AI Adoption in the Mining Industry

Transforming heavy industries through artificial intelligence innovation

- **Understand why GenAI is a now-priority for mining and natural resources,** *and how it drives double-digit gains in efficiency, revenue, and asset reliability.*
- **Identify high-impact GenAI** *use cases and adoption patterns that avoid "POC prison" and overcome real-world constraints in cost, talent, and governance.*
- **Apply an AI CoE ROI** *flywheel model to turn isolated pilots into a compounding, business-first AI program with a clear 90-day action plan.*


From improving reliability to supporting faster, better-informed decisions, these are just some of the ways AI-supported tools are helping us get more value from our assets.
Johan van Jaarsveld
Chief Technical Officer
BHP

Explore

Overview of GenAI Adoption

Growing GenAI Adoption

Over half of organizations use multiple GenAI-powered applications to enhance their operations and decision-making processes.

Focus Areas in Asset-Intensive Sectors

Predictive maintenance and cost optimization are top priorities to boost operational efficiency and reduce equipment downtime.

Measured Benefits

Companies report a 34% rise in operational efficiency, 28% revenue growth, and enhanced customer experience from GenAI initiatives.

Industry-Specific AI Solutions

Specialized vendor AI applications have improved core operations for 71% of users, highlighting the value of tailored AI tools.

Trends Driving GenAI Adoption

Growth in GenAI Spending

GenAI investments are rising steadily from 2025 to 2026 as companies seek measurable returns on AI projects.

Predictive Maintenance Benefits

GenAI enables predictive maintenance to optimize asset performance and reduce operational costs.

Infrastructure and Tooling

Companies invest in AI development tools, computing infrastructure, and data management for tailored GenAI solutions.

Barriers to Adoption

High Infrastructure Costs

Significant expenses for infrastructure and software limit the ability to implement GenAI solutions widely.

Talent Shortage

A limited supply of skilled professionals hinders the effective deployment and management of GenAI technologies.

Governance and Compliance Risks

Complex governance, data control risks, and regulatory requirements increase the difficulty of adoption.

Overestimated Maturity

Organizations overestimating their GenAI readiness risk complacency and underinvestment in essential capabilities.

Actionable Guidance for Leaders

Prioritize High-Impact Use Cases

Focus on key GenAI applications like predictive maintenance and cost optimization to generate maximum value.

Balance Build vs Buy

Leaders should weigh build-versus-buy choices, leveraging vendor solutions to speed deployment and reduce risks.

Strengthen Governance and Compliance

Implement governance frameworks to address bias, privacy, and regulatory compliance in AI deployments.

Invest in Talent and Infrastructure

Develop skills and infrastructure to enable AI scalability and sustain long-term organizational success.

Explore Agentic AI with Oversight

Adopt Agentic AI for decision support with human oversight for critical operations to prepare for autonomous advances.

Summary and Next Steps

GenAI as Strategic Enabler

GenAI enhances operational efficiency, reduces costs, and improves asset reliability in asset-intensive industries.

Focus on ROI and Ethics

Organizations must prioritize ROI-driven initiatives and ensure ethical integration of AI technologies.

Readiness for Next-Gen AI

Preparing for next-generation AI agents requires aligning investments with business goals and fostering collaboration.

GenAI in Asset-Intensive Industries – Why Now

Accelerated GenAI Adoption

Over half of asset-intensive organizations deploy multiple GenAI applications in operations and decision-making.

