

Data Riders

*Consulting: Shaping a Sustainable
Future in Mining*

Company Presentation















We empower the mining industry to embrace sustainability, pioneering the development and implementation of global best practices for a more sustainable future.

Our global team of consultants, mining experts, provide comprehensive solutions to optimize the management and strengthen the safety of critical geotechnical assets, in line with international best practices.

Expert technical consulting services

-  Establishment of governance, standards and adoption of global best practices (Management Systems)
-  Participation as an active member in ITRB and GRB Independent Technical Review committees
-  Analysis of adherence and auditing of global standards: Guides and Protocols (GISTM/ICMM, TSM, The Copper Mark)
-  Development and review of normative documents, technical and management procedures
-  Integrated project management using agile methodologies, PMBOK and FEL (Front End Loading)
-  Hazard identification and risk assessment associated with critical geotechnical assets
-  Engineering Services, Engineer of Records (EOR) and Technical peer-review
-  Development and implementation of plans and strategies for the Multi-Year Mining Master Plan
-  Evaluation of Alternatives and Multicriteria Analysis of TSFs (Tailings Storage Structures)
-  Greenhouse Gas Management, through the development of inventories and equivalent carbon credit projects

Certifications



Certified Verifier



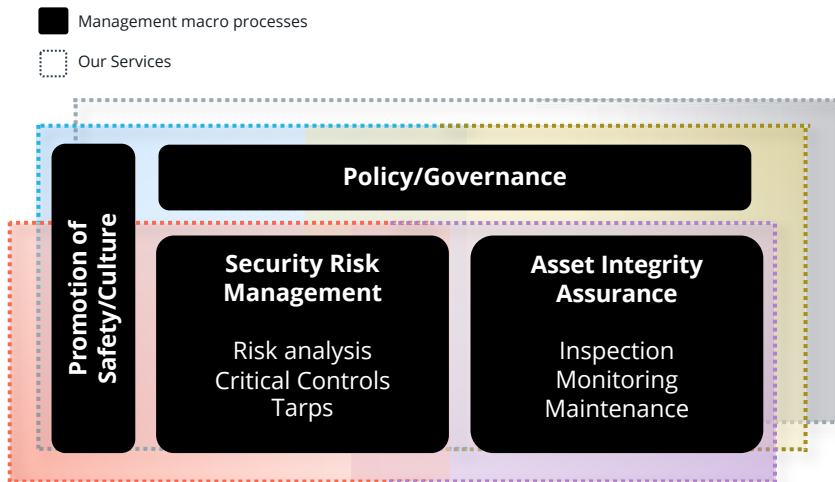
Certified Assessor



Certified Auditor

Our services support a wide range of effective risk management and security processes in the different lines of defense of organizations.

Our services linked to macro safety management processes



Establishment of global best practice (TMS) governance, standards, and adoption

Systematic management methods to identify, monitor and control risks on an ongoing basis; Definition of roles and responsibilities; Identification of gaps, review and creation of normative documents; Organizational, compliance, and resource change management

Hazard Identification and Risk Assessments of Geotechnical Critical Assets

Organization of multidisciplinary team and workshops; Identification of unwanted events (MUE); Failure mode analysis, FMEA risk analysis, and Bow-tie cause and consequence diagrams; Definition of preventive controls and mitigating barriers; Development of critical control sheets and TARPs; Evaluation and assurance of the effectiveness of critical controls

Analysis of adherence to global standards (GISTM and TSM)

Compliance with technical and ESG requirements; Plans and procedures; Corporate policy, governance and TMS; Roles, responsibilities, functional and organizational structure; Accountability, lines and effectiveness of communication, relationships with interface areas; Integration with site-wide systems and information management; Environmental compliance; Communication and community engagement

Participation as an active member in ITRB and GRB Independent Technical Review committees

Excavations, underground mine, waste dumps and produce deposits, piles, excavation evaluation, blasting. Provide Independent Technical Opinion of engineering practices, without bias in the design, construction, operation and maintenance of the tailings facility

