



ANZLIC
the Spatial Information Council

Strategy Workshop

Summary of discussions
24 October 2019



Introduction

Engaging for impact

As part of its ongoing work towards a harmonised approach for spatial data at the national level, ANZLIC is committed to working in an inclusive and collaborative way with its stakeholders.

In developing the *ANZLIC Strategic Plan 2020-24*, ANZLIC sought to engage with key stakeholders through a Strategy Workshop to ensure that this Plan:

- aligns with stakeholder needs
- addresses stakeholders' key priorities and challenges
- communicates ANZLIC's vision and priorities.

The workshop drew together a diverse range of representatives from industry, government and the research sector and included peak bodies from the Architecture, Engineering, and Construction sector, space-related entities, and advanced data and geospatial specialists.

The session also provided participants with the opportunity to shape proposed *Digital Twin Principles for the Built and Natural Environment in Australia*.

An interactive experience

In exploring the evolving use of spatial data and services to create value and deliver better outcomes for business, government and the community, the workshop featured interactive segments to discuss:

- Emerging trends and challenges for stakeholders over the next 5 years
- ANZLIC's value proposition for stakeholders to create impact and shared value
- Aligning ANZLIC's strategic priorities to support stakeholder needs
- Where to focus collective efforts in the future, and ANZLIC's role in enabling opportunities for collaboration.



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Context and background

Workshop purpose

The purpose of the workshop was articulated by **ANZLIC Deputy Chair, Melissa Harris**. Key points raised by Melissa in her remarks included:

- An overview of ANZLIC's background and role as the peak intergovernmental group providing leadership in the collection, management and use of spatial information in Australia and New Zealand
- An overview of key ANZLIC initiatives, including the Foundation Spatial Data Framework (FSDF) and the evolving need for 3D and 4D data
- The workshop goal is to learn more about stakeholder priorities and challenges ahead, collectively identify ways to collaborate and share information for mutual benefit and to incorporate feedback from this workshop into ANZLIC's strategy and forward work plan.

“ Today's workshop is an opportunity for an open, honest and collaborative discussion on some of the issues around spatial data and information, and how we can work together going forward. ”

Context for workshop discussions

Bruce Thompson, ANZLIC Chair, provided an overview of the key issues, trends and themes as a backdrop to the day's discussions:

- National and global challenges, including:
 - Natural disaster and climate change mitigation and resilience
 - Equitable and safe management of water resources
 - Population growth and development
 - Increasing need for significant infrastructure investment
- Access to and use of location-based data will provide insights to inform decision-making in response to these challenges
- Leveraging geospatial information in the development of new technologies and capabilities, such as AI, machine learning, VR, unmanned vehicles and drones, and smart sensors and IoT
- The value of integrating spatial data with other data such as building, infrastructure, utilities, environment, and socioeconomic data to create spatially-enabled digital twins
- The need to strengthen partnerships and increase collaboration between & across industry, government and research sectors.



Trends and influences

The participatory part of the day kicked off with a rolling Conversation Café session.

This session aimed to understand the influences shaping stakeholder work and identify high-level touchpoints for consideration in the Strategy.

The questions posed during the café were:

- What are the **macro and micro trends and developments** that will influence the work of your organisation/industry in the next 5 years?
- How might **advances in spatial information and data** affect you, or provide new opportunities for you, over the next 5 years?
- How might **ANZLIC help you respond** to these challenges and opportunities?

Common themes

A range of common themes emerged across the three rounds of conversation, including:

- Creating a culture of sharing and collaboration to better enable responses to emerging trends and challenges
- A need to reduce duplication of effort and investment
- Creating stronger links between data custodians.

- The value of mapping relationships, and ways to bring new voices and participants into these discussions that are outcomes-focused
- Enabling better data practice, given the increasing velocity and volume and the step-change presented by machine learning and AI – with a particular focus on:
 - Privacy
 - Transparency
 - Accessibility
 - Affordability.

Areas for ANZLIC to develop its leadership position were identified, including:

- Supporting more shared and agreed understanding of key roles in the ecosystem, and the trust that goes with these roles
- Acceleration of standards development, including a framework
- Extending its reach to more influential areas
- Develop strategic pathways and facilitate participation
- Demonstrate the value of spatial and highlighting best practice
- Bridging roles in education and skills.

A sample of conversation topics and issues are highlighted on page 5.



