Assessment and Recommendations

This section analyses the current digital government landscape in Mexico and outlines proposed recommendations.

The fourth industrial revolution: Leveraging digital government in Mexico

The age of disruption

The world is facing an age of unique technological change. The speed, depth and breadth of this change are reshaping economies and societies across the globe. New business models are upending entire industries. Technology companies are taking over as the world's most valuable firms, autonomous vehicles are taking the streets, distributed models challenge incumbents and the Internet of Things (IoT) is making digital cities a reality. All this is already changing how we live, work and relate to one another. Still, more innovation is to be expected as our ability to produce, store and process massive amounts of data accelerates.

Governments around the world have no option but to adjust to this pace of change. Understanding how to leverage emerging technologies to reshape responses to changing expectations about public services, and building the capabilities to respond to this changing environment, are priorities for policy makers. Public authorities have become aware of the need to build digital capacity, update governance arrangements and transform business processes to meet the challenges of the 21st century and overcome traditional models that too often rely on outsourcing digital skills and capability. Analogue governments cannot effectively serve digital economies and societies, which require governments to be digital.

The digital disruption has barely started, and it is likely to accelerate. Deprioritising the digital transformation of the public sector or overseeing the current and upcoming challenges could drive significant failures in the Mexican public sector. This study seeks to flag these potential pitfalls for the Mexican government and encourage constructive and informed policy action going forward.

Digital government at the core of public sector reform

Unprecedented levels of home-based and mobile connectivity enable new public service delivery arrangements that are more convenient and that allow for data and user-driven continuous improvement, while saving time and resources for users and the public sector. Beginning in the late 1990s, governments strived to implement e-government –"the use of information and communication technologies (ICTs), and particularly the Internet, to achieve better government" (OECD, 2014). The e-government wave had a number of shortcomings. Most notably, it left a legacy of siloed systems, digital fragmentation and the digitisation of services without significant transformation – from processes to organisational culture.

These outcomes and new levels of technological development led the OECD to call for a paradigm shift in the use of technology in the public sector, encouraging governments to move from e-government to digital government (OECD, 2014). Digital government uses technology to enable open, user-driven, proactive and inclusive public services; redesign government processes; and take data-driven decisions (OECD, forthcoming). It also enables the rise of government as a platform, facilitates greater integration of services, as well as deeper collaboration and sharing within and outside of the public sector.

Mexico's efforts to achieve digital government in the past few decades cannot be neglected. In particular, the push for digitalisation, driven by the Coordination of the National Digital Strategy at the Office of the President, has achieved significant success. Today, roughly 90% of government transactions can be initiated on line and 75% can be completed digitally (IDB, 2018). Nevertheless, only 10% of Mexicans reported completing their last government transaction through digital channels, and government transactions often require several interactions to be completed. To reap the full benefits of digital government, Mexico might benefit from adopting an increasingly multi-channel, joined-up and user driven approach, which can affect societal well-being and hence support increased public trust in government.

Governance for sustainable and inclusive digital government

The evolution from e-government to digital government in Mexico

A new National Digital Strategy (Estrategia Digital Nacional, EDN) was launched in Mexico under the 2012-18 federal administration, providing a clear articulation with the public sector reform programme and the National Development Plan. The Coordination of the National Digital Strategy was established under the Office of the President to oversee and co ordinate its implementation.

The EDN, its structure and objectives have a significant focus on improving public sector performance (Government of Mexico, 2013). The EDN identified five strategic objectives that would drive the digital transformation of government, education, health, the economy and government-citizen relations (Figure 1). These objectives are supported by five key enablers: 1) connectivity; 2) digital skills and inclusion; 3) interoperability; 4) legal framework; and 5) open data.

