

What makes your ANSP safe?

Two views with profound implications

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DEMAND

AIRSPACE

TECHNOLOGY

REGULATIONS

NORMS

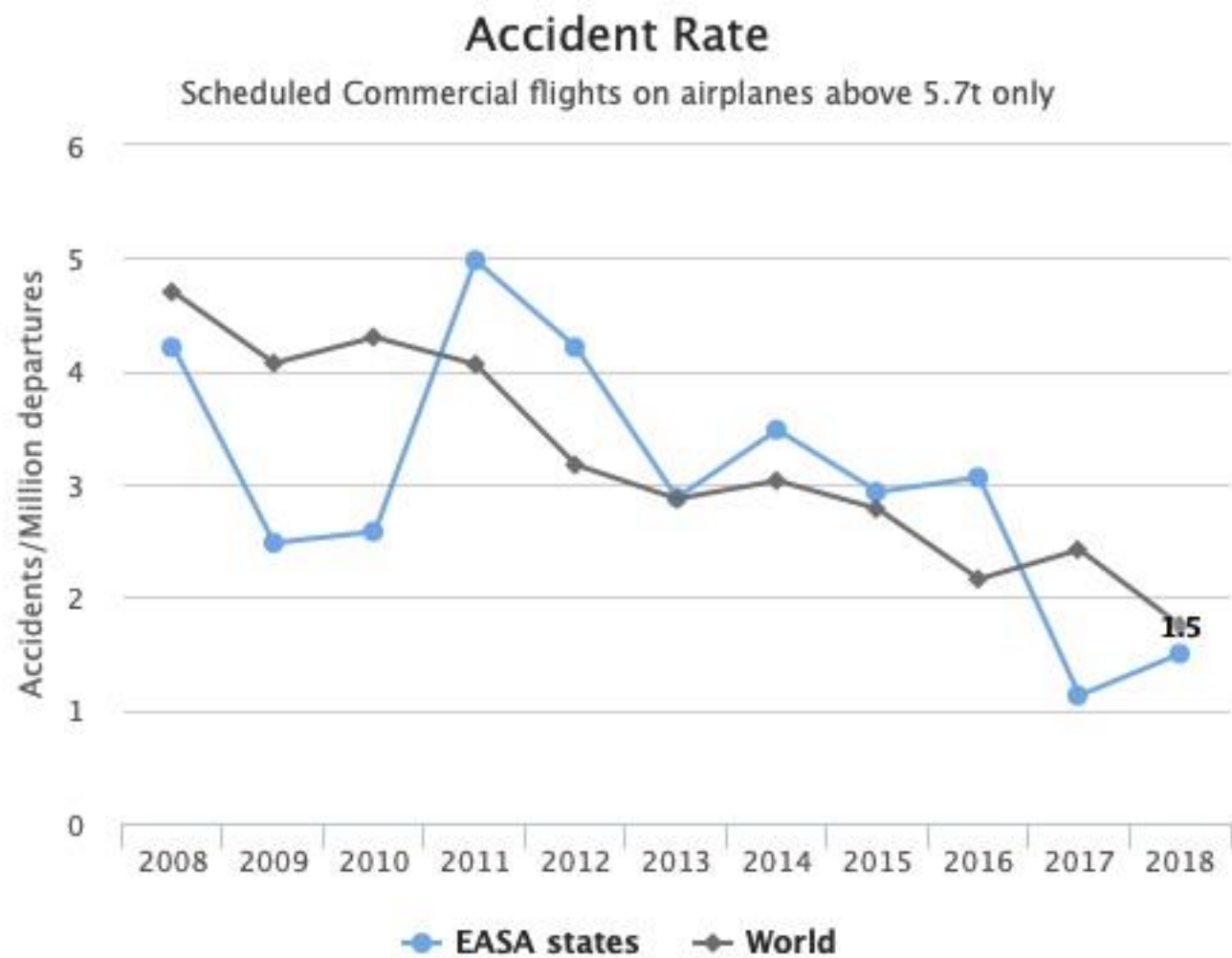
JOB ROLES

STAFFING

MARKET

OPPORTUNITIES

THREATS



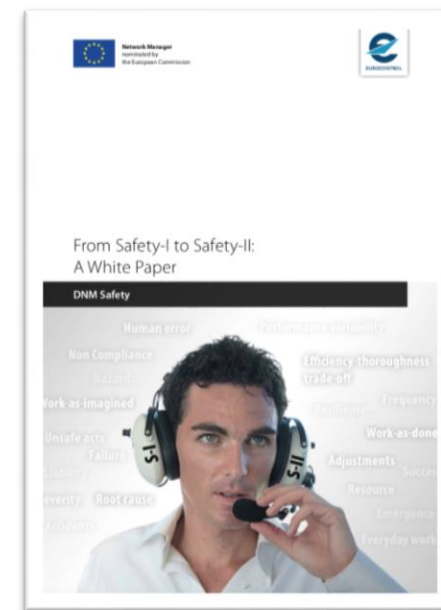
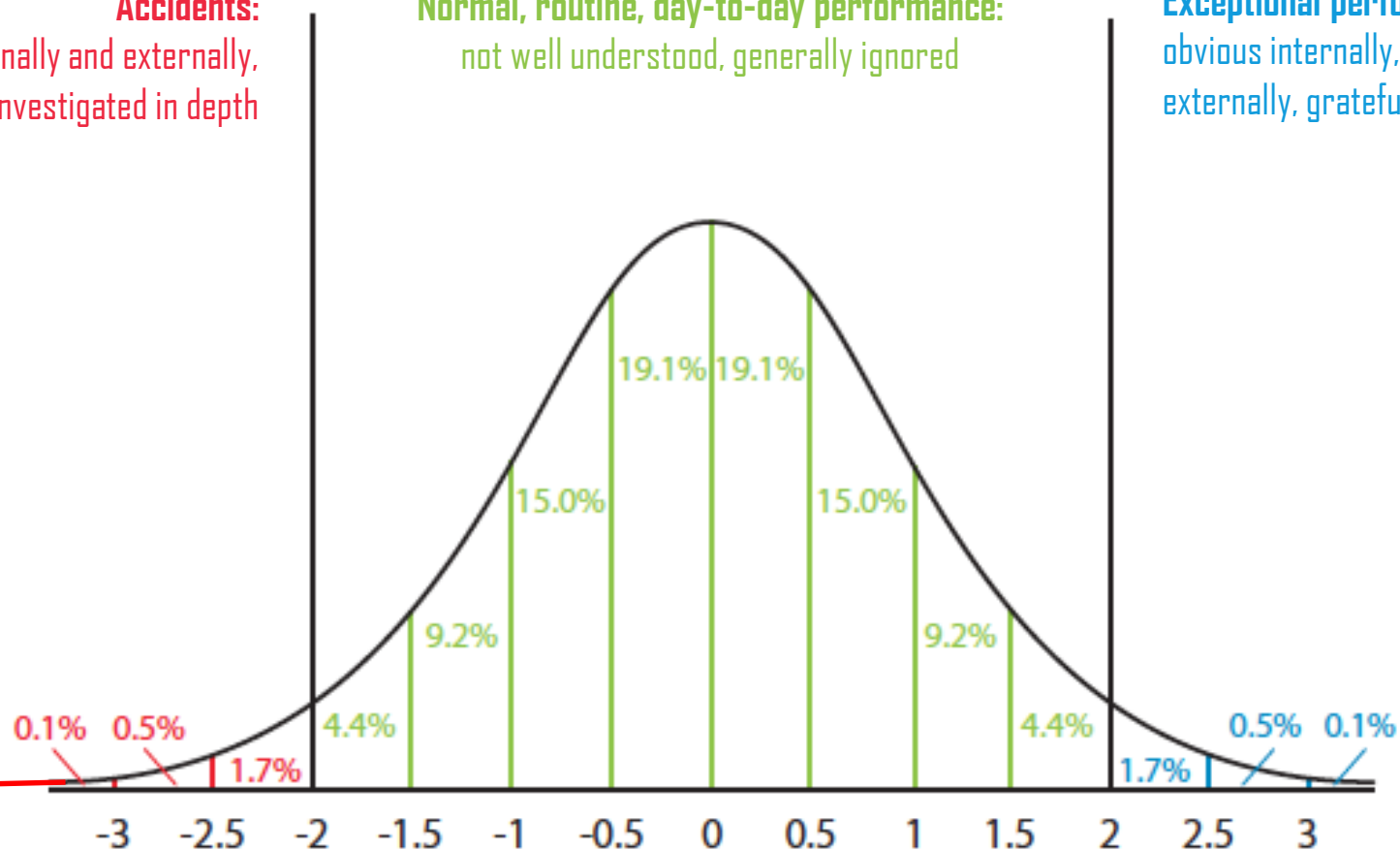
Accidents:
obvious internally and externally,
investigated in depth

