



## ONLINE DATA ANALYTICS PLATFORM (ODAP) - TEST BENCH

### Technical Detail:

The SU platform, a TRL-7 prototype, integrates data from installed IMT sensor assets via a data server, processes and contextualizes it using BASE administration shells to digitally represent physical assets with real-time state data, and feeds this into a CSIR algorithm. The platform connects to an ESRI data visualization dashboard, geographically positioning assets and displaying information from the IMT PDS system. This solution demonstrates a rapid (average 7 seconds from PDS detection to human worker's BASE administration shell update) sensor-to-cloud data flow, enabling low-level sensor data exposure, contextualization for third-party expert applications, and automated system behavior based on integrated sensor data. The architecture emphasizes modularity and interoperability, facilitating integration of subsystems through well-defined interfaces for a complete, vertically integrated technology stack with potential for horizontal extension.

### Benefit:

University of Stellenbosch in collaboration with Esri SA and CSIR developed a platform and integrated solution to significantly enhance real-time situational awareness and decision-making in mining by effectively drawing, processing, and contextualizing sensor data from IMT assets. This not only demonstrates the ability to integrate disparate systems and automate responses based on environmental states, but also provides a robust, modular, and scalable sensor-to-cloud technology stack with potential for future integration and digital twin services, ultimately maximizing the value of existing and new technologies for improved safety and operational efficiency.