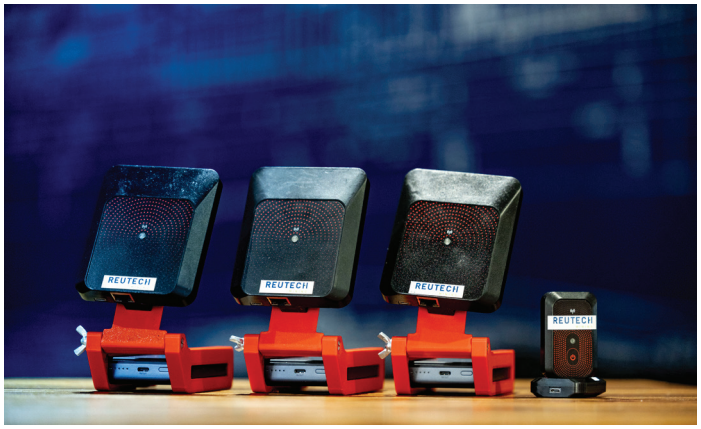
science, technology & innovation
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Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

CSIR E-PEG SPATIAL POSITIONING SYSTEM: ADVANCING OPERATIONAL AND GEOTECHNICAL COMPETITIVENESS IN THE MINING INDUSTRY

The CSIR's e-Peg underground spatial positioning system is a portable, ultra-wideband (UWB), real-time system for spatially recording people, equipment, hazards and other points of interest in underground mines. Developed in collaboration with Eliko, the system combines UWB anchors and tags with a tablet interface to capture and display spatial coordinates in environments where Global Positioning System (GPS) is unavailable.





TECHNICAL ABILITIES

Because GPS signals fail underground, an alternative is needed to support day-to-day operational and geotechnical observations within the mine's survey system. The e-Peg addresses this shortcoming by ensuring that all observations are consistent with the mine's survey system, maintaining operational monitoring requirements for safety, efficiency and reporting on assets. Using the e-PEG provides a location architecture using anchors and tags where a ruggedised tablet is used to run the Eliko interface. Other features include:

- live tag-coordinate display;
- point-of-interest and trace capture;
- timestamped records with comments and filtered Comma Separated Values (CSV) exports creating a traceable spatial record for underground monitoring, analysis and operational decision-making.



BENEFITS TO THE INDUSTRY

MOBILE SYSTEM FOR ON-THE-GO MONITORING

Our portable system can be deployed or relocated as work areas change, with an automated anchor-location workflow and live tag positions. Users can record points and traces, add categories or comments and export time-filtered records for mapping and analysis.

HOW IT IS USED IN INDUSTRY

The system supports underground surveyors, rock engineers, geologists, safety teams and production supervisors who need spatially referenced operational information. It complements statutory surveying and supports routine location capture. This has benefits for tracking mobile assets underground, speeding up rescue efforts by pinpointing the last location of teams, and ensuring surface activities such as drilling can be done with full understanding of the underground mine map.

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