# **BIM GUIDE**

# AWARENESS







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# ABOUT

The BIM Guide is formulated as a fundamental approach to educate construction players for the BIM adoption in Malaysia. The Guide enables construction industry players to improve productivity and efficiency of the construction process by adopting higher usage of modern technology. This is in line with the Construction Industry Transformation Programme (CITP) to raise productivity level across the Malaysian construction industry.

This BIM Guide provides directive, references and process guidelines to the construction players at both organisational and project level and will be published in three booklets.



For further understanding and clarification of the BIM adoption processes, it is advisable for the construction players to acquire skills and knowledge by attending the BIM Roadshow, BIM training programs provided by the Construction Industry Development Board (CIDB) and refer to Jabatan Kerja Raya's (JKR) BIM Guideline.

# INTRODUCTION -

Booklet ] BIM Awareness

#### WHAT is BIM?

Booklet 1 aims to educate readers of what BIM is all about.

This booklet will explain the definition of BIM and the development of BIM maturity levels, illustrate the components of BIM, describe the structure of information layer in BIM models, and clarify the rationale of BIM adoption in Malaysia.

A strong understanding of BIM will enhance the reader's **awareness** and knowledge of BIM adoption in Malaysia.

### DEFINITION OF BUILDING INFORMATION MODELLING

The Building Information Modelling in the Malaysian context is defined as:

**"A** modelling technology and associated set of processes to produce, communicate, analyse and use of digital information models throughout construction project life-cycle **"** 



Modelling Technology

refers to the modelling tools used to develop the BIM Model.

#### Digital Information Models

refers to the intelligent 3D model that consist of comprehensive construction information.

### Construction Project Life-Cycle

refers to the construction process starting from design, construction and management the building or infrastructure throughout project lifecycle.

## DIRECTION OF BIM IMPLEMENTATION IN MALAYSIA

The BIM process evolves in a few stages where each stage is identified by the level of information collaboration. The process of collaborated information determines the maturity of BIM process.

The figure below illustrates the BIM Maturity and implementation process.



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The detail explanation of each level :

#### CONVENTIONAL

The design uses manual and computer based documents used such as CAD drawings and spreadsheet.

Much of project information (ie drawings and documents) are managed manually.

Design information is not communicated effectively.

### Discipline based 3D Model with digital information.

MODELLING

Application of BIM tools (if applied) to streamline the design or construction activities, is restricted internally.

No significant model-based interchanges between different disciplines.

The implementation of BIM takes place in an isolated condition within the organisation.

#### COLLABORATON

Collaborative based 3D Model with digital information.

The construction information will be managed in a structured manner in a 3D environment.

The information can be shared and communicated using a specific and common platform.

Use of multidisciplinary model that promotes collaborative processes.

Use of common standards for collaboration between different disciplines.

#### **INTEGRATION**

Integrated 3D Model and digital information through integrated network or cloud based applications.

Use of cloud-based BIM model to strengthen the collaborative process and coordination throughout the construction process.

Use of single source of information on a cloud or common server.

### PARAMETERS OF A BIM PROJECT

The characters and attributes to define a BIM project consist of the following parameters:-



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### STRUCTURED LAYERS OF INFORMATION IN BIM MODEL

The difference between a 2D and BIM is the comprehensiveness of the information integrated in the model. For BIM, the comprehensiveness of the information will determine by the richness of the information according to the uses and expected deliverables from the BIM process. The below figure illustrates the structured layers of information in BIM model.

**IDENTIFICATION** 

(Specification, product identification, classification and cost).

**PERFORMANCE** (Quality, function, design requirement).

**INSTALLATION** (Installation information).

**APPEARANCE** (Physical appearance of the product).

**LIFECYCLE** (Maintenance, sustainability, supply chain).

# BENEFITS OF BIM ADOPTION IN MALAYSIA

#### The benefits of BIM adoption in Malaysia could be defined into two categories :

- i. National level; and
- ii. Organisational/project level.

To support the aspiration of Malaysia construction industry as in CITP 2016-2020, the overarching goal of BIM adoption is to become a catalyst to transform the industry to a higher level by enhancing productivity and efficiency.

At project and organisational level, BIM is expected to enhance the collaborative integrated design during the planning and design, construction and facility management throughout the project lifecycle.

The following figures illustrate the BIM adoption at national and organisational/project level.



### **National Level**

Promotes transparency and accountability of the construction process. Brings our construction industry in line with the international standard.



Appreciates intellectual property (ownership) and human capital.

Transforms the construction industry from skill-driven to knowledge driven.



### Enhance

productivity and efficiency



### **Organisational/project level**





#### PLANNING AND DESIGN STAGE



Improved ability for analysis and design audit.



More upfront involvement of key stakeholders who can provide earlier feedback.



Improved efficiency for design production.



Allows Client/Building Owner to evaluate the proposed design, and modification.



Improved planning and design.

Better understanding of

project at early stages.

Quicker client approvals

via visualisation design

intent.



Intelligent transfer of information between key project stakeholders.



Greater certainty between design intent and the final construction and operation of the building.



Project stakeholder have more informed decisions at the beginning of the project.





### **2** CONSTRUCTION STAGE



Better outcomes through collaboration.



Reduces waste.



Improved multi-party communication.



Improved safety and quality.



Reduces project risk.



Reduces unbudgeted construction changes.



Increased prefabrication.



Ensure project documentation is coordinated, timely and in an accessible form.



Improve coordination between client-consultantcontractor.







Enhanced project performance.



#### **B** FACILITY MANAGEMENT STAGE



To create and maintain facilities in more efficient, lower carbon emissions, more effective and safer places to live and work.



Provide a single source of accurate and up-to-date information for FM activities.



To systematically design maintenance strategy based on the information of design information, asset history lifecycle cost.



Better information for the whole life cycle of asset management.



Better lifecycle data for facility management.



Enhanced evaluation on maintenance approach based on cost.



Maintain up-to-date facility and equipment



Allow for future updates of current asset information.

# **MOVING FORWARD**

The importance of BIM is established according to the aims and objectives of CITP 2016-2020. **Awareness** of BIM among construction players will establish a common platform for all to explore the potential of what BIM could provide to synergise the productivity and efficiency of Malaysian construction industry.

The strengths of BIM in improving the productivity and efficiency of construction process have been proven in some countries (i.e United Kingdom, United States, Hong Kong and Singapore). The questions is, are we **ready** to adopt BIM to enhance our construction industry to the next level?

#### **BOOKLET 2 : BIM READINESS**

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May your contributions benefit towards the eminence of construction industry in Malaysia



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