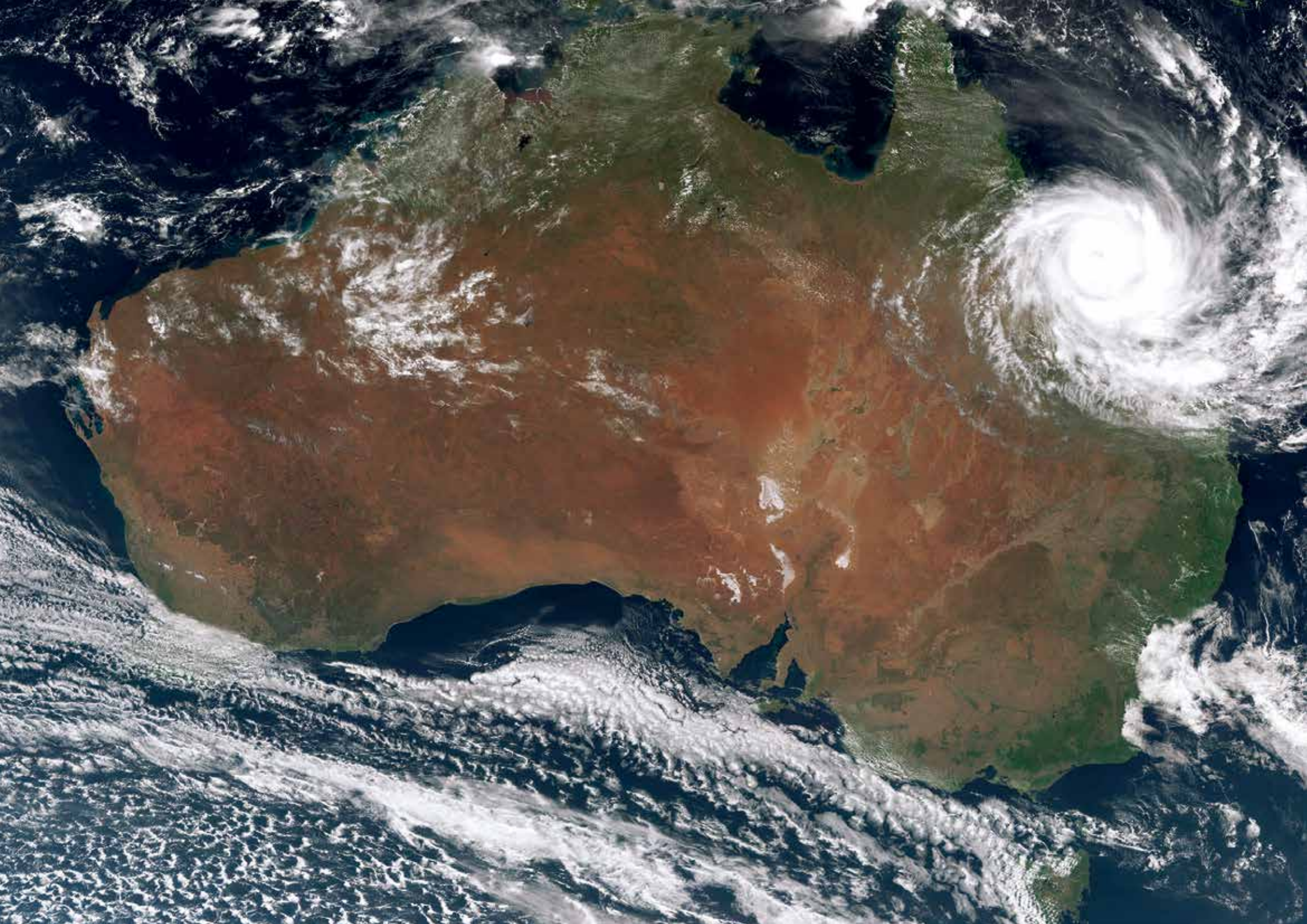




Australian Government
Bureau of Meteorology

DATA 2022 AND BEYOND

UPLIFTING THE BUREAU'S DATA CAPABILITY
TO MAXIMISE IMPACT AND VALUE





Data 2022 and Beyond is the Bureau of Meteorology's approach to maximise the value and impact of our data for our customers in a data-driven world.

Data is at the core of everything we do at the Bureau. We collect millions of observations from our networks and external sources and convert these into essential weather, climate, water and ocean services.

