Australian BIM Strategic Framework

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Introduction

State and Territory Governments recognise the value of Building Information Modelling (BIM) in the delivery and management of buildings and infrastructure assets and networks across Australia.

BIM offers many benefits throughout the asset lifecycle and has the potential to drive efficiency, value for money, productivity and innovation.

Governments are committed to enabling and supporting Australian industry and asset owners to take advantage of the opportunities provided by BIM in design, construction and asset lifecycle management.

This Australian BIM Strategic Framework. is the first key step to establishing a basis for governments to adopt a consistent national approach to BIM in major building and infrastructure construction projects across Australia. Australian industry also shares a responsibility for ensuring that it develops capability, expertise and skills.

State and Territory Governments will work collaboratively with industry to ensure the success of the Framework, including with the Australasian BIM Advisory Board (ABAB) to continue to provide collaboration and leadership.

Strategic Action Areas

Providing clear direction about government BIM adoption and requirements	State and Territory Governments will develop polices and guidance appropriate to their jurisdictions, through a joint Government and Industry approach, consistent with the Framework.
Developing and adopting standards and ensuring an open and common data environment	BIM data formats, standards, protocols, systems and tools should be open and harmonised across the nation, where possible, to ensure that the benefits of BIM can be fully realised by industry and governments.
Enhancing procurement and contractual arrangements	State and Territory Governments recognise that transparency in procurement and contracting is essential for building capability and enabling industry engagement and development.
Encouraging the development of skills and building capabilities	State and Territory Governments recognise the importance of developing skills and capabilities to enable BIM to be utilised across the entire asset lifecycle.

1. Objectives

The objectives of the Framework are:

- To promote a consistent and coordinated approach to BIM by the building and infrastructure sectors nationally
- To encourage and support innovation and efficiency in the delivery and management of public and private infrastructure.
- To promote consistency and openness in the data requirements for major public buildings and infrastructure assets to facilitate a consistent more harmonised approach to industry in the application of BIM.
- To increase capacity and capability across both the public and private sectors to optimise the benefits of BIM in building and infrastructure development, delivery and

There is an opportunity for harmonising a common, Australia-wide strategic approach for the use and application of BIM.

Government policy and public procurement methods are powerful tools to support such a step-change. State and Territory leadership will encourage the development of industry capability and the adoption of BIM in large government building and infrastructure projects, while enhancing the opportunity to significantly improve the productivity of construction activities and improved asset management.

A harmonised State and Territory approach working together with industry and the skills sector is essential for achieving this transformation.

It is important to note that a number of Australian industry associations, research organisations and networks have actively pursued BIM for more than 15 years (Attachment 1). This is considered essential to leverage and maximise the realisation of the Framework's objectives.

2. Defining Building Information Modelling (BIM)

BIM is a digital form of construction and asset operations. It brings together technology, process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision making for both buildings and public infrastructure assets across the whole lifecycle. It applies to new build projects; and crucially, BIM supports the renovation, refurbishment and maintenance of the built environment – the largest share of the sector. (EU BIM Taskgroup, 2018)

BIM enables a collaborative way of working using digital processes to support decision making and enable more productive methods of planning, designing, constructing, operating and maintaining assets through their life-cycle.

BIM enables the creation and management of information on a project – before, during and after construction, serving as a shared knowledge resource for information about an asset throughout its lifecycle. It provides a digital representation of the physical and functional characteristics of buildings, infrastructure or environment. It reflects the convergence of emerging technologies, such as geospatial location services Geographic Information Systems (GIS) and visualisation technologies such as Augmented Reality (AR), to derive better business, project and asset delivery and management outcomes.

BIM is as much about process as it is about technology. BIM processes emphasise information sharing and the breaking down of information silos between various professions and project stages.

BIM may also be referred to as Asset Information Modelling (AIM), Virtual Design and Construction (VDC), Digital Engineering (DE) and the terms Building Information Modelling or Management are variously used interchangeably.

In some ways BIM is an evolution of Computer Aided Design (CAD) and 3 Dimensional (3D) visualisation, however it incorporates far more information than just the geometric aspects with links to information on any component of the model.

Such alternative terms have been retained where it reflects the name of an organisation, title of a document or specific initiative.

3. National Policy Principles

Through extensive State and Territory consultations, in November 2016 the Council of Australian Governments' (COAG) Transport Infrastructure Council endorsed National Digital Engineering Policy Principles as a step towards a national adoption and integration of BIM in building and infrastructure development and management and its interaction with industry.

While national consistency in the approach to BIM and the data requirements for major projects is a central objective, it is recognised that it is important for State and Territory jurisdictions to continue to operate within their own policy parameters to provide some flexibility to meet individual needs and requirements.