Figure 1. Structure of the Mexican National Digital Strategy: Objectives and enablers
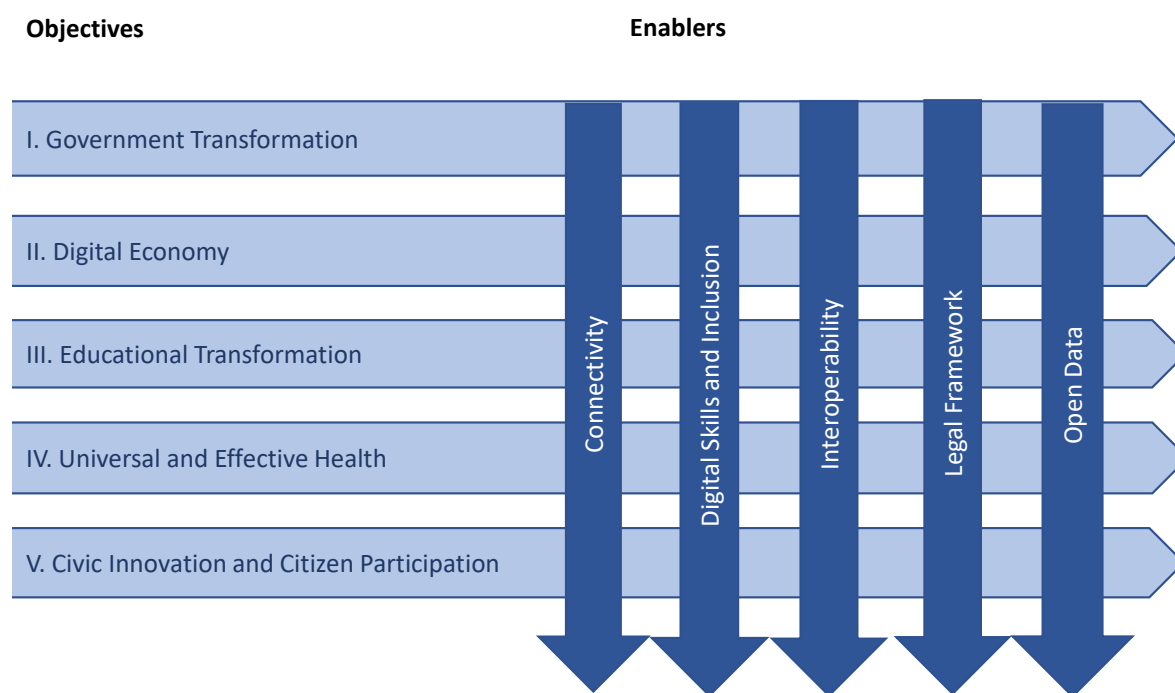
Source: Government of Mexico (2013) Estrategia Nacional Digital.

Mexico identified early on the power of digital and the country has firmly established itself as a leader in Latin America and the Caribbean and, progressively, the world, as its performance in international metrics show. Mexico ranks 23rd in the UN's Online Service Index, up from 35th in 2014, and 5th in the OECD Open, Useful and Re-Usable Data (OURData) Index, up from 10th in 2014.

However, success should not lead to complacency, as experience proves that digital initiatives often fail and the implementation of digital strategies does not always lead to the desired results (Bughin et al., 2018). The digital transformation of government entails a continuous evolution, which demands sustained effort. As governments operate in political environments of competing interests and changing policy priorities, a solid governance framework is essential to secure continuity for the effective implementation of strategies and sustained long-term results. Effective governance in the 21st century needs to support

governments capable to embed new ways of working and advanced analytics into public sector operations at all levels to draw on new insights, enable smart automation where valuable, and develop new business models in order to make public policy and service delivery more effective.

The enablers of the digital transformation

Connectivity

Access to basic ICT infrastructure, and notably the Internet, is the backbone of the digital revolution. With an overall performance below the OECD average – due to a relatively low share of the population using in the Internet – in 2013 Mexico took bold, courageous action to address this challenge and accelerate the country's actions to establish the environment needed to transition to the digital economy. Most remarkably, access to the Internet and broadband was recognised as a constitutional right for all Mexicans as of June 2013, thus putting pressure on public authorities to live up to this standard. While Mexico still scores below the OECD average, it has experienced significant growth in the number of Internet users in the country, particularly after 2014.

While these are encouraging results, Mexico still lags far behind OECD peers in the development and adoption of critical infrastructure for the digital transformation, such as access to and use of fixed and mobile broadband. From a digital government perspective, Mexico would do well to double down on its efforts to expand connectivity and inclusion as it would allow the country to reap the full benefits from government transformation and the digital economy.

