Developing Resilience in Flight Operations

Individual, Crew and Organisational Strategies

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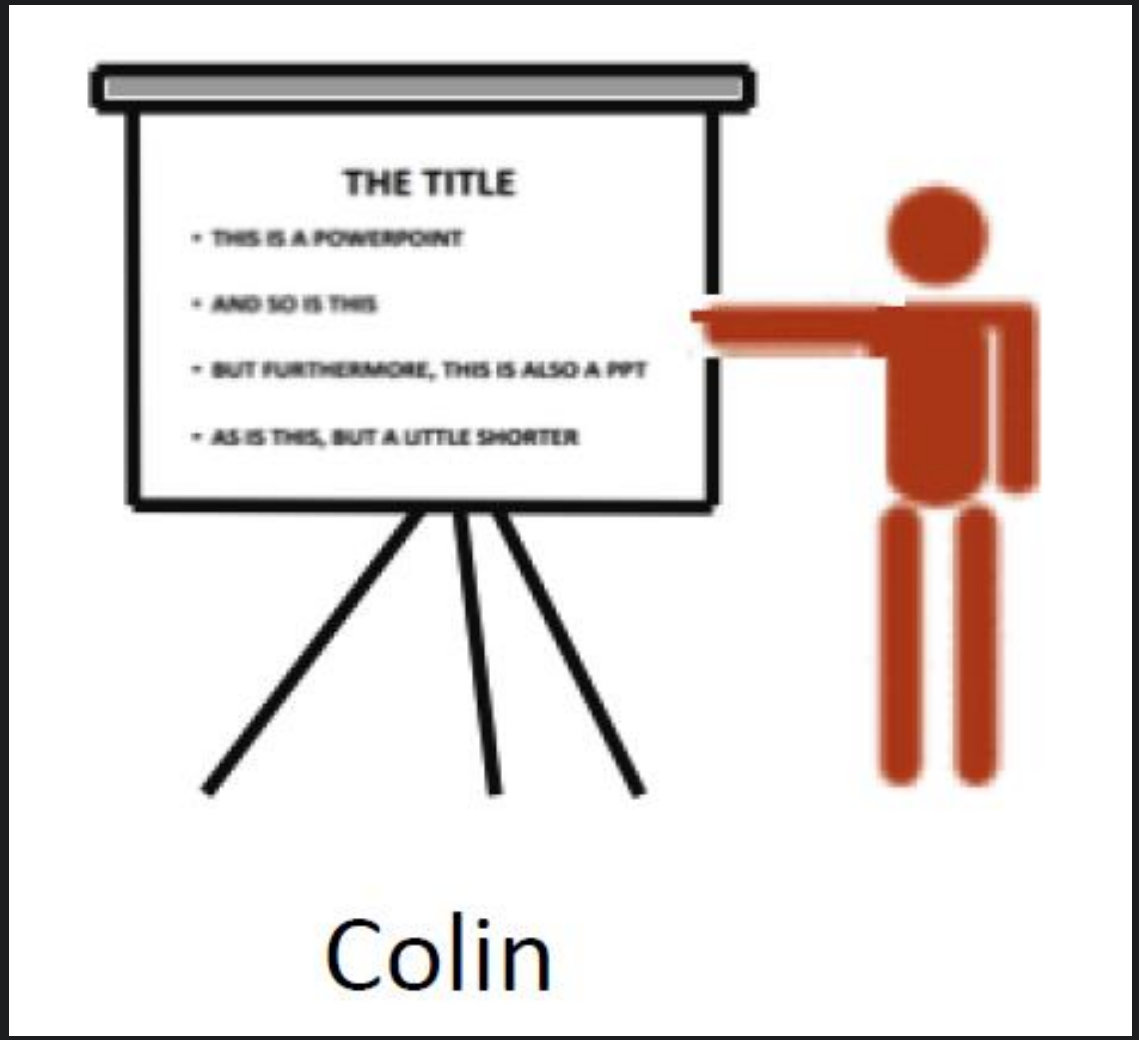
The Plan

13.00 – 13.30	Introduction to Resilience
13.30-14.30	Individual Resilience Skills, Team Resilience Skills,
14.30-15.00	Morning Tea
15.00 – 15.45	Organisational Resilience Skills and Case Studies
15.45 – 16.00	Summary and Conclusion

