

New Ideas in Enterprise Risk Management (ERM) Across Industries

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University of Toronto

Rotman

Martin Pergler? Who is this guy?

- Focus on risk issues outside financial sector
 - Natural resources, industrials, airlines, conglomerates, consumer, institutional investors...
 - ERM and decisionmaking under uncertainty
- 200+ companies served
 - 32 countries
 - 25+ on longer risk transformations
 - 14 years at McKinsey & Co...
 - ...founded Balanced Risk Strategies this year
- Math (Ph.D. Univ. of Chicago) and music background → quants and “soft stuff”
- Live in Ottawa



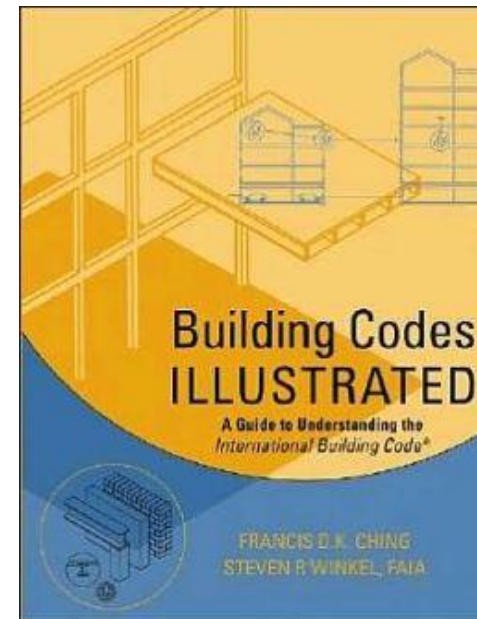
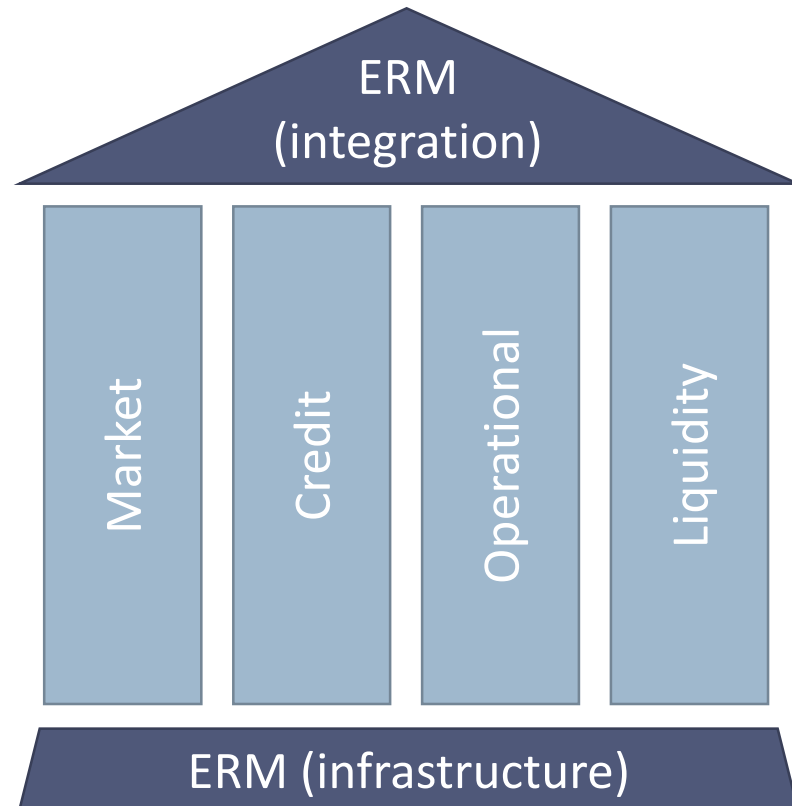
5 ERM trends I'll cover today

- ERM in financial services = regulatory agenda
- Elsewhere: dentist → safari guide
- Healthy and humble risk quantification
- Coming of age of oversight and culture
- Percolation to smaller companies and downstream

**Free bonus!
Today only!**

A bold
and rash
prediction
at the end

ERM in financial services driven by regulatory agenda



- Dodd-Frank
- EMIR
- Basel III
- Solvency II
- CCAR
- ...

Grumpier formulation: ERM in financial services being replaced by regulatory response

Risk management big, important, growing

Big

- 10% of HSBC workforce is risk/compliance
- GARP+PRMIA 200k+ members together. 28k certified FRMs
- 83% have or are implementing ERM

