Practical Challenges: Integrating FDA into Airline SMS

Presentation in ICAO APRAST

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IATA

Flight Data Analysis

ICAO Annex 6, Chapter 1

- Analyses recorded flight data to enhance flight safety

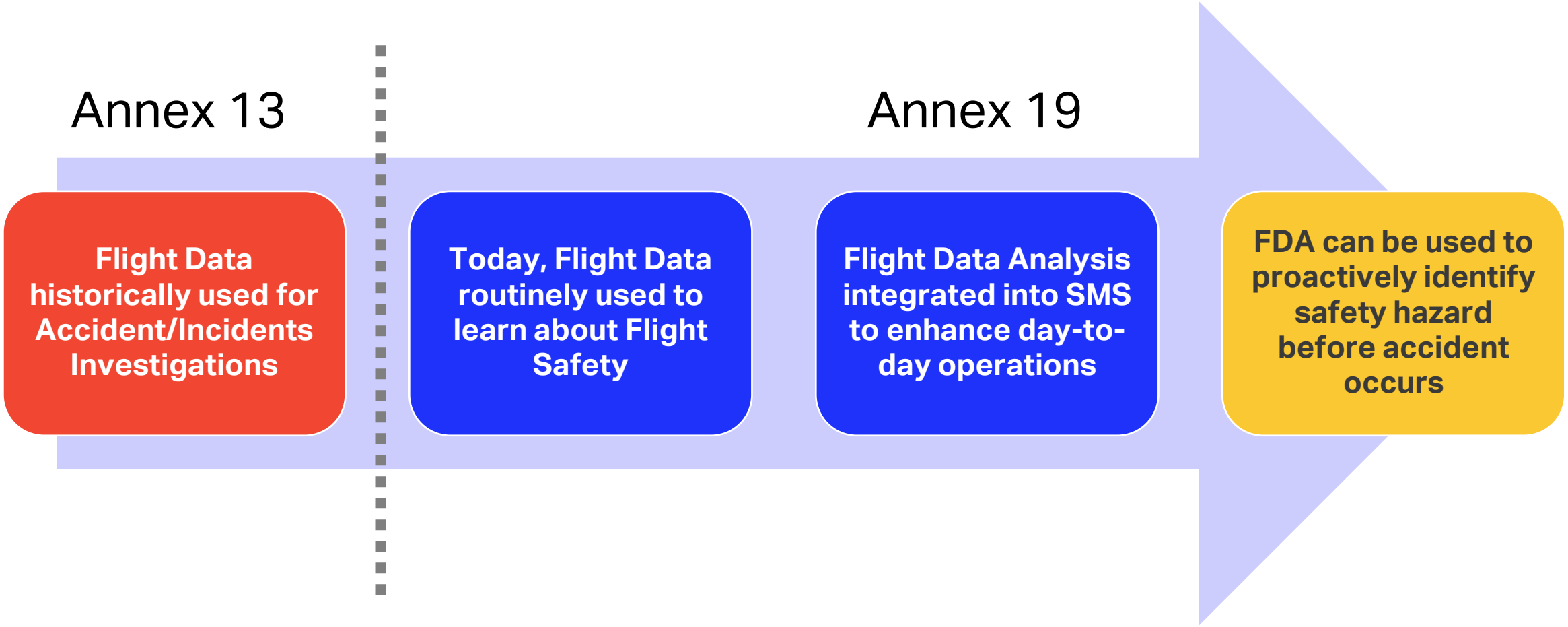
ICAO Doc 1000

- Describes SMS-FDAP relationship, FDAP elements, and guidance for implementation