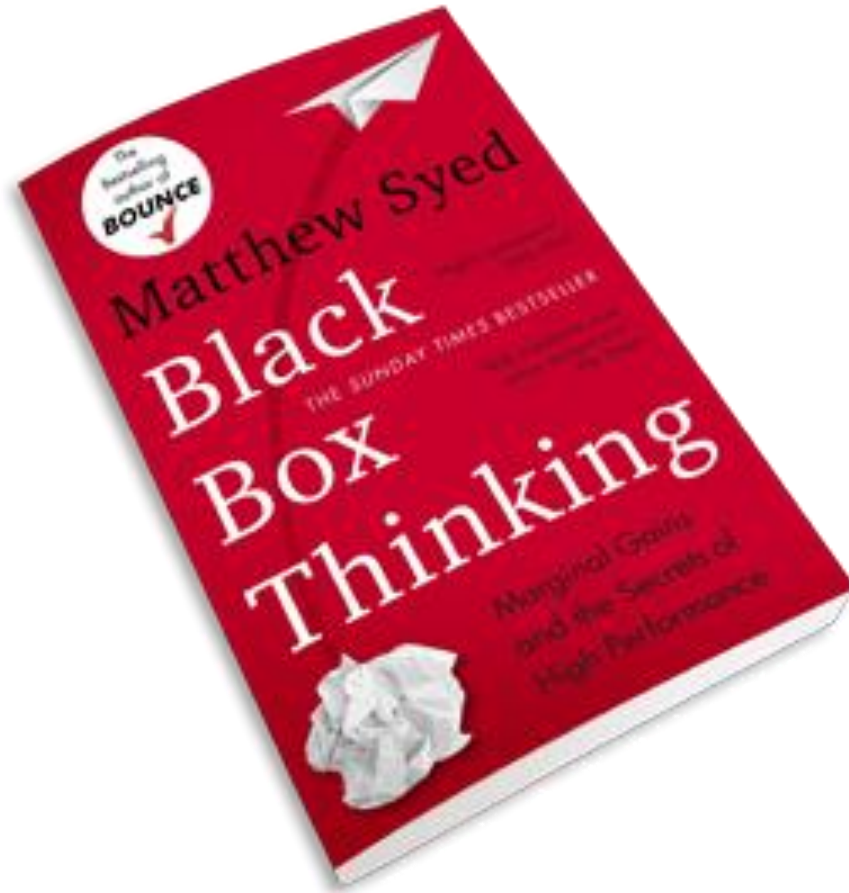
Normal, routine, day-to-day performance:
not well understood, generally ignored

Exceptional performance:
obvious internally, hard to see
externally, gratefully accepted

