

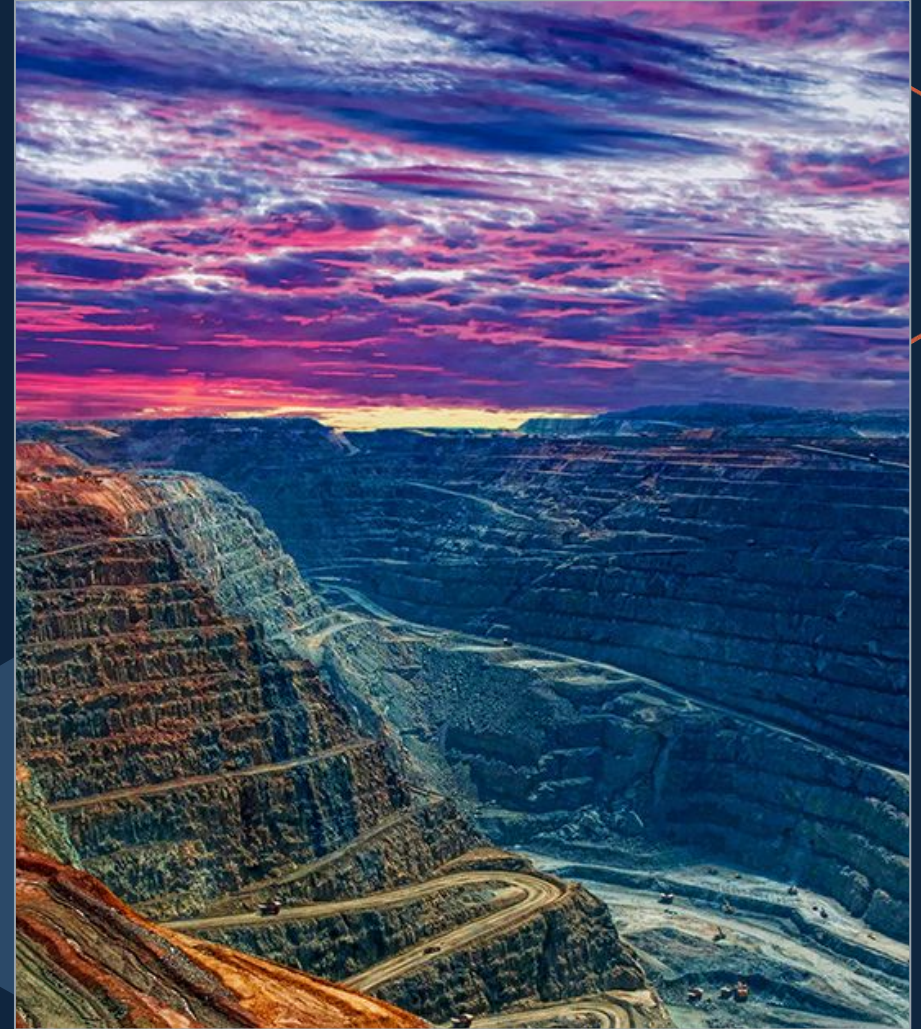


Embracing AI for a Sustainable Future in Mining & Exploration

“AI is disrupting the exploration and mining industry and has been fully embraced by the whole industry. Majors, juniors and suppliers”.

