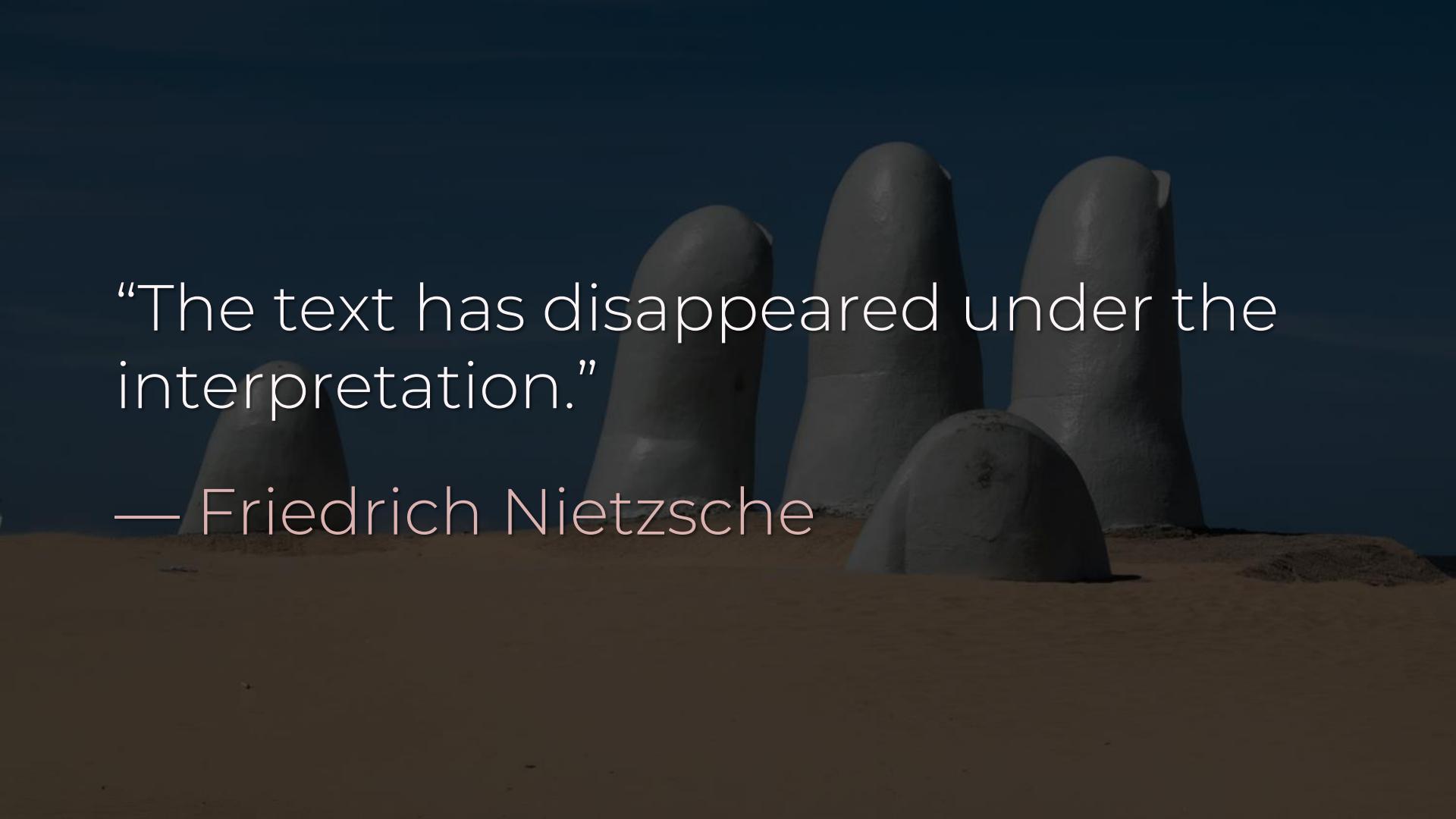


Risk Quicksand in Information Security

Kelly Shortridge (@swagitda_)
Art into Science 2019

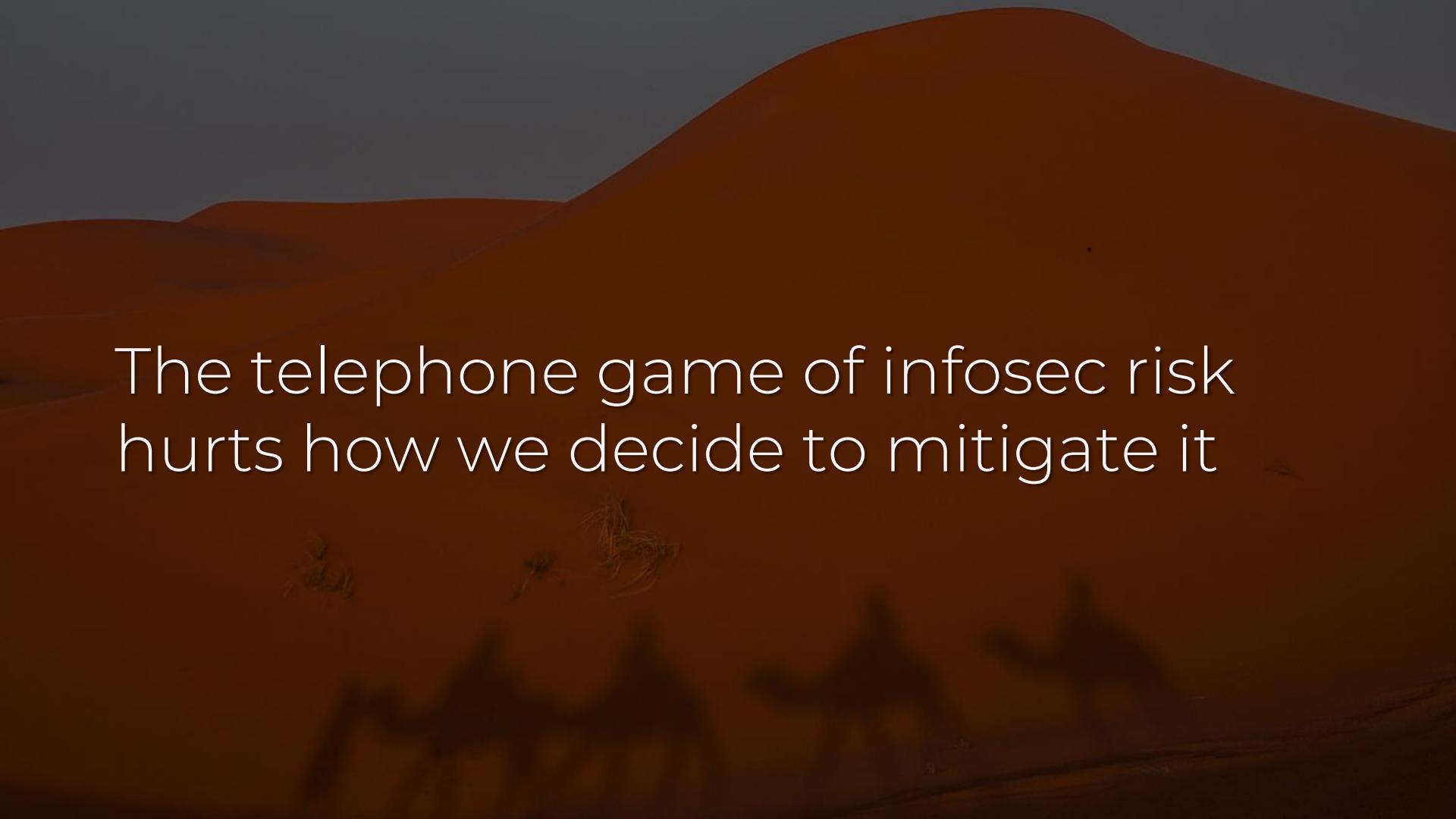
A photograph of a ginger and white cat standing on a rocky, textured surface. The cat is facing the camera, with its head slightly turned to the right. Its fur is a mix of orange and white stripes. The background is blurred, showing more of the same rocky terrain under a hazy sky.

Hi, I'm Kelly

A dark, atmospheric landscape featuring several large, rounded, grey rock formations or hills silhouetted against a bright sky.

“The text has disappeared under the interpretation.”

— Friedrich Nietzsche



The telephone game of infosec risk
hurts how we decide to mitigate it

A dark, atmospheric landscape featuring a dead tree in the foreground and red rock formations in the background under a purple sky.

Full implications of transitions & feedback are not properly uncovered

A close-up photograph of dry, cracked earth under bright sunlight. The ground is a dark brown color with numerous deep, irregular cracks of varying sizes, creating a pattern of polygons. The lighting highlights the texture of the dried soil, emphasizing the severity of the drought. The overall tone is somber and reflects themes of environmental stress and uncertainty.