Commercial Aviation

<0.0001%

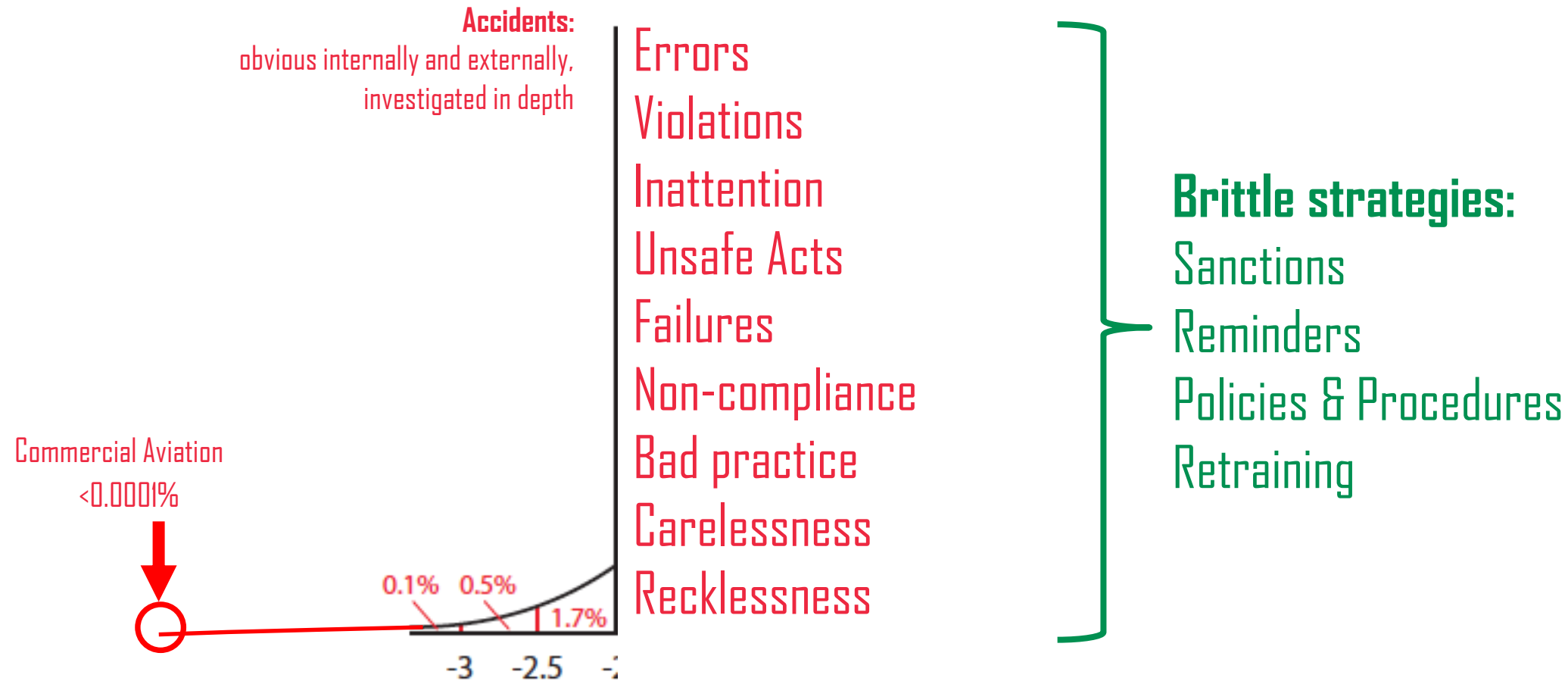




“ Failure is rich in learning opportunities for a simple reason: in many of its guises, it represents a violation of expectation. It is showing us that the world is in some sense different from the way we imagined it to be.

WHY DO THINGS GO WRONG?

First story: Human Error & Violations



‘First Story’: Human Error & Violations

- Appears quickly after an event
- High personalisation (sharp-end actors)
- Low context
- Low complexity
- High newsworthiness
- Appears easily preventable and fixable (with hindsight)

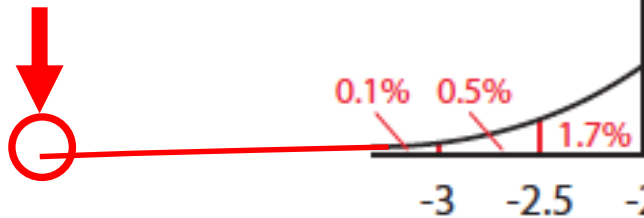
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“...we explain the unusual event by invoking the usual and proclaiming it to be different, when of course it is not.

Instead, it is the obscure, accidental, and even random concatenation of normal disorders that produces a great event that we assume must have had great causes.

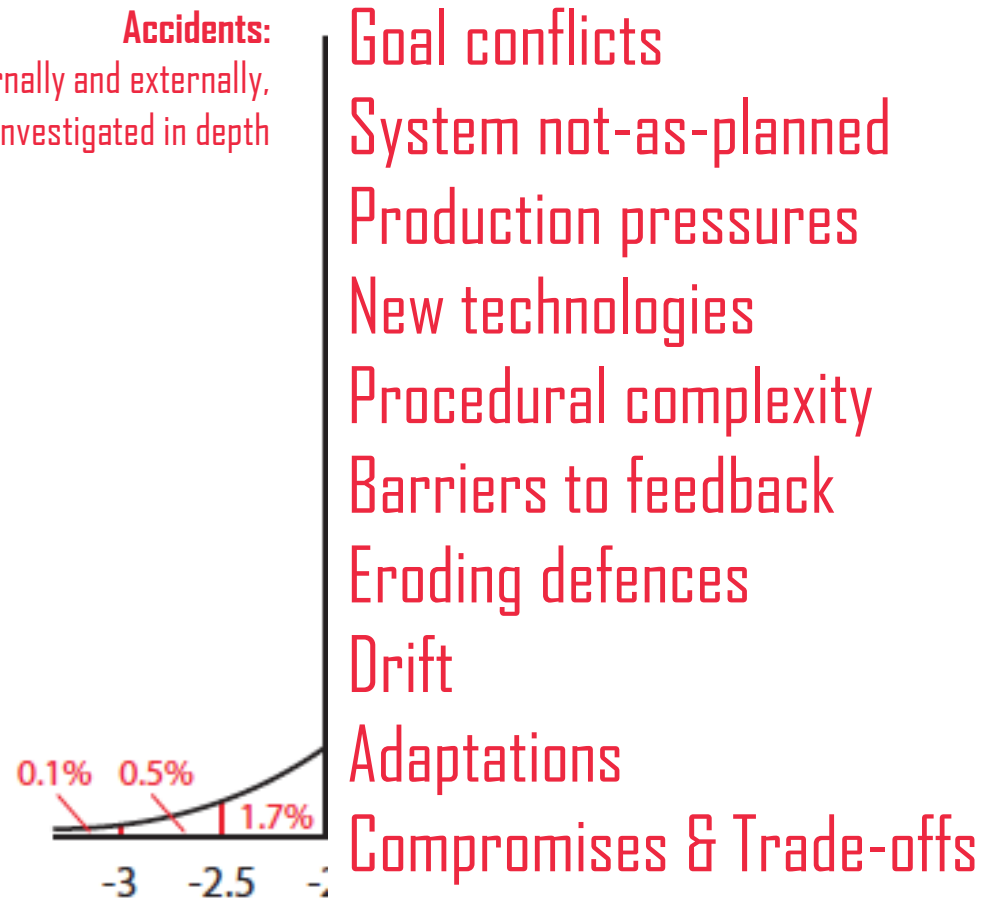


Commercial Aviation
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'Second Story': System Vulnerabilities

