

Realizing Greater Value From Innovation

How to reduce the barrier to adoption

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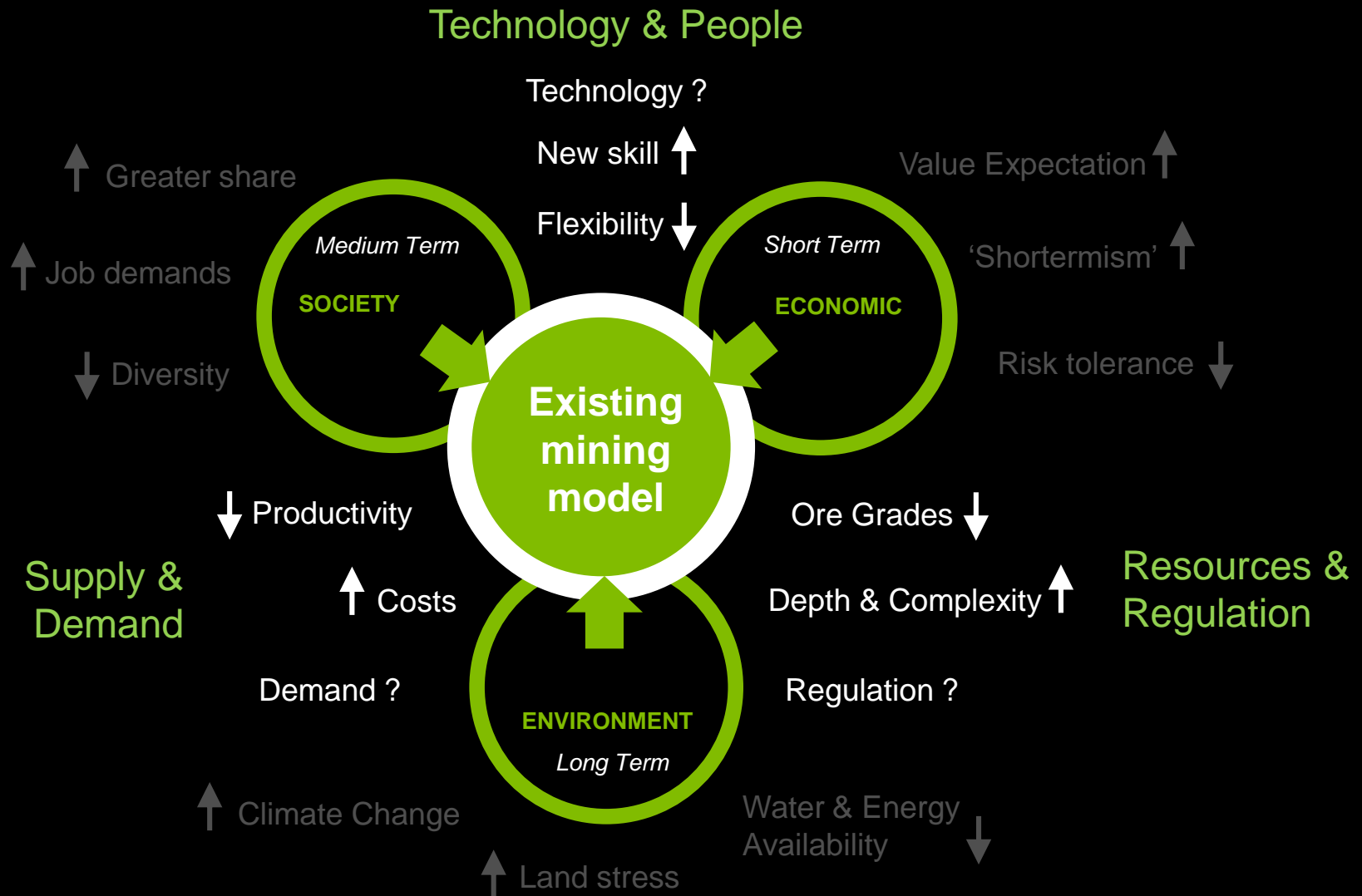
Realizing greater value from innovation