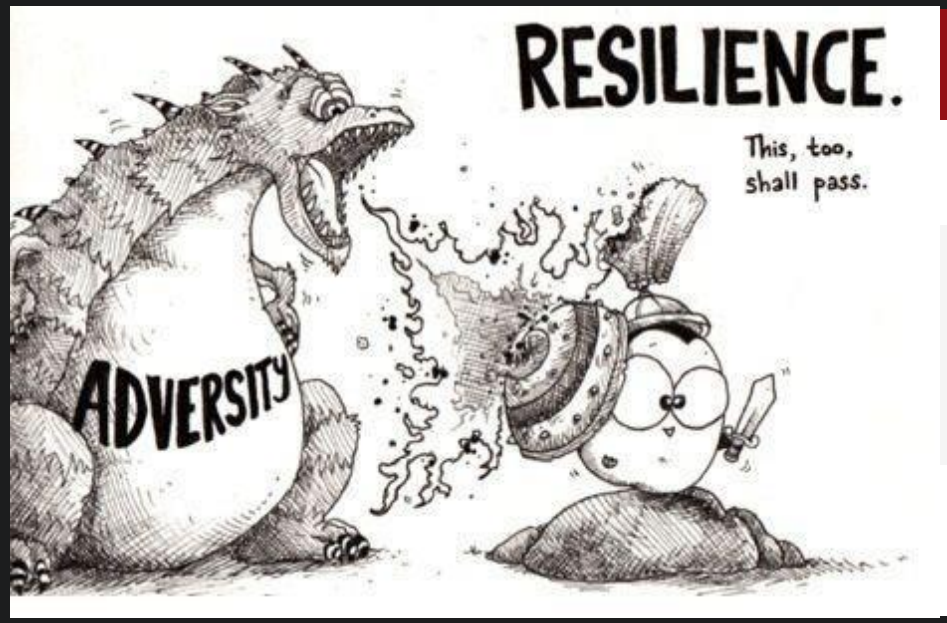

THE TITLE
• THIS IS A POWERPOINT
• AND SO IS THIS
• BUT FURTHERMORE, THIS IS ALSO A PPT
• AS IS THIS, BUT A LITTLE SHORTER
Colin

Introduction to Resilience

Group Discussion:

How would you define resilience?
Individual? Team? Organisational?

What is Resilience? Definitions from various domains



Domain	Definition
Psychology	The developable capacity to rebound from adversity
Disaster Management	The ability of social units to mitigate hazards, contain the effects of disasters when they occur and carry out recovery activities that minimise social disruption and mitigate the effects of future events
Engineering	The ability to sense, recognise, adapt and absorb variations, changes, disturbances, disruptions and surprises

Is this a new concept for HF practitioners?

Multi-layer view of Resilience

Individual Resilience

- An individual's ability to successfully adapt to life tasks in the face of social disadvantage or highly adverse conditions

Team Resilience

- The capacity of a team to withstand and overcome stressors in a manner that enables sustained performance.

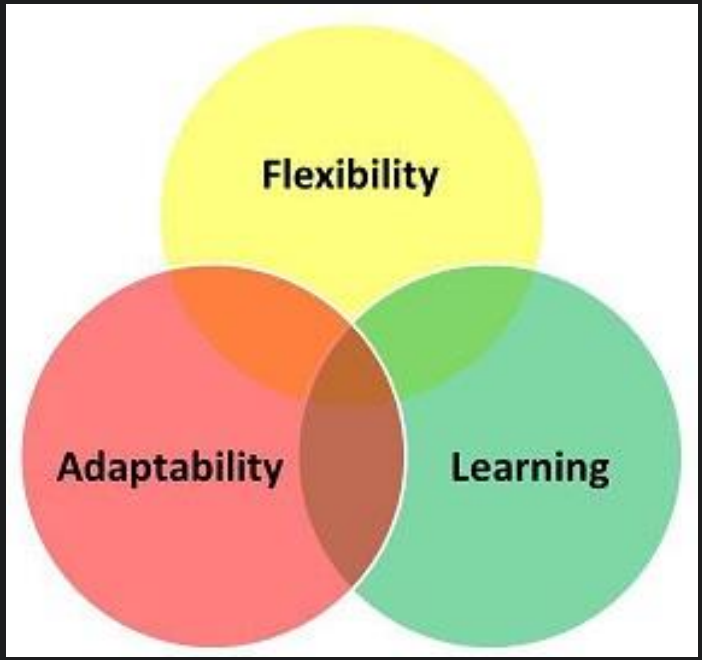
  The attribute that helps teams handle and bounce back from challenges that can endanger team cohesiveness and performance.

Organisational Resilience

- “The capacity for complex systems to survive, adapt, evolve and grow in the face of turbulent change. The resilient organisation is risk intelligent, flexible, and agile”.

- The US Competitiveness Council

Does Organisation Resilience improve safety?



Resilience Skills & Strategies

Small Group Discussion

- What does ‘good’ and ‘bad’ INDIVIDUAL resilience look like?
- What does ‘good’ and ‘bad’ TEAM resilience look like?
- What does ‘good’ and ‘bad’ ORGANISATIONAL resilience look like?