Benefits of GenAI

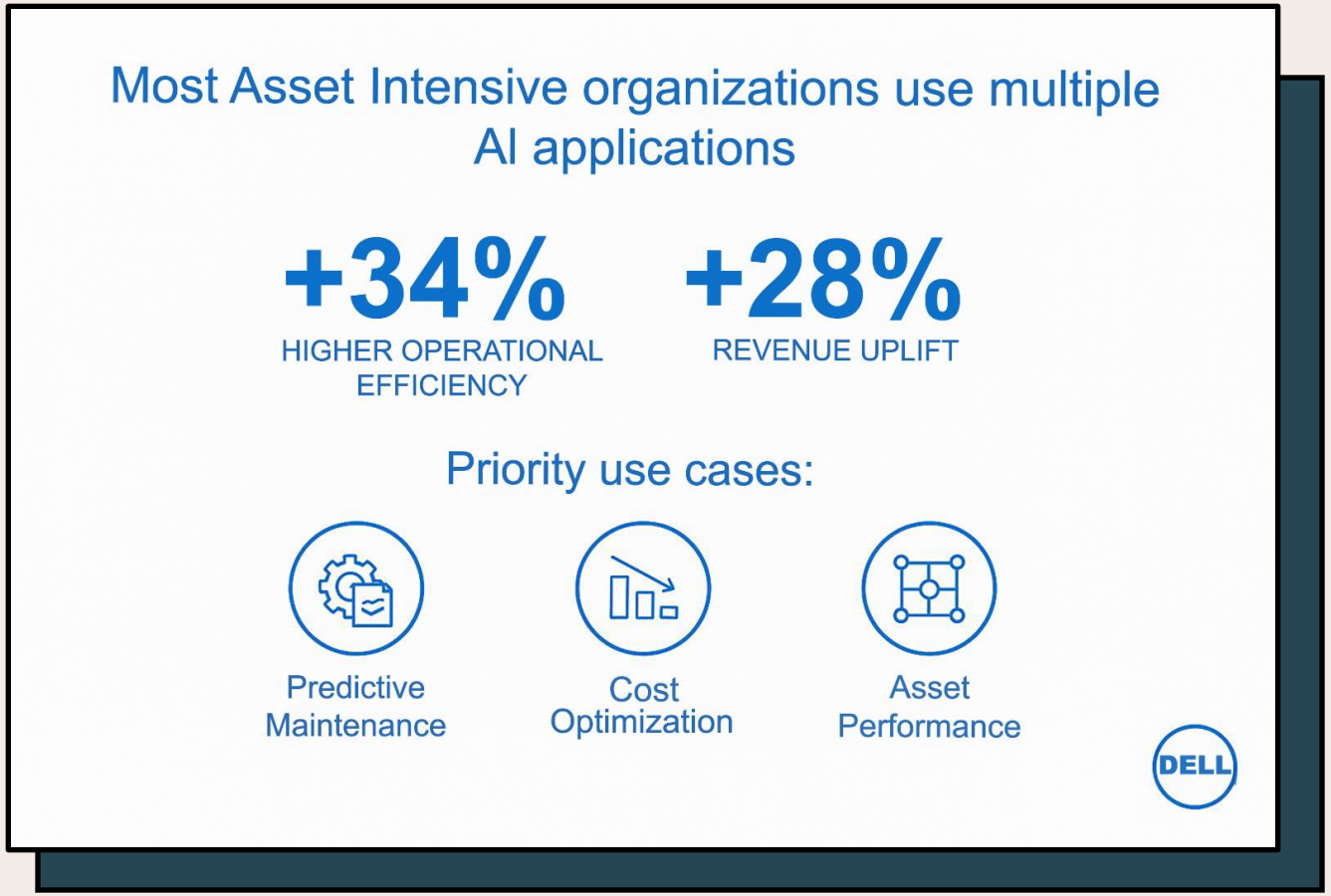
GenAI initiatives yield 34% operational efficiency increase and 28% revenue uplift in industries.

Priority Use Cases

Key use cases include predictive maintenance, cost optimization, and asset performance management for safety and uptime.

Role of AI Platforms

AI platforms and consulting enable secure, compliant, and scalable GenAI deployments in asset-heavy industries.



Building an ROI Flywheel in Your AI Centre of Excellence

Driving continuous value through AI innovation and strategy

GLOBAL COE

	SAFETY *Fewer incidents*	MAINTENANCE *Higher availability*	OPERATIONAL *More throughput*	BUSINESS *Faster decisions*
Digital Twin				
Computer Vision				
Generative Pre-Trained Transformers				
Code Creation				
Content Creation				

Mine AI Factory

Applications, Servers, Network	GPU, NPU, CPU	Storage	DATA

How and Why to Build an ROI Flywheel in Your AI CoE

ROI Flywheel Concept

The ROI flywheel turns isolated AI projects into a self-reinforcing engine of compounded value and accelerated returns.