1. HOW INNOVATION IS CHANGING MINING
2. QUANTIFYING THE VALUE OF INNOVATION
3. REDUCING THE BARRIERS TO ADOPTION

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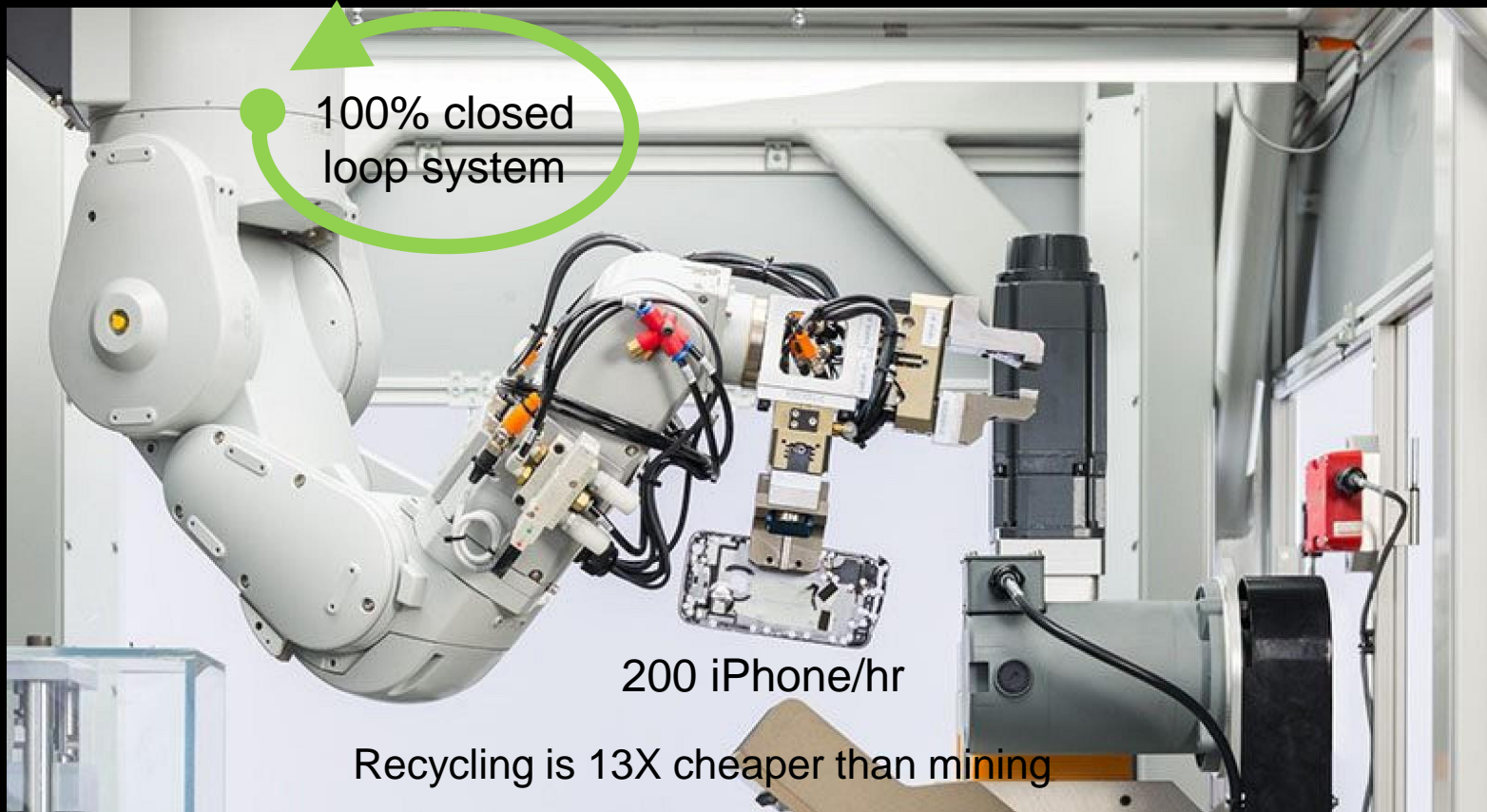
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Mining is experiencing pressure from all stakeholders