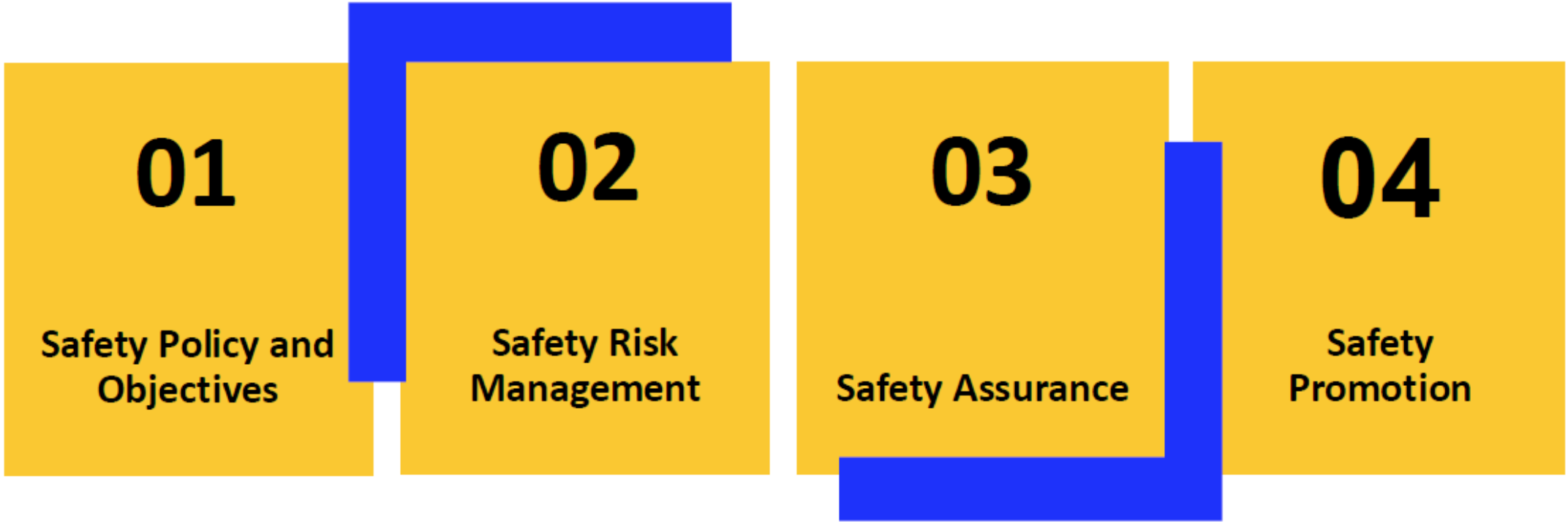
Regulatory Guidelines on FDAP

- FAA Advisory Circular 120-82: Flight Operational Quality Assurance
- EASA Easy Access Rules for Air Operations (Regulation (EU) No 965/2012)
- UK CAA CAP 739: Flight Data Monitoring
- CASA CAAP SMS-4(0): FDAP Guidance for Safety Management Systems

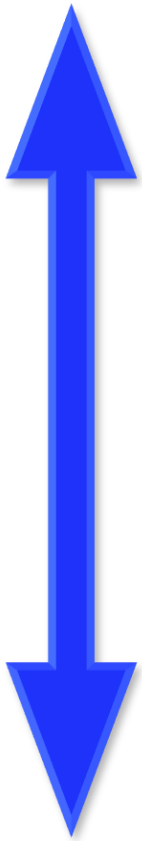
From Accident Investigation to SMS



SMS Framework - Four Pillars



FDA in Safety Risk Management



Operational Knowledge for Risk Assessment

- Understanding current operations is essential for assessing total risks to the operator

Objective Analysis from FDA Programme

- A well-implemented FDA programme offers objective analysis to support expert opinions in incident investigations and initial risk assessments

Comprehensive Safety Data Utilisation

- All available safety data (e.g. safety reports) should be used to enhance risk modelling

