



MANDELA MINING PRECINCT
MINDS FOR MINES

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REAL-TIME INFORMATION MANAGEMENT SYSTEMS

“The right information to the right person (or system) at the right time”

Overview: The Real-Time Information Management Systems programme (RTIMS), one of five programmes of the South African Mining Extraction, Research, Development and Innovation (SAMERDI) strategy.

RTIMS aims to revolutionize mining operations by optimizing the entire data lifecycle. This includes enhancing data collection, transmission, storage, and dissemination through innovative tools, practices, and procedures. RTIMS will enable diverse applications and use cases, such as real-time data sharing between underground and surface operations, empowering smarter decision-making and improved control for increased efficiency and safety in the mining sector

Solution: To enhance mining operations, it is crucial to establish collaborative efforts and guiding principles that address key transformative forces. These forces include the global shift towards sustainable practices, digital transformation, evolving regulations, safety enhancements, productivity improvements, and cost reduction.

Challenge: The need for these efforts stems from the current lack of comprehensive situational awareness in underground mining environments. Improved decision-making and control, facilitated by smart systems and shared information, communication, and technology infrastructure, are essential for a wide range of mining applications.

Highlights: The mining industry is increasingly recognizing the critical role of data in optimizing operations, enhancing safety, and driving innovation. For that, RTIMS introduced the Open Data Analytics Platform (ODAP), aptly named as a mnemonic poised

to revolutionize how the mining sector leverages data for enhanced decision-making and operational excellence.

ODAP is designed with a fundamental principle in mind: openness. It embraces an open data format, breaking free from the limitations of proprietary systems and ensuring interoperability. Its more than a repository for data; it's an engine for analytics. Its core value proposition lies in its ability to transform raw data into actionable insights. This tangible platform offers a space for industry to experiment with data, develop and test analytical models, and visualize results in an interactive dashboard format. Access to this test bench, along with a degree of licensed support, provides a valuable resource for the mining industry.

RTIMS also enables information from the deepest tunnels to the surface control room through edge devices, deployed throughout the mine by capturing environmental information, the health of equipment, and the well-being of miners. These devices, connected wireless with internet communication channels, provide a comprehensive and up-to-the-minute view of the entire mine. This includes Global Navigation Satellite System technology for precise GPS coordinates of real-time positioning of personnel and equipment both on the surface and underground.



The Real-Time Information Management System programme is configured to:

1. Address Capability development - provides ability through skills and processes and technology ("how") to enhance a mine's ability to effectively utilize and manage real-time information;
2. Deliver technology solutioning - provides the means (the tools - "what") focussing on the selection, implementation, verification (TRLs) and integration of RTIMS technological components.
3. Participate in strategic co-creation and value extraction - provides the purpose and the business outcomes ("why and how") promoting partnerships between mining companies, technology providers, researchers and other stakeholders to identify innovative and sustainable real-time information management strategies.



The objectives of the Real-Time Information Management System are as follows:

1. Establish collaboration and guiding principles for several transformative forces, including the global transition toward sustainability, digital transformation, regulatory changes, safety, productivity and cost minimisation.



2. To improve data sourcing, transmission, storage, dissemination, through existing information management tools, practices and procedures for various use cases

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