Chapter 6. Governing and enabling government data as a service in Argentina

This chapter presents the efforts the Argentinian government has made to build an enabling context within the public sector to govern and manage data and support its strategic use of inside and outside the public sector for public value co-creation.

Introduction

Over the past two decades, the discussion around the strategic value of data and good data governance has increasingly influenced policy decisions. Recently, data misuse by private companies has triggered government intervention to improve greater personal data protection and the need for giving citizens control over their data.

The understanding of data as an asset is evolving within governments. Data-related initiatives have responded either to external pressure (e.g. opening up government data), or resulted from public sector efficiency measures (e.g. the development of data registers). Yet, often these initiatives run in disconnection to one other hence leading to the realisation that, indeed, further integration and governance improve how governments manage, produce, share, protect and re-use data. These arrangements can improve the design and delivery of public services, fight corruption, and increase public trust as well as governments' performance.

Principle 3 of the 2014 OECD *Recommendation of the Council on Digital Government Strategies* (OECD, 2014b) (Box 6.1) is clear in relation to the relevance of developing frameworks to support the reuse of data, and set the basic foundations that can help transform raw and isolated data into a mission-critical element of public sector business intelligence. Also, the OECD work on Open Government Data [see for instance OECD (2018e), OECD (2018d), OECD (2016)] provides evidence on how the discussion surrounding public sector data is evolving. Open government data is no longer a siloed policy and, while still relevant by its own, it is now understood as an outcome of good public sector data management practices and broader data policies.

In line with the above, balancing open by default approaches with the protection of sensitive and private data, data ethics, and citizens' consent are also emerging as relevant policy topics that require governments' attention and action.

The Argentinian central administration, in power since late 2015, is not oblivious to this context. Efforts are being put in place to advance a forward-looking data agenda in the public sector, seeking to improve how government data are produced and shared either among public sector organisations or with external actors. Nevertheless, there are still opportunities to scale up data initiatives and evolve towards a data-driven public sector that places data governance as a foundation for digital transformation, cohesion and trust.

**Box 6.1. 2014 OECD *Recommendation of the Council on Digital Government Strategies*:
Principle 3**

The [OECD] Council […] on the proposal of the Public Governance Committee […] recommends that governments develop and implement digital government strategies which:

Create a data-driven culture in the public sector, by:

1. Developing frameworks to enable, guide and foster access to, use and reuse of the increasing amount of evidence, statistics and data concerning operations, processes and results to: (a) increase openness and transparency; and (b) incentivise public engagement in policy making, public value creation, service design and delivery.

2. Balancing the need to provide timely official data with the need to deliver trustworthy data, managing risks of data misuse related to the increased availability of data in open formats (i.e. allowing use and reuse, and the possibility for non-governmental actors to reuse and supplement data with a view to maximise public economic and social value).

Source: OECD (2014b), *Recommendation of the Council on Digital Government Strategies*, https://www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf.


The state of data governance in the Argentinian public sector

Data governance (Figure 6.1) is the exercise of authority, control and shared decision making (planning, monitoring and enforcement) over the management of data assets (Ladley, 2012) either within one organisation or across different organisations that share an interest for common data assets. A data governance model must support existing and new processes to ensure the proper management and protection of data, proper production and usage of data through its life cycle in a collaborative, federated approach to managing valuable data assets (Ghavami, 2015).

Data governance is not a technical task proper of data managers, but more a strategic set of decisions, activities, capacities, roles and instruments that aim to transform data into an asset for business intelligence. Yet, in less mature organisational environments, data governance elements can be in place, but disconnected from each other, reflecting the legacy that still exists in terms of how data are managed and shared across the organisation (e.g. data silos).

Also, those data governance tools already in place may respond more to the technical or operational elements of data management (e.g. data standards) rather than to strategic enterprise-wide matters (data strategy, leadership, stewardship). Thus, understanding data governance as a comprehensive effort that connects dispersed data-related actions is key for managing and sharing data in a strategic, value-oriented fashion.

Figure 6.1. Data governance in the public sector
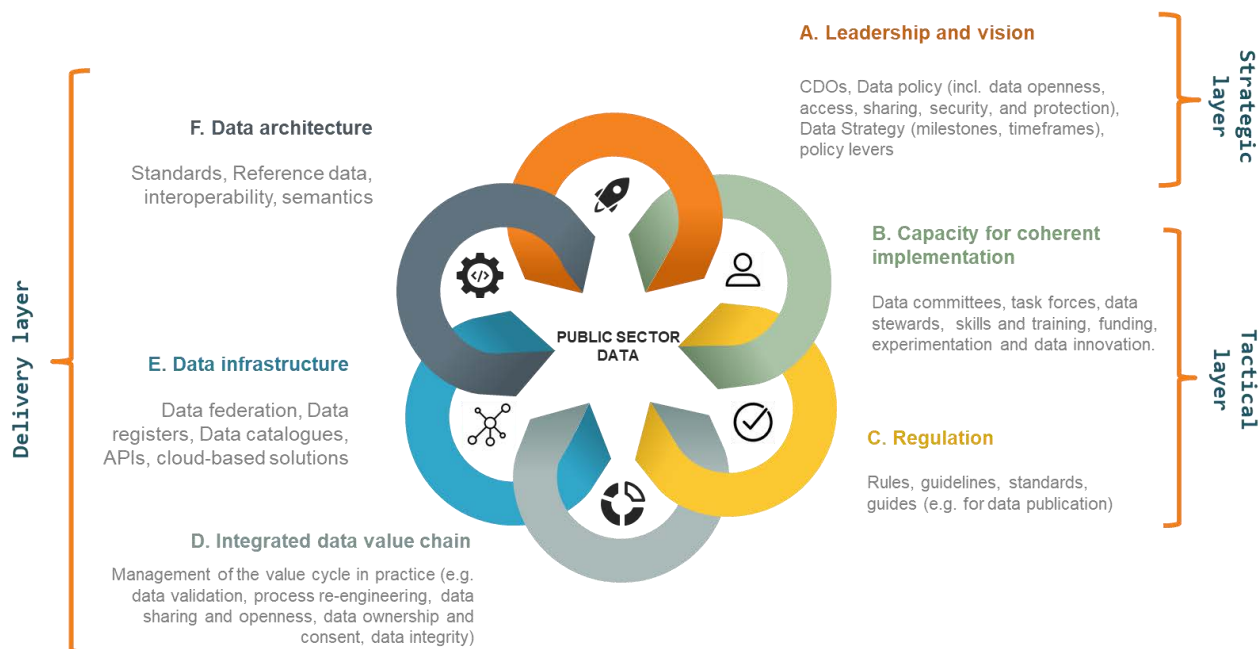
Source: Author. Original content produced for the purpose of this review. Based on previous and under-going OECD work on Digital Government and Government Data (including OECD (2017)**, Digital Government Review of Norway**: Boosting the Digital Transformation of the Public Sector, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264279742-en ; OECD (2019), **Digital Government Review of Sweden**: Towards a Data-driven Public Sector, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/4daf932b-en & OECD (2018e), **Open Government Data Report:** Enhancing Policy Maturity for Sustainable Impact, OECD Digital Government Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264305847-en) and on further research including Ghavami, P. (2015), Big Data Governance: Modern Data Management Principles for Hadoop, NoSQL & Big Data Analytics and Ladley, J. (2012), Data Governance: How to Design, Deploy and Sustain an Effective Data Governance Program.

Leadership and vision

In Argentina, different public sector organisations hold responsibilities in relation to the definition and implementation of different policy elements related to data governance (OECD, 2018a):

- Located in the Chief of Cabinet Office (Jefatura del Gabinete de Ministros), the Access to Information Agency (Agencia de Acceso a la Información Pública) was created in 2016 and is responsible for the implementation and enforcement of the 2017 Freedom of Information Act[1] and the 2000 Data Protection Act.[2]

- Decree 434/2016[3] set the responsibilities of the then Ministry of Modernisation (MoM, now the Government Secretariat of Modernisation, SGM) in the context of the State Modernisation Plan (see Chapter 2), including a clear mandate for improving enterprise-wide management systems, setting data interoperability mechanisms, and the co-ordination of open data efforts.

- Decree 117/2016 established shared policy development competencies between the Chief of Cabinet Office and the then MoM, with the latter keeping responsibilities for its co-ordination, implementation and follow up.

- In addition, other public bodies also have important responsibilities in the definition or implementation of key data-related initiatives. These include the National Institute for Statistics and Census (Instituto Nacional de Estadística y Censos, INDEC), the National Geographic Institute, the central tax authority, the social security (ANSES) agency and the Ministry of Social Development. The Ministry of Social Development is in charge of the National Tax and Social Identification System (Sistema de Identificación Nacional Tributario y Social, SINTyS) (see Section 6.4).

In this fragmented context, the National Direction of Public Data and Public Information (Dirección Nacional de Datos e Información Pública, DPDI),[4] a body within the then MoM, has acted as a *de facto* chief data officer for the government data co-ordination efforts. The DPDI's actions first focused on the publication of open government data. However, in a later stage, the DPDI's goal was to bring further control to the data management process to ensure that data are produced and published with a mind-set that prioritises quality, value and re-use. The DPDI has made important strides to set up technological and operational underpinnings of a data infrastructure, helping to address legacy issues in terms of government data integrity (Box 6.2), and supporting the publication of government data as open data (see Section 6.5).

Yet, as observed in other areas related to digital government, such as digital public services (see Chapter 5), the DPDI has taken a "soft" approach to implementation, learning first and regulating second – an approach levered by the need of delivering fast results in the context of four-year political cycles at the central level (OECD, 2018b). While this approach may have contributed to faster, more flexible responses in a changing implementation environment, three years down the road it is now apparent that there is a need to move towards a more solid, institutionalised policy framework to sustain sustainable results in the long term.