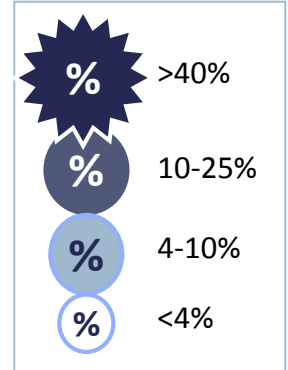
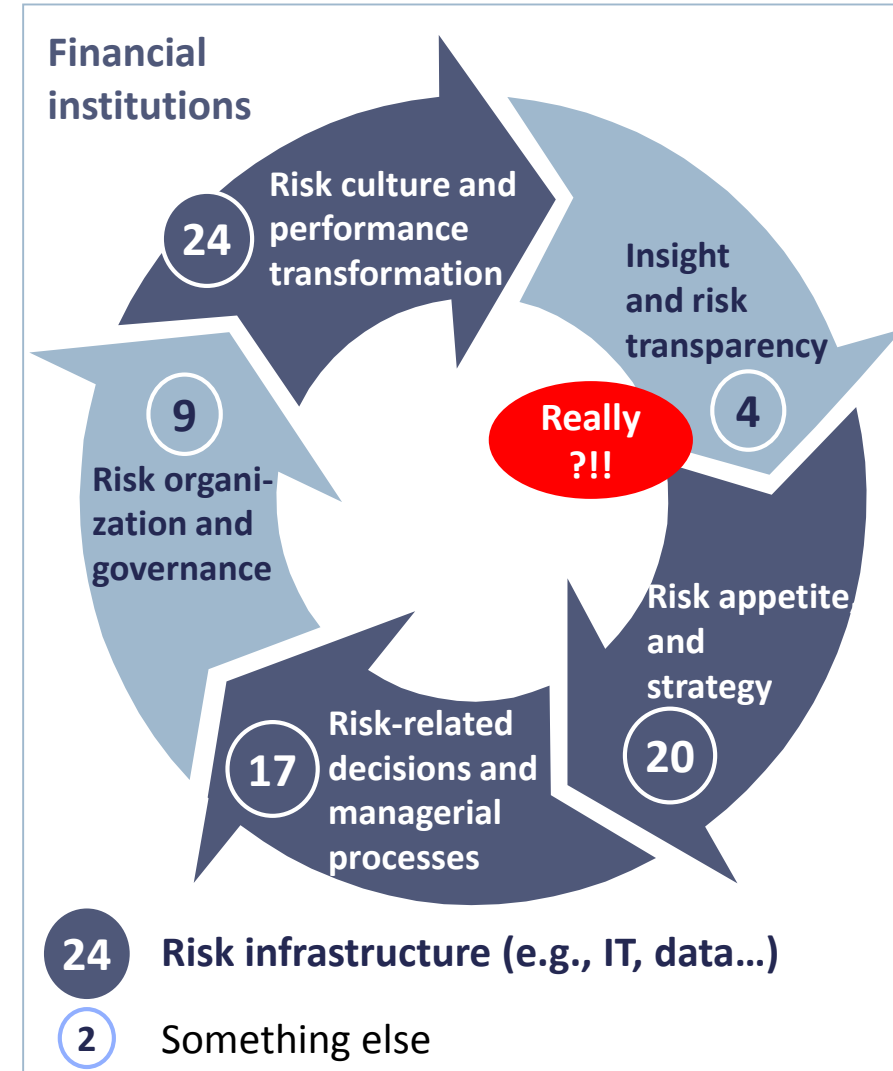
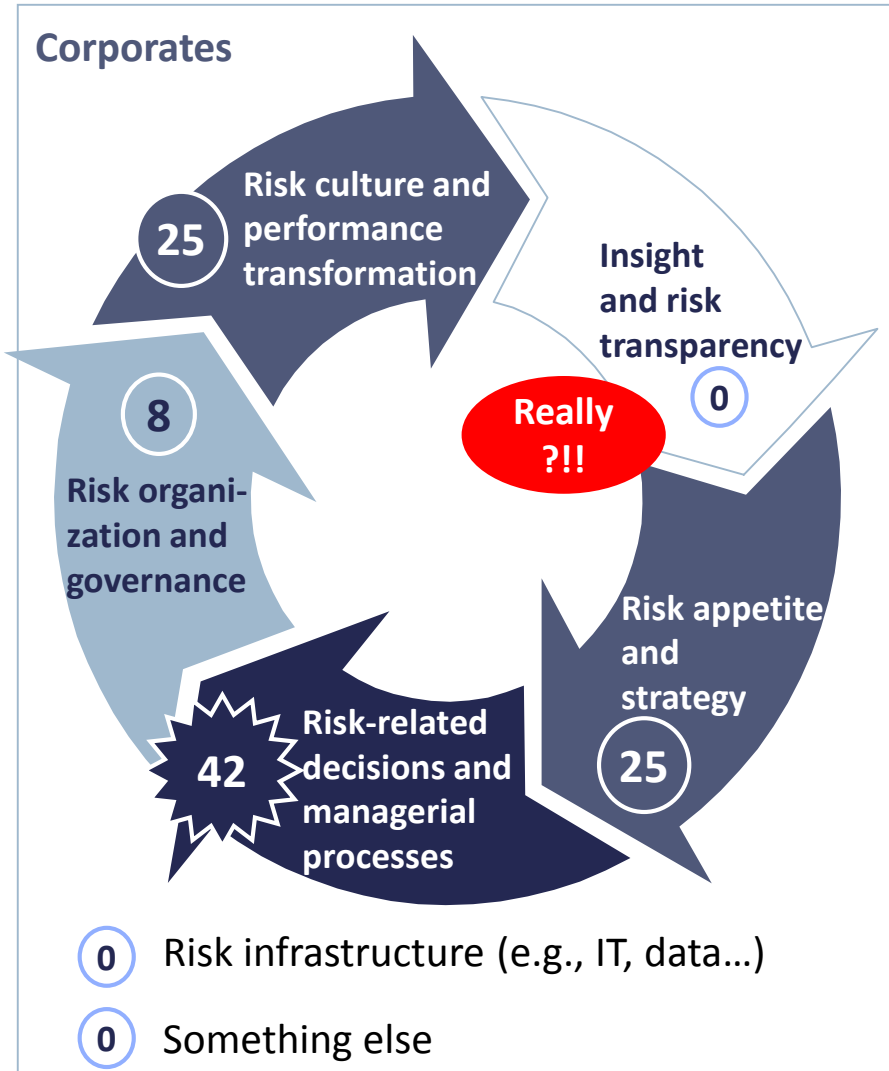
Important