Aligning AI Strategy

AI strategy should be aligned with measurable business outcomes to drive sustainable growth and operational efficiency.

Avoiding POC Prison

Structured design and governance help prevent stalled AI projects that fail to deliver clear value or escalate costs.

Building Momentum and Trust

Adopting the ROI flywheel reduces deployment friction and builds stakeholder trust to transform AI into a strategic asset.

Enterprise AI: Big Ambition, Uneven ROI

Challenges in AI Adoption

Many AI projects stall at proof-of-concept due to unclear business value and data issues.

High Abandonment Rates

Over 30% of generative AI initiatives are abandoned after proof-of-concept, showing systemic issues.

Industrializing AI for ROI

Standardized AI platforms and governance deliver high ROI and accelerate deployments.

ROI Flywheel Strategy

Adopting a flywheel approach unlocks sustained enterprise value through reinvestment and scalability.

The Changing Mandate of AI CoEs

Evolution of AI CoEs

AI CoEs have shifted from experimental labs to strategic units delivering measurable business value across enterprises.

Diverse Stakeholder Expectations

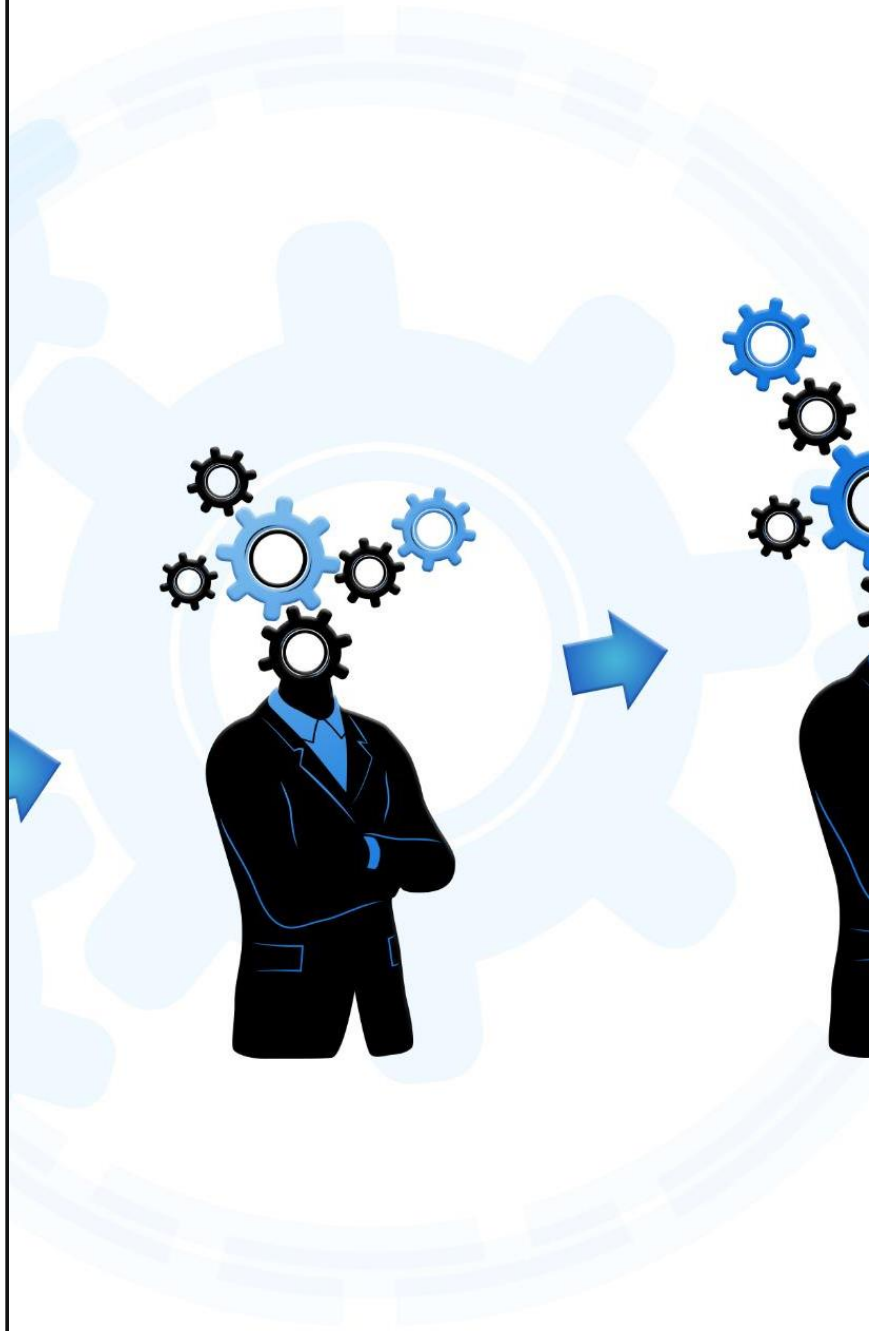
CFOs, CEOs, CISOs, legal teams, CIOs, and engineers demand financial outcomes, risk management, and scalable platforms.

