

Managing Economic Uncertainty: Enterprise Risk Management for a Volatile World

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Note: the content of this presentation reflects the view of the presenter. It should not be interpreted to be the view of his employer or his academic affiliations. All examples and displays are illustrative only

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“ Novel risks arise from unforeseen events, from complex combinations of apparently routine events, and from apparently familiar events occurring at unprecedented scale and speed.

Source: Novel Risks, Robert S. Kaplan, Herman B. “Dutch” Leonard, Anette Mikes, Harvard Business School Working Paper 20-094



1. «unknowns»

2. complex combinations of “knowns”

3. high velocity of “knowns”

Manage Economic Uncertainty – introductory comments

Imagine diverse potential future paths, and connect people to assess and address risks

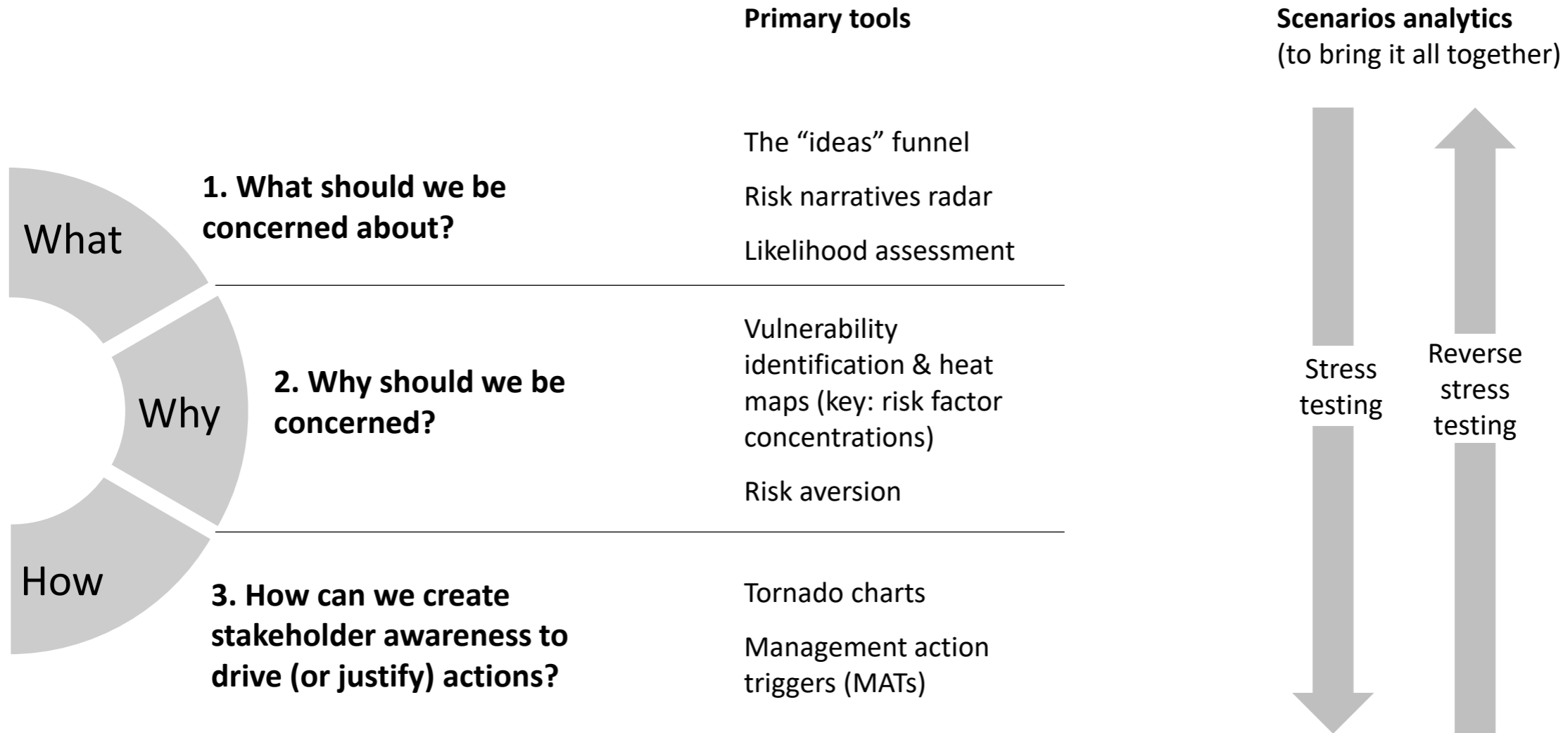
Some challenges we face

- **“This was a black swan event”** – whilst they may exist, they seem unreasonably often used as an “excuse”
- **“This time is different”** – non-stationary time series / non-ergodic processes increase uncertainty
- **“Predictable events that though materialized at the same time and too fast”** – an increasingly interconnected, complex and high velocity world, facilitated by technology

How could we approach this?