Engineering, EOR and Services of Technical peer-review

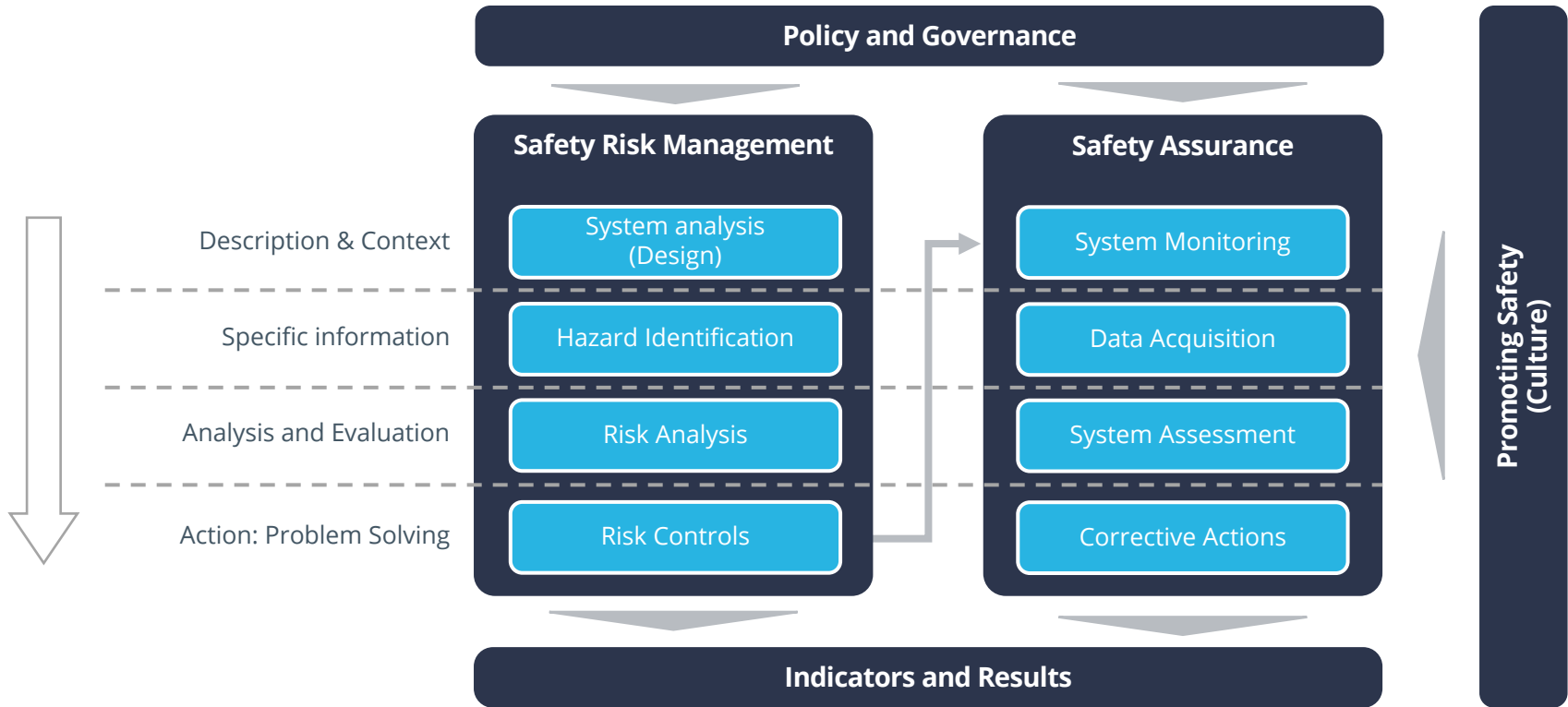
Confirm that the structure is designed, constructed, operated, and maintained in accordance with design intent, safety standards, applicable regulations, and integrated mine planning; Define modifications, operational, maintenance and monitoring changes of the installation; Definition of objectives, indicators and performance criteria; EPRP

At all stages of the structure's life cycle:



Application of international best practices for Risk Management

Framework SMS (*Safety Management Systems*)



Steps and tools of Safety Risk Management processes

Event Identification, Risk Analysis, Critical Controls and TARPs (Trigger Action Response Plans)

STEPS

1. Prior Preparation:

- Formation of a multidisciplinary team.
- Advance distribution of information and documentation related to the Workshop.

2. Workshop and Technical Inspection:

- Identification and listing of Unwanted Events (MUEs).
- Elaboration of the Bow-Tie Diagram: Identifying Causes and Consequences.
- Execution of the FMEA Analysis followed by the Risk Analysis.
- Complementing the Bow-Tie Diagram: Establishing Prevention Controls and Mitigation Barriers.

3. Development of Sheets for Critical Controls and TARPs:

- Detailed elaboration, including objectives, location, performance requirements, triggers, and verification activities.

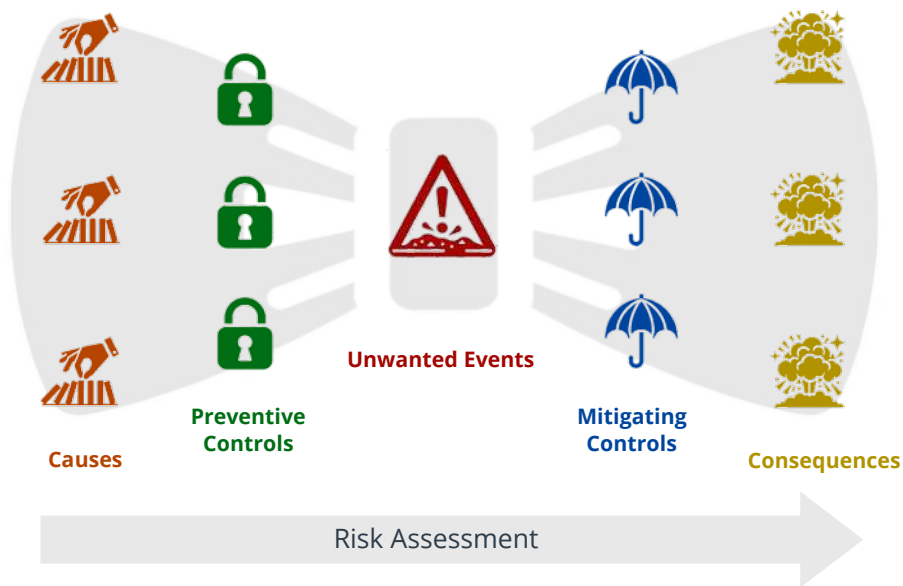
4. Planning for the Implementation of Critical Controls:

- Definition of actions, responsibilities and timeline for implementation.

5. Assessment and Assurance:

- Evaluation of the effectiveness of critical controls.
- Continuous process of assurance and refinement based on periodic feedback and analysis.

