

**Agate SDAS™**

WHAT MAKES AGATE SDAS DIFFERENT?

An executive paper on decision intelligence for natural resource development

Central thesis

Mining projects rarely fail because of geology. They fail at interfaces—where independent technical, legal, regulatory, financial and social systems converge, interact and ultimately determine whether a project can advance.

Agate SDAS™ was developed to understand those interfaces, identify their pressure points, quantify their uncertainties and, identify and characterize alternative development pathways before critical decisions are made.

Model

Map

Quantify

Appraise

Decide

EXECUTIVE PAPER

Executive summary

Agate SDAS™ is an integrated decision intelligence platform for natural resource development: a methodology and toolchain for modelling the institutional, technical, commercial and social systems that determine whether a project can progress, if it can what is the optimal pathway to progress it from exploration to commissioning.

Working definition

Agate SDAS™ is an AI-augmented intelligent scenario development and appraisal platform that creates digital twins of project-development pathways, identifies legal, regulatory, bureaucratic and social pressure points, quantifies uncertainty and ranks practical development options for executive decision-making.

Why this matters?

The mineral sector already has excellent tools for geology, mine planning, scheduling, GIS, simulation and financial modelling. The unresolved problem is that these tools normally operate in separate specialist domains. They do not, by themselves, model how regulatory gates, agency behaviour, social expectations, financeability, technical design and schedule dependencies interact as one project-development system.

The Agate distinction

- It starts with the project-development pathway rather than the orebody or mine plan alone.
- It converts legal, regulatory, bureaucratic and social complexity into structured process models and intelligence libraries.
- It combines qualitative judgement with quantitative methods such as PCA, Monte Carlo simulation and valuation logic.
- It uses expert-governed AI to accelerate scenario generation without removing professional control.
- It translates complex analysis into board-ready pathway maps, risk registers, value envelopes and decision narratives.

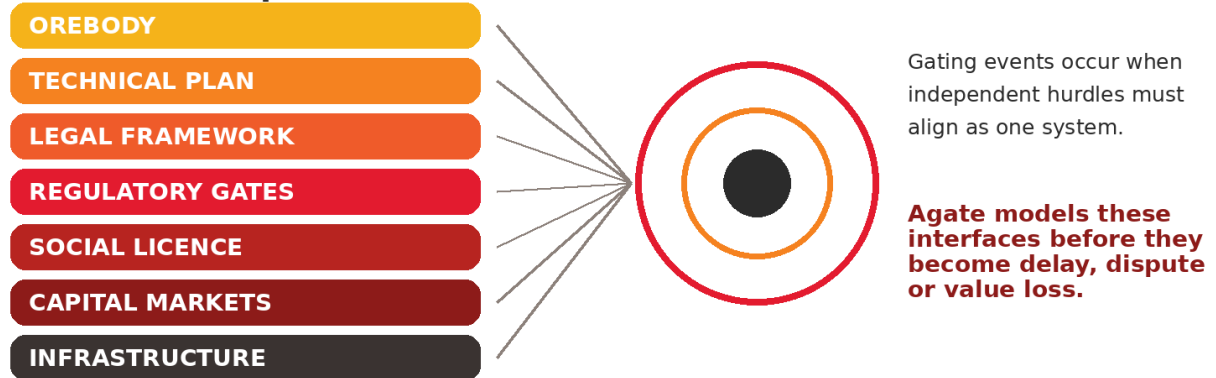
THE PROBLEM AGATE IS BUILT TO SOLVE

Projects fail at interfaces

Most project-development failures are not caused by one isolated technical flaw. They emerge where different systems meet: legislation, agency interpretation, licence conditions, environmental constraints, infrastructure availability, community expectations, capital-market timing and technical feasibility.

These interfaces are often managed through spreadsheets, narrative risk registers, consultant reports and informal project memory. Agate SDAS™ treats them as a modelable decision architecture.

The interface problem



The institutional blind spot

In natural resource development, institutions are part of the project system. Government departments, statutory agencies, local authorities, policy settings, courts, landholders, communities, lenders and investors all create gates and pressure points. A technically robust project can still lose momentum if these institutional interfaces are misread or sequenced poorly.

