BIM Management Plans

P3 How should you prepare & apply a BIM Management Plan?

BIM IN PRACTICE

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INTRODUCTION

The process of preparing and applying a BIM Management Plan is as important as the plan itself. No one person can single-handedly know all the needs of the project for its entire lifecycle. Neither can they determine all of the appropriate measures to meet them. A collaborative and iterative approach is necessary.

The following excerpt from the *Penn State BIM Project Execution Planning Guide*[1] summarises its approach to preparing a BIM Management Plan:

The BIM Plan should be developed in the early stages of a project; continually developed as additional participants are added to the project; and monitored, updated and revised as needed throughout the implementation phase of the project. The plan should define the scope of BIM implementation on the project, identify the process flow for BIM tasks, define the information exchanges between parties, and describe the required project and company infrastructure needed to support the implementation.

Some of the principles that should be adopted during the preparation of a BIM Management Plan are described below:

Approach as a collaborative effort

Some BIM guides like the NATSPEC National BIM Management Plan Template describe the roles and responsibilities of each team member with regard to the development of the BIM Management Plan. It is important that the input of those with technical expertise in BIM is balanced by input from those with project management experience. The contents should reflect the input and consultation with the project participants, in accordance with their abilities and expertise. As such, it is a record of agreement rather than a set of instructions from one party to another. This is why BIM project planning workshops are an appropriate means of formulating the particulars of BIM Management Plans.

Establish overarching project requirements before working on the details

Practitioners should first clearly establish some basic information, such as procurement strategy, objectives, challenges and opportunities, and ensure the case is made that BIM-based project delivery can provide what the project needs.

Use a structured process

Refer to resources like the *Penn State BIM Project Execution Planning Guide* for suggested methodologies.

Use a template

Using a BIM Management Plan template will avoid starting from scratch and help overcome some of the inertia that can be experienced at the beginning of the planning process. It will provide an initial checklist of items that need to be addressed

1 *BIM Project Execution Planning Guide Version 2*, Computer Integrated Construction Research Program (CIC) at the Pennsylvania State University, July 2010 http://bim.psu.edu/.

BIM Management Planning Resources

VETERANS' AFFAIRS (VA) BIM GUIDE

Developed for the US Department of Veterans' Affairs, this may not be directly as appropriate for Australian (and non-health) projects as what the NATSPEC National BIM Management Plan is, which was tailored for this specific purpose.

http://www.cfm.va.gov/til/bim/BIMGuide/lifecycle.htm

PENN STATE BIM PROJECT EXECUTION PLANNING GUIDE V2.0

Required reading for anyone drafting a BMP because it clearly sets out a methodology and provides tools such as worksheets and templates to help implement it. NATSPEC NBG Section 7 'Requirements for Using BIM' and NATSPEC BMP Template Section 6 'Specific Uses of BIM' are both based on the BIM use Descriptions found in Appendix B of this Guide. The NATSPEC BMP Template provides cross references to the relevant sections.

http://bim.psu.edu/Project/resources/default.aspx

PENN STATE OWNER BIM EXECUTION PLANNING RESOURCES V1.0

http://bim.psu.edu/Owner/Resources/default.aspx

NATSPEC NATIONAL BIM GUIDE (NBG)

Originally based on the VA BIM Guide, but tailored to suit Australian projects and those of other market sectors, this document has had contribution from a broad group of industry participants.

Download NBG Set: http://bim.natspec.org/images/stories/BIM/NATSPEC_National_BIM_Guide_Document_Set.zip

Download BIM Object/Element Matrix:

http://bim.natspec.org/images/stories/natspec_bim_object-element_matrix_draft_110809.zip

NATSPEC BIM MANAGEMENT PLAN (BMP) TEMPLATE

Companion document to the NATSPEC National BIM Guide. Other documents also accompany this, such as the Project BIM Brief and BIM Reference Schedule.

Download Word format document: http://bim.natspec.org/images/stories/BIM/BIM_Management_Plan_Template_v1.0.docx

Download PDF version:

http://bim.natspec.org/images/stories/BIM/BIM_Management_Plan_Template_v1.0.pdf

INDIANA UNIVERSITY BIM EXECUTION PLAN TEMPLATE

http://www.indiana.edu/~uao/IU%20BIM%20Execution%20Plan%20Template.doc

and a framework for discussion.

Use one of the several template documents available in the public domain and do not hesitate to customise it to suit your project needs. The table adjacent lists some useful resources. The list is not exhaustive.

Start early and develop progressively – don't try to do it all at once

The development of a BIM Management Plan mirrors the design process – it starts with a general outline which is progressively refined as more information becomes available and decisions are made. You can no more formulate a detailed, definitive BIM Management Plan in the first week of the project than produce a set of working drawings before doing a sketch plan.

Development must also accommodate the reality of project establishment that not all parties are engaged from day one. All of this suggests that the most sensible approach is to plan for a series of BIM Management Plans which represent progressive iterations of the initial plan.

While it would be ideal to have the BIM Management Plan complete before any modelling work commences, this is not always practical or possible, given all the variables that may be at play. However consideration should be given by the project team to the consequences of various modelling activities commencing without certain information being established (fees, rework, delay, information reliability etc).

