KEARNEY | VISA

Digital Government Platforms

Transforming interactions between Governments, people and businesses

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Executive summary

— Governments have been focused on digitalizing their services for citizens and business for the past decade. **Digital government services simplify interactions with the public sector**, freeing up people and companies from dealing with the government to focus on other priorities. They help to increase trust in the public sector, foster a more inclusive society, and boost prosperity.

— **Digital payments are a key enabler for government digital services**, as they bridge the gap between digital access to services and final user consumption. By providing a streamlined, intuitive end-to-end process for users, digital payment from citizens and businesses to the government eliminates the need for face-to-face interactions and time-consuming paper-based workflows.

— Digital payments not only have the power to **reduce operational costs** by lowering the costs of cash and streamlining processes but can also **boost revenue collection** by providing more convenient payment options—enabling governments to improve reconciliation, payment forecasting, and treasury management. Digital payments play an important role in **enhancing inclusion** across society—making government services more accessible to all people, and actively supporting their adoption.

— Advanced digital governments provide a **single point of entry** to all government services for citizens and businesses. They commonly prioritize respecting the time of their citizens asking for relevant data **"once only"**, protecting the **security of citizens' data**, and using it only with **consent**. They focus on meeting users' needs in a **responsive and proactive** way, while enabling **collaboration and data sharing** across government entities. And importantly, they offer digital payments with emphasis on the **right choice for users**, secure authentication process, frictionless (one-click) payment, and convenience through digital credentials for recurring services.

— **Open government data and open finance are the next frontier for digital governments**. They can empower the public sector to tailor its services more effectively to the needs of specific users, tackle fraud, and enhance collection of tax revenue and other debt obligations to the government.

— Convenient, user-friendly end-to-end digital government services can help **win and maintain the trust of citizens and businesses**—enhancing their confidence that the public sector is there to serve them. To deliver the full benefits, digitalization of government services and payments needs to be backed by **well-defined strategies with clear goals, strong public–private sector partnerships, and long-term vision** and commitment from governments themselves.

About the study

This study has been commissioned and developed in collaboration between Visa—a global payments organization—and Kearney—a global management consulting firm. Our mutual goal is to engage with government officials and policymakers—inspiring them to collaborate and leverage the opportunities provided by digital payments to enhance public-sector services and maximize value for society and the economy.

The study was conducted between June and September 2022. All insights, recommendations, and conclusions featured in this study are based on data and information sourced both before the COVID-19 pandemic and during the last two years of the pandemic.

Primary research

20+
government officials and leaders of public-private partnerships

10+
Kearney Financial Services experts, with experience at the intersection of payments and public sector

20+
Visa subject matter experts across different geographies and functions

Secondary research

130+
data sources referenced in the white paper

30+
research and content pieces by international organizations, e g., the World Bank, the European Central Bank, the WHO, the IMF, the OECD, and the European Commission

75+
program descriptions and studies published by public sector entities

Global examples

55+
programs deploying X2G services and payments digitalization solutions, including focus area, description, and results

3
in-depth case studies of flagship X2G digitalization programs across different geographies

The case studies span several themes – digital government platforms, e-Government platforms, selective E2E digitalization, open data

1. Introduction

Engaging with government is an unavoidable part of life for citizens and businesses. But all too often, interactions with the public sector are something to be tolerated at best and dreaded at worst. Every single year, citizens and businesses have to interact with government multiple times to receive public services spanning everything from registering births and renewing identity documents to filing and paying taxes or applying for construction permits. While some of these interactions are easy, others require manual application through paper forms, face-to-face appointments, multiple visits to various government offices in different locations, and the need to provide the same data over and over again. For citizens, this is not only frustrating and time consuming, but also fuels distrust of the public sector. For the government, it creates an administrative burden, delays receipt of monies due, and wastes taxpayers' money.

Digitalizing government services to individuals and businesses can simplify interactions with the public sector—freeing up people and companies from dealing with the government to focus on other priorities. The public sector can also derive significant benefits from digitalization. Governments can reduce operating costs and risks by centralizing services and integrating systems, and they can streamline staffing costs by mitigating the need for face-to-face interactions and manual processes—unlocking greater productivity in the process. Digitalization of payments can also help governments reduce the informal economy, decrease the need for manual reconciliation, and increase revenue collection by improving customer experience.

Many governments have already made strides toward greater digitalization. The number of countries offering at least one online transactional service increased from 140 in 2018 to 189 in 2022—improving processes, functions, and services as a result. In its most basic form, digitalization focuses on individual use cases, such as paying for public parking via municipal solutions. At the more sophisticated end of the scale, digitally advanced governments use integrated platforms to offer all public services via a one-stop shop. In Estonia, most public services can be accessed via a single interface, generating annual savings equivalent to 2 percent of national GDP through the use of digital signatures alone. But time and cost efficiencies are just part of the picture. "Besides reduced financial cost, other potential measures in quality, accessibility, and increase of satisfaction are perhaps as important. This has an overall positive influence on the quality of life of our citizens," according to Indrek Õnnik, Global Affairs Director at the Government CIO Office in Estonia.

The COVID-19 crisis highlighted—and accelerated—the importance of digital access to services, with 10 percent of adults in Europe and Central Asia making their first-ever digital merchant payment during the pandemic. The pandemic also underscored the critical importance of connectivity and use of digital technologies to the interaction between governments, individuals, and businesses. Citizens' increased adoption of digital services, tools, and devices represents a valuable opportunity for the government sector to offer more remote, more efficient, and digitally enabled services and reinforces the need for a coordinated, whole-of-government policy approach to digital transformation.

This paper explores the value of digitalization both for public sector services and public sector payments, drawing on a series of compelling case studies. **It takes a closer look at the critical considerations involved in designing an efficient and user-friendly digital government and explores how digital governments can deliver enhanced public value**. This paper also analyzes the power of digital payments[1] to bridge the gap between service identification and service delivery in an end-to-end (E2E) digital process, exploring how the public sector can create a seamless user experience and in parallel, optimize revenue collections and money flows into the government. In addition, this paper illustrates the critical importance of public–private sector partnerships in bringing innovative, high-impact solutions to the public sector. Finally, this paper looks further into the future to discuss how open government data and open finance can be deployed to improve the provision of proactive services to citizens and businesses.

[1] A digital payment, sometimes called an electronic payment, is a transaction carried out via a personalized device (or a set of devices), software, and/or set of procedures agreed between the end user and the payment service provider to request the execution of an electronic transfer of value. Typical examples of electronic payment instruments are payment cards, credit transfers, direct debits, e-money transfers, and digital payment tokens. The initiation channel of an electronic payment can be a personal computer, mobile device, payment terminal, or an automated teller machine.

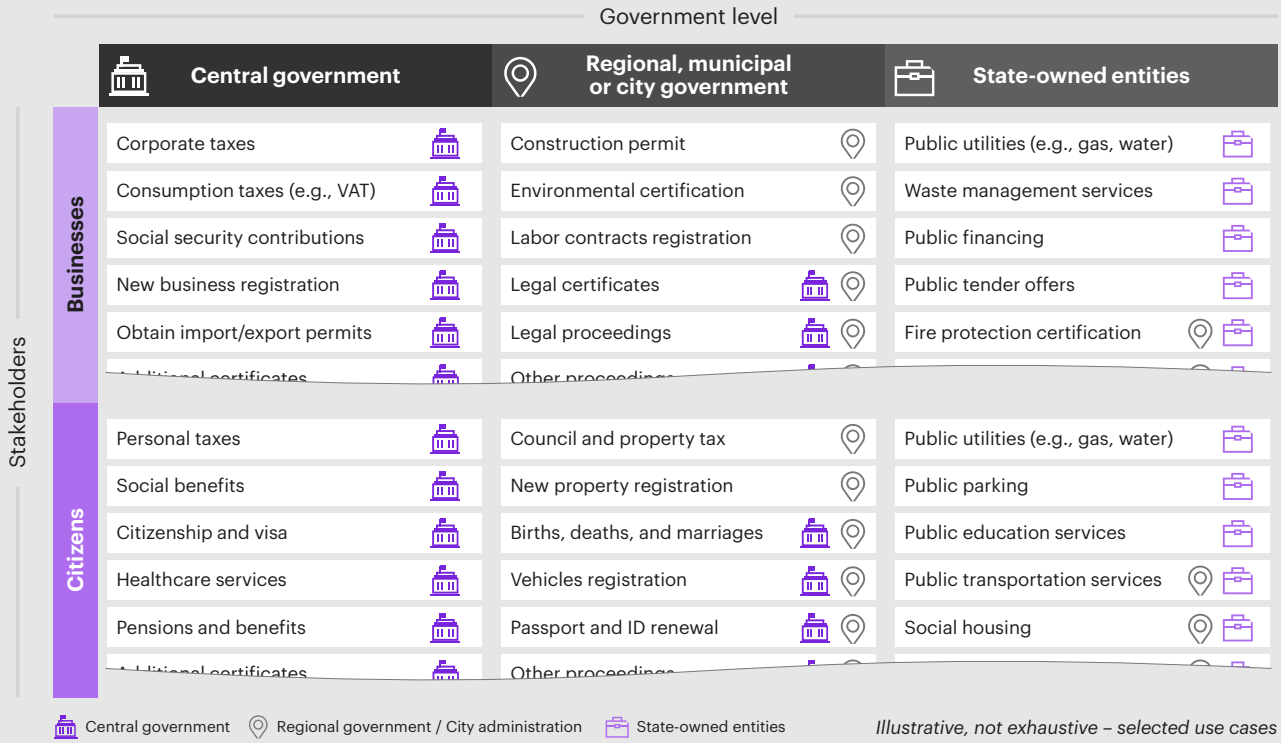
2. Developing digital government capabilities