Building on this agile initial approach, it is recommended to move towards greater institutionalisation to establish a more solid and stable data governance that would make the management of the data value chain more efficient and results more sustainable in the long term – e.g. including open data efforts in all government institutions (OECD, 2018b).

One important step in this direction may be the development of a government-wide data strategy and governance framework. Unlike some leading OECD countries like **Canada** and the **United States** (see Annexes 6.A and 6.B), Argentina lacks a formal and broader data policy and/or strategy for the public sector[5] (OECD, 2018c), which would provide greater coherence to scattered data governance instruments and consolidate data efforts under one single policy umbrella.

Box 6.2. The quality of official statistics in Argentina

Argentina's statistics deteriorated over 2007-15 amid growing political pressure to show more "positive" data about the economy and society. The number and quality of underlying censuses, surveys and procedures declined and data on international trade, inflation, gross domestic product and poverty levels became unreliable. In July 2011, the International Monetary Fund found Argentina in breach of its minimum reporting requirements because of inaccurate provision of consumer price index and GDP data (IMF, 2013). Since 2016, the national statistics institute INDEC has been completely overhauled and its leadership changed.

Argentina is now working with the OECD to improve the quality of its statistics. A statistical emergency was declared at the end of 2015, putting the production of some indicators on hold until capacity was rebuilt, which limits the scope for drawing comparisons over time. For some series, the quality of historic data could not be improved and therefore remains subject to reservations. This is particularly the case for household data, which are considered unreliable for 2007-15 as the sample composition may have been altered to obtain the desired outcomes.

For some series, reliable data are really only available as of mid-2016, preceded by a six-month data gap due to the statistical emergency. For some variables, notably inflation, having recourse to non-official series for which a longer history is available is the only option. Moreover, poor statistics at the provincial level make comparisons across regions difficult.

Source: OECD (2017d), *Argentina: Multi-dimensional Economic Survey*, https://doi.org/10.1787/eco_surveys-arg-2017-en.

Argentina also lacks solid and clear formal leadership. There is no public body, nor a specific figure formally mandated to lead the definition and coherent implementation of a broader data policy.[6]

In **New Zealand**, for example, the Government Chief Data Steward works across government and is responsible for the development of policy, infrastructure, strategy and planning building capacity on the use of data across government (OECD, 2018c). **France** was the first European country to nominate a Chief Data Officer in 2014 (*administrateur général des données*) in charge of co-ordinating whole-of-government actions to facilitate the production, sharing and reuse of data by public sector organisations.[7]

During the workshop organised in July 2018, stakeholders expressed the need for formalising a leadership position in charge of moving forward a data policy for the government. Nevertheless, the challenge in Argentina is to decide which leadership model best fits the culture of its public administration (e.g. one-person leadership, data committee) and leveraging the opportunities created by the relocation of the then MoM, now the SGM, within the Chief of Cabinet Office.

Improving data stewardship and skill development

Choosing and enabling the right supportive institutional context across the public sector will be paramount for Argentina to move forward any broader data efforts. This means setting up the right networks across public sector organisations able to translate policy goals into real-world action at the organisational level.

While the DPDI has made progress identifying contact points across public sector organisations in the context of open data efforts, evidence suggests the need to scale up this network from a purely technical and operational perspective to include a more comprehensive strategic vision and roles. This is particularly true in light of the approach taken by the DPDI, which focused on better managing the data value chain to ensure the quality of government data from the source, therefore facilitating data reuse within and outside the public sector.

Argentina, as many OECD countries, lacks an explicit formal requirement to appoint institutional chief data officers for central/federal line ministries and agencies.[8] Indeed, across OECD countries, most efforts in this regard have been put in place in the context of

open data policies, and have mainly focused on complying with data publication regulations, therefore creating networks composed of data administrators instead of data strategists and/or stewards (OECD, 2018e).

For instance, in the **United States**, the recently approved 2018 Foundations for Evidence-Based Policymaking Act[9] (signed into law by President Trump on 14 January 2019) directs the head of each agency to "designate a non-political appointee employee in the agency as the Chief Data Officer of the agency." The latter is part of the provisions of the Open, Public, Electronic, and Necessary Government Data Act (OPEN Government Data Act), which is one component of the Evidence-Based Policymaking Act.

A permanent network of institutional chief data officers/data stewards can play an important role in contributing to efficient public sector data governance models,facilitate horizontal collaboration and secure sustainable results in the long-term (OECD, 2018e). In this regard, Argentina may benefit by the formalisation of these networks, all the while ensuring they respond to strategic data governance matters instead of mere technical data-related issues. Still, co-ordination and collaboration would be needed at all levels, from strategic to operational layers.

While choosing and enabling the right institutional setup for data governance is key, it may not be sufficient to unleash the full potential of data to transform the policy-making process. Developing and ensuring that data skills are available and widespread across public organisations is also a challenging task, especially if investments in data infrastructure are to be judged in the context of a broader digital transformation strategy.

As mentioned in Chapter 4, Argentina would benefit from further clarifying competency and skill frameworks for the public sector, including data profession descriptions, and from building a basic level of understanding among public sector organisations in relation to digital technologies and data. Evidence suggests that between 2016 and 2018, Argentina invested heavily in raising awareness and building data-related skills within the public sector (Figure 6.2), with National Institute of Public Administration (Instituto Nacional de la Administración Pública, INAP) and the SGM (through different bodies) the lead public sector organisations in this regard.

Figure 6.2. Data-related capacity-building activities: Number of activities organised between 2016 and 2018
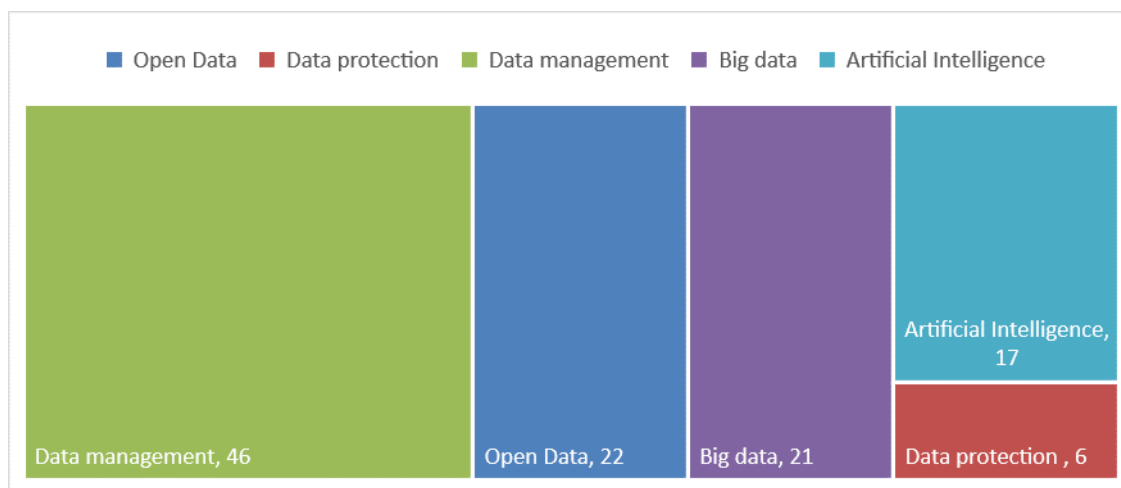
*Source*: Based on data and evidence provided by the Argentinian government.

For instance, the INAP curricula includes face-to-face and online training sessions on data management and visualisation, open data, and artificial intelligence.[10]

Indeed, sustaining INAP's capacity-building exercises will play a key role to building those capacities needed to democratise the value of data for non-experts through data visualisations, and exploiting data for the generation of digital and data-driven services (e.g. predictive services) in the medium term.

Within the DNPI, the Direction of Analytical Services (Dirección De Servicios Analíticos) promotes and assists public sector organisations in the development of evidence-based public policies and services through the use of data science and behavioural economics methodologies, tools and techniques. For this purpose, the direction contributes to the generation of the necessary capacities among public sector organisations for the use of techniques and tools for data and information analysis[11] (OECD, 2018c).

These capacity-building exercises target stages of the data value chain *de facto* (e.g. data and information management, data protection and privacy, open data, and data analytics; Figure 6.3) and show the willingness of the Argentinian government to address deficits within the public sector related to data competencies in the long term.

Figure 6.3. Government data value chain/cycle
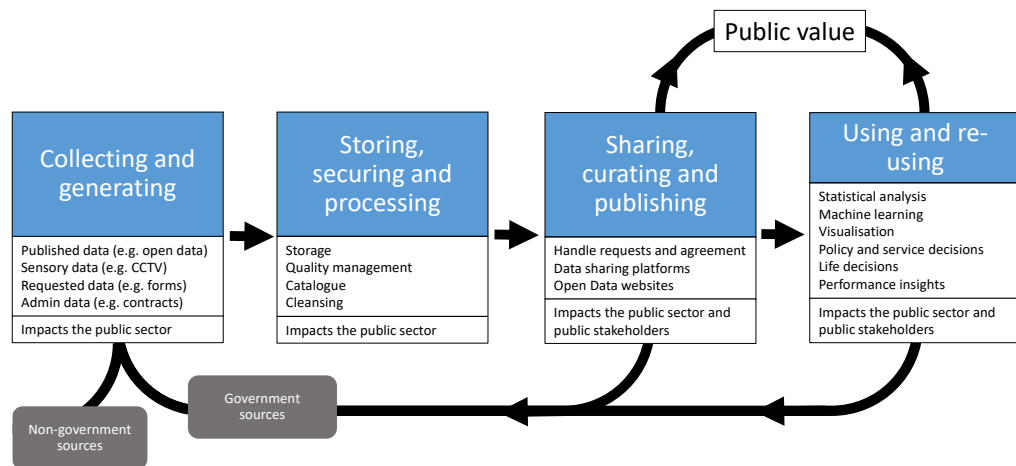
Source: Van Ooijen, C., B. Ubaldi and B. Welby (2019), "A data-driven public sector: Enabling the strategic use of data for productive, inclusive and trustworthy governance", OECD Working Papers on Public Governance, No. 33, OECD Publishing, Paris, https://doi.org/10.1787/09ab162c-en.