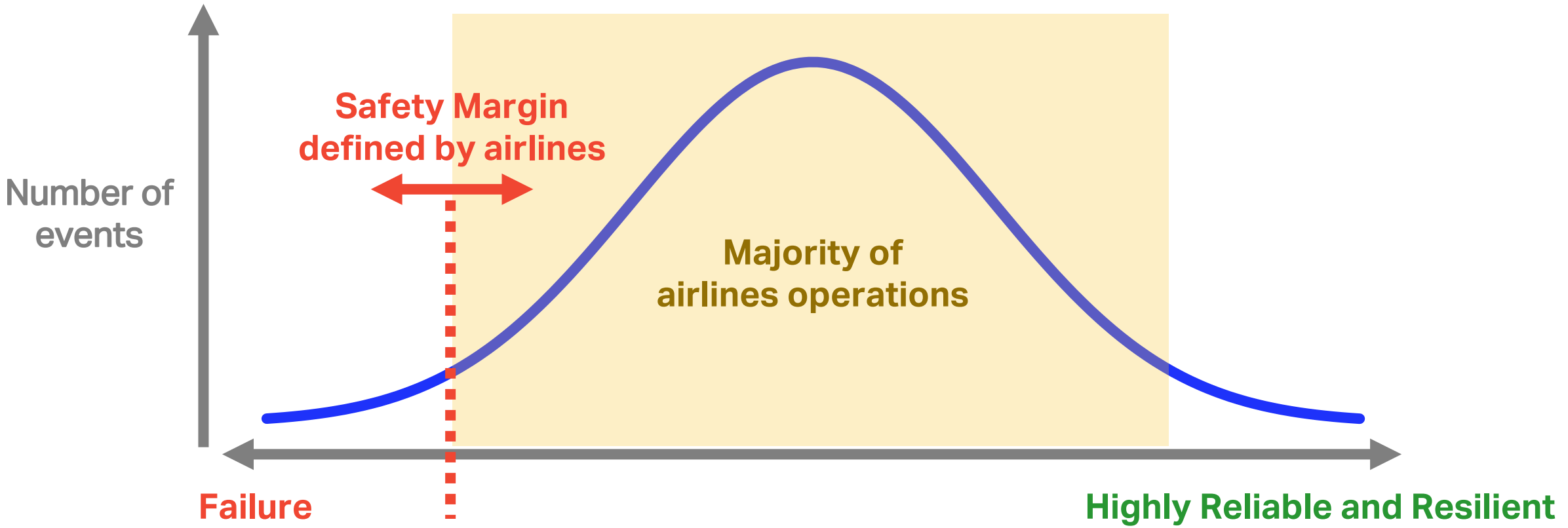
FDA in Safety Assurance

Safety Performance monitoring and measurement

Management of change

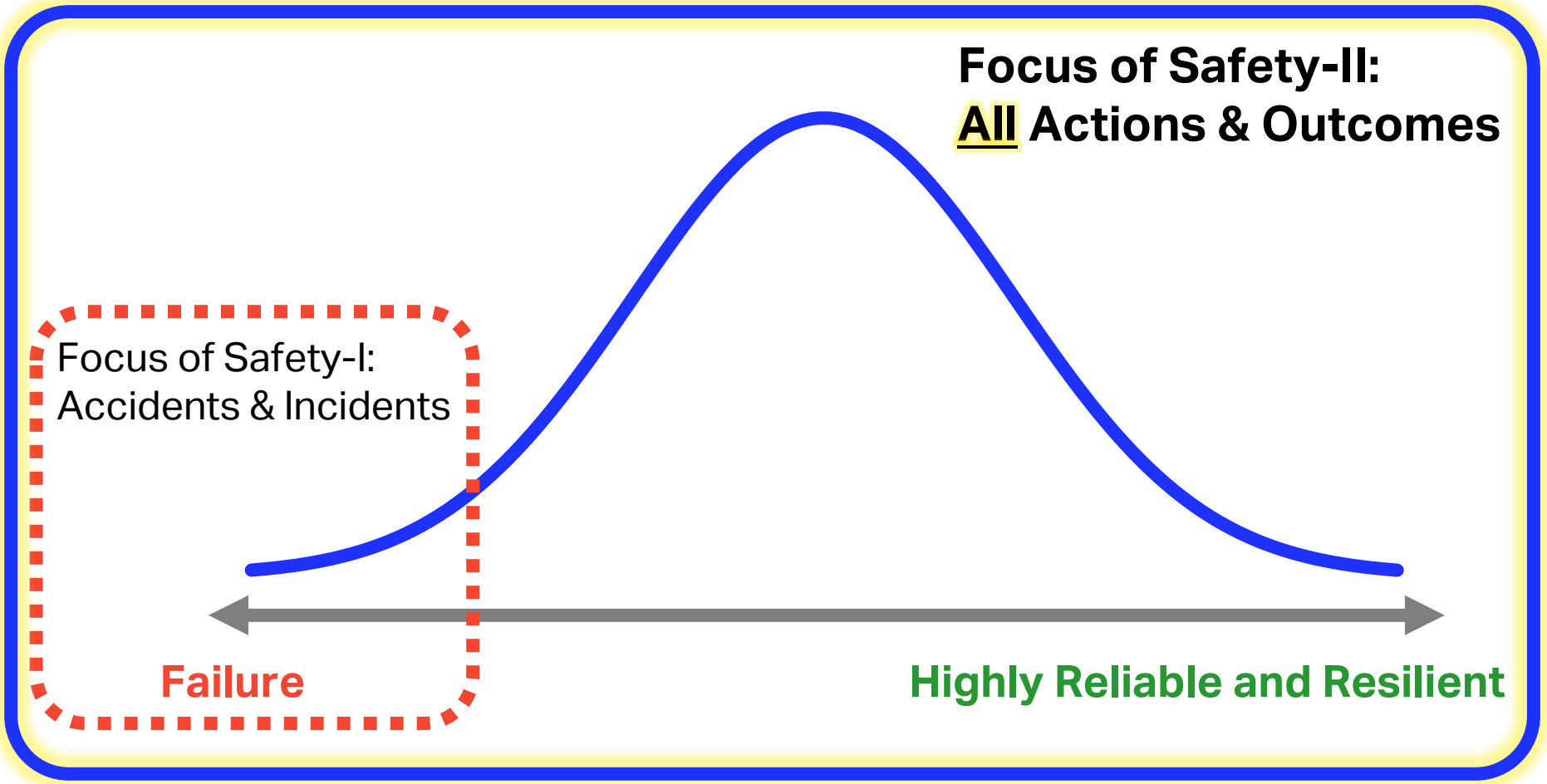
Continuous improvement of SMS

Safety Performance Monitoring



*Reference: Hollnagel, E., Leonhardt, J., Shorrock, S. and Licu, T. (2013). *From Safety-I to Safety-II. A White Paper*

Safety Performance: Safety-I vs Safety-II



"Safety is not (only) the absence of events; safety is the presence of defences."

- Todd Conklin

*Reference: McCarthy, P. (2020). *The Application of Safety II in Commercial Aviation - The Operational Learning Review (OLR)*

Examples of Safety Performance Indicators

"Safety is not (only) the absence of events; safety is the presence of defences."