National Digital Engineering Principles

- A more consistent application of Digital Engineering in public infrastructure will be actively encouraged and supported by Government at a level appropriate to the size and complexity of the asset.
- Digital Engineering data formats, standards, protocols, systems and tools should be open and harmonised across governments, where possible, to facilitate greater consistency in engagement with industry.
- Digital Engineering data formats, standards, protocols, systems and tools should be harmonised across whole of asset life-cycle management processes, where possible, to ensure data built up through the design and construction phases of a project is fully utilised in the asset management and operations phases.
- Governments will work to ensure Digital Engineering approaches complement existing project design and development systems and interface with Geographic Information Systems (GIS) to graphically display and visualise relevant information captured as part of the Digital Engineering process.
- Governments will work collaboratively across state and territory jurisdictions and with the private sector to drive best practice in the application of Digital Engineering in public infrastructure development and management.
- Governments will seek to actively incorporate lessons learned from all sectors and international experiences in the application of Digital Engineering in public infrastructure development and management.
- Governments will work to build capability within the public sector to support Digital Engineering and, where practicable, enable an increase in private sector capability and capacity to optimise the application of Digital Engineering.

4. Fostering an integrated approach

As developers, procurers, and managers of major building and infrastructure construction projects and assets, State and Territory governments are well-positioned to benefit from the use of BIM. Particularly as they have direct responsibility for delivering major infrastructure projects, providing infrastructure services to the community and industry, and owning and managing public infrastructure assets.

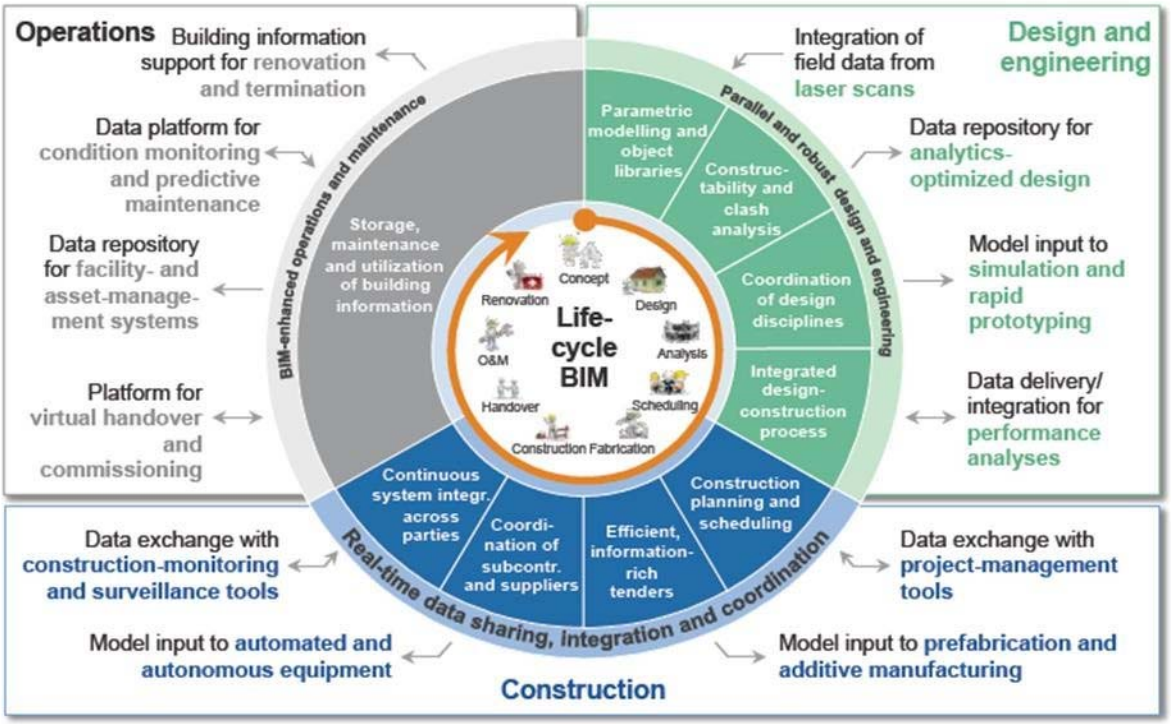
The framework will:

- guide the consistent implementation, integration and promotion of BIM
- confirm the role for governments on national issues such as the development and use of common standards and digital data sharing policies
- promote continued innovation and capability development in relation to BIM across building and infrastructure delivery and management supply chains.