Hard and soft regulatory instruments

Argentina has developed different hard and soft regulatory instruments related to data management, sharing, interoperability, protection and openness (see Annex A), mainly since the current administration took power in 2015. Among those, the following instruments are worth mentioning:

- **2000 Data Protection Law** (*Protección de los Datos Personales*, Law 25,326)[12] (see Section 6.3).

- **2016 Decree on Register Simplification** (*Simplificación Registral*, Decree 1273/2016):[13] Establishing the responsibility of public sector organisations to enable and facilitate the exchange of information with other public sector

organisations. The then MoM had the responsibility for issuing any additional and secondary instruments to enable information and data interoperability (see Section 6.4).

- **2016 Freedom of Information Law** (*Derecho de Acceso a la Información Pública*, Law 27,275). Besides establishing the usual freedom of information provisions, the law included a wide range of proactive transparency obligations, and the need to provide data in open formats when applicable.

- **2016 Decree on Data Opening Plans** (*Plan de Apertura de Datos*, Decree 117/2016). This decree established the normative underpinnings of the open data policy at the national level, mandating the publication of key datasets and setting the responsibility for public sector organisations to develop their open data plans within a 90-day period. The decree is also relevant as it connected open data efforts to broader anti-corruption efforts in the public sector (Box 6.3).

- **Resolution 19/2018**, which approved the implementation of the Data Interoperability Platform[14] (INTEROPER.AR) (see Section 6.4).

Box 6.3. 2016 Decree on Data Opening Plans

In January 2016, days after inauguration, President Mauricio Macri passed Decree 117/2016 mandating the immediate publication of key datasets and setting an ambitious timeline for ministries to develop their own institutional open data plans, in accordance with the policy and technical framework developed by the Chief of Cabinet Office and the then Ministry of Modernisation (MoM).

The decree is framed within a broader open data initiative at the central level which involved the then MoM, the Chief of Cabinet, and key partners such as the Anticorruption Office and the Ministry of Finance.

The decree acts as a mechanism to foster the development of institutional open data plans and the Argentinian central open data portal, and defines categories of public sector information to be prioritised by the central government for publication as open data to fight corruption in the country, including:

- the structure of the executive branch

- the salaries and asset disclosure of senior-level authorities of the executive branch

- the salaries of all civil servants and public sector employees

- the salary scales applicable to different public employment regimes

- budgetary credits

- all procurement procedures included in the Electronic Public Procurement System

- access to information requests

- all lobbying meetings held by members of the executive branch.

Source: OECD (2017a), "Compendium of good practices on the use of open data for anti-corruption: Towards data-driven public sector integrity and civic auditing", www.oecd.org/corruption/g20-oecd-compendium-open-data-anti-corruption.htm.

Additional soft instruments include:

- Guidelines for the Identification and Use of Inter-operable [data] Entities (*Guía para la identificación y uso de entidades interoperables*)[15] (see Section 6.4).

- guidelines for the publication of government data in open formats[16]

- guidelines for the publication of metadata.[17]

Data protection: Balancing openness by default and privacy needs

A second challenge faced by Argentina relates to the maturity or the need for sustaining efforts to update data protection frameworks in the country. Indeed, privacy and data protection emerged as recurrent issues during the workshops organised by the OECD in July and December 2018.

As from September 2017, the Access to Public Information Agency, an autarchic and autonomous entity created by law in 2016, has also become the Argentinian Data Protection Authority (DPA) (Decrees No. 746/2017 and No. 899/2017). The DPA gained autonomy as a result of this legislative change – a key element for the protection of personal data according to international standards.

Under the new regulation, the Access to Public Information Agency's Director is appointed by the President and she/he can be dismissed by the President only with the approval of the National Congress and only in case of poor performance of his/her duties. This procedure contrasts to the previous one in which the designation/removal process was a one-person decision taken by the Minister of Justice and Human Rights. Under the new regulation, the agency was also granted its own annual budget.

The agency is also moving forward in terms of better mapping and controlling personal data registries across the public sector and updating the National Direction of Personal Data Protection's (Dirección Nacional de Protección de Datos Personales) Register of Databases.[18] Additionally, on 25 February 2019, Argentina ratified the Council of Europe's Convention for the protection of individuals with regard to Automatic Processing of Personal Data ("Treaty 108")[19] and its additional Protocol. Treaty 108 is the only existing legally binding international treaty with global relevance in this field. Treaty108 entered into force in Argentina on 1 June 2019.

Also, Argentina adhered to the 2017 Personal Data Protection Standards developed in the context of the Data Protection Ibero-American Network (Red Iberoamericana de Protección de Datos). These standards, which stand more as a set of common principles, incorporate cross-border data flows and data portability,[20] hence the need of reflecting these principles in national law. For instance, in **Norway**, the Norwegian 2000 Act on Personal Data (Personopplysningsloven) clearly defines citizens' right to be informed of any requests submitted to access their personal information and data held by government authorities, and includes specific legal provisions to regulate cross-border personal data transfers (OECD, 2017b).

Despite the above-mentioned achievements, there are still some other areas of opportunity to exploit. For instance, the 2000 Data Protection Law seems to be outdated, particularly compared with the provisions of more advanced supranational instruments such as the European Union General Data Protection Regulation (GDPR)[21] (e.g. including citizens' rights related to automated data processing, specific regulations regarding the processing of children's data, the obligation to have a data protection officer for certain types of data

processing, among other differences). Efforts to update the Data Protection Law are already underway under the leadership of the Access to Information Agency and its National Direction of Personal Data Protection.[22]

On 19 September 2018, the executive sent a proposed bill to modify the current data protection law to the Congress. The draft bill is intended to provide a high level of protection of personal data, adapting to the new international standards on the matter and, at the same time, bring new possibilities of innovation and investment to Argentina.

In addition, evidence from the workshops suggests that, beside the need of updating data protection legislation, secondary regulation and further guidance may also be required to ensure an adequate level of understanding and coherent implementation. For instance, stakeholders expressed the following concerns:

- a lack of clarity in terms of the limits of what data can be made available for public access

- the need for developing clear protocols to share public information and data either inside or outside the public sector

- the need for a clear governance for sensitive data (with the right controls in place)

- the need for additional support tools for data anonymisation.

As observed in some OECD countries (Box 6.4), the role of the Access to Information Agency, and its close collaboration with the SGM and its relevant sub-bodies, will be crucial to ensure that data protection is properly balanced with data-sharing and data openness practices in the public sector.

Box 6.4. Initiatives in EU countries to implement the General Data Protection Regulation in practice

The EU General Data Protection Regulation (GDPR) aims to reconcile citizens' ownership and control over their data that organisations hold. It offers a series of requirements to ensure that organisations stand as data custodians of personal data, with the right to collect, store, manage and use the data, while ownership of that data remains in the hands of citizens.

In most EU countries, the GDPR has been transposed into national legislation to ensure legal rights are granted to citizens to safeguard the ownership of their data. Data privacy laws have been updated to allow citizens to restrict the use of their data, to request erasure of their data or to know which organisations hold data concerning them.

Following some obligations of the GDPR, some public sector organisations have implemented specific initiatives to ensure its requirements are applied in practice.

In **France**, the National Commission on Informatics and Liberty established data protection impact assessment software designed to enable data controllers to assess if they are indeed complying with all of the requirements of the GDPR. Public sector organisations using it are able to assess if different data processing is in line with citizens' rights and to design customised assessments in line with different activities.

In the **United Kingdom**, the Information Commissioner's Office issued a series of guidelines for public sector organisations regarding data protection impact assessments.

The guidelines include checklists which public sector organisations are required to obey when carrying out a data protection impact assessment.

In addition, some EU countries have developed other guidelines to help public sector organisations comply with all of the elements of the GDPR.

Spain has established a data anonymisation guideline for public sector organisations to safeguard citizens' personal information. The guidelines offer a series of principles, actions and other elements to consider in order to guarantee the quality of the anonymisation process of personal data.

Norway has followed a similar approach, offering guidelines to help public sector organisations anonymise personal data they have collected in a robust and secure manner. The Norwegian Data Protection Authority offers guidelines for public sector organisations to comply with the requirements of the GDPR. This guide helps public sector organisations to consider matters of data protection regarding software that process data. It offers a series of recommendations and measures that are to be considered for each of the key activities in the process of developing software, such as recommendations regarding the type of training public sector organisations should offer or on the coding of the software.

Sources: Based on research and text from different sources, including CNIL (2018), "The open source PIA software helps to carry out data protection impact assessment", https://www.cnil.fr/en/open-source-pia-software-helps-carry-out-data-protection-impact-assesment; Information Commissioner's Office (n.d.), "Data protection impact assessments", https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/accountability-and-governance/data-protection-impact-assessments; Norwegian Data Protection Authority (2017a), "A guide to the anonymisation of personal data", https://www.datatilsynet.no/en/regulations-and-tools/guidelines/anonymisation; Norwegian Data Protection Authority (2017b), "Software development with data protection by design and by default", https://www.datatilsynet.no/en/regulations-and-tools/guidelines/data-protection-by-design-and-by-default; Spanish Data Protection Agency (2016), "Orientaciones y garantías en los procedimientos de anonimización de datos personales", https://www.aepd.es/media/guias/guia-orientaciones-procedimientos-anonimizacion.pdf.