Where insufficient information is available in the early stages of a project to make firm decisions about an item, it can be noted for review and action in following editions of the BIM Management Plan. Likewise, assumptions can be documented so that the information required to support (or dismiss) them can be identified and incorporated in following editions.

The contingent nature of each BIM Management Plan should be made clear to project participants so that they are not perceived to be overly prescriptive or restrictive.

The iterations outlined below illustrate how a BIM Management Plan could be progressively developed:

- **Iteration 1**: Possibly prepared by one party (eg, lead consultant) with the client in isolation from others – who may not yet be formally appointed. The focus is on broad strategic considerations such as project goals and objectives, required completion dates and the most appropriate project procurement strategies.
- **Iteration 2**: Prepared when the project team has largely been assembled and the need for organised collaboration is established. Knowledge of each other's requirements and abilities will assist in active collaboration. The focus is on the 'who, what and when' of the project – the roles of team members and their broad responsibilities and authority, the deliverables required, and the uses of BIM necessary to achieve the project goals and objectives.
- **Iteration 3**: After the general project management framework has been established, the 'nuts and bolts' details that allow project team members to share information and collaborate effectively need to be agreed. The focus is more on the 'how'

Ref	Item	i1	i2	i3
1	Agreement	●	●	●
2	BIM Plan overview	~	~	~
3	Project particulars	●	●	●
a	Project identification	●	●	●
b	Project team and contacts	●	●	●
c	Project roles and responsibilities	●	●	●
d	Project team member BIM capability and maturity statement	~	~	~
e	Project procurement strategy	○	~	~
4	Project definitions/terminology	~	~	~
5	Project objectives	●	●	●
6	Project BIM uses	○	●	●
7	Project deliverables	●	●	●
8	Project procedures and protocols		●	●
a	Project schedules (programs)		~	~
b	Information exchange		~	~
i	Informational requirements		~	~
ii	Information exchange matrix		●	●
iii	Collaboration procedures		●	●
c	Information generation		●	●
i	Model element authoring (including LODs)		○	~
ii	Model-independent information (data)		○	~
iii	Model-independent information (drafting/ detailing)		○	●
iv	Model assembly/file structure		○	●
v	Project coordinates		●	●
9	Project policies and standards		○	~
a	Modelling standards		○	●
i	Modelling nomenclature (naming/numbering)		○	~
ii	Object/component standards		○	~
b	Quality Control		○	~
c	Documentation standards		○	~
d	Intellectual Property and warranty of use of information		○	~
10	Technology Infrastructure		~	~
a	Software, hardware and network environments		○	~
b	Communications		○	●
c	Data storage (including archiving) and information access			~

Table 1. indicates what aspects of planning are appropriate for each Iteration. Refer to document **P2: What should be addressed in a BIM Management Plan?** for a fuller description of each item.

of the project – processes, protocols, and the tools and infrastructure required to support them. It would give any new team members joining the project at this time a clear picture of its organisation.

Beyond this, scheduled reviews and updates of the BIM Management Plan will ensure its continued relevance and usefulness. They can be held at regular intervals – eg, monthly – or linked to nominated project stages or milestones. They can be separate from, or part of, regular project meetings. The latter will help the process become part of established project processes and amendments can be made in response to issues as they arise.

There are also unscheduled events that can prompt changes to a BIM Management Plan including:

- a project participant providing feedback about a need to make change, with protocols provided for in the initial BIM Management Plan
- significant changes to the project team
- changes to the project scope or program
- changes to the project procurement strategy or contractual arrangements

It is important that those in executive roles, eg, BIM Manager, Project Manager, be cognisant of any changes having contractual implications and the need to address these in the appropriate place. That is, some changes may need to be addressed by changes to the contract rather than the BIM Management Plan alone. More frequent or trivial changes that do not warrant a new edition, such as changes to contact details should be made clear in the first iteration of the BIM Management Plan.

CONCLUSIONS

Establishing future needs and related information early on is rarely easy, and sometimes impossible. Key stakeholders who would provide information may not be appointed until much later in the project. Ultimately, only the client can change this, so in such circumstances, project teams should do the best they can with what they have.

The BIM Management Plan doesn't have to be *perfect* the first time in order to achieve a good (improved) outcome. The pursuit of excellence, good communication and a project-first attitude are attributes that will underpin any project team's success. A good BIM Management Plan can capture and demonstrate each of these.

Project teams should also be aware that human nature suggests that under project pressures, people tend to want to retreat from the new and revert to the old. Explicit commitment is required if the proverbial 'bail-out' by some project participants is to be avoided.

The preparation of a BIM Management Plan should be a collaborative, strategic, structured, iterative process, geared around providing certainty and transparency for all project participants.

In this sense, the focus is not (BIM as) Building Information *Modelling*, but (project-centric) Building Information *Management*.

As BIM matures within the AEC industry, including owners and facility managers, it will be integrated to the point of being 'just the way we do things' – not requiring special attention. Eventually there will be no BIM Management Plans – just project plans – having benefited from enhanced information management processes, policies and tools.

Summary

For best results in preparing a BIM Management Plan:

- be iterative
- be collaborative
- be structured
- prioritise
- start with a template
- get buy-in
- get expert assistance