

Engineering, Built Environment and Information Technology

Exxaro partners with UP in cutting-edge technology programme to drive safer, more sustainable mining

By Zamokuhle Lethukuthula

Exxaro Resources has entered into a partnership with the Department of Mining Engineering in the Faculty of Engineering, Built Environment and Information Technology (EBIT) at the University of Pretoria to establish the Exxaro Chair in Extended Reality (XR) Technology.

Extended reality technology refers to all real-and-virtual-combined environments and human-machine interactions generated by computer technology, including augmented reality, mixed reality and virtual reality (VR). Through this partnership, the Exxaro Chair will offer a framework of how XR technology can be used to address challenges in the mining industry and identify the best available technologies for solutions. This investment in technological advancement will allow for constant research towards a safer, more economical and more environmentally sensitive form of mining.

‘Exxaro opens new opportunities for us to excel in industry-related XR research,’ said Professor Ina Fourie, Head of the Department of Information Science and the inaugural Exxaro Chair in XR Technology. ‘They are offering us an opportunity to become international leaders in the use of XR technology in the mining industry and mining safety. Many other applications and opportunities could follow.’

‘We thank Exxaro for their generous contribution over three years, and we hope that this will be the start of a long relationship,’ added UP Vice-Chancellor and Principal Professor Tawana Kupe. He noted that UP would educate and train the next generation of developers and researchers with real-world projects unique to XR technology and immersive learning.

‘The EBIT Faculty is honoured to work with an industry-leading company such as Exxaro in strengthening the United Nations’ Sustainable Development Goals [SDGs] – especially SDG 9, Industry, Innovation and Infrastructure, and SDG 8, Decent Work and Economic Growth, both of which South Africa desperately needs,’ said Prof Sunil Maharaj, Dean of EBIT.

‘We are proud to have such a strategic partnership with the University of Pretoria and to be among the mining

companies to explore the potential benefits of XR technology as a strategic intervention across its operations,’ Exxaro CEO Mxolisi Mgojo said.

‘Together, we are expanding upon the practical capabilities of XR in the South African context while supporting our need for the industry to embrace the opportunities of the fourth industrial revolution. The possibilities of what we could develop are fascinating.’

Exxaro will work with the Virtual Reality and Interaction Lab (VRI), an initiative of the Department of Information Science at UP and the Department of Mining Engineering. The VRI lab applies XR technologies to create interactive user experiences for various applications.

The XR technology programme will assist in selecting the most effective XR technology for specific applications, then design interactions that can enable intuitive interaction with the virtual environment. It will also offer extensive user testing of proposed solutions to ensure that such solutions address and solve as many challenges as possible. Among the solutions explored are the

application of individual and shared VR; mobile, tethered and cave setup VR; communication VR; tracked and untracked VR space; and hand tracking and full-body tracking.

‘We are extremely excited about this partnership as part of our drive to support research that overcomes the obstacles associated with the fourth industrial revolution,’ Mgojo said. ‘We believe that XR technology has immense applications for dealing with mining-related challenges and that it can optimise the resources of companies like Exxaro.’



↑ Prof Kupe experiencing virtual reality.



↑ Left to right: Prof Ina Fourie, Prof Sunil Maharaj, Prof Ronny Webber-Youngman and Mr Mxolisi Mgojo. In front: Prof Tawana Kupe