
# e-Government in Bulgaria:

## The journey to 2020 and the future ahead

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# Acknowledgments

The present report was led by Davide Zucchini (Senior Public Sector Specialist, EECG2), and drafted by a core team of principal authors consisting of Anya Vodopyanov (Public Sector Specialist-ETC, EECG2), Zamira Dzhusupova (Consultant, ECCG2), Chris Velichkov Flipov (Manager, ECCG2), Ivelina Todorova Taushanova (Senior External Affairs Officer, ECAEC), and Dillyana Doichinova (Consultant). Roby Senderowitsch (Practice Manager, EECG2) and Fabrizio Zarcone (Country Manager, ECCBG) provided valuable overall guidance. Adela Delcheva (Operations Assistant, ECCBG) and Virginia Yates (Program Assistant, ECCG2) provided operational excellent assistance from Bulgaria and Washington D.C. A special debt of gratitude is due to peer reviewers for commenting on the early concept and multiple drafts of the report: Cem Dener (Lead Governance Specialist, EPSPF), Desislava Nikolova (Senior Economist, EECM2), David Santos Ruano (Senior Public Sector Specialist, ELCG2), and Khuram Farooq (Senior Financial Management Specialist, EPSPF). Finally, the fieldwork and its many adaptations in light of the COVID-19 pandemic would not have been possible without the leadership and support throughout from the Bulgarian authorities, particularly the State E-Government Agency (SEGA), as well as the numerous ministry, agency, and municipal authorities who agreed to participate in the study. The World Bank team would like to extend particular thanks to SEGA Deputy Chairman Mr. Simonski and Ms. Gergana Koleshanska for their guidance, detailed technical discussions, valuable quantitative administrative data, and support with outreach to the many institutional stakeholders interviewed and surveyed for the study.

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## List of acronyms

| | |
|---|---|
| **AI** | Artificial Intelligence |
| **AIBEST** | Association for Innovation, Business Excel lence, Services and Technology |
| **API** | Application Programming Interface |
| **ASA** | Adaptive Security Appliance |
| **BNIF** | Bulgarian National Interoperability Framework Draft |
| **BPR** | Business-Process Re-Engineering |
| **CAPI** | Computer Assisted Personal Interviewing |
| **CATI** | Computer Assisted Telephone Interviewing |
| **CERT** | National Computer Security Incidents Response Team |
| **COM** | Council of Ministers |
| **CPV** | Common Procurement Vocabulary |
| **DDoS** | Distributed Denial-Of-Service |
| **DGRA** | Digital Government Readiness Assessment |
| **DRC** | Disaster Recovery Center |
| **DSS** | Data Security Standard |
| **EBA** | Uniform Budget Classification |
| **EESM** | Unified Electronic Communications Network |
| **eIDAS** | Electronic Identification, Authentication and Trust Services |
| **EU** | European Union |
| **GIS** | Geographic Information System |
| **HRMIS** | Human Resources Management Information System |
| **IaaS** | Infrastructure as a Service |
| **ID** | Identity |
| **IFMIS** | Integrated Financial Management Information System |
| **ICT** | Information and Communications Technology |
| **IoT** | Internet of Things |
| **KPIs** | Key Performance Indicators |
| **MIS** | Management Information System |
| **MTICT** | Ministry of Transport, Information, and Communications Technology |
| **NACID** | National Center for Information and Documentation |
| **NRA** | National Revenue Agency |
| **OPGG** | Operational Program “Good Governance” |
| **PIC** | Personal Identification Code |
| **PIN** | Personal Identification Number |
| **POS** | Point of Sale |
| **QES** | Qualified Electronic Signature |
| **RegiX** | Registry Information Exchange System () |
| **SaaS** | Software as a Service |
| **SEGA** | State Agency for E-Governance |
| **SOE** | State Owned Enterprise |
| **UECN** | Single Electronic Communication Network |

# Executive Summary

**In the last two decades, Bulgaria has come a long way in building a modern, digitally-enabled government** – a government that effectively reaps new digital technologies to improve the efficiency of its internal functions and to deliver better services for citizens and businesses. The transformation was first set in motion in the early 2000s and accelerated after Bulgaria's accession to the European Union (EU) in 2007 and passage of an ambitious 2014-2020 e-Government Strategy and related reforms.

**The 2014-2020 e-Government Strategy ushered in a solid new policy and legal framework and increased focus on e-Government investment, although implementation remains uneven.** The Strategy harmonized relevant laws and regulations and, critically, created in 2016 the State e-Government Agency (SEGA) as a central body overseeing all aspects of e-Government policy, technical standards, resource allocation, and coordination. Despite significant progress, especially given the country's low starting base, evidence from existing partial benchmarking exercises suggests that many challenges remain at the implementation level and that these cut across both back-office functions and public service delivery. The challenge appears is not only on the supply side but also on the demand side (and the two may be related), as the Bulgarian public appears to use e-government tools at much lower rates than citizens of other EU countries.

**In 2019, the Government of Bulgaria launched a review of its 2014-2020 e-Government Strategy, to understand the current status of reforms and identify critical gaps.** Given the complexity of the task and the need for a credible independent perspective, the Government requested the World Bank's support with the stocktaking, to include the collection of rigorous baseline measures of the status quo on various dimensions. The gap analysis is expected to be used to help the Government prioritize interventions and guide its e-Government strategy for the next phase.

**The present report comes in response to the Government's request and presents the results of the World Bank's detailed diagnostic of Bulgaria's current e-Government readiness.** The diagnostic consists of a gap analysis, based on the World Bank's Digital Government Readiness Assessment (DGRA) tool. It covers a maximally broad range of issues related to digital readiness and its main purpose is identifying key areas of weakness, not an in-depth analysis of specific gaps. That said, the diagnostic goes beyond the basic DGRA with more detail, including additional original quantitative and qualitative data from interviews and surveys, on some critical areas.

**The findings of the assessment show good progress in several areas such as the establishment of a solid legal framework and the roll-out of several digital services, but also gaps in other aspects.** Gaps include electronic services not being fully automated, limited prioritization of investments, and key government systems not fully integrated. Key findings can be grouped into four categories: institutional arrangements and legal framework; performance of the Bulgaria e-Government Agency (SEGA); implementation of electronic services in Ministries and Municipalities; and user-centric services.

**Bulgaria's spending in e-Government is much less compared with other OECD countries and its quality also present challenges.** The government's investments in e-Government are not increasing at the same page as other OECD and EU member states and the country is not catching up with more advanced economies. In addition, the quality of spending is hard to assess since budget allocations for e-Government are not tied to specific KPIs either at the agency or program levels. Government institutions are required to report on their e-Government expenditures but not the outputs and outcomes, or what they achieved with those resources. The lack of a proper KPIs system and granular expenditure data evidences that many investment decisions are taken with very limited information about expected economic and social returns.

**Institutional arrangements are mostly adequate, although the institutional role of SEGA could be strengthened.** In the last few years, Bulgaria has transitioned from a decentralized to a more centralized model of governance in the digital government field, with SEGA as the central coordinating body. That being said, SEGA's institutional standing and position could be raised to enable it to drive the reform process more smoothly and to overcome resistance.

**Bulgaria's e-Government legal framework is well developed and in line with EU directives, but the challenge is in implementation.** Bulgaria has adopted, or is in the process of implementing, all European Union directives, regulations on protection of personal data, the framework for electronic signatures, and the EU Directive on electronic commerce, among others.

**The role of the State Agency for E-Governance (SEGA) is one of the main strengths of the e-Government system but there are still challenges in those areas where the partnership with other stakeholders is needed.** SEGA enforces the common principles and requirements for e-Government projects approved by the government, has designed an e-Government Architecture and Interoperability framework, establishes rules for public registries and created a unified model for e-Services that is mandatory for all central and local government administrations. Against these strengths, the assessment has identified areas where SEGA should strengthen its role. One of these areas is the simplification and seamless delivery of services. Currently, to find specific e-services, users have to go through all available services, and they are often being redirected to the ministry/agency website to apply for the service online. In addition, several e-services still require downloading and filling in applications before sending them to the respective administrative bodies through the eDelivery system. The latest trends in digital government development show that e-service satisfaction levels decrease when users need to hunt through various e-services, need to read long texts with a service description, and follow detailed instructions on how to use or apply for services online.

**While there is undeniable progress in how many ICT solutions were upgraded over time, ineffective automation of internal business processes and legacy information systems in some government institutions remain problematic.** The assessment found that not all business processes have been re-engineered before the introduction of new ICT solutions and the integration with other information systems to ensure seamless service delivery often does not allow for sharing of data and/or efficient delivery of e-services. This is even more evident in many local institutions and municipalities that are struggling with insufficient internet bandwidth and the low speed of the government communication network due to last-mile connectivity problems.

**The report analyzed several key strategic recommendations that, if implemented, could significantly improve the performance of the Bulgarian e-Government system.** These recommendations could constitute some of the elements included in a revised e-Government vision that goes beyond the current strategy. The evidence included in this report suggests that this "forward-looking vision" should be thoroughly discussed with all sectors of Bulgaria, including the private sector and organized groups of citizens.

**First, the government could revise its current ICT governance model. The current model allowed Bulgaria to catch up, but it seems to be insufficient to tackle new challenges.** In particular, the new model should help improve the efficiency of public institutions through stronger collaboration among central and local government bodies, renew focus on eliminating duplicated efforts, and support a faster rollout of information systems and applications for government e-services. Central and local government entities should be provided with hands-on support to streamline inefficient or hard-to-automate processes and data flows across government, as a necessary step before considering any new investment in information systems.

**Second, the Government should consider procuring and maintaining common Management Information Systems in a centralized way to improve the efficiency of government institutions and to reduce costs.** Evidence from the interviews suggests that SEGA only plays a role in ensuring that technical specifications and standards are met when an agency procures a new system. While a fully centralized model is not desirable, the government should strengthen its ability to provide integrated service delivery for commonly used systems through cloud computing services and other emerging technologies.

**Third, the Government should establish a Data Governance Framework.** As more data is generated and used as more electronic services are deployed, the framework should establish the methods, responsibilities, and key business processes and information flows to standardize, integrate, and protect data. A Data Government Framework could also contribute to better sharing and use of data across the government and drive improved and targeted services for citizens and businesses. Better use of analytics would increase the efficiency of service delivery and lead to increased satisfaction.

**Fourth, the government should explore change management methods and incentives to foster the adoption of electronic services.** Ministries, agencies, and municipalities rarely invest in change management practice specifically aimed at adopting a corporate and service-oriented organizational culture. They are generally not guided by central government agencies, such as the Institute of Public Administration and SEGA, in change management practices. The emergency created by COVID 19 "nudged" public institutions to rapidly move in the direction of electronic services and citizens were generally rapidly adopting them. The government should carefully evaluate the results of this "experiment" and craft a strategy to increase the adoption of electronic services using behavioral science and incentives.

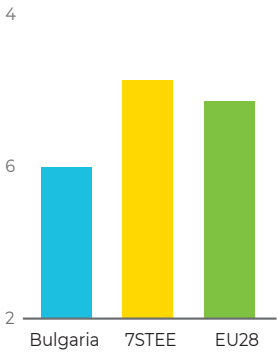
# Chapter 1
# Introduction and Methodology

## Motivation

**1. In the last three decades, Bulgaria has made considerable progress in modernizing and growing its economy.** Between 1997 and 2013 the country made significant strides in converging to EU income levels (from 29 to 45 percent of EU levels) and lifted 1.7 million Bulgarians out of poverty.[1] Today it is an upper-middle-income country and a member of the European Union. It has a highly educated population, relatively low poverty incidence, considerable macro stability, and low sovereign debt levels.

**2. Despite the progress, Bulgaria continues to face challenges.** The most important challenge relates to the low efficiency and effectiveness of the public administration, which undermines core government functions and citizen trust in the state. The efficiency of tax collection (Figure 1.1) and the quality of public services to citizens (Figure 1.2) and businesses (Figure 1.3) are low relative to EU and Seven Small Transition Economies of Europe (7STEE) comparators. Bulgaria spends less on public services than peers and delivers poorer quality than many EU peers. In 2016 Bulgarian businesses needed more than twice as long to start a business as in Italy and almost 7 times as long as in Estonia, and these gaps have remained unchanged in 2019. These are key constraints on Bulgaria's ability to achieve sustainable and inclusive growth.

**Figure 1.1 Income tax administration efficiency is low**

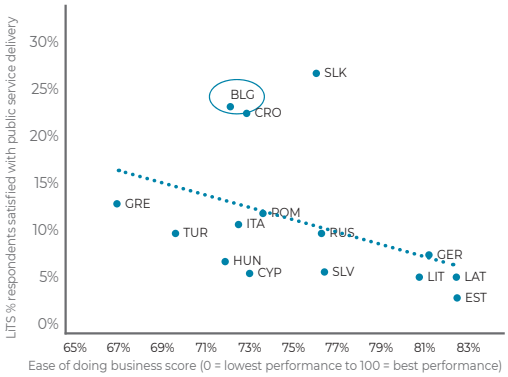



Source: IPD 2016

**Figure 1.2 Low citizen satisfaction with services in absolute terms and relative to spending**


Source: LiTS survey 2016, WDI 2016

**Figure 1.3 Services for firms are slow and burdensome**

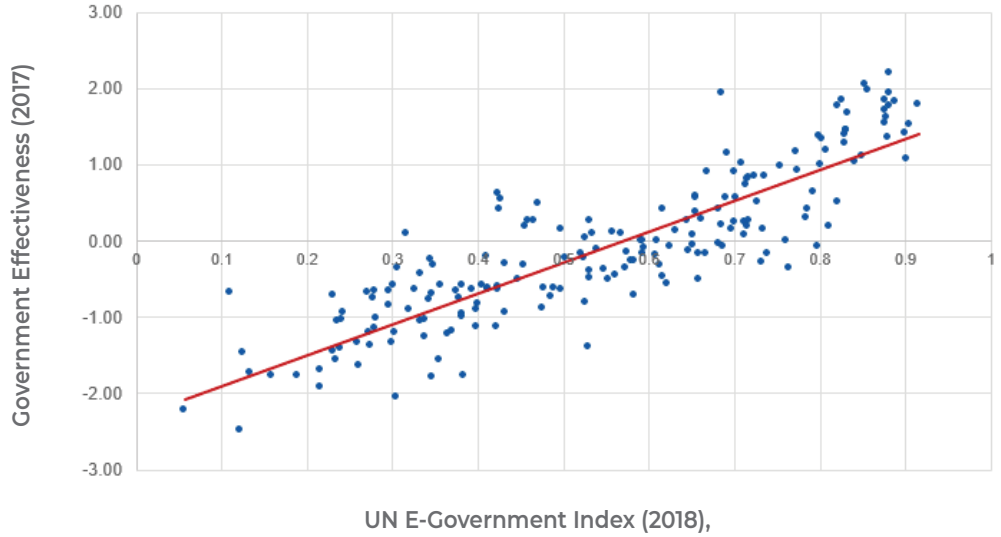



Source: WB Doing Business 2016

[1] World Bank 2015. Bulgaria Systematic Country Diagnostic.

**3. Evidence from around the world shows that investment in the digital government can significantly raise government effectiveness, a key prerequisite for a country's development and growth.** Digital government technology can dramatically improve the quality of public expenditures and government services to citizens and businesses, by increasing the efficiency, transparency, accountability, and client-orientation of internal government functions. It can also improve the quality of expenditures and help governments deliver better services, thereby raising the population's overall wellbeing and creating a more conducive environment for private investment and economic growth. Indeed, a recent World Bank study shows a strong correlation between the level of e-government development and overall government effectiveness (Figure 1.4).

**Figure 1.4 Correlation between e-Government Development and Government Effectiveness**




Sources: World Bank Governance Indicators (2017), UN E-Government Index (2018), World Bank 2019

# Evolution of e-Government reforms and planning for the next stage

**4. In the last two decades, the Government of Bulgaria has made the digital transformation of government a policy priority.** Despite being a leader in the electronics industry of the Eastern Bloc in the 1980s,[2] the Bulgarian public sector for years lagged international standards on the use of digital technologies and skills in the public administration and for service delivery. The transition was initially set in motion by the passage of the 2001 Law on Electronic Signature and the country's first e-Government Strategy in 2002, and the momentum gained pace after Bulgaria's accession to the European Union in added momentum. EU accession aided the adoption of EU directives on e-Government, critical legal foundations through the passage of the 2008 e-Government Act, and a much-needed central coordinating function in the form of a high-level Council for e-Government[3] albeit ad hoc at that time. It is also important to note that the same period saw the emergence of a complementary private sector ecosystem in the information-communications technology (ICT) sphere, which was highly competitive and innovative.[4]

[2] In the 1980s the electronics sector had more than 300,000 employees and produced almost 40 percent of the computers in the Eastern block.
[3] The Council was chaired by the Prime Minister and included the deputy prime ministers for Finance, Interior, and EU Funds Absorption.
[4] Between 2006 and 2016, the software business in Bulgaria grew from 139.4 million to over one billion euros in revenues.

**5. The adoption of the 2014-2020 e-Government Strategy marked a new milestone.** A new Government elected in 2013 raised the bar for reform and the Council for e-Government set a deadline to have a fully functioning e-Government by 2020. In this context, the 2014-2020 e-Government Strategy was passed. It ushered in a solid new policy and legal framework, harmonizing previous laws and regulations related to government ICT systems, functions, and operations. It aided the creation in 2016 of the State e-Government Agency (SEGA) as a permanent central body coordinating all aspects of e-Government for the whole of government in Bulgaria, including policy, technical standards, resource allocation, and oversight aspects. It increased focus on administrative simplification and the provision of electronic services, as well as strengthening of enabling back-office functions. It also enabled significant upgrades to the legal and regulatory framework for ICT and e-Government during 2016-2019, including on electronic communication, e-identification, e-signatures, e-certification, e-document exchange, spatial data, and cybersecurity. Overhauled in the process were also the rules governing various registers, including the Commercial Register, Property Register,[5] Register of Non-Profit Entities, the National Archive, and the Cadaster.[6] Overall, the e-Governance reforms implemented since 2016 promote convergence with EU peers.

**6. Several internal and external pressures helped boost the e-Government reform agenda.** These included consistent indirect pressure from the EC to catch up to EU standards, a 2019 cyberattack causing a large scale leak of personal data from the National Revenue Agency, and growing public frustration with the quality of public services and reports showing Bulgaria substantially trailing behind other EU member states.[7] The pressures prompted the Government to announce sweeping administrative reforms. Changes introduced in 2018 included elevating the e-Government portfolio by putting a Deputy Prime Minister in charge, reducing the administrative procedures and documents for public services, and fielding a survey on the level of e-service provision by different institutions. The survey showed wide disparities and spurred remedial efforts.

**7. Despite notable achievements, existing evidence suggests that implementation still remains highly uneven.** Many processes that are nominally digitized still require physical forms and visits: by some estimates, the existing 354 electronic government services require almost 6,000 different supporting paper documents. Wide gaps remain in the level of implementation between government agencies and between central and local governments, with the latter lagging substantially. Overall, despite significant achievements, Bulgaria ranks among the lowest performers on EU's 2019 E-Government Benchmark index and is in the last place on EU's 2019 Digital Economy and Society Index due to the low levels of digitalization and penetration of digital technologies in the government. Evidence also suggests that Bulgaria has significantly lower rates of citizen online interaction with authorities compared to other EU countries.

**8. In 2019, the Government of Bulgaria launched a review of its 2014-2020 e-Government Strategy, to understand the current status of reforms and identify critical gaps.** Given the complexity of the task and the need for a credible independent perspective, the Government requested the World Bank's support with the stocktaking, to include a collection of rigorous baseline measures of the status quo on various dimensions. The gap analysis is expected to be used to help the Government prioritize interventions and guide its e-Government strategy for the next phase.

[5] Some of the functionalities of the Property Register are not enabled due to a legal issue associated with the recording regime for real estate ownership.

[6] Ordinance on the General Requirements for Information and Communication Technology Systems, Registers and Electronic Administrative Services; Ordinance on Exchange of Documents within the Administration; Ordinance on Certification of Electronic Signatures within the Administration; Ordinance on Administrative Registers; Rules on Implementing the Law on Electronic Identification; Ordinance on Activities of the Providers of Certification Services; Ordinance on Minimal Requirements for Information and Network Security adopted pursuant to the provisions of Art. 3 (2) of the Law on Cybersecurity; and Ordinance on the Scope and Methodology for Conducting Impact Assessments, all adopted with Resolution No. 3 of the Council of Ministers dated January 9, 2017.

[7] A report by the Bulgarian Industrial Association showed that in 2016 only 19 percent of Bulgarians obtain online resources or services from the government compared to 77 percent in Estonia.

# Methodology

**9. This report responds to the Government's request by taking a broad stocktaking of the current overall state of e-Government Development – or Digital Government Readiness – in Bulgaria.** The stocktaking is expected to provide a baseline analysis of Bulgaria's Digital Government Readiness, to compare to international good practice, and against which to measure future progress. Its ultimate goal is to flag key strengths and weaknesses, identify areas for further diagnosis, and provide initial guidance for policy makers crafting Bulgaria's next e-Government Strategy. The diagnostic is designed to cover a maximally broad range of issues related to digital readiness and flag gaps that merit the Government's attention and further investigation. The diagnostic is not a prioritization exercise, which should be led by the Bulgarian Government, but it is expected that it can serve as a foundation and guide for such an exercise.

**10. For the purposes of this report, the term electronic government (e-Government) and Digital Government are used interchangeably to refer to both back-office functions and user-facing services.** Globally a multitude of terms are used to refer to the use of information and communication technology (ICT) in government. This report uses the terms e-Government and Digital Government to align most closely with the Bulgarian Government's preferred vocabulary. They are used here to refer to all ICT processes, functions, and resources supporting the internal functioning of the Government as well as the provision of public services to external users, including citizens and businesses.

**11. The diagnostic is based on the World Bank's Digital Government Readiness Assessment (DGRA) tool.** The tool is based on a tested methodology and consists of 9 modules assessing several key dimensions of e-Government including the supporting institutional and governance arrangements, legislation, technology infrastructure, data infrastructure, digital skills, business processes, and user-centricity of e-services design (Box 1.1). It was developed by the World Bank to assess the state of a country's digital reform and identify areas of weakness relative to international good practice. Although the present diagnostic is not the first e-Government benchmarking for Bulgaria, it is the first that looks not only at user access and experience but also the critical back-office systems and underlying institutional and legal foundations, which are at least as important.

### Box 1.1 Digital Government Assessment Toolkit – 9 Modules

**1. Leadership and governance.** This aspect looks at the existence of strategies, blueprints, and roadmaps to the development of GovTech. It also reviews the institutional architecture, governance aspects and organization dimension of how all the institutions involved in digital transformation operate and share responsibilities. It not only looks at the form (formal set of rules) but also at the "function" (who is actually carrying out a specific function or responsibility).

**2. User-Centered Design.** This section systematically looks at the degree to which services were designed or co-designed with the participation of users and how feedback loops are used to continuously improve electronic services.

**3. Public Administration Reforms and Change Management.** This dimension analyzes broader public administration reforms that might be considered an enabler of digital transformation processes. Traditional e-Government/GovTech assessments tend to focus on technical elements of the reforms process, and specifically to the technological side of the developmental process.

**4. Capabilities, Culture, and Skills.** This aspect of the assessment takes stock of the existence of well-trained staff, IT capability in the public sector but also how well the private sector can support the GovTech agenda with niche expertise and cutting-edge training.

**5. Technology Infrastructure.** This dimension reviews the development of the technology infrastructure that supports both back-office functions and the provision of electronic services to citizens and businesses. It ranges from the status of the Government Enterprise Architecture, Interoperability Framework, the use of Cloud Services, APIs, etc.

**6. Data Infrastructure, Strategies, and Governance.** A core element of every sustainable and scalable strategy to develop electronic services is the use of data. This dimension specifically examines the government data, what are the policies, standards and protocols to access it and exchange sensitive, and non-sensitive information across different government institutions.

**7. Cyber Security, Privacy, and Resilience.** One of the main concerns in Bulgaria, given the recent unfortunate history of security breaches to the revenue agency, is cybersecurity. The assessment carefully reviews the government policies, the governance framework and key practices to ensure the integrity, and security in government digital processes.

**8. Legislation and Regulation.** This dimension reviews the legal framework and regulations related to the development of the provision of digital services to citizens and businesses. Under this area, the team will also look at the EU legislation that might be in the process of being adopted or has been recently implemented by Bulgaria.

**9. Digital Ecosystem.** The assessment expands the analysis to broader elements that might the conducive and enable faster implementation of electronic services. These elements constitute the larger digital ecosystem and include the existence of dedicated intuitions for R&D, entrepreneurship programs, investment institutions, universities with specialized centers.

**12. The present diagnostic covers all modules of the DGRA but arranges the findings around explicit or implicit stakeholder groups.** While the standard DGRA modules are arranged by technical theme, the present diagnostic drills deeper on the themes and arranges findings by explicit or implicit stakeholder group, including the Government and highest decision-makers setting the institutional arrangements and high-level policies, the specialized center of government institutions coordinating and overseeing the e-Government agenda, the implementing institutions (line ministries, agencies, municipalities), the staff in ICT units in government institutions, and the users – Bulgarian citizens. The report is organized around these themes and implicit audience.

**13. Furthermore, to account for Bulgaria's relatively advanced state of reform relative to most countries where the World Bank works, and to tailor to its specific needs, the report significantly extends the instrument for a deeper dive in several critical areas.** In addition to the standard set of expert interviews and field visits, which in most DGRAs focus on central coordinating authorities and a small sample of implementing units, it incorporates specialized thematic "deep dives" based on unique quantitative and qualitative data gathered through interviews and specially developed surveys. The three "deep dives" focus on (i) e-Government implementation challenges, from the perspective of both center of government and implementing institutions, (ii) constraints in the number, skills, and motivation of qualified ICT staff in the public, using unique data from the perspectives of center-of-government institutions, ICT managers in budget units, and ICT staff themselves, and (iii) citizen experience and preferences with regard to public e-services.

**14. Overall, the diagnostic's seven complementary assessments and sources include:**

1. Institutional review (using desk-based research and interviews);
2. Legal review (using desk-based research and interviews);

3. Central e-Government coordination and policy functions, role Bulgaria's State e-Government Agency (using face to face expert interviews, administrative quantitative data);
4. Central public administration reform (PAR) coordination and e-Government linkages, the role of Council of Ministers (using an interview with CoM);
5. E-Government implementation aspects from the perspective of implementing units, using a survey of a broad sample of ministries, agencies, municipalities (using a specially designed quantitative online survey, 37 respondents from 37 institutions);
6. Human resources for ICT and related challenges in implementing institutions (using a specially designed quantitative online survey, 52 respondents from 25 institutions);
7. Citizen use and attitudes towards e-government services and resources (using a specially designed quantitative online survey of 653 citizens, sample representative of Bulgaria's online users).

15. **The quantitative surveys were an innovation of the present study.** To the authors' best knowledge, they have not been used as part of DGRA exercises in other countries but could be potentially used as a model. They permitted the collection of much more detailed information from a much broader set of institutional actors and stakeholders than would have been possible from expert assessments alone as envisioned by the standard DGRA. The final product combines in-depth qualitative data with a rich set of quantitative diagnostics. The quantitative surveys were implemented online during March-May 2020 in partnership with the Bulgarian survey firm ESTAT, which also implemented the programming of questionnaires and sampling approach for the large-scale citizen survey. Although all the interviews and surveys were initially designed to be conducted face-to-face or over the telephone, using Computer Assisted Personal Interviewing (CAPI) and Computer Assisted Telephone Interviewing (CATI) tools respectively, with the rapid spread of COVID-19 after mid-March significant adjustments to the fieldwork plan were required and all data collection was moved online.

