Mapping the Underground

,

It s an idea reminiscent of Harry Potter and his magical Marauder s Map which reveals every classroom, secret passage and corner of the castle, but also pinpoints, with a moving dot, the exact location of every person on the grounds. Now imagine if that same capability were possible, deep underground in a complex and ever-changing mine environment.

This is exactly what Chris Rizos, Professor of Geodesy and Navigation aims to achieve with a recently awarded Australian Research Council (ARC) Linkage Grant.

Accurate positioning underground is critical to ensuring the safety of mine workers if there is an emergency, but it is also a key technological capability in resolving mine productivity bottlenecks, says Professor Rizos. Knowing exactly where the trucks, machines and people are will assist decision-making about excavating and mining in the most efficient way.

Professor Rizos is working with colleagues at the School of Mining Engineering, Associate Professor Serkan Saydam and Dr Binghao Li; and industry and academic collaborators at Crelead Information Technology (Crelead) in China; and the China University of Mining and Technology (CUMT)

Choosing UNSW as our collaborator was an inevitable choice, says Dr Qiang Wang, Chief Investigator from Crelead, who learnt much about UNSW capabilities as an exchange PhD student from CUMT in 2008. It will maximise Australia s competitive advantage in mining and the geospatial positioning industry and deepen the ties between the two countries. It is also a good chance for Australian technology to enter the Chinese market.

The project team will explore how a variety of technologies might work together, including WiFi based positioning, proximity sensors, radio frequency identification, inertial navigation systems (which can track motion and the direction in which something is moving) and an Australian technology called Locata, which is based on terrestrial signals similar to satellite signals.