Uncertainty is seen as a threat, drying up our range of potential responses

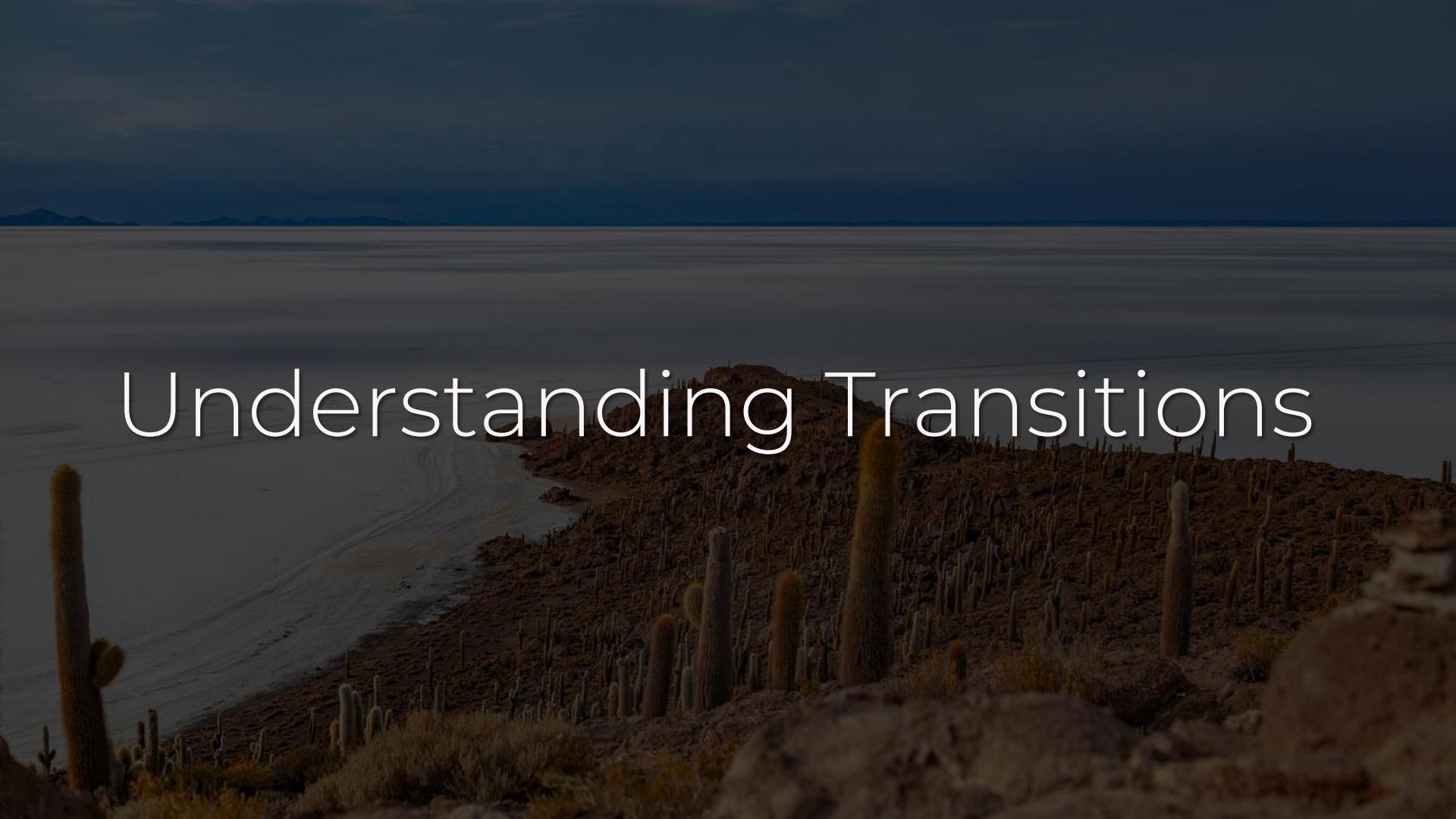
Bias influences how people interpret risk, but we aren't countering it



How can we avoid sinking & ensure
infosec risk is properly considered?

- 
1. Understanding transitions
 2. Uncertainty management
 3. Communicating risk

Understanding Transitions



What is the riskiness of implementing
a mitigation?

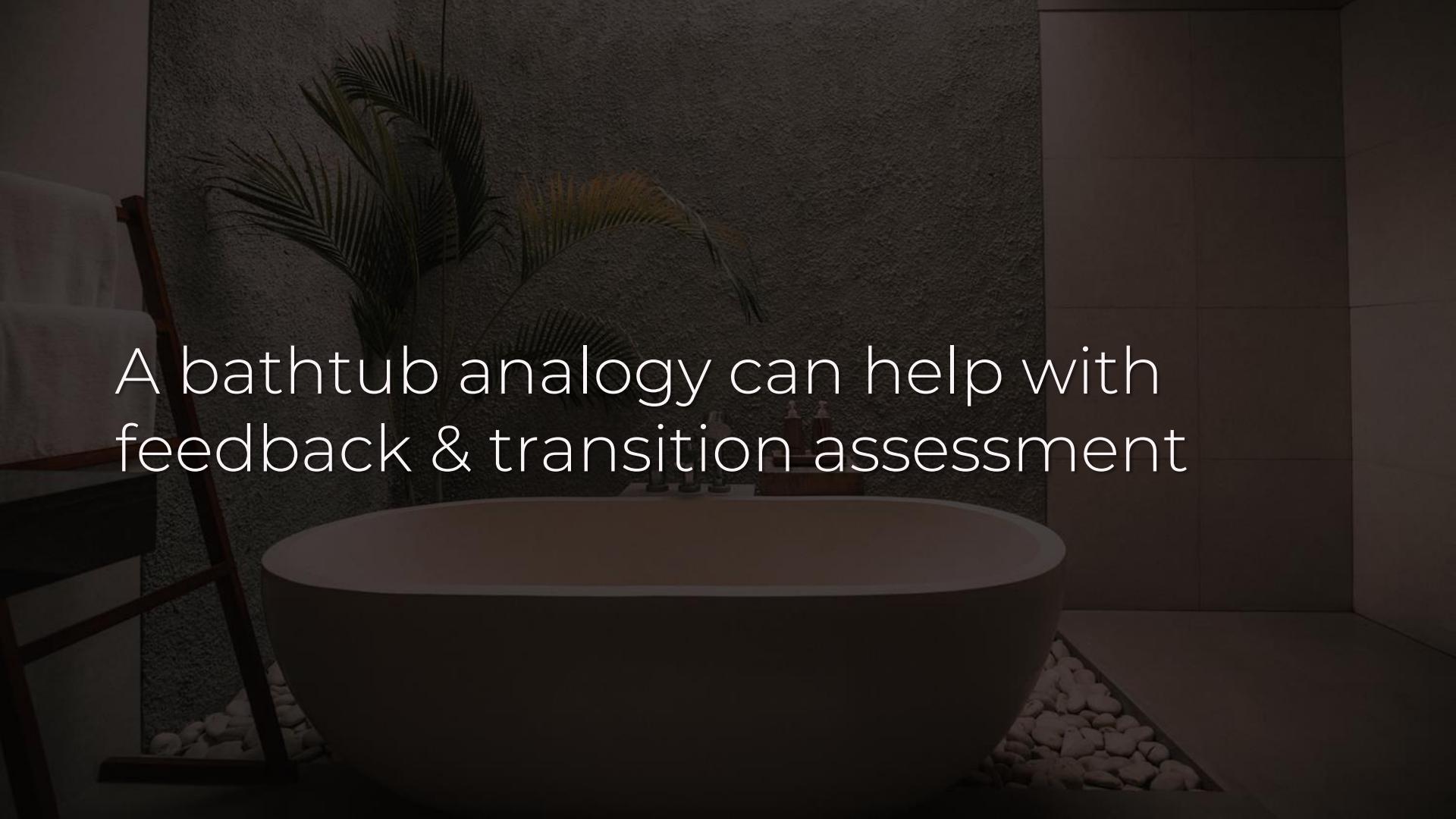
The background of the slide is a photograph of a desert landscape at dusk or dawn. Large, layered red rock formations, characteristic of Monument Valley, rise from a vast, dark valley floor. The sky above is a deep, dark blue-grey, suggesting twilight or early morning light. The overall mood is somber and contemplative.

Adaptation Deficit – gap between
current status & goal implementation

ZTN takes years to fully deploy; are transition costs in your risk model?

