

Virtual technology expands the frontiers of construction

By [Bongani Dladla](#)

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Technology is changing the shape of the global construction industry, and some of the most exciting trends have already taken root in South Africa.



Bongani Dladla, CEO of the CIDB

At the cutting edge of development is the utilisation of virtual reality and augmented reality to reduce the costs of projects, enhance the quality of delivery and raise productivity levels.

The application of fourth industrial revolution (4IR) technologies is no longer on the fringes of the construction sector. Many companies are utilising laser scanning, 3D printing, on-site robots and small drones to deliver more cost-effective projects. Big data is transforming the industry by reducing costs and increasing access to information.

The sector becomes more productive and efficient with each advance. Virtual reality and augmented reality take these evolving technologies a few steps further.

Both technologies are already extensively used in the entertainment and gaming industries, in aerospace and defence, and in the medicine and healthcare sectors. It also has the potential to transform the construction and engineering fields and expand the edges of possibilities.

Virtual reality uses computer technology to create a simulated environment. It enables users to relate both physically and virtually with this environment.

Augmented reality builds on this technology by overlaying information as visual content into a real-time experience. The user may survey the physical environment through smartphones or tablets while computer-generated simulations offer views of what a future structure could and should look like. Potential flaws and challenges are identified on the spot.



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Immense opportunities for construction

The immense opportunities which these technologies offer to the construction sector are obvious. It enables owners and contractors to visualise what a building will look like before construction starts, and subsequently tracks the building processes through all their stages to the point of final delivery.

Construction is, by definition, a highly collaborative sector which requires high levels of teamwork between contractors from various disciplines. On-site meetings consume costly time and resources, and often contribute to failure of meeting deadlines and late delivery of projects.

Many of these processes can now be streamlined through the application of new technology. These factors alone will

prompt many construction companies to invest in virtual and augmented reality applications which are still very expensive.

But this will not be an entirely major leap for the local industries. Covid-19 requirements have already introduced a shift towards virtual planning and electronic meetings.

The new generation of leadership within engineering and construction are all early adopters of technology and have the curiosity and skills to embrace the next generation of applications.



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The South African context

The obvious question is whether these technologies are applicable within the current South African environment in which there are still huge disparities in the resources available to large primary contractors and small and medium enterprises, predominantly owned by women and Black people.

Will these technologies only be found in the toolboxes of established conglomerates or will emerging contractors also be able to function within this space? The costs of programmes and applications are still premium but will, inevitably, become accessible to medium-sized and niche contractors who want to expand their businesses.

These are issues which need to be addressed within the broader construction and engineering sectors as the indications are that construction activity is picking up and government's expansive infrastructure programme will be a major driver of future growth.

The Construction Industry Development Board (CIDB) is already assisting emerging contractors with support programmes to grow their skills and improve their capacity to move up through the contractor levels. As will the introduction of virtual technologies.



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Tailor-made solutions

Examples of these are software developers who produce applications which are tailor-made for South African conditions and offer the requisite training. Such solutions are already on the market in the property, surveying and planning environments.

Virtual and augmented reality applications are becoming agile and more intuitive daily and are increasingly being integrated into standard construction software. As the technology becomes mature and gain acceptance, it will become more cost effective and deliver better returns on investment.

This presents exciting new opportunities for the South African construction industry.

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