SMS / QMS Insights

For 135 / 121 Operators

Friday March 06, 2020

ALASKA AIR CARRIERS ASSOCIATION

Paul Salerno Accountable Executive

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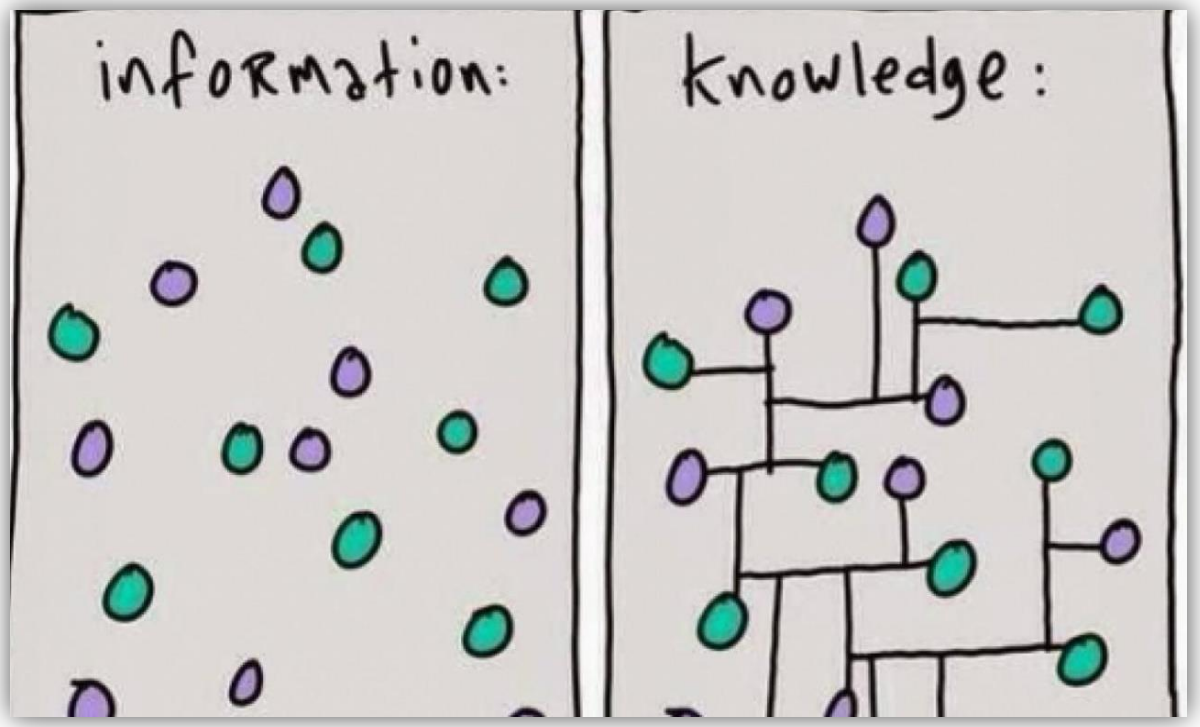
Today's objectives:

Sharing information

Gaining knowledge

'Connecting the dots'



Through active discussion, please!

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Introductions

Please tell us a little about yourself,
and 'where you are' with SMS…

Today's Topics for Discussion

Planning and developing an effective SMS

FAA's Part 5 and the SMSVP standard

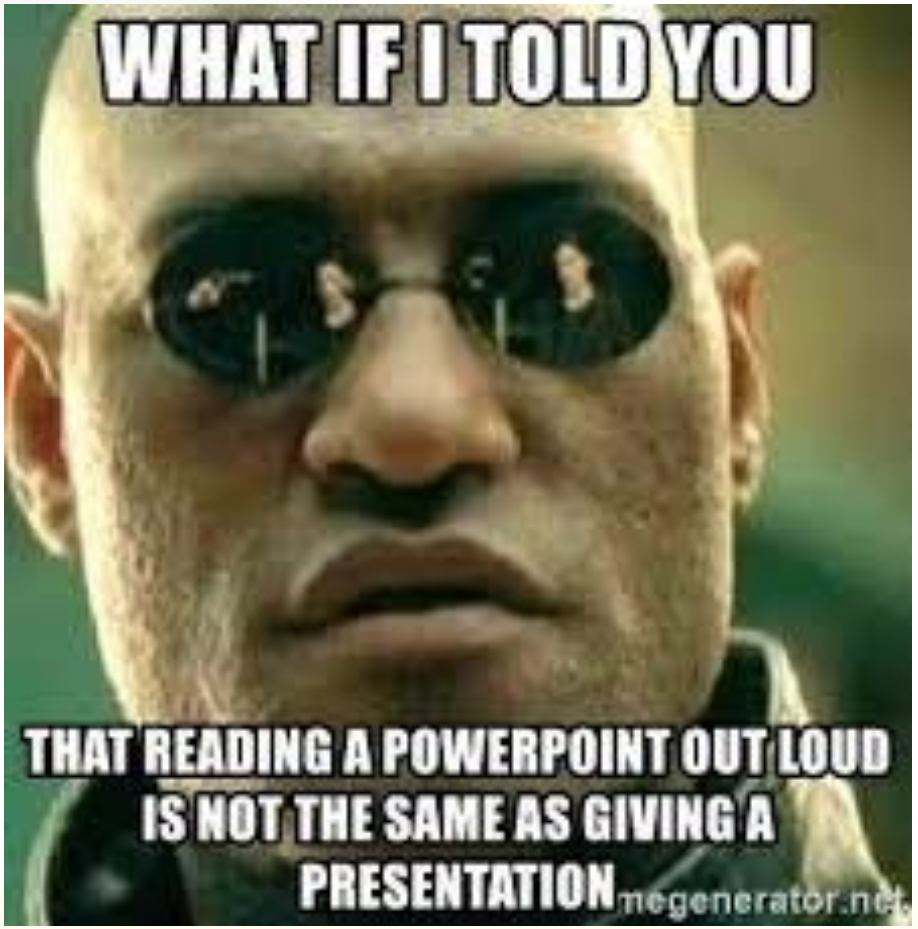
Performance measures and indicators

Barrier-based safety management

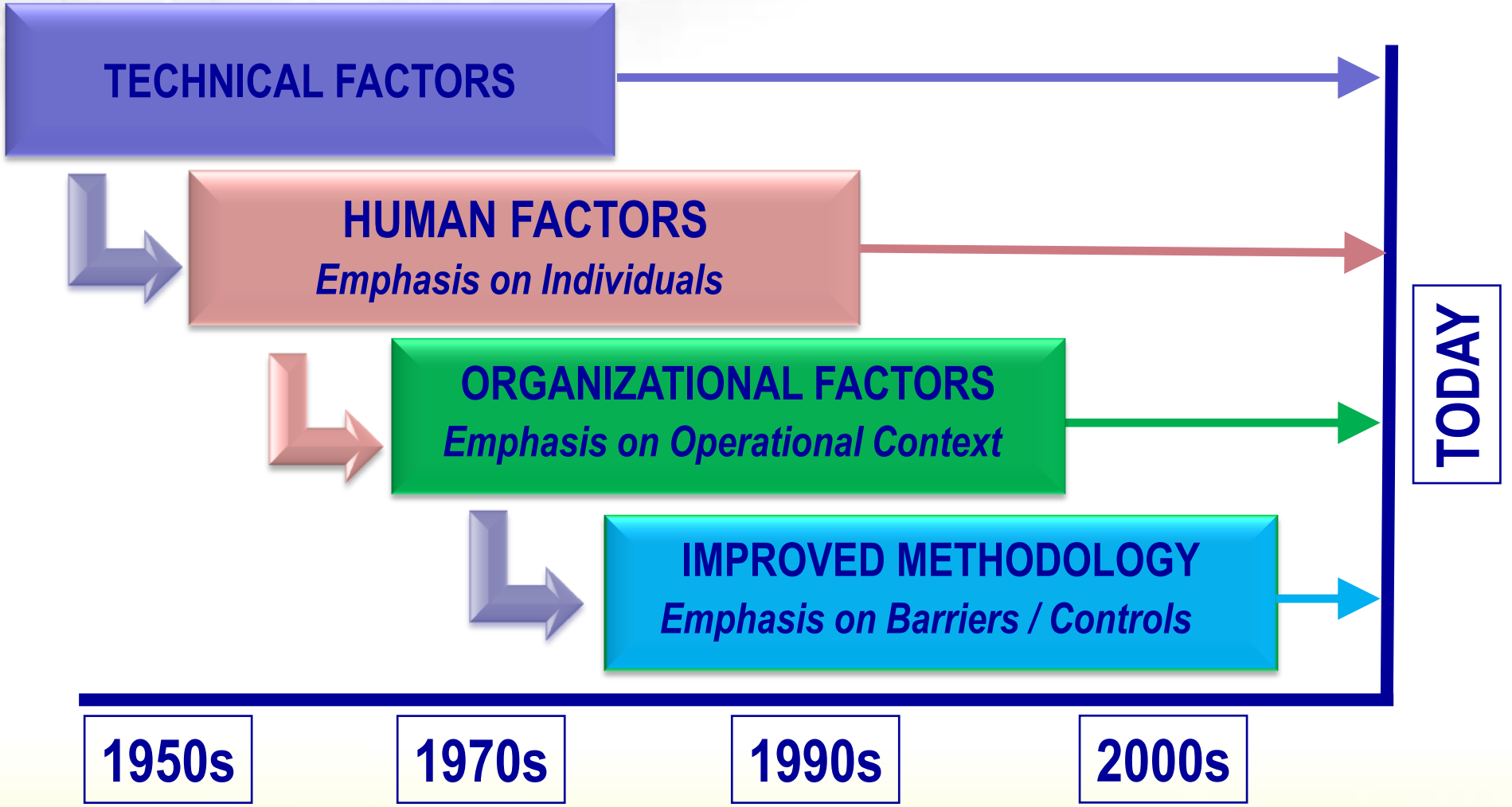
Integrated systems of management

The harmonized management system

Navigating the SMS / QMS Matrix



Evolution of Safety Management



An Effective SMS - How do we get there?

Implement SMS for the first time?

Retain Medallion safety programs?

Improve our current SMS?

Integrate other programs or systems of management?

Meet a higher SMS standard?

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An Effective SMS - How do we get there?

Which standard should we meet?

ICAO's SMS Framework (SARPS)

IBAC's International Standard for Business Aircraft Ops (ISBAO)

Air Charter Safety Foundation

FAA's Part 5 / SMSVP Standard

An Effective SMS - How do we get there?

Develop the SMS internally with existing personnel

Hire an expert consultant to build it

Contract with the right SMS product / service provider(s)

Continue to improve upon existing systems / programs until we achieve the desired results

Examine closely what you are 'polishing'

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An Effective SMS - How do we get there?

Management Team ‘SMS Training’ – Its purpose is:

To design and build an SMS?

(or)

To operate the SMS?

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An Effective SMS - How do we get there?

ASRS? / ASIAS program?

ASAP / VDRP? **FOQA / LOSA?**

CASS (or) informal Mx QA?

Occupational health and safety?

Quality management w/ customer focus?

Integrating safety programs and other systems of management will improve efficiency and identify common causal factors

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An Effective SMS - How do we get there?

Avoiding the 'piece-meal' SMS

SMS / QMS requires a *systems approach* to design and build

Disparate components acquired from different external providers will properly interface

In a 'harmonized' SMS / QMS, all components interface with common terms, definitions, and data relationships

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The Part 5 / SMS Voluntary Program standard

SMSVP is the right choice for Part 135 operators

To meet this standard, safety (process) attributes must be incorporated into system design:

- Responsibility
- Authority
- Procedures
- Controls
- Interfaces
- Process measures
- Safety ownership

FAA

Source: FAA Order 8900.1 Vol. 17, Chapter 1, Section 2

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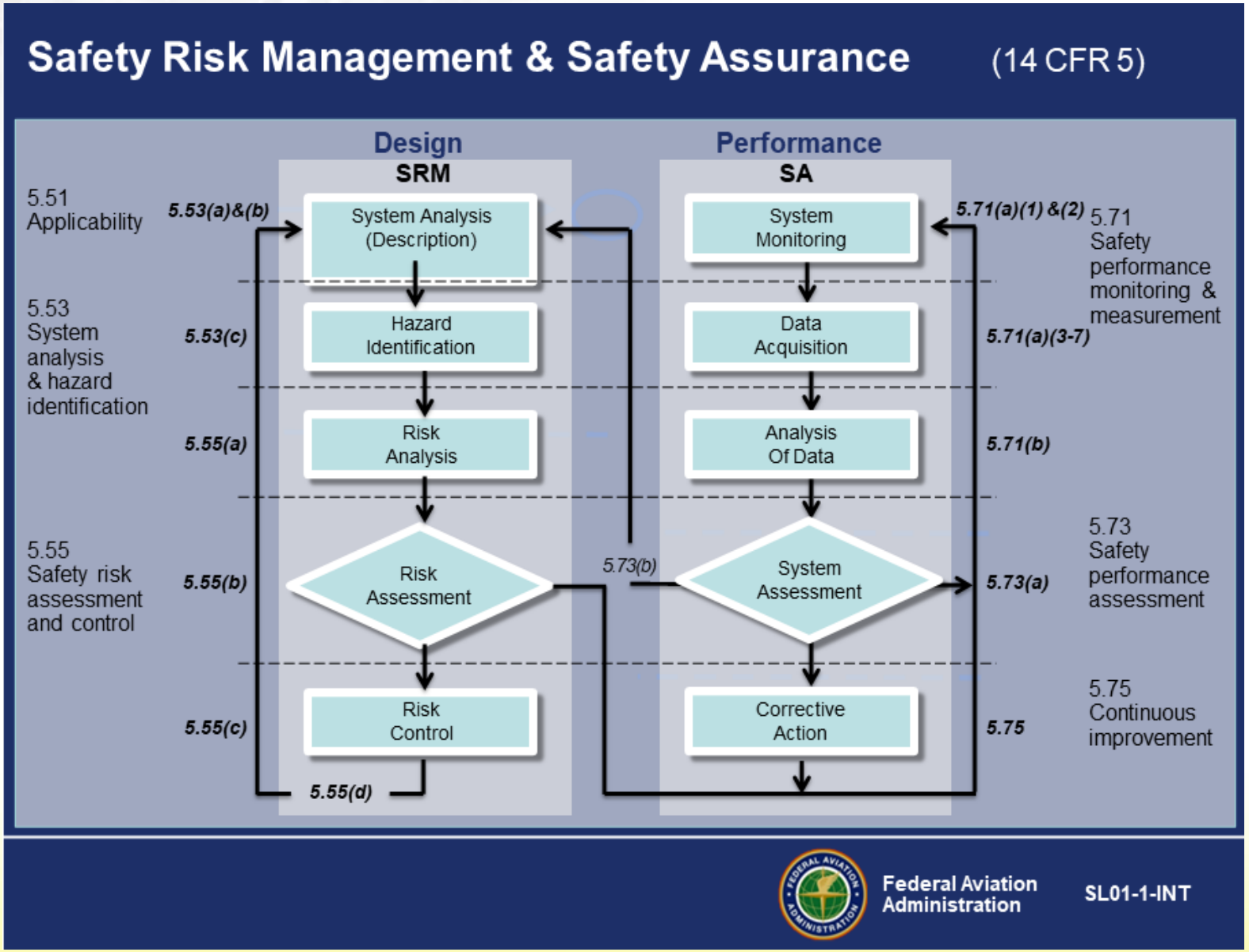
The Part 5 / SMS Voluntary Program standard