Figure 2. OECD fixed broadband subscriptions per 100 inhabitants, by technology, December 2017
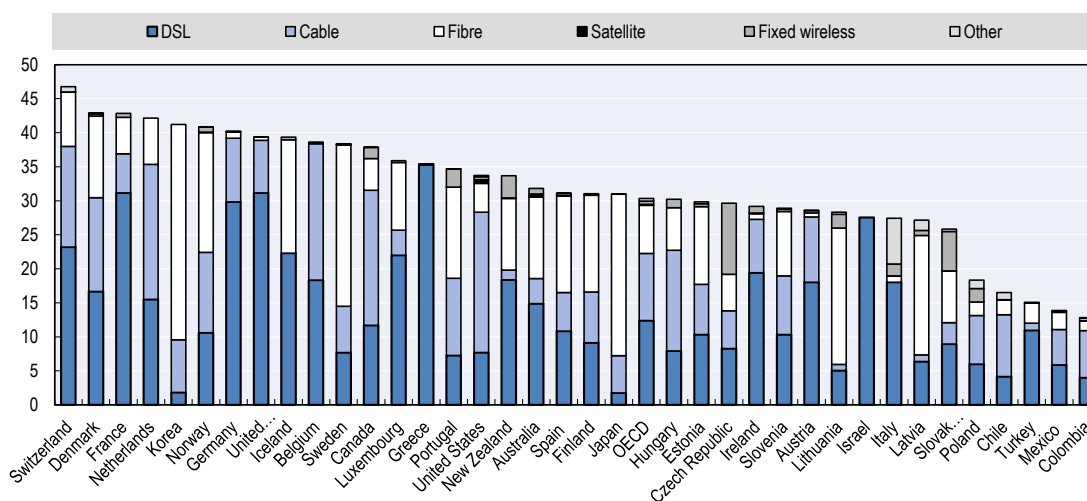
Note: Canada: Fixed wireless includes satellite. France: cable includes VDSL2 THD. Germany: cable includes HFC lines; fibre includes fibre lines provided by cable operators; fixed wireless includes BWA subscribers; other includes leased lines. Israel: temporary OECD estimates. Italy: terrestrial fixed wireless data include WiMax lines; other includes vDSL services. Switzerland and United States: data for December 2017 are estimates. Information on data for Israel: http://oe.cd/israel-disclaimer.
Source: OECD Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm.

Digital skills and inclusion

The EDN also points out digital inclusion and the development of digital skills as a critical factor making digital success possible in the country. Indeed, building the digital skills of society can help drive innovation in the production of goods and services and their adoption, use and consumption by members of society.

Mexico has set up important initiatives, such as MéxicoX, an online learning platform with over 230 courses for specialised and academic training for teachers, benefiting more than 1.5 million users (OECD, 2018a). Similarly, @prende.mx has provided schools with technological equipment and a knowledge-sharing platform for teachers on using technology as part of the learning process, and has run pilots aimed at improving students' access to digital technologies and the responsible use of the Internet.

While these initiatives are promising, they still have shortcomings that need to be addressed. @prende.mx has yet to develop indicators of success to understand its impact on broader education outcomes or skills development. Moreover, it is unclear whether the measures taken are sufficient to instil a digital culture among teachers. Finally, it seems that not enough attention is paid to low-skilled workers that will increasingly face pressures to upskill and reskill. The rise of automation makes this all the more relevant and urgent. The transition towards broad automation may after all take place more rapidly than we expect.

Interoperability

Mexico has focused on enhancing interoperability as a driver of government business processes and service transformation. The Mexican single portal, Gob.mx, with the support of a new normative framework for digital government, has been driving interoperability between government departments. In addition, the initiative InteroperaMX has been an outstanding achievement for facilitating data sharing within the public sector.

InteroperaMX, inspired by the Estonian X-Road, is a platform that allows public institutions to securely share reliable and trustworthy data, with clear identification of the source and certification of the information. This effort, launched in 2016 and operational as of 2018, is driven by the vision of a public administration where the user only has to provide information once to the public sector.

The initiative to advance interoperability in the country is of a critical strategic importance, as it is a structural enabler to achieve end-to-end digital services and seamless government. A seamless government would significantly reshape how the public administration operates, including between levels of government, to better serve citizens and become more agile.

The birth certificate is the use case chosen by the government to illustrate the power of InteroperaMX and thus of interoperability in the public sector. A birth certificate is required as proof of a citizen's identity for 46% of all government transactions at the federal level. Moreover, 45% of completed government transactions in Mexico concern proofs of identity and civil registration (IDB, 2018). These initiatives have enormous potential to drive transformation both within the public sector in Mexico and outside of it by enabling digital delivery models. However, they so far lack scale. Only a limited number of public services have adopted these solutions as a means to achieve interoperability. In addition, these solutions do not provide users with full transparency on the use and sharing of personal data by public institutions. This final point is one that could and should be considered for future iterations.

Legal framework

The legal and regulatory framework for digital government and information and communications technologies is an inevitable component of the governance framework that needs to be adjusted in line with the needs of the digital age. Mexico has also taken significant steps in this domain. As previously mentioned, access to the Internet has now become a constitutional right. The Mexican government has focused important energies on fostering competition in the telecommunications sector under the 2012-18

Peña Nieto administration. It has also pushed for the modernisation of the regulatory and normative framework for digital government.

The current legal and regulatory framework of digital government in Mexico provides a vision for the progressive digital integration of the federal public administration. Furthermore, the legal framework of ICT procurement, digital identification and signature, and personal data protection have recently been modernised.

These changes should be welcomed and encouraged as they facilitate more joined-up and data-driven approaches in the implementation of digital government. However, more is needed for these approaches to be streamlined and ingrained in the fabric of government as default ways of working. As the government of Mexico seeks to enhance service delivery through digital approaches, it seems of critical importance that frameworks such as those dedicated to ICT commissioning are revised or complemented to facilitate agile contracting and development.