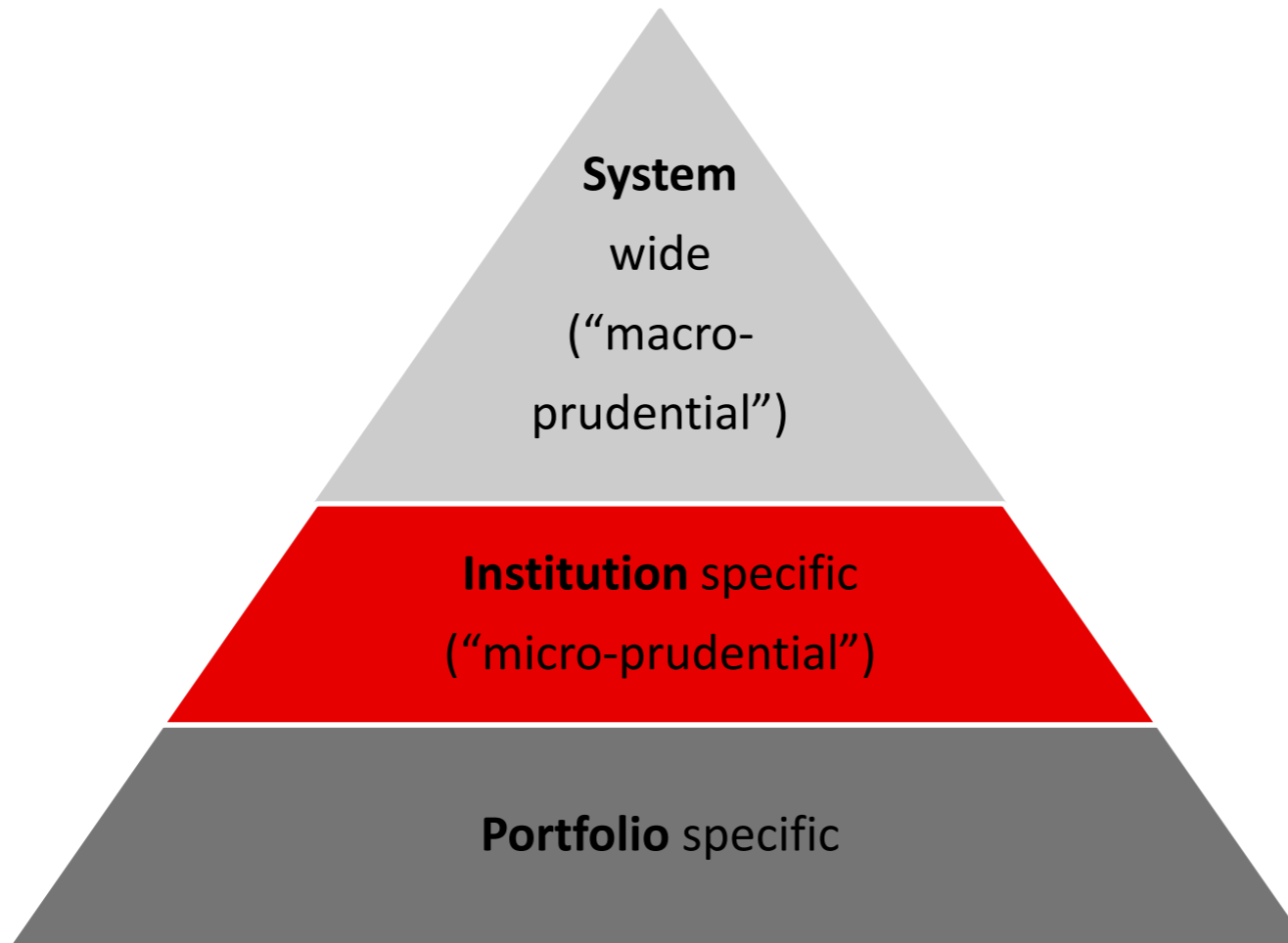
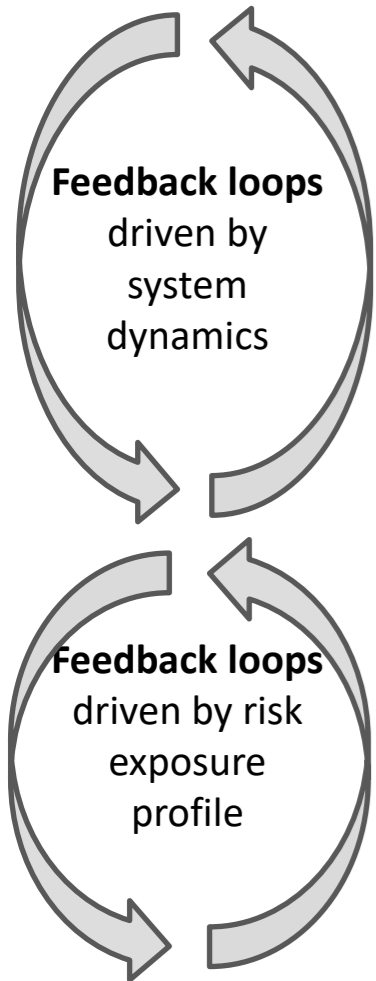
1. Think broadly about **external risk narratives**
2. Utilize **scenarios thinking** and agile **planning**
3. Identify **cognitive biases**
4. Balance **short-term tactical decisions** with **long-term vision**
5. Reaction functions and **ability to navigate adverse situations**: operate under incomplete information and time pressure

Context-versatile tools – an initial map



How is this all relevant? Financial **institution** perspective

Financial Institution View



Reverse stress test type of question

"What interlinkages in the financial system may cause the system to break down, e.g. such that transactions can no longer be executed?"

"What is the most likely reason our bank becomes illiquid?"

"What does it take for a transaction X to lead to a loss > EUR 10mn?"

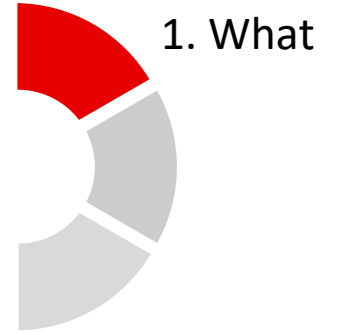
What should we be concerned about – risk **narratives** in the room

Narratives driven approach is key to de-silo across risk categories (“holistic risk management”)



Mentimeter survey question:

Keywords on “what are you worried about?”



Results from the Mentimeter
live survey in the room

Facilitates scenarios thinking

Aggregation level drives
perspective

Key challenges:

- Some risks are difficult to parametrize
- Modeling of joint dependencies

Wisdom of the crowds should be uncoordinated to maximize information content

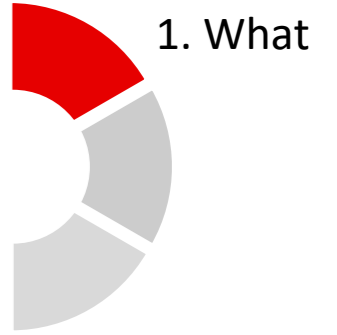
What should we be concerned about – subjective likelihood

Narratives driven approach is key to de-silo across risk categories (“holistic risk management”)



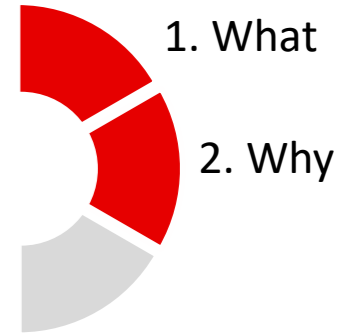
Mentimeter survey question:

What likelihood do you assign to the statement: “during 2024 China invades Taiwan or attempts to block sea traffic via blockades or material military maneuvers.



