



# METAL AND MINES

## Tata Communications MOVE™ - Private Network

### Industry Overview

The metals and mining industry is facing unprecedented volatility. Though it is expected to witness significant growth owing to the increasing demand, the changing market dynamics and downturn in commodity prices has made it crucial for mining players to improve operational efficiency. Smart mining through technological enhancements such as AI based image sensing, predictive & preventive maintenance and hazard detection devices can ensure safety of mine workers and optimize vehicle downtime providing mining players the competitive edge required to survive in the industry.

All these technologies need a robust underlying communication infrastructure to ensure that they deliver on the outcome they promise. With 5G network, mining industry can attain significant opportunities such as automation and remote operations which can increase its ore production

### Metal and Mines - Challenges

- **Market Volatility** - Due to the impact of covid 19 on the global commodities market, there has been significant volatility in mining industry. The pandemic has significantly disrupted supply chains in the near term and created ongoing uncertainty around demand
- **Productivity and Cost** - Ongoing economic uncertainty and COVID-19-related expenses are increasing cost pressures. Minimising production line downtime with strict SLAs & maximising productivity & manufacturing output quality is the need of the hour
- **Worker health and safety** - With harsh conditions in mines, and heavy pieces of equipment operating around, safety needs to be on top of the mind – all the time. Digitalisation can have a tremendous impact on safety, giving mine operators a clearer picture of the full breadth of operations, monitoring critical factors like air quality and tunnel strength
- **Digital and data optimisation** - Metal and Mine organisations are realising the additional additional benefits of digital transformation throughout the crisis
- **Cost of operations** - Achieving networking cost-effectiveness with flexibility around Capital & Operational spend

### Tata Communications MOVE™ - Private Network

An easy-to-manage, enterprise wireless connectivity solution. It delivers a robust and reliable private wireless network, with an associated digital ecosystem enablement platform to help you to achieve your digital transformation vision

### Value Proposition

- **Automation and orchestration platform** to enable industrial applications
- **Unified view of operations** across global locations
- **Industry vertical knowledge** solving sector specific challenges and needs
- **Collaboration centre** with 5G testbed for use case testing and evaluation
- **Multi-layer security** to protect device, network, and applications
- **Comprehensive service suite** comprising network planning, deployment & management service

## Metals and Mines Use Cases

USE CASE	DESCRIPTION	BENEFITS	FINANCIALS
Automated Guided Vehicles (AGV)	AGVs as driverless haulage system using smart 3D sensors, edge computing & reliable 5G connectivity to navigate across the mines	<ul style="list-style-type: none"> <li>Reduced human resource cost</li> <li>Safe work environment with less human-led collisions</li> <li>Improved productivity due to automation</li> </ul>	<ul style="list-style-type: none"> <li>34% up in productivity for a metal organisation</li> <li>ROI by year 10 would be around 72%. Payback period would be &lt;7 years</li> </ul>
Predictive & preventive maintenance with condition monitoring	Condition monitoring to monitor factors like vibration and temperature of all assets to detect abnormalities and predict when an asset needs maintenance	<ul style="list-style-type: none"> <li>Early detection of potential faults and their causes</li> <li>Continual real time monitoring</li> <li>Just-in-time maintenance</li> <li>Optimal utilisation of technicians</li> </ul>	<ul style="list-style-type: none"> <li>Unplanned maintenance cost reduced by 25%</li> <li>RoI (Year 5) would be around 288%. Payback period would be &lt;2 years</li> </ul>
Drones for surveillance	Drones used for faster and thorough inspection of mines. Camera- equipped drones to collect & stream data to Edge cloud, where analytics is used to detect theft/unpermitted access	<ul style="list-style-type: none"> <li>Early detection of potential threats and thefts</li> <li>Real time surveillance</li> <li>Reduction in cost &amp; resources to deliver small items to ships</li> <li>Safe work environment for employees</li> </ul>	<ul style="list-style-type: none"> <li>Financial benefit for baseline underground mine was about 0.3% of revenue</li> <li>RoI (Year 5) would be 153% &amp; payback period would be &lt;3 years</li> </ul>
Remote collaboration using AR/VR	AR/VR head gears combined with analytics technology provide a comprehensive remote technical assistance	<ul style="list-style-type: none"> <li>Low cost of maintenance</li> <li>High asset up time</li> <li>Higher rate of issue resolution</li> <li>Higher specialists' utilisation</li> </ul>	<ul style="list-style-type: none"> <li>Service resolution times down by 40% for an OEM</li> <li>70% drop in injuries &amp; 90% less ergonomic issues</li> </ul>
Asset & Vehicle Tracking	Connected equipment to track locations of assets and enable machine-to-machine communication	<ul style="list-style-type: none"> <li>Real time location tracking</li> <li>24*7 visibility of assets</li> <li>Optimal utilisation of mine resources</li> <li>Minimal waiting time for assets needing assistance</li> </ul>	<ul style="list-style-type: none"> <li>20.1% decrease in downtime, 17.8% decrease in inventory maintenance</li> <li>Average investment recovery time of 14.5 months</li> </ul>
Smart Cranes	Smart cranes are equipped with HD cameras to obtain pictures of surrounding vehicles & can be processed to create 3D models	<ul style="list-style-type: none"> <li>Minimised risk caused by dangerous work</li> <li>Improved visibility with 24/7 operations</li> <li>Intelligent decision making</li> </ul>	<ul style="list-style-type: none"> <li>Up to 30% maintenance cost reduction (reduced mechanical stress)</li> </ul>
Remote Control Drilling	Remote drilling requires multiple connections on the same vehicle, high bandwidth for video streaming, and a reliable connection for QoS	<ul style="list-style-type: none"> <li>Precise, &amp; cost-efficient drilling</li> <li>Safe working environment</li> <li>Reduced downtime caused by unforeseen incidents</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance cost reduced by 25% due to less manual intervention</li> <li>RoI (Year 10) would be around 200%. Payback period would be &lt;4 years</li> </ul>

## Way forward

The industrial applications for 5G are dependent on access to the appropriate radio spectrum, a key consideration for any wireless technology.

Be it a mission-critical public safety service or a business-critical industrial site, 5G wireless private networks – deployed either standalone or in conjunction with public networks – enable the use of wireless communication for critical applications, with stringent communication requirements for many use cases. The global 3GPP ecosystem secures cost-efficient, future-proof products and services for evolution. With the help of private 5G network, industries can quickly realize industry 4.0 scenarios.

To collaborate with us or to know more about smart mines solution and POCs, Please email us at: [5Gnetwork@tatacommunications.com](mailto:5Gnetwork@tatacommunications.com)