Accidents:
obvious internally and externally,
investigated in depth



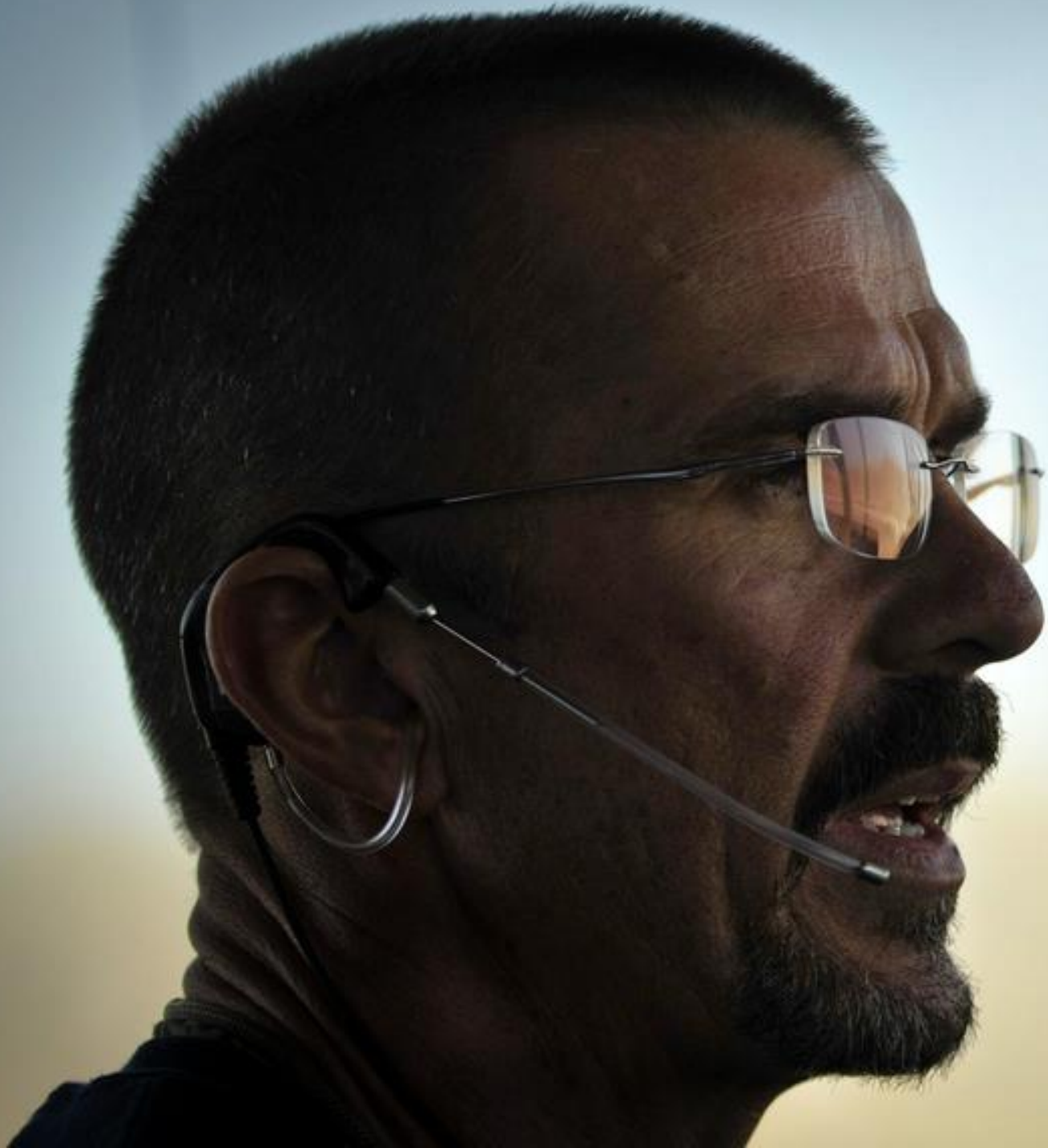
It depends

‘Second Story’: System Vulnerabilities

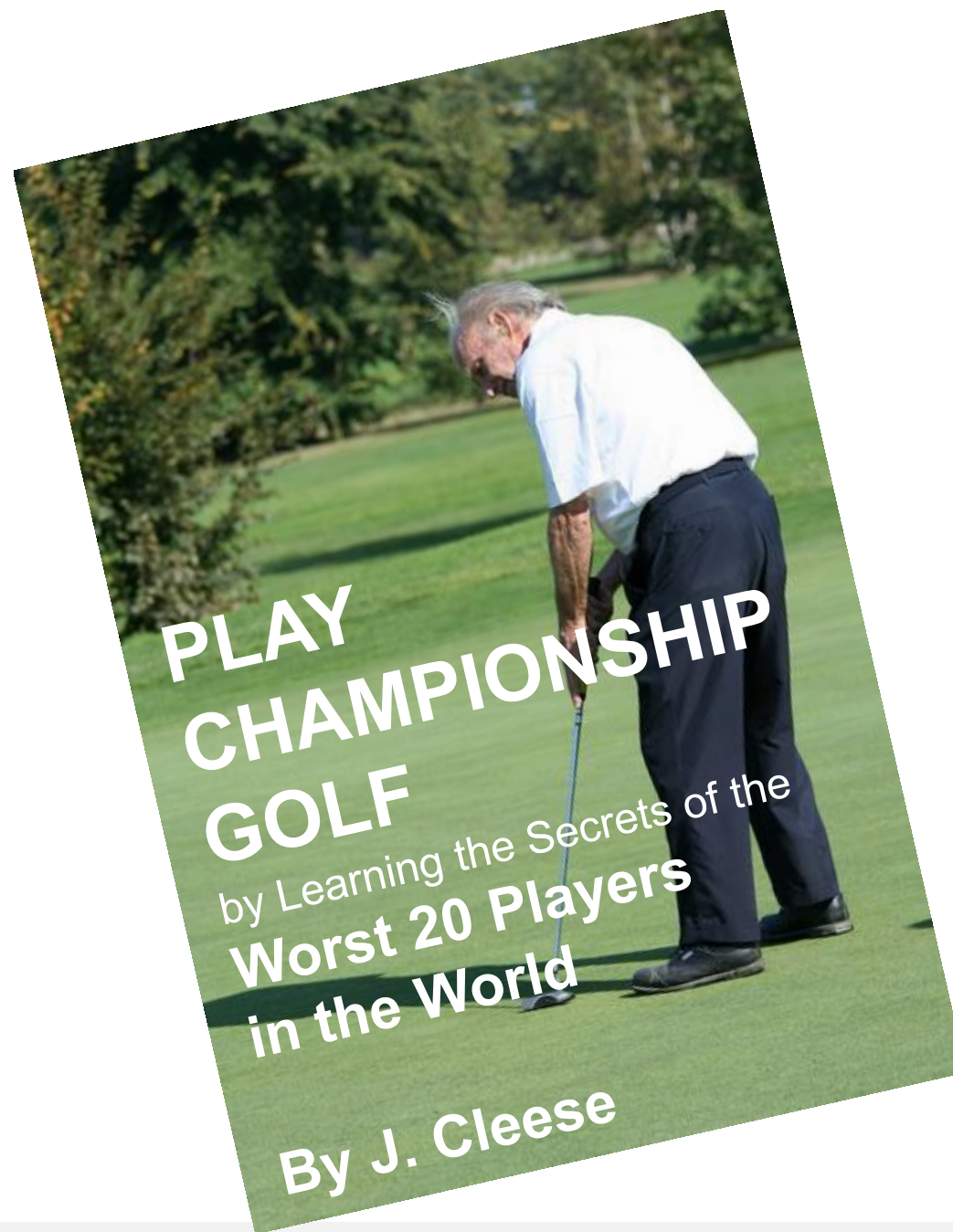
- Emerges slowly after long delay
- Low personalisation
- High context
- High complexity
- Low newsworthiness
- No easy prevention or remediation
 - Event wasn’t easy to foresee. But conditions were there to see
 - Changes have unintended consequences
 - Success requires deep expertise

