta, leveraged on digital solutions to provide financial help to eligible citizens and businesses.

Examples from...

Ireland - **Online Welfare Payments**

The Irish government leveraged digital means to deploy a new social welfare payment for employees and the self-employed who have lost employment due to the COVID-19 crisis. The information on the subsidy as well as the requests are available online.

Malta - **Economic Support Measures**

The Maltese government deployed electronic applications for a number of measures to address the COVID-19 crisis for all eligible businesses. These applications are integrated with other Government agencies' systems such as JobsPlus and the Commissioner for Revenue to automatically check the status of employees.

Ensure businesses are aware of the public services and subsidies available to them

EU Member States have launched financial help and subsidy programmes to reduce the impact of the COVID-19 crisis on businesses. To increase the uptake and use of such financial incentives, public administrations used digital tools to raise the awareness of the resources and public services that are available to businesses. EU Member States such as Austria and Bulgaria developed digital solutions to provide comprehensive information on the available public services and aids to businesses.

Examples from...

Austria - **Chatbot Mona**

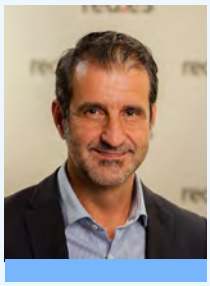
The Mona chatbot is available on the Austrian Business Service Portal (USP) which is the central eGovernment portal for companies. The chatbot provides comprehensive information on the public services and aids available quickly, easily and even on the move.

Bulgaria - **eServices hotline**

The Bulgarian State eGovernment Agency (SEGA) has launched a national single telephone number of the Agency's Contact Help Desk. By calling it, businesses can receive information on digital solutions enabling e-services related to their needs.

38 Further information available at: https://ec.europa.eu/eurostat/web/covid-19/society-work

A closer look at Spain's digital response to COVID-19



ACELERA PYME

This case study on the Spanish digital solution Acelera PYME has been written following the insights provided by Mr David Cierco Jiménez de Parga from Red.es in Spain.

David Cierco Jiménez de Parga is the General Director of Red.es, a public entity of the Spanish Government attached to the Ministry of Economic Affairs and Digital Transformation through the Secretary of State for Digitalisation and Artificial Intelligence. Red.es is tasked with the development of programmes to foster digital economy and government. With over 20 years of experience in the public and private sectors, David Cierco Jiménez de Parga has overseen projects with a particular focus on new technologies and the development of information society.

Impact of the COVID-19 on public services delivery in Spain

As one of the EU Member States having registered the highest number of cases of COVID-19, Spain is the first to have implemented lockdown measures on 9 March 2020. These governmental measures prevented citizens and businesses from physically accessing public services, making the use of digital solutions necessary for the continuity of their delivery.

In particular, the impact of the first wave of COVID-19 on the provision of public services for small and medium-sized enterprises (SMEs) and self-employed citizens was threefold:

- Public services related to financial help and subsidy systems to assist SMEs and self-employed citizens were not disrupted by the COVID-19 crisis as these were already delivered digitally by the Spanish central and regional governments.
- Public services related to assist SMEs and self-employed citizens in conducting their activities were moderately disrupted by the COVID-19 crisis. The challenges faced by the Spanish public administrations to deliver such services were twofold: to ensure the beneficiaries' awareness of where and how such services could be digitally accessed; and to deploy scalable systems to manage an increased volume of requests.
- Public services aimed at supporting the digital transformation of SMEs and self-employed citizens were severely impacted by the COVID-19 crisis. The first wave of COVID-19 and the subsequent lockdown and stay-at-home orders made the digitalisation of SMEs and self-employed citizens a necessity for the continuity of their activities. In light of this, the programmes previously put in place by the Spanish public administrations proved to be insufficient.

Acelera PYME inception to support SMEs and self-employed citizens

The disruption brought by the first wave of COVID-19 on Spanish public administrations complicated their supporting role to SMEs and self-employed citizens as well as the continuity of their activities in a period of high uncertainty. In order to mitigate this, the capabilities of Red.es[39], through the Ministry of Economy and Digital Transformation[40], were leveraged to rapidly develop and implement a comprehensive solution to ensure the proper support of SMEs and self-employed citizens throughout the COVID-19 crisis: Acelera PYME[41]. On 17 March 2020, the project of a portal aimed at supporting SMEs and self-employed citizens was approved by the Spanish government and received support from the Vice President and Minister of Economic Affairs and Digital Transformation. On 23 March 2020, the first version of the Acelera PYME was made available to the public, providing up-to-date information on national measures targeting SMEs and self-employed citizens as well as a catalogue of solutions from public and private organisations available to support their activities.