- 80% of CROs report to CEO or Board
- CRO of Goldman part of executive committee
- Industry CRO comp = CFO, CLO

Growing

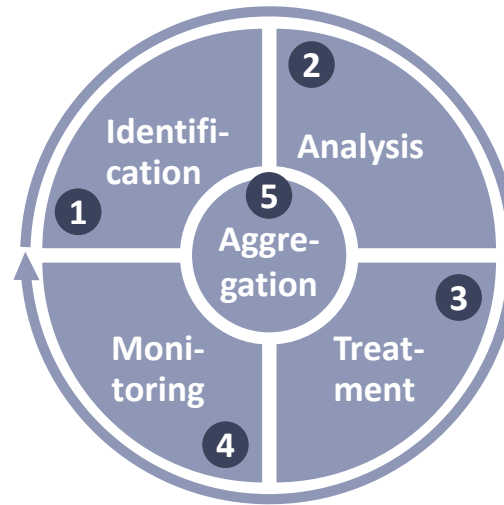
- Risk headcount overall +46% 2010-2012
- 90% have CRO in 2012 vs 65% in 2002
- Industry CRO comp up 50% from pre-crisis levels

Which ERM element would you most like to strengthen?



Attempt at a cross-sector ERM framework

Ten components of (enterprise) risk management



- A** Governance
- B** Dialogue
- C** Tools
- D** Culture
- E** Response

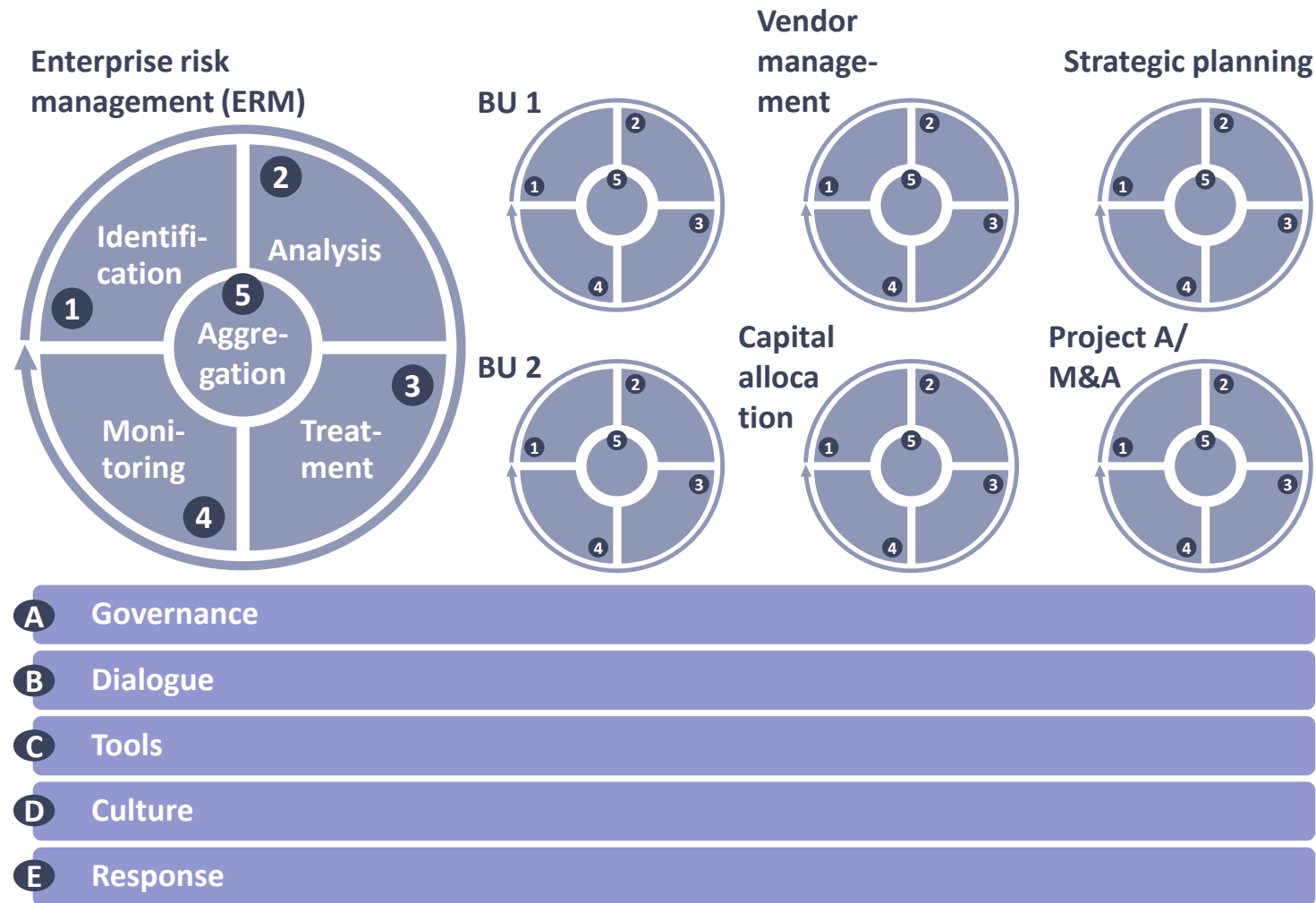
SOURCE: Balanced Risk Strategies; Pergler book manuscript under preparation

Drill down on key risk-generating processes

Natural resource extractor	Sovereign wealth fund
<ul style="list-style-type: none">▪ Health/safety in operations▪ Capex decisions<ul style="list-style-type: none">— Stage-gate process— Cycle management— Prioritization/portfolio▪ Stakeholder involvement<ul style="list-style-type: none">— License to operate— JV/partnering▪ Long-term sales contracts	<ul style="list-style-type: none">▪ Defining the risk-return mandate▪ Investment and divestment decisions<ul style="list-style-type: none">— Target evaluation— Timing the cycle▪ Influencing holdings' own risk taking

SOURCE: McKinsey Risk Practice (Cambridge June 2014 - Pergler); Balanced Risk Strategies, Ltd.