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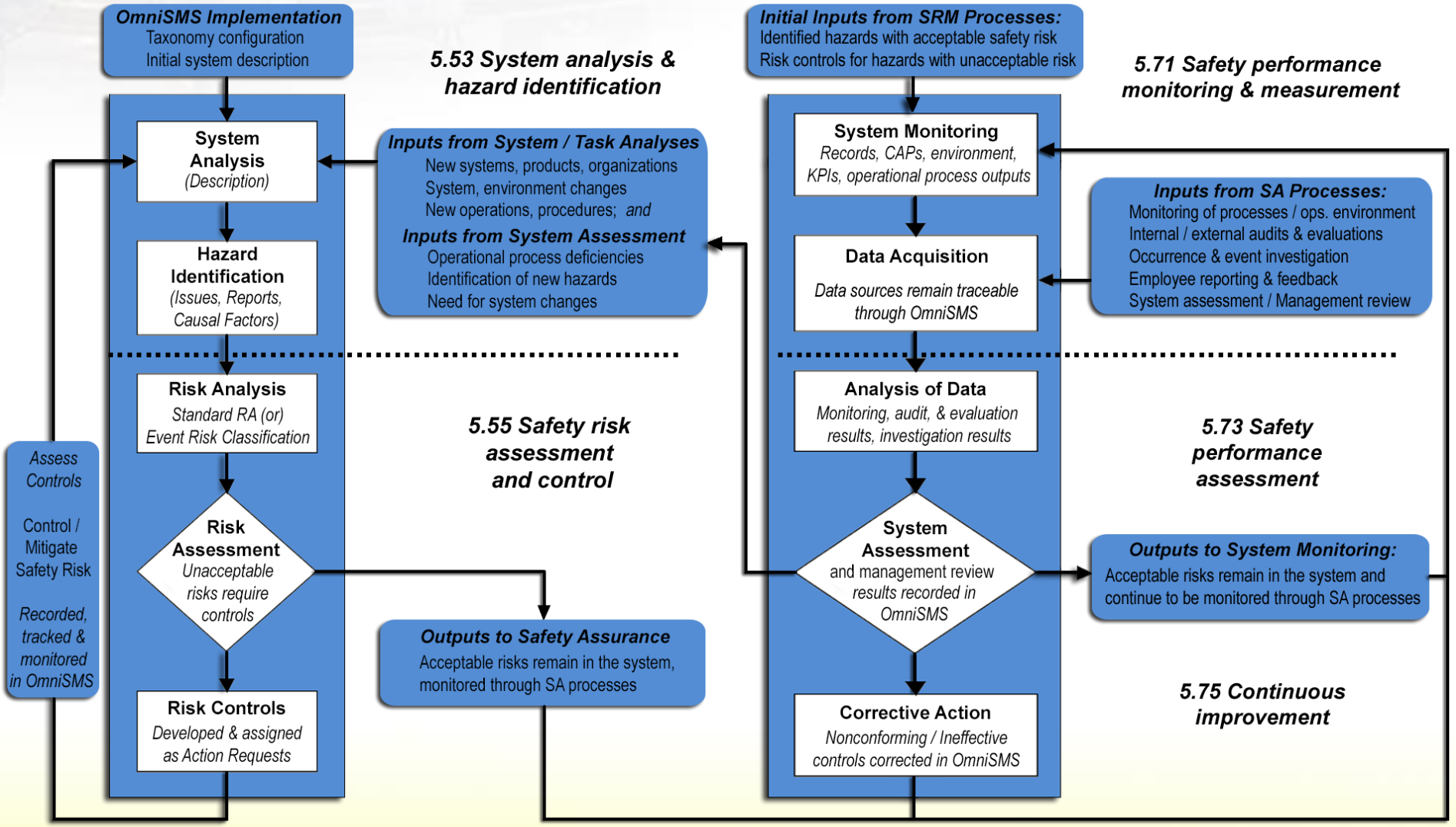
The Part 5 / SMS Voluntary Program standard



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Part 5 / SMSVP Standard and Data Structure

“SMS is a data-driven approach to safety”

To effectively utilize data, it must be structured
This means we need taxonomies

Align hazard taxonomies with your unique operating environment and activities -

Events / Hazards / Human Factors / Organizational Influences

Organize safety data in accordance with your organizational structure -

Departments / Employee groups

and

Functional Areas / Processes

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Part 5 / SMSVP Standard and Data Structure

Your organization's functional areas and processes

(pre-defined by FAA's SAS and used by Data Collection Tools)

Title 14 CFR Part 135 (10 or More) (Peer Group B)

1.0 Organizational Management	2.0 Flight Operations	3.0 Operational Control	4.0 Technical Operations	5.0 Onboard Operations	6.0 Ground and Station Operations
1.1 Safety Programs (H) 1.1.2 (OP) Safety Program (Ground and Flight) 1.1.3 (AW) CASS 1.1.4 (AW) Reliability Program 1.1.6 (AW) Safety Program **1.2 Operations Management (L)** 1.2.1 (OP) Part 119 Required Personnel 1.2.2 (OP) Manual Management 1.2.3 (OP) Computer-Based Recordkeeping System **1.3 Airworthiness Management (L)**	**2.1 Training & Qualification (M)** 2.1.1 (OP) Training of Flight Crewmembers 2.1.2 (OP) Training of Check Airmen and Instructors 2.1.3 (OP) Simulators/Training Devices 2.1.4 (OP) Outsource Crewmember Training 2.1.5 (OP) Appropriate Airmen/Crewmember Checks & Quals 2.1.6 (OP) Advanced Qualification Program (AQP)	**3.2 Flight Operations Engineering (M)** 3.2.1 (OP) Aircraft Performance Operating Limitations 3.2.2 (OP) Use of Approved Areas, Routes, and Airports 3.2.3 (OP) Special Navigation Areas of Operation 3.2.4 (OP) RVSM Authorization **3.3 Flight Planning & Monitoring (H)** 3.3.1 (OP) Operational Control	**4.1 Training & Qualification (L)** 4.1.1 (AW) RII Personnel 4.1.2 (AW) Maintenance Certificate Requirements 4.1.3 (AW) Maintenance/RII Training Program **4.2 Maintenance Planning and Monitoring (H)** 4.2.1 (AW) Maintenance/Inspection Requirements 4.2.2 (AW) Maintenance/Inspection	**5.1 Training & Qualification (M)** 5.1.1 (OP) Training of Flight Attendants 5.1.2 (OP) Flight Attendant Duty/Rest Time **5.2 Cabin Operations (M)** 5.2.1 (OP) Crewmember Duties/Cabin Procedures 5.2.2 (OP) Carry-on Baggage Program 5.2.3 (OP) Exit Seating Program 5.2.4 (OP) Passenger Handling	**6.1 Training & Qualification (M)** 6.1.1 (OP) Training of Station Personnel 6.1.2 (OP) Hazardous Material Training Program **6.2 Ground Handling (M)** 6.2.1 (AW) Fueling 6.2.4 (OP) Line Station Operations/Ground Personnel Duties **6.3 Cargo Acceptance & Handling (H)** 6.3.1 (OP) Carriage of Cargo 6.3.2 (OP) Hazardous

Source: FAA Order 8900.1 Vol. 10, Chapter 1, Section 2: SAS

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Part 5 / SMSVP Standard and Data Structure

By structuring your data to align with SAS functional areas and processes* (subsystems and elements):

Other audit standards will 'fit into' this FAA-defined structure

More functional areas and processes can be added to accommodate other processes (ISO 9000 series)

(or)

Other special-use standards (e.g., CAMTS, C.A.S.E., etc.)

Your system will also be aligned with FAA's Data Collection Tools

***Process: A set of interrelated or interacting activities which transforms input elements into outputs, respecting constraints, requiring resources, meeting a defined mission, corresponding to a specific purpose, adapted to a given environment. (Source: based on ISO 9000:2015)**

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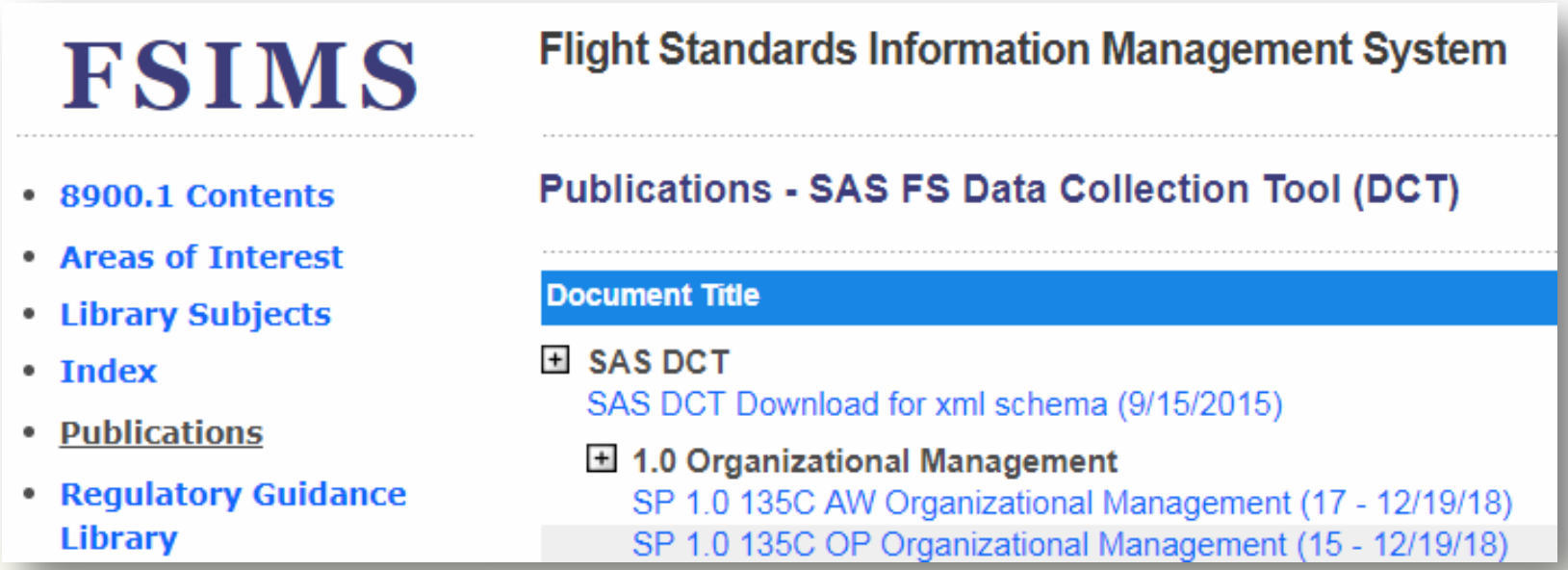
Part 5 / SMSVP Standard and Data Structure

DCTs assess design criteria and performance:

System or Subsystem Performance (SP DCT)

Element Performance (EP DCT)

Element Design (ED DCT)



DCTs should be used not just for auditing your systems and elements (processes) but *during SMS system design* to assure FAA acceptance

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Part 5 / SMSVP Standard and Data Structure

Another reason to use SAS DCTs:

When FAA comes to audit you

You will know exactly what to expect

You will be prepared!

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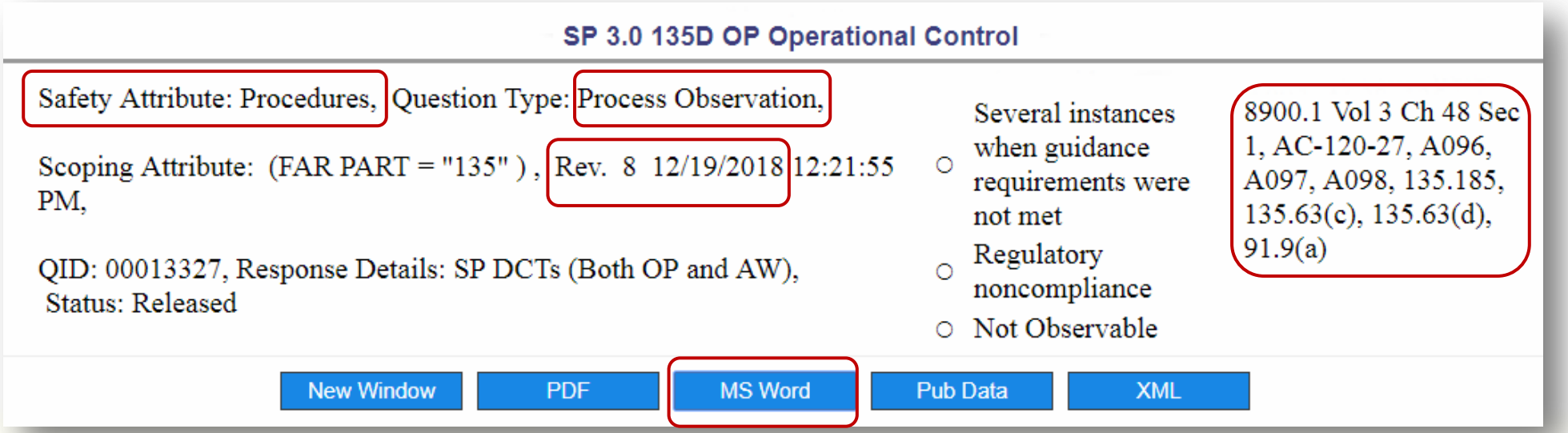
Part 5 / SMSVP Standard and Data Structure

More reasons to use FAA's DCTs…

Processes already defined to support ISO 9000 / AS9100

DCTs are editable, updated, include SRRs, guidance refs.



FAA has developed and maintains detailed, comprehensive Internal Evaluation Program (IEP) checklists for you!

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Part 5 / SMSVP Standard and Data Structure

Still more reasons to use SAS data structure / DCTs:

When performing root cause analysis

- Events are grouped by functional area (FA)
- Contributing factors are associated with functional areas
- Causal factors are associated with each FA's process
- Risk controls and corrective actions are then associated with one or more processes.

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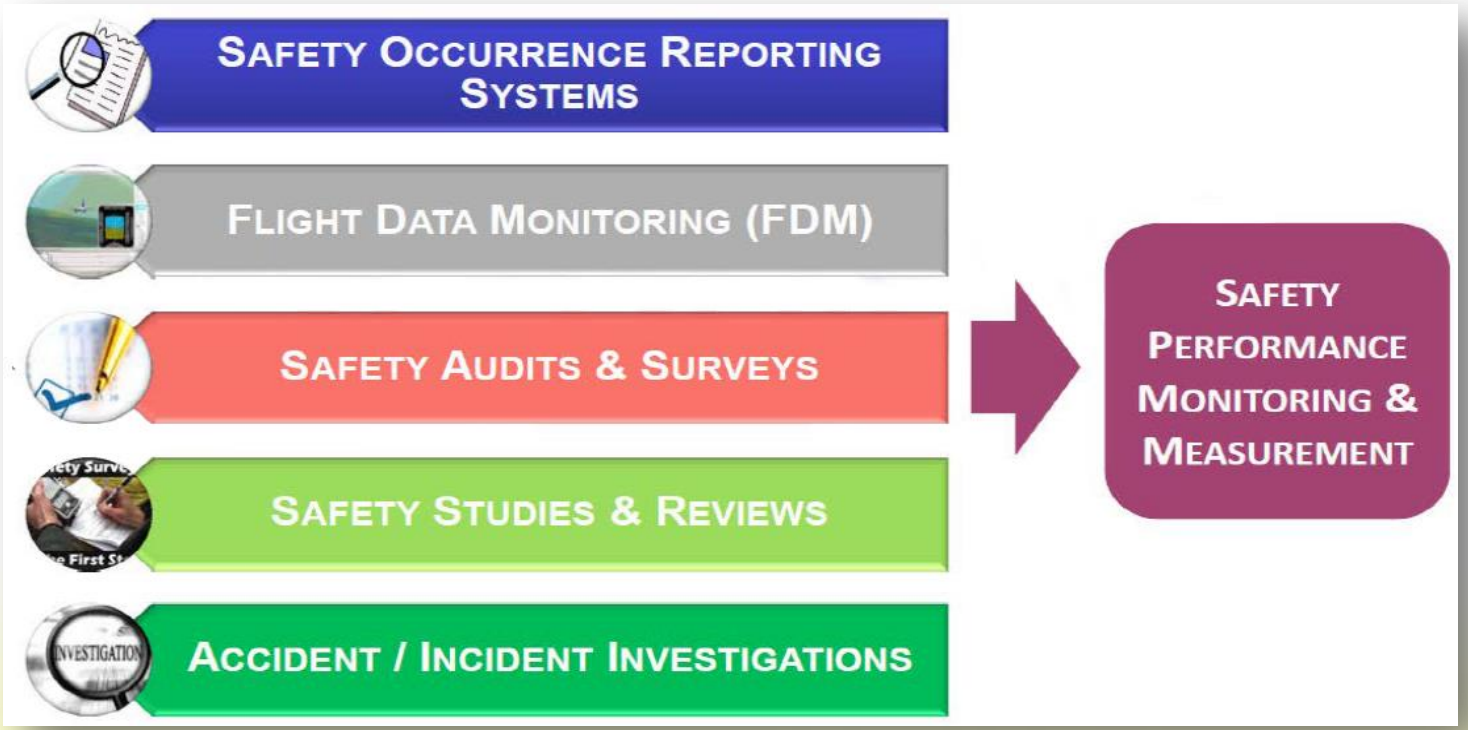
Part 5 / SMSVP Standard and Data Structure

What it means is…

A ‘process view’ of safety / quality emerges from all data sources



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Part 5 / SMSVP Standard and Data Structure