Transition costs don't justify inaction,
but you do need to quantify them

Ignoring Adaptation Deficits creates a
false sense of resolution

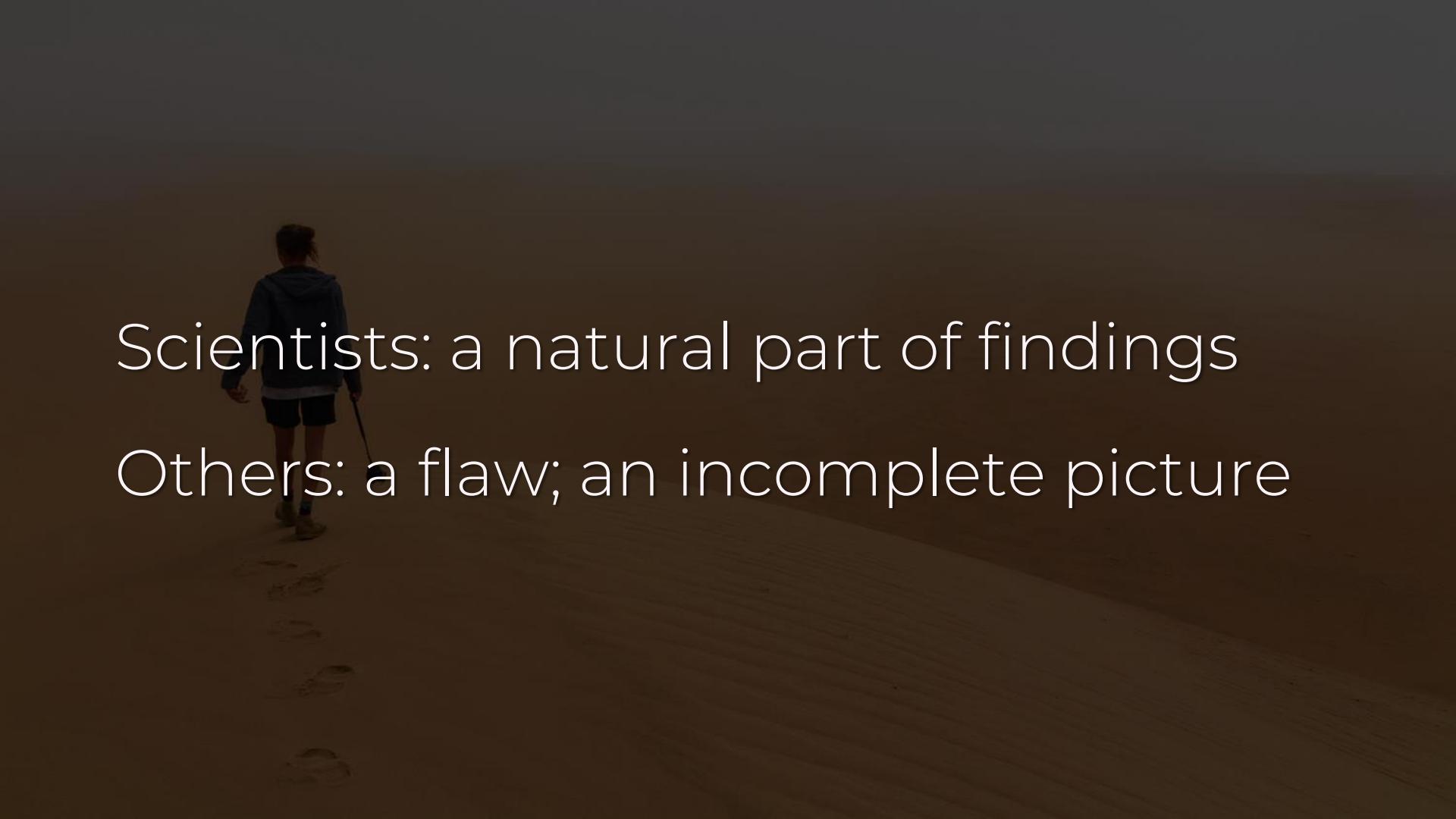
A dark, moody photograph of a modern bathroom interior. In the foreground, a large white bathtub is partially visible, surrounded by a dark, textured wall. A large, green palm frond hangs from above, casting a shadow over the scene. To the left, a portion of a wooden chair is visible. The overall atmosphere is sophisticated and minimalist.

A bathtub analogy can help with
feedback & transition assessment

The “Cyber Tub” – the infosec version
of the bathtub analogy

Uncertainty Management

What do we mean by uncertainty?

A dark, atmospheric photograph of a person walking away from the viewer on a sandy beach. The person is seen from behind, wearing a dark hoodie and shorts, and is carrying a long object, possibly a cane or a stick. Their footprints are visible in the sand. The scene is dimly lit, creating a somber and contemplative mood.

Scientists: a natural part of findings

Others: a flaw; an incomplete picture

High uncertainty can encourage a
“wait & see” approach for policy

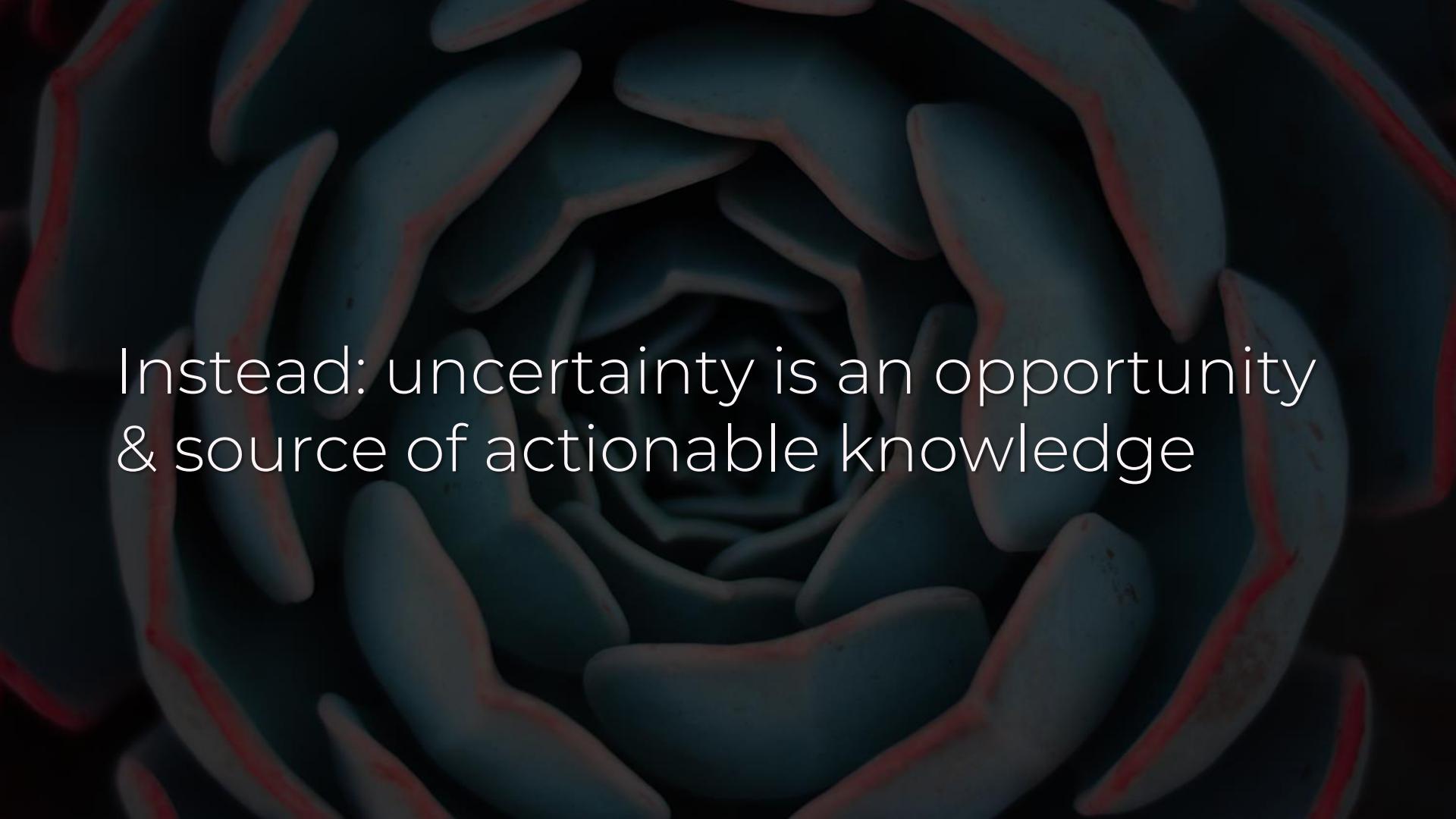
“Wait & see” means the problem worsens & mitigation is too late

Action today can help lessen future uncertainty by creating data points

A dark, atmospheric photograph of a dense forest of tall, spiky cacti under a cloudy sky.

