

FUTURESMART MINING™

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MINING IS ON THE CUSP OF GAME-CHANGING INNOVATION

Unprecedented opportunity for those prepared to take a fresh approach



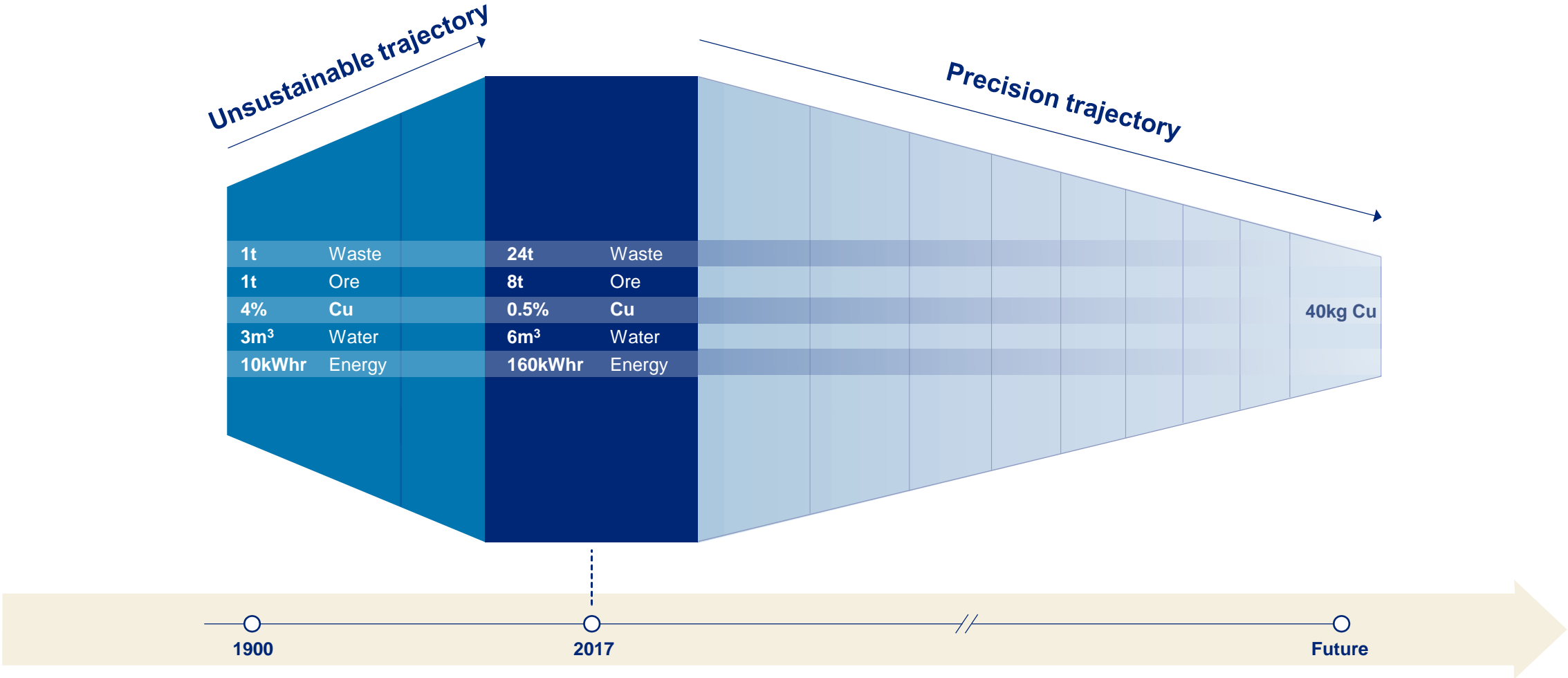
Anglo American has a portfolio of world-class competitive mining operations and undeveloped resources and a rich heritage of technology and innovation that spans 100 years.

Diamonds (De Beers), Copper, Platinum Group Metals (PGMs), Iron Ore & Manganese, Coal, Nickel