BOW-TIE ANALYSIS



Evaluation of alternatives and multicriteria analysis of Tailings Storage Facilities

Established methodology, in accordance with global standards and international best practices

Standards, good practice guides, Normative and regulatory documents

ICMM - International Council on Mining and Metals:

- Tailings Management: Good Practice Guide
- Global Industry Standard on Tailings Management: Conformance Protocols
- Tailings Reduction Roadmap

TSM - Towards Sustainable Mining:

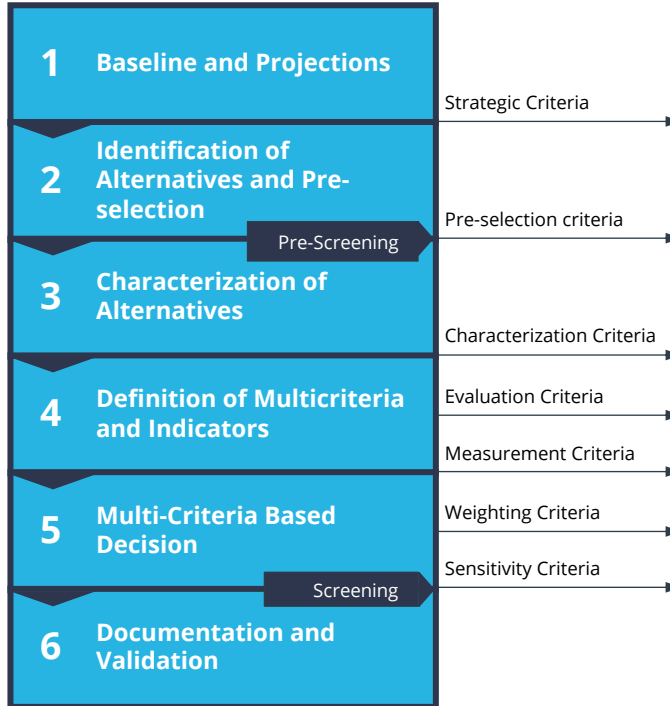
- Tailings Guide Implementation Checklist
- A Guide to the Management of Tailings Facilities

Mining and Processing Division, Environment Canada:

- Guidelines for the Assessment of Alternatives for Mine Waste Disposal

ANM Laws, Standards and Resolutions

Development Steps: Multicriteria Decision Analysis



Evaluation of Alternatives and Multicriteria Analysis of Tailings Storage Facilities

Implementation, participation and support in the processes and mechanisms of review of geotechnical structures and mining tailings dams



Independent Review

Objective and impartial analysis of the various aspects related to the structures, including the characterization of the site, engineering models, and the intention of the project, assumptions and criteria adopted. This review is crucial to ensure that the project is executed in accordance with the necessary safety and efficacy standards.



Operational Assessment

Conducted to review the operating procedures in place, including the tailings transportation and disposal plan, water management, and risk assessment and management. Through these assessments, it is possible to identify potential failure modes and implement corrective measures to ensure the safe operation of the dam.



TMS (Tailings Management System) Review

The TMS review involves analyzing the corporate tailings management policy, functional and organizational structure, lines of communication, and the effectiveness of the response in case of emergencies. It is a crucial mechanism to ensure that tailings management is carried out effectively and safely.



Audit

An audit is a formal, systematic, and documented assessment of a tailings facility's compliance with explicit, agreed, and prescribed criteria. It includes the review of legal requirements, operator policies and commitments, applicable standards and performance expectations.



Dam Safety Review

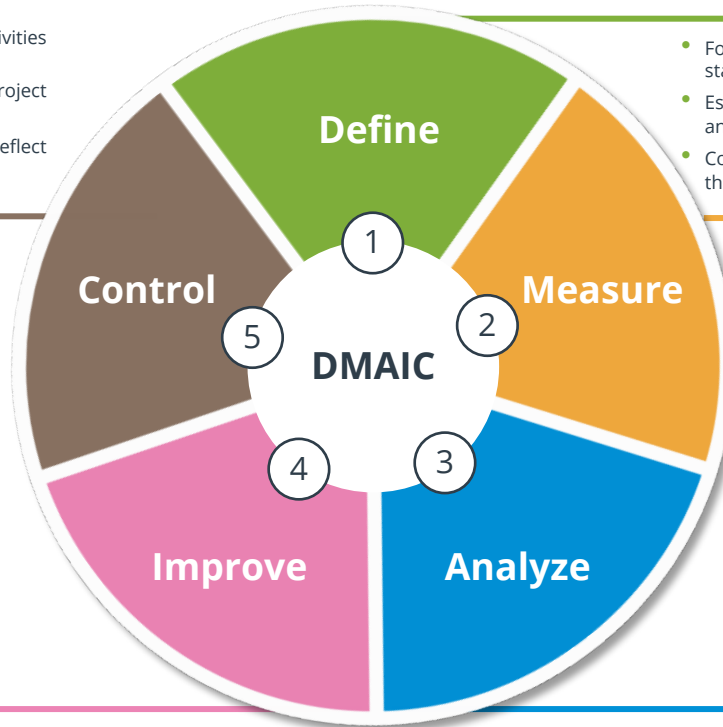
This review aims to provide a statement on the safety of the facility, including the assessment of technical, operational, and governance aspects. The goal is to ensure that the dam meets the design intent and applicable safety criteria, without posing unacceptable risks.

Integrated scope to support the compliance process with international best practices

Framework DMAIC (*Define, Measure, Analyze, Improve, Control*)

- Perform project management and control activities through the PMO (Project Management Office).
- Keep the Gap Analysis Report updated as the project progresses.
- Continuously update the Gap Closure Plan to reflect changes and progress made.