39 Red.es is a public entity of the Spanish Government attached to the Ministry of Economic Affairs and Digital Transformation through the Secretary of State for Digitalisation and Artificial Intelligence tasked with the development of programs to foster digital economy and government. Further information available at: https://red.es/redes/en

40 Further information available at: https://portal.mineco.gob.es/en-us/Pages/default.aspx

41 Further information available at: https://acelerapyme.gob.es/

Development of Acelera PYME within the Spanish administration

The development of the Acelera PYME portal was led by Red.es and more specifically by a core team composed of 15 members of the organisation. The rapid deployment of the solution was enabled by the close collaboration of the Spanish public administration with private companies to provide solutions to be included in the catalogue. At first, the portal included about 20 referenced companies, while today it has almost 500 partnering companies providing solutions and services to SMEs and self-employed citizens. To handle the application of partner companies requesting to be featured in the Acelera PYME portal, a dedicated team was created following the portal's launch.

In May 2020, the Board of Directors of Red.es approved the Acelera PYME Programme, which includes measures valued at € 250 million in the field of technological enablement for SMEs and self-employed citizens. This programme builds on the foundations set by the Acelera PYME portal and includes different initiatives with three main goals: to accelerate the digitalisation process of SMEs and self-employed citizens based on consultancy and training, to establish measures to support the creation of technological solutions for SMEs and self-employed citizens' digitalisation, and to set up financial support measures for their digitalisation. This programme plans to expand the scope of the Acelera PYME portal into a full platform complete with online training sessions. As of December 2020, the portal had received over 530 000 visits and had more than 101 000 unique users.

Features and uses of Acelera PYME

The Acelera PYME portal, soon-to-be platform, centralises the measures and solutions available to help SMEs and self-employed citizens in ensuring the continuity of their activities during the COVID-19 crisis. The content available on the Acelera PYME portal includes up-to-date information on governmental measures and resources aimed at supporting SMEs and self-employed citizens such as financing schemes and subsidies as well as advice to ensure business continuity. Additionally, a repository of solutions and services is made available on the portal through a partnership with private companies to help SMEs and self-employed citizens mitigate the effects of the pandemic on their business.

The Acelera PYME Programme, which encompasses the portal but goes beyond it, aims to include three main measures:

- Support measures to accelerate the process of SMEs and self-employed citizens' digitalisation through consulting services and training. These measures include the development of eSkills through training sessions for SMEs and self-employed citizens, as well as the provision of career guidance services. Additionally, Red.es plans to deploy an Acelera PYME Office Network starting in 2021 with a forecast of 90 locations across Spain by 2022. The Acelera PYME Offices will be both physical and virtual spaces dispersed across the country to offer advice and support to SMEs and self-employed citizens, to assist them in their digital transformation processes and conduct awareness and support actions in this field. All services offered by these offices will be free for all the users.
- Support measures for developing digital solutions for SMEs and self-employed citizens. These measures are planned for 2021 and include a call for projects on technological developments based on artificial intelligence and other digital enabling technologies (e.g. Internet of Things, blockchain and robotics).
- Financial measures for SMEs and self-employed citizens' digitalisation.

The Acelera PYME Programme is mainly financed with EU Funds such as the European Regional Development Fund[42] (ERDF) and the European Social Fund[43] (ESF).

42 Further information available at: https://ec.europa.eu/regional_policy/en/funding/erdf/

43 Further information available at: https://ec.europa.eu/esf/home.jsp?langId=en

Key takeaways from Spain on the rapid digital response to COVID-19

The rapid launch of Acelera PYME within a few days of its inception has been made possible by the preparedness of Red.es. The Spanish public administrations were ready, prior to the COVID-19 crisis, to work remotely and leverage digital solutions to ensure the continuity of their activities. It had the necessary capabilities in terms of budget, technological skills and governance to ensure a swift response to a state of emergency.

In order for Acelera PYME to become a success story, the team at Red.es has leveraged on cross-administration collaboration and public-private partnerships. In particular, Red.es continues to collaborate with the Chamber of Commerce of Spain[44] and other stakeholders in the ecosystem to set up the Acelera PYME Office Network and with regional and local administrations in order to reach SMEs and self-employed citizens all over the country.

The most important lesson learnt from the Spanish experience has been to focus on those for whom the programme is made rather than on who is responsible for the programme, and on what they need rather than on what can be offered. Taking a step-by-step approach, Red.es is going to further develop Acelera PYME into a platform that serves as a meeting point for the ecosystem, including features and services, as well as, digital solutions, in close collaboration with SMEs and other businesses that have offered to collaborate with the Acelera PYME office network.

