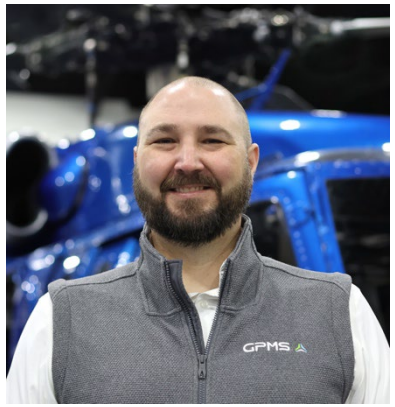
SOUTHEAST ASIA AVIATION SAFETY CONFERENCE
2026 / 27–29 MAY / BALI

Safety Data in Action:
Understanding the Value and Affordability of Data with FDM & HUMS

28 May 2026

Speakers

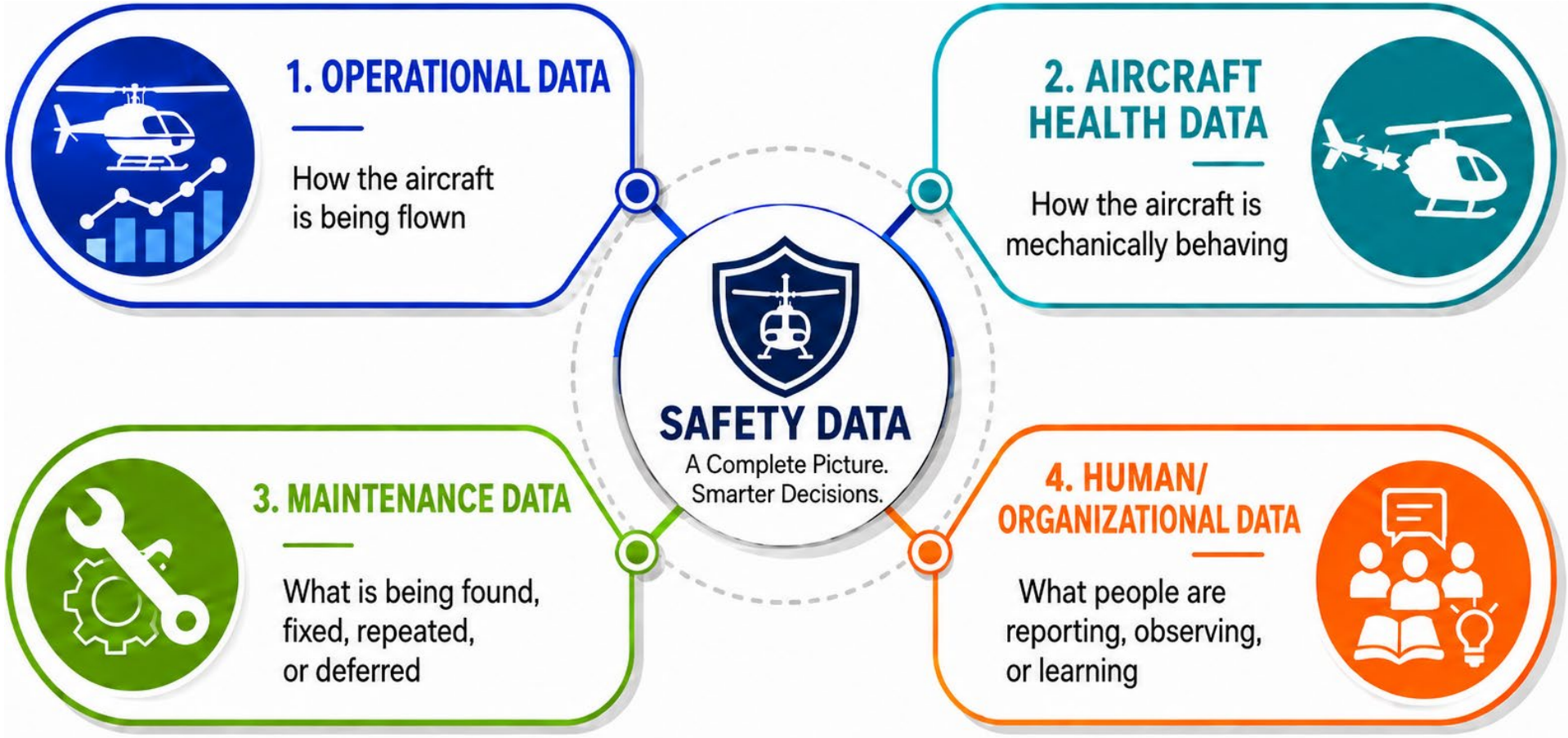


- Ronnie Ries
  - Chief Revenue Officer at GPMS International
  - 18 Years at Bell
  - Former Chair of Transportation Research Board Helicopter Subcommittee

- David Anderson
  - Senior Technical Advisor at Flight Safety Foundation
  - 45+ Years in Aviation
  - Pilot, Flight Engineer, Mechanic and beyond!

