Scimita™ GROUP

Your Ultimate Innovation Partner

Beyond Optimisation:
Rethinking Value Creation in the Resource-to-Reserve Stage

Dr Mobin Nomvar
Managing Director

We build INNOVATIVE PRODUCTS.

We create VIABLE BUSINESSES.

We shape a SUSTAINABLE FUTURE.

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PART 1 / THE INDUSTRY SHIFT

Mining Complexity Is Accelerating

The Industry Environment Has Fundamentally Changed

01 Ore grades are declining

02 Mineralogy is becoming more complex

03 Critical minerals require new processing pathways

04 Traditional flowsheet assumptions are under pressure

KEY QUESTIONS

Q1 What is really different in these projects from historical projects?

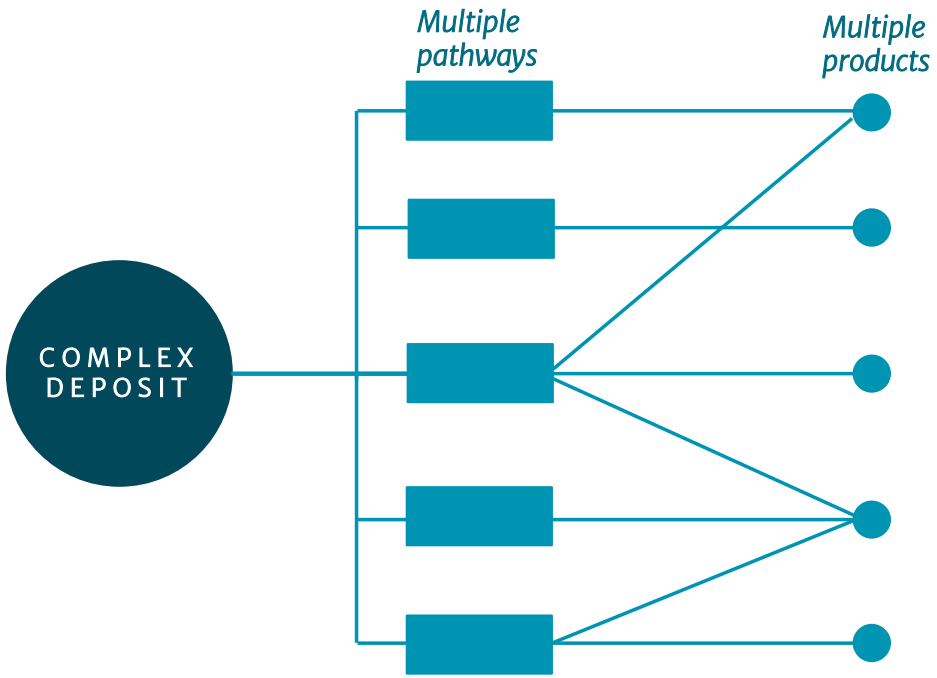
Q2 Where in the development lifecycle are we best placed to optimise the long-term value of a project?

Q3 How can we, as a DTIH, impact the outcome unlike anyone else?

PART 2 / THE STRUCTURAL CONSTRAINT

Where Complexity Changes the Equation

Complex Deposits Bring Broader Optionality AND More Possible Futures



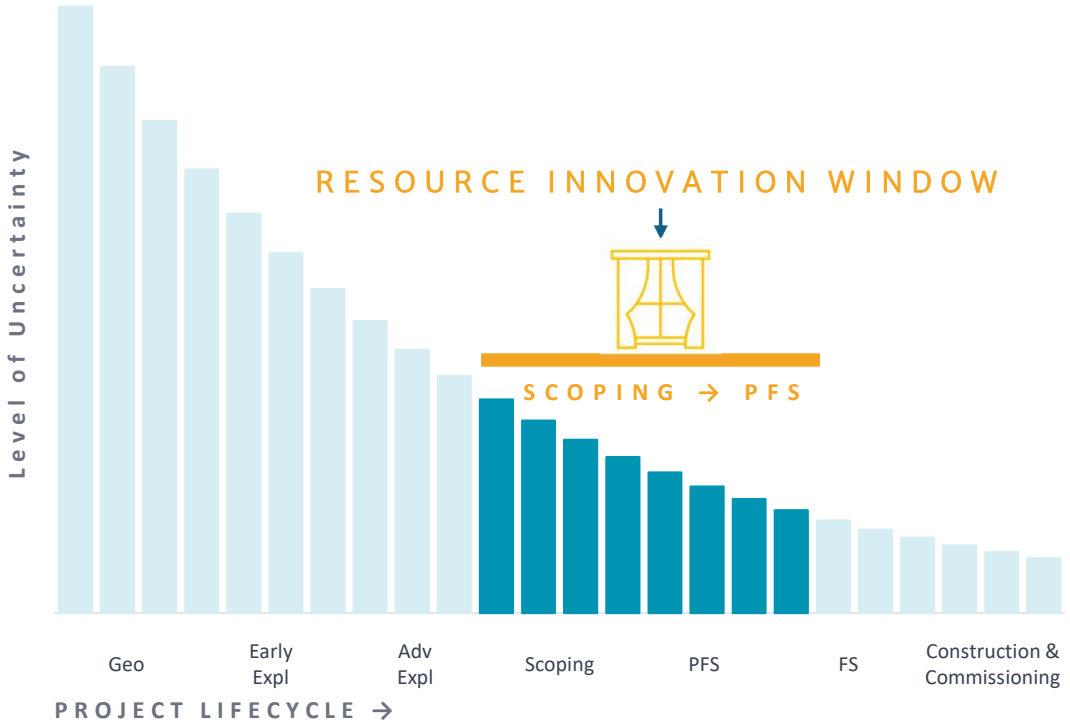
- Critical minerals create wider opportunity sets
- Rare earths and mineral sands increase flowsheet complexity
- Multiple product pathways may exist
- Traditional optimisation can unintentionally constrain value
- Shift from **conventional mineral processing** into **industrial chemistry & chemical engineering**

