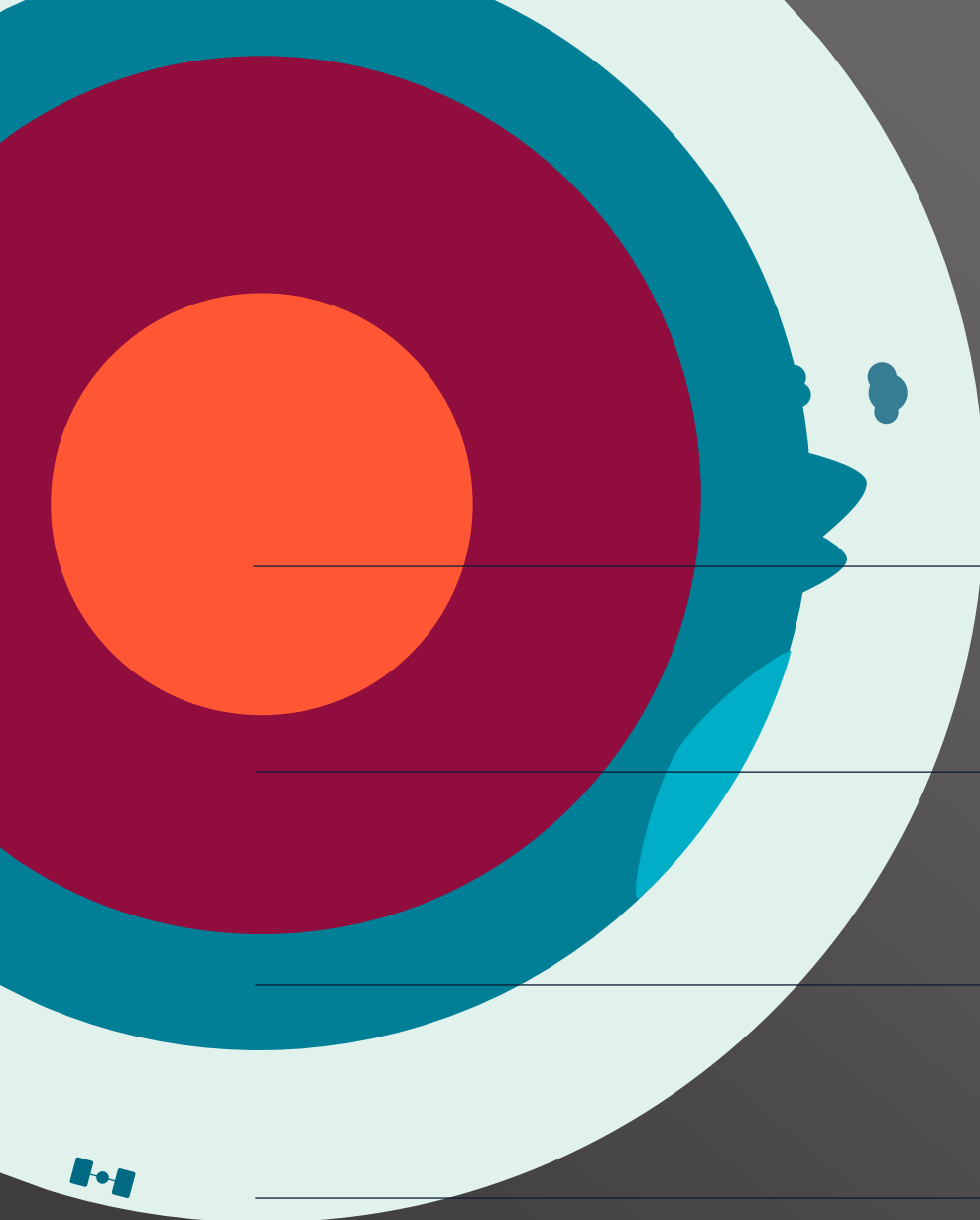




Geoscience Australia's Digital Strategy 2019-22



Australian Government
Geoscience Australia



Geoscience Australia's Digital Strategy 2019 - 2022



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Geoscience Australia

VISION

Geoscience Australia's digital investment will drive and enable high-impact science, leading to more accurate and robust insights, and better decisions about Australia's resources, land and marine environments, spatial enablement and community safety.