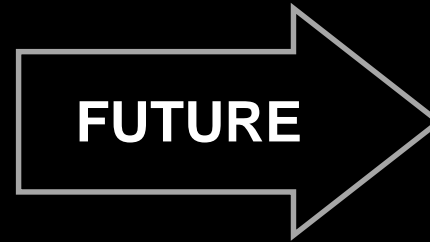
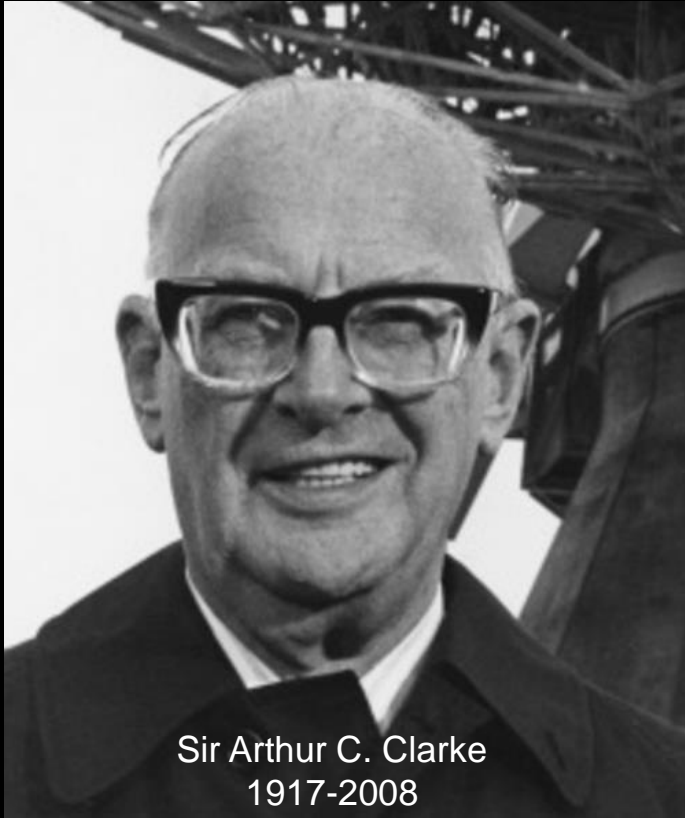
Is the existing mining model able to cope or adapt effectively?

