



Building Effective Safety Oversight of Aeronautical Information Services (AIS) and Aeronautical Information Management (AIM) Workshop

Presenters

Federal Aviation Administration (FAA)

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- Mr. Changala Chisanga, Aeronautical Information Specialist

National Geospatial and Intelligence Agency (NGA)

- Ms. Jodi Brainard, International Aeronautical Representative



Workshop Guidelines

Participants are requested to:

- Turn off or silence cell phones
- Arrive on-time and return promptly from breaks
- Wear name badges
- Respect the views and ideas of other participants
- Ask questions
- Be engaged in discussions and activities

Workshop Materials

Go to ICAO Dakar website:

<https://www.icao.int/WACAF/Pages/default.aspx>

WACAF Office events, current year:

<https://www.icao.int/WACAF/Pages/Meetings2023.aspx>

Why Are We Here?

- The ICAO Global Aviation Safety Plan (GASP) Goal 2, calls for all States to strengthen their safety oversight capabilities
 - 75% Effective Implementation (EI) of Critical Elements (CEs) by 2024
 - 85% EI score by 2026
 - 95% EI score by 2030
- Support the Effective Implementation in Air Navigation Services (ANS) and Aerodromes, Air Routes, and Ground Aids (AGA) areas of safety oversight in African States
- Provide best practices on effective implementation of safety oversight of an ANSP and continued performance monitoring

Workshop Objectives

- Discuss strategies for conducting effective safety oversight of AIS/AIM
- Review safety oversight responsibilities
- Encourage knowledge and resource sharing among safety professionals in the WACAF Region
- Participate in interactive activities to complement presentations and discussions



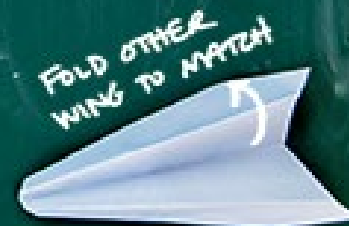
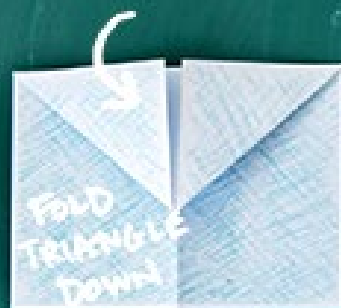
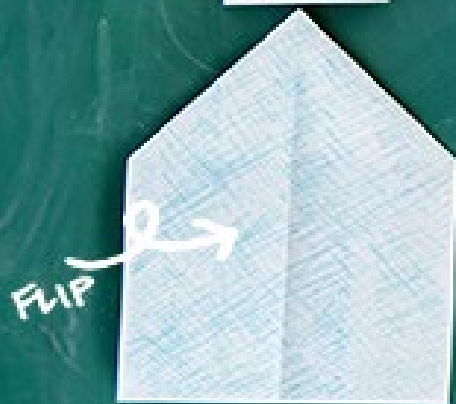
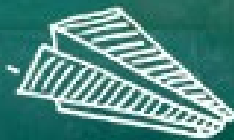
Introductions

Getting to Know YOU

TAKE FLIGHT¹...

¹ www.womensministrytoolbox.com

HOW TO fold a PAPER AIRPLANE



Overview of Safety Oversight of AIS and AIM



Federal Aviation
Administration



FAA Approach to Safety Oversight

- The FAA is committed to providing the safest, most efficient aerospace system in the world.
- The FAA fulfills the commitment by basing our approach to safety on robust, data-driven oversight.
- The FAA strives to advance global interoperability and leadership.

FAA Safety Oversight of AIS and AIM

- Aeronautical Information
- FAA Aeronautical Information Services (AIS)
- Oversight of AIS
- Global Initiatives



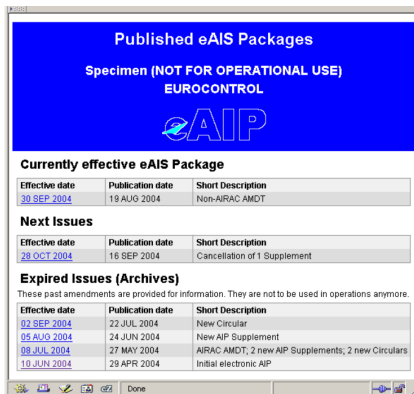
The many forms of Aeronautical Information

AERONAUTICAL INFORMATION

Aeronautical Information

ICAO Definition

Information resulting from the assembly, analysis and formatting of aeronautical data



The screenshot shows a webpage titled "Published eAIS Packages" with a blue header. Below the header, it says "Specimen (NOT FOR OPERATIONAL USE) EUROCONTROL" and features the "eAIP" logo. The main content is divided into three sections: "Currently effective eAIS Package", "Next Issues", and "Expired Issues (Archives)". Each section contains a table with columns for "Effective date", "Publication date", and "Short Description".

