




**Australian Government**

**Department of the Prime Minister and Cabinet**



# **Australian Data Strategy**

The Australian Government's whole-of-economy vision for data



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## Ministers' foreword

Digital technologies have enabled things to be done online that we could only have envisaged doing in person just a generation ago: shopping, banking, staying in touch with loved ones and now, through the COVID-19 pandemic, working flexibly and staying healthy.

The Australian Data Strategy plays an important part in the Government's vision for Australia's development over the coming decade. It complements other strategies like our Digital Economy Strategy and the Digital Government Strategy and sets out clear actions to improve how the Government uses data to better the lives of all Australians, how we can help businesses and others to be more productive through data use and give Australians greater agency over how their data is used.

The Digital Economy Strategy sets out the Government's goal to position Australia as a leading digital economy and society by 2030 in order to create better jobs; improve transport, communication and innovation, and enable us to provide better services to all Australians from all walks of life.

Data is the building block for this digital future, with 176 zettabytes of new data expected to be generated each year by 2025. Some Australian businesses already use data to create new value, streamline processes and optimise value chains. To achieve the Prime Minister's goal, we need more consumers, businesses, and the Australian Government to make better use of the data they hold and generate.

Good use of data has helped us in our efforts against the COVID-19 pandemic. We worked with state and territory governments throughout 2020 and 2021 to establish pathways for sharing critical data to support the COVID-19 response and recovery, including navigating legislative and privacy requirements, to ensure vulnerable Australians remained safe.

A mature and well-regulated data ecosystem will deliver benefits for all Australians, businesses and governments. It will allow Australian businesses to be more effective and innovative and create new jobs in a range of emerging sectors, deliver improved outcomes for Australians and allow Government to provide frictionless, efficient and trusted services to Australians.

By treating non-sensitive publicly held data as a public good for the benefit of all Australians, we had one of the world's most effective responses to the initial outbreak of the virus. Aside from our efforts to combat the pandemic, we also developed a whole-of-government Hosting Strategy, a Consumer Data Right that gives Australians the right to access and manage data that is held about them, and a Bill to establish the statutory position of National Data Commissioner to oversee a new scheme for sharing government data. These initiatives are just a small sample of ways we are engaging with data to improve the lives of all Australians.

Australia's first Data Strategy sets out our vision to become a modern data-driven society by 2030, and outlines the national approach to data as a key driver of the future economy. The Data Strategy will set out how data can be used to drive jobs growth; drive competition; tailor, target and deliver better government services; and drive better insights to social, economic and place-based challenges. Throughout this process, we will ensure the appropriate infrastructure and safeguards are in place to maximise use of data and ensure its protection. This Data Strategy looks forward to 2025, after which we will review successes, challenges and opportunities and create a new strategy to guide our next steps to 2030.

This is not the end of the story. The Data Strategy is supported by actions that make it a living document as we continue our conversation with Australians. We will seek your feedback on this Strategy, and consider how we can best respond to your needs.

The Hon Stuart Robert MP

Minister for Employment, Workforce, Skills, Small  
and Family Business

Senator the Hon Jane Hume

Minister for Superannuation, Financial Services and  
the Digital Economy

Minister for Women's Economic Security

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# Executive summary

Data is a valuable national asset that, when leveraged effectively, can bring transformative benefits to its users and to individuals and the economy more broadly. The Australian Government proved this in its response to the initial COVID-19 outbreak, when it leveraged private and public data to respond to the health and economic effects of the virus. The private sector also has a long history of using data to benefit its clients through better and more tailored services and offerings.

Enshrining the effective, safe, ethical and secure use of data as an important foundational tool for businesses, individuals, the non-government and government sectors in an Australian Data Strategy will help to support the Government's vision to become a modern data-driven society by 2030.

The Australian Data Strategy signposts the Australian Government's data intent and efforts over the period to 2025. It focuses on three key themes:

1. **maximising the value of data** – describes why data is important, its economic and social value, its use in responding to priority issues, and the benefit that can be gained through using and safely sharing data. Data can create new value when shared between different levels of government, and the private and non-government sectors.
2. **trust and protection** – describes the settings that can be adopted in the private and public sectors to keep data safe and secure, and the frameworks available to protect Australians' data and ensure its ethical use through the entire data lifecycle.
3. **enabling data use** – sets out approaches and requirements to leverage the value of data, such as capabilities, legislation, management and integration of data, and engaging internationally.

The document considers both public sector data, which is managed by the government, and data in the broader economy, where the Australian Government both enables data users and regulates its use and sharing to provide greater certainty in how people deal with their data.

The Australian Data Strategy is supported by a living Action Plan which sets out tangible measures the Government is implementing to improve our data settings across the economy. The Action Plan will be regularly reviewed to ensure it evolves to meet the changing priorities of Australians; and continuously raises the bar to meet our goal of being a leading digital economy and society by 2030.

While the Data Strategy and Action Plan do not introduce new regulations or legislation, they align with a range of existing legislation, strategies, policies, and reviews which regulate data. These include the *Privacy Act 1988* (and its review, currently underway) and the *Freedom of Information Act 1982*; the Data Availability and Transparency Bill 2020 (the DAT Bill); the 2015 Public Data Policy Statement; the Digital Economy Strategy; the Cyber Security Strategy; the Productivity Commission's 2017 Inquiry into Data Availability and Use; the Consumer Data Right; and many others.

The Data Strategy brings together these diverse elements for the first time, setting out current and forward data settings. It signals the Australian Government's intent to use data to bring tangible benefits to the Australian people and enable data as the lifeblood of our digital economy, including through the Government engaging with the private sector to secure economic and social data for limited approved uses.

Finally, the Australian Government acknowledges this Strategy is the beginning of a conversation rather than its conclusion. We welcome your submissions in response to this Strategy which will inform our future data activities. We will close responses to the Australian Data Strategy by the end of June 2022.

## Our Vision

Australia's first Data Strategy sets our vision to create a national ecosystem of data that is accessible, reliable and relevant and easily used to power our national endeavour and become a modern data-driven society by 2030. The Data Strategy seeks to maximise data's value, protect it to build trust and enable its use. We will do this by creating a data system that will help businesses determine where opportunities are, and provide new products and services; supporting governments at all levels, as well as non-government organisations, to determine where policies and services will achieve the greatest amount of public good; and helping Australians in their personal lives as they determine what services and products they want to consume.

By 2025, we will create a mature and well-positioned data system in Australia that will deliver benefits for all Australians. Businesses will be encouraged to make better use of the data they receive and generate to complete transactions, tailor services and deliver new products.




The Government will make more publicly held data available, creating easy, intuitive access to Australian Government open data, data inventories, data sharing agreements and data visualisation tools. We will develop the infrastructure needed to enable the better use of government data, underpinning new data assets using data shared between the Commonwealth and states and territories, and drive better sharing of and certainty about data. And we will underpin these by creating a modern data system through investment in enhancing data maturity, skills and capability within the APS, and implementing the trust frameworks proposed under the Data Availability and Transparency Scheme.

We will ensure data measures in the Action Plan are regularly updated to align with this vision, and in 2025, we will conduct a full review of our achievements gained through safely sharing and using data.

### The Australian Data Strategy:

#### *Enhancing Australia's data system by 2025 to support the Digital Economy Strategy*

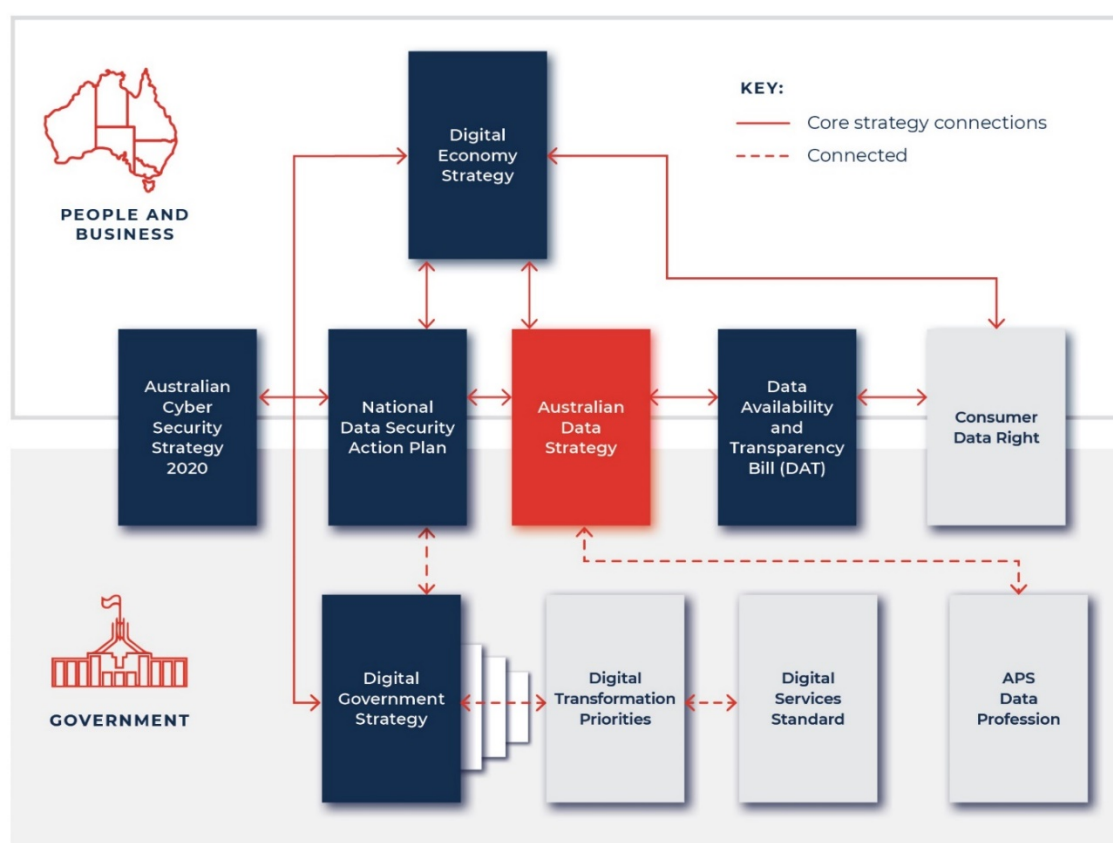
#### Three Key Themes

 <h3>Maximising the value of data</h3> <p>Summary: Describes why data is important, its economic and social value, its use in responding to priority issues, and the benefit that can be gained through using and safely sharing data.</p>	 <h3>Trust and protection</h3> <p>Summary: Describes the settings that can be adopted in the private and public sectors to keep data safe and secure, and the frameworks available to protect Australians' data and ensure its ethical use through the entire data lifecycle.</p>	 <h3>Enabling data use</h3> <p>Summary: Sets out approaches and requirements to leverage the value of data, such as capabilities, legislation, management and integration of data, and engaging internationally.</p>
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## In brief: the policy landscape

The Australian Data Strategy exists as one of the highest-level whole-of-government policies in an ecosystem of other strategies, plans, policies and frameworks in the data and digital sector. These different policies ensure that we have the right settings in related fields, including an overarching vision to 2030 through the Digital Economy Strategy; keeping Australians safe through the Australian Cyber Security Strategy 2020; and showing our steps to becoming a top three digital government in the world through the Digital Government Strategy (see Figure 1). Many of these other policies are referred to in this Strategy.

**Figure 1: The Policy Landscape**



\*DAT Bill will be replaced by the DAT Act when enacted. More detailed information about government frameworks is available in the Cyber Security Strategy and Digital Government Strategy.

# 1. Maximising the value of data

Our intent is to support the use of data to deliver outcomes for individuals, businesses and governments. Data and analytics create economic and social value for all Australians and help respond to the priority issues facing Australian governments, businesses and individuals. Value is also created by sharing and re-using data, particularly government data. While data sharing can and does occur within and between governments, we also explore the interplay between government and the non-government and private sectors.

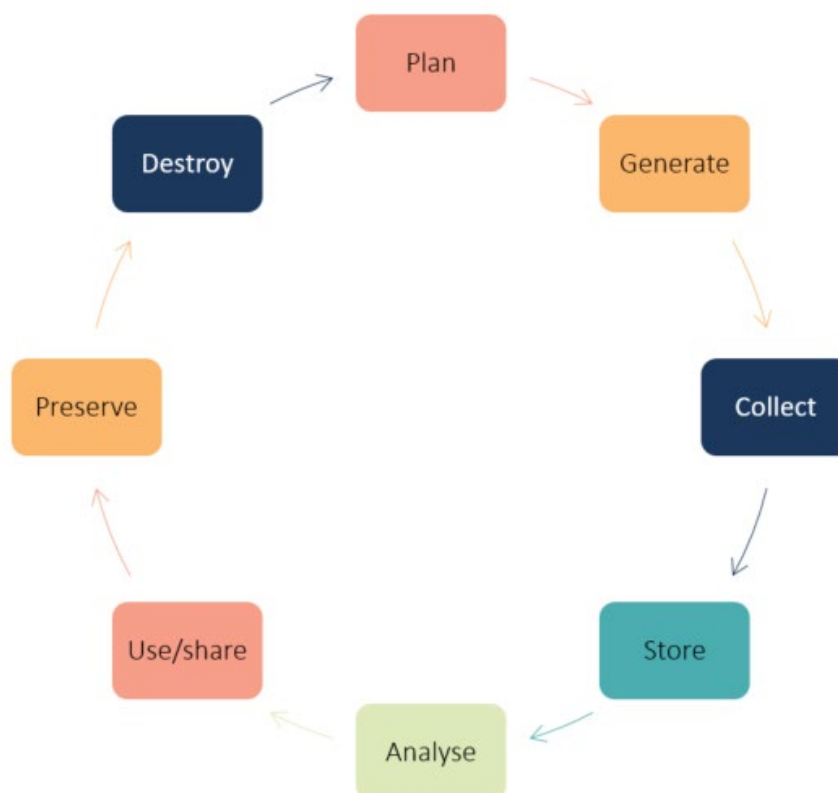
## 1.1 Data is important

Data is an important national asset that drives innovation and transforms the world we live in. It is growing exponentially, showing no sign of stopping, and will certainly power productivity in the future economy. Use of digital products has also been accelerating, which both relies on data as well as bringing data to life.

Many in the private sector have recognised the value of data and analytics and are taking advantage of them to drive better performance and provide more intuitive customer service. However, more can be done to maximise the use of data.

The opportunities and risks for data change across its lifecycle (see Figure 2). Different organisations have different roles to play at each stage - some, such as researchers, focus on generating, collecting or analysing data, while others, such as data centres, focus on storing and preserving it. Some, including the Australian Government, engage with all stages of the data management lifecycle, planning throughout how data is generated, collected, analysed and used, and preserved and destroyed. The private sector performs these roles to generate income and profit, and, in the process benefits clients or customers through improved offerings. The not-for-profit sector uses data to deliver their missions, from delivering critical research to advocating for constituents. Government performs these roles with the aim to enhance Australians' lives, and to stimulate businesses, research institutions, not-for-profits and others. We achieve this by investing in data infrastructure, skills and capabilities, and fit-for-purpose legislation and regulation to ensure data is used safely. We also adjust settings to support others to make these investments.



**Figure 2: The Data Management Lifecycle**

**The cost of inaction is high.** If we don't mindfully improve the way we generate and use data, many appropriate data uses and opportunities will go unidentified and unleveraged. We also risk losing our competitiveness and credibility on the world stage, becoming an unattractive option for talent and missing out on investment opportunities.

The Australian Government's vision is to help use the transformative power of data to benefit Australians, either directly through data-driven policies and programs, or by making safe and secure access to data easier. The Data Strategy sets out the vision for how, from now until 2025, we will support Australia's continuing transition to a data-driven economy, with mature capabilities **to use, re-use and share data in effective, safe and secure ways**. Our ambitions reflect the need to balance the great opportunities and value to be gained from increasing our use and re-use of data with the need to maintain the privacy, safety and security of Australians' personal information.

### Box 1: What do we mean by 'data'?

Data can mean different things to different users. The Strategy uses the term consistent with the DAT Bill definition:

*Data is any information in a form capable of being communicated, analysed or processed (whether by an individual or by computer or other automated means).*

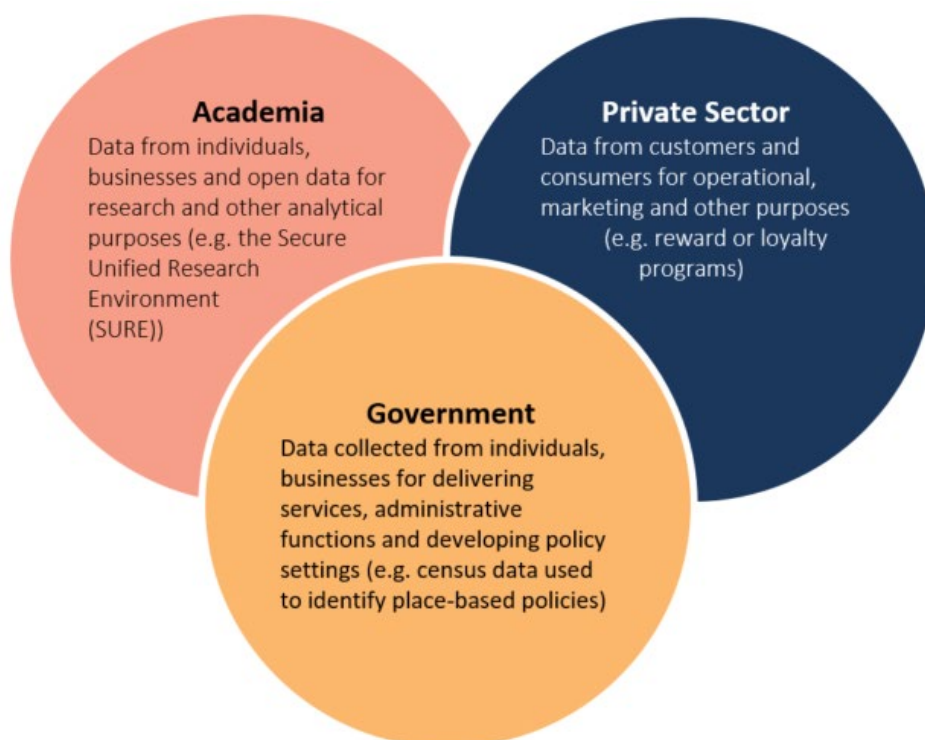
Data is useful when it can be communicated easily and analysed to gain insights. Data's value stems from its use, re-use and re-purposing, particularly in large volumes. Unused or unusable data has little inherent value. To properly realise this value, data must be accurate, reliable, and free from bias. It is also important to ensure the value from its use is applied and distributed fairly. These are issues the Government will explore over the next four years.

