

## Winners of the Mine.D: Zero Harm hackathon

The Tshimologong Precinct and the Research Institute for Innovation and Sustainability (RIIS) has announced the three overall winners of the digitally-inspired Mine.D: Zero Harm hackathon, which focused on Mixed Reality (MR) and Internet of Things (IoT) within the health and safety space of the mining sector. Through the experience, teams were exposed to the wonders of technology, including demonstrations and one-on-one coaching from industry experts.



Winning team SystemDex with the organisers from Tshimologong and RIIS

Lesley Williamson, CEO, Tshimologong Precinct, says that the top three entries were inspiring and very relevant to the health and safety of the mining environment: "I was impressed by the depth of knowledge and skill of the entrants. As we hoped, the results address very real issues and concerns within the mining environment and all utilise technology in innovative ways."

While she says the judging process was not easy, the first place was awarded to team SystemDex (Sikhanyiso Ngetu, Mosima Matlwana, and Menzi Mohlobo), which simplified big data into a mixed reality interface with an added feature of monitoring the health vitals of miners. By using a low-cost sensor system, they are able to track health and environmental management in real time.

In second place was team SixUp (Aaron Tseke, Andile Mutono, and Gift Mogeni), which tackled rock seismic activity with a preventative warning system. The system is able to warn miners of rock movements and give them immediate insight into the potential danger of rock fall, depending on the speed and distance of the seismic activity.

The third place we awarded to team Looksee.do (Dean Hodgskiss, Dylan Holshausen, Chris Behrens, Shaun Lottering, and Jaco Wilters), which solved health and safety training challenges through an affordable mixed reality method, costing a fraction of a traditional system. It allows miners to be trained in a safe virtual environment through a gamified system with in-built health and safety challenges to overcome.

Highlights of the programme included a visit to a mock mine at the Wits Mining Institute, as part of the immersive context setting. The mock mine takes the participants into a mock tunnel resembling those in underground mines. The tunnel led the participants to a 1.5 m high rock face, which shows how miners work underground. They got to experience the heavy equipment, narrow tunnels and potentially dangerous conditions miners work in. The participants also enjoyed being exposed to a mock control room, showing all the data that is collected in a mine.



Participants in the mock mine

Participants also found the context sessions on Augmented and Virtual Reality and IoT to be very helpful. These sessions gave the participants a deeper understanding of how they can use these emerging technologies for digital innovation in the mining industry. A demo showing cutting edge mixed reality technology helped participants to tinker and contextualise the potential of the technology they were applying at the hackathon.

The prizes for the Hackathan included a membership at the Tshimologong Precinct, mentoring from Mixed Reality and IoT experts and an introduction to the innovation and technology divisions at South African mining companies.

Davis Cook, CEO, RIIS, says that Mine.D was an outright success: “Our aim was to use technology to address current issues and this was achieved. The teams developed some exceptional work and we are very happy with the outcome and potential of this type of hackathon.”