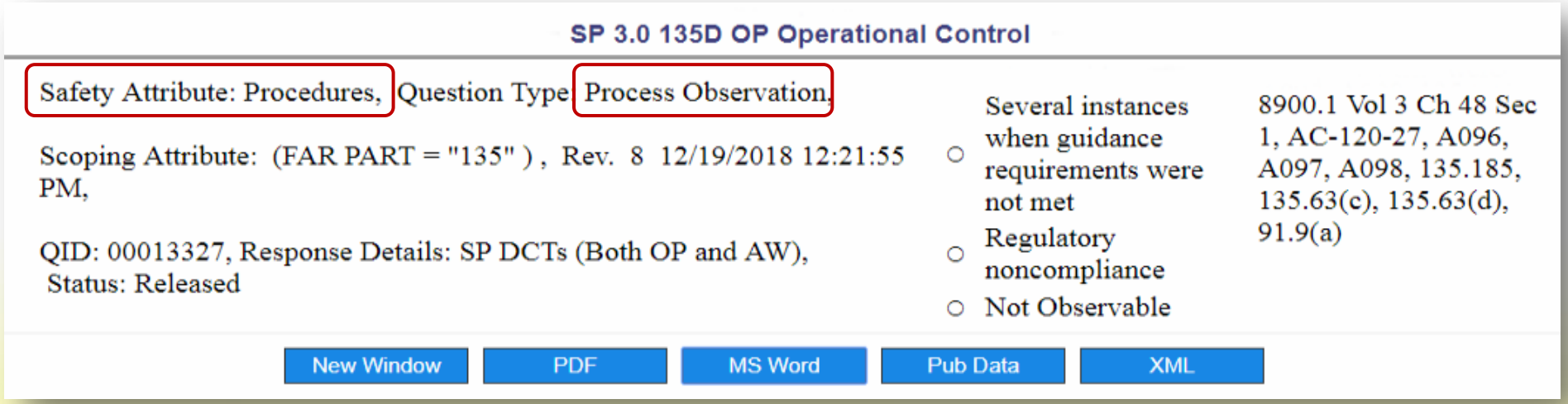
What it also means is…

When a *process audit* is performed (this is essentially what most DCTs are):

Controls impacting the process can be reviewed & assessed

Processes can be monitored

Process performance can be measured
(this is a recurring DCT question)



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SMSVP Steps / Phases / Timeline

Letter of request for entry - (Order 8900.1 Vol 17 Ch 3)

Initial workshop; Implementation plan due in 12 months of wkshop

Preparation Phase

Prep gap analysis / implementation plan

CMT Implementation Plan Review Phase

Review of gap analysis / plan / SMSVP conformance

Documentation Validation Phase

FAA performs a *quality review* of SMS documents

Design Demonstration Phase

SMS must be implemented / validated within 36 months of wkshop

Continued Operational Safety (COS)

CMT uses COS job aids to assure continued safety

Performance Measurements / Indicators

Within the SMS, key performance indicators should

- Monitor and measure operational processes (NOT just SMS processes)
- Be based on meaningful units of measure

Four essential types of KPIs help us measure

- SMS performance
- Operational performance
- Safety performance (low and high-level)
- Quality performance (low and high-level)

Performance Measurements / Indicators

SMS performance indicators (examples)

- Reports received per employee group
- Timely investigations
- Risk controls implemented / corrected

These indicators can effectively be measured using a 'per-month' unit of measure

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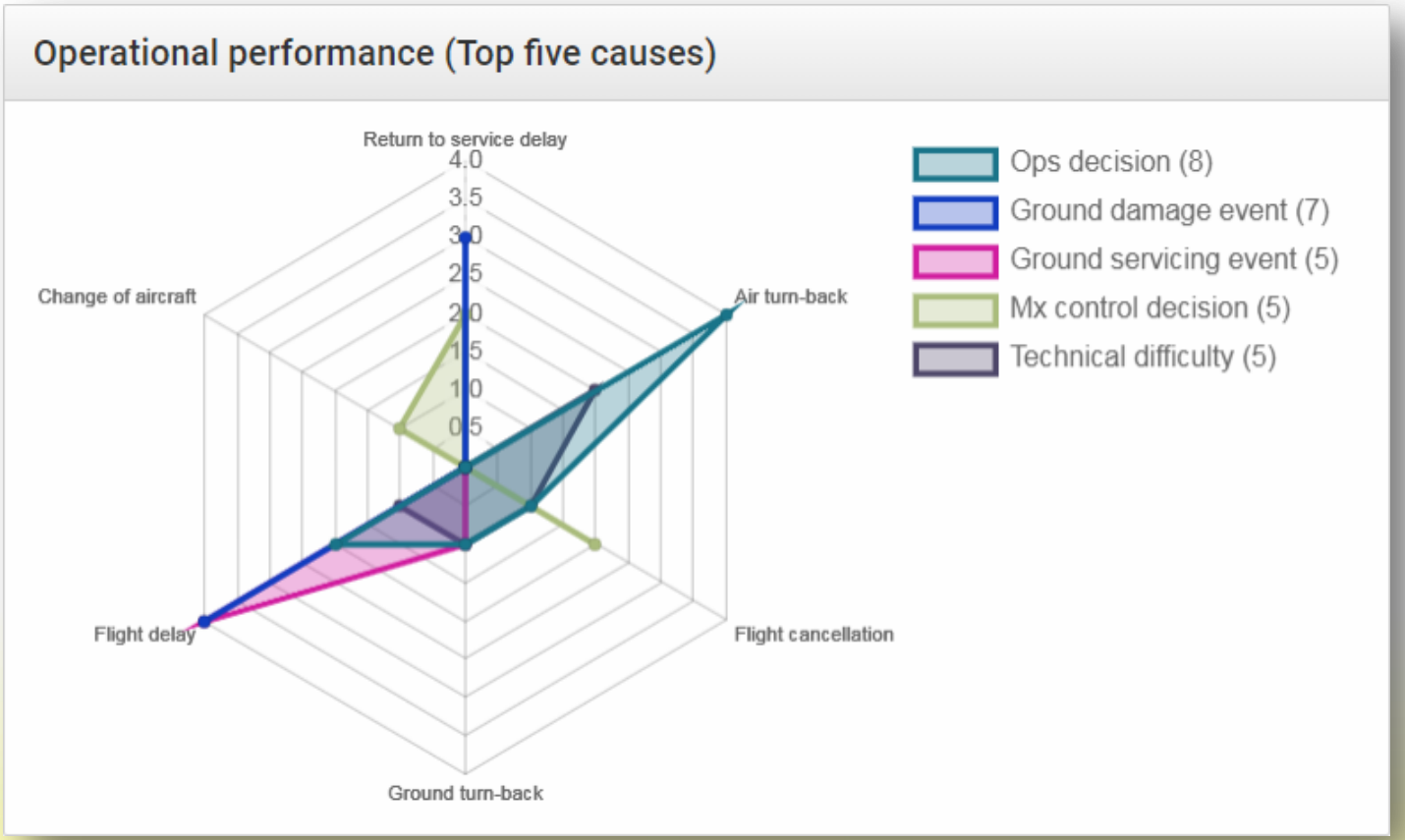
Performance Measurements / Indicators

Monitoring operational performance

For an operator, this means flight delays / interruptions

Events can also include return-to-service delays in Mx



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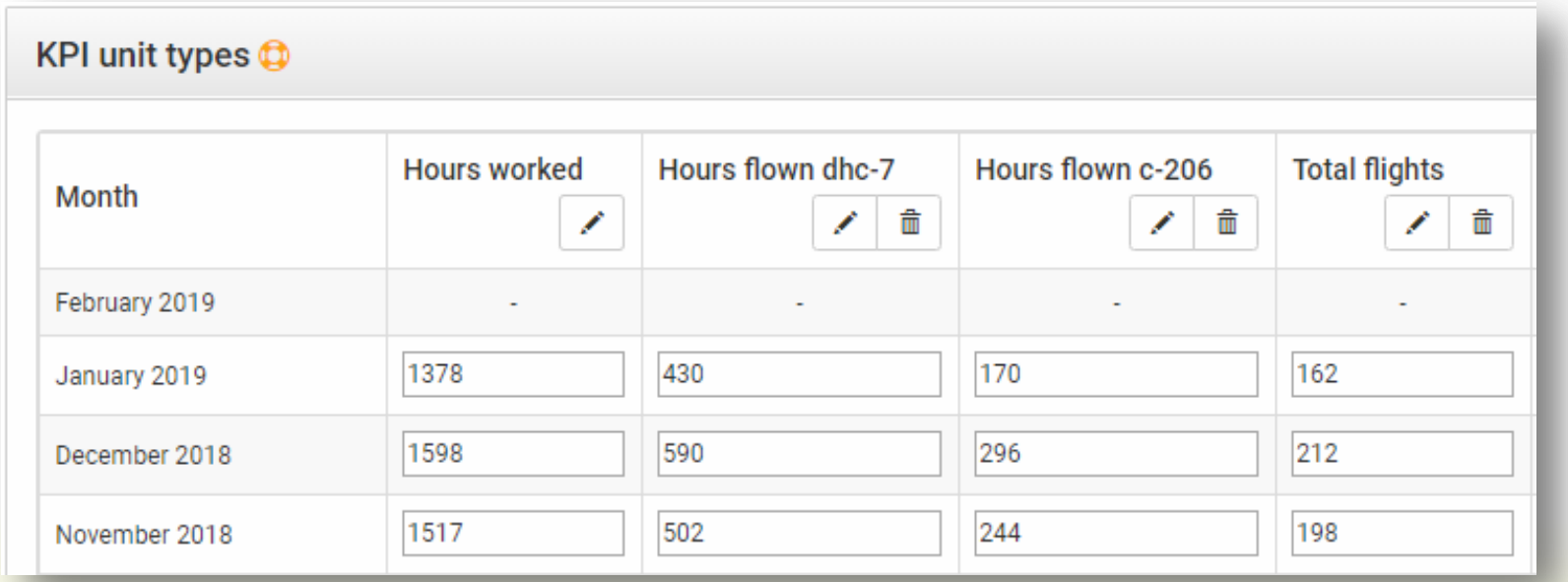
Performance Measurements / Indicators

Operational performance indicators

Require a more accurate unit of measurement (examples):

- Number of events per flight hour
- Number of events per flight segment



KPI unit types

Month	Hours worked	Hours flown dhc-7	Hours flown c-206	Total flights
February 2019	-	-	-	-
January 2019	1378	430	170	162
December 2018	1598	590	296	212
November 2018	1517	502	244	198

In the context of SMS, 'operational performance' looks at the safety and quality-related causes of minor system failures

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Performance Measurements / Indicators

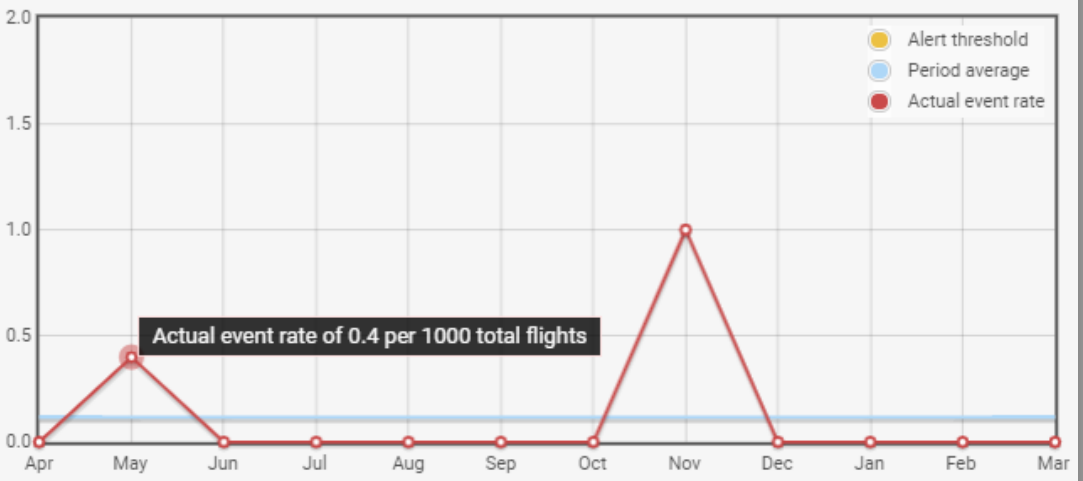
Example: Operational Key Performance Indicator (OKPI) for ground damage

OKPI: Delays / Interruptions due to Ground Damage

Alert threshold: 0.3 per 1,000 total flights **Current average**: 0.11 per 1,000 to

Performance goal: Reduce instances of delays or interruptions caused by ground damage to less than .1 event

Previous 12 months



Contributing Reports

Date	Title	Event	Type	Cause
12 Sep 2018	Damage discovered on aft cargo door sill - N45565	Aircraft or Equipment damage	Flight delay	Ground damage event
16 May 2017	FOD damage to N23456 during scheduled inspection	Foreign Object Damage	Return to service delay	Ground damage event
22 Nov 2017	Towbar / Nose Strut damage to N234546	Aircraft or Equipment damage	Return to service delay	Ground damage event
03 Aug 2018	FOD damage in KSEA	Damage from FOD left on ramp	Flight delay	Ground damage event
12 May 2017	FOD damage - N44565 APU	Foreign Object Damage	Return to service delay	Ground damage event

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Performance Measurements / Indicators

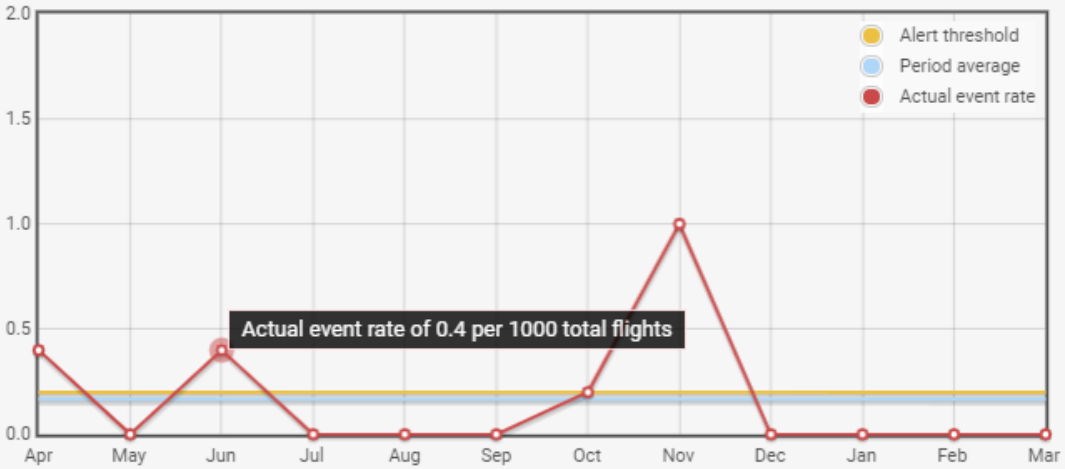
Example: OKPI for Mx-related delays and interruptions

OKPI: Mx-related Flight Delays / Interruptions

Alert threshold: 0.3 per 1,000 total flights **Current average**: 0.07 per 1,000 tot

Performance goal: Reduce maintenance-related flight delays to less than 0.10 per 1,000 flights by April 30, 201

Previous 12 months



Contributing Reports

Date	Title	Event	Type	Caus
27 Jun 2017	Inflight shutdown - ATR 42 arriving CYXE	Inflight engine shutdown (IFSD)	Air turn-back	Techr diffic
06 Apr 2017	Overfly of N34338 Phased Inspection	Inspection overfly	Flight cancellation	Mx c decis
01 Oct 2018	Aircraft N44567 damaged while parked in front of main hangar	Aircraft or Equipment damage	Flight cancellation	Techr diffic
27 Jun 2017	Tail rotor vibration after maintenance	Rotor systems malfunction	Return to service delay	Mx c decis
01 May 2018	N356SA RII item not signed off as inspected	-	Change of aircraft	Mx c decis

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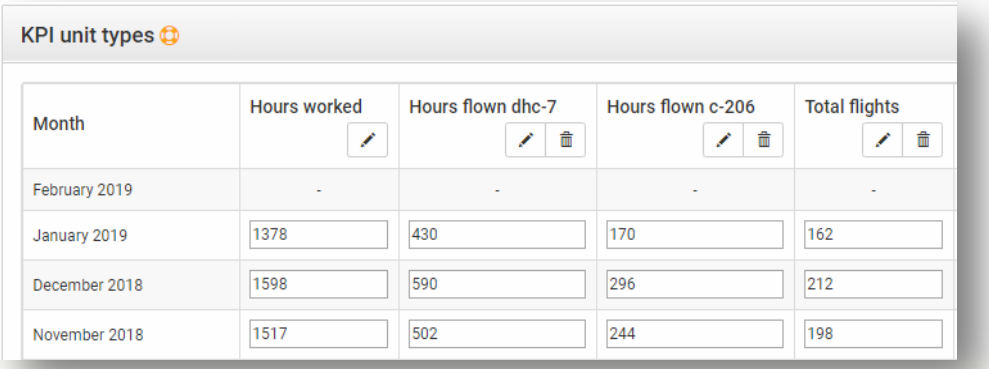
Performance Measurements / Indicators

Safety performance indicators

Tie SKPIs to your policy / objectives

Select the best unit type for the desired KPI

- Per flight hour by aircraft type
- Per total flight hours
- Per no. of flights
- Per hours worked



KPI unit types

Month	Hours worked	Hours flown dhc-7	Hours flown c-206	Total flights
February 2019	-	-	-	-
January 2019	1378	430	170	162
December 2018	1598	590	296	212
November 2018	1517	502	244	198

Low-level SKPIs should capture precursors related to their undesired accident outcome

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Performance Measurements / Indicators

Example: Safety Key Performance Indicator (SKPI) for runway excursion precursors

SKPI: Runway Excursion Precursor Events

Alert threshold: 0.4 per 1,000 total flights

Current average: 0 per 1,000 total flig

Performance goal: Reduce instances of runway excursion precursor events to .4 per 1,000 flight segments.