Effective date	Publication date	Short Description
30 SEP 2004	19 AUG 2004	Non-AIRAC AMDT

Effective date	Publication date	Short Description
28 OCT 2004	16 SEP 2004	Cancellation of 1 Supplement

Effective date	Publication date	Short Description
02 SEP 2004	22 JUL 2004	New Circular
05 AUG 2004	24 JUN 2004	New AIP Supplement
08 JUL 2004	27 MAY 2004	AIRAC AMDT, 2 new AIP Supplements, 2 new Circulars
10 JUN 2004	29 APR 2004	Initial electronic AIP

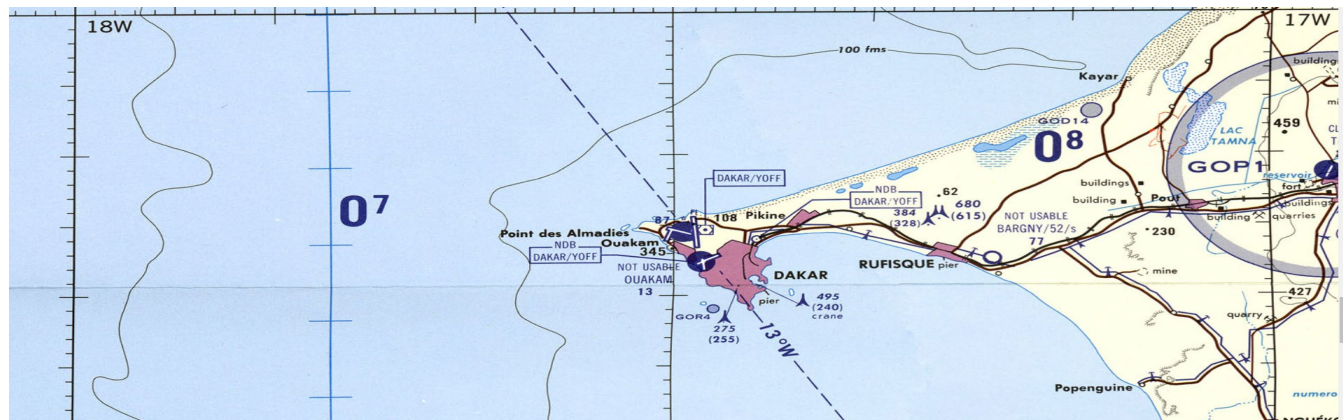


Source: ICAO Annex 15

Aeronautical Information Service

ICAO Definition

A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation



Source: ICAO Annex 15

Aeronautical Information Products

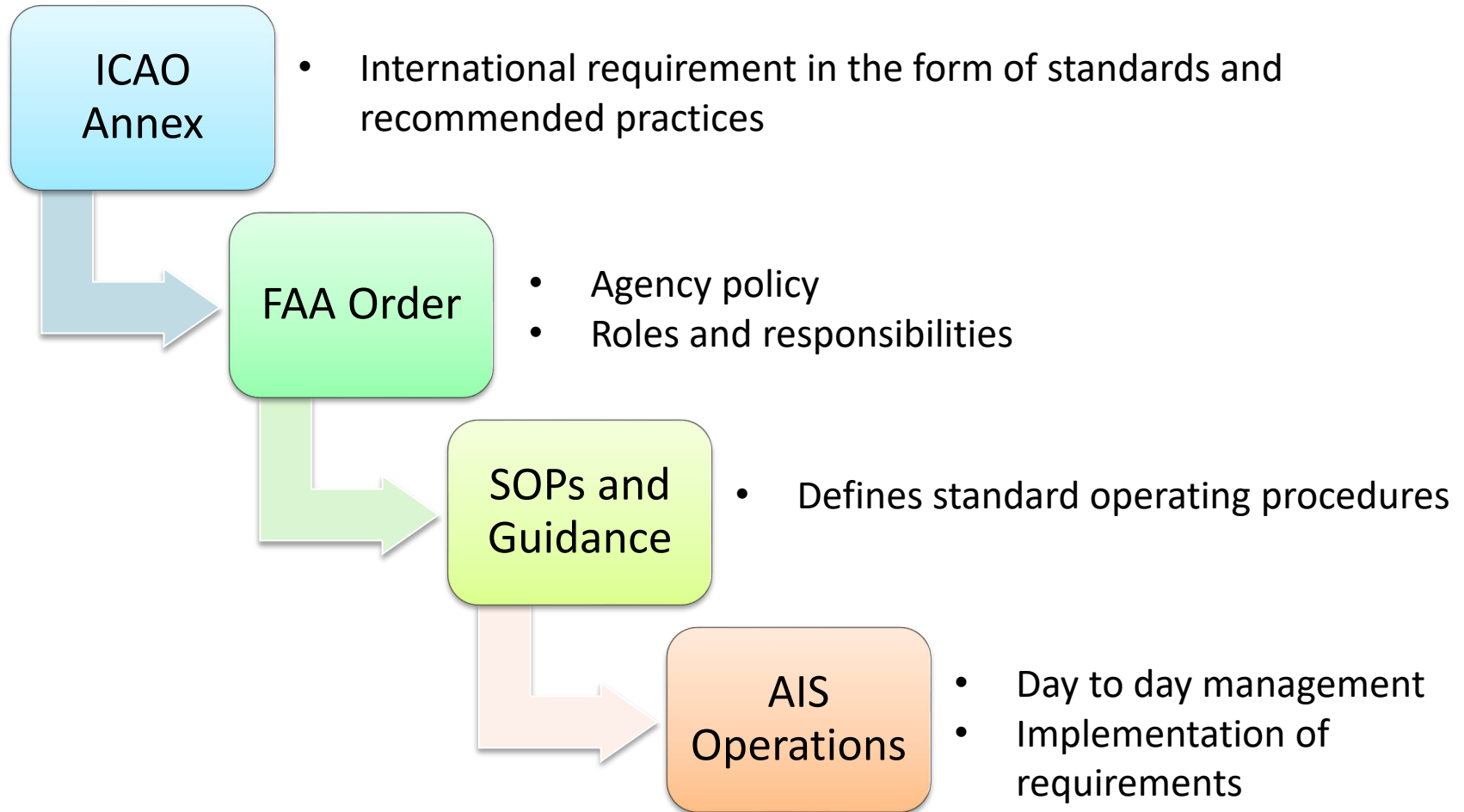
ICAO Definition

Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media including:

- Aeronautical Information Publication (AIP), including Amendments and Supplements
- Aeronautical Information Circulars (AIC)
- Aeronautical charts
- NOTAMs
- Digital data sets

Source: ICAO Annex 15

Line of Sight





Operations

FAA AERONAUTICAL INFORMATION SERVICES (AIS)



AIS Organization