There is an emergence of alternative options to deal with uncertainties



Innovation within, and outside the industry
will change mining in dramatic ways

What could the future of mining look like? The perils of prediction



See it to believe it

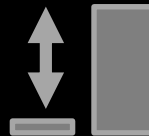
Sounds Reasonable

Too conservative

Sounds unrealistic

Accurate description

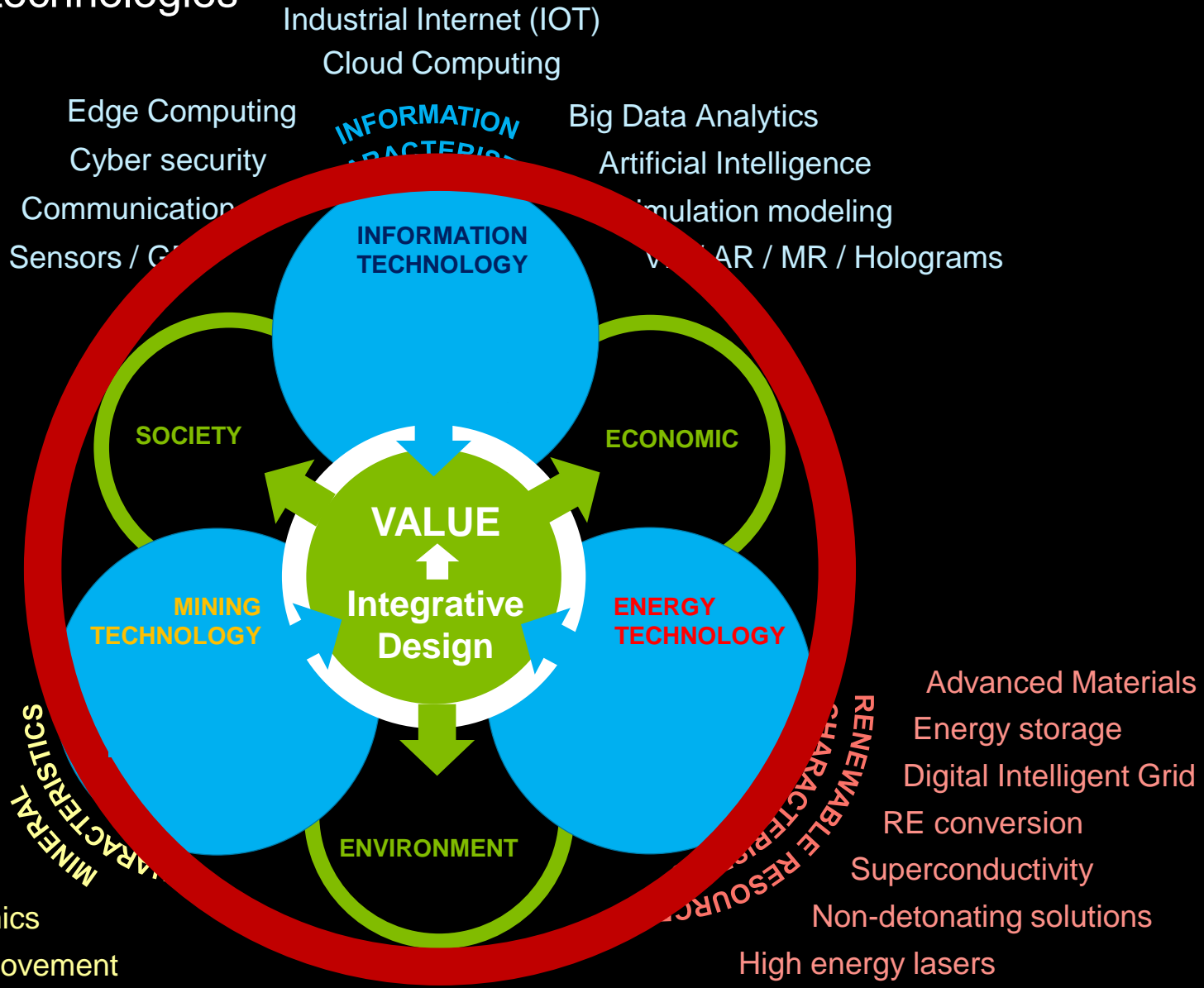
Believe it to see it



Magnitude VS Rate



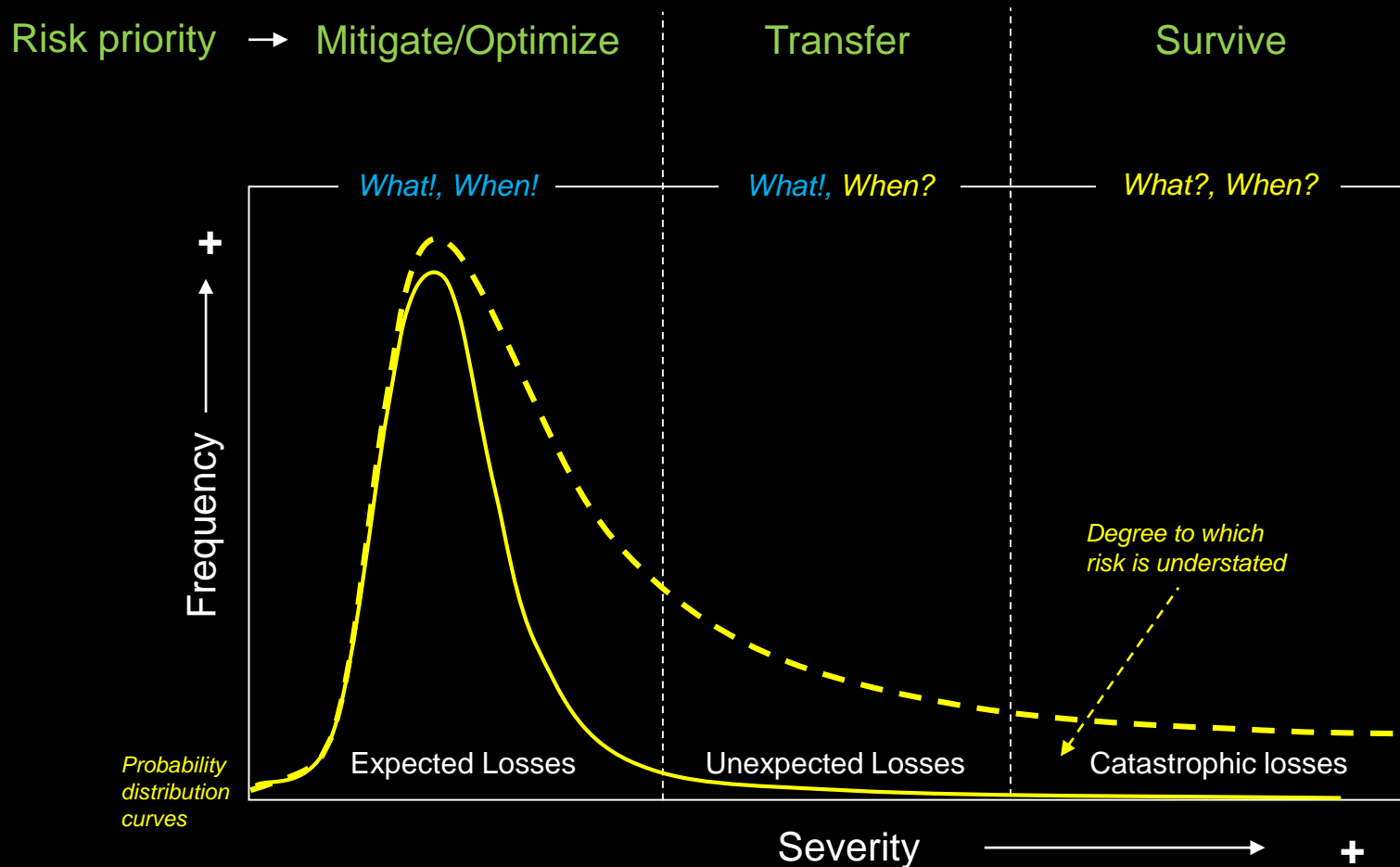
Mining needs to adapt in specific ways to benefit from the advancement of “exponential technologies”