Data federation: Enabling greater data sharing and interoperability

The challenges that governments can face when aiming to put data policy principles, standards and guidelines into practice are vast. Historically, formal data management is often understood and tends to be a localised function (Ladley, 2012) under the responsibility of technicians and information and/or data managers. This context created legacy challenges in terms of breaking down data silos, enabling greater data interoperability, retrofitting data infrastructures, creating shared data registers, and supporting seamless and real-time data sharing.

Like many OECD countries, Argentina is not exempt of the negative impact this context has on digitalisation efforts (e.g. data interoperability and real-time data sharing can support better public service delivery; see Chapter 4). Unsurprisingly, data sharing and interoperability emerged as one of the most voiced concerns raised by stakeholders during the workshops organised in July 2018. Yet, Argentina also faced legacy challenges in terms of data integrity (e.g. in relation to official statistics) and the availability of information critical for a well-functioning public sector (e.g. data on public sector employment).[23]

The mix of these factors placed the production of good-quality government data and data sharing and interoperability at the core of the activities of the Argentinian government. While the 2016 Decree on Register Simplification (see Section 6.2.3) set the regulatory

basis for greater data exchange and interoperability among public sector organisations, two whole-of-government initiatives stand out in this area.

First is the DPDI's vision to enable Data as a Service (DaaS) (Box 6.5), which is forward looking among Latin American countries, and aims to follow a quality-from-the-source principle in relation to the production of government data. The DPDI's DaaS approach (inclusive of open data) was designed to ensure that government data can be produced as good quality and interoperable data by design prior to their publication and sharing (OECD, 2018b).

Box 6.5. Moving from open by default to open by design: The Data as a Service approach

The National Direction of Public Data and Public Information (DPDI) was created in early 2016 to ensure the implementation of Presidential Decree 117/2016, which established the normative and policy underpinnings for an open data by default approach to public sector information. After setting up the basic technological and operational infrastructure for open data, by mid-2017 it was clear that the easy mile of the open data implementation efforts was well on track. Yet additional efforts had to be made in order to secure the DPDI's vision towards an open by design data infrastructure, focused on users' needs and geared towards data reuse scenarios.

The so-called Data as a Service (DaaS) approach emerged as a complementary effort to bulk data releases, facilitating data publishing and data consumption through the development of a suite of APIs (web services) based on 100% open data, designed in the open, and to be easily deployed by third-party organisations.

Tailored for more skilled users, the approach targets a number of specific use-case scenarios:

- data publishers that want to benefit from a simple, yet more powerful and user-driven approach to data publication and data reuse

- data owners that want to sanitise, normalise, extend or increase the quality at entry of their data assets

- data analysts that use spreadsheets, statistical software and data processing packages to programmatically update data in their work environments

- developers creating either desktop, web or mobile applications that seek to integrate programmatic service requests into their product development cycle.

The DPDI team prioritised the development of two independent APIs, focused on temporal and spatial data respectively (the Time-Series API and the GeoRef API; see Box 6.7), with the vision to extend the approach to budget, people and organisational data in the near future.
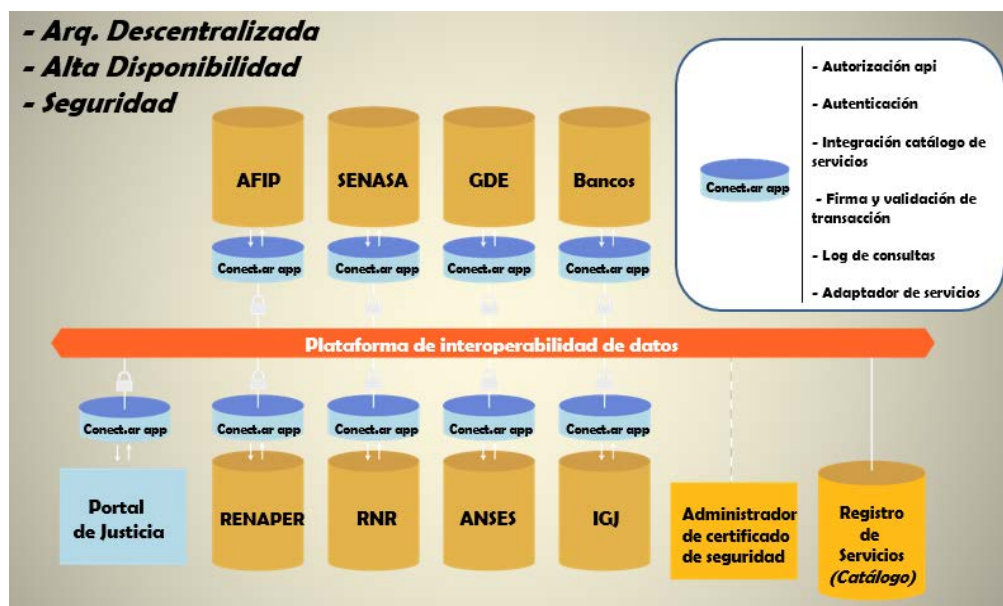
Source: Information provided by the Argentinian government.

Second, the efforts to develop a Data Interoperability Platform for the public sector (see Figure 6.4) as a supportive layer of the Electronic Document Management Platform (*Plataforma de Gestión Documental Electrónica*, GDE; see Chapter 5). The platform, known as INTEROPER.AR, follows the example of Estonia's X-road federated data-sharing model[24] and aims to:

- Inter-connect and enable data sharing between existing data registers such as the National Population Register (RENAPER), the National Recidivism Register (Registro Nacional de Reincidencia), the Social Security Register (ANSES) and data from the General Inspector of Justice (Inspección General de Justicia). Indeed, improving the interaction and interoperability between RENAPER and other data registers was raised as an area of opportunity by stakeholders during the workshops organised in July 2018.

- Facilitate the development of integrated services, and automated data sharing through APIs.

Figure 6.4. Argentina: Data interoperability platform (conceptual model)

Source: Information provided by the Argentinian government, March 2018.

Using the GDE's Data Interoperability Platform, the SGM and the Ministry of Justice developed a specific tool to improve the access to and sharing of personal data in the context of judicial investigation. The tool, known as Smart Judicial Investigation (*Investigación Judicial Inteligente*) allows registered users (e.g. tribunals, prosecutors, courtrooms) to request data from and between those public bodies and data registers connected to INTEROPER.AR. Once registered users submit and sign a data access request through the Remote Formalities Platform (*Trámites a Distancia*, TAD), the system performs a query across inter-connected data registers and systems, and provides the information and data automatically.

However, in line with the analysis presented in the *OECD Integrity Review of Argentina*, opportunities exist to sustain, scale up and use INTEROPER.AR as the underlying data-sharing platform to develop and connect specific public sector data registers and catalogues (e.g. Tax, Cadastral, Anti-corruption Office, Employment, Treasury Attorney General's Office, Financial Intelligence Unit) to support public sector integrity efforts.

Another focalised example includes the National Tax and Social Identification System (SINTyS), which acts as a large clearinghouse for the controlled exchange of personal data across government agencies and jurisdictional levels (Box 6.6).

Box 6.6. The National Tax and Social Identification System

Since its creation in 1998 by the Chief of Cabinet Office and later consolidation by the National Council on the Coordination of Social Policies, the National Tax and Social Identification System (SINTyS) has been acting as a large clearinghouse for the controlled exchange of personal data across government agencies at all jurisdictional levels. Its main function is to achieve the univocal identification of people, through the co-ordination of the exchange of the numerous databases that exist at the national, provincial and municipal levels.

Working within the existing personal data protection policy frameworks, SINTyS allows for both massive data exchanges and single data requests, provided agreements have been signed between participating agencies.

SINTyS' goal is not to generate or provide complete databases, but to sanitise data and enrich attributes of an otherwise fragmented, disjointed, and inconsistent social and fiscal information framework. As such, the SINTyS model assembles themes that group the shared information, allowing cross checks to be simplified, and providing a quicker and simpler answer to the organism, with a homogeneous and protocolised structure.

With more than 400 public entities on board by 2018, SINTyS has managed to establish itself as the tool of choice to validate and incorporate social identification numbers into government databases; perform survival controls; establish controls of incompatibilities and pluri-coverage of social and health insurance programmes, pensions and retirement; and verify the eligibility of beneficiaries for social programmes, among other salient features.

In this way, SINTyS has contributed to achieving an effective and efficient targeting for the implementation and monitoring of social benefits, improving the implementation of social programmes throughout the whole policy cycle.

Source: Information provided by the Argentinian government.

Both the DaaS approach and the development the Data Interoperability Platform (INTEROPER.AR) respond to the need of improving and bringing order in the data management and sharing practices within the public sector. Thus, the need of focusing first on technical matters that could be later scaled up to enable better service delivery and public value co-creation[25] (OECD, 2018b).

The *Guide for the Identification and Use of Inter-operable [data] Entities* also stands as an interesting example on the efforts implemented by the DPDI to move towards greater data interoperability in and exchange with the public sector. The guide is an ongoing effort to ensure both public and private sector organisations can follow simple methods to generate, share and/or consume good-quality government data, therefore putting the DaaS vision in practice.

The guide provides guidance on how to produce simple identifiers for data that are produced by different public sector organisations, but that at the same time are regularly shared among them (e.g. country > country_id). Consistent and increasing efforts have been underway since 2017 to make sure this core-reference framework for government data is available through APIs (OECD, 2018b) (Box 6.7).

Box 6.7. The GeoRef and Time-Series APIs

The Time-Series API

Launched in December 2017, the Time Series API allows public sector organisations to easily publish and document their time-stamped data, while providing a one-stop shop for users seeking a wide range of statistical and non-statistical indicators.

By March 2019, the service had compiled more than 20 000 series from multiple sources (including the National Statistics Office [INDEC], the central bank, ANSES and other data-intensive organisations), covering a wide range of topics, from financial indicators to energy consumption, or social security statistics. It had reached more than 25 000 unique users and 5 million queries; including 400 frequent users that perform an average of 15 000 queries per day.