Mining innovation is driven by increasingly critical challenges

- safety
- productivity
- sustainability

A NEW PARADIGM



FUTURESMART MINING™ IS REDEFINING THE MINING INNOVATION CYCLE

CREATING SHARED VALUE THROUGH THE SMART ADAPTATION AND APPLICATION OF TECHNOLOGY

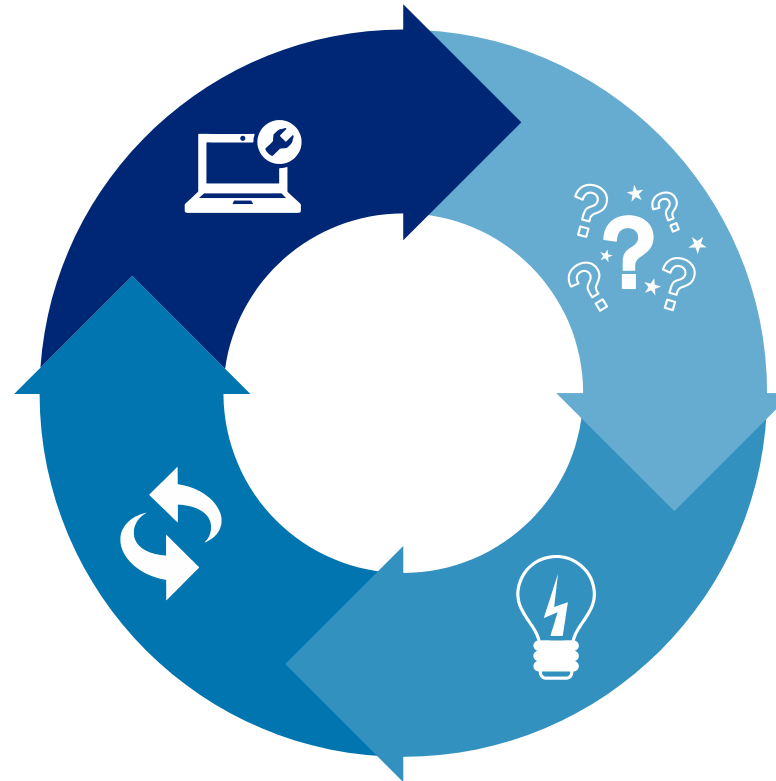
FAST, ITERATIVE EXECUTION

DELIVER

- Rapid delivery cycles (SmartPath)
- Learning plans
- SmartBox

CONSOLIDATE

- Technology Programmes
- Value defined
- Balance delivery over time



GRASP CHALLENGES

Consider entire value chain. 3 lenses:

- Sustainability (water, energy)
- Processing
- Mining

VALUE IDENTIFICATION

IDEATE

- Open Forums
- Internal participation
- Open and collaborative

COLLABORATION



THE CONCENTRATED MINE

Precisely targeting the metal and mineral with less waste

CHALLENGE

Precision mining with minimal energy, water and capital intensity

APPROACH

Concentrate the mine™ concept:

- Improved mine fragmentation
- Rejecting the worthless rock (gangue) earlier
- Coarse particle recovery

Fine particle recovery



VISION

Moving and processing only the mineral / metal



THE WATERLESS MINE

Waterless processing

CHALLENGE

Around 75% of our current portfolio is located in high-water-risk regions

APPROACH

- Closed Loop water recycling
- Evaporation control
- Dry tailings disposal



VISION

Dry processing without the need for tailings dams



MODERN MINE

Continuous, hard rock mining for safer, more economic mines

Underground testing is advanced at our platinum mines

MN220 Reef Miner

(Pictured) Remote controlled disc cutting machine designed for mining narrow reefs of hard rock

The Rapid Mine Development System

(RMDS) Safely excavates low-profile tunnels with rapid access to ore

Continuous haulage system

(CHS) A remote controlled system to transfer bulk material from the RMDS to the fixed conveyors

Slot Borer

Platinum reef drilling system for drilling narrow vein hard rock ore body of just 1m-1.5m



VISION

A safer, more economic mine



MODERN MINE

Transforming hard rock mining

CHALLENGE

Precise, continuous mining at depth

APPROACH

- Adapt disruptive technologies
- Mechanise existing methods
- Continuous hard rock cutting and materials movement



VISION

A safer, more economic mine



THE INTELLIGENT MINE

A smart, connected, learning mine

CHALLENGE

Predict and shape operational outcomes

APPROACH

- Digital planning & work management
- Predictive condition-based monitoring and maintenance
- Advanced process control
- Automation