Core risk cycle multiplies across risk-generating processes (and risk types)



SOURCE: Balanced Risk Strategies; Pergler book manuscript under preparation

ERM from dentist to safari guide



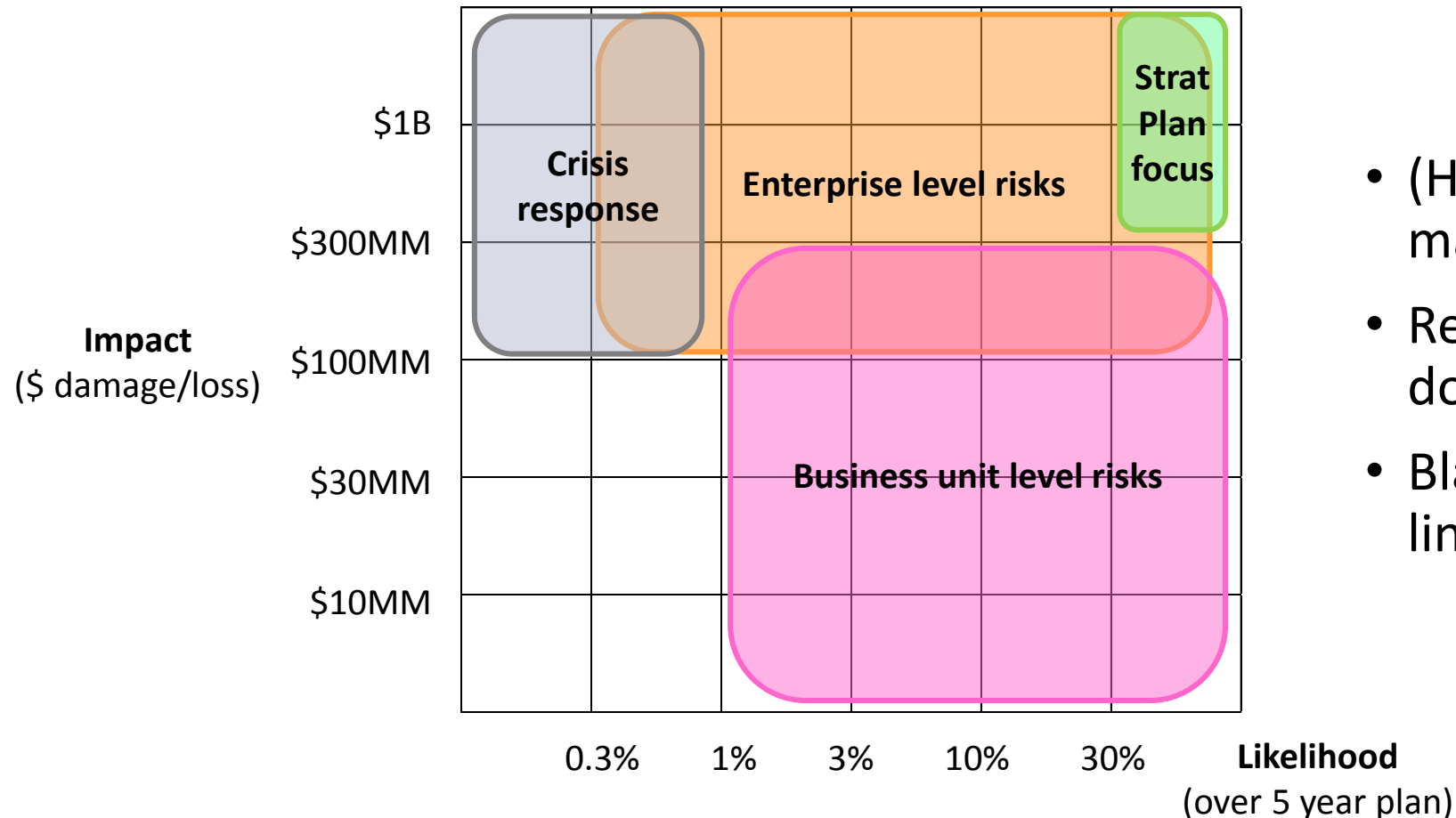
- Safety, compliance, response
- Backwards looking
- Necessary but no fun



