

perspective and its distinct art style. The students were inspired by the South African animator, Mike Scott, a YouTube video by PJ Ligouri, "PJ, Tiny Planet Explorer", and the games Angry Birds Space, Super Mario Galaxy, Aether and Capsized. The Super Sea Dragons won the South African national finals of the Microsoft Imagine Cup after beating more than 50 teams from South African universities.

The top three local teams went on to compete against teams from all over the southern hemisphere in the Microsoft Imagine Cup world semifinals. There, the Super Sea Dragons won the Skype Award for innovation and collaboration – a \$5 000 cash prize aimed at helping the young game designers to improve their product. The Skype Award aims to tap into the innovative and creative spirit among the Microsoft Imagine Cup participants to deliver new ideas on how to leverage Skype to have a positive social impact. Three world semifinalist teams each received this prize for recording the best Skype video message explaining how to use Skype to do great things in the world. The Super Sea Dragons will use their prize money as a contribution towards promoting Orbit and getting the game onto the Windows phone store.

The students described their experience of this large-scale collaborative innovation as follows: "If you put enough brilliant minds into one room, the atmosphere becomes electric." The experience is an important driver of future innovation for these talented students and they hope for it to be a stepping stone for their careers. Three of the four students have already secured contracts with Microsoft.

They report that the most important lessons that they have learned pertain to their product's leap from innovation to a real-world business. The students have integrated extensive testing and version and quality control into their business model and plan to sell Orbit when it is finished. Orbit is already available online as a demo version, the first step in the game's five-step business plan. 📍

Technology to enhance gold recovery

The University of Pretoria has been collaborating with the gold processing solutions company, BIOMIN South Africa (Pty) Ltd, on the development of new technology to improve gold recovery in the processing of double refractory ores.

Gold recovery often results in native carbon competing with activated carbon, which limits gold recovery (commonly called preg-robbing). BIOMIN's process manager, Craig van Buuren, announced that the new technology is now available for commercial use. BIOMIN is a biological oxidation (bioX) solutions provider, which acquired the patent for the BIOX® (biological oxidation) refractory processing technology in 2013.

The process, called high-temperature caustic conditioning (HiTeCC), is a conditioning stage introduced after conventional carbon-in-leach (CIL) processing to recover preg-robbed gold from native carbonaceous materials. Preg-robbing of gold during cyanide leaching occurs when the leached gold is adsorbed by certain components of the ore.

HiTeCC was reliably proven to improve gold recovery by 5 to 10%. "BIOMIN is working with the University of Pretoria to further the fundamental understanding of the HiTeCC process, which will allow it to be extensively modelled," Van Buuren added.

"In our tests on double refractory concentrates with high native carbon content, normal gold recoveries were severely impacted without the HiTeCC process," he explained. After conventional CIL processing, the process involved conditioning slurry with heat, carbon and caustic reagents to reverse the preg-robbing effect. Gold was stripped from the native carbon and recaptured onto activated carbon through a two-stage temperature swing. This "innovative" slurry heat exchanging process meant that HiTeCC could easily be tied into conventional leach circuits.

BIOMIN noted that it had done significant work to improve the efficiency of the process for plants processing double refractory ores and would continue to develop the modelling to enable tailored solutions for specific preg-robbing materials. 📍