The Minserv Gen-AI System

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Date 2025

Minserv

Serving Responsible Mining

What we do

Support services at a country policy or company strategic level

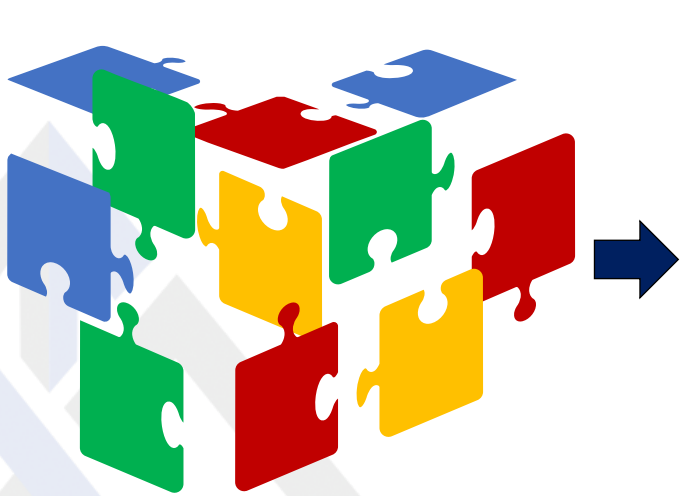
- Policy and strategy consulting/research to enable the Mining Life Cycle
- Mining Life Cycle analysis for Measurable Value Creation
- Twenty-first century Business Development Systems
- Skills development for workplace readiness

Minserv Vision for Responsible Mining:
Unification of Mining, Technology and People for Benefit

Aligned with local context and implementable approaches

Country and Business Development

- Minerals Policy and Investment studies
- MLC and MVC analysis
- AI-Based automated mining systems
- Policy (or Strategy) alignment with Regulations (or Operating procedures)



Siloed systems

Just data – not strategic

> No AI

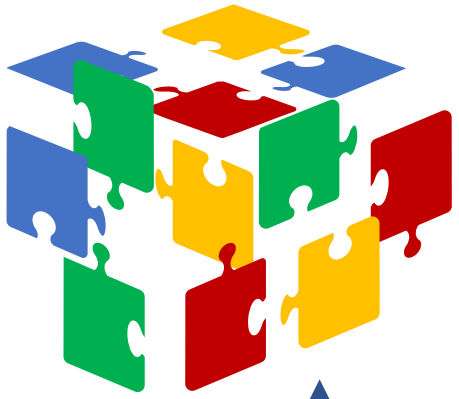
System integrated

Strategically aligned

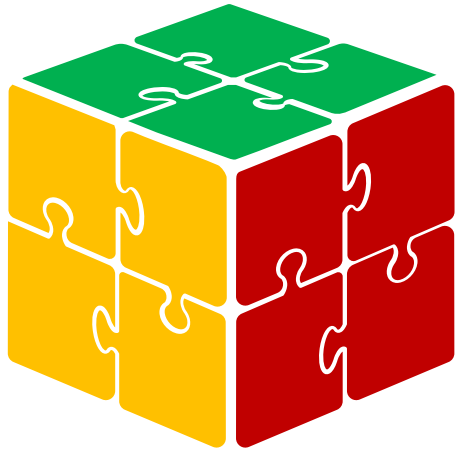
> Gen-AI

Approach to Gen-AI System development

Unaligned data

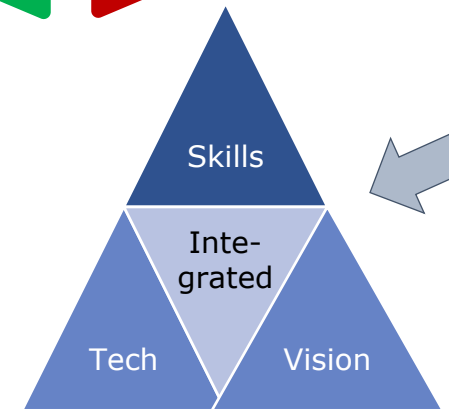


Aligned information



1. Issue
2. Action Plan
3. KPI Data
4. Capacity
4. Future ready

Input data → Clean → Process → Integrate



Serving Responsible Mining

Minserv
Mineral Development
& Research Services

21st Century Business Development System

Mine-Ahead™

Parallel to MMP RTIMS projects, Minserv has developed a dynamic AI Tool for:

- **Policy-making and strategy implementation**
- **Agility in a rapidly changing environment**
- **Decision-making and operational efficiency**
- **Process and learning material updates**

Mine-Ahead™ Key Features

1. **Human in Charge**

   Allows for user control, while achieving recommendations aligned with strategy

Seamless integration of machine intelligence and human oversight to support decision-making.