- Tradeoffs, value stewardship
- Forward-looking enabler

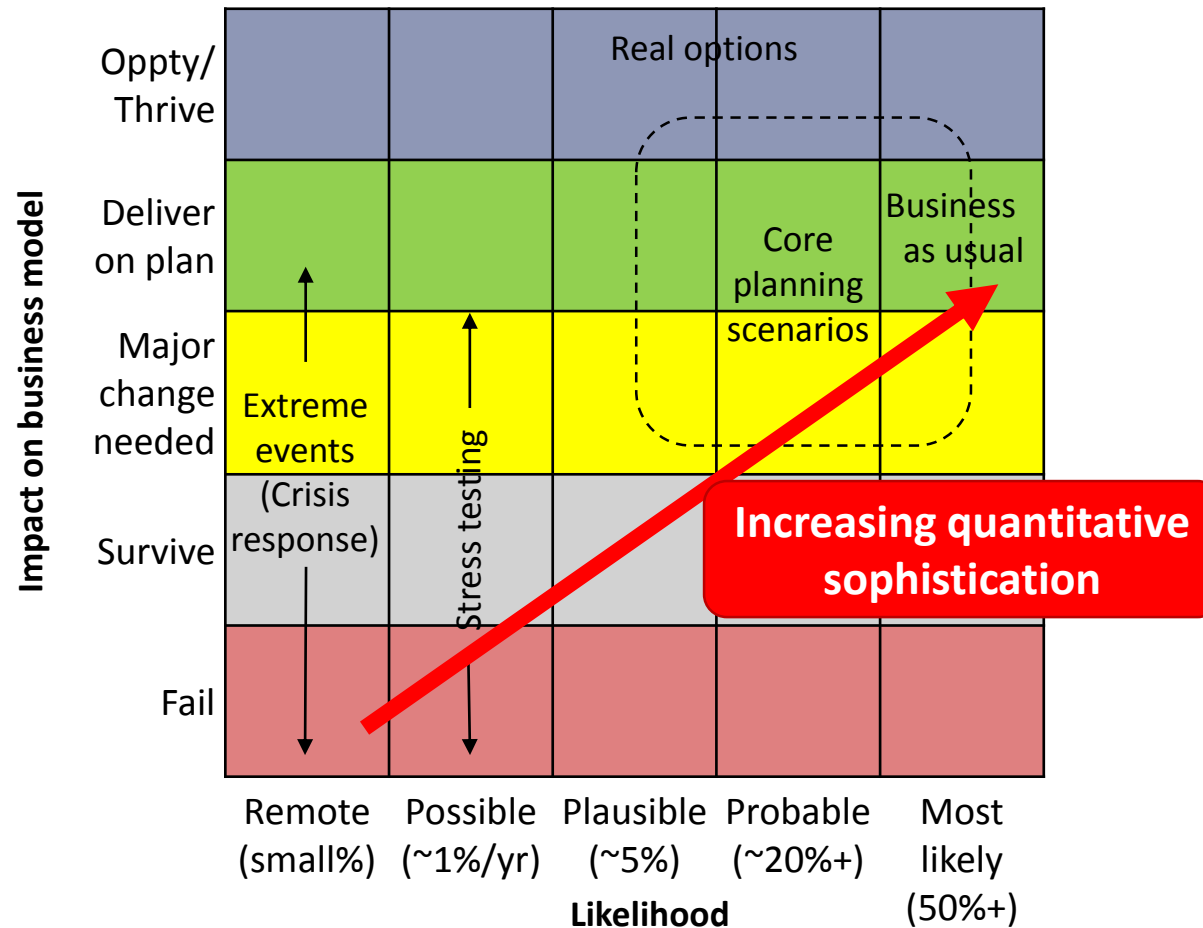
SOURCE (RHS): Martin's trip down the Zambezi river, 2003.

“Semi-quantitative” risk assessment and prioritization



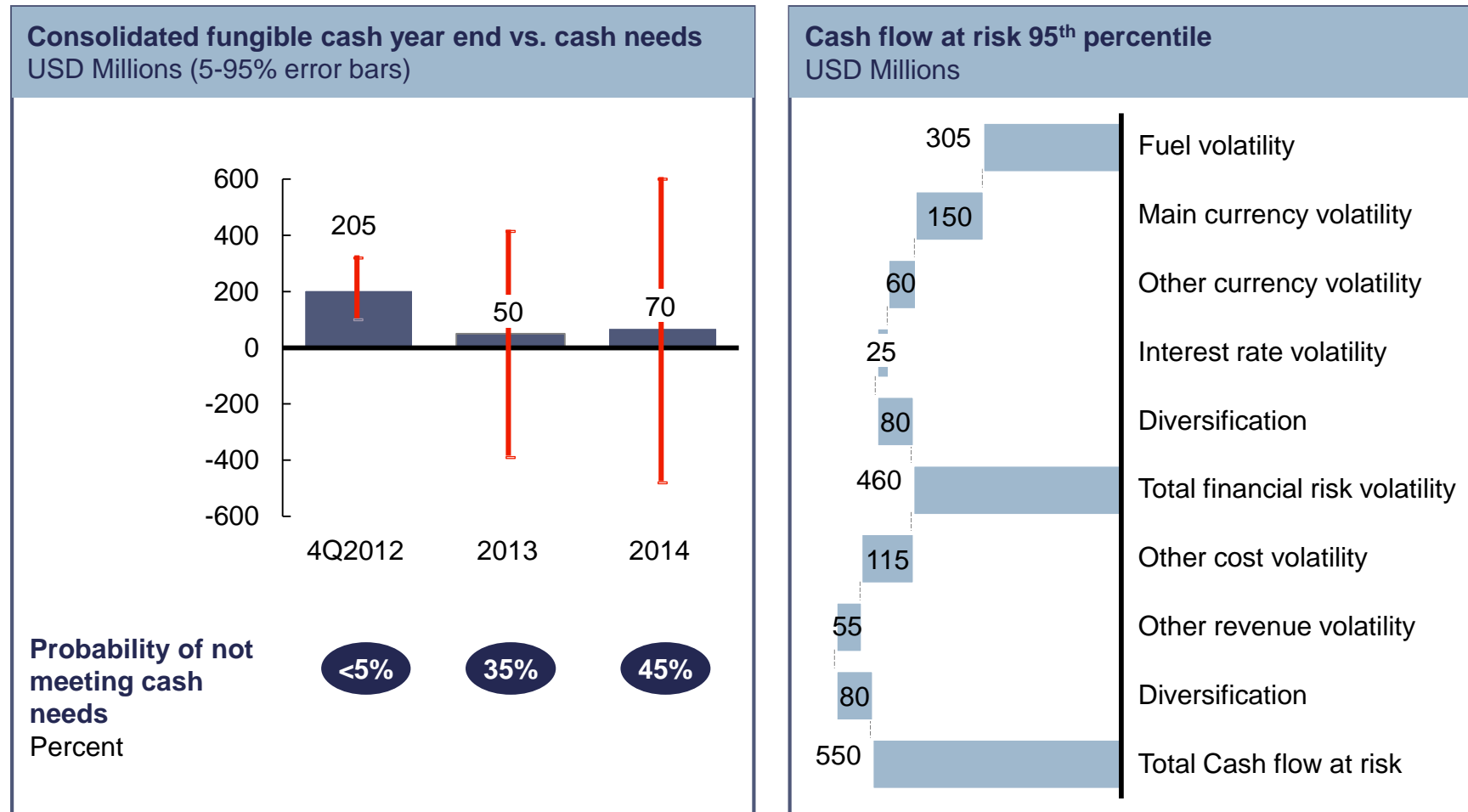
- (Half)orders of magnitude, not $\pm 10\%$
- Recognize how much we don't know
- Black Swans/fat tails are lines in the heatmap