Each pathway carries a different technical, commercial, environmental and capital profile.
Each pathway creates a different future.

PART 2 / THE INDUSTRY SHIFT

Where Project Value Is Often Shaped

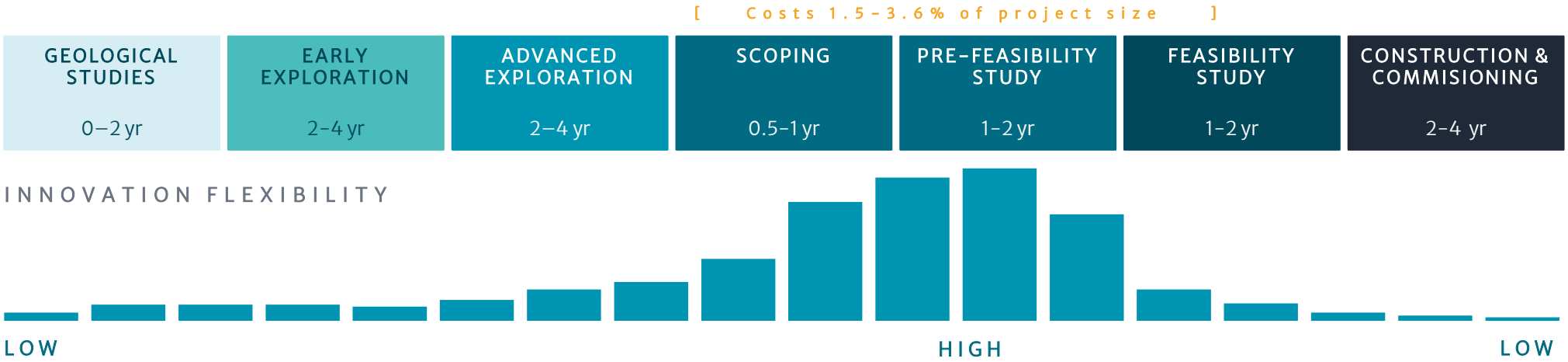
The Resource-to-Reserve Transition



- Flowsheet decisions shape long-term economics
- Small decisions create large NPV impacts
- Most value pathways are defined early
- This stage may be the **highest leverage point** in project development

The Mining Development Lifecycle

12–16 Years of Progressive Risk Reduction



- Exploration absorbs major uncertainty
- Resource confidence builds progressively
- Reserve stages focus on certainty and bankability
- Innovation flexibility narrows over time

The Resource Innovation Window

A Small Window for Value Multiplication

01
A short strategic window emerges

02
It exists before reserve pathways solidify

03
Integrated optimisation is still possible

04
Optionality compresses rapidly afterward

PART 4 / THE OPTIMISATION HIERARCHY

Optimising the Process vs Optimising the Resource

TRADITIONAL STUDY OPTIMISATION

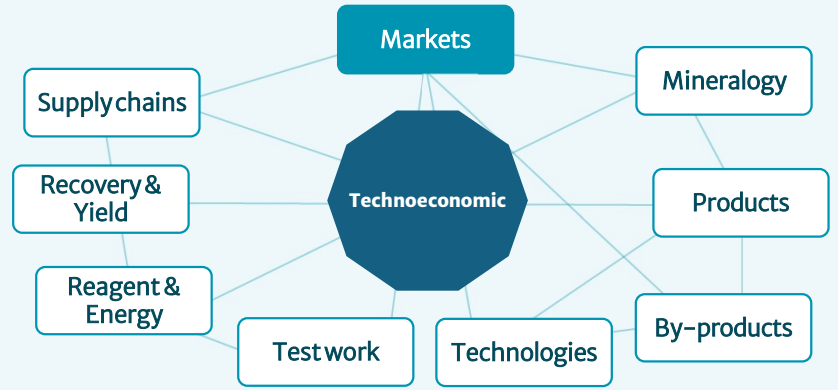
Mostly separated silos — each individually optimised