Design Philosophy for Impact

CoEs must focus on repeatability and structured models to compound AI success and drive broader adoption.

ROI Flywheel Concept

The ROI flywheel accelerates AI deployments through standardized platforms, governance, and talent development.



Introducing the AI ROI Flywheel Model

Self-Reinforcing AI Cycle

The flywheel model creates a continuous cycle where successful AI use cases drive stronger data and capabilities.

Six Interconnected Stages

The model includes Commit, Focus, Standardize, Execute & Measure, Scale & Reinvest, and Strengthen Foundations.

Platform Thinking

Standardized infrastructure and processes replace fragmented solutions to enable scalable AI deployment.

Business and Technical Alignment

Aligning AI execution with business strategy drives revenue growth, efficiency, and risk mitigation.

Stages of the ROI Flywheel Explained

Commit to AI Strategy

Stage 1 involves top-down sponsorship aligning AI initiatives with enterprise strategy for foundational capability.

Prioritize High-Impact Use Cases

Stage 2 focuses on selecting use cases using business value, data readiness, and executive support scoring.

Standardize AI Infrastructure

Stage 3 creates a unified AI Factory platform integrating data, GPU infrastructure, frameworks, and governance.

Execute, Measure, and Scale

Stages 4 and 5 emphasize measuring ROI rigorously, codifying successes, and reinvesting benefits to scale AI.

Strengthen Foundations

Stage 6 focuses on improving data quality, governance frameworks, and talent development to sustain momentum.

The Economics Behind Platform Choice

High ROI from AI Platforms

Deploying AI platforms can generate up to 1,225% ROI over four years and 269% in the first year, accelerating reinvestment.

Accelerated Time-to-Production

AI platforms reduce time-to-production by 3 to 12 months compared to DIY approaches, speeding deployment.

Operational Efficiency Gains

Automation and infrastructure consolidation improve operational efficiency and boost productivity among knowledge workers.

Cost Advantages of On-Premises AI

On-premises AI deployments can reduce costs for large language model workloads compared to public cloud solutions.

Customer Example and Interactive Mapping

ROI Flywheel Strategy

Deploy small, high-impact AI use cases first to accelerate time-to-production and drive early ROI.

Interactive Mapping Exercise

Participants assess their Center of Excellence Stream across six flywheel stages in a collaborative session.

Actionable 90-Day Plan

The exercise culminates in a tailored 90-day action plan focusing on ROI, governance, and platform alignment.

John Roese
Chief AI Officer
Dell Technologies

- The AI ROI Flywheel concept emphasizes a transformative approach to implementing enterprise AI anchored in "business first" thinking. Rather than starting with technology and asking what it can do, organizations are urged to begin by clearly identifying the business objectives or pain points they wish to address. Only after this step should technology selection and solution development follow.