# Chapter 2
# Institutional Arrangements

## Key institutional actors in Bulgaria's e-Governance landscape

**16. Since the establishment of the State E-Government Agency (SEGA) in 2016, Bulgaria has begun to transition from a decentralized to a more centralized model of institutional governance in the e-Gov area.** Before 2016 Bulgaria had a mostly decentralized institutional system of e-Governance, with individual ministries, agencies, and municipalities setting their own ICT development priorities and standards, and funding ICT investments and recurring costs from their overall budgets without specific accounting and central reporting. The Electronic Government Directorate of the Ministry of Transport, Information and Communications Technologies (MTICT) and the Executive Agency "Electronic Communication Networks and Information Systems" under the MTICT provided general guidance but were not empowered to shape e-Government policy or coordinated implementation. SEGA was established in the summer of 2016 through amendments to Law on Electronic Government (LEG), by merging the two MTICT bodies. Meanwhile, the ICT Directorate of the MTICT coordinates all activities related to the free flow of data, data economy, and information society, and a permanent working group under the Council for Administrative Reform[8] and recently created E-Government Council[9] coordinate policy implementation and alignment of sectoral e-government strategies.

**17. Several additional bodies support SEGA in its central coordinating function.** One is the ICT Directorate of MTICT, which coordinates all activities related to the free flow of data, data economy, and information society. Second, the E-Governance Council and a permanent (ad hoc) working group under the Council for Administrative Reform composed of ministers and high-level decision-makers chaired by the Deputy Prime Minister, both coordinate policy implementation and alignment of sectoral e-government strategies. Finally, the state-owned ICT company "Information Services" is a frequent contractor for installation or maintenance of government ICT systems, so it plays an important role in the implementation of the e-Government strategy.

**18. Information and Communications Technology (ICT) directorates and units in government ministries, agencies, and municipalities implement SEGA's directives and report to SEGA.** By law, they are required to follow SEGA guidelines on technical standards and to implement departmental e-Government projects falling within their respective areas of competence. SEGA is granted broad authority concerning monitoring the ICT expenditures and ICT-related projects of public authorities and oversees the maintenance of the horizontal ICT systems used by public institutions. The agency is also tasked with verifying the compliance of the ICT systems of individual government budget units with interoperability and other requirements.

[8] CAR is an ad hoc consultative body, composed of ministers and high-level decision-makers, chaired by the Deputy Prime Minister.
[9] Established in 2017

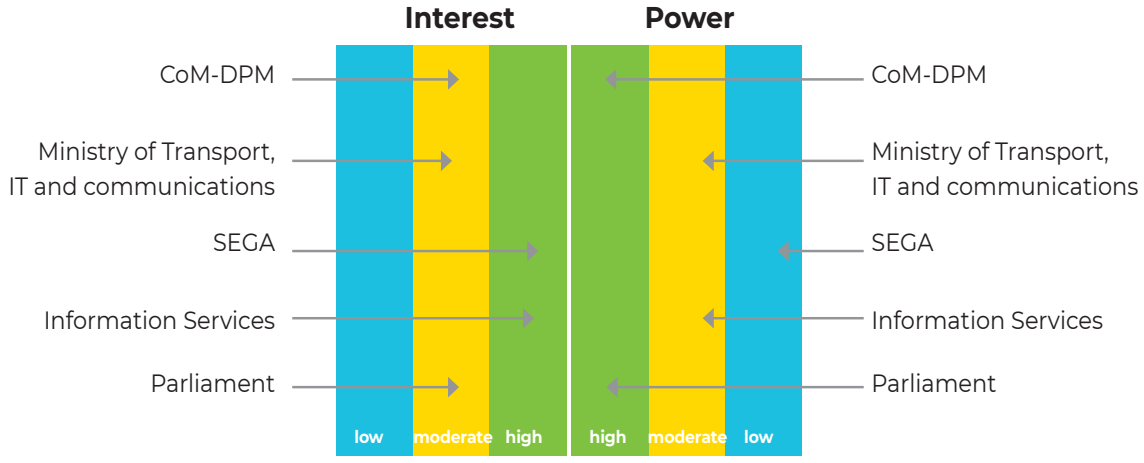
**19. Although in a short few years SEGA has done much to centralize policy, standards, and oversight, the process is still ongoing as old entrenched ways take time to change.** A report published by a Parliamentary Committee in February 2020 concluded that government ICT systems, which were designed separately as standalone projects by individual institutions, are still disjointed. It argued that this creates weaknesses and vulnerabilities and that the solution is comprehensive measures to build an integrated architecture and corresponding change in the attitudes and change management in all the administrative authorities.[10]

# Stakeholders' leverage and interest in reform

**20. Global experience shows that the number, type, and leverage of institutional actors matters for the feasibility and sustainability of reforms in any policy area, including e-Government.** A stakeholder or influence mapping is an effective first step in understanding the degree to which reform champions are sufficiently strong to lead difficult longer-term reforms.

**21. A rapid stakeholder mapping of e-Government sector in Bulgaria shows that the institutional players have different degrees of interest and power over this agenda, with no institution demonstrating simultaneously high interest and high power.** Two institutions with a strong interest in the reform are the State Agency for E-Government (SEGA) and the state-owned ICT company "Information Services" (Figure 2.1). However, they lack high power. Furthermore, SEGA is not empowered enough to impose decisions or push for investments, while the power of "Information Services" is moderate mainly due to its skilled and talented IT staff, which gives them some leverage in implementation. The Ministry of Transport, IT and Communications occupies the moderate spectrum of power and interest grid, while COM and Deputy Prime Minister's Office (DPM) lacks high interest. The list of top 5 stakeholders does not include, for example the Ministry of Finance (MoF) as e-government agenda is not among its immediate priorities and given its fiscally conservative stance. Going forward, MoF could play an important role at least promoting the economic and fiscal benefits from investing in digital government development.

**Figure 2.1 Interest and leverage of institutions directly responsible for e-Government development**




Source: World Bank Staff

[10] The full report in Bulgarian is published here https://parliament.bg/pub/plenary_documents/953-83 1_Doklad_za_deynostta_na_VAK_izyasnyavane_fakti_i_obstoyatelstva_okolo_iztochvane_informatsiya_ot_elektronnata_baza_danni_na_NAP_s_PR.pdf

**22. Beyond the core five stakeholders, the overall number of institutional actors with an interest in e-Government field is high, but until now many have lacked the power to move forward the agenda.** The various institutional stakeholders include line Ministries, 265 local governments, and the President's office, while non-governmental stakeholders include the private sector, trade unions, and international partners.

**23. The good news is that the balance can shift over time as institutional interests and power dynamics change, as already seen in light of the COVID crisis.** The outbreak of COVID-19 at the beginning of March 2020 followed by emergency lockdown has created new pressures from both institutions and citizens to deepen and speed up e-Government reforms to ensure business continuity and uninterrupted provision of public services. This has prompted several institutional actors that had formerly considered the e-Government issue a low policy priority to express stronger interest in reform to ensure resilience against future crisis-related disruptions. One stark example is the Ministry of Education's rapid mobilization of e-technologies to ensure the continuity of public schooling (Box 2.1). Another is a renewed interest by the Ministry of Health (MoH) to invest in the National Health ICT system, despite years of slow progress previously. In response to an offer by the association of 583 Bulgarian ICT companies (AIBEST[11]) to give 15,000 man-hours of pro bono work to government institutions, MoH signed an MoU with AIBEST for the development of the needed Health ICT modules, including an e-Health dossier, and an e-Prescription and medicine registry. These types of examples show that a shock like COVID may have had a silver lining. It injected visible urgency to some aspects of digital government reforms, broadened the reform coalition, and boosted existing champions like SEGA.

### Box 2.1 A silver lining: E-Learning in light of COVID-19

The education sector was the first to mobilize in light of COVID-19. Within 4 days of the nationwide lockdown, schools introduced distance learning, covering large cities, rural areas, and vulnerable groups.

One Roma NGO conducted a survey in the first days of the lockdown to assess the enrollment of students in 200 schools that teach children from vulnerable groups and schools that work with children whose parents have relatively high education and social status. The results of the survey showed:

- The share of students enrolled in distant learning was promisingly high. Over 36 percent of the schools surveyed were able to reach between 75 percent and 100 percent of their students in various forms of distance learning during the first 3 days.
- The percentage of schools with low students' participation in the first days was 6.6 percent.
- Two-thirds of schools combine internet-based techniques (from assigning tasks via Skype, Messenger, etc. or e-lessons through platforms like zoom) with distributing printed assignments and lessons by school mediators. The remaining one-third (32 percent) of schools use only internet-based techniques.

Among the identified obstacles are lack of appropriate devices – in only 22.34 percent of schools over 90 percent of students have appropriate devices. In 11.68 percent of schools, over 75 percent of students do not have the devices to participate in online learning. In two-thirds of schools, students without devices that allow effective participation is between 10 percent and 75percent. The Ministry of Education and Science should rethink the opinion that almost all Bulgarian students have appropriate tablets, computers, or smartphones.

Source: http://www.amalipe.com/index.php?nav=news&id=3690&lang=2

[11] Association for Innovation, Business Excellence, Services and Technology

**24. Although the COVID-related lockdown generated new momentum, sustaining the reform drive over the medium term will require strong institutional foundations and champions, and a solid evidence base.** Global experience shows that economic and social shocks often bring an impetus for change but the momentum can grind to a halt once the immediate crisis passes. In Bulgaria's case, the momentum is unlikely to fizzle, but it could go back to the slower pre-COVID pace and bottlenecks unless the Government finds a way to rebalance the interests and power of key institutional actors in Figure 2.1 and brings into the coalition powerful ministries such as Ministry of Finance. To be sustainable in the medium and long term, the reform agenda needs institutional champions with both sufficient interest and power.

# Examples of institutional models from EU and OECD

**25. There is no one size fits all institutional model – all come with their own features, and different features work better in different contexts.** Bulgaria's institutional model is uniquely shaped by its historical and political context but, as its own experience and the experience of other countries has demonstrated, institutions are not static. They are constantly evolving and adapting to new needs, and Bulgaria's shift from a decentralized towards a more centralized model of e-Governance is a good example. The experience of countries with advanced digital governance practices could be instructive for the Bulgarian Government as it plans the next medium-term e-Government reform agenda. The paragraphs below present the experiences of Denmark, the UK, South Korea, Singapore, and New Zealand.

**26. Denmark.** Denmark, which tops the latest UN's e-Government Index (2018) as the country with the most developed digital government sector, has a coordinated governance framework for digital government development. The Agency for Digitization under the Ministry of Finance is driving public sector digital transformation while the Agency for Governmental IT Services provides IT services and support to government institutions. Both agencies work closely with the National Center for Public Sector Innovation under the Ministry of Finance, which leads innovation across the public sector in partnership with private sector companies, citizens, and academia. The Danish Council for ICT is responsible for the oversight of the progress on digital government development and stakeholder engagement. Denmark's institutional model for e-Government transformation has been successful so far. The main ingredients of that success have been that (i) placing the digital government portfolio under a powerful ministry with a strong capacity to drive implementation, (ii) co-locating in the same ministry the broader public sector modernization and innovation portfolio, ensuring close alignment between the two agendas, (iii) close partnership with the private sector and proactive engagement of various stakeholders.

**27. The United Kingdom.** The UK, in fourth place on the latest UN e-Government Index, has a central e-governance model, with the Government Digital Service (GDS) performing the function of the central owner and driver of the reforms. Unlike Denmark's central coordinating body, GDS is not a ministry but a unit under the Cabinet, overseen by an inter-ministerial committee. GDS' core functions include setting and enforcing standards for digital technologies and user-centric services, enabling interoperability of public systems, sharing ICT resources, providing advice on emerging digital technologies, redesigning processes and change management, and overseeing overall progress on digital government development. It also provides and supports shared platforms and services along with common components and tools to all government institutions. Other players include the inter-ministerial group on Government Digital Technology that oversees the GDS's work and overall progress on public sector digital transformation; the Privacy and Consumer Advisory Group (PCAG) that supports the user-centric public services agenda; the inter-agency Technology and Digital Leaders Network (TDLN); and the Data Leaders Network for proper government data management, use, and sharing. Although the UK lacks a specialized e-Government ministry, its institutional model has been effective for at least two reasons: (i) it has significant power and leverage by virtue of being a unit of the Cabinet, and (ii) it has been noted for its innovation-fostering agility, by virtue of being an agile unit outside of the ministerial system. The GDS model has been adopted by several countries around the world, including the United States (United States Digital Service) and Canada (Canadian Digital Service).

**28. South Korea.** South Korea, in third place on the 2018 UN e-Government index, has a centralized model of e-Governance. The National Information Society Agency (NIA) drives digital transformation in the public sector and society, steering government-wide policies, providing technical guidance, and overseeing policy implementation, compliance with required standards, overall progress on digital government development. To ensure seamless delivery of public services and to improve government efficiency, the Agency develops and maintains information systems for inter-agency data exchange, and supports the management of information resources in the public sector. Additional key players include the Korea Internet & Security Agency (KISA), e-Government Bureau of the Ministry of the Interior and Safety (MOIS), and the Government Innovation and Organization Management Office (GIOMO). KISA supports NIA on information and cybersecurity and competitiveness of the internet and information security industry. GIOMO supports NIA on the development and oversight of privacy-related policies and personal information protection. Since GIOMO also has overall responsibility for government innovation, inter-agency collaboration, and administrative efficiency, it serves as a link between the digital government and broader public sector modernization reform agendas.

**29. Singapore.** Singapore is ranked seventh on the UN e-Government index and has a centralized governance framework for digital government development. The Government Technology Agency (GTA), the implementing agency of Smart Nation and Digital Government Office (SNDGO) under the Prime Minister's Office, serves as a Centre of Excellence for ICT and Smart Systems and leads public sector digital government development. Its functions include setting digital service standards for the whole public sector, providing guidance to units on planning and implementation, building shared platforms and solutions, and developing government capabilities in emerging technologies. It also regulates ICT procurement, regulates, and ensures data protection and security for the sector, oversees key government ICT infrastructure. Other key players involved in public sector digital transformation are Cyber Security Agency of Singapore (CSA) managed by the Ministry of Communications and Information, and Infocomm Media Development Authority (IMDA), a statutory board in the government, that develops and regulates the Infocomm and media sectors.

**30. New Zealand.** New Zealand falls in eighth place on the UN e-Government index and has a coordinated model of digital governance with core responsibilities distributed among several key institutions. The institutions include the Department of Internal Affairs (DIA), Stats NZ (the country's primary data and statistics agency), the Government Communications Security Bureau (GCSB), the Digital Council, and the Digital Government Partnership. The DIA is the institutional home of the Minister for Government Digital Services and the Government Chief Digital Officer, who set overall digital policy and standards and oversee the digital development and management of the public sector, including ICT investments, digital services, and assures digital government capabilities and outcomes. Stats NZ is the institutional home of the Government Chief Data Steward, who oversees the use of data resources across government for both back-office and service delivery purposes, and ensures that government agencies have the capability and right skills to maximize the value of data. The GCSB houses the Government Chief Information Security Officer and strengthens Government decision making and coordination around Information Security, identifies systemic risks and vulnerabilities, assigns roles, establishes minimum standards, supports agencies managing complex security challenges. The Digital Council advises the Government on how to maximize the societal benefits of digital and data-driven technologies, and services as a bridge between the government, industry, and communities. The Digital Government Partnership is a platform for engaging stakeholders from agencies across the government to support a coherent, all-of-government digital system.

**31. The examples of digitally advanced governments suggest that different institutional models can yield good results but there are some common factors of success.** One common success factor is the power and influence of the institution(s) leading the government's digital transformation. In all cases, the leading institution was at the cabinet-level – a ministry (Denmark, New Zealand) or a unit within the cabinet (UK, Singapore) – or an Agency under a powerful ministry such as Interior or Finance (for example, Denmark ). In other words, the *de jure* form the body – whether it is a ministry or outside the ministerial system – is less important than whether it *de facto* has a seat at the decision-making table. Given the complexity of reforms associated with governments' digital transformation, bodies leading the portfolio must have sufficient "weight" to rally important policy decisions and ensure implementation. The second ingredient of success is a

strong linkage of the digital government agenda to a broader public sector or public administration reforms (PAR). In some countries, this is baked into the institutional model, where the same ministry is in charge of both portfolios (e.g., Denmark). In other cases, the leading agency is not in charge of broader PAR issues but other key players supporting it do (e.g. South Korea). A third success factor is the existence of dedicated strategic foresight units that track fast-changing trends in digital innovation and data governance and help guide forward-looking investment (e.g. New Zealand, UK, Denmark). And the last but not least factor is the existence of dedicated units that focus on data-driven user-centric services and active engagement of citizens and businesses in the design of these solutions (e.g. Denmark, New Zealand).

# Recommendations

- **Raise the profile and power of institutions and inter-institutional coalitions leading the "whole-of-government" digital government transformation.** Evidence from OECD countries shows that effective digital government transformation can take place under centralized or decentralized governance arrangements and that what matters more is the influence of the responsible lead agencies and coalitions. Because of this, the Government of Bulgaria is will need to review institutional arrangements to ensure that SEGA, the agency designated to lead the whole-of-government digital government transformation, has sufficient leverage to enforce common standards and transition to new common systems and business processes at all levels of government, with corresponding power to reward or sanction non-compliance. This is particularly important given the country's history of an institutionally fragmented approach to digital government development. Furthermore, efforts are needed to strengthen the reform coalition by making the digital government agenda more relevant to powerful institutional players, such as the Ministry of Finance.

- **Strengthen linkages between the champions of e-Government and broader public sector modernization agendas.** The ultimate goal of digital government transformation is to improve efficiency as well as the effectiveness of the government in serving the public. As such, it is a core element of the broader public sector modernization (PSM) agenda, and alignment with that broader agenda through close institutional linkages has been important for the success of e-Government transformation in several OECD countries. In Bulgaria, the linkages between SEGA and the Council of Ministers, which is driving broader public sector modernization reforms, could be significantly strengthened. The end of the current reform strategy cycle ending in 2020 presents an opportunity to review and strengthen avenues for collaboration, including potentially through coordination on the respective e-Government and PSM strategies for the upcoming 2021-2030 reform period.

- **Establish central units dedicated to strategic foresight, e-service innovation, and data governance.** Given the rapid pace of innovation in the e-Government technology field, it is critical for the Bulgarian Government to stay abreast of the emerging trends. A strategic foresight unit would be responsible for tracking emerging e-Government trends and related business models and can help the Government guide investments in future-proof smart solutions, which are both more effective and cost-efficient. A unit dedicated to e-service delivery innovation can help SEGA keep track of the latest global trends, progress on implementation across the Bulgarian government, and citizen feedback and needs, which can be used to further improve the user-centric design of services. Finally, a central unit responsible for data governance is increasingly seen as good practice by EU and OECD governments, given the transformational importance of data for everything from basic internal government processes, to innovation, oversight, and decision-making. The unit can help push the frontier on standards and technical solutions, as well as monitor progress on implementation of national data governance policies and standards across the government.

# Chapter 3
# Policy and Legal Foundations

## Enabling legal framework for digital government development

**32. Bulgaria's policy framework meets adequate standards for advancing e-Government development.** Bulgaria's main policy document for digital government transformation is the Strategy on the Development of e-Government in the Republic of Bulgaria for the period 2014-2020 (henceforth 2014-2020 e-Government Strategy). Its core strategic objectives are (i) the digital transformation of the government and (ii) delivering cost-effective and easily accessible electronic administrative services for both citizens and business. It also has an implementation Roadmap which defines concrete actions, institutional roles, and financing sources.[12] Several other cross-cutting and sectoral documents and implementation plans are designed to complement the umbrella e-Government Strategy and Roadmap and cover the same period, including the Public Administration Development Strategy (2014-2020), Strategy for the Introduction of e-Government in the Justice Sector, and Strategy for the Development of e-Management of the National Customs.

**33. The E-Government Strategy entailed significant upgrades to the legal framework.** It accelerated the adoption of rules and procedures promoting the wider availability of e-services, upgrading public registers, the exchange of electronic documents, e-identification, the use of e-signatures, etc. Amendments adopted in the period 2016-2019 mandate the implementation of adopted e-government policies and upgrading regulations on spatial data, access to public information, electronic identification, exchange of electronic documents, electronic certification services, electronic communications, insurance, administrative procedures, and cybersecurity. Overhauled in the process were also the rules governing various registers, including the Commercial Register, Property Register[13], Register of Non-Profit Entities, the National Archive, and the Cadaster.[14]

**34. The State E-Government Agency (SEGA) was established in the summer of 2016 through amendments to Law on Electronic Government (LEG).**[15] Its legal mandate, defined in primary legislation,[16] is to develop

[12] Roadmap for the implementation of the Strategy for the development of electronic government in Bulgaria (2016—2020).

[13] Some of the functionalities of the Property Register are not enabled due to a legal issue associated with the recording regime for real estate ownership.

[14] Ordinance on the General Requirements for Information and Communication Technology Systems, Registers and Electronic Administrative Services; Ordinance on Exchange of Documents within the Administration; Ordinance on Certification of Electronic Signatures within the Administration; Ordinance on Administrative Registers; Rules on Implementing the Law on Electronic Identification; Ordinance on Activities of the Providers of Certification Services; Ordinance on Minimal Requirements for Information and Network Security adopted pursuant to the provisions of Art. 3 (2) of the Law on Cybersecurity; and Ordinance on the Scope and Methodology for Conducting Impact Assessments, all adopted with Resolution No. 3 of the Council of Ministers dated January 9, 2017.

[15] Law on Electronic Government, promulgated SG No. 46/12.06.2007, last amended SG No. 102/31.12.2019

[16] These are: Law on Electronic Governance, promulgated SG No. 46/12.06.2007, last amended SG No. 102/31.12.2019; the Law on Electronic Identification promulgated SG No. 38/20.05.2016, last amended SG No. 94/29.11.2019; the Law on Electronic Communication, promulgated SG No. 41/22.05.2007, last amended SG No. 28/24.03.2020; the Law on Cybersecurity, promulgated SG 94/13.11.2018.

policies, issue regulations and guidelines, coordinate strategic planning, review sector-related ICT projects and policies, and monitor ICT budgets of individual government institutions. Under this mandate, SEGA has developed secondary legislation on institutional roles and responsibilities of public authorities, the provision of e-certification services, electronic document exchange, digitalization, and interoperability of registers and cybersecurity.

**35. All government units are required to follow SEGA guidelines in implementing departmental e-Government projects falling within their respective areas of competence.** SEGA is granted broad authority for monitoring the ICT expenditures and ICT-related projects of the public authorities and is in charge of maintenance of the horizontal ICT systems across the government. The agency is also tasked with verifying compliance of individual institutions with its ICT systems technical and interoperability standards.

## Addressing fragmentation of ICT systems and interoperability

**36. Common procedures guide the reengineering of business processes within the government and the design of ICT systems that support them.** A methodology on business process reengineering describes the prerequisites, sequence of steps, methods, techniques, and expected results of the public service delivery processes.[17] The standardization of business processes is a critical prerequisite for the deployment of common ICT platforms and solutions and allows defining unique specifications for horizontal ICT systems based on supported business processes. The description and mapping of business processes are also used in designing electronic administrative services and quality management systems.

**37. Adopting an enterprise architecture for the whole of government and addressing interoperability are mandated by law.**[18] SEGA develops the common enterprise architecture document for the entire government and approves the enterprise architecture and interoperability policies developed by individual ministries and agencies.[19] SEGA has monitoring and control authority over ministries and agencies concerning implementing sectoral enterprise architecture,[20] performing ICT audits[21], and is authorized to shut down the ICT systems of the individual ministries and agencies in cases of violations.[22]

**38. The automatic exchange of data among government institutions is mandated by law.** The 2016 amendments of the Law on E-Government mandates that personal data and information on citizens,[23] stored in any of the registers maintained by different public authorities, are exchanged electronically between government institutions.[24] Numerous laws and regulations were amended to ensure compliance with the 'once-only' principle and eliminating the provisions requiring the re-certification of data and information that is already available in administrative registers and to mandate the electronic exchange of data and information within the government.

[17] Methodology for re-engineering business processes for public administrative services and implementation handbook, adopted with Decision of the Council of Ministers No. 578 of September 2013, applicable to both – the central and municipal government institutions.

[18] Tasked with developing the enterprise architecture document is the Chairman of SEGA, who is also tasked with approving sectoral policies on e-government and enterprise architecture developed by sectoral ministries. See: Art. 7c (1) 6 Law on Electronic Government. The Electronic Government Architecture for the whole of government was adopted with an Order of the Chairman of SEGA № DAEU-5040/11.04.2019. The full document published, certain sections restricted.

[19] An "Architectural Council", composed of decision-makers of ministries, agencies and key management staff of the SEGA and chaired by the Deputy Chairman of the SEGA, develops national e-government architecture and sectoral architectures and is tasked with monitoring their implementation.

[20] See: Art. 7c pt. 7, 11 Law on Electronic Government

[21] See: Art. 59a Law on Electronic Government

[22] See: Art. 59b and 60 Law on Electronic Government

[23] The Commission for Personal Data Protection is tasked with safeguarding the access and processing of personal data.

[24] See: 58a pt. 5, Law on Electronic Governance

# Regulations on sharing data and resources within the government

**39. E-Government reform actions implemented since 2016 promote convergence with EU peers.** Bulgaria's policies and legislation conform to all EC principles and recommendations for data interoperability,[25] inter-system interaction,[26] harmonization of legislation and regulations on interoperability[27] and organizational interoperability following high performance and efficiency indicators.[28] Policies on the collection, recording, storing, managing, sharing, using, and re-using of data are outlined in the updated E-Government Strategy 2019-2023. By law, SEGA is required to maintain *"a register of standards as a single centralized electronic database managed by an information system, containing technical standards and their applicability"*.[29]

**40. Government institutions can access data through a central component that ensures compliance with the interoperability and data exchange requirements defined by SEGA.** Data is also exchanged directly, on a peer-to-peer basis, through legacy solutions developed by the individual ministries or agencies. Data sharing agreements concluded among collaborating government institutions were abolished[30] and replaced by mandatory automated data sharing. Despite the mandatory "automated online data sharing," many government institutions adopted special data-sharing rules through internal regulation.

**41. Bulgaria does not have a separate data management strategy.** Rules and procedures on data standards, access and exchange of data, requirements on data integrity, data privacy, data quality, data security, etc. are addressed in different pieces of legislation.[31] Amendments to the Law for Protection of Personal Data of 2017 align national rules on processing and free movement of personal data with European standards.[32] Secondary legislation adopted in 2017 establishes a central register of general requirements for information systems, registers, and electronic administrative services.[33] SEGA also maintains a catalog of API standards and API design guidance.[34]

[25] semantic interoperability

[26] technological interoperability

[27] legal interoperability

[28] Updated e-Government Strategy (2019-2023) and updated roadmap for implementing the strategy, the Law on E-Governance and rules on its implementation, amendments to the Code of Administrative Procedure, the Law on Electronic Documents and Electronic Certification Services.

[29] See: Art. 47 (1) Law on Electronic Governance

[30] See: Art.4 (4), Law on Electronic Governance

[31] Law on Electronic Governance, the Code of Administrative Procedure, the Ordinance on the Common Requirements for Information Systems, Registers and e-Services; and the Ordinance on Minimum Information Security Requirements, as well as Ordinances of the Chairman of the SEGA that provide instructions and guidelines on these.