Risk heat-maps inhabit same ecosystem as stress testing, scenario planning, real options



Source: Book manuscript under preparation (Pergler)

Example: Cash flow at risk model

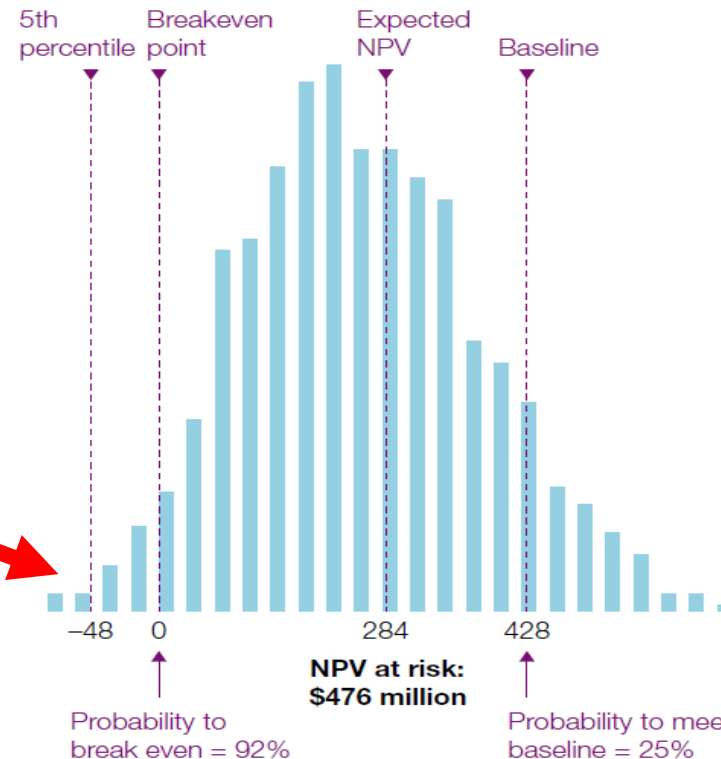


- Real **airline** example, built in Treasury
- Covers core Treasury risks (fx, fuel, IR)
- ...but sees through the business (**passthrough on fare and demand elasticity**)
- Used to consider **financing and market strategy**

SOURCE: Sanitized client example (McKinsey: Cambridge 2014 and RWP #50 - Pergler)

Example: Risk-adjusted returns of capital projects in oil & gas

Net-present-value (NPV) distribution, \$ million



No fat tails!

- + Conditional on assumptions
- Dangerously easy to think they don't matter! P5 may not be a real P5...

Key metrics

	Baseline metrics	Risk-corrected metrics
Capital expenditure, \$ million	1,974	2,221
NPV, \$ million	428	284
Internal rate of return, %	18.5	16.8
Payback period, years	10	10.9
Return on capital	NPV/I, ¹ %	33
	RAROC, ² %	16

Key decomposition

Key risks	NPV at risk, \$ million
Capital-expenditure overrun	347
Crude price	310
Execution delay	35