- Authoritative government source for collecting, storing, maintaining, and disseminating aeronautical data for the U. S. and its territories
- Develops and maintains aeronautical data and information products in support of safe operations in the National Airspace System (NAS)

AIS products and services are the “foundations for flight” designed to support aviation and to meet the demand for increased capacity, efficiency, and predictability in the NAS.

High-level AIS Operational Responsibilities

- Implement performance within the information management operations
- Measure outcomes against the standards
- Perform activities including (in natural order of their execution or work-flow):

acquire data

provide information

validate and verify data

use information

maintain data

analyze and review information

produce and process
information

evaluate information

maintain information

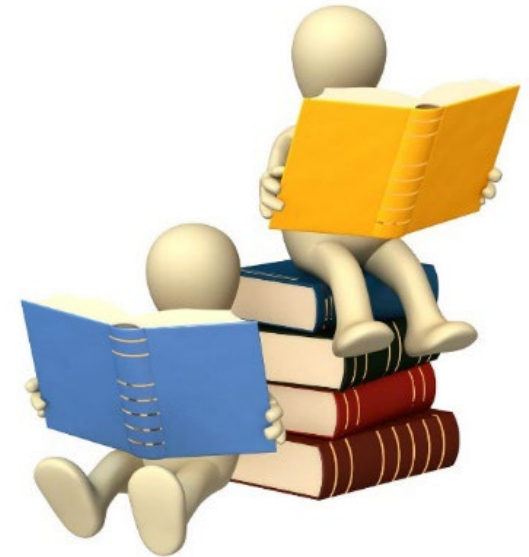
compare information



AIS Requirements

Requirements for the work done in the oversight of AIS and AIM can be found in a large group of documents in the form of:

- ICAO Annexes
- FAA
 - Rules and Regulations
 - Orders
 - Directives
 - Standard Operating Procedures

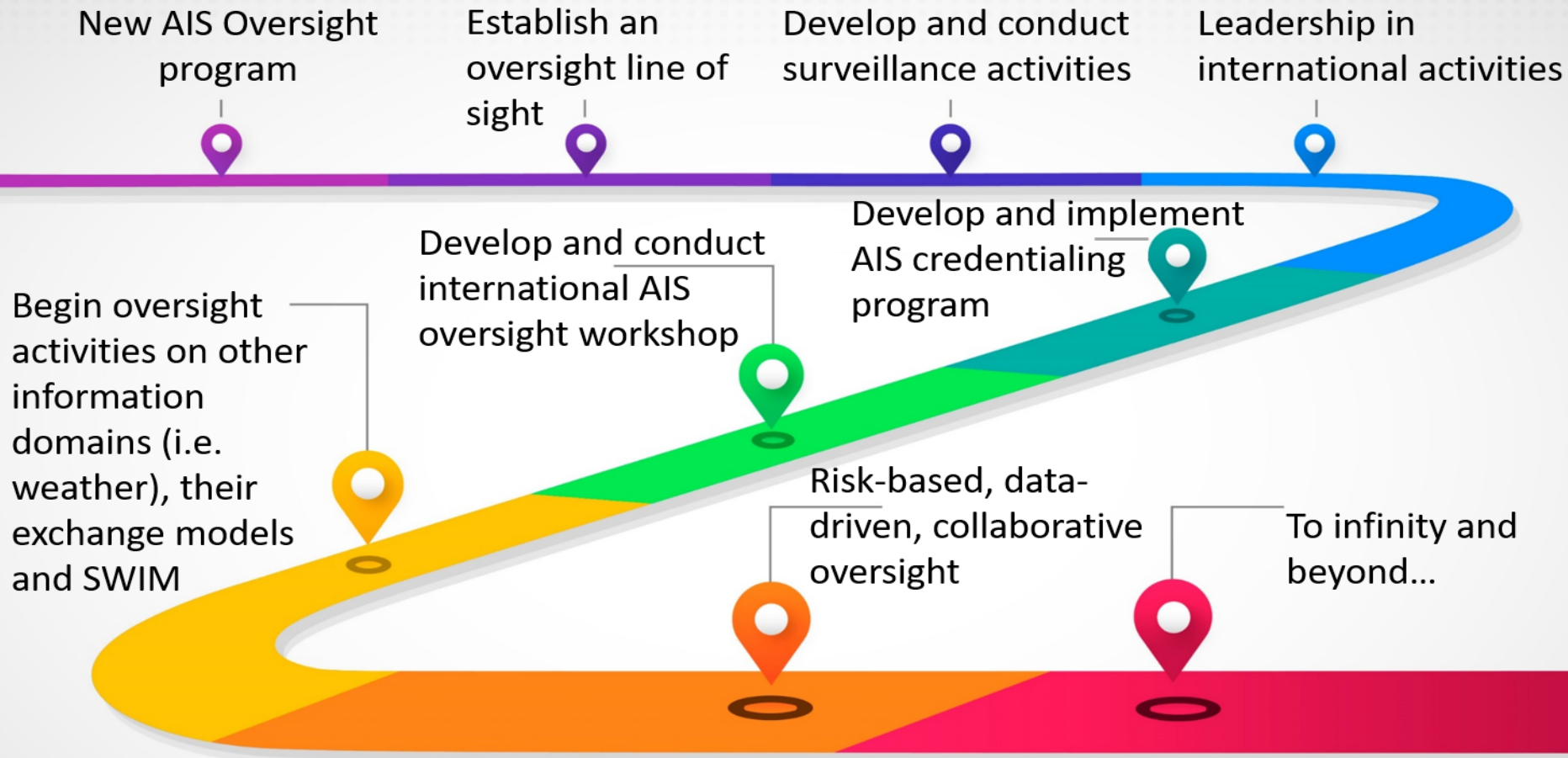




Details of FAA Oversight Organization

OVERSIGHT OF AIS

AIS Program Oversight Roadmap



FAA's Oversight Organization



Oversight of the FAA's management and delivery of aeronautical information products and services, throughout the lifecycle from collection of data elements to distribution of information products, ensuring the performance and safety requirements of the aeronautical community are met

Our Passion

We believe in a collaborative approach to safety oversight through trusted relationships, where our approach is interdisciplinary with foundational AIS expertise.