Mine-Ahead™ Key Features

2. Impressive Speed

Vast amounts of data are processed quickly and consistently for reliable insights

Able to provide up-to-date recommendations for complex decision-making

Mine-Ahead™ Key Features

3. Self, Deep Learning

Innovative solutions are generated autonomously, beyond initial expectations

For example: a detailed implementation plan, stakeholder engagement strategies, risk mitigation measures and more

Mine-Ahead™ Key Benefits

1. **Efficiency:**
   Generates responses within seconds, reducing time and costs associated with decision-making

Mine-Ahead™ Key Benefits

2. Scalability:

Grows as new information is added, ensuring access to the latest insights and recommendations

Mine-Ahead™ Key Benefits

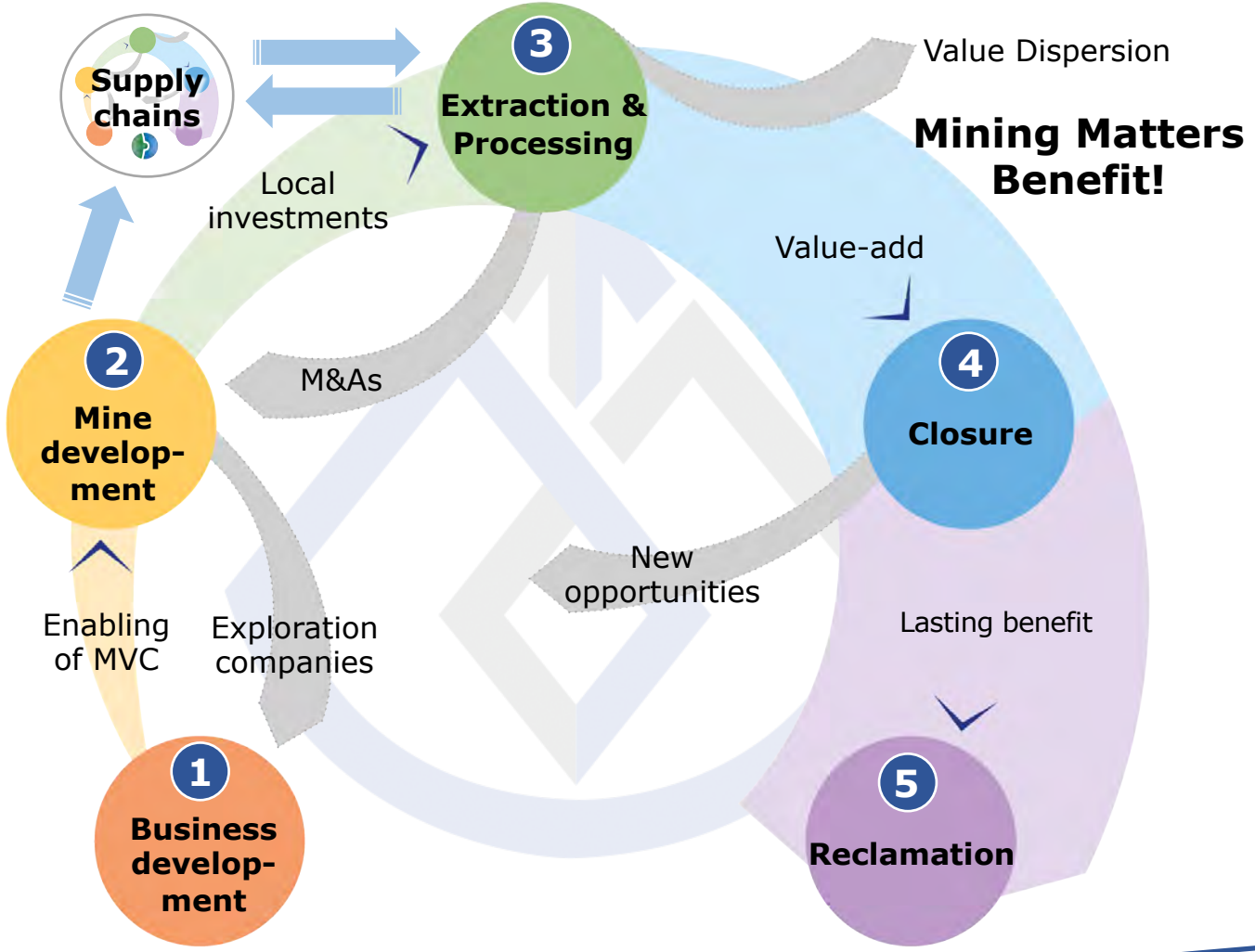
3. Security:

Mitigates risks associated with using open platforms by providing a secure, tailored solution

Mine-Ahead™ Methodology

- Rooted in neural network analysis, allowing it to extract insights from complex datasets
- Analyses multiple scenarios and ranks them based on relevance and impact and then presents recommendations
- There is model training and user interaction (not ChatGPT, but similar result)

All Data Linked in One Secure System



Mine-Ahead™

Serving Responsible Mining

Mine-Ahead™ Use Case 1

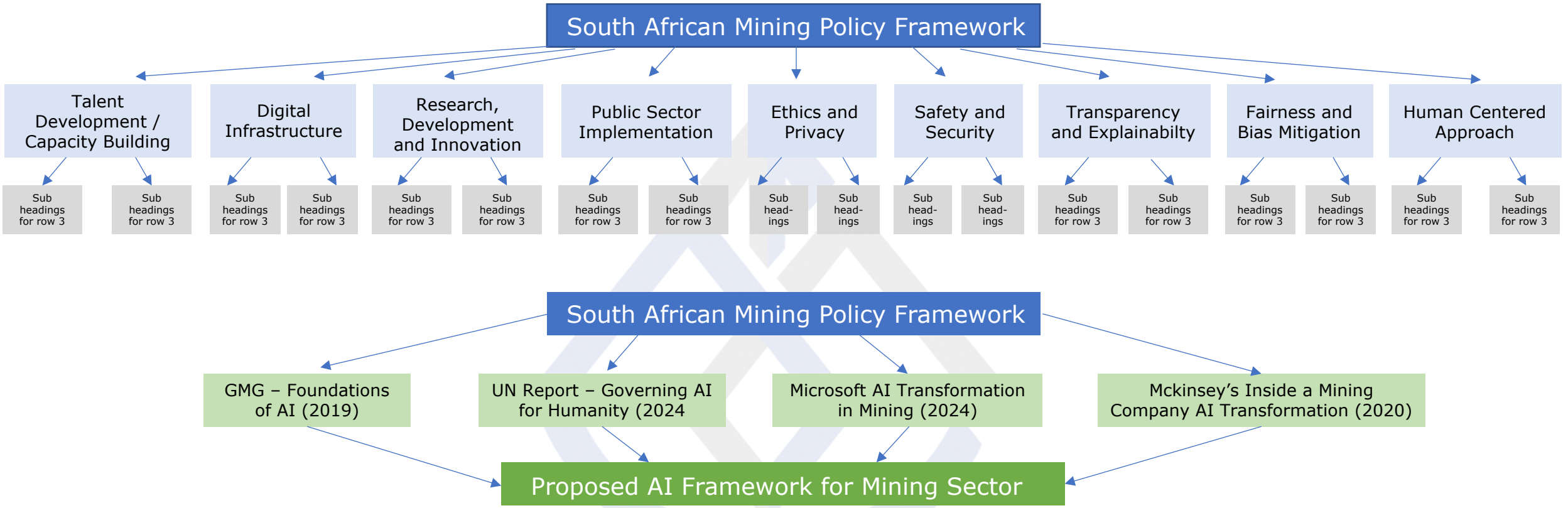
Develop an AI Framework for the South African mining sector

The Problem:
How can the mining sector effectively respond to emerging technologies, such as AI, while addressing associated challenges and taking advantage of opportunities?

The Solution:
An AI Framework addressing key considerations like compliance, workforce readiness, ethical AI and risks, offering scenario-based strategies.