In the Data Strategy, we use the terms 'data' and 'information' interchangeably.

Governments, businesses and Australians need access to high-quality, comprehensive, accurate data and analytics to create value in their own contexts. Data sharing between government and non-government actors, as well as publishing non-sensitive data by default also supports Australia's economic growth, improving outcomes for all Australians.

While sectors collect and use data for different purposes (see Figure 3), there is consistency in many of the underlying foundations.

**Figure 3: Examples of how sectors collect and use data for different purposes**



A complex ecosystem of governance (see section 3.2), stakeholders, data holdings, technical systems and data uses underpins the Australian data landscape.

### 1.1.1 Whose data is it?

Ownership and rights that attach to data are complex. Where the Australian Government collects data from others, it is largely used to effect public good on behalf of Australians, either directly, through service provision, or indirectly as an evidence-base to develop better, more effective policies. Outside government, individuals and businesses usually hold a great deal of data about themselves. Businesses and non-government entities, such as community groups and charities, use data to improve their services and offerings, develop new insights, and even trade or share with other entities, subject to Australian privacy laws. The data system is complex, with each entity holding a piece of the data puzzle.

## 1.2 Data enables our modern economy

Data is an increasingly important driver of growth in our modern connected economy. The importance of data is not a new phenomenon. Rapid growth in digital technologies and recent national crises, such as the ongoing COVID-19 pandemic, highlight the importance of accurate, readily available data (see Figure 4).

**Figure 4: Data use has benefits for all Australians**



The International Data Corporation forecasts that by 2025 the world will generate around 176 zettabytes of new data each year, nearly ten times the amount of data generated in 2015 (18.2 ZB) and more than four times the estimated total amount of data in existence in 2020 (44 ZB) (World Economic Forum, 2019). At the same time, continued advances in technology used to store and process data will make it easier to use it to benefit society.

Data can help individuals, businesses and governments make better decisions. The Government's vision is to help unlock the economic and social value of data, not only by improving how we manage our data assets to develop policies and deliver services, but also by removing barriers to better data access,



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use and sharing by all Australians.

Many people can use the same data simultaneously for a range of purposes, generating additional social and economic value without added costs to the data holder. This 'non-rivalry' characteristic suggests the value extracted from data grows without cost when it is shared, re-used and re-purposed.

However, this also makes it difficult to quantify the value of data to the economy. With a range of indirect benefits and few observable markets, it is hard to know the true benefits of data. One estimate suggests the value of open government data alone was up to \$25 billion (around 2% of GDP) in 2014, with the potential for all open data in Australia to contribute an additional \$64 billion annually (5% of GDP) (Gruen, Houghton, & Tooth, 2014). Other methodologies and values are explored in Box 2 below. Regardless of the exact number, all sectors, including governments, should invest in making more data open and accessible.

Recent research suggests we can think about the value of data in two channels: how it enhances existing processes and how it enables innovation (Nguyen & Paczos, 2020). In both cases, data supports the allocation of our resources to their best use, which ultimately improves social welfare.

#### **Box 2: Measuring the value of data**

A number of methodologies have been developed to measure the economic value of data. The 2017 Productivity Commission Inquiry report on [Data Availability and Use](#) (the PC Inquiry) provided a useful summary of the outcomes of these methodologies being used to estimate the value of public sector data.

The upper bound of these estimates reflects the total potential increase in economic output if all public data was made open, disregarding all costs. More conservative estimates reflect the economy-wide impacts of using public sector data (which could be up to \$34 billion) or the market value of public sector data (around \$3.9 billion) (Productivity Commission, 2017). These estimates can be used to identify an approximate upper and lower bound.

In 2019, the ABS commissioned a study to estimate the value to Australia through the use and application of the Australian Census data (Lateral Economics, 2019). The study found that Australia gains \$6 in broader economic value for every dollar spent to generate Census data. This translates to about \$4 billion of economic value over the five year Census cycle.

### **1.2.1 Data supports the economy and creates jobs**

Innovative data use and analytics can help businesses design and develop new products, services and business models - it can even spark the creation of new industries. Data-driven economic growth will support job creation across most industries as it stimulates activity in Australia. We are already seeing this happening (see Box 3).

By creating the right settings to promote greater safe and secure data sharing and innovative data use, the Government can support businesses to unlock the true potential of their datasets and increase their productivity. This will have positive impacts for the Australian workforce and the economy more broadly. By capitalising on this opportunity, we can aid improved service delivery, productivity gains and rapid technological innovation. This will lead to the development of new businesses and opportunities for the Australian workforce. Workers with data and analytics skills will be in greater demand, and new, resilient

jobs that are less location-dependent will be created; with the potential to help workers otherwise displaced by technological and workforce changes.

We are helping the transition to new, data-centric jobs by investing in programs to build the necessary skills and capabilities in the public service (see Section 3.4 below). We are also ensuring the Australian workforce is ready for the opportunities that will come from more mature data use, particularly in the digital technology sector. For example, we established the Digital Skills Organisation Pilot in 2020 to shape the national training system and test innovative solutions to ensure that digital training meets the skills needs of employers and builds Australia's digital workforce. This pilot aligns with other reforms across the national training system, including the National Skills Commission and the National Careers Institute.

### Box 3: Data helps create jobs

Data, analytics and the technology that it powers have stoked intense demand for skilled workers including data engineers, data scientists, data analysts and those able to bring a data-driven perspective to existing industries. New data-centric industries are also being born, adding to this demand. Australia's new space industry, with the Australian Space Agency at the fore, is growing strongly and even outperforming the broader economy. It is expected that the space industry in Australia will double its employment to 20,000 by 2030; and a high proportion of this workforce will need data and analytics skills.

This new local industry is also expected to inspire the next generation through the prism of space, increasing Australia's STEM educated population and create a workforce pipeline to grow and sustain a national space industry.

## 1.2.2 Data benefits consumers

There are obvious applications for data in the business world, including the collection and analysis of client data in order to inform new or improved products and services such as loyalty or reward programs, or even to inform the location of products on supermarket shelves in order to convenience shoppers. Similarly, Australians are increasingly using their personal data to choose products and services that are right for them, including managing their finances and using their personal finance data to adjust their spending habits more effectively by way of the CDR, and using exercise and dietary data to live longer, healthier lives.

People gain greater ability to make decisions to improve their quality of life if they have greater access to the right data, and tools to extract insights from it. Data analytics can cut down the time Australians spend searching for goods and services through automated and smarter consumer preference matching and more targeted and personalised advertising. Comparison tools, such as Energy Made Easy, YourSuper and Moneysmart, make it easier for consumers to find the product or service that best suits their needs, improving competition and leading to lower prices and higher quality goods and services for all Australians.

The Government has also taken a range of actions in the data space to empower Australians with greater access to their data, including through the CDR (see Box 4).

#### Box 4: The CDR gives consumers control over their data

The Consumer Data Right is an economic reform designed to fundamentally change how Australians engage with and benefit from data. The CDR provides data infrastructure that will help underpin the digital economy, empowering households and businesses to have greater access to and benefit from data held about them by businesses. Implementation in the banking sector is now almost complete, with energy next and telecommunications being considered for designation.

Households and businesses generate a huge volume of data in modern life – when people pay for goods and services electronically, manage bills and mortgages, and use metered energy services. Banks and energy providers hold this data as part of delivering their products and services to individual and business consumers.

The CDR creates the secure infrastructure for easy and safe, opt-in consumer data-sharing, and it is explicitly consent-based. This means that, if consumers choose to use the CDR, they choose which data will be shared, for which purpose and for how long. Strong privacy safeguards are built into the system, including **a right for consumers to ask for their data to be deleted**.

The CDR puts consumers in the driver's seat – giving households and businesses more power and control over their data. Under the CDR, consumers can choose to securely share their data with an Accredited Data Recipient to derive direct benefits, helping them manage their finances more easily and making it easier to find the best products and services. Giving consumers the ability to find better products and services while being in control of their data will strengthen competition and productivity, and, as the CDR expands beyond banking to other sectors of the economy, there will be additional opportunities for innovation.

The Government's use of data visualisation technology is providing new ways to consider a range of problems in the public and private sectors, identify solutions and refine service scope and delivery. Where possible, these will be made freely available to the public in order to help them make data-driven decisions in their everyday or business lives.

### 1.2.3 Data benefits businesses

Getting the right data to the right people at the right time can help businesses and markets function, and help individuals and businesses better understand past performance and produce more informed forecasts, improving decision-making and risk identification and mitigation. In this way, data can promote competition between firms and support productivity growth.

Data can also promote organisational transparency and accountability by encouraging public scrutiny of processes. This helps the public and private sectors build trust among stakeholders and can reduce and deter inefficiency and corruption.

Businesses can leverage data and analytics to expand the breadth and depth of the products and services they deliver, as well as to identify new and emerging opportunities and markets. Consumers benefit from this innovation through increased competition and higher quality goods and services that better match their preferences. For example, the availability of pre-competitive geological data has informed exploration decisions of mining companies in Australia (ACIL Allen Consulting, 2020).

Meanwhile, open business registers have supported the entry of new firms into Australia (Department of the Treasury, 2017).

Data has driven entire ecosystem transformations, such as the consumer technology boom, and supported the creation and growth of new industries such as artificial intelligence (AI). The availability of big data has driven advances in AI techniques, such as machine learning and natural language processing, which have in turn led to the development of new business models, created employment opportunities in high-skilled occupations and enabled powerful analysis of data. Governments can benefit from learning, and leveraging the skills and insights developed in the private sector. For example, the technology company Atlassian helped the Government develop a WhatsApp messaging service to disseminate COVID-19 information to Australians.

Many Australian businesses are global leaders in developing operations and services that use data-driven decisions, such as business-to-business software-as-a-service, fintech, regtech (see Section 3.2.1 below) and mining and agricultural companies that invest heavily in industrial technologies. Similarly, our research sector is a vibrant and advanced global hub for data use and analytics. In this context, the Government has an important role to play in creating the right environment to encourage data access and sharing between and among private data providers, creators and users.

Australian-born business management platform MYOB has helped small and medium-sized businesses in Australia make the transition to more data-driven and digital operations. These business-to-business applications demonstrate the skills and advantage Australia can leverage in this space. Supplemented by Government initiatives such as Single Touch Payroll, these types of applications allow businesses to spend less time manually taking care of their finances and more time delivering their goods and services, or developing new ways of doing things.

There is still work to be done to help Australian businesses on their data journey. The Rethink Data report (International Data Corporation, 2020) found many businesses are not adequately extracting the value from their data assets.

**‘Only 7% of Australian organisations rate themselves ‘very effective’ at meeting their data and analytics objectives’ (McKinsey, 2021)**

Over the next four years, the Government will develop the right environment for businesses to build data into their operations and leverage more of its value.

**Box 5: Australians build businesses using data, supported by Government settings**  
**Illustrative example**

The way Mehak creates, engages with, and leverages data for her online business has been changing, aided by digital technologies that give her access to global markets from the comfort of her home. The rapid uptake of personal digital devices, such as smartphones and smartwatches has changed how her customers interact with her business, and how she interacts with the government.

Mehak’s customers provide an increasing amount of data to her business through in-store and online purchases, providing her valuable insights into their preferences, and allowing her to provide more innovative and convenient solutions to their needs, including deciding her product levels. She also identifies social media trends to target the goods and services that she produces and tailor her advertising strategy.

The Government is using online and digital tools to help Mehak in new ways, making it easier for her to understand her company registration requirements and simplifying her tax returns by using her previous returns to pre-populate information. In the future, the Government will find more ways to help Mehak increase her competitiveness as she expands into new markets, including by identifying up-to-date, non-sensitive economic data about potential sites for new business ventures and making it publicly available (see Box 8 – A Digital Atlas of Australia).

Australian businesses have also seized the power of data in response to the changing environment created by COVID-19. Many businesses have adopted cloud-based software using data to manage uncertain and volatile business conditions. Innovative marketing and rostering analytics have enabled businesses to respond to their customer needs as lockdowns of geographic areas impact their business model and staffing requirements. These tools, and the data that powers them, have allowed Australian businesses to continue operating and helped reduce the economic impact of the crisis.

Other data tools are helping Australian businesses deliver their services more efficiently. Data standardisation can provide better access to the right information, and allow businesses and governments alike to deliver better services across all sectors. Digital financial reporting can make it easier for users, including regulators, standard-setters and professional bodies, to access financial reporting information. This means they can spend less time searching for and cleaning information and more time on delivering meaningful outcomes for their customers, clients or other stakeholders. It also has much broader potential applications.

The use of digital financial reporting is gaining ground overseas, but is still relatively limited in Australia. Some companies in Australia are already using digital reporting in some contexts, such as reporting to overseas securities exchanges, and the Australian Prudential Regulation Authority currently requires digital reports from banks.

### **Supporting the private sector to leverage value**

Data is fundamental to the effective operation of markets. Data, and the information derived from it, helps businesses and consumers make better decisions, and creates opportunities for innovation. Government facilitates this by making its data publicly available, requiring certain information to be disclosed to improve market decision-making and setting and adopting standards for more seamless market interactions. Regulations, particularly around mandatory disclosure, also ensure that consumers have the information they need to make informed choices. There are a number of examples of the Government's work in these areas in recent years. The Government is implementing the Australian Business Registry Services that will provide access to trusted and valuable information. The Reserve Bank of Australia has been helping to set standards and govern the operations of the New Payments Platform (NPP), which provides open-access infrastructure for fast payments in Australia. The ATO operates the Australian Peppol Authority for the government to help businesses take advantage of the benefits of e-invoicing in the digital economy.

### **Leveraging private sector data to support public outcomes**

Partnerships between the private and public sectors can provide significant mutual benefits. Data from the private sector used for statistical and research purposes helps governments make better decisions about policies that affect the private sector. For example, private sector data on business and consumer spending helped governments measure and respond to the effect of COVID-19 lockdowns on the Australian economy. Similarly, data on the number of jobs advertised are an important economic health indicator and can be used to inform the Government's employment policies, as well as to identify trends



in future skills and training needs.

Government is also increasingly partnering with the private and not-for-profit sectors to inform and deliver policy outcomes and services.

### 1.2.4 Government data benefits Australians

Government is able to provide data in ways not possible or available to other sectors. As such, there is room for government to generate and release data for public consumption in areas where the private sector does not have the access, resources nor incentives. This is reflected in government delivery of public services, such as health and education, tax collection and welfare support, and produce specific deliverables, such as weather forecasts, national statistics and surveys, environmental information, and address compilation.

While it may be difficult for the private sector to fully capture or appreciate the returns on investment in open data, government generation and dissemination of this data produces many public and economic benefits (see Box 6).

**‘Investment in open data, including publicly funded research, generates a return on investment of 1.5 times’ (Gruen et al., 2014)**

#### **Box 6: The same data can benefit the public in many ways** **Illustrative example**

Kathy works in the Australian Bureau of Statistics (ABS) Labour Statistics team, releasing Weekly Payroll Jobs and Wages data on the ABS website. Kathy's team produces this data by transforming Single Touch Payroll (STP) information supplied by businesses to the Australian Taxation Office (ATO). Garry runs his own market advisory company providing strategies for small to medium businesses to manage their business investments in domestic markets. Garry refers to the Weekly Payroll Jobs and Wages data to get a regular read on the employment experiences of 10 million Australians, and other public releases to help identify underlying economic trends and guide his investment advice. Similar statistics provided by the private sector are often behind expensive paywalls or are not as comprehensive or regular.

Because regular outputs from Kathy's work compiling Weekly Payroll Jobs and Wages data are freely accessible on the ABS website, Garry has access to the same timely and high quality information his competitors at other firms have and, importantly, his use of the data does not prevent others from also using it.

The Government uses its front door to data, [data.gov.au](http://data.gov.au), as a central source of open government data, with more than 98,000 datasets available to the public, more than triple the number available in January 2018 (31,000). There are also many cases where we freely release consistent, quality, timely and comprehensive data to the public through other channels.

These data sources generate insights and value for Australian businesses, their customers and the public (see Box 7). This provides a strong rationale for governments to take a default position of making the large volumes of non-sensitive data it generates or collects more accessible where it is safe and secure to do so. With this in mind, the Government is taking action to improve how we manage and secure our data assets, while making non-sensitive data open by default.

### **Box 7: Accurate weather data can save lives and prevent infrastructure damage**

The Bureau of Meteorology (the Bureau) is well-known as a reliable and detailed source of weather forecasts to allow Australians to go about their days knowing what weather conditions to expect. The Bureau's forecasts, warnings and other information also help protect Australian lives and property. Improved hazard preparedness and response during severe weather events has contributed to the long-term downward trend in the annual number of fatalities per capita in Australia from bushfires, floods, tropical cyclones and severe thunderstorms. This information also reduces the economic costs of natural disasters. A 2016 study estimated that the Bureau's services help prevent around \$450 million per year in damage (London Economics, 2017).

The Bureau also offers more specialised services to customers. Resource extraction and processing activities in Australia's northwest are routinely impacted by severe weather, such as wind and wave hazards caused by tropical cyclones which affect offshore oil and gas operations. The Bureau plays a central role in delivering valuable and actionable weather insights to the sector. It is estimated the Bureau's services helped generate up to \$120 million of economic value to three major resource customers in 2020-21 by helping to mitigate the impacts of severe weather and avoid lost production.