2.1. The breadth of government services

The public sector provides services at different levels—centrally, regionally, and locally. Individuals and businesses typically file their income or corporate tax and social security contributions at the central government level, with sales (or value-added) taxes allocated there too. Meanwhile, applications and payments for building permits, vehicle registrations, or council taxes are generally dealt with at the regional, municipal, and city level. Lastly, state-owned companies provide a range of services—from public utilities (e.g., water, gas, and electricity supply), transportation, and public parking to more specific areas such as social housing.

Every interaction of the public sector with citizens and businesses represents a valuable opportunity to address their needs and expectations and to earn their trust. Governments that use their services to respond effectively to the needs of the public have an opportunity to increase access and inclusion, and to create prosperity for society as a result.

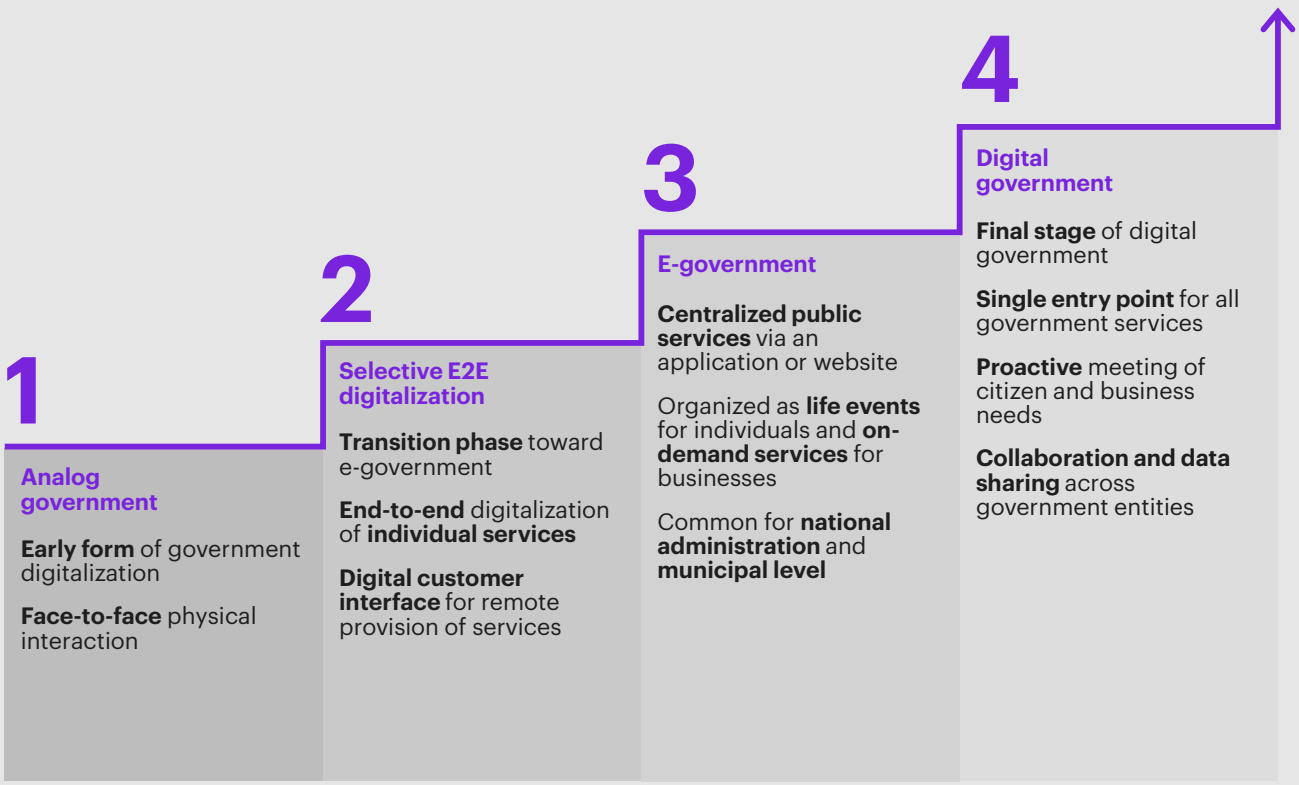
Figure 1
Services provided by different government levels and publicly owned companies



2.2. Stages of digital government

Over the past decade, governments around the world have dedicated time and resources to digitalizing their services. In 2014, the OECD created its Recommendation of the Council on Digital Government Strategies—the first international legal instrument on digital government, aiming to support the adoption of more strategic approaches for the use of technology that spurs more open, efficient, participatory, and innovative governments. Drawing on the OECD's recommendations, we defined four stages of digital evolution and maturity of government services and the payment for these services.

Figure 2
Stages in the digital transformation of the public sector



1

Analog government

Analog government relies heavily on paperwork, personal interactions, and manual execution. Governments in this stage are reactive: their role begins and ends with providing services to the people and businesses that request them. Under a typical analog government model, applying for a passport is likely to involve visiting the relevant public office, filling out a paper-based form, paying in cash for the service, and returning to the office to collect the passport at a predetermined date.

Users often have to make payment at the specific government office where the services are requested. Digital payments are likely to be limited, with the acceptance infrastructure either lacking or absent altogether. Many governments in this stage still favor cash, check, and paper-based methods such as vouchers and postal orders. Truly analog governments are rare nowadays: according to a 2020 United Nations report, the number of countries offering at least one online transactional service increased from 140 in 2018 to 189 in 2022—an increase of 35 percent. The provision of 16 types of services was the global average in 2022, but 115 of the member states (61 percent) offered more.

2

Selective digitalization

Selective digitalization represents a transitional step on the road to e-government. In this stage, governments prioritize digitalization of some services ahead of others, with the focus on efficiency, improved customer service, and opportunities to deploy digital payment. Administrations typically deliver these services through individual siloed apps—all of which have differing login and authentication requirements, look and feel, navigation logic, and accepted payment methods. The need to register separately for each app creates added complexity and inconvenience for users—eroding engagement levels over time.

Many countries opt to start their digital transformation journey by digitalizing services with a very selective remit, such as public parking, public transportation fare, or tax filing for self-employed people. In this stage, some public services—like passport applications—are still conducted entirely manually and involve numerous paper forms, multiple signatures, and potentially cash payment. Conversely, other services—like paying for parking outside the government office issuing the passport—might be completed via an app through a single click.

3

E-government

E-government brings together services and processes across multiple government entities. This often takes the form of a specialized customer-centric portal or website, acting as a single point of contact where people and companies can access information, collect data, request documents, engage in transactional services, perform legal obligations, and be involved in more participatory governance. Services are organized as life events for individuals and as on-demand services for businesses. Users can apply for a passport and file their taxes from the same centralized application or portal, complete all the steps digitally, and pay with a commonly accepted digital payment method. They also receive notifications about the status of their application. For example, Australia's myGov allows users to access a wide range of government services, such as tax payments and social benefits—arranged around events that happen in life, rather than government structures—through a single application.

In this stage, the consolidation of government services enables users to make digital payments within the platform. Different digital payment options are accepted to cater to the different habits and preferences of citizens and businesses. Users can complete their transactions remotely without the need for face-to-face interactions with public servants. Payment credentials can be saved in the platform and reused with appropriate authentication. This provides a new level of convenience and encourages adoption of digital payments. A whole-of-government approach—coordinated and standardized across multiple levels of public sector organizations—is crucial to achieving high quality and adoption of government service.

4

Digital government

At the most sophisticated end of the spectrum, digital government provides a single point of entry to all government services for citizens and businesses. It focuses on meeting users' needs in a responsive and proactive way, while enabling collaboration and data sharing across government entities. The aim is to design a holistic and consistent experience for all stakeholders across most—even all—services provided by the public sector.