Resilience Strategies – Handouts

	Preparation and Planning	Detecting the impact of adversity	Recovering (Short & Long Term)
Individual			
Team			
Organisational			

Individual Resilience – 'Surprise'

Surprise is inherently challenging to resilience, because:

- It cannot be anticipated,
- May be an absence or reduction of monitoring due to uniqueness of event
- No precursor events to learn from

Two main types of surprise (Lanir, 1986):

- *Fundamental Surprise* - Clash between your understanding of the world and reality, requires a major reappraisal to gain an understanding (Tugend, 2011)

- *Situational Surprise* - Unexpected, but within our understanding of the world.

(Wears & Webb, 2011)

Individual Resilience – ‘Startle’

Startle is a sudden bombardment of the senses, which is often accompanied by surprise.

Can have Physical, Emotional and Cognitive reactions.

Individual Resilience - What responses can we expect?

How does resilience impact these reactions?

- Will we still have them?
- Can I train myself out of these reactions?
- What can I expect of resilience training?
  - E.g. Detection skills, recovery skills, post incident reaction.

Individual Resilience Skills

- Emotional regulation – the ability to manage emotions and reactions
- Social support and willingness to access this
- Problem-solving skills
- Asking for help and seeking resources
- Strong self image
- Adaptive coping strategies

Individual Resilience - Preparing and Responding

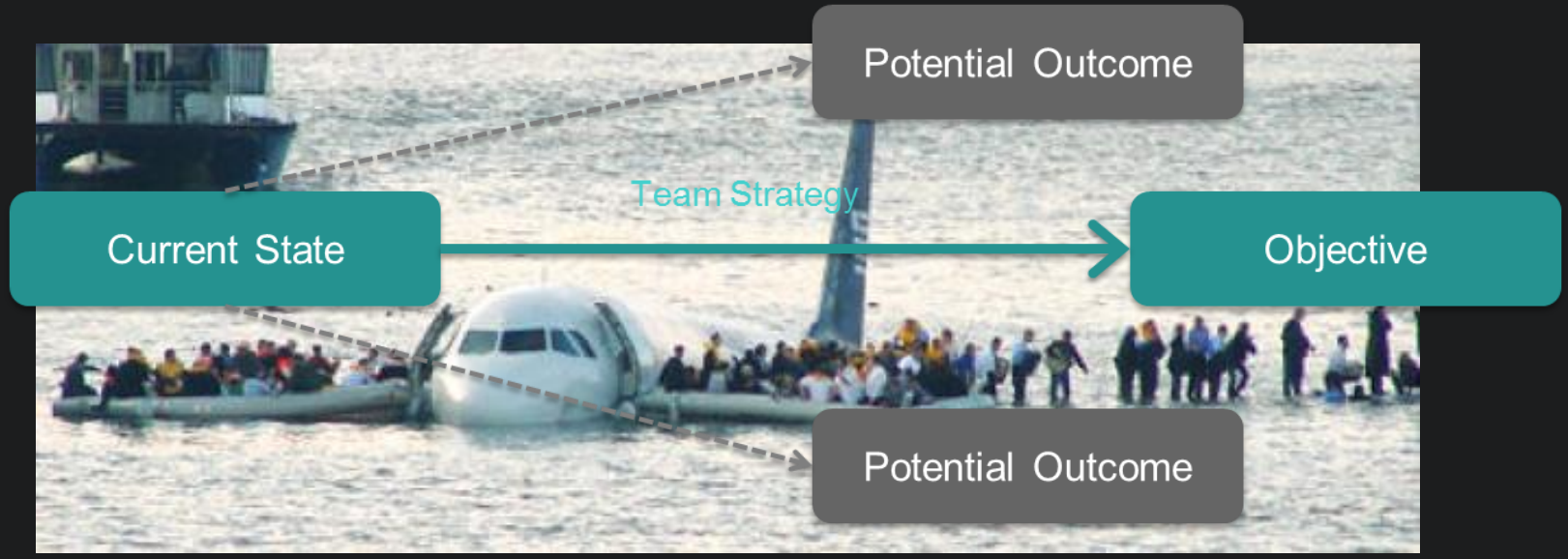
Training should apply realistic, scenario-based instruction to teach pilots to:

- Recognise physical, emotional, and cognitive responses
- Manage stress/arousal levels — not too complacent or overloaded
- Adapt known procedures to fit novel situations
- Learn problem-solving techniques to avoid becoming fixated on a solution that is not working

