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DI² IN OREBODY KNOWLEDGE

RAJ MATHIRAVEDU
DARREN PALMER



CRITICAL MINERALS AND NET ZERO GOAL:

We will not reach our net zero objectives doing the same as before

Sustainability is the new megatrend...



Three main elements in sustainability are:

- **Growth in electric lightweight vehicles:** transition from direct use of fuels to EVs and increase demand for materials like Al and Cu
- **Renewable electricity, construction of energy networks and storage:** greater renewable electricity generation and expansion of energy networks
- **Higher recycling rate, especially of batteries:** Recycling of batteries grows rapidly from 2030 due to ease of collection and ongoing improvements in recycling of other metals

...along with three key mega trends...



Other three key mega trends that drives demand growth are:

- **Rise of India and East Asia:** infrastructure-hungry developing Asia and Sub-Saharan Africa drive demand growth for energy and steelmaking commodities
- **'Hungrier' world:** population growth & greater wealth drives global increase in fertilizer demand
- **End-use substitution:** expensive metals 'engineered-out' in manufacturing while material substitution continues in construction

...drive demand growth for next 20 years



Three filters applied to identify 'future-facing' commodities to explore their growth outlook in detail

- **Lithium:** CAGR 8%, driven by EV/utility batteries
- **Cobalt:** CAGR 5%, due to EV battery growth
- **Nickel:** CAGR 3%, primary used in alloys and increasingly in batteries
- **Lead:** CAGR 2%, battery demand drives growth
- **Zinc:** CAGR 1%, used in metallurgical application
- **Phosphate rock:** CAGR 2%, greater agricultural productivity drives growth
- **Potash:** CAGR 2%, greater agricultural productivity drives growth

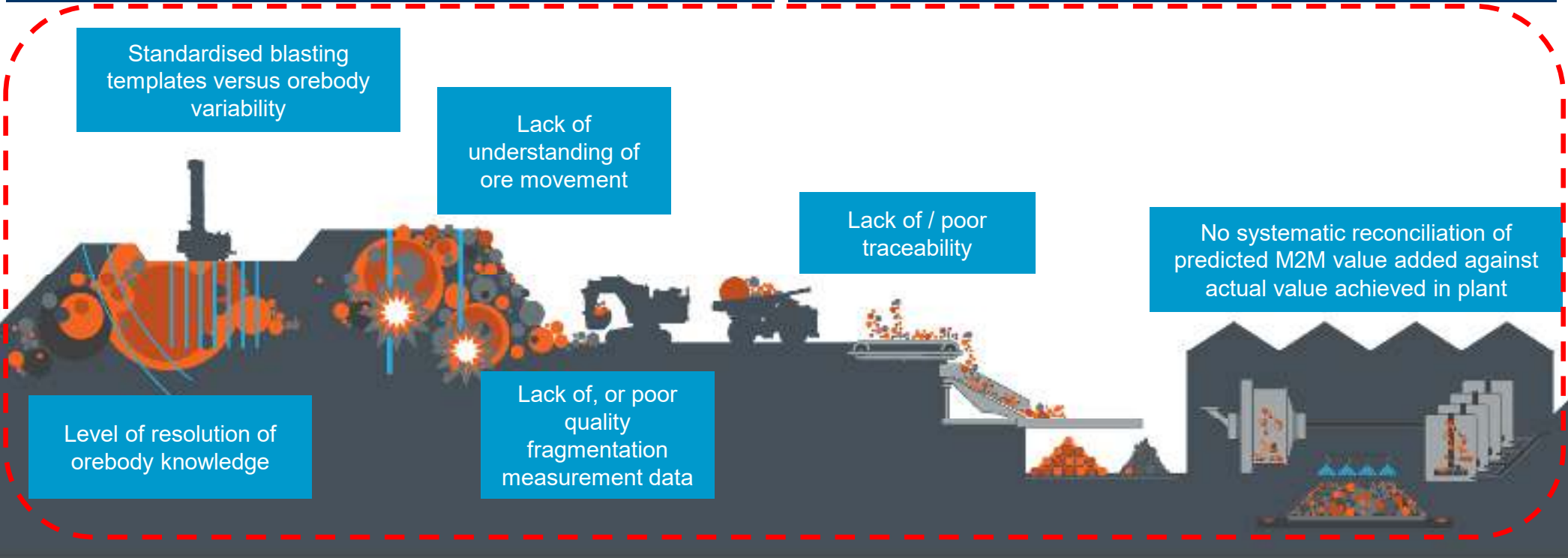
SUSTAINABLE END TO END OPTIMIZATION: Beset by data challenges and lack of workflow integration