Four Categories of Useful Safety Data

A Practical Way to Organize Safety Data



The SMS Connection

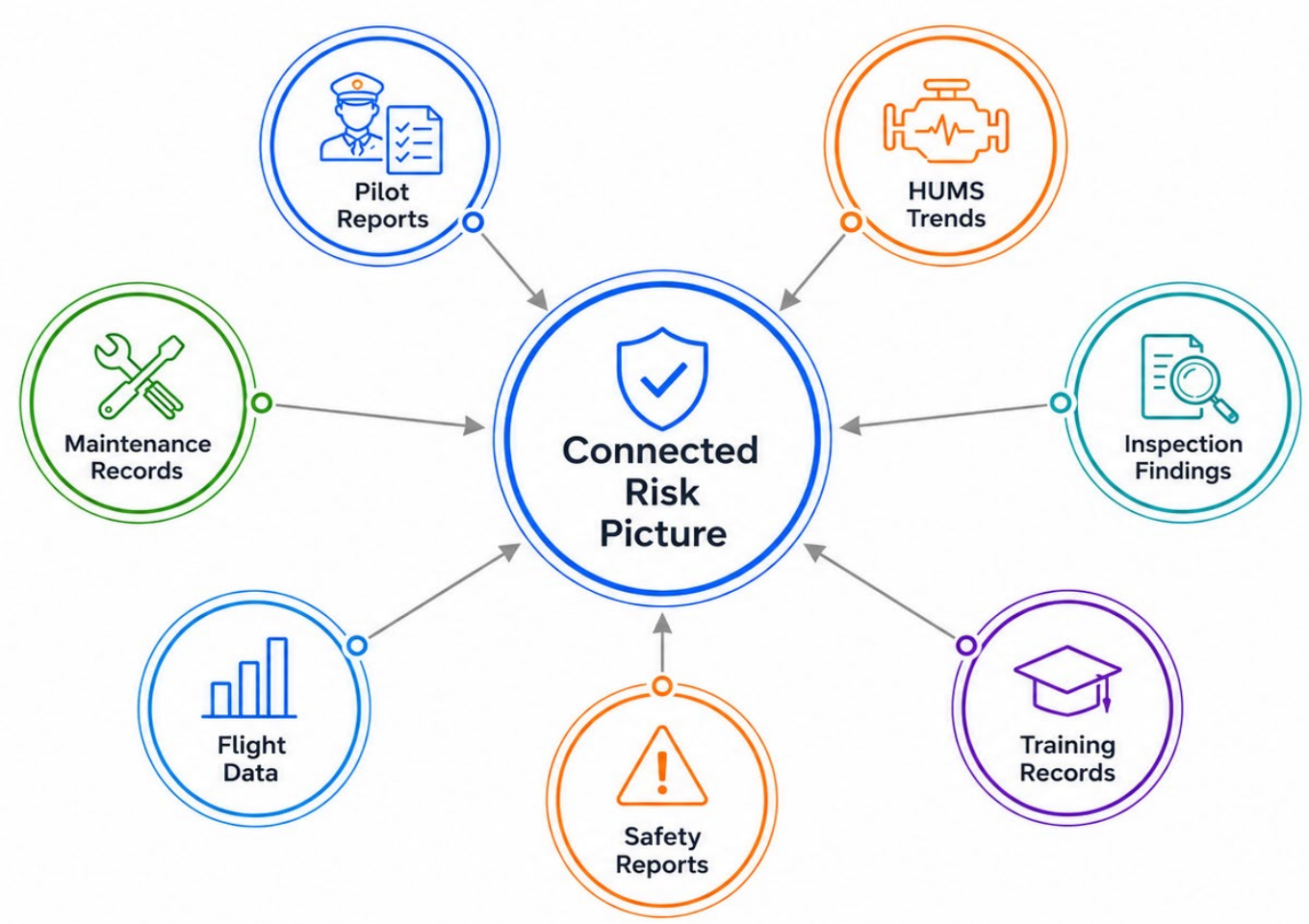
Safety Data Is Foundational to SMS

Capturing Safety Data Is Critical

… But It's Only Valuable When It Leads to Action

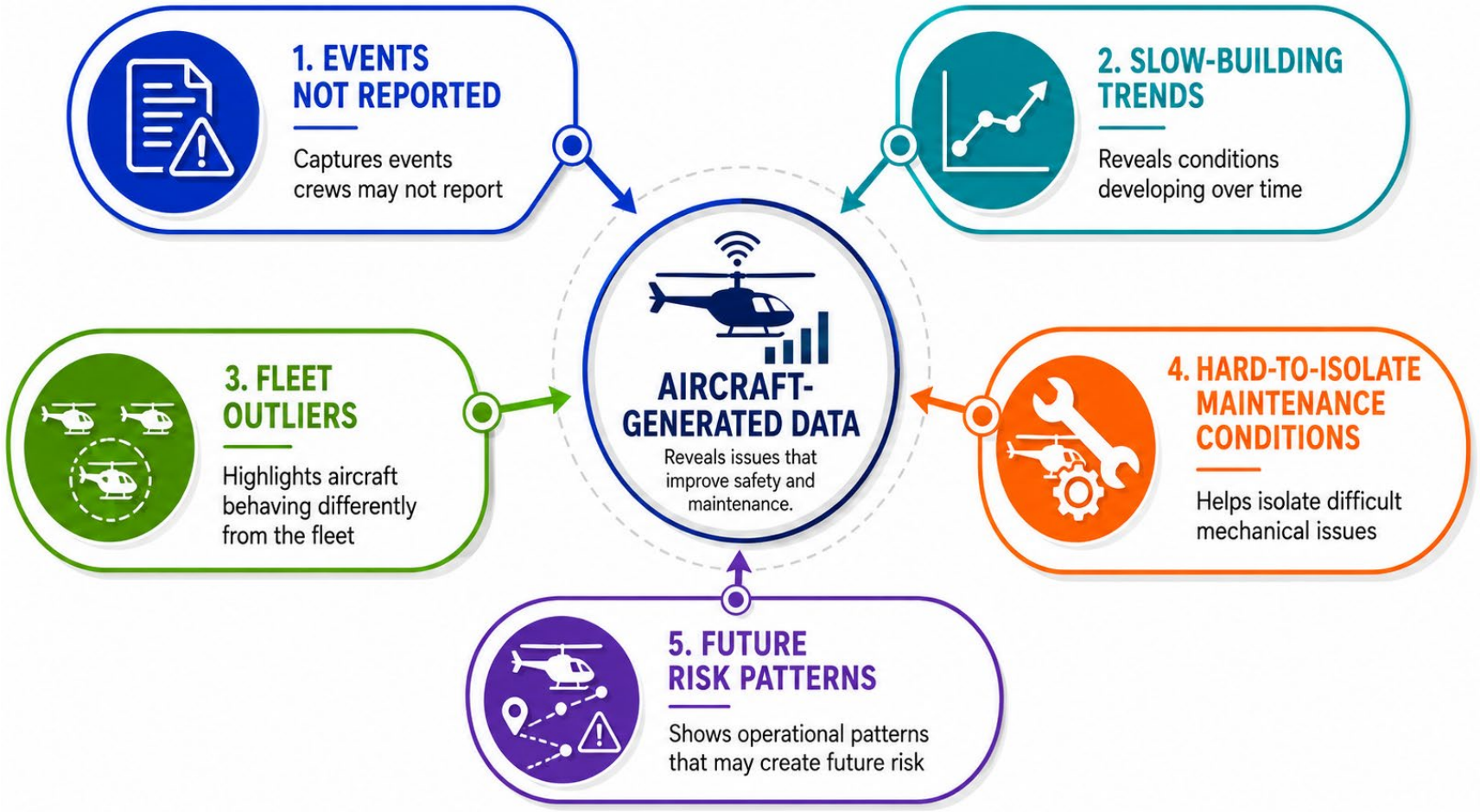
The Common Problem

Most Operators Have Data. Fewer Have a System for Using It.



The Aircraft as a Data Source

The Aircraft Can Tell You Things People May Not See



What is a Health and Usage Monitoring System (HUMS)?

Industry Experts Know HUMS & FDM Are The Future of Safety

IHSF

IHSF analysis of more than 1,000 helicopter accidents identified three major opportunities to reduce accidents:

- Manual HUMS
- Automated HUMS
- FDM programs

IHSF Press Release

USHST

USHST identified HUMS and FDM among the top technologies for mitigating helicopter accident factors, especially fatal accidents.

USHST accident trends study

USFS

USFS requires designated contracted aircraft to be instrumented with a functioning Health and Usage Monitoring System (HUMS).

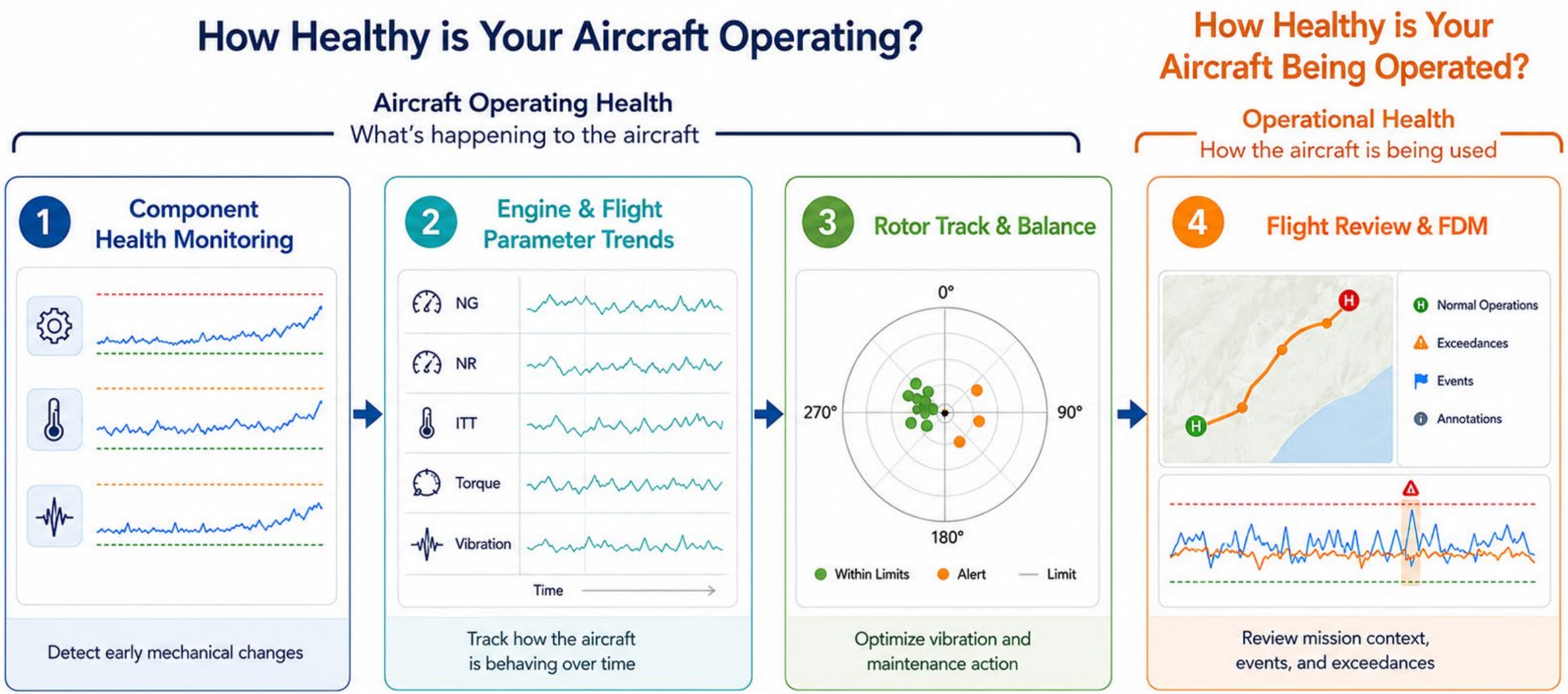
USFS Solicitation 1202SA21R0008

BARS

BARS requires Flight Data Monitoring capability for designated long-term contracted aircraft and a plan to fit HUMS or helicopter vibration monitoring where approved, with routine data download and analysis.