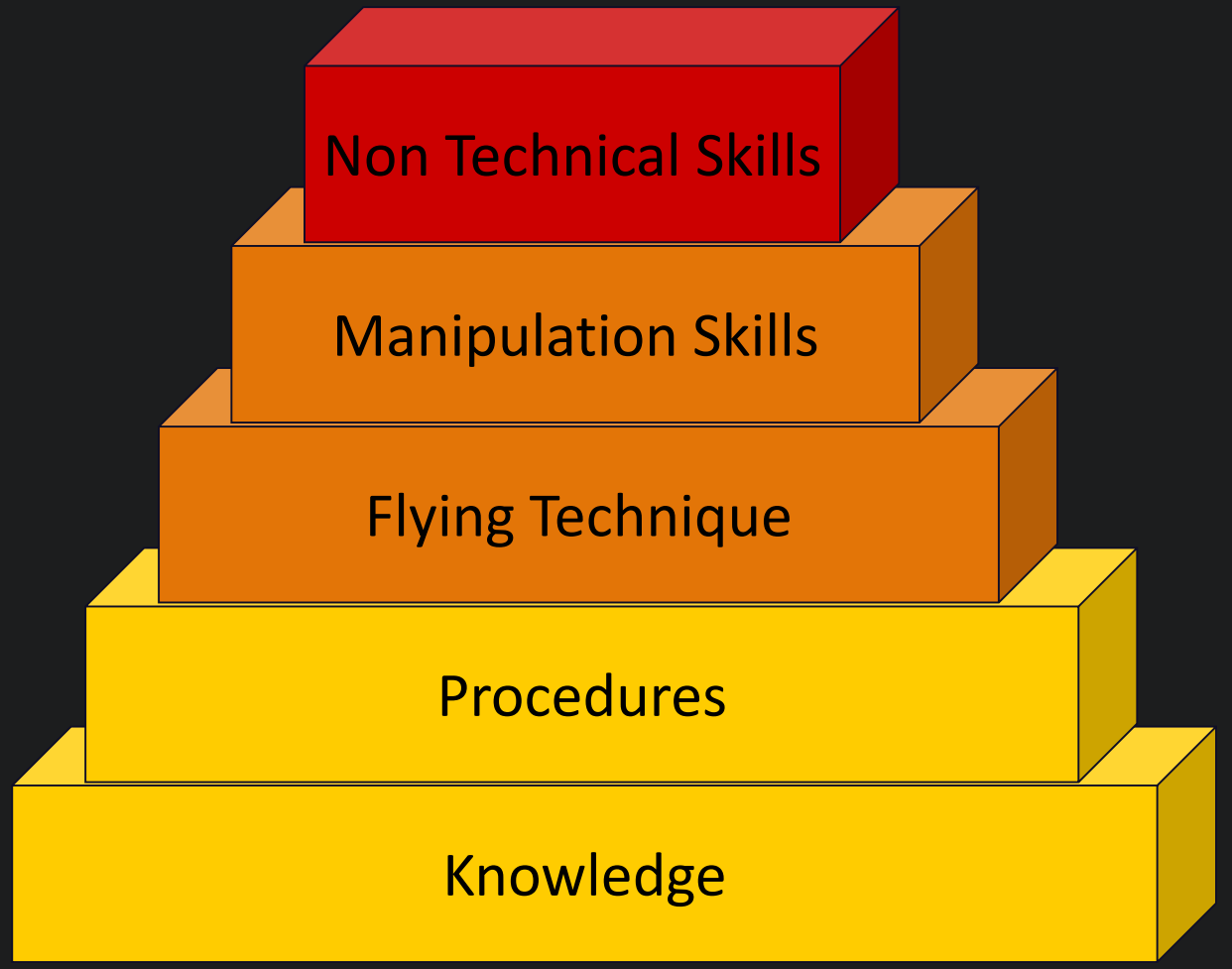
(OGHFA)

Team Resilience Skills – Be prepared

- Get your house in order – Individual Resilience Strategies
- Assess wellbeing and readiness during briefing
- Look out for early warning signs, and manage them early
- Anticipate challenges – Be ready
- Know your resources and be willing to use them
- Objective focus