## **1.3 The value of data lies in its use**

### **1.3.1 Delivering essential services to Australians**

Limited resources need to be effectively allocated to meet Australians' needs, whether they are delivered by government to provide health, welfare assistance, or regulatory oversight to the public, or a business' operational output for their customers.

Access to the right data and analytics can help government and private decision-makers tailor how they deliver these services. For example, Census data can not only be used to identify where services are needed, but also how to best tailor those services for the needs of Australians. Access to the right data is also critical for the success of our Digital Government Strategy, which will allow the APS to deliver simple, helpful, respectful, and transparent services to all users (see Section 1.2.4).

Census data helps us understand where health, education and community programs and services are most needed and to then inform the best allocation of resources. For example, a review of the National Partnership Agreement on Remote Indigenous Housing and the Remote Housing Strategy used Census data to determine how many more houses were needed in remote areas. Similarly, the New South Wales Health department uses Census results to weight its own survey results on risk factors and health behaviours (Lateral Economics, 2019).

**Box 8: A Digital Atlas of Australia**

Australia is facing pressing and complex place-based issues that require a rapid, yet informed, response. Data that includes 'location' or geographical information is often the starting point for solving such issues. It is also often the unique data attribute that allows data to be integrated.

National emergencies such as bushfires, floods and COVID-19, expected booms in intelligent transport, a desire to develop our regions and make our cities more liveable, as well as our general curiosity to know 'what is happening where', all reinforce the importance of location data to support decision-making.

Businesses and citizens need timely access to trusted and accessible location data to de-risk investment, protect assets, and make decisions for their communities. Governments need authoritative and timely location data to best target investment in communities and delivery of government services.

The Government's Digital Atlas, along with other spatial data initiatives, will be a valuable tool for responding to these needs and supporting informed decision-making. The Digital Atlas, a 3-dimensional platform visualising Australia's geography, will bring together the wealth of Government data on the economy, employment, infrastructure, health, land and the environment into a single national data asset. The Digital Atlas will allow individuals, governments and other organisations to better understand and respond to important policy and operational issues.


Spatial data tools allow:

- **businesses** to be better informed on economic, demographic, and infrastructure settings to guide decisions on where business activity and investment is best targeted
- **planners** to position new infrastructure to maximise social amenity or get products to market faster
- **Australians** to better understand their community and interact with decision makers on proposals affecting them.

We can also use data for ongoing performance monitoring and assessing the effectiveness of pilot programs and policies to highlight how they can be better calibrated to meet Australians' expectations. Every time we make data-driven decisions to deliver better services, we build Australians' trust and confidence that we can appropriately respond to the issues affecting them.

One example of our policies in action is an improvement in the quality, accessibility and timeliness of data on suicide and self-harm in Australia through the National Suicide and Self-harm Monitoring Project. This work will ensure the right data is available as a critical resource for governments, services and communities to better respond to suicide and self-harm. By better understanding the details around these events, better policy responses can be developed to address underlying factors. Ongoing monitoring can support governments, services and communities to spot trends and identify emerging areas of concern and priority groups.

The Government's National Mental Health and Suicide Prevention Plan included funding to develop a perinatal mental health minimum dataset to help identify gaps in screening, and support evidence-based investments in perinatal mental health services. This will involve cross-jurisdictional work with



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states and territories to support universal perinatal mental health screening across antenatal and postnatal care settings, and enhance digital screening and data collection.

### 1.3.2 Responding to crises

During the 2019-20 summer bushfires, real-time data sharing between jurisdictions allowed emergency responders to react to rapidly changing situations quickly and effectively, as well as allowing governments to effectively target recovery efforts to areas most affected.

Recent crises have required a government-wide data response, and highlighted the need for good data management and governance practices. We have learnt valuable lessons from these experiences (see Box 9) and will use that momentum for future progress under this Data Strategy to strengthen our capacity to prepare for future crises. This is not limited to government-led services – the bushfire.io website provided a valuable data visualisation tool for Australians dealing with the bushfire emergency and was created by a non-government organisation and provided to the public for free.

The Australian Government Crisis Management Framework outlines the governance frameworks for different national crisis situations. States and territories have primary responsibility for managing crises in their jurisdictions, but the Australian Government has an important role to play, including providing support to states and territories, managing the response (jointly or as the primary coordinator, depending on the scope) and providing financial assistance for relief and recovery to individuals affected by a major crises and to states and territories.

#### Box 9: Responding to natural disasters

##### Climate Change

The Australian Climate Service (ACS) strengthens Australia's position as a world leader in anticipating and adapting to the impacts of a changing climate. The service brings together world-leading science, information and expertise from the Bureau of Meteorology, Geoscience Australia, CSIRO and ABS, to connect and leverage comprehensive Commonwealth climate, natural hazard and socio-economic datasets into a single national view.

The ACS will use this data and expertise to advise on climate resilience to help prepare Australia for natural disasters before they happen, and make sure the right information is available to decision-makers to direct response, relief and recovery efforts during and in the aftermath of future disasters.

The ACS will work with customers, such as Emergency Management Australia and the National Recovery and Resilience Agency (previously the National Bushfire Recovery Agency), to provide data and intelligence to support each phase of the national disaster continuum: Prevention, Preparedness, Response, Recovery, Relief and Resilience.

### Cyclones

The Australian Geospatial-Intelligence Organisation (AGO) used its data to support humanitarian assistance and disaster relief (HADR) efforts following Tropical Cyclone Yasa in Fiji in December 2020. AGO leveraged new Defence capabilities to prioritise imagery collection using commercial satellites to identify the worst-affected areas and safe vessel landing locations, supporting the deployment of Royal Australian Navy HMAS Adelaide, timely assessment of critical infrastructure damage and identification of priority response options to assist the recovery effort.

AGO also used its geospatial data holdings, supplemented with data leveraged from international partners and the United Nations, to support Australian Defence Force activities. They also used Human Geography data, such as population density and medical facilities, to help guide and prioritise HADR efforts.

### 1.3.3 Keeping Australians secure

Effective data sharing between intelligence agencies enables them to operate more effectively and work together to protect the national interest. Efforts since the 2017 Independent Intelligence Review, and the acknowledgment of the need for a broader National Intelligence Community (NIC), reflect the increasing need to share information and consolidate existing linkages between agencies in order to respond to complex and evolving security challenges.

Australia's security and intelligence agencies are leveraging the value of data and analytics to keep Australians safe and to protect our national security (see Box 10). A number of NIC agencies are developing and implementing machine learning and AI as tools to manage and analyse this growing volume of complex information.

#### **Box 10: Linking new data sources are helping protect Australia's national security**

AUSTRAC is responsible for detecting, deterring and disrupting criminal abuse of the financial system to protect the community from serious and organised crime. It works in a financial landscape facing new and emerging technologies changing the way financial services are delivered, in an increasingly globalised economy.

AUSTRAC is proactively responding to these changes, collecting and integrating data from a range of new sources to enhance its existing datasets. In its fight to combat terrorism financing, AUSTRAC collected open source information from an online video streaming website to identify channels promoting extremist content linked to popular payment platforms being misused to fund such content. This data was then fused with financial information reported to AUSTRAC and informed a strategic intelligence product on evolving methods of terrorism financing.



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### 1.3.4 Better outcomes for Aboriginal and Torres Strait Islander people

The range, accuracy and quality of data provided by Aboriginal and Torres Strait Islander people has evolved a great deal over the past two decades. Data about Aboriginal and Torres Strait Islander people is found in both Indigenous-specific data collections and mainstream collections. Improvements in the consistency and quality of Indigenous status collection across the Government's datasets has helped to establish an evidence base for better service delivery for Aboriginal and Torres Strait Islander people. This has built a stronger understanding of barriers faced by Aboriginal and Torres Strait Islander people in accessing government services and broader opportunities in society and the economy.

Data is now being used to recognise the strengths and accomplishments of Aboriginal and Torres Strait Islander people and culture, rather than just focusing on disadvantage and poorer outcomes compared with non-Indigenous Australians.

#### **Closing the Gap**

There is an opportunity to improve the cultural appropriateness and accessibility of public and private sector data collections to better reflect the needs, priorities and aspirations of Aboriginal and Torres Strait Islander people. The 2020 National Agreement on Closing the Gap sets a precedent for working in partnership with Aboriginal and Torres Strait Islander people to improve outcomes in new ways. Priority Reform Four of the Agreement focuses on shared access to data and information at a regional level to support decision-making and the development of local solutions. This includes the need to build capability and expertise in data collection and analysis among Aboriginal and Torres Strait Islander communities and organisations. The parties to the Agreement will consider progress on this Priority in 2025.

The Agreement also contains new socioeconomic targets that may help improve data availability and use arrangements for Aboriginal and Torres Strait Islander people, including targets that aim to improve internet access for individuals and communities, including those located in regional and remote areas.

#### **Box 11: Maranguka's data sharing and collaboration is an enabler to 'break the circuit'**

Maranguka means 'caring for others' in Ngemba language, and is built around Indigenous self-governance in partnership with relevant government and non-government agencies. Australian civic tech start-up Seer Data has partnered with the Stronger Places, Stronger People (SPSP) Initiative to support the Maranguka Community Hub.

Community members and the Bourke Tribal Council have used data on education, employment, housing, health, child safety and crime, paired with community feedback, to inform the development of goals, measures and strategies for Maranguka.

Source: <https://seerdata.ai/maranguka-community-hub/>

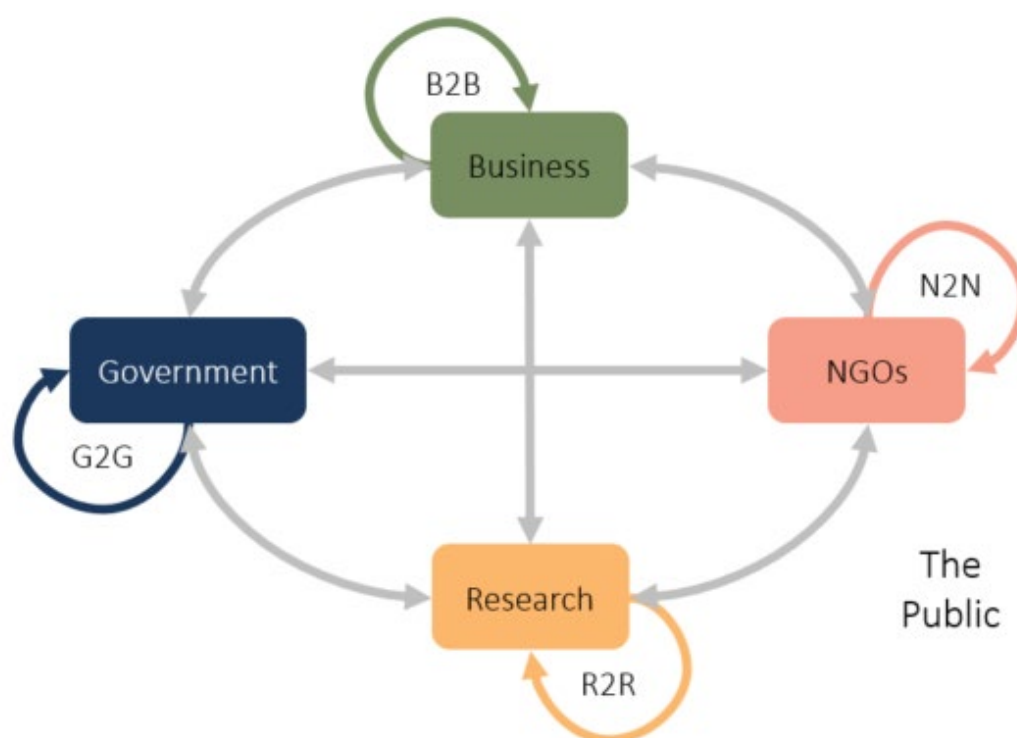
## 1.4 Building partnerships through data sharing

### 1.4.1 Sharing data across sectors

The public, private, research and non-government sectors generate a wealth of data. However, most datasets are generated for a particular purpose and are frequently not visible or accessible to others.

The Australian Government has committed to making non-sensitive government data open by default; however, structured data sharing partnerships within and between non-government entities are needed to generate economic, social and health outcomes from data (see Figure 5). For example, greater and more secure data sharing for the purposes of research will facilitate better and more data-driven research outcomes, drive new public-private research partnership models, and also facilitate better policy outcomes and innovation gains for all Australians.

**Figure 5: Sharing data across sectors**



The greater availability and use of quality data through data sharing, along with the advent of digital technologies, is both transforming research innovation and underpinning the integrity of the scientific process.

The research sector typically takes data from the public and private sectors and adds value through integration, aggregation and analysis, providing societal benefits for all Australians. Some examples of the use of national research data capability include:

- national skin cancer genomic database for improved treatments
- field data for more accurate pollen forecasts to alleviate the burden of allergic diseases
- greenhouse and genomics data to develop salt-tolerant wheat

- big data climate modelling to support all sectors of the economy adapting to a changing climate
- genetic mutation data to support new personalised treatment for Lupus.

While Australians should feel proud of our researchers' skills and innovations, they must also feel confident that researchers use data responsibly, ethically and safely. The 2018 [Code for the Responsible Conduct of Research](#) and its related data guide establishes the responsibilities of researchers and their institutions with regard to data and data management. Researchers also refer to the National Statement on Ethical Conduct in Human Research when they use and share data and information.

Cross-sector programs, such as the National Collaborative Research Infrastructure Strategy (NCRIS), Cooperative Research Centre (CRC), Industrial Transformation Training Centres (ITRC), and the new National Freight Data Hub, catalyse activity within their respective sectors. These programs already enable important data flows among the sectors of the economy. For example, there are 22 NCRIS national facilities that provide national-scale services, assets and infrastructure to support leading-edge research. With the digital transformation of society, these national facilities increasingly provide national data assets and digital infrastructure alongside traditional instruments and products.

The Melbourne Institute at the University of Melbourne is developing a protected data lab to enable the housing, curation, and analysis of sensitive data. It is making this investment because of the importance of being able to create 'shared' environments that allow authorised researchers to access information from different sources, enabling faster and better analyses of data. This environment will provide safe and secure access to data in an independent facility, linking data from both government and industry sources.

Data sharing between governments and businesses can also help achieve important outcomes. The Australian Government established the National COVID-19 Coordination Commission (NCCC) in 2020 to create a structured and open mechanism to enable collaboration between the public and private sectors. This ensured a constant and regular avenue for business input, both in the immediate response and into recovery. Early in the COVID-19 crisis, the Government quickly responded to issues raised by businesses, such as lifting curfews for trucks, to ensure consistent supply chains and stock in grocery stores. The NCCC has proactively established guidelines for safe, COVID-19-ready workplaces before lockdowns eased and have worked with businesses to refine them over time.

The Australian Government is committed to breaking down unnecessary barriers and simplifying data sharing, enabling governments and non-government organisations to get more value out of Australian Government data assets. It is achieving this by guiding agencies with a best practice approach to applying data sharing principles to data sharing arrangements, working to standardise documentation relevant to data sharing and uplifting data management maturity in the APS. The Australian Government also commits to:

- optimise the use and re-use of public data
- release non-sensitive data as open by default
- collaborate with the private and research sectors to extend public data value for the benefit of the Australian public.

Increasing data flows between governments, non-government organisations and businesses can build a better picture of Australians and their needs, and help governments tackle new and evolving public policy questions. Bringing together data from different sources can enable Australian governments, researchers and businesses to make more informed decisions and interact with the public more efficiently. Linking data could also make it easier for Australians to interact with services and programs from the Commonwealth and state and territory governments, reducing the number of times individuals and businesses have to provide their information.

Data sharing between governments helps leverage the enormous social value of data (see Box 12).





#### Box 12: Case study - using data to support Victorians in COVID-19 lockdown

In 2020, Victoria declared a state of disaster due to rising COVID-19 infection rates. This created a clear and urgent public interest to support the crisis response. Victorian government agencies needed business location data for lockdown planning, and to understand vulnerable communities and individuals needing additional support.

The Australian Government identified relevant data custodians and coordinated data sharing access. Data custodians quickly provided guidance on available data, explained its characteristics, and agreed appropriate data use. The declared state of disaster streamlined legislative pathways and approval processes, and resulted in the provision of better and faster support for vulnerable Australians during the lockdown.

Access to government data is also critical for much of the research conducted in Australia.

#### 74% of respondents assessed the relevant of [public sector information] to public researched as ‘High’ or ‘Very High’ (OECD, 2020)

The Australian Government’s Data Sharing Principles are a best-practice risk management framework to enable the robust, safe and secure sharing of data. Developed by the Office of the National Data Commissioner (ONDC), the principles underpin sharing decisions through the DAT Scheme and the Intergovernmental Agreement on Data Sharing (see below). The principles are:

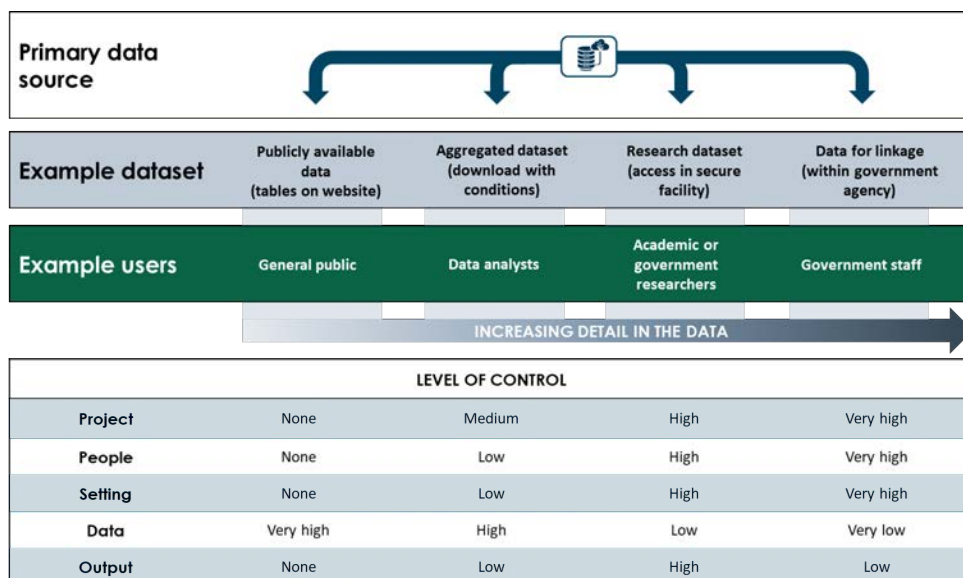
- **Project Principle** – sharing only for an appropriate and authorised purpose
- **People Principle** – sharing data only with authorised users
- **Settings Principle** – using data only in a safe and secure environment
- **Data Principle** – applying appropriate protections to the data
- **Outputs Principle** – outputs are appropriately safeguarded before further sharing or release

These principles are based on the Five Safes Framework, an internationally-recognised approach to disclosure risk management. How data custodians apply these principles will vary **depending on the data sharing context** and sensitivity. Data sharing is also subject to security guidelines and data management (see Sections 2.1 and 3.2 below, respectively).