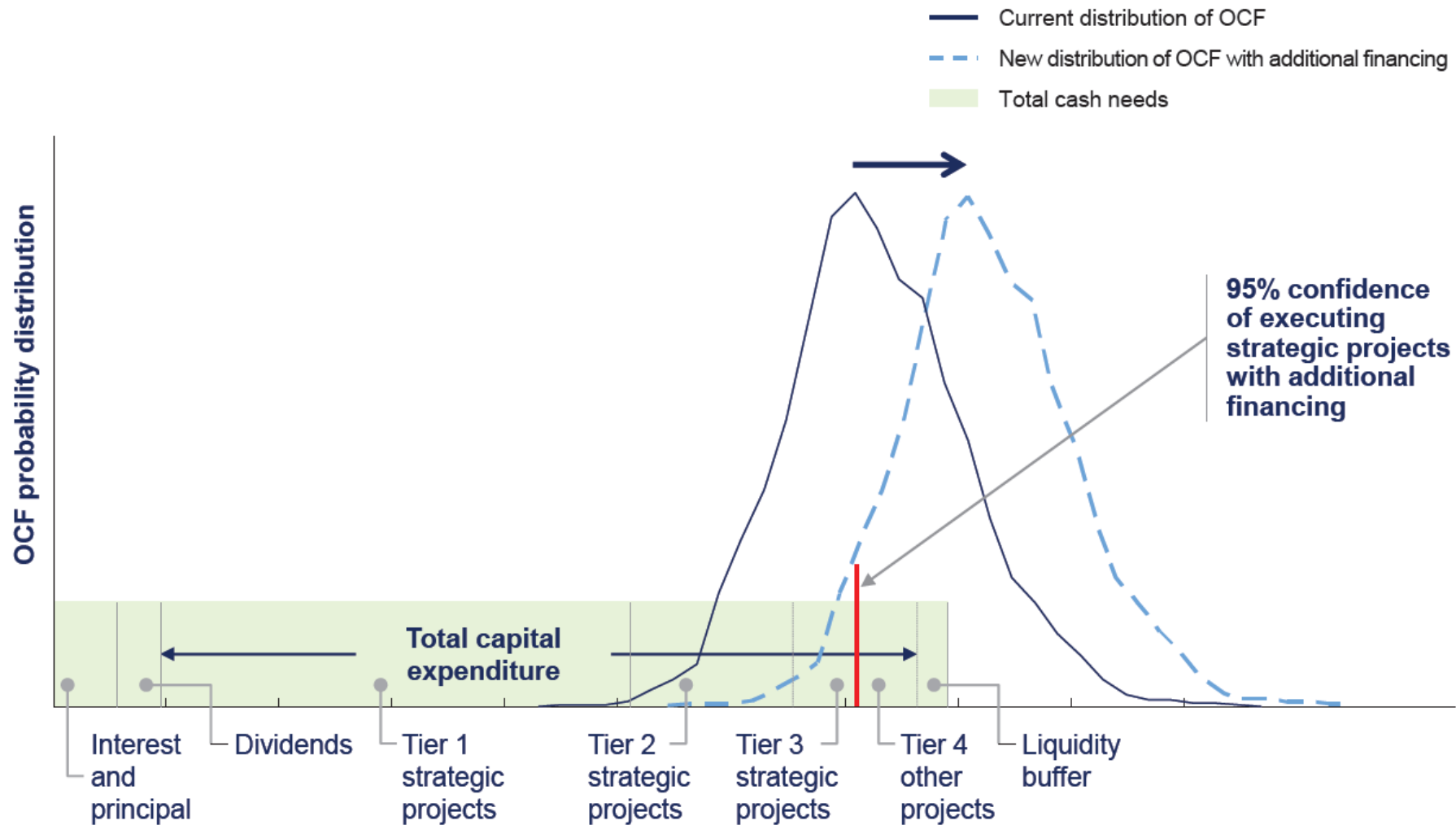
¹ Ratio of NPV to investment.

² Risk-adjusted return on capital = (expected NPV)/(planned investment + NPV at risk).

Example: Quants focused on decisions at hand

Cumulative operating cash flow (OCF)

2010–14, \$ billion



Source: Sanitized client example (RWP #50)

It takes a ~~village~~ army...



Board: Fiduciary responsibility

CEO: Chief integrator (risk and everything else)



CFO:
Steward of equity capital



Treasurer:
Steward of cash/liquidity



HS&E:
Steward of employee and society health



CRO (if exists):
Risk silo-breaker, coach



Everyone: Good risk culture (mindsets and behaviors)

Different visions for central ERM function

Managerial independence	Aggregated insight	Checks and balances	Active risk ownership
<ul style="list-style-type: none"> ▪ Line management owns risks ▪ Risk optimization effected by a strong business and risk culture ▪ No central risk function/on-demand support only 	<ul style="list-style-type: none"> ▪ Line management owns risks ▪ Small central risk team aggregates risk insight, integrates across enterprise ▪ Risk optimization achieved by line with support from central risk team 	<ul style="list-style-type: none"> ▪ Line management owns risks ▪ Central risk team led by CRO with a seat at the table, acting as counterweight for important strategic decisions ▪ CRO acts as thought partner to business heads 	<ul style="list-style-type: none"> ▪ Risk function owns and actively monitors and manages certain key risks centrally (e.g., FX hedging, trading/credit limits) ▪ Business heads get approval on other risk strategies from CRO

Key drivers of choice: risk complexity and confidence in existing risk processes and culture

Examples of percolation

Smaller banks (Deloitte)

- 70% will spend more on RM (vs 40% large) in next 3 years
- 81% have CRO (vs 97% large)

Major retailer

- Move to reactive to proactive
- Threats → strategic risks
- Board member from fin inst asking questions

