PERAN MAHASISWA TERKAIT IMPLEMENTASI BIM (BUILDING INFORMATION MODELLING) PADA PEMBANGUNAN INFRASTRUKTUR

Zamrud M. Yusuf Gustian, S.T.
BIM Manager / Coordinator
PT Virama Karya (Persero)
Padang, 25 Juli 2020
Contents

ONE
About Building Information Modelling (BIM)

TWO
The Four Pillars of BIM
WHAT IS BIM?

BIM or Building Information Modelling is a process for creating and managing information on a construction project across the project lifecycle. One of the key outputs of this process is the Building Information Model, the digital description of every aspect of the built asset. This model draws on information assembled collaboratively and updated at key stages of a project. Creating a digital Building Information Model enables those who interact with the building to optimize their actions, resulting in a greater whole life value for the asset. (NBS)
What Can BIM Offer?

- The ease of modification to aspects of a building by using just one model
- The application of adjustments, such as cost, directly to the model
- Control of project processes, minimising the time and costs of a project
Argument Against BIM

- People are unwilling to adopt new methods.
- Experts and organisations have their own cultures, posing significant challenges when standardising practices.
- People are wary of mistakes when learning new tools.
Helping construction professionals share the information of a project effectively.

Enabling construction workers to utilise the available data to coordinate their work.

Improving coordination in the building sector and therefore reducing delays, costs and extended construction periods.

Helping construction professionals share the information of a project effectively.

Arguments for BIM
### Level of Development

<table>
<thead>
<tr>
<th>LOD</th>
<th>Description</th>
<th>Concept</th>
<th>Design Development</th>
<th>Documentation</th>
<th>Construction</th>
<th>Facilities Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Office Chair Arms, Wheels</td>
<td><img src="image1" alt="Chair LOD 100" /></td>
<td><img src="image2" alt="Chair LOD 100" /></td>
<td><img src="image3" alt="Chair LOD 100" /></td>
<td><img src="image4" alt="Chair LOD 100" /></td>
<td><img src="image5" alt="Chair LOD 100" /></td>
</tr>
<tr>
<td>200</td>
<td>Office Chair Arms, Wheels</td>
<td><img src="image6" alt="Chair LOD 200" /></td>
<td><img src="image7" alt="Chair LOD 200" /></td>
<td><img src="image8" alt="Chair LOD 200" /></td>
<td><img src="image9" alt="Chair LOD 200" /></td>
<td><img src="image10" alt="Chair LOD 200" /></td>
</tr>
<tr>
<td>300</td>
<td>Office Chair Arms, Wheels</td>
<td><img src="image11" alt="Chair LOD 300" /></td>
<td><img src="image12" alt="Chair LOD 300" /></td>
<td><img src="image13" alt="Chair LOD 300" /></td>
<td><img src="image14" alt="Chair LOD 300" /></td>
<td><img src="image15" alt="Chair LOD 300" /></td>
</tr>
<tr>
<td>400</td>
<td>Office Chair Arms, Wheels</td>
<td><img src="image16" alt="Chair LOD 400" /></td>
<td><img src="image17" alt="Chair LOD 400" /></td>
<td><img src="image18" alt="Chair LOD 400" /></td>
<td><img src="image19" alt="Chair LOD 400" /></td>
<td><img src="image20" alt="Chair LOD 400" /></td>
</tr>
<tr>
<td>500</td>
<td>Office Chair Arms, Wheels</td>
<td><img src="image21" alt="Chair LOD 500" /></td>
<td><img src="image22" alt="Chair LOD 500" /></td>
<td><img src="image23" alt="Chair LOD 500" /></td>
<td><img src="image24" alt="Chair LOD 500" /></td>
<td><img src="image25" alt="Chair LOD 500" /></td>
</tr>
</tbody>
</table>

**Description:**
- **Arms, Wheels**
- **Width:**
- **Depth:**
- **Height:**
- **Manufacturer:** Herman Miller, Inc.
- **Model:** Mirra
- **LOD:** 100

**Purchase Date:** 01/02/2013

### Level of Detail

<table>
<thead>
<tr>
<th>G0</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schematic</td>
<td>Concept</td>
<td>Defined</td>
<td>Rendered</td>
</tr>
</tbody>
</table>

(based on AEC [UK] BIM protocol v2.0 - Component Grade)

practicalBIM.net © 2013
When considering BIM, it can be helpful to consider these four significant factors: Policy, People, Technology, and Process.
The Four Pillars of BIM

ISO/TS 12911:2012
Establishes a framework for providing specifications for the commissioning of building information modelling (BIM).

ISO 19659-1:2018
Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) -- Information management using building information modelling -- Part 1: Concepts and principles

ISO 19659-2:2018
Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) -- Information management using building information modelling -- Part 2: Delivery phase of the assets
Realistically, awareness is not the only reason for adopting BIM in the AEC. However, awareness can influence policy changes to adopt BIM where necessary. In the UK for instance, awareness of BIM and its benefits has led to the government calling for BIM to be mandatory for public projects. This policy change has influenced the private sector to follow suit.
A major issue experienced within non-BIM design processes is the matter of conflicting design issues. The ethos of having a core central BIM model is to facilitate a smoother transition through these issues by identifying conflicts earlier on in the project stages, thus reducing the negative effects on schedule and costs.
Conducting Research Into BIM

There is a research, and it surveyed practitioners and consultants working on projects that incorporate BIM in the UK. It will be findings demonstrate that there are several solutions that can be used depending on factors such as company size and resource availability.
The Four Pillars of BIM

BIM technology has, over the years, helped in carrying out all the pre-construction design analysis and interrogation, resulting in reduction of conflicts and changes made during the construction phase that usually have a detrimental effect on a project in terms of wastage, quality, time and costs.

At the same time, the stringent energy analysis that can take place in the early stages of a BIM project aims to improve the performance of a project in regards to low-impact design.
Process

Having the design process completed within a BIM environment using a core 3D BIM model at the centre of the project can lead to multiple benefits later in the process. The models can be analysed, allowing for a multitude of model interrogations to take place, including energy analysis, structural analysis, accurate schedules, and quantity take-offs.

It is argued that using BIM processes for building projects will improve energy efficiency, improve scheduling, facilitate a reduction of waste, and facilitate a reduction in costs.
The Four Pillars of BIM

Practice
Practice Makes Perfect

Process

Pilot Project
Portofolio
BIM Adoption

1. Detailed Engineering Design
   Jalan Tol Ciranjang - Padalarang

2. Manajemen Konstruksi
   Jakarta International Stadium

3. Perencanaan
   Persemian Modern IKN

4. RTA Design and Build
   Jalan Tol Ruas Binjai - Langsa Seksi Binjai - Pangkalan Brandan
CDE IMPLEMENTATION ON CONSTRUCTION MANAGEMENT JAKARTA INTERNATIONAL STADIUM PROJECT
PENYUSUNAN DETAIL ENGINEERING DESIGN (DED) JALAN TOL CIRANJANG - PADALARANG

VIRAMAKARYA  VIRAMAKARYAOFCC  VIRAMA KARYA  WWW.VIRAMAKARYA.CO.ID
THANK YOU