“ We need to embrace collaborative and multidisciplinary approaches to addressing issues, for example co-design, innovative procurement processes and so on. ”

Discussion highlights

1 Macro & micro trends and developments

Skills & capability

- Access to any **skills and research capability** is a really big issue – this constrains the ability of Australia/NZ to be able to capitalise on opportunities
- How to address **workforce shortages with skills**, especially given skillsets themselves are evolving rapidly (eg AI/ML/VR/AR etc)
- Skills shortages to fulfil **opportunities in emerging fields** like space is a challenge
- Spatial information capabilities need to be delivered to users in an effective way to **promote use and self-sufficiency**

Roles & opportunities

- **Government role vs private role**, eg Governments have role to play to achieve a more consistent application of BIM, BIM data formats standards
- **Carve out a role for Australia/NZ** with opportunities for small start-ups, encouraging private sector involvement in market in addition to government

Data & infrastructure

- **Greater cadence and volume** of data, including real-time
- Building an **infrastructure for federated and integrated datasets** – spatial, social/economic, service-based

2 Advances in spatial information and data

Spatial-led opportunities

- Leveraging the innovation opportunities of **open and shared data**
- Use spatial capacity to **connect data via place** to drive more real-time data in government and IoT at local government level
- Use **spatial as a catalyst for aggregation** (ie spatial foundation) and bonding (connecting with) other data (eg IoT)
- **Modelling real-world environments** in increasingly granular space and time
- Richer/better **real-time monitoring** enabling performance assessment of a wide range of issues (environment, urban spaces, etc)
- Improved **data visualisation capabilities** leading to greater use
- Environmental monitoring:
 - Biodiversity
 - Air quality
 - Water quality
 - Sea surface temperature
- **Equitable access to high quality data and standards**, particularly including:
 - Academics
 - Start-ups
 - Small business
- Opportunity in **standardised definitions** and use of data

3 ANZLIC responding to these challenges and opportunities

Coordination & collaboration

- Stakeholder engagement to **drive the coordination** to achieve the outcomes
- **Culture of collaboration** between governments and with industry
- Coordinating **joint purchase of data**
- Establishing **forums and collaborations**

Engagement

- Give **stakeholders who have not yet joined** the spatial conversation a platform to enable participation
- Need to reach the people who are 'not spatial' but will **play a role** in achieving the outcomes
- **Participate in COAG** (and/or equivalent) processes
- Work with industry bodies to **identify areas of workforce requirements**

Standards

- Common **data formats and structures**
- Alignment with **international standards**
- **Spatialise regulatory models and processes** (machine readable)
- Develop, implement and promote **spatial information/3D/digital twin standards**
- Encourage government to **share/open up datasets** and clear contracts to make sure the data is not locked up

ANZLIC's value proposition

A focused discussion was held to seek feedback on ANZLIC's current and potential value to stakeholders.

Using a "Value Proposition builder" tool, participants workshoped a series of value statements to identify key ways in which ANZLIC could contribute in new and renewed ways to the work of stakeholder industries and organisations.

The participants' responses indicated that there was a degree of uncertainty about "what ANZLIC does now", with most feedback highlighting areas of value that ANZLIC could provide.

Examples of **current value** included:

- Ability to connect, align and coordinate across national jurisdictions
- Establishment, management, standardisation and promotion of the FSDF
- Engagement and evangelism of digital twins.

Examples of **potential value** included:

- Increased leadership through advocacy and a more authoritative voice
- Promotion, communication and collaboration
- Convening to connect expert and non-expert professionals

- Coordination and facilitation of national projects, such as digital twins
- Assisting non-expert and non-spatial professionals to understand the application and value of spatial data and to 'find their way' to spatial data and expertise.

In particular, there was strong support for ANZLIC seeking a **more authoritative voice in senior decision-making fora** such as COAG, and to be more "hard-wired" as a source of advice within Departments.

Participants also emphasised the value for ANZLIC in being the source of **clear understanding and guidance about standards**, including common definitions, protocols, guidelines and glossaries. This also includes an understanding of the data supply chain.

In discussion, the importance of **a shared value approach** emerged as a significant opportunity to explore more explicitly, where ANZLIC's position of authority in the stakeholder ecosystem could **create supportive conditions for collective co-investment** in collaboration and the co-sharing of resources to accelerate take-up and build confidence in spatial data.

Examples of value statements proposed by participants are highlighted on pages 7-9.