The Government also applies a number of information management principles and policies to increase data interoperability and make it easier to share. For example, the *Building trust in the public record* policy recommends agencies assess their interoperability maturity based on business and stakeholder needs. This includes identifying interoperability maturity gaps and planning to address them.

### Box 13: A single data source can be shared in many different ways.

One example is featured below.



Source: *Best Practice Guide to Applying Data Sharing Principles*, ONDC, 2019

\*Current legislative frameworks may restrict this in practice.

## Intergovernmental Agreement on Data Sharing

Commonwealth, state and territory government leaders set their expectations for data sharing across jurisdictions by signing the Intergovernmental Agreement on Data Sharing (IGA) on 9 July 2021. The IGA recognises that data held by one government can be valuable to another government for policy, service delivery and decision-making. Under the IGA, governments have committed to work collaboratively to share public sector data by default, be responsive to data requests, and share data unless there is a legitimate reason not to.

All jurisdictions can apply the IGA's enabling framework and guidance to progress existing and develop new data sharing arrangements. Where existing data sharing practices are mature, governed efficiently and delivering strong outcomes, they should continue to operate. Existing privacy and other protections will continue to apply, with data de-identified or aggregated when required.

Data and Digital Ministers are responsible for delivering a National Data Sharing Work Program that improves data sharing in agreed priority areas, and delivers system-wide reforms and guidance. The IGA provides a mechanism to ensure initiatives on the Work Program are in the national interest and have broad support, including through endorsement from relevant Commonwealth and state and territory portfolio Ministers.

Small cross-jurisdictional project teams with policy and data expertise will be established to progress Work Program initiatives, using a multi-disciplinary approach to remove barriers to effective data sharing.

## Data sharing under the DAT Bill

Complex laws and systems can prevent data sharing entirely or create a risk-averse environment discouraging data sharing. The DAT Bill provides a preferred pathway to share public sector data, ensuring it is accessible and sharing is safe, consistent and streamlined.

### Box 14: ONDC's public consultation process for the DAT Bill

The DAT Bill was designed on a foundation of co-design, consultation and engagement based on the ONDC's philosophy of 'listen, learn and adapt.' This is critical to building trust and putting the needs of Australians at the centre of the Government's data sharing reforms.

The ONDC has meaningfully considered stakeholder views at every stage of the legislative development process, conducting:

- 275 stakeholder submissions to the Bill's Issues Paper, Discussion Paper, and Exposure Draft
- 76 roundtables and two public webinars
- three Privacy Impact Assessments on the Bill.

The ONDC has also worked closely with the Australian Information Commissioner to ensure the scheme is informed by best practice data privacy and security practices; and the ABS to capture technical advice and expertise.

The ONDC has used their stakeholders' expertise and views to develop products and services such as the:

- DAT Bill
- Foundational Four guidance for government agencies
- Dataplace digital services platform.

This process has put the needs of Australians at the centre of the Australian Government's data sharing reforms and contributed to building trust.

The Government has considered the recommendations of a number of Parliamentary Committees that have reviewed the Bill subsequent to its introduction into the Australian Parliament in 2020.

The ONDC is responsible for the development and implementation of the DAT Bill. When enacted and implemented, the Bill will create a new scheme for sharing government data. The scheme will enable Australian Government agencies to safely, accountably and transparently share public sector data, where appropriate, with accredited users, and contains strong safeguards to manage the risks of increased public sector data sharing. Data custodians can choose to utilise the scheme to enable data sharing with accredited users.

The terms of sharing will be recorded in a data sharing agreement with the key terms of these agreements published in an online register accessible by the public. Data sharing agreements made using the DAT scheme will be consistent with the principles set out in the DAT Bill (see Box 15) and data will only be shared for one of three permitted purposes:

- improving government service delivery
- informing government policy and programs
- research and development.

The ONDC is designing a new digital services platform called Dataplace to support this regime.

#### Box 15: The DAT Bill

### The DAT Bill only allows sharing for permitted purposes



The Bill will establish an additional pathway to share government data. The new data sharing scheme will improve transparency and provide a best practice pathway to safely share government data.



Under the scheme, the National Data Commissioner will **accredit entities** who have the systems, skills and capabilities to safely manage data.



The Bill will reduce risk around sharing of government data by requiring the application of **a risk management framework** to ensure the data is used for the right purposes by the right people.



The National Data Commissioner will have the ability to **monitor the scheme and enforce compliance measures** to take action before and if things go wrong.

*Source: Office of the National Data Commissioner, 2021*

## 2. Trust and protection

Our intent is to explain how the Australian Government keeps data safe and secure. It is also our intent to use and manage data in appropriate ways – we want to earn and maintain your trust through our data initiatives.

### 2.1 Keeping data safe

As the amount of data created, accessed and shared by Australians increases, so does the need for data to be stored in trusted and secure ways. We must strike a balance between enabling broader access to data to leverage its benefits, whilst mitigating security and other risks.

The public holds the Government and trusted sectors such as banks and telecommunications companies to a high standard when it comes to keeping data secure, expecting their data to be managed with appropriate privacy, security and cyber controls.

Ensuring all data users, inside and outside Government, act in accordance with clear and appropriate security guidelines will help mitigate the cyber, and other, risks that could arise with broader access, use, re-use and sharing of data. It will also improve Australians' confidence that their data is used and shared securely by governments and businesses.

There are several elements to keeping data safe and secure. The Government is taking action to address identified gaps in its existing data security settings through initiatives such as the National Data Security Action Plan and the Hardening Government IT Initiative.

The Australian Government's data security position follows 3 core pillars: knowing **how well data is secured**, by whom, and secured to a level commensurate with the sensitivity of the data; knowing that **custodians are held accountable** through clear and concise guidance, policy and legislative mechanisms; and **knowing what data is being stored**, where it is being stored, and who has access and the ability to remove, transfer and destroy the data. The National Data Security Action Plan, agreed as part of the Digital Economy Strategy, will deliver a comprehensive, whole-of-economy approach to all aspects of the Government's data frameworks including data in transit, data in the cloud and data stored in third party data centres. The Government will consult through this process, prioritising engagement and adoption by industries, states and territories to ensure a true whole-of-nation approach to the security of government data.

The first priority of the Action Plan will be to ensure Australia's control of sensitive data holdings by ensuring robust security settings for Australian Government data, building on initiatives such as the Government's Hosting Strategy, and the Protecting Critical Infrastructure and Systems of National Significance reforms. Following the uplift of data security settings for government data, the Australian Government will consider measures for businesses and individuals that will further support the development of a security and prosperous digital economy.

The Government introduced the Critical Infrastructure Bill into Parliament to drive a security uplift across several sectors, including data storage and processing. Entities operating critical data storage or processing assets will be required to have a written risk management program that identifies material risks to their assets and, where possible, mitigate those risks. These reforms will capture assets used wholly or primarily to provide data storage or processing services on a commercial basis to critical infrastructure entities and Commonwealth, state or territory government agencies.

Significant investment has been made in safeguarding the security and privacy of government-held

data. Key parts of this investment include the Whole of Government Hosting Strategy and Hosting Certification Framework, the secure environment and associated infrastructure that provide hosting services for Australian Government agencies, and the Hardening Government IT Initiative's Cyber Hubs Pilot funded under the Government's Digital Economy Strategy.

We also have rules about how we release non-sensitive data such as open data, or engage in data sharing agreements either with state and territory governments or with the non-government sector such as researchers.

### 2.1.1 Cyber security

The Government has a role in improving the understanding of cyber threats both within and outside the public sector. In recognition of this we released the [Cyber Security Strategy 2020](#) in August 2020, a 10 year, \$1.67 billion investment to create a more secure online world for Australians, their businesses and essential services by:

- strengthening the Government's protections against sophisticated threats
- supporting businesses to strengthen the security of their products and services and protect their customers from known cyber vulnerabilities
- encouraging the community to practice secure online behaviours and make informed purchasing decisions.

As part of the Cyber Security Strategy, the Government is consulting on stronger cyber security regulations and incentives to make Australian businesses more resilient to cyber security threats. This work will complement ongoing critical infrastructure reforms by ensuring that all businesses in the digital economy are cyber-resilient. Stronger cyber security will also contribute to the Government's goal of being a leading digital economy by 2030.

The Hardening Government IT Initiative will implement consistent, whole-of-government cyber capabilities to strengthen our cyber security posture against evolving threats. The Cyber Hubs model, currently being piloted, is designed to reduce the threat surface available to malicious actors and to consolidate ICT services across agencies, ensuring baseline security standards. The model has the added benefit of driving efficiencies in the Government's cyber security investment.

The Australian Cyber Security Centre (ACSC) publishes comprehensive resources on its [website](#) to help individuals, businesses and other organisations protect their data and maintain effective cyber security.

### 2.1.2 Data hosting and storage

We are hosting your data securely. Migrating data to the cloud supports more agile and flexible work and business operations and means larger volumes of data can be stored and accessed more readily. It is critically important that data held in cloud repositories remains safe and secure.

The Whole of Government Hosting Strategy provides policy direction and guidance to the Australian Government hosting ecosystem, including facilities and other infrastructure.

The Australian Government is committed to ensuring the highest degree of privacy, security and resilience of such infrastructure to improve delivery of government services. The Hosting Strategy supports this commitment with the following principles:

- reducing ownership and supply chain risks

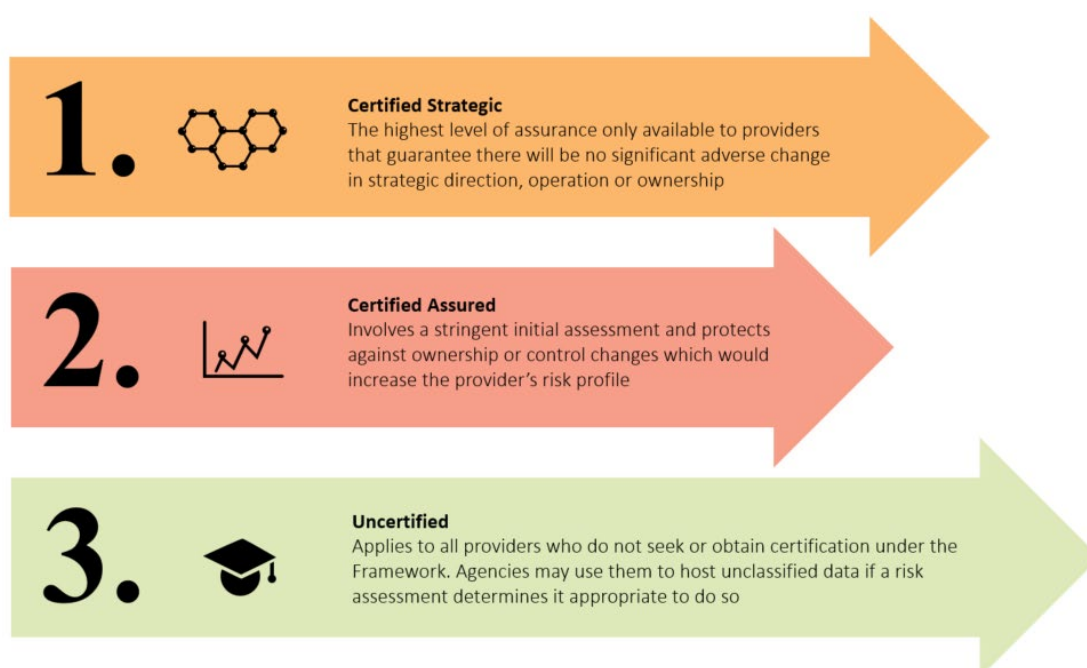
- ensuring government hosting services are more efficient and cost-effective
- providing certainty on the Australian Government hosting operating environment for industry and agencies.

### The Hosting Certification Framework

The Whole of Government Hosting Certification Framework (the Framework), released in March 2021, operationalises the Hosting Strategy and supports secure management of government-held data. The Framework complements the Government's existing security policies and takes the next step towards stronger government data safety.

The Framework requires data centres hosting high-value government data and systems to be certified by the Digital Transformation Agency (DTA) as the Commonwealth's Certifying Authority. In addition to obligations under the Protective Security Policy Framework (PSPF) and Information Security Manual, this provides greater assurance over data holdings by ensuring hosting services meet enhanced privacy and security controls. The Framework sets out a tiered certification process to make it clear which data centre providers Australian Government agencies can use to store their data depending on classification and sensitivity (see Figure 6 below).

**Figure 6: Hosting Certification Levels**



### The Protective Security Policy Framework (PSPF)

The PSPF sets out requirements for protective security to ensure the secure and continuous delivery of government business. It helps Australian Government entities protect their people, information and assets, both at home and overseas, across 4 areas:

- security governance
- information security
- personnel security
- physical security.

The PSPF is applied through a security risk management approach with a focus on fostering a positive culture of security across the government. The PSPF requires government departments and agencies to identify their information holdings, assess the sensitivity and security classification of those holdings and implement operational controls proportional to their value, importance and sensitivity. These measures are designed to ensure the confidentiality, integrity and availability of all official information.

## 2.2 Earning and maintaining public trust

The private sector is rapidly moving into digital and online services. This is supported by the Australian Government's Digital Economy Strategy, which sets a vision for all Australian Government services to be flexibly available, online where appropriate, and all new businesses to be 'born' digital by 2030. To continue realising the opportunities of digital and online services requires Australians to both enjoy their experience and trust that their data will be properly used and protected (Deloitte, 2021).

There are many drivers of public trust, including:

- a strong record of performance and delivery
- transparent and meaningful engagement with Australians on data collection, use and sharing
- robust and appropriate privacy and security systems and processes.

Nearly 60% of Australians surveyed experienced problems with how their personal information was used in the 12 months to 2020, including unwanted marketing communications, or information being collected unnecessarily (Office of the Australian Information Commissioner, 2020). The Australian Government is working hard to address these concerns. We are giving consumers greater control over their data through the CDR (see Box 4 above) and through the Privacy Act Review which seeks to ensure privacy settings empower consumers, protect their data and best serve the Australian economy. The Government has also introduced the DAT Bill which intends to streamline how public data is shared and enhance the protections on the sharing and use of data held by the Australian Government.

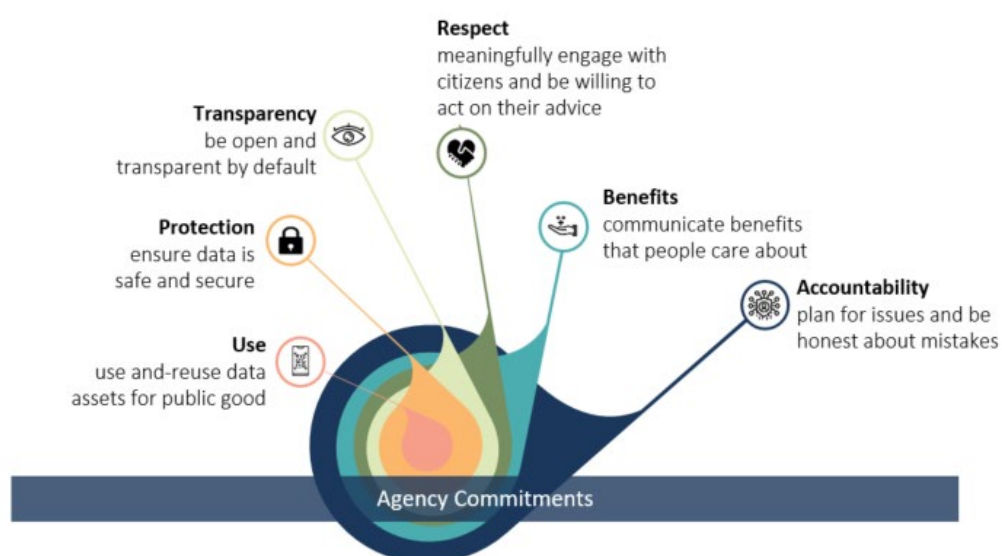
As digital technologies and data systems rapidly evolve, we will continue to use fit-for-purpose privacy practices, use data with integrity, and keep data protected to meet community expectations. The Government is leading by example by committing its agencies to principles to support trust in government data use (see Box 16). Agencies can be guided on good information management to better support, protect and serve the community through the Building Trust in the Public Record policy. Developed by National Archives of Australia (NAA), the policy identifies key requirements and outlines actions for the Australian Government to improve its management of records, information and data.



### Box 16: Trust in Government Use of Data

#### Agency Commitments

In 2019, Secretaries from all Australian Government departments committed to the following principles, to guide management and use of data.



Source: *Trust in Government Use of Data Framework, 2019*

## 2.2.1 Using data with integrity

### Transparent use of data

The Government is committed to being more transparent about how we use Australians' data, including as we develop more personalised service delivery. Many Australians expect governments to tailor services to some degree, and recent studies indicate privacy is the leading consideration when choosing an app or program to download, ahead of quality, convenience, and price (Office of the Australian Information Commissioner, 2020). Being transparent about how data is collected and used helps Australians better understand what we intend to do with their data and why. Both public and private sector organisations must be transparent about how they collect and handle personal information. Half of all Australians feel that most of the organisations they deal with, public and private, are transparent about the way they use their personal information (Office of the Australian Information Commissioner, 2020).