High-level AIS Oversight Responsibilities

Monitor, inspect, analyze, evaluate, assess, and report how well the management and the performance of work associated with information is being performed



Scope of AIS Oversight

What could go wrong?

Data and Information Hazards

Incorrect

Incomplete

Untimely

Unsynchronized

Unavailable

*Unprotected

What does risk look like?

Variation

Competency

Business Rules

Process

Traceability

What prevents things from going wrong?

Controls/Barriers

Formal Arrangements

QMS

Production Control

Configuration Management

How will I know if controls are working?

Safety Oversight Activities

Continuous Monitoring

Audits and Assessments

Inspections

Module 5 Section 3

Oversight Goals

To provide leadership in AIS safety oversight through implementation of best practices and risk management to support a desired future state of seamless, operational performance in a rapidly changing global landscape



Oversight Goals continued

- Increase quality of products and processes
- Compliance with FAA rules and regulations, orders, safety directives, standard operating procedures and ICAO annexes
- Risk-based, data driven AIS oversight
- Promote best practices in AIS operations and oversight
- Support robust global information management practices
- Emphasize key role of quality management from origination through information dissemination



Safety Management System Principles



Applying SMS Principles to Information Management

Information Policy

- Data is a resource, and information is an asset
- Common data dictionary, vocabulary, and business rules
- Data is the foundation for all information products and services
- Data and information are compliant with local laws and regulations

Information Assurance

- Data quality is fit for the purpose of meeting ATM requirements
- Data quality starts at the originator and continues throughout the life cycle
- Data, information, and their exchange are secure and comply with information assurance standards

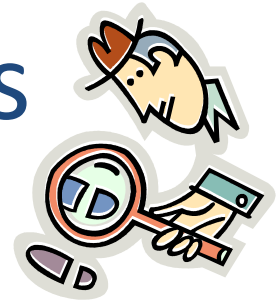
Info Risk Management

- Data is not duplicated
- Information is accessible through authorized service provision like System Wide Information Management (SWIM)

Information Promotion

- Data management is everyone's responsibility

AIS Surveillance Definitions



Audits and Assessments

Evaluate the FAA's management controls (processes, procedures, people) ensuring the delivery of accurate, timely, synchronized, available and complete information products and services within the aeronautical, weather and flight domains

Due Diligence

Evaluate the FAA's capability to comply with FAA Orders and ICAO Annex requirements pertaining to a particular activity. A due diligence will focus on the management controls (SOP, QMS, etc.) and technical processes.