The strategic action areas identified below will ensure that individual activities by State and Territory governments are appropriately prioritised, while also recognising commercial aspects of project delivery and each government's responsibilities.

5. Realising Benefits and Addressing Obstacles

State and Territory Governments recognise the opportunities offered by BIM, as identified by the World Economic Forum:



Source: World Economic Forum, Shaping the Future of Construction, May 2016

The collaborative aspects of BIM can unlock efficiencies and productivity gains, as well as other benefits such as:

- Increased utility and speed
- Enhanced collaboration
- Greater data integrity and quality
- Enhanced fault finding
- Improved information sharing
- Time and costs savings that can be directly translated into productivity gains
- Greater transparency and accountability in decision making
- Increased sustainability
- Labour market improvements.

However, there is also evidence of obstacles to the adoption of BIM, such as:

- Lack of client understanding, engagement, and demand
- Lack of a consistent national industry wide approach
- Cost of implementation
- Disruptive process and change resistance
- Lack of standards for information exchange and interoperability
- Lack of a digital planning among clients
- Uneven skill levels or capability.

Governments and industry have complementary roles to play in addressing these. The Framework and State and Territory jurisdictional plans are important are important to unlock the potential significant productivity and efficiency gains, as well as overcoming the obstacles.

6. Strategic Action Areas

That State and Territory Governments agree the following priority actions to shape a consistent national approach to enhance the adoption of BIM for government, industry, researchers, and the education sectors.

1. Providing clear direction about government BIM adoption and requirements

State and Territory Governments will develop polices and guidance appropriate to their jurisdictions through a joint government and industry approach consistent with the Framework.

Relevant existing governance structures across and within State and Territories will be utilised to ensure strong interface between industry and governments to support the delivery of the Framework. This includes mechanisms like the Australasian BIM Advisory Board, and potentially COAG Councils for national decision making.

Governments will also collaborate on key inputs such as systems, capability development and real-world assessments to further the adoption of BIM across the building and infrastructure supply chains and government entities.

State and Territories will develop a forward work plan potentially each year. This will address all key areas of this Framework. It will be informed by and build upon industry and government-led efforts.

Leadership will be demonstrated by raising awareness and acceptance of BIM and strategies to efficiently manage transitions between old and new processes and technologies. A Communication Strategy will be developed within 12 months of the commencement of this Framework.

States and Territories have a particular role in providing clear direction and requirements.

Each State and Territory should consider development of a BIM implementation Plan for their jurisdiction. The BIM implementation plan will detail the approach to be taken to support the adoption of BIM by industry and relevant government entities, consistent with this Framework.

State and Territory Plans will also address the different capabilities, capacity, and trajectory of each jurisdiction. This includes giving attention to the anticipated level of BIM uptake over time for that jurisdiction using agreed definitions of “levels of BIM”, so as to provide necessary clarity including to industry and to enable the sequencing of effort consistent with this Framework to support BIM adoption across the nation.

It is recognised that Governments will have specific requirements in areas such as information asset management and security, and related protocols, and that these will take precedence in the development of State and Territory and Plans.

2. Development and adopting standards and ensuring an open and common data environment

BIM data formats, standards, protocols, systems and tools should be open and harmonised across the nation, where possible, to ensure that the benefits of BIM can be fully realised by industry and governments.

Development of BIM data standards will be a collaborative effort between governments and industry.

Governments will require the use of a standards, with this to be based on open data format for the exchange of information. Support will continue to be provided to industry to provide for the development of common technical standards appropriate for the Australian context, to ensure that the greatest benefits from the adoption of BIM are realised.

Data classification systems and data exchange formats will refer to relevant standards, including those that are developed locally or adopted international standards where relevant to the Australian context.

A Common Data Environment will be considered for managing data and information, including related processes and rules for data management, as a means of allowing quality assured information to be managed, shared, used and stored. This will take into account complementary national effort on broader information and data standards undertaken by governments.

Important to this is ensuring that appropriate security standards are prioritised for development and implementation, with this a priority matter for action by governments at a national level.

3. Enhancing procurement and contractual arrangements

State and Territory Governments recognise that transparency in procurement and contracting is essential for building capability and enabling industry engagement and development.

State and Territory Governments will improve procurement methods to allow for the adoption of BIM, and wherever possible, will adopt a nationally consistent approach to BIM in the procurement of building and infrastructure construction and management.

These approaches will take into account current commercial and intellectual property structures relevant to construction and asset management in Australia and draw on these to inform the development of a Best Practice Guide on procuring that is inclusive of BIM.

A national approach in this area will be developed, drawing on existing governance structures and industry more broadly. This will be iterative, in recognition that the adoption and use of BIM continues to evolve.