Open government data

Data, including open government data (OGD), is a strategic enabler of the digital transformation that allows government to work as a platform for the co-creation of public value (OECD, 2018c). Open-by-default standards give governments the opportunity to leverage outside talent and capabilities not only to help advance government accountability, but also public sector performance and social and economic innovations that deliver convenient new services and promote well-being (OECD, forthcoming).

In 2016, the government of Mexico, through the Coordination of the National Digital Strategy, the General Direction of Open Data and the Ministry of Public Administration partnered with the OECD to perform an OECD Open Government Data Review of Mexico (OECD, 2018b). The review provided an assessment of open government data policies in Mexico in the light of the OECD analytical framework for open government data (Ubaldi, 2013) and highlighted opportunities for Mexico to reap the full benefits of OGD to support the digital transformation of Mexico.

The Open Government Data Review of Mexico benefited from a follow up project in 2018 to assess the progress made since the review. The 2018 report also assessed the present environment to make forward-looking recommendations that would help the government of Mexico make strategic choices today so that the national OGD ecosystem continues to grow in maturity and robustness (OECD, 2018b). The conclusions of this OECD report remain valid to this date.

Political leadership: Creating an enabling environment for change

International experiences highlight that transforming government requires the mobilisation of a myriad of actors, networks, structures and systems, which demands substantial political capability. Because of these requirements in terms of political leverage, digital government authorities are very often located at a central department or ministry, close or within the centre of government, with a transversal mandate such as a finance minister, public administration minister or cabinet office, which is consistent with Mexico's experience.

Mexico has successfully adopted a model where the political push comes from the centre, via the Coordination of the National Digital Strategy located in the Office of the President, with the implementing drive and support coming from the Ministry of Public Administration. Measured by the rate of digitalisation of public services, this model has delivered. Mexico has consolidated itself as a regional leader when it comes to the level of digitalisation of government transactions (IDB, 2018; OECD, 2018a). However, the model is not without its shortcomings.

One key weakness of the current Mexican model is that a disproportionate level of the political drive – and thus the ability to exert influence across sectors – depends on the individual executives within the Office

of the President, who might often struggle to find the time required to effectively steer the digitalisation agenda (Bracken and Greenway, 2018). Experience shows that while digital agendas operated from the centre of government can be extremely effective, they also risk becoming too closely associated with a specific executive or political leader, whereas digital government does not have a political colour. The existing model provides no certain answer for the need of sustained efforts in digital government implementation, with the risk for the digital agenda to lose relevance because of political elections.

Several of the most digitally advanced OECD countries have attempted to solve this tension by creating a more stable institutional set up with a co-ordinating mandate – e.g. ranging from a specialised agency for digitalisation headed by a senior executive reporting directly to an institution with the necessary political clout to directorates headed by senior executives or political appointees and/or reporting to the centre of government (OECD, 2016a). This arrangement has provided the authorities in charge of digital government with the political support to co-ordinate and steer in order to achieve transversal reform and drive government-wide change, to establish agile and collaborative approaches across the administration; and create incentives that support cultural change. This set-up also ensures adequate levels of resources, accountability, specialisation and a reasonable scope for organisational performance assessment. Just as importantly, these digitalisation agencies have been endowed with the budget, convening and enforcement power required to accelerate the development of a robust and dynamic digital ecosystem, allowing for sustained and effective efforts in government transformation.

Organisational frameworks to deliver on digital ambitions

Since 2001, Mexico has progressively taken steps to improve the organisational structures supporting its public sector digitalisation and modernisation efforts. The partnership between the Coordination of the National Digital Strategy and the Ministry of Public Administration has allowed the government of Mexico to achieve more robust integration of digital efforts, from connectivity to the digital economy and society as well as government transformation. It has also secured enough political capital to launch an ambitious, mission-driven initiative to overhaul the government services portal.

Stronger digital government co-ordination has been favoured by the National Digital Strategy and its Coordination office; an increasingly robust legal and regulatory framework; and a set of standards, guidelines and toolkits that have allowed the public administration to progressively harmonise processes and procedures in the federal public administration. Furthermore, the Executive Council Inter-ministerial Commission for e Government Development (Comisión Intersecretarial para el Desarrollo del Gobierno Electrónico, CIDGE) has ensured technical and operational co-ordination of the implementation of the strategy. The sub-commissions and technical teams of the CIDGE have proved to be critical in the operationalisation of key components of the National Digital Strategy.