AIS Surveillance Definitions, continued

Monitoring

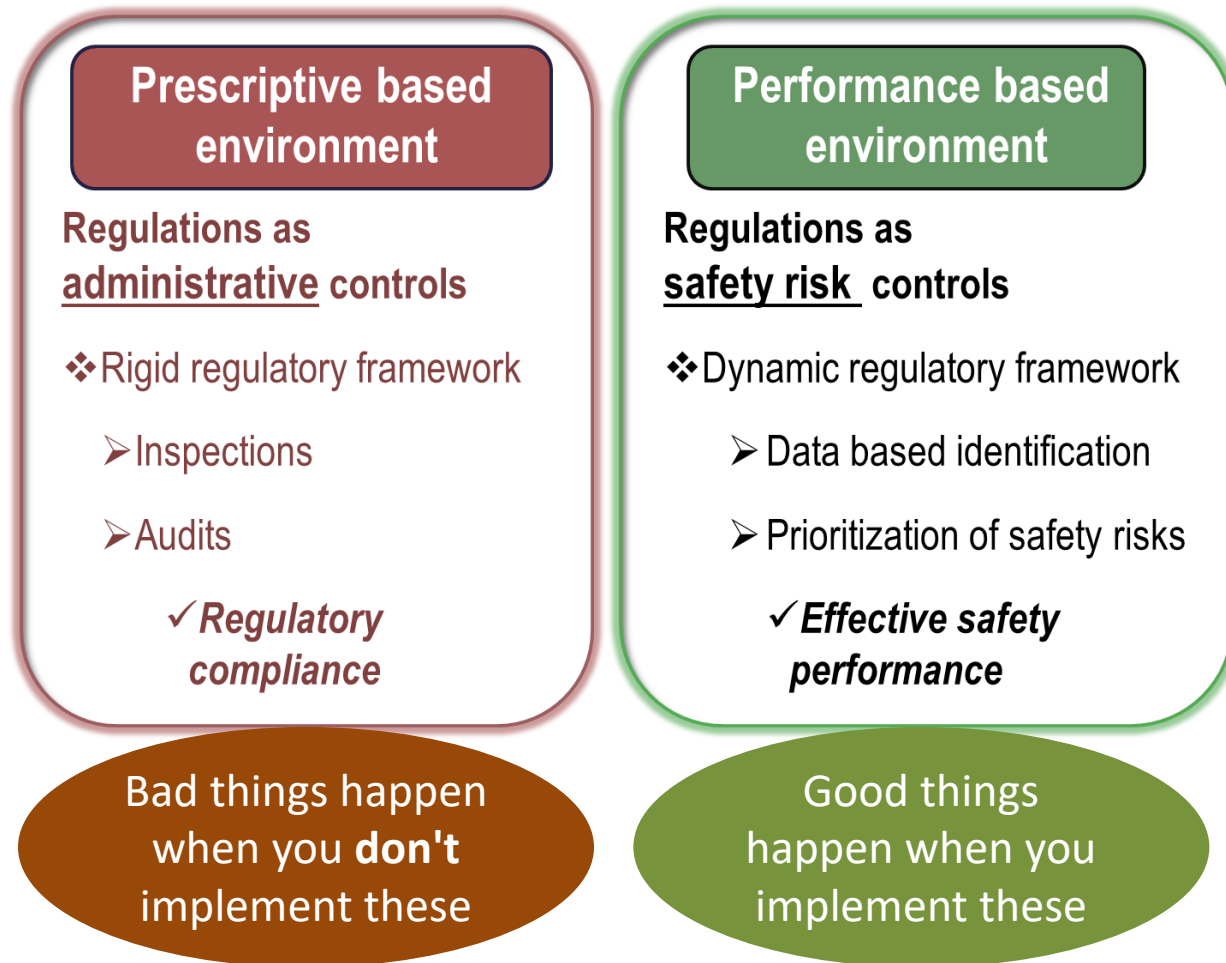
Monitoring is a continuous activity to ensure the FAA is adhering to established safety standards of their aerospace systems, sub-systems processes and programs.

Obstruction Evaluation Backlog

Evaluation resulting from a repeat audit finding. This continuous surveillance technique was established to ensure reported obstruction data is available for downstream processes in operational products and services.



Our Methodology - Simplified....



From ICAO State Safety Program (SSP) Implementation Course – lesson 6

Definition of Global Harmonization and Interoperability



Support global harmonization and interoperability through the development, implementation and oversight of international AIS information management standards and best practices. These functions are performed in collaboration with domestic and global oversight and operational partners.

International Oversight Activities

- Global harmonization and interoperability
- Support AIS implementation
- Oversight
- International information management standards and best practices.



These functions are performed in collaboration with domestic and global oversight and operational partners

Current Global Involvement

Leadership and collaboration with the ICAO Information Management Panel (IMP), AIM and Governance Working Groups, and related AIS Focus Groups.

Safety risk management includes the identification of hazards, assessment of risk associated with these hazards, and implementation of mitigations throughout the lifecycle of aeronautical data and information.