Billy Haylock
Managing Director / Chairman

24th May 2024

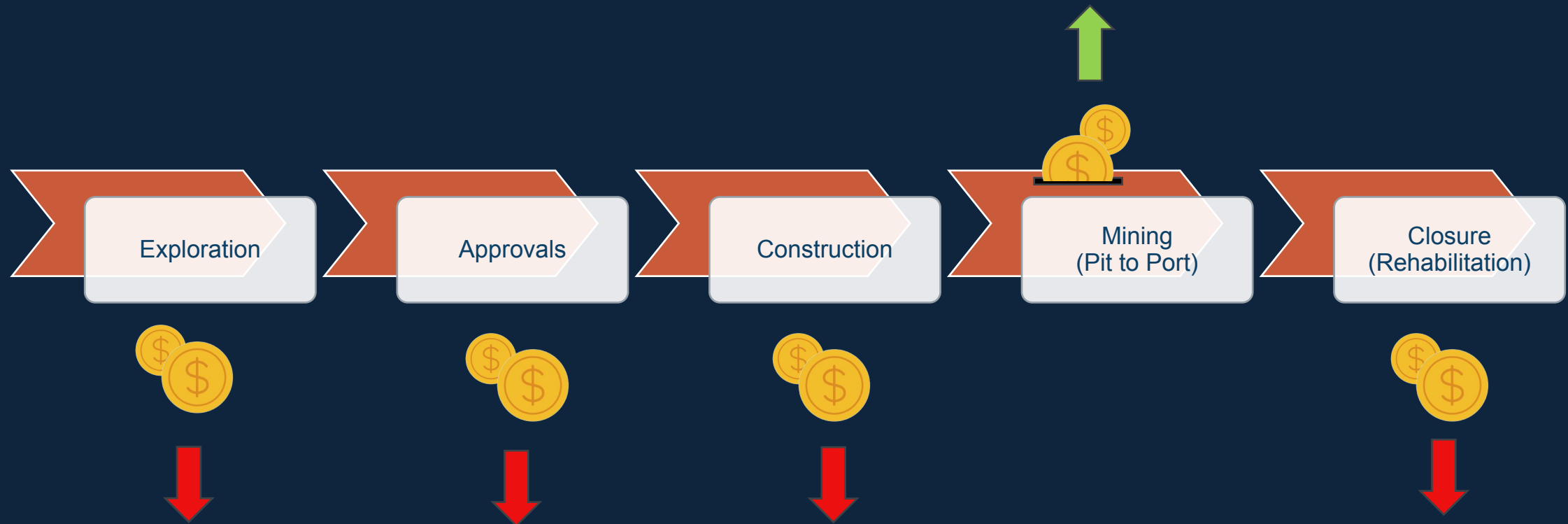




1. What is the exploration and mining industry?
2. Where is AI being utilised?
3. What can go wrong?
4. What is PX4 Software pursuing?
5. What are our issues?
6. What might the future look like?

Exploration and Mining Sector

Practicalities of these industries



Sustainability for Exploration & Mining

Demonstrating compliance - the G in ESG

Knowing what legislation, regulations,
and approvals exist

Complying with these requirements

Being as effective and efficient in doing so

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Where is AI being utilised?

AI – Category	Exploration	Approval	Construction	Mining (Pit to Port)	Mine Closure
Exploration					
Environment					
Safety and Risk					
Decision Support Systems					
Autonomous Vehicles					
Energy Optimisation					
Ore Sorting					
Robotics					
Predictive Maintenance					
Governance & Compliance					



Mining 4.0 is based on 4 “pillars”

Pillar 1

Combining real machines and the virtual world of the Internet into augmented reality

Pillar 2

Extraterritorial access to any information “on demand”

Effective & Efficient

Pillar 3

Almost limitless possibilities of distributed cloud computing

Pillar 4

Artificial intelligence and neural networks

What could go wrong!



Ranger Uranium Mine

Jabiluka approval



Carmichael Mine



Vale / BHP
Samarco JV



Juukan Gorge

What is PX4 Software pursuing?

How does PX4 Software work?



PX4 – across the whole mining life cycle

Exploration

Approvals

Construction

Mining (Pit to Port)

Mine Closure

Initial Access data and all background studies and data

complying with all commitments made in initial access and approvals

PX4 - Corporate IP - cradle to the grave



New Zealand – *Crowns Mineral Act 1991*

- EP – Exploration Permit
- MP – Mining Permit
- PP – Prospecting Permit

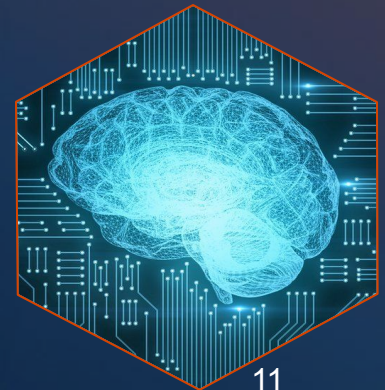
- Application Processes
- Due Dates
- Payment & reporting requirements

- 40 jurisdictions – Approx. 400 jurisdictions worldwide



PEAK – Process Extraction Assistant Kit

- ❖ **PX4 – scale quickly and effectively, can an AI Tool do this?**
- ❖ **A large language model – to automate the identification and capture of relevant legal and regulatory obligations**
- ❖ **Training PEAK’s search and extraction functions**
- ❖ **QUT Partnership – research – PEAK’s interpretive approaches & outputs**
 - ❖ **Legal interp...**
 - ❖ **Regulatory subject matter expert interp... (RSME)**



What might the future look like?

Status and Future for PX4

- ❖ PEAK outputs consistently align with legal interp rather than RSME
- ❖ Significant challenges with extracting essential meaning from legislative and regulatory texts
- ❖ A more sophisticated set of instructions
- ❖ Other LLMs or combinations

An initial review of potential AI Tools

What is PX4 looking at?

Privacy & security policies

Legislation and regulations

Agreements





Email: Bill.Haylock@PX4Software.com

Mobile: +61 417 717 793

LinkedIn:

<https://www.linkedin.com/in/bill-haylock-92a4bb8b/>