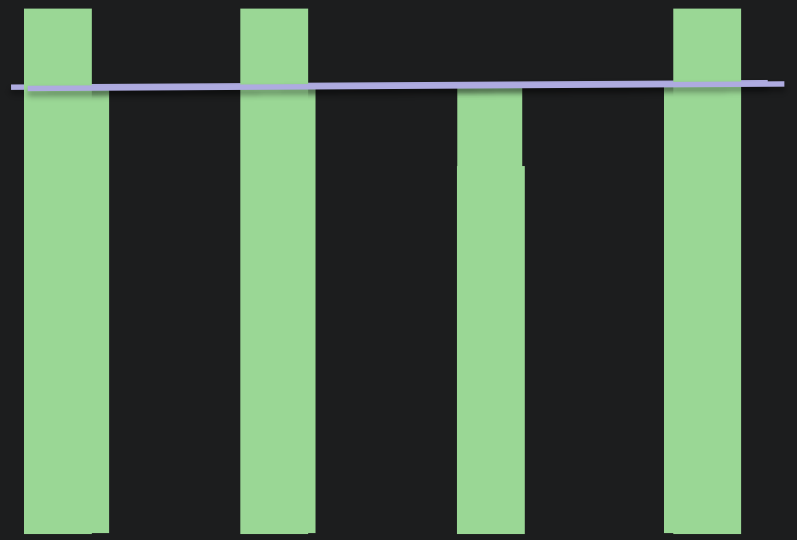


Qantas Hierarchy of Skills



Team Resilience Skills – During adversity

- Back to basics – Fly the aircraft, Get your mind together, Manage.
- Open lines of communication – How is everyone coping?
  - Pace? Workload? Do you need to be directive?
- Can we meet the objective? Do we need to reassess?
- Collective efficiency is your aim
- Rally Effect
- Post event?

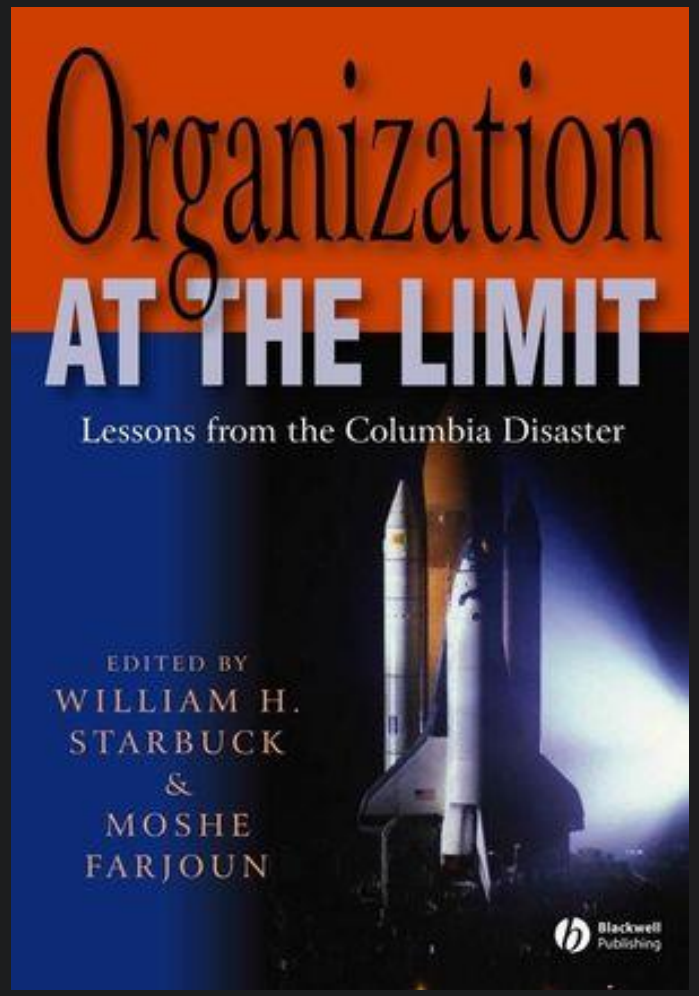


#DontCrackUnderPressure
TACHYMETRE

Why do I get to speak to you today?