**Box 17: The ABS is transparent about its use of administrative data**

The ABS is using administrative data to improve and expand the statistics it provides to the Australian community, and to make surveys, including the 2021 Census, more efficient and easier to complete. The ABS is open and transparent about what this work involves, the benefits as guided by research, and the protections in place to safeguard privacy.

Benefits of using administrative data for Census include improving the information base for people in less accessible places, ensuring they are counted, and identifying areas that may need additional support to complete the Census and providing support such as employing staff from culturally diverse backgrounds.

The ABS has strengthened its message around the value and benefits of using administrative data by making research articles readily available, along with the Privacy Impact Assessments conducted for use of administrative data.

The implementation of the DAT Bill is another measure ensuring there is transparency about the sharing of Australian Government data. The operation of the DAT Bill, if passed, will give Australians greater visibility of data flows. The National Data Commissioner will publish information about what is being shared and why, who is accessing the data, and how it is being safely shared under data sharing agreements in publically available registers.

**Data ethics**

The Australian Government works to embed integrity and ethical considerations in its operations. We articulate these values in the APS code of conduct, embed them in our workforce culture, and ensure continued application of ethical practices by monitoring and identifying ways to govern new technologies, such as machine learning and artificial intelligence. The Government will ensure that ethical practices are ingrained in decision-making in the use of data analytics and these new tools, and expect the same consideration by those who develop and apply these technologies outside government.

Some Australian Government agencies have already developed data ethics frameworks to govern their data collection, use and sharing activities (see Box 18). The Government will make this practice more widespread over the next 4 years.

The National Statement on Ethical Conduct in Human Research (the National Statement) was refreshed in 2018 in a joint initiative between the National Health and Medical Research Council (NHMRC), the Australian Research Council (ARC) and Universities Australia (UA) to promote ethical human research. The National Statement informs the design, ethical review and conduct of human research associated with its founding organisations, and sets a standard for any individual, institution or organisation conducting human research.

**Box 18: Case study – ATO application of data ethics**

The ATO applies a data ethics framework to encourage consideration of ethical issues throughout the data lifecycle.

The ATO uses threshold assessments to identify risks. Where identified data trust and ethics related risks are above the threshold, the ATO uses a full impact assessment to guide decision making and identify ways to reduce the risks. This may include escalation to a Business Data Steward, Chief Data Ethics Risk Owner or the Data Ethics Review panel for guidance.

This framework is future-focused to utilise emerging technologies such as AI. The ATO requires all data science modelling to consider and complete a data ethics assessment before AI models can be put into production. This process comprises both automation and manual human oversight to ensure ATO data ethics principles are met.

For example, Jane is a data analyst at the ATO. She follows policy practice to apply six best practice data ethics principles when collecting, using, storing, accessing and sharing data, by considering if the following are being adhered to:

- act in the public interest, be mindful of the individual
- uphold privacy, security and legality
- explain clearly and be transparent
- engage in purposeful data activities
- exercise human supervision
- maintain data stewardship.

In doing so, Jane makes sure the ATO handles Australians' data ethically. This ensures transparent Government decision-making and helps build and maintain community trust and confidence in how the ATO manages data.

**Data ethics and artificial intelligence**

Data is an essential ingredient for AI technologies, which have everyday impacts on all Australians. We are committed to ensuring AI is used responsibly and inclusively. However, lack of trust continues to be a significant barrier to adopting and applying AI more widely.

The Australian Government released the Australian AI Ethics Principles in 2019 to guide businesses and governments developing and implementing AI in Australia (see Box 19). These principles support businesses, consumers, and the broader public to have the confidence to participate actively in the digital economy.

**Box 19: Australia's AI Ethics Framework outlines principles to ensure AI is safe, secure, and reliable**

1. **Human, societal and environmental wellbeing:** AI systems should benefit individuals, society and the environment
2. **Human-centred values:** AI systems should respect human rights, diversity, and the autonomy of individuals
3. **Fairness:** AI systems should be inclusive and accessible, and should not involve or result in unfair discrimination against individuals, communities or groups
4. **Privacy protection and security:** AI systems should respect and uphold privacy rights and data protection, and ensure the security of data
5. **Reliability and safety:** AI systems should reliably operate in accordance with their intended purpose
6. **Transparency and explainability:** there should be transparency and responsible disclosure so people can understand when they are being significantly impacted by AI, and can find out when an AI system is engaging with them
7. **Contestability:** when an AI system significantly impacts a person, community, group or environment, there should be a timely process to allow people to challenge the use or outcomes of the AI system
8. **Accountability:** people responsible for the different phases of the AI system lifecycle should be identifiable and accountable for the outcomes of the AI systems, and human oversight of AI systems should be enabled.

The principles also encourage businesses to ensure their AI systems are inclusive and accessible, in addition to being designed and deployed to minimise bias and discriminatory impacts. Having reliable and representative datasets and AI systems that are resilient to cyber security attacks will be critical to enhancing public trust and confidence in AI being used in Australia.

The Australian Government tested the AI Ethics Principles in a pilot project with some of Australia's biggest businesses (see Box 20), and will continue to drive their adoption through its AI Action Plan.

**Box 20: Australian AI Ethics Principles pilot**

Businesses chose how they approached the pilot but with the same end goals to:

- identify challenges to implementing the principles
- identify solutions and processes on how they applied the principles (without disclosing any intellectual property or confidential information)
- provide feedback to the Government on areas in need of greater guidance
- share learnings and tips from their experiences with each other and other businesses through case studies.

The pilot found the Australian AI Ethics Principles are relevant to organisations of all sizes and sectors involved in AI (private, public, large or small). Additionally, everyone can benefit from greater education on the value of applying the principles whenever they design, develop and implement AI systems. Businesses participating in the pilot expected the Government to lead by example and implement the principles.

*Source: Testing the AI Ethics Principles | Department of Industry, Science, Energy and Resources*

Australia's AI Ethics Principles achieve safer, more reliable and fairer outcomes for all Australians, reduce the risk of negative impacts on those affected by AI applications, and help businesses and governments to practice the highest ethical standards when designing, developing and implementing AI. In coming years, if these principles are found to be fit-for-purpose, we will identify natural next steps for broadening them beyond AI.

## 2.2.2 Protecting privacy

The *Privacy Act 1988* (Privacy Act) is a key legislative protection of individuals' personal information in Australia. The Privacy Act applies to government agencies and certain private sector organisations and is complemented by a national framework of state, territory and sector specific legislation, regulations and other tailored measures that govern how government and business use and manage their data holdings.

The Privacy Act promotes and protects individuals' privacy in Australia. It sets the baseline standards we must meet in how we manage your data, regulating how most Australian Government agencies and certain private sector organisations collect, use, disclose and store Australians' personal information, including sensitive information such as health and medical information.

The Australian Privacy Principles (APPs), a key element forming the Privacy Act's framework, translate the requirements to the real world, giving organisations and agencies flexibility to tailor their personal information handling practices to their business models and the diverse needs of individuals (see Figure 7). In particular, entities must take reasonable steps to protect the personal information they hold from misuse, interference and loss as well as from unauthorised access, modification or disclosure.

Australian Government agencies that are subject to the Privacy Act are required to have a Privacy Officer and a Privacy Champion, as required under the Privacy (Australian Government Agencies – Governance) APP Code (Privacy Code). The Privacy Officer is the first point of contact for privacy matters within an agency, and is responsible for ensuring day-to-day operational privacy activities are undertaken. A Privacy Champion is a senior official within an agency who is responsible for leadership activities and engagement that require broader strategic oversight. Their responsibilities include:

- promoting a culture of privacy within the agency that values and protects personal information
- providing leadership on broader strategic privacy issues
- approving the agency's privacy management plans and associated documents
- providing regular reports to the agency's executive, including about any privacy issues that might arise.

The *Australian Information Commissioner Act 2010* establishes the Office of the Australian Information Commissioner (OAIC) as an independent privacy regulator. The OAIC regularly monitors agency compliance to ensure Australians' strong privacy expectations are met.

Australians value their privacy; more than 85% want more control and choice over the collection and use of their personal information (OAIC, 2020).

**Figure 7: Australian Privacy Principles**

APP 1	APP 2	APP 3	APP 4	APP 5	APP 6	APP 7
Open and transparent management of personal information	Anonymity and pseudonymity	Collection of solicited personal information	Dealing with unsolicited personal information	Notification of the collection of personal information	Use or disclosure of personal information	Direct marketing
APP 8	APP 9	APP 10	APP 11	APP 12	APP 13	More info
Cross-border disclosure of personal information	Adoption, use or disclosure of government related identifiers	Quality of personal information	Security of personal information	Access to personal information	Correction of personal information	Further detail on APPs can be found at: <a href="http://www.oaic.gov.au/privacy/australian-privacy-principles/">www.oaic.gov.au/privacy/australian-privacy-principles/</a>

**Box 21: Your privacy rights to access and correct your personal information**

Australian businesses and other private organisations (entities) hold personal information for a wide variety of reasons. Under APP 12, individuals may request access to personal information that is held about them by an entity covered by the Privacy Act. Under APP 13, individuals can also correct personal information about them that is held by entities for a number of reasons, including where information is out of date, inaccurate or misleading.

Entities have obligations to allow access or corrections to an individual's personal information unless there is a specific exemption in place.

Requesting personal information can be done by contacting the entity that holds the information. The Office of the Australian Information Commissioner's (OAIC) guides to [Access your personal information](#) and [Correct your personal information](#) outline how to go about these processes, the associated costs and when an organisation can refuse the request.

The Government is currently progressing reforms to strengthen privacy protections online with the proposed introduction of a new binding code for certain online platforms, such as social media entities. These reforms will also increase penalties for all entities regulated under the Privacy Act and enhance the OAIC's enforcement measures.

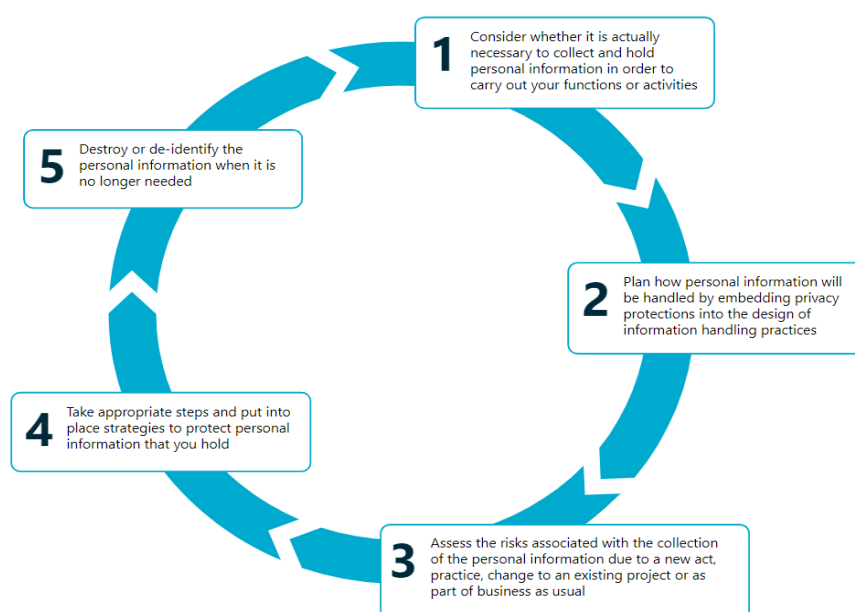
The Government is also conducting a broader review of the Privacy Act to consider whether its scope and enforcement mechanisms are fit-for-purpose and to ensure that its privacy settings better empower consumers, protect their data and support the digital economy.

## The Privacy Code

Australian Government agencies are subject to the Privacy Code, which sets out requirements for Australian Government agencies to enhance their privacy practices. An example of a requirement for agencies under the Privacy Code is undertaking Privacy Impact Assessments for all 'high privacy risk' projects that involve new or changed ways of handling personal information.

The Government has embedded strong privacy practices at every stage of the information lifecycle (see Figure 8), such as privacy by design, which considers privacy in the design of technologies, business practices, new systems, processes, and physical infrastructures.

**Figure 8: Information lifecycle**



(Source: [OAIC](#), 2018)

## Managing Data Breaches

Even with the most robust frameworks and systems in place, data breaches can still occur. Where a data breach occurs in spite of the measures we take to prioritise its protection (see Section 2.1), we take responsibility, take immediate action to reduce the consequence of the breach, and identify ways to reduce the risk of similar breaches occurring in future.

The Notifiable Data Breach (NDB) scheme requires entities covered by the Privacy Act (government and non-government) to notify affected individuals and the Australian Information Commissioner of certain data breaches involving personal information.

The primary purpose of the NDB scheme is to ensure individuals are notified if their personal information is involved in an eligible data breach that is likely to result in serious harm, in order to enable them to take action to protect themselves from harm. The NDB scheme also encourages secure and safe information-handling practices and enhances entities' accountability for privacy protection.

The OAIC regularly publishes notifiable data breach statistics to help organisations, agencies and the public understand how the scheme works and what breaches are occurring in what sectors.

The DAT Bill extends the concepts of the NDB to non-personal information. If passed, it will introduce a

new statutory framework to manage breaches of data where that data has been shared under the data sharing scheme. Data breach responsibilities under the data sharing scheme will require entities to take reasonable steps to prevent or reduce any harm resulting from a data breach. Where a data breach under the data sharing scheme relates to personal information, the breach will be managed under the NDB scheme and regulated by the OAIC. Other non-personal information data breaches will be notified to the Data Commissioner.



## 3. Enabling data use

Our intent is to enable greater use of data by investing in data infrastructure, management, skills and capability. We also intend to engage on data issues on the global stage to support our interests.

### 3.1 Enabling better use of data within and outside government

There are a number of key enablers to improving our use of data. These include:

- modern data standards
- policy and legislative frameworks that facilitate the safe transfer of data such as the Public Data Policy Statement, the CDR, the Privacy Act and the DAT Bill
- robust data management practices in the private and public sectors
- data integration practices
- data capabilities.

Many of these can be delivered through a partnership between governments and the private sector. For example, towards 2025, we will focus on areas such as improving consistency in data standards and classifications so that people and organisations can speak the same language when dealing with data. Having consistent data standards will be an important part of the implementation of individual measures, including the National Freight Data Hub (see Box 22).

#### Box 22: National Freight Data Hub

Every Australian, everywhere, every day relies on freight. The freight task is growing – we need high quality, easily accessible data to ensure the freight sector is as efficient, safe, productive and resilient as possible. Improving national freight data and establishing a National Freight Data Hub (the Hub) is a high priority for industry and the National Freight and Supply Chain Strategy.

The Australian Government is investing \$16.5 million over the 4 years to 2024-25 to establish the Hub. This will build on and improve the [Hub prototype website](#), launched in May 2021, and the underlying data, across all freight modes and more supply chains. The prototype is an early demonstration of the value of improved freight-related data, and helps to build momentum. It has been designed to be incrementally innovative, providing a practical and technologically advanced solution for insights into Australia's freight system.

The prototype website showcases how data can be used to answer important questions such as what is being moved, when and where. It features cutting-edge visualisations for congestion, truck counts and rest area usage across Australia to enable industry and governments to gain a national picture of truck movements. The truck movement data is an example of harnessing both government-collected and privately-provided data. All private data is aggregated and de-identified prior to publication and use. Data is available in the first publicly-searchable, dedicated freight data catalogue for Australia.

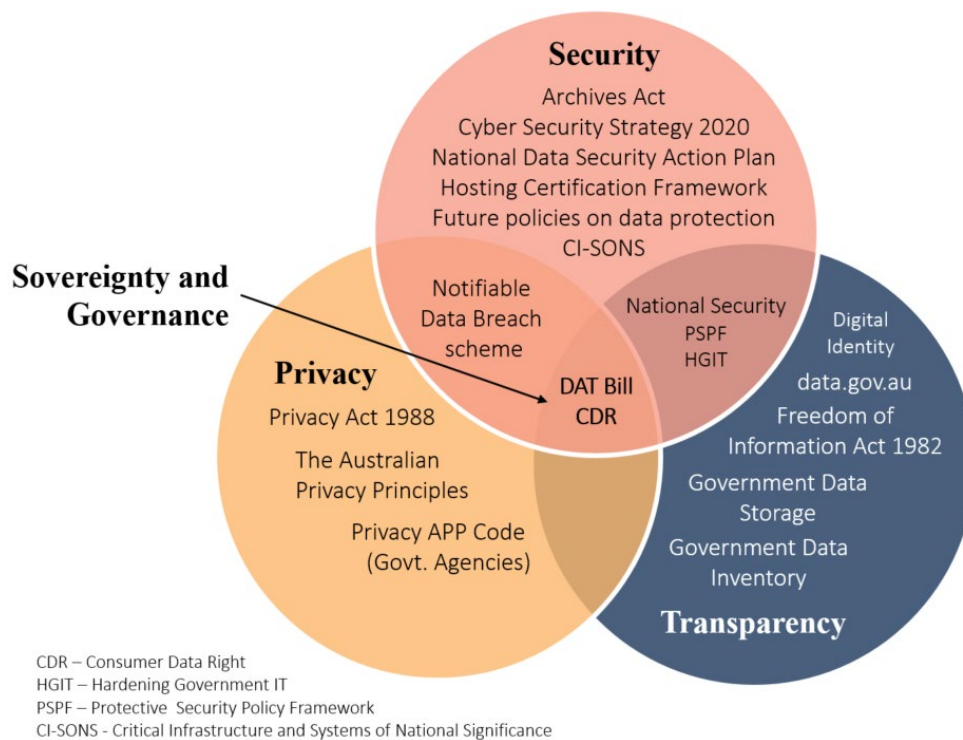
Feedback from the prototype is informing the Hub's next stage, including:

- updating and expanding the website to connect freight data users with each other
- establishing a safe data sharing system
- building the skills, capability and connections to foster innovation.