In this stage, users can not only complete all their government obligations end to end online, but also gain additional benefits. For example, instead of having to apply for child benefits, new parents may be automatically awarded them when they register the birth of their child. In this scenario, the new parents might be notified by email or SMS, or through a small welcome present for the new member of their family. Many long and tedious forms, especially tax filings, may come pre-filled for citizens—based on inputs from other databases, such as bank payments—and only require a single click to submit.

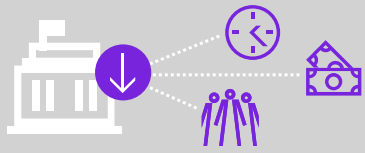
As government services become more automated and proactive, so too do the payment options for these services. Payments are embedded and frictionless and allow the user to pay for different services with a single click. Explicit consent of the user and rigorous authentication are a critical part of the process. Automation of recurring payments gains traction by starting with the renewal of services such as parking permits or payment of highway tolls and expanding into new areas over time.

Most importantly, a digital government is not a one-off effort. It involves a clear, long-term strategy, continuity across different administrations, concerted transformation of different government offices and levels, and visible leadership from the top. For example, the implementation of digital government in South Korea has been continuously pursued for more than 30 years as a national agenda, regardless of regime change. Most recently, the Fourth Industrial Revolution Committee—a presidential underpinning organization—deliberates on the national strategy and policy of the Korean government and coordinates inter-ministerial policies. Similarly, Singapore began its digital transformation journey back in the 1980s with the goal to computerize major functions in every ministry, to facilitate the growth of the local IT sector, and to develop a pool of IT resources for future needs. In 2014, the country outlined plans to become the world's first Smart Nation, and by 2017, the Smart Nation & Digital Government Office was reporting directly to the Prime Minister with responsibility for key national projects such as the National Digital Identity and the Smart Nation Sensor Platform.

2.3. Benefits of digitalizing government services

Digitalization of government services can deliver some attractive benefits for citizens, businesses, and the public sector itself—increasing the trust of citizens, fostering a more inclusive society, and boosting prosperity.

SAVING TIME, MONEY, AND RESOURCES FOR THE PUBLIC SECTOR



The effectiveness of government services is measured by the level of citizen adoption and the speed of interactions with citizens. In the U.S., the public spends an estimated USD69bn and 11.5bn hours on government paperwork each year. In Japan, only 13 percent of administrative procedures of the central government were digitalized in 2020 and only 7.5 percent of the citizens were using government apps for administrative service.

Digital government can significantly streamline operations and standardize processes. Government platforms eliminate the need for decentralized service centers and reduce staff time required for processing offline transactions and services. By digitalizing internal operations and reducing their reliance on paper-based processes, governments can improve internal communications, boost systems interoperability, foster transparency, and enhance data usage and storage.

Denmark. Data shows that Denmark's digitalization effectively saves USD312mn (EUR296mn) annually and has reduced processing time by 30 percent. It has also delivered improvements in the transparency of ministries and organizations, leading Denmark to rank second in the European Union's Digital Economy and Society Index 2022.

Estonia. The government estimates that the use of digital signatures saves at least 2 percent of national GDP. In addition, X-Road—a secure data exchange layer among government offices—saves more than 820 years of working time for the state and citizens annually.

Ireland. As part of the "Seamless Seven"—the country's vision that an individual's life events and interactions with the government will be digital—the Office of the Government Chief Information Officer (OGCIO) has introduced digital postboxes for secure interactions with citizens and state employees. OGCIO expects to save up to USD1.8mn (EUR1.7mn) per year in postage by switching to this digital approach.

U.K. In the recent 2022–2025 roadmap for digital and data, the U.K. estimates potential savings of over USD1.25bn (GBP1bn) through digital transformation of services, by eliminating unnecessary costs of paper-based services and processes.

ENHANCING CUSTOMER SATISFACTION AND INCREASING ENGAGEMENT

Citizens and businesses are familiar with "one-click" solutions—and they expect their interactions with the public sector to offer this same level of convenience. Governments that successfully harness digital solutions can significantly increase user satisfaction with digital public sector services. Recent research indicates that several factors influence satisfaction with digital public sector services, among the most important being users' perceptions of the accuracy, completeness, and convenience of the service they are accessing, and the ability to complete it on their own end to end. The way in which the services are delivered also shapes user experience through the accessibility, privacy and security protection, and the user support of the digital solution. What is more, studies show that citizens who are satisfied with specific public services generally have a higher level of trust in public institutions than citizens who are dissatisfied.

U.K. 82.2 percent of individuals using the phone, webchat, and digital services of Her Majesty's Revenue and Customs (HMRC) between April 2021 and April 2022 reported being "satisfied" or "very satisfied" with their experience.

Singapore. For digital government services, continuous efforts raised citizen satisfaction from 73 percent in 2016 to 85 percent in 2021; satisfaction among businesses also rose from 64 percent to 76 percent. These results saw Singapore hit its self-imposed target of 75–80 percent for citizen and business satisfaction with digital services by 2023—ahead of schedule.

Estonia. 82 percent of e-Estonia users report being satisfied with public e-services in August 2022.

Denmark. Satisfaction with services on authorities' websites has risen over the last couple of years. In 2020, 91 percent of the citizens who had accessed an authority's website or used a self-service solution were satisfied with the digital public services. This is an increase from 88 percent in 2019 and 87 percent in 2017.

PROMOTING INCLUSIVENESS AND EQUAL ACCESS FOR ALL CITIZENS

Governments work hard to increase—and measure—the inclusiveness of their services. The EU recommends a variety of measures to make government applications and websites more accessible for the estimated 100mn EU residents with disabilities, including text-to-speech or larger font sizes. Under Section 508 of the Rehabilitation Act, the U.S. federal government is required to make all of its websites accessible to disabled people. In the U.K., the accessibility requirements are based on level AA of the Web Content Accessibility Guidelines (WCAG 2.1) as a minimum and recommends the use of assistive technologies, including screen magnifiers, screen readers, and speech recognition tools.

Yet government services are still not always easily accessible as mandated by the legislature. A recent study by the Information Technology & Innovation Foundation tested the most popular U.S. federal websites and found that 30 percent did not pass an automated accessibility test for their homepage, and nearly half (48 percent) failed the test on at least one of their three most popular pages. One-third of popular federal websites did not have an easily discoverable page with contact information for users to report accessibility issues.

One billion people around the world—or 15 percent of the world's population—live with some form of disability, according to the World Health Organization. In addition, the current United Nations global estimate is that the number of persons living outside of their country of origin reached 281mn in 2020, roughly equal to the size of the entire population of Indonesia, the world's fourth most populous country. As the world's population becomes increasingly diverse, public sector services have tremendous potential to influence inclusion—leading by example and providing equal and convenient access for all. Inclusion not only creates a more cohesive society, but also contributes to the prosperity of all citizens and businesses in it.

What are X2G payments?

Person-to-government (P2G) payments are payments made by individuals (payers) to government agencies or public sector entities (payees).

Business-to-government (B2G) payments are payments made by businesses (payers) to government agencies or public sector entities (payees).

In this paper, we refer to P2G and B2G payments together as X2G payments

3. Why digital payments dictate the success of digital governments

Digital payments are a key enabler for government digitalization. They bridge the gap between digital access to services and final user consumption and, when fully integrated within the digitalized government, provide a high level of convenience for users. Yet there is a significant disparity among countries when it comes to the adoption of digital X2G payments in the government sector. In OECD countries, 86 percent of payments, measured by number, are made electronically[2]. Still, according to the OECD Tax Administration 2021 report, there are several jurisdictions where the number of tax payments through non-electronic means remains high.

Since the COVID-19 pandemic, digital payments have become more prevalent than ever. According to the Global Findex 2021 survey, 64 percent of adults around the world made or received at least one digital payment. What is more, in developing economies[3], 8 percent of adults, on average, made their first digital merchant payment after the start of the pandemic, accounting for about 40 percent of those who made a digital merchant payment. With more and more individuals, businesses, and governments now favoring digital payments, digital transactions are poised to play an increasingly important role in society and public services.

[2] Kearney calculation, based on OECD's 'Tax Administration 2021', Table A.47 'Electronic payments', page 338.
[3] The World Bank uses income classifications to group countries (based on gross national income per capita), referring to the low- and middle-income groups taken together as the "developing world".

3.1. The vital importance of X2G payments

The payments made by citizens and businesses to the public sector—or X2G payments—are the most important contributor to government revenue for nations around the world. These payments come from taxes paid on income, profits, capital gains, payroll, property, goods, and services. They also include social security payments[4], excise of fuel, tobacco, or alcohol, and customs duties on imported or exported raw materials, goods, and services. Citizens and businesses also pay fees to different government offices for processing permits, issuing official documents, or paying fines.

In the OECD, the average tax-to-GDP ratio was 34.1 percent in 2021. The flow of payments from citizens and businesses to the public sector is dependent on the taxation model (i.e., share of direct versus indirect taxes) and government structure (i.e., responsibility for tax collection among central, regional, and local/city government) of each particular country.