[32] The Law for Protection of Personal Data transposes Directive 95/46/EC; the Commission for Personal Data Protection, an independent supervisory authority, overseas implementation and compliance with the law.

[33] Ordinance on General Requirements for Information Systems of Registers and Electronic Administrative Services", adopted COM in 2017, effective as of August 2018

[34] In Bulgaria, the use of APIs in the public sector is not regulated and is not subject to European standards. Each software developer can build its own interface, for example SEGA developed APIs associated with its own proprietary systems: RegiX; the Open Data Portal, the Spatial Data Portal INSPIRE; the electronic authentication system; COM developed the API to the Administrative Register. Through the Developer Console of the Software Development Resources Portal (https://dev.egov.bg/PDev) software developers can access information (documentation, usage restrictions, support and web services) and test the services offered through APIs.

# Regulating digital service delivery

**42. New amendments to the Law on Public Procurement passed in 2016 introduced the concept of electronic public procurement.** The amendments define the phases of the e-Procurement process, including e-Notification, e-Tendering, e-Auctions and Dynamic Purchasing, and mandate that all procurement procedures and all communications exchanged in the process should happen over a centralized, web-based e-Procurement platform, currently under procurement.[35] And its completion is planned for the end of 2020.

**43. The formulation of sectoral policies and strategies is designed to be aligned with the legal framework.** Compliance with the requirements for interoperability at the national level is mandated by law, which spells out also the requirements for accessing and integration of horizontal ICT systems, interoperability, and cybersecurity, etc. Updates to the National Framework for Semantic Interoperability[36] are planned to address the unification of concepts, data, and processes presented through different laws and regulations.

**44. The cross-government data exchange and interoperability platform connects ministries and agencies.** By law, SEGA is mandated to provide reliable, secure and up-to-date communications for the needs of government[37] SEGA operates the Regix Interregional Exchange System Environment, which enables automatic access to the registers maintained by central and municipal bodies. The system provides certification and reference information for entered circumstances in the systems maintained by various government institutions through "system-system" mode and user interfaces.

**45. The Strategy for the Development of the Public Administration 2015-2020 calls for the introduction of shared services[38].** Shared Services were introduced on a pilot basis with World Bank support in the areas of human resource management, financial management, and property management.[39] The legal framework allows for the creation of service centers based on agreement among government institutions, for providing complex administrative services. Administrative laws and procedures were amended to resolve existing ambiguities in the normative framework and to enable organizational restructuring for shared service provision following best practice models.

# Regulating collaboration within and among government institutions

**46. The provision of internal electronic administrative services and the exchange of electronic documents among institutions are aligned with interoperability rules and standards.** The broader use of shared systems and infrastructure was enabled by upgrading requirements on the electronic exchange of documents between institutions and the authentication of the electronic identification of the sender and addressee.

[35] The development of the e-Procurement platform is funded under OPGG. The foundational modules of the platform have been completed and are operational since March 2019. The platform was used in over 200 procurement procedures since April 2020. Currently, remaining functionalities and modules are being implemented and completion scheduled for the end of 2020.

[36] The framework defines the model of semantic OS, an element of which is an element of the Interoperability Registers provisions of the Law on e-Government

[37] See: Art. 7c (1) 7 Law on E-Government

[38] Under the model, one administration provides administrative support services to other government institutions in areas such as ICT, finance management, human resources management and property management, procurement etc

[39] World Bank Shared Services Project implemented in collaboration with Directorate "Modernization of the Administration" of the Council of Ministers in the period May 2017 – August 2019. Funded under OPGG.

The amendments to the Law on Electronic Document and Electronic Signature of 2017[40] place electronic and handwritten signatures on equal footing and led to amending the Code of Administrative Procedure to equate the legal effect of electronic and paper delivery and define secure electronic delivery.

**47. Rules on e-identification authentication and trust services were further refined to address critical areas such as remote biometric identification, e-archiving, partner verification of means for e-identification and regulatory oversight of providers of e-identification, authentication and trust services.** The Law on Electronic Identification[41] and amendments to the legislation on national identification documents of 2016 establish a uniform system for electronic identification of citizens and businesses. Upgraded legal provisions impose stricter requirements for businesses and public authorities that process personal data and the traffic of data, such as GPS coordinates, or IP addresses.[42]

**48. The establishment and maintenance of a register of information technology resources are mandated by law.**[43] A complete inventory of the ICT infrastructure available to central, regional, and municipal institutions laid the foundation for its introduction.[44] The register has up-to-date information on the ICT resources of individual government institutions.[45] It includes those of the Unified Electronic Communications Network (EESM) used by the government for national security needs; as well as the replacement of ICT resources planned by institutions, including a breakdown following the Uniform Budget Classification (EBA) and the Common Glossary (CPV). The registry contains information on each type of licensed software product, and metadata on the developer, source code, link to the repository, warranty and post-warranty support, maintenance and upgrading provisions, etc. A corresponding catalog of mobile apps for the government is being developed.

# Recommendations

- **Enact legislation on emerging technologies.** While focusing on the implementation of current projects to roll out additional electronic services and increase the amount of information available through the open data portal (data.egov.bg), an area where the government could be more ambitious is to focus on cutting-edge technologies that are expected to come in full use soon. These technologies include Artificial Intelligence (including text mining and machine learning related issues), Blockchain (and distributed ledgers), citizen engagement (including tracking and self-tracking applications), and robotics (autonomous vehicles among others).

  Given the complexity and the relatively limited applicable knowledge in this area, there are several principles that the Government should explore to develop the next generation of regulations for emerging technologies[46]:
  - An adaptive, iterative approach to regulation, to keep up with the dynamic introduction of technologies;

[40] The Law on Electronic Document and Electronic Signature of 2017 complies with Regulation (EC) No. 910/2014 on the electronic identification and trust services for electronic transactions in the internal market.

[41] Law on Electronic Identification, published SG No. 38/20.05.2016, last amended SG No. 94/29.11.2019.

[42] The amendments of the Law on Electronic Communications of 2017 are aligned with Regulation (EU) № 910/2017 on electronic identification and trust services.

[43] See: Art. 7f (1) Law on E-Government

[44] The inventory of information and communication infrastructure developed under the project "Inventory Review of ICT Infrastructure for e-Government Needs", funded under OPGG. The ICT resources and infrastructure of the judiciary was excluded from the scope of the project. An add-on ICT system was developed under the project for performing ex-ante, on-going and ex-post evaluations in the e-government area and the monitor the use of ICT within the administration.

[45] except those intended for the operation and storage of classified information

[46] See Deloitte "The Future of regulation. Principle for regulating emerging technologies". https://www2.deloitte.com/content/dam/insights/us/articles/4538_Future-of-regulation/DI_Future-of-regulation.pdf

- Regulatory pilot "sandboxes" where regulators and firms can test the appropriateness of new frameworks in a controlled environment. Sandboxes allow regulators to make adjustments to existing regulations, or test new regulations before they are formally discussed and approved by the Government;
- Collaborative regulation by engaging with stakeholders on regulatory issues and to get early feedback on proposed changes to existing rules

- **Draft secondary legislation and guidelines to meet requirements established by the Personal Data Protection Act for cloud services based on the EU General Data Protection Regulation approved in 2018.** The legislation and related regulations apply to organizations based in the EU that collect, analyze, process and store personal data of individuals residing in any EU country, but also non-EU organizations that offer services in the European Union.

- **Draft regulations on procurement of cloud services (infrastructure as a service, IaaS).** The transition from purchasing ICT infrastructure to IaaS presents an opportunity to modernize the existing stock of infrastructure, upgrade old solutions without large upfront investment and expand the availability of modern solutions even to smaller municipalities in Bulgaria. The challenge that regulators such as SEGA are faced with is that procurement regulations were designed when IaaS was still an incipient solution and most ICT infrastructure procurement processes were focused on the acquisition of hardware.

  The transition to IaaS would require the development of secondary legislation and guidelines for line ministries, SOEs and municipalities with specific guidance on how to distinguish between cloud infrastructure (IaaS) and cloud applications (Software as a Service (SaaS)) that rely on the infrastructure.

- **Develop a Public Sector Data Governance Policy to ensure good management, use/re-use, and where relevant disclosure of government data for decision-making, provision client-centric e-services, and public information.** Similarly, the Policy could provide a guide for the government to identify citizen demand and use of government data, and crowdsource solutions. This would align Bulgaria with OECD trends.[47]

- **Draft regulations to update and harmonize sectoral legal and regulatory acts with the recent e-Government legislation to facilitate data sharing.** This would help to overcome the persistent challenge of certain ministries and agencies not sharing data with SEGA and other institutions due to legal restrictions.

[47] https://www.oecd-ilibrary.org/governance/the-path-to-becoming-a-data-driven-public-sector_9cada708-en

# Chapter 4

# Central e-Government Coordinator: SEGA functions and activities

**49. With the establishment of the State e-Government Agency (SEGA) as a central owner and coordinator of the e-Government agenda in 2016, Bulgaria laid the foundation for sustained coordinated reforms in the digital government area.** When SEGA was formed, there was little central policy, implementation coordination, or oversight. In the short few years since its existence, SEGA has begun to centralize several key processes, including e-Government budget coordination and oversight, and has created a set of technical and operational implementation guidelines for all government institutions to follow to ensure common standards and interoperability. Indeed, SEGA's technical guidelines, standards, requirements, and shared platforms closely follow international good practice.

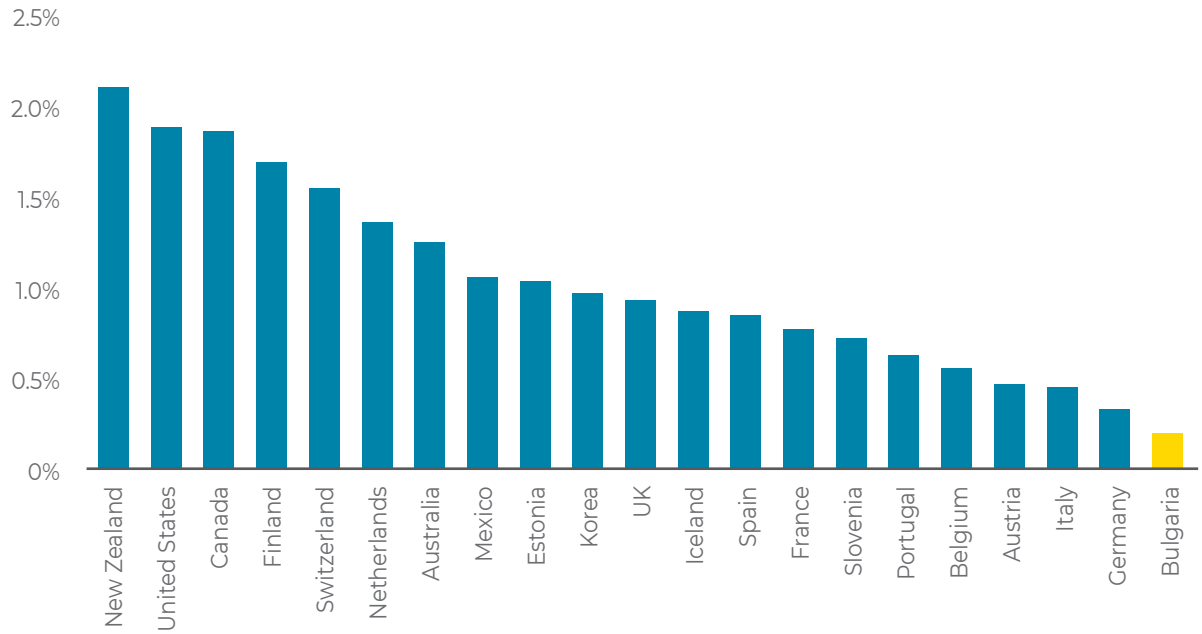
**50. While SEGA has accomplished a significant amount on the technical front in the short few years of its existence, in the next stage more attention is needed to the non-technical aspects.** Specifically, more attention should be given in the next reform period to advisory support and developing capacity for change management, streamlining operational processes, and fostering and incentivizing a culture of collaboration within and across government units. The findings presented in this chapter are based on extensive interviews with SEGA leadership and technical staff, and administrative data shared by SEGA.

## e-Government Budget and quality of spending

**51. One key goal for the establishment of SEGA in 2016 was to improve the government's information and control over e-Government expenditures.** Before 2017, these expenditures were made by individual ministries, agencies, and municipalities from their overall budgets, without a specific budget line item for e-Government and without reporting the spending separately. Without this data, the Government had difficulty assessing the effectiveness and value-for-money of expenditures, making informed decisions about future allocations, and applying for related donor support. Since 2017-18 SEGA has begun collecting data on operational and capital e-Government spending by each institution. Since 2019 SEGA has also begun approving e-Government budget requests, including planned expenditures on major procurement items, and 2-year budget forecasts for central government institutions before these plans are submitted to the Ministry of Finance. Local-level institutions (municipalities) will begin reporting their e-Government expenditures to SEGA starting in 2020 but are not yet obliged to get SEGA's approval on their budget requests or forecasts. For all institutions, there a formal process for making necessary budget adjustments in case of changes to expenditure items during a budget year.

**52. SEGA's consolidated data on e-Government expenditures reveals that Bulgaria spends too little on e-Government relative to comparators.** Although budgets have risen steadily since 2017 and are de facto guaranteed to be approved in the annual Budget Laws by parliament, they are low. In 2019, central government institutions[48] spent a total of 142 million leva, including 6 million leva by SEGA, or 0.2 percent of GDP. This places Bulgaria in the last place on the list of EU and OECD member states (Figure 4.1). The gap is likely underestimated, as the OECD data is from 2013 (latest) and many governments have been boosting their e-Government budgets in recent years.

**Figure 4.1: Actual expenditure on e-Government as a share of total central government expenditure.**




Sources: SEGA (Bulgaria) 2018, OECD survey of ICT expenditures 2013.

**53. In addition to the low volume of spending, the quality of spending may also present a key challenge.** According to SEGA, budget allocations for e-Government are not tied to specific KPIs either at the agency or program levels. Institutions are required to report on their e-Government expenditures but not the outputs/outcomes or what they achieved with those resources. This finding is largely confirmed by the survey of ICT Directors in government institutions. Although 26 percent do note having internal results targets, the overwhelming majority do not discuss and negotiate these with SEGA. The lack of systematic KPIs complicates the effort of tracking the efficiency, effectiveness, and value for money of Bulgaria's e-Government expenditures, which are critical to unlocking additional funding from the Ministry of Finance and donors. This closely relates to the shortfalls in the monitoring and evaluation systems for e-Government, which are discussed below.

[48] As mentioned earlier, consolidated data for municipal will only become available after 2020.

# Target setting, and Monitoring and Evaluation

**54. Despite SEGA's notable achievements in improving policy-relevant data for decision-makers, gaps remain in its target setting, and monitoring and evaluation (M&E) systems.** Bulgaria's e-Government Strategy defines two strategic medium-term goals to be achieved by 2023: digital transformation of public sector institutions and introducing citizen-centric e-services. The strategy does not list measurable quantitative indicators that could be considered as actionable KPIs for the outcome, which is an important omission but easy to rectify. It does, however, suggest two main sources that could be used to measure progress: EU's annual e-Government benchmark indicators, and statistics on the number of citizens using the internet to interact with public authorities collected by the Bulgarian National Statistical Institute. These measures capture elements of the second goal but are less clearly linked to the first goal (digital transformation). The EU benchmarking methodology is based on mystery shopping by 2 evaluators. The benchmark data thus documents gaps from a user perspective, but not the back-office functions and changes required for a digital transformation in the public sector. Likewise, the updated e-Government Roadmap includes actions and timelines for reaching the strategic objective, but no specific indicators for measuring progress.

**55. SEGA has developed an initial monitoring and evaluation (M&E) system for measuring progress on the deployment and quality of e-services across government institutions.** SEGA monitors the development and deployment of shared services. Government institutions also report on their development and deployment of information systems to the Management of the Operational program.

**56. Since 2017, efforts have been made to assess and where feasible quantify the impacts of e-government reforms, but there is room to do more.** So far, there have not been any attempts to quantify the impacts of e-Government reforms on fiscal savings or the broader economy. SEGA currently collects two main measures of impact:

- Service efficiency, measured using administrative data on the number of e-transactions, the speed of service delivery, and time and money saved with the e-document/ e-message exchange system;
- Quality, measured using annual user satisfaction surveys and administrative data from user feedback and complaints with e-service delivery.

# Developing guidelines for government institutions

**57. As the central coordination agency, SEGA enforces the common technical principles and requirements for central and sectoral e-Government projects.** These include projects adopted under the Law on e-Government and related strategic documents, the e-Government Architecture and Interoperability documents, and other regulatory acts[49]. All central and local government institutions and municipalities are obliged to follow those principles and comply with the requirements. SEGA is authorized to control compliance and report on violations.

**58. To ensure implementation of the government-wide policies and regulation for e-Government development, institutions at all levels are supported by the SEGA Directorate "Strategies and Policies for E-Government".** The Directorate oversees the implementation of the strategic and program documents and oversees the compliance of government institutions' plans, decisions and actions with the approved policies, strategic documents and programs.

[49] E-Government policies and strategies, available at https://e-gov.bg/wps/portal/agency/strategies-policies/e-management/strategic-documents

# e-Government Architecture Guidelines

**59. The e-Government Architecture[50] provides a cross-government framework that defines and regulates its core dimensions and relevant elements in line with the European Union guiding documents.** The core dimensions include:

- **Functional Architecture** – defines e-Government participants, their functions, principles of interaction and development policies, and functional requirements for ICT systems.
- **System Architecture** – describes system solutions for various e-Government building blocks and their components, electronic exchange of documents and data between government organizations, and management of interactions between the participants of e-Government. The dimension defines centralized systems, horizontal systems, basic registers and databases, applications, and an integration layer.
- **Technological Architecture** – defines the tools, systems, information, and technical infrastructure

**60. SEGA has developed an e-Government Architecture document that defines core concepts, common principles, standards and requirements for e-Government processes, projects, information systems, and ICT solutions.** To ensure all central and local government institutions comply with those principles, standards and requirements, SEGA enforces their adoption, conducts compliance audits and reports on violations. Based on the violation's reports, central and local governments can be penalized with fines. SEGA provides support to central and local government institutions on e-Government related investment proposals and oversees the whole-of-government digital portfolio and associated investments.

**61. The Architectural Council, led by SEGA and composed of ICT directors from line ministries, ensures compliance of the e-Government projects and systems with the adopted government-wide principles and requirements.** The core aspects of compliance include coordinated development of policies, design and implementation of e-Government projects, interactions between government organizations at various level of public administration (the e-Government actors), ICT systems common requirements for information systems, registers and e-services and technological infrastructure, information system solutions and their components, centralized systems, registers and databases, cross-government (horizontal) systems and applications, electronic document, and data exchange.

# National interoperability requirements

**62. The Interoperability framework[51] is aimed at increasing public sector efficiency and improving public service delivery to Bulgarian and EU citizens.** The Interoperability Framework defines common vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices to strengthen government organizations' ability to collaborate, interact and exchange data between their ICT-based systems. The IF guidelines are structured around four dimensions: (i) legal interoperability to ensure coherent legislation; (ii) organizational interoperability to ensure coordinated business processes; (iii) semantic interoperability to ensure a common understanding of the data to be exchanged; and (iv) technological interoperability to ensure smooth interaction of ICT systems and exchange of compatible data. According to SEGA, the National Framework for Semantic Interoperability will be updated during 2020-2021 to align with the new European Interoperability Framework[52].

[50] e-Government Architecture summary document available at https://bit.ly/3a8H633
[51] Bulgarian National Interoperability Framework Draft (BNIF), available at e-gov.bg/wps/portal/agency-en/strategy-policy/interoperability
[52] https://ec.europa.eu/isa2/eif_en

**63. By law, government organizations are obliged to meet the interoperability requirements and uniform standards and rules.** To ensure compliance with the specific interoperability guidelines and technical standards, SEGA provides a template with the requirements for information systems and mobile apps, technical specifications, and documentation. The Information Systems and Interoperability Directorate reviews technical specifications submitted by various government institutions for procurement of services for developing or upgrading information systems, software solutions, or hardware tools and provides technical evaluation[53]. Based on the evaluation, SEGA may approve or disapprove technical specifications and shall inform the Procurement Office about decisions.

**64. In order to help government institutions, connecting their information systems to the technological platform for interoperability (RegiX), SEGA provides a manual and step-by-step instructions to government institutions[54].** The dedicated team of the Support Center[55] provides helpdesk services with detailed guidance and responses to requests.

## Unified model for e-Services: principles and guidelines

**65. In implementing the adopted core principles of e-Government development, the "Unified Model for requesting, payment and provision of electronic administrative services" was developed and has been gradually implementing with EU support.**[56] The Unified Model applies a user-centric approach and defines a set of core components, horizontal e-Government systems. The core components are gradually developed with the financial support of the Operational Program "Good Governance", co-financed by the European Union. The Model is aligned with EU principles for e-services:

- Delivery of administrative services in electronic format from start to end.
- Once Only – requesting personal information from users only once and use it for further e-services.
- Digital by Default – with no paper documents.
- One point of access to the administrative e-services and information – government portal to administrative services and information.
- Single SignOn – entering credentials once and getting access to multiple-services
- Interoperability by Default – exchange data in electronic format between basic registers and information systems.
- Protection of personal data and privacy ensuring secure and safe user interactions and electronic transactions.
- Standardization of data presentation and their structure, uniform regulatory requirements and industry standards for information systems and e-services.
- Traceability of transactions to enable users to track the e-service delivery process.
- Cross-border by Default to ensure access to administrative services to EU citizens.
- User-driven process – the whole e-service delivery process is based on user needs and preferences.
- Proactivity, where possible – offering personalized services to users based on the analysis of their preferences.
- Presentation in a non-discriminatory manner to ensure equal access to different user categories taking into account their specific needs, location, language, and other important features.

[53] https://www2.e-gov.bg/bg/102
[54] http://regixaisweb.egov.bg/RegiXInfo/RegiXGuides/
[55] https://support.e-gov.bg
[56] https://unifiedmodel.egov.bg/wps/portal/unified-model/home

**66. SEGA provides guidance to government authorities on how to deliver e-services using the Unified Model and its core components, and also to citizens and businesses on how to apply and pay for e-services using the Model.**[57] The guidelines and procedures for institutions' system developers are also available on the National e-Government portal explaining how to connect their information systems to the horizontal e-government systems. Also, the detailed technical instructions are provided for developers.[58]

**67. According to the Unified Model requirements, government institutions/service providers need to provide complete information about their e-services.** The required information includes normative basis, deadlines for implementation, fees, criteria for their determination, available payment options, and e-service delivery ways. More specifically, they are obliged to:

- Create an account in the system for secure electronic service
- Create a profile in the eForms system
- Provide up-to-date electronic forms in the eForms system
- Ensure accessibility of e-services to customers including people with disabilities
- Update information related to their e-services
- Ensure up-to-date and reliable data in the registers maintained by them and used for e-services
- Ensure protection of the applicant's personal data
- Provide users with the opportunity to pay electronically for a requested service
- Deliver e-services in accordance with the adopted regulation
- Respond to inquiries and explain the requirements for e-services and how to apply;
- Provide information on the progress of the service.

## Open data rules and procedures

**68. SEGA provides guidance to government institutions on planning and prioritizing datasets to make them available for public use.** The guidance explains how to define the structure and content of open data sets, and rules and procedures for publishing open data sets in a machine-readable format and updating information.

## Network and Information Security Requirements

**69. SEGA requires government institutions to align their activities with the minimum network and information security standards adopted by the Network and Information Security Regulation.**[59] SEGA provides training on network and information security to government institutions. The Information Systems and Interoperability Directorate reviews technical specifications for new or upgraded information systems on the compliance with the network and information security requirements.

[57] http://unifiedmodel.egov.bg/wps/portal/unified-model/for-administrations/integration-procedures/
[58] https://unifiedmodel.egov.bg/wps/portal/unified-model/for-developers/for-developers
[59] https://www2.e-gov.bg/bg/news/139

# Deploying shared digital government platforms

**70. In order to ensure the seamless delivery of various government e-services to citizens and businesses and to improve the effectiveness of internal government processes, SEGA provides access to shared digital government platforms.** They were gradually developed and deployed as core components of the Unified Model[60] within the implementation of the aforementioned Operational Program "Good Governance. The "Unified System Integrator" Directorate organizes, coordinates and monitors the development, implementation, and operation of all shared digital platforms.

## Shared Digital Platforms for e-Services and e-Documents

**71. Several shared digital platforms are available and used by government service providers and citizens and business users to deliver/receive services in a seamless way.**

### National e-Government Portal

**72. SEGA maintains the e-Government portal as a single access point to administrative e-services and information.** The single sign-on provides users with access to a variety of services and information from participating government departments. The portal is integrated with the eDelivery platform that helps users to securely apply for government services online with eSignature (where required) or with a personal identification code (PIC) using two-factor authentication. The ePayment Gateway permits users to pay taxes online and pay for certain administrative e-services. The portal also serves as a communication channel with business, citizens, and government institutions, and provides a help desk and an opportunity to provide user feedback on services. Currently, the portal is being upgraded to make it more convenient for users.

### eAuthentication

**73. The eAuthentication system[61] is a platform developed and operated by SEGA, which enables the identification and authentication of applicants for the government e-services using SingleSign-On options.**[62] It permits Bulgarian users of government e-services to be identified by usernames and passwords, PICs (used by the National Revenue Agency and the National Social Security Institute), UCD (used by the National Health Insurance Center), or Qualified Electronic Signature. Users who select the identification with username and password, PICs, or UCD are provided with the two-factor authentication option to ensure a higher level of security (SMS, or one-time hyperlink for e-mail).

**74. Users need to buy a Qualified Electronic Signature (QES) to access the e-services portal, sign documents, fill customs and tax declarations, and pay taxes and fees remotely.** Mobile eSignature, a Cloud QES solution recently implemented in partnership with domestic private companies and provided to citizens free of charge, enables users to access various e-services through a secure mobile application.[63] The number of customers using QES and Cloud QEA for e-services has been growing over time and has spiked since the beginning of the COVID-19 crisis. According to SEGA in April 2020 the number of successfully connected users with QES increased to 93667, the number of successfully connected users with Cloud QES– increased to 20183, and the total number of users successfully authenticated for e-service requests has increased to 13850.[64]

[60] https://unifiedmodel.egov.bg/wps/portal/unified-model/unified-model/development-concept/development-concept
[61] https://e-gov.bg/wps/portal/agency/systems/info-systems/e-authentication
[62] https://edelivery.egov.bg/Account/Login?returnUrl=%2FProfile
[63] https://e-gov.bg/wps/portal/agency-en/media-center/news-details/access-administrative-services
[64] Statistics on using eSignature by customers for e-services provided by SEGA, May 2020

**75. Forms of e-Identification are being developed in parallel.** The National e-identification scheme is currently under development by the Minister of Interior that will issue e-Identity certificates for residents. The e-identifier will enable individuals to verify their identity for requesting government e-services. For the cross-border e-identification purposes, an eIDAS Node was developed and deployed by SEGA in accordance with the EC Regulation. The eIDAS Node is integrated with the e-Authentication system, and it is being connected and tested with the Nodes of other EU Member States.