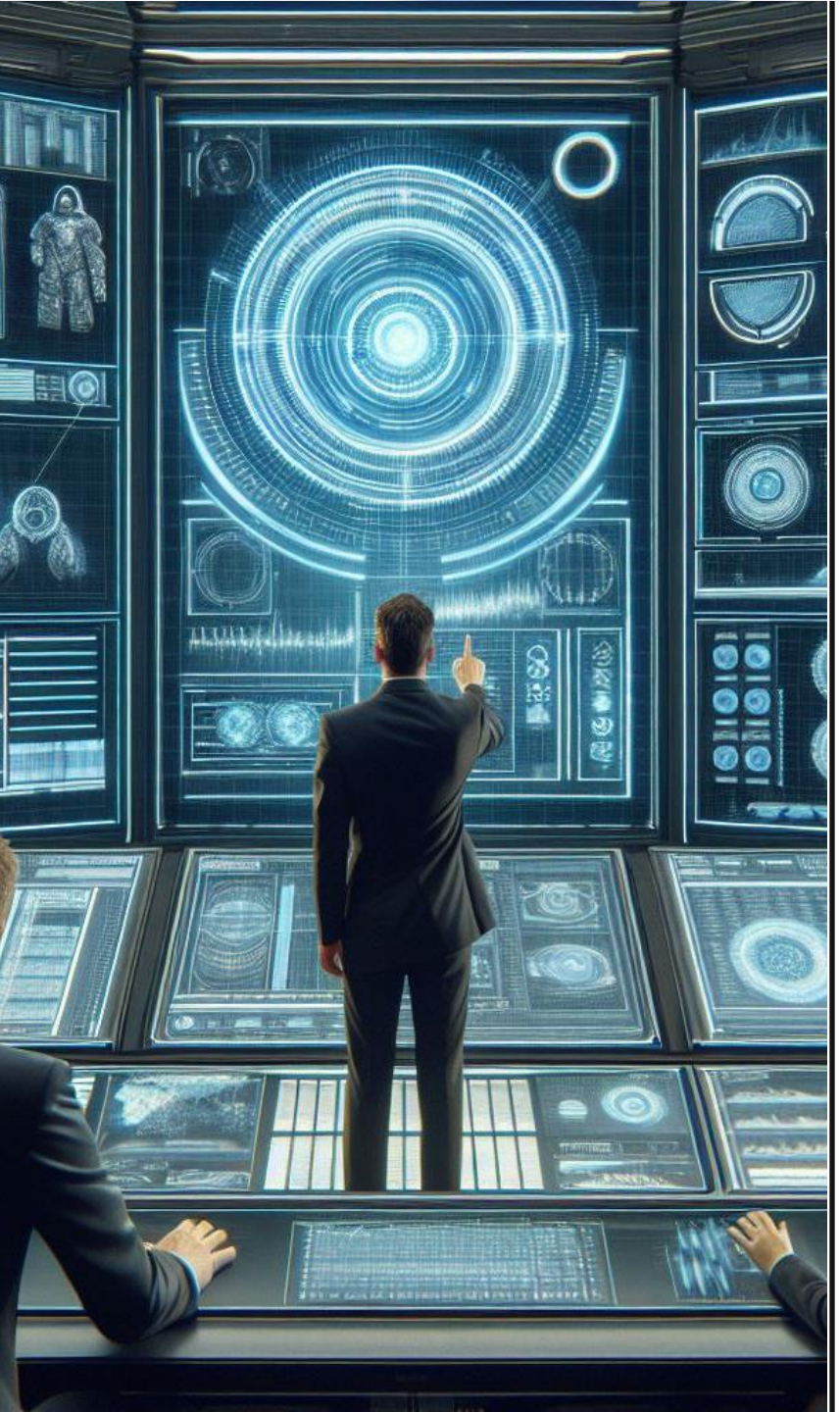
This methodology, shaped by Roese's experiences at Dell and interactions with AI leaders globally, has generated measurable success—some AI projects returned up to 100:1 ROI—by systematically bringing AI into production where it drives real business impact.

The flywheel metaphor describes a positive feedback loop: business-first AI initiatives deliver tangible returns, which in turn increase organizational appetite for further projects while lowering friction to launch new ones.

A recurring risk is the temptation to pursue technology-driven pilots with no direct linkage to business transformation, often resulting in resource waste and limited impact.