44 Further information available at: https://www.camara.es/

3

Factors enabling the use of digital solutions in response to the COVID-19 crisis in the EU

3 Factors enabling the use of digital solutions in response to the COVID-19 crisis in the EU

The **digital response to COVID-19 of EU Member States has been enabled by factors** that allowed the development and/or implementation of digital solutions to mitigate the disruption of public services. For the purpose of this study, 'enabling factors' are defined as those factors which allow EU public administrations to develop and/or implement digital public services to avoid their disruption and ensure the continuity of public administrations' activities during the COVID-19 crisis, and fall within three clusters: human capital, governance and technological, as detailed in Figure 5.[45]

Figure 5 Key factors enabling the use of digital solutions in response to the COVID-19 crisis

Human Capital factors

- Civil servants' digital skills
- Readiness to change
- Knowledge of existing reusable tools
- Capacity to innovate

Technological factors

- Access to collaborative communication tools
- Access to document and knowledge management tools
- Access to hardware for remote work
- Access to interoperable and reusable tools
- Scalable IT infrastructure
- Cybersecurity
- Access to organisation network and data
- Electronic identification (eID)

Governance factors

- Cooperation between administrations
- Clear governance and support from the hierarchy
- Transparency of information
- Budget availability
- Adequate public procurement arrangements
- Crisis management process
- Partnership with private sector organisations
- Existing framework for delivering digital public services

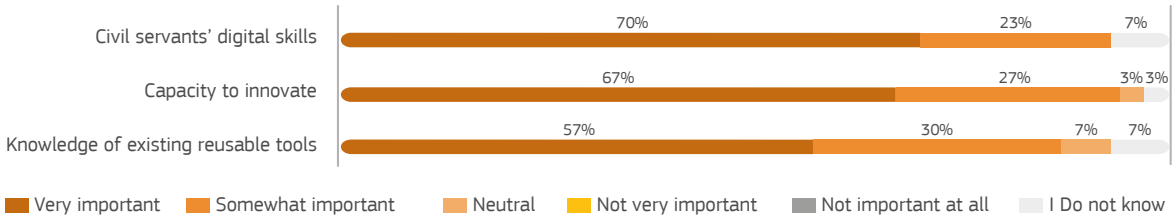
Source: Survey performed by Wavestone, November 2020.

45 European Commission Open Source Observatory (OSOR), *Key success factors of sustainable open source communities*, 2020.

3.1 Human Capital Factors

This section explores the human capital factors that helped public servants to efficiently respond to the COVID-19 crisis, namely their skills, knowledge and competences. Figure 6 illustrates the extent to which human capital factors were considered important by the respondents of the survey to avoid disruption of public services and ensure the continuity of public administrations' activities during the COVID-19 crisis.

Figure 6 Enabling human capital factors of EU public administrations' digital response to COVID-19



Source: Survey performed by Wavestone, November 2020. Response to the question: 'To which extent have the following human capital factors been important for your public administration to develop and/or implement digital public services to avoid disruption of public services and ensure the continuity of public administrations' activities during the COVID-19 crisis?'

Civil servants' digital skills are considered as a very important enabling factor allowing civil servants to efficiently work remotely and deliver digital public services. Survey respondents also highlighted the role and importance of the capacity to innovate and the knowledge of reusable tools, as detailed in Table 1.

Table 1 Human Capital factors enabling the use of digital solutions in response to the COVID-19 crisis in the EU

Civil servants' digital skills	Civil servants' digital skills are understood as the ability to select and use the appropriate tools to ensure the continuity of their activities remotely. Several EU Member States released digital tools and training sessions dedicated to supporting civil servants in the switch to the remote delivery of public services. For instance, the Belgian administration expanded its online training services and adapted physical trainings to online delivery for public servants in response to the COVID-19 crisis.[46]
Capacity to innovate and readiness for change	Public administrations' capacity to innovate and readiness for change are crucial for civil servants' adaptability. This is key in providing a quick response to a state of crisis. For example, the French administration leveraged on its Innovation Labs[47]created in 2008 to accelerate the development and implementation of digital public services. The Labs are accelerators of innovation, providing tools, methodologies, and a dedicated space for civil servants to think outside the box on the future of digital public services.

46 Organisation for Economic Co-operation and Development, 2020. Public servants and the coronavirus (COVID-19) pandemic: Emerging responses and initial recommendations.

47 Further information available at: https://www.strategie.gouv.fr/actualites/innovation-publique-france-strategie-lance-projet-lab

Knowledge of reusable tools

Public administrations' knowledge of reusable tools has been highlighted as a factor contributing to the development and/or implementation of digital public services in response to the COVID-19 crisis. The use of existing, reusable, and interoperable tools can be an accelerator of the digital response of EU Member States. Furthermore, leveraging existing tools can help decrease the costs and time necessary for the development and/or implementation of digital solutions. For instance, the development of the ePass system in Croatia within three weeks was made possible by the reuse of existing components such as the eCitizens[48] systems, which is the Croatian central access point to eGovernment services (cf. p.19).

Good practices from the development of the Acelera PYME portal in Spain

The Acelera PYME portal, developed by Red.es, provides information on access to subsidies and financial help to SMEs and self-employed individuals, as well as support for their digital transformation. Red.es is a government agency characterised by its capacity to innovate by creating digital solutions and leading innovative action plans to tackle some of the key issues faced by the Spanish society and economy.