- Root cause analysis of the gaps from the perspective of Engineering, Processes and People, followed by a benchmarking study of international best practices, and identification of countermeasures and objectives to remedy the identified gaps.
- Conducting workshops to define and validate countermeasures, objectives, and required actions, including responsibilities and duration. Use GUT Analysis to prioritize actions and group interrelated actions into macro activities, culminating in the definition and validation of the Gap Closing Roadmap with leadership.
- Preparation and presentation of the Gap Closure Plan, followed by its implementation, in addition to supporting change management through communications, training and continuous improvement initiatives.



- Formation of the work team and identification of stakeholders.
- Establishment of the follow-up routine based on the 5Ps and creation of compliance control spreadsheets.
- Conducting the Kick-off meeting with initial presentation of the scope.

- Request and take receipt of documentation on governance and management model.
- Request and receipt of documentation related to the site and structures.
- Conduct technical visits for on-site evaluation.
- Analysis of documentation to identify needs for additional interviews, surveys, and requests, followed by conducting these activities as needed.
- Execution of the Gap Assessment focusing on Engineering, Processes and People, categorizing the findings as: Meets, Partially Meets or Does Not Meet.
- Conducting a workshop to validate the Gap Analysis with the project team and key stakeholders, and reviewing and validating the final version of the Gap Analysis Report.

TSM (Towards Sustainable Mining) Performance Rating System

In numbers: 8 topics, 30 performance indicators, and 428 evaluation items

The goal is for each facility to reach at least level A.

Level	Criteria
AAA	Excellence and leadership.
AA	Systems and processes are integrated into management decisions and business functions.
A	Good practice. Systems and processes are developed and implemented.
B	Procedures exist, but they are not fully consistent or documented. Systems and processes are planned and being developed.
C	No system is in place. Activities tend to be reactive. Procedures may exist, but they are not integrated into policies and management systems.

Note: Topics 3, Crisis Management and Communication Planning and 4, Prevention of Child Labour and Forced Labour use a different method of binary assessment: YES and NO.



		TSM Performance Indicators	Ev.
Communities and People	1	Indigenous and Community Relations	91
	1.1	Identification of the Community of Interest (COI)	11
	1.2	Effective Engagement with the COI and Dialogue	24
	1.3	Effective Engagement with Indigenous People and Dialogue	18
	1.4	Benefits and Community Impact Management	27
	1.5	COI Response Mechanism	11
	2	Health & Safety	83
	2.1	Commitment and Accountability	15
	2.2	Planning and Implementation	19
	2.3	Training, Behavior, and Culture	20
	2.4	Reporting & Monitoring	17
	2.5	Performance	12
	3	Crisis Management and Communication Planning	39
	3.1	Crisis management and communication agility	24
	3.2	Revision	10
3.3	Training	5	
4	Prevention of Child Labor and Forced Labor	5	
4.1	Prevention of Forced Labor	3	
4.2	Prevention of Child Labor	2	
Environment and Climate Change	5	Management of Energy Use and Greenhouse Gas (GHG) Emissions	69
	5.1	Energy use and greenhouse gas (GHG) emissions management systems	29
	5.2	Reporting systems for energy use and greenhouse gas (GHG) emissions	24
	5.3	Energy performance and greenhouse gas (GHG) emissions targets	16
	6	Biodiversity Management and Conservation	38
	6.1	Corporate commitment to biodiversity conservation, accountability and communication	7
	6.2	Biodiversity conservation planning in installation and implementation	26
	6.3	Biodiversity Conservation Reports	5
	7	Tailings Management	47
	7.1	Tailings Management Policy and Commitment	12
	7.2	Tailings Management and Emergency Preparedness System	12
	7.3	Accountability and Responsibility for Tailings Management	10
	7.4	Annual Review of Tailings Management	8
	7.5	Operation, Maintenance and Control Manual	5
	8	Water Management	56
8.1	Water Governance	15	
8.2	Operational Water Management	22	
8.3	Watershed Scale Planning	11	
8.4	Water Performance & Reporting	8	

* Ev. It is the number of evaluation items required to rank each Performance Indicator.



TSM Classification Process

References, Steps, and Outputs of the TSM Performance Rating Process

Global standards, international best practice guides, and assessment protocols

TSM - Towards Sustainable Mining:

- TSM 101: A Primer
- TSM: Responsible Sourcing Alignment Supplement
- TSM Verification Guide

IBRAM - Towards Sustainable Mining:

1. Protocol for the relationship with communities, Indigenous, quilombola and traditional peoples
2. Health & Safety Protocol
3. Protocol for Crisis Management Planning and Communications
4. Protocol for the Verification of the Prevention of Child Labor and Forced or Slave Labor
5. Climate Change Protocol
6. Biodiversity Conservation Management Protocol
7. Tailings Management Protocol
8. Sustainable Water Management Protocol