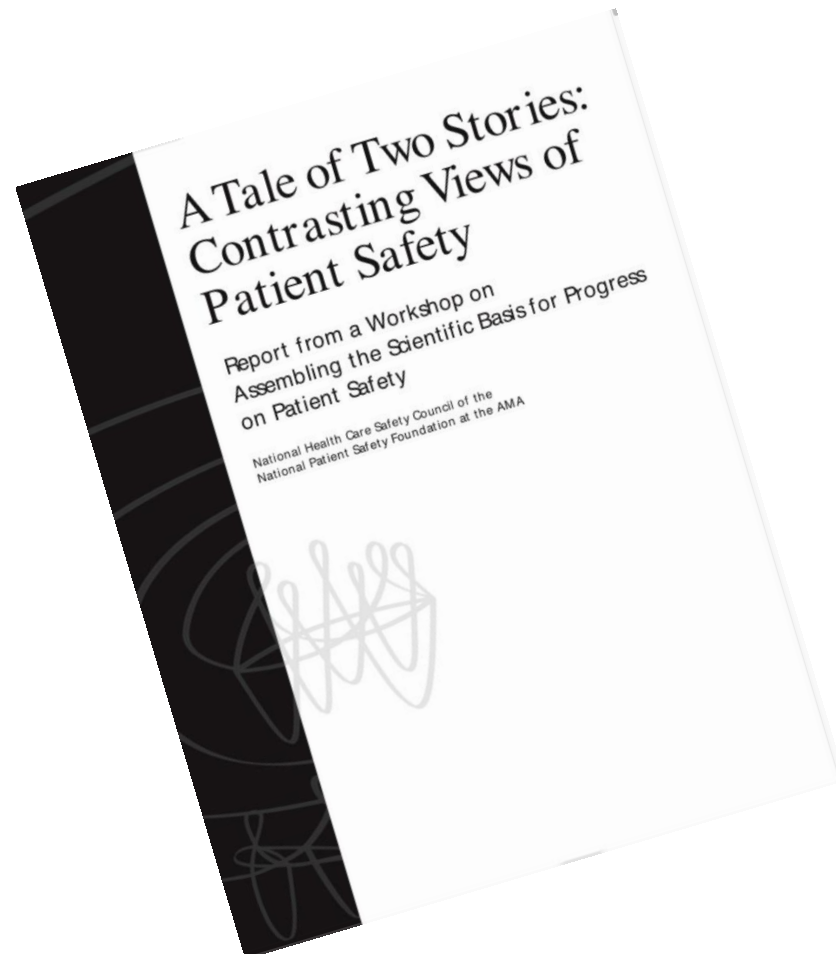
AFTER

THE RUNWAY INCURSION

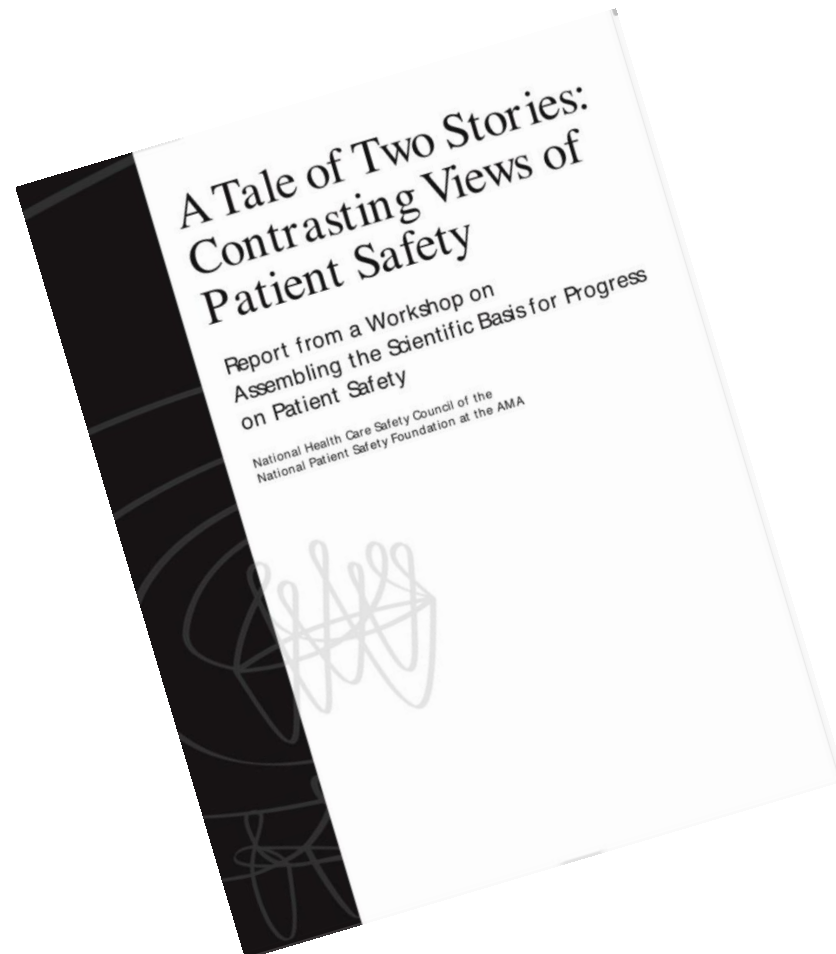


WHY DO THINGS GO RIGHT?





“ success and failure are derived from the same sources ... exposure to hazards is indivisibly connected to the pursuit of success ... bad events are not separate phenomena that can be eliminated by the use of some managerial or technological tool.

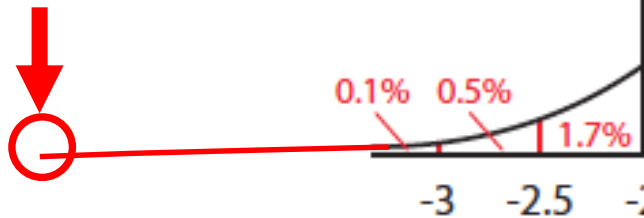


“ Safety is not a separate entity that can be manipulated or achieved in isolation. Rather it is an emergent property of the ways in which the technical, individual, organizational, regulatory, and economic factors ... join together to create the settings in which events—the best ones and the worst ones—occur.

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investigated in depth

The 'safer' we get, the less
'safety data' we have.