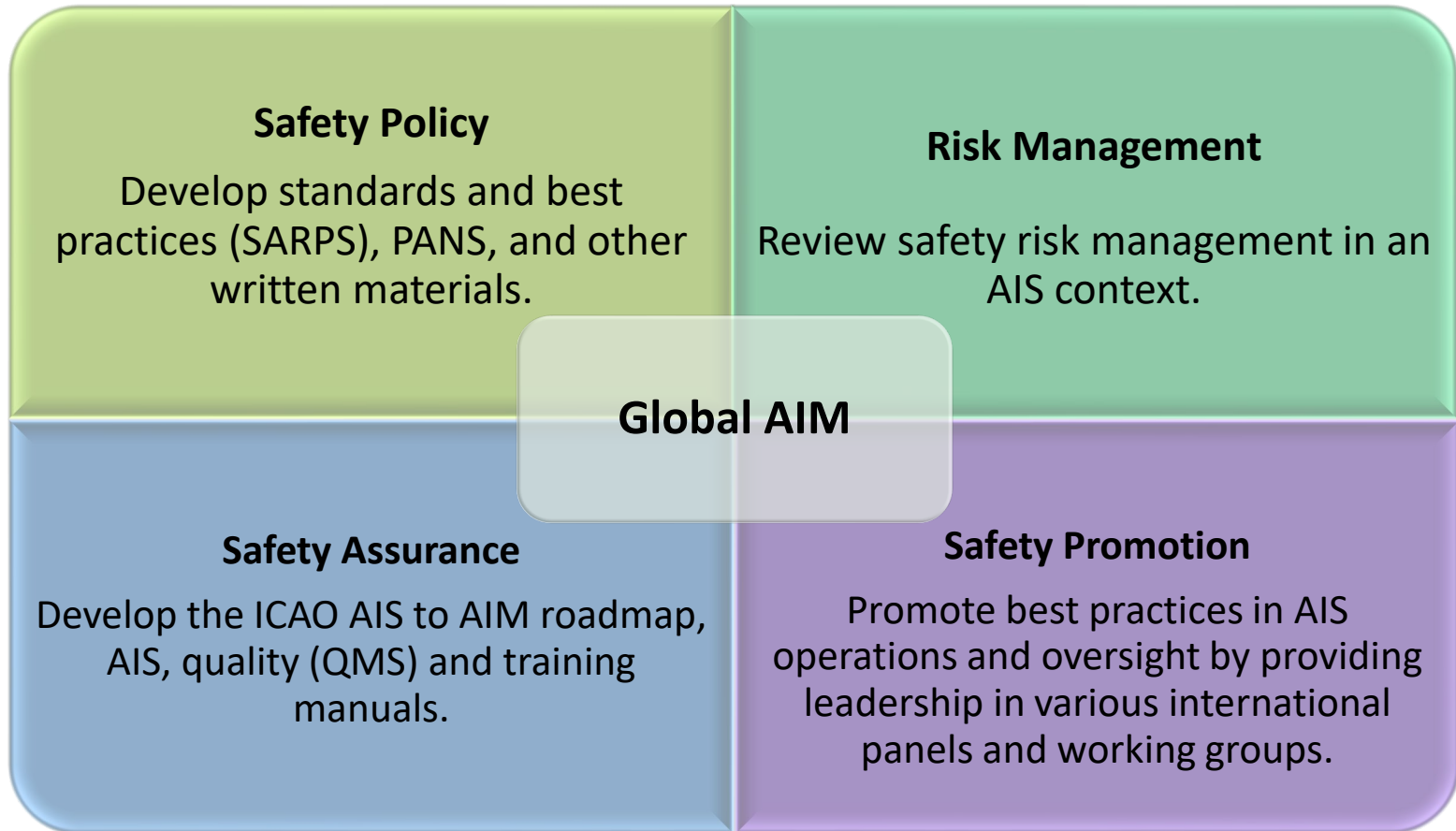


Core Themes for International Engagement



- Collaborate in the development and harmonization of international air navigation services SARPs
- Integrate ICAO standards and recommended practices into FAA operations
- Collaborate with other FAA offices and other U.S. agencies to ensure U.S. Government interests are represented in a harmonized position
- Engage with foreign regulators and aviation stakeholders to advance the safety and efficiency of ANS in the global aviation system

Global AIM Definitions



CONTROLS

- Annex 3 – Meteorological Service for International Air Navigation
- Annex 4 – Aeronautical Charts
- Annex 15 – Aeronautical Information Services
- Annex 19 – Safety Management System
- Annex 1 - Licensing
- Supporting ICAO Docs:
 - Doc 10066 – PANS-AIM
 - Doc 9854 – Global Air Traffic Management Operational Concept

INPUTS

- ICAO Information Management Panel (IMP) & Working Groups
 - Information Papers
 - Working Papers
 - Presentations
- QMS as related to FAA AIS (competency, metadata, assurance, monitoring and audit)



OUTPUTS

- Contributions to international standards and guidance content
 - ICAO AIS Training Manual
 - ICAO AIS to AIM Roadmap
 - ICAO AIS Quality Manual
 - ICAO AIS Manual