However, while these mechanisms have brought Mexico a long way in terms of technical co-ordination, their limitations become evident when it comes to high-level political co ordination. The highest ranking co-ordination body for digital government implementation, the CIDGE, meets only at the level of heads of ICT units. While this co ordination structure has been tremendously important so far, it is unclear whether it will be sufficient going forward to secure the political support required to sustain the horizontal and transversal evolution required by the digital transformation.

Given that digital decisions will inevitably become more intertwined with organisation-wide strategic and political decisions, a space or body for high-level political co-ordination and strategic orientation on digital matters becomes increasingly necessary.

Box 1. Proposals for action

Based on the assessment advanced above, Mexico might benefit from considering the following actions:

- Continue to support infrastructure development, access to telecommunications services and Internet connectivity as a means to achieve universal digital inclusion; in particular by identifying key gaps and the actions that would deliver the most impact and progress.

- Double down on the focus of user experience and starting with user needs as the structuring elements of any digital government strategy. This means constantly reviewing policies, regulations, frameworks, standards, guidelines, handbooks and incentives to foster a user-driven culture in the public administration. This would also allow for the emergence of a digital by design approach that supports multi-channel service delivery, contributing to an inclusive government transformation process.

- Further structuring and advancing its efforts for the development of digital skills and inclusion. It would be important in particular to deploy more ambitious pilots and actions to develop digital skills, not only among students and teachers, but across the public sector and all excluded groups, including the elderly, low-income or low-education workers, among others. The authority responsible for the National Digital Strategy could also consider working the Ministry of Public Administration and the Ministry of Labour and Social Welfare to map skills gaps and deploy reskilling and upskilling programmes for civil servants and workers at risk of automation and technological displacement. These programmes should take a broad view on human resources and compensation management to ensure that digital skills and talent are duly recognised. Public sector skills strengthening would benefit from looking at both user skills throughout the public sector and professional skills for IT or digital professionals.

- Empower digital transformation officers within departments, in particular by establishing more direct relationships between the digital leaders or digital transformation officers within institutions and the political leadership of their organisation. These include the introduction of leadership skills and seniority in the competency framework of digital transformation officers, sensitisation programmes on digital transformation for senior political leaders, and other incentives, such as recognitions or awards.

- Build on the accomplishments achieved in the realm of interoperability to achieve end-to-end digital services and seamless government. This initial success exemplified by the InteroperaMX, the interoperable birth certificate and the Single Identity Number for the Population Registry, digital identity and the advanced electronic signature provides the basis for progressive scale. Scaling up these efforts would ease interactions between levels of government. Most importantly, the continuous expansion of the use of these interoperable components would enable the public administration to better serve users, making life easier for citizens. Future efforts might do well by continuing to focus on key national registries to unlock the power of data sharing to simplify service delivery. An area of additional interest that is worth exploring is how to establish a stronger consent model to provide service users with greater control about how their data are used by the public authorities and/or shared, as countries like Belgium, Estonia, the Netherlands and Spain are doing.

- Continue to strengthen the open government data ecosystem through the implementation of the recommendations in the OECD report Open Government Data in Mexico: The Way Forward.

- Establish a high-level collegial body to provide overall political orientation and strategic co-ordination of digital government policy and issues of relevance for the National Digital Strategy. This body would not replace the very much needed implementation co-ordination level that

brings together the leaders of ICT units across the federal administration, but would be a new level of governance engaging senior organisational leadership.

- Set up a governance and organisational arrangements that support the effective and sustained implementation of the National Digital Strategy. These arrangements should grant the authority responsible for overseeing the implementation of the strategy with an adequate mandate, securing the necessary level of authority and political influence. These organisational arrangements should also provide levels of accountability that offer incentives to take action. Setting up an agency for digital transformation attached to an institution with the necessary political clout (e.g. the Office of the President or the Ministry of Finance), while securing the agency's leadership, could provide the right framework for sustainable success. This path could ensure the influence to steer changes across sectors, while isolating the agency from the risk of changing executives within those ministries that may or may not be as interested in the digitalisation agenda.

Strides towards a digital and user-driven administration in Mexico

Digital service transformation starts with user needs

Mexico has joined other trend-setter OECD countries in developing design principles, standards, guides and other requirements for digital public service delivery. This trend has given rise to the internationally recognised Principles for Digital Development[1] and the OECD's forthcoming General Digital Service Design Principles. These powerful tools have encouraged digital teams across the administration not to simply digitalise paper-based procedures, but to focus on digitalisation efforts to redesign processes.

By providing digital teams with a principle-based approach to service design, these tools empower them to leave behind obsolete rules and refocus efforts on user-driven approaches. These tools are of critical importance for the successful transformation of service delivery. All digital service delivery strategies start with user needs and these tools help governments to refocus its attention and efforts on understanding those needs. These tools have also provided a clear definition of what performing services are. The power of such standards and principles has been magnified by the governance framework put around the government's single portal Gob.mx, which have allowed the Digital Government Unit to be able to determine whether a digital service complies with the standards and is good enough to go on the portal, thus serving as quality control. Along with the government's Seal of Excellence, a government tool providing incentives for compliance with government guidelines and standards, the framework for digital services has brought Mexico a long way.