Previous 12 months

Contributing Reports

Date	Title
04 Mar 2017	High ROD between 500 - 100 Ft - Global 5000 (Precursor event)
01 Oct 2017	Near runway overrun / tire failures on landing at KSIT
28 Sep 2017	Long landing at KASE

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Performance Measurements / Indicators

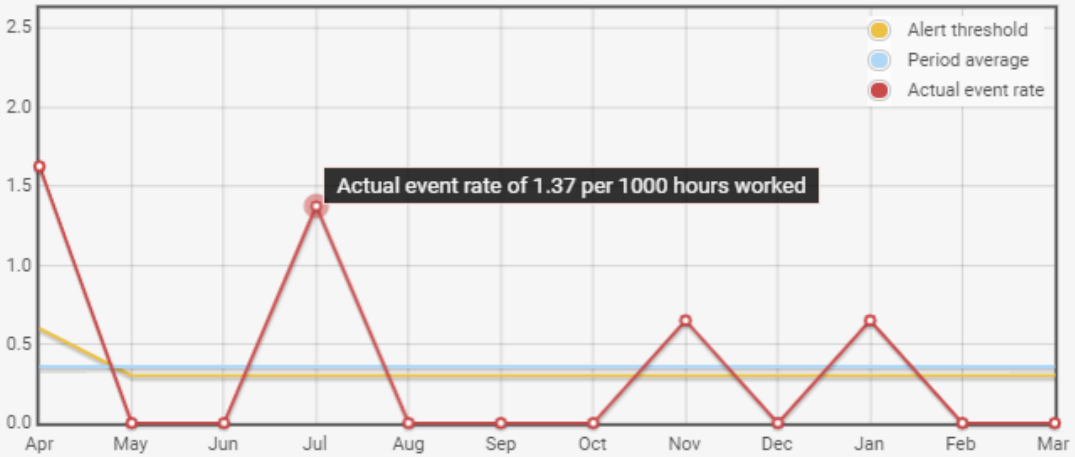
Example: SKPI for regulatory violations in maintenance

SKPI: Regulatory Violations in Maintenance

Alert threshold: 0.3 per 1,000 hours worked **Current average**: 0.22 per 1,000 hours

Performance goal: Reduce instances of regulatory violations by maintenance personnel to less than 0.2 per thous

Previous 12 months



Contributing Reports

Date	Title	Event
29 Jan 2018	ASAP: Tech. Exceeded Duty Time During Non-routine Repair of N45565.	Unintentiona
12 Dec 2018	Saturday Overtime Violation	Regulatory v
20 Sep 2018	Duty time exceeded in maintenance	Unintentiona
27 Nov 2018	Untitled	Unintentiona
04 Dec 2018	Mx Duty Time Violation	Routine viol

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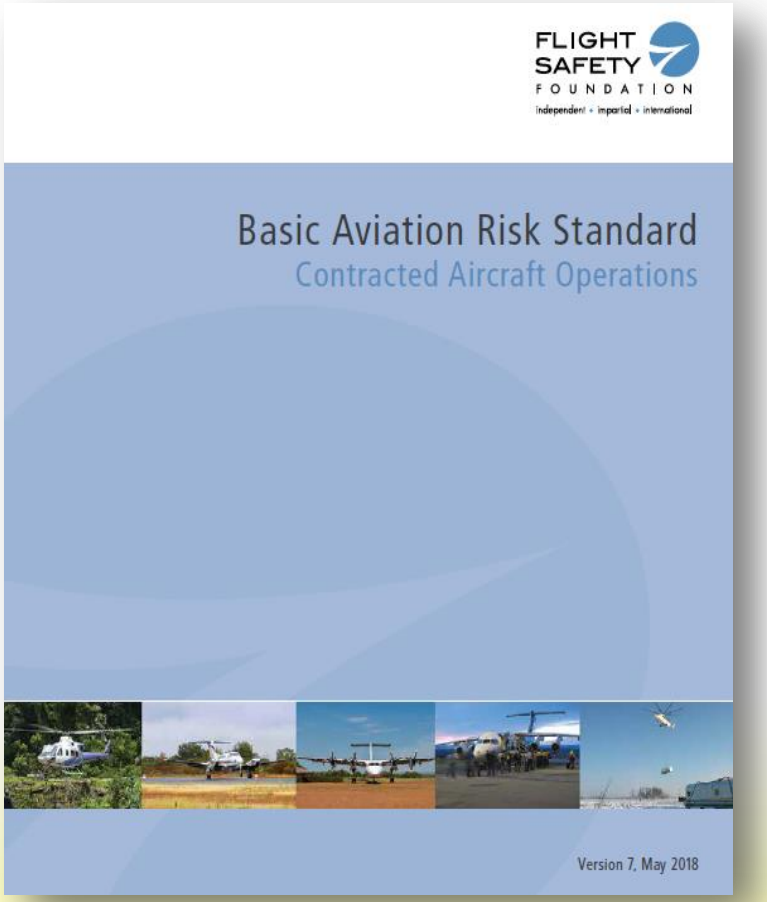
Barrier-based Safety Management

A list of barriers / controls in place with responsibility for continued performance is essential to an effective Safety Management System

Starting point: FSF's Basic Aviation Risk Standard (BARS)

- **An audit standard originally intended for contract ops. Resource sector**



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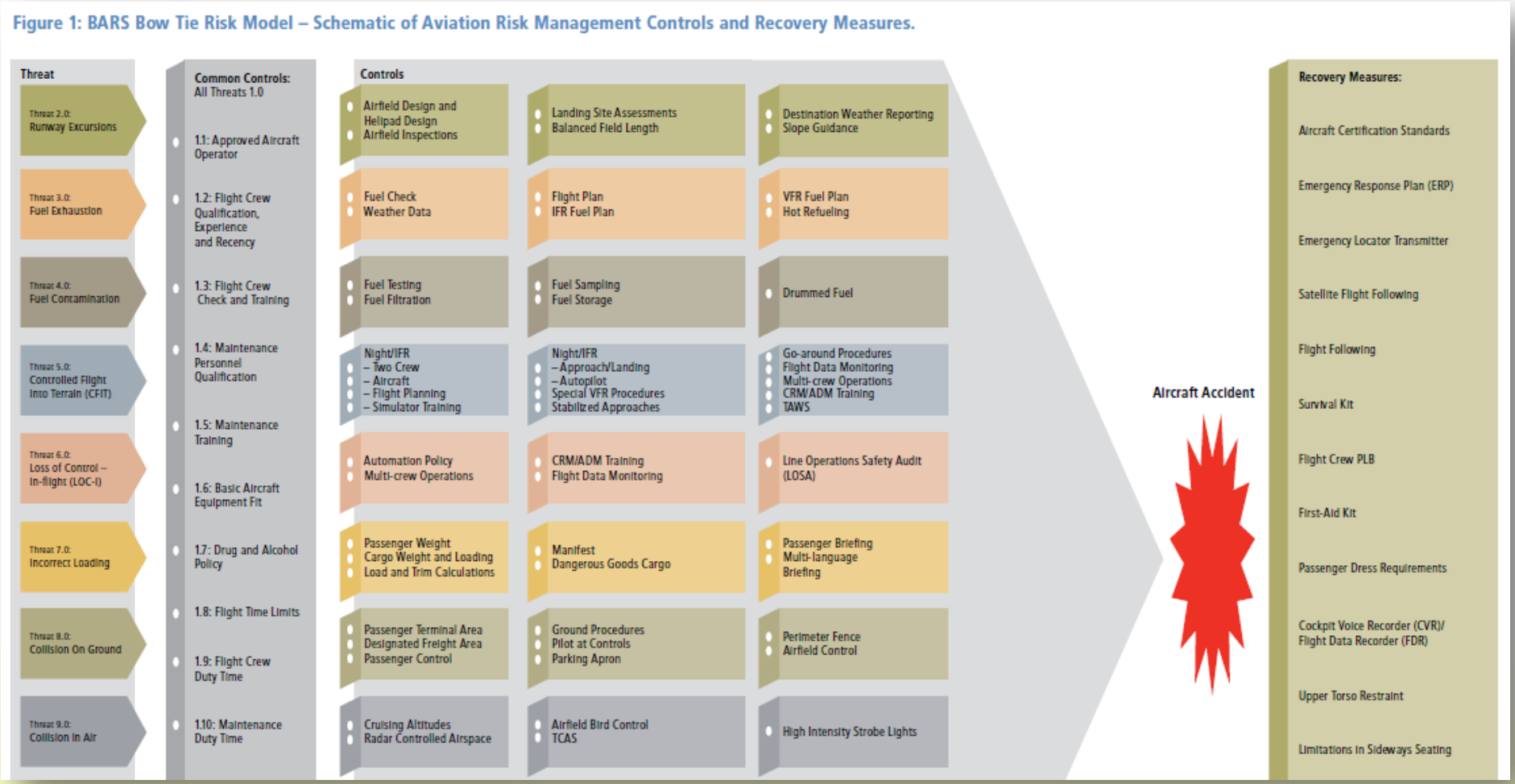
Barrier-based Safety Management

BARS controls by threat as shown in a Bowtie model

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



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Barrier-based Safety Management

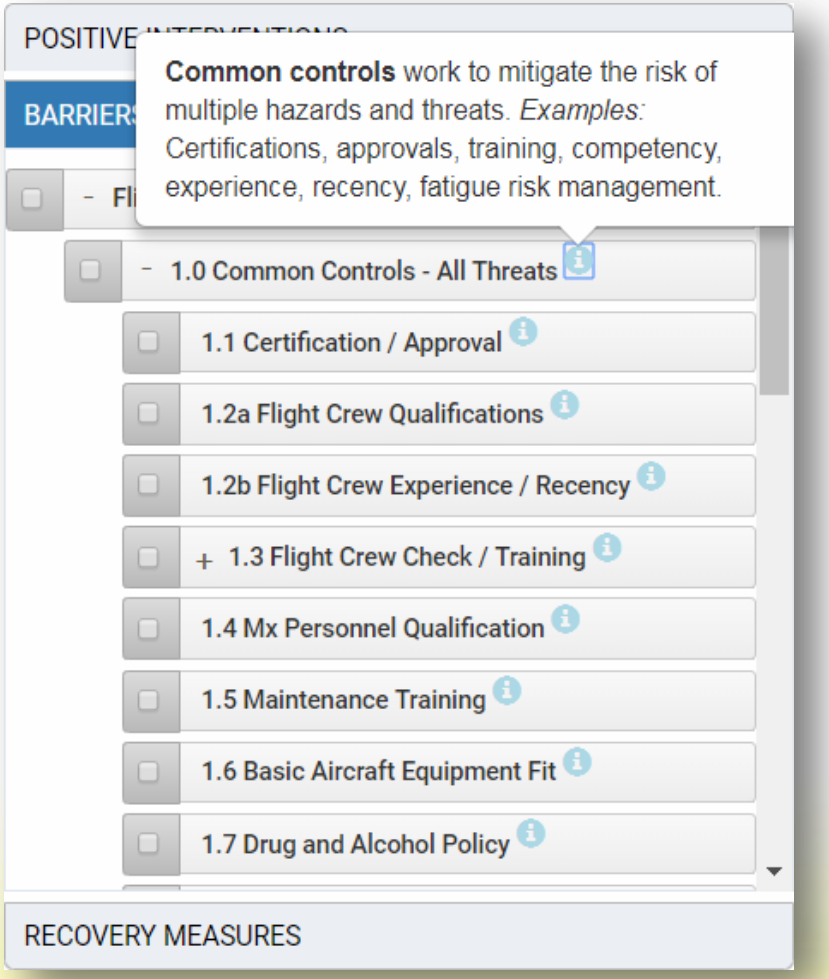
The BAR standard includes *common controls*

Taxonomies work reactively

- For Event Risk Classification
- To improve risk assessments

Taxonomies work proactively

- During Safety Issue studies
- With Bowtie analysis
- During system descriptions to stimulate thought processes



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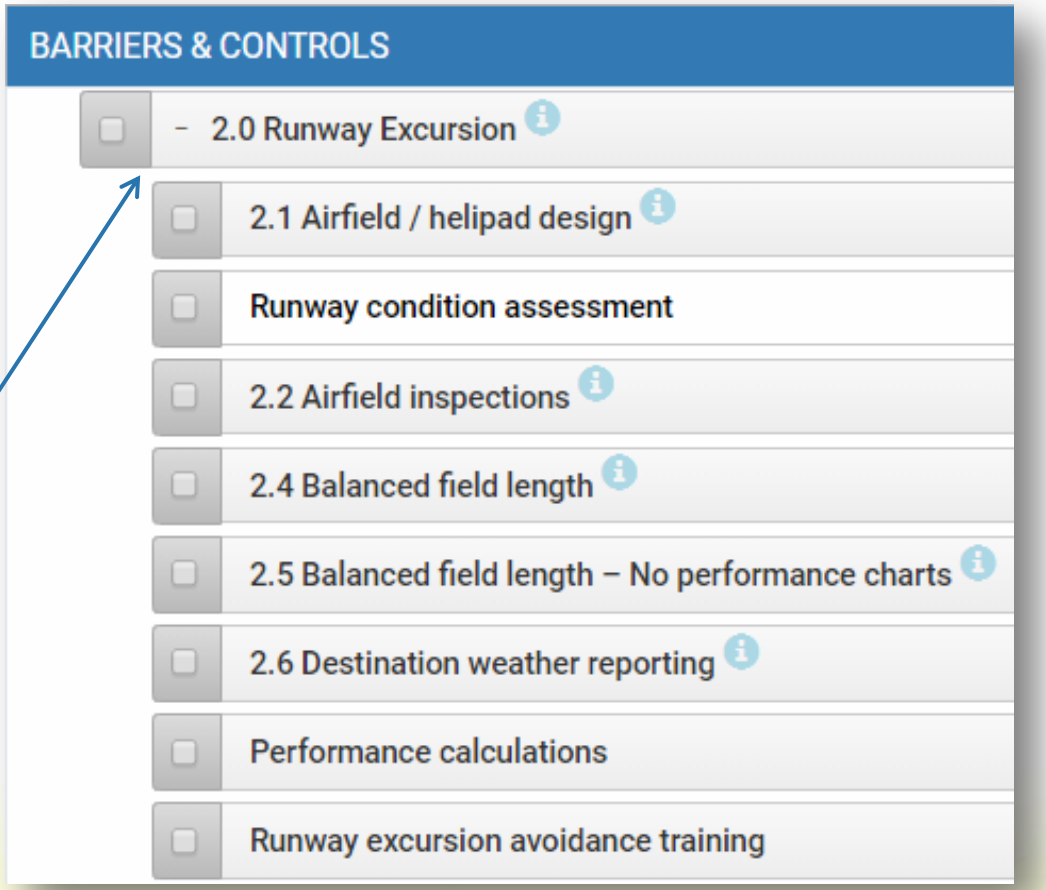
Barrier-based Safety Management

BARS is readily adaptable to any type of operation

Organized by 'Threat'

Specifies barriers and controls to mitigate various threats



Example of BARS Threat 2.0 Runway Excursion adapted to a Part 135 operator's SMS database

Now – Let's apply these taxonomies to our SMS

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Barrier-based Safety Management

ARMS method of Operational Risk Assessment

Developed by the Aviation Risk Management Solutions (ARMS) working group, from 2007 to 2010

Purpose:

- **To overcome the problems associated with traditional risk assessment methods**
- **To simplify initial risk assessment by analyzing the barriers and controls that worked to prevent an accident**

ARMS methodology has been adopted by airlines around the world

It's not just for the big guys!