WHAT DRIVES GLOBAL ALIGNMENT

Today's Transforming World



- “We must consider **the products our consumers use are no longer simply “our” products, but global commodities**. We are shopping in a global supermarket, and that makes protecting our consumers a global endeavor.”¹
- “We must also create a modern means to share data globally—and not just pieces of data, but all the data we need **as a global family of regulators to really work together and leverage our limited resources**. And we must use those data and advanced analytics to proactively identify and prevent problems. Detecting and preventing global problems demands global intelligence sharing and data mining.”¹
- “For regulators, this poses a huge new set of challenges and responsibilities. Truly, today, we must think and act in new ways. And **success will require not only a new paradigm, but also new partnerships...across nations and across sectors**”¹
- “This type of cooperation and collaboration is essential in today’s transforming world. **Globalization has multiplied the scope and scale of our responsibilities**—and created unique regulatory challenges for the U.S. and for you, our regulatory partners around the world.”¹

¹ Margaret A. Hamburg, M.D. (17 May 2011) Commissioner of Food and Drugs. US FDA
<http://www.fda.gov/NewsEvents/Speeches/ucm275707.htm>

Thoughts...



- Meeting strategic objectives requires transformational shifts in AIS oversight
- Providing leadership and engagement in the international community is woven into the fabric of the FAA oversight organization
- Continuing to develop innovative ways towards becoming risk-based, interoperable and data-driven

Questions and Discussion



References

- ICAO Annex 15
- ICAO Annex 4
- ICAO State Safety Program

Workshop Curriculum

Day 1 - ICAO and Safety Risk Management

Day 2 - Surveillance and Activities

Day 3 - QMS as the Safety Risk Control

Day 4 - AIS Oversight

Day 5 - Collaboration and Next Steps



Building Effective Safety Oversight of AIS and AIM



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Day 1: ICAO and Safety Risk Management

Day 1 Agenda

- ICAO Introduction
- ICAO Annex 15 Requirements
- Aeronautical Data Source Management
- Overview of safety risk management - data risks and mitigations

Let's Get Started!



International Civil Aviation Organization (ICAO) Introduction



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An Overview

Agenda

- ICAO – An Overview
- ICAO's Structure and How International Standards are Developed
- FAA's International Mission and Obligations
- ICAO's Filing of Differences



ICAO Overview

- Formed in 1944 at the Convention on International Civil Aviation (Chicago Convention)
- The Chicago Convention is an International Treaty – intended for States to abide by the provisions of the Organization
- ICAO Mission is to promote the safe and orderly development of all aspects of international civil aeronautics, and provides the forum for issues affecting civil aviation to be discussed



FAA International Obligations

U.S. law (Title 49 USC §40104, 40105) directs the FAA to:

- Encourage the development of civil aeronautics and safety of air commerce
- Act consistently with the obligations of international agreements
- Promote and achieve global improvements in the safety, efficiency and environmental concerns by engaging:
 - FAA civil aviation foreign counterparts
 - ICAO and its subsidiary organizations
 - International aviation organizations
 - Private sector



FAA International Engagement

Allows the FAA to promote:



- Seamless global interoperability of aviation systems
- Harmonization of global aeronautical data and information regulations and standards
- Safety, efficiency, and environmental sustainability

U.S. Participation

- Includes almost every office within the FAA, and multiple USG Departments and Agencies (DOS, DOD, NTSB, DOC, EPA, DOT) and U.S. Industry and Stakeholders
- Involved in:
 - All decision-making bodies (Council and Assembly)
 - Global and regional meetings
- Provides the following resources:
 - Funding
 - Participation on expert groups
 - Secondments and technical fellows
 - Voluntary contributions to individual projects



ICAO Expert Groups

- Specialized technical groups chartered to assist with the development of SARPs and related guidance material
 - Participation requested through ICAO State letters to approximately 12-15 Contracting States
 - Members serve as independent technical experts, and not as representatives of their State
- Three main types of expert groups:
 - Panels
 - Study and Working Groups
 - Task Forces



U.S. Participation - ICAO Expert Groups

- Aeronautical Communications Panel
- Aerodrome Design and Operations Panel
- Accident Investigation Panel
- Airworthiness Panel
- Air Traffic Management Operations Panel
- Air Traffic Management Requirements and Performance Panel
- Dangerous Goods Panel
- Flight Operations Panel
- Frequency Spectrum Management Panel
- **Instrument Flight Procedures Panel**
- **Information Management Panel**
 - **Aeronautical Information Management Working Group**
- **Meteorology Panel**
- Navigation Systems Panel
- Remotely Piloted Aircraft Systems Panel
- Separation and Airspace Safety Panel
 - Operational Datalink Working Group
- Global Aviation Safety