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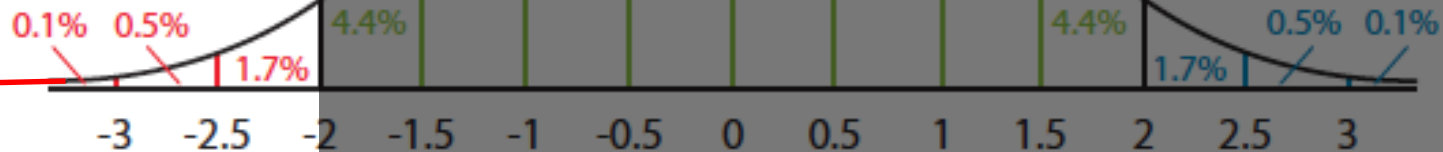
Sources of Safety?

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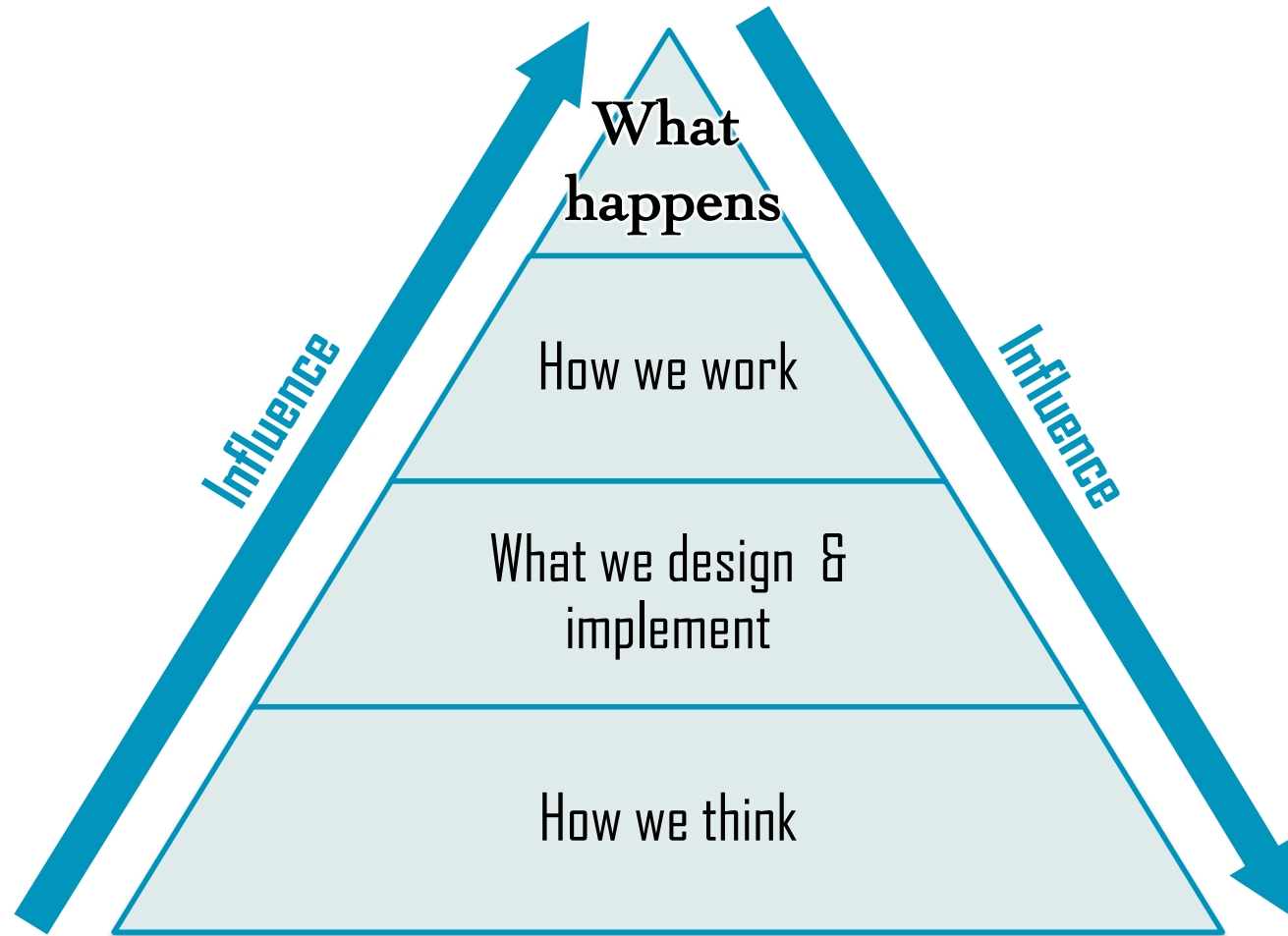
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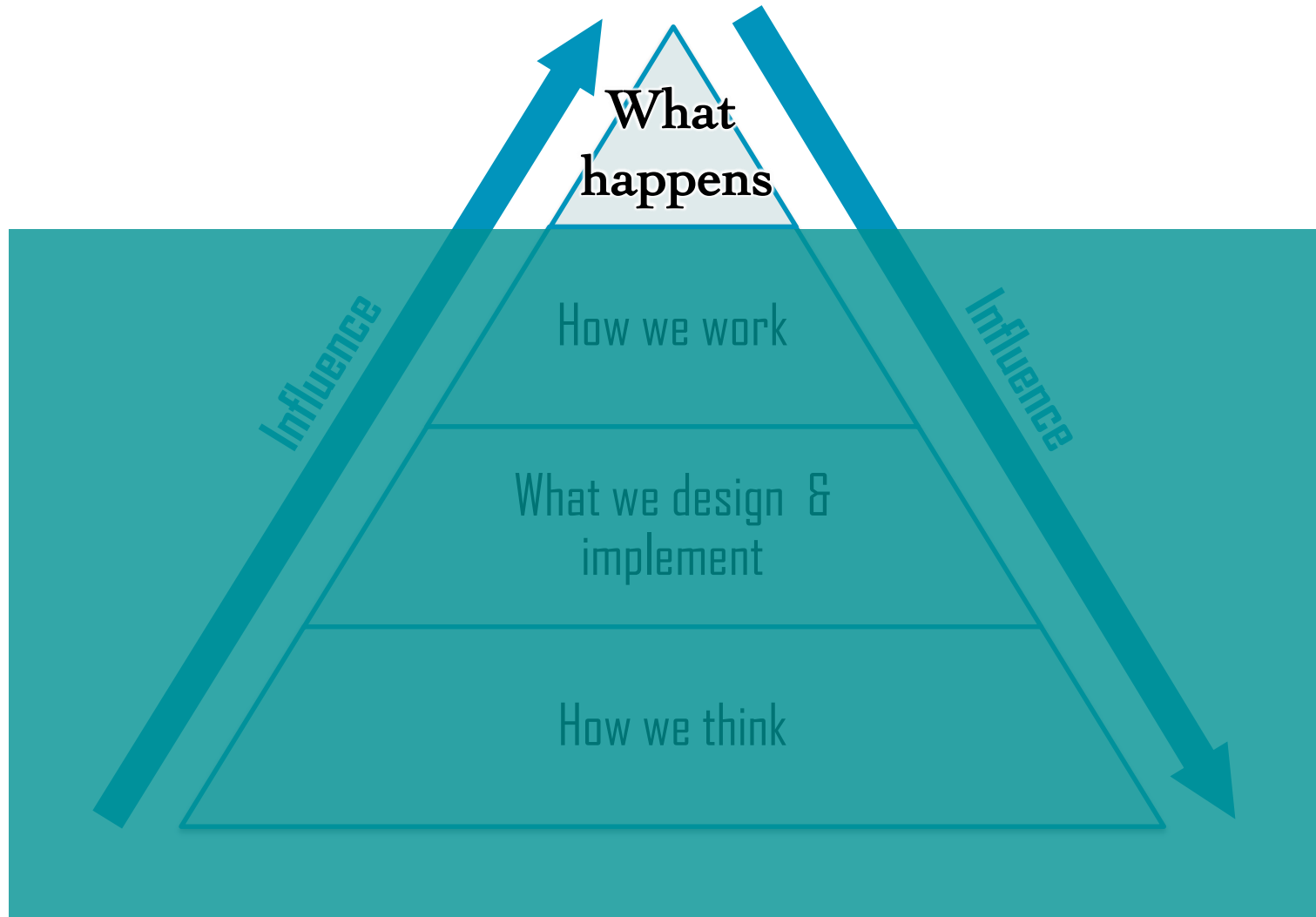
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Things go right and wrong for the same sorts of reasons