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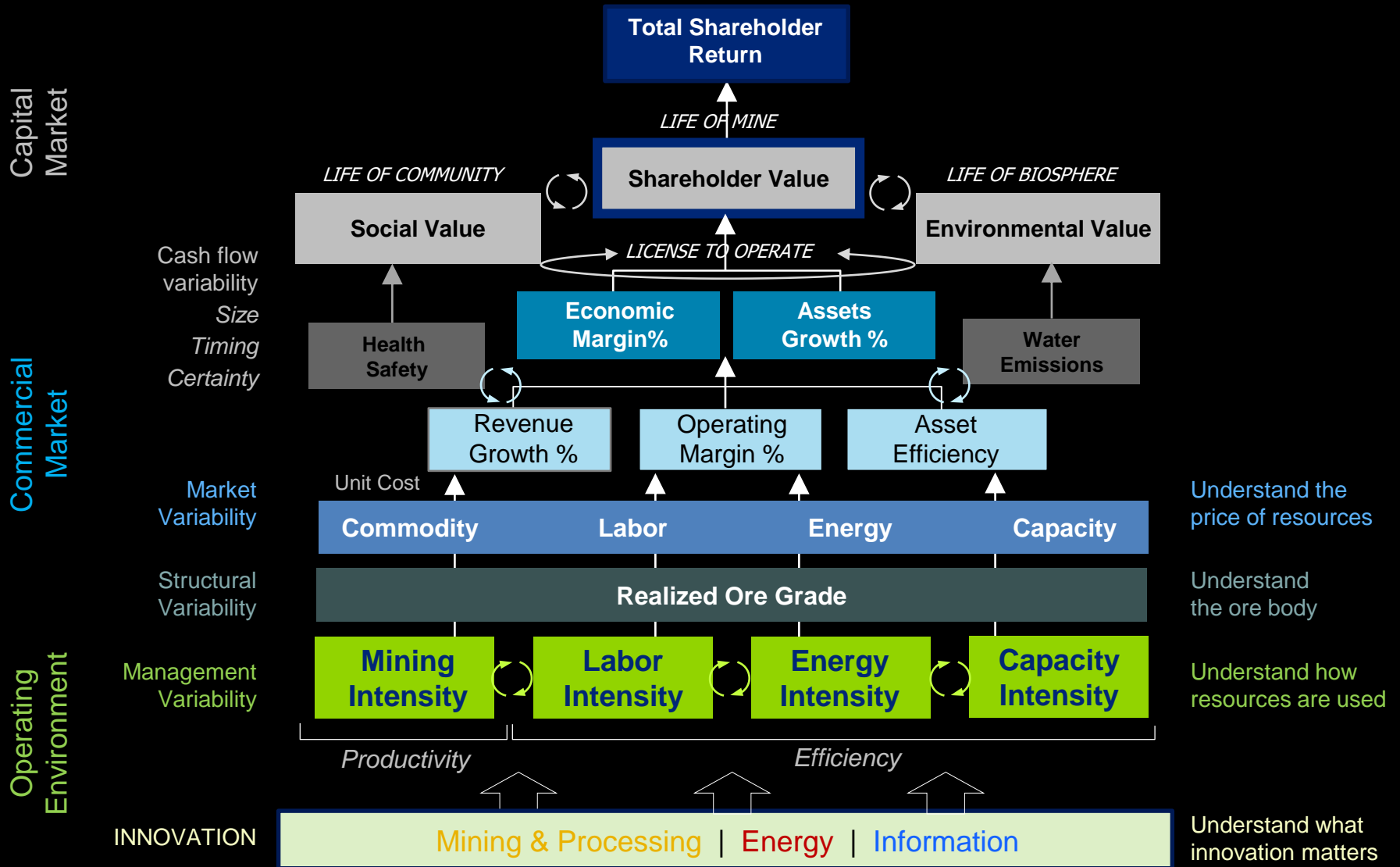
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Transformational innovation is perceived to be too risky in an environment where most of the focus is on managing expected losses



Underestimating true residual risk makes lack of innovation more risky

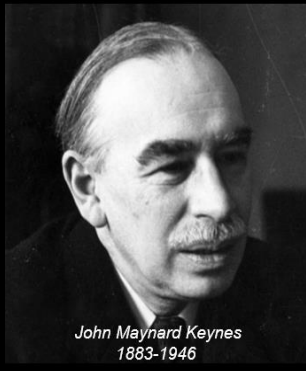
An integrated measurement framework helps to quantify the impact on value of the trade-offs between returns and risks from innovations



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Why is it so hard to change how we do things?



"The difficulty lies not so much in developing new ideas as in escaping from old ones..."