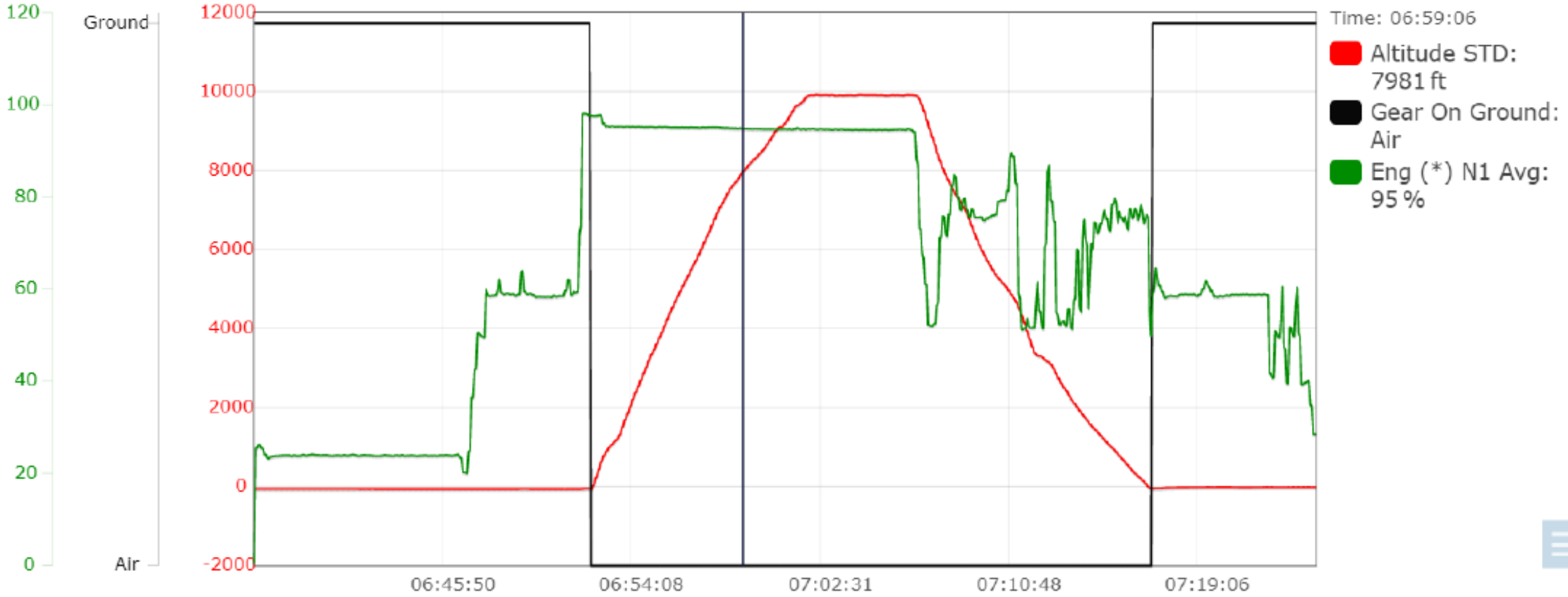
- Todd Conklin

Lagging Indicators	Leading Indicators
How many unstable approaches?	How is the scan rate for FDA?
How many pitch-high events?	How confident are frontline staff in FDA?
How many hard landings?	How many FDA animations shared in training?
How many TCAS RA events?	How many safety initiatives via FDA?