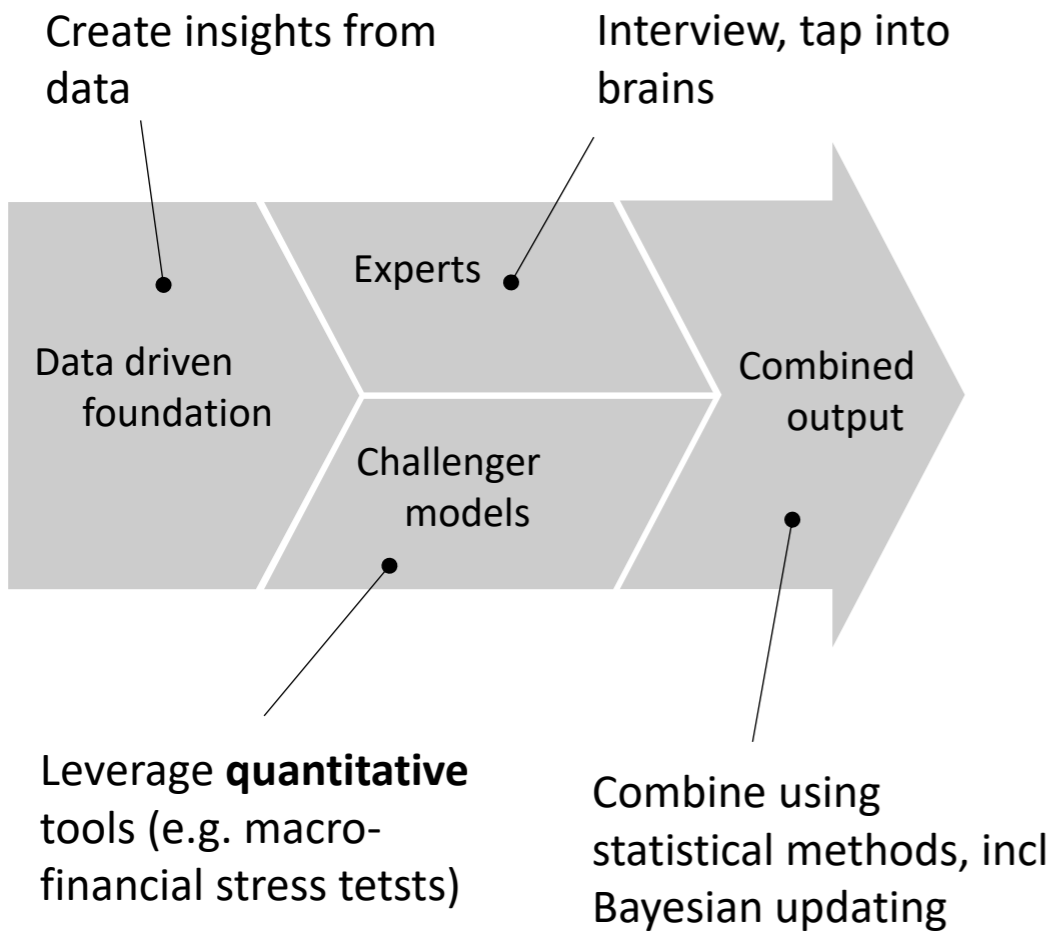
Results from the Mentimeter
live survey in the room

Two stage ideas funnel



Start with a data driven approach – complement with expert views

Sequential process



Distill information



→ Apply “Occam’s Razor”: remove unnecessary over-parametrization

Vulnerability identification – heat maps

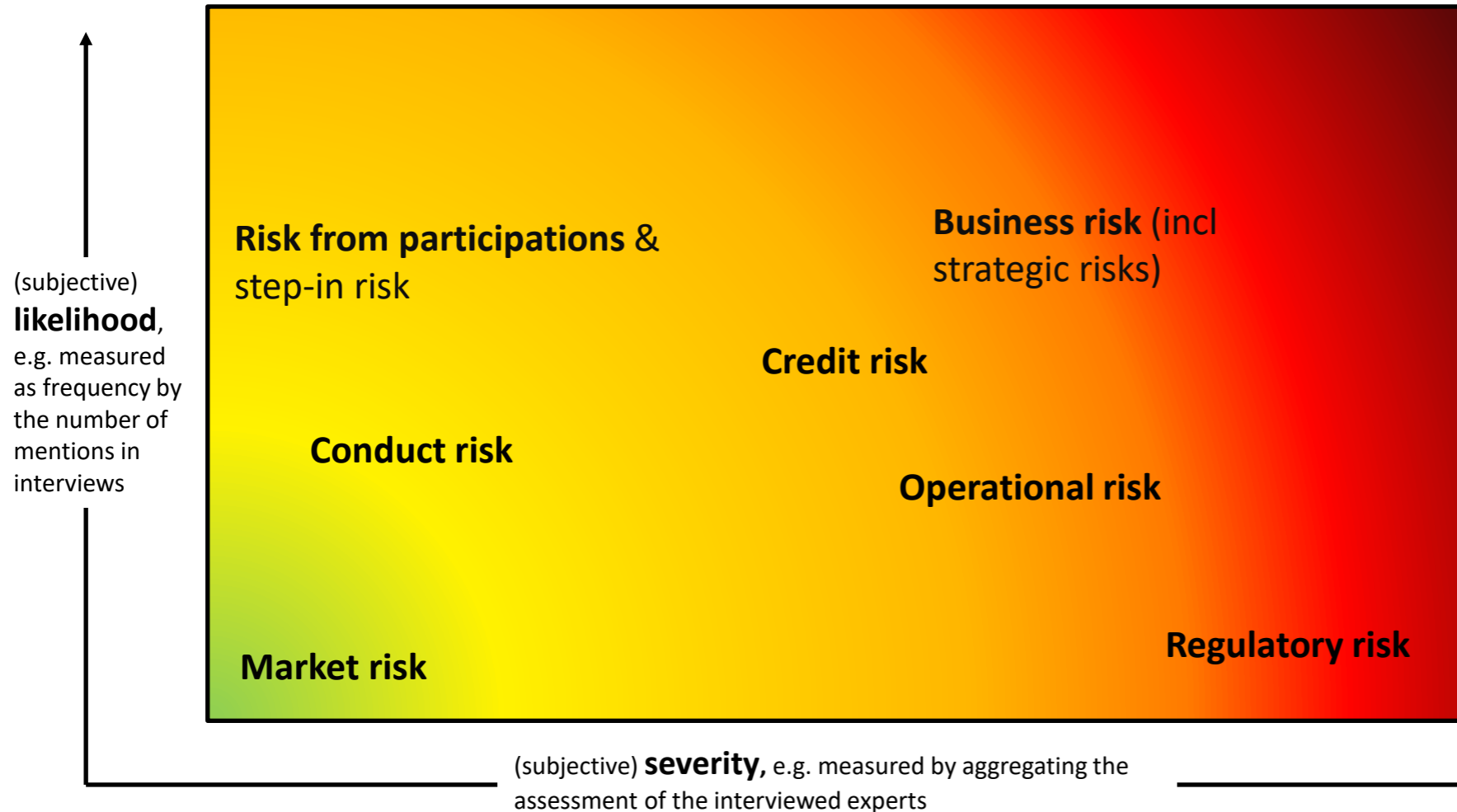
How does our exposure profile look? Distill visually via heat maps