## eDelivery

**76. The eDelivery system, developed and operated by SEGA, allows citizens and legal entities to send e-applications/requests for government e-services and receive e-notifications by e-mail or via text messages (SMS).**[65] The eDelivery platform enables e-document exchange and e-messaging between government institutions and supports long-term storage of e-documents and also information on sent and received documents and messages. Communication via the e-delivery system replaces the paper-based mail delivery in line with the EU Regulation. It is an electronic equivalent of the registered mail with a return receipt. All institutions have been required to exchange documents only by electronic means since 1 November 2018. Currently, 108 institutions are connected, including 68 municipal institutions. All administrative authorities can integrate the eDelivery module into their information systems or use it via a user interface.

**77. Access through the interface is protected.** The eDocuments are being protected and accessed only by the sender or/ and receiver. Third parties to whom the recipient has specifically granted access can also view the documents. Access requires user registration and identification using one of the following options: (i) Qualified Electronic Signature (QES); (ii) Cloud Electronic Signature; or (iii) a Personal Identification Code (PIC). The user interface allows directly sending messages and accessing messages located in a user's personal profile. The system is integrated with the system for eAuthentication and provides an option for automated use of authentication and reference information by information systems of administrative authorities as well as third party systems. The system is also integrated with the ePayment system.

**78. Available statistics demonstrate a steady rise in the use of eDelivery, generating savings.**[66] Between March 2019 and April 2020 the number of registered business users on the platform increased more than tenfold, individual users tripled, government institutions almost doubled, while documents and messages exchanged through the platform increased almost four times over. According to SEGA[67], the paper-based document flow among all public entities has been significantly reduced due to electronic document exchange. Average savings from reducing paper costs for various public entities are about 100 tons of paper per year and about 220,000 levs per year. By eliminating the paper-based exchange of documents, the time necessary to register a document and to respond was shortened 6 times.

## ePayment Gateway

**79. Developed and operated by SEGA, the ePayment platform**[68] **serves a single-entry point to pay electronically for requested government e-services provided by the central and local government institutions.** The platform offers various possible payment methods to users. Citizens and businesses can make e-payments using their qualified e-signatures that contains Unified Civil Number (PIN) or Personal Number of a Foreigner (PIN) or using a Payment Code automatically generated by the system. The relevant government institutions are automatically notified of the e-payments made for their e-services. Payments can be made immediately after requesting e-service at the National e-Government portal and / or at the portals of the government institutions providing services.

[65] https://edelivery.egov.bg
[66] eDelivery statistics provided by SEGA, May 2020
[67] https://www2.e-gov.bg/en/news/124 Chairman, 06-27-2019
[68] https://pay.egov.bg/

**80. Currently, four payment service providers (banks and virtual POS terminal of ePay.bg) and 36 government institutions/providers of e-services are connected to the ePayment platform.** The government service providers include the Ministry of Justice, Ministry of Economy, Ministry of Tourism, National Center for Information and Documentation (NACID), Executive Agency "Automotive Administration" and several municipalities.[69] All providers follow the Rules for the inclusion of providers of electronic administrative services.[70]

**81. The platform has user-friendly features and usage has been growing**. The platform provides a Help section for users with guiding information on how to make e-payments for e-services and what is required[71]. Users can provide their feedback with questions, suggestions, or technical problems.[72] The number of successful e-payments transactions by the users of e-services almost doubled between March 2019 and March 2020.[73]

## Shared digital platforms for interoperability and data sharing

### Registry Information Exchange Platform (RegIX)

**82. The RegIX platform is designed to be used for active data exchange between basic registries and information systems.** Developed and operated by SEGA, RegIX[74] serves an interoperability platform for automated interactions between registries and information systems owned by various central and local government institutions. It differs from the eDelivery platform, whose purpose is to enable e-document exchange and e-messaging between institutions and to support long-term storage of e-documents.

**83. The platform has been designed to be friendly to institutional users and the number of organizations using data from basic registers through the RegIX platform has been growing.** Public institutions, government employees and public service organizations can get access to the registers integrated to RegIX with the approval from a Register Owner. APIs have been developed and published to help government institutions connect to the RegiX and eAuthentication system. Currently, all central government institutions use data from basic registers via RegIX but not all municipalities.

**84. RegIX enables automated filing and servicing of standardized requests for government e-services.** Authorized users can automatically retrieve data from basic registers such as the National Population Register, BULSTAT Register, Property Register, Commercial Register, Debt register for customs administration, Register of data controllers, Register of Bulgarian ID documents, Unified register of foreigners, Register of secondary school students and others. According to the statistics[75], 64 core registers administered by 25 central government institutions were connected to the RegIX in 2019; 179 registry inquiries were created and over 22 081 000 transactions were completed.

**85. The biggest challenges for extended use of RegIX are associated with a lack of data sharing culture among government institutions, and a lack of automation of internal business processes.** Also, there are still pending legal issues – data sharing is enabled by e-Government Law but some confusing statements in other outdated legal acts create barriers for sharing data. Municipalities face additional technology-related issues, including low internet bandwidth and speed of the government communication network.

[69] https://pay.egov.bg/Home/Departments
[70] https://pay.egov.bg/Home/AccessRules
[71] https://pay.egov.bg/Home/Help?focus=access_code
[72] https://pay.egov.bg/Home/Feedback
[73] Statistics on ePayment transactions provided by SEGA, May 2020
[74] https://regix-service.egov.bg
[75] https://regix-service.egov.bg/statistics.xml

### National Open Data Portal

**86. SEGA maintains a National Open Data Portal to ensure public access to government data on topics relevant for businesses, non-government organizations, and researchers.**[76] The portal was developed under the project "Improving the processes related to the provision, access and re-use of public sector information", funded through the Operational Program "Good Governance" (OPGG). According to the statistics provided on the portal, 478 government organizations provide public access to their 10178 open data sets, while the number of registered users has reached 1444.

**87. The portal supports the publication of datasets and resources and provides government institutions with visualization tools and graphs for data presentation.** It is a unified, centralized, web-based information system that enables government institutions to publish information in an open, machine-readable format, and with relevant metadata. Available open data sets provide information on various topics including agriculture, fisheries, forestry and foods, education, culture and sport, environment, energy, transport, science and technology, economy and finance, population and society, government and public sector, health, regions and cities, justice, legal system and public safety, international issues, and others. The data dissemination is licensed to ensure free access for commercial and non-commercial use and for developing applications.

**88. The portal provides documentation and instructions on how to use publicly available APIs for retrieving and using open data sets.** A set of APIs are available to help users extract, process, and use open data. Currently, the portal is being upgraded to ensure a more user-centric design with easier and faster access to datasets and resources.

**89. Cross-government Spatial Data Platform. SEGA is in the process of developing a national spatial data platform, also supported by the Operational Program "Good Governance"**[77]**.** The project is expected to be completed in December 2020 and is expected to provide government and non-government users with user-friendly geographic information for better planning, analysis, and decision-making. A national spatial data catalog[78] is already available online and is linked to the EU geo-portal.

## Shared digital platforms for ICT Resources

**90. Registry of Information Technology Resources. SEGA maintains the Registry of Information Technology Resources in the public sector to oversee deployed ICT resources and decommissioned ICT resources by government institutions.** The Registry of Information Technology Resources[79] contains information on registers and ICT resources of the government institutions; the ICT resources of the Unified Electronic Communications Network; annual plans of government institutions for updating/ replacing ICT resources. It also maintains metadata on developers – companies or departments (internal contractors); source code or link to the repository if available; year of construction; warranty period; history and terms of warranty and post-warranty support; development and upgrading contracts; other software related information resources; price; and out-of-warranty maintenance costs. Government institutions are obliged to register within a month newly deployed ICT resources and decommissioned ICT resources. A complete inventory of the ICT infrastructure of the central, regional and municipal government institutions (excluding Justice) was developed in 2018 under the project "Inventory Review of ICT Infrastructure for e-Government Needs."

[76] https://data.egov.bg
[77] https://e-gov.bg/wps/portal/agency/all-projects/projects-DAEU/projects-opdu1/project6
[78] https:// inspire-catalogue.egov.bg/
[79] https://rir.egov.bg./pages/UI.php

**91. Software Development Resources Portal.** To help government institutions comply with the adopted requirements and standards for information systems and applications, SEGA provides access to the Software Development Resources Portal,[80] which it developed and operates. Developers of the information systems and applications are required to publish and describe APIs on the portal (with supporting documentation and user instructions) following the European Guide to the Evaluation and Selection of e-Government Standards and Specifications. As a next step, developers of the information systems and applications will be provided with web services and testing support. SEGA is planning to systematize the APIs published on the Portal ensuring they all have documentation, rules, and procedures for using them. Developers of software systems will be provided with web services and support for testing. SEGA also developed and published APIs to enable government institutions to connect to the RegiX and eAuthentication systems, as well as various external users including businesses and the general public to connect to the Open Data Portal[81] and to the upcoming National Spatial Data Portal.

## Shared digital infrastructure

**92. Government-wide digital infrastructure such as Single Electronic Communication Network is maintained by SEGA for shared use by central and local government institutions.** Currently, it connects 3000 government institutions at the national, regional, and local levels. The automated Blockchain-based system has been developed by SEGA and used for 24/7 support and monitoring. The infrastructure is operated and maintained by the SEGA Directorate "Information and Communications Infrastructure."[82] The government Cloud infrastructure and services are being currently developed.

**93. Single Electronic Communication Network.** The government-wide Single eCommunication Network includes two networks that were merged in 2011, the National Network of Public Administration, and the Electronic Communications Network.[83] According to SEGA[84], the network currently connects 3000 government institutions including 85 percent of all national institutions, 80 percent of regional bodies, 60 percent of local bodies, and 35 percent of all municipalities. The network has a three-level architecture: (i) Backbone support nodes (main support to Sofia; general); (ii) Aggregation Nodes; and (iii) Access Nodes. The backbone is well reserved, and optical lines have two independent connections. There have been no issues or complaints about the access notes from users. SEGA developed and has been using the automated Blockchain-based system for 24/7 support and monitoring. However, the biggest problem is the limited last-mile connectivity that affects access to the network for municipalities. According to SEGA, there is a plan to improve last-mile connectivity for 50 municipalities.

**94. Government Cloud Infrastructure.** Aiming to optimize ICT resources and provide faster and more secure, flexible, and cost-efficient cloud services, SEGA has been incrementally developing the Government Hybrid Cloud infrastructure within the EU funded project "Upgrading and Development of the State Hybrid Private Cloud for e-Government Needs."[85]

**95. The Hybrid Cloud solution includes two interchangeable Data Centers, Disaster Recovery Center (DRC), and Monitoring and Management Center.** The infrastructure will be built on two peer-to-peer and interchangeable data centers (Data Center 1 and Data Center 2). Data Center 1 is being upgraded while Data

[80] https://dev.egov.bg/PDev
[81] SEGA plans to develop 2 APIs for integrating for eAuthentication system with e-identity providers and e-services
[82] https://e-gov.bg/wps/portal/agency-en/digital-government-infrastructure
[83] https://e-gov.bg/wps/portal/agency-en/digital-government-infrastructure/unified-communications-network
[84] Interviews with SEGA technical team, May 2020
[85] https://e-gov.bg/wps/portal/agency/all-projects/projects-DAEU/projects-opdu1/project-ehcho

Center 2 is currently under construction. A Disaster Recovery Center (DRC) with critical data storage will be built in different locations (200 km from Sofia) to ensure backup and rapid data recovery if both data centers of the Government Hybrid Cloud are out of service due to natural disasters or other events. A Monitoring and Management Center will ensure the sustainable and secure operation of the government cloud infrastructure and un-interrupted cloud services to government institutions. The full stage implementation of the Infrastructure as a Service is estimated to be completed in 2021.

**96. The step-by-step implementation of the Hybrid Government Cloud will help optimize cloud services and provide faster, secure, flexible, and cost-efficient shared cloud services.** Currently, SEGA provides shared use of ICT resources to 30 tenants. It is expected that the Government Cloud services will help address the growing ICT needs of government institutions associated with the provision of administrative e-services for citizens and businesses; internal administration-administration services; projects and systems; maintaining and further developing national registries and databases; other government activities or projects mandated by law.

**97. Network and Information Security.** The National Information Security Incident Response Center serves as a Computer Emergency Response Team (CERT)[86] helping government institutions to reduce information security risks, prevents cyber incidents, and proactively respond when they occur. Specifically, the Center provides the following network and information security services:

- **Signaling and warning in case of crisis situations** – dissemination of information on cyberattacks, security vulnerabilities, alarms in the event of unauthorized interference, computer viruses or fraud, and the offering of recommended short-term actions to address and resolve issues. Alerts, warnings and advice are sent in response to an ongoing information security threat along with the guidance to prevent hazards or to restore systems in case they have been affected.
- **Vulnerability Management** – obtaining and processing information on vulnerabilities in the hardware and software of systems and applications; analysis of the nature, mechanism and consequences of vulnerabilities and development of action strategies for detection and correction of vulnerabilities; identifying appropriate actions to mitigate or correct the vulnerability.
- **Security incident management** – receiving, sorting and responding to requests, and analyzing incidents and events; taking action to protect systems and networks affected or threatened by unwanted attacks; proposing solutions and strategies to reduce the risks resulting from similar events that have already occurred; checks for attacks in other parts of the network; network traffic filtering; system recovery; updating the systems; developing alternative strategies to solve network and information security problems.
- **Artifact management** – obtaining information about the presence and copy of the artifacts that were used in the attack by an intruder. The study of artifacts involves analyzing the nature, mechanics, version, and use of artifacts, and developing (or proposing) strategies for action to detect, remove, and protect against them.
- **Newsletters services** – vulnerability warnings and accounts of attempted attacks, and security tips to protect systems against such vulnerabilities before they become widespread. These bulletins provide information on newly discovered vulnerabilities and attack tools.
- **Dissemination services** – instructions for contacting the CSIRT unit; archiving warnings, notifications, and other messages; documents on current good practices in the field; basic guidelines for computer security; policies, procedures and checklists; information on the development and dissemination of security patches; links to suppliers; current statistics and trends in incident detection; and other information.
- **The National Information Security Incident Response Center also conducts training on information security and incident management, and also research on new technologies in network and information security and provides a centralized database with various information on how to provide a secure information environment.**

[86] https://www.govcert.bg/

**98. Despite SEGA's ongoing efforts to enable seamless e-service delivery and collaborative digital transformation in the public sector, several challenges remain.** Based on the evidence derived from this assessment, the main challenges include the following:

- **Access challenges.** Although a variety of administrative e-services are currently listed on the National e-Government Portal, accessing them can be a challenge. Many e-services are nested under other services and are not easily searchable. Users must click through multiple levels to find the service they need. Many services cannot be obtained from the central Portal itself, and for many services, users are redirected to the website of the ministry/agency providing the online service. The latest trends in digital government development show that the e-service satisfaction level decreases when users spend a long time searching for the service they need and have to read long user instructions on how to apply online.
- **Not fully electronic.** Many e-services listed on the National e-Government Portal have significant non-electronic components. Some require users to download, print, manually sign, and upload documents before being allowed to send a request a service to the respective administrative bodies through the eDelivery system. As shown by the advanced practices in other countries, the service application process can be significantly simplified and made more convenient and faster with the use of eSignature. One of the good examples of the e-service from start to end is an online application for a UK passport with the possibility to track the progress.[87]
- **Lack of mobile applications.** Despite growing mobile penetration in Bulgaria, mobile applications are still not used for government e-services.
- **Incomplete automation and old information systems.** Despite significant progress in the last two decades, incomplete automation of internal business processes and legacy information systems in some government institutions remain a barrier to the digital transformation of the public sector. Many local government institutions and municipalities are struggling with insufficient internet bandwidth and low speed of the government communication network due to a last-mile connectivity problem. These challenges prevent the integration of information systems across institutions to ensure seamless service delivery.
- **Barriers to data sharing.** Incomplete data governance frameworks and resistance to data sharing in some government institutions due to outdated sectoral laws despite overriding provisions under the e-Government Law, hamper data sharing across the government. This creates a challenge for data-driven decision making and service delivery.

# Recommendations

- **Undertake a review of e-Government spending.** The government would benefit from a spending review to more fully map the existing budget process (and related possible bottlenecks and inefficiencies) and identify how to increase the return on investments in e-Government. The Review would help to identify in granular detail how government funds are being spent, what types of expenditures and interventions are yielding the highest and lowest returns, what types of expenditures should be increased to maximize benefits, and how. It could also look carefully at expenditures on investment and maintenance, to help find the appropriate balance based on needs and common principles. The Review would ideally be led by the Ministry of Finance in collaboration with SEGA, given their collective interest in understanding the current efficiency and impact of e-Government investments and overall expenditures, and identifying new investments and options to increase value for money.

[87] https://www.gov.uk/apply-renew-passport

- **Undertake financial and economic analyses for new projects.** The analyses will help to quantify the macro-level impacts of e-Government reforms, especially on fiscal savings and the broader economy. In the context of the current low spending on e-Government, the analyses will help the Government make a case for additional budget resources and external financing, and will also help to better integrate the e-Government agenda into the Government's medium-term economic and fiscal planning.

- **Develop a set of outcome and process-level key performance indicators (KPIs).** Additional KPIs would help SEGA improve its tracking of achievement of strategic goals under the e-Government strategy. A further set of KPIs could be beneficial for tracking progress on implementation.

- **Adopt a set of criteria and standards for the quality e-services and provide relevant guidelines and performance dashboards to central and local government institutions.** SEGA can provide government institutions with guidelines and tools for the design and delivery of user-centric e-services and appropriate metrics for assessment. A variety of outcome indicators should be adopted besides user satisfaction, including Digital take-up – the percentage of people using government services online compared to other methods (e.g. phone or post); Completion rate – the percentage of people who successfully complete a government service; Cost per transaction – the average cost to government of each transaction. A publicly available Performance Dashboard platform with data visualization tools can help share and analyze progress over time – by government institutions to share and learn from each other's experiences, by the Government to make policy decisions, and by the public and media to monitor how their tax leva are being spent. Common standards and assessment criteria will encourage central and local government institutions to design and deliver better e-services and will simplify SEGA's task of monitoring and oversight.

- **Prioritize the digitization of services with the highest expected social benefits, budget savings, and user convenience.** The focus can be on services with the highest user volume and highest labor intensity or expense on back-office processes. Some services may have become obsolete and can be effectively replaced or complemented by smarter solutions. High priority should also be given to mobile-friendly government e-services and specialized mobile applications, as this can also help to boost demand for the services. Widespread mobile penetration in Bulgaria and the recent availability of free cloud-based eSignature, creates a particularly opportune environment to provide secure access to e-services and transactions from mobile devices on the go.

- **Guide government institutions on streamlining organizational processes and data flow before digitizing them.** Seamless service delivery and efficient public administration require thoughtful optimization and re-engineering of back-office processes before building new information systems and applications for e-services. As many services and decisions require the inter-agency interactions and data exchange, the organizational processes should be streamlined, not only within individual institutions but across the government before or in parallel with acquiring new ICT systems.

- **Adopt an agile-by-design approach for developing and adopting systems and solutions to address the evolving needs of users.** Using agile methods will help government organizations to be more proactive and respond more easily to the evolving needs and preferences of citizens while using new opportunities provided by emerging technologies.

- **Advise central and local administrations on new projects and systems, and create incentives to ensure their alignment with the whole-of-government digital transformation policies and priorities.** In the previous reform period, SEGA has developed clear common standards and protocols, but in the next stage, it will need to invest more in shepherding implementation. One important step in this direction will be more hands-on advice on new projects and systems implemented by government institutions, and closer oversight. A critical complementary approach would be through targeted budget incentives.

Although SEGA has a nominal process for penalizing non-compliance by government units with fines, in reality, transgressors seem to be rarely fined, and besides this weak penalties regime, there are few other incentives to follow SEGA's directives. To strengthen incentives and penalties for avoiding duplicative systems and following common standards and shared systems, SEGA could give institutions a defined timeframe to consolidate existing systems and adopt common standards, after which the budget for maintenance of existing systems will not be approved. Some digitally developed economies, like Austria, use similar incentives to ensure compliance with central platforms. The ultimate goal would be the alignment of systems and approaches, to minimize duplication, increase budget savings from reduced spending on unnecessary replacement of outdated duplicated systems or components, and free resources for more productive investments. It would also improve and simplify SEGA's oversight of ICT investments across the government.

- **Provide a digital marketplace for central and local governments to buy the required hardware and software products and services.** More coordinated purchase of the hardware and software by various public institutions will facilitate faster deployment of ICT systems and e-service applications across the government. At the same time, it would make it easier for smaller businesses to bid for government contracts and sell services to government organizations. Software-as-a-Service (SaaS) cloud services available via the digital marketplace would help central and local institutions to use available innovative cloud-based solutions and eliminate the need for developing in- house software solutions.

- **Promote data-driven innovative solutions for service delivery and anticipatory decision making in government institutions.** Besides a supportive organizational environment, the adoption of data-driven innovation in the public sector requires the active promotion of innovative solutions and technologies across the government. The Cloud-first approach will help break down data silos and drive adoption of emerging technologies such as AI, robotics, IoT, big data, and analytics. Cloud computing services, gradually being deployed by SEGA, provide vast leapfrog opportunities to implement smarter solutions for e-service delivery.

# Chapter 5
# Central and Local Government Implementing units

**99. To complement the perspective and concerns of the central e-Government coordinating authority (SEGA) discussed in the last chapter, this chapter presents the views of ICT Directors in 37 implementing institutions.** The same topics are covered – planning and coordination with SEGA, budget, technical aspects of implementation, and change management. The findings presented in this chapter draw primarily on the quantitative survey of ICT Directors representing 11 ministries, 12 agencies, and 14 municipalities, conducted in April-May 2020.

**100. The key findings are that despite SEGA's efforts, in line with best practice, to communicate its strategy and enforce common standards and shared platforms and infrastructure, implementation is marked by considerable persistent fragmentation.** Different ministries, agencies, and especially local governments use disparate, not always interoperable systems and standards, not always following SEGA's instructions. Indeed, there is even some resistance to the adoption of common standards and interoperable systems in part out of historical momentum. Recommendations at the end of the chapter provide possible steps to address these critical implementation challenges.

## Engagement in e-Government Strategy Development

**101. The ICT Directors' surveys suggest a high degree of awareness and engagement with the national e-Government strategic planning.** Most of the sampled ministries, agencies, and municipalities (78.4 percent) are familiar with the 2019-2023 e-Government strategy and are aware of its implications generally and for their organizations in particular (82.8 percent). Most also follow the national e-Government strategy in their plans and activities (70.3 percent). About half of the sampled central and local government institutions participated in the process of developing the 2019-2023 Strategy (48.3 percent), and of these a fifth (20.7 percent[88]) provided suggestions and comments by e-mail or during joint meetings with other stakeholders. Some public agencies were also involved in the review of all strategic documents as part of the Integration Council at SEGA.

**102. Government communication of the e-Government vision and strategy could be improved.** Less than half of surveyed ICT Directors (37.8 percent) felt the Strategy was well or very well communicated overall or as it concerned their organizations. Their suggestions on how to improve communication on e-Government include the following:

[88] Note that answers to survey questions do not always add up to 100 percent because a portion of respondents did not know the answer or declined to answer the question.

- Using a more targeted approach and direct communications
- Defining concrete and obligatory steps and procedures to follow in the implementation of the e-Government strategy
- Demonstrating a strong commitment to the tasks and objectives
- The strategy and plan should be valid and applicable to all municipalities
- Promoting good quality, efficient and easily accessible e-services for citizens and businesses and digital administration through the integration of information processes
- Introducing more easily applicable measures and mandatory elements of e-Government for all organizations
- Expanding the possibilities for requesting e-services and significantly facilitating access to them
- Organizing meetings and consultations with individual institutions taking into account specific sectoral strategies for e-Government (e.g. Customs Agency – "e- Customs "2016-2025)
- Sharing good practices on e-Government implementation and relevant examples from the EU
- Training, seminars, sending newsletters, workshops on e-services, digital platforms, tools, and their practical application
- Centralized training programs for ICT specialists
- Partnership and collaboration with stakeholders, not just through top-down decision-making
- Engaging experts from municipalities in working groups
- Online publicity and awareness-raising within the institution
- Promotion through TV commercials
- Having competent contact persons for specific issues
- Encouraging the departments' efforts with control and regulatory functions, which provide a small number of services to a relatively limited number of clients, yet indirectly affect a large number of stakeholders
- Investing in public communication infrastructure / free internet for all

# e-Government Budgets

**103. Two key findings emerge from the ICT Directors survey concerning budgets.**

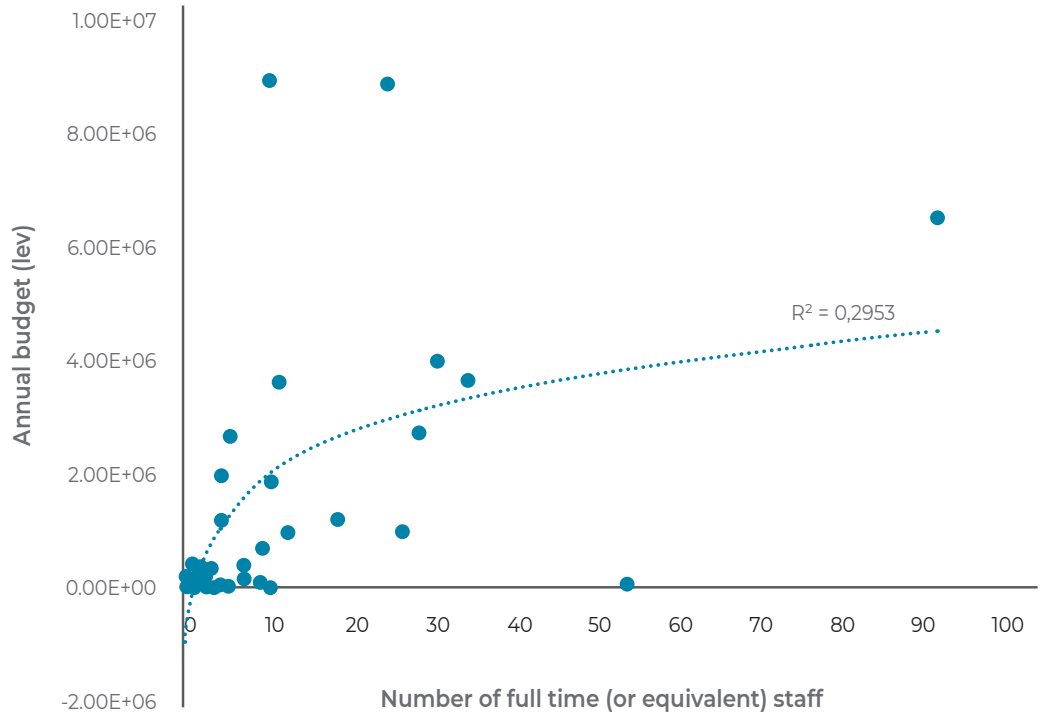
**104. One finding, which confirms information provided by SEGA, is that implementing institutions' e-Government budgets are only weakly tied to results.** In response to the survey question of whether their budgets are tied to specific Key Performance Indicators (KPIs), i.e. quantitative measures used to track the institution's success in meeting certain pre-defined performance objectives, 56 percent of those who responded said "no," while 18 percent were uncertain. Only 26 percent confirmed that their budgets were tied to KPIs, but in about half of these cases, the KPIs were not formally agreed with SEGA, which potentially reduces their level of ambition and impact as well as SEGA's capacity to steer reform outcomes.