- Metallurgy
- Mine Plan
- Flotation
- Energy
- Hydromet
- Logistics

OPTIMISED TRADITIONAL FLOWSHEET

RESOURCE INNOVATION OPTIMISATION

Fully integrated network — co-optimised



OPTIMISED RESOURCE VALUE

- Commercial product optionality is rarely explored systematically
- Junior miners optimise known mineralogy through known pathways
- Technical silos optimise independently
- Resource Innovation optimises total resource NPV potential

The boundary you optimise within, and the level of integration defines the value you can create.

PART 5 / THE EMERGENCE OF THE INNOVATION HOUSE

Innovation Through The Flowsheet

Integrated Value-Chain Optimisation

THE TRADITIONAL ASK

"How do we optimise this flowsheet?"

OUR ASK

"What is the highest-value future this deposit could support?"

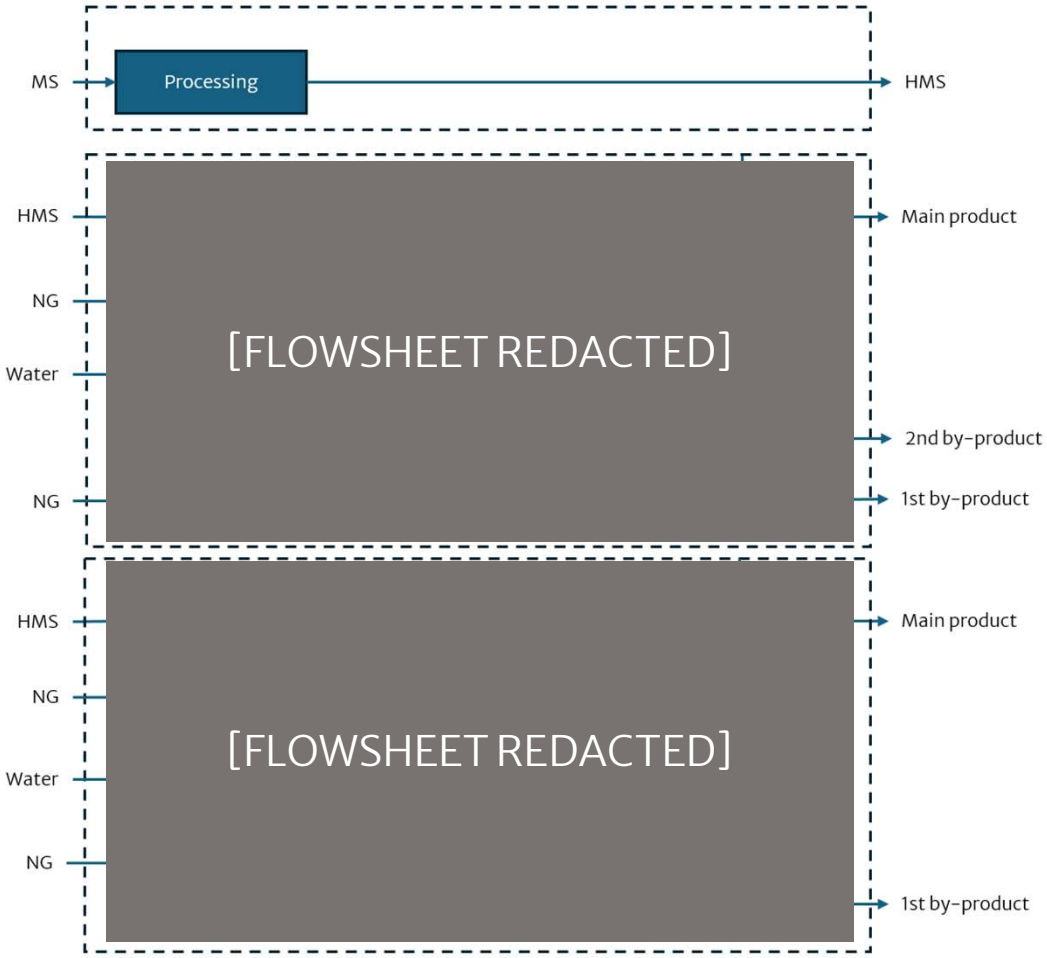
ONCE YOU ASK THAT QUESTION, THINGS EMERGE

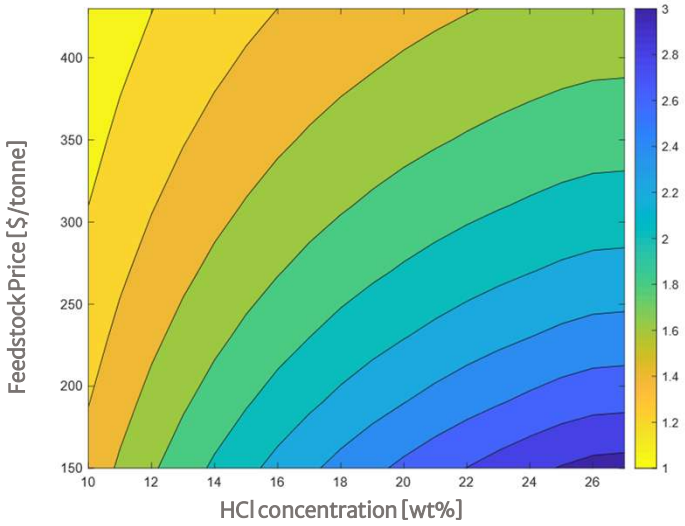
By-products	Alternate markets	Hybrid flowsheets	Aggregated technologies	Alternate energy	Cut-off strategies	Product strategies

PROCESS OPTIMISATION → RESOURCE NPV OPTIMISATION