2. Why

Risk stripe heatmap visualization

Illustrative example



Notes:

- Reputational risks may be a knock-example, an Operational risk on effect of, for and/or Conduct risk incident.
- Operational incidents may give rise to conduct risk.
- Regulatory risk in this context mainly describes the ability to implement regulatory requirements timely and effectively.
- Liquidity risks may be primarily seen as a consequential risk of other vulnerabilities.

The issue with maps: representation and perspectives matter



2. Why



Mentimeter survey question:

By which factor does Africa outsize Greenland? What were your estimates?

Results from the Mentimeter live survey in the room

A map that (most of us) are used to from European schooling system



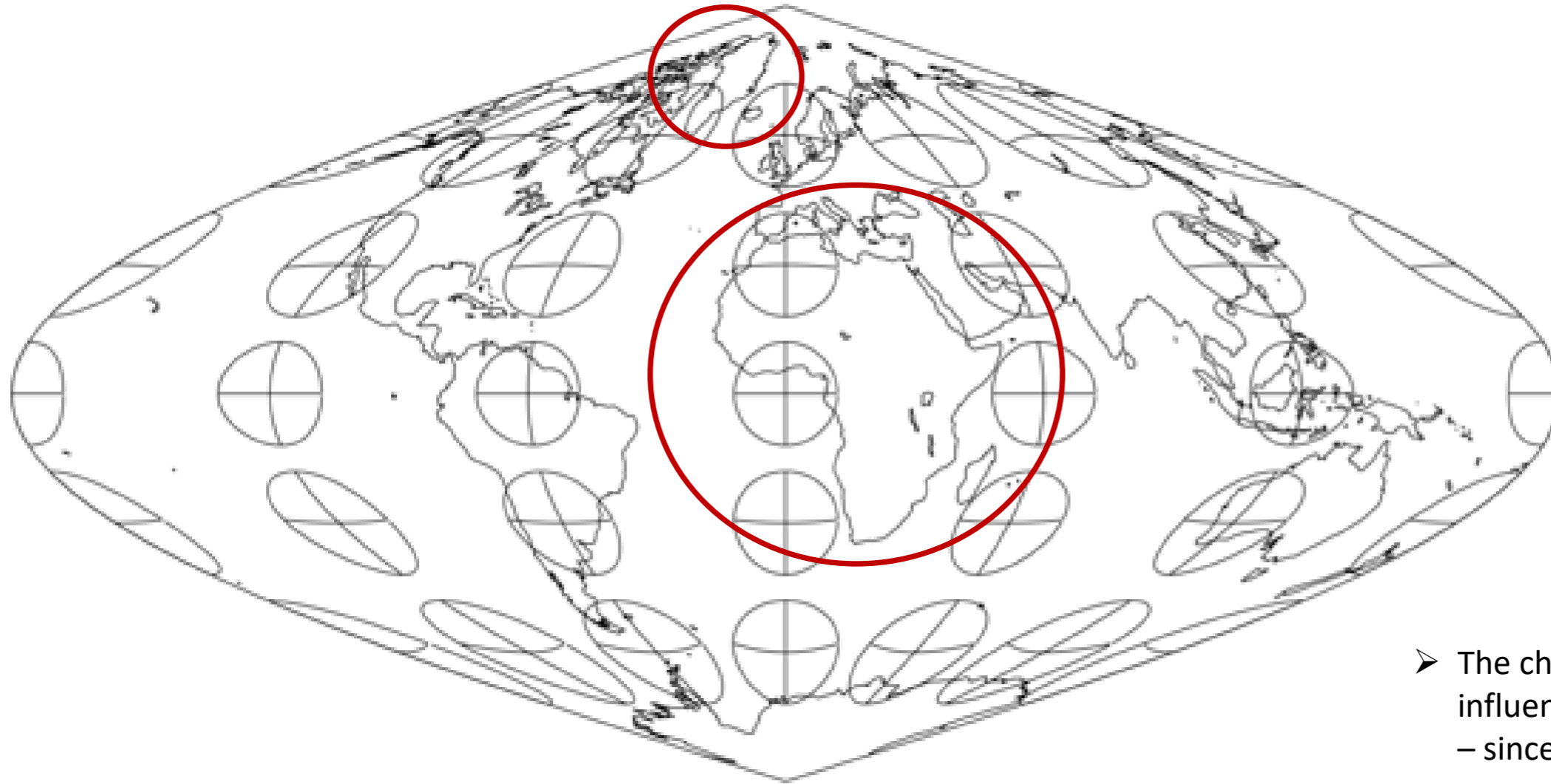
→ The map is not the territory

→ Alternative maps offer different perspectives

The issue with maps: alternative maps – different perspectives



2. Why



About
14.5x

- The choice of the map influences the outcome – since it drives perception

See also: [Large-Scale Distortions in Map Projections](#), 2007, David M. Goldberg & [J. Richard Gott III](#), 2007, V42 N4.