TSM Classification Steps

1 Preparation and Kick-off

2 Technical Visit

3 Interviews

4 Document Analysis

5 Evaluation, Rating and Recommendation

6 Verification & Reporting

7 Validation and Endorsement

8 ICMM Alignment Supplement

9 Control and Continuous Improvement

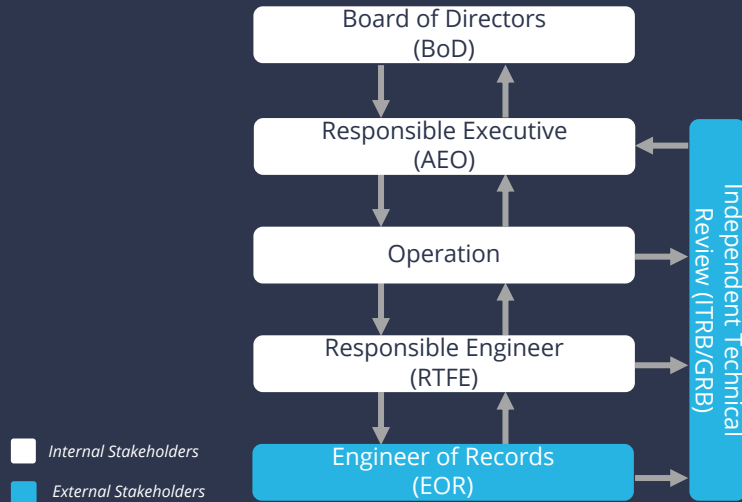


TSM Performance Rating

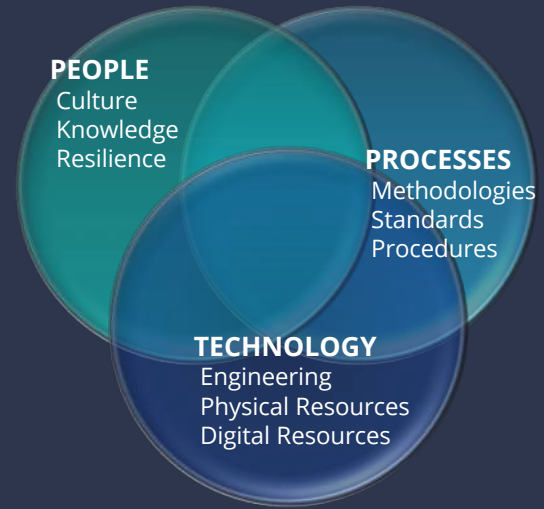
- 8 Topics
- 30 Performance Indicators
- 428 Ratings
- Observations and Recommendations
- Reference Documentation
- Technical Support
- ICMM Supplement
- Ongoing technical support

Proper management of geotechnical assets is critical to ensuring the safety, efficiency, and continuity of operations in sectors such as mining. This management is underpinned by a robust organizational structure and effective lines of communication.

The organizational structure for the management of tailings and geotechnical assets is outlined by key roles that perform important complementary functions



Excellence in management through our integrated approach from the perspective of People, Processes and Technology



Benefits of the development of the Multi-Year Mining Master Plan

The Multi-Year Master Plan is an essential strategic tool for the mining industry. It serves as a roadmap for the sustainable management of mineral resources, ensuring the continuity of operations and the maximization of economic, social, and environmental benefits.



Long-Term Vision

Establish clear goals and objectives for a multi-year horizon, allowing for better foresight and preparedness for future challenges.



Resource Optimization

Ensure the efficient use of mineral resources, reducing waste and increasing productivity.



Sustainability

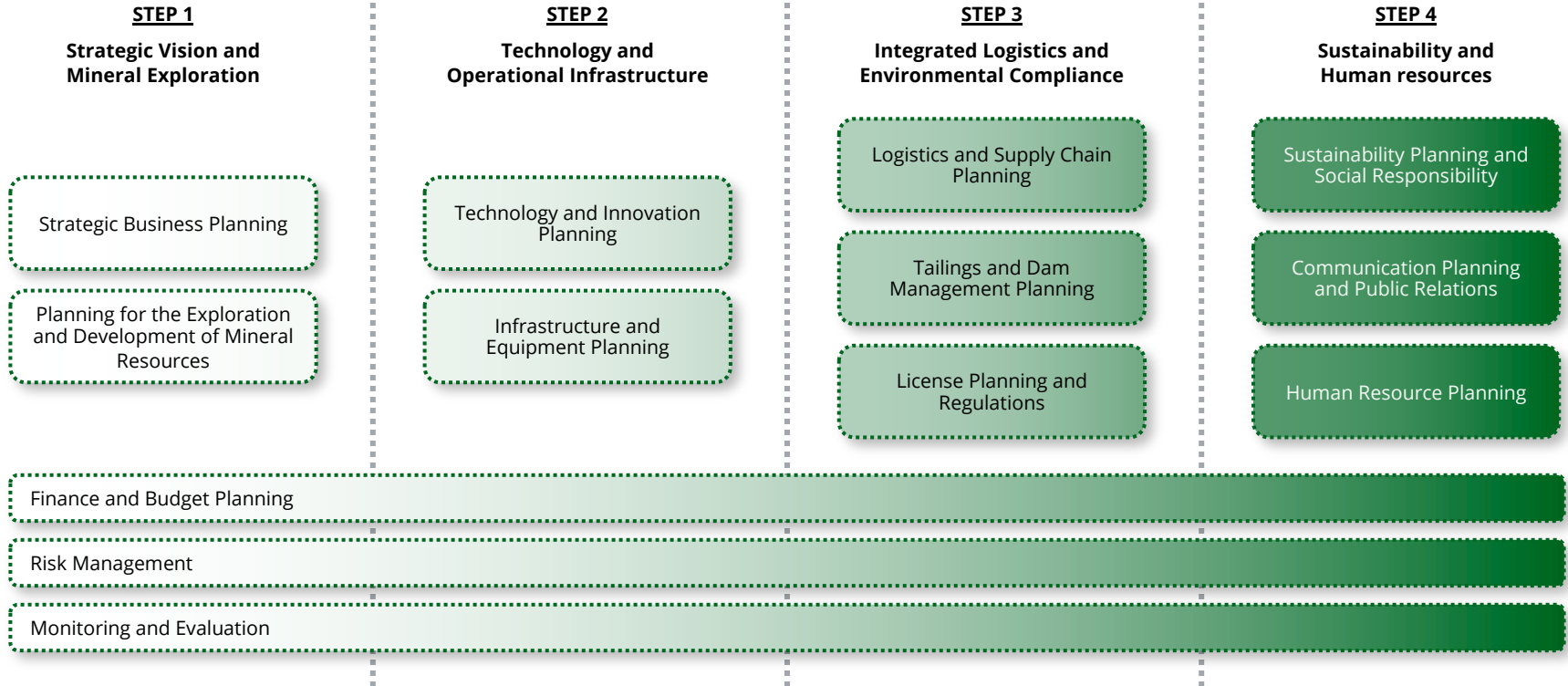
Promote responsible mining practices, considering environmental and social impacts.