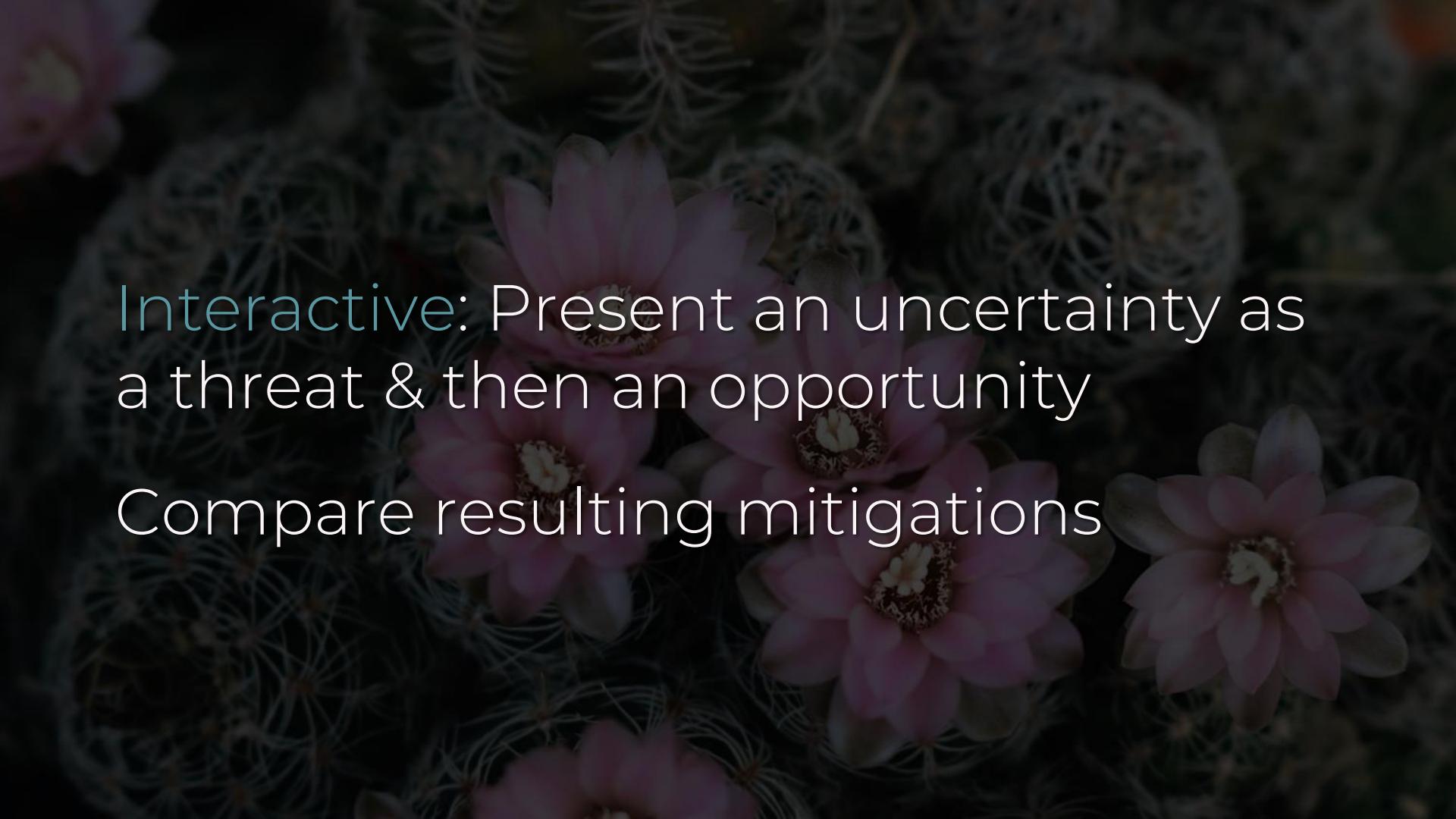
Mistake: trying to reduce uncertainty
to appease policy makers

Risk people should craft the narrative
– it's not a threat, nor a call to inaction



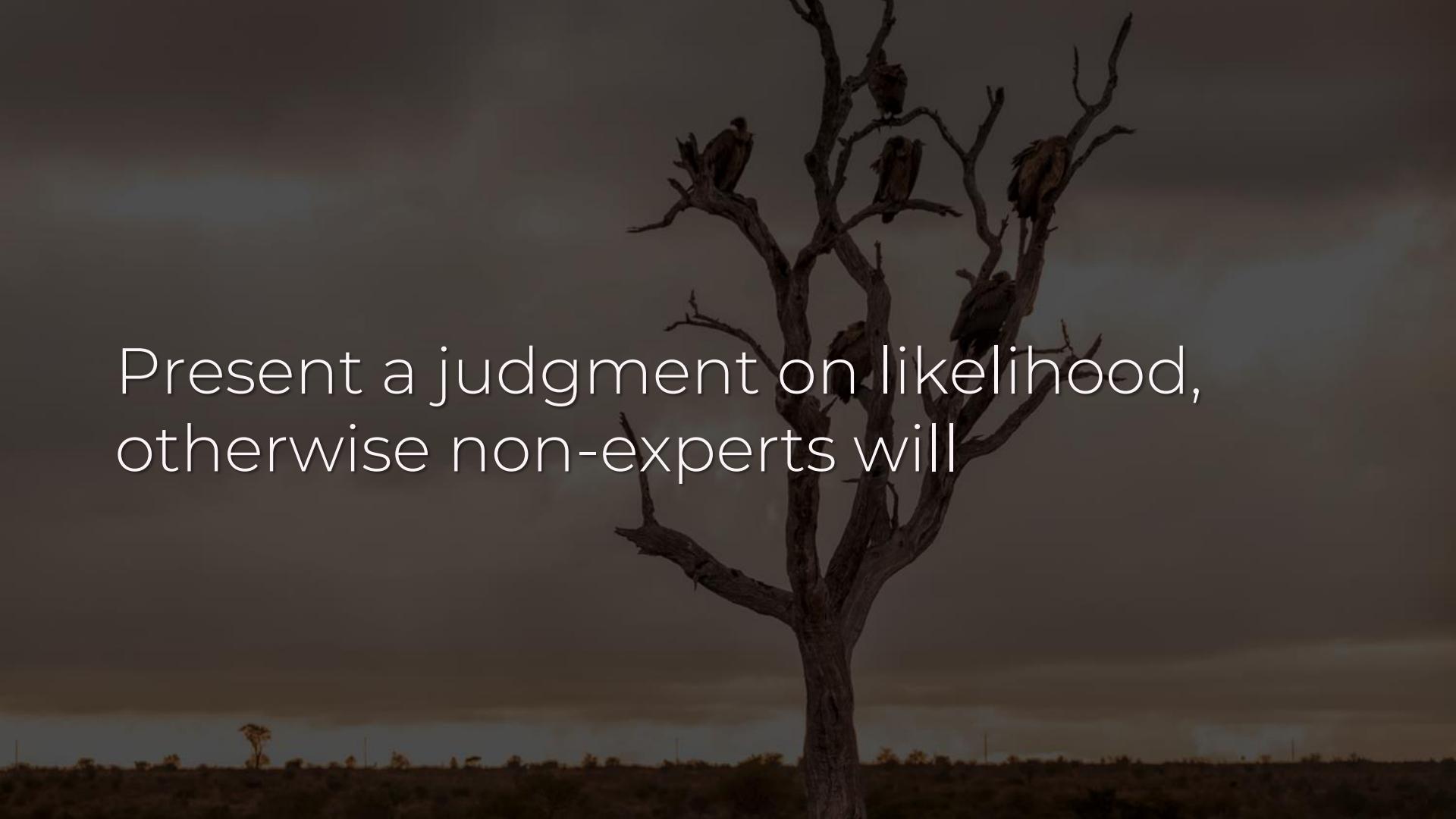
Instead: uncertainty is an opportunity
& source of actionable knowledge

“Web app can be taken offline” vs.
“Uncertainty about app availability”



Interactive: Present an uncertainty as
a threat & then an opportunity

Compare resulting mitigations

A dark, silhouetted tree stands in the foreground, its bare branches reaching upwards. Several vultures are perched on the branches, their dark forms contrasting with the lighter, hazy background. The scene suggests a desolate or somber environment.