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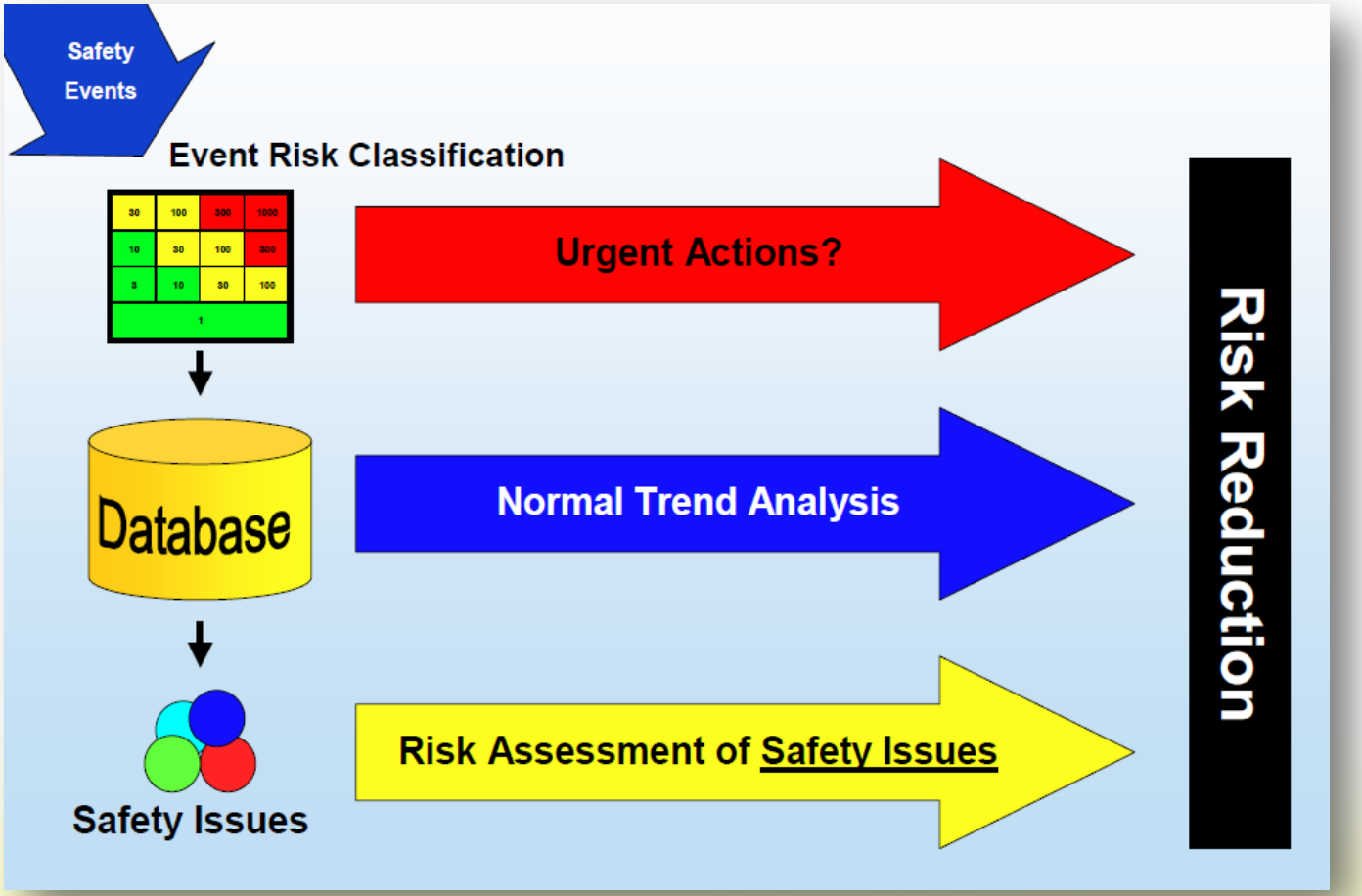
Barrier-based Safety Management

ARMS risk assessment methodology overview



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Barrier-based Safety Management

ARMS Event Risk Classification (ERC)

An effective method to screen incoming event reports

Methodology:

- Simple and fast
- Conceptually solid

Results:

- Coherent
- Useful
- Understandable by non-experts

Event Risk Classification is a new and better method of assessing the risk of events that have already occurred

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Barrier-based Safety Management

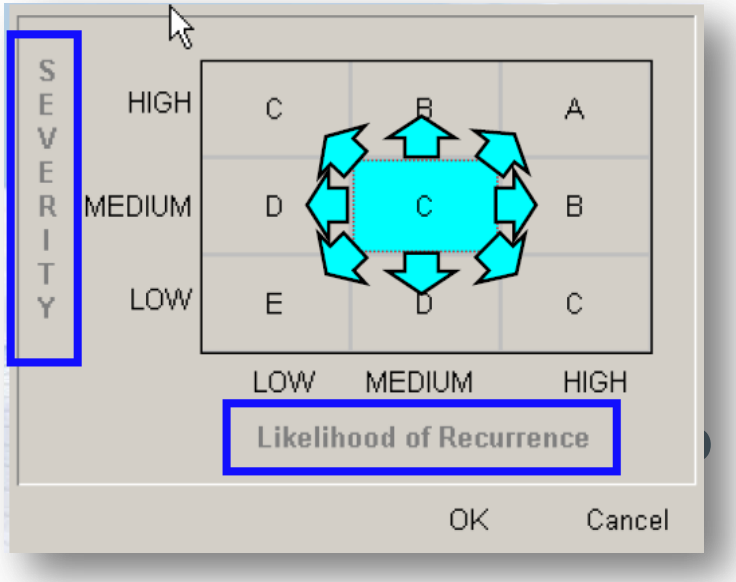
Problems with older methods - *fictitious example*

You learn about an event which occurred yesterday

A twin-engine turbine-powered aircraft with 110 pax aboard almost overran the runway end on landing at Sitka

Actual outcome: blown tires

Causes: unstable approach and reduced braking capability a maintenance error



In the classic approach to risk assessment, you:

Assess ‘severity’ and ‘likelihood’

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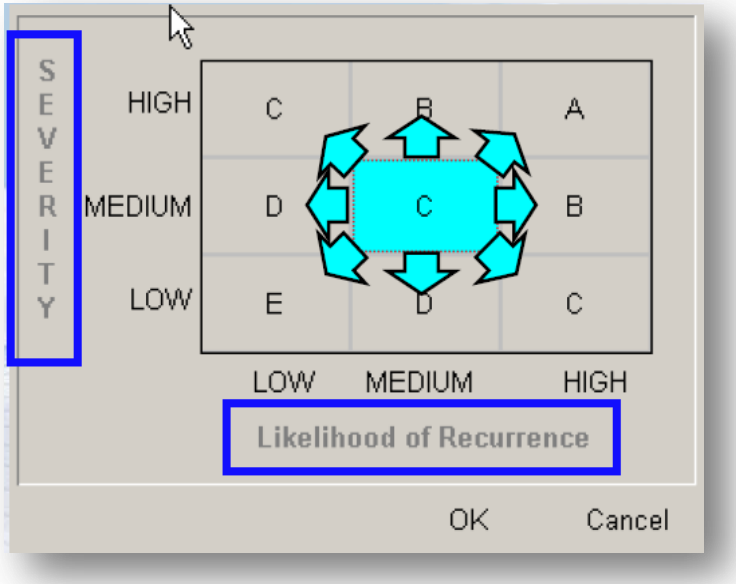
Barrier-based Safety Management

Fictitious example of runway overrun (continued)

Severity *of what?*

- Actual outcome: blown tires?
- Most likely accident scenario:
  with some injuries
  fatalities (if any)?
- The worst-case scenario:
  with 100% fatalities?
- Shall we consider smaller A/C?
  less pax? Cargo flights?
- Other airports?



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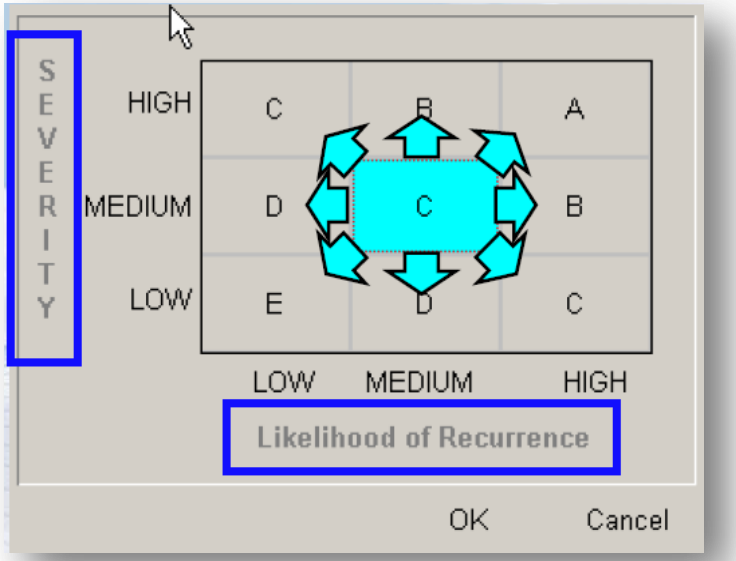
Barrier-based Safety Management

Fictitious example of runway overrun (continued)

Likelihood *of what?* (what risk*?)

- The same maintenance error?
- Near-overshoot events?
- Actual overshoot events?
- Any aircraft type?
- Any location?



**The ICAO definition of 'risk' refers to the "worst foreseeable situation", which usually equals 100% fatalities. But this is not the same as the "most credible accident scenario", which in real life may be a more useful concept.*

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Barrier-based Safety Management

Conceptual confusion exists assessing historical events

Each actual outcome is unique

The many variables and chain of events will never happen again in exactly the same way

So we try to risk-assess a potential similar event…

But “similar” is very subjective

With many estimates

…and much speculation

Is it appropriate at all to be risk-assessing events that have already occurred?

Barrier-based Safety Management

A Better Way – ARMS Event Risk Classification (ERC)

SMS standards require us to investigate

- Incidents
- Accidents

} Collectively known as ‘Occurrences’

But the vast majority of reported events are:

- Irregularities
- Minor events (e.g., violations under ASAP)

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Barrier-based Safety Management

A Better Way – ARMS Event Risk Classification (ERC)

- Using a typical RA matrix, risk assessments are
  - Ambiguous
  - Subjective

- Event Risk Classification is a better tool
  - ERC analyzes barriers that worked to prevent an accident
  - It requires minimal investigation, so it's fast

Let's see how it works – in 3 easy steps!

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Barrier-based Safety Management

ERC Example 1: Inflight shutdown

Step 1: Identify barriers that did not fail

Identify the interventions and barriers that prevented this event from escalating into an accident scenario. Ignore barriers that already failed; these will be studied in the investigation that follows. Consider only the barrier which worked, and any subsequent barriers still in place. Analyzing these barriers provides a more accurate assessment of the likelihood of an incident or accident scenario being realized.
Source: Event Risk (ER) classification - Methodology for Operational Risk Assessment - ARMS Working Group, 2010

Interventions / Barriers Add barrier

Barrier	Description
10.2 Multi-engine aircraft design	2-engine redundancy
Failure anticipation	In-flight monitoring of engine parameters revealed impending engine failure
Applied training / SOPs	Engine shutdown & secure / single-engine approach procedures
Emergency procedures training	Crew trained and checked on engine failure procedures
Inflight action	Precautionary shutdown
Checklist	Crew used provided emerg. checklist for failed engine
CRM / ADM training	Captain applied CRM and instructed SIC to continue the approach while he secured the engine and monitored the SIC flying
Land as Precaution	Crew landed at nearest suitable airport

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Barrier-based Safety Management

ERC Example 2: Near-overrun event

Step 1: Shown here are the barriers that worked

(i.e., the barriers that remained in place and helped prevent the event from escalating into an accident scenario)

Interventions / Barriers Add barrier

Barrier	Description
2.1 Airfield / helipad design	Engineered Materials Arresting System (EMAS) and Runway End Safety Area (RESA) safety nets in place
2.6 Destination weather reporting	Runway was reported as wet (acceptable for landing)
Runway excursion avoidance training	Both crewmembers trained and current
Runway condition assessment	Conditions assessed
Performance calculations	Landing performance calculations per AFM
2.4 Balanced field length	Ability to stop within 60% without reverse thrust
Applied training / SOPs	Application of emergency air brake

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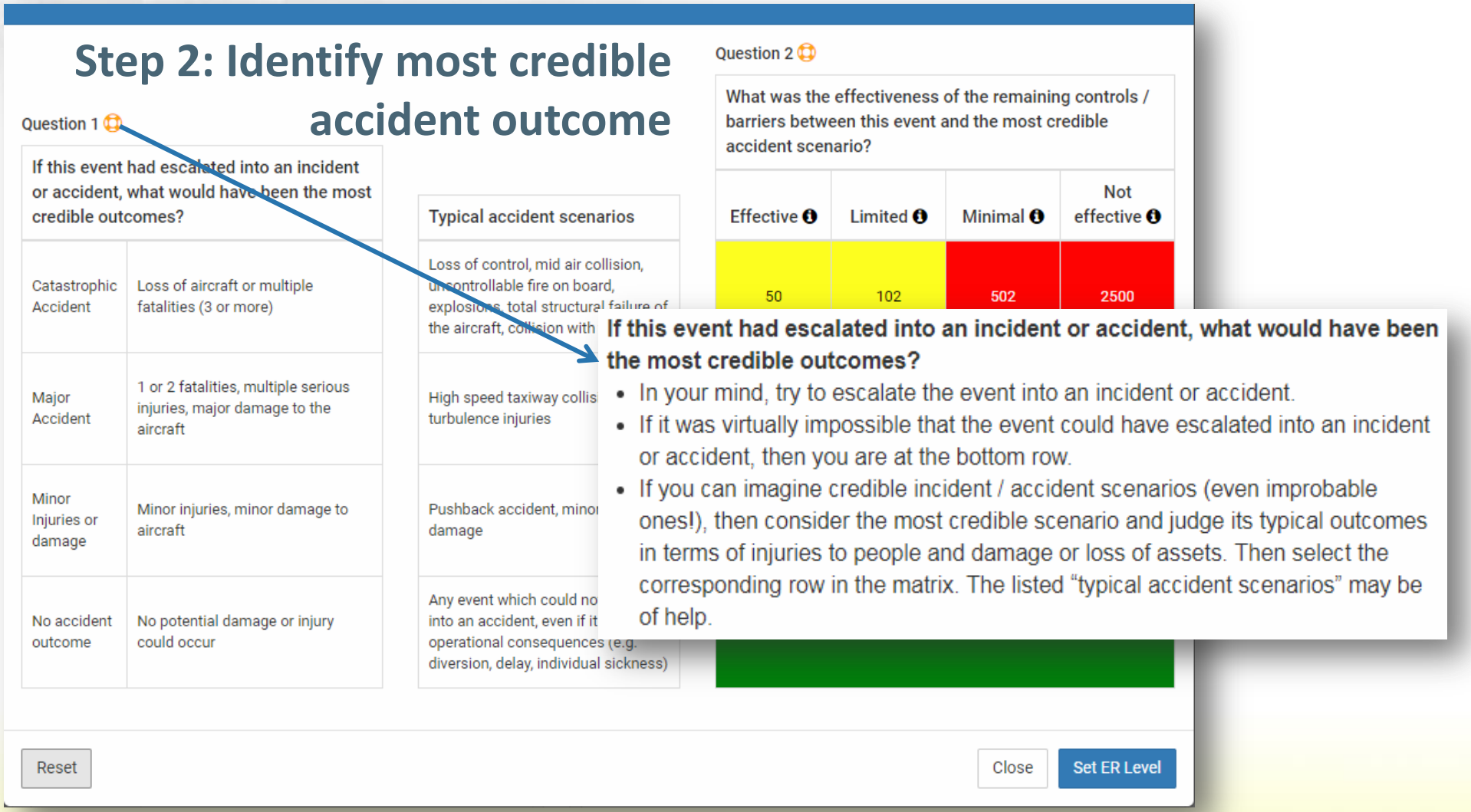
Barrier-based Safety Management