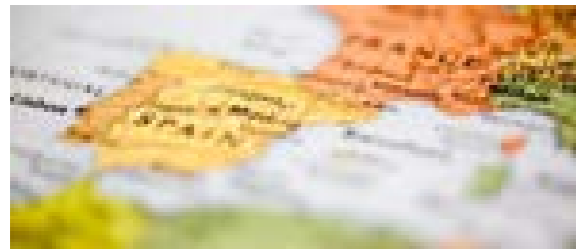
Aggregation level drives results – a “maps” related example

“How long is the coast line” → the answer depends on how closely you look at it

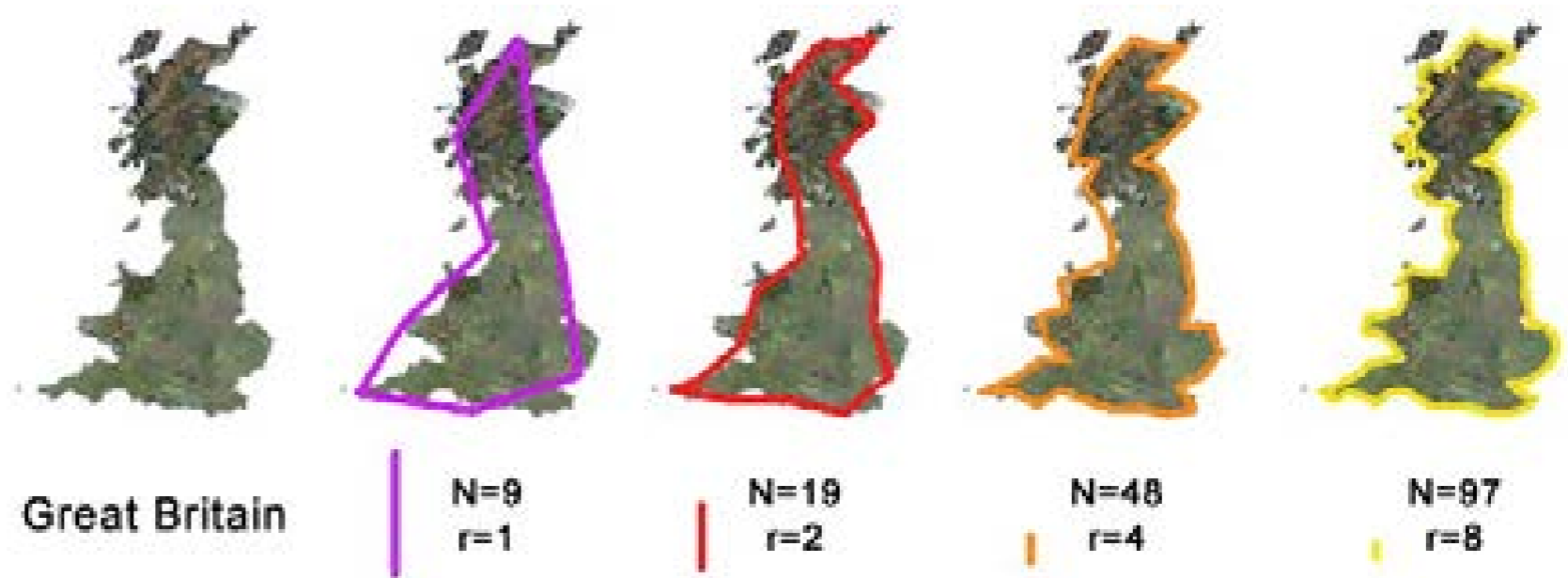


2. Why

- How long is the frontier between Spain and Portugal?



- Length of the British west coast. Result materially depends on level of abstraction; increases materially with finer granularity



r is the magnification factor (the inverse of the ruler length)

- Mathematician Lewis Fry Richardson (1881–1953) investigated the impact of border length between two countries on probability of war

Source of above: Fractal Dimension of Coastlines, fractalfoundation.org, [Fractal Foundation Online Course - Chapter 1 - FRACTALS IN NATURE](#), retrieved on 10/04/2024

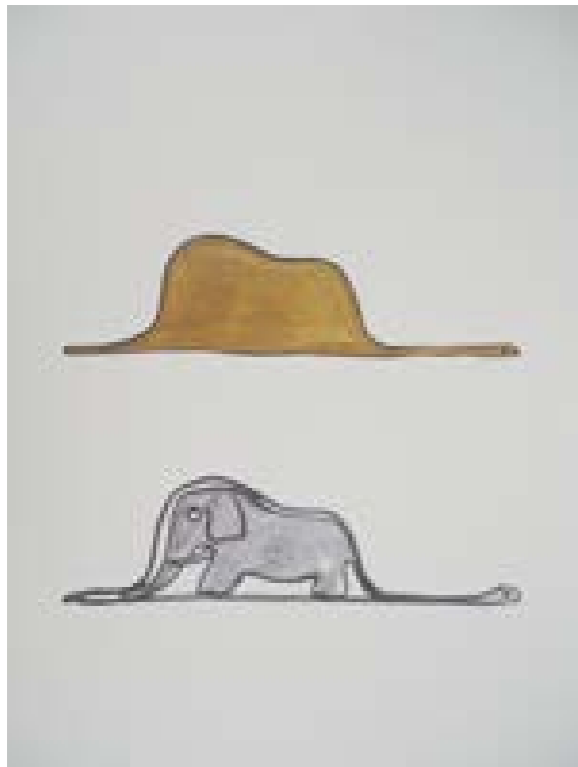
Abstraction is required to simplify reality in the appropriate ways