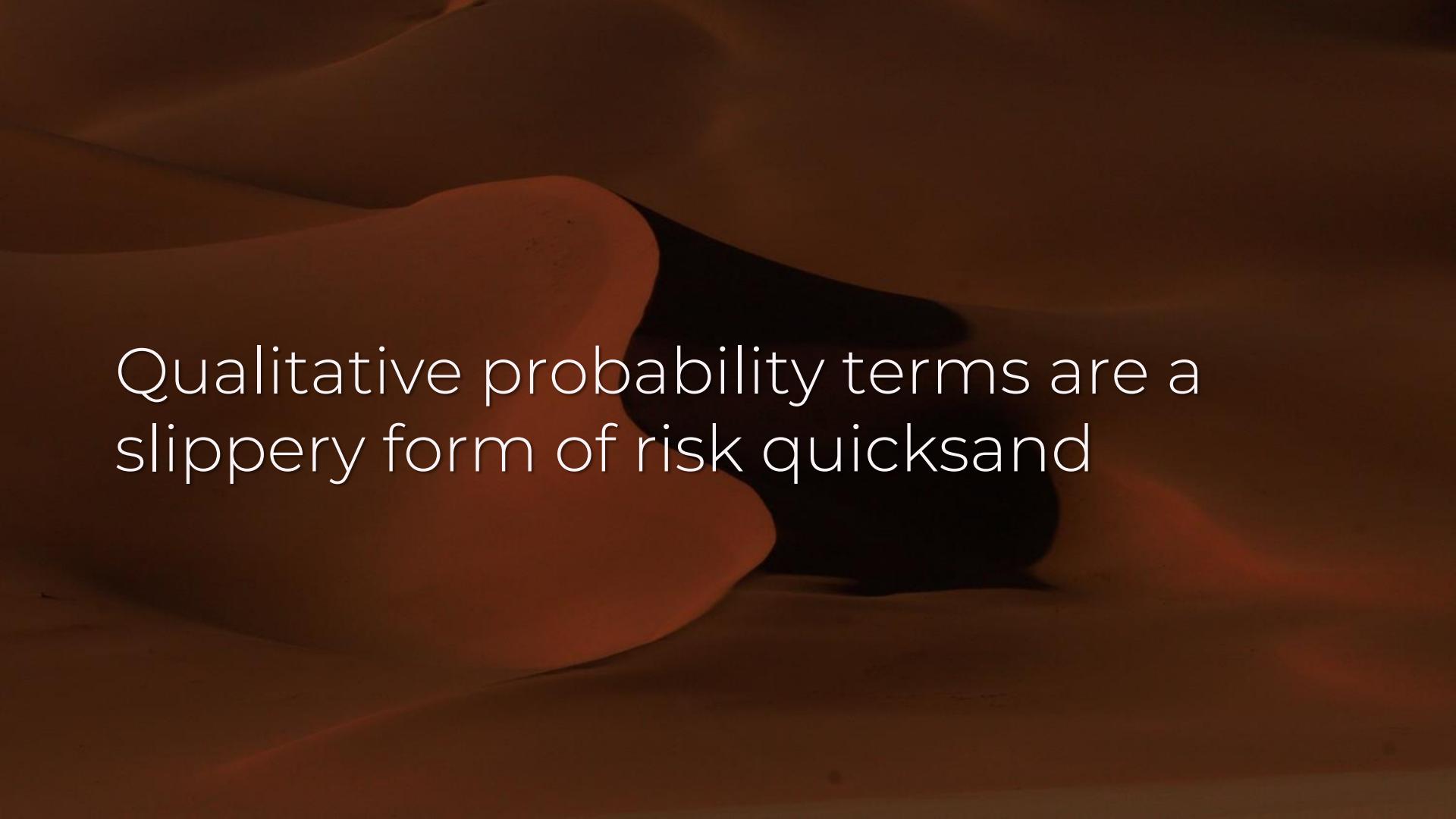
Present a judgment on likelihood,
otherwise non-experts will

Probability density functions are your friends, full ranges are not

50% chance of 20mm user records &
90% chance of 5mm user records

vs. 100k – 50mm user records at risk

Science for policy = policymakers
need expert judgement, even if it has
a considerable degree of subjectivity

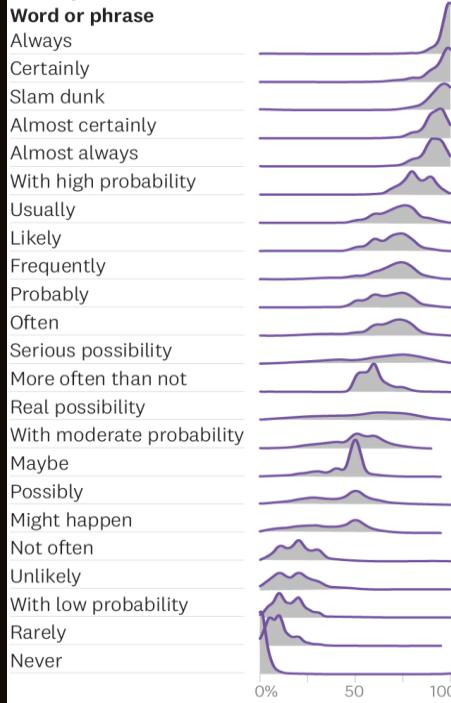
A photograph showing a person's lower legs and feet submerged in dark, rippling water. The person is wearing dark swim trunks. The image serves as a visual metaphor for being "stuck in quicksand" or "drowning in uncertainty".

Qualitative probability terms are a
slippery form of risk quicksand

How People Interpret Probabilistic Words

"Always" doesn't always mean always.

Distribution of responses according to respondents' estimate of likelihood



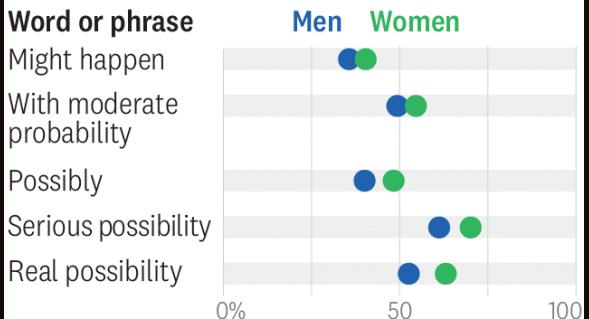
Source: Andrew Mauboussin and Michael J. Mauboussin



What's a “Real Possibility”? Men and Women Answer Slightly Differently

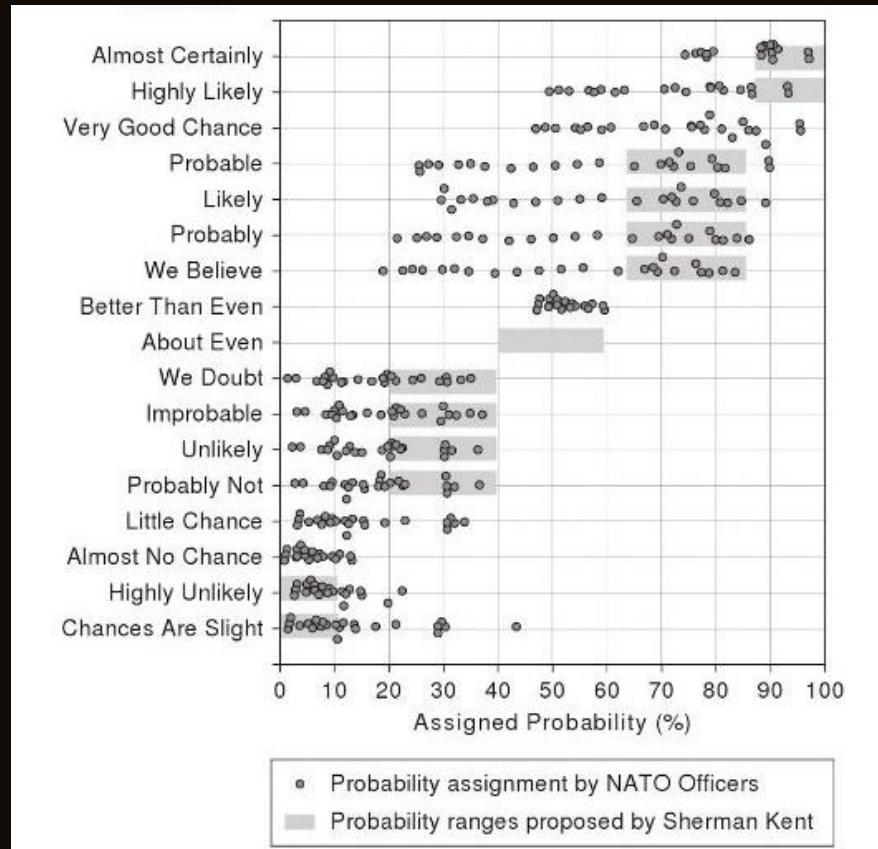
Women are more likely than men to interpret certain probabilistic words or phrases positively (i.e., as indicating that an event will occur).

