

BIM Management Plans

*P1 What is a BIM
Management Plan &
why should we use one?*

P1

BIM IN PRACTICE



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P1 What is a BIM Management Plan & why should we use one? [Version 1 – August 2012]

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WHAT IS A BIM MANAGEMENT PLAN?

A BIM Management Plan sets out who will do what, when, how and why, to achieve the project's goals with respect to BIM-based project delivery. Under most current procurement methods, the BIM Management Plan is prepared after project contributors have been formally appointed. Consequently, the BIM Plan's status as an agreement needs to be made clear from the outset. It should be noted that if it can't be used to hold the project team to account, it's likely that it will be ignored in the face of later project pressures. The Legal and Procurement group discuss this issue further in their document: **L3 – Stakeholders' Responsibilities**.

For example, some of the items that could be grouped under these headings include:

Who Project team, roles and responsibilities, relevant authorities

What Goals and objectives, deliverables

When All project deliverables and activities related to project program

How Tools and tool use, information exchange, digital/ technological infrastructure, standards

Why Contractual requirements, project procurement strategy

A BIM Management Plan is not unlike a screenplay in that it serves as a central collaborative platform for the production, and is critical to its success and acclaim.

HOW DOES A BIM MANAGEMENT PLAN DIFFER FROM, OR FIT WITHIN, A 'REGULAR' PROJECT PLAN?

Planning is crucial for any project of the scale of a construction project, and with the many individuals involved. BIM Management Plans are founded on the same broad principles as existing (generic) project plans:

"Fail to plan, and plan to fail!"¹

A focus on the end-game is required for the effective delivery of any project. Planning ahead means looking ahead to start with and charting a course back to the present, addressing who, what, why, when and how.

Any BIM Management Plan must connect the strategic objectives of the project with tactics (methodology) designed to achieve them. Establishing and communicating both will help increase understanding and reduce uncertainty within the project team.

Although planning a BIM-based project shares similar challenges to a 'legacy' (non-BIM) project, there are some key differences. BIM-based project delivery enables better use to be made of information throughout the project lifecycle. It recognises the value of information to multiple parties, and the efficiencies that can be gained by exploiting its interdependence. A BIM Management Plan exists in part because various risks accompany this potential and, without adequate preparation, some advantages may never materialise. Indeed, if the project team cannot effectively manage the process, it may turn out to be less efficient overall. The BIM Management Plan is therefore:

- a preparation platform
- a communication tool
- a risk mitigation tool

The following comparison of BIM and legacy processes will help those using BIM Management Plans to understand the differences between their corresponding project plans:

¹ This quote (or variants of) is widely attributed to Benjamin Franklin as well as others since, including Winston Churchill.

Characteristics of existing processes

- **Familiar:** Because the deliverables and methodology of legacy-approach project delivery have, over many years, become fairly well established, participants generally (but not always) have a tacit understanding of what is expected of them.
- **Inefficient:** Despite being familiar, inefficiencies in legacy processes are rife, with construction industry wastage at unsustainable levels².
- **Fragmented:** Information created by each party has to be interpreted and re-entered by the others, often repeatedly. This fragmentation and on-going manual coordination leads to duplication of effort and errors.
- **Isolated:** Project plans tend to exist within organisations, for their own sake.

Characteristics of BIM processes

- **New and rapidly evolving:** Lack of familiarity leads to uncertainty and confusion about what is expected of team members.
- **Integrated:** The digital, multi-dimensional nature of BIM allows information to be readily manipulated, coordinated and consolidated. The integration and ready exchange of information also facilitates collaboration.
- **Fluid:** The speed and ease of change that BIM provides requires greater attention to process management than when using 2D abstract representations of elements and disparate paper-based information. With the enhanced levels of interdependence of information in BIM, the consequences of various actions can be greatly improved, or disastrous.
- **Recognises information as an asset:** The sheer volume of information contained in models can obscure irrelevant or valueless information. This and the need to maintain the interdependence and integrity of information increases the value of information validation – knowing what is reliable, correct or appropriate at any point in time. A BIM Management Plan can address this, acknowledging that it may vary by necessity from one project phase to the next as decisions are made.
- **Recognises value within project lifecycle:** When properly leveraged, BIM can be used to improve processes throughout design, construction and facility management. The ‘whole of building lifecycle’ view of information associated with BIM tends to expand designers’ and contractors’ perspectives beyond their traditional preoccupations. Clients increasingly require their project teams to better consider long-term needs and outcomes. While the traditional involvement of designers ceases at completion of construction documentation (articulating ‘design intent’), some are now seeing opportunities (and risks) with being involved in the construction and operations phases of the project. The attention is no longer just on getting a project built; it’s on getting a great asset built on time, on budget and with minimal wastage (LEAN construction).