ARMS Event Risk Classification Question 1

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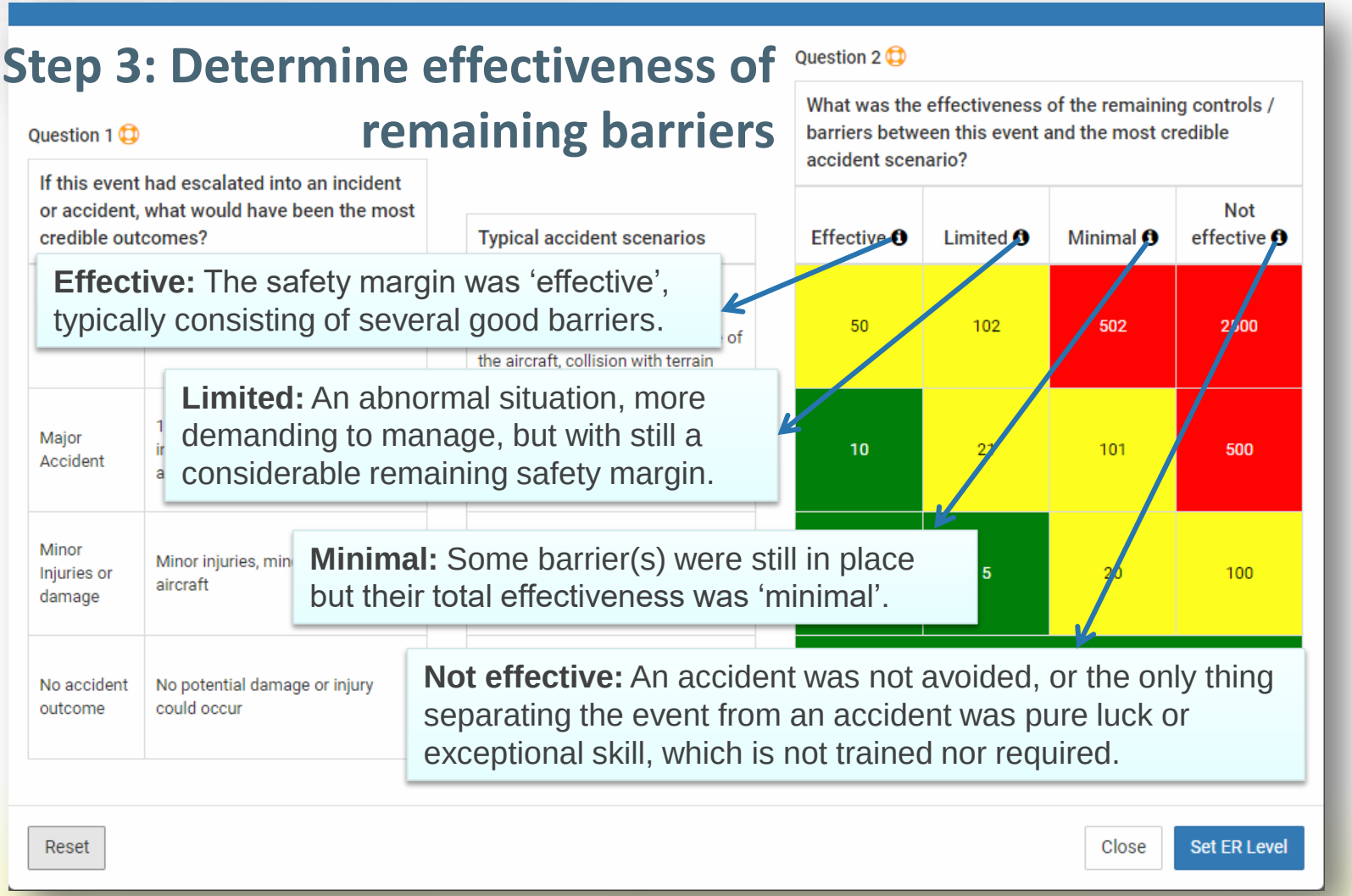

ARMS Event Risk Classification Question 2

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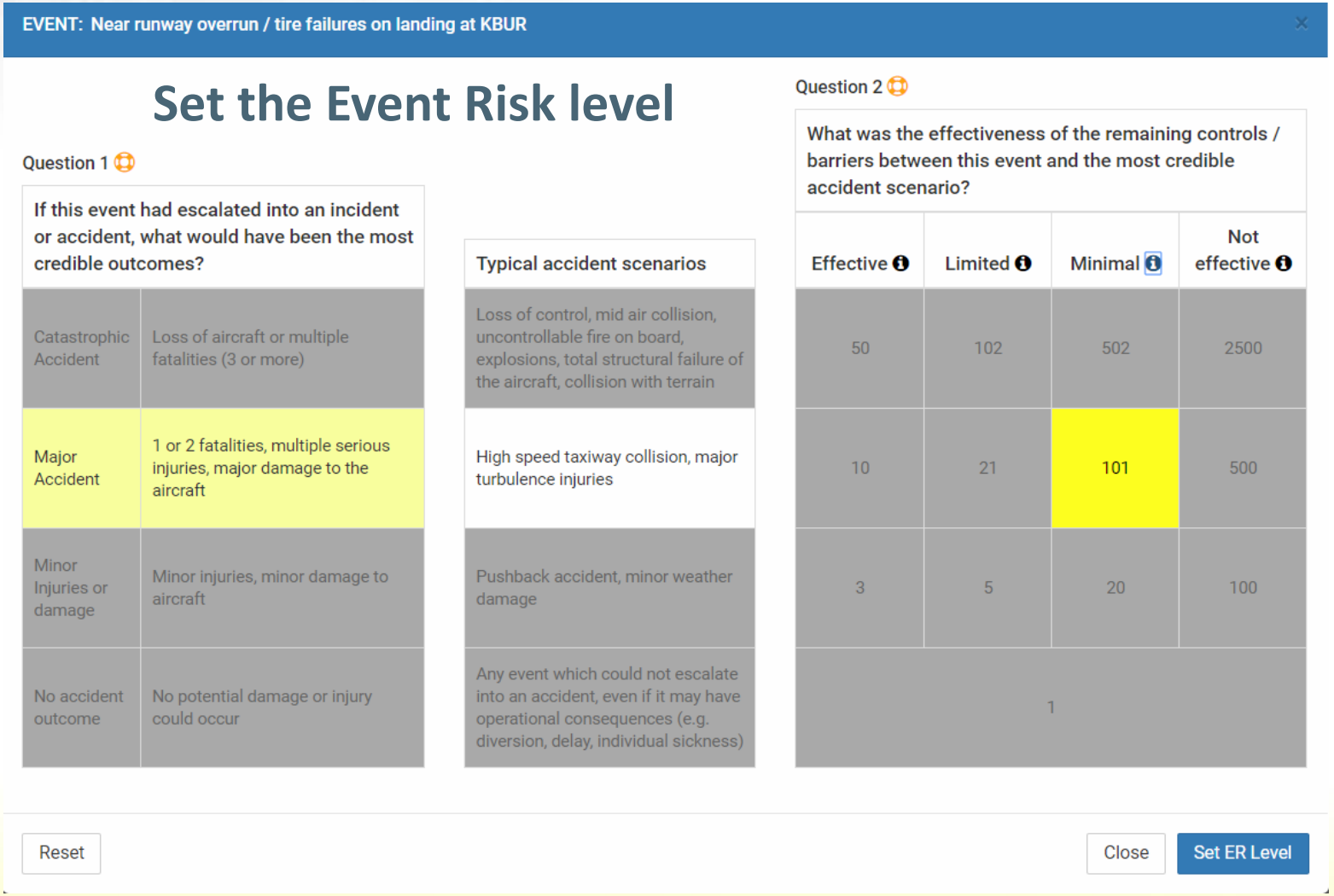

ARMS Event Risk Classification – Risk level set

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ARMS Safety Issue risk assessment method

Proactive Safety Issues

- Meet FAA's SMSVP 'SRM trigger' requirements
- Begin with a system description and are clearly defined
- Produce risk assessments that are less subjective
- Can be used to assess future risks (change management)
- Analyze barriers and controls currently in place
- Are well-suited to the use of Bowtie analysis

Reports of historical events / occurrences can be linked to the associated Safety Issue

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ARMS Safety Issue definition:

“A manifestation of a hazard or combination of several hazards in a specific context. The Safety Issue has been identified through the systematic Hazard Identification process of the organization. An Issue could be a local implication of one hazard (e.g. de-icing problems with one particular aircraft type) or a combination of hazards in one part of the operation (e.g. operation to a demanding airport).”

Barrier-based Safety Management

Safety Issue **is an important concept**

Typically the local, specific implication(s) of a hazard

(e.g. Windshear on approach to Galena)

Or a combination of hazards present at once

(e.g. Landing to Sitka (terrain, short runway, displaced ILS, tailwind, wet runway, etc.)

(e.g. Mx tech working alone, outside, at night on a slippery ramp in adverse weather conditions)

Barrier-based Safety Management

Why is the ‘Safety Issue’ concept so important?

Several reasons:

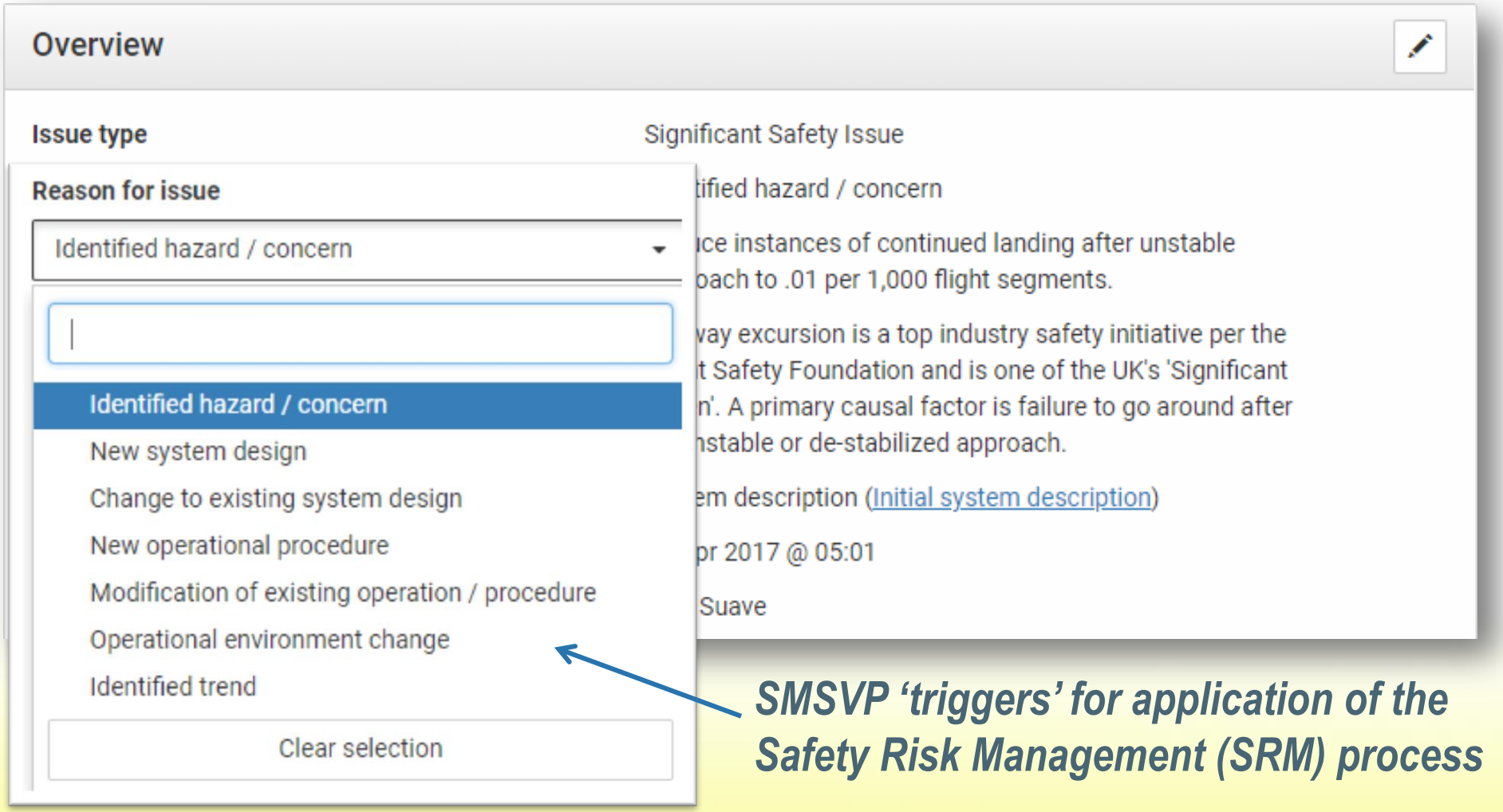
Safety Issues can be precisely defined and therefore risk-assessed with minimal subjectivity

Safety Issues can be designed to meet Part 5 / SMSVP requirements for Safety Risk Management (SRM)

Safety Issues are proactive; they offer the most benefit for managing safety with your organization or department

Barrier-based Safety Management

Safety Issue: Runway Excursion



SMSVP 'triggers' for application of the Safety Risk Management (SRM) process

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Barrier-based Safety Management

Safety Issue: Runway Excursion

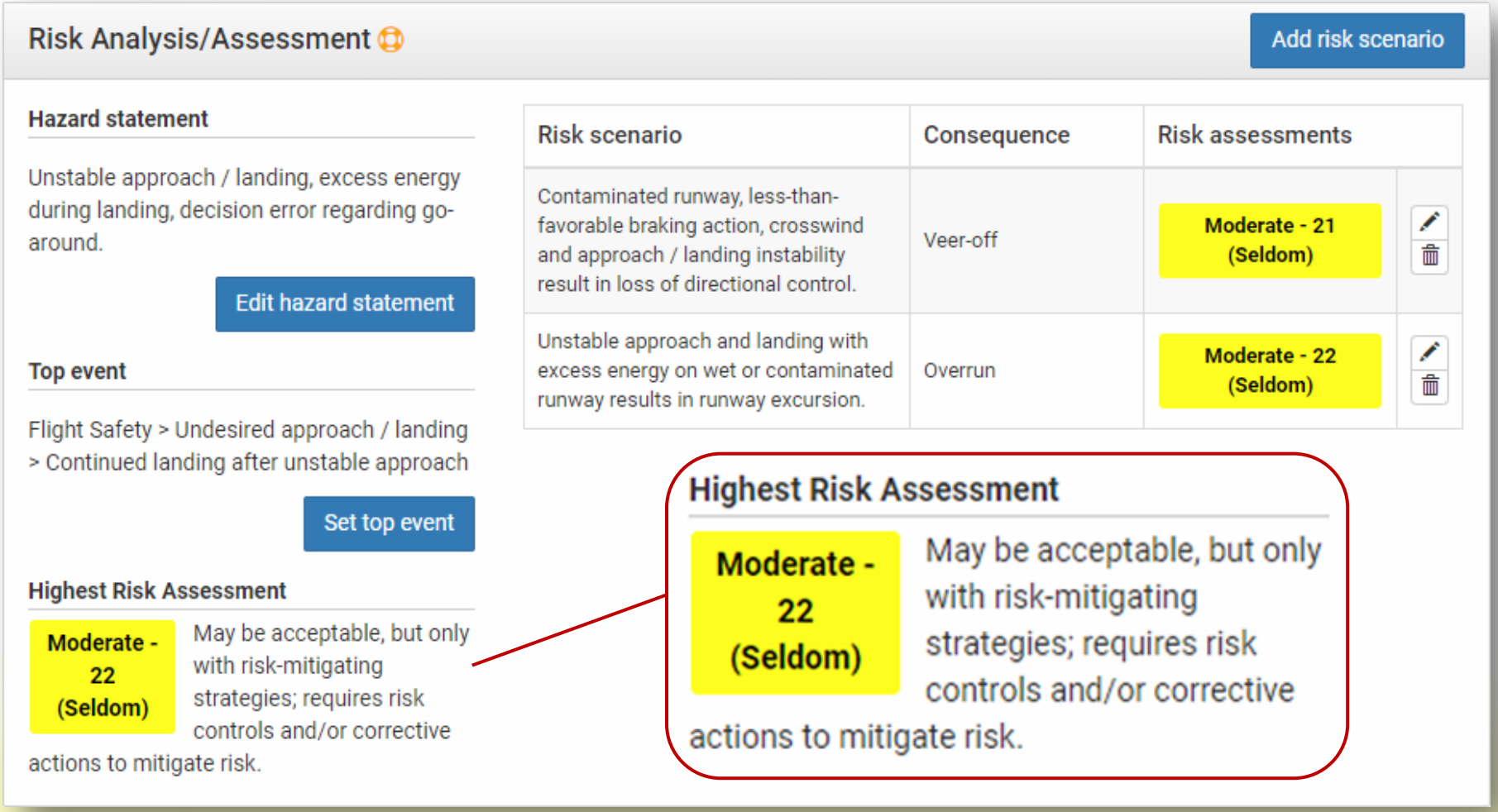
Objective established for performance measurement

Overview

Issue type	Significant Safety Issue
Reason for issue	Identified hazard / concern
Objective(s)	Reduce instances of continued landing after unstable approach to .01 per 1,000 flight segments.
Explanation	Runway excursion is a top industry safety initiative per the Flight Safety Foundation and is one of the UK's 'Significant Seven'. A primary causal factor is failure to go around after an unstable or de-stabilized approach.
Data source	System description (Initial system description)
Date created	03 Apr 2017 @ 05:01
Created by	Rico Suave