However, a push from the centre can only go so far and is unlikely to deliver lasting, government-wide cultural transformation across the administration and levels of government. One answer for this dilemma is embedding digital leadership and approaches across departments and levels of government. It is important to understand that digital leaders are not IT specialists, but individuals who can strategically leverage the power and principles of technologies to achieve the organisations' strategic objectives. In this sense, the position of digital transformation officer must go beyond a fancy title to overcome the biased perception of them being perceived as an IT support system. To help drive change, digital transformation officers must be politically able, and stay close to the ears of organisational boards and become the voice of service users within the organisation.

Furthermore, as digital governments achieve new levels of maturity, they have been looking for ways to improve their own digital service standards. The United Kingdom, an OECD peer and trend-setter in this domain, is the clearest example. The Government Digital Service is working on a revised framework that will focus, among others, on fostering more joined up approaches rather than simply transforming individual

services (Gill, 12 September 2018). This means a greater focus on what the user is ultimately trying to achieve rather than departmental individual mandates or responsibilities. Mexico would also benefit from a greater focus on the user journey and life events in the mid- to long term as a means to achieving more substantial, user-driven transformation.

Finally, Mexico has a significant number of citizens residing abroad (12 million). Digital service transformation could also yield benefits by better serving Mexicans, foreign investors and other user groups abroad, bringing government closer to these constituents.

A data culture that supports the delivery of policy outcomes and social change

The government of Mexico has embedded the relevance of data for the digital transformation in the National Digital Strategy (Government of Mexico, 2013), and has made concrete efforts to build the institutional, social and economic infrastructure around it to support it (OECD, 2016b; 2018b). Furthermore, it has progressively built the necessary institutional capabilities and the organisational underpinnings to achieve increasing levels of sophistication in the use of data in the public sector to address priority policy issues. Efforts such as the institutionalisation of chief data officers and digital transformation officers are of remarkable importance to advancing the data operations of the public sector (OECD, 2018b).

Mexico has also maintained a healthy interest in disruptive emerging data-processing technologies that will upend industries, such as artificial intelligence (AI). Indeed, the government of Mexico is expected to show leadership in this area of critical importance for its sustained economic development. The Coordination of the National Digital Strategy worked with the British Embassy in Mexico, Oxford Insights and C Minds to develop a roadmap for the effective and ethical AI in the country (Dutton, 2018; Martinho Truswell et al., 2018; Zapata, 22 March 2018). In addition, the government of Mexico has supported the creation of ia2030, a multi-sectoral partnership to set the course for AI development in the country. This is consistent with trends across OECD countries as highlighted by the work of the OECD E-Leaders' Thematic Group on Emerging Technologies. Mexico has largely succeeded in making the case for the relevance of data-driven approaches going forward. The question today is how to nurture a data-driven culture in the public sector that is ingrained in public sector operations, strategic priorities and policy objectives.

One first objective might be ensuring that public organisations are able to look beyond the hype and have a thorough understanding of technologies' opportunities, but also understanding their limitations and what they cannot achieve. A clear-eyed view that understands that data can be a critical strategic asset to improve the public sector's strategic foresight, public service delivery and performance monitoring, and deploys data capabilities consequently. Data science skills are scarce. The initiative Retos Publicos, later renamed Retos MX, responded to the need to foster the capacity of the Mexican public sector to let policy issues and strategic questions drive efforts aimed to foster data-driven approaches (Díaz, Rowshankish and Saleh, 2018). Additionally, data analytics have been successfully deployed in digital service delivery through the Gob.mx portal, but cases of successful implementation for policy making are still rare. The data governance in the Mexican federal public administration should be reinforced to keep encouraging and expanding the implementation of data-driven techniques in highly strategic ways through frameworks, incentives, guidance and capacity building.

While frameworks and systems are critical, culture ultimately relies on people and is preserved by senior leadership. The speed and depth of technological change exposes political leaders to great risk of failure if they do not understand the strategic implications of these changes and of the choices in front of them (Díaz, Rowshankish and Saleh, 2018). This might suggest the need for more direct linkages and effective co ordination and lines of communications between chief data officers and digital transformation officers and the top decision makers in the organisation. As top-level decision makers progressively see how technology and data can make them more effective executives, this relationship is bound to gain the digital and data-driven culture support.

Ultimately, to embed a data-driven culture into the fabric of the state, regardless of changing administrations, chief data officers and data scientists must be able to effectively work with business units and operations. By making the latter improve the delivery of their respective functions, thus enhancing organisational performance, chief data officers and their teams will gain growing support, interest and demand from the different parts of the organisation.

