8th International Flight Safety Seminar 2026

ROYAL AIR FORCE Safety Centre

Transition to Conflict:

Adaptation of The Safety Management System

Thoughts on preparing our safety framework for tomorrow's fight



Group Captain Steve Courtnadge
Inspector of Flight Safety | RAF Safety Centre

The proposition…

- Safety is not a peacetime luxury
- In conflict, effective safety management becomes more valuable because people, platforms, time and operational credibility become harder to replace.

Safety is a combat enabler

Controlled adaptation enables disciplined risk-taking to preserve combat capability

PEOPLE | PLATFORMS | SORTIE GENERATION | DECISION QUALITY



What happened?

- 2 Sep 2006 – Nimrod MR2 XV230 crashed in Afghanistan, killing all 14 personnel on board.
- Air-to-air re-fuelling event, leading to a catastrophic fire and an un-recoverable aircraft.
- Wider organisational issues beyond just the immediate technical cause.
- Independent 2009 review: Charles Haddon-Cave QC.



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What did we do?

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4* Senior Duty Holder (SDH)

↕

2* Operating Duty Holder (ODH)

↕

OF-5 Delivery Duty Holder (DDH)

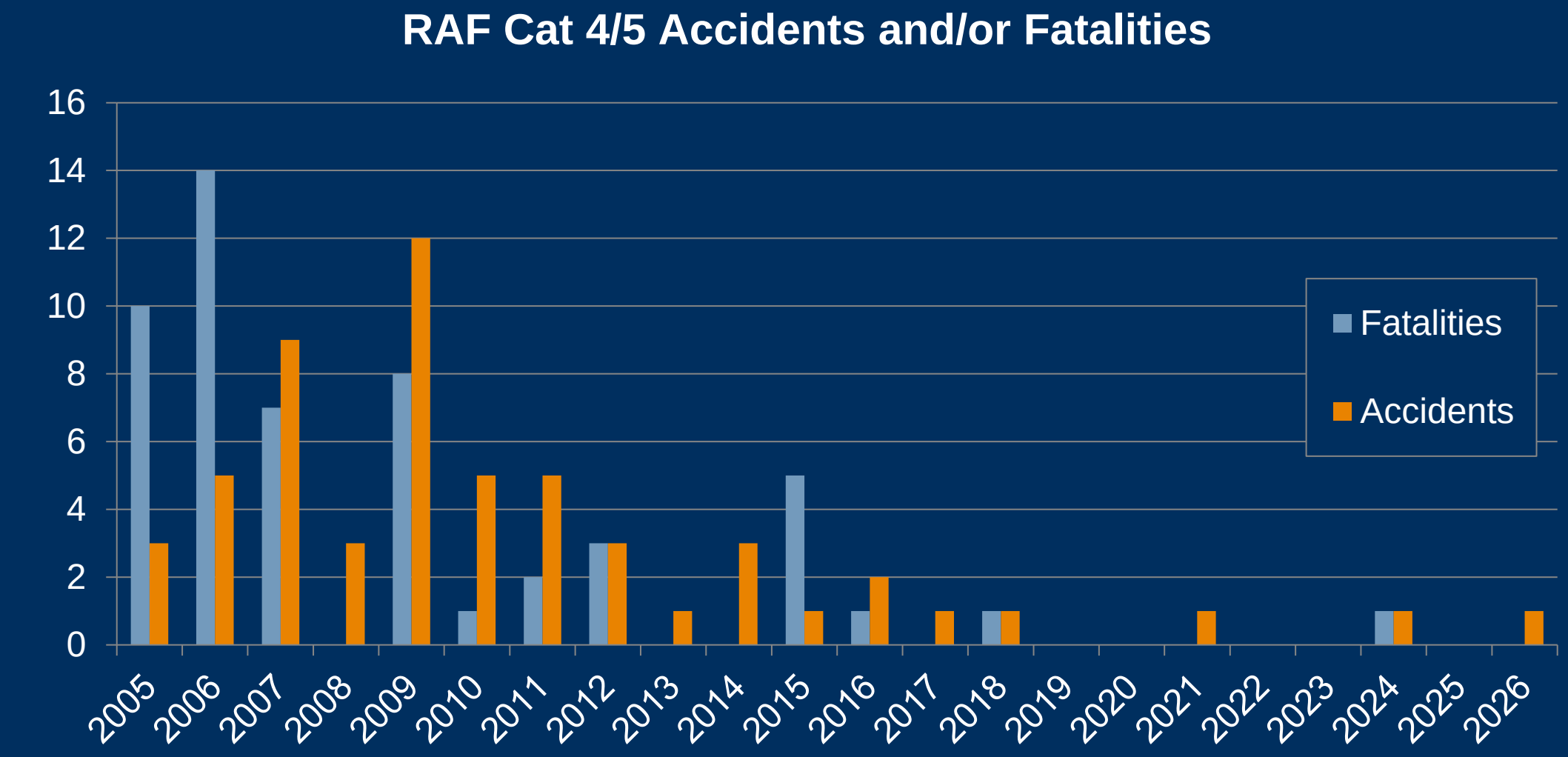
Military Aviation Authority

MAA



What were the results?

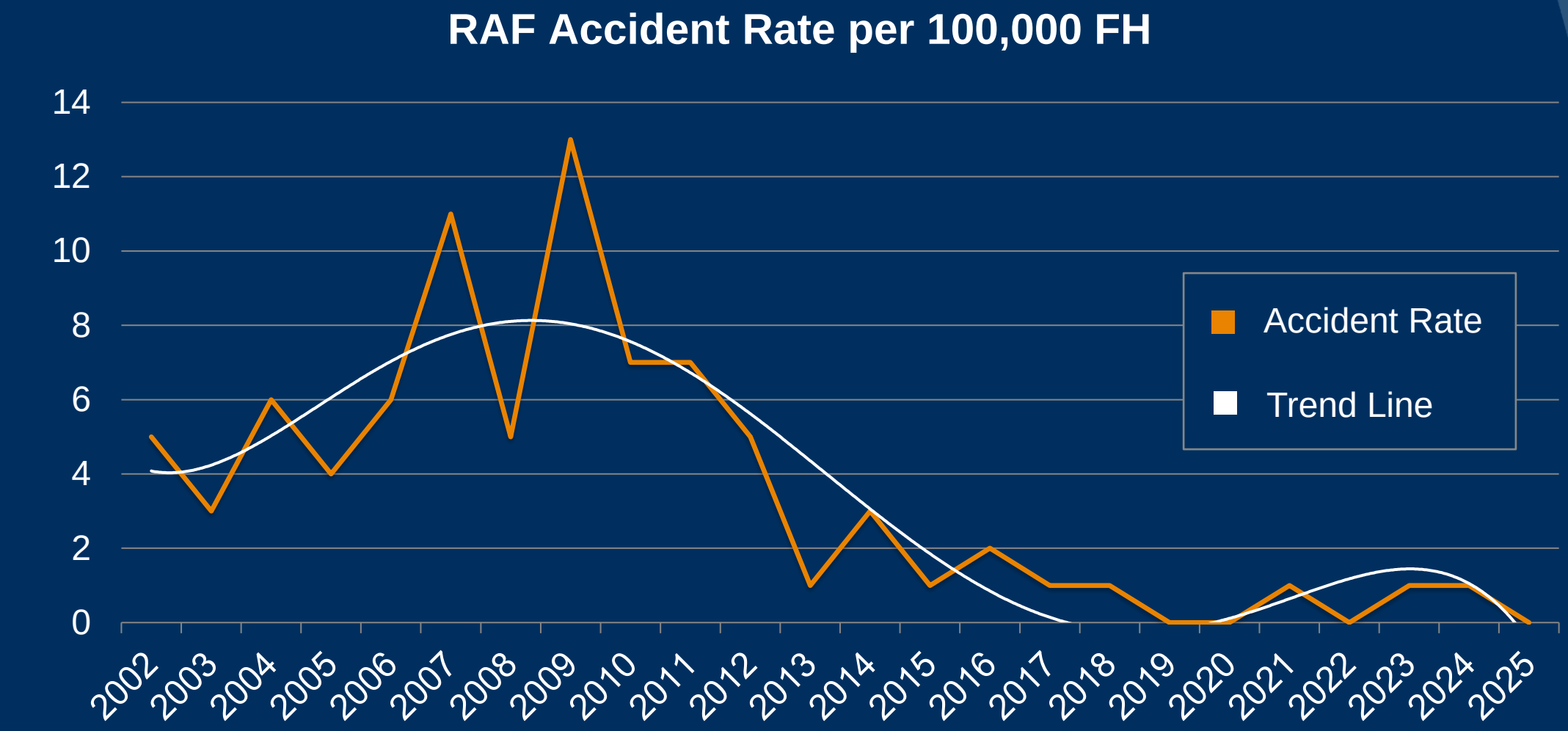
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What were the results?