Integral to this is State and Territory Governments establishing baseline detailed digital requirements, including codifying the technological deliverable requirements of construction projects.

4. Encouraging the development of skills and building capabilities

State and Territory Governments recognise the importance of developing skills and capabilities to enable BIM to be utilised across the entire lifecycle of an asset.

State and Territory Government will support the development of capability and systems within their agencies, consistent with agency objectives and their jurisdictional BIM Plan once established.

State and Territory Governments will consider engagement in Communities of Practice where these have been established to accelerate the capability building and encourage collaboration. Such Communities of Practice may be based on themes that relate to governments across the nation, as well as by jurisdiction.

Governments will continue to work with and encourage industry to increase its capabilities and develop a competitive edge in BIM.

Significant competitiveness gains can be achieved by building strategic alliances, improving access to competitive infrastructure (hard and soft), encouraging innovation and the uptake of technology and skills, and through the creation and application of knowledge to create wealth.

The approach to BIM in public procurement will help drive industry development, including pilot projects, training and promotion to recognise early success and provide for broader capability building.

Attachment 1. Australian Guidelines and Frameworks

A number of Australian industry associations, research organisations and networks have actively pursued BIM for more than 15 years, providing an important platform for realising the objectives of this Framework.

NATSPEC National BIM Guide and BIM Management Plan Template

Following a 2011 request to NATSPEC by the Department of Innovation (Commonwealth) to develop a National BIM Guide for Australia, and industry consultation, NATSPEC released the

BIM guidelines to assist clients, consultants and stakeholders to clarify their BIM requirements in a nationally consistent manner.

The National BIM Guide details BIM deliverables in greater detail, including documentation and data-standards in support of the BIM process. This document was reviewed by government and industry in 2016 and was reconfirmed without change. Supporting documents and tools include the Project BIM Brief and BIM Management Plan Templates.

In 2018, NATSPEC launched the BIM Properties Generator which is a free online tool for standardising object designations, properties and property names.

buildingSMART National BIM Initiative

buildingSMART has played a key role in the promotion of BIM in Australia, developing a two-part report containing a roadmap for BIM uptake in 2012. The roadmap helped mobilise industry and has provided a valuable resource to guide the uptake of BIM.

In 2017, buildingSMART launched BIMcreds which offers BIM/DE practitioners a mechanism for demonstrating their competence. BIMcreds will complement the BIM Knowledge and Skills Framework developed by the APCC/ACIF BIM Education Group.

BIM Practice Guides by the Australian Institute of Architects and Consult Australia

In 2012 and 2013 the Australian Institute of Architects together with Consult Australia, released a total of 27 “Practice Guides” on BIM, addressing a broad range of topics and stakeholders.

Each of the guidance papers offers a baseline level of information to the industry. The effort was aimed to offer practical, entry level information to assist those in the supply chain who were new to the concepts behind BIM and their effects on the construction sector.

Towards a National Strategy by the Sustainable Built Environment National Research Council (SBEnrc)

In 2014, the SBEnrc released a guidance document and continues to promote the development of an Australian national strategy for BIM adoption.

In 2016, the SBEnrc developed the BIM Value Tool, in collaboration with NATSPEC, to support built environment practitioners seeking to implement BIM across the life-cycle of built environment assets and wanting to understand how BIM will deliver value to their businesses and projects. At the end of 2017 the BIM Value Benchmarking tool was released so that practitioners may compare project data with others.

BIM-MEPAUS Standards, Guidelines, Specifications and Models

Over many years BIM-MEPAUS has been giving specific focus to the application of BIM for mechanical engineering aspects of buildings and infrastructure, extending throughout the design and operation process. BIM-MEPAUS standards, guidelines, specifications and models have been instrumental in supporting Australia’s global leadership in this area.

Joint BIM efforts by the ACIF and the APCC – ABAB

The most recent additions to the suite of BIM documents and guides stem from a combined effort between the Australasian Procurement and Construction Council (APCC) and the Australian Construction Industry Forum (ACIF). Next to their publications such as the “Framework for the Adoption of Project Team Integration and Building Information Modelling” the joint group released a Building and Construction Procurement Guide with a predominant focus on Project Team Integration and BIM.

The APCC and ACIF see their role as mediator between industry interests and Government requirements. APCC/ACIF’s focus lies less on the technical aspects of BIM, but they rather focus on legal, procurement and collaboration/process related topics.

In 2017 APCC and ACIF, together with NATSPEC, buildingSMART, and Standards Australia and the support of State governments, established the Australasian BIM Advisory Board (ABAB). The ABAB is taking a whole of construction industry approach to the national adoption of BIM.