Commitment

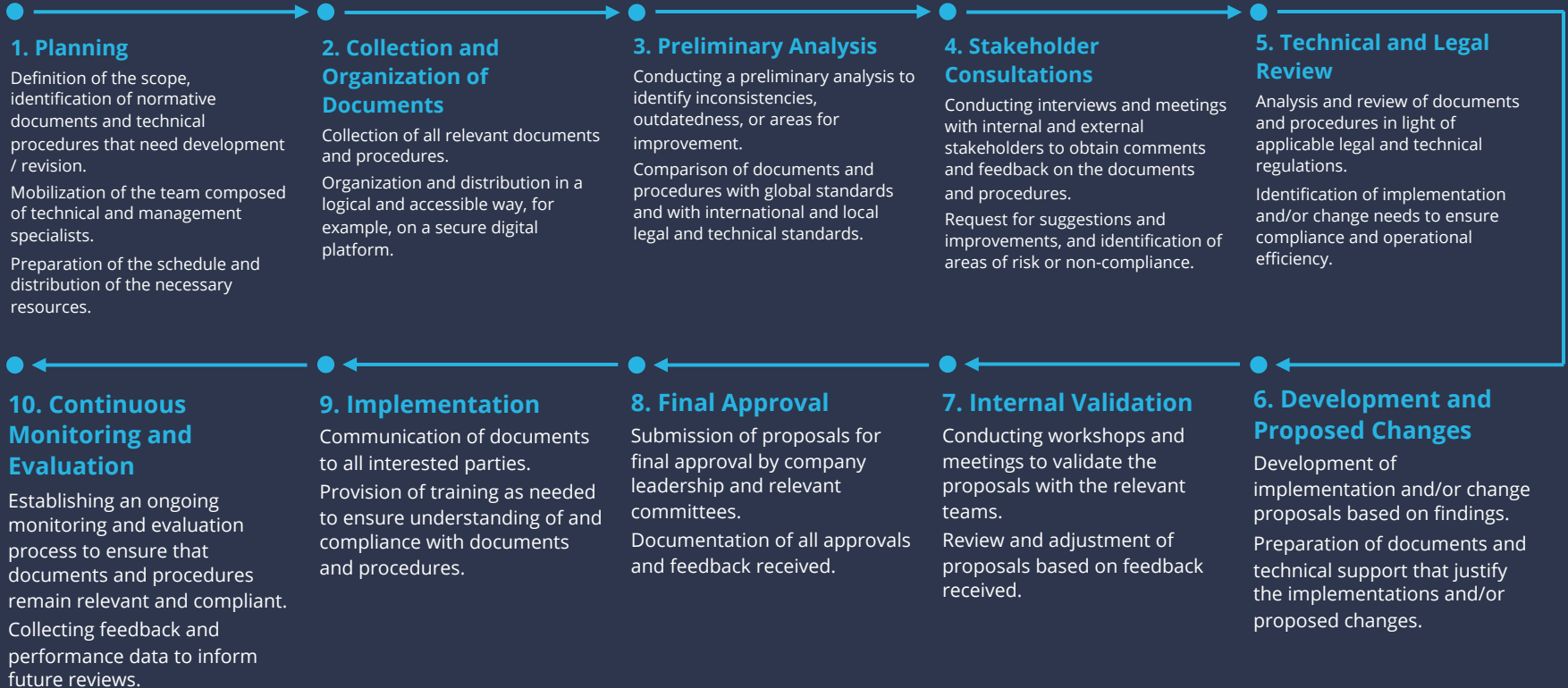
Strengthen relationships with local communities, governments and other stakeholders through transparent and effective communication.

Support to clients in the preparation and implementation of the components of the Multi-Year Mining Master Plan, using a framework structured in 4 stages of development.



Development and review of normative documents, technical and management procedures

10 steps in the development and review process



Alignment of the business goal for the development of Greenhouse Gas (GHG) inventories and Carbon Credit projects

Goal	Objective
GHG Management	Compliance with GHG regulations
	Access to market opportunities
	Investment and acquisition decision support
Tracking and reducing GHG emissions	Identification of emission hotspots and reduction opportunities
	Support in setting GHG reduction targets
	Measurement and reporting of GHG performance over time
	Development of performance benchmark
GHG Stakeholder Reporting	Meeting Information Needs
	Reporting to government and credit programs
	Leveraging corporate reputation and accountability

Greenhouse Gas (GHG) accounting and inventory

Detailed assistance to teams in the preparation of exhaustive inventories of Greenhouse Gas (GHG) Emissions, as well as in the planning and implementation of robust projects for the mitigation of these emissions, including the identification and execution of carbon reduction initiatives and the generation of corresponding carbon credits.