Barrier-based Safety Management

Safety Issue: Runway Excursion - Risk Assessment



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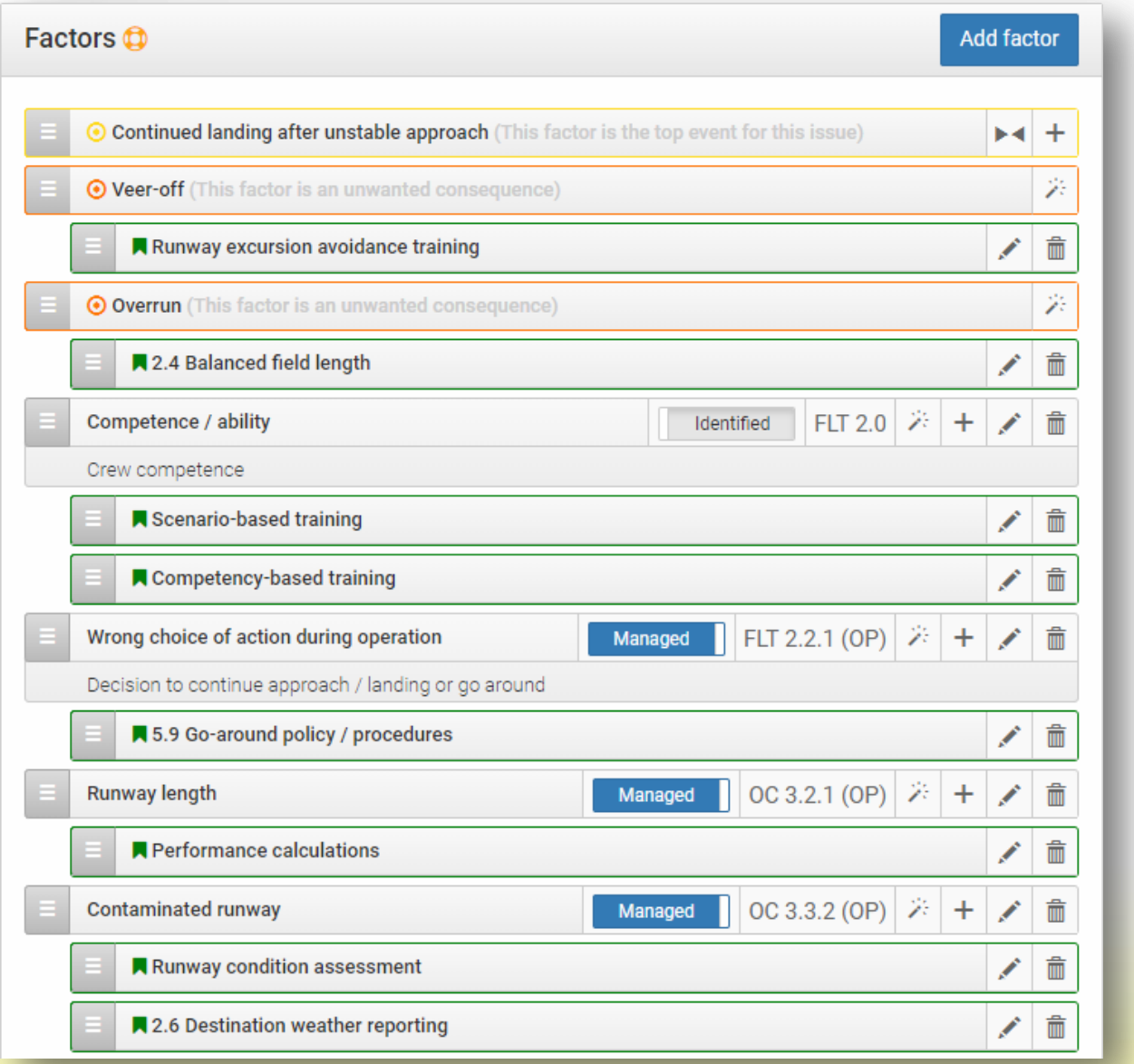
Safety Issue: Runway Excursion

Study of threats and barriers



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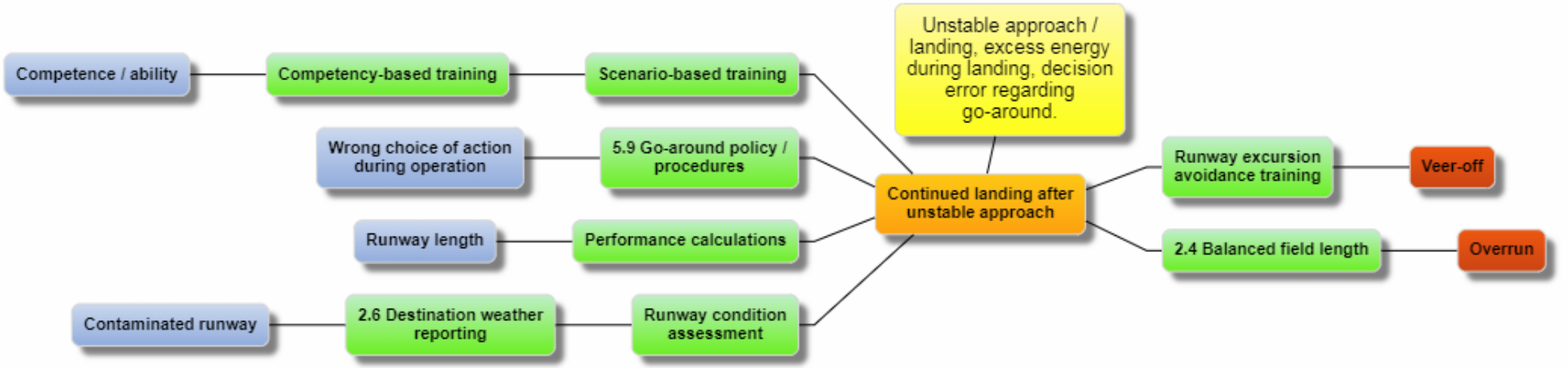
Safety Issue: Runway Excursion - In-depth Risk Analysis

Bowtie analysis is the industry's leading tool for in-depth analysis of proactive safety issues



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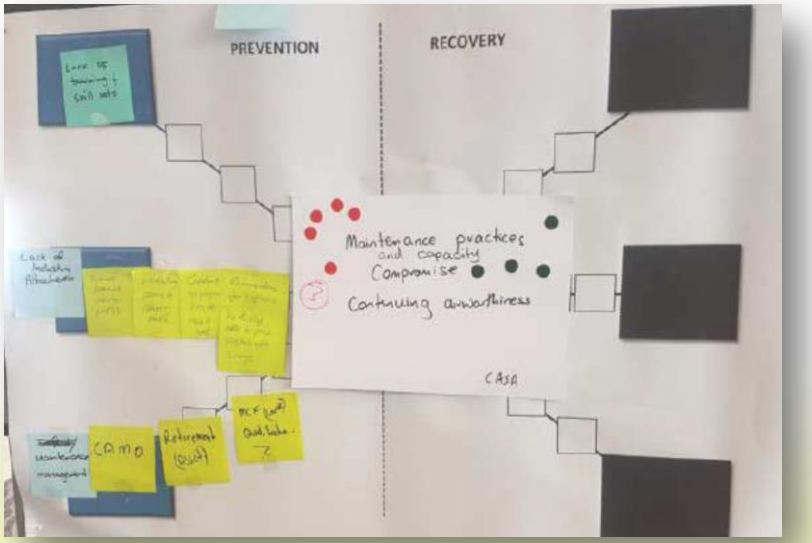
Bowtie analysis

Bowtie analysis can be done on paper!



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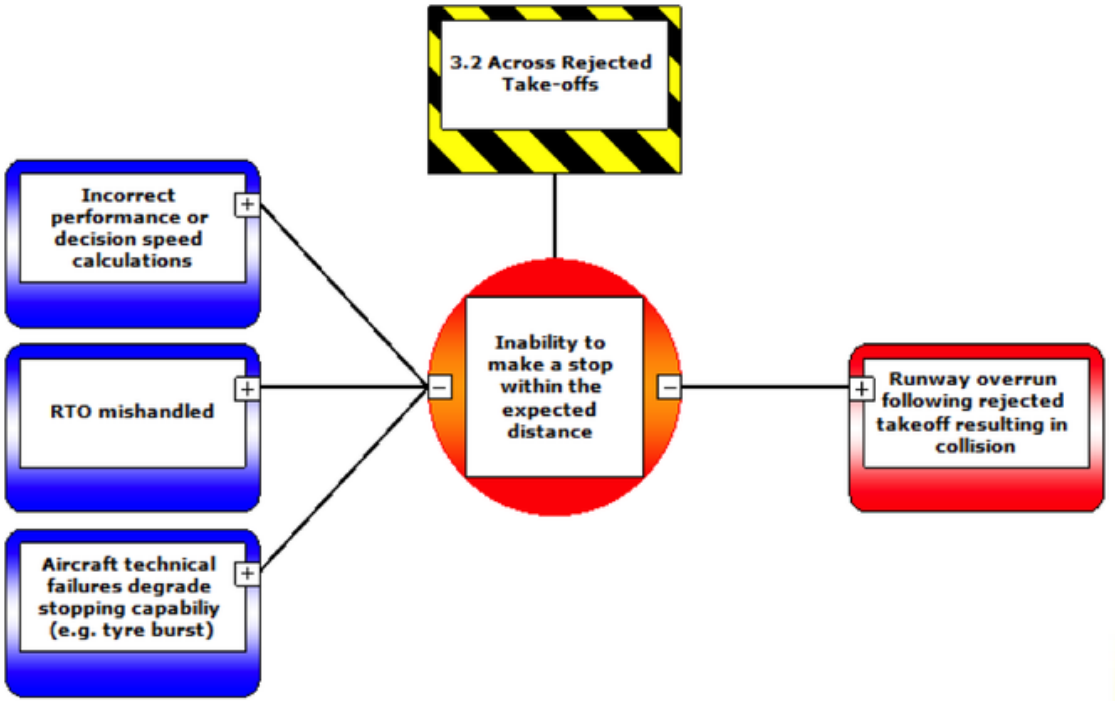
Bowtie analysis

Commercial software is available

- Bowtie Pro
- THESIS BowTie
- BowtieXP



Search 'Bowtie' at www.caa.co.uk for more information

Integrated Systems of Management

Share data between various aviation safety programs and management systems, such as:

- **OSHA / EHS**
- **Maintenance quality assurance (Mx QA)**
- **ISO 9000 / AS9100 and TQM**

Improve efficiency / SMS performance

- **Can eliminate ‘silos’ in SMS & Mx QA systems**
- **Require configurable data structure and taxonomies**
- ***Won’t work without properly structured data***

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Integrated Systems of Management

Support OHS / EHS management requirements

- Manage illness / injury hazards and events
- Manage environmental hazards and events
- Perform risk assessments
- Identify causal factors from all data sources

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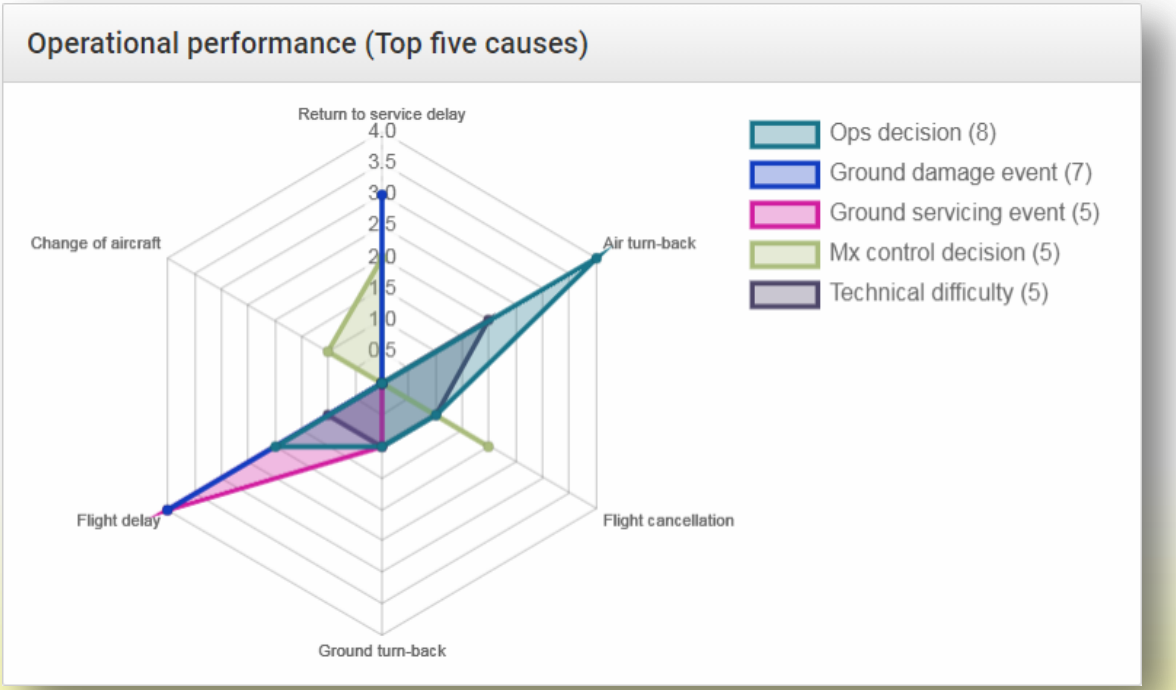
Integrated Systems of Management

Support Mx quality assurance (CASS)

By measuring Mx system performance

- Flight delays and interruptions due to technical difficulties / Mx control errors
- Return-to-service delays and interruptions
- Mx system errors / failures that “flew on the aircraft”



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Integrated Systems of Management

Support Mx quality assurance (CASS)

Through reporting and trending of system / component failures and non-routine maintenance by:

- Aircraft reg. no.
- Aircraft type
- ATA code
- Component applicability / part no.
- Supplier / external provider

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Integrated Systems of Management

Further support your Mx QA system

With maintenance system performance indicators

- Mx system errors
- Quality escapes
- Policy / procedure violations

Including performance objectives, thresholds and alerts per:

- Work-hour
- Flight-hour
- Number-of-flights

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Integrated Systems of Management

Support ISO 9000 quality management standards (AS9100 for MROs / repair stations)

Requires processes to be identified and documented

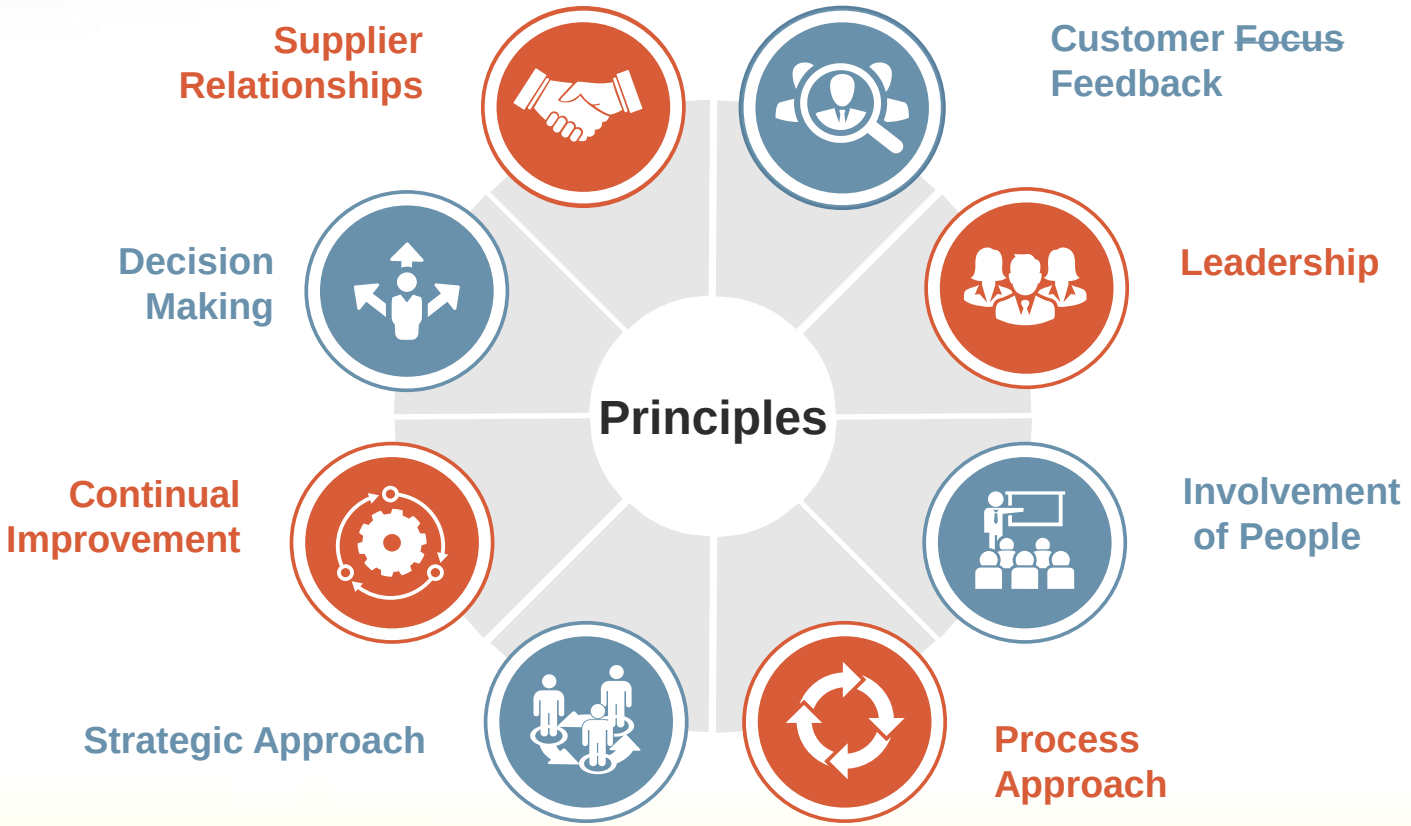
Includes audits for 'process effectiveness'

So what do processes look like for an MRO – or an operator's maintenance organization?