— **Taxation model.** OECD countries collect most taxes through three categories. Social security contributions amounted to the largest share of tax revenues in the OECD, at just over one-quarter (26.6 percent), on average. Together with personal income taxes (24.1 percent) and Value-Added Tax (VAT) (20.2 percent), these three tax types amounted to well over two-thirds of tax revenues in OECD countries. However, there is a wide disparity among countries.

The **Czech Republic** collects most of its tax revenue from social security contributions (45.5 percent), while countries like **Chile**, **Latvia**, and **Hungary** collect more than 40 percent from taxation on goods and services.

— **Government structure.** OECD countries collect most taxes on the central government level. In federal OECD countries—countries in which the different states or provinces of the country have important powers to make their own laws and decisions—tax revenue of the central governments adds up to 53 percent of the entire national tax collection; in unitary countries—where most or all of the governing power resides in a centralized government—this share is higher at 62 percent.

Still, there are significant differences between countries: in 2020, **Chile** collected close to 85 percent and **Australia** more than 80 percent of taxes at the central government level, while this share was 27.5 percent in **Germany** and 33.5 percent in **Switzerland**.

Understanding where and how different payments are collected by the public administration is crucial in the context of their digitalization. **Starting the digitalization journey at the central government level often makes it quicker and easier to achieve scale** than beginning at a local level, and addresses a larger portion of the X2G payments in one go.

For example, in **Ukraine**, the digitalization of government services was coordinated by the central Ministry of Digital Transformation with ambitious goals set for 2024. While Diia—the centerpiece of the Ukraine public sector digitalization (For more details see Case study #1: Diia)—was used by 2.5mn Ukrainian citizens at the end of 2020, this figure was over 12mn one year later—representing around a third of Ukraine citizens.

[4] Social security contributions are compulsory payments paid to general government that confer entitlement to receive a (contingent) future social benefit. They include unemployment insurance benefits and supplements; accident, injury, and sickness benefits; old-age, disability, and survivors' pensions; family allowances; reimbursements for medical and hospital expenses; or provision of hospital or medical services. Contributions may be levied on both employees and employers.

3.2. Benefits of digitalizing X2G payments

The public sector can derive significant benefits from digitalizing incoming payments from citizens and businesses alike. **Digital payments not only have the power to reduce operational costs by lowering the costs of cash and streamlining processes, they can also boost revenue collection by providing more convenient payment options**—enabling governments to improve reconciliation, payment forecasting, and treasury management.

REDUCED COSTS AND LOWER ADMINISTRATIVE BURDEN

By digitalizing X2G flows, governments can reduce the costs of collecting and processing payments. X2G digital payments play an important part in assuring end-to-end digitalization of government processes by eliminating face-to-face interactions and paper-based workflows. Digitalizing public sector payments reduces the administrative burden associated with cash payments, simplifies reporting and reconciliation across agencies, and reduces opportunities for fraud and mismanagement of cash. The cost of errors is driven down, as is the level of human intervention required to undertake checks and corrections.

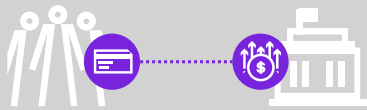
U.K. According to estimates by the UK Government's Digital Efficiency Report, for some government services, the average cost of a digital transaction is almost 20 times lower than the cost of a telephone transaction, about 30 times lower than the cost of a postal transaction, and about 50 times lower than a face-to-face transaction[5]. Digitalization is also likely to reduce both the risk of failed transactions and the business cost of having to repeat the same process multiple times.

Brazil, **China**, **India**, **Indonesia**, **Mexico**, **Nigeria**, and **South Africa**. Analysis of the International Monetary Fund finds that digitalizing government payments in developing countries[6] could save about 0.8–1.1 percent of GDP, equivalent to USD220bn–USD320bn annually. This is equal to 1.5 percent of the value of all government payment transactions.

Pakistan. As part of a wider global project on person-to-government payments via mobile money, two services were digitalized early on in Pakistan—traffic challans[7] and passport payments. Passport application payments via mobile money has reduced the process from one day of traveling and queuing to just minutes. Paying traffic challans via mobile money has reduced a three-hour process to less than an hour.

[5] According to Driving Standards Agency data, 2011/12: GBP6.62 post, GBP4.11 telephone, GBP0.22 digital per transaction.
[6] Based on a study by the International Monetary Fund including Brazil, China, India, Indonesia, Mexico, Nigeria, and South Africa.
[7] Official document issued to a motor vehicle driver who violates traffic rules and regulations.

BETTER COMPLIANCE



Digital payments reduce compliance costs and improve overall compliance. The ability to make digital payments to the government saves citizens and business owners from the time and money they would have spent on traveling to the fiscal authority's physical office, waiting in a queue, or tracking down potential payment processing errors. Added to this is the opportunity cost of the time that could have otherwise been spent on more productive activities. In this way, faster, safer, and more convenient digital payments also incentivize voluntary compliance. They can significantly increase the collection of government receipts and, in the process, reduce the tax gap—the difference between the taxes owed to government and taxes paid.

Kenya. The expanded tax base, institutional reforms, and the ease of tax payment supported by the digital platform iTax enabled the Kenya Revenue Authority to boost tax collection from USD6.82bn (KES695.9bn) in 2011–2012 to USD8.94bn (KES911.8bn) in 2013–2014. In 2014–2015, it passed the trillion mark for the first time, hitting USD10bn (KES1.02tn). Tax-to-GDP improved from 19.1 percent in 2013–2014 to about 20.3 percent in 2015–2016.

Indonesia. The Directorate General of Taxes, Indonesia's national entity responsible for collecting federal taxes, has pursued digitalization as a critical means to encourage taxpayer compliance, leading to a 20 percent reduction in business tax compliance time between 2014 and 2019.

Rwanda. Alongside tax reforms, investments in digital tax services increased the country's tax-to-GDP ratio from 13.1 percent to 16.6 percent and led to 14 percent average annual growth in collected tax revenue between 2010 and 2018. The number of registered taxpayers nearly doubled between 2011—when digital payments were introduced—and 2018, rising from 144,000 to 242,000 individuals.

Romania. Ghiseul.ro—the National Electronic Online Tax Payment System—was launched in one municipality in 2011 in a successful public–private partnership. Currently, it is available nationwide and has passed the mark of 1mn active users, or approximately 20 percent of the working population. In an often-cited example by Ciprian Ghise[8], Executive Director of the Association of Electronic Payment in Romania, Ghiseul.ro has improved compliance from truck drivers and operators when it comes to the payment of urban access fees. Drivers that previously had to leave their vehicle outside the city and visit the municipality office in person—a time-consuming and cumbersome process—can now pay the fee easily and instantly online.

[8] Information provided in an interview by Mr. Ciprian Ghise on July 27, 2022.

INCREASED TRANSPARENCY

Digitalizing payments reduces opportunities for fraud and corruption by minimizing interpersonal interaction and the involvement of unnecessary actors along the payment chain. Payment flows become more transparent, making it simpler and quicker to track and reference individual transactions. For governments, digital payments ensure a clear view on revenue collection status and simplify the reconciliation among different agencies. For citizens and businesses, payment tracking eliminates the anxiety created by submission errors, removes confusion over processing dates, and minimizes the risk of late payment fees.

As a result, digital payments offer governments a powerful tool for combating the informal economy. A joint study by Visa and Kearney identified a strong inverse relationship between digital payments and the informal economy. Cash makes it easier to conceal informal activities from authorities: as digital payments begin to displace cash, the informal economy is weakened. Governments can be an important role model here by driving and supporting the digitalization of all incoming and outgoing payments as a key step toward increasing transparency in society and combating the informal economy.

Mexico brought 4.2mn micro businesses into the formal economy once mandatory invoicing was introduced.

India. The demonetization from November 8, 2016[9] contributed to a sizable increase in electronic payments and filed tax returns. While in March 2014, just 38mn were filed, this figure had grown to 68.6mn in 2017–2018. In a press release, the Indian Ministry of Finance stated that the demonetization brought "more formalization of the economy, more money in the system, higher tax revenue, higher expenditure, and higher growth".

Kenya. Increased transparency, accountability, and traceability of funds doubled revenue collection by the Kenyan National Transportation Safety Authority from USD1.1mn to USD2mn per month between July 2015 and October 2016.

The Visa—Kearney Global Informal Economy study projected that even a 5 percent increase in digital payments per year for five consecutive years could reduce the informal economy by 11–13 percent. This could also have a significant impact on tax revenue, increasing it by up to 1.7 percent in the **U.S.**, or 3.5 percent in **Italy**.