Definition of Organizational Boundaries

Definition of Operational Boundaries

Identification of sources, sinks and reservoirs

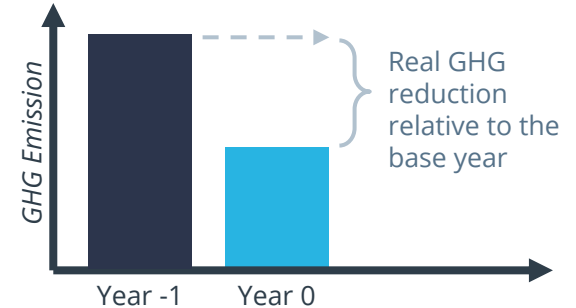
Emissions Tracking

Selection of the calculation approach

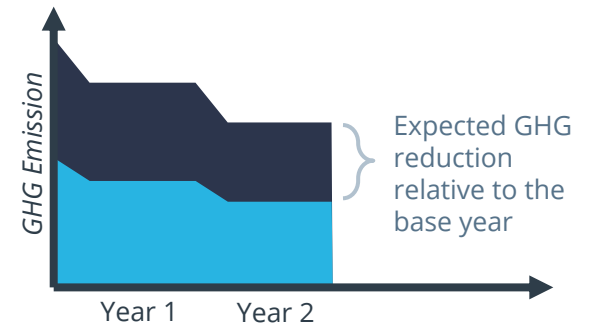
Data collection and application of calculation tools