**105. A related finding from the data is that the size of e-Government budgets that institutions receive is uncorrelated with the institution's investment in developing a set of KPIs.** If anything, budgets are 5 percent higher for institutions who report their budgets are unlinked to KPIs. This finding again confirms that currently the government is not using any tools to incentivize the strategic and coordinated use of KPIs by implementing agencies to drive results.

**106. A second finding from the survey is the presence of significant unexplained heterogeneity in access to funding by different institutions, which merits further research.** Generally, one expects an institution's budget for e-Government to be correlated with its volume of e-Government related tasks (such as e-services), its number of ICT staff, or both. Interestingly, the survey results are not fully aligned with these expectations. Annual budgets are only weakly correlated with the number of full-time or equivalent ICT staff (civil servants or contractuals) in the institution (Figure 5.1). There are many unexplained outliers where budgets are either

disproportionately large or disproportionately small relative to staff size. Even more counterintuitively, the average annual e-Government budget of institutions that provide e-services (1.09 million lev) is significantly smaller than that of institutions that do not provide any e-services (2,26 million lev). This could reflect a time inconsistency – that institutions without e-services are receiving more funds in order to ramp up activities to introduce such services in the near future. It could also point to significant inefficiencies. Further research, ideally through a spending review, will be needed to explain the finding.

**Figure 5.1: Correlation between institutions' number of full-time ICT staff and annual budget.**




Source: Survey of ICT Directors in Bulgarian ministries, agencies, municipalities. World Bank 2020.

# e-Government Implementation

**107.** This section considers several key aspects of implementation, including the adoption of government-wide technical principles and standards, development and operation of Management Information Systems (MIS), cross-government data sharing, data infrastructure, cybersecurity, and change management.

## Adoption of Government-wide Principles, Standards, and Requirements

**108. All central and local government institutions are obliged to follow common principles, standards, and requirements.** Requirements for common standards are regulated by the e-Government Act, the Cybersecurity Law, e-Government Architecture and Interoperability documents, the Order on General Requirements for Information Systems, Registers, and Electronic Administrative Services; Ordering for minimum network requirements and information security.

**109. The IT Directors' survey shows that in reality many institutions do not follow the common requirements set out in the e-Government Act and other laws and regulations.** About half of the surveyed government organizations have begun applying the principles, standards, and requirements adopted in

the e-Government Architecture while others are planning to do so. Half have applied the principles and requirements in implementing and maintaining core ICT systems to ensure interoperability, security, and reliable operation (48.6 percent) and in developing applications for e-services (40.5 percent). Fewer have used them for streamlining business processes (27.0 percent) and designing and maintaining data assets (24.3percent). Less than one-third of government organizations are applying the government-wide interoperability principles, guidelines, standards, and requirements (32.4 percent), although a further 54 percent are planning to start doing so. The principles and standards are mostly used for the integration of information systems and applications for e-service with the centralized eIdentification system and eDelivery system, coordination of ICT project proposals and technical specifications for the implementation of approved projects based on the template, provided by SEGA, developing new information systems and re-design of existing information systems, and storing information. The Interoperability standards are used to reduce and optimize ICT costs, ensure security and privacy, and increase technological neutrality and adaptability.

**110. Part of the reason for the weak application of common standards and systems appears to be a weak incentive system.** Many ministries, agencies, and municipalities do not know if the Government provides any incentives or penalties for adopting / following or not adopting/following the e-Government Architecture principles, standards, and requirements (48.6 percent). About half also do not know if the Government provide any incentives for adopting the e-Government Interoperability Framework or impose penalties for violations (48.6 percent). Only a small percentage of organizations (13.5 percent) report being fined for violating SEGA's guidelines and requirements on the adoption of the e-Government Interoperability framework, although actual non-compliance is likely to be more widespread.

## Development and Operation of Management Information Systems

**111. According to the IT Directors' survey, central and local government institutions use various Management Information Systems (MIS).** The most popular among them are commonly used MIS such as Human Resource MIS (HRMIS – 73.0 percent), Investment and Finance MIS (IFMIS- 56.8 percent) and e-Procurement (48.6 percent) followed by the Asset MIS (35.1 percent). Other information systems used in the public sector include Tax management, Property registration, eCustoms, Cadastre, Geographic Information System (GIS), Health MIS, Document management, Recordkeeping, and others. Most of the MIS are based on proprietary software solutions, although a few systems use open-source products. For the same type of MIS (e.g IFMIS, HRMIS), different government organizations use various proprietary software solutions. Most of such proprietary software solutions are developed based on outsourcing – IFMIS (100.0 percent), HRMIS (100.0 percent), Tax MIS (100.0 percent), e-Procurement (80.0 percent).

**112. It is also noteworthy that most of the commonly used MIS were procured by individual ministries, agencies, and municipalities – Document management (75.7 percent), FMIS&HRMIS (43.2 percent), Content Management (24.3 percent), Customer Relationship Management (16.2 percent).** Some information systems were automated based on the intra-agency business-process re-engineering (BPR) (32.4 percent) and a few based on inter-agency BPR (2.7 percent), but most MIS were developed without BPR. Some respondents did not know how their MIS were developed.

**113. In terms of maintenance of the information systems operated by various government organizations, most of them are handled by the own ICT staff (54.1 percent) or outsourced (43.2 percent), while only a few of them – by centrally appointed ICT staff (2.7 percent).**

## Cross-Government Data Sharing

**114. According to the survey, most of the government organizations' information systems are connected to the Registry Information Exchange System (RegiX) – 67.6 percent, while some are not connected – 27.0 percent.** Many central and local government institutions confirm that they have access to basic registers and

use data in their operations. However, there are still organizations that do not use data from the registries. Different types of data from basic registries such as National ID numbers, business registration ID, property registration ID are mostly used for user validation and verification, and automatic filing of e-documents. Almost all ministries, agencies, and municipalities participated in the survey indicated that they use the centralized e-messaging and e-document exchange system (97.3 percent).

**115. Currently, many ministries and agencies provide public access to their open data sets on various topics via the Open Data portal**[89]. However, only some of them confirm that they provide APIs to make it easier to extract and use available open data (27.0 percent).

**116. In terms of who bears the primary responsibility for managing data, most institutions answered it was their ICT departments (64.9 percent).** Less than half of the public organizations have Data Sharing Agreements with third parties (48.6 percent) and use Data Exchange Protocols with the third parties.

## Data Infrastructure and Emerging Technologies

**117. Most of the surveyed ministries, agencies, and municipalities indicated that they maintain their own Data Centers (75.7 percent). So far, only a few organizations participated in the survey confirmed that they use the resources of the government-wide Data Center (10.8 percent).** Some government institutions have begun using Cloud-based technologies. So far, 24.3 percent of responding organizations use cloud-based services such as Infrastructure-as-a-Service (IaaS), and another 24.3 percent of them are planning to use it. Only 16.2 percent of them use cloud-based services such as Software-as-a-Service (SaaS) and 18.9 percent are planning their use, and just a few of them use cloud-based services – Platform-as-a-Service (PaaS). However, more than half of the government organizations do not use any Cloud computing technologies.

**118. It is noteworthy that government institutions started using emerging technologies.** According to the survey, 16.2 percent of the participated organizations are already using the Internet of Things (IoT), 5.4 percent of them using Blockchain technologies and AI, machine learning technologies, and more are planning to leverage the power of emerging technologies. However, most ministries, agencies, and municipalities do not use or have no plans while others do not know.

## Cybersecurity

**119. Bulgaria's e-Government systems were vulnerable to cyber breaches in the past. Currently, central and local government institutions are obliged to follow the information security standards and requirements adopted by relevant regulatory and legal acts.** The most crucial ones are the Cybersecurity Law, the Electronic Government Act, the Ordinance on the minimum requirements for network and information security, and the Ordinance on the general requirements for information systems, registers, and electronic administrative services. To ensure compliance with the requirements, SEGA performs information security and cybersecurity audit across government institutions. The National Center for Incident Response in Information Security (CERT) organizes awareness-raising events on cybersecurity, provides training for government organizations to strengthen the security of the ICT systems and networks. The Center also conducts research on new digital risks and emerging relevant solutions, assesses cyberthreats, monitors and prevents security incidents, and responds to cyberattacks.

**120. Central and local government institutions are taking various relevant organizational and technical measures to ensure the secure operation of their information systems and to prevent data breaches in line with the government-wide cybersecurity standards.** According to the survey, ministries, agencies, and municipalities have developed their information security and cybersecurity strategies and plans that are updated periodically in line with the measures and actions taken to eliminate the identified risks. They also

[89] https://data.egov.bg/

adopted "Internal rules for network and information security" and regularly monitor compliance with the requirements. The most common technical measures to ensure information and network security include:

- Development and implementation of a network and information security management system
- Constant monitoring and regular audit of all information systems and networks
- Firewalls at the entrance of the systems, protection against DdoS
- Maintenance of up-to-date antivirus and antispam protections of email systems and workstations
- Access control to various applications and restriction of the use of USB devices
- Updating ICT systems to the latest software versions
- Automated backups of all copies and data, at least every day. Backups are stored on a medium other than the one on which originals are located. Periodic archiving
- Data encryption through specialized software
- Creation of a DMZ (isolated area in the network), where the publicly available servers and services of the ASA are located
- Implementation of new technological solutions
- Provision of certificates issued by a trusted system using an encryption algorithm
- Internet Security, Secure Protocols, ISO27001 certification

### Change Management Practices

**121. The survey indicates that many government organizations recognize the importance of change management practices to ensure their digitalization efforts' effectiveness and efficiency.** Change management is promoted through the on-the-job training on e-Government related aspects for non-ICT staff (27 percent), formal/classroom training (18.9 percent), with HR changes such as recruiting people with relevant skills (13.5 percent), and/or the corporate and service culture orientation (8.1 percent). Typically, the primary responsibility for managing change management aspects, including training, is under ICT departments (50.0 percent), but in some cases also other government institutions such as Institute of Public Administration (15.0 percent), the Information Services company, Ministry of Labor and Social Protection SEGA (5.0 percent). However, a full quarter of respondents do not know who is responsible for change management practices in their organizations, and almost half do not yet invest in change management practices at all.

## Digital Transformation Challenges

**122. The surveyed government institutions indicated the following digital transformation challenges from the change management perspective:**

- Building trust
- Lack of understanding of the need for change among employees and managers
- Implementing a single framework for e-government development
- Strategy development, its implementation in practice and approval of work standards
- The unification of processes, standardization, and creation of electronic registers
- The application of change management procedures
- Compliance with the regulatory requirements
- The introduction of electronic document management
- Synchronization of software products with paper-based administrative processes
- Employee resistance
- Insufficient capacity
- Insufficient number of ICT staff
- Training of employees

**123. Regarding the critical barriers for further digitization of data in their ministries, agencies, and municipalities, insufficient hardware and software were indicated as the most common (67.6 percent) along with inadequate ICT capacity (54.1 percent), costs (51.4 percent), cultural barriers, resistance from ministry/entity staff (29.7 percent), electronic network (21.6 percent) and others.** However, a few government organizations consider the lack of will at ministry /agency/ municipality leadership levels – 2.7 percent and the lack of will/capacity at central government levels (e.g. SEGA, Council of Ministers) – 2.7 percent.

# Key Findings

**124. The key assessment findings in terms of how central and local government institutions are engaged in the digital transformation process can be summarized as follow:**

- Most of the ministries, agencies, and municipalities have an understanding of the national e-Government strategy and align their digital transformation plans and activities with the government-wide strategy. However, there are still some government institutions that are not aware of the e-Government strategy.
- Though some government organizations took part in the e-Government strategic planning and provided their suggestions and comments and were involved in the review of all strategic documents as part of the Integration Council at SEGA, most of the central and local government institutions did not participate in the strategy development process.
- In general, government organizations have begun following the government-wide principles, standards, and requirements adopted in the e-Government related legal and regulatory documents or are planning to do so. However, some ministries, agencies, and municipalities either do not know about the e-Government Architecture and Interoperability Framework documents or have no plans to adopt its principles, standards, and requirements. Many of them do not know if the Government applies any incentives for adopting the e-Government Architecture or impose penalties for not following them.
- They mostly apply those principles, standards, and requirements in developing and maintaining new information systems and re-designing of existing information systems to ensure interoperability, security, and reliable operation. They also follow them for the integration of their systems with the Registry Information Exchange System (RegiX) to enable data exchange, and with the centralized eIdentification system and eDelivery system to provide seamless services to citizens and businesses. Those organizations that follow e-Government Architecture and Interoperability Framework standards and requirements, rarely apply them to streamline business processes and design and maintain data assets.
- The government-wide principles and standards also help them coordinate ICT project proposals and implement approved projects, reduce ICT costs, ensure security and privacy, and increase technological neutrality and adaptability. Based on the compliance audit conducted by SEGA, a few organizations were fined but many others were never penalized.
- Many central and local government institutions implemented HRMIS, IFMIS, e-Procurement, Document management, Recordkeeping, Content Management, Customer Relationship Management and Geographic Information System (GIS). However, different software solutions were procured by individual ministries, agencies, and municipalities for the same type of information systems.
- Specific information systems such as Tax Management, Property registration, eCustoms, Cadastre, Health MIS, and others have been mostly developed based on outsourcing using proprietary software solutions and only some systems use open-source products. Typically, information systems are procured by the individual government organizations and maintained by their own ICT staff.

- Though some information systems were automated based on the intra-agency business-process re-engineering and a few among them – based on inter-agency BPR, most of the
- Ministries, agencies, and municipalities indicated that they rarely streamline and re-engineer their business-processes before developing their information systems. Many central and local government institutions have access to basic registers and use data in their operations, and almost all of them use the centralized e-messaging and e-document exchange system. However, there are still government organizations that do not use data from the registries for user validation and verification and automatic filing of e-documents
- Open data sets are publicly accessible by many government organizations via the Open Data portal but APIs for easier data extraction and use are provided by just a few of them. The primary responsibility for managing data within ministries, agencies, and municipalities is under their ICT departments. Some government organizations have Data Sharing Agreements with third parties and use Data Exchange Protocols with the third parties.
- Currently, most of the ministries, agencies, and municipalities maintain their own Data Centers and only a few of them use the resources of the government-wide Data Center. Some government institutions have begun using or planning to use cloud-based services such as Infrastructure-as-a-Service (IaaS) and only a few organizations use or planning to use Software-as-a-Service (SaaS) cloud-based services.
- Most of the government organizations do not use cloud computing services and emerging technologies and have no plans to do so while some others have started or planning using emerging technologies such as the Internet of Things (IoT), Blockchain and AI, machine learning technologies.
- Central and local government institutions are obliged to follow the information security standards and requirements adopted by relevant regulatory and legal acts. To ensure compliance with the requirements, SEGA conducts information security and cybersecurity audit across the government institutions while the National CERT provides guidance, training, and technical support.
- Government institutions are taking various relevant organizational and technical measures to ensure the secure operation of their information systems and prevent data breaches in line with the government-wide security standards. Some of them developed their information security and cybersecurity strategies and plans, adopted internal rules for network and information security, and regularly monitor and assess information and cybersecurity risks.
- In general, government organizations recognize the importance of change management but rarely invest in establishing service-oriented organizational culture. They indicated that they are not guided in change management practices by central government agencies, such as the Institute of Public Administration and SEGA. Typically, the primary responsibility for managing change management aspects is under ICT departments.
- Currently, the government organizations face various digital transformation challenges, including building trust, lack of understanding among employees and managers, applying change management procedures, employee' resistance to changes, regulatory compliance, standardizing processes, creating electronic registries and lack of hardware and software, introducing electronic document management practices and synchronization with paper administrative processes, lack of digital skills among employees, inadequate ICT capacity, as well as limited employee training.

# Recommendations

- **Disseminate widely the National e-Government strategy and implementation plan among government institutions with a clear statement of strategic goals and expected benefits.** The directors and senior IT staff of all government institutions should know and understand the content and implications of the National e-Government strategy – its expected results, roles and responsibilities, and metrics to assess progress and impact. To better inform and engage multiple stakeholders in the development and implementation of government strategy, an effective communication strategy should be defined, and mechanisms and digital platform for sharing knowledge and good practices should be established.

- **Tie implementing institutions' e-Government budgets more closely to results.** Each ministry, agency, and municipality benefiting from budget funding for ICT and e-Government related activities should be required to put together a set of measurable and achievable KPIs, which are developed in coordination with SEGA and aligned with the national e-Government Strategy. The KPIs should be reviewed and updated annually and included in budget negotiations and decisions. They can include measures such as the number of e-services developed and deployed during a year, levels of user satisfaction with given services, cost savings from e-service deployment, among others.

- **Conduct a spending review to explain the heterogeneity in access to e-Government financing by different ministries, agencies, and municipalities.** The review should explain why financing does not appear to be closely linked to the size of ICT staff and negatively related to the institution's provision of e-services, and propose appropriate rectifying measures as needed to ensure alignment of financing with needs and with incentives.

- **Communicate government-wide standards and incentives for their adoption.** This includes requirements adopted by the e-Government regulation including e-Government Architecture and Interoperability Framework along with possible incentives for adoption to facilitate data sharing, ensure secure and sustainable operation of basic registries and information systems, and enable integrated delivery of e-services. To ensure compliance with the government-wide interoperability and security standards and requirements for information systems, SEGA provides guidance to central and local institutions with a template for technical specifications. The dedicated team provides helpdesk services on how to connect basic registers and information system to RegIX that serves as the interoperability platform. In order to accelerate the adoption of the e-Government Architecture and Interoperability standards, it should define possible financial and non-financial incentives. Both monetary and non-financial incentives such as awards, special recognition, learning opportunities among others can help motivate ministries, agencies, and municipalities for closer collaboration and data sharing that is critical for seamless service delivery and effective decision making.

- **Procure and maintain commonly used Management Information Systems, along with cloud computing services and emerging technologies, in a centralized way to improve the efficiency of public administration and reduce costs.** To meet common needs in technology solutions, ministers, agencies, and municipalities should take advantage of existing multi-agency contracts. To prevent unnecessary spending, duplication of efforts and procurement processes of central and local institutions, common information systems with the same functionalities, various tools, and emerging technologies such as cloud services, Blockchain, IoT, AI, and data analytics should be procured and maintained in a centralized way. A single government platform like a Digital Marketplace for the public sector can help public organizations to buy required hardware and software products and services.

- **Streamline and re-organize business-processes and use available data from basic registries following the government-wide guidelines.** In addition to the guidelines for BPR provided by the central coordination institution, ministries, agencies, and municipalities should be provided with expert assistance for streamlining inefficient organizational processes and data flows across government. Re-organization

and optimization of the back-office processes before developing information systems and applications for e-services will improve the efficiency of public administration and the quality of service delivery. To ensure seamless e-services to citizens and businesses, the processes should be streamlined across the government organizations involved in integrated service delivery. It is important for government organizations to understand the linkages between their services and services provided by other ministries, agencies, and municipalities and to seek opportunities to integrate service delivery. Also, application development teams across government organizations should adopt modern and agile approaches to system development to enable greater adaptability to rapid changes in both business requirements and enabling technologies and, ultimately, delivery of greater value for the users.

- **Prioritize investments for broader adoption of change management practices and the creation of a digitally friendly organizational culture, led by central coordinating bodies for digital transformation in the public sector.** E-Government implementation requires not only technological innovation and the reorganization of business processes but also significant changes in the organizational culture. As shown by international experience and advanced practices, quality public service requires promoting a culture of collaboration, co-creation, and partnership. However, traditional cultural norms within government organizations often challenge the changes needed for digital transformation such as shifting from a silo approach to a user-centric focus, agile development and deployment of information systems, and e-service applications. Government organizations should not only assess user needs and preferences but engage citizens and businesses in the design of innovative e-services. To enable public servants across the government to collaborate and deliver seamless services to citizens and businesses, effective digital workplace technologies and tools should be provided.

- **Strengthen the digital transformation capacity of government institutions through awareness-raising and knowledge sharing activities, regular workshops, seminars, and training programs, as well as communities of practices.** Capacity development activities and training programs for digital transformation should target senior, managerial and technical level public officials. They should cover various important aspects including the latest global trends, data-driven proactive delivery of e-services and innovative digital solutions for anticipatory decision making, interoperability of information systems, data governance and sharing, open data, data analytics, information security, digital risks assessment and benefits of using emerging technologies in the public sector. Universities and other academic institutions can be engaged in the implementation of capacity building activities and the delivery of training programs. The online knowledge platform for capacity building and training can help extend the participation of employees from various ministries, agencies, and municipalities.

- **Strengthen incentives for ministries, agencies, and municipalities to foster the delivery of simple, faster, and convenient e-services and stronger collaboration across the public sector.** In other words, the stakeholders with high power, but moderate interest (Ministry of Finance and Ministry of the Interior, for example) could consider ideas on how to reward early adopters, including staff and ICT personnel. Another way of incentivizing is simply to promote and celebrate success similar to well-established practices in Australia, the US, the United Kingdom, and Singapore. Annual digital government awards can recognize excellence in government digital products, e-services, partnerships with the private sector, and collaboration with other government institutions. Related to this, SEGA may significantly benefit from a more structured and professional outreach and communications approach and take on a more ambitious implementation path.

# Chapter 6
# Human resources for e-Government

**125. The availability of appropriately trained and motivated ICT staff in implementing institutions is one of the most important ingredients for effective Digital Government transformation.** Having a sufficient number and quality of such subject matter specialists is critical for Bulgaria.

**126. This chapter presents key findings on the current human resource (HR) dimension of Bulgaria's e-Government.** The findings are based on five main sources of data: interviews with SEGA and the Council of Ministers, national administrative data shared by SEGA, the survey of ICT Directors in implementing institutions, and a survey of regular ICT staff in the same ministries, agencies and municipalities. The different sources are used to present the status quo situation and challenges from multiple perspectives – central, implementing unit managers, and the ICT cadre itself. At the end of the chapter, recommendations are provided for potential interventions to address key areas of weakness.

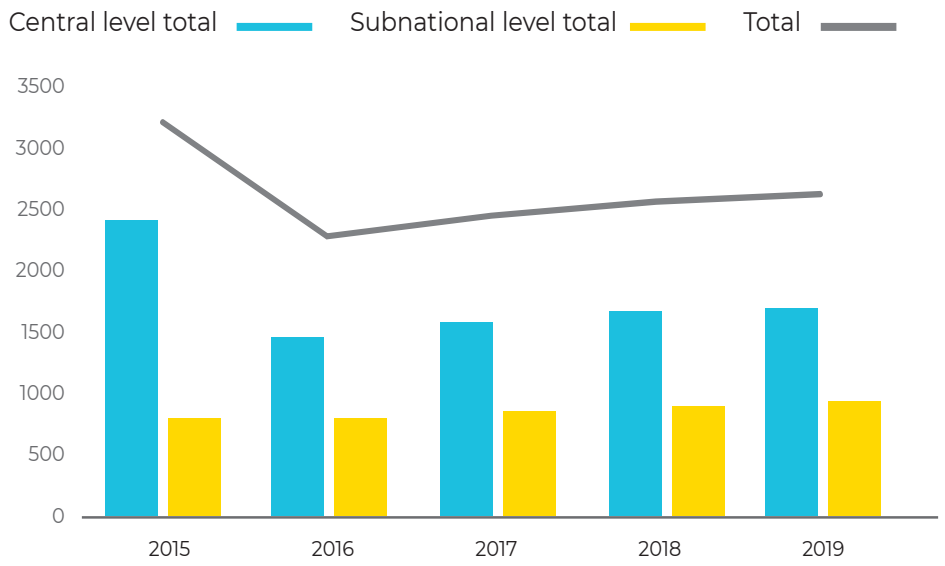
## Capabilities and gaps: View from the Center of Government

**127. Given their importance for the overall digital government transformation, e-Government human resource needs are closely tracked by the Government.** At the central level, the responsibility for policy and oversight in the HR domain falls on the Public Administration Reform Directorate at the Council of Ministers (COM). Its mandate on HR issues is broader than HR for e-Government, and it coordinates closely with SEGA on the e-Government related dimension. To track HR needs (including for e-Government) across the whole government sector, COM requires individual budget holder institutions to share detailed data on both civil servants and public employees on labor contracts, which it collates and publishes in an annual report showing the number of planned and actual positions and competencies across the government. The existence of the central monitoring function is commendable and aligned with international good practice. However, it is unclear to what extent the staffing data is comprehensive – for instance, whether it includes part-time as well as full-time workers – and whether and how COM audits or cross-checks the data for quality and consistency using independent sources such as payroll records. The comprehensiveness and consistency checks would be important for ensuring that the Government has an accurate overall picture of the HR dynamics and potential gaps in the e-Government sector.

**128. From SEGA's perspective, HR capacity is a critical weakness and constraint on the effective implementation of the e-Government Strategy.** The challenge is perceived to be both in the number of staff and their skills. In terms of the number of staff, SEGA believes the government sector overall has difficulty attracting and retaining sufficient ICT staff. Administrative data depicted in Figure 6.1 broadly supports this view: the number of ICT staff in the government has declined between 2015 and 2019, particularly at the

central level (the big drop was between 2015 and 2016 and since then the trend has been static or slightly upward looking). In terms of the skills of staff, SEGA sees the biggest capacity gaps at the local level, with many critical gaps and challenges in finding qualified individuals for positions. In SEGA's view, the problem is compensation, which is regulated by public sector pay and grading rules and cannot compete with private sector salaries. This could explain why the shortage of staff is particularly acute at the central government level, as most central government jobs are located in the capital Sofia where there are more opportunities for outside employment, in the private sector.

**Figure 6.1: Number of Employees in ICT departments (full-time equivalent, civil servants and contractuals)**




Source: World Bank staff, based on data obtained from SEGA

# Capabilities and gaps: View from implementing units

The ICT Directors survey presents some interesting complementary results.

**129. In terms of overall staff levels,** the modal number of full time or full-time equivalent staff in ICT departments across the sampled ministries, agencies and municipalities is 2 people including the manager. [90] Overall, the number of staff in the sampled ICT departments appears to be decreasing, evidenced by the fact that twice as many (32.4 percent) managers report seeing a decrease in staff numbers than an increase (13.5 percent) in the last 5 years.

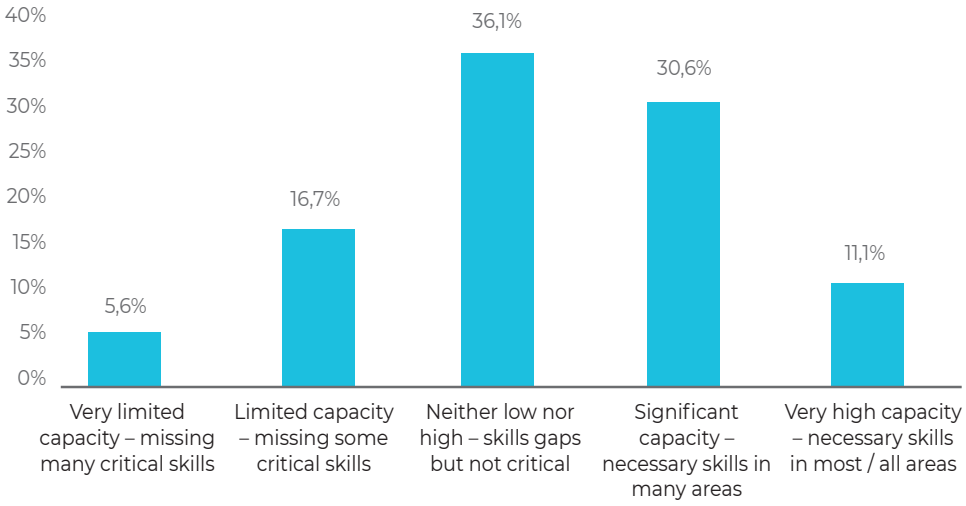
**130. In terms of overall skill levels,** the picture is mixed. Of the managers who replied to the question about skill availability, 42 percent believe their departments have the necessary skills in many or all areas of their work, while the rest believe there are gaps, including in some or many critical skills (22 percent) (Figure 6.2).