Examples of current value statements

ANZLIC's...	help(s)...	who want to...	by...	and...
ability to bring together Australian & NZ governments	the construction industry	achieve more spatial standardising	reducing state and industry differences	increasing national and industry productivity
composition and coordination	spatial organisations in government	work together and access spatial datasets	connecting them to one another	coordinating and publishing datasets
foundation spatial data framework	the planning industry	write reliable reports and make maps	reducing barriers	making quality spatial data open
role as a cross-government forum	individual member agencies	reduce cost and share best practice	linking “spatial” into broader data divisions	endorsing collaboration across agencies
participation in the development of standards	the industry	use data in a consistent and relevant manner	reducing inconsistencies	incorporating feedback from organisations
evangelism of digital twins	CSIRO Data61's Geospatial Intelligence team	build a national digital twin federated data ecosystem	demonstrating the importance of FSDF data, providing information about FSDF supply chains (via LINK) and creating a space for collaboration regarding foundation data supply	facilitating linkages between federal government and states
coordination of priorities	FrontierSI, its partners and the spatial industry	improve service provision through improved data workflows	carrying out collaborative, multidisciplinary, multijurisdictional research and innovation thereby reducing duplicative efforts	enabling leveraged, coordinated activities

Examples of potential value statements

ANZLIC's...	could help...	who want to...	by...	and...
ability to convene for including government and industry	government and industry	collectively offer better services and enhanced value	avoid being government only, and/or siloed government	accelerate the time to value/outcomes as well as increase trust in government/ institutions/ industry
convening ability with the spatial industry	non-spatial industry	deliver new services reliant upon spatial data but don't know it	clarify and explain the value and role of spatial data	enable other industries to benefit from the value of spatial data and increasing the visibility and role of spatial data to non-spatial-specialists
coordination and standardisation of delivery channels	all industries	quickly and efficiently deploy spatial data	reducing acquisition lead times	avoiding data conflicts
coordination of spatial experts in government agencies	the industry	share costs to obtain data (eg digital imagery)	avoiding siloing	enabling communication and joint procurement
local government engagement	local governments	produce quality spatial data, digital twins and planning rules as code	reducing the effort to collaborate	providing forums and standards materials and training
multi-jurisdictional, authoritative advice on priorities	governments and industry more formally	know what the priorities areas of focus are, emerging issues and opportunities for the use of spatial information to activate economic development	reducing siloed, uncoordinated national and jurisdictional efforts	advising COAG and providing annual or biannual priorities to governments at all levels

Examples of potential value statements (continued)

ANZLIC's...	could help...	who want to...	by...	and...
network and mature engagement model with jurisdictions and industry	policy organisations (government, industry associations, financial institutions)	understand the value the spatial information sector delivers	developing a nuanced economic model of the sector that supports strategic investment at policy and business level	increasing productivity and reducing waste
promotion, advocacy, communication and collaboration	government and industry	use and collect spatial data	showcasing and promoting the importance of the professional approach to data and spatial information	increasing interest for the next generation and diversity to choose the spatial and surveying professions
information management experience	non-spatial professionals	manage their data better	reducing fragmentation in the jurisdictions	shared learnings
leadership and advocacy	all organisations with spatial/place work	gain political support and funding to improve their benefit to industry and the community	engaging with relevant federal and state ministers	engaging across relevant industry groups
role to develop, coordinate, implement, promote the broad range of spatial information standards, protocols and definitions	the whole spatial industry and user community	participate in a federated system	shared understating and mutual value	facilitated data sharing and publishing

Alignment of priorities

The intent of this session was to use ANZLIC's draft strategic priorities as a basis for exploring areas of cross-sector strategic alignment, and identify potential gaps.

ANZLIC's draft strategic priorities are:

- ▶ **Modernising foundation spatial information and data** to 3D and 4D (time) formats, including streamlining processes and improving collection, processing and maintenance.
- ▶ Investing in **spatial capabilities for the future** by actively promoting diversity and inclusion in the spatial sector and working to develop and share spatial expertise.
- ▶ **Collaboration and engagement** with stakeholders to co-design spatial initiatives and advocate for ANZLIC's priorities and the value of spatial information.
- ▶ **Creating insights and influencing decision making** through accurate, current and accessible spatial data.
- ▶ **Future proofing** by embracing and advocating for spatial-related R&D and emerging technology.

Significant alignment across all strategic themes was identified, particularly in the following common priority areas:

- Evolving the **full data lifecycle**: capture, procurement, access, standardising, enriching and the development of new data products
- A concerted effort to improve **skills and literacy** in the use of data, including spatial data
- A broad **definition of "capabilities"**, ranging from systems and processes through to practices and people
- Common **whole-of-government data infrastructure** to unlock value
- Understanding the **ecosystem of industries and technologies** that touch spatial data and services
- Building **stronger relationships across siloes**: sectors, disciplines, jurisdictions
- Create **platforms for collaboration and communication**
- Greater and more **visible advocacy** of the value and role of spatial data in creating places and supporting better decisions
- Focus on **supporting policy insights** across all portfolio and interest areas
- Ensure **investment in the workforce and skills** for the future.