Average of responses according to respondents' estimate of likelihood



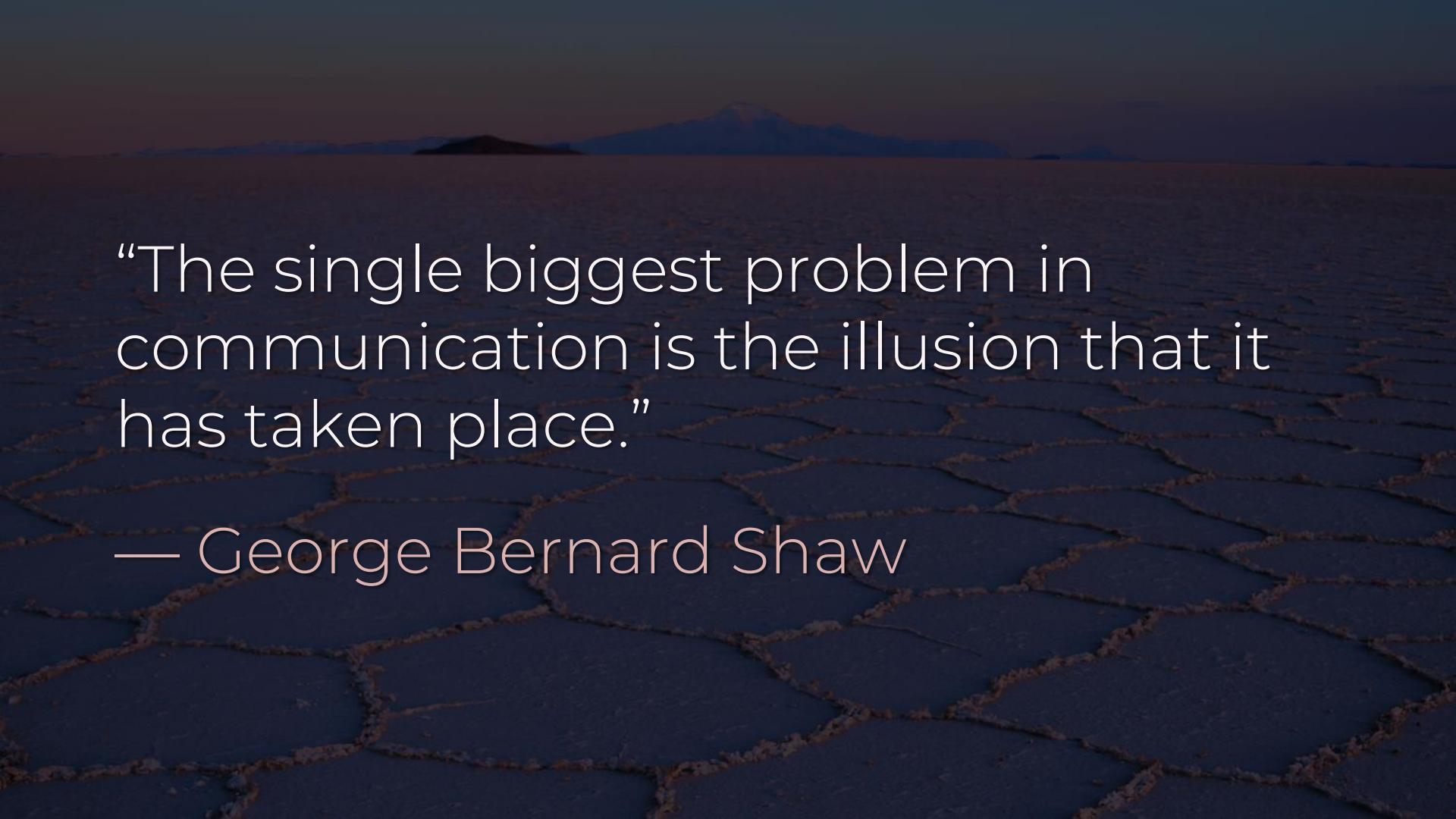
Source: Andrew Mauboussin and Michael J. Mauboussin

HBR



Use percentages & PDFs when possible to avoid misinterpretation

Communicating Risk



“The single biggest problem in communication is the illusion that it has taken place.”

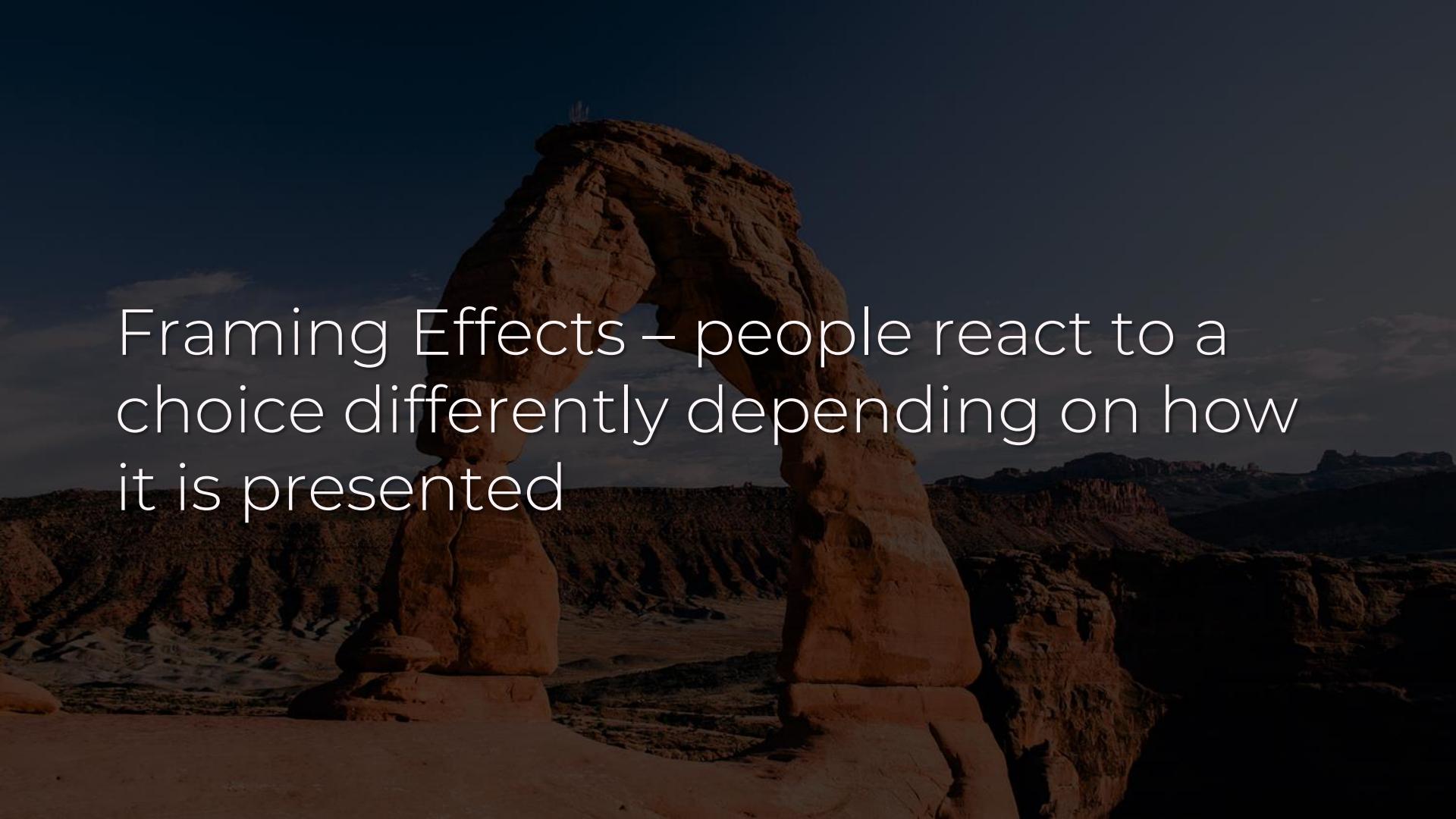
— George Bernard Shaw

Risk is not an abstract concept –
attitudes & tolerance to risk by
decision makers influence it

The background image shows a vast, open landscape during twilight. In the foreground, there are rolling hills with distinct horizontal sedimentary layers. A prominent, tall, light-colored rock formation, possibly a butte or mesa, stands in the middle ground. The sky above is a deep blue, transitioning into a warm orange and yellow near the horizon, suggesting either sunrise or sunset.

“Science as policy” – provide info in
order of its impact on decisions

Consider biases – & gently remind
others when they succumb to them

A photograph of a large, light-colored rock formation with a prominent natural arch. The formation is set against a dark, cloudy sky. In the background, there are more rock formations and hills under a dark, cloudy sky.

Framing Effects – people react to a choice differently depending on how it is presented

Portray the risk in both past and present terms

“We'll have less client confidence than
in the past” / “Our ability to attract
new clients will be eroded”

Availability bias – how easily you recall
an event affects your perception

The background of the slide is a dark, textured image that looks like a close-up of a tree's bark or a similar organic material. The texture is composed of various shades of brown and black, creating a natural, earthy feel.