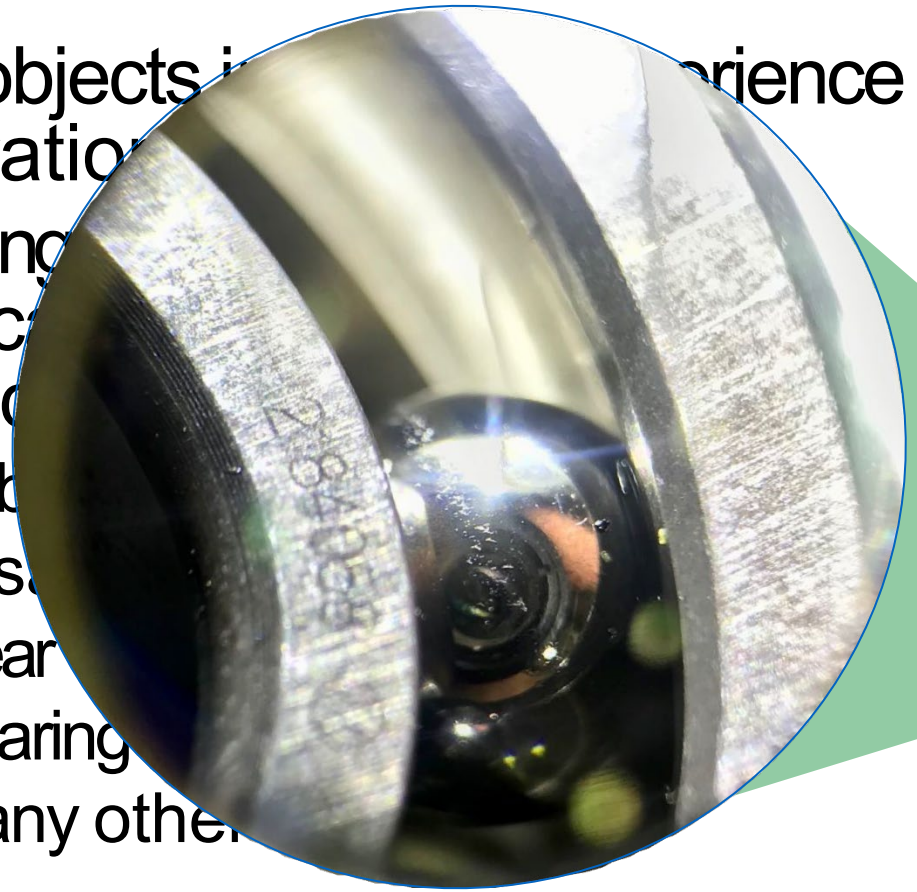
BARS Controls 6.4 and 10.5

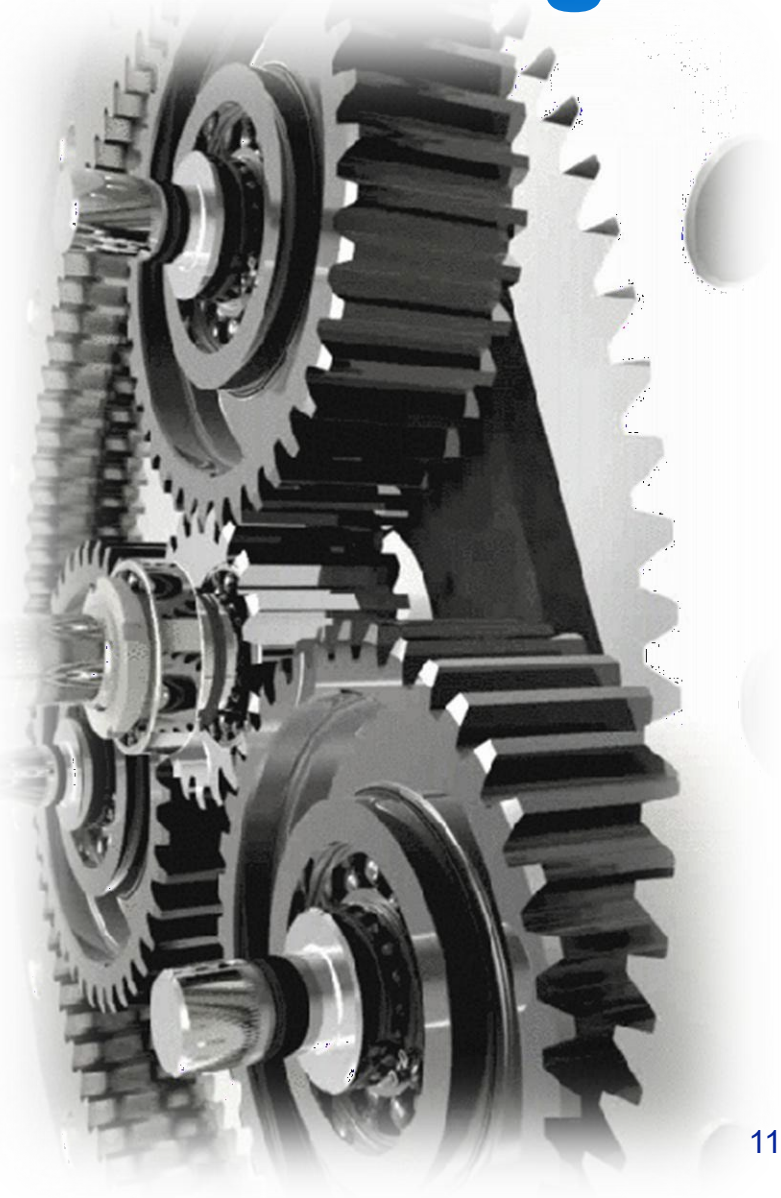
Typical Components of a HUMS



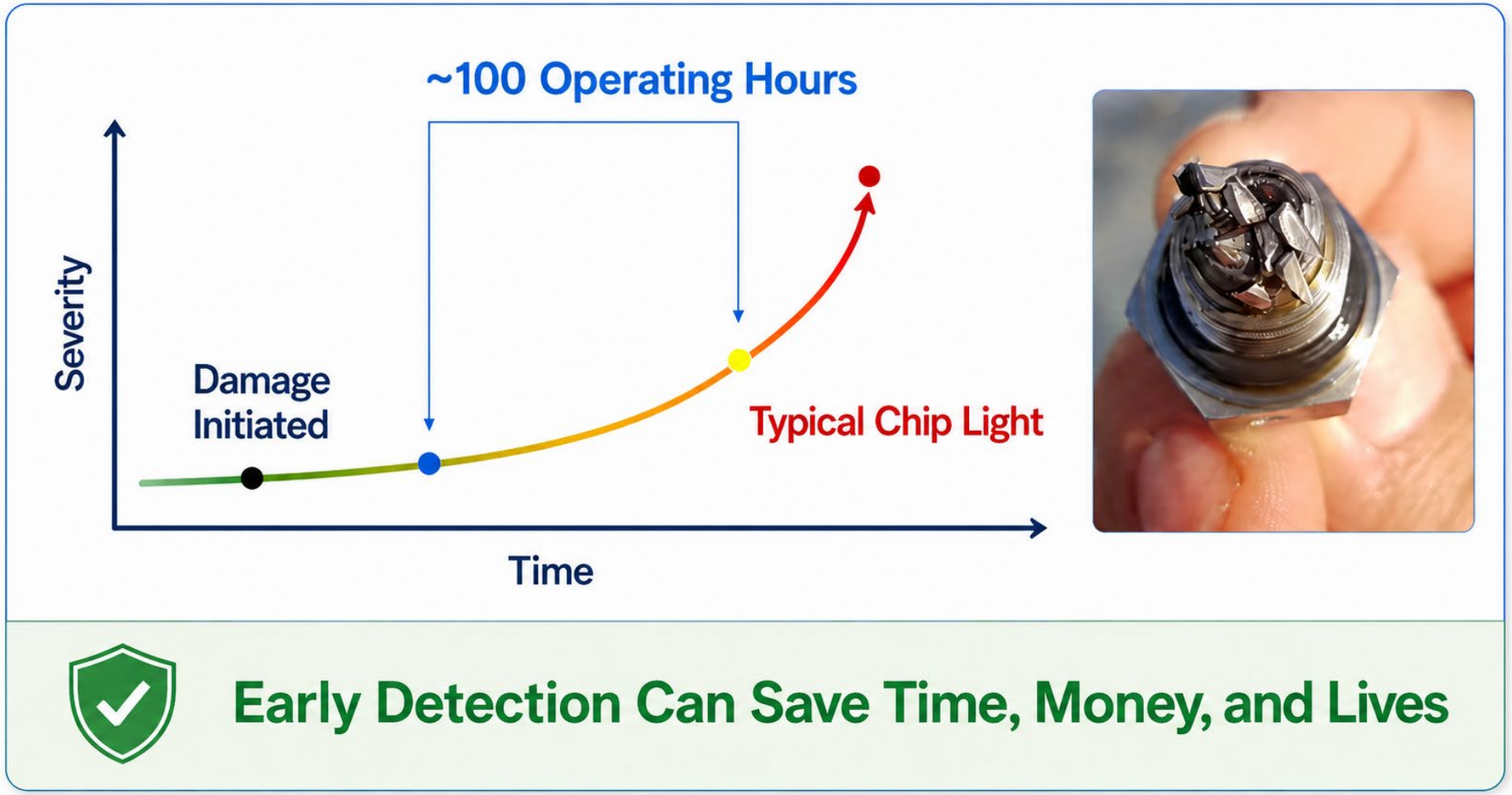
HUMS Overview – Vibration Monitoring

- All objects i rience vibratio
- Chang indic conc
  - Imb
  - Mis
  - Gear
  - Bearing
  - Many othe