A sample of priorities are documented on pages 11-12.



Examples of stakeholders' strategic priorities in alignment with ANZLIC

Modernising foundation spatial information & data

- Automating data input, processing and delivery
- Creation of a whole-of-jurisdiction 3D dataset including natural and built environment
- Develop modern standards for FSDF and consider expanding them to support key place datasets for the future digital economy
- Enabling user access to current, accurate data through online services
- Improving data quality to better leverage data re-use
- Improving data workflows for government service provision
- Improving the quality, accuracy and timeliness of data underpinning decisions
- National data legislation in place

Spatial capabilities for the future

- Building a data literate workforce
- Data and standards that promote national consistency and relevancy in spatial data
- Develop body of knowledge platform for spatial practitioners
- Enable whole of government data infrastructure to unlock economic, social and environmental value
- Ensure planners are taught the skills they need to engage with technology
- Have accurate, good quality location data that talks to other data
- Improve how we value good information management practice
- Improve the spatial maturity of Australian Government agencies

Collaboration & engagement

- Bringing third-party data to the table (eg infrastructure operators, asset owners, customer data) especially to fill data gaps
- Build a spatial intelligence platform that brings privacy, machine learning and analytics to digital twins
- Build collaborative models based on value that contributors derive, and create that is sustainable and iterative and resilient
- Create the spatial data marketplace where government and industry intersect to build value from a digital twin
- Deliver an open location platform to enable a complete ecosystem around spatial data

Creating insights & influencing decision-making

- A range of case studies that demonstrate major impact in spatial data analytics for urban and regional planning and policymaking
- Advocating on behalf of our members on issues of significance to the spatial information sector
- Be a respected source of practical information for members and practitioners
- Bring together positioning, earth observation and digital mapping for policy insights
- Defensible data for enforcement of laws and regulations in Australia's marine jurisdiction
- Enhance the imagination of planners around the opportunities of digital

Future-proofing: R&D and technology

- Automating manual decision-making and assessment
- Deliver information that is end-user driven to serve the needs of the communications, agriculture, transport, defence, energy and resources industries
- Have an operational place-based Digital Twin for existing and new locations
- Have new Australian businesses digital and data savvy
- Incorporation of real-time data that captures the ability for AI and machine learning for decision-making
- Investment in workforce and skills to enhance analytics and predictive modelling functions
- Mitigate the effects of disasters on Australia's communities, businesses, and infrastructure

Examples of stakeholders' strategic priorities in alignment with ANZLIC (continued)



Modernising foundation spatial information & data Spatial capabilities for the future Collaboration & engagement Creating insights & influencing decision-making Future proofing – R&D & technology

ANZLIC's priorities > 2024

Session 3: Strategic priorities, action and role 15min anzlic.gov.au



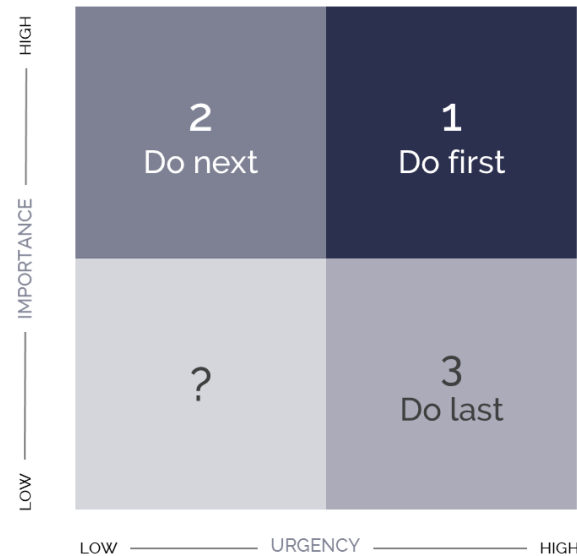
Initiatives to create value

ANZLIC presented their proposed suite of initiatives for consideration by stakeholders.

The 12 initiatives currently being considered by ANZLIC are:

Delivery of spatial data	Modernise FSDF
Digitise property transactions	Coordinated imagery acquisition
Diversity and Inclusion	Support autonomous vehicle needs
Digital Twins & Smart Cities	Geocentric Datum of Australia 2020
Positioning (SBAS, NPIC)	Address Validation
Stakeholder engagement	Spatial skill shortages

Using an online polling tool, participants were asked to **rate the 12 proposed initiatives by their importance and urgency**, which was then assembled onto a matrix.