"Path Dependence"

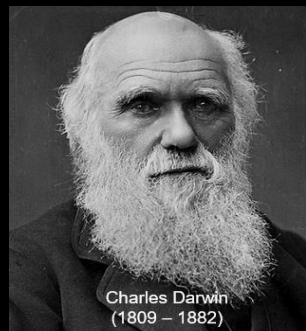
When good enough (and familiar) gets in the way of better:
Einstellung effect



People are prone to large errors due to the power of intuition

Your experience becomes your trained intuition

"Knowledge neglect"

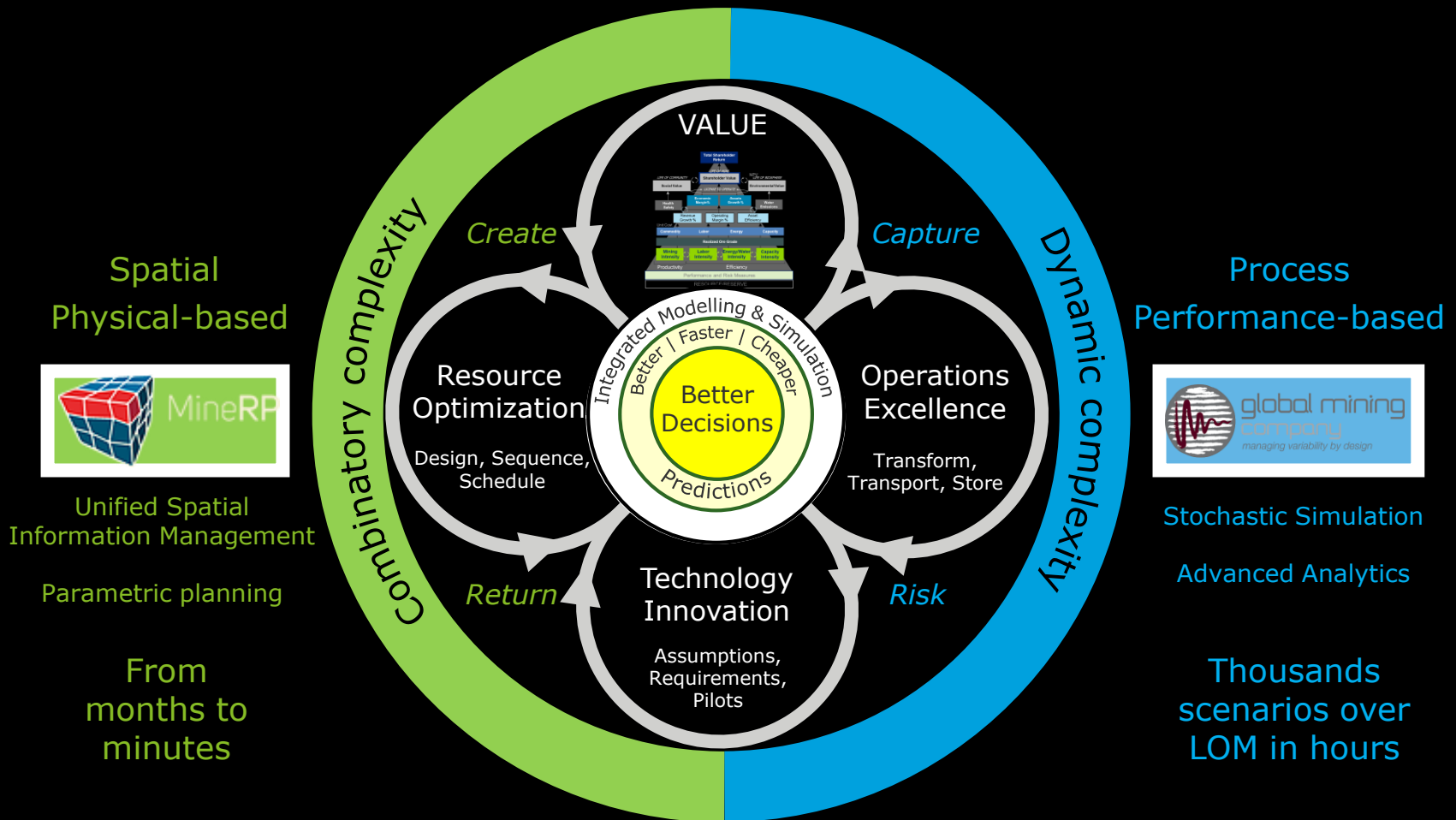


"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."