Agate's premise

The least-resistance pathway is not the easiest pathway. It is the pathway that satisfies compliance, evidence, stakeholder and capital logic with the fewest avoidable conflicts and delays.

MARKET POSITIONING

The gap is integration, not the absence of tools

There are many strong software products in the market. Some model mines. Some simulate uncertainty. Some map processes. Some manage enterprise data. Some support AI-assisted analysis. Very few are designed specifically to model the whole project-development pathway for natural resource projects.

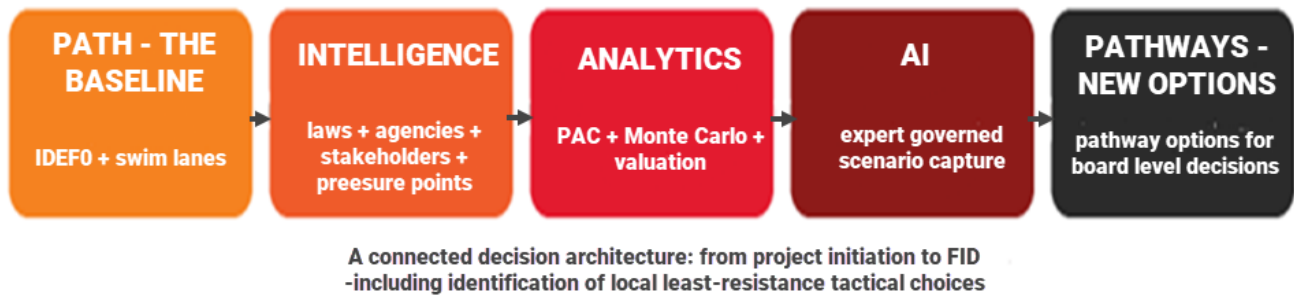
Product category	What it does well	Residual gap Agate targets
Mine planning suites	Design, scheduling, optimisation and operational planning.	Usually stop before modelling legal, bureaucratic, social and capital-market interfaces.
Risk and simulation tools	Monte Carlo, reliability, water balance, cost and schedule uncertainty.	Powerful quantitatively, but usually require the institutional decision structure to be built externally.
Process modelling tools	IDEF0, BPMN, swim-lanes, hand-offs and governance workflows.	Strong process representation, but not mining-specific and not usually linked to valuation or permitting intelligence.
Statistical / analytics platforms	PCA, machine learning, data preparation and model deployment.	Analytically strong, but not a natural resource development pathway architecture.
Enterprise AI / data platforms	Large-scale enterprise data integration and human-AI decision support.	Closest in philosophy, but generally not mining-project-specific and typically requires extensive bespoke implementation.
GIS / spatial platforms	Spatial constraints, environmental context, infrastructure and land-use intelligence.	Essential input, but not a complete project-development decision system.

Positioning note: Agate is not intended to replace specialist tools. It is intended to orchestrate their outputs and fill the decision-interface gap between technical evidence, institutional rules and board-level investment decisions.

METHODOLOGY ARCHITECTURE

From process logic to board decisions

Agate SDAS™ is built around a connected methodology: first structure the project-development problem, then build institutional intelligence, then quantify uncertainty, then use expert-governed AI to generate and appraise scenarios and finally convert the analysis into decision outputs.

**Agate Process**

Legal, regulatory, technical and business process modelling; IDEF0 and swim-lane views of duties, controls, mechanisms and decision gates.

Agate Intelligence

Bureaucratic, agency, stakeholder and social pressure-point libraries; evidence requirements and common failure modes.

Agate Analytics

PCA, statistical analysis, Monte Carlo simulation, valuation ranges, schedule/cost uncertainty and sensitivity logic.

Agate AI

Expert-governed scenario generation, pathway scoring, assumption interrogation and narrative development.

Agate Board

Decision packs, ranked pathway maps, pitfall registers, risk-weighted valuation ranges and capital narratives.

WHAT MAKES AGATE DIFFERENT

A platform for institutional and project-development intelligence

The principal innovation is not any single analytical technique. PCA, Monte Carlo simulation, process mapping and AI assistance already exist. The innovation is the way Agate brings them together around a natural resource project-development pathway.