Flowsheets become dynamic rather than fixed	Multiple pathways can be evaluated simultaneously	Resource economics can be reshaped early	Integrated optimisation improves long-term project outcomes

Innovation Through The Flowsheet





Outcomes

- Revenue potential increased to approximately $0.6B per year
- Process technoeconomic sensitivities became well understood
- Processing pathway simplified
- Process emissions and environmental footprint reduced by approximately 40%
- Demonstration pathway accelerated
- Project progressed toward second-stage demonstration
- Investment risk reduced, with the required capital quantum becoming more manageable
- Scale-up pathway staged, with technical and commercial validation integrated throughout

The Five Failure Patterns

01

Innovation Drift

Work intended to deliver outcomes reverts back into knowledge creation and repeated test work or research.

02

Technoeconomic Disconnect

Technical progress advances without a clear link to economic value drivers.

03

Premature Scale-Up

Pilot or demonstration decisions made before critical uncertainties are resolved.

04

Static Flowsheet Thinking

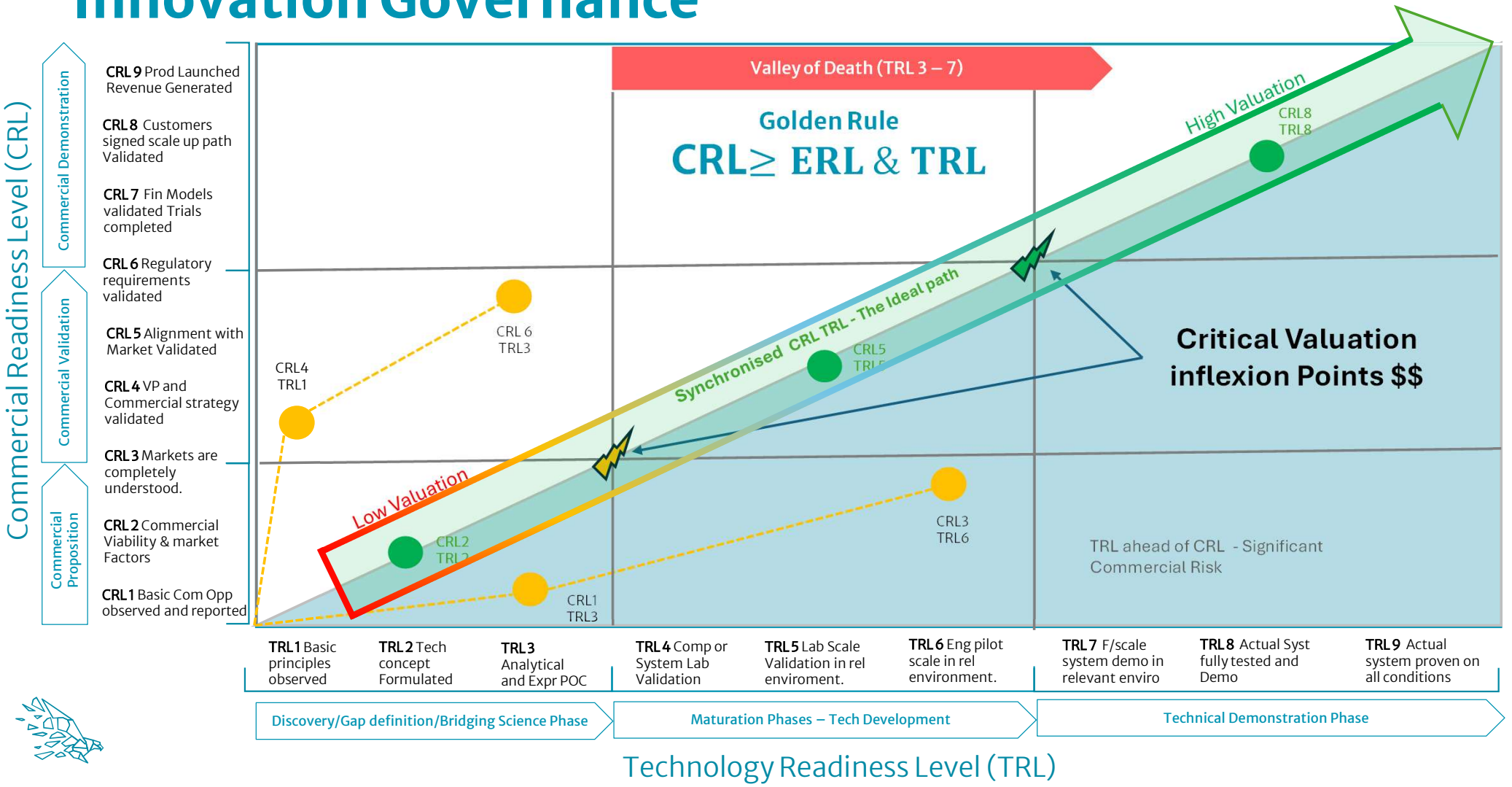
Innovation constrained within an assumed flowsheet instead of challenging it.