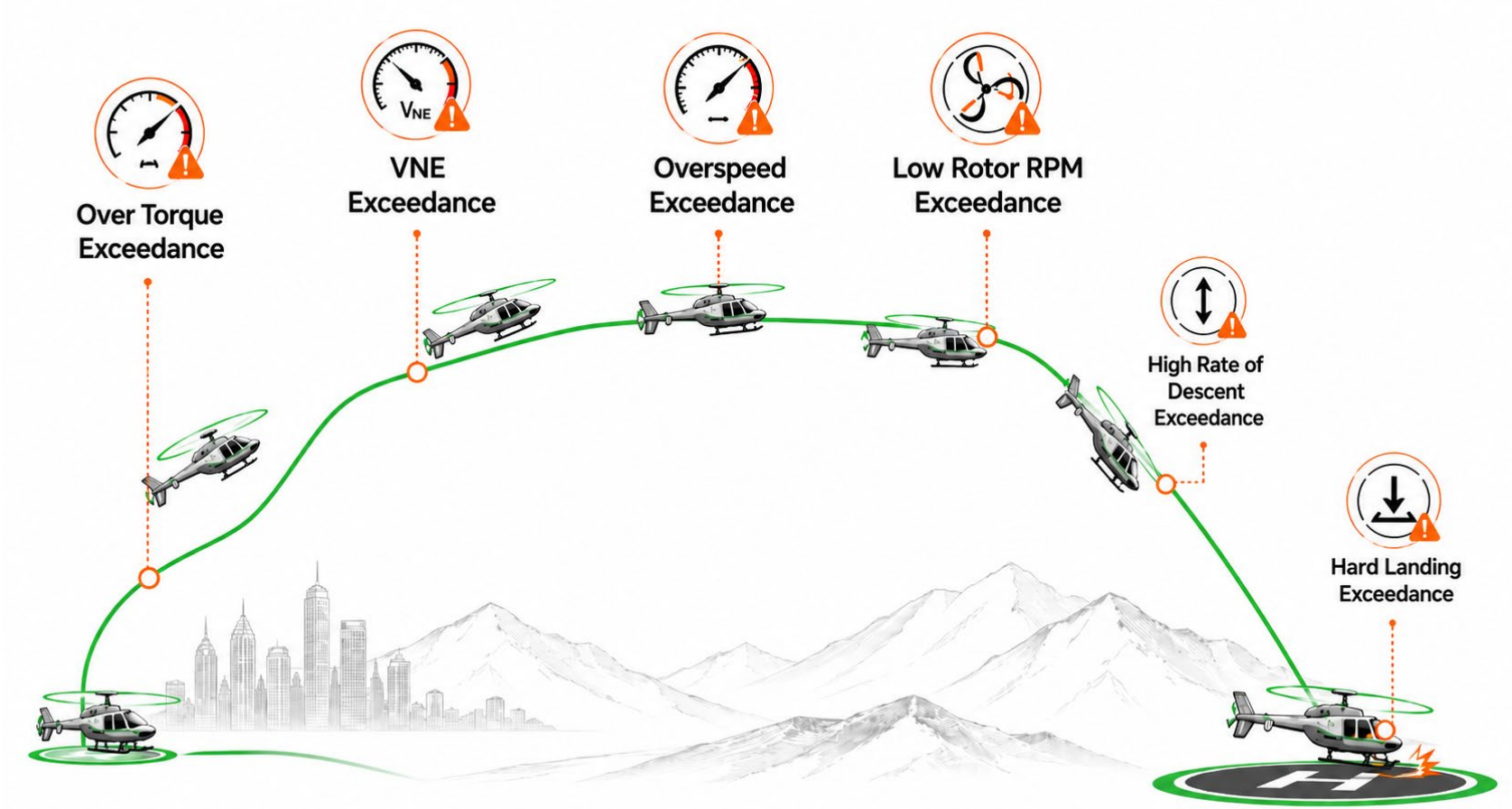


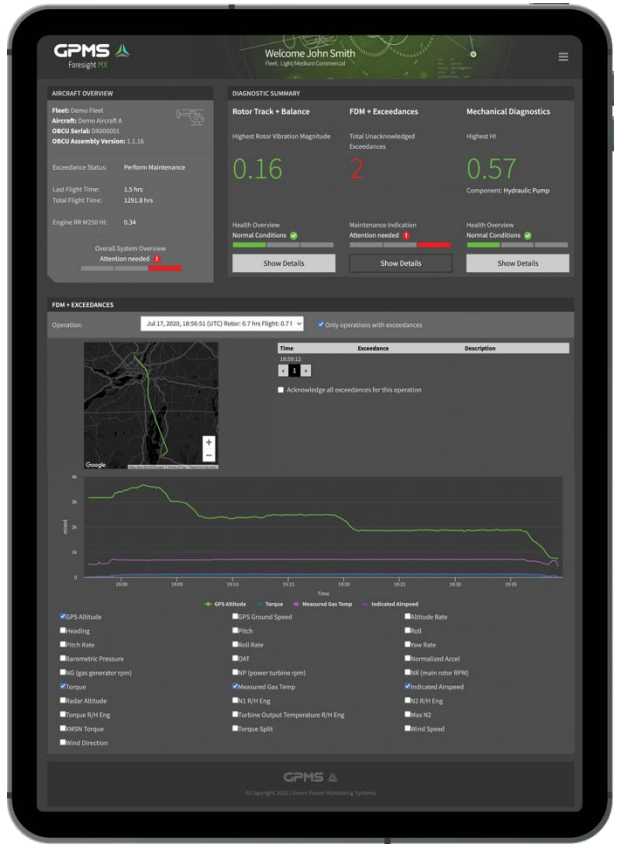
Why Vibration Monitoring is Important



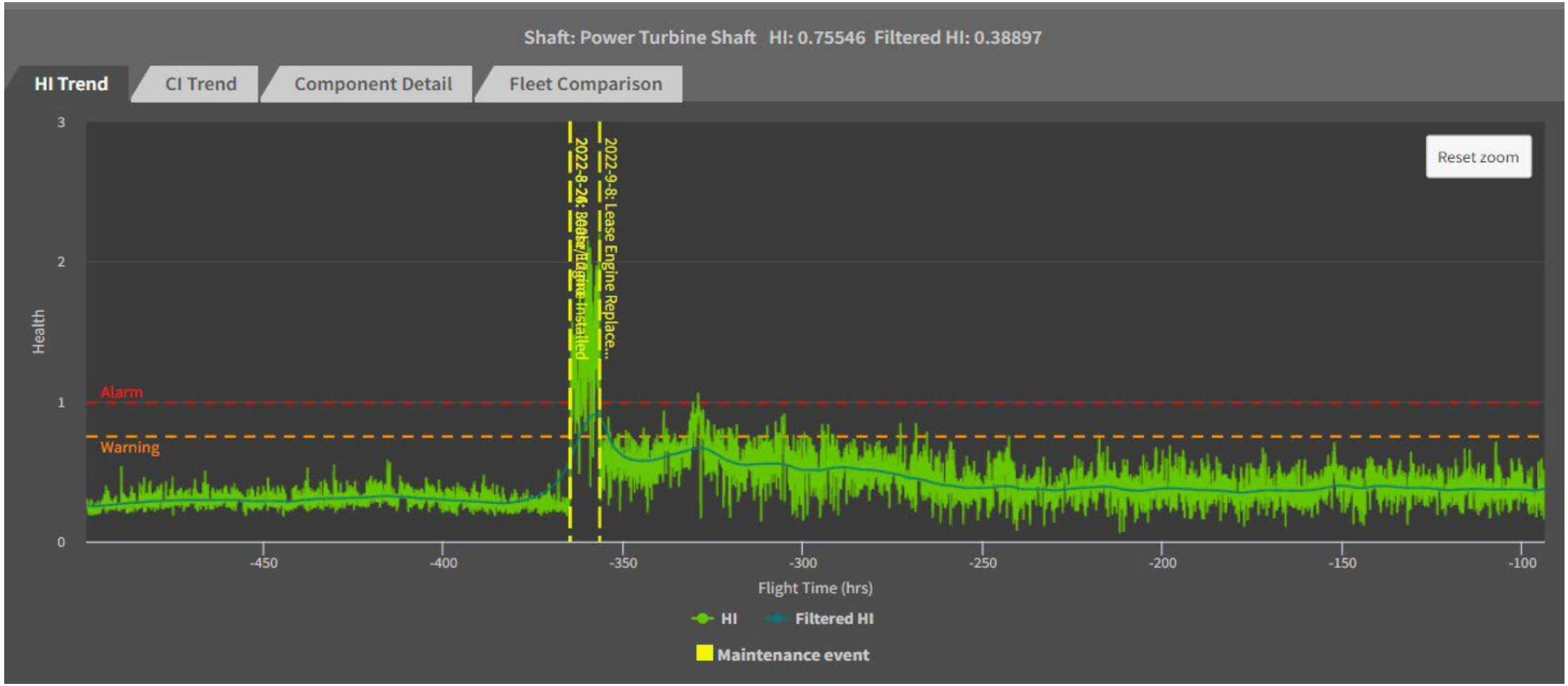
FDM: Operational Safety Data

Shows How the Aircraft Is Being Operated

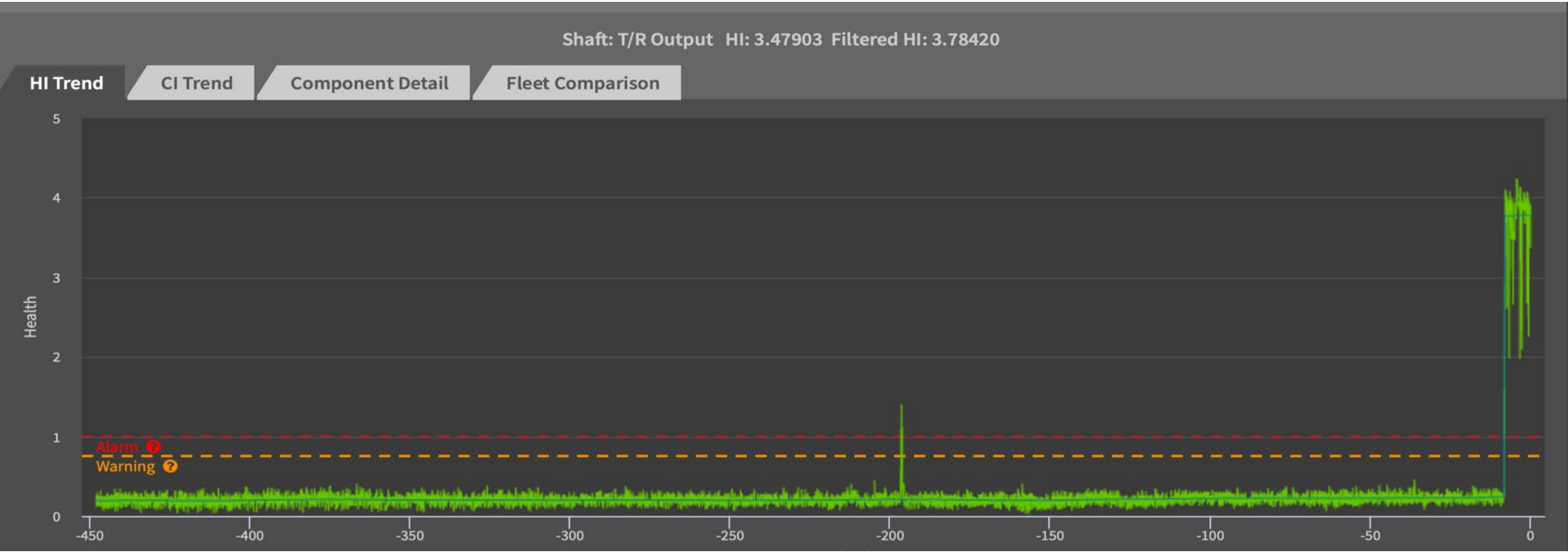