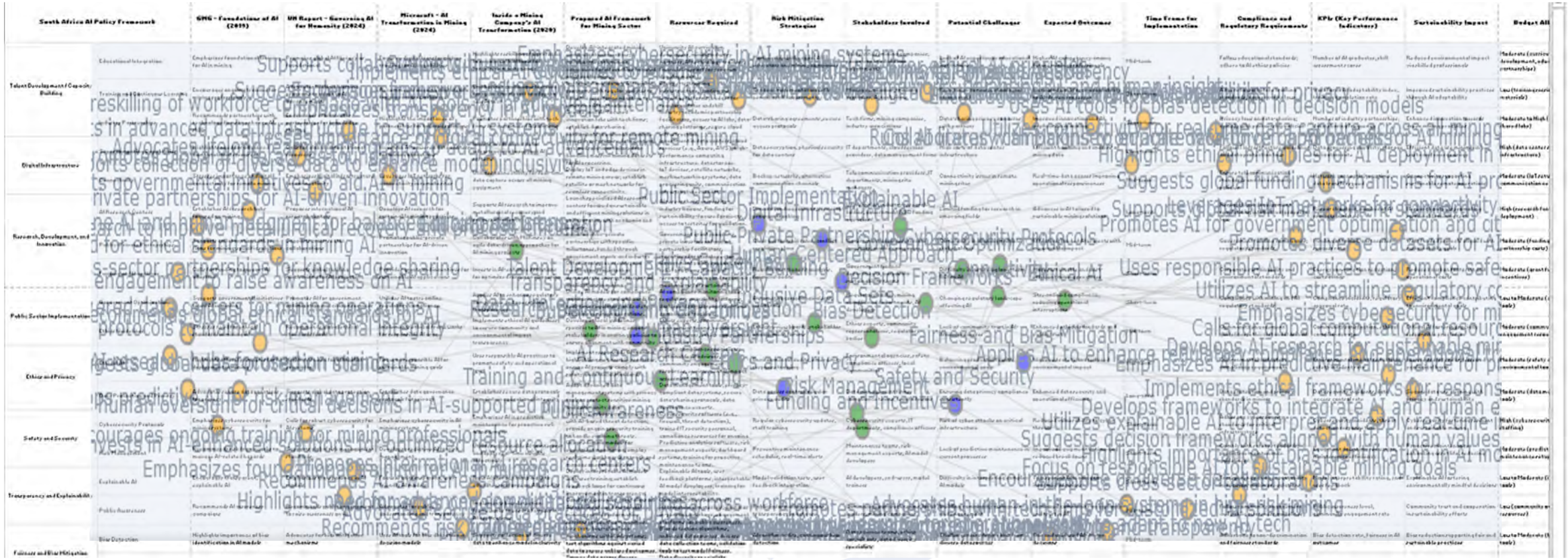
The Result:
A practical roadmap for AI integration, balancing immediate actions with long-term strategies tailored to South Africa's unique socio-economic and regulatory context.

Mine-Ahead™ Use Case 1: Approach



A 3-layer data structure with 23,988 nodes generated insights at a 90% confidence level after training