Reasons for Data Issues

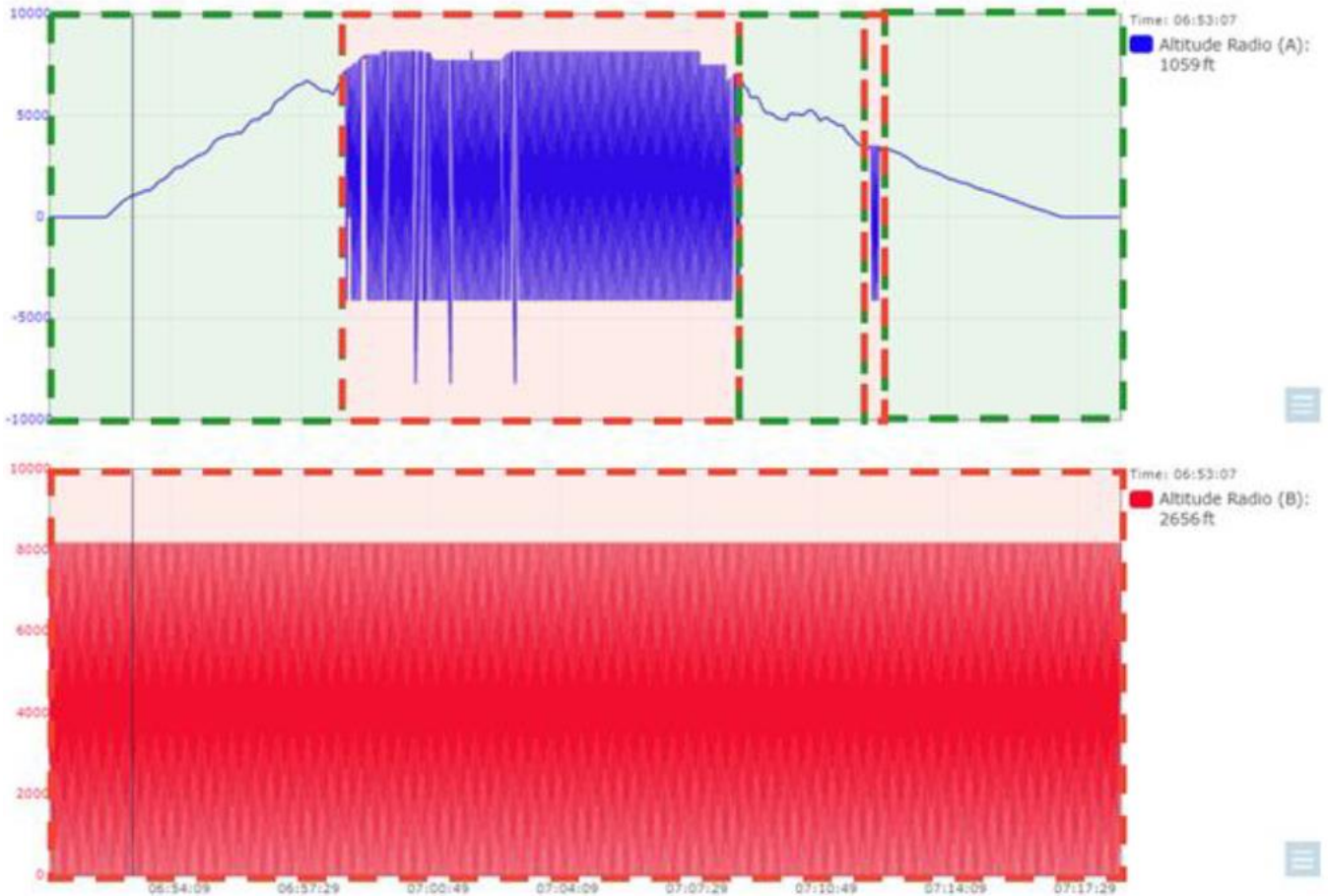
- Equipment must be installed and functioning correctly
- Outdated software updates may change parameter recording
- Data gaps and poor-quality complicate troubleshooting
- Data interpretation should involve Subject Matter Experts (SMEs)