**131. Interestingly, despite the significant skills challenge,** over 50 percent of managers responded that they have not outsourced any functions in past years, although almost two-thirds say they are open to the option.

[90] The number includes civil servants and public employees

**132. Partly related to the gaps in skills and partly to broader HR planning, several standard positions needed for effective implementation of e-Government strategies appear to remain unfilled in many institutions.** These include cybersecurity specialist positions (over 70 percent of managers confirmed they do not have one, but over one-third of those plan to hire one in 2020-2021), and the position of a Chief Digital Transformation Officer or Chief Information Officer (only 5.4 percent of surveyed institutions had one).

**Figure 6.2: Skill gaps reported by ICT managers in sample institutions**




Source: Survey of ICT Directors in Bulgarian ministries, agencies, municipalities. World Bank 2020.

**133. The reason for the skill gaps appears to be managers' inability to recruit and, to a lesser degree retain, the needed staff.** Only 21 percent of managers say they can reliably (usually or more often than not) recruit the specialized ICT staff they need, while the rest say they are not able to do so reliably (Figure 6.3). Retention rates appear slightly better, as 36 percent of managers report being able to reliably retain the specialized staff they need (Figure 6.4), but even so two-thirds of managers often or very often see staff leaving their jobs.

**Figure 6.3: Managers' ability to recruit the specialized ICT staff they need (percent)**

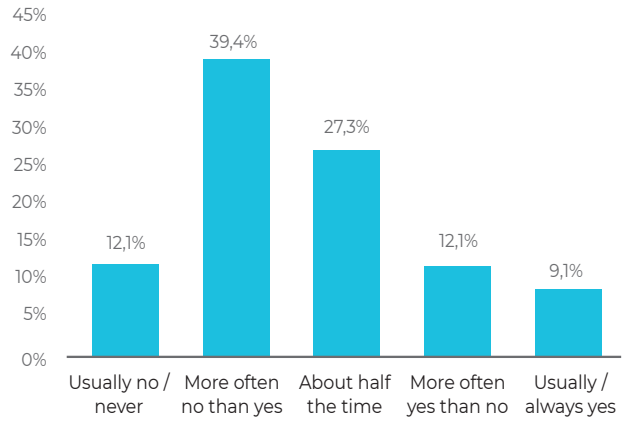
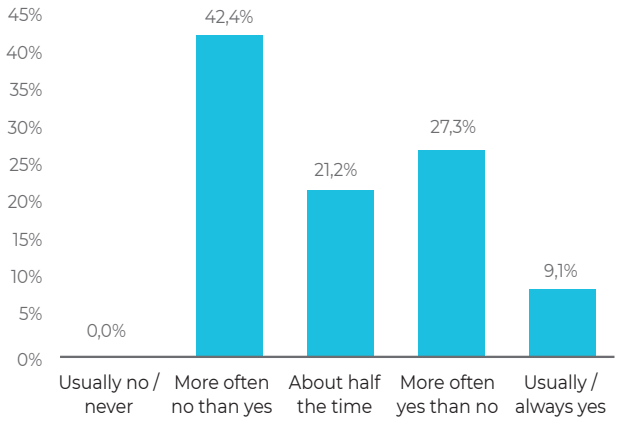



**Figure 6.4: Managers' ability to retain the specialized ICT staff they need (percent)**




Source: Survey of ICT Directors in Bulgarian ministries, agencies, municipalities. World Bank 2020.

**134. Open-ended questions on the causes yielded similar answers for the recruitment and retention challenges** (Figures 6.5, 6.6). The most frequently cited reason for both weak recruitment (100 percent of managers agree) and retention (93 percent of managers agree) is low pay compared to similar positions in the private sector, which is similar to SEGA's view. Since public sector wages and perhaps other types of material incentives are determined centrally, there is not much the managers can do about this constraint. However, it should be noted that several other constraints cited are under their mandate and potentially actionable. They include opportunities for career development, workload, training, clarity of responsibilities, working hours, and working conditions.

**Figure 6.5: Perceived causes of difficulty recruiting (% managers stating view)**

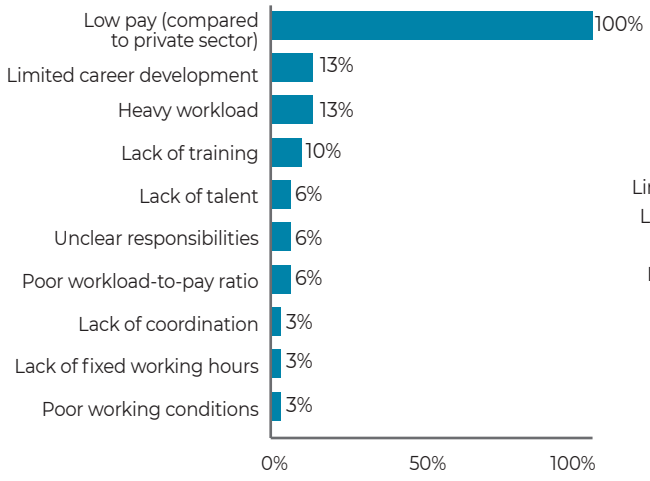
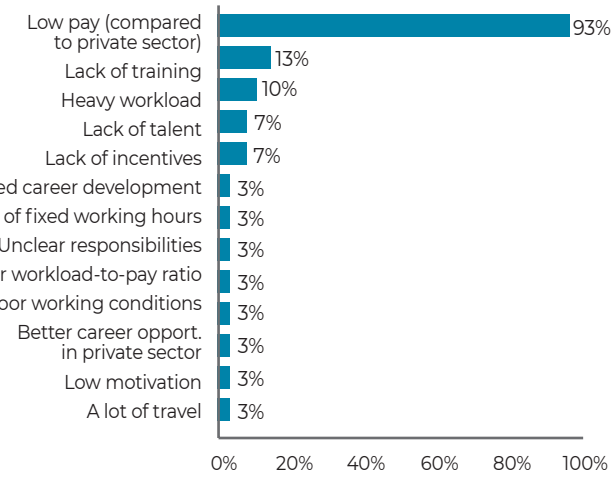



**Figure 6.6: Perceived causes of difficulty retaining (% managers stating view)**




Source: Survey of ICT Directors in Bulgarian ministries, agencies, municipalities. World Bank 2020.

**135. Managers cite several measures to address the challenge of recruitment and retention, with significant overlap between the two sets of measures** (Figures 6.7, 6.8). Enhanced job security is the most popular measure by a long shot, followed by opportunities for training and skills upgrading, improved management, boosting a sense of mission, and non-material incentives and recognition. These align closely with international good practice and guidance for improving loyalty, motivation, and productivity in the public service. Predictably, material incentives and benefits are low on the list of the managers' tools given their low level of control over these factors.

**Figure 6.7: Measures taken by managers to address recruitment (% managers)**

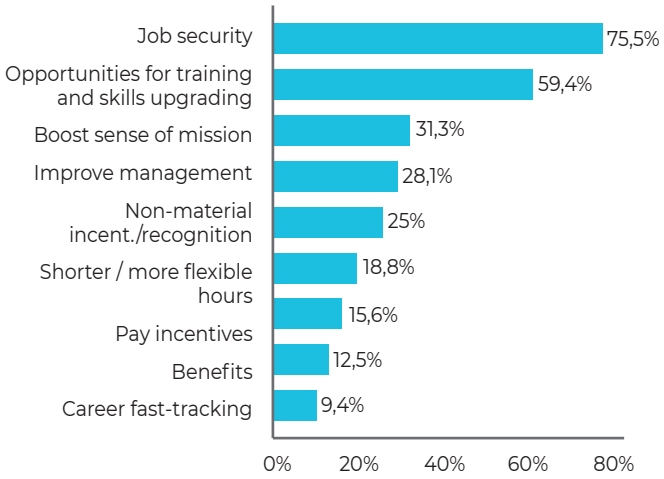
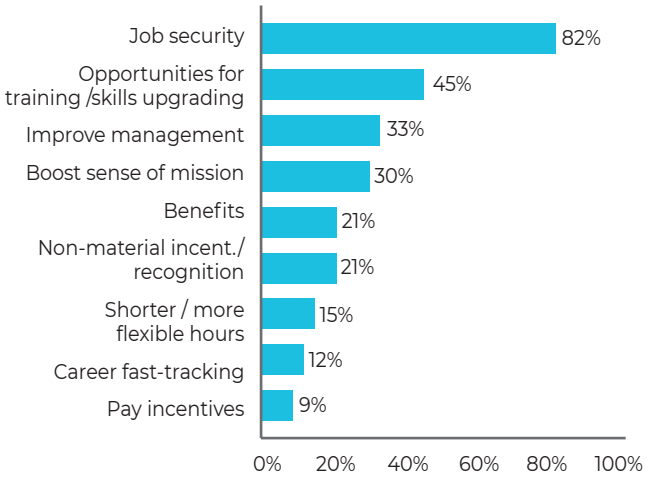



**Figure 6.8: Measures taken by managers to address retention (% managers)**




Source: Survey of ICT Directors in Bulgarian ministries, agencies, municipalities. World Bank 2020.

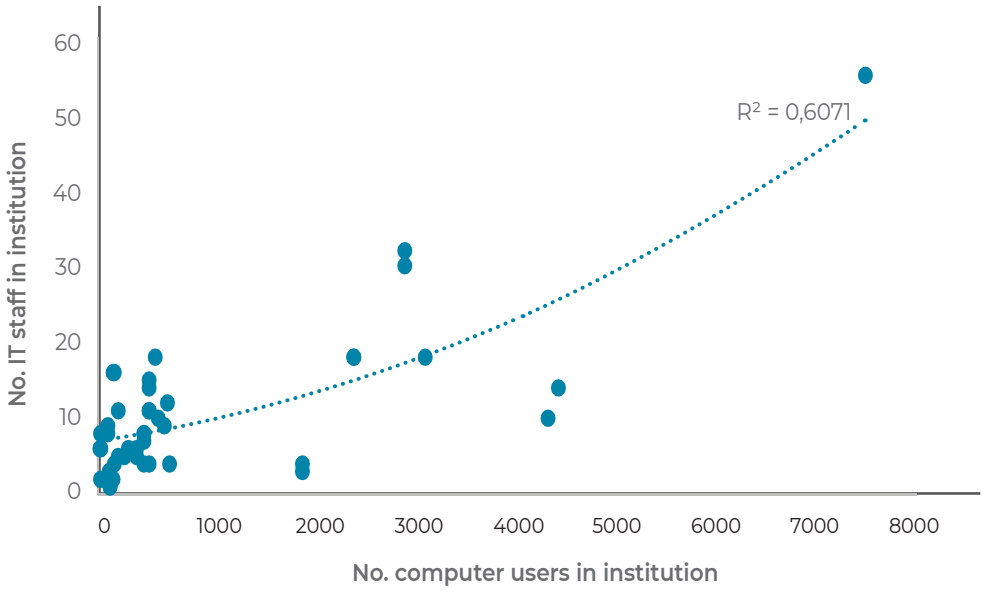
**136. Recruitment methods vary widely across institutions, suggesting potential room for standardization.** About one-third of the sampled institutions (36.4 percent recruit through annual batch recruitment competitions for civil servants, another third (30.4 percent) recruits on an ad hoc basis, and another third (33.3 percent) use a mix of batch and ad hoc hiring. Meanwhile, 97 percent of managers said they drafted their own job descriptions, while only 3 percent used central standardized job descriptions for similar positions. Interestingly, only 35.1 percent believe it is their responsibility to recruit ICT experts for their departments, suggesting also a misalignment in their perceived role in staff recruitment and retention.

# Capabilities and gaps: ICT staff perspective

**137. Several complementary results emerge from the survey of regular ICT staff.** The survey was fielded to ICT staff in 37 institutions, of these 52 staff responded from 21 institutions, including 7 ministries, 9 agencies, and 9 municipalities. The respondents were in equal proportion male and female, with a mean and modal age of 45 years. Most were civil servants, all were full-time employees, and 52percent were managers or senior rank staff.

**138. In terms of staffing numbers,** although the survey cannot directly indicate the presence or absence of staff shortages, it does suggest that the number of ICT staff in a given institution is overall positively correlated with the number of computer users (ICT department's internal clients) in that institution, although the distribution is extremely uneven (Figure 6.9). While some institutions have severe shortages of staff with one ICT expert servicing over 650 staff who are computer users, others appear to have an oversupply of experts with one for every 3 staff, suggesting significant inefficiencies in labor allocation. Further analysis of these inefficiencies is needed to determine their drivers and whether reallocation/transfer of staff could help to ease some of the capacity constraints.

**Figure 6.9: Scatter plot with the number of ICT staff and number of computer users by institution**




Source: Survey of ICT department staff in Bulgarian ministries, agencies, municipalities. World Bank 2020.

**139. In terms of the staff's skill level and type, the results are mixed.** On the one hand, most of the surveyed ICT employees are highly educated: 98 percent have a bachelor's degree and above, including 86% a Masters or Ph.D. The problem appears to be more in the educational specialization of ICT staff. A majority (71%) possess degrees in science technology engineering and math (STEM) fields, including 52 percent in computer science and ICT. However, a sizable minority (almost 30 percent) appear to come from non-STEM fields, suggesting potential skill mismatches and gaps in recruitment and/or internal HR transfer procedures.

**140. In terms of job satisfaction and job mobility, the picture is mixed.** A relatively high percentage of staff (65 percent) is overall satisfied with their job. On the other hand, only 50 percent say they would be content to stay in this or similar job in the government until they retire; 13 percent definitely do not want to stay, and 37 percent are uncertain. Employees' reasons for wanting or not wanting to stay partly reflect their reasons for joining the public service and partly the broader labor market and economic climate. Those who want to stay cite liking the team or manager as the top reason, followed by feeling substantive interest and challenge, believing in the mission, and seeing career growth potential (Figure 6.10, blue) – factors that correspond closely to their stated reasons for choosing the job at the time when they accepted it (Figure 6.11). On the other hand, for employees who would like to leave the job, the main reason is the low salary (Figure 6.10, red), which is fully aligned with the diagnosis by SEGA and ICT department managers.[91] SEGA also correctly identifies that the main pull factor for the brain drain is the private sector. The employees' job history suggests significant external (but not internal) mobility, with almost 70 percent of the respondents reporting having worked in the private ICT sector before taking their current job, and with on average 7 years spent in jobs outside the government. Additionally, 59 percent of those who have applied or thought about applying to jobs outside the public sector say their preferred destination is the Bulgarian private sector, compared to 23 percent who prefer to move abroad.

**Figure 6.10: Employee's reasons for wanting to stay (blue) /leave job (red)**

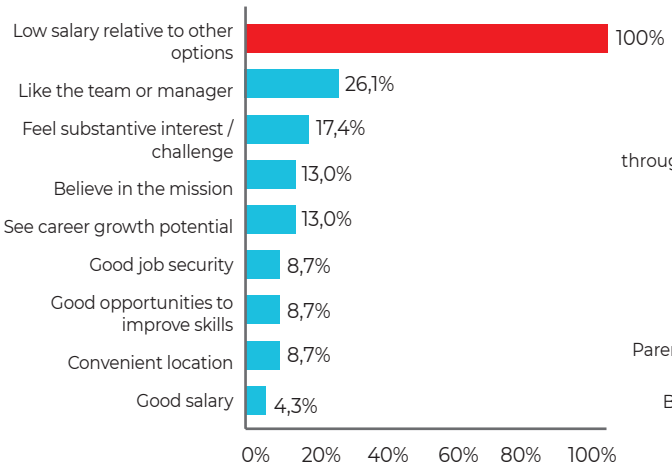
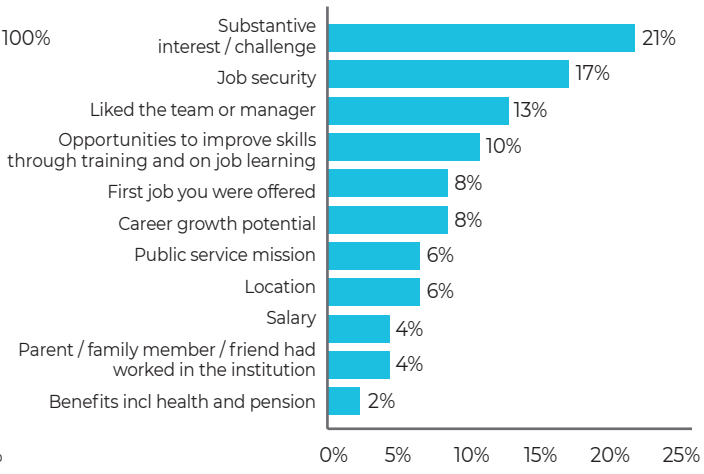



**Figure 6.11: Employees' reasons for choosing the current job, at the time when accepted it**




Source: Survey of ICT department staff in Bulgarian ministries, agencies, municipalities. World Bank 2020.

**141. The Government recognizes HR challenges and is working to develop solutions.** According to the SEGA and COM, the Government has reviewed its remuneration model and adopted a new pay and grading structure to make it easier to attract and retain talent in the ICT area. There is also increasing thinking that the

[91] Note, the results for the ICT staff and ICT managers surveys are not independent, as ICT managers were also invited to participate in the ICT staff questionnaire and a number of them appear to have done so.

strategic vision for Public Administration Reform (PAR) and e-Government reform needs to be further aligned so that the efforts are focused in the same direction. This could be done through the participation of experts from both SEGA and CoM in the working groups, tasked with designing the new PAR and e-Gov strategies post-2020; alignment of timeframes for the two strategies; and the alignment of both with shared priorities in the Bulgaria 2030 strategic document.

# Recommendations

- **Analyze and take measures as necessary to correct inefficiencies in ICT workers' allocation across the public sector.** If many of the observed shortages in ICT staff and skills could be addressed by transferring staff from over-staffed units to understaffed units, that would be more efficient and effective than hiring new workers.
- **Analyze and take measures as necessary to correct inefficiencies in the recruitment and/or internal transfers of ICT staff in the government sector.** Half of the specialized staff in ICT departments do not have a background in ICT or computer science, and almost one third do not have a background in any science or engineering. Before taking further measures to boost the recruitment of ICT specialists, it would be important to understand why those currently employed apparently lack the educational qualifications for the job, and address those causes.
- **Explore options for outsourcing.** The challenge of recruiting specialized ICT staff is an opportunity to explore other options, including outsourcing certain functions. Overall, this option might be not only more sustainable but also cheaper, considering that outsourcing will relieve the government of significant investments in compensation (salaries, allowances, benefits, pensions), training and re-skilling, physical office space and hardware, among other, and allow it to reap greater synergies from shared services/ resources and greater flexibility in responding to new needs. As mentioned earlier, over 50 percent of surveyed ICT managers have not outsourced any functions in past years despite facing skilled labor shortages, but the good news is that almost two-thirds say they are open to the option. Further analysis is needed to understand the reasons for the low uptake of HR outsourcing to date: in principle, SEGA provides standard TORs and guidelines for ICT related procurement and outsourcing, but there could be issues of awareness or access to the tools. Looking deeper into the existing roadblocks can help all stakeholders develop an appropriate response.
- **Introduce more widely the shared services model in the public administration.** The model will allow the Government to both save costs and deploy fewer ICT staff to serve the same number of users.
- **Focus on factors that help the recruitment of qualified staff.** For positions that the Government is unable or unwilling to outsource, and where staff transfers are also not an option, recruiting will be the preferred choice. As the challenge with retention appears to be somewhat less severe than recruitment, it could pay off to focus on factors that affect recruitment. The staff survey suggests that most recruits who come to the public sector are intrinsically motivated and attracted to the positions for non-material reasons, such as the substantive challenge of the job, the mission, the quality of management (clarifying responsibilities, promoting career development, ensuring a balanced workload and working hours and good working conditions), and non-material incentives and recognition. Improving the attractiveness of jobs by boosting these parameters will not cost much (most are non-material) but could help to attract the right people.
- **Clarify the ICT managers' roles and responsibilities in HR matters, including recruitment of specialized ICT staff.** The surveys suggest some confusion among managers about how much responsibility they carry in recruiting ICT staff (65 percent say this is not their responsibility, but at the same time 95 percent draft their own customized job descriptions instead of using centrally standardized job descriptions,

suggesting a significant individual managers' stamp on the recruitment process). Since managers do play an important role in day-to-day staff management, development, and motivation, they should be clear about their roles.

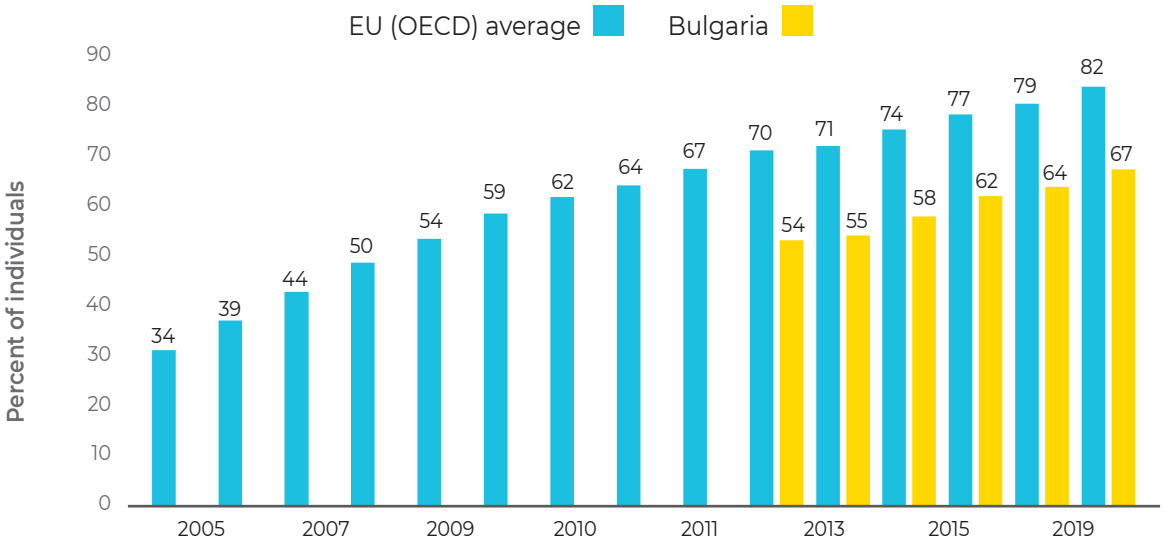
- **Investing in training.** Although training opportunities are not among the top reasons identified by ICT staff for wanting to stay or leave the public sector, they could help. According to SEGA the Institute for Public Administration provides intensive certificate training programs in ICT related subjects, which cater to existing government employees and with costs borne by the hiring institutions. Some ICT managers indicate using training programs as a way to attract or retain staff, but more could be done, in combination with the other measures proposed above.
- **Benchmark the ICT salary structure against the private sector equivalent.** Despite the Government's efforts to adjust salaries for ICT experts, the ICT staff survey suggests that their salaries are still not keeping up with the private sector. A preferred solution is to, therefore, to regularly benchmark the compensation for critical positions such as ICT directly to the private sector equivalent, taking into account not only the salary but the whole package of benefits and allowances and expected monetary value of job security and similar intangibles. This approach will promote flexibility and allow salaries to remain competitive at all times.

# Chapter 7
# User-Centric e-Services

**142. The goal of building a solid e-Government infrastructure with adequate supporting material and human resources is to provide the best possible services to the ultimate service users – citizens and businesses.** This chapter examines the status quo conditions and challenges Bulgaria's Government faces in providing high-quality user-centric e-services. It approaches this question from multiple perspectives, including those of SEGA, the implementing central and local government institutions, and the citizen-users themselves.

**143. Overall, a key challenge is overcoming the low uptake of e-government services by users among the general population.** Data suggest that while the percentage of individuals using the internet regularly (daily or almost daily) has increased rapidly over time and is gradually converging with average EU levels[92] (Figure 7.1), the percent of individuals using the internet to interact with government authorities – including to obtain e-services and e-resources – has remained flat (Figure 7.2). This has led to a growing gap in e-Gov use: a widening difference between the percent of individuals who are regular internet users and those who use the internet to interact with public authorities (Figure 7.3).