The simplification of complexity depends critically on the target audience and the intended purpose

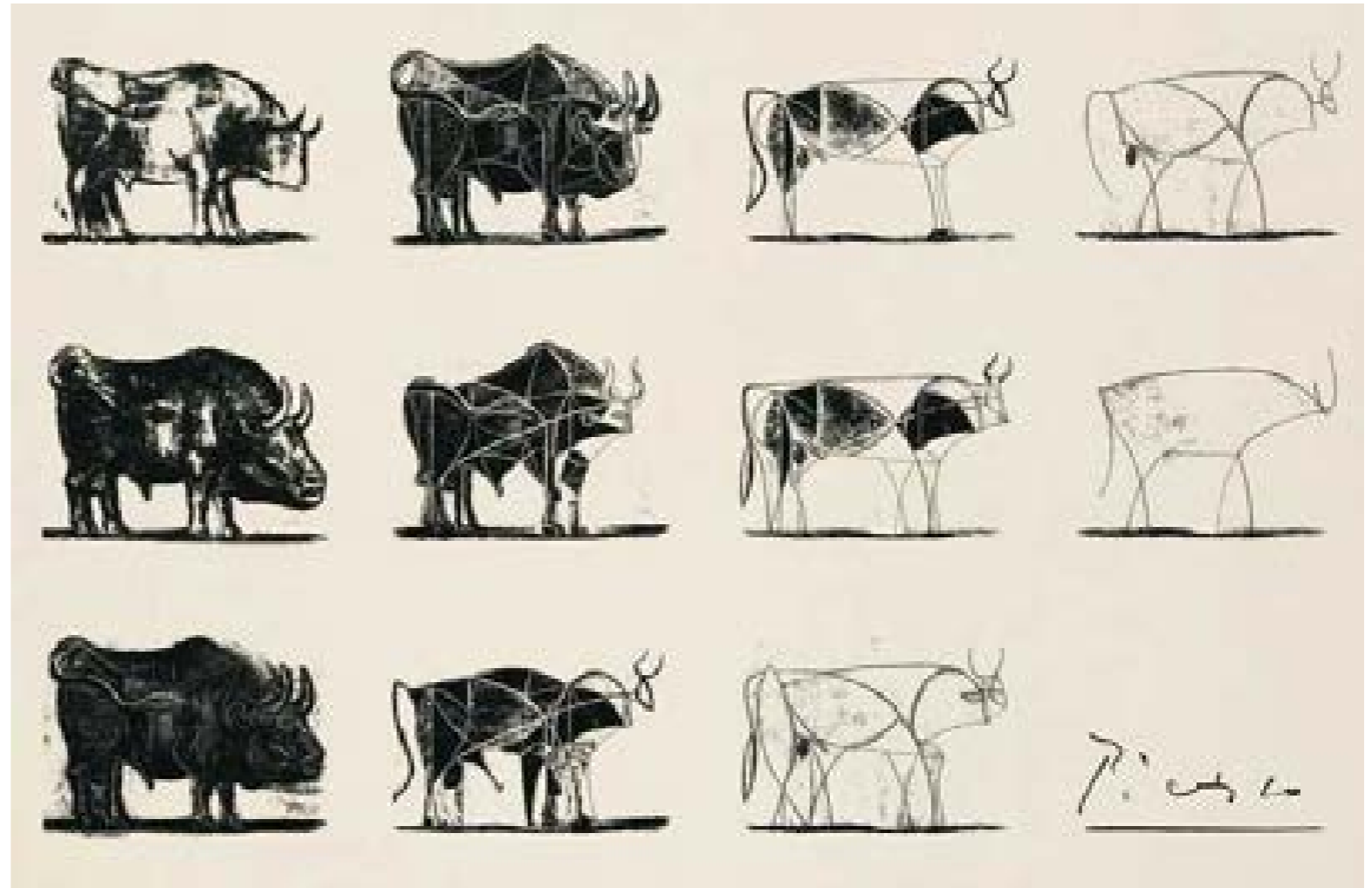


2. Why

Some artistic examples....



Le Petit Prince, Antoine de Saint-Exupéry



Pablo Picasso, der Stier (Le taureau), 1946

Why should we be concerned – risk aversion

Gamify to understand preferences for risk taking and risk aversion



2. Why

A fictitious Casino (in St. Petersburg, given the historical backdrop, not the current geopolitical situation)