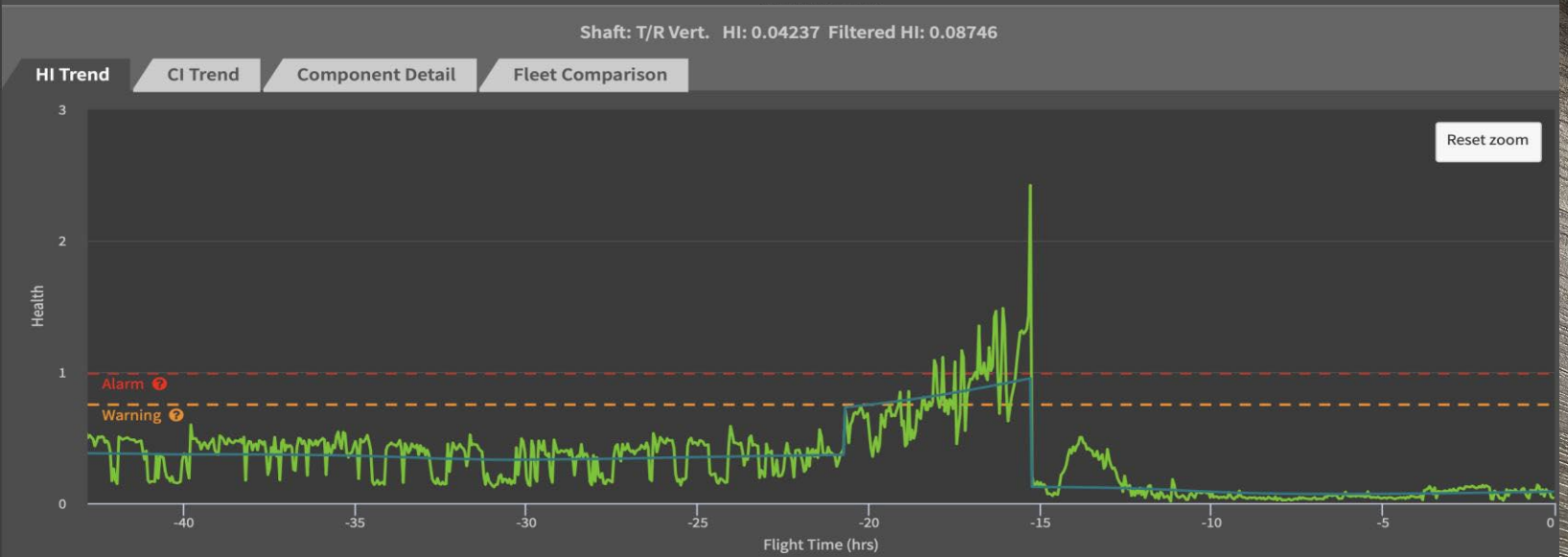
Case Study #1 - Replacing an Engine



Case Study #2 - Replacing an Engine



Case Study #3 – Issues Can Develop Quickly



Case Study #4 – Training Opportunity

If HUMS & FDM Have Been Around… Why Now?