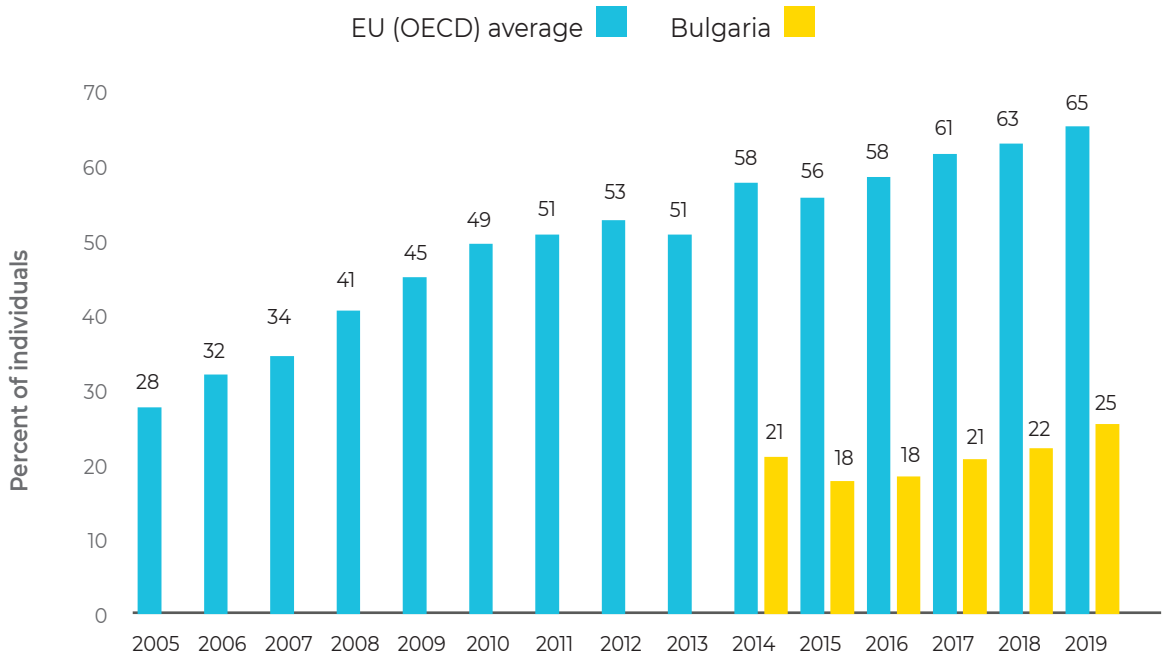
**Figure 7.1: Percent of individuals regularly using the internet (daily or almost daily)**




Sources: National Statistical Institute of Bulgaria, OECD Statistics http://stats.oecd.org

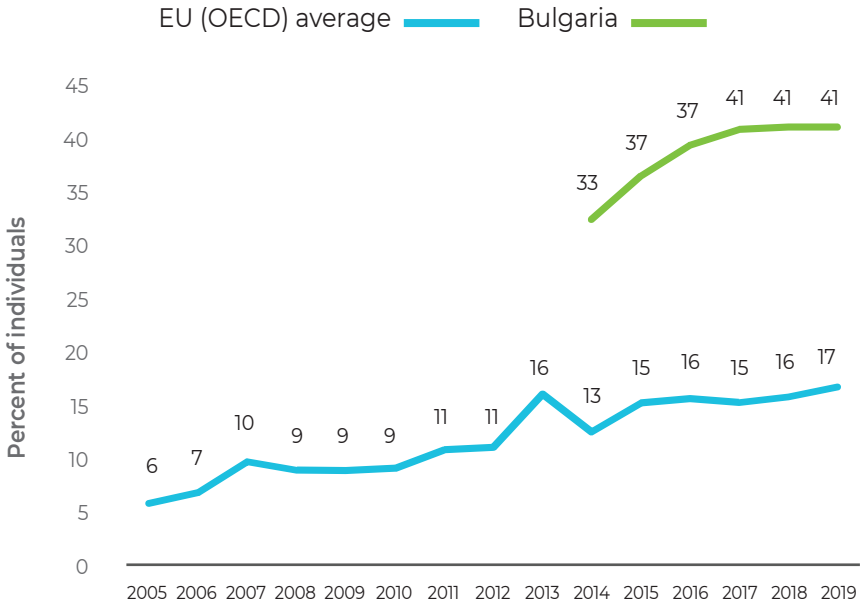
[92] EU countries in OECD include: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, UK

**Figure 7.2. Percent of individuals using the internet to interact with public authorities**




Sources: National Statistical Institute of Bulgaria, OECD Statistics http://stats.oecd.org

**Figure 7.3. Gap in e-Gov use – difference between overall internet use and internet use to interact with public authorities**




Sources: National Statistical Institute of Bulgaria, OECD Statistics http://stats.oecd.org

# User-centric e-Services: SEGA perspective

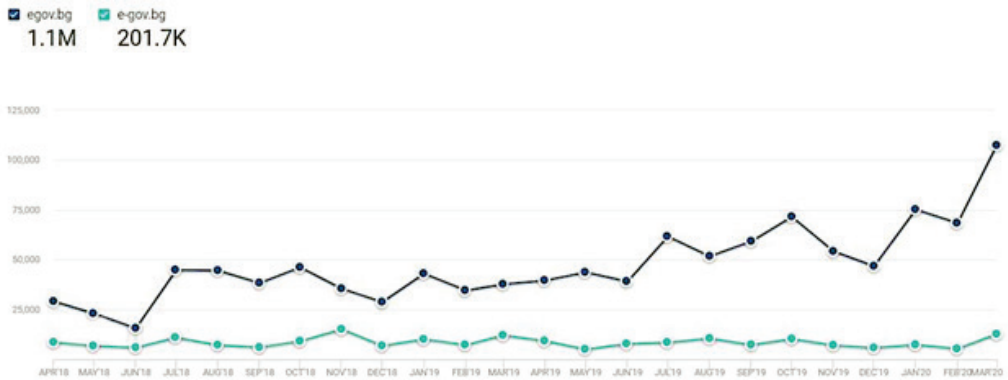
**144. The e-Government Strategy and the implementation Roadmap includes specific actions to achieve the strategic objective to provide more electronic administrative services (e-services).** All available e-services are accessible via the National e-Government portal[93] operated by SEGA. Currently, the total number of e-services accessible through the portal is 354, of which 143 are provided by municipal institutions.[94] It is expected that more than 850 e-services will be provided to citizens and businesses by 2023[95]. The portal allows users to request e-services provided by various ministries and institutions and receive responses from their requests. Each e-service accessible through the portal is supported with the information on the government institution that provides the service, a brief description of the service, required documents, sample documents for e-requests where applicable, the service delivery options, as well as fees and terms.

**145. As mentioned earlier, SEGA provides guidance on using centralized e-services based on the Unified Model[96].** It enables access to shared digital platforms for e-services such as eIdentification, eDelivery, eForm, and ePayment. To ensure user-centric service delivery, recently the MyProfile option (a MyGov concept) was made available with the single sign-on access for a registered user to various services and correspondence from participating government departments. A Help Desk/Hotline option on the portal provides assistance to users on how to navigate and find what they need, how to use, and how to apply for e-services. Users can also provide their feedback and complaints on e-services via the portal.

**146. The government e-services available at the portal can be accessed from mobile devices using a personal, cloud-based qualified electronic signature (QES).** However, the development of mobile apps for e-services was not among the priorities in the previous e-Government strategy. According to SEGA, it is planned to implement the "mobile-first" principle in service delivery. Mobile apps and different platforms will be developed, making the e-services easy-to-use via different channels. Private companies will be allowed to develop mobile apps for citizens to ensure easier access to government services.

**147. SEGA's data on the usage of the portal clearly illustrates the increased demand and usage of e-solutions from citizens – about 1,5 million people have used the centralized application through e-authentication** (Figure 7.4). There is a significant increase in the number of requested e-services through the Government portal (egov.bg)–more than 18,000 requests for e-services were processed in the period January 2017 to May 2020, whereas 16,300 requests were filed in the first four months of 2020 alone.

**Figure 7.4: User visits to e-Government portal and SEGA website[97]**

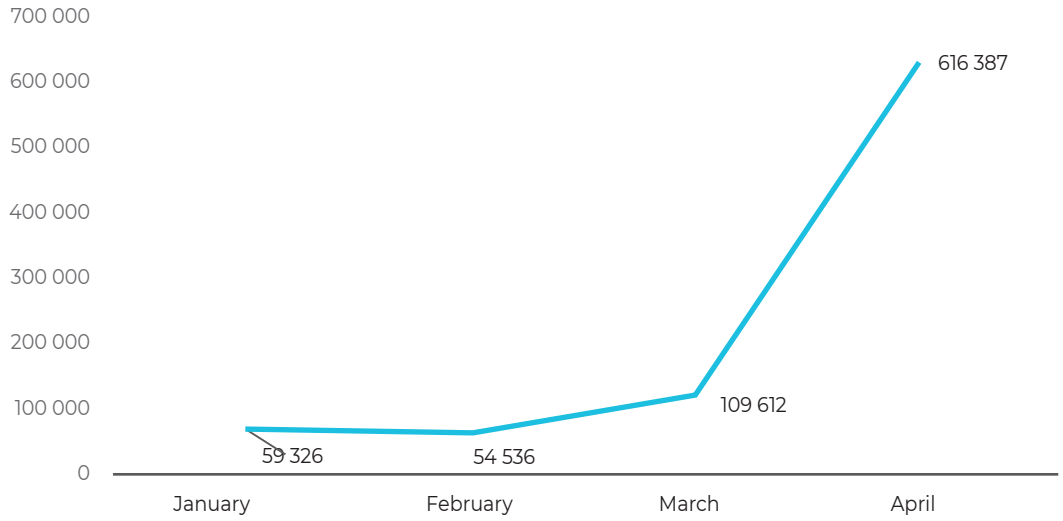



Source: Data provided by SEGA, May 2020

[93] www.egov.bg
[94] https://unifiedmodel.egov.bg/wps/portal/unified-model/for-citizens-and-businesses/active-e-admin-services/active-e-admin-services
[95] https://www2.e-gov.bg/en/news/124
[96] https://unifiedmodel.egov.bg/wps/portal/unified-model/home
[97] Statistics on users visits to e-Government portal and SEGA website provided by SEGA, May 2020

**148. During the outbreak of COVID-19, it increased significantly, reaching 1.1 million visits by March 2020.** Figure 7.5 below illustrates the increased number of visits in the portal (egov.bg) in the first four months of 2020 with more than 100,000 visits that month alone.

**Figure 7.5: Number of Visits in egov.bg portal in the first months of 2020**




**149. E-services accessible through the portal are prioritized together by the implementing institutions based on their technical capabilities and user needs, sometimes with SEGA's input.** Special services for people with disabilities have recently been developed. The latest example of a new e-service is online applications for job seekers and registration of applicants. The e-service emerged during the COVID19 pandemic, as most businesses were closed, and many employees were laid off. It was launched by SEGA in collaboration with the Employment Agency to prevent the crowding of large numbers of people in one place and to comply with measures to reduce the spread of the virus. However, there is no government-wide approach and methodology for prioritizing services that need to be digitized. Typically, individual institutions are responsible for their services and take into account the frequency of services and cost reductions to determine priorities.

**150. SEGA tracks the uptake of the government e-services by citizens and businesses based on the statistics published by EUROSTAT, and statistics on using eSignature (QES and Cloud QES) for e-service requests[98].** For monitoring the uptake of e-services, SEGA also uses statistics on registered users of the eDelivery platform – individual, business and government organizations; and e-applications, e-documents and e-messages exchanged through the platform[99], e-payments transactions for e-services[100], data inquiries from basic registries and data exchange transactions completed over the RegIX platform[101]. Institutions can track the use of their e-services by citizens and enterprises on their respective portals. SEGA monitors the use of open data sets based on the Open Data portal statistics on the number of registered users.

**151. Annual e-service satisfaction surveys for businesses and citizens have been conducted by SEGA by a company expert in sociological studies since 2017.** According to the survey in 2018, 75 percent of the respondents in Bulgaria have never used e-services and preferred traditional over-the-counter services[102].

[98] Statistics on using eSignature by customers for e-services provided by SEGA, May 2020
[99] eDelivery statistics provided by SEGA, May 2020
[100] Statistics on ePayment transactions provided by SEGA, May 2020
[101] https://regix-service.egov.bg/statistics.xml
[102] https://www2.e-gov.bg/en/news/124

There is a significant difference between the adoption of e-services by enterprises and citizens. Almost all businesses use electronic services provided by government organizations, such as e-taxes, reporting to the Revenue Agency, business registration, etc., while the e-services' take-up by citizens is very low.

**152. Major barriers for citizens to use existing e-services are associated with the lack of basic digital skills.** According to the Eurostat data[103], only 29 percent of Bulgarian citizens between 15 and 64 years have basic digital skills compared to the EU average of 57 percent. Often e-services provided by ministries, agencies, and municipalities are lacking required information and are not always convenient for citizens.

**153. The delay in the implementation of the national eID makes it difficult for citizens to access e-services.** In addition, there is no active promotion of government e-services in general. Some new e-services such as e-Payment, e-Delivery, Cloud Signature are promoted at conferences, newspapers, radio, and social media (Twitter, youtube channel). Some incentives for e-services are applied – most of them are available for free but for those with fees are provided with discounts for e-payments. According to SEGA, the portal will be upgraded in collaboration with ministries, agencies, and municipalities under the ongoing EU project until the end of summer 2020. The modifications will be conducted in line with the EU regulation ensuring user-centricity, unified user-friendly interface, and "three clicks" rule to get access to an e-service.

## User-centric e-Services: Central and Local Governments perspective

**154. A large share of respondents to the survey of ICT directors and managers in ministries, agencies and municipalities[104] (83.8 percent) confirm that they currently deliver electronic administrative services (e-services) to citizens and businesses[105], and 48.6 percent of those are planning to provide additional e-services.** The planned services include:

- Acceptance and processing of applications for Bulgarian personal documents (BPD) and transmission of ready-made ones to Bulgarian citizens abroad: ID card, passport, driving license
- Ongoing work on the completion of the National Health Information System (NHIS) – part I and part II is currently being implemented; a list of administrative services that could be digitized is to be drawn up
- Payments for all types of services
- Contact call center for providing information and services
- Provision of information on the presence or absence of obligations of persons participating in a public procurement procedures

**155. Municipalities confirmed that they are ready to provide electronically the remaining 27 administrative services out of the total of 45 provided.** These services could be easily deployed since SEGA has already developed them and there are no legal restrictions to switch from paper-based to online.

**156. The most popular channel that citizens currently use to access the e-services provided by various central and local governments is the online portal accessed from computers.** The results of the survey show that 93.5 percent get access to e-services via the online portal from computers, 38.7 percent via the online portal from mobile devices (smartphone), and only 3.2 percent via mobile apps.

[103] https://appsso.eurostat.ec.europa.eu
[104] Total number of represented ministries, agencies and municipalities – 37
[105] https://egov.bg/wps/portal/egov/institutions/agencies

**157. It is noteworthy that 83.9 percent of responses confirmed that the single sign-on option helps users to access multiple e-services provided by their ministry/agency or municipality.** The most frequently used option for user e-identification and authentication is the Qualified Electronic Signature (90.3 percent) while the second most used option is the Personal Identification Number/Personal Identification Code (48.4 percent), and the third one is the User ID and password (29 percent).

**158. According to the survey, many e-services provided by the central and local governments are available via the eDelivery platform operated by SEGA**[106]**.** The most popular options for registered users are the application for e-services, the possibility to send supporting documents via the platform, and notifications and secure e-mails on the application status. For instance, the Directorate "Labor Office" accept via the eDelivery system applications from employers for vacancies, issuance of decisions to terminate the registration of job seekers, administrative acts (orders) for payment of cash benefits for unemployment and pension, and issuance of NSSI personal identification code (PIC). Some institutions such as the National Revenue Agency can deliver all their e-services via the system. However, some respondents confirm that some services provided by their institutions cannot be delivered through the shared eDelivery platform.

**159. It is noteworthy that 64.7 percent of responding ministries, agencies and municipalities confirmed that they systematically study and consider user needs for the design and prioritization of their e-services.** While this figure shows an increasing interest in citizen-centric services, there is still a significant portion (26.5 percent) that does not have mechanisms to systematically capture users' preferences. Some 55.9 percent of ministries, agencies and municipalities confirmed that they lead the user needs assessment process for their e-services, while 44.1 percent referred to SEGA as a leading government unit that studies and considers user needs for improving e-services.

**160. The most commonly tracked data on the use of e-services provided by central and local governments is the type of e-service provided (61.3 percent of responses), followed by the date of e-service request (48.4 percent), the date of e-service delivery (35.5 percent), payment method (32.3 percent), and user characteristics such as gender, age, location (29.0 percent).** However, 19.4 percent of the responding ministries, agencies and municipalities are not tracing the use of e-services provided by them.

**161. Most of responding ministries, agencies and municipalities confirm that they have a process and mechanism for handling users' inquiries about the e-services (61.3 percent), and use their complaints and feedback to improve e-services and user interface (58.1 percent).** But notably, 12.9 percent of them use none of these mechanisms. As per the mechanism used to handle user inquiries, feedback, or complaints, the most popular among others are still traditional channels such as email exchange (92.6 percent), phone (88.9 percent), regular mail (74.1 percent), followed by online form (59.3 percent), dropbox at ministry/ agency (48.1 percent), and face to face appointments (37.0 percent). Not surprisingly, online chat is rarely used (3.7 percent).

## User-centric e-Services: Users' perspective

**162. A set of complementary findings emerge from the citizen survey, which offers the users' perspective.** The survey was conducted online in May 2020 and included a total of 653 respondents. The sample was selected from a panel of Bulgarian adults with access to the internet and is representative of the internet-using population (67 percent of Bulgarian adults[107]), not the general population. The survey has broad geographic representation, with users hailing from all 28 provinces and 254 out of 265 municipalities, including Sofia city. The respondents are balanced on gender and their age ranges from 18 to 82 with a mean age of 45. Most (68

[106] https://edelivery.egov.bg

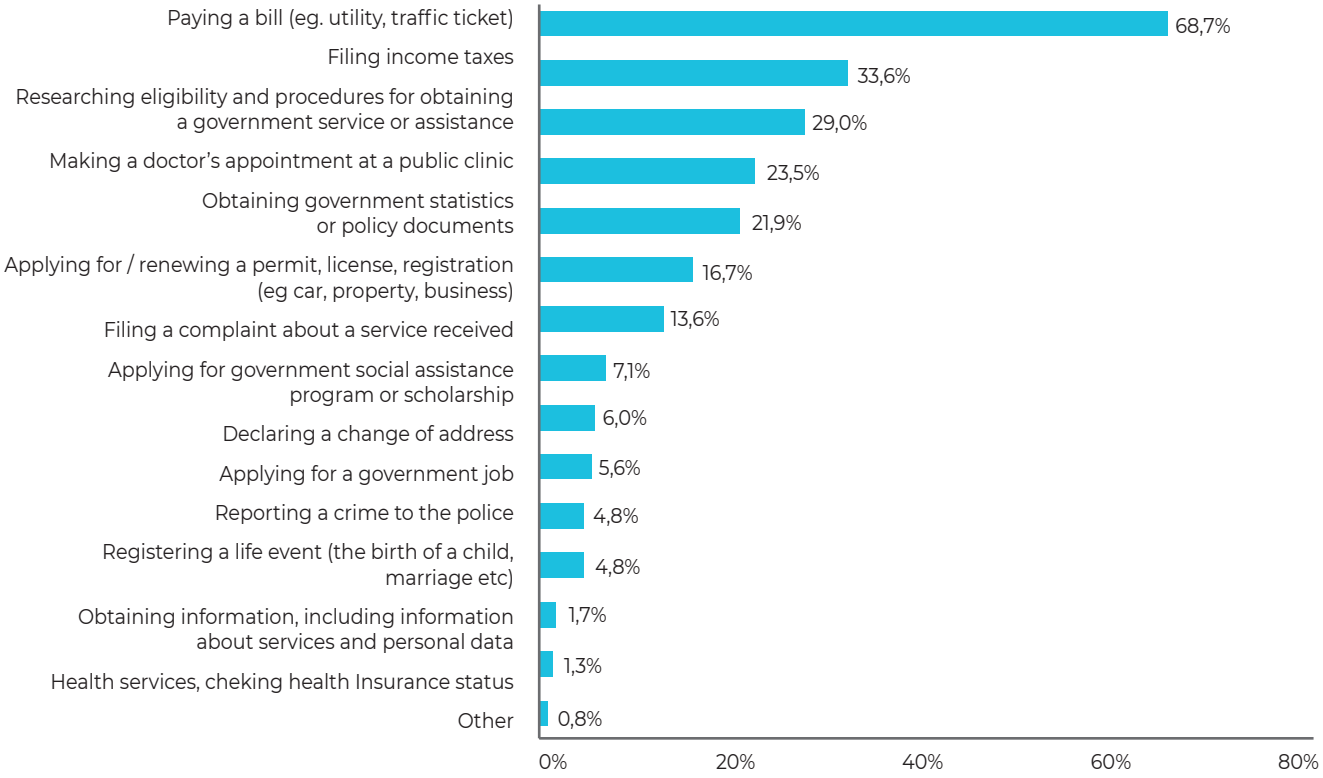
[107] National Statistical Institute of Bulgaria.

percent) have tertiary education, and most (65 percent) are employed, with two-thirds working in the private sector. Since the survey was fielded after the start of COVID-19, results are almost certainly colored by that experience; to take advantage of this new reality, questions were added to probe change in preferences in the wake of the crisis and need for social distancing.

**163. The survey compared citizens' general information on the government resources and services they seek out most and the service qualities they prize against what they sought online and their experience.** It found that the most sought-after government services/resources, in general, were paying bills, filing income taxes, researching eligibility for various forms of assistance, obtaining government statistics, and applying for permits (Figure 7.5)[108]. What matters most to potential users of government services and resources, in general, are convenience-accessibility, speed, and reducing paperwork and processes (Figure 7.6).

**164. Turning to electronic government services and resources, overall public awareness of such resources is low.** Only one-third of respondents had ever heard of SEGA, and most of those who had done so through television (61 percent), social media (38 percent), government portal (25 percent), and news website or email (24 percent). When asked whether they know if the government is providing any e-services at the national or local level, 61 percent said yes. But 32 percent said they did not know, which is high considering that the sample consists of frequent internet users. Still, a full 74 percent of respondents who had used any government service in the last 12 months had used e-services. The most popular services (Figure 7.7) align closely with services/interactions generally sought from the government (Figure 7.5) including utility bill payment, social assistance claims research, obtaining statistics, filing income taxes, and making a doctor's appointment (possibly elevated above normal levels due to COVID-19). The most popular method of accessing the e-service/resource is online platforms but apps for smartphones already account for a sizable share.

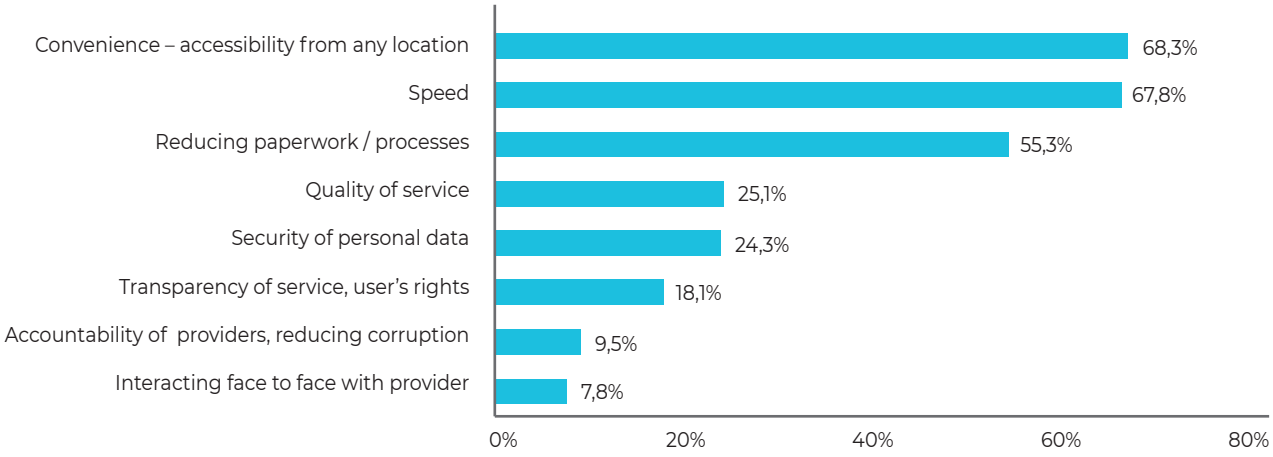
**Figure 7.5: Government resources/services sought in the last 12 months**




Source: Survey of citizens / internet-using Bulgarian adults, World Bank 2020.

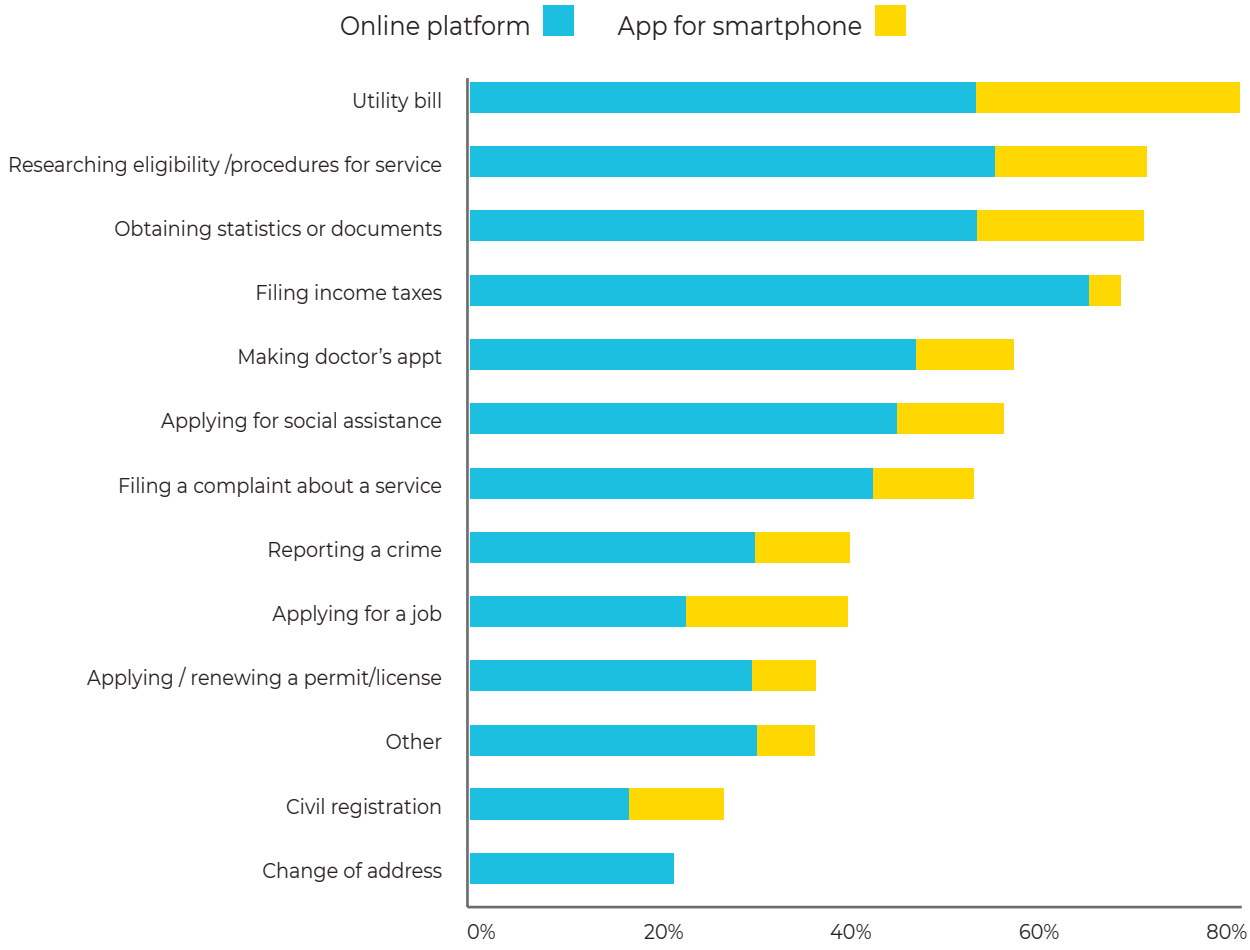
[108] In light of COVID, making doctors' appointments at local clinics also was ranked highly

**Figure 7.6: What service qualities matter most to users**




Source: Survey of citizens / internet-using Bulgarian adults, World Bank 2020.