[9] The Government of India decided to cancel the Legal Tender Status of Rs.1000 and Rs.500 denomination currency notes on November 8, 2016 with several objectives: (i) to flush out black money; (ii) to eliminate fake Indian Currency Notes; (iii) to strike at the root of financing of terrorism and left-wing extremism; (iv) to convert non-formal economy into a formal economy to expand the tax base and employment; and (v) to give a big boost to digitalization of payments to make India a less cash-heavy economy.

IMPROVED FINANCIAL ACCESS AND INCLUSION FOR ALL CITIZENS

Digital payments can provide a valuable way to improve access for all citizens to the financial system and to increase financial inclusion. In economies with a large share of unbanked individuals, interaction with public authorities often represents the entry point to the formal financial system: according to the World Bank Global Findex database 2021, in low- and middle-income countries[10], 22 percent of adults opened their first financial institution account to receive money from the government. When the Ukraine government introduced the ePidtrymka (eSupport) functionality into its Diia application, more than 4.5mn Ukrainians registered and 4.1mn cards were issued in a matter of days. In the first two months alone, the government issued 9.3mn ePidtrymka cards.

Getting digital payments from the government can encourage citizens to get into the habit of actively using digital payments, especially if the government explicitly incentivizes or mandates it. This mechanism is particularly powerful when governments offer payment solutions for more than one service. This approach also comes with some positive secondary effects for citizens: creating greater visibility of money received or due to be received, empowering them to better manage their budgets and cashflow, increasing their interest in additional financial products (such as regular savings or insurance), and ultimately, enhancing their overall financial health.

India. 99 percent of India's adult population uses Aadhaar, its national digital ID program, as of 2018. Aadhaar enables electronic know-your-customer checks—authenticated instant verification of identity—and provides access to public, financial, and other services. The government initiative to link financial inclusion and disbursement payments to the national identification system went a long way toward helping reduce the number of unbanked citizens. According to the World Bank Findex Database, the number of individuals aged above 15 years who have an account at a financial institution more than doubled between 2011 and 2021 from 35 percent to 78 percent.

Philippines. PhilSys, the national digital identity system of the Philippines, greatly enhanced the country's inclusive digital finance infrastructure. PhilSys addresses the lack of identity documents as an oft-cited barrier to account opening. As of the end of 2021, 7.2mn unbanked PhilSys registrants were onboarded by the Land Bank of the Philippines and provided with their own transaction accounts free of charge and with no initial deposit requirement.

"Getting digital payments from the government can encourage citizens to get into the habit of actively using digital payments"

[10] The World Bank uses income classifications to group countries (based on gross national income per capita) into low- and middle-income groups.

4. Design principles of digital government platforms

More and more governments are embracing digital transformation of their public services and digitalization of the payment infrastructure and methods that underpin them. Governments that build their digital platforms with an eye on leading design principles stand to reap the benefits of greater inclusion, social cohesion, and increased trust in the public sector, along with compelling savings in time, resources, and funds.

4.1. "One-stop shop": consolidation of government services

Providing centralized access to services is at the forefront of governments' digital transformation. Under this consolidated, customer-centric "one-stop shop" approach, citizens and businesses benefit from a single point of access to the digital public sector services. Almost three-quarters of the United Nations member states (138 countries) use one-stop-shop portals for the online provision of different government services.

One-stop shop service platforms reduce governments' administrative burden and costs, while also simplifying access to digital public services for citizens and businesses. They allow users to access the information they need without first having to identify the appropriate department, provide direct links and nudges toward connected services, and streamline the interaction to a single search, form, or transaction. It is important for one-stop shops to be designed with the user in mind and structured around specific circumstances or life events faced by businesses (e.g., enterprise registration) and citizens (e.g., the birth of a child). Easy authentication and intuitive interfaces are equally important. The citizen-centric approach—shifting away from the services governments can provide to the services citizens need—actively increases the adoption.

In the same vein, integrating X2G payments into one-stop shop platforms allows users to complete transactions without having to switch to a different interface—creating a seamless and convenient experience. According to the World Bank GovTech dataset, by the end of 2022, 85 out of 198 analyzed countries—43 percent—offered a centralized platform for government e-payment services.

Australia. Through myGOV, Australian citizens can access services from 15 separate government services, for example, from the Australian Taxation Office, Medicare, or the Department of Veterans' Affairs. Transactions can be completed either through BPAY, credit or debit card, online payment, direct debit, by phone, or in person at Australia Post—offering users a seamless, integrated experience. As a result, myGOV is Australia's largest and most recognized government platform, with approximately 500,000 logins each day and 16.7mn active accounts.

Ukraine. In Diia, the Ukrainian digital government platform, paying for government services is also a seamless experience, with users submitting payments within the app itself. This means that multi-step procedures, such as corporate tax payments, can now be completed in a few clicks (see Case study #1: Diia)—encouraging compliance and prioritizing convenience for end users.

Japan. The e-GOV Portal was developed through user testing and workshops in which various public sector stakeholders developed user personas and to-be journey maps. The efforts followed the principle of "user-centered administrative service reform"—an important pillar of Japan's Digital Government Action Plan. Through the portal, citizens can participate in policy planning, manage their personal information accessible by the state, and send applications and notifications to various administrative agencies. Over 4,000 procedures can be applied for with the e-GOV electronic application service as of November 30, 2022.

Case study #1

Diia[11]

Country	Initiative timeline	Key information
Ukraine 	**Launched:** 2020 **Status:** Ongoing	**# of users:** 12mn (around one-third of the Ukrainian population) as of January 2022 **# of government services covered:** as of December 2022, more than 70 services are available on the Diia portal, as well as 14 documents and 21 services in the Diia app

Historically, Ukraine's public services were hampered by a heavy dependence on paper-based processes, with high levels of bureaucracy making interactions with the state slow and cumbersome. In 2019, Ukrainian businesses were still spending 91 percent more time than the EU average on filing taxes—on average 328 hours a year. As a result, the country ranked 71st in 2019 in the World Bank Doing Business ranking, behind nations such as Kenya and Belarus.

To address these challenges, the Ukrainian government launched Diia (an acronym for "State and Me" in Ukrainian)—an internet portal and a mobile app. Diia provides citizens and businesses with a one-stop solution to access digital documents and complete government services online. Originally conceived as a digital ID, Diia has grown from covering just two documents—driving license and vehicle registration certificate—to providing more than 70 government services online as of December 2022.

The platform rapidly gained popularity due to its ability to replace multi-step bureaucratic procedures with a few clicks. For example, it enables business owners to submit annual tax statements in just two steps. First, the period of tax payment is chosen allowing the system to calculate the amount due based on bank statements and prior tax statements. Next, the payment can be initiated by selecting the preferred payment method.

Diia has close ties to the country's formal banking system. To access Diia for the first time and verify their identity, citizens are required to log in through their bank account provider. As such, all debit and credit cards registered under citizens' names with that financial institution can automatically be added as payment methods through the app.

In addition, citizens' tax ID numbers—tied to their bank accounts—are automatically downloaded during registration. These two pieces of information are used to verify citizens' identity, as well as establish their claim to various benefits and any obligations to the state.

Besides convenience, Diia offers other benefits for citizens and businesses alike. As of December 2022, registration services for private limited companies and limited liability companies on the Diia portal are fully automated. It takes 10–15 minutes for a private limited company to apply for registration and two seconds for the registration to be processed. In 2022, more than 100,000 private limited companies were registered through the Diia portal. The app's ability to provide official digital documentation that can be accessed from anywhere has become a key advantage during the ongoing war. It helps reduce the loss of legal identity documents and, as a result, the loss of access to legal protection. It also mitigates the need to resort to fraudulent IDs as seen during the Syrian War, increasing civilians' safety.

Diia allows the Ukrainian government to quickly adjust its services to emerging needs. According to Mykhailo Fedorov, Ukraine's Minister of Digital Transformation, Diia allowed thousands of Ukrainians who were forced to leave their homes and move to other cities to register as "displaced individuals" and receive a monthly allowance of USD68 (UAH2,000). Additionally, the app allowed the government to quickly collect additional funds from its citizens to fund the war effort, with Diia raising more than USD8.8mn (UAH260mn) in donations.

[11] The initiative timeline and other information included in this case study were confirmed directly by the Press Office of the Ministry of Digital Transformation, Ukraine.

Key benefits generated

- Saving time, money, and resources for the public sector
- Reduced cost and lower administrative burden
- **Enhancing customer satisfaction and increasing engagement**
- Better compliance
- **Improved financial access and inclusion for all citizens**
- **Increased transparency**

4.2. "Once-only": the founding principle of data sharing

Historically, data that is collected and stored by individual public sector entities has not been shared across the government as a whole. Breaking down these silos and empowering data sharing across government entities can save time and money for governments. Back in 2015, the European Union estimated that implementing the once-only principle in data collection and data sharing at the EU level could result in savings of as much as USD6.6bn (EUR5bn) per year.