Lower Cost

Lighter

More Accurate

Automation

Access Anywhere

Easy to Use Interface

From Data to Action

The Safety Value Comes From the Workflow

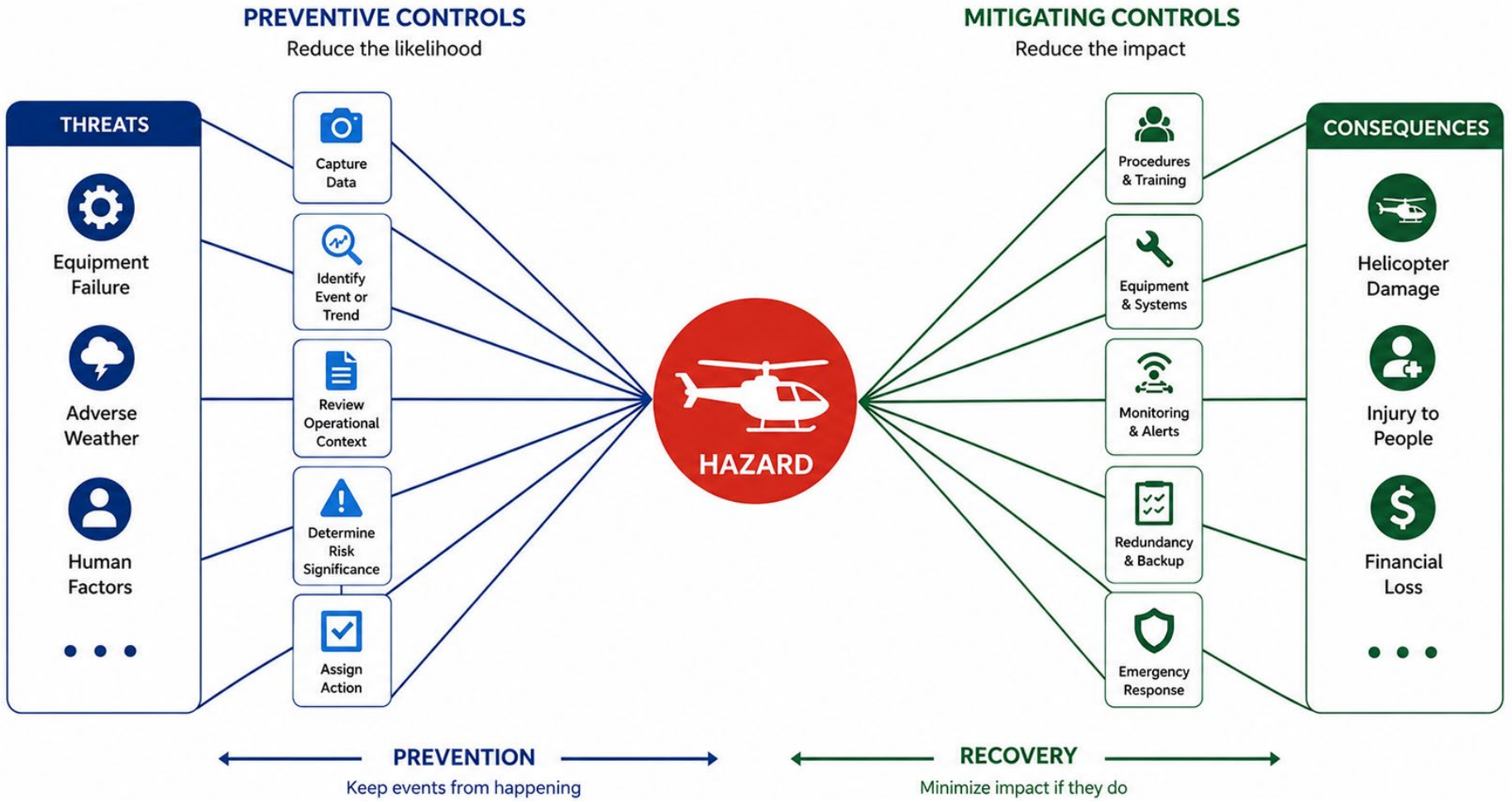
Safety Data - Sources

Where can you find safety data?

- Reporting Systems
  - Hazard reporting
  - Voluntary reporting
  - Risk Register
  - Mandatory Occurrence reporting
  - Incident reporting
- Other safety data sources
  - Internal Audits
  - 2nd party/Ext Audits
  - Assurance activities
  - Industry Intelligence
  - Other accident reports
- Systems data sources
  - FDM
  - HUMS/ECTM
  - LOSA
  - CBTA
  - Industry data sharing

Introducing the Bowtie Model

Turns Data Into a Risk Conversation

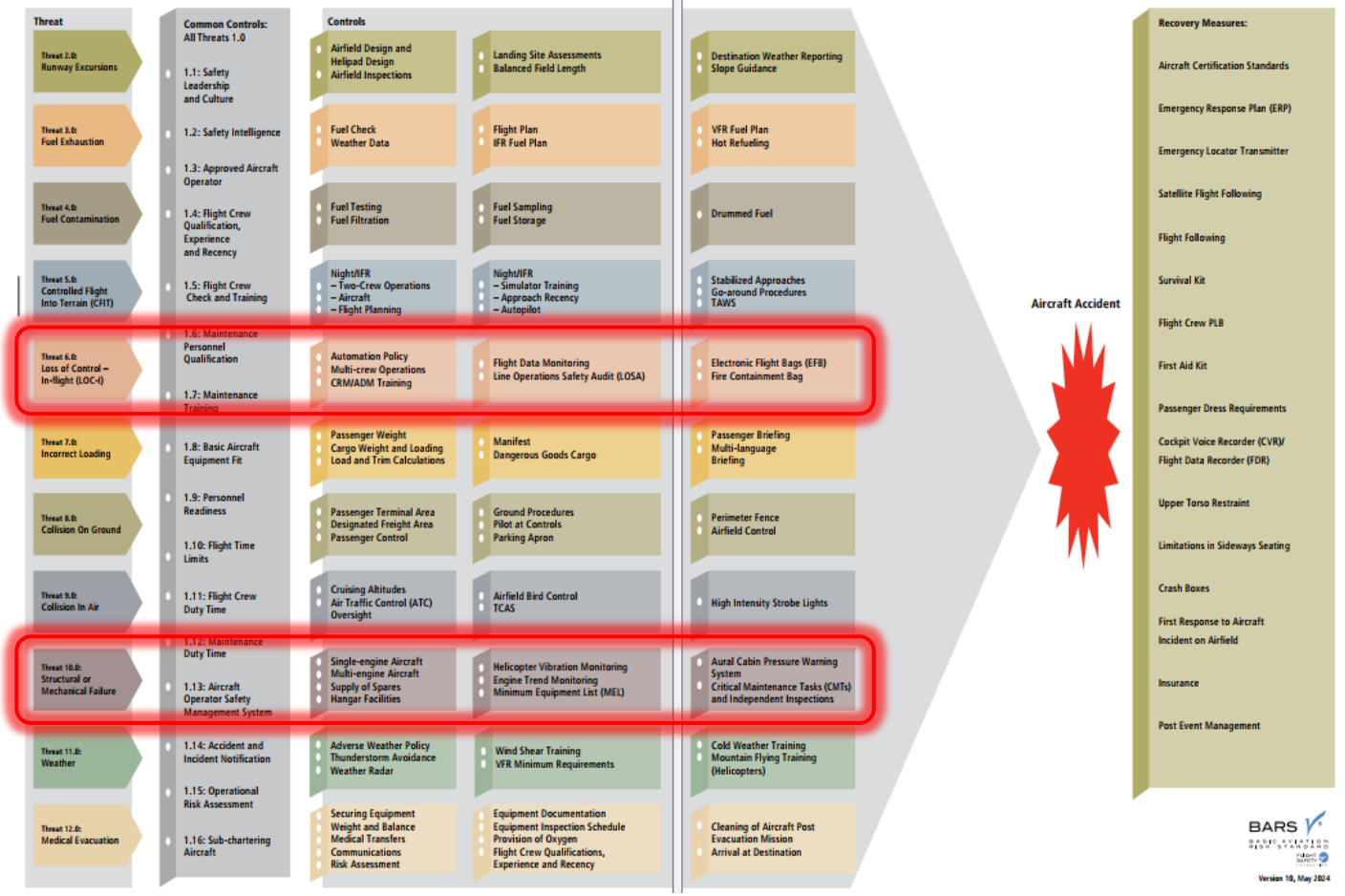


The BARS Bowtie Models

BAR Standard for Contracted Operations (V10)

- Established since 2011
- Addresses both FW and Helicopter situations
- Key input to the SMS and airworthiness functions
- Standard derived from Risk – not compliance
- Operators can tailor to their own context

Figure 1: BARS Bow Tie Risk Model – Schematic of Aviation Risk Management Controls and Recovery Measures.