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Expeditionary SMS Assumptions

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Stable infrastructure
Power, communications, digital systems and operating locations remain functional.

Time for analysis
Reporting, investigations and governance processes can operate through established timelines.

Known controls
Procedures, competence standards, supervision, maintenance arrangements and other barriers remain valid.

Accessible expertise
Engineering authorities, safety specialists, regulators and assurance organisations are available.

Future operations challenged our SMS assumptions

Unavoidable variation

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Work as Imagined

Rigid compliance



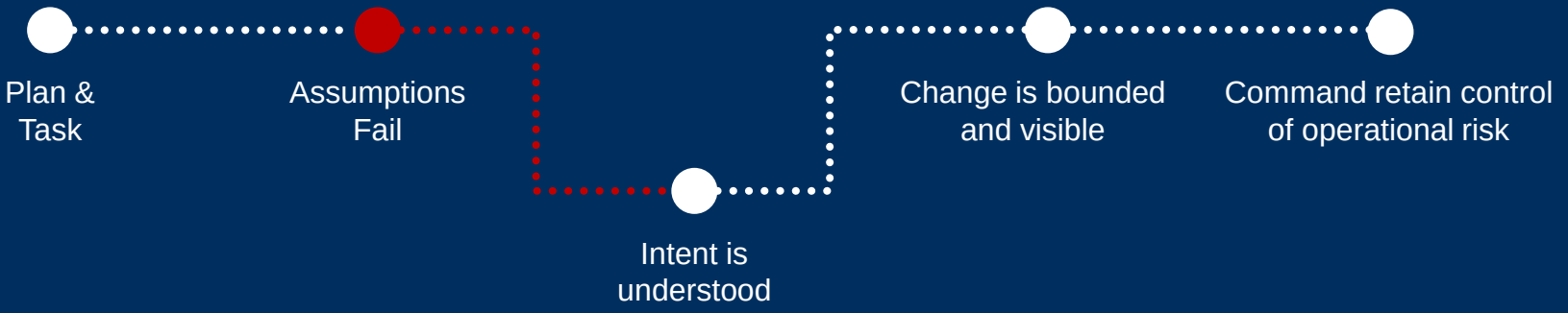
Work as Done

Un-controlled



Work as Done