05

Governance Gaps in Decision Making

Lack of structured checkpoints leads to inconsistent or intuition-driven progression.

Innovation Governance



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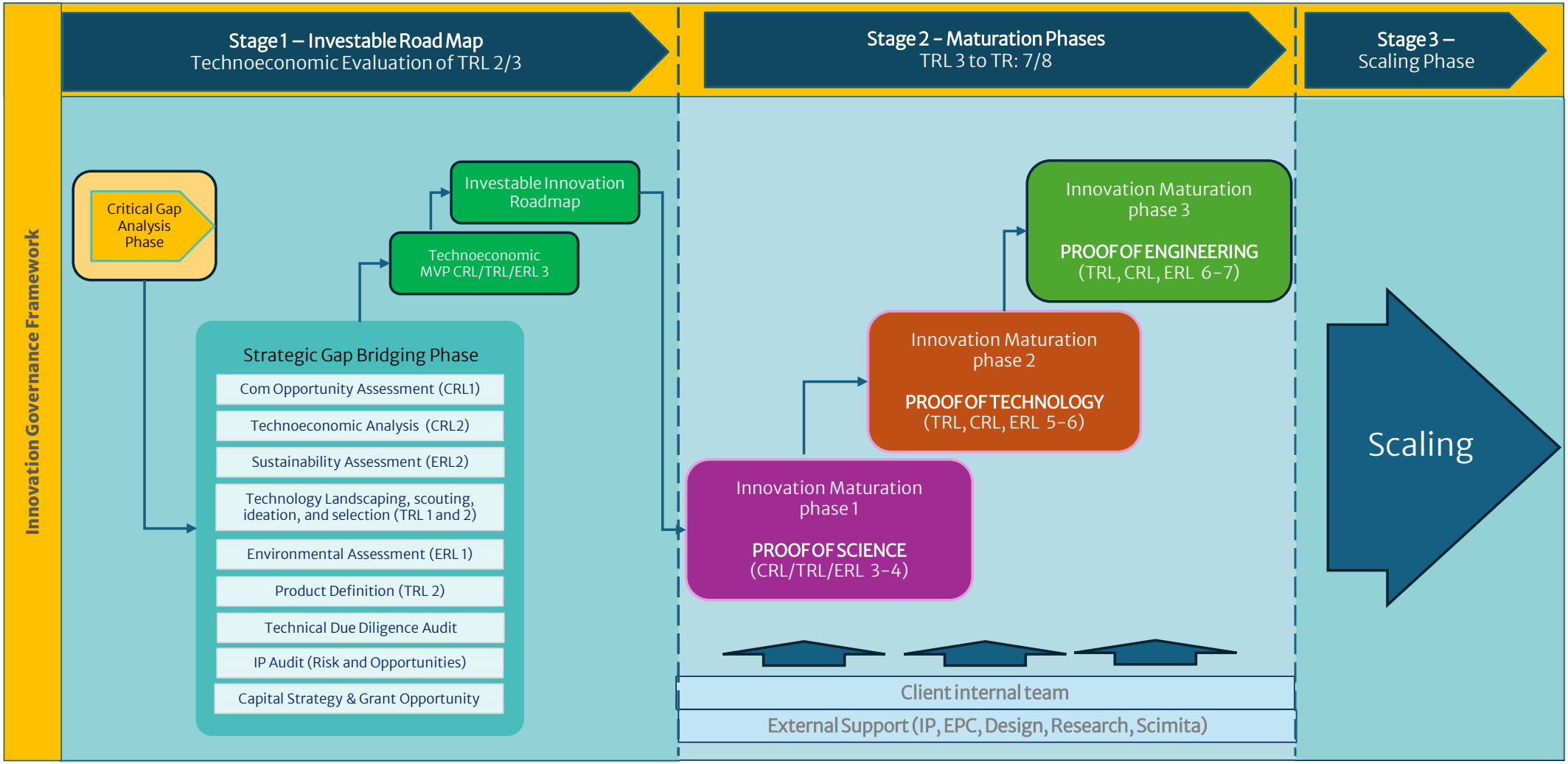
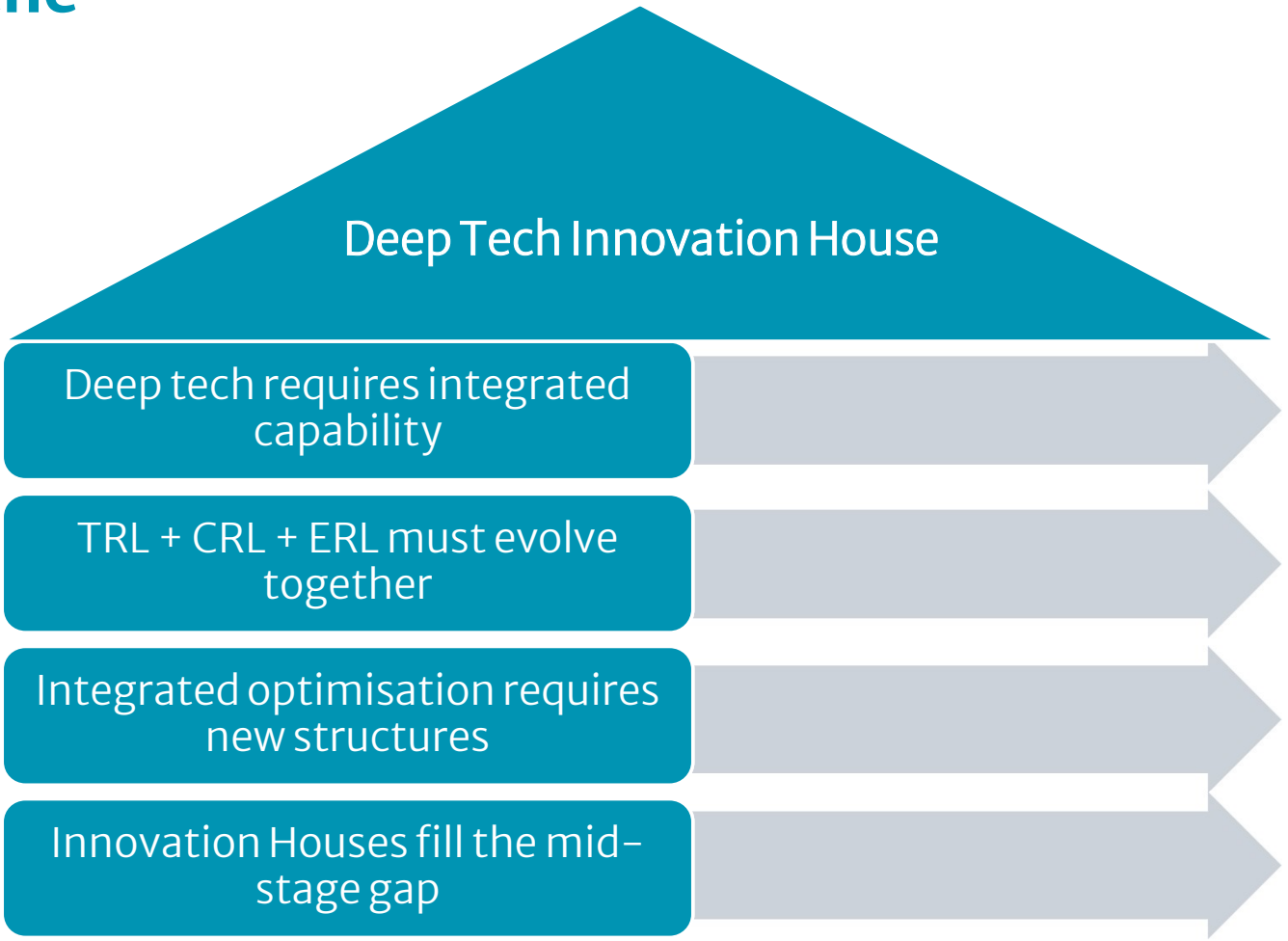