## 3.2 Sound data management

Data management is the practice of collecting, keeping and using data securely, efficiently and cost-effectively and involves a broad range of tasks, policies, procedures and practices. In Government, it also involves legislation and regulations. These mechanisms set the scope of acceptable actions and impose obligations on the practices and culture exhibited in the management of data at both the organisational and individual level. Good data management is vital to ensuring we can maintain public trust and maximise the value of data in a safe and secure way.

**Figure 9: Examples of data legislation and regulations**



The end goal of data management is to support decision-making to enable entities to meet their strategy goals and objectives. There are different frameworks to assist organisations thinking about data management functions, as well as data, including the Data Management Association's Data Management Body of Knowledge (DMBOK). DMBOK helps entities to plan and execute policies, practices and projects that acquire, control, protect, deliver and enhance the value of data and information assets, and provides a framework for both information and data management; and is used by a range of agencies within the Commonwealth.

Australian Government agencies take the management of data seriously. We manage data assets in the same way we manage other assets that we are responsible for.

### 3.2.1 Data management within the community

Australian organisations of all shapes and sizes must be mindful of how they manage the data they hold. Retail and hospitality businesses with an annual turnover of \$3 million or more, for example, must comply with the Privacy Act for customer data they hold in order to delivery loyalty programs.

Commonwealth and state laws and regulations have not always kept pace with the way Australians engage with digital communications or participate in an increasingly data-enabled economy. They can also add unnecessary red tape – something that we are working to reduce, including through identifying and harmonising areas where there are potential duplications, overlap or inefficiencies.

The Australian Government is tackling this by taking a new whole-of-government approach to regulatory policy. A key focus of our Deregulation Agenda is to reduce barriers affecting productivity growth and competitiveness. The Agenda will also ensure regulations are well-designed, fit-for-purpose and support businesses to grow and create jobs.

To reduce costs and better reflect the way Australians and businesses want to engage with and access data, the Australian Government is working together with:

- the **business** community and **consumers** to identify and address these issues
- **regulators** to lift regulator performance, capability and culture
- **state and territory governments** to explore complementary reforms.

We are also examining how to make our legislation technology neutral.

#### Box 23: Harnessing regulatory technology

Work is underway across all levels of government on opportunities and challenges presented by regulatory technology (RegTech). RegTech is the use of technology that enables regulated entities to meet their regulatory obligations, often relying on new or existing datasets. The application of RegTech can assist business and governments to achieve regulatory objectives while reducing administration and compliance costs. This work will:

- identify and develop case studies and principles for policy makers and regulators to support adoption of RegTech solutions
- identify risks and blockages to the implementation of RegTech
- identify opportunities to collaborate on RegTech solutions to advance regulatory reforms.

As the Productivity Commission notes, adoption of RegTech solutions is no substitute for improvement or removal of poor regulatory frameworks (Productivity Commission, 2020). Accordingly, improving regulatory frameworks and RegTech opportunities are a focus for governments.

### 3.2.2 Data management within Government

Government data is valuable and must be collected and managed effectively to realise its value safely and securely. Australian Government agencies are subject to additional requirements in how they create and manage their data holdings.

#### **Data quality and standards**

The way that data is collected and managed impacts its usefulness. Datasets that are more complete, of higher quality and come with useful supporting information (e.g. metadata) offer greater opportunities for analysis and improved accuracy in how the data is interpreted. Data also needs to be fit-for-purpose. Systems designed to collect, collate and synthesise data can be improved to streamline data supply and improve comparability and timeliness. The 360-degree cycle of understanding data and its usefulness ensures we are maximising value through iteration and adaption. The more consistency across organisations everywhere, the better we can maximise the benefits of existing data holdings for all Australians.

The Government is investigating ways to improve consistency in its own data holdings. It has undertaken investigative work into cross-agency collaboration in metadata management, and is aiming to develop data asset inventories to increase transparency and consistency.

Some agencies already maintain inventories of the datasets they hold. However there is room to expand this practice. The Government will begin by developing a data inventories pilot program for 20% of Australian Government agencies and, once complete, will list the inventories in a catalogue of government-held data assets. The program intends to make it easier to find and discover Australian Government data to support more opportunities for re-use and sharing, and help unlock the value of that data. Depending on the result of the pilot, it may then be effective to roll out data inventories across all agencies following the initial 20%. The Office of the National Data Commissioner is leading this work.

The Government recognises the need for robust and effective industry standards, with national consensus around the adoption of standards. As we develop consistent standards for Government we will share these for the benefit of other sectors to adopt at their discretion. If Government considers adopting standards that have impacts on other sectors, we will undertake consultation with the relevant industries and sectors to determine the impacts and understand their needs.

Our vision is to increase data maturity across all levels of government and the private and research sectors by uplifting organisational data maturity, and data quality and standards.

#### **Clear accountabilities**

In the same way that clear accountability promotes better management of financial or physical assets, good data management requires the right accountabilities. More Australian Government agencies are appointing Chief Data Officers (CDOs) responsible for the effective and efficient use and management of their agency's data holdings and data-related activities.

The Government is also developing accountabilities around the rest of the data lifecycle. For example, the NAA has developed standards for agencies around obtaining and retaining data, and the Records Authority is a legal instrument that sets mandatory standards for the retention of data.

### 3.2.3 Data maturity

Data maturity describes the level of capability that an organisation has in the way it manages, governs and uses the data that it holds. Uneven maturity across the data landscape, both within and outside government, can limit the ability to connect and share the right datasets and reduce the usefulness of shared datasets where necessary analytical skills and metadata consistency are missing. That is why we are committed to building data maturity in Australia.

Part of this means improving the supporting information around datasets. Metadata allows users to understand the context of data they are using. It describes information such as the purpose, collection and processing methods of the data. Metadata consistency makes it easier to interpret or compare datasets, and reduces reliance on specialised processing to use data. Improving metadata consistency, including through standards, classifications and inventories, is an important step in increasing the usefulness of shared datasets.

Another important part of improving Australia's data maturity is ensuring our data is of high quality. Studies indicate that some data users, including researchers and businesses, can spend up to 80% of their time sourcing and cleaning data with only the remaining 20% spent on analytics, insights generation activity and more advanced applications, including AI. Small increases in Australia's data maturity would improve the ability to find and use data, which in turn reduces its costs and generates even more efficiencies.

High quality data relies on a number of steps, from identification and curation, to cleaning and standardisation. It is also an important part of unlocking the opportunities that data can generate.

An organisation's data maturity can vary from a basic level, where data systems are limited and use is ad hoc, to data-driven organisations where data is central to business decisions and used efficiently in a productive data culture. Good data maturity enables organisations to undertake predictive analyses, resulting in proactive, evidence-based decisions. It positions organisations to maximise the value of data through effective use and innovative re-use, the benefits of which will only be realised if data maturity is uplifted across the whole economy.

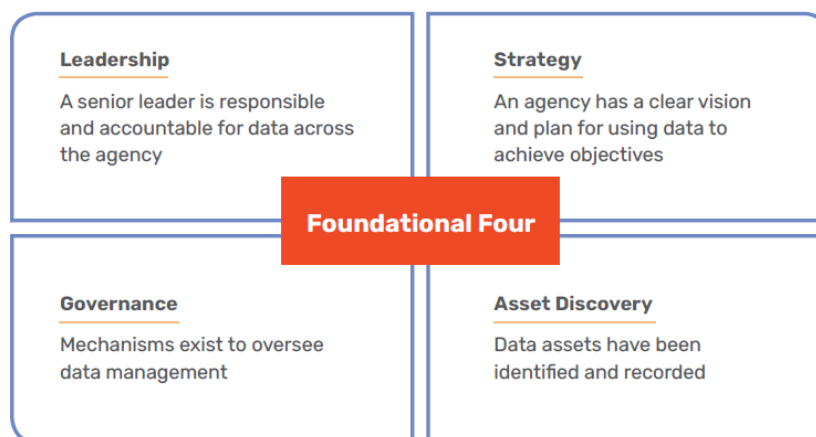
The Australian Government recognises that many private sector organisations already have high levels of data maturity. Government is responsible for good management of the data it holds, and where entities in the broader economy have low data maturity and are seeking to improve this, the Government also has a responsibility to share its own learnings for the benefit of others.

#### **Organisational data maturity**

The [Foundational Four](#) (see Figure 10) released by the ONDC is a guide for government agencies and their CDOs on how they can start improving their data practices and address the technical and cultural challenges that can limit their ability to get the most out of their data. The Australian Government expects that all agencies consider the 4 data practices as a starting point for organisational maturity in the data space.

Most leading APS data agencies already have an organisational data strategy in place. By 2025 all Australian Government departments will be required to have a data strategy that aligns with the Australian Data Strategy. The Government will work to improve how we assess data maturity in the APS to support agencies as they develop their data strategies. Non-government entities are encouraged to engage with this Strategy when developing their own. .

**Figure 10: The 'Foundational Four'**



(Source: [ONDC, 2020](#))

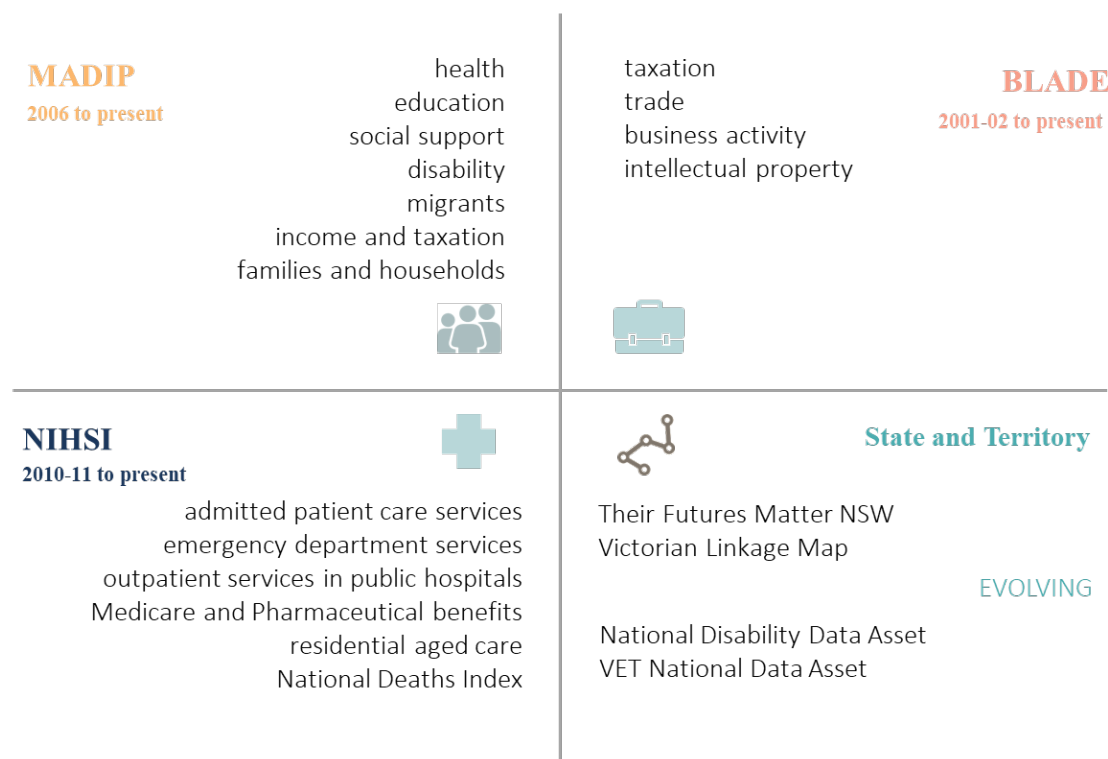
### 3.3 Data integration

Integrating government data is critical to inform policy development, and to develop programs and deliver services. However, datasets held by different departments risk becoming information silos where they remain separate and distinct. Data custodians and users from all fields are increasingly recognising the significant potential of combining information from different sources into integrated datasets to gain valuable new insights into our society, economy and environment that are not possible from single data sources.

#### 3.3.1 Integrated data assets deliver more effective outcomes

Data integration brings together multiple datasets about people, places, or events to support research, policy analysis and service delivery. Data accessed by researchers is de-identified and accessed in safe, secure environments.

The Government is already creating integrated data assets to maximise the value of data by re-using and re-purposing existing data holdings (see Figure 11). Bringing data together in this way increases its analytical value, and the benefit that data can bring to Australians through better and more targeted policies and service delivery (see Box 24).

**Figure 11: Examples of integrated data assets**

The Data Integration Partnership for Australia (DIPA) ran for 3 years from 2017 with the aim to improve data assets and support data analytics in areas from health and education to business productivity. The DIPA investment represented a major step in the Government's efforts to elevate data integration by prioritising important policy research, and improvements to data integration infrastructure, particularly the Multi-Agency Data Integration Project (MADIP) – a people-based data asset – and Business Longitudinal Analysis Data Environment (BLADE) – a business-based data asset. Both BLADE and MADIP will continue to be supported by the Government. DIPA also funded linkage of new datasets to MADIP, BLADE and other integrated assets which added to a wealth of information that continues to be re-used for new analysis.

The lessons learned from analytical projects and enhancement of foundational systems under DIPA demonstrate the value of a coordinated government approach to uplifting data integration capability, and driving priority research. DIPA generated valuable analysis from integrated data. For example, one project identified the factors that have caused heatwave deaths in Australia and helped governments and communities prevent them in future. Another explored the education outcomes of Australians over time for different education pathways, to help students and educators make more informed choices.

The foundations set by DIPA are now allowing us to make further advances in data integration.

## **Box 24: Integrating data can make a real difference for Australians and businesses**

### **Labour market insights supporting economic recovery**

As the economy recovers from COVID-19 shocks, it is crucial to understand labour market developments. Last year, the government used integrated data about jobs, income and support payments to understand the impact of the pandemic on Australian businesses and the economy. The integrated data is being used for timely labour market monitoring by approved researchers in close to real-time to see how the labour market is tracking relative to what is expected. Australian, state and territory governments are using these data insights to support economic recovery, informing forecasting, service delivery, policy development and more.

More than just understanding the economic impact of the pandemic, integrated data allowed us to understand the impact on the lives of Australians. The data is being used to examine the impact of COVID-19 on the mental health of Australians, and to answer questions about disadvantage caused by job loss and whether government payments were appropriately targeted to assist the most vulnerable in our communities.

### **Immunisation records support analysis for the COVID-19 Vaccination Rollout**

Australia's COVID-19 vaccination rollout is a national priority that aims to ensure all Australians who want to be vaccinated, can be. Enhanced, de-identified information from the integration of Australian Immunisation Register (AIR) data with MADIP will support more detailed analysis to inform the progress of the rollout.

The integrated data will enable additional insights without people having to provide their information again, including identification of priority cohorts such as people with disability or chronic health conditions. The integrated dataset enables deeper analysis of vaccination trends by different groups, such as young adults or those from culturally and linguistically diverse backgrounds. Early insights have identified languages and geographic areas that could be used for more focused communications to support vaccine uptake.

The use of existing data is carefully managed to protect people's privacy while supporting important policy and real-life outcomes. The integrated MADIP and AIR data, and the associated work to connect MADIP to BLADE and other integrated data assets, continues to support more comprehensive social and economic analyses for the immediate COVID-19 response, as well as longer term research requirements.



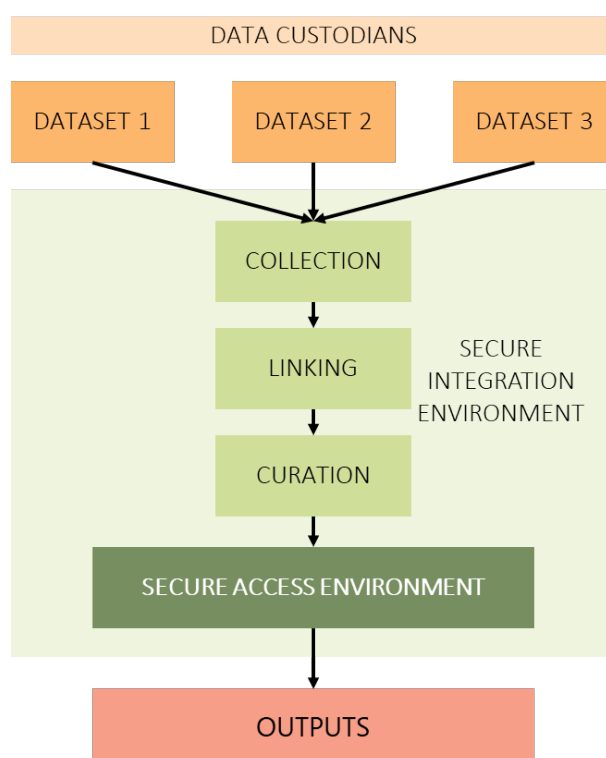
### 3.3.2 Safety and security of integrated data environments

Integrated data is managed in accordance with privacy legislation and privacy-by-design (see Section 3.2), and best practice guidance such as the Data Sharing Principles (see Section 1.4). Integrated data accessed by researchers does not identify individuals. The Government adopts significant protections to support safe data handling, and we are committed to keeping data safe throughout the integration process, being transparent about data integration activities and engaging with the community about new data use and handling.


The roles of parties involved in data integration are crucial to ensuring good data handling and the safe flow of information throughout the end-to-end process.

Agencies that conduct data integration, Accredited Integrating Authorities (AIAs), are accredited to conduct high risk data integration involving Commonwealth data for statistical and research purposes. AIAs, (or Accredited Data Service Providers (ADSPs) under the proposed DAT Bill), are subject to additional policies and practices that work together to strengthen the safety of data about Australians and businesses, while meeting legislative requirements. AIAs such as the ABS, the Australian Institute of Health and Welfare (AIHW) and the Australian Institute of Family Studies (AIFS), receive datasets from data custodians, containing information that has been collected from data providers, such as individuals or businesses. The AIA will then bring datasets together in a safe and secure manner, and curate the information into useful packages. Users, such as researchers or policy makers, can then access the right kind of integrated data to suit their data needs and analytical capability (see Figure 12 below).