**Figure 7.7: Government e-services that users have accessed or someone they know has accessed**

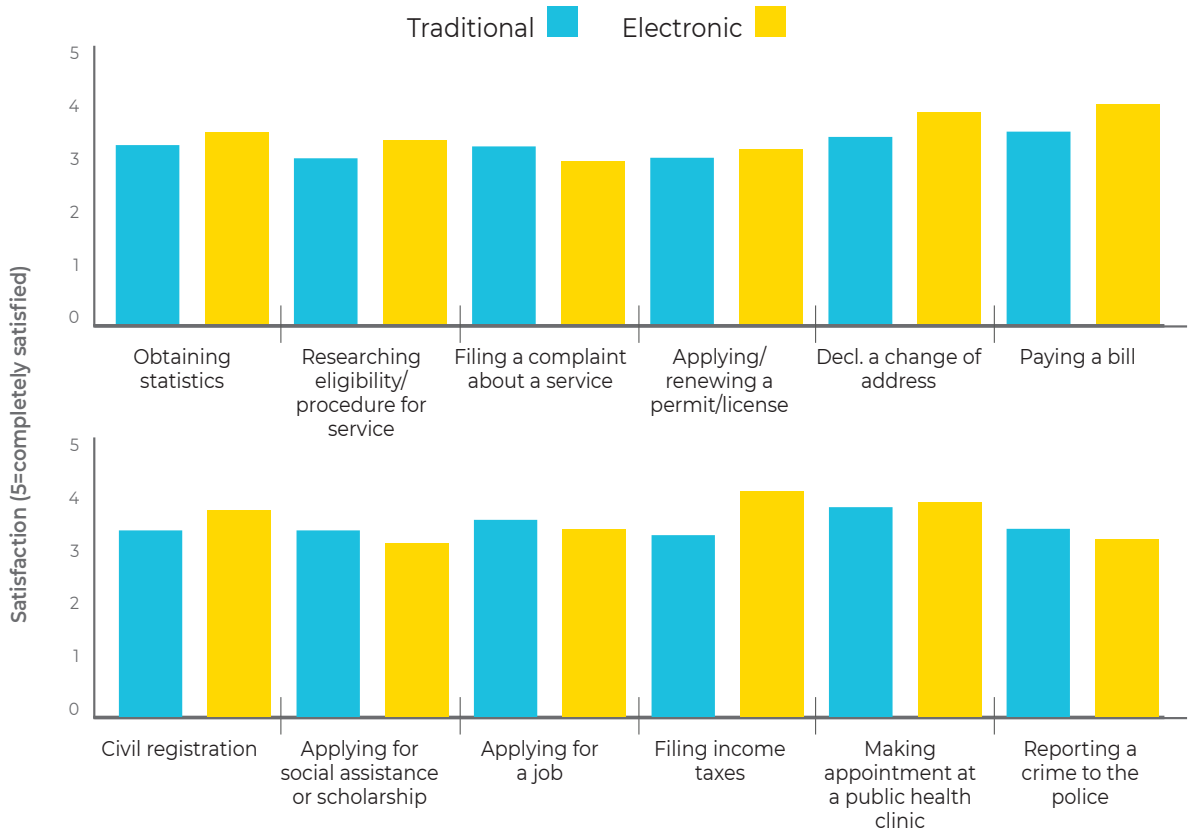



Source: Survey of citizens / internet-using Bulgarian adults, World Bank 2020.

**165. Looking at citizens' satisfaction with e-services, several findings emerge.** One is that on average e-services are preferred to traditional services. Overall, citizens are more satisfied with services where they use electronic/online access even partially, although there is a variation (Figure 7.8). Paying a bill, filing income taxes, civil registration, change of address services were areas where e-services were notably preferred. Two main reasons for choosing electronic means for service delivery float to the top: convenience (can be accessed from home) and speed. E-services selected by the largest number of respondents as trustworthy are tax filing /payments (15%), utility bill payments (9%), and social security services (5.6%).

**166. The survey also reveals preferences for forms of e-identification and channels for accessing services.** The overwhelming majority use a PIN or a user ID and password to sign up. Most (55 percent) were not able to switch channels once they started a service transaction. Most users of e-services (94%) received an electronic notification if their request for an e-service was submitted successfully, with the most popular notification method being email (50%), followed by SMS (25%) and message on the portal (20%). Only half the users usually had the option to electronically track the progress of their e-service requests until it was delivered. Most respondents (83%) have never submitted an inquiry or complaint about an e-service or e-resource – or its availability.

**Figure 7.8: Citizen satisfaction, by channel of service (traditional includes face to face, email, snail mail, phone)**

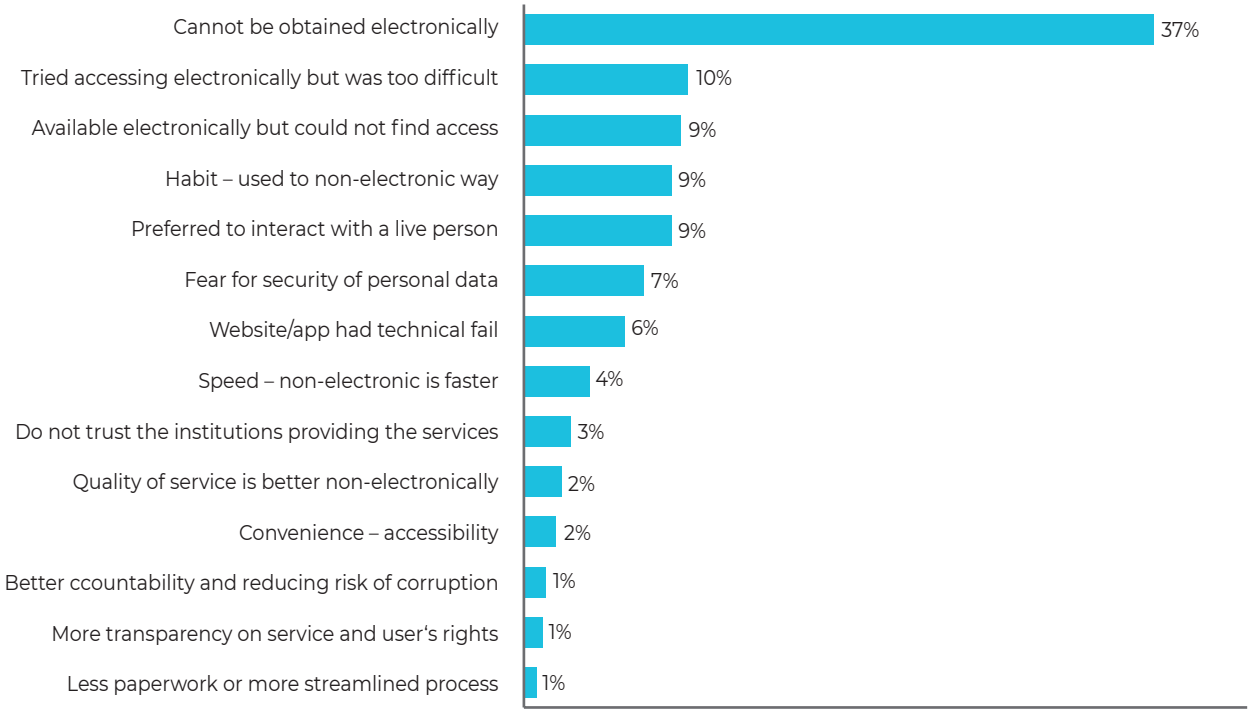



Source: Survey of citizens / internet-using Bulgarian adults, World Bank 2020.

**167. Respondents mostly (63 percent) confirmed they will start or increase their use of e-services in light of COVID and the vast majority (88 percent) affirmed that it would be good if more government services were provided online or via mobile channels.** For those who did not want more services, their top reasons were: lack of trust in electronic communications (22%), infrequent need for administrative services (21%), concern about personal data (14%), and the government does not provide the services they need (9%). For those who wanted to increase their use of e-services in light of COVID cited as their main reasons the

need for reduction in physical contact (25%) – unsurprisingly in light of COVID – as well as safety/security of transactions (9%), speed (7%) and convenience (7%). In general, respondents' main reasons for not choosing electronic services /interactions are lack of availability of the service online, difficulties with the platforms, and habit (Figure 7.9).

**Figure 7.9 Reasons given for not choosing electronic service or interaction.**




Source: Survey of citizens / internet-using Bulgarian adults, World Bank 2020.

**168. Respondents were asked to name a few services that you would like to see provided online or via mobile channels and that are currently not available through these channels.** Many filled out the open-ended question. Overall, some proposals suggest low awareness of the types of services currently available is low. many people named services that are already available fully or partly electronically, including paying taxes, utility bills. The main suggested activities are:

- Applying for personal documents (ID Card, passport, driving license, birth certificate, etc.
- Increased number of e-services at the local level, including local taxes and fees
- Application for child benefit payments
- Vehicle registration
- Application for social assistance
- E-voting
- Online medical consultation and prescription services
- Unemployment registration
- Traffic policy e-fine payments
- Signing up for public insurance
- E-courts
- E-educational services
- Application for retirement benefits
- "All services should be provided online"
- Request for digital signature

# Recommendations

- **Proactively engage citizens and businesses in co-design and co-creation of user-centric and personalized government e-services.** The user-centric design of government e-services requires regular user needs assessment and research on citizen preferences and channels of choice, in addition to the service satisfaction survey. E-services for citizens and companies should focus on finding solutions for essential problems and needs. They should be designed for different categories of citizens, such as women, youth, seniors, people with various special needs, and others. The proactive engagement of citizens and businesses in the design process will help deliver more seamless and personalized e-services. An iterative process can help design user-centric e-services through an understanding of specific citizen's needs, developing, experimenting, and testing multiple ideas and prototypes. With the available information about the citizen in government registries and databases, personalized e-services should be provided without requesting data again.

  Co-creation of user-centric and personalized e-services requires new relationships and improving interactions of government organizations with citizens and businesses. The government should proactively communicate and engage with the citizen, using data from all previous interactions with the citizen. Emerging technologies, such as deep learning and machine learning, can help government organizations predict future citizen needs and requests. Virtual assistants can help communicate with the citizen about transactions and requested services.

- **Prioritize the development of mobile-friendly government e-services and mobile apps for innovative service delivery.** The growth of mobile devices and significant improvement in mobile internet connectivity in Bulgaria presents new opportunities in the public sector. Mobile technologies can make interacting with the government easier for the general population and deliver essential services to vulnerable citizens. Low-income citizens and their families especially depend on smartphones for online access to information and services. The greater accessibility of smartphones to underserved populations provides opportunities for delivering government e-services through mobile apps to people with a low level of basic digital skills. Mobile apps can save citizens much time, lower transportation costs to visit government offices to get overt-the-counter services. Mobile apps can also empower citizens by giving them easier access to information and better service responsiveness. More and more countries provide special mobile apps for the elderly, women, and people with special needs. Government organizations can benefit from savings in reduced staff time, faxing, photocopying, and phone calls, and from sending automatic notifications on e-services through SMS. It is noteworthy that the data generated using mobile apps can further help in developing more personalized innovative e-services that would improve user satisfaction.

  To ensure the full potential of mobile apps and their benefits for citizens, governments should develop them from the user perspective, and not rely on established processes in individual organizations. The user interface for electronic services should be intuitive and extremely easy to use for people with even a low level of basic digital skills. The catalog of available mobile apps for e-services should be available at the National e-Government portal.

- **Actively promote available government e-services among citizens and articulate clearly the benefits of using them vs. traditional over-the-counter public services.** Government organizations should inform citizens that public services can be accessed online and encourage its use. Online and offline advertisements should be used to promote online services. Assisted digital support options should be clearly articulated to reassure users that there is help for them if they need prompt action. The benefits of using e-services instead of traditional over-the-counter services (i.e., faster, easier, more convenient, cheaper) should be well communicated.

  Government organizations should make sure that nobody is excluded. They should understand possible barriers different groups of users might face when trying to use a service, and how to address them. Someone's ability to use a service could be affected by location, age, gender, and health conditions.

- **Facilitate the development of basic digital skills of the population with special programs for women, youth, and people with special needs.** To accelerate the take up of government e-services, government organizations should prioritize capacity-building and awareness-raising activities for the population. Citizens across the country should be trained to acquire basic digital literacy and digital skills needed for the adoption of e-services and interactions with government organizations. They should gain a basic understanding of technologies, software, and applications and learn how to use devices and techniques to collaborate and communicate with and use the services they need. Individuals of different ages, including youth and the elderly, should learn about digital rights, data privacy, information security, and cybersecurity, the ability to make use of information and data. Customized digital skills programs should be designed and delivered to women.

# Chapter 8
# Conclusion

**169. The story of the e-Government Strategy in Bulgaria is one of uneven but rapid convergence.** In 2016, only 19 percent of Bulgarians used electronic services as most services required face to face interaction. In 2020, the study found that most services to the private sector were delivered electronically and that citizens used electronic services much more frequently, with 74.7 percent of the citizens using them at least once a year and 35.7 percent at least once a month. Currently, the total number of e-services accessible through the government portal is 354 and it is expected to increase to 850 by 2023.

**170. The government response to the challenges posed by COVID 19 shows that when incentives are aligned, significant progress can be achieved in very little time.** The government lockdown following the emergency created by COVID-19 forced the government to find innovative ways to provide key services to citizens with the collaboration of the Association for Innovation, Business Excellence, Services and Technology (AIBEST) that offered 15,000 man-hours of pro bono work on key electronic systems of state institutions. This collaboration confirmed that the traditional top-down approach used in the past to implement reform is not very effective and that a stronger collaboration with non-traditional stakeholders can yield positive results.

**171. While progress in many areas is clear, the country is still facing fundamental issues when it comes to fragmentation of functions and systems.** The report suggests that there are some unresolved overlaps of functions between SEGA and the Ministry of Transport: the first is in charge of the development and promotion of e-Government solutions across the government, while the latter is leading the digital development agenda. As briefly presented in the document, many other OECD countries have faced similar issues of government coordination and put in place arrangements such as councils or task forces to monitor progress across different agencies. The fragmentation of systems is another factor that is limiting the impact of the effectiveness of the government. Each ministry, and spending units within each ministry are still keeping legacy stand-alone systems for financial management and human resources, which increases the cost of maintenance and delays the adoption of more cost-effective solutions (such as cloud-based applications). Despite the creation of dedicated institutions (SEGA) and central coordination mechanisms (e-Government Council), the government is still dealing with a relatively high level of fragmentation.

**172. The compensation of IT staff is highlighted in the report as a key bottleneck to advance the introduction of innovative solutions in the public sector.** Bulgaria has a very buoyant ICT private sector that is attracting top talent, and it is extremely difficult for the government to attract and retain skilled professionals on government salary scales. This challenge is not unique to Bulgaria and the country would from try alternative options such as the creation of non-financial incentives and outsourcing, or explore the creation of a private limited company, which allows the government to pay its IT staff at the market rate.

**173. Strengthening the focus on change management, while new innovative solutions are introduced, stands out as one area that requires attention.** The report presents evidence that the introduction of change management is still very incipient, with over 50% of the managers and staff unaware of any intervention in this area. Leveraging new technologies (such as blockchain or AI) to improve the performance of the government and the delivery of better services is likely to yield limited results if not accompanied by investment to streamline business processes, understanding users' needs, and create a more customer-oriented culture.

**174. The evidence and analysis presented in this report suggest that four key elements should be included in the future e-Government Strategy.** These are cross-cutting factors that, if properly implemented, would enhance the impact of ongoing investments and create a solid foundation for the deployment of future solutions.

- **Consolidation of key management information system.** The analysis of this report suggests that core management information systems along with cloud computing services and emerging technologies should be procured and maintained in a centralized way. If implemented, the government could improve the efficiency of public institutions, ensure systems are well maintained (hence reducing the risk of cybersecurity attacks) and reduce costs. This is especially important for common information systems with similar functionalities that could be easily provided in a cloud environment. A single government platform like a Digital Marketplace for the public sector can help public organizations to buy required hardware and software products and services.
- **Data governance framework and remove barriers to sharing information.** The rapid implementation of new cloud solutions and the incremental increase in electronic services available to companies and citizens is generating an incredible amount of data that should be better utilized. Bulgaria should adopt a data governance framework that captures methods, responsibilities, and key business processes to integrate, protect, and share data across government agencies. Such a framework should be a central element to support SEGA in the promotion of more data-driven decisions on new services and solutions offered to other government entities.
- **Co-creation and continuous feedback loops. The report finds that there are untapped opportunities to engage with the private sector and citizens to co-design e-services.** The results of the survey suggested that users in Bulgaria have different preferences when it comes to electronic services and there is still an important gap across geographic areas, as well as socio-economic groups. Establishing iterative processes to design user-centric e-services by segmenting the "market" would allow the government to understand specific needs and develop more targeted instruments. Deep learning, machine learning, and other emerging technologies can help government organizations to better understand citizen needs. As we present in chapter 2, taking full advantage of emerging technology would require the creation of a conducing legal environment.
- **Use of behavioral science and change management to incentive the uptake of digital solutions and foster a more service-oriented culture in the public sector.** Finding from the report suggest that the introduction of behavioral science and change management strategies could help to reduce institutional barriers to cross-government collaboration and increase the uptake of digital services. Results of the survey suggest that almost 50 percent of ministries, agencies, and municipalities do not invest in change management.

# Annex 1

**The following table summarizes specific recommendations discussed in individual chapters of the report. They are structured across the DGRA pillars.**

Short-term high impact Short term Medium to Long Term

| DGRA Pillars | Recommendations | Rationale | Key Actors | Priority |
|---|---|---|---|---|
| **Leadership and Governance** | Raise the profile and power of institutions and inter-institutional coalitions leading the "whole-of-government" digital government transformation. | Evidence from OECD countries shows that effective digital government transformation requires the responsible lead agencies and coalitions to have sufficient power and influence to push through various reforms, including enforcing common standards and systems. This is particularly important given Bulgaria's history of an institutionally fragmented approach to digital government development. | Council of Ministers | |
| | Strengthen linkages between the champions of e-Government and broader public sector modernization agendas. | The rapid pace of change in technologies and business models requires new ways to tackle eGovernment initiatives and ensure future-proof smart solutions | Council of Ministers | |
| | Establish central units dedicated to strategic foresight, e-service innovation, and data governance. | Enable tracking and adoption of new technologies and innovation in the e-Government/e-services/data governance fields, support coordination of standards and policies, and monitor progress on implementation and uptake of technologies and regulated standards by institutions across the government. | SEGA | |
| | Institutionalize channels and procedures for active regular consultation with citizens, the private sector, and civil society on e-Government related policy initiatives and implementation. | The Government may consider including the private sector and civil society organizations more actively in policy formulation through special councils or instances where organizations outside the public sector can participate and contribute to the design of initiatives Stakeholder engagement will improve the quality and user-centricity of the digital development initiatives, especially public e-services, will increase public usage of the services, and raise public trust in the government overall. | SEGA in collaboration with the Council of Ministers | |
| | Undertake a review of e-Government spending. | Map the existing budget process, explain the heterogeneity in access to e-Government financing by different government institutions, identify how to increase the return on investments in e-Government. | Ministry of Finance in collaboration with SEGA | |

| | | | | |
|---|---|---|---|---|
| | Develop a set of outcome and process-level key performance indicators (KPIs). | Additional KPIs would help SEGA improve its tracking of achievement of strategic goals under the e-Government strategy. | SEGA | |
| | Tie implementing institutions' e-Government budgets more closely to results. | Each ministry, agency, and municipality benefiting from budget funding for ICT and e-Government related activities should be required to put together a set of measurable and achievable KPIs, which are developed in coordination with SEGA and aligned with the national e-Government Strategy. The KPIs should be reviewed and updated annually and included in budget negotiations and decisions.. | Ministry of Finance in collaboration with SEGA | |
| | Undertake financial and economic analyses. | These analyses will help to quantify the macro-level impacts of e-Government reforms, especially on fiscal savings and the broader economy. | Ministry of Finance with support from SEGA for IT-related investments | |
| | Disseminate widely the National eGovernment strategy and implementation plan among government institutions with a clear statement of strategic goals and expected benefits. | This will help to ensure shared understanding and commitment and also help to monitor progress and evaluation of the impact. | Sega in collaboration with Council of Ministers | |
| | Communicate government-wide standards and incentives for their adoption. | Properly communicated standards and requirements adopted by the eGovernment Architecture and Interoperability Framework along with possible incentives will facilitate their adoption and compliance. | SEGA | |
| **Legislation and Regulation** | Draft legislation on emerging technologies. | Laws are required to regulate the use of new cutting-edge technologies, such as Artificial Intelligence and Blockchain before the technologies are adopted. | Council of Ministers | |
| | Draft secondary legislation and guidelines to meet requirements established by the Personal Data Protection Act for cloud services. | To align national rules on processing and movement of personal data with EU standards. | Council of Ministers | |
| | Draft regulations on procurement of cloud services (infrastructure as a service, IaaS). | The transition from purchasing ICT infrastructure to IaaS presents an opportunity to modernize the existing stock of infrastructure, upgrade old solutions without large upfront investment, and expand the use of modern solutions. | SEGA in collaboration with the Council of Ministers | |

| | | | | |
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| | Develop a Public Sector Data Governance Policy. | The policy will help ensure good management, use/re-use, and (where relevant) disclosure of government data. These are critical for evidence-based decision-making, client-centric e-services, and provision of information to the public. | SEGA in collaboration with the Council of Ministers | |
| | Harmonize sectoral legal and regulatory acts with the recent e-Government legislation. | Numerous sectoral legal and regulatory acts are outdated and misaligned with e-Government legislation and regulations. The alignment will help to remove barriers to data sharing, streamline business processes and collaboration across the government, integrate information systems, and deliver e-services more seamlessly. | SEGA in collaboration with the Council of Ministers | |
| **User-centered Design** | Prioritize digitization of services with the highest expected social benefits, highest savings, and user convenience. | Will boost the take-up of e-services and improve user satisfaction. | SEGA | |
| | Adopt a set of criteria and standards for the quality e-services and provide relevant guidelines, metrics and performance dashboards to central and local government institutions. | Common criteria and standards will help central and local government institutions to deliver better e-services, and will simply SEGA's task of monitoring and oversight. | SEGA | |
| | Guide government institutions on streamlining organizational processes and data flow before digitizing them. | Seamless service delivery and efficient public administration require thoughtful optimization and re-engineering of back-office processes before building new information systems and applications for e-services. | SEGA in collaboration with the Ministry of Transport | |
| | Proactively engage citizens and businesses in co-design and co-creation of user-centric and personalized government e-services. | E-services for citizens and companies should focus on finding solutions for essential problems and needs. They should be designed for different categories of citizens, such as women, youth, seniors, people with various special needs, and others. The proactive engagement of citizens and businesses in the design process will help deliver more seamless and personalized e-services. | SEGA | |
| | Prioritize the development of mobile-friendly government e-services and mobile apps for innovative service delivery. | The growth of mobile devices and significant improvement in mobile internet connectivity in Bulgaria presents new opportunities in the public sector. The growth of mobile devices and significant improvement in mobile internet connectivity in Bulgaria presents new opportunities in the public sector. Mobile technologies can make interacting with the government easier for the general population and deliver essential services to vulnerable citizens. | SEGA | |

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| | Promote available government e-services among citizens and articulate clearly the benefits of using them vs. traditional over-the-counter public services. | Government organizations should inform citizens that public services can be accessed online and encourage its use. Online and offline advertisements should be used to promote online services. Assisted digital support options should be clearly articulated to reassure users that there is help for them if they need prompt action. | SEGA in collaboration with the Council of Ministers and the Ministry of Transport | |
| | Prioritize investments for broader adoption of change management practices and the creation of a digitally friendly organizational culture, led by central coordinating bodies for digital transformation in the public sector. | E-Government implementation requires not only technological innovation and the reorganization of business processes but also significant changes in the organizational culture. Traditional cultural norms within government organizations often challenge the changes needed for digital transformation such as shifting from a silo approach to a user-centric focus, agile development, and deployment of information systems and e-service applications. | SEGA in collaboration with the Council of Ministers | |
| | Strengthen the digital transformation capacity of government institutions through awareness-raising and knowledge sharing activities, regular workshops, seminars and training programs, as well as communities of practices. | | SEGA in collaboration with the Council of Ministers | |
| **Capabilities, Culture, and Skills** | Consider incentives for ministries, agencies, and municipalities to foster the delivery of simple, faster and convenient e-services and stronger collaboration across the public sector. | Ministries, agencies, staff, and ICT personnel should be rewarded for the user-centric e-services with the highest level of satisfaction, most effective and efficient innovative digital solutions, and collaboration and data sharing with other government institutions. | SEGA in collaboration with the Council of Ministers | |
| | Take measures to correct potential inefficiencies in ICT workers' allocation across the public sector, and in recruitment or internal transfers. | Ensure proper staffing of ICT departments in public sector institutions. | Council of Ministers | |

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| Explore options for outsourcing. | The challenge of recruiting specialized ICT staff is an opportunity to explore other options, including outsourcing certain functions. Overall, this option might be not only more sustainable but also cheaper, considering that outsourcing will relieve the government of significant investments in compensation (salaries, allowances, benefits, pensions), training and re-skilling, physical office space, and hardware. | SEGA in collaboration with the Council of Ministers | |
| Introduce more widely the shared services model in the public administration. | The model will allow the Government to both save costs and deploy fewer ICT staff to serve the same number of users. | SEGA | |
| Focus on factors that help the recruitment of qualified staff. | The staff survey suggests that most recruits who come to the public sector are intrinsically motivated and attracted to the positions for non-material reasons, such as the substantive challenge of the job, the mission, the quality of management (clarifying responsibilities, promoting career development, ensuring a balanced workload and working hours and good working conditions), and non-material incentives and recognition. Improving the attractiveness of jobs by boosting these parameters will not cost much (most are non-material) but could help to attract the right people. | Council of Ministers SEGA | |
| Introduce more widely the shared services model in the public administration. | The model will allow the Government to both save costs and deploy fewer ICT staff to serve the same number of users. | | |
| Clarify the ICT managers' roles and responsibilities in HR matters, including recruitment of specialized ICT staff. | The surveys suggest some confusion among managers about how much responsibility they carry in recruiting ICT staff. Since managers do play an important role in day-to-day staff management, development, and motivation, they should be clear about their roles. | SEGA | |
| Investing in training. | Although training opportunities are not among the top reasons identified by ICT staff for wanting to stay or leave the public sector, they could help. Some ICT managers indicate using training programs as a way to attract or retain staff, but more could be done, in combination with the other measures proposed above. | SEGA and line ministries | |
| Benchmark the ICT employees' compensation against the private sector equivalent. | Help attract and retain talent in government ICT units. | SEGA in collaboration with the Council of Ministers SEGA and line ministries | |

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| | Facilitate the development of basic digital skills of the population with special programs for women, youth, and people with special needs. | Citizens across the country should be trained to acquire basic digital literacy and digital skills needed for the adoption of e-services and interactions with government organizations. Individuals of different ages, including youth and the elderly, should learn about digital rights, data privacy, information security, and cybersecurity, the ability to make use of information and data. Customized digital skills programs should be designed and delivered to women. | SEGA in collaboration with the Council of Ministers and the Ministry of Transport | |
| | Adopt an agile-by-design approach for developing and adopting systems and solutions to address the evolving needs of users. | Agile methods allow governments to be more proactive and respond more easily to evolving needs and preferences while using new opportunities provided by emerging technologies. | SEGA in collaboration with the Council of Ministers and the Ministry of Transport | |
| | Advise central and local administrations on new projects and systems to ensure their alignment with the whole-of-government digital transformation policies and priorities. | The alignment will help strengthen SEGA's oversight of ICT investments across government, minimize duplication, and enable savings. | SEGA | |
| **Technology Infrastructure** | Procure and maintain commonly used Management Information Systems, along with cloud computing services and emerging technologies, in a centralized way to improve the efficiency of public administration and reduce costs. | In order to prevent unnecessary spending, duplication of efforts and procurement processes of central and local institutions, common information systems with the same functionalities, various tools, and emerging technologies such as cloud services, Blockchain, IoT, AI and data analytics should be procured and maintained in a centralized way. This will help strengthen the oversight of ICT investments across government and minimize duplication of digitalization efforts of central and local government institutions and prevent spending for unnecessary replacement of information systems. | SEGA in close collaboration with the Ministry of Finance SEGA | |
| | Provide a digital marketplace for central and local governments to buy the required hardware and software products and services. | A single government platform should be provided as a Digital Marketplace to central and local administrations for a more coordinated purchase of the required hardware and software. These measures will facilitate the flexible and faster deployment of ICT systems and e-service applications across the government. At the same time, it would make it easier for smaller businesses to bid for government contracts and sell services to government organizations. | SEGA in collaboration with the Council of Ministers | |

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| | Promote innovative solutions for service delivery in government institutions. | Besides a supportive organizational environment, the adoption of data-driven innovation in the public sector requires the active promotion of innovative solutions and technologies across the government. | SEGA in collaboration with the Council of Ministers | |


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