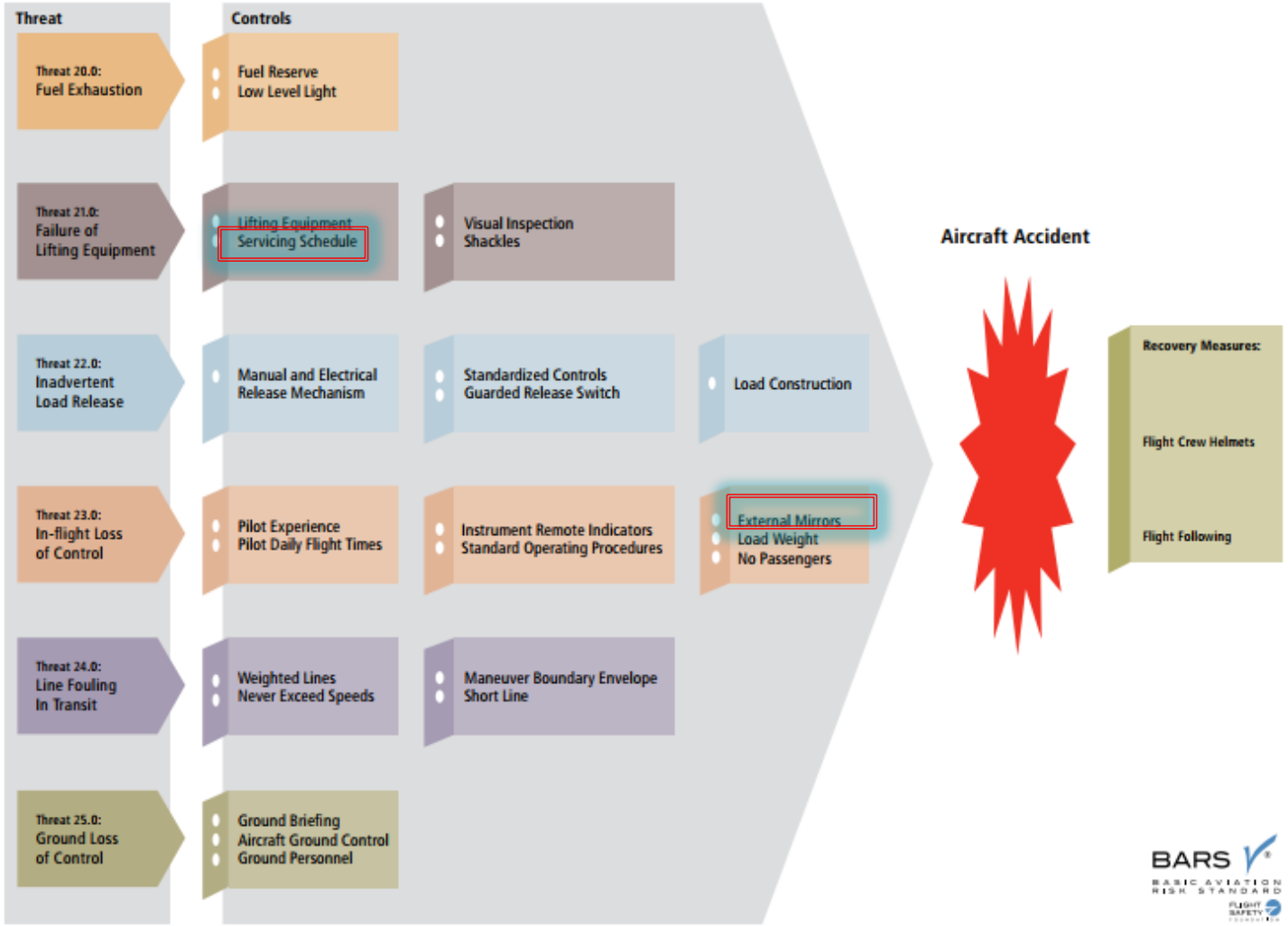
Safety Data in Action – Leading Indicators

The Bow Tie in Action….

Safety Data inputs:

External Load Operations

- Audit Finding
  - Servicing Schedule not used
  - External Mirrors not fitted



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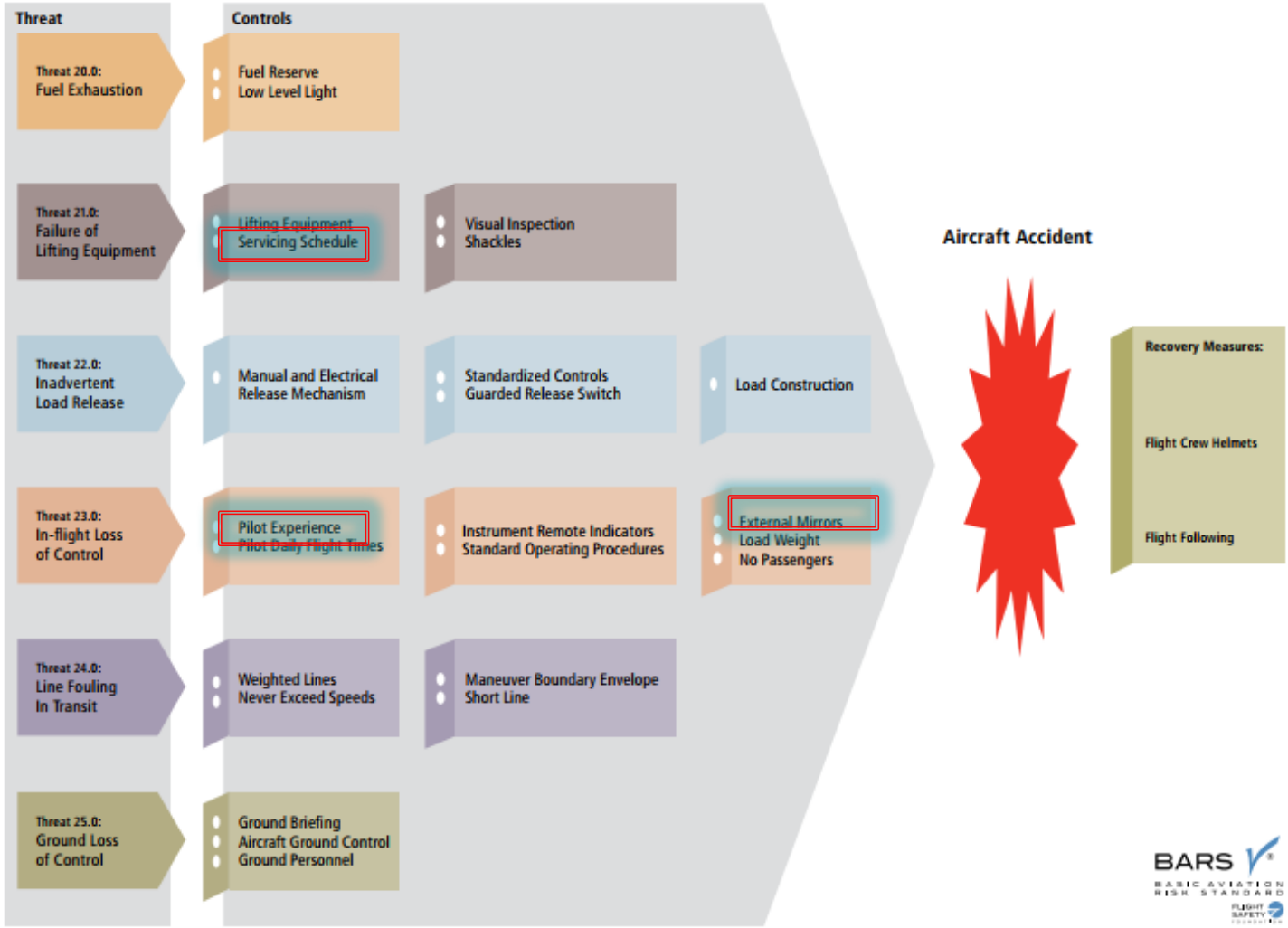
  - Low levels of specialist pilot experience



