THE INGENIEUR

Building Information Modelling in Digitalisation of the Construction Industry

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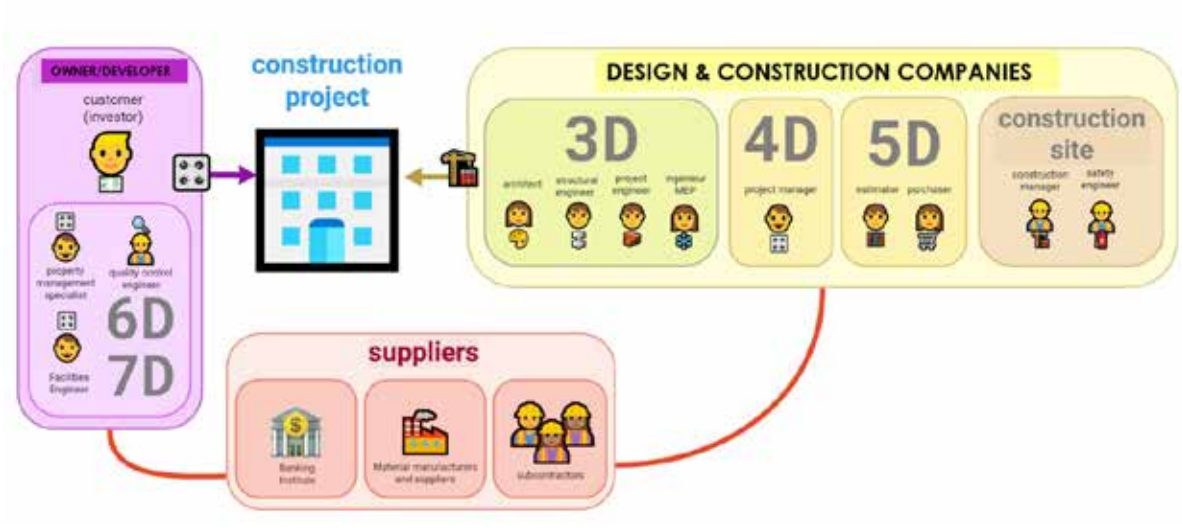
Building Information Modelling explained

The digital economy is a highly competitive form of economic organisation and contributes to the growth of globalisation due to the use of information and communication technologies that have a cross-border nature. This facilitates quick response and adaptation to changing environmental conditions, including risk-forming factors. By 2025, 75% of businesses will leverage digital platforms and ecosystems but globally, construction has lagged other sectors in leveraging digital technologies.

Embedding construction in the ecosystem of the digital economy is impossible without the digitalisation of the industry, which should follow the path of accelerated implementation of IT technologies in the design and construction process, as well as the creation of a unified information environment for construction, uniting all existing information systems, optimising their activities regarding the collection and analysis of information in the field of construction, process automation.



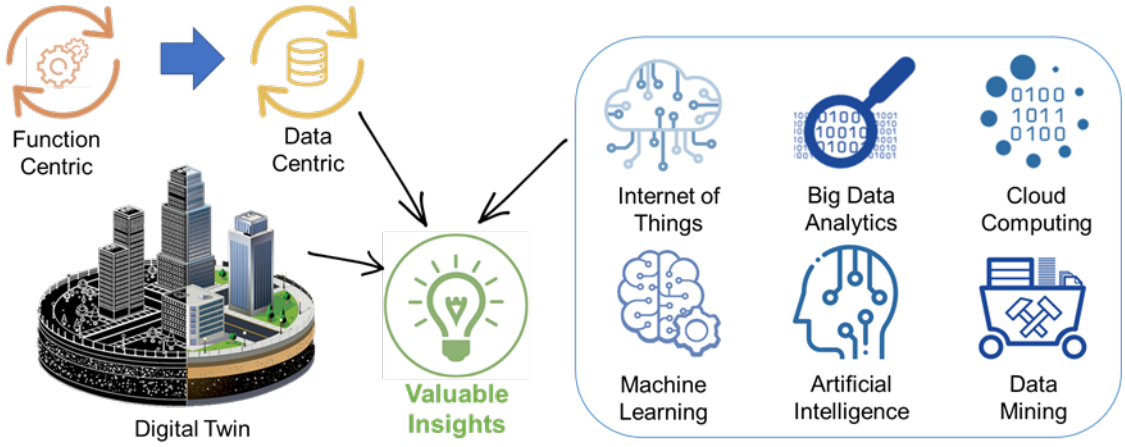
The driver of the digital transformation of the construction industry is Building Information Modelling (BIM) technologies. BIM is about creating 3D models of buildings & Infrastructure and increasingly about 'linking' all kinds of data which is recorded in all sorts of data sources during the lifecycle of the building. This includes requirements, time, schedule, specifications, cost figures, environmental data, management, and maintenance data. In this way, all combinations of data are created which can be of value to parties in the construction and infrastructure sector at any given point during the building lifecycle. By digitally representing all aspects of infrastructure, construction companies can cut down on waste and delays by identifying potential challenges before execution in the field. Thus, BIM, which gives construction professionals advanced insight into designing buildings and infrastructure, will be highly useful.

Today, there is a wave of awareness programmes and activities regarding BIM, that is created and supported by technology companies and Industry associations, and aided by the heavy investments in infrastructure announced by many Governments to revitalise the economy after the pandemic. These will provide an opportunity to utilise BIM and related technologies in transforming the construction and infrastructure industry.

In the next 30 years, the number of people living in cities will double and this growth will require the construction of thousands of new buildings, roads, and other utility infrastructure to build "Smart Cities". Combining BIM and a Geographic Information System (GIS) will be a game-changer in planning, designing, and executing a Smart City project, where a reliable City Model is prepared.

Apart from large projects, medium and small-scale projects are generally delivered by Small Medium Enterprises (SMEs) and they form the backbone of the country's economic development. As productivity is the key issue in construction projects, BIM provides tangible and intangible benefits such as addressing performance problems that have long plagued the construction industry.

The COVID-19 pandemic has presented many challenges and on-going uncertainty to many businesses including construction. While it can be difficult to know how conditions will change, the ability to adapt at speed to a new way of doing business is critical. As the pandemic is forcing the adoption of new business models and as many organisations scramble to adapt to these new conditions, some have been hampered by a lack of digital preparedness. Legacy and siloed technologies – always high-cost and slow-moving – are now an even greater liability. Now is the time to make those hard decisions around replacing legacy technologies and assessing new technologies, including Cloud-based & mobile-enabled Common Data Environment (CDE), Augmented Reality (AR) and Virtual Reality (VR), Machine Learning (ML), Artificial Intelligence (AI), and Internet of Things (IoT),



which allow companies to track construction, enable collaboration among stakeholders and project team, even from remote locations, thus enabling projects to continue in a digital and virtual environment, eliminating the risk among the team members to meet and work together.

As construction sites all over the world are gradually getting active after lockdown and where sites have re-started, only a partial number of workers can safely return under social distancing rules. This could prove to be tedious in getting the optimised output within the stipulated time frame of projects. The sooner the adoption and implementation of digital technology such as BIM, Cloud & mobile-enabled CDE, VR, the better will be the results for the construction industry to cope with the worst effects of the pandemic and get back on track. ■