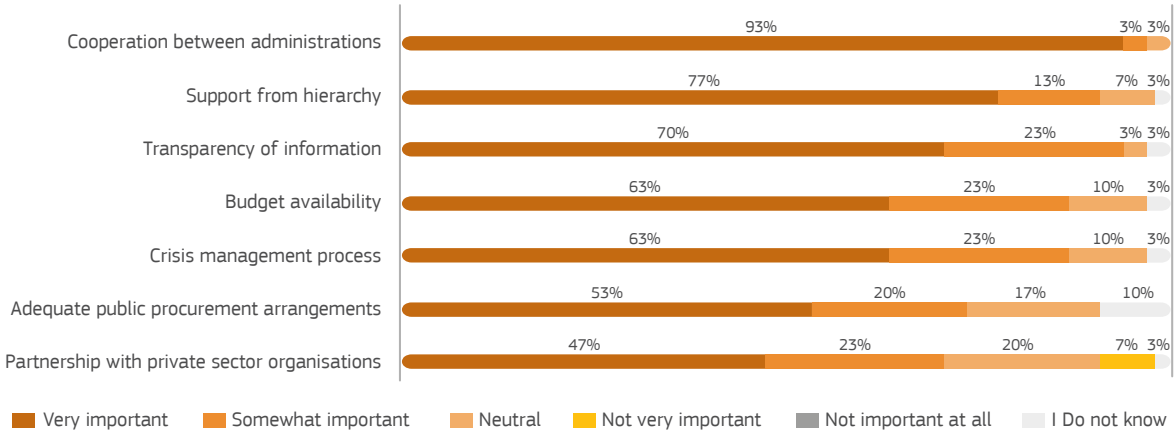
With regards to the launch of Acelera PYME, the fast in-house development of the platform in five days was made possible thanks to the availability of highly skilled experts within the organisation. In total, a team of 15 developers and IT experts contributed to the project.

48 See https://vlada.gov.hr/the-e-citizens-system/15215

3.2 Governance Factors

Governance, understood as the structures and processes designed to ensure the organisation of an administration,[49] is a key aspect of EU public administrations as it aims to ensure its proper functioning. Therefore, survey respondents were asked to what extent factors related to the governance in place in their public administrations were important for the development and/or implementation of digital public services to avoid their disruption and ensure the continuity of public administrations' activities during the COVID-19 crisis, as shown in Figure 7.

Figure 7 Enabling governance factors of EU public administrations' digital response to COVID-19



Source: Survey performed by Wavestone, November 2020. Response to the question: 'To which extent have the following governance factors been important for your public administration to develop and/or implement digital public services to avoid disruption of public services and ensure the continuity of public administrations' activities during the COVID-19 crisis?'

Based on the findings of the survey, cooperation between administrations appears as the most important factor enabling the development and/or use of digital solutions by EU public administrations in the first wave of the COVID-19 crisis. Survey respondents also highlighted additional governance factors detailed in Table 2.

Table 2 Governance factors enabling the use of digital solutions in response to the COVID-19 crisis in the EU

Cooperation between administrations	Several countries relied on cross-administration collaboration and partnerships to mutualise resources and skills. France, for instance, reported the effective cooperation between ministries to share the benefits of different digital skills as one of the key factors enabling the country to respond to the crisis. In Ireland, the public administration developed tools, such as a questionnaire and an online portal, to map transferrable skills and facilitate temporary mobility assignments across the public services.[50] This system required not only flexibility on part of the civil servants but also an efficient cross-service collaboration.

49 Further information available at: http://www.ibe.unesco.org/en/geqaf/technical-notes/concept-governance

50 Organisation for Economic Co-operation and Development, 2020. Ibid.

Hierarchical support, along with a clear governance, ensures a quick and clear decision-making process for the development and/or implementation of digital solutions. Indeed, clear governance and top-down support can help public servants carry out ambitious and innovative projects in response to a state of emergency. Malta noted the hierarchical structure and clear chain of command within Maltese public administrations as key in ensuring the continuity of services. This allowed the country to rapidly respond to the challenges brought by the COVID-19 crisis by redeploying staff according to the needs and fostering agile Information Management Units.

Representatives of EU Member States responding to the survey highlighted information transparency as playing an important role in the digital response to COVID-19. Several countries, such as Denmark and Finland, have highlighted the absolute importance of transparency in order to gain trust from citizens and ultimately enhance the use of digital public services. In France, to guarantee the transparency of information, the French government decided to publish open data sets and dashboards throughout the crisis.[51]

To make the digital response to COVID-19 possible, EU public administrations had to make budgets available for the development and implementation of digital solutions to support the delivery of public services. Malta reports the willingness to make rapid budget re-allocations as a key factor enabling the country's digital response to COVID-19.

EU public administrations required adequate public procurement schemes to ensure a quick response to the COVID-19 crisis. For instance, the Italian government adopted the Cura Italia law[52] which simplifies negotiated procedures to purchase IT goods and services in public administrations, especially on Cloud SaaS tools and connectivity devices. Such schemes provide public administrations with the flexibility required to procure outside support on technology-related matters in situations of need.