Family-owned conglomerate

- Professionalize the business
- Choose bets, allocate risk

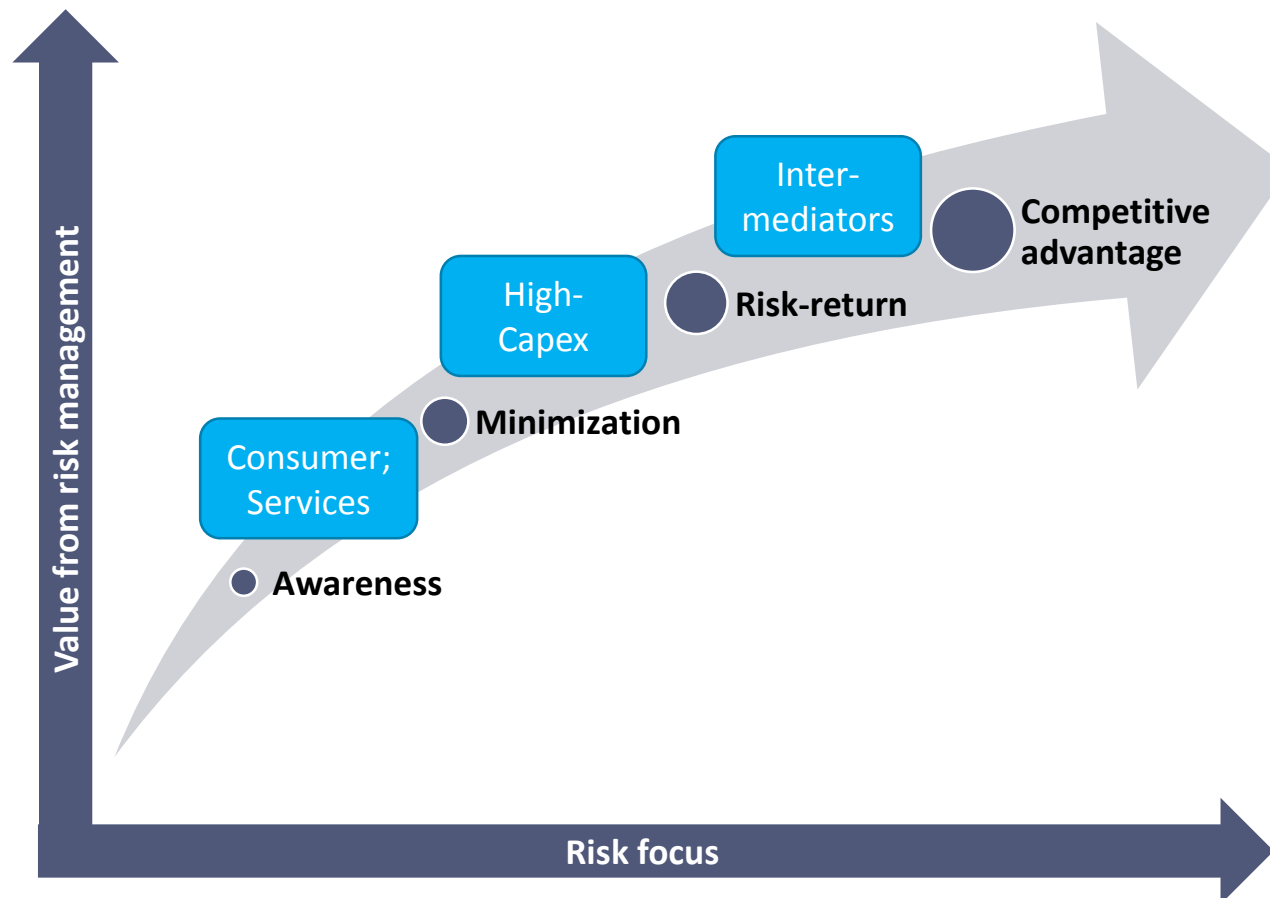
Oil drilling services and equipment

- Macro stress test
- Negotiate risk in contracts

Airline

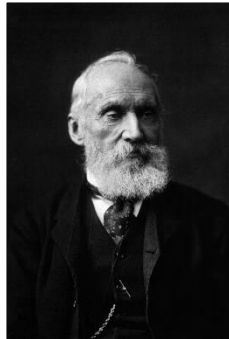
- Hedging → margin management
- Probabilistic risk model
- Support strategic choices

Different maturity levels / goals



- Lots of “risk management **fatigue**” (dentist, not safari guide!)...
- ...So moving along needs a **business case**
- Less about industry sector or size than “keeping up with the Joneses” in company’s **ecosystem** (supply chain, competitors, ...)

A warning from the history of science



"There is **nothing new to be discovered** in physics now. All that remains is more and more precise measurement" - Lord Kelvin 1900



Gödel Incompleteness Theorems (1931): nontrivial axiomatic systems are **inherently inconsistent or incomplete**

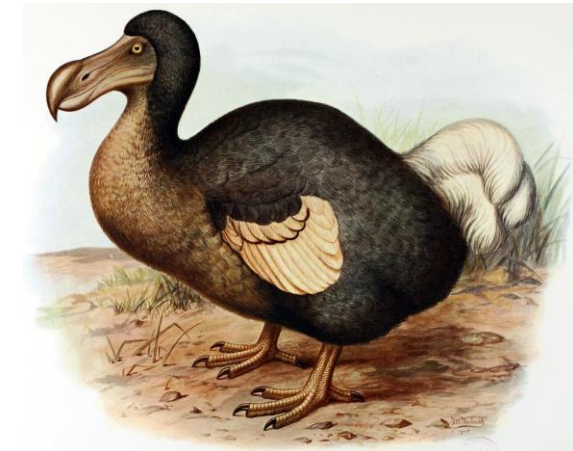


Heisenberg Uncertainty Principle (1927)/Observer effect: Complex systems **cannot be fully understood without affecting them**

The rash prediction I promised...

- Risk management, ERM specifically, fragmenting into
 - Regulatory/compliance/stakeholder management
 - Decisions under uncertainty
 - Good risk culture and risk-informed processes
- Informed humble dialogue rather than knowing the unknown (unknowable!)

CRO (and ERM)



- Endangered in 10 years...
- ...**extinct** in 20
- “Good stop gap solution for poor risk capabilities in turn-of-the-century capitalism” – pundits in 2050

Comments or questions?



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www.balrisk.com (papers, articles, etc.)