Our data customers—including the general public, industry, government, defence, the research community, international meteorological community and our internal business groups—use this information to make critical decisions every day. All these services depend on well-managed, reliable and accessible data.

The future is being shaped by data-driven technologies and capabilities, and exponential growth in data volumes. Customers are demanding more data and information be delivered precisely when and how they need it. To sustain our standing as a national service provider we must respond effectively to this rapidly evolving data landscape.

Data 2022 and Beyond will ensure that we have the data capability to support the transformations in operations and delivery driven by the Bureau's *Strategy 2017–2022*.

It will ensure that we realise the data opportunities of the future, capitalising on our weather, climate, water and ocean data assets, while meeting our legislative and international obligations. Trusted, discoverable and interoperable data will support public safety, community wellbeing and economic prosperity. It will enable innovation in service delivery, operational excellence, ground-breaking research and enhance our reputation as the 'go to' agency for environmental data services.

This approach will mean transforming our data practices and processes. It will also mean exciting opportunities to leverage best practice, grow data skills and competencies, all the while harnessing innovative new technologies and approaches.

Nichole Brinsmead

Chief Information and Technology Officer and Group Executive, Data and Digital.

Delivering the Bureau's strategy

The Bureau's vision is to be an organisation of global standing, that is highly valued by the community for our pivotal role in enabling a safe, prosperous, secure and healthy Australia.

The Bureau's mission is to provide trusted, reliable and responsive weather, water, climate and ocean services for Australia—all day, every day.

Our data, as the foundation to everything we do, must be trusted, reliable and responsive.

The Bureau strategically focusses on four pillars—impact and value, operational excellence, insight and innovation and the Bureau way—to achieve success.

Our data must benefit Australians and drive competitive advantage for business and industry. We must have the best data science, data infrastructure and data people working together for efficiency, productivity and innovation.

At the centre of all this are our customers.

We need creative thinking and data partnerships, an enterprise culture where data is valued and managed by everyone, and an organisation where we understand our data customers.



Data at a glance



BUREAU IS DATA RICH

4 petabytes of data ingested per year

Millions of observations a day

OBSERVATIONAL DATA SOURCES

19 satellites

62 radars

~700 weather stations

5000+ hydrological stations

100s more data streams

DOMAINS

Space, weather, climate, water, ocean and corporate data

TYPES

Simple, time series, gridded, image, spatial data and historical records



BUREAU IS A DATA MACHINE

5+ international models integrated into forecasts and outlooks

8 major Bureau numerical weather prediction models

SUPER COMPUTER

1.6 petaflops processing power


44.5 terabytes data produced per day


4320 terabytes storage

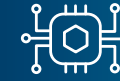
146+ numerical prediction model runs per day

INTEGRITY:

 quality assurance

 quality control

 verification activities



BUREAU DATA DRIVES BUSINESS

Over **100** years of long-term climate record

ANNUAL PRODUCT OUTPUTS

~700 000 public forecasts

1.5 million aviation forecasts

500 000+ climate products

1000s of warnings

SECTORS

Community, Government, Emergency Management, Science, Defence, Aviation, Agriculture, Water, Energy and Resources

Data principles

Data 2022 and Beyond is guided by the Bureau's enterprise data principles.

Strategic alignment

Data capability and practices will align with the Bureau's strategy.

Meeting customer requirements

Data will be fit-for-purpose and of high quality, meeting the needs of both internal and external customers.

Authoritative, trusted and secure

The Bureau will be a trusted, authoritative and reliable source of weather, water, climate and ocean data.

Appropriately valued

Data will be appropriately valued, both as an asset and as a service to our customers.

Discoverable and usable

Data will be easily discoverable, accessible and interoperable.

Strong management and governance

Standards-based governance and data management practices will inform all aspects of the data lifecycle.

Partnerships and collaboration

The Bureau's own data will be complemented by externally sourced data through national, international and commercial partnerships, collaborations and data sharing arrangements.

Innovation and leadership

The Bureau will demonstrate innovation and leadership in data capability to adapt to new opportunities and risks.