MINING OPERATIONS

Generate broken ore to specification at lowest cost

ORE PROCESSING

Deliver maximum throughput with high recovery



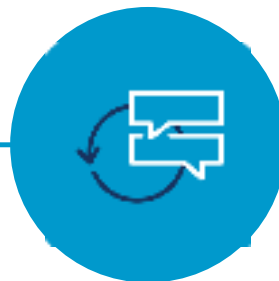
JOURNEY OF DI²:

Accelerate the cycle time from prospect to product while reducing emissions



Better Data

- Inform full value chain
- Fundamental to all models
 - Timely Data



Increased Insight

- Understand uncertainty
- Decisions based on data
 - Manage the portfolio

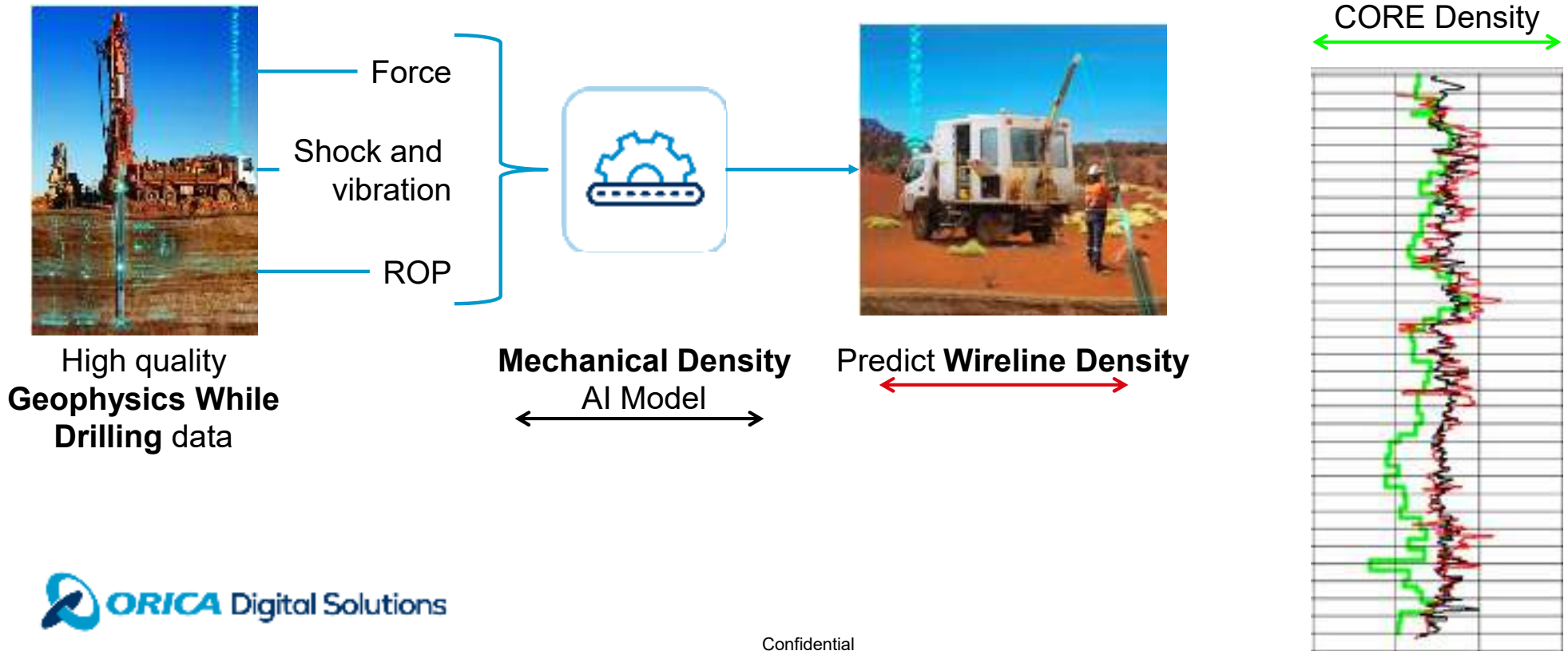


Greater Intelligence

- Integrated models
- Understand variability