In 2018, the DNPI conducted a series of in-depth interviews with API users to evaluate its impact and understand users' needs. During the interviews, users identified the following from using APIs:

- Better data access and reuse. Users found it easier to find, access and reuse time series when data were provided by a single data engine that lists thousands of data, including their metadata, together with a unified and well-documented set of API methods.

- Improved data cleansing. All the interviewed users agreed that typical data transformation and data cleansing tasks were drastically simplified, reducing costs and wasted time in their respective use-case scenarios.

- Automated data consumption. Users also agreed that the costs of acquiring and updating data from recurring queries to replicate reports is one of the API's greatest benefits.

Most of the interviewees emphasised that the API allows them to increase the time they spent analysing the data instead of searching for it, downloading it and cleaning it.

An API for location services (GeoRef API)

Another example of the DaaS strategy is the so-called GeoRef API (API del Servicio de Normalización de Datos Geográficos de Argentina), a data service that compiles and delivers official names and identifiers for official territorial units, street-level addresses and a broad range of geographical entities produced by key public sector organisations, such as the INDEC, the National Geographic Institute and the National Register of Popular Settlements, among others.

Launched in the second semester of 2018, the service had an immediate take up among application developers, both within and outside the public sector, either seeking to build standard web forms based on official names and identifiers, perform address normalisation, or embed georeferencing capabilities into their products. Despite the existence of georeferencing services such as Google Maps API or Here, users find it valuable to access an official, public and free API, a particularly relevant issue for public sector organisations dealing with budget limitations and severe bureaucratic restrictions.

By March 2019, the service had reached more than 300 000 unique users making almost 2 million queries, making for tens of millions of data normalisation operations.

Source: Information provided by the Argentinian government.

The *Guide for the Identification and Use of Inter-operable [data] Entities* mirrors similar efforts taken in OECD countries to move towards greater data interoperability and integration. For instance, in **France**, the passage of the 2016 General Reference Framework for Interoperability (Référentiel Général d'Interopérabilité; Box 6.8) demonstrated a government-wide, strategic approach to the interoperability of data and systems, thereby creating a solid foundation for the exchange of data within the country.

Box 6.8. France: General Reference Framework for Interoperability

In France, the General Reference Framework for Interoperability offers a series of recommendations to promote interoperability across information systems within the public sector.

Following the rationale of the European Interoperability Framework, the French framework focuses on different levels of interoperability, setting standards for each level that are to be implemented by public sector organisations. Standards are therefore established for technical, semantic or syntactic interoperability to guarantee that public sector organisations, their dispositions and systems are as interoperable as possible:

- The semantic interoperability refers to the meaning of different words, which often varies among public sector organisations. This interoperability aims to streamline the definition of words across public sector organisations to ensure there is agreement regarding the meaning of data that are exchanged and on the context of the exchange.

- The technical interoperability refers to data formats and data exchange protocols as well as the conditions and formats of storage of these data. This interoperability ensures that data can be properly exchanged among public sector organisations and in the right format.

- The syntactic interoperability stands as a subset of the technical interoperability as it focuses on the technical format data should have in order to be properly exchanged among public sector organisations.

Source: Direction Interministérielle du Numérique et du Système d'Information et de Communication de l'État (2015), *Référentiel Général d'Interopérabilité: Standardiser, s'aligner et se focaliser pour échanger efficacement*, http://references.modernisation.gouv.fr/sites/default/files/Referentiel_General_Interoperabilite_V2.pdf.

Nevertheless, some challenges will remain in terms of moving forward data interoperability and sharing efforts across the public sector:

- Promoting and enforcing wider adoption of technical data standards in public sector organisations, particularly those that might be mission-critical for greater data interoperability within the public sector. Stakeholders also raised this challenge during the workshops organised by the OECD in July 2018, which may signal a window of opportunity for a more aggressive regulatory framework.

- The scalability and transferability of data interoperability platforms will be key to avoid the proliferation of pragmatic, isolated practices in the medium and long term. The Data Interoperability Platform is an ambitious project for it aims to adapt Estonia's X-road experience to the Argentinian context (Estonia's experience is singular as the country was born digital). Hence, it will be important to ensure that

the system and its principles are replicable and scalable in terms of its adoption (Box 6.9). This follows the principle of enabling the government as a platform and a provider of solutions which are replicable, scalable and transferable.

Box 6.9. The US Data Federation Project

The US Data Federation Project aims to bring greater coherence to data federation practices in the US public sector in order to better support policy decisions, increase operational efficiencies, enable the diffusion of shared processes and infrastructures, foster an integrated government, and combat silos.

The proliferation of the different data federated models using different tools, processes and infrastructure could therefore be prevented and gradually replaced with a single and scalable data federation model developed by the central government. This would follow a "Government as a Platform" approach, thus the overall goal is to build a shared tool for data federation that could be adopted across the public sector.

The project will draw upon the collection of best practices regarding efforts to collect, combine and exchange data from disparate sources and across different public sector organisations and levels of government. In addition, it aims to establish data standards, offer guidelines and deliver reusable tools such as for automated aggregation in order to foster knowledge sharing across public sector organisations and effective reuse of government data coming from different sources.

Source: Lindpainter, J. (2019), "The US Data Federation wants to make it easier to collect, combine, and exchange data across government", https://18f.gsa.gov/2019/03/05/the-us-data-federation.

- The mapping, classification and discoverability of already available data is also a challenging step that comes before interoperability. The work being implemented by the Access to Information Agency to update the National Direction of Personal Data Protection's Register of Databases is an example in this regard (see Section 6.3). These exercises might need to be replicated across other policy areas, particularly if the Argentinian government aims to better control and keep track of its data assets. This effort would be in line with the National Offcie of Information Technologies's (Oficina Nacional de Technologías de la Información, ONTI) Six Action Pillars as per its strategy for 2018-19 (Box 6.10).

Box 6.10. ONTI's 2018-19 Strategy: Data classification

In order to fulfil its mandate to foster the modernisation of the state through the diffusion and use of digital technologies, the ONTI defined a two-year strategy that established six pillars of action:

1. the Technological Decalogue (*Decálogo Tecnológico*)
2. data classification
3. cloud use in government
4. ICT policies for the national public administration
5. guidelines in innovation technologies

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6. communities.

The "data classification" strategic action aims to build a government-as-a-whole approach and policy on the classification of information in the government. It will require public sector organisations to classify the data that they generate, use and eliminate in specific categories in order to then facilitate other data management processes, such as storage, distribution or archiving.

The sound and efficient classification of data across all public sector organisations is an important step to promote a data-driven public sector, as it enables a clear and discoverable overview of all available government data, allows for a standardisation of data, and promotes both sharing and reuse of government data across the public sector.

In this regard, the data classification strategic action builds on the objective to use data as an essential strategic asset within the government to promote the digital transformation of the public sector.

Source: Based on information provided by the Argentinian government.

- The use of cloud-based services for better data management and sharing, and, consequently, for the design and delivery of services. In this respect, the Argentinian government is clear in terms of the need to follow a "hybrid cloud" model approach (see Chapter 5), meaning balancing the benefits of using private cloud service providers with the opportunities of using the public-owned cloud, namely ARSAT's National Data Centre.[26] Increasing the use of cloud-based services is also part of ONTI's 2018-19 Strategy (see Box 6.10), and follows the current trend observed in different OECD countries in terms of scaling up efforts to use cloud technologies in the public sector.

For instance, in **Finland**, the Policy on Management and Location of Government Data (under development as of 2018) will integrate the use of cloud-based data hosting as a tool for better managing government data. The final policy is expected to be agreed upon and approved in the course of 2019[27] (OECD, 2018c).

Another relevant example is that of **Norway**'s Cloud Computing Strategy, which centred the procurement of cloud-based service on five premises, including data protection by default, which states the obligation of contractors to comply with data protection regulations (OECD, 2017b).

Opening up government data

Results from the OECD Open, Useful and Re-usable data (OURdata) Index for the Latin American region showed that, by 2015-16, open data was an area of opportunity that could be further developed by the Argentinian government (OECD, 2017c).Argentina scored below the OECD average at the time (Figure 6.5). The availability of high-level political support from President Macri's administration and the resulting activities carried out by the DPDI have aimed to reverse this trend. The preliminary results of the 2019 OECD OURdata Index[28] provide evidence of these efforts and Argentina's success in championing the open data policy in the country since 2015.

The production and eventual public availability of good-quality open government data is a priority for the current administration. The 2016 Decree on Data Opening Plans (see

Section 6.2.3) set the policy basis for the publication of OGD which was then put into practice under the leadership of the then MoM (now the SGM), through the DPDI.

While by 2016, and a result of the decree, efforts targeted the publication of specific datasets in line with anti-corruption efforts, by 2017, and as part of the DaaS vision, open data efforts had moved from a focus on data publication towards the goal of "cleaning house" (OECD, 2018b). As discussed in the previous sections, these efforts aimed to bring order to the state of government data across the public sector, thus making data control and governance (*idem*) a priority for the current administration.