Actions

Owner	Task	Due	Priority	Status	Dependencies/Notes
TBD	Identify and document key business objectives and problems before considering AI solutions	TBD	High	New	Essential to ensure projects are business-driven
TBD	Map existing and planned AI projects to explicit business outcomes to validate ROI alignment	TBD	High	New	Requires input from both business and technical leads
TBD	Develop communication materials emphasizing "business first" AI strategy for internal/client use	TBD	Medium	New	Supports cultural understanding and adoption
TBD	Review current AI initiatives for alignment with clearly defined business transformation and expected ROI	TBD	High	New	May require revision or reprioritization of existing projects



Next Steps

Owner	When	Task or Dependency
TBD	As soon as possible	Review all ongoing AI projects to confirm each is anchored in a specific, measurable business objective
TBD	As soon as possible	Build an inventory of top business objectives to guide future AI decisions (depends on completion of above review)
TBD	As soon as possible	Develop and schedule a briefing/training session on the business-first AI and flywheel concept
TBD	After briefing development	Roll out communication materials to business audiences
TBD	Ongoing	Update owners and timelines as clarity emerges from above actions

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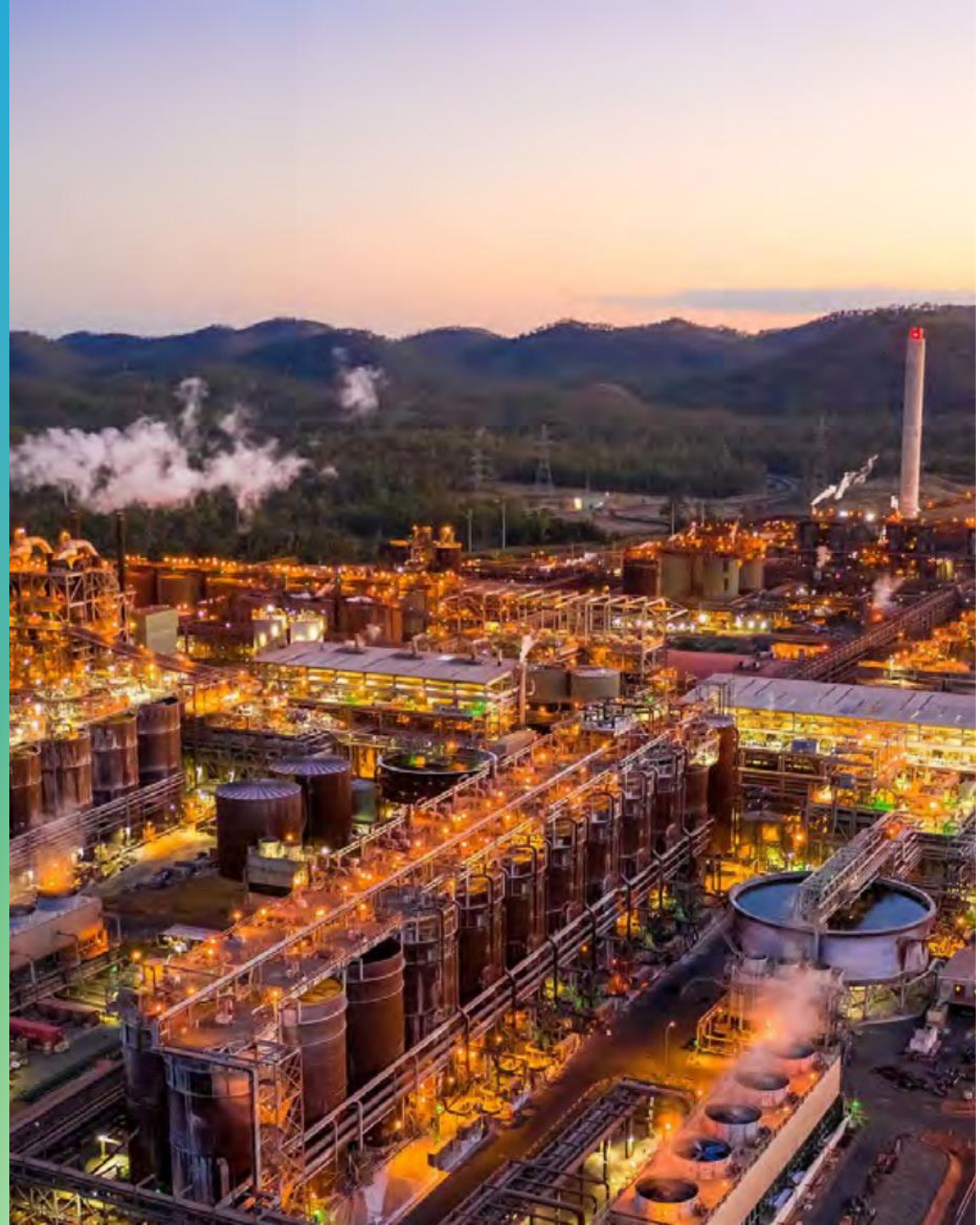