EU Member States' crisis management and preparedness has also played a prominent role in ensuring a prompt and efficient response. The Maltese CIO mentions that public administrations in Malta had carried out lockdown exercises previously, making public entities ready to deliver their services remotely when the COVID-19 crisis occurred.

51 Further information available at: https://www.data.gouv.fr/en/

52 Law Decree no. 18, 17 March 2019.

Partnerships with private organisations

Some EU Member States relied on partnerships with private organisations for their digital responses to boost their internal capabilities in the development and/or implementation of digital solutions. This is the case in Estonia, which reports the cooperation between private and public organisations as a key element in minimising the disruption in the country's public services delivery. In Greece, the e-Exousiodotisi solution for eID relies on the data provided by private banks to enable the identification of citizens through their account credentials.

Existing framework for delivering digital public services

The existing framework for delivering digital public services has proved to be essential in ensuring a rapid switch to digital delivery during the COVID-19 crisis. This was reported by several EU Member States in the survey. In Luxembourg, the national portal for digital public services, MyGuichet[53], enabled the government to rapidly deploy 20 additional administrative procedures in response to the lockdown enforced in the country from March to May 2020.

Good practices from the development of the Eduthek platform in Austria

Eduthek is an online platform, developed by the Austrian Ministry of Education, Science and Research, which gathers ready-made and peer-reviewed educational content to support teachers in ensuring the continuity of classes. The fast development of the Eduthek platform in the span of seven days was made possible due to the availability of budget and the strong support of the project team's hierarchy, and in particular of the Federal Minister of Education, Science and Research.

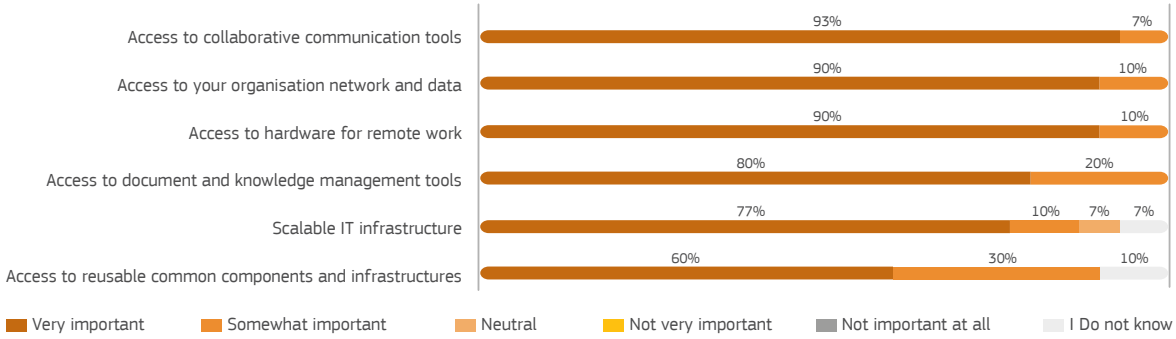
The strong hierarchical support, paired with a clear mission and objective, allowed the swift development of a digital solution that quickly became popular amongst Austrian teachers. To reduce development time and deliver the best quality possible, the Eduthek project team collaborated with the private sector, in particular with start-ups specialised in the development of education software.

53 Further information available at: https://guichet.public.lu/fr/myguichet.html

3.3 Technological Factors

In addition to the human capital and governance factors discussed, technological factors were also essential for the development and/or implementation of digital solutions by EU public administrations in response to the COVID-19 crisis. The availability of technological factors such as hardware, software and architectural components supported the development and/or implementation of digital solutions, allowing the delivery of public services. The technological factors enabling the digital response to COVID-19 are identified in Figure 8.

Figure 8 Enabling technological factors of EU public administrations' digital response to COVID-19



Source: Survey performed by Wavestone, November 2020. Response to the question: 'To which extent have the following governance factors been important for your public administration to develop and/or implement digital public services to avoid disruption of public services and ensure the continuity of public administrations' activities during the COVID-19 crisis?'

Figure 8 identifies the access to collaborative communication tools, access to organisation network and data, and access to hardware as the most important enabling technological factors. This can be explained by the need for public servants to work remotely from home as a consequence of the lockdown and stay-at-home orders issued by EU governments during the first wave of the COVID-19 crisis (cf. Figure 4). Survey respondents also highlighted a series of additional enabling factors and good practices that contributed to the swift development and/or use of digital solutions by EU public administrations in response to the COVID-19 crisis presented in Table 3.

Table 3 Technological factors enabling the use of digital solutions in response to the COVID-19 crisis in the EU

Collaborative communication tools	Access to collaborative communication tools allowed civil servants to communicate despite the remote working environment and promote collaboration. This not only ensured the continuation of public services delivery, but it also enabled the development and/or implementation of new digital solutions during the crisis. In France, all civil servants have been able to use Tchap,[54] an open-source encrypted messaging service developed by the inter-ministerial Directorate for Digital Affairs[55] (DINUM) in 2017. The use of communication technologies not only enables collaboration within administrations but also between different ministries and administrations, which emerges as a key factor for the swift digital response to the COVID-19 crisis, as highlighted in section 3.2.