Figure 6.5. 2014 OURdata Index: Open, Useful, Reusable Government Data

Including data for Latin America and Caribbean countries for 2015-16
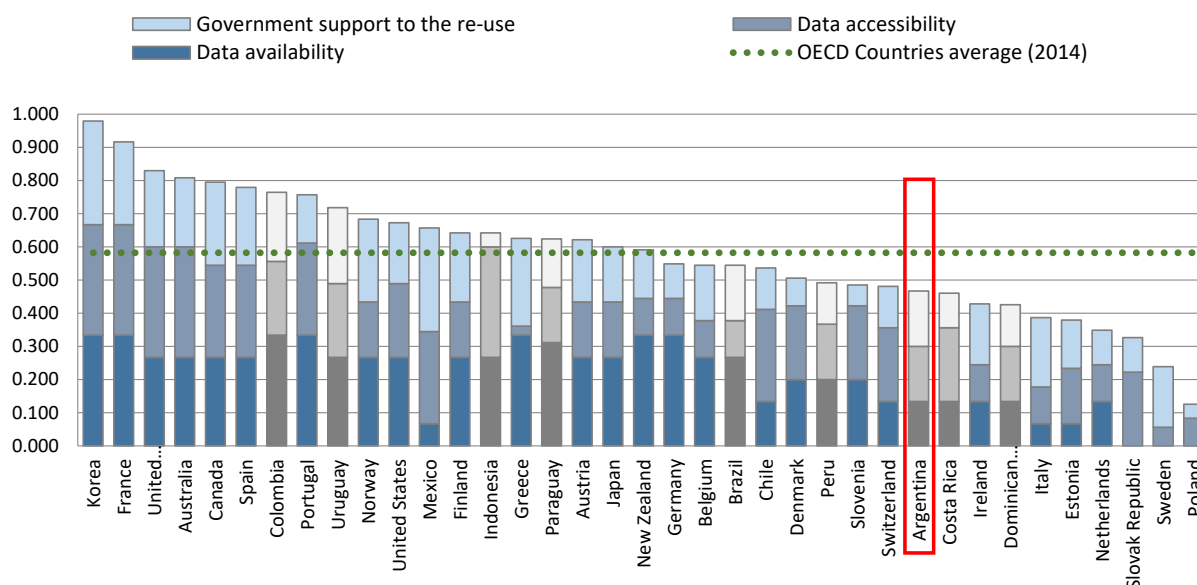
Note: OECD countries: a) Data for Australia, Austria, Belgium, Canada, Chile, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States are for 2014. b) Data for the Czech Republic, Hungary, Iceland, Israel and Luxembourg are not available. c) Turkey does not have a one-stop shop open data portal. Partner countries: a) Data for Indonesia are for 2015. b) Data for Argentina, Brazil, Colombia, Costa Rica, the Dominican Republic, Paraguay, Peru and Uruguay are for 2016. c) El Salvador, Guatemala and Panama do not have a one-stop shop open data portal.
Source: OECD (2014a), OECD Open Government Data Survey 2.0.

Data availability and accessibility

Data quality is at the core of the DPDI's efforts. The DaaS approach, and the development of specific soft law instruments such as the open data and metadata guides aim to contribute to the production of good-quality government data from the source, thus increasing the accessibility and value of data for users.

In terms of data availability, evidence collected during the OECD mission to Buenos Aires in March 2018 shows that efforts have paid off, with an increasing quantity of good-quality government data being published on the central open data portal Datos.gob.ar.[29] This has been possible thanks to the DPDI's efforts to build an informal network of institutional contact points across public sector organisations (including the Ministries of Energy,

Justice, Transport, Agroindustry and Production) as means to increase their interest and willingness to collaborate (OECD, 2018b). This highlights the opportunities in terms of connecting open data efforts to the activities of specific line ministries.

For instance, the 2017 OECD "Compendium on the use of open data for anti-corruption", (OECD, 2017a) highlighted how, by 2016, the work of Argentina's Ministry of Justice and Human Rights to make civil servants' declarations of assets (*declaraciones juradas patrimoniales integrales*) publicly available could help to further build public sector integrity in the country. These efforts are in line with the Justice 2020 Strategy,[30] which among other objectives seeks to better use open and digital approaches to the judiciary system in the country. Others, like Finance and Production, have moved faster in implementing a DaaS approach, which resulted in the development of innovative data services such as the Time-Series API (see Box 6.7).

The lack of motivation to open up government data was one of the most voiced concerns by stakeholders during the workshop organised in July 2018, hence showing, again, how cultural legacy issues are often among the most difficult challenges to overcome in the context of digital government and open data policies. Stakeholders also expressed that data publication is not a priority for public sector organisations, which stresses the need to provide further incentives to public sector organisations to embark on the data openness journey.

While this provides a window of opportunity to explore the use of incentives towards the publication of open data in the central portal, it also raises questions in terms of what incentives might or might not work in the short or long term in the specific Argentinian public sector context.

Evidence from the OECD *Open Government Data Report* shows that only 10 out of 31 OECD member and partner countries provide specific incentives to public sector organisations to publish OGD. These incentives often focus on the provision of financial resources and awards (OECD, 2018e). Yet, as also discussed in the aforementioned report, while financial incentives can serve as effective motivation tools in the short term, they can also be detrimental in the long term, as they do not target a real cultural change. Hence, the need of further investing efforts to help public officials better understand the potential of open data in practice and in line with their respective policy area.

Building public sector communities of practice could enable knowledge and best practice sharing in the public sector, therefore contributing to increase the interest of public officials to join the public sector open data bandwagon. Nevertheless, this would also require ensuring the support from decision makers inside public sector organisations so that open data initiatives can also benefit from support from the leadership positions.

Open data discoverability and access

In practice, the central open data portal is used as a tool to control the quality of government data, thus following a federated model based on three premises (OECD, 2018b):

1. Through the DPDI, the SGM provides the supporting hard and soft infrastructure (e.g. IT infrastructure and guidelines) to help public sector organisations catalogue and publish their own datasets.

2. Public sector organisations are responsible for maintaining their own data catalogues either based on the "Portal Andino" tool (a CKAN tool developed by the DPDI)[31] or other mechanisms in order to comply with metadata standards.

3. Only those datasets that comply with the DDPI's data and metadata standards can then be federated for publication through the central open data portal.

This approach has been useful to bring public sector organisations on board and reduce the burden imposed on them in terms of data publication, but it also has led to fragmented data access due to the proliferation of open data portals[32] (OECD, 2018b).

The challenge at this stage is not to shut down these portals, but to address discoverability and accessibility issues by ensuring that these platforms are unified (for instance, through data-harvesting functionalities allowing the retrieval of data from different institutional open data portals to the central portal) (Box 6.11) and developed in line with centrally defined standards. This approach can also promote the central open data portal as a "portal for open data", meaning providing access to non-government open data.

Box 6.11. Data-harvesting functionalities across OECD countries

Data-harvesting functionalities are essential if governments wish to create a unified, yet federated, approach to the discoverability and accessibility of open data across the public sector. By harvesting data from different data sources, governments can enable central open data platforms as open data hubs drawing upon the value of machine-to-machine data sharing while adding some flexibility to those public sector organisations willing to maintain single open data portals for strategic purposes.

Examples from the OECD *Open Government Data Report* show how OECD countries are implementing data-harvesting practices:

- In Belgium, the federal open government data (OGD) portal indicates the different harvesting sources of the portal, which are mainly regional portals, the statistics office's portals and other federal portals.

- In Canada, the federal OGD portal harvests datasets from public sector organisations in the federal government. For example, the portal harvests data from both the National Resources Canada's Federal Geospatial Platform and the Natural Resources Canada's Geospatial Portal.

- In Slovenia, the central OGD portal harvests data from the Statistical Office of Slovenia, the Bank of Slovenia, the Slovenian INSPIRE geo-portal and the National Assembly of Slovenia. It is also in the process of harvesting datasets from other portals, such as the National Institute of Public Health portal, the Energy Portal and General Police Directorate portal.

- In Sweden, the central OGD portal harvests metadata from both central and regional public sector organisations. It also harvests metadata from municipalities and non-governmental organisations (e.g. academia, such as the Swedish University of Agricultural Sciences).

- In the United Kingdom, the central OGD portal indicates the different harvesting sources of the portal. In general, government data are harvested from public sector organisations from the central government level, its arm's-length bodies and local public sector organisations.

Source: Adapted from OECD (2018e), *Open Government Data Report: Enhancing Policy Maturity for Sustainable Impact*, https://dx.doi.org/10.1787/9789264305847-en.

User-driven approaches for data publication and reuse

In terms of data publication, OECD work on OGD has identified seven approaches that countries often follow in terms of data publication and that can define their maturity in terms of open data policies (for instance, a strong focus on data supply, early consultations, data as a platform; see Annex 6.C).

In this regard, evidence from the OECD missions to Argentina and the workshops organised in Buenos Aires in July and December 2018 shows that despite the efforts taken to produce and publish open government data, two key additional challenges remain to fully reap the benefits of open data for users.

On the one hand, there is a need to further promote a prioritisation of the publication of open data based on the needs of users. The need for running consultations engaging users in demand identification exercises was frequently voiced by stakeholders during the workshops organised in Buenos Aires.

Yet, while in an earlier stage these consultation exercises might fall under the responsibility of the open data leadership (in Argentina, the DPDI), public sector organisations such as line ministries might need to take a more active role in the medium term (if not before).

For instance, in the **United Kingdom**, the Cabinet Office released the Open Policy Making Toolkit, which provides a set of guidelines for public sector institutions regarding public consultations (OECD, 2018e). The value of the Open Policy Making Toolkit does not reside strictly on this guidance, but on its value as a cross-domain instrument. The toolkit brings together principles and tools touching on open government, digital government, data science, and public sector innovation, hence stressing how these policies and initiatives are mutually reinforcing.

When this rationale is applied to the Argentinian context, there are clear opportunities to draw upon the value of the work of the open government, public sector innovation and digital government teams to implement open-, demand- and user-driven approaches for the publication of OGD; for instance, by stressing how the Principles for Digital Services (see Chapter 5) can also guide the publication and reuse of data.

On the other hand, there is the challenge of increasing the reuse of data published on either datos.gob.ar or institutional open data portals. During the OECD mission to Buenos Aires in March 2018 and the workshop organised in July 2018, stakeholders expressed that data, while publicly available, was not used. While this scenario might be propelled by data discoverability and demand-driven publication issues (see above), this also implies a need

for taking action to promote the reuse of OGD, which would be key to reinforce the business case for open data in the long term.