Broader data sharing across the public sector is also key to proactive government services that are shaped around the needs of individuals and businesses, provided without the requirement for application and extensive documentation, and focused on delivering seamless service experience at important points of interaction with the public sector (see Case study #2: e-Estonia).

For example, the Tell Us Once program of the **UK** government lets relatives report a death to most government organizations in one go. Once notified through the program, HMRC can deal with personal tax affairs; the Department for Work and Pensions can cancel benefits such as state pension; and the Passport Office can cancel a British passport.

In **New Zealand**, four different government agencies—the Department of Internal Affairs, the Ministry of Social Development, Inland Revenue, and the Ministry of Health—collaboratively designed SmartStart, a life event-based online tool aimed at parents and caregivers about to have a baby. The service was launched in 2016 and provides integrated government information and support related to each phase of pregnancy and early childhood. Once the user registers a birth and consents to data sharing, an Inland Revenue number is generated, and the Ministry of Social Development updates the benefit entitlement. In its first year, SmartStart registered more than 170,000 users.

Data sharing and data interoperability in the public sector rely on a solid IT infrastructure, connecting available databases in different branches of the public sector.

Estonia, for example, uses X-road, a data exchange layer that allows secure access to data stored in many decentralized registers and ensures that data is not duplicated (see Case study #2: e-Estonia). Databases are coordinated by the State Information Management System RIHA, which verifies the justification for data collection and the compliance with the once-only principle—allowing unique and accurate data to flow.

In Flanders, **Belgium**, MAGDA (Maximal Data Sharing between Administrations) ensures that all authorities with the right permission have access to authentic data sources of the public sector. MAGDA offers an electronic service package for this purpose and guarantees that data is exchanged securely and in accordance with the General Data Protection Regulation.

While government services remain essential in all life situations, they do not need to be perceived as a burden. This was also the intention of the Tallinn Declaration on eGovernment signed by the ministers in charge of e-government policy, in cooperation with 32 countries of the EU and the EFTA[12] in October 2017. The Declaration reaffirmed the commitment to "the once-only principle in order to provide efficient and secure digital public services that will make citizens and businesses lives easier".

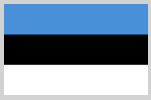
[12] European Free Trade Association.

Case study #2

e-Estonia

Country

Estonia



Initiative timeline

Launched: 2000 (with an e-tax board)

Status: Ongoing

Key information

$ of savings generated: 2 percent of GDP with digital signature alone

# of government services: 99 percent of all public services available online 24 hours a day

In the summer of 1991, Estonia declared independence from the Soviet Union. Independence presented the country with an opportunity to build new technology infrastructure from scratch and excel at a global level. This spawned the e-Estonia initiative—a modern, all-encompassing platform for government services—designed to provide low-cost, cutting-edge systems ensuring accessibility and efficiency.

The government started with tax digitalization in 2000, adding an e-ID in 2002, and progressing to the implementation of A.I. solutions in the public and private sectors starting in 2019. Today, e-Estonia is hailed as one of the leading examples of digitalized government services and the country's relentless commitment in this area is widely recognized. Moreover, the platform's various solutions have been exported to other countries: for example, X-Road, e-Estonia's data exchange layer that connects 52,000 public and private organizations, has been adopted in countries including Finland, Kyrgyzstan, and Japan.

The roots of e-Estonia's success lie in the government's efforts to understand the needs of its citizens and to act on them. The government has ensured political support for digitalization by underpinning it with a comprehensive legal framework including compulsory e-ID, de-centralization and once-only policy, and trust-by-design. To fulfill its digital public service objectives, the state cooperated with the private sector.

The platform is optimized to deliver value to businesses and citizens alike. The average time to set up a company in Estonia is just three hours, with 98 percent of businesses registered online and 98 percent of tax declarations filed digitally. As a result, the country has positioned itself as one of the leading nations for start-ups—since 2010, the vibrant start-up community in Estonia has raised a total of more than USD4.18bn (EUR3.5bn) and 10 unicorns have been founded by Estonians and/or in Estonia (Skype, Playtech, Wise, Bolt, Pipedrive, Zego, ID.me, Gelato, Veriff, and Glia). The nation is among the top countries in Europe in terms of start-ups per capita.

Estonia was the first country in the world to launch an e-residency program—a government-issued digital identity and status that gives residents from any country access to Estonia's business environment. This allows them to set up and manage an EU-based company from anywhere—entirely online. The solution has proven highly popular: as of August 2022, there were more than 100,000 e-residents from over 170 countries and 22,000 Estonian companies registered online by e-residents. The program has translated into USD33.6mn (EUR32mn) in tax revenues.

Recently, the government has invested in A.I.-based solutions to become even more proactive in the services it offers to citizens and businesses. By 2020, the number of "invisible services"—services proactively offered by the state without a requirement to apply—expanded to seven, and included automatic receipt of family benefits or active communication to persons about to retire in the next six months. As of today, USD46.2mn (EUR44mn) of the nation's family and parental benefits requires no interaction between the state and its citizens.

Key benefits generated

- **Saving time, money, and resources for the public sector**
- **Reduced cost and lower administrative burden**
- **Enhancing customer satisfaction and increasing engagement**
- Better compliance
- **Improved financial access and inclusion for all citizens**
- **Increased transparency**

4.3. Government open data

Governments collect and process vast amounts of data, and many of them are making part of this data available beyond the public sector itself. Government open data can include anything from statistical census data, scientific research, and weather information to company revenues and performance of financial markets to more niche datasets, such as health during pregnancy. In combination with private sector data, government open data could play a valuable role in informing and shaping public sector strategies and decisions, especially in view of the post-pandemic recovery of the economy and individual sectors. In parallel, it can boost GDP and trigger innovation. Studies estimate that data access and sharing can help generate social and economic benefits worth between 0.1—1.5 percent of GDP in the case of public sector data, and between 1.0—2.5 percent of GDP when also including private sector data.

Colombia, for example, has rapidly expanded the number of open datasets, with over 7,000 datasets from over 1,100 public bodies currently available to anyone, free of charge. To date, 17,000 visualizations and research have been conducted based on the data, providing insights into all areas of the economy, from agriculture and rural development to science, technology, and innovation.

The **Dutch** government is also taking steps to open up its data, with five out of its 10 base registers being partly or fully available as open data: BAG (Registry of Addresses and Buildings), BRV (Vehicle Registry), BRK (Land Registry – Cadastre), BRT (Topography Registry), and BGT (Registry Large Scale Topography).

Companies in different industries can use open government data to bring more convenience and efficiency to their clients.

Nest Finder—an app with comprehensive information for travelers and tourists in **New Zealand**—utilizes multiple open data sources, including datasets of the Department of Conservation. The data shows tracks, huts, campsites, public conversation areas, recreational hunting permit areas, and topographic maps which significantly increases safety for the user, particularly while traveling in remote areas.

Through BA Works (Buenos Aires Public Works), the city of **Buenos Aires** opened up almost 300 datasets and created several websites and apps that visualize the cost of public works. This enables citizens to access building permits or estimate the best location to open a new business by mapping commercial opportunities in the city. Introduced more recently, Plano Abierto BA (Open Plan Buenos Aires) provides information for urban planning, with data on land uses and heights allowed for construction in the city.

Increasingly, open government data spurs innovation, and adds value to the daily lives of citizens and in the operations of businesses. It promotes transparency and holds the public sector accountable for ensuring that resources are used in a responsible manner.

Taiwan—ranked at the top in the Global Open Data Index of the Open Knowledge Foundation (see Case study #3: Digital Nation and Innovative Economic Development Program (DIGI+) and Digital Government Program 2.0)—has established a comprehensive data governance model. Other countries and regions have recently followed in its footsteps.

Belgium has adopted a transparent approach to the management of open, closed, and shared data to ensure public trust. datastore.brussels—the regional platform for publishing open data and sharing data and services in the Brussels region—facilitates and promotes the re-use of data and services. Users are free to browse the portal, search, and consult the various data and web services—enhancing public trust in the ethical data practices of governments.

Case study #3

Digital Nation and Innovative Economic Development Program (DIGI+) and Digital Government Program 2.0

Country	Initiative timeline	Key information
Taiwan 	**Launched:** 2017 **Status:** Ongoing	**expected economy benefit by 2025:** USD213.73bn (TWD6.5tn) **broadband internet:** connection speed of 2GBps[13] to be rolled out to 90 percent of users, citizens to be guaranteed the basic right to 25MBps[14] **# of public open data datasets:** over 55,800

In 2017, Taiwan announced its Digital Nation and Innovative Economic Development Plan (2017–2025)—a strategy designed to enhance digital infrastructure, build a service-based digital government, and create a fair and active internet society with equal digital rights for all. This strategy is often referred to as DIGI+ and stands for Development, Innovation, Governance, and Inclusion, with the "plus" signaling the possibility of upgrading the policy to create and adopt new technologies.