The Emergence of the Innovation House

A Structure Designed for Integrated Optimisation



The complexity of todays' deposits require a new capability to optimise their value

PART 5 / THE EMERGENCE OF THE INNOVATION HOUSE

What becomes possible

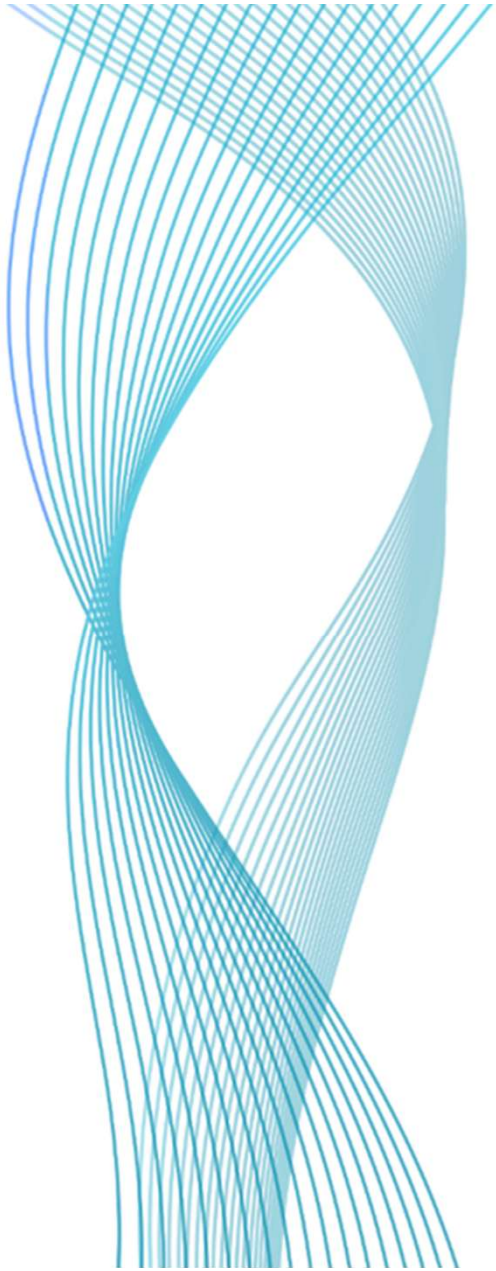
A Different Future for Complex Deposits

PART 5 / THE EMERGENCE OF THE INNOVATION HOUSE

The Core Insight

Innovation Is Not the Objective — Value Creation Is

- Complex deposits open up new opportunities and bring unique challenges with them.
- Resource Optimisation is a high leverage Innovation Window in Resource-to-Reserve conversion.
- Optimisation boundaries and level of integration define outcomes.
- Timing matters enormously.
- Innovation is an enabling and value creation mechanism.
- The 5 common failure points can be managed through innovation governance.
- Deep Tech Innovation House is an integrated structure that multiples project value.