The Argentinian government has implemented a number of initiatives in this regard. As mentioned in Section 6.4, in 2017 the DPDI started to shift from an open by default to an open by design/DaaS approach, a move that was materialised by the development of two experimental, large-scale data services: the Time-Series API and the GeoRef API.

In addition, the SGM partnered with other public sector organisations to host hackathons and data competitions geared towards the Fintech, Agrotech and HealthTech communities (Box 6.12) as an effort to support the adoption of open innovation and value co-creation methodologies in the public sector (OECD, 2018b). The value of that strategy is that of targeting data reuse efforts drawing upon the availability of those communities already available in the country.

Yet, sustaining and scaling up such efforts requires further identifying and mapping the data communities in Argentina to assess their needs, develop their digital and data skills, and increase data reuse (OECD, 2018e).

Box 6.12. Open innovation: The Agrotech Hackathon

Historically, the agricultural sector has been the engine of the Argentine economy. According to figures from the National Statistics Office (INDEC), this industry represents more than 2.7 million jobs and 40% of the country's total exports. In terms of gross domestic product (GDP), agricultural value chains add to more than 13% of total national GDP (1 out of 8 Argentinian pesos).

In this regard, and following the success of the 2016 edition, in 2017 Argentina's central administration organised a two-day, country-wide Agrotech Hackathon, bringing together participants from the private sector, academia and the public sector. The hackathon aimed to address key challenges faced by the agricultural sector in Argentina drawing upon the value of technology and data.

The hackathon was organised around four main axes:

1. the generation and promotion of good practices for a sustainable agricultural production
2. solving inefficiencies and logistical issues of the agro-industrial sector value chain
3. efficiency in the development and use of the agricultural sector's infrastructure
4. facilitating the establishment, development and management of aquaculture ventures.

A jury of experts from the public and private sectors selected the most outstanding projects developed during the two-day event. The winning solutions included:

- a video-based recognition system for intelligent fumigation propelled by machine learning
- wheat quality detection using artificial intelligence and image recognition
- intelligent irrigation of kiwi plantations according to the reading and data collected through digital tensiometers

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- production of electrical energy from organic waste

- measurement of soil environmental variables through wireless nodes and upload of information to web and mobile format.

Source: Based on information provided by the Argentinian government.

Establishing partnerships and building communities of practice in collaboration with key partners such as journalists, universities, researchers and the private sector across the country will be a determining factor to ensure that open government data delivers widespread real value for all actors within the ecosystem (OECD, 2018e). Indeed, evidence from the 2018 OECD *Open Government Data Report* shows that some of these communities (journalists, academia) are not a priority in terms of reach, consultation, capacity building or engagement across OECD countries, which stresses the need to take further action in this regard (Box 6.13).

As stressed in the key findings of this review (OECD, 2018b), these consultation and user engagement exercises can help define a strategic data infrastructure for the country in the medium term.

Box 6.13. Engaging with data communities: Examples from OECD member and partner countries

Australia and New Zealand

In Australia and New Zealand, the Open Data Community Forum of the Cross-Jurisdictional Open Data Working Group of the Australian New Zealand Land Information Council (www.anzlic.gov.au/anzlic-council) is a good example of national and local open government data (OGD) initiatives that also works collaboratively across borders. One of the strategic focus areas of the group under the technology ecosystem is to establish affordable and scalable cloud-based solutions for the delivery of federated spatial data.

Colombia

The Colombian project "Emprende con datos" supports entrepreneurs that use OGD to solve public policy issues. The project offers support to entrepreneurs through mentoring and advice to develop sustainable business models and applications that will address public policy issues. The 2018 "Emprende con datos" event presented different projects of entrepreneurs that have reused OGD to address public policy issues related to health, education, agriculture, mobility, security, territorial planning and sustainable development.

Greece

In Greece, in 2016, the government signed an agreement with the Open Technologies Alliance to promote openness actions in the field of education. The purpose of the agreement is to promote the implementation of open digital technologies that can support the reuse of OGD in the field of education and research.

United States

In the United States, the government has established different partnerships with civil society organisations that work in the field of open data in order to organise roundtables, hackathons or conferences. Partnerships have, for example, been created with the Center

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for Open Data Enterprise, the Sunlight Foundation or the Data Foundation, such as for the organisation of the White House Open Data Innovation Summit in 2016.

Source: OECD (2018e), *Open Government Data Report: Enhancing Policy Maturity for Sustainable Impact*, https://dx.doi.org/10.1787/9789264305847-en.

Notes

[1] For more information see: http://servicios.infoleg.gob.ar/infolegInternet/anexos/265000-269999/265949/norma.htm

[2] For more information see: https://www.oas.org/juridico/pdfs/arg_ley25326.pdf.

[3] For more information see: http://servicios.infoleg.gob.ar/infolegInternet/anexos/255000-259999/259082/norma.htm.

[4] For more information see: https://datosgobar.github.io.

[5] Question 83: Does the central/federal government currently have a single public sector data policy (i.e. a formal government document – plan, policy or strategy – providing strategic and/or planning directions [e.g. standards and guidelines] on the management and use of data [personal, confidential and/or open] in the public sector for policy making, service design and delivery, and/or organisational management)?

[6] Question 86: Is there a single leading institution (ministry or agency) formally responsible for formulating the central/federal public sector data policy?; and Question 87: Does your country currently have a chief data officer in place for the central/federal government?

[7] For more information see: https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029463482&categorieLien=id.

[8] Question 80: Does your country have an explicit formal requirement (i.e. written guidance provided in an official government document: laws, directives, regulations, guidelines, action plans, executive order, other) to assign institutional chief data officers for central/federal line ministries and agencies?

[9] For more information see: https://www.congress.gov/bill/115th-congress/house-bill/4174.

[10] For more information see: https://capacitacion.inap.gob.ar/cursos.

[11] Question 47: Does your country have a strategy or policy to develop any of the following skills in the public service workforce and have training sessions been developed for these skills?

[12] For more information see: http://servicios.infoleg.gob.ar/infolegInternet/anexos/60000-64999/64790/texact.htm.

[13] For more information see: http://servicios.infoleg.gob.ar/infolegInternet/anexos/265000-269999/269242/norma.htm.

[14] For more information see: http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=307439.

15.   For more information see: https://datosgobar.github.io/paquete-apertura-datos/guia-interoperables.

16.   For more information see: http://paquete-apertura-datos.readthedocs.io/es/stable/guia_abiertos.html.

17.   For more information see: https://paquete-apertura-datos.readthedocs.io/es/stable/guia_metadatos.html.

18.   For more information see: https://www.diariojudicial.com/public/documentos/000/083/091/000083091.pdf.

19.   For more information see: https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/108

20.   For more information see: www.jus.gob.ar/media/3234534/est_ndares_de_protecci_n_de_datos_para_los_estados_iberoamericanos__es_.pdf.

21.   For more information see: https://eugdpr.org.

22.   For more information see: https://www.argentina.gob.ar/aaip/planificacion2018.

23.   In 2017, as a result of Decree 365/2017, the Argentinian central government launched the Integrated Public Employment Database (Base Integrada de Empleo Público, BIEP) as an effort to unify the source of employment information by improving the quality of public employment data for decision making. For more information see: https://www.argentina.gob.ar/modernizacion/empleopublico/biep/preguntasfrecuentes#1.

24.   For more information see: https://e-estonia.com/solutions/interoperability-services/x-road.

25.   See, for instance, Annex 2 of Resolution 19/2018 providing technical guidelines for the development and scalability of the INTEROPER.AR platform.

26.   For more information see: https://www.arsat.com.ar/servicios.php?serv=centrode.

27.   Question 57: Does the National Digital Government Strategy include actions foreseeing the use of cloud computing?

28   Results publicly available during the second quarter of 2019.

29.   For more information see: https://datos.gob.ar.

30.   For more information see: https://www.justicia2020.gob.ar.

31.   For more information see: https://github.com/datosgobar/portal-andino#qu%C3%A9-contiene-el-paquete-de-andino.

32.   See, for instance: http://datos.jus.gob.ar/dataset, http://datos.mincyt.gob.ar and https://datos.hcdn.gob.ar.

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Annex 6.A. Canada: A data strategy roadmap for the federal public service

As the volume of data produced globally increases exponentially, governments around the world are trying to grasp what it means to responsibly manage data in such a way that it protects citizens while delivering services more effectively and stimulates economic growth.

Canada has taken this challenge as an opportunity: "This is an opportunity for Canada to position itself as a leading jurisdiction in the data sphere by setting forward-thinking, globally recognized standards that spur innovation and economic growth, and create positive social impact."

The strategy roadmap, which is framed in the context of the digital policy, aims high with longer term transformational goals, yet is grounded by proposing early, ambitious actions. Recommendations are classified into four areas: 1) governance; 2) people and culture; 3) environment and digital infrastructure; and 4) data as an asset. All recommendations are influenced by six guiding principles: client-centred, trusted, agile, open, enabling and purposeful.

The strategy roadmap takes into account a number of intersecting data initiatives that were already underway in Canada, which ensures that the roadmap is grounded in real, tangible results that are now being governed under one umbrella strategy.