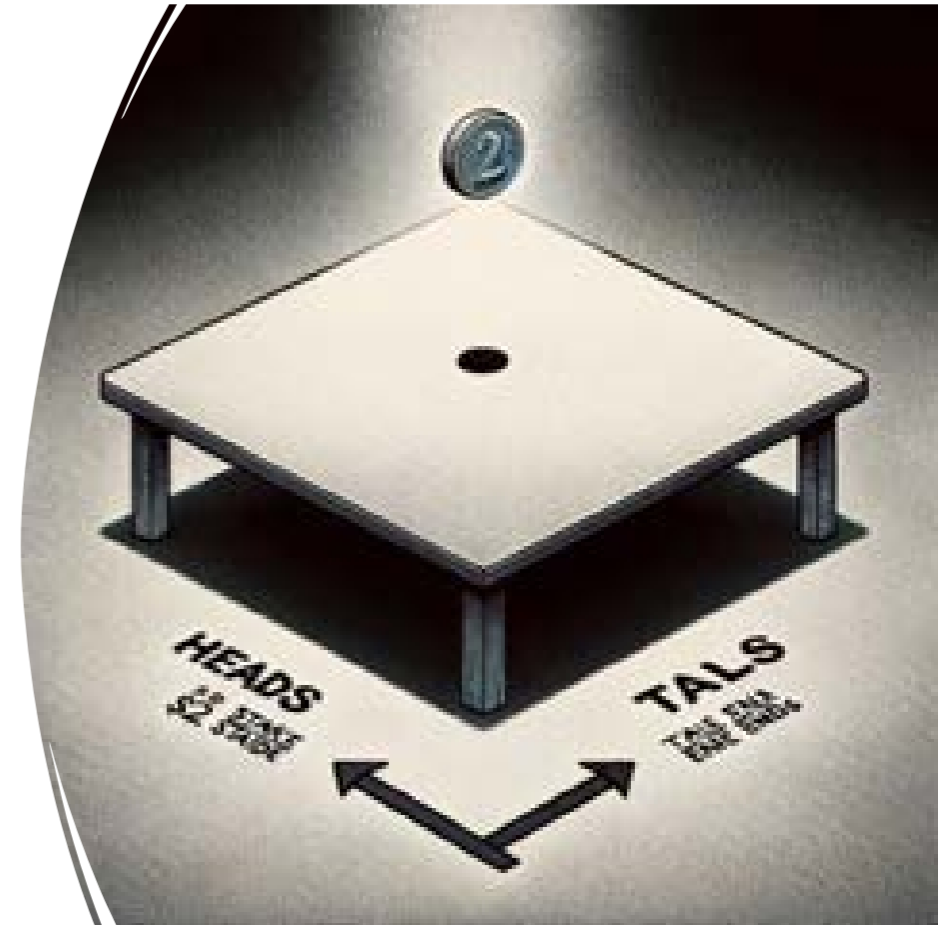
- In each round, we throw a fair coin; starting pay out is 2 dollars
- For every round that the coin shows tails, the amount is doubled
- When heads appears for first time, game ends, last determined amount is paid



Mentimeter survey question:

How much would you be willing to pay at most (reservation price), in order to participate in this game?

Results from the Mentimeter live survey in the room



Why should we be concerned – risk aversion

What is a mathematically correct answer?

# coin tosses	Probability	Payoff	Expected payoff
1	1/2	2	1
2	1/4	4	1
3	1/8	8	1
4	1/16	16	1
5	1/32	32	1
6	1/64	64	1
...
Expected value			∞

St. Petersburg paradox: a situation where a game has an infinite expected monetary value, yet most people are only willing to pay a small finite amount to play it, highlighting a **gap between expected value and real-world decision-making**

- Typically, willingness to pay remains low due to (1) risk aversion and (2) finite wealth ('lack of deep pockets')



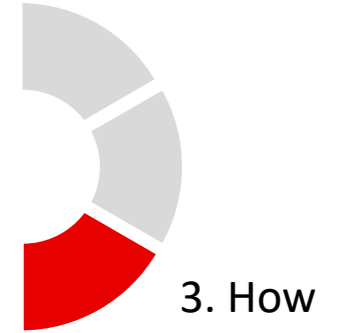
2. Why



The problem was invented by Nicolas Bernoulli who stated it in a letter to Pierre Raymond de Montmort on September 9, 1713

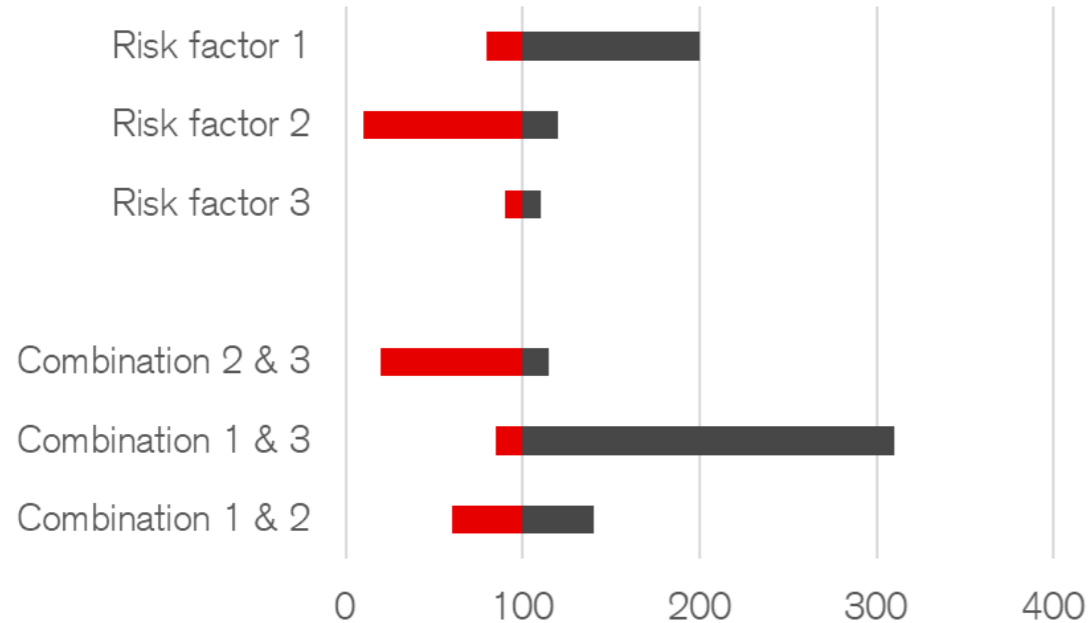
Stakeholder engagement – tornado charts & management actions