Example of Valid Data



Examples of Invalid Data - Altitude Radio

- Altitude Radio accurately records up to 3000-5000 ft RA; data fails above this range
- Temporary data breaks occur during descent for Altitude Radio (A)
- Altitude Radio (B) may be misconfigured or unavailable on the aircraft



Just Culture

"Just Culture is about trust, learning and accountability."

- Sidney Dekker

"A good Safety Culture is a culture that allows the boss to hear bad news."

- Sidney Dekker

Just Culture Building Blocks

Just culture in a Flight Data Analysis Programme (FDAP) rests on the following three building blocks:

01

Framework of **Data Protection**

02

Building **Essential Trust**

03

Requisite **Safety Culture**

01 Framework of Data Protection

ICAO Annexes

- ICAO Annexes 6, 13 and 19 establish crucial protective measures for data within aviation

Local Jurisdiction

- Countries must follow their national data protection laws to ensure compliance

ICAO Guidelines

- ICAO Doc 9859 and Doc 10159 provide guidelines for safety data protection

02 Building Essential Trust

Early Involvement

- Engage flight crew and/or authority representatives early in FDAP process

Formal Agreement

- Establish a formal data use and protection agreement with flight crew

Non-punitive Policy

- Implement a policy focused on improving organisational safety than blaming individuals

03 Requisite Safety Culture

Proactive Safety Culture

- Encourage flight crew to take proactive approach to enhance safety

Collaboration and Accountability

- Ensure collaboration and accountability at all organisational levels

Non-punitive Handling

- Address incidents involving pilots non-punitively through FDAP

Considerations in Risk-Based Audits

Engagement with Qualified Personnel

- Data interpretation performed together with personnel with flight operations backgrounds and knowledgeable about operational procedures

Systemic Focus and Non-punitive Handling

- Addressing systemic issues that influencing behaviour, rather than blaming individual actions
- Flight crew trust FDA programme and organisational commitment to non-punitive principles