Taiwan's commitment to transparency is at the forefront of its drive to modernize the public sector. The Digital Government Program of Taiwan was created in line with DIGI+, aiming to accelerate the digital transformation of government. Until 2025, the program's focus is on promoting government open data, making digital services simpler and easier to use, and letting the government decision-making model become faster and more precise.

With this goal in mind, Taiwan has made exceptional progress advancing the digital government objectives. One of the prominent achievements is the government's open data platform, which includes datasets from 18 categories—ranging from education and new business start-ups to more unusual ones such as health during pregnancy. More than 80 percent of open data matched the machine readable, structured, open format quality standard, and drove data service industry chain total output value of USD3.09bn (TWD93.6bn) in 2019. Going forward, the emphasis is on transparency of open data, speeding up data release, data re-use, and maximum added value application.

Taiwan's commitment to data is visible in the IMD[15] digital competitiveness ranking, where Taiwan scored #2 among 63 countries and regions globally in the use of big data and analytics, and #11 in overall digital competitiveness.

In addition, Taiwan is modernizing public dialogue through digital government solutions, creating one of the world's most active civic–tech communities. To promote open government, the National Development Council established in 2015 a public policy participation platform—called Join—as a regular channel for citizens to participate in public affairs, enabling them to discuss and give advice on policy issues during the drafting and implementation stage. To become established as a case requiring government response, a citizen-originated proposal must receive 5,000 registrations of support within 60 days. So far, the open dialogue has achieved widespread popularity: Join's website has hosted 10.6mn unique visitors—almost half of Taiwan's population—since its launch in 2015. The platform is used at both the central and local government level and tackles a broad array of topics from vacancy taxes to drug prescriptions for animals.

[13] Gigabytes per second.
[14] Megabytes per second.
[15] International Institute for Management Development, a private business school in Lausanne, Switzerland specializing in executive education.

Key benefits generated

- Saving time, money, and resources for the public sector
- Reduced cost and lower administrative burden
- **Enhancing customer satisfaction and increasing engagement**
- Better compliance
- **Improved financial access and inclusion for all citizens**
- **Increased transparency**

4.4. The importance of choice in digitalizing X2G payments

Governments that establish a common, citizen-centric payment infrastructure for all digital government services will be well-placed to reap multiple benefits going forward. Under a "one place to pay" model that puts citizens at the heart of payment flows, users are offered a choice of different payment methods and can select the method that best meets their needs and circumstances.

Countries with broad adoption of digital payments commonly offer the ability to pay online or by card for public services. In these countries, it is important to start integrating the payment landscape of different government agencies—ensuring the same payment methods are available no matter which service a user selects. Users expect the payment options they choose to be convenient, frictionless, and secure. Delivering on these expectations relies on the ability to embed one or more preferred payment methods and payment details into the government platform, use them repeatedly and interchangeably for different services, and approve payments from a payment cockpit with a single click. Crucially, users must have complete confidence that all of these elements are underpinned by strong and secure payment authentication.

Singapore, for example, adopted in 2019 a government-wide payments platform, with all agencies mandated to accept payments via the e-payments service PayNow. Most types of taxes can be paid to the Inland Revenue Authority of Singapore (IRAS) through PayNow QR: users simply need to scan the QR code generated in the myTax portal, with the payment amount and reference number embedded automatically. This process is free, more convenient, and less error prone for the user, while ensuring that accounts are updated automatically. Besides PayNow, most IRAS taxes can also be paid through internet banking transfer, telegraphic transfer, or even at physical, self-service transaction terminals.

Conversely, in countries where financial services penetration remains limited, the government may concentrate on ensuring that the choice of payment methods maximizes the accessibility of the service. Offering payment options that suit the transaction habits of the local populations is an important way to foster access and inclusiveness. While there is no "one-size-fits-all" solution here, governments that match the available infrastructure in the country and prioritize citizens' needs stand to create a better overall experience for beneficiaries, making government services more user-friendly and accessible.

In **Brazil**, for example, 16 percent of the population aged 15 and above is unbanked, but around 85 percent has access to a smart phone. In the city of São Paulo, on-street parking payments used to be done via pre-paid paper tickets. But in 2015, when the city replaced the paper system with a digital one, it offered a payment method that is accessible to the general public: payments via mobile app or SMS. This digital solution, designed to match local payment preferences, enabled the city to avoid the costs of installing parking meters or pay stations. By 2017, the new digital approach had led to 60 percent higher income from on-street parking fees.

In another example, when the **Cambodian** government's Ministry of Public Works and Transport started offering mobile payments alongside bank transfers for collecting P2G fees, the agency's revenue more than doubled from USD15mn in 2017 to USD37mn in 2019.

4.5. Investing in cybersecurity to protect the security of citizens' data

Governments' approach to handling the data of its citizens can either reinforce or erode public trust. Therefore, establishing an adequate governance framework and investing in cybersecurity is essential to tap into the value of data and allow data integration, access, sharing, and use across the public sector. Each state needs to be sure that stored data—including personal and sensitive data—is safe and secure. The accelerated transition to hybrid and remote working resulting from the COVID-19 pandemic has led to greater reliance on digital services and incentivized organized crime groups toward cybercrime.

In **England** and **Wales**, there were 1.8mn computer misuse offenses in the year ending June 2021—an 85 percent increase compared with the year ending June 2019, largely driven by a 161 percent increase in "unauthorized access to personal information (including hacking)" offenses.

Over the years, there have been many notorious data breaches and high-profile losses of personal data—with the public sector increasingly affected too.

In 2020, the **Dutch** Donor Register, under the Ministry of Health, Wellbeing and Sports, admitted the loss of two external hard disk storage devices containing personal data of more than 6.9mn organ donors. The data on the hard drives—claimed to have gone missing from a safe—included the name, date of birth, signature, and ID number of each donor.

Just one year earlier, the government database records of up to 92mn **Brazilian** citizens were reported to be on sale on the dark web.

Further, in 2017, the **Indian** Center for Internet and Society reported that 130mn to 135mn Aadhaar numbers—used to file tax returns, for example—had been made public, exposing sensitive financial information.

To guard against these risks, many governments put information security at the forefront of their digital government strategy.

For example, as part of the **Dutch** National Cybersecurity Agenda, the state established in early 2020 an information security framework—called Government Information Security Baseline—now the sole baseline for the entire government.

In **Estonia**, the state made data protection a top priority after a number of cyber-attacks against public authorities in 2007. Since then, the nation has become a champion of secure data storage and is continuously improving its data protection measures. USD15.1mn (EUR14.4mn) was allocated from the state budget in 2022 for the updating and maintenance of outdated IT platforms and systems. Estonia ranked third globally in the 2020 ITU Global Cybersecurity Index.

4.6. Foster public–private sector partnerships to develop optimal digital government solutions

Governments stand to benefit from tapping into the experience of the private sector in addressing digitalization. They can collaborate with financial and technological leaders to design solutions that are simple, user-friendly, cost-effective, scalable, and secure. The OECD lists several points of engagement under public–private partnerships that could benefit government service platforms, for example, financing and investments, or open data and data sharing. The ability of the private sector to move and deliver faster while drawing on global experiences and insights can represent a high-value resource for the public sector.

In fact, **some of the most successful digital platforms currently in operation are a result of such public–private sector partnerships**. When developing Diia, the Ukrainian government worked closely with the banking sector to seamlessly integrate digital payments from business and citizens to governments within the platform (see Case study #1: Diia). Similarly, this kind of partnership approach between the private and the public sector is one of the core principles of e-Estonia—one of the world's most advanced digital government platforms—and has greatly contributed to its success (see Case study #2: e-Estonia).

Cooperation between the private and public sector can increase convenience and drive adoption.

In **Italy**, Agenzia per l'Italia Digitale (AgID) has been partnering with private companies to develop the Public Digital Identity System (SPID)—a digital identity solution consisting of a pair of strictly personal credentials (username and password), with which it is possible to access online services of both the public administration and private members. The credentials are generated by digital identity providers—ten private entities authorized by AgID for the creation and management of users' digital identities. Since 2016, citizens can use SPID, at no cost, to access public online services such as school enrollments or healthcare reservations. More than 12,000 public administrations and almost 150 private companies allow access to online services through SPID. In the six years since launch, more than 33.6mn SPID identities have been generated.

5. The promise of open finance for digital governments

Governments around the world have embarked on a data democratization journey. One particular type of data—financial and transactional data—has recently been the focal point of many governments. Open finance involves financial data sharing and third-party access to data on a wide range of financial products owned and used by individuals and businesses. Open finance goes beyond access to transaction history or account consolidation alone; it could also include additional sources of financial data, such as capital market investments, pension insurance (state and private), or life insurance products.