Take away

Set up an GenAI acceleration workshop in your own business, get the actions and next steps happening.

Shayne Phillips
+61 439 068 222

“In my opinion, the future of AI in Mining won’t be defined by how much we experiment but by how effectively we **scale what works.**”

Mikko Tepponen
BHP Chief Digital Officer

What enables scale

Start with the constraint

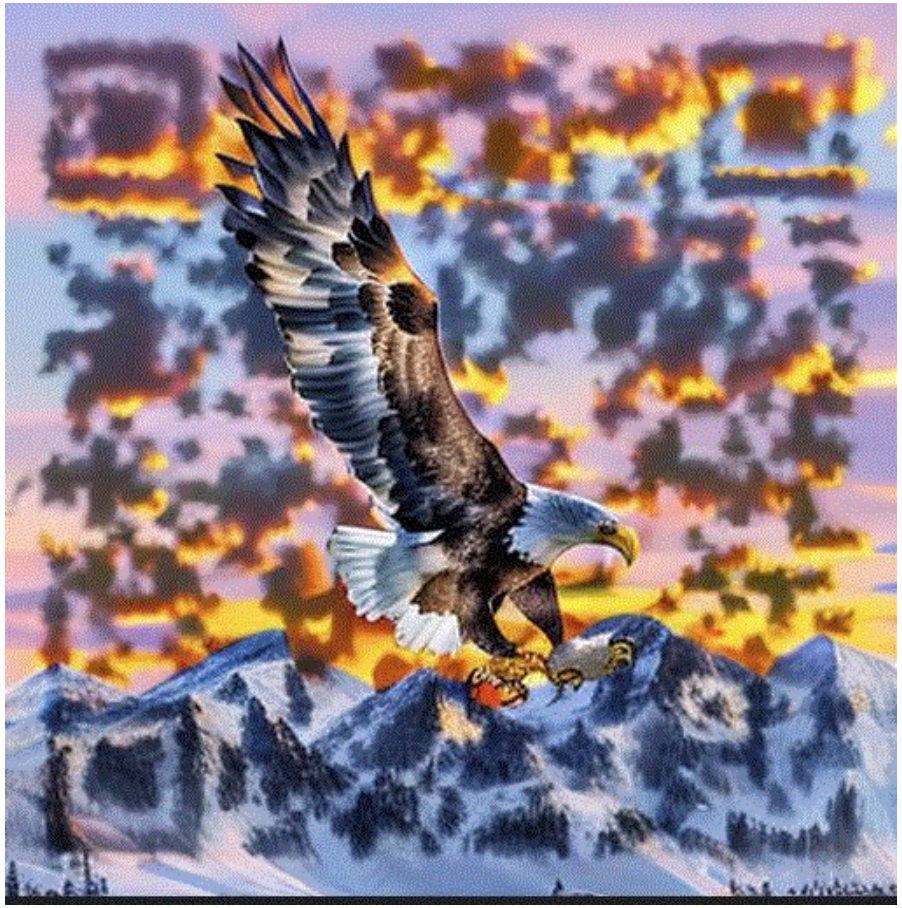
- Define the real operational bottleneck
- Anchor to measurable

Design for scale

- Build for production, not pilot
- Reuse data, models and components

Build foundations that compound

- Platform thinking
- Standardised data and application stack



Thank you