Annex Figure 6.A.1. Data strategy framework for Canadian federal public service
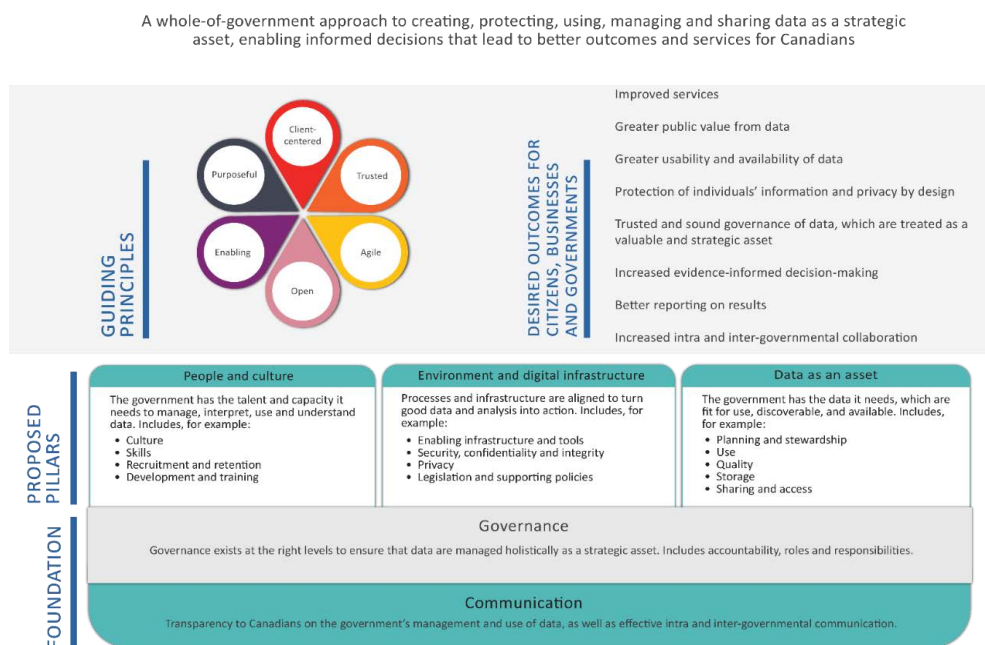
Source: Based on Government of Canada (2018), *Report to the Clerk of the Privy Council: Data Strategy Roadmap for the Federal Public Service*, https://www.canada.ca/content/dam/pco-bcp/documents/clk/Data_Strategy_Roadmap_ENG.pdf.

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Annex 6.B. United States: Creating a data strategy and infrastructure for the future

The US government has been developing a Federal Data Strategy in order leverage data as a strategic asset for increasing government efficiency, the oversight of policies, levels of transparency and faster economic growth. The US Data Strategy focuses on four main areas:

1. **Enterprise data governance:** Focusing on the management of government data, it establishes data policies and specifies the roles and responsibilities for public sector organisations regarding data privacy, security and confidentiality protection. Responsibilities and roles are also defined for monitoring compliance to data standards and policies in place.

2. **Access, use and augmentation:** This action focuses on the development of policies and procedures to ensure public sector organisations and external stakeholders can easily access and reuse government data. This will be achieved by improving data dissemination, increasing the amount of non-sensitive data available on line, and leveraging new technologies and best practices to promote access to sensitive or restricted data while protecting the rights of citizens.

3. **Decision making and accountability:** This aims to improve the use of data for decision-making and accountability purposes. It will focus on the provision of high-quality and timely data for evidence-based decision making or on providing specific datasets such as spending data to foster public sector accountability and transparency. The strategy will also aim to promote the use of data for policy monitoring and evaluation purposes to inform future policy decisions.

4. **Commercialisation, innovation and public use:** This final action will focus on facilitating the use of government data by external stakeholders, making the data more accessible and relevant for commercial purposes, innovation or other public uses. The strategy will foster the use of government data to promote economic, good governance and social value, targeting different groups such as private firms, researchers or citizens.

To ensure the development of a long-term and whole-of-government approach, the Federal Data Strategy pinpoints four different drivers of change that will focus on each of the four different strategies:

1. **Policy:** Laws, policies and procedures will have to be consistent, clear and harmonised.

2. **People:** Specific roles and responsibilities for data management at a whole-of-government level within each public sector organisation will have to be defined, investing in the data capabilities of public servants, and promoting a data management culture that focuses on reuse and stewardship.

3. **Process:** Define effective processes that are able to pinpoint priorities, enhance cross-governmental co-ordination and foster maturity over time for each strategy.

4. **Platform:** Create effective governance frameworks and enablers to facilitate the integration, sharing and use of government data.

Annex Figure 6.B.1. US Federal Data Strategy
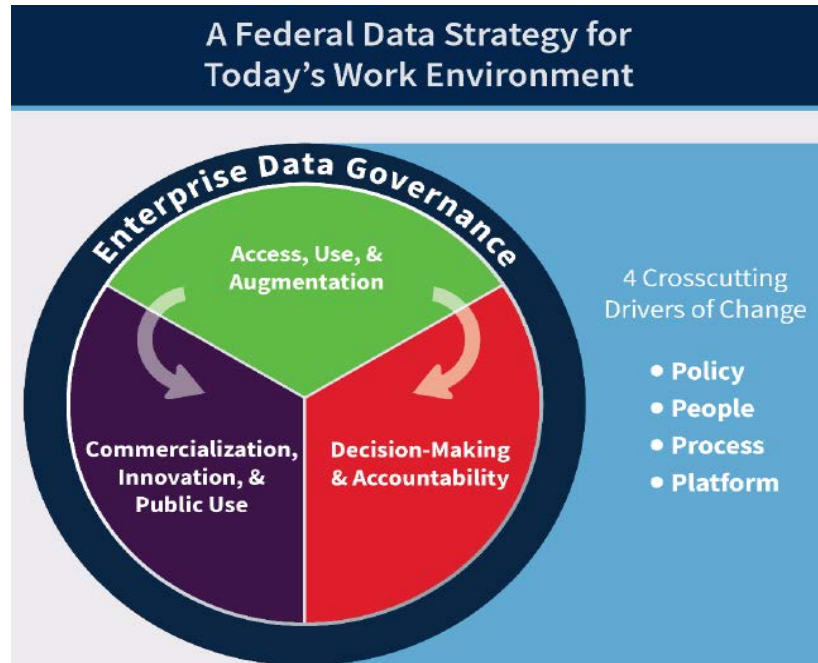
Source: President's Management Council and the Executive Office of the President (2018), *President's Management Agenda*, https://www.whitehouse.gov/wp-content/uploads/2018/03/Presidents-Management-Agenda.pdf.

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Annex 6.C. The OECD maturity model for open data policies

OECD work on open government data, established in 2013, has collected evidence and expertise on specific characteristics that determine the maturity level of open government data policies across OECD member and partner countries. The OECD is developing a seven-stage maturity level model to assess, in general terms, the state of development of an open data policy, including:

1. **The lowest-hanging fruit:** With a strong focus on the supply side, this level of development strictly centres on data publication as the main objective of the open data policy. The government releases those data that are easier to publish, often without a clear strategy behind this decision. Standards and guidelines for data publication and quality are, in most cases, absent. There is not full understanding of the concept of open data among public sector institutions (e.g. proprietary formats, PDFs). Extrinsic drivers motivate data publication (legal compliance, financial incentives).

2. **The transparency approach:** Focus on the supply of data. Data publication is reactive, passive and often opportunities are missed for it to be strategic. While some datasets are available on the portal, user action is needed to request data. Data request tools are often inefficient and build on freedom of information channels (public sector information access requests). There is a strong focus on the publication of aggregated databases in proprietary formats (e.g. the use of APIs [application programming interfaces] is not considered).

3. **Early consultation:** Governments and public sector organisations start showing signs of acknowledging the value of user engagement. Some initiatives to identify data demand are in place. Guidelines and standards are available, but further capacity-building exercises are needed to help public sector organisations understand open data. User engagement and feedback stress the relevance of good-quality data. Metadata emerges as a key element of open government data. There is early discussion on data governance tools (e.g. data catalogues).

4. **User engagement:** The focus shifts from consultation to collaboration. These exercises inform data publication. Initiatives such as hackathons are implemented, but sometimes without a clear purpose. Champions and data stewardship emerge in the public sector. Data request and feedback channels are available on the portal. Developing skills and creating capacities within the external ecosystem emerge as a key element of open data policies. Intrinsic motivation drives open data initiatives.

5. **Problem-solving approach:** In parallel to recognising the relevance of data demand, the government acknowledges the contribution of open government data to the broad policy agenda. The data supply takes a strategic approach. High-value data taxonomies are published on the portal in line with their contribution to the achievement of policy goals and the political agenda. User engagement exercises

centre on the problem to be addressed, not the data. There is a focus on the sustainability of these initiatives and of the open data policy as a whole. Discussion on the impact of open data policies emerges, as well as on the need to establish data causality. Attention to skills development moves from a focus on open government data to broader digital transformation skills development efforts inside the public sector (digital, innovation and data skills). Automated data exchange is in place. Multiple but inter-connected government data sources exist (e.g. data harvesting).

6. **Data as infrastructure (Data as a Platform, DaaP).** The government balances data supply and demand. Open government data is identified as a product of broader data governance efforts in the public sector and a result of the data value chain. Efforts are targeted, and open government data are further embedded in sectoral policies. High-quality and timely open government data are used as an asset for the development of services and products. Open government data emerges as a long-term commitment, not a short-term ad hoc activity.

7. **Government as a Platform (GaaP).** Multi-stakeholder engagement, value co-creation, online and physical collaboration spaces, and data communities are at the centre of this approach. The value of the portal is not only based on the data it provides (DaaP), but also on its value for the ecosystem. The government portal is a driver for data-driven digital innovation and knowledge sharing: The central open government data portal changes to a portal for open data and a community platform. Data are supplied by external users. The discussion is centred on data policies, not on open government data policies, with a clear connection to digital government and public sector digital transformation policies. Open data are clearly acknowledged as a means to reach this ends rather than being seen as an end in itself.

Source: Originally published in OECD (2018), *Open Government Data Report: Enhancing Policy Maturity for Sustainable Impact*, OECD Digital Government Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264305847-en.