

BIM Me One More Time



By:
Ken Lee
Group BIM Manager
Robert Bird Group (Member of Surbana Jurong Group)

In the beginning of 2019, the Robert Bird Group (RBG) embarked on an ambitious journey within our Engineering and Technology (E&T) Platform. The aim was to increase the uptake of engineering and technological initiatives and upskill our staff within the confines of our core business, which is engineering. Building Information Modelling (BIM) as part of E&T was nurtured, but it was mostly only known to industry leaders.

Within the BIM circle, I was recently referred to as the visualisation guy twice in a span of two days when trying to address specific BIM-related queries. In reality, I am one of the visualisation guys but at that particular moment, I was acting as a BIM technical support staff. In a way, that reference is a curious by-product of the current state of industry we are in – equipped with little or no understanding on the terminology of BIM. It also reminded me of a conversation I had several years ago when I was asked if I could ‘do’ BIM, or in other words if it was something doable? These questions on BIM

prompted me to at least try and settle the burning question - what the heck is BIM anyway?

CAD and Its Early Days

Computer Aided-Design or CAD has been around since the 1960s with the progression of manual drafting to the utilisation of CAD as a drafting tool. The benefits of CAD and the ability to perform engineering analyses, without a doubt, had the biggest impact on the architecture, engineering and the construction industry.

CAD was revolutionary. It gave designers a new dynamic of robust and fluid software to produce drawings and perform complex analyses on projects which became increasingly multi-faceted. It was also extremely easy to understand and define.

Then along came BIM, and with-it confusion. Is it CAD? Is it more than CAD? How can something be more than CAD, seeing that it is also computer-based

and similarly producing engineering analyses with drafting capabilities?

BIM quickly became the buzz word and for the first 10 years it was known, hardly applied but always discussed within the industry. BIM became the cool uncle.

Needless to say, reality sets in. It was not the elixir which everyone expected. The transition from CAD to BIM became a concern financially, and the return of investment matrix did not seem to add up and skilled resources were few and far between. Naysayers sat on the fence, the believers soldiered on.

Gradually, the investment on BIM did pay off and everything made more sense. The excitement returned and for a while, it looked like BIM was finally working, albeit on a concentrated level. Meanwhile the understanding of BIM stagnated, but the project procurement wheel kept on spinning.

Something was still amiss. A glitch in the Matrix, maybe? The question of ‘Do we do BIM?’ was still bothering me.

It made me think about my reference as *the* visualisation guy, and realised that the lay person might not necessary understand BIM. I need to do better in explaining BIM, and to do so, it requires a re-evaluation of my understanding of BIM. I realised I was trapped in Hodor’s Bootstrap Paradox – the infinite cause-effect loop.

So, What Actually is BIM?

I have encountered various definitions from, “it is a concept of working collaboratively”, to “it is not a software but a process”.

One of the main misunderstandings is that BIM relates to buildings. The word “building” from BIM is a verb. It is an all-encompassing undertaking to build an information rich computer model which becomes the digital twin of the actual infrastructure. Putting this simply – CAD on steroids.

To achieve this requires a complex and intertwined concoction of processes, workflows, software, hardware and skills. It is not achieved by a single individual but rather as a collective endeavour.

Think about BIM as a collapsed star spewing information and data with CAD at its core. It utilises the four stages of development and is in constant and perpetual motion – Synchronicity – Process –

Application – Mining. I know, it is spelled SPAM. This means BIM *is* SPAM...in a funny way.

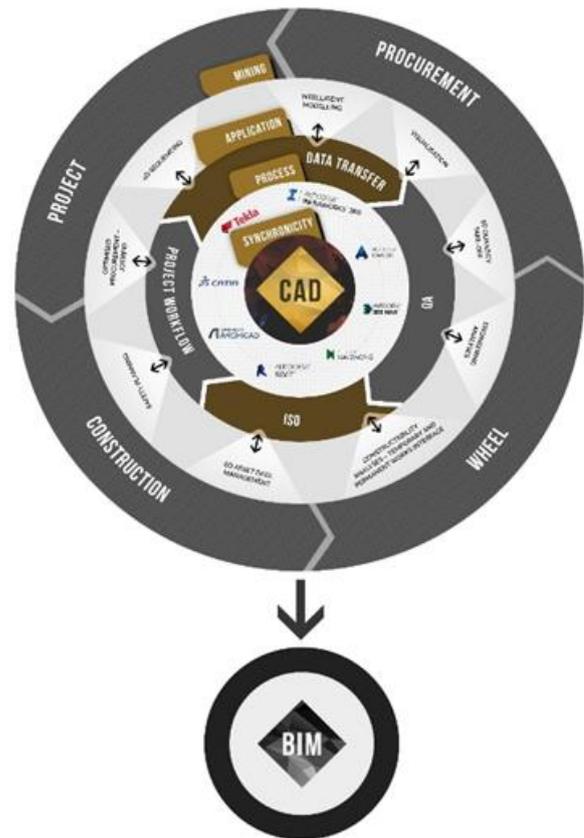


Figure 1 - BIM Genesis Wheel (image by F.Kumthanom)

Synchronicity

BIM begins with the utilisation of computer aided-software to create one or multiple 3-dimensional computer model. This assortment of software requires interoperability capabilities to enable a collaborative and synchronised working environment. It also entails coordinated information flowing from one software vessel to another, and concurrently retaining its 3-dimensional geometry. With the 3-dimensional model(s) created, BIM requires a process to guide design consultants throughout the project stages.

Process

The processes usually include submissions of partially constructed 3-dimensional computer model(s), quality control and review, engineering and sustainability analyses, etc. These are one of the many processes required during the lifecycle of the project. The 3Ws tool (Who’s Doing What & Where) is used to identify these processes and provide a practical component of information management, project coordination and gap analysis assessment. It demonstrates how workflow is constructed, how

data is stored and how the associated model elements are checked and used. Subsequently BIM is then applied to harness this data information.

Application

Through the application of BIM, we understand the challenges prior to construction, and also predict the time required for a facility to complete. We can accurately estimate the cost and know how much material is required for a facility. Building contractors mine and utilise these data for a variety of reasons - ranging from fast-tracking of projects to pre-empting of construction issues.

Mining

Mining BIM data provides immediate information ranging from cost comparison, understanding of project programme, managing building code compliance, constructability, risk mitigation and much more. Nevertheless, the GIGO (Garbage-In-Garbage-Out) principle still applies to BIM and therein lies the fundamental principles of BIM which

are attention, commitment and consistency. These three principles are crucial for the success of producing a BIM 3-dimensional model and with it an Information model.

In conclusion, this is also my call to arms for BIM. BIM is ever-changing and ever-evolving. As the Internet of Things encroaches this space, BIM itself will morph from being a CAD on Steroids to becoming an integral part of machine learning through Artificial Intelligence. It is the future and it is now.

Revisiting the question of do we 'do' BIM?
My answer to that is: "More than ever."

**** End****

Connect with Us

Ken Lee

Email: Ken.Lee@robertbird.com.au