Mine-Ahead™ – AI Framework for SA Mining

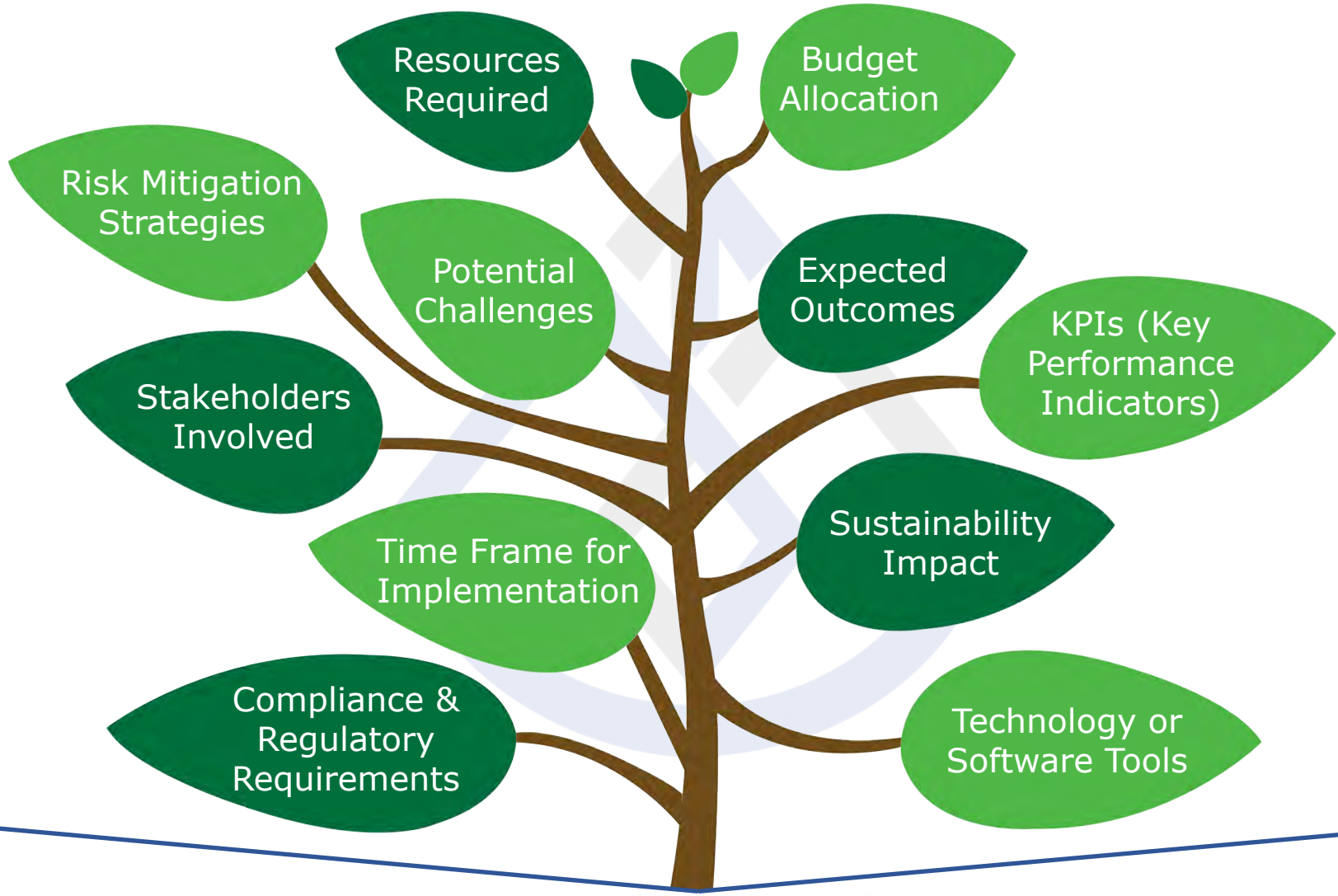


Use Case 1 demonstrates Mine-Ahead's ability to develop a robust and actionable AI Framework tailored to the unique challenges of the South African mining sector

A Deeper Result, Specific to Mining

South Africa AI Policy Framework (Original)		AI Framework for Mining Sector (Result)
Talent Development / Capacity Building	Educational Integration	Develop AI-integrated mining curricula at universities; collaborate with mining companies for internships focused on AI applications.
	Training and Continuous Learning	Implement mandatory AI training programs with regular updates to keep the workforce adaptive to emerging AI technologies.
	Industry Partnerships	Create joint AI-focused innovation labs with tech firms; establish data-sharing agreements to enhance resource utilization.
Digital Infrastructure	Supercomputing Capabilities	Invest in on-premise data centers or cloud solutions tailored for handling massive mining datasets for AI processing.
	Connectivity	Deploy IoT and edge devices in remote mining areas; establish satellite or mesh networks for seamless connectivity.

Mine-Ahead™ Gave More (By Itself)



Mine-Ahead™ Use Case 2

Explain how mining value chains link over the mining life cycle

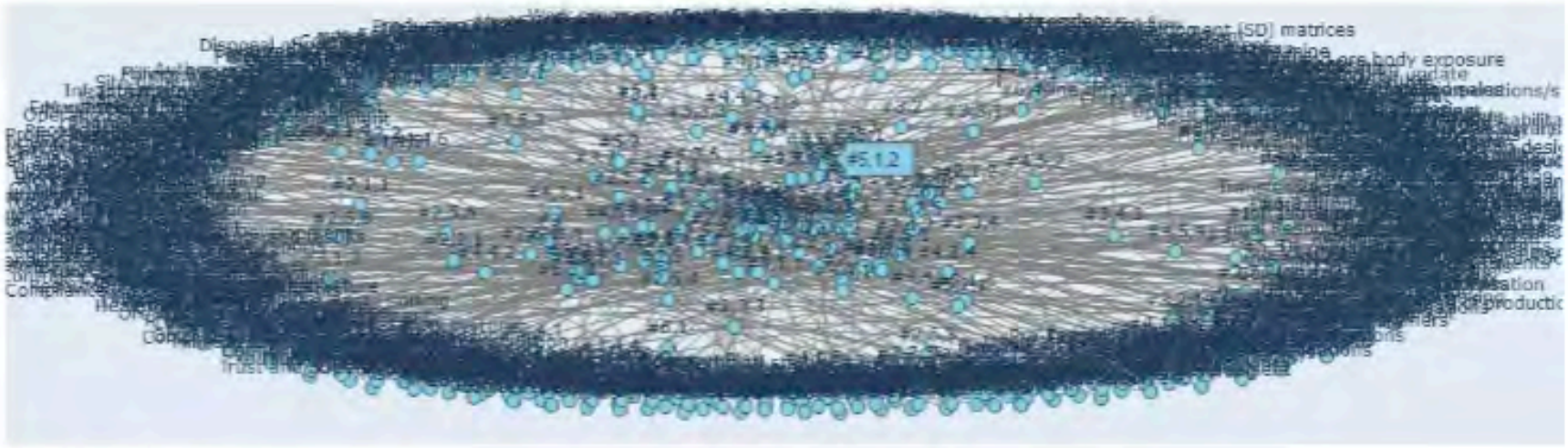
The Problem:
How can mining operations identify the best path forward while managing complex value chain activities?