Development of the inventory report

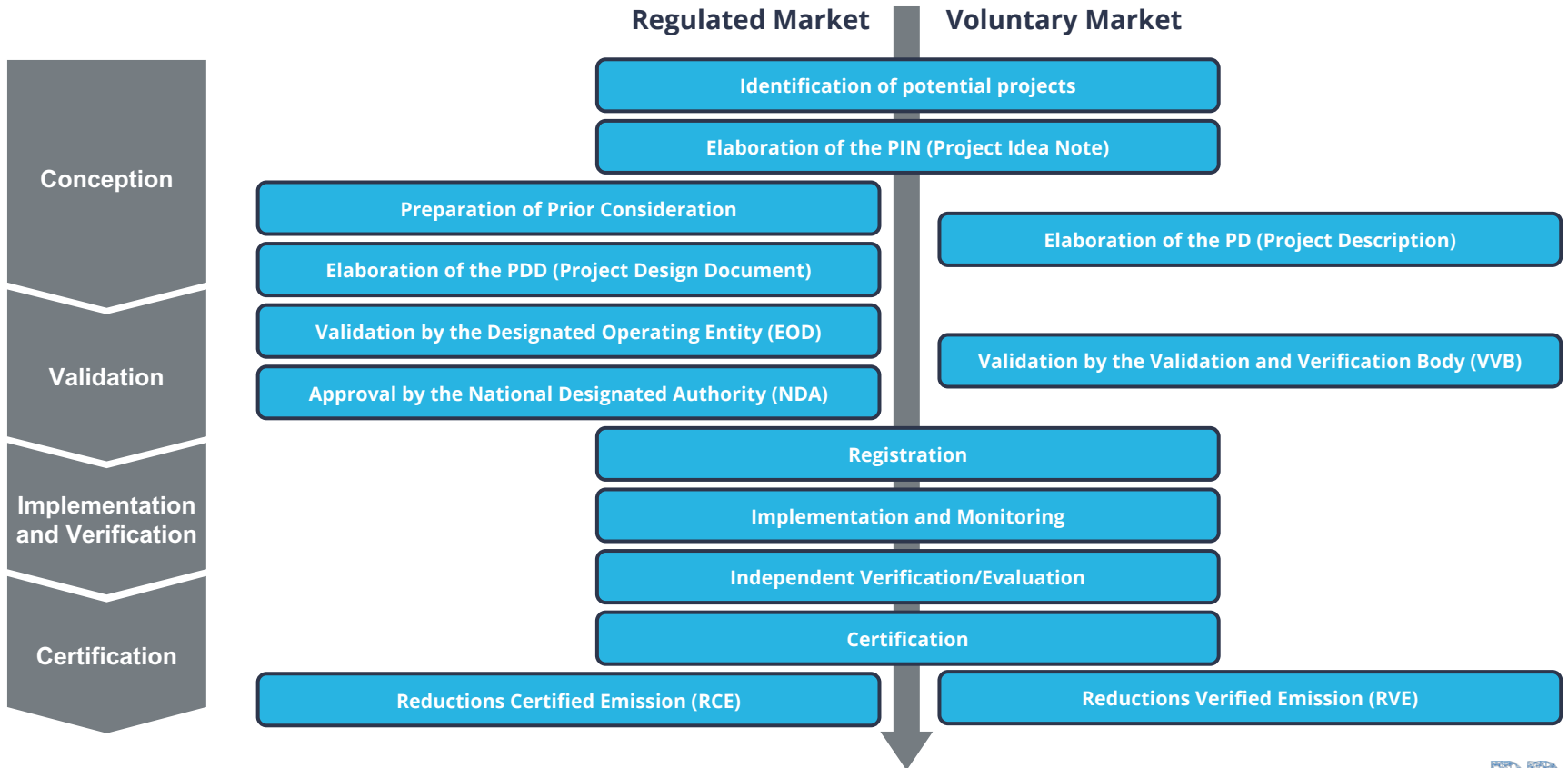
Operations Accounting



Project Accounting



Development of Carbon Credit projects



Mining Project Management Services

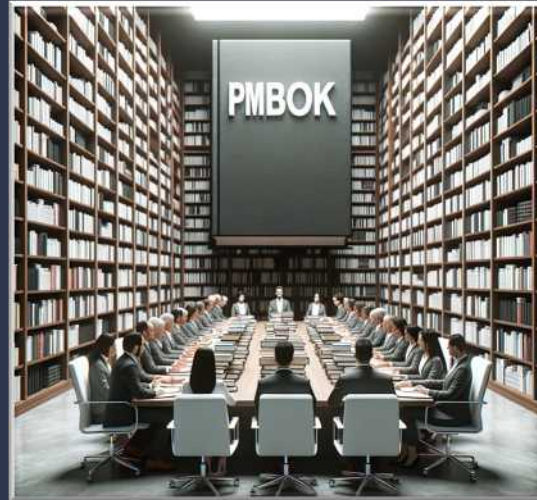
Implementation of established international methodologies and best practices

Agile



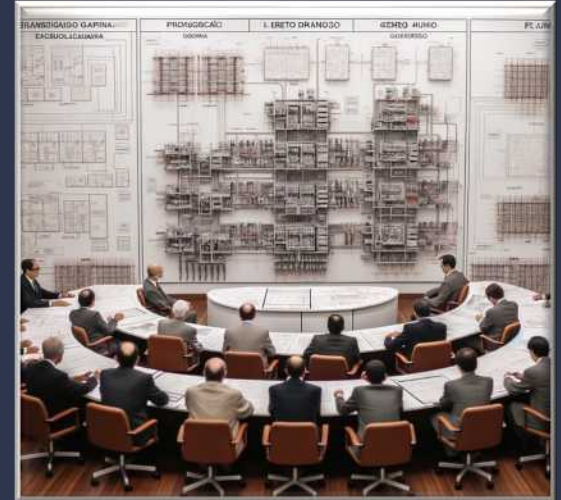
Flexible and iterative approach to project management. Promotes continuous collaboration, quick adjustments, and customer satisfaction using frameworks such as Scrum and Kanban.

PMBok



Standardized set of practices for project management. It focuses on defined processes, areas of knowledge and project phases, promoting predictability and control.

FEL (Front End Loading)



Detailed planning and scoping in the early phases of complex projects. It emphasizes risk assessment and stakeholder engagement to prevent costly changes later on.

Our international consultants bring together years of accumulated expertise in areas such as Mining, Energy, Logistics and Technology, coming from different regions of the world.



With global experience, we offer complementary expertise in:

- Geotechnical engineering and tailings management
- Governance structures and management systems
- Change management and stakeholder engagement
- Artificial intelligence and emerging technological innovations

We actively contribute to global mining standards, with renowned publications in geotechnics, hydrogeology, governance, technology, and other initiatives.

Presentation of the First Team

Dedicated professionals with global experience and specialized expertise

Fernando Damasio

Fernando Damasio is a multifaceted professional with two decades of experience spanning sectors such as technology, mining, steel and logistics. His global journey has seen him work across four continents, solidifying his reputation as an expert in automation, sensing, and process control. In addition to leading the forefront in the development of technologies for autonomous vehicles, Fernando has also played a crucial role in the deployment of tailings management systems and dams. With a degree in Control and Automation Engineering, he not only applied his knowledge in the field but also shared his expertise as a professor in graduate programs. His ongoing dedication to education and innovation is evident in her regular participation in continuing education programs at reputable institutions.

fernando.damasio@datariders.com.br

Johan du Toit

With a 25-year international consulting career, Johan du Toit is a respected and recognized consultant. But his passion for science began much earlier, as a chemistry researcher in South Africa, where he earned a prestigious PhD. Since then, Johan has been dedicated to identifying opportunities to enhance operational excellence and build organizational resilience across multiple continents. In recent years, he has taken a deep dive into tailings management, leading a significant task force for a mining giant. His commitment to the industry was recently recognized when he was invited to be a member of CQM (Madeira Chemistry Centre) to advise Portugal's leading chemistry research centre on career management for its team of more than 20 PhD students.

johan.dutoit@datariders.com.br

Luís Cervantes

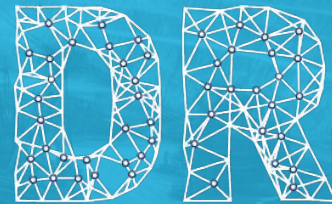
Dr. Luis Cervantes is an outstanding geotechnical engineer with specializations in soil mechanics, rock mechanics, and hydrogeology. Over the course of his two-decade career, he has contributed significantly to the industry in both South America and Australia. His articles, published in world-renowned conferences and journals, reflect his deep understanding and passion for the field. Luís is recognized for his expertise in open-pit mining, tailings dams and geotechnics. In addition, he has played a vital role in the planning, development and evaluation of Tailings Management Systems, always ensuring compliance with global standards and promoting innovations in the sector.

luis.cervantes@datariders.com.br

Thank you.

fernando.damasio@datariders.com.br

Business name: Data Riders Educação e Consultoria
LTDA
Business number: 29.742.713/0001-02
Address: Av. Jose Maria Alkimin 864
Belo Horizonte, MG / Brazil 30320-210



Data Riders

*Specialized Consulting in
Engineering and Management*