What do we know about things below the surface?



If you had to explain to a neighbour why your organisation is safe, what would you say?

Adaptive Safety

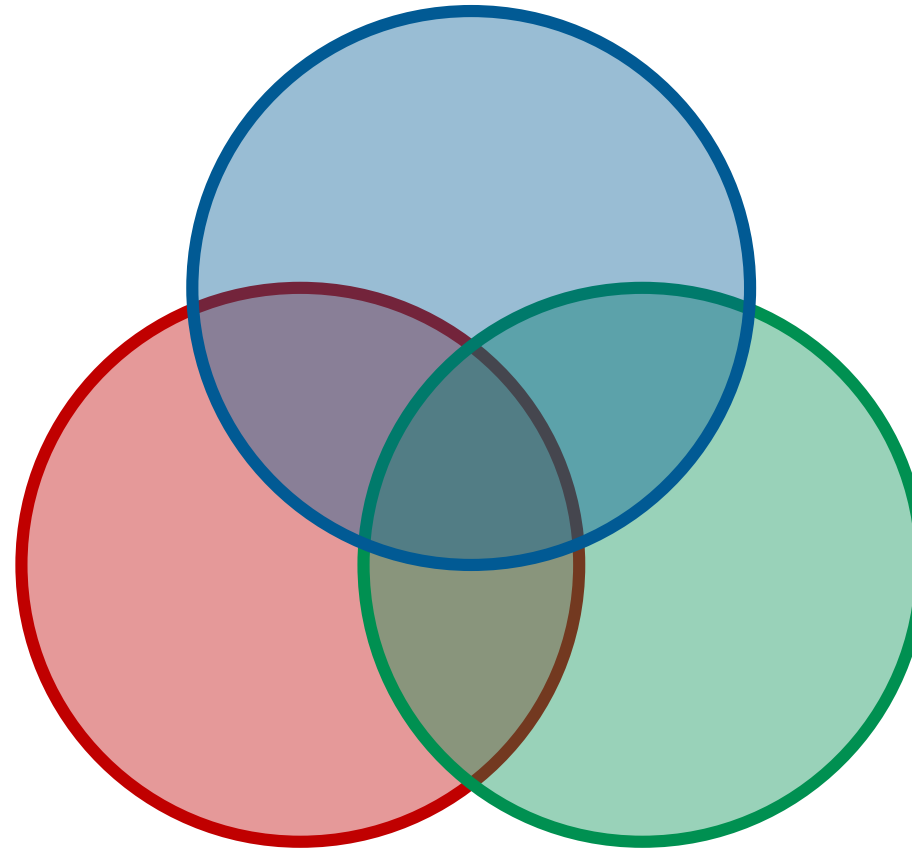
competency | adaptability | teamwork | bottom-up safety management

Designed Safety

procedures | SMS | technology | training | top-down safety management

MIND THE GAP

Work-as-Done



Work-as-Analysed
Work-as-Measured
Work-as-Abstracted
Work-as-Evaluated
Work-as-Simulated