LOST
CONFUSED
UNSURE
UNCLEAR
PERPLEXED
DISORIENTED
BEWILDERED

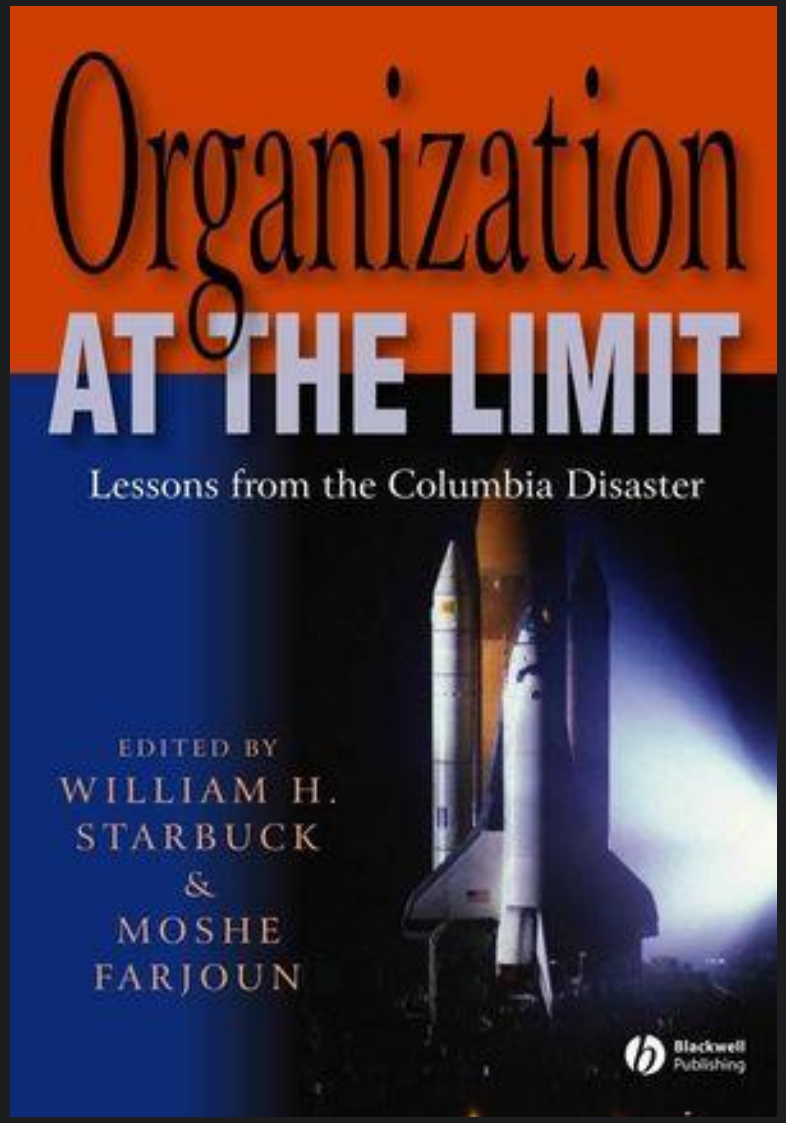
AVOID
RISK
REDUCE



The focus of resilience engineering is on monitoring organisational decision-making to assess the risk that the organisation is operating nearer to safety boundaries than it realises…

Or that the organisation's adaptive capacity is degrading or lower than the adaptive demands of its environment.

Monitor for risks in how the organisation monitors its risks

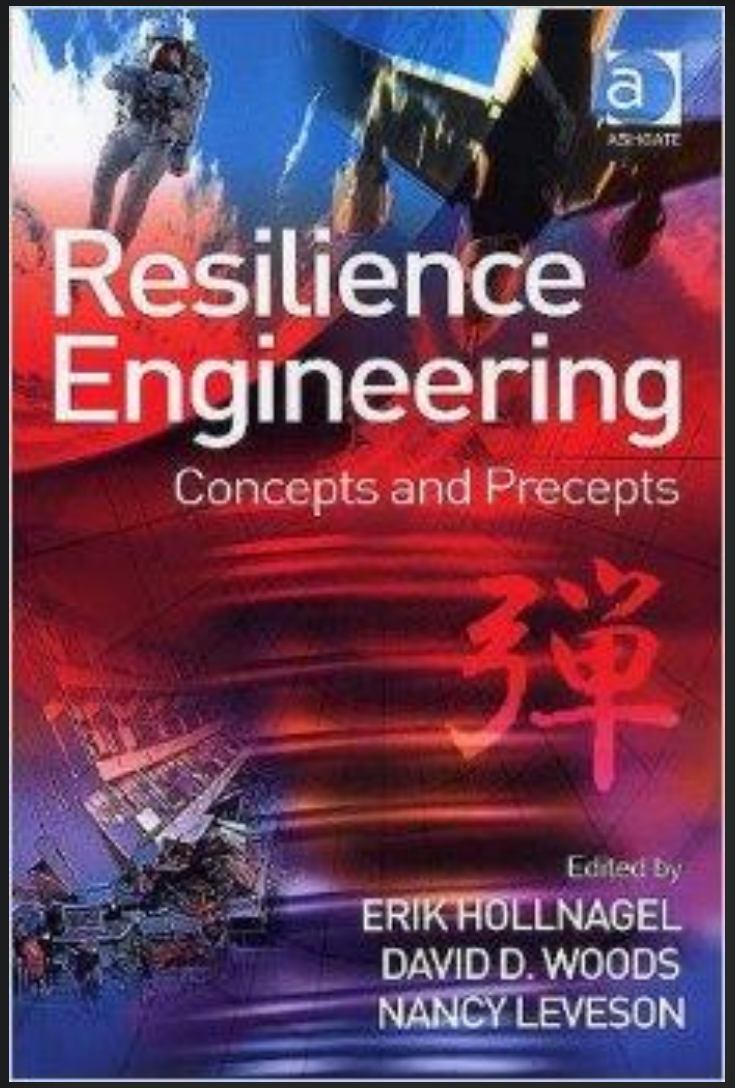


Buffering capacity

Flexibility

Margin

Tolerance



Andrew Hale & Tom Heijer

- Defences erode under production pressure
- Past good performance feeds future confidence
- Fragmented problem-solving clouds the big picture – no shared risk picture
- Failure to revise risk assessments as new evidence accumulates
- Breakdown at boundaries impedes communication, coordination
- Organisation cannot respond to rapidly changing demands and is not able to cope with unexpected situations
- Not enough commitment to safety alongside other goals
- Safety is not an inherent part of the way the system operates