To find out, locate your SAS Peer Group under 8900.1 Vol 10 Ch 1 Sec 2: SAS

Integrated Systems of Management

Support Total Quality Management principles



A 'process approach' to SMS is also possible using FAA-defined processes designed specifically for commercial operators

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Integrated Systems of Management

Can be developed to support Medallion legacy safety programs:

- **ASAP**
- **Operational Control**
- **CFIT Avoidance**
- **Internal Audit**
- **Safety**
- **Maintenance / Ground service**

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The Harmonized Management System

Begins with good system design

Has components and elements that work together

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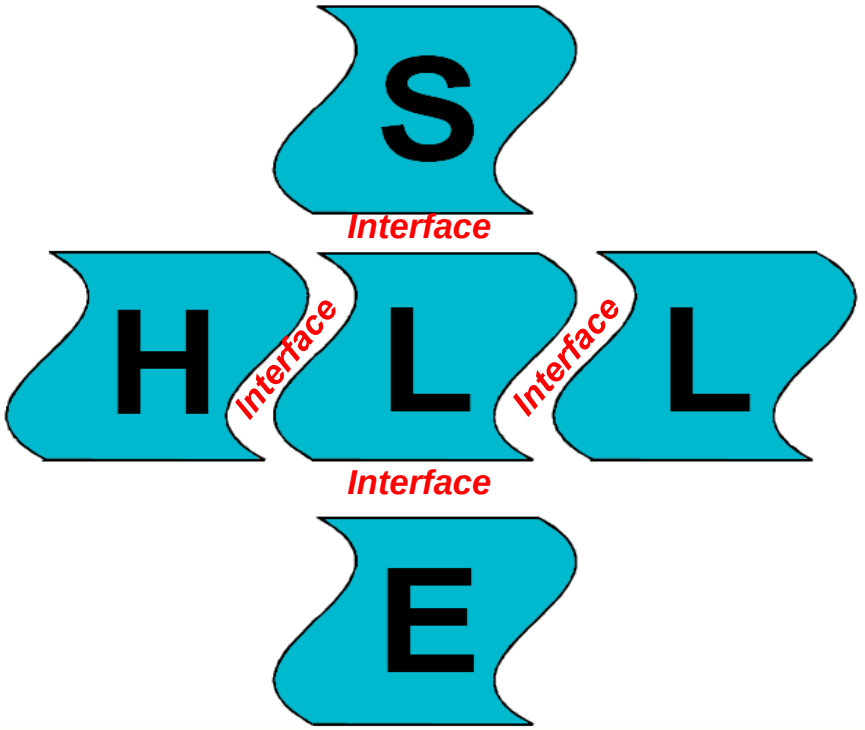
The Harmonized Management System

Uses components / elements / methods that interface properly

- SMS software / matrices
- FRAT / GRAT tools
- Root cause analysis tools
- FOQA / LOSA threats / errors
- SMS training
- Documentation



Avoid the 'piece-meal' SMS!

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The Harmonized Management System

Contains written guidance that should include:

- **Specific regulatory requirements (SRRs)**
- **Safety attributes**

Includes documents that interface and are maintained under separate cover

- **The revision process is simplified and more accurate**
- **FAA's acceptance / approval process is faster and easier**
- **Move to electronic documents (recommended practice)**

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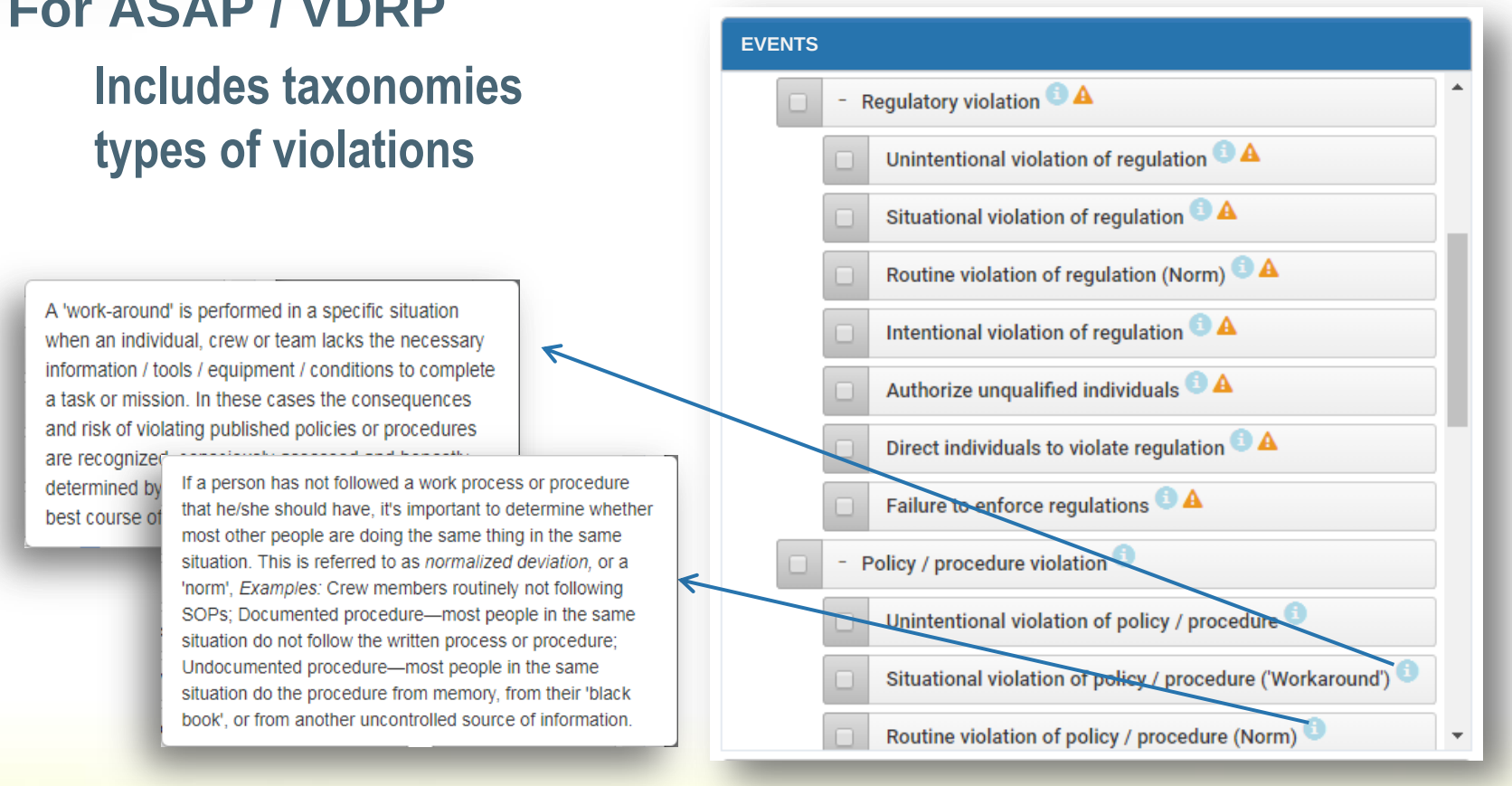
The Harmonized Management System

Shares data from other safety programs

For ASAP / VDRP

Includes taxonomies types of violations



Important: Proposed Advisory Circular AC 120-66C looks at policy/procedure violations (not just regulatory) when determining reckless conduct!

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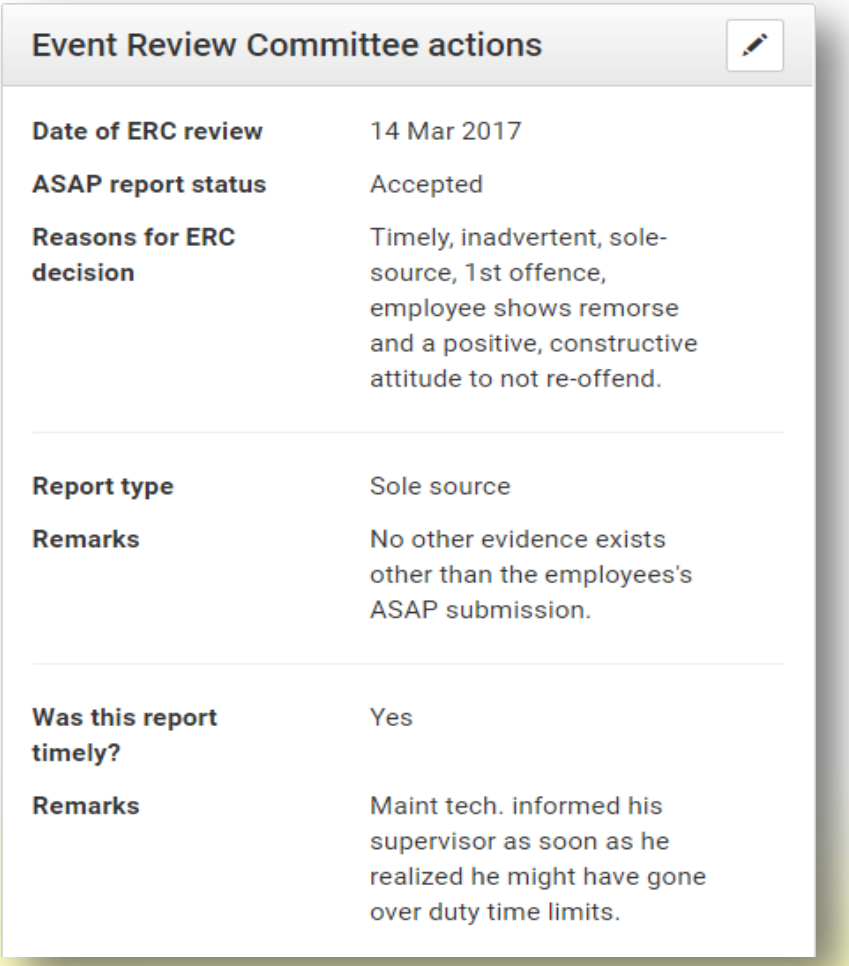
The Harmonized Management System

Brings outside safety programs ‘in-house’

For ASAP

Includes ERC processes, procedures and actions

Eliminates redundant reporting requirements



Source: FAA/AIR document - Best Practices for Event Review Committees

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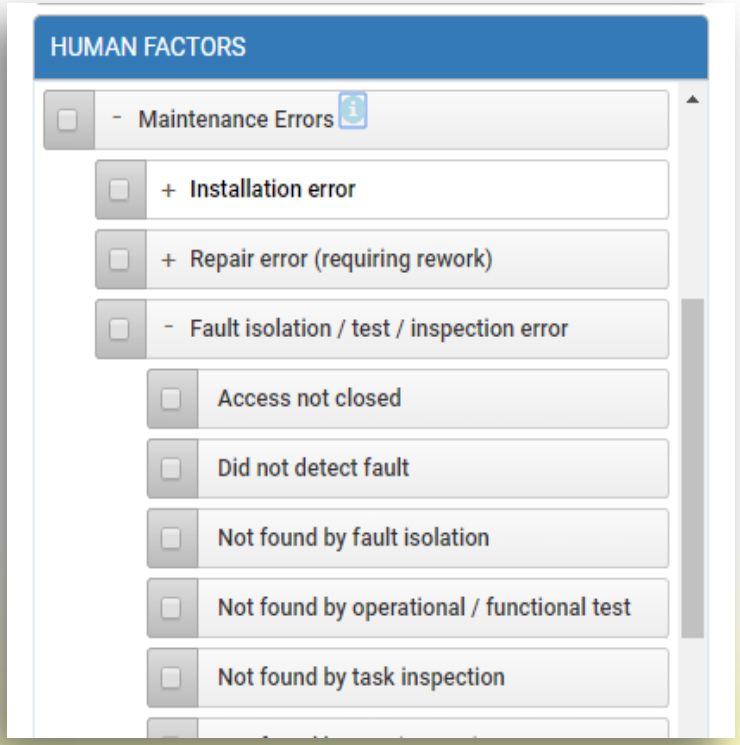
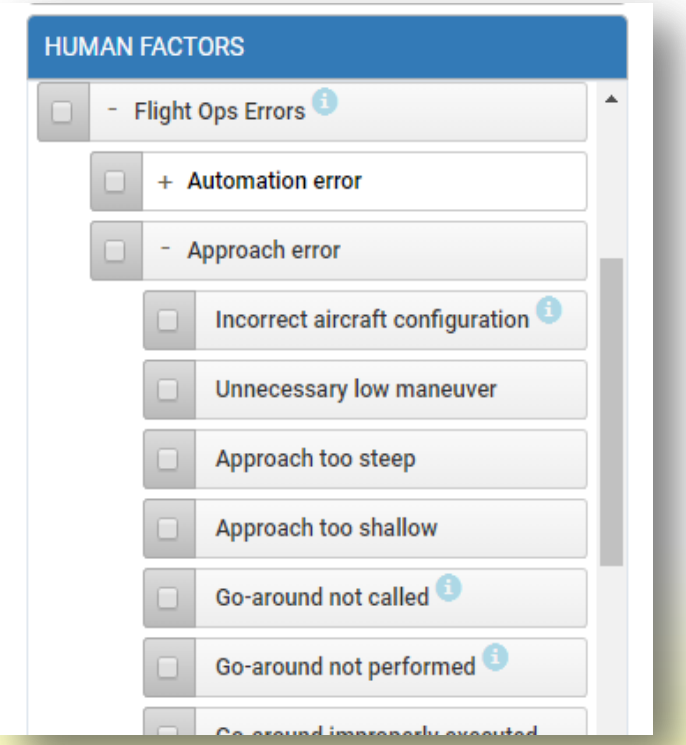
The Harmonized Management System

Incorporates data structure from other proven industry programs

For Boeing's MEDA / REDA / PEAT and LOSA programs

Taxonomies of threats and errors should be utilized





OmniSMS® Aviation Management System

The Harmonized Management System

Integrates other programs and data structures

For Fatigue risk management, FOQA and Medallion's CFIT avoidance / Operational control programs, etc.

Taxonomies of fatigue events and factors should be used

Taxonomies should include *precursors**

**Precursors are minor, reportable events that could lead to unwanted consequences (e.g., rejected takeoffs and long landings are precursors to runway excursion)*

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Conclusion

Development of an effective SMS requires considerable investments of time and resources

The Part 5 / SMSVP standard is the right choice for 135 operators.

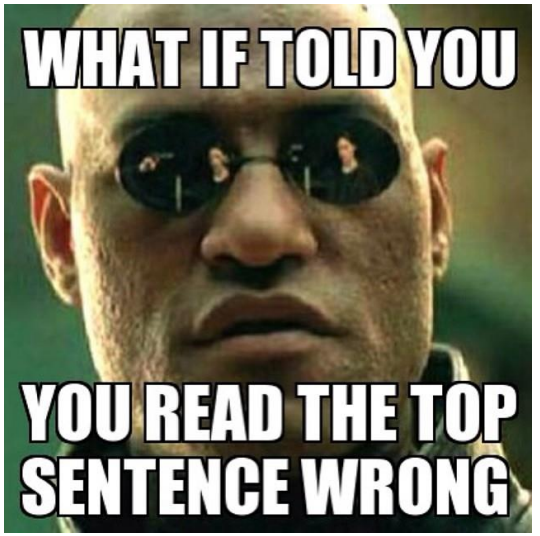
FAA-defined Peer Groups identify required processes for all systems of management, which can then be measured.

Our industry is moving to barrier-based safety management, which supports Event Risk Classification and management of Safety Issues. The BAR standard is a good place to start.

An integrated, harmonized management system that includes SMS, Mx quality / reliability, OHS, EHS, and supports future ISO 9000 series quality certifications is most efficient and effective.

Conclusion

Good presenters don’t read from their PowerPoint slides.



Questions?

Thank you!

ALASKA AIR CARRIERS ASSOCIATION

Paul Salerno Accountable Executive

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