PART 5 / THE EMERGENCE OF THE INNOVATION HOUSE

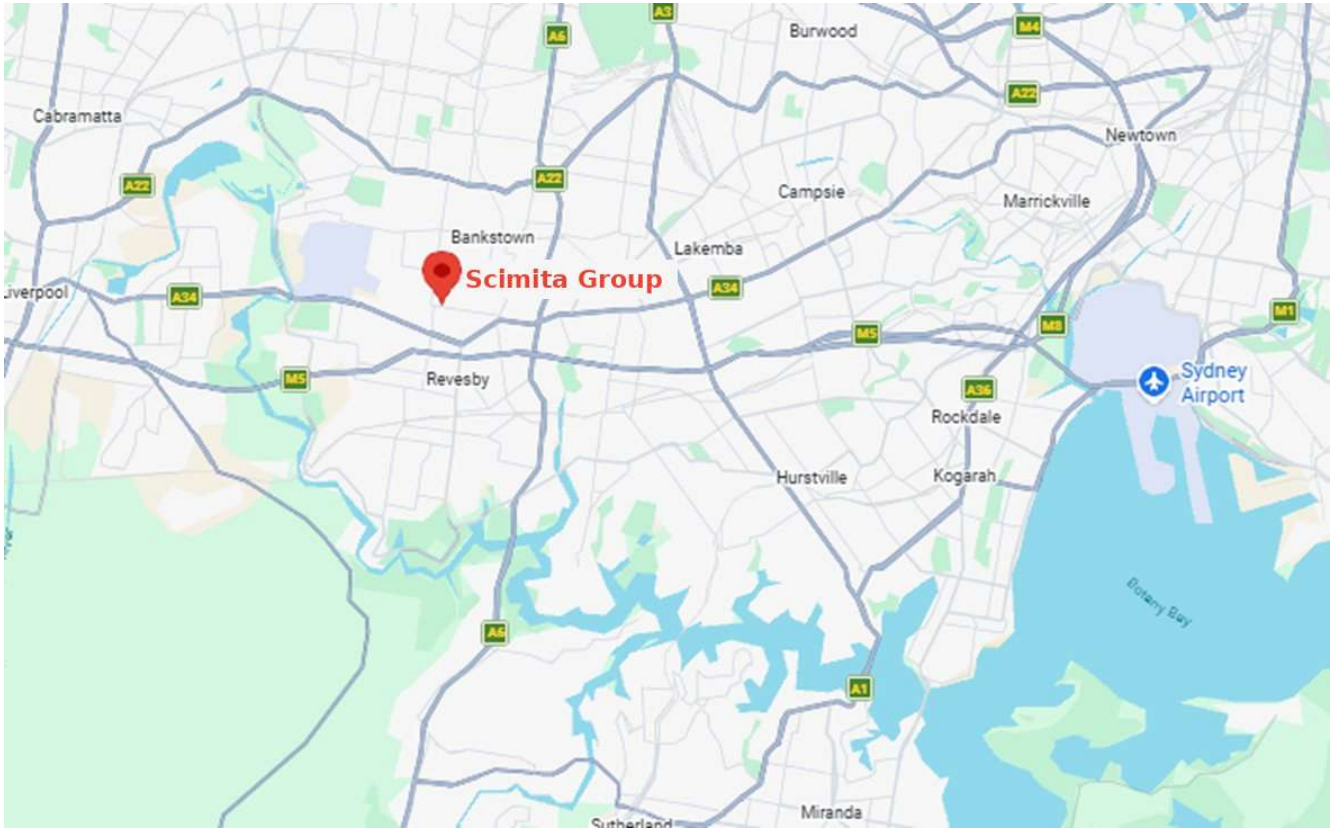
In Closing

Are we creating an opportunity to ask: What is the highest-value future this mineralogy could actually support?

And is the process we are proposing when coupled with the suggested capabilities and frameworks likely to increase the potential value of complex projects?

CONTACT

Get in Touch



Scimita® GROUP

ADDRESS

9/11 Nowill Street
Condell Park, NSW 2200
Australia

PHONE

+61 424 271 370

HOURS

Monday – Friday
9:00 AM – 5:00 PM AEST

The TRLs <> Study Type Cheat sheet

TRL	Technical State	Study Type	What You Can Reliably Do	Cost Accuracy
TRL 2–3	Concept / early lab proof	**Back-of-envelope OPEX / simple economics**	– Rough OPEX/price assumptions – Order-of-magnitude viability check	Order of Magnitude
TRL 3–4	Lab validation (batch)	**Early TEA (desktop)**	– Basic mass balance – Theoretical yields – First-pass CAPEX/OPEX models	±100%
TRL 4–5	Bench-scale validated	**Advanced TEA / Scoping Study**	– Defined flowsheet (still flexible) – Bench test reproducibility – Sensitivity analysis	±50%
TRL 5	Bench + some continuous testing	**Scoping → Early PFS**	– Defensible design criteria – Defensible reagent consumption – Early impurity handling	±30–40%
TRL 5–6	Pilot design emerging	**PFS (Pre-Feasibility Study)**	– Locked flowsheet (mostly) – Pilot or continuous testwork – Engineering basis begins	±25–35%
TRL 6	Integrated pilot demonstrated (relevant env.)	**Robust PFS / Pre-DFS**	– Stable operating conditions – Credible scale-up basis – Product validation underway	±20–30%
TRL 6–7	Integrated pilot/MVS plant	**DFS (Definitive Feasibility Study)**	– Full mass & energy balance – Equipment sizing – Vendor inputs – Bankable model	±10–15%
TRL 7–8	Demonstration/MVS plant	**Bankable DFS / Execution readiness**	– Operational data at scale – De-risked scale-up – Lender-ready case	±10%
TRL 8–9	First-of-a-kind / commercial	**FID (Final Investment Decision)**	– Construction-ready design – Financing secured – Execution risk understood	±5–10%

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