- Minimise critical failures

CASE STUDY:

Mechanical Density - Sensors, Software, and Data Science



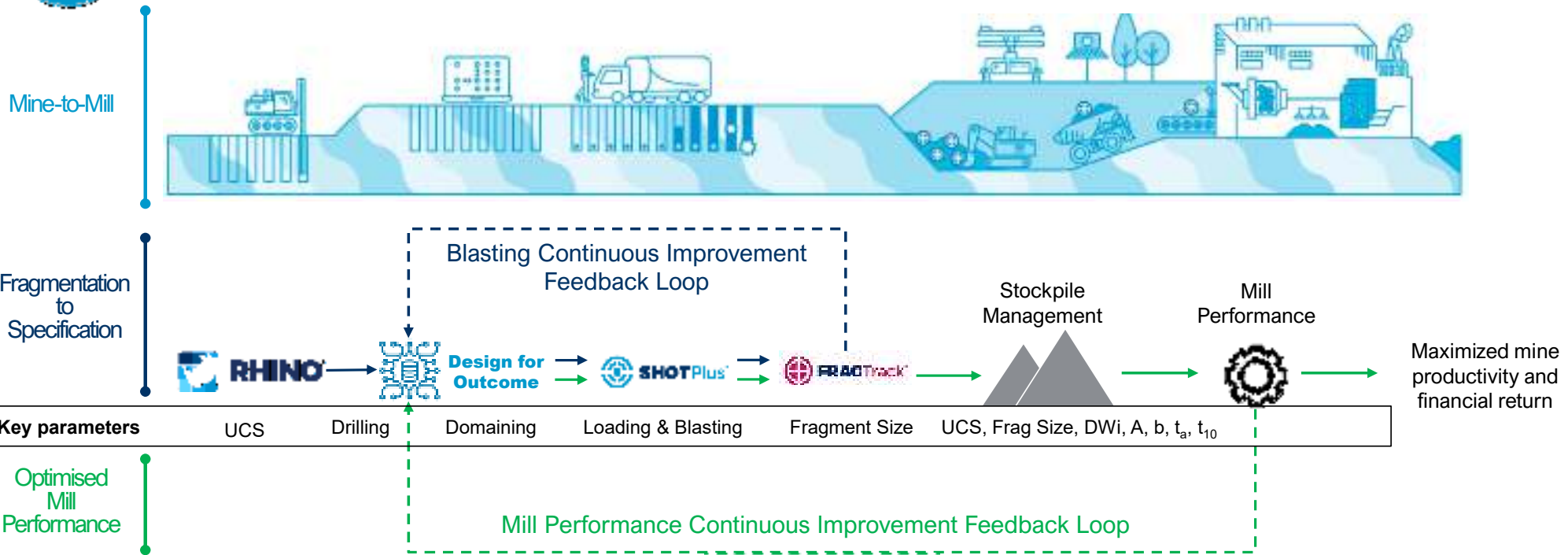
CASE STUDY:

Optimising energy across the value chain - Sensors, Software, and Data Science



Mine-to-Mill Continuous Improvement

- Prediction of key mill performance metrics
- Adjust mill operations based on rock hardness and fragmentation data for incoming blasted rock



Confidential

KEY TO MOVE FROM DISCRETE SILOS TO INTEGRATED WORKFLOWS: Augmented Intelligence in a Collaborative environment