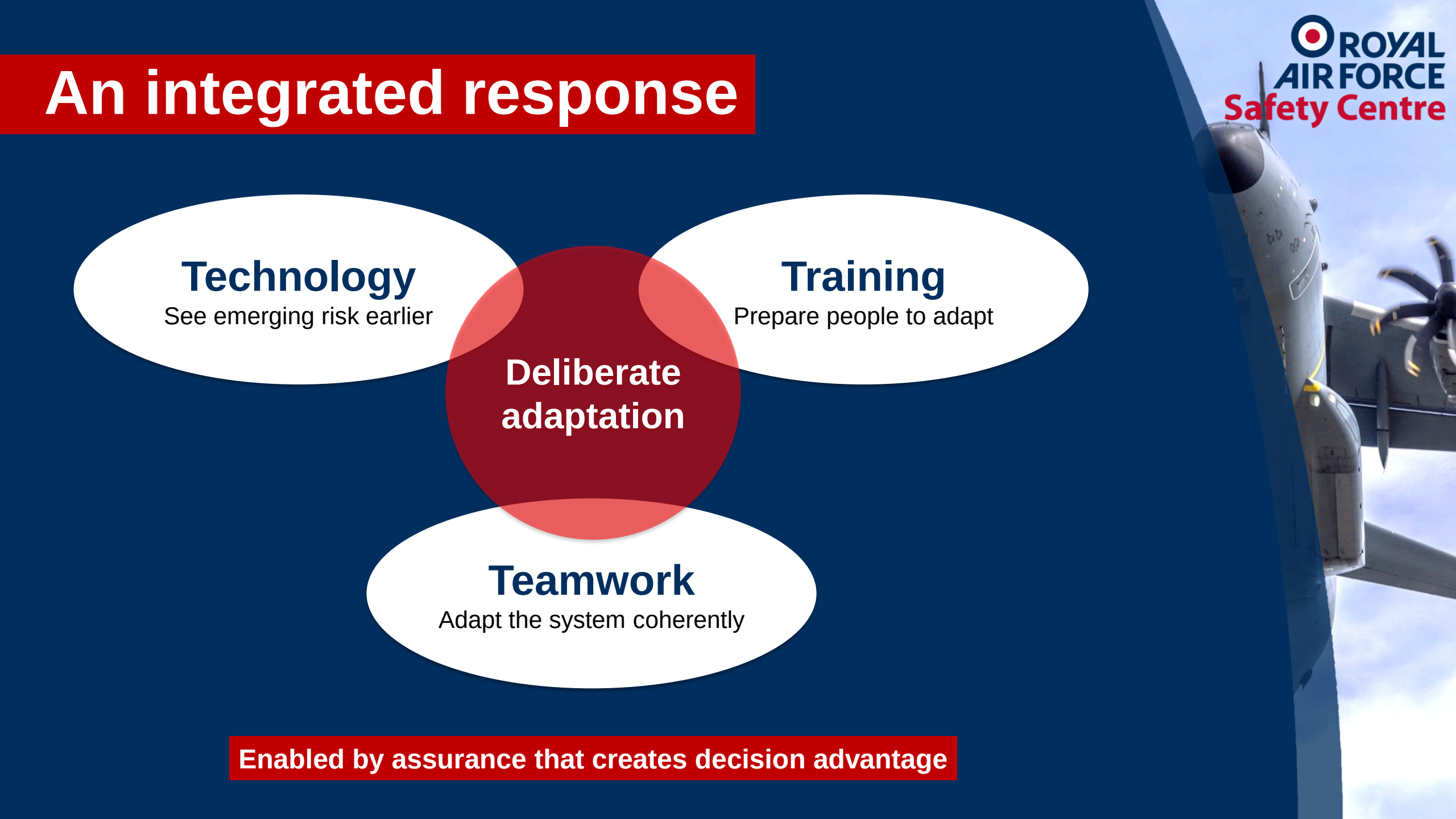
Deliberate Adaptation





An integrated response

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Technology
See emerging risk earlier

Training
Prepare people to adapt

Deliberate adaptation

Teamwork
Adapt the system coherently

Enabled by assurance that creates decision advantage

Technology

- Unlock the ability to see across the wider safety and operational system.
- Technology should help safety teams and commanders:

Connect fragmented safety information

Recognise emerging conditions and patterns

Identify changes in barrier performance

Accelerate analysis when expertise is constrained

Present uncertainty and evidence clearly

Commanders remain accountable for risk decisions

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From safety data to risk intelligence