5.1. Opportunities for digital governments from open finance

The use of financial data within an open finance ecosystem—especially that of private individuals—requires their explicit consent and understanding of the purpose for which their data will be used. But if that consent is granted, open finance can enable the creation of services that provide consumers and businesses with a comprehensive view of their financial assets and help them to manage their finances better. The potential to save users the time and effort involved in some of the most cumbersome administrative processes in the interaction with the state, such as tax filings, is also significant.

Some emerging and promising uses of open finance are demonstrated below:

Automatic pre-filling of government forms

Tax services in **Estonia** are fully digitalized. The country has solid mechanisms for exchange of data between the state and financial institutions, which enable a high level of automation in preparation and submission of tax returns. Everything is automatically prepared and prefilled—incomes, taxes paid by the employer on the individual's behalf, mortgage payments, etc.—and if any data, such as income from selling stocks, is missing from the declaration, it can be added in just a few clicks via online banking. The pre-filled tax form takes into account the existing tax rules—e.g., taxes that might be owed but also rebates that the business or individual might be eligible for. As a result, it takes about three minutes in Estonia to file taxes as a physical person. Similarly, in **Norway**, the Tax Administration—through Altinn, a digital dialogue solution—pre-fills tax forms and, since 2008, recipients only have to "sign and submit" if there have been changes, otherwise the form is processed automatically. By 2020, seven out of 10 employees and pensioners used the so-called "silent acceptance" mechanism.

In the **U.K.**, HMRC rolled out a simple assessment tax system to save taxpayers the hassle of having to calculate exactly how much tax they owe. New forms for self-assessment tax returns now come pre-filled using the government's data on individual taxpayers.

Proactive, personalized notifications

Governments can proactively inform individuals about existing public services of relevance to them.

For example, in **Austria** parents do not have to apply for child support as the tax authorities automatically check requirements and transfer the monthly payments without application to the account of the parents. Only in cases where account information is missing from the tax authorities will parents be asked to provide data. Other countries' digital government initiatives are based on the life event model, underlined by the principle that data collected in various parts of the public sector will be brought together and used to proactively develop services for citizens. The AuroraAI proactive service in **Finland**, not yet launched, is intended to automatically identify "life events", and work as "a nanny" that helps citizens meet particular public service needs that may arise in conjunction with certain life circumstances, e.g., moving to a new place, changing family relations, etc. The economic rationale is that timeliness, personalization, targeting, and automated service provision are expected to increase efficiency and remove wastefulness.

In an environment where digital government platforms are closely connected to the country's banking system, such personalized notifications can also help combat financial fraud.

For example, Diia added a functionality that alerts citizens when banks check their credit history. As this step is necessary to obtain a loan in **Ukraine**, individuals are immediately informed if a fraudster is attempting to steal their identity and can act quickly to block such attempts.

Efficient, automated audits

The tax gap—the difference between taxes legally owed and taxes collected—is a significant problem worldwide.

Estimates indicate that as much as USD1.1tn (EUR1tn) is lost every year in the **European Union** alone to tax evasion and tax avoidance. In the **U.K.**, the tax gap in 2020 to 2021 is estimated to be USD43.3bn (GBP32bn)—5.1 percent of total theoretical tax liabilities.

While tax authorities are keen to reduce the loss of income, manual tax audits can prove costly. Using open data for such purposes offers an alternative to traditional methods of audit—providing a cost-efficient, albeit still underutilized, opportunity in many countries. Financial data can enable governments to detect patterns and use advanced algorithms to determine the likelihood that an individual or business is underreporting earnings.

For example, in the **U.K.**, HMRC's Connect system collates data from 40 data sets and 600mn documents—from bank accounts, credit and debit card accounts, e-commerce websites, and others—to identify spending behaviors that do not align with individuals' reported tax statements. The system, which costs around USD124.2mn (GBP90mn) to develop, is estimated to have helped secure an additional USD4.1bn (GBP3bn) in tax revenues.

In **Slovenia**, the Ministry of Finance's Financial Administration has been using machine learning to detect tax evasion schemes, tax fraud, and to find errors in tax reports. In 2017, the administration listed 158 risk factors and used them to select around 17,500 individuals and companies for tax inspection. The inspectors found irregularities in more than 75 percent of all the selected cases. In **Poland**, tax authorities use STIR, an algorithm made to help with fighting VAT fraud. The algorithm uses the data of millions of entrepreneurs, including bank accounts opened and maintained by the company, details of transactions, balances of statements, and IP addresses from which account holders log into their accounts. Suspicious transactions are selected using criteria such as whether an entity made unusual, sudden movements on its bank account. In 2019, 537 suspicious accounts belonging to 113 entities were frozen, leading to estimated savings for the state of USD152mn (PLN584mn).

5.2. Personal data privacy and open finance

Open data and open finance function most effectively when underpinned by a customer-centric model of data ownership and control. This means that every individual and company that owns data is empowered to decide whether to grant access to their data, including when, to whom, and for how long their data will be shared. The existence of transparent, simple, and well understood ethical principles of data collection, sharing, and use builds the foundation for a long-term sustainable model under which citizens and businesses can opt to share their data on their own terms. Adherence to these ethical values and principles for the management and use of data is essential for facilitating voluntary individual consent. The transition to an open data and open finance society must also be underpinned by incentives to encourage users to share their data and meaningful benefits they get in exchange.

A number of countries are ahead of the game when it comes to open data.

In **France**, data.gouv.fr—the open platform for French public data, currently gathering more than 43,500 datasets—is developed and operated by the Etalab department of the Interministerial Digital Department. Etalab acts as the state's "Chief Data Officer", coordinating the design and implementation of the state's strategy in the field of data. The team's responsibilities include facilitating the circulation of data between administrations, implementing the principles of open government, such as citizen participation and open innovation, and organizing, in compliance with the protection of personal data, the best use of data from and by the state administrations.

6. Takeaways

Digital transformation programs have become a priority on national agendas, with this trend accelerated by the COVID-19 pandemic. Digitalization transforms the way public institutions operate, organize themselves, and interact with internal and external stakeholders. As most aspects of everyday life become inherently digital, citizens are expecting efficient, digitalized experiences in their government interactions. Here are some learnings for governments on their way to digital transformation:

01

Maintaining the status quo is a false economy

Large-scale digital transformation initiatives go beyond four-year terms and the planning horizon of many governments. The high costs and long implementation timelines involved can disincentivize some administrations from pursuing such complex change. However, maintaining the status quo of paper-based processes, face-to-face interactions, manual reconciliations, and patchy technical landscapes comes with costs of its own. Examples from Estonia to South Korea clearly show that digitalizing government services and processes can generate substantial savings. The success stories of these governments also demonstrate that the investment does not pay off in financial terms alone: governments that succeed in building solid foundations for long-term growth through digitalization stand to genuinely enhance the lives of citizens and boost the prosperity of businesses.

02

Governments risk losing digital ground that they cannot make up

Today, the adoption of digital government services is not widespread in every country, and implementation is not uniform across all levels of government. But the use of digital technologies is steadily growing among citizens and businesses and has made a significant leap forward in the COVID-19 pandemic. Governments that fail to act now will face some very significant risks. The rapid pace of change means that complex, monolithic systems in the public sector are not sustainable as technology advancements evolve and governments continue to build technical debt in their complex estates. In addition, the cost of running large, complex systems is rising and the pool of resources with the skills to maintain them is shrinking and difficult to retain. There is no question that the future is digital, so the more time elapses, the greater the technology and skill gap that governments will have to bridge. The digitalization of public sector services is no longer a matter of choice, but an unavoidable necessity.

03

The all-important role of digital payments

For governments moving toward digitalized services, digital payments play a key role in facilitating this transition. They allow individuals and businesses to use public services remotely, without time-consuming face-to-face interactions. At the same time, governments can promote inclusion and easier access by adding digital payments to the range of payment options. Digitalization of payments also delivers tangible financial benefits—empowering governments to enhance and optimize revenue collections, reduce tax gaps, and achieve significant cost savings. Additionally, it significantly enhances citizen engagement through personalization, offers greater choice, and removes barriers to payment. Above all, digital payments can deliver a better customer experience and foster trust.

04

Get ahead of the game

Governments that have successfully led digital transformations exhibit several key traits. They begin their digitalization journey with an ambitious national digital transformation strategy that is underpinned by clear targets and designed to drive coherent and sustainable change. Robust public–private partnerships underpin the delivery of new digital models—combining digital skills, innovation, and global experience from the private sector with forward-thinking policies, reach, and resources of the public administration. Quick wins play an important part in maintaining momentum, but they also facilitate the onboarding of a larger number of citizens and businesses. Most importantly, governments starting the digitalization journey have the advantage to lean on the learnings of other nations—anticipating issues, tapping into ready-to-use solutions, and being able to reap the benefits faster.

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