VISION

Predictive intelligence

DIGITAL MINING

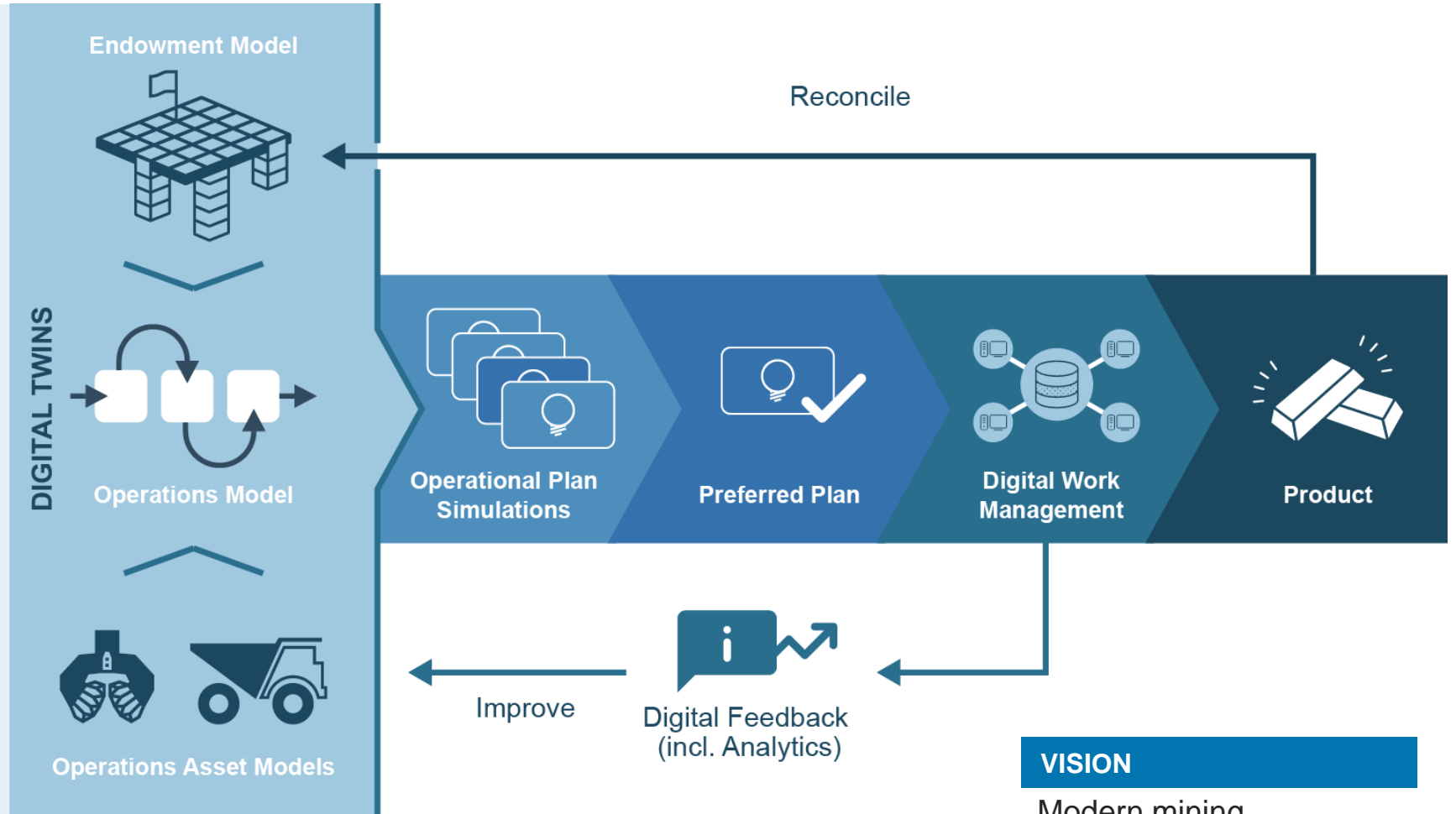
Digital provides an opportunity to transform current mining methods

OPPORTUNITY

Mining's digital potential lies in leveraging a unique combination of digital and physical assets

APPROACH

- The use of modelling & simulation ("digital twins")
- Improving the current business model (assets, processes and people)
- Standard use of machine learning



DIGITAL INNOVATION

Mining's true digital potential lies beyond digital transition

OPPORTUNITY

Digital innovation can create a new business model

APPROACH

- Digitise the value chain to shift boundaries
- Create new markets
- Disrupt the old business model



VISION

A new business model for mining

INNOVATION AND NEW WAYS OF WORKING

CHARACTERISTICS OF THE WORKPLACE OF THE FUTURE



Flattened hierarchies



Generational diversity



Technology enabled collaboration



Work/life convergence



Entrepreneurialism



Values-centred environment

IMPLICATIONS FOR ALL LEADERS

- Manage networks not teams
- Encourage risk, reward failure
- Continuous learning & feedback
- Make purpose personal

HIGHLY SENSITIVE TO THE EXTERNAL ENVIRONMENT, THE MINE MANAGER OF THE FUTURE WILL REQUIRE AN EXPANDED SKILLS BASE:

- Dialogue-based communication
- Risk assessment and issues management
- Reputation management
- Stakeholder engagement

THANK YOU

FUTURESMART MINING™