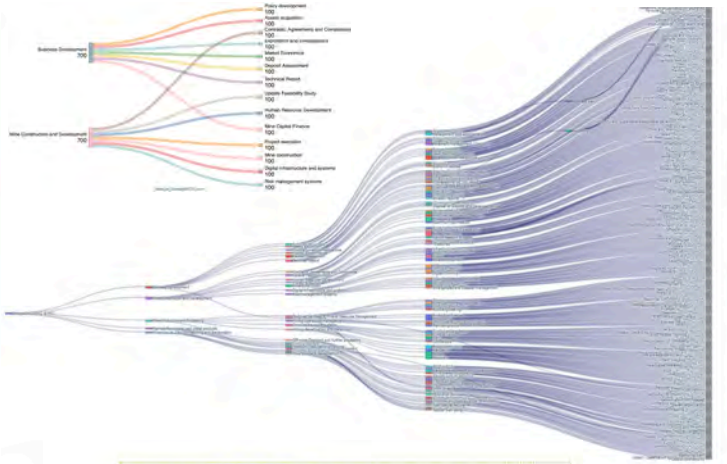
The Solution:
A visual approach to optimize value creation along the mining value chain

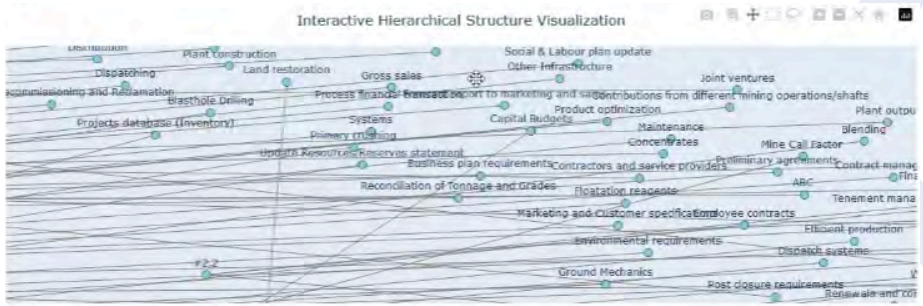
The Result:
Expert guidance and capacity building for value-driven value chain leaders

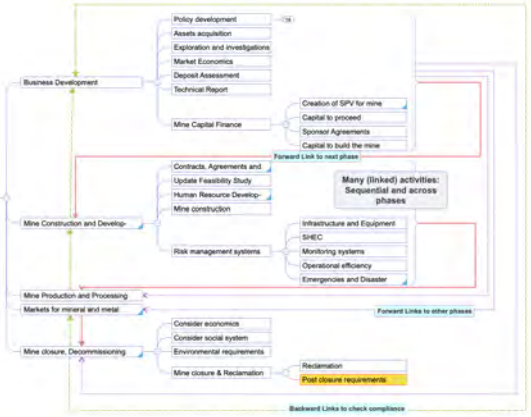
Use Case 2 is a mining-specific Mine-Ahead model for mining, focusing on MVC understanding over the MLC