OUR STRATEGIC THEMES

01 STRONG FOUNDATIONS

Stable, reliable, high-performing , efficient, secure and well-supported digital foundations to enable a world-leading geoscience capability

02 SYSTEMATIC EXPERIMENTATION

Systematic approaches and investments that push beyond the status quo to drive innovation

03 DATA-DRIVEN SCIENCE

To enable data-intensive, high-quality science to deliver improved value to the community

04 DIGITAL CULTURE AND CAPABILITY

To enhance our governance, capability and partnerships to drive high-impact science for Australia and the international science community

Vision / Geoscience Australia's digital investment will drive and enable high-impact science, leading to more accurate and robust insights, and better decisions about Australia's resources, land and marine environments, spatial enablement and community safety.

Geoscience Australia is a long-standing organisation that can trace the history of its predecessor organisations back to 1910 when the Australian Survey Office was established. Since then the scope of Geoscience Australia has steadily expanded, with new topics and a vast land and marine area being progressively added to our remit. In taking on this challenge, we fulfil a critical role of being the nation's authoritative advisor on matters of geology and geography.

Like other science organisations in Australia, technology has become central to our work. Geoscience Australia needs to manage, harness, draw insights from, and make accessible a vast array of datasets, computational capabilities, innovative platforms and other digital assets.

The pace and level of complexity at which digital science must operate continues to accelerate, and new paradigms and capabilities are offering unprecedented opportunities to deliver value to Australia, our partners and our region.

In this context, taking a strategic perspective on our digital capability has never been more critical. The Geoscience Australia Digital Strategy is our statement on how we will sustain, grow and innovate our platforms, skills and approaches to realise the potential offered by the digital age. It charts the next three years of investment and evolution as part of a longer, ongoing journey to continuously improve how we deliver and enable timely, high-quality digital science to support of our national priorities.

The 10 year outlook: external drivers

There are many pressures and opportunities that present themselves to Geoscience Australia and the broader scientific community that we will need to respond to, and for which technology must play a critical role. The most significant of these, which drive the Digital Strategy, are:

- 01 **Emerging technology:** The emergence of new, rapidly evolving technologies creates opportunities to increase the efficiency and impact of science
- 02 **Scientific ecosystem:** Increasing opportunity and demand for integration with the broader Australian and international scientific community, from collaboration to the sharing of data and digital capability
- 03 **Cyber threat environment:** Increasing threat of cyber attack and the implementation of cyber resilience standards require uplift in the management and mitigation of security threats in order to protect the digital environment
- 04 **Growth in data:** Ever-increasing availability of data driving the need for managing new orders of magnitude of information/computation
- 05 **Trusted data:** The ability to have easy to access data that is available to, and trusted by the community and general public, in a way that suits their needs
- 06 **Open source:** The increasingly vibrant, innovative and trusted open source code and platforms enabling diverse digital opportunities

Internal drivers

Within the Commonwealth Government and within Geoscience Australia, new demands and requirements are emerging that we need to ensure are managed deliberately to improve the impact of technology for our staff, the Government and other stakeholders. The most significant of these are:

- 07 **OneGA:** Geoscience Australia is shifting to a more enterprise perspective, and with this comes the opportunity for the digital strategy to sustain and grow partnerships for a unified direction that strongly aligns with the GA Strategic Priorities and Plan
- 08 **Opportunities for internal integration:** There is the opportunity to consolidate and simplify the Geoscience Australia digital ecosystem. This will help to create efficiencies and the opportunity to add further value
- 09 **Mobility:** The nature and demands of work are changing, and for Geoscience Australia this is intensified by the diverse needs of people both in office and field environments, which requires increasing flexibility for staff to be effective
- 10 **Need for increasing efficiencies:** Operational and budget pressures continue to create tension between enterprise planning/foundation investments versus opportunistic experimentation, inviting new approaches to organisation investment and governance
- 11 **Strategic alignment with Government directions:** Alignment with the strategic directions of Government (for example, the Digital Transformation Strategy, the drive towards open data, the Digital Continuity Principles 2020 and others in existence or emerging).

The strategic themes at a glance

Geoscience Australia has identified 18 strategies, across four major strategic themes, that will guide investment and deliver on the organisation's digital vision.

01 Strong foundations

- 1.1 Operate a stable, contemporary **network**
- 1.2 Invest in scalable, strategic **storage and archiving** capabilities
- 1.3 Implement measures to boost **cyber-security**, resilience and trust
- 1.4 Continue the shift to an **optimised architecture**
- 1.5 **Simplify and consolidate** the GA environment
- 1.6 **Differentiate support** based on pre-agreed principles that guide allocation of resources

02 Systematic experimentation

- 2.1 Sustain and build our capacity for **agile collaboration** and experimentation
- 2.2 Create predictable, managed **pathways into operations** for successful experiments
- 2.3 Implement a framework that enables experimentation to be **resourced without compromising mission-critical** priorities
- 2.4 **Become future-ready**, systematically assessing and where appropriate, implementing emerging technologies

03 Data-driven science

- 3.1 Deliberately manage the **data lifecycle** to promote accessible, discoverable, reusable, managed and trusted data
- 3.2 Use sustainable, scalable **compute** and analytics that facilitates research and operational outcomes
- 3.3 Increase the usability of **data and data platforms**

04 Digital culture and capability

- 4.1 Drive **collective governance** and prioritisation for digital investment decision-making
- 4.2 Support **collaboration** and a porous boundary with partners and the community, to facilitate two-way sharing of learnings and resources
- 4.3 Enable **flexible, mobile modes** of working
- 4.4 Build clear, accountable **vendor partnerships** to further the potential of digital-enabled science impact
- 4.5 Deliberately invest in our staff **skills and capability** in contemporary and emerging digital technologies and approaches

01 Strong Foundations

Vision for this theme: Stable, reliable, high-performing, efficient, secure and well-supported digital foundations to enable a world-leading geoscience capability

Approach: We will modernise, strengthen and harden our core digital infrastructures to ensure that they support the organisation and its partners in delivering a trusted, reliable and affordable digital service.

1.1 Operate a stable, contemporary network

This means we will:

- Invest in technologies to modernise, develop and improve Geoscience Australia's internal network
- Ensure the network is well-managed and stable

1.4 Continue the shift to an optimised architecture

This means we will:

- Continue to drive the uptake of cloud services, strategically increasing its presence in the our digital environment
- Implement appropriate centralised governance to support capable procurement, governance and operation of cloud and other platforms

1.2 Invest in scalable, strategic storage and archiving capabilities

This means we will:

- Guide our investment to ensure that our digital infrastructures are scalable and meet data storage requirements now and in the future
- Enable access to data across its lifecycle to drive insight, validation and provenance

1.5 Simplify and consolidate our digital environment

This means we will:

- Find opportunities to consolidate digital assets and increase the benefits of scale, and identify opportunities for natural integration
- Implement processes to ensure no unnecessary future duplication of digital assets or cost
- Define processes outlining how new technologies integrate in to the wider digital ecosystem
- Ensure old products are decommissioned

1.3 Implement measures to boost cyber-security, resilience and trust

This means we will:

- Build a strong security awareness culture
- Implement appropriate controls and safeguards
- Equip our staff with the appropriate tools and processes to meet security requirements
- Develop capability to respond to, and recover from a cyber-security incident

1.6 Differentiate support based on pre-agreed principles that guide allocation of resources

This means we will:

- Deliver support based on principles that reflect agreed strategic and operational requirements, within reasonable resource constraints
- Implement processes to assess and respond to support requests in line with the appropriate support level and to proactively plan capacity shifts

02 Systematic experimentation

Vision for this theme: Systematic approaches and investments that push beyond the status quo to drive innovation

Approach: We will explore new ideas and identify new opportunities to use existing and emerging technologies to increase the insight and impact of our data and expertise

2.1 Sustain and build our capacity for agile collaboration and experimentation

This means we will:

- Embed an agile mindset to drive innovative collaborations between science and technology capabilities
- Create safe, flexible sandbox environments to enable experimentation

2.4 Become future-ready, systematically assessing and where appropriate, implementing emerging technologies

This means we will:

- Trial high-potential emerging technologies that could stimulate innovative, quality geoscience
- Invest strategically in emerging technologies that would improve operational science or introduce organisational efficiencies

2.2 Create predictable, managed pathways into operations for successful experiments

This means we will:

- Create an authorising environment that allows for experimentation to develop new ideas and opportunities
- Have clear and structured pathways to operationalise successful experiments
- Implement structured, flexible governance to monitor, review, endorse and fund experiments into operations

2.3 Implement a framework that enables experimentation to be resourced without compromising mission-critical priorities

This means we will:

- Plan for and anticipate opportunistic capital and operational expenditure on experimentation and implementation

03 Data-driven science

Vision for this theme: To enable data-intensive, high-quality science to deliver improved value to the community

Approach: We will increase quality, usability and access so that users can readily interact with, analyse and trust our data

3.1 Deliberately manage the data lifecycle to promote accessible, discoverable, reusable, managed and trusted data.

This means we will:

- Enhance our data governance and stewardship
- Grow, support and reward good data management and practices
- Continually streamline and enhance our data assets to allow us to create additional value and improved exploitation
- Ensure that public good data is open unless there is reason for confidentiality

3.2 Use sustainable, scalable compute and analytics that facilitates research and operational outcomes

This means we will:

- Develop and use modern data platforms and formats to enable research and operational science that is transparent, secure, accessible and reproducible
- Strategically improve and scale our computational platform and capability, including through collaboration with others

3.3 Increase the usability of data and platforms

This means we will:

- Make our data increasingly accessible, machine-readable and easy to use for a broad cross-section of society, including those that are not geoscience experts
- Continually assess our data sharing arrangements and continually improve and extend them where this would create significant additional value for us and our stakeholders
- Enable consumers of our data to enrich their use through leveraging platforms for visualisation and analysis.

04 Digital culture and capability

Vision for this theme: To enhance our governance, capability and partnerships to drive high-impact science

Approach: We will create and sustain the mindset, culture and expertise needed to continue to grow our digital capability for affordable, reliable operations and for breakthrough science.

4.1 Drive collective governance and informed, objective prioritisation for digital investment decision-making

This means we will

- Make investment decisions and set digital policy directions collectively
- Align policy and investment planning with the One GA initiative

4.4 Build clear, accountable vendor partnerships to further digital-enabled science impact

This means we will:

- Have clear, consistent processes to sustain well-aligned vendor partnerships
- Have clear, purposeful arrangements with commercial partners to enable the delivery of GA outcomes

4.2 Support collaboration and a porous boundary with partners and the community, to facilitate two-way sharing of learnings and resources

This means we will:

- Employ systematic and deliberate approaches to stakeholder engagement and partnerships
- Regularly seek feedback to help us plan for, and deliver more benefit to Australia

4.5 Deliberately invest in our staff skills and capability in contemporary and emerging digital technologies and approaches

This means we will:

- Identify essential digital knowledge domains and recruit, develop and train within these domains
- Create a learning culture, encouraging our staff to learn, share lessons and develop new digital skills

4.3 Enable flexible, mobile modes of working

This means we will:

- Where possible, provide the appropriate tools and processes to enable our staff to work in a way that suits them best and delivers quality outcomes for the organisation
- Support a “mobile culture” that creates new opportunities and experiences for staff at work, out of the office and in the field

Strategic principles: how we will execute the strategy

01 **Think about the whole ecosystem**

Think about and make decisions with a whole-ecosystem mindset, ensuring that digital investments are integrated and coordinated across the organisation and align with the needs and directions of government, industry, research and community partners and stakeholders.

02 **Focus on performant, reliable and secure foundations**

Ensure that our core platforms are robust, stable and well-supported, meeting the expectations of the organisation and those that use our services, and that we have the skills and culture in place to manage these well.

03 **Embrace innovation & experimentation**

Recognise the opportunity afforded by emerging technologies, digital-enabled innovation and cutting-edge digital science, and actively and deliberately move beyond the current state to create new value and contribution.

04 **Be agile and adaptive**

Foster an environment and a culture that is deft at collaboration and is open and responsive to evolving needs and opportunities created by technological innovation.

05 **Enable openness and access**

Be deliberate and active in making data, services and platforms standards-based and available to those beyond Geoscience. In doing so, magnify and multiply the value derived from our work and provide services that align with broader government strategies (such as the Digital Service Standard).

06 **Take collective accountability for the strategic vision**

Come together to make decisions that consistently advance Geoscience Australia towards its long-term preferred future, and that places an emphasis on the collective outcome.

Key performance indicators and measures

For each theme, we will know we have achieved our vision based on the following key performance indicators.

Theme	Key performance indicator	Measures
01 Strong Foundations	Stable, reliable, high-performing, efficient, secure digital and well-supported foundations in place	<ul style="list-style-type: none"><input type="checkbox"/> System uptime and stability<input type="checkbox"/> Number of security incidents<input type="checkbox"/> Increasing infrastructure and licensing efficiency<input type="checkbox"/> Internal satisfaction with GA digital services<input type="checkbox"/> Reduction in retired products not decommissioned
02 Systematic experimentation	Ongoing development of well-supported and well-adopted science solutions	<ul style="list-style-type: none"><input type="checkbox"/> Increase in operationalised digital science innovations<input type="checkbox"/> Number of high-potential emerging technologies assessed
03 Data-driven science	High-value exploitation of data driving better science	<ul style="list-style-type: none"><input type="checkbox"/> Higher trust and confidence in data<input type="checkbox"/> Increased adoption of data products and platforms
04 Digital culture and capability	Sustainable, well-resourced capability in place to support and develop GA's digital vision	<ul style="list-style-type: none"><input type="checkbox"/> Number of new and sustained collaborations<input type="checkbox"/> Increase in available data<input type="checkbox"/> Presence of required capability in current and emerging areas of need