54 Further information available at: https://www.tchap.gouv.fr/#/welcome

55 Further information available at: https://www.numerique.gouv.fr/dinum/

Document and knowledge management tools

Civil servants' access to an internal network as well as document and knowledge management tools also proved to be essential to public administrations' digital response to COVID-19. Such tools enable remote working by ensuring civil servants' access to the data and tools essential to the delivery of their activities. In Spain, for instance, several tools to allow remote working were introduced during the crisis, including licenses for VPNs to enable remote connection to administrations' data networks.

Hardware

The tools introduced within public administrations to enable remote and collaborative work are of limited relevance without the required hardware to exploit them. Several EU Member States such as France and the Netherlands highlighted the lack of proper equipment for civil servants to work remotely as one of the challenges faced by their public administrations to ensure the continuous provision of public services. To mitigate this risk, the Maltese administration equipped 18 000 civil servants with digital tools and IT equipment fit for remote work (e.g. laptops, access to the communication platform Teams, cloud-based tools) as well as VPN connectivity. These initiatives, encompassed under the Mapping Tomorrow[56] programme ensured the continuous delivery of public services in Malta by enabling the remote and secure work of civil servants throughout the crisis.

Reusable components & interoperability

Once remote working conditions are available, the development and/or implementation of digital public services can be accelerated thanks to the reuse of components. As confirmed by the representatives of the Irish public administration, the existence of digital-ready components from previous investments in digital solutions was a key enabling factor allowing the swift development of digital public services as part of the digital response to the COVID-19 crisis. The use of reusable components goes in hand with interoperability, in particular, regarding technical aspects. In Croatia, ensuring the interoperability of public registries and public administrations' information systems by linking base registries and databases has been an important enabling factor allowing the country to further develop digital public services by relying on an interoperable IT infrastructure.

Scalable IT infrastructure

When lockdown measures and stay-at-home orders were implemented in most of the EU Member States between March and June 2020, digital public services registered a surge in the number of users. Public administrations' IT infrastructures needed to be scalable, particularly servers' capacity, in order to meet user demand. Additionally, the scalability of public administrations' IT infrastructure was a crucial element enabling the remote work for civil servants during the COVID-19 crisis. This was highlighted by Hungary, Denmark and Portugal among others. In Slovenia, the online portal eUprava,[57] which is the central access point to digital public services, registered a surge in the number of users, with a 600% increase in filed applications and a 300% increase in the number of visitors. This surge in requests put a strain on the existing IT infrastructure, thus showing the need for a scalable technology to accommodate such an increase in data volumes.

56 Office of the Principal Permanent Secretary, 2019. Mapping Tomorrow, A Strategic Plan for the Digital Transformation of the Public Administration 2019 - 2021.

57 Further information available at: https://e-uprava.gov.si/

Cybersecurity

The increased use of digital solutions and the online transfer of official documents raised the risk of cybersecurity issues, both for public administrations and users. In May 2020, the International Criminal Police Organisation (INTERPOL) launched #WashYourCyberHands, a cybersecurity awareness campaign on the specific risks linked to the use of digital solutions during the COVID-19 crisis[58]. At the national level, some EU Member States such as Spain leveraged their existing cybersecurity response teams to respond to cybersecurity issues and inform public administrations about related risks. The Information Security of the National Cryptological Centre[59] (CCN-CERT) of Spain has been instrumental to the protection of Spanish public sector entities, while the National Cybersecurity Institute's reference centre[60] (INCIBE-CERT) was leveraged to tackle cybersecurity issues impacting critical infrastructures, private entities and citizens. Additionally, the increased use of electronic identification tools such as eID was reported as an important enabling factor by many EU Member States in the development of secure digital public services. Portugal, for instance, reports the use of eID building blocks as a key enabler to ensure continuity in the delivery of public services during the COVID-19 crisis.

Good practices from the development of ePass in Croatia

ePass is a digital solution, available via an online browser, which enables Croatian citizens to request authorisation forms to move outside their municipality to reach a specific place. Developed by the Central State Office for the Development of the Digital Society of Croatia, the solution was developed within three weeks. This fast development was made possible by the scalable IT infrastructure provided by the Shared Service Centre, limiting the risk of a server crash.

The ePass project team also gained development time by making the most of reusable components, such as the NIAS component from the eCitizen system, eID with personal identification numbers and connection to different base registries. Finally, the ePass solution achieved technical interoperability by linking to existing registries.