Use Case 2: MVC Linkages over the MLC









A 5-layer data structure with 100s of thousands nodes – still in training

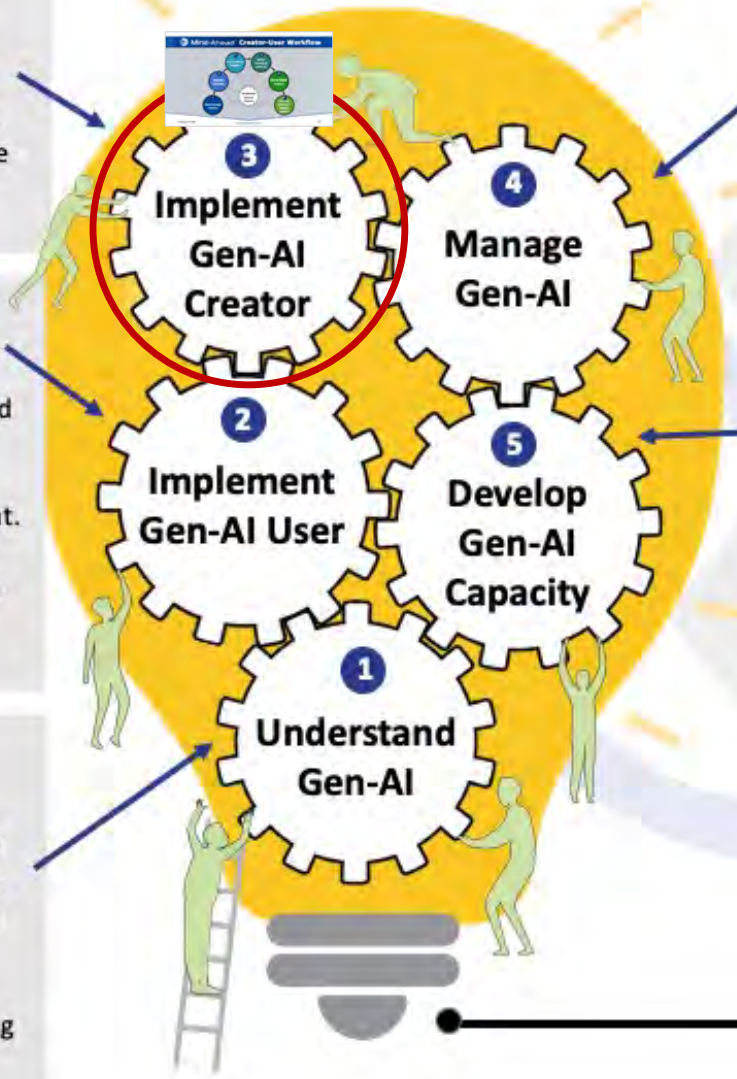
BUILDING AN AI POWERED ORGANISATION

MANDELA MINING PRECINCT
MINDS FOR MINES

3. The organisation has a bespoke, personalised Gen-AI assistant that is tested, aligned with strategy and workflows, ready for rollout on scale and continuous improvement.

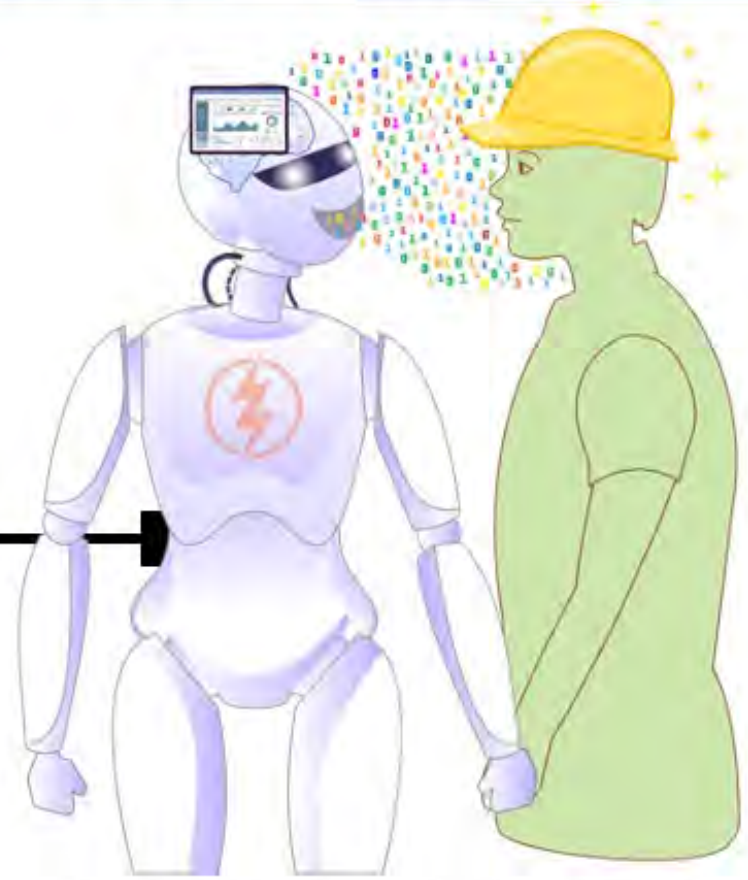
2. The organisation has a tested, customised commercial platform aligned with strategy and workflows, ready for rollout on scale and continuous improvement. Organisations that selected the user option will move directly to Milestone 4.

1. The organisation has aligned Gen-AI with feasible MVC activities, developed categories of work and decided which tasks can be automated and which tasks AI shouldn't do, selected suitable tool(s) for linking with KPIs.



4. The organisation has an accurate, integrated, bespoke, personalised Gen-AI assistant that adds value, ensures compliance and is fully adopted.

5. The organisation has a competent, engaged and satisfied Gen-AI certified workforce operating in their specialised functions.