Most companies *under-estimate* the rate of change in the external environment, and *over-estimate* their abilities to adapt to this change

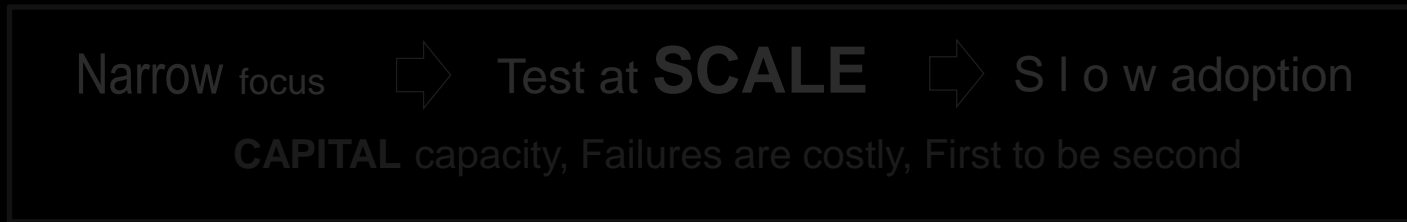
An integrated modelling platform is the only way to properly assess the impact of innovation on operations to improve decisions and adoption

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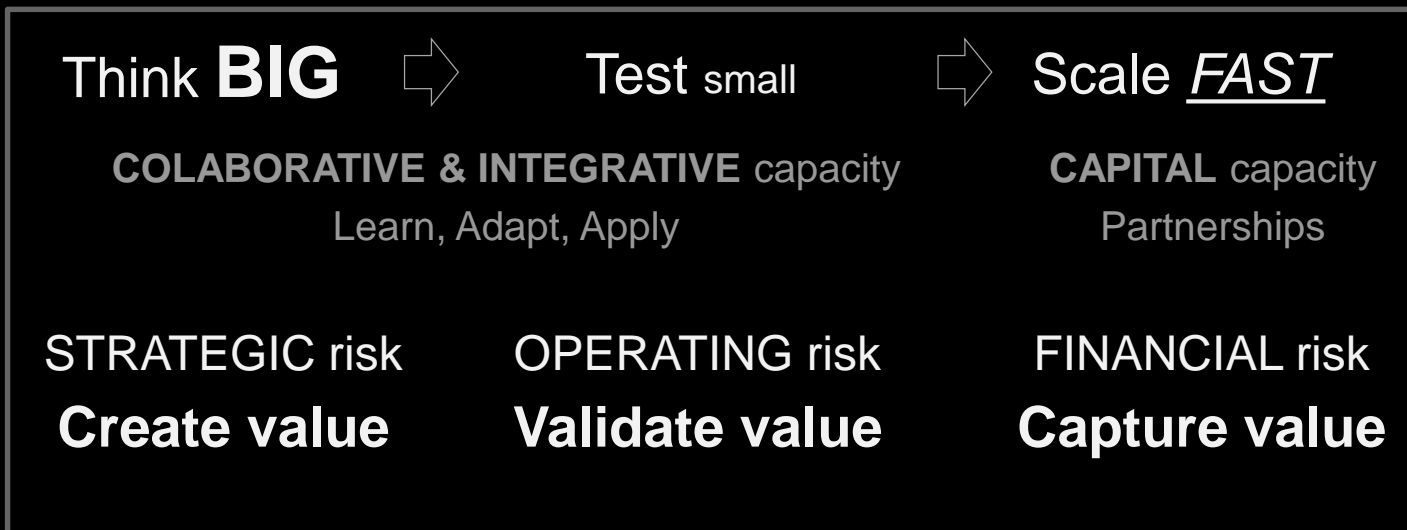


Suppliers

A change in the approach to innovation is required to accelerate adoption and value realization



Waterfall



Agile

Three rules for more courage to innovate in mining



Elon Musk

- The biggest risk you can take is not taking a risk
- Be a failure pioneer
- Have Viking spirit (“sisu”)

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