Work-as-Imagined

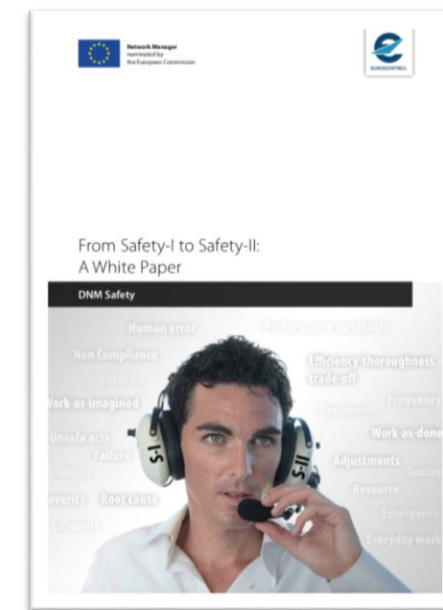
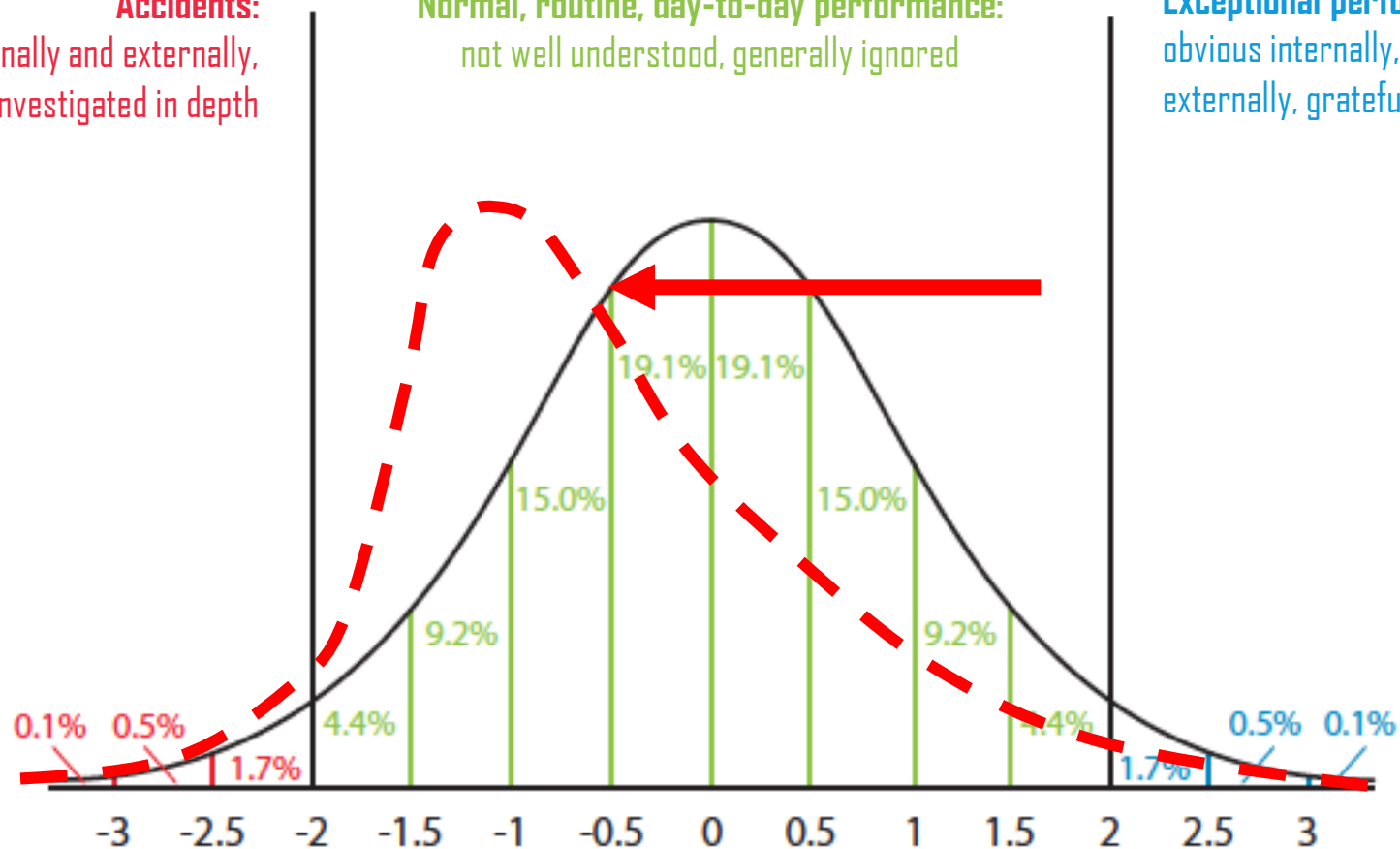
Work-as-Prescribed

Unseen drift in normal performance

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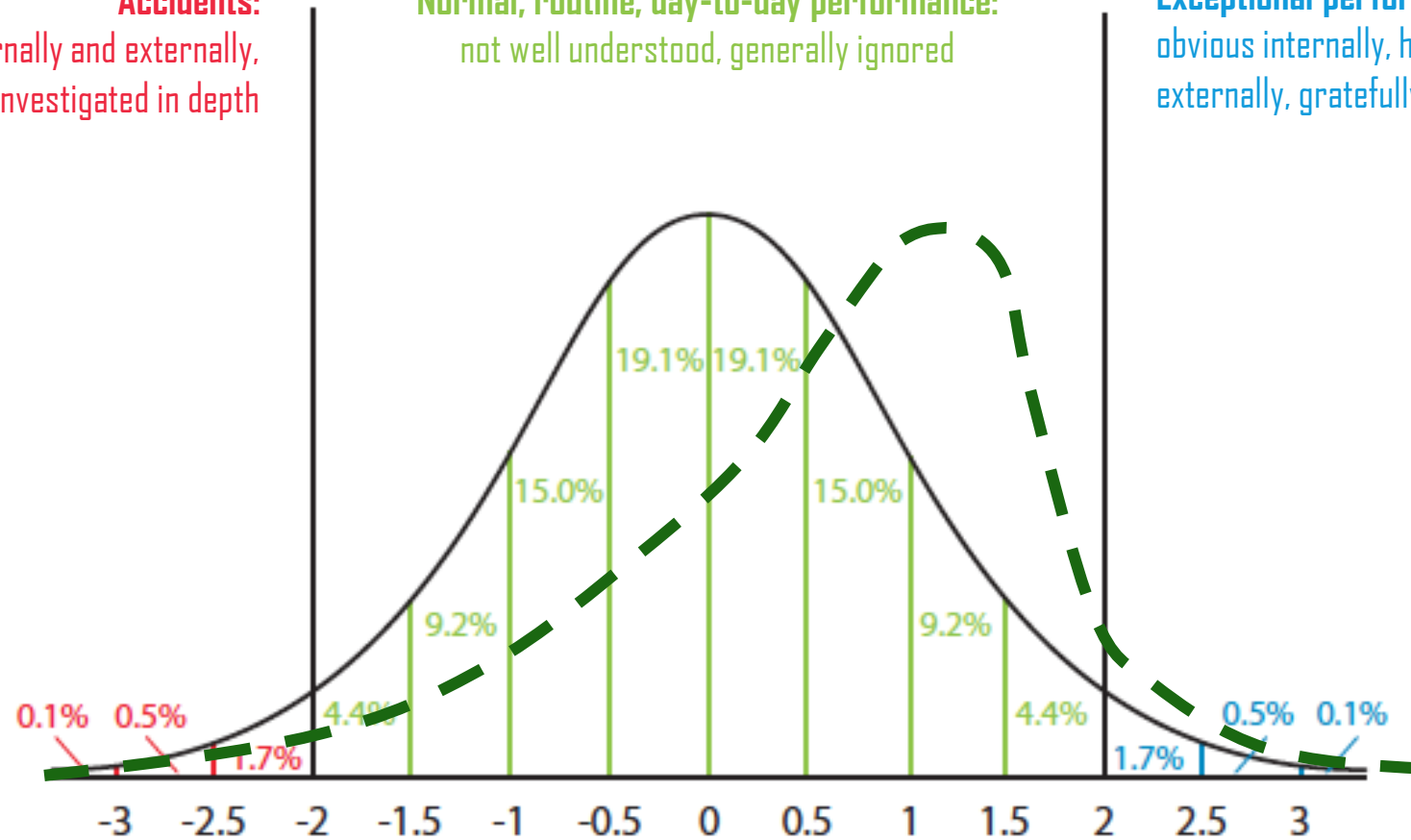


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Seven Friends of Intervention

Acceptance of uncertainty

Competency, expertise & involvement

Research

Listening & observing

Human-centred, activity-focused design

Multiple perspectives & thick descriptions

Systems methods