Acknowledge the need…

To balance the tension between standardisation and flexibility/adaptability:

- The way work gets done
- The way power and knowledge is distributed
- Maintaining stable system vs change capacity
- The way a product or service changes to demands in the environment
- Use of technology

Resilience Case Studies

Individual Resilience Case Study
Lt Charles Brown – 327th Bombardier Squadron, Dec 20, 1943

- B17 Bombing mission over Germany – Brown's first as Captain
- Received severe flak damage to plexiglass nose and wing
- #2 engine shut down, #4 partial power only
- Completed bombing run then made multiple evasive manoeuvres to avoid fighters
- Mercilessly attacked; only 3 defensive guns operating – others were frozen in -59°C temp
- One Crewmember was killed, another maimed (leg amputated on return), four wounded
- Received serious damage to #3 engine
- Left elevator and stabiliser were destroyed
- Oxygen system and communications system were destroyed
- Rudder was shredded, causing a spiral dive. Lt Brown recovered control just prior to impact.
- A German fighter tried to force them to land but Lt Brown evaded him and headed out to sea
- He nursed the crippled aircraft back to England
- Awarded Air Force Cross

Believe that there is a solution!

Case Study Discussion

1. What were the the elements / factors / skills that created resilience ?

2. Were there any deficits in individual resilience skills?

3. Is there anything you can add to your strategy table?

Team Resilience – Apollo 13

- Team successfully returned crew
- Working with limited time and resources

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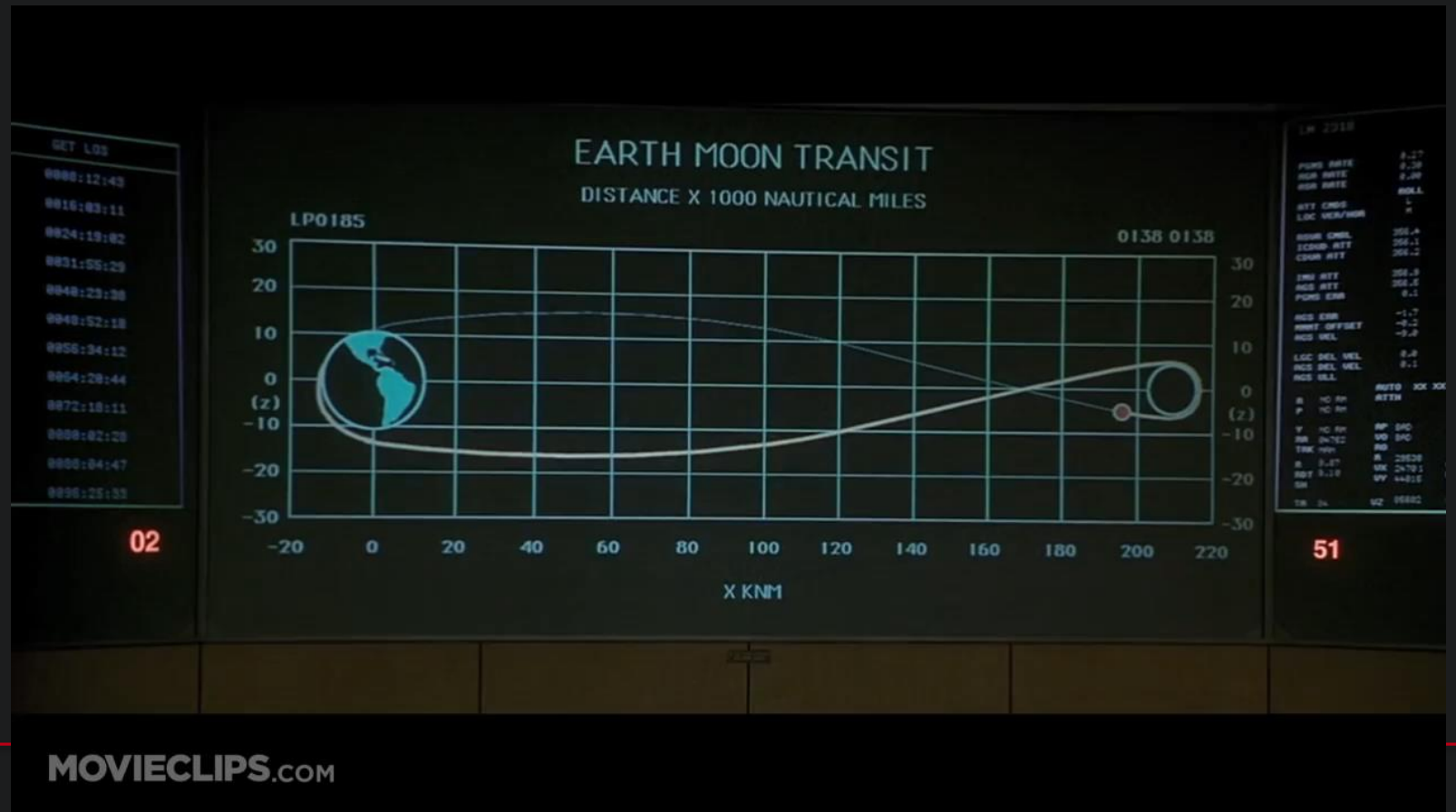