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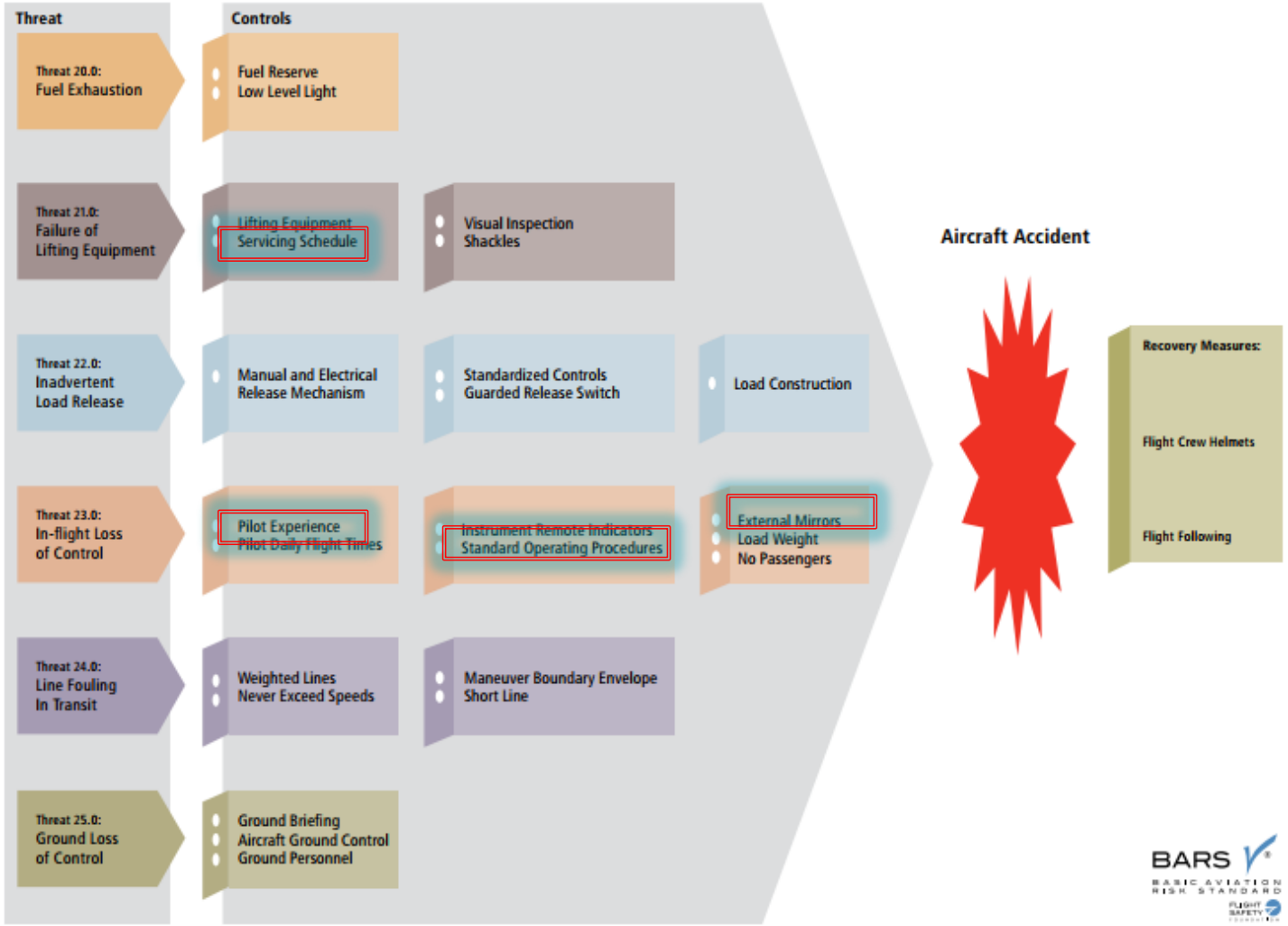
  - Low levels of specialist pilot experience
- FDM
  - SOP Flight Profiles flags



The Affordability Conversation

THE COST OF NOT USING HUMS & FDM

- Unscheduled Downtime
- Troubleshooting Labor
- AOG Events
- Component Damage
- Lost Aircraft Availability
- Mission Interruption
- Insurance / Contract Pressure
- Safety Exposure

INVESTING IN HUMS & FDM COSTS FAR LESS THAN THE COST OF NOT USING THEM

COSTS OF NOT USING HUMS & FDM

BENEFITS OF USING HUMS & FDM

THE BENEFITS OF USING HUMS & FDM

Reduced Unscheduled Maintenance	$50K–$150K+ per avoided event
Rotor Track & Balance Savings	$25K–$75K+ annual savings
Improved Aircraft Availability	+1–2% typical availability improvement
Extended Component Life	10–20%+ longer component service life
Reduced Maintenance Labor	10–15% reduction in maintenance labor
Greater Mission Readiness & Safety	Fewer missed $35K revenue generating flights due to aircraft down
Stronger Financial Performance	Measurable ROI and lower total cost of ownership

Better Data. Better Decisions. Safer Operations.

The goal is not to collect every possible data point.

The goal is to collect the right data, understand what it means, and use it to act sooner.

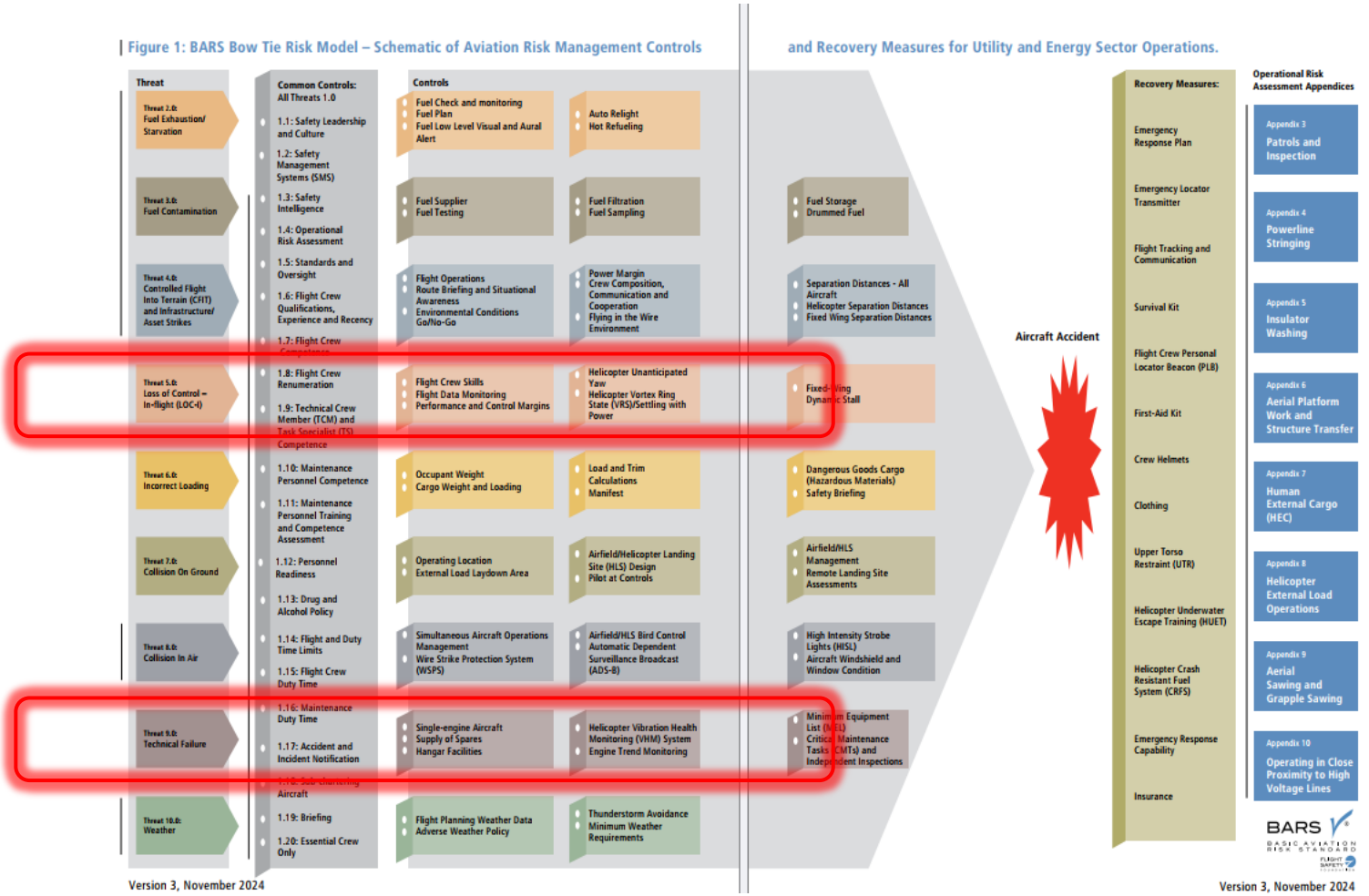
FDM and HUMS make safety data more practical when they help organizations move from reporting what happened to managing what may happen next.

Questions?

The BARS Bowtie Models

BAR Standard for Utility & Energy Sector (V3)

- Focused on powerline construction and maintenance



The BARS Bowtie Models

BAR Standard for Offshore Helicopter Operations (V6)

- BARSOHO Safety Performance Model ranks the accident threats according to data
- System Failure (SCF) is largest single causal category in HeliOffshore 2025 Safety report for all accidents
- Top 3 threats account for 80% of Offshore Accidents