Continuous Training Updates

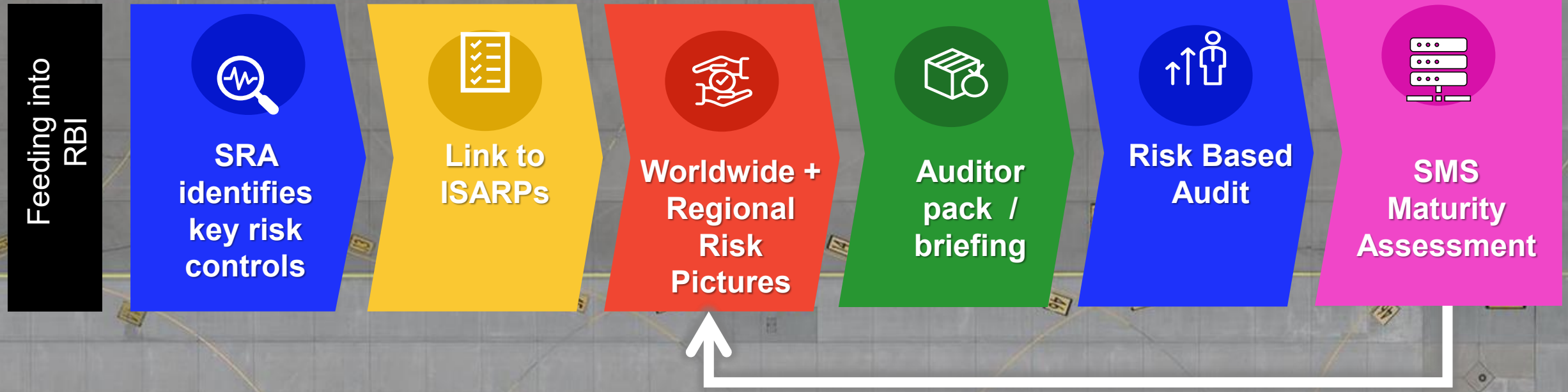
- Flight crew training materials and scenarios regularly updated based on trend analysis from FDA programme

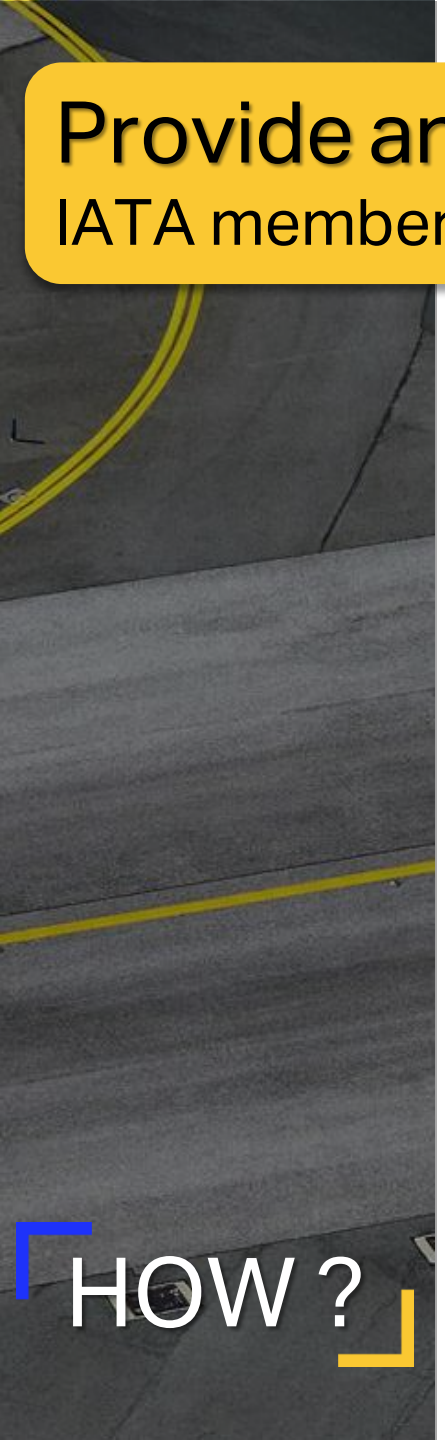
Improvement via Safety Discussions and Actions

- Quality and relevance of hazards and safety risk identified through FDA programme

*Reference: Section ORG 3.3.1 in *IOSA standards Manual (ISM) Ed 17 - Maturity Assessment Criteria*

Cycle for Continuous Improvement





Provide and Maintain a one-stop shop for aviation safety issues to support IATA members and the wider industry.

HOW ?