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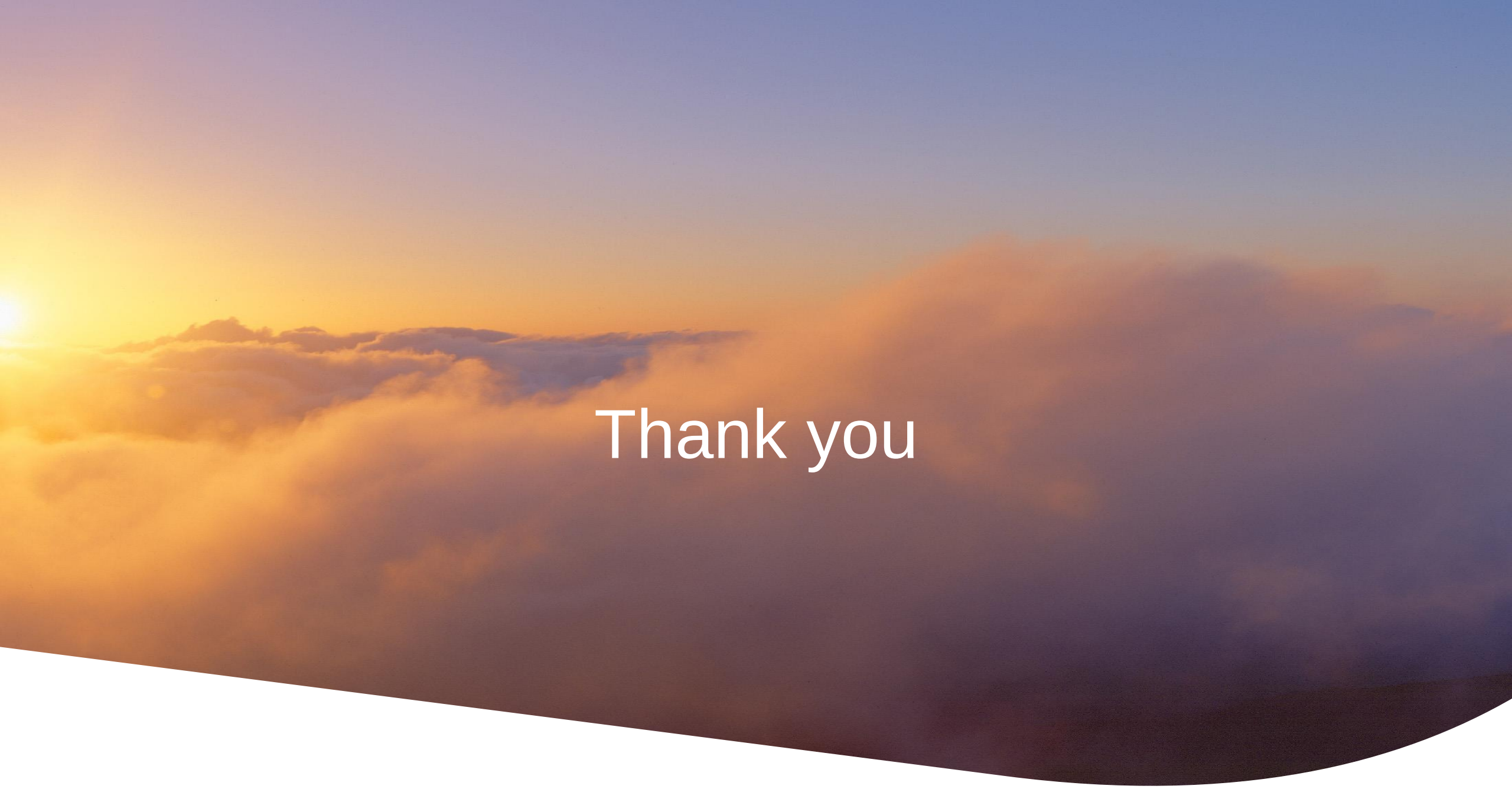
Don’t we already know much of this?

Strategy and Capacity Building Discussion

Resilience Strategies

- Review strategy tables
- What existing programs / processes are available to support resilience?
- What are likely challenges / threats / stressors to individual/team/organizational resilience programs?


Thank you