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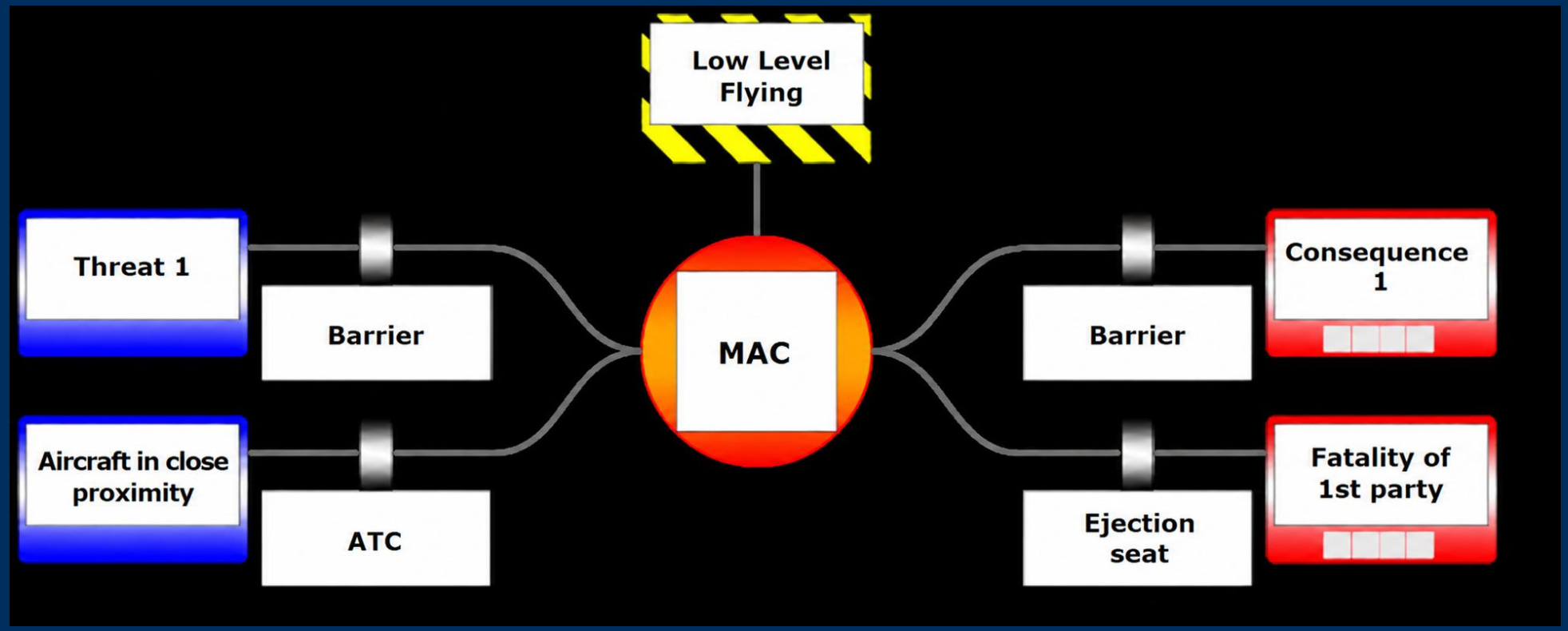


Safety Data → **BowTies** → **CoBRA** → **Enhanced Risk Picture**

The Golden Thread: Evidence ➡ Barrier ➡ Risk Impact ➡ Command Decision

From safety data to risk intelligence

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Bow Tie Risk Management

From safety data to risk intelligence

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FLIGHT DATA MONITORING

SAFETY REPORTS

OPERATIONAL DATASETS

AI Risk Intelligence in Safety

AIRIS

Safety Data → Risk Intelligence

DYNAMIC BOWTIES

ANOMALY DETECTION

PREDICTIVE 'WHAT IF' MODELLING

Training

- From “Train as you fight” to “Train to adapt”.
- No plan survives contact…..

UNDERSTAND INTENT	Know what must be protected and why.
PRACTISE ADAPTATION	Train beyond the plan.
ADAPT TOGETHER	Exercise the wider enterprise.
LEARN FROM SUCCESS	Capture successful adaptation and scale it.

Future-ready people are not trained to improvise, they are trained to adapt



Teamwork – Coherent adaptation

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Operators	Engineers	Safety Specialists
Regulators	**Commanders**	Policy & Assurance
Industry	National Infrastructure	Government

Shared Picture - Shared Intent - Common Language - Visible Trade-offs

Summary

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A changing operational context requires the system to evolve.

SEE	ADAPT	ADAPT TOGETHER
Technology	Training	Teamwork

Safety helps commanders understand and manage risk while preserving the people and capability needed for what comes next.

LEARN THE LESSON BEFORE THE ACCIDENT

Questions for discussion

How do we optimise AI use now (and in the future)?

How do you deliver a (coherent) adaptive mindset?

What guardrails do we need to protect ourselves from over dependent use of AI?