58 Further information available at: https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-launches-awareness-campaign-on-COVID-19-cyberthreats

59 Further information available at: https://www.ccn-cert.cni.es/

60 Further information available at: https://www.incibe-cert.es/

4

The Way Forward

4 The Way Forward

As the COVID-19 pandemic spread across the European Union from March 2020, a vast majority of EU governments implemented lockdown measures to counter this health crisis. Consequently, the delivery of public services was disrupted at least to a certain extent in most EU Member States. The countries which could leverage a pre-existing high level of digitalisation in their public administrations were better positioned to rapidly switch to the remote delivery of public services. In this scenario, it comes as no surprise that the developed and implemented digital solutions, which often took place in the wake of the first wave of the COVID-19 crisis, have played a crucial role in what can be described as a truly 'digital response' from EU public administrations working to ensure the continuity of public services. In particular, this report outlined examples of good practices regarding the development and implementation of digital solutions to address challenges faced when it comes to accessing general public services, but also two vital sector-specific public services: education and economic affairs-related public services. The report also gathered insights on the internal factors that enabled public administrations to respond efficiently and swiftly to the crisis through the development and implementation of digital solutions.

The COVID-19 pandemic has demonstrated that most EU public administrations have the ability to adapt and react to major crises in order to ensure the continuity of their public services. Numerous digital solutions have been developed in a very short timeframe, ranging from three weeks for the Croatian ePass solution to only five days for the Acelera PYME online portal in Spain. Be they developed in-house or with the help of external contractors, these digital solutions were able to meet the increasing needs and demands from both EU citizens and businesses. Several human capital factors such as the availability of in-house eSkills, as well as the capacity to innovate and to adapt to change, have been highlighted as important enablers for the swift development and/or implementation of digital solutions by EU public administrations. Additionally, support from the hierarchy and collaboration between public administrations emerged as key governance factors. Finally, ensuring technical and semantic interoperability, the scalability of IT infrastructure, and civil servants' access to all the necessary equipment for remote working stood out as crucial elements to enable this swift transition to the digital delivery of public services.

The digitalisation of public administrations remains a priority for the European Commission. The European Commission's Recovery Plan for Europe presented on 27 May 2020 acknowledges the crucial role played by the digital transformation of the public sector for job creation and economic growth in the European Union. This is further evidenced in the upcoming Digital Europe Programme, which acknowledges the importance of the further development of eSkills within public administrations, as well as of interoperable digital public services across the EU. The European Commission is expected to launch a Common Services Platform, a one-stop-shop for EU public administrations, citizens and businesses to enhance their digital government capabilities.

As the second wave of the COVID-19 virus has spread across Europe from September 2020, EU Member States drew on the lessons learned from the crisis on the occasion of the signature of the Berlin Declaration[61] on 8 December 2020. Negotiated by the German presidency of the Council of the EU, the Declaration underlines once more the crucial importance of the digitalisation of public administrations and the provision of digital public services to EU citizens and businesses. The signatories of the Berlin Declaration committed to work on the elaboration of cross-border digital public services, support the development of eSkills within public administrations, and develop digital public services accessible through mobile devices by the end of 2024. At the same time, the Declaration signatories called upon the European Commission to facilitate collaboration between EU Member States to reach these objectives by launching a Digital Skills platform – a one-stop-shop gathering all initiatives regarding eSkills - and strengthening the current European Interoperability Framework.[62] Therefore, the commitments undertaken by the Berlin Declaration signatories aim not only at strengthening the digitalisation of public administrations to improve their efficiency and efficacy, but also at guaranteeing increased accessibility by making digital public services accessible through mobile devices. This report showed the efficiency of reusing existing digital components and solutions. Looking to the future, greater collaboration and coordination between public administrations could facilitate the faster development of solutions while reducing public expenditure.

To discover more solutions supporting the digital response to COVID-19 across the EU, please consult the Digital Response to COVID-19 collection.

61 Further information available at: https://ec.europa.eu/digital-single-market/en/news/berlin-declaration-digital-society-and-value-based-digital-government

62 Further information available at: https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/eif-european-interoperability-framework-0

Annex I - Methodology

Annex I - Methodology

This annex describes the methodological approach taken to conduct the study on Public Administrations' Digital Response to COVID-19 in the EU. The report focuses on the development and/or implementation of digital solutions by EU public administrations to ensure the continuous delivery of public services throughout the first wave of the COVID-19 crisis, from March to June 2020. The digital solutions taken into consideration within the report include applications, IT infrastructure, reusable components, platforms, networks, and other software that enabled the digital response to COVID-19 of public administrations in the EU. The study aims at responding to three research questions, detailed in Table 4.

Table 4 Research Questions

RQ1	During the COVID-19 crisis, what were the public services which were not disrupted thanks to digital solutions?
RQ2	Which were the digital solutions that enabled governments to continue delivering public services?
RQ3	What are the key factors that enabled public administrations to leverage digital tools effectively and quickly to avoid disruption due to the COVID-19 crisis?

In order to gather the necessary data for the report, the data collection approach relies on: (I) desk research, (II) the design and dissemination of a survey and (III) a series of three case study interviews, as summarised in Figure 9.

Figure 9 Data collection approach

Desk Research

Exploration of existing information on the digital response to COVID-19 using:
- The Digital Response to COVID-19 collection on Joinup;
- Documents shared by the CIO Network;
- Publicly available information.