The Mexican public sector would also benefit from focusing early data-driven missions to improve public sector performance in areas that require substantial effort and resources, thus ensuring high returns on investment. For instance, predictive maintenance of infrastructure and equipment could lead to substantial savings of resources and lives (Bender, Henke and Lamarre, 2018).

Building digital capability in the Mexican public sector

Government transformation is first and foremost about transforming the way government works and building new capabilities and a culture that supports delivery. Digitalisation will transform the future of work, requiring new skills in every sector and industry (Chui, Manyika and Miremadi, 2015; Manyika et al., 2017), including governments. Decades of outsourcing IT delivery and maintenance in government has probably undermined the public sector's ability to manage and deliver IT projects, not to mention digital design and delivery approaches. The Mexican public sector faces the need to deploy strategies to reskill, upskill and acquire new talent in order to deliver on its digital ambitions.

To tackle this issue, the government of Mexico launched its new Digital Academy,[2] a platform providing civil servants access to online courses. It also provides guidance on how to obtain access to in-person digital government training workshops organised by the Digital Government Unit of the Ministry of Public Administration. While this is an important first step in upskilling civil servants, these activities do not yet have the scope or scale needed to respond to the challenge of the digital transformation.

It is important for the Mexican public sector to clearly differentiate between the skills that it may need to acquire and the capabilities it can build internally by reskilling and retraining existing staff. Project managers and other roles can be retrained to identify digital opportunities and use agile or DevOps methodologies instead of waterfall project management relatively easy. However, areas like data science, machine learning, artificial intelligence or even human-centred design require very specific skills, backgrounds and experience which are hard to transfer (Bughin et al., 2018). In addition, talent in these areas is scarce and in high demand, but very much needed for a successful digital transformation.

Mexico might benefit from mapping the existing skills gap within the public sector as a basis to develop a strategy to quickly attract new digital talent to the public sector, while these new skills become more available and are able to spread more broadly across the public sector. For this, the government of Mexico would have to map skill needs with the government's priorities and choose better candidates in addition to making public sector employment or missions more attractive for these highly skilled individuals, by creating appropriate job profiles.

Ensuring that the hiring process is more agile and candidates are tested for relevant abilities and skills is part of the redesigning process of public employment in support of the digital transformation, e.g. recruiting staff to build a data-driven skilled administration implies testing candidates capable of data mining, processing massive amounts of data or setting up data collection techniques for a given service (Bracken and Greenway, 2018; Bracken et al., 2018) through a panel bringing together multidisciplinary profiles with expertise that can provide a robust assessment of the actual knowledge and capabilities of the candidate.

In addition, roles should be clearly defined and titles should not be used loosely. If public organisations call any data analysis role a data scientist, the clarity, value and prestige that comes with the title will erode, making it harder to attract talent from the private sector. Clarifying roles, responsibilities and expectations around them could be a beneficial development. This suggests the relevance of efforts targeted towards

the development of competency frameworks as key for digital and data-related positions in the public sector as well as the importance of clarifying their role and responsibilities.

ICT acquisition frameworks to support more integrated and agile delivery are another area of potential improvement. Through the ICT Policy,[3] its implementation guides and handbooks,[4] the government of Mexico has established a clear process for conducting an ICT commissioning exercise and structuring ICT projects. These include basic requirements, such as the use of open standards, reusable components, digital identity and meeting interoperability requirements. In addition, the current policy is sound in identifying the team, establishing ICT project catalogues, performing feasibility studies, structuring a business case and providing clear definitions of minimum requirements. These specifications are made more robust by the use of the digital government Seal of Excellence,[5] granted to those services that meet the existing digital government standards and which have gone through a robust process of development.

The government of Mexico has also set up framework agreements for software licensing with 31 software providers,[6] which has the value of making procurement simpler and more agile. Moreover, the government is currently developing a software framework agreement to efficiently respond to the software needs of public organisations.[7] While these efforts are greatly valuable as they save the public sector time and resources, more can be done to adjust the procurement process in order to expand the number of providers participating in this sort of agreement, to limit concentration, to make access to business opportunities more inclusive and to expand the pool of providers to the state. Ultimately, 31 firms are just too few to ensure adequate competition among providers and licensing agreements are not enough to respond to the need of more tailored solutions.

Procurement frameworks and business cases would also benefit from clarifying the approach and contracting modalities to facilitate the use of agile methodologies. The ICT Policy asks project managers to define service requirements and functionalities in advance. This is sensible, but recognition is needed for the fact that new functionalities and requirements may and will be revealed in the testing or roll-out stages, requiring further iteration and improvement. While the digital standard and the service design principles of the government of Mexico provide guidance to project managers on how to manage digitalisation initiatives, the ICT Policy and handbook do not clearly advise on how to conduct the procurement process or structure contracts to effectively use agile approaches.