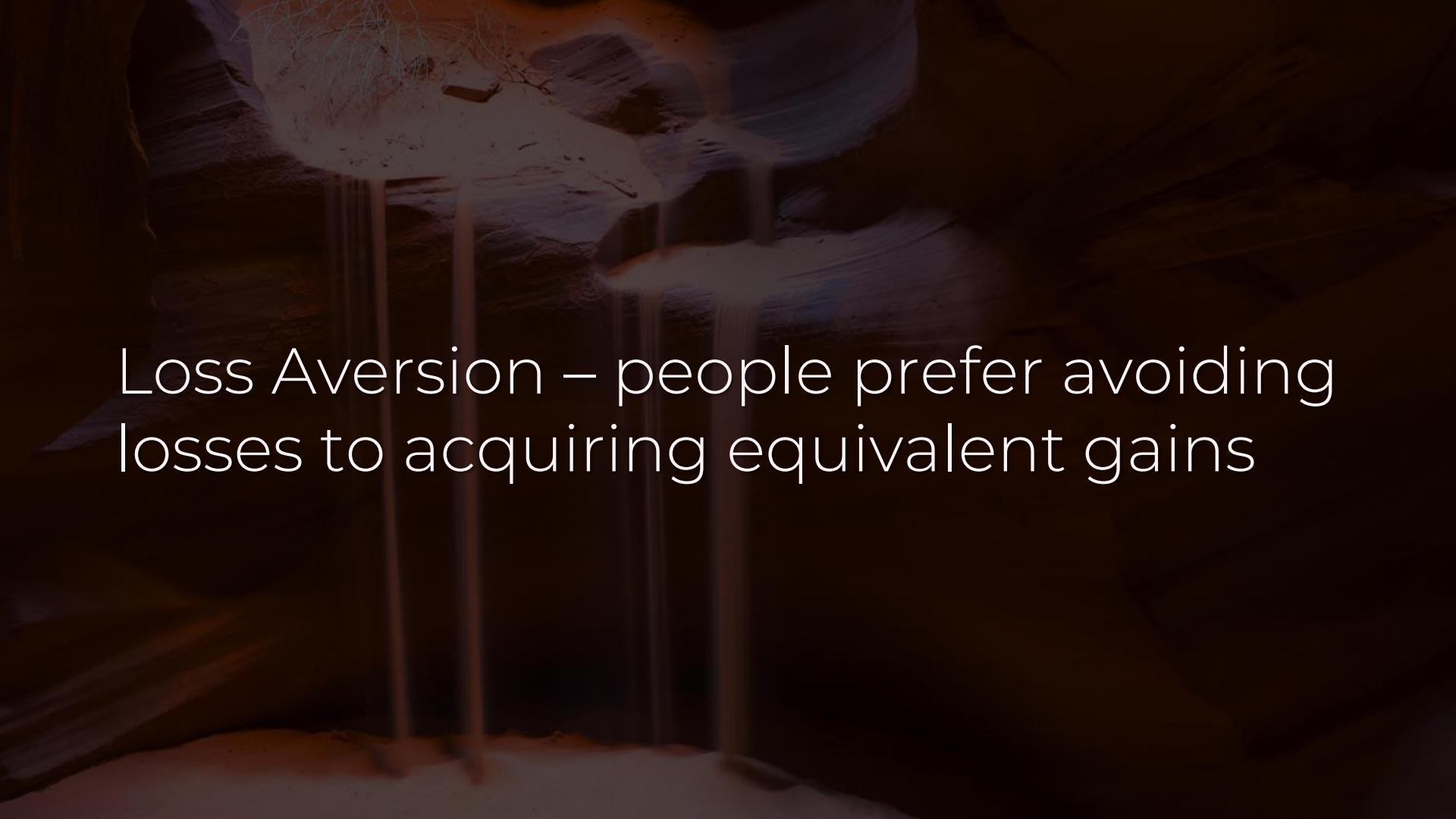
Dramatic headlines will be top of
mind & influence risk perception

Counter: anticipate what might be top of mind or not & come with data

Status quo bias – moving away from current plans can be seen as failure

“We can create our own canaries!” but
then you never do, wasting more time
than it would cost to buy & deploy

Counter: delay decision time &
present a narrow range of options



Loss Aversion – people prefer avoiding losses to acquiring equivalent gains

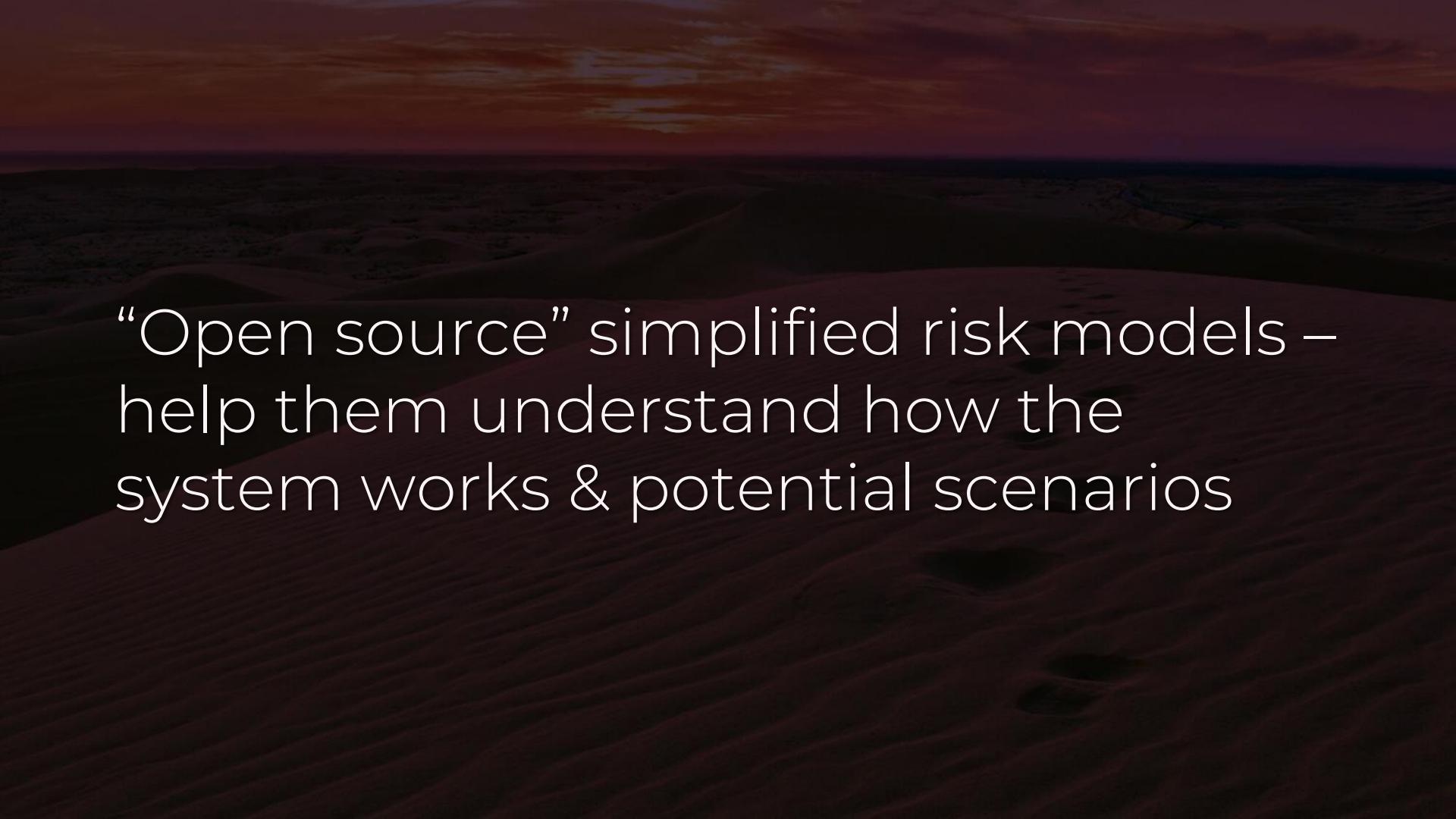
Counter: Use the endowment effect
to emphasize irreversible loss

“We will lose our software velocity,
with a 90% chance of slowing our
time to deploy by 33% if __ happens.”



Scientists learn through iterative,
interactive learning processes

But we tell results to others with presentations, facts, & figures

The background of the slide features a dark, atmospheric landscape with rolling hills or fields. The sky above is filled with heavy, textured clouds, with a faint glow of orange and yellow light visible through them, suggesting either a sunrise or sunset. The overall mood is somber and contemplative.