**Figure 12: Data flow for integration**



All states and territories have active data integration programs, with data linkage units in Victoria (CVDL), South Australia and the Northern Territory (SA NT DataLink), Queensland (QGSO and DLQ),



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Western Australia (WADLS), New South Wales and Australian Capital Territory (CHeReL) and Tasmania (TDLU). State-based data linkage units create opportunities for researchers and policy-makers by broadening the evidence base at the state and territory level, primarily for health, education and social policy.

State- and territory-based data linkage units, as well as AIHW at the national level, connect through the Population Health Research Network (PHRN), a national collaboration conducting health data integration and related research, and supporting secure data access environments.

The IGA will be pivotal to further uplifting national collaboration, in part by fostering consensus on national priority research areas, helping to leverage comparative advantages in data integration and breaking down barriers to sharing data.

#### **Box 25: NSW Human Services Dataset**

In 2018, the NSW Department of Communities and Justice delivered the first comprehensive human services cross-agency dataset in NSW, a major milestone in NSW data integration work. The Human Services Dataset (the Dataset) was designed to help government agencies understand and predict future demand for services, make evidence-based investment decisions, and develop coordinated cross-agency interventions that improve outcomes for vulnerable children and families.

The Dataset brought together 27 years of data, over 7 million records, from over 60 frontline datasets in 11 government agencies. It has since been updated several times and linked with Commonwealth data in MADIP.

Under the Their Futures Matter initiative, information from the Dataset revealed many powerful insights never before quantified in NSW, including:

- the finding that welfare is the largest component of future support cost (56%), followed by health services (25%) and justice costs (8%)
- forecasting for services use costs for the study population (under 25 years) up to age 40
- risk factors can be used to project social outcomes and future support costs.

These findings have provided an evidence base to compare and contrast the experiences of different cohorts, to better understand what works and ultimately to support the development of better government services to help vulnerable children and families in NSW.

To learn more, see the full [NSW Human Services Dataset case study](#).

#### **Secure access environments**

Secure access environments support access to detailed data for accredited users while upholding confidentiality. The ABS DataLab is one example of a government-run secure access environment, and similar examples have been set up by non-government organisations such as the Sax Institute.

These secure access environments are increasingly being used to broaden access to detailed data in a safe and secure way.

**Box 26: DataLab**

Researchers often vary their approach to data analysis depending on the context of their project, resource constraints and data quality. Accessing an analysis system that allows them to apply the best statistical tools and techniques in a timely and cost-efficient manner is integral to maximising the value of their research. Increasingly, the growth in the size of contemporary datasets and the computational requirement for modern data science techniques means that a researcher's own analysis systems are not sophisticated enough to interact safely with key datasets held by the Commonwealth.

The ABS DataLab is a secure, safe data sharing environment that uses Australian-based cloud infrastructure to provide a scalable solution for researchers to select the combination of processing power, memory and storage to suit their needs, using a range of contemporary statistical packages and tools. The ABS DataLab has enabled government and academic researchers to overcome previous system limitations and analyse contemporary government datasets in a cost-efficient manner.

The ABS DataLab was designed to support safe data sharing using the model enshrined by the Data Sharing Principles (see Section 1.4 above). Controls under the Principles are regularly adapted to account for individual data custodian requirements, the heightened sensitivity of certain types of business and person data, and the objectives of the research project. The proven security of the ABS DataLab, plus an adaptive suite of data protection controls, enabled this infrastructure to be used to support whole-of-government data sharing and analysis. Currently, the ABS is engaging with other APS agencies to use the ABS DataLab to support their data sharing objectives, including those envisioned through the DAT scheme.

Statistical organisations have well-established integration programs for survey and administrative data and are increasingly developing large-scale integrated data assets. For example, New Zealand built an Integrated Data Infrastructure (IDI) to hold data from across government. Through support for project and analytical priorities the IDI was increasingly expanded and engaged with by users. Stats NZ's IDI is now a mature, widely-used system supporting New Zealand's data needs.

### 3.4 Australia's data capabilities

Investment in data and analytics capabilities will not only lay the right foundations for future job creation and security, it has important implications for public trust in data use. A strong culture of effective data management and capability in organisations that hold and interact with data means personal information is safer and organisations are more trusted.

We are investing in education and training pathways to give Australians access to the data-enabled careers of the future, and ensure our businesses have access to a modern workforce with the skills and capabilities for a modern, data-driven economy. These skills will assist adoption of powerful tools including in AI, such as machine learning and natural language processing, which will be important to the government, businesses and consumers. AI presents incredible opportunities to grow our economy, stimulate businesses, and by doing so, can also improve our day-to-day lives. However, the Australian workforce needs the right skills and capabilities, and the right frameworks must be in place to ensure its development and applications remain ethical and secure.

We are not the only source of this type of investment in the Australian workforce. For example, the Grow with Google initiative, launched in March 2019, provides free skills training online to Australians, including students, jobseekers, small businesses and start-ups.

In building a workforce equipped to engage with data, we can improve the chances someone will identify and develop a new or improved product, service or way of working.

### 3.4.1 Building data capabilities in the Australian economy

Investment in data capability across the Australian economy will support non-government entities to leverage the full value from their data holdings. Both the public and non-government sectors have recognised that data skills are high on the list of requirements for our current and future workforce in transport and mobility. Some skill areas, such as cyber security and AI, are particularly hard to find in Australia.

Digital technologies such as AI, machine learning and predictive analysis will be underpinned by data. Leveraging the significant economic opportunities that these technologies present relies on businesses' ability to make effective use of data.

As part of the Digital Economy Strategy, the Government is investing \$101.8 million across a range of programs to uplift Australia's digital and related capability. This builds on other existing programs aimed at improving skills in the Australian workforce and investing for the jobs of the future. Figure 13 provides a sample of current Government investments that will assist in uplifting data capability.

**Figure 13: Sample of Government investments to uplift Australia's data related capability**

Digital Economy Strategy measures	Cyber Security Skills Partnership Innovation Fund	\$43.8 million to fund additional innovative projects to improve the quality and quantity of cyber security professionals in Australia.
	Next Generation Artificial Intelligence Graduates Program	\$24.7 million to attract and train the next generation of home-grown, job-ready AI specialists through industry co-funded scholarships.
	Next Generation Emerging Technologies Graduates Program	\$22.6 million to attract and train the next generation of home-grown, job-ready emerging technologies specialists through industry co-funded scholarships, such as in robotics, cyber security, quantum computing, blockchain and data science.
Existing Government measures	Job Ready Graduates Package	\$900 million over four years to the National Priorities and Industry Linkage Fund to support universities engaging with industry and create job-ready graduates, increasing the number of STEM-skilled graduates.
	Digital Skills Organisation	Working with digital employers to strengthen training to meet emerging skills needs, with the first project focusing on training 100 data analysts.
	Australian Industry and Skills Committee	Developed new training products in response to emerging skills needs across industry sectors, including developing cross-sector skill sets to address common needs such as in the areas of big data and cyber security.

Increasing data capability within government will help drive outcomes across other sectors. Data sharing and partnership arrangements with the private, academic, and research sectors using government-led schemes (such as the DAT Bill) enables all sectors to develop the ability to identify and exemplify good data practices.

### 3.4.2 Building data capabilities in the APS

Recent experiences with natural disasters highlight an ongoing need for data to drive informed decisions. Investing in the data workforce is the cornerstone to evolving enterprise-wide government services.

Meaningful reform will require time and investment now, to enable Australians to reap the benefits of mature data and analytics capabilities in the future. This will unlock the potential value of government data holdings, and take advantage of advances in technology and processing power. More advanced data and analytics can reveal new insights and improve evidence for decision-making, enabling seamless service delivery and citizen user satisfaction. In turn, we will enhance public trust and satisfaction in government services, and open opportunities for more ambitious projects.

The Australian Government has begun building data capabilities across the APS, including establishing the APS Data Professional Stream in 2020 in response to findings in the 2019 APS Review. This stream is part of a larger push to enact cultural change and move toward a data-driven APS, one that can take advantage of the latest tools in data and analytics.

The Data Professional Stream will build data expertise and capability across the APS workforce and support career pathways across the APS (see Box 27). The Stream will focus on attracting, developing, mobilising, and retaining data production, management and analytics capabilities. We will establish a professional model providing continuous professional growth and mastery through the right learning opportunities including training, mobility and peer-based learning and networking.

#### Box 27: The Data Profession Stream will increase data and analytics capabilities across the APS

	APS Data Profession	Data workforce	Data capability	
Work Streams	<p><b>Supporting the Head of the APS Data Profession</b></p> <ul style="list-style-type: none"><li>• Set up the professional stream</li><li>• Collaborate and network</li></ul>	<p><b>Establishing a formal APS Data Profession</b></p> <ul style="list-style-type: none"><li>• Attract the right skills to APS data roles</li><li>• Ensure appropriate entry level qualifications</li></ul>	<p><b>Strengthening public sector data capability maturity</b></p> <ul style="list-style-type: none"><li>• Retain and grow a data workforce for the whole APS</li></ul>	<p><b>Develop sophisticated and specialist data capabilities</b></p> <ul style="list-style-type: none"><li>• Enhance data capabilities and literacy</li></ul>
Benefits	<p><i>Enhance data leadership to improve planning and governance</i></p>	<p><i>More efficient and scalable data capability uplift across the APS</i></p>	<p><i>Data used appropriately to inform decisions, policy, regulation and services</i></p>	<p><i>Improved and mobilised APS data capability to generate deeper policy insights and to advance service delivery</i></p>

Source: Australian Bureau of Statistics, 2021

### 3.5 International trends and opportunities

International data flows are the backbone of today's diversified value and supply chains, and have been crucial in the COVID-19 pandemic, through quickly sharing data and pooling resources to understand the virus and develop better diagnostics, therapies and vaccines. Approximately 40% of Australia's GDP is attributed to international trade, underpinned by the Internet and the free flow of data across borders (Department of Foreign Affairs and Trade, 2020). Cross-border data flows are necessary for consumer-to-consumer interactions, and it is estimated that they will add US\$11 trillion to the global economy by 2025 (Meltzer & Lovelock, 2018).

International capital flows are also vital for digital transformation. The development of emerging technologies such as AI are reliant on accessing large amounts of data. Often, the data required to unlock these benefits reside in other jurisdictions, both across domestic governments and overseas.

Despite the clear potential benefit of cross-border data flows, countries are typically fragmented in their approach to data regulation, which can prohibit or significantly encumber the free flow of data due to varied privacy, security and data access legislation and policies. Australia seeks to be a trusted and influential partner in the international community. Our international engagement aims to contribute to priority initiatives such as international data standards, and data flows that are safe, secure, lawful and ethical and in line with Australia's values and interests.

The [International Cyber and Critical Technology Engagement Strategy](#) (ICCTES) provides the backdrop for international engagements on data and sets out Australia's strategy to protect Australia's national security, foreign policy, economic, trade and development interests. Cross-border data flows and usage, which Australia engages in, will also align with four values:

- **Democratic principles:** data will be used in a way that upholds Australia's democratic principles and processes
- **Human rights:** data within Australia and Australian data overseas will not impinge on human rights
- **Ethical use of data:** data flows and use will align with domestic and international law, including human rights
- **Diversity, inclusion and equality:** advocate for diversity, inclusion and equality in data use, such as AI.

#### Box 28: Cross-border flows of data

CSIRO, in partnership with the Singapore Nanyang Technological University, completed a joint data innovation project examining healthy ageing. The project was delivered under the Australia-Singapore Digital Economy Agreement.

The project analysed a representative sample of two cohorts (40–64 years and 65 years and above) in Australia and Singapore. It analysed the role of environmental and psychological variables, health or digital literacy and sociodemographic factors on compliance with dietary and physical activity guidelines and perceived health status.

The study found that supporting lifestyle change is an effective way to prevent further health issues in the ageing population. Further, the study showed health literacy and knowledge, self-efficacy and peer support are important and accessible targets for mobile health interventions. The findings are being used to inform policy and education programs.

The project continues to investigate cross-cultural differences in the drivers of health promotion behaviours in older adults in Australia and Singapore. This cross-border analysis integrated data privacy and protection. It became a test case for a newly formed bilateral agreement on data sharing.

### 3.5.1 Current landscape

Australia participates in important initiatives to support international data interoperability and data flows. This includes engaging closely with partners, bilateral trade discussions, and participation in multilateral forums.

#### **Data standards**

Data standards are critical to ensuring efficient and effective data flows, both within Australia and internationally. Differing data maturity levels means that not all domestic or international bodies have adopted international standards to enable interoperability of data. Interoperability is also highly dependent on the supporting infrastructure.

Globally, there is a range of work underway to create and establish data standards. The International Organisation for Standardization (ISO) and International Electrotechnical Committee (IEC) collaborate in a joint technical committee to develop standards, including on data usage, AI, smart cities, cyber security and information management.

Australia supports an industry-led, consensus-driven approach to standards development promoting interoperability, innovation, transparency, diverse markets and security-by-design. Australia has contributed to multiple standards working groups through Standards Australia, a not-for-profit company nominated by the Australian Government to be Australia's representative at the ISO and IEC. Australia continues to be active in over 11 000 schemas, ontologies, metadata registries and data catalogues to support the government agenda for open public data initiatives. In March 2018, the Association of Southeast Asian Nations (ASEAN) held a special summit in Australia and announced the ASEAN-Australia Digital Trade Standards Initiative. The initiative seeks to raise awareness on the role of international standards and address the key factors that enable and inhibit digital trade across ASEAN and Australia. Standards Australia has also partnered with the Australian Department of Foreign Affairs and Trade to support knowledge building and standards collaboration across the ASEAN region in Critical and Emerging Technologies.

The ABS leads Australia's contribution to global statistical standards, frameworks and classifications through the United Nations (UN) Statistical Commission, and emerging growth sectors such as statistical-geospatial data integration (see Box 29).



**Box 29: Supporting international data standards**

Australia was the co-chair of the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) Expert Group on Statistical-Geospatial Integration from 2013 to 2019. It has been instrumental in the development of the Global Statistical Geospatial Framework, using ABS' Statistical Spatial Framework as its basis. This framework was endorsed at the 51st session of the UN Statistical Commission following adoption at the 9<sup>th</sup> session of the UN-GGIM. The framework represents a landmark partnership between the statistical and geospatial communities to provide better-integrated information to support decision-makers.

**Global research initiatives**

The OECD Council's Recommendation on Access to Data from Public Funding 2021 indicates that '[r]esearch is inherently global and ... global approaches are often needed to establish and maintain datasets that constitute global assets and to develop appropriate standards, infrastructure, and other relevant international cooperation mechanisms'.

Most research occurs outside Australia, requiring a joined-up approach to research data. Australian researchers and organisations play a leading role in international data initiatives that place our research at the centre of global research.

International research data exchanges often follow the networks established by the Australian Government's participation in multilateral fora. For example, Australia's national marine research infrastructure, the Integrated Marine Observing System, feeds into UNESCO's International Oceanographic Data Exchange. Similarly, the Australian research infrastructure capabilities at Geoscience Australia, AuScope and TERN support Australia's leading role in the Group on Earth Observations, for which a Ministerial Summit was held in Australia in 2019. Standards established by inter-governmental organisations such as OECD, WHO, WTO and WMO enable global research data sharing. More importantly, they allow Australian scientists to contribute to the frontiers of global research addressing societal challenges in health, trade, climate and sustainable development.

**Box 30: Australia's contribution to global research**

In 2013, the Australian government collaborated with the European Commission and the US National Science Foundation to establish the Research Data Alliance (RDA). This global forum helps researchers and innovators to openly share and re-use data across technologies, disciplines, and countries to address the grand challenges of society. As an example, RDA is addressing global data exchange in agriculture with a number of technical working groups.

RDA builds the social and technical bridges that enable open sharing and re-use of data. From the original AU-Eu-US kernel, RDA now comprises 12,000 participants from 145 countries. The NCRIS facility, the Australian Research Data Commons, supports the ongoing governance and operations of the RDA Foundation and provides its Director of Operations.

**International organisations and processes**

Initiatives to reduce barriers to cross-border data flows are being progressed through multilateral forums. Australia engages with digital issues through the OECD's Committee on Digital Economy Policy, including on Enhancing Access to and Sharing of Data and the Going Digital project. This work seeks to facilitate the promotion and protection of data free flow with trust, and to shape a set of general

principles for data governance and policies.

In the 2019 G20, Japan introduced the concept of ‘data free flow with trust’. This initiative seeks international agreement on ways to reduce barriers to international data flows, while strengthening consumer and business trust. It aims to address issues such as differing regulatory schemes between countries and privacy, security and access to data. In July 2021, G7 leaders endorsed a [Roadmap for Cooperation on Data Free Flow with Trust](#). While attending the G7 as an outreach partner, Australia has also endorsed the Roadmap and will work with G7 countries to progress select areas for joint action, noting the work on ‘Government access to personal data held by the private sector’ has been put on hold (see Figure 14 below).

**Figure 14: G7 Roadmap for Cooperation on Data Free Flow with Trust**



Australia engages in a number of multilateral initiatives through our relationships with NSOs and other working groups. For example, the ABS has a long history of involvement with the United Nations Statistical Commission (UNSC). Australia is also a member of the [Global Partnership on Artificial Intelligence](#) (see Box 31).

#### **Box 31: Global Partnership on Artificial Intelligence**

The Global Partnership on AI (GPAI) is an international and multi-stakeholder initiative to advance the responsible development and use of AI consistent with human rights, fundamental freedoms, and shared democratic values, as reflected in the OECD Recommendation on AI. The Australian Government is taking action to make the most of the opportunities that AI offers and to ensure that benefits flow to all Australians.

Australia is finding opportunities to work with our valued global partners. We have been active in helping to shape the AI landscape at fora such as the G20 and OECD. In 2020, Australia became a founding member of GPAI – the first multilateral forum focused on AI.

Despite being a newly formed multilateral body, GPAI has proven to be valuable in tackling a range of issues in the areas of public health, climate, transportation and logistics and employment, through the use of AI. GPAI has played a key role in considering the impact of AI on international standards and human rights, including gender equality and inclusiveness, factoring in AI’s potential to impact those with disabilities.

