

4IR will drive the post-pandemic construction industry

By [Bongani Dladla](#)

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Fundamental changes that are taking place with the construction industry will enable the sector to play a turnkey role in South Africa's post-pandemic recovery.



Bongani Dladla, acting CEO of the Construction Industry Development Board

The fourth industrial revolution (4IR), with its emphasis on technology-driven solutions and innovation, is already having a profound impact on the way in which the construction sector – both established and emerging participants – prepare itself for the future.

The Construction Industry Development Board (cidb) is strategically placed to provide leadership during this transition, in line with our mandate to facilitate and promote the contribution of the construction industry to South Africa's economy and society.

It is well-documented how the Covid-19 pandemic placed an initial serious damper on economic activity in the country. The construction sector experienced this slowdown most severely as building activities grounded to a halt and contractors were confronted with a new range of imponderables relating to occupational health and safety in addition to the uncertainties of when and how the economy will recover.

However, the initial pause in construction caused by the pandemic also provided the sector the opportunities to reimagine its future and to consider how the profound changes that are brought to the fore by the 4IR can lead to a

more agile, responsive and transformed industry.

Important leap

This is an important leap because globally, the construction industry has acquired a poor track record on issues as diverse as health and safety, ethics and malpractices, and lack of regard for the wellbeing of its workforce and stakeholders. It is characterised by low productivity and high unpredictability in both cost and quality and there are justifiable concerns about the lack of transparency which often leads to rampant corruption.

4IR offers strategic approaches and strategic solutions to most of these issues and can lead to significant transformation in the way in which infrastructure is planned, procured, delivered and maintained. Construction 4.0 – the integration of 4IR advances into the industry – will revolutionise processes across the entire spectrum of activities. Some of these innovations are already being deployed with great success in the South African industry.

Designers and building clients can have an advance look at the final product through 3D modelling. Robots can access areas of projects that may be unsafe for humans. Drones provide progress reports, thus reducing the cost of time and travel for project managers. Big data is increasingly being used to further reduce costs and increase access to information.



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Transforming our built environment

South African construction is not insulated from the factors that affect the global industry. Our aim must be to move along the leading edges of 4IR innovation and apply the knowledge gained through such research to transform our own built environment.

Thus, we should be especially interested in the major advances made in materials technology which have brought to market a new range of building materials which can improve efficiencies, reduce costs and mitigate the environmental impact of the industry.

Modularisation and prefabrication can contribute to higher productivity and improve the quality of construction products. Automated equipment and robots can assemble prefabricated units which can significantly reduce the cost of buildings and improve industry occupational health and safety.

Emerging entrepreneurs are already benefiting from the knowledge gained by Construction 4.0. Two female entrepreneurs from Sasolburg, Kedibone and Kekeletso Tsiloane, have brought to market an innovative product which uses recycled plastic to manufacture bricks which are strong, durable, fire retardant and environmentally friendly.

Testing done by a facility accredited by South Africa National Standards has concluded that these bricks are stronger and less absorbent than cement bricks. Through their company, Ramtsilo Trading, the entrepreneurs purchase plastic from waste pickers and buy-back centres and recycle all types of plastic, including those which usually ends up in landfills or the environment.

These types of innovations point towards the direction in which the South African construction industry should move. Covid-19 has placed additional constraints on already diminishing budgets for public infrastructure and there is an ongoing need for greater construction efficiencies and higher levels of productivity.



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Stimulating interest in the potential of 4IR

To accelerate the adoption of 4IR trends in construction, the CIDB has initiated a project to collate and analyse research that will add value to the industry. The first phase is the development of a database that documents all relevant research, both published and in-house.

This will be followed up by a database of educational programmes offered in the tertiary sector and an overview of 4IR technologies used by participants in the construction sector, from designers and project managers to facilities managers and maintenance practitioners.

Through this project, the CIDB will stimulate interest in the vast potential that 4IR holds for the transformation of the South African construction sector. And it will open further doors for new participants in an industry that will be critical to the country's ability to emerge in a post-pandemic environment.

ABOUT BONGANI DLADLA

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