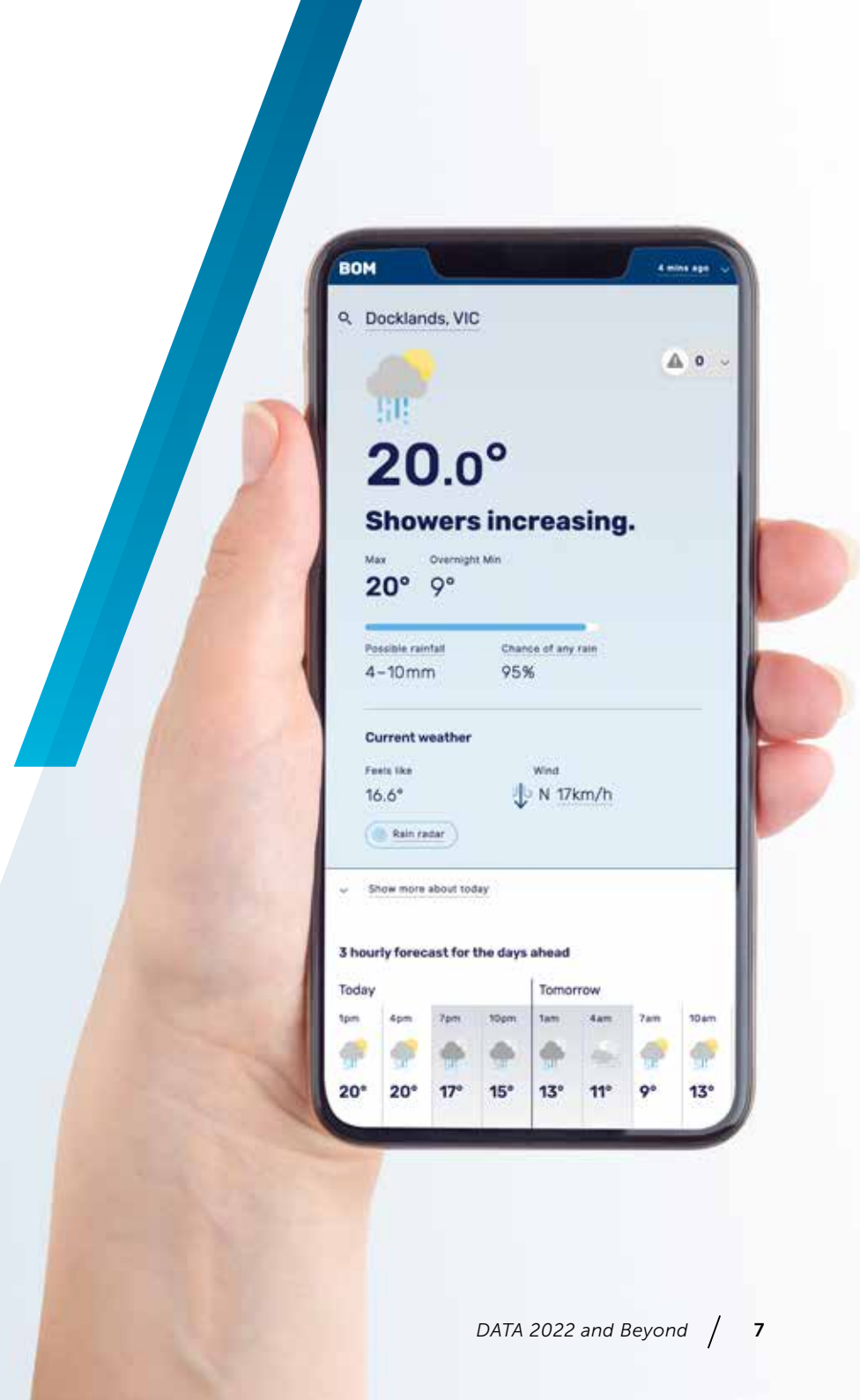
Transformation

Key drivers

- Customer requirements and expectations
- New data technologies and approaches
- Changing operating and service delivery models
- Increasing competition in a data-enabled world
- Whole of government requirements in key areas such as privacy, security and data sharing

Opportunities

- Extend access to our data and data services
- Enable more data use and reuse
- Harness new external data streams
- Simplify data processes and increase responsiveness
- Develop future data skills and competencies
- Enable new pathways for innovation
- Promote long-term sustainability, security and resilience
- Extend capability through partnerships and collaborations
- Unlock new impact and value through data-driven technologies



Themes

To maximise impact and value for customers, we will focus on five transformative themes.



