

## Construction 4.0 Series

### [1] Building Information Modelling (BIM)

We have started a new series on Construction 4.0, focusing on the different innovative approaches related to the AEC industry. We are kicking off this series with one of the most promising recent developments in the AEC industry and the current buzzword in construction, Building Information Modelling (BIM).

With BIM technology, an accurate 3D model of a building can be created which is then used for planning, design, construction and operations and maintenance. BIM represents a new paradigm which encourages integration of all stakeholders (clients, architects, engineers, consultants, contractors, etc.) on a project. It gives them the ability to visualise the upcoming building in a simulated environment and to detect any possible design, construction or operational issues. The *building information model* consists BIM objects with correct geometry and accurate data to facilitate design, procurement, fabrication and construction. The same model is updated after completion with all as-built components and can be used by the owner for operations and maintenance.

The most important aspect of BIM is the crucial information that it brings to a drawing and to a project on the whole. BIM came as a solution to bottlenecks generated from lack of information, incorrect information, no flow of information to all stakeholders and information not available on time, resulting in unnecessary reworks and inaccurate project budget and planning. BIM aims at decreasing project cost, increase productivity and quality, and reduce project delivery time. BIM also supports the concept of *integrated project delivery*, which is an innovative approach bringing people, systems and practices together onto a collaborative platform which helps to reduce waste and optimize efficiency through all phases of the project life cycle. With this integrated approach, the final model becomes more reliable and construction documents such as client requirements, all submitted drawings, procurement details, internal processes, and technical specifications can be easily interrelated and retrieved on a digital platform.

Prodesign had adopted BIM since 2008 and today, all our MEP designs and processes such as calculations and visualisations are being done through BIM. We have used the international ISO 19650 standard to create our own BIM standards which is better adapted to the local context. We have changed our workflows fully to a cloud solution, BIM 360 which integrates across the project lifecycle, from planning, design, construction and operations of buildings. All our simulations and calculations are being done on this single holistic platform, and the same can be translated throughout the design process, to ultimately the as-built model. BIM 360 has positively changed our workflow and collaboration on our models. This digital tool allows for all quantities to be measured automatically on the model itself, saving us time. Another key feature of the BIM model is that it is not static, all latest modifications are reflected in real time and can be viewed instantly by any collaborator. Through BIM, our R&D team has been able to develop other useful and innovative applications such as Augmented Reality and Virtual Reality. Some of our major clients have understood the advantages of BIM and are currently working on fully BIM-coordinated projects.

The future of BIM is both exciting and challenging. Recently, BIM has been made mandatory in several countries and the increased adoption of BIM globally will surely push for a quicker reaction locally. BIM will enhance collaboration and reduce fragmentation and lead to a better performance by the Mauritian construction industry.