IATA Safety Issue Hub

- FDX, IDX
- Incident Reports
- Regional Offices
- Accident Reports
- Industry Workshops
- IOSA Trends

Issues identification tools

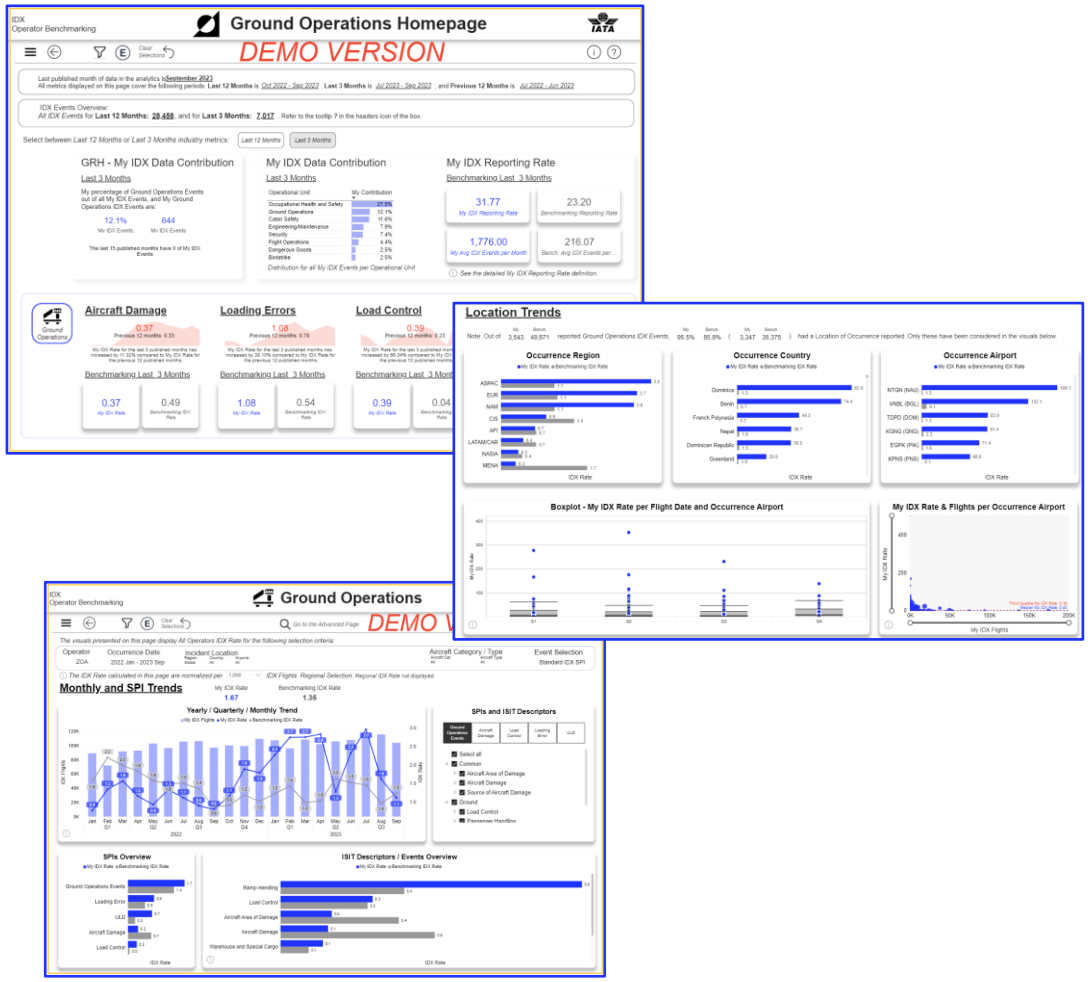
Hazard ID

Internal Sources

- FDM/FOQA
- Reporting Systems
- Operational interphases Analysis
- Audits

IATA

Flight Data Exchange (FDX) - Key Benefits



- **Ability to extract charts and data** tables by a user for use in company presentations
- **Improved User Interface** with an easy navigation flow
- **Group benchmarking** for airlines within the same airline group
- **Access to summarized SPIs** with an overview of the airlines' or region's performance
- **Easy to use** for new users with the detailed information and guidance pages provided

Thank You