- **Relies on greater leveraging of technology:** The complexity and volume of information associated with projects has grown significantly over recent decades, propelled by both client need and advances in technology. Information Technology (IT) has emerged as a powerful enabler, allowing teams to achieve more when used cleverly.
- **Requires collaboration from multiple stakeholders:** Project planning most effectively takes place in multi-party agreement. Integrated project delivery (IPD) embodies this principle, and arguably has more effect on achieving improved project outcomes than the use of technology.

WHY IS A BIM MANAGEMENT PLAN NEEDED & WHAT VALUE DOES IT PROVIDE?

As noted, all construction projects require planning, but given BIM’s nascent status in the industry, a clear direction on projects using BIM is crucial if BIM is to add value to the process.

“If one does not know to which port one is sailing, no wind is favourable.”

– Lucius Annaeus Seneca

The reasons a BIM Management Plan is needed can be summarised into two broad groups:

- **Cultural:** Teams benefit from increased planning. With clearer communication and reducing the unknowns in the implementation process, risks to all parties and the project are lessened.
- **Technical:** The technology underlying BIM software tools permits improved organisation, management and sharing of project information. However, the information needs to be structured and consistently applied between project members to achieve maximum benefit. Disciplined information management yields significant dividends for the project and its stakeholders.

2 Gallaher, M. P., A. C. O’Connor, J. L. Dettbarn Jr., and L. T. Gilday. Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry. Technical Report GCR 04-867: NIST, 2004

Value of a BIM Management Plan

The Penn State BIM Project Execution Planning Guide³ summarises the need for a BIM Management Plan and its value as follows:

To effectively integrate BIM into the project delivery process, it is important for the team to develop a detailed execution plan for BIM implementation. A BIM Project Execution Plan (hereinafter referred to as the 'BIM Plan') outlines the overall vision along with implementation details for the team to follow throughout the project.

By developing a BIM Plan, the project and project team members can achieve the following value:

- All parties will clearly understand and communicate the strategic goals for implementing BIM on the project
- Organisations will understand their roles and responsibilities in the implementation
- The team will be able to design an execution process which is well suited for each team member's business practices and typical organisational workflows
- The plan will outline additional resources, training, or other competencies necessary to successfully implement BIM for the intended uses
- The plan will provide a benchmark for describing the process to future participants who join the project
- The purchasing divisions will be able to define contract language to ensure that all project participants fulfil their obligations
- The baseline plan will provide a goal for measuring progress throughout the project

³ BIM Project Execution Planning Guide Version 2, Computer Integrated Construction Research Program (CIC) at the Pennsylvania State University July 2010 <http://bim.psu.edu/>.

Other values the BIM Management Plan can provide include:

- **Risk mitigation:** through defining project requirements, collaboration methodology, contributor responsibilities and outcomes.
- **Greater efficiencies:** afforded to the project, by having each project participant more aware of others' requirements and offerings.
- **Project record:** comprehensive documentation can record how the project was delivered and can be reviewed and re-used for improving processes on future projects.
- **Educational:** providing greater understanding of BIM and its impact on the project for those involved.
- **Defining project goals:** Comprehending and expressing what's most important to the client (particularly in alliance procurements, where those expressions may be closely linked to project objectives and remuneration).

CONCLUSION

A BIM Management Plan offers clarity, certainty and transparency for the project stakeholders. It should connect objectives with methodology, and allow the team to plan the execution and delivery of the project with particular emphasis on BIM. Without it, misunderstandings and confusion would prohibit the project team from fully understanding their responsibilities and the context in which they work. It would represent a continuation of the inward-focused and fragmented work patterns of years past.

Summary

A BIM Management Plan establishes:

- Who, what, why, when and how with respect to building information on a project.
- It 'sets the scene' and helps orchestrate activities and sequence.

- It acknowledges the value of diligent planning, effective communication and genuine collaboration.
- There is significant value to the project and project team by establishing and employing a BIM Management Plan.