Engage our customers

To respond to data needs



Leverage our data assets

To deliver trusted data



Enable people and culture

To ensure future data capability



Optimise systems and processes

To improve efficiency with data



Embrace innovation

To generate new data possibilities





Engage our customers

Respond to data needs

We need to understand how internal and external customers use our data. We want to develop deeper insights into our customers' requirements, and how they will evolve in the future, so we can anticipate their data needs. Partnerships with customers will deliver better outcomes. New data streams and new opportunities will extend our capability to respond to changing needs with agility.

To do this we will:

- Develop a data customer engagement model
- Undertake strategic data domain and network studies
- Engage in key international and domain data initiatives
- Identify opportunities for partnerships.



Leverage our data assets

Deliver trusted data

Our data needs to be managed with enterprise-wide governance before we can leverage its full potential. We need to be able to discover, reuse and repurpose our data more easily. A data governance framework will ensure data is managed throughout the data lifecycle. Documented data management processes will drive consistency and efficiency in working with data across the enterprise. Enhancing our data quality assurance and quality control capabilities will ensure continued data integrity.

To do this we will:

- Implement an enterprise approach to data governance and data management
- Enhance data quality assurance and quality control processes
- Develop new approaches to master data, reference data and metadata management
- Adopt enterprise standards to make data more interoperable.



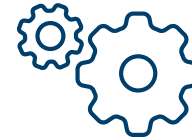
Enable people and culture

Ensure future data capability

Building on the strengths of our skilled and dedicated people, we need to continue to grow data literacy, skills and expertise for the future. We can enable best practice in data management by providing guidance, systems, tools and support for people to understand their data responsibilities and manage our data effectively.

To do this we will:

- Establish and maintain a data workforce plan into the future
- Enhance enterprise data stewardship capabilities
- Provide data training and development opportunities
- Continually assess our data maturity and monitor trends.



Optimise systems and processes

Improve efficiency with data

We need to minimise unnecessary complexity, duplication, manual processing and administrative overheads in our data systems and processes. By harnessing new technologies and approaches we can streamline our capacity to input new data, improve efficiency and productivity of data around the Bureau and make it easier for internal and external customers to find, access and use our data.

To do this we will:

- Implement new and enhanced data processes, systems and services
- Improve access to Bureau and external data
- Monitor performance of our data systems and processes
- Facilitate the transition to digital records and information management.



Embracing innovation

Generate new data possibilities

New pathways to innovation in key areas such as data analytics, business intelligence and machine learning will enable our customers to go further with our data. We want to deliver data solutions that facilitate ground-breaking products and services and improve business outcomes.

To do this we will:

- Improve our data science and analytics capability
- Establish key priorities for data innovation
- Undertake skills planning to support data innovation
- Partner to enable and extend capacity.



Key priorities to 2022

The initial focus of the *Data 2022 and Beyond* approach will be on fundamental consolidation and uplift activities required to support increased maturity in the Bureau's approach to data, and to provide the basis for future innovation. Ten priorities have been identified against our transformative themes, to be delivered by 2022.



1. Implement enterprise data governance and lifecycle planning



6. Support data stewardship across the enterprise



2. Enhance and extend data integrity, assurance and quality control



7. Identify and grow future data skills and capabilities



3. Understand and anticipate customers' data requirements



8. Monitor data performance and key performance indicators



4. Facilitate data acquisition, licensing and sharing



9. Facilitate transition to digital information management



5. Make data more easily discoverable, accessible and usable



10. Develop new analytics, business intelligence and machine learning capabilities

Next steps

The *Data 2022 and Beyond* approach will be delivered by initiatives in the Data Program, ROBUST, and other Bureau groups, programs and transformative initiatives, as well as data customers and external partners.

It will be led by the Chief Data Officer reporting to Executive through the Chief Information and Technology Officer. The Data Program will develop an implementation plan and monitor progress.

What will success look like?

By 2022, the Bureau will have a deeper understanding of our customer data requirements and an increased agility to work with our data to deliver customer outcomes. Our data will be more accessible and discoverable, meaning more customers can get the right data, faster. We will have set the foundation to manage our data in a consistent, streamlined way leading to improved quality, efficiency and interoperability. Responsibility for our data will be embedded in the Bureau way. The Bureau will be positioned to harness new technologies and integrate new data and embed new analytics capabilities into the exemplary services we deliver for the safety, security, prosperity and health of all Australians.



CONNECT WITH US