Institutional intelligence

Agate models the institutions that influence project momentum: agencies, laws, licences, policies, social actors, appraisal habits and evidence expectations.

Development-pathway digital twin

Instead of modelling only the physical asset, Agate creates a working representation of the pathway through which the asset must pass to become investable, permitted and executable.

Pressure-point intelligence libraries

Recurring legal, bureaucratic, social and technical pressure points are captured, structured and reused across similar projects and jurisdictions.

Expert-governed AI

AI is used to accelerate scenario development, issue spotting and narrative synthesis, while qualified professionals govern assumptions, evidence and judgement.

Capability footprint

Capability	Agate SDAS™ emphasis
Legal/regulatory framework modelling	Core Agate capability
Bureaucratic decision pathway modelling	Core Agate capability
Social pressure-point intelligence libraries	Core Agate capability
Process modelling: IDEF0 and swim lanes	Integrated into pathway architecture
PCA and statistical analysis	Used to isolate dominant drivers
Monte Carlo simulation	Used for schedule, cost, permitting and valuation uncertainty
AI-assisted scenario appraisal	Expert-governed, not autonomous
Board and investor decision outputs	Ranked pathways, risk registers and value envelopes

APPLIED CAPABILITY

Godawaya / Sevanagala REE pathway context

A practical application of the Agate approach is early-stage pathway design for a Sri Lankan critical minerals project. The objective was not simply to describe the mineral opportunity, but to identify practical progress routes through permitting, appraisal and early-stage valuation under uncertainty.

Problem	Approach	Outputs
Critical minerals project context with multiple regulatory, policy, appraisal, stakeholder and valuation uncertainties.	Legal/regulatory analysis, permit-gate mapping, IDEF0, swim lanes, PCA, Monte Carlo simulation and Agate SDAS™ pathway scoring.	Least-resistance development pathway, permit pitfall register, risk-weighted value envelope and board/investor narrative.

Techniques deployed

- Analysis of applicable laws, regulations, licence conditions and policy constraints.
- Agency appraisal trend characterisation and permit-gate mapping.
- IDEF0 modelling of mining operations, controls, outputs and dependencies.
- Swim-lane modelling of agency roles, stakeholder interfaces and response loops.
- Principal component analysis to isolate dominant project and appraisal drivers.
- Monte Carlo simulation of schedule, cost, approval and valuation uncertainty.
- Agate SDAS™ AI-assisted scenario development and pathway scoring.

Why this is different

The result is not only a risk register. It is a structured decision system that connects compliance, evidence, sequencing, schedule, value and narrative. That allows executives and investors to discuss the project in terms of ranked alternatives rather than disconnected technical opinions.

CONCLUSION

Agate defines a new decision category

Agate SDAS™ is best positioned as an integrated decision intelligence platform for natural resource development, supported by a proprietary methodology for modelling, analysing and ranking project-development pathways.

Its value lies in making invisible interfaces visible: the legal interpretations, bureaucratic gates, social pressure points, evidence gaps, technical dependencies and capital-market narratives that determine whether a project can move forward.

Primary use cases

- Early-stage project appraisal where technical potential is high but the development pathway is uncertain.
- Permitting pathway design and regulatory engagement planning.
- Critical minerals projects involving complex policy, community, ESG and infrastructure interfaces.
- Board and investor decision packs for project prioritisation, capital allocation or divestment.
- Independent review of stalled projects, value leakage or permitting bottlenecks.

Positioning statement

Agate SDAS™ turns complex permitting and early-stage project uncertainty into a disciplined decision system: pathway maps, pressure-point intelligence, quantified risk, expert-governed AI scenarios and board-ready investment narratives.

Brand statement

Agate SDAS™ is not merely software. It is a decision methodology implemented through an integrated platform. That distinction matters: software features can be copied; disciplined domain methodology, pressure-point libraries and expert governance are much harder to replicate.

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This executive paper is a marketing and concept summary. It is not a legal opinion, statutory submission, independent technical report, formal valuation or investment recommendation.