Distill visually via heat maps, possibly on different aggregation levels



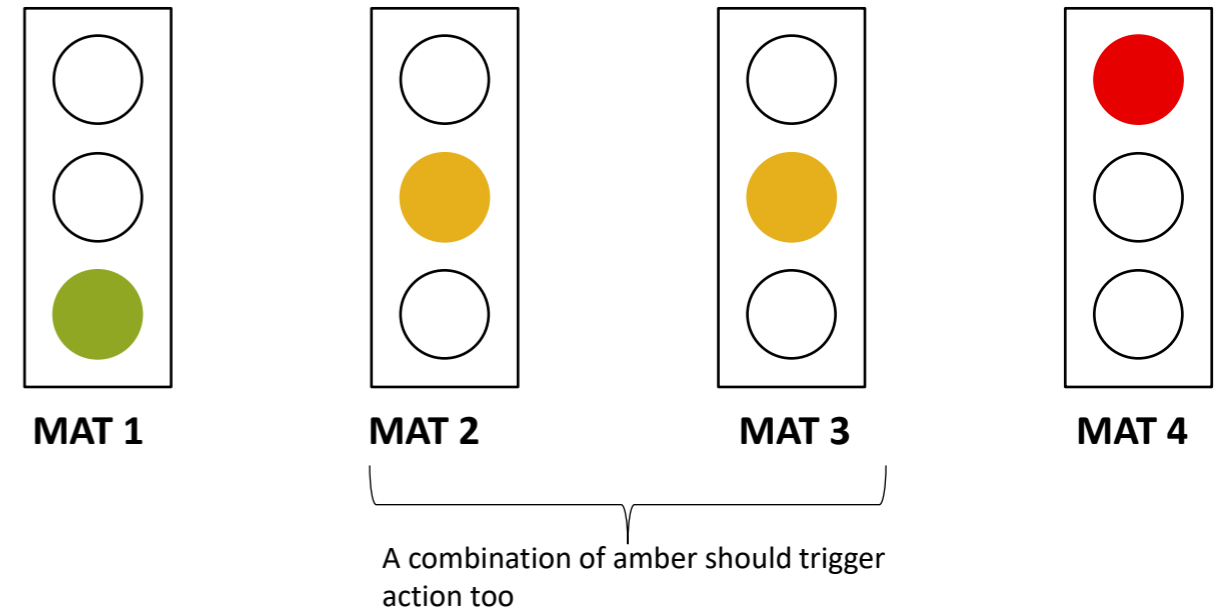
Tornado charts

- Include downside and upside
- Shows uncertainty ranges



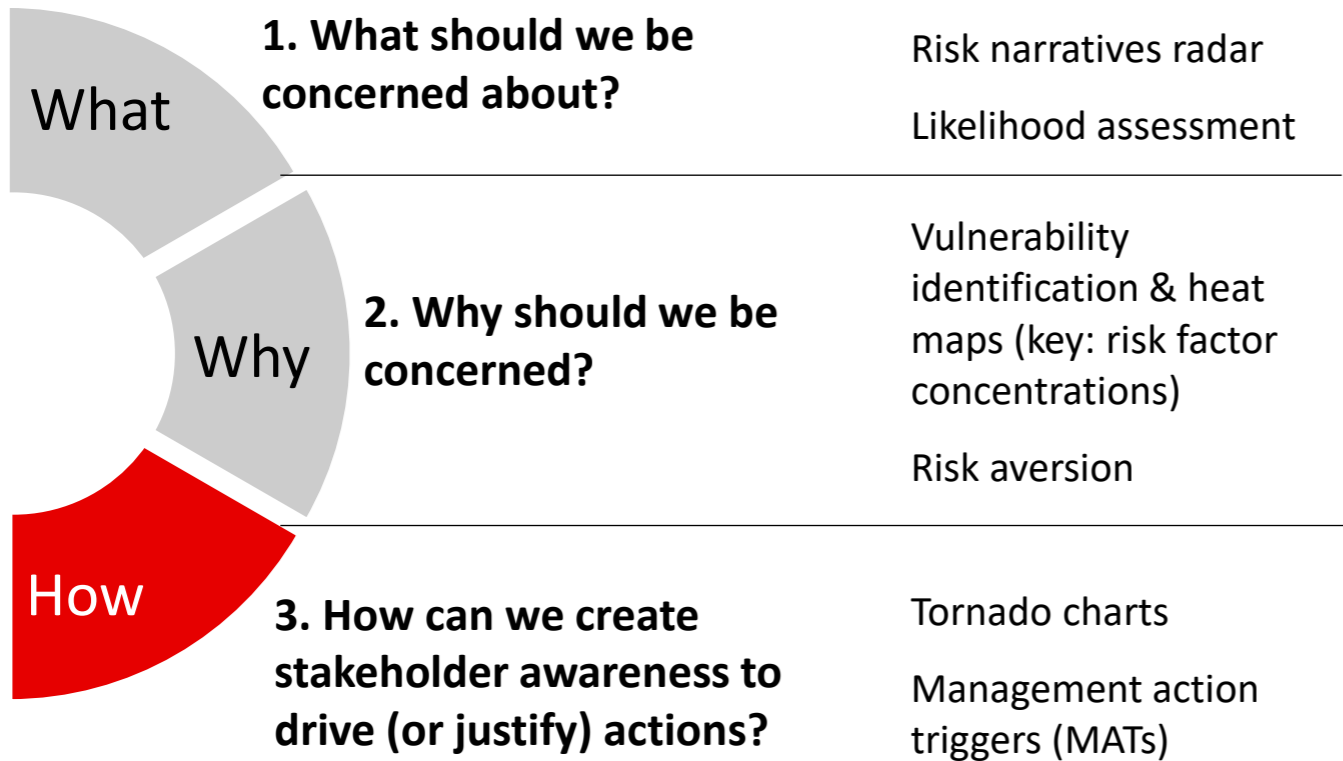
Management action triggers (MATs)

- Define ex-ante when to snap into action, define trigger variables and thresholds (e.g. amber vs red)
- Define based on quantifiable metrics (much easier) and hard-to-observe / qualitative / proxy criteria (much more challenging)



→ Define **reaction functions** & execution **authorities**

Concluding thoughts



Key take-aways

- Spark the debate via graphical tools
 - thoughtful disagreement is a good outcome
 - wisdom of the crowds should be uncoordinated to maximize information content
- Exposure profile transparency key to understand management focus areas
- Consciously create maps as they may introduce biases
- Some risks are good: gauge risk aversion, and illuminate also upside not only downside
- Resist the temptation to run from one short-term narrative to the next, balance with long-term perspective
- Pre-plan, define management action triggers, and reaction functions

Thank you

Any questions?

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