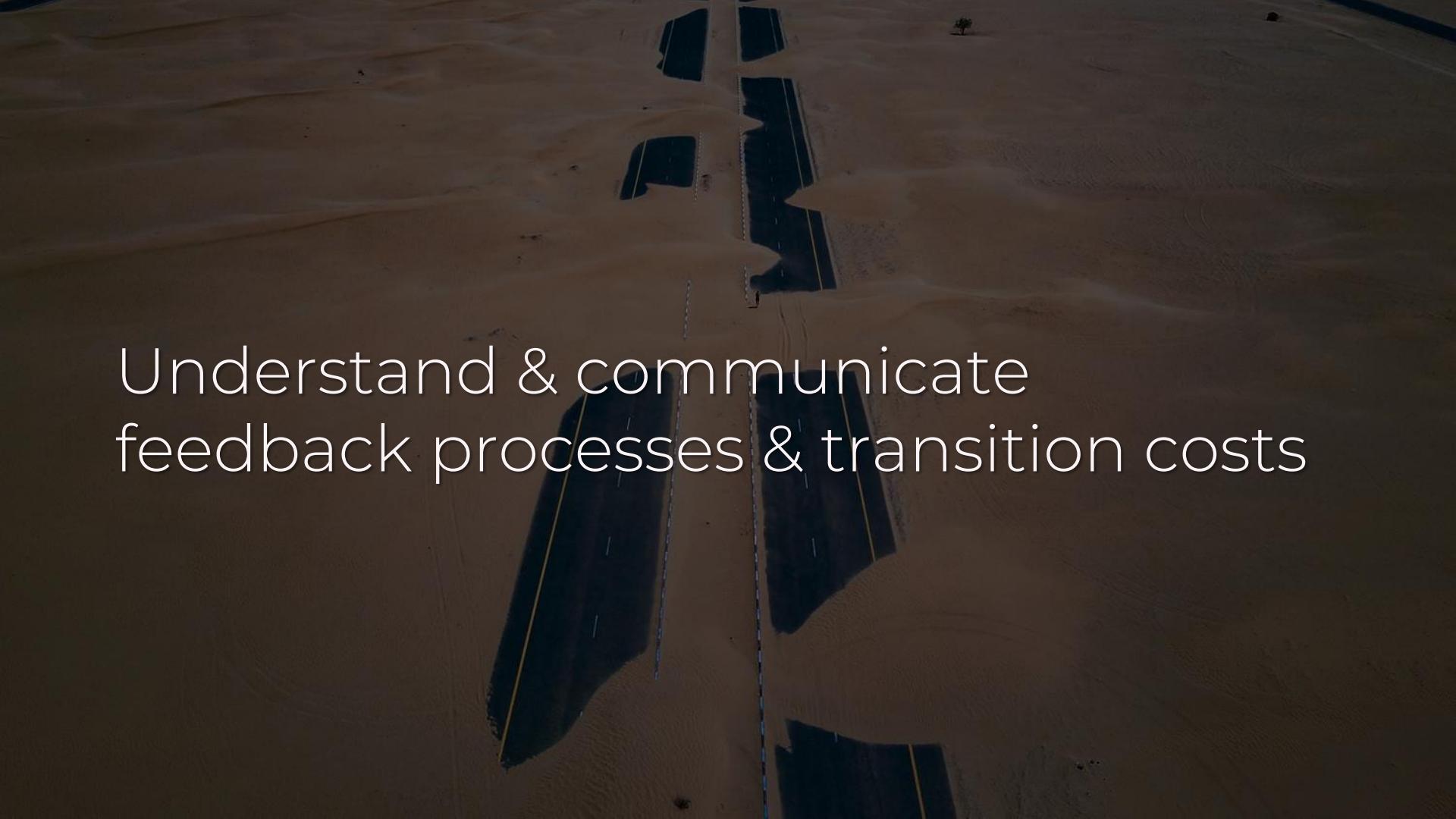
“Open source” simplified risk models –
help them understand how the
system works & potential scenarios

Create your own “Cyber Tub,” or use straightforward causal diagrams

Choose the right data – aim for the highest impact vs. completion

Conclusion



The background of the slide is a photograph of a desert landscape from an aerial perspective. The terrain is light brown and textured with numerous dark, irregular shapes that represent clusters of vegetation or shrubs. A prominent vertical line of darker vegetation runs down the center of the frame. In the upper right corner, there is a small, isolated dark spot, likely a single tree.

Understand & communicate
feedback processes & transition costs

A close-up photograph of a cactus, likely a cholla, showing its segmented stem, sharp spines, and several large, dark purple, fuzzy flowers or flower buds. The lighting is dramatic, highlighting the textures of the cactus and its blossoms.

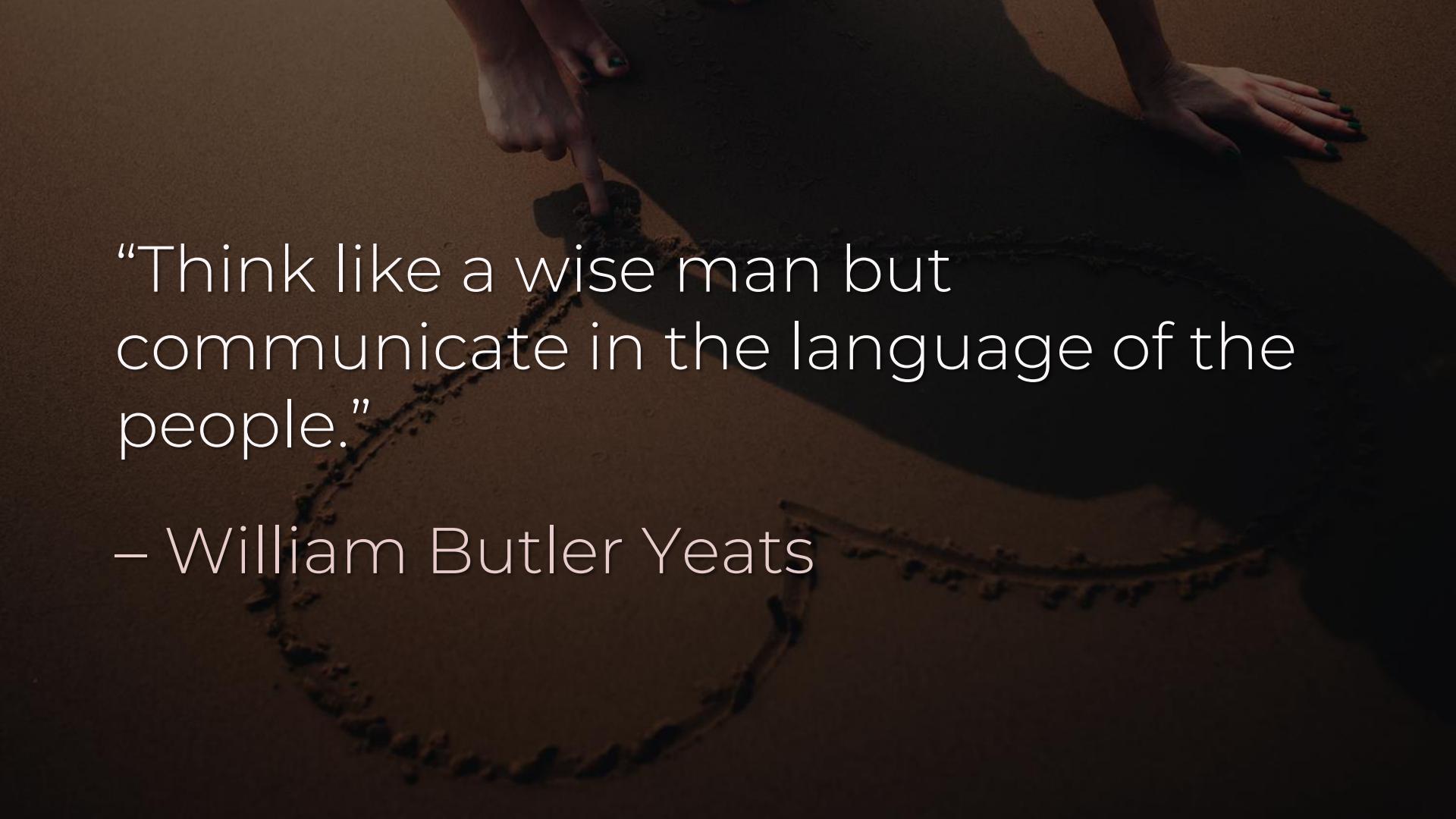
Embrace uncertainty as an
opportunity, not a threat

A close-up photograph of a camel's head and neck, facing right. The camel has a light brown coat with darker, mottled patches on its neck. Its eye is partially closed, and its mouth is slightly open. The background is a dark, hazy desert landscape.

Communicate through a “science for policy” lens & give your expert stance

A large, reddish-brown rock formation with a prominent natural archway is silhouetted against a dark, hazy sky. In the background, a vast, layered landscape of mesas and canyons stretches across the horizon under a dark, overcast sky.

Anticipate bias & frame data so
decision makers are empowered



“Think like a wise man but communicate in the language of the people.”

– William Butler Yeats



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