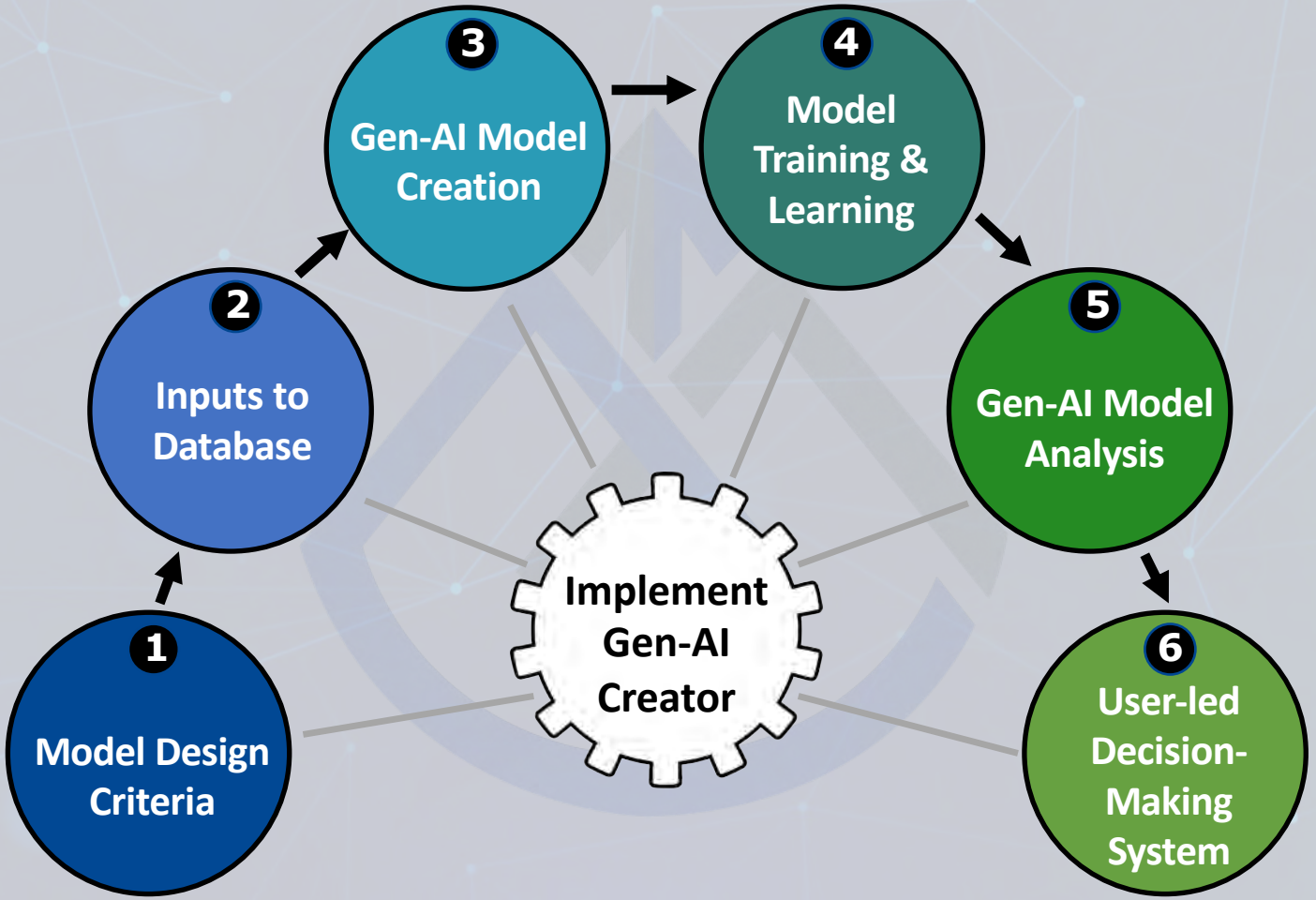


- Source 1: (Modified for mining): McAfee, A., Rock, D., and Bryonjolfsson, E. How to capitalize on Generative AI: A guide to realizing its benefits while limiting its risks. Havard Business Review November – December 2023, pg 42-48
- Source 2: (Modified) Leonardi, P. Helping employees succeed with generative AI: How to manage performance when new technology brings constant and unpredictable change Harvard Business Review November– December 2023, pg 49-53

Minserv Mineral Development & Research Services

BETTER 4life Training & Development

Mine-Ahead™ Creator-User Workflow



Conclusion

What?

A sober, accurate perspective on 5IR and beyond

Why?

Helping users to align action with strategy

Mine-Ahead™

How to Move Forward?

Taking hands to navigate unexplored opportunities and risks responsibly

Risks	**Opportunities**
Doing nothing	Leading the change
Uncoordinated use of AI	Strategic capacity development
Humans losing workplace viability	Man-machine collaboration for ***better***

Going Forward

1. Feedback on the presentation and discussion
2. Workshop to develop detailed ToR?
3. Followed by proposal with costing

Mine-Ahead™

Ready to revolutionize your operations and unlock the full potential of AI-driven solutions?

Contact us to discover how Mine-Ahead™ can transform your organization!

THANK YOU

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Mine-Ahead™

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