Survey

A two-part survey shared with the NIFO representatives of EU Member States to gather data on the disruption of public services, the solutions implemented to mitigate it and the key factors enabling such a digital response.

Case studies

In-depth interviews conducted to explore the successful implementation of digital solutions to ensure the continuity of public services in:
- Croatia with ePass (e-Propusnice);
- Austria with Eduthek;
- Spain with Acelera PYME.

Source: Summary of the data collection approach by Wavestone, 2020

The three-pronged methodological approach taken to conduct this study was designed with the aim of gathering diverse data to address the research questions in a structured and rigorous manner. This approach is further outlined below:

Step 1 - Desk Research

The research began with an extensive desk research phase, whose aim was to analyse existing reports examining the digital response to COVID-19 by EU public administrations and to collect information on digital solutions that they developed and/or implemented to avoid the disruption of public services. In this regard, an analysis of the solutions available in the Digital Response to COVID-19 collection[63] on Joinup was conducted. This repository features digital solutions that were implemented worldwide, in private and public sectors, in response to the pandemic. This analysis was further complemented by desk research on publicly available information sources, as well as with the analysis of documents shared by the Chief Information Officer (CIO) network at the EU level during a working meeting. The CIO network gathers the CIOs of each EU Member State to exchange information and good practices regarding public administrations' digital transformation. The information found via desk research has been used to complement the analysis in all the Chapters of the report.

Step 2 - Survey

The report's methodological approach comprises the design of a survey targeted to the National Interoperability Framework Observatory (NIFO) contact points and ISA^2 committee members of all EU Member States. The ISA^2 committee is the high-level governmental body tasked with the management of the ISA^2 Programme,[64] which supports the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services. The survey was composed of two parts:

- The first part of the survey was focused on collecting data on the level of disruption of public services caused by the COVID-19 crisis, the role of digital solutions, and the key enabling factors which allowed public administrations to swiftly respond and mitigate the effects of the crisis. It contained 18 questions: 8 single choice questions, 2 multiple choice questions and 8 open questions.

- The second part of the survey allowed respondents to complement the first part of the survey, by sharing information on specific digital solutions developed or implemented by their public administration to prevent the disruption of public services during the COVID-19 crisis. It contained 23 questions: 4 single choice questions and 19 open questions. Survey respondents could submit up to three digital solutions, providing details on the features and aim of each digital solution.

The survey was launched on 7 October 2020 on the platform Alchemer[65] and closed on 10 November 2020. Throughout the field period, a total of 33 complete responses were gathered for the first part of the survey, while the second part received 15 complete responses.

All the complete submitted responses were considered for the analysis of the survey data (n=33), except for the elaboration of Figure 2 which focussed on analysing one response per EU Member State (n=27). In case of duplicate responses, one answer was selected after validation of the response by desk research or direct contact with the survey respondents.

The outcome of this step is detailed in Chapter 1 and Chapter 3.

63 Further information available at: https://joinup.ec.europa.eu/collection/digital-response-covid-19

64 Further information available at: https://ec.europa.eu/isa2/isa2_en

65 Further information available at: https://www.alchemer.com/

Step 3 - Case studies

In order to gather further insights on good practices and enrich our analysis, a case study approach was taken to analyse successful implementations of digital solutions to avoid the disruption of public services. Among the solutions that were submitted in the survey and those that were found via desk research, a total of three case studies were selected according to the following selection criteria:

- Geography – the selected case studies should exhibit geographical balance in terms of countries covered.
- Level of digitalisation – the selected case studies should exhibit variance in the level of digitalisation of the public administrations in the EU. The eGovernment Benchmark 2020[66] was used to determine a country's level of digitalisation.
- Public service – the selected case studies should be linked to one of the public services chosen by the survey respondents for which the development of digital solutions is most relevant (see Figure 3). Thus, solutions linked to public services in education and economic affairs were selected as both sectors were cited by 69% and 50% of survey respondents respectively as being the most important. A third case study providing insights on the general access to public services was also selected in order to provide an overview of the solutions that were applicable across different sectors to help avoid the disruption of public services in the COVID-19 crisis.

Semi-structured interviews with the owners of the following selected solutions were conducted between the 20 November and the 11 December 2020:

- Acelera PYME, developed by the Spanish Ministry of Economic Affairs and Digital Transformation;
- Eduthek, developed by the Austrian Ministry of Education;
- ePass (e-Propusnica), developed by the Croatian State Office for the Development of the Digital Society.

The outcome of this step is detailed in Chapter 2.

66 European Commission, 2020. *eGovernment Benchmark* 2020.

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ISA² is a EUR 131 million programme of the European Commission which develops digital solutions that enable interoperable cross-border and cross-sector public services, for the benefit of public administrations, businesses and citizens across the EU.
ISA² supports a wide range of activities and solutions, among which is the National Interoperability Framework Observatory (NIFO) action.
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