If not carefully structured, contracts may require successive extensions to address problems with the solutions delivered, improve functionality or user experience, which may be uneconomical and inefficient. Moreover, IT project management frameworks and guidance might benefit from encouraging practitioners to adopt more joined-up management approaches.

Box 2. Proposals for action

Based on the assessment advanced above, Mexico might benefit from considering the following actions:

- Digital strategies start with user needs. Reassess standards, design principles, guidelines and other tools to take them to their next level of maturity, fostering more proactive delivery of services around users' needs and goals (e.g. linked to life events) that needs to rely on joined up approaches to service delivery. Understanding users' needs allows the public administration to take a digital-by-design approach that supports multi-channel service delivery, promoting a government transformation that is inclusive in a country that still faces significant digital, social and economic divides.

- Explore opportunities in cross-border services to better serve Mexican citizens abroad, foreign investors and other users. In particular, the promotion of cross border services in North America, Europe and Latin America could yield important economic and social benefits for the country.

- Make efforts to grow digital leadership across departments. In particular, identify criteria to select and assign digital transformation officers across ministries with adequate leadership skills, powers and access to the political leadership to be able to underline the importance of digital transformation for the government in different sectors. Nurture communities of practices within government in key areas, such as service design, user research and digital delivery.

- Define and adopt a formalised strategic approach to govern the management of the whole value chain of government data in alignment with the recommendations advanced in the OECD report Open Government Data in Mexico: The Way Forward. This action should include: the deployment of data driven efforts strategically to tackle clearly defined policy or operational problems (e.g. to link prioritisation of data release in open formats with broader policy objectives or policy issues); the development of capabilities for data use driven by a problem solving approach to create value and nurture political support; consider high-impact interventions, such as predictive infrastructure maintenance.

- Demonstrate the value of data for the core business of different public sector organisations, working with them to identify priority data sets to improve their performance and operations. These efforts should acknowledge the contribution of the business units and operations across the public sector to guide decisions on data (e.g. for increased sharing, interoperability, opening up) led by the demand of users across the public sector. This would secure efforts that can be scaled up and improve public sector performance as rooted in the core business of government. Ultimately, working together with business units on data-driven approaches will help organisations more clearly define what to do, understand how to do it and assess the success of interventions.

- Develop a strategy for acquiring new talent in critical areas and upskilling the existing public sector workforce. In particular, take measures to rapidly build data science, service design and human-centred design capabilities across the public sector. In addition, deploy a structured upskilling programme for civil servants, training them in essential skills for managers, such as agile procurement, management and development.

- Clarify digital, data, and ICT roles and competency frameworks in the public sector. In doing this, Mexico might benefit from clearly defining key roles to increase its maturity as a digital government, including digital transformation officer, product and delivery managers, user researchers, data scientist, data analysts, data engineer, data architect. Providing clarity of roles and assigned responsibilities; aligning human resources management, compensation and recognition policies; and building a culture that provides the correct incentives and space for

these new roles to properly exert their role would be essential. The federal public administration would thus be better able to protect the status of these roles and their ability to influence change.

- Review talent acquisition frameworks to provide fit-for-purpose environments for hiring highly technical talent. These adjustments could seek to ensure contracting procedures that are clear and agile and that test the core skills of the mission.

- Review business cases and ICT commissioning frameworks so they are in line with digital service standards and principles and that they enable the administration to focus on delivery and outcomes. These investment frameworks would ideally allow the public sector to roll out agile contracting approaches and joined-up digital delivery models (such as DevOps) instead of waterfall project management. These approaches would also benefit from testing proof of concept and providers' capability to deliver first, instead of during the implementation phase. Achieving this may require the revisiting of project funding and spending control frameworks.

- Increase the variety of providers with framework agreements that encourage competition and diversity in ICT providers for the public sector. The software framework agreement currently being developed would also benefit from clearly stating the expectation of use of agile, iterative approaches laid out in the digital standards and service design principles of the Mexican public sector. These policy measures would enable the federal administration to open up to a number of newly emerging service providers in the digital age (e.g. start-ups, social entrepreneurs), thus bringing more efficiency to the public sector while contributing to the economic growth of new actors in emerging sectors.

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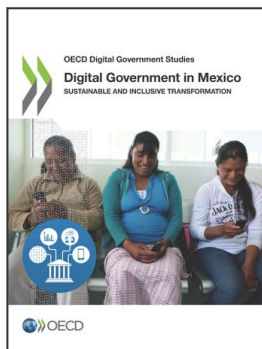
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