Australia also has a strong presence in the Pacific region and we have built close relationships with our near neighbours through our participation in the Asia-Pacific Economic Cooperation (APEC) group. In 2005, APEC leaders endorsed the [Cross-Border Privacy Rules](#) (CBPR) system. The CBPR is a privacy certification that businesses of participating economies can join to demonstrate compliance with internationally recognised data privacy standards. The CBPR system was developed with the aim of building consumer, business and regulator trust in cross-border flows of personal information within the APEC region.

Australia's application to participate in the CBPR system was endorsed in 2018, although the CBPR system has not yet been implemented domestically. As part of its review of Australian privacy laws, we will consult Australian businesses to better understand the potential benefits of domestic implementation.

The Bureau of Meteorology is entirely focused on providing products and services that benefit the Australian community, from saving lives to driving competitive advantage for businesses and industries. International data sharing, enabled through the World Meteorological Organization across almost 200 member states, critically underpins the provision of these products and services all day every day.

### **Bilateral and plurilateral relationships**

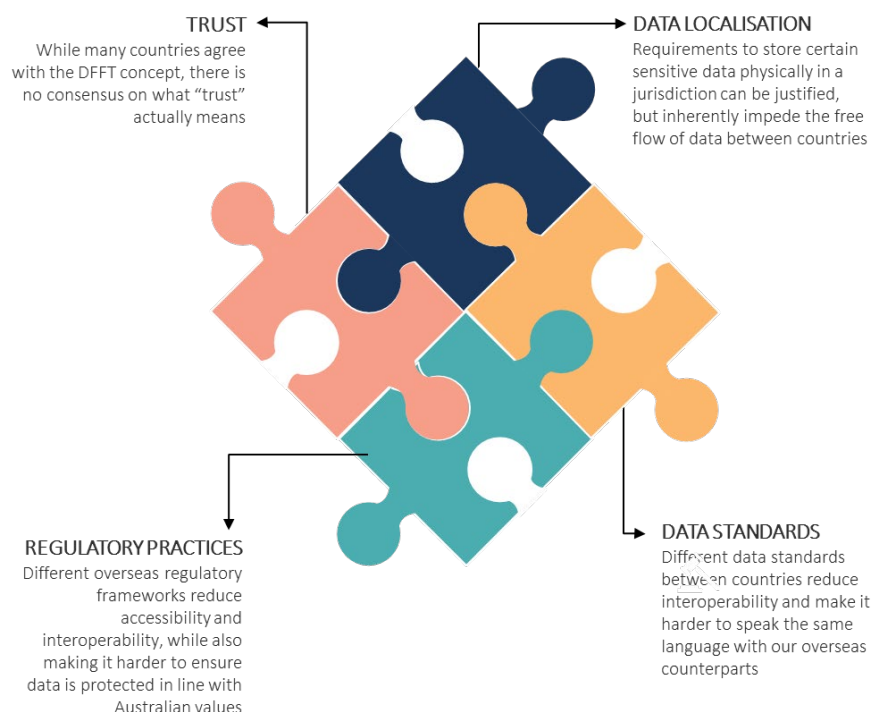
Australia is engaging internationally to lead and influence the setting of norms, standards and regulations for data flows, while ensuring appropriate privacy protections. For example, in March 2020, Australia signed the [Australia-Singapore Digital Economy Agreement](#), which set a new global benchmark for trade rules, and delivered a range of practical cooperation initiatives to reduce barriers to digital trade. Australia also has a close collaborative partnership with New Zealand on data and digital matters, through their representation on the [Data and Digital Ministers Meeting](#).

In our modern free trade agreements (including the [Comprehensive and Progressive Agreement for Trans-Pacific Partnership](#), [Regional Comprehensive Economic Partnership](#), the amended Australia-Singapore Free Trade Agreement, as well as our ongoing Free Trade Agreement negotiations with the UK and the EU), Australia seeks to include ambitious digital trade rules that prevent unnecessary restrictions on cross-border data flows and requirements for data localisation that can stifle trade and investment. Australia is also co-convening the World Trade Organisation Joint Statement Initiative on E-commerce negotiating the first set of global digital trade rules, which includes data rules.

### **3.5.2 Factors impacting international flows of data**

Section 3.5.1 discusses how differing data standards impact data interoperability, as well as some of the work Australia does to contribute to international data standards. There are a number of factors which impact international data flows, which can largely be attributed to building trust between countries, data localisation laws and differing regulatory practices.

**Figure 15: Four main factors impact international data flows**



## Trust

As with all areas of data use, trust is a critical consideration for data flows. Australians must be able to trust that all layers of government and businesses are using their data ethically and protecting their privacy. Government and Australian businesses need to trust that international data flows are conducted securely and in line with Australian values and privacy standards.

The Privacy Act enables entities to disclose personal information to overseas parties where that entity has taken reasonable steps to ensure the overseas recipient does not breach the APPs in relation to the information, or where:

- the overseas recipient is subject to a law or binding scheme that protects personal information in a way that is at least substantially similar to the protections in the APPs and there are mechanisms an individual can access to take action to enforce that protection,
- the entity has the informed consent of the individual whose personal information is being disclosed,
- the entity is authorised or required by an Australian law or international agreement, or
- it is reasonably necessary for enforcement-related activities of an Australian enforcement body.

The ICCTES commits Australia to working with international partners to develop a safe and inclusive online environment; build international resilience to digital disinformation; and build a strong and resilient cyber security capability for Australia, the Indo-Pacific and the world.

## Data Localisation

Local storage requirements are generally put in place to protect information deemed highly sensitive or which may pose national security threats if transferred overseas. Many countries have data localisation

laws in place, while others are adopting legislation, mainly to stop the transfer of personal information across borders.

While data localisation laws are justified in some instances, widespread storage requirements can represent significant barriers to trade and economic cost. For example, it is estimated the introduction of data localisation legislation cost India, Indonesia and Vietnam between 0.1% to 1.7% of GDP (Bauer, Lee-Makiyama, van der Marel, & Verschedle, 2014).

Some of Australia's legislation prohibits or restricts the storage, processing and transferring of particular data overseas. Data localisation measures within Australian Commonwealth legislation are largely aimed at ensuring that operating entities can be audited for financial compliance; overseas disruptions do not affect the continued operation of Australian financial systems; and protecting the security of particular subsets of personal and sensitive information. For example, Commonwealth legislation prevents registered operators and service providers from holding, taking, processing or handling My Health Record information offshore.

To reduce digital trade barriers, Australia has agreed with a number of countries to avoid unjustified data localisation laws. For example, the Australia-Singapore Digital Economy Agreement prevents unnecessary restrictions on the transfer and location of data between Singapore and Australia, while preserving the ability to implement certain measures achieving legitimate public policy objectives, such as privacy requirements for personal information. This supports businesses operating in both countries by encouraging innovation in their products and services through access to market intelligence, thereby increasing competitiveness in local and international markets. This means that, where data can safely, securely and lawfully be stored and accessed outside of Australia, the Government will not mandate storing of data onshore.

## Regulatory practices

Differing regulatory approaches between countries means we must work closely with our international partners to come to a consensus on how Australian data is treated overseas. For example, the General Data Protection Regulation (GDPR) was introduced in the European Union in May 2018. The GDPR has implications for Australian businesses that operate in the EU and includes some notable differences from the Privacy Act. The GDPR includes certain rights of individuals, such as the 'right to be forgotten' (in relation to marketing and information sharing and storing in the private sector) which is not addressed in the Privacy Act, although it is currently under consideration as part of the Privacy Act Review. The differences between domestic and international language creates complexity for Australian businesses that operate on a global scale.

In May 2021, the OECD published a paper on Mapping Commonalities in Regulatory Approaches to Cross-Border Transfers (Casalini, López González, & T. Nemoto, 2021). The intent of the paper is to identify common elements between regulatory approaches to serve as building blocks towards trusted environments for cross-border data flows. A number of different instruments can be used to facilitate flows of data across borders, including unilateral, bilateral and multilateral agreements.

Australia already has strong bilateral and multilateral relationships with its geographic neighbours and partner countries across the world, demonstrated through instruments such as Free Trade Agreements and participation in multilateral fora. Over the four years to 2025 and beyond, Australia will continue to engage with partner countries and multilateral fora to identify commonalities and build trust-based trade relationships.



### 3.5.3 International principles

By 2025, the Government expects all Australian Government agencies will be guided by four international engagement principles (see Box 32). We will continue to refine these principles to the end of 2022, following consultation across the APS.

#### Box 32: Australia's international data engagement principles

Through its engagement on international data issues, Australia will:

1. **avoid unjustified data localisation and barriers to trade**, while ensuring the security and privacy of Australians is adequately protected
2. **align with existing internationally-recognised data standards** where it is safe, secure, lawful and ethical to do so, and contribute to developing common international standards
3. **make open non-sensitive data by default** for agreed purposes, where it is safe, secure, lawful and ethical to do so
4. **champion ethical data flows** for trade and research.

## 4. Our Commitment

The Australian Data Strategy sets out the value proposition for data within the public, private and non-government sectors. Data is the foundation for the high-tech jobs of the future and will be a key enabler for Australia to be a leading digital economy and society by 2030.

The Government cannot and should not deliver this Strategy alone. Your feedback is crucial. We ask that you submit responses to the Australian Data Strategy [via our website](#) by the end of June 2022. We will consider responses over the remainder of 2022 and adjust the Strategy where there are areas for additional clarification by the end of the year.

In order to drive successful implementation to 2025, we have published an Action Plan of future activities. The Government will review the Action Plan regularly to ensure it evolves to meet priorities and continue moving towards the Data Strategy's vision to become a modern data-driven society by 2030. We will also conduct a full review of the Data Strategy's achievements and future challenges and opportunities by the end of 2025.

In tracking our progress to 2025, we will be guided by the following:

- The Government will make data available where it is safe, secure, lawful and ethical to do so
- The Government will develop the right infrastructure to enable the better use of data and underpin the creation of new data assets
- The Government will create a modern data system through investments in data maturity, skills and capability within the APS, and implementing the frameworks under the Data Availability and Transparency Scheme.

Through the Australian Data Strategy, we will ensure that data can be leveraged to deliver services, promote competition, and generate better choices for Australians as individuals, business owners and community groups; and minimise the negative impacts that could eventuate from erecting barriers to the better use of data.

## Glossary of terms

*Accredited Integrating Authority (AIA)*: an organisation assessed as having the infrastructure and capability to undertake high risk data integration projects involving Commonwealth Government data for statistical or research purposes. AIAs are also responsible for providing researchers with safe and secure access to integrated data in line with the requirements of Data Custodians ([source](#)).

*Accredited Data Service Provider (ADSP)*: an organisation or individual with technical expertise who can offer complex data integration services and/or data sharing on behalf of a Data Custodian ([source](#)).

*Administrative data*: information collected by government agencies, businesses or other organisations for various purposes, including registrations, transactions and record keeping, usually during the delivery of a service ([source](#)).

*Artificial Intelligence (AI)*: AI is a collection of interrelated technologies that can be used to solve problems autonomously and perform tasks to achieve defined objectives. In some cases, it can do this without explicit guidance from a human being (Dawson, et al., 2019). AI is more than just the mathematical algorithms that enable a computer to learn from text, images or sounds. It is the ability for a computational system to sense its environment, learn, predict and take independent action to control virtual or physical infrastructure ([source](#)).

*Australian Public Service (APS)*: comprises entities that employ their staff under the *Public Service Act 1999*. This includes all departments of state, and some other entities ([source](#)).

*Australian Research Council (ARC)*: a Commonwealth entity and advises the Australian Government on research matters, administers the National Competitive Grants Program ([source](#)).

*Business Longitudinal Analysis Data Environment (BLADE)*: an economic data tool combining tax, trade and intellectual property data with information from ABS surveys to provide a better understanding of the Australian economy and businesses performance over time ([source](#)).

*Chief Data Officer (CDO)*: a senior data leader responsible for the effective and efficient use and management of an agency's data holdings ([source](#)).

*Chief Information Officer (CIO)*: leads the IT strategy for an organisation and is responsible for managing technology assets ([source](#)).

*Consumer Data Right (CDR)*: gives consumers greater access to and control over their data, improves their ability to compare and switch between products and services, and encourages competition between service providers ([source](#)).

*Data*: any information in a form capable of being communicated, analysed or processed (whether by an individual or by computer or other automated means) ([source](#)).

*Data and Digital Ministers Meeting (DDMM)*: the regular, ongoing meeting of Commonwealth and state and territory Ministers with responsibility for data and digital matters under Australian federal relations architecture ([source](#)).

*Data asset*: a structured collection of data developed for a purpose ([source](#)).

*Data breach*: when personal information held by an agency or organisation is lost or is accessed or disclosed in an unauthorised way ([source](#)).

*Data Champions*: a group comprising senior officials within Commonwealth agencies to promote the use, sharing and reuse of data within their organisations and across the APS.



*Data Custodian:* the agency that collects or generates data for any purpose, and is accountable and responsible for the governance of that data ([source](#)).

*Data Integration Partnership for Australia (DIPA):* DIPA was a whole-of-government collaboration of over 20 Commonwealth agencies, and improved technical data infrastructure and data integration capabilities across the Australian Public Service ([source](#)).

*Data Integration:* the process of bringing together information from two or more sources that relates to the same entity, such as an individual or business ([source](#)).

*Data Inventory:* a record of data assets held by an organisation. A data inventory should include basic information about a data asset (e.g. title, description, access rights).

*Data Management Strategy:* a detailed plan for an agency's data and how it can be best used to meet its broader business objectives and priorities.

*Data Sharing Principles:* a risk management framework to assess risks of sharing data and identify ways to manage those risks ([source](#)).

*Digital Atlas of Australia:* will deliver a 3-dimensional platform visualising Australia's geography, bringing together the wealth of Government data on people, the economy, employment, infrastructure, health, land and the environment into a single national data asset ([source](#)).

*Dataset:* a collection of information or data and associated metadata.

*eXtensible Business Reporting Language (XBRL):* a standard for tagging business and financial reports to increase the transparency and accessibility of business information by using a uniform format ([source](#)).

*Foundational Four:* guidance for agencies on how they can start improving their data practices and address the technical and cultural challenges that can limit their ability to get the most out of their data ([source](#)).

*Government data:* data lawfully collected, created or held by or on behalf of a government entity (adapted from the Data Availability and Transparency Bill 2020).

*Hosting Certification Framework:* support the secure management of government systems and data ([source](#)).

*Human Research Ethics Committee (HREC):* committees that review research proposals that involve human participants to ensure that they meet ethical standards and guidelines ([source](#)).

*Integrated Data Infrastructure (IDI):* New Zealand's integrated research database. It holds microdata about people and households ([source](#)).

*Metadata:* the information that defines and describes data, often referred to as data about data ([source](#)).

*Multi-Agency Data Integration Project (MADIP):* a secure data asset combining information on health, education, government payments, income and taxation, employment, and population demographics (including the Census) over time ([source](#)).

*Non-sensitive data:* Non-sensitive data is anonymised data that does not identify an individual or breach privacy or security requirements ([source](#)). Examples include economic data, weather data or de-identified personal data.

*National Archives of Australia (NAA):* collects, preserves and manages documents and other evidence that records important events in Australian history and makes them available to the public ([source](#)).

*National Integrated Health Services Information (NIHSI) Analysis Asset (AA):* an integrated data asset combining de-identified health data ([source](#)).

*National Health and Medical Research Council (NHMRC)*: leading expert body in health and medical research ([source](#)).

*National Statement on Ethical Conduct in Human Research*: consists of a series of guidelines made in accordance with the *National Health and Medical Research Council Act 1992* ([source](#)).

*National Statistics Organisations*: central organisation which is responsible for producing and disseminating official statistics.

*Notifiable Data Breach (NDB) scheme*: requires any organisation or agency covered by the Privacy Act to notify affected individuals and the OAIC when a data breach is likely to result in serious harm to an individual whose personal information is involved ([source](#)).

*Open data*: information that is freely available, easily discoverable, anonymous, accessible and published in ways and with licences that allow reuse ([source](#)).

*Office of the Australian Information Commissioner (OAIC)*: an independent agency within the Attorney-General's portfolio with the primary functions of privacy, freedom of information and government information policy ([source](#)).

*Office of the National Data Commissioner (ONDC)*: sits within the Department of the Prime Minister and Cabinet and is responsible for streamlining how public sector data is used and shared ([source](#)).

*Official Statistics*: statistics disseminated by the national statistical system. The ABS is Australia's National Statistics Organisation.

*Personal information*: information or an opinion about an identified individual, or an individual who is reasonably identifiable whether the information or opinion is (a) true or not true; and (b) recorded in a material form or not, in accordance with the Privacy Act ([source](#)).

*Privacy (Australian Government Agencies — Governance) APP Code 2017 (the Privacy Code)*: sets out specific requirements and key practical steps that agencies must take as part of complying with Australian Privacy Principle 1.2 ([source](#)).

*Privacy Impact Assessment (PIA)*: a systematic assessment of a project that identifies the impact that the project might have on the privacy of individuals, and sets out recommendations for managing, minimising or eliminating that impact.

*Privacy-by-design*: is a process for embedding good privacy practices into the design specifications of technologies, business practices and physical infrastructures ([source](#)).

*Protective Security Policy Framework (PSPF)*: sets out the requirements for protective security to ensure the secure and continuous delivery of government business ([source](#)).

*Secure Unified Research Environment (SURE)*: an online workspace for analysing and sharing health data from many sources ([source](#)).

*Sensitive Information*: personal information that includes information or an opinion about an individual, in accordance with the *Privacy Act 1988*.

*Spatial Data*: data with a direct or indirect reference to a specific location or geographical area. Also referred to as geospatial data or geographic information.

*Universities Australia (UA)*: the peak body for the university sector ([source](#)).

*Zettabyte (ZB)*: a digital unit of measurement equal to one sextillion bytes, or a trillion gigabytes (about 250 billion DVDs).

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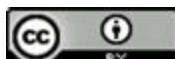
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