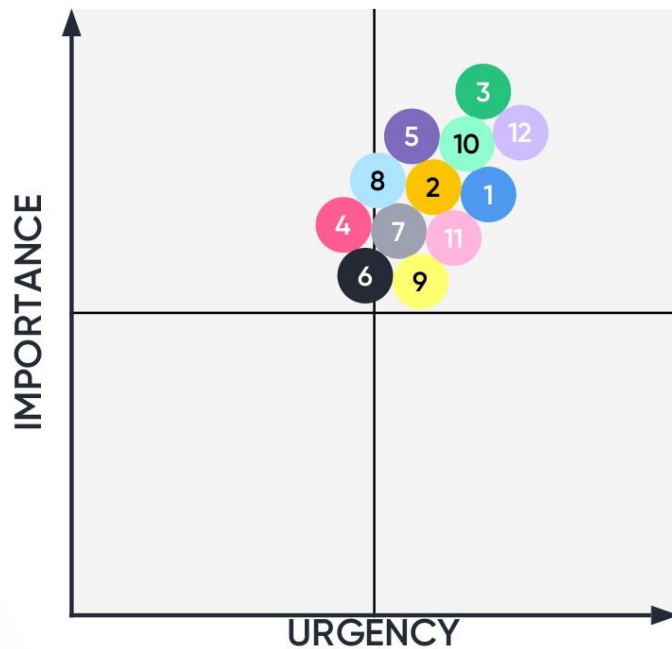


The resulting matrix is shown on page 15, including a link to the dynamic online version of the matrix.



Priority matrix: 5 year initiatives

Mentimeter



- 1 Digital Twins and Smart Cities
- 2 Geocentric Datum of Australia 2020 transition
- 3 Improved spatial data delivery
- 4 Coordinated imagery acquisition
- 5 Positioning
- 6 Whole-of-gov address validation
- 7 Digital transformation of property transactions
- 8 Transport
- 9 Modernise the FSDF
- 10 Improved engagement
- 11 Diversity and inclusion
- 12 Skills and capability

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ANZLIC's evolving role

What role could ANZLIC best play in the next five years to respond to stakeholder priorities?

Reflecting on the range of issues and ideas emerging from the previous sessions, participants were asked to consider the most effective role for ANZLIC that is responsive to the priorities and needs of its stakeholders.

In considering this question, participants were asked:

Over the next five years, what should ANZLIC:

- **START** doing?
- Do **MORE** of?
- **KEEP** doing?
- Do **LESS** of?
- **STOP** doing?

Participants identified a range of responses across this spectrum. In the plenary discussion, it was noted that **there is both a need and an opportunity to consider many of these ideas as collective effort**: where ANZLIC may have a clear leadership role to play, the wider ecosystem also has an important contribution to make to deliver greater value.

Examples of ANZLIC roles identified include:

- **Elevated leadership, advocacy and influence**, especially at senior levels of government
- Provide **mechanisms for more engagement and collaboration** across the evolving stakeholder ecosystem, including pathways to non-spatial professionals
- Expand the **scope and participation options** for industry and the research community, as well as ways to engage with non-spatial professions and disciplines
- **International engagement**, especially on standards and exploring ways to leverage Australia and NZ role in these global fora
- Provide a clear **ANZLIC / ICSM roadmap** that identifies priorities and collaboration opportunities across the full spatial value chain, linking supply with demand
- Convene and host **renewed approaches to working groups** that are less internally-focused
- Building **shared spatial understanding**: standards, policies, protocols and definitions
- Facilitate **skill- and capacity-building** across spatial and adjacent sectors.

A summary of specific responses is provided on page 17.



Over the next five years, ANZLIC should...

Start ...

- Providing strong support for coordinated advocacy
- Encouraging broader and more diverse participation
- Curating the executive thinkers (higher level bureaucracy and politicians) and extend into the academics
- Developing and implementing a National Spatial Roadmap that:
 - clearly connects supply with demand
 - creates the conditions for improved, evidence-based decision-making
 - focuses on connecting spatial information to emerging themes and trends: “spatial + ...”
- Convening a project to develop a National Spatial Repository for BIM and PIM
- Bringing the ecosystem together
- Exploring shared resources arrangements
- An expert industry advisory group to ANZLIC to promote mutual influence
- Facilitating capacity-building – education, professional development
- Developing a Standards Framework
- Choosing a smaller focused set of initiatives and do them well
- Increasing the potency of its voice and influence
- Leveraging existing local and international frameworks and alignment
- Exerting its leadership role as a facilitator of systemic reform

Be more ...

- Authoritative than consultative
- Outcome rather than output focused
- Technology agnostic in solution development
- Focused on activation

Undertake more ...

- Structured engagement
- Collaboration, information sharing and facilitating connections between government, industry, academia and end users, including linkages with existing networks and initiatives like 2026 Agenda
- Open relationships
- Workshops
- Clarity about the authorising environment – currently ambiguous
- International outreach and engagement
- Awareness about ANZLIC’s role and it’s value proposition
- Engagement with the education sector

Keep ...

- Leading the development of standards and policies
- Being a conduit for national data conversations
- Pushing for open data
- Developing and promoting FSDF
- Promoting a national spatial agenda

Be less ...

- “Volunteer” in approach – develop ANZLIC’s role to be more integrated and demonstrate the case for better resourcing

Support fewer ...

- Inactive working groups
- Technical working groups

Stop ...

- Grappling with relevance
- Being seen as a “closed shop”

Spatial Principles for Digital Twins

This session focused on developments related to digital twins, particularly spatially-enabled digital twins of the built and natural environment.

The objectives of this session were to

- Seek **high-level feedback** on key elements of the draft paper Principles for Spatially Enabled Digital Twins of the Built and Natural Environment in Australia, particularly benefits
- **Scope early collaborations** to deliver spatially-enabled digital twins in Australia.

Deb Anton, Interim National Data Commissioner made some brief remarks to introduce the Office of the National Data Commissioner and encourage ongoing interaction as these conversations evolve.

Bruce Thompson provided some context for the discussion, including an introduction to the digital twin concept and an overview of application, value and benefits of a spatially-enabled digital twin. This included references to case studies in Victoria, NSW, SA, Tasmania and South-East Queensland.

(These reference materials are available as a separate companion document)

A draft set of principles has been developed by ANZLIC (see page 19) and the group was invited to consider the principles, and explore the following questions:

- What are some of the other **benefits of spatially-enabled digital twins** that we need to capture?
- How can we all **work together** to reach a workable model?
- What **opportunities and roles** would you and your organisation like to explore moving forward?

In framing the discussion, the group acknowledged:

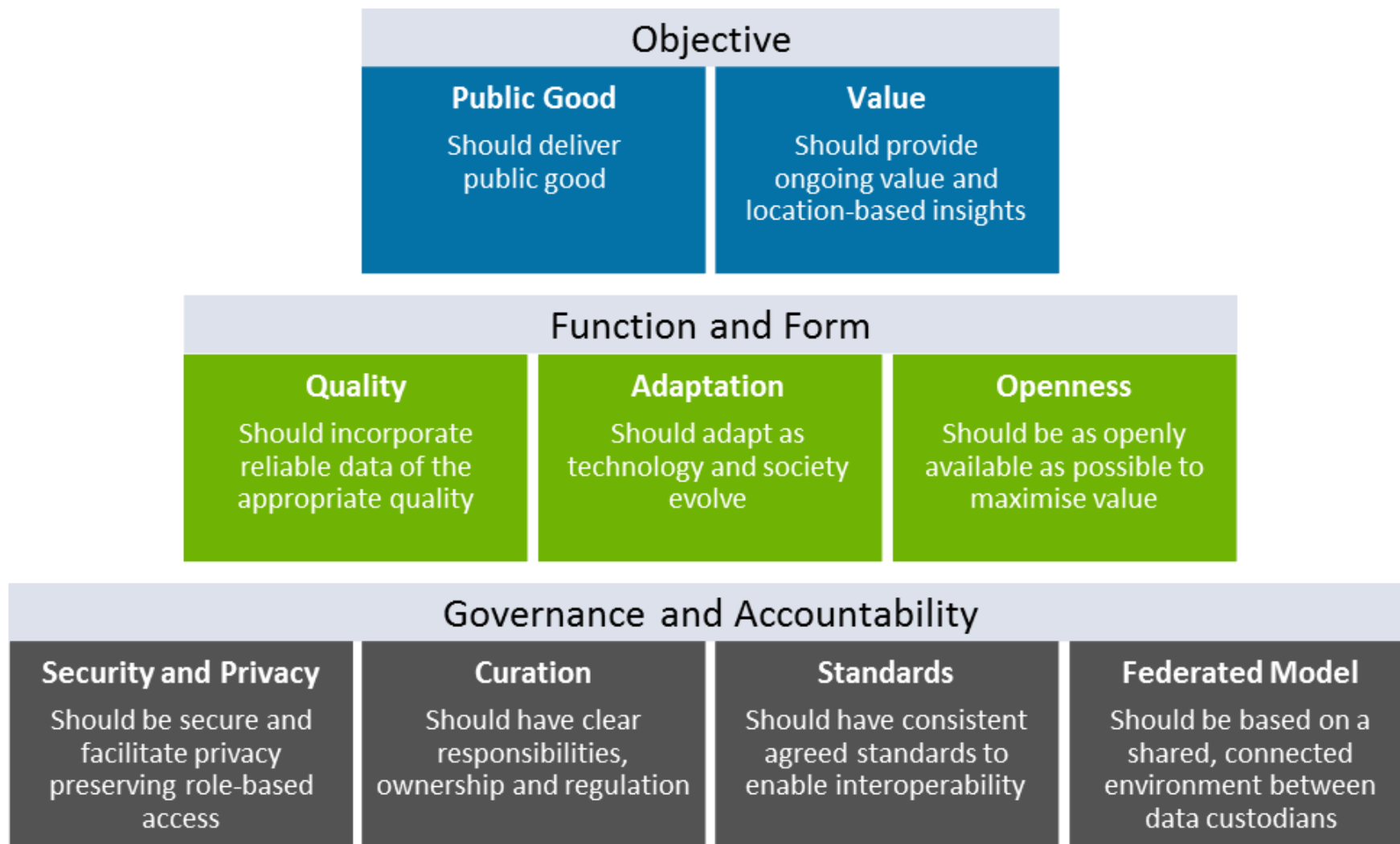
- The **differing levels of awareness, experience and readiness** regarding digital twins, encouraging those participants with experience and insight to help sense-make and provide pathways for novices
- The opportunity – for some, the imperative – to **expand the frame of the discussion** and potential benefits to digital twins in general, rather than seeing ‘spatially-enabled’ as a perceived separate class of twin.

A summary of the key issues and questions arising from the discussion is highlighted on pages 20-22.

“ We should be bold and set the bar high by declaring that digital twins should be inherently spatially-enabled, and if it's not, then it's not a digital twin. ”



Draft principles for spatially-enabled digital twins of the built and natural environment in Australia



Discussion summary: principles for spatially-enabled digital twins

Benefits

Better quality places and communities

- Full lifecycle modelling and scenarios - real-time environmental, economic and social modelling of the built and natural environments, capacity to “rewind” and “fast forward”
- Connected twins to view relationships
- Enable safer, more efficient cities

Better, more transparent regulatory environment

- Intersection between technology and regulation

Optimised investment in infrastructure

- Provides total system view of construction - removes isolated analysis
- Lower costs, more safety and security
- Improved construction and property development efficiencies
- More real-time impact of new construction
- Have the digital twin early (before the decision is finalised) to model and analyse options and save money/effort

Radical improvement in evidence-based decision-making

- Joined-up government view
- Aggregated datasets to enable connected analysis

- Understanding changes and patterns of change
- Visibility and visualisation: the ability to “show it” to influence decision-makers and understand:
 - Where is it happening?
 - What is the cause?
 - What are the relationships?
 - Who is responsible?
- Unlock latent siloed data

Improved democratic transparency and participation

- Increased transparency, leading to better accountability and more trust
- Enables people to see what is proposed more clearly
- Co-design opportunities

Accelerated research and development

- Living Labs can provide a collaborative mechanism to conduct experiments, harvest policy insights, identify behavioural insights

New digital economy industries and skills

- To realise this benefit, there needs to be a focus and investment in education and skill development
- Platform for mobility-as-service

Enhanced environmental performance and improved sustainability

- Understanding and managing the natural environment
 - Water management
 - Water/energy security
 - Agriculture
 - Mining

“Real-time pulse” of the built environment

- Supporting real-time management, planning and construction
- Disaster response
- Transport congestion response

Discussion summary: principles for spatially-enabled digital twins

A workable model for collaboration

Agreed “rules of engagement”

- Multidisciplinary and sectoral – need defined roles, coordination and governance mechanisms
- Establish standards and protocols for interchange, and develop sharing mechanisms based on open data and interoperability principles
- Governance impact: how do we change the model of data and data roles defining who is the producer, owner, custodian to enable the changes that are required?
- Coordinating and governance mechanisms
 - Who owns and operates platforms?
 - Who will/can access them?
 - How do we ensure QA?
- Cultural change management re the data ecosystem
- Voluntary vs mandatory data sharing

Policy and information frameworks

- Centralised coordination for a national information and standards framework that is funded (eg UK)
- Agreed standards and definitions
- Need to develop common language for standards and connections
- Common understanding and definition of digital twin

- Maintenance regime - constant information management across time, number and quality of the data sources
- Policy framework with “line of sight” from COAG through federal, state, local
- Align policies to interventions like digital twins
- Enabling legislation
 - Planning/property
 - Privacy
 - Data sharing
 - Costs (transaction)
- “No investment is made by government without a digital twin”

Collective capacity

- Will need a huge capability uplift of multiple professions
- Focus on next-generation exposure
- LGAs and planners need development to adapt to a planning and regulatory process that operates in 4D
- Leverage CRC programs
- Concurrent design facility concept – used in spacecraft design, how can this translate to digital twin?
- Collective disciplines and decision processes

Roles

- ANZLIC as coordinator and champion
- Define roles for LGAs and property owners

Beyond the “built environment” bias

- Not just about the built environment
 - Natural environment and resources
 - Human services
 - Medical health

Discussion summary: principles for spatially-enabled digital twins

Opportunities to explore

International opportunities

- Explore international examples for peer to peer exchange and learning
- Contribute to ISOs as national leadership
- International exemplars to help communicate value and benefits

Universities and research

- Innovators, new models, AI, ML
- Educational resource – train the next generation of spatial scientists, planners and policymakers, urban designers etc
- Future Cities CRC

Industry growth and development

- Growth opportunity for the industry – economic, employment, training

Communication and engagement

- Need to engage the broader ICT industries
- Explore opportunities to influence federal government to invest
- Improved, evidence-based decision-making
 - Evidence based
 - Support government grants and funding requests
 - Explain business cases and impacts
 - Prioritisation and optimisation
 - Aligning policy to interventions



Engagement

The final session of the workshop focused on insights from stakeholders about engagement expectations and preferences.

Given the range of issues, themes and opportunities explored throughout the day, this session aimed to inform ANZLIC about how best to engage with stakeholders for mutual benefit.

Participants were invited to suggest engagement modes and ideas, and then organise them using the IAP2 Engagement Spectrum

A number of organisations indicated specific and focused engagement with ANZLIC:

- Office of the National Data Commissioner
- SIBA/GITA
- SSSI
- Space Industry Association
- Australasian BIM Advisory Board
- ABS.

A summary of suggested engagement modes and options are highlighted on page 24.

Common recommendations included:

- Regular **email newsletter** linked to web/blog and appropriate social media
- **Presentations at industry events** and targeted presentations/briefings to organisations and stakeholders
- **Publishing of decisions, activities and strategic plan progress** (for example via a quarterly update)
- **Annual workshop**, including showcase and sharing of learning and impact
- **Sessions on major themes**, projects and/or activities
- Outreach to **non-spatial organisations and stakeholders**
- Involvement in **other relevant industry forums**
- **Working groups** drawn from today's audience to work on different issues
- Better linkages with **professional and industry bodies**
- Mechanism to include **profession, industry and academic/research representation in ANZLIC** – eg advisory group
- A **common set of terminology** (common language) - SI standards, protocols and definitions; sensemaking for non-experts
- Explicit leadership in **spatial data standards**.



INFORM US

STANDARDS & FRAMEWORKS

- Standards and frameworks published in machine-readable format

UPDATES

- Regular (monthly) email newsletter update, supported by information on the web and social media
- Quarterly update: a short bullet points email with key actions, achievements, priorities from the previous quarter
- Annual update to ADDC and Senior Officials Group

ANZLIC DECISIONS & PROGRESS

- Publish ANZLIC discussions and decisions after each meeting

PRESENCE

- Presentations at industry events

SHARE BETTER PRACTICE

- Posts with case studies of better practice with easy-to-contact people (blog, LinkedIn, Twitter, YouTube)

CONSULT with us

BRIEFINGS & WORKSHOPS

- Targeted presentations and briefings to organisations and stakeholders about strategic initiatives
- Briefing on ANZLIC priorities to groups such as the Office of the National Data Commissioner
- Annual workshop, including showcase and sharing of learning and impact

WIDER CONSULTATION MECHANISM

- Establish an advisory group to ANZLIC from industry, academia and peak bodies with linkages to ANZLIC meetings
- Outreach to non-spatial peak bodies and other stakeholders

INVOLVE US

COMMON LANGUAGE

- A common, agreed set of terminology across Government, industry, research and public: spatial information standards, protocols and definitions
- Sensemaking tools and guides for non-experts

PARTICIPATORY EVENTS

- Webinars on major themes, projects, activities

COLLABORATE with us

CONVENE COLLABORATIVE SESSIONS

- Workshops, labs or forums for major work/initiatives
- Purposeful workshops adjacent to other relevant national forums

EMPOWER US

ESTABLISH WORKING GROUPS

- Working groups drawn from Strategy Workshop audience to work on different issues



Participants

Industry and sector representatives

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Martin Brady

Australian Bureau of Statistics (ABS)

James Cameron

Australian Construction Industry Forum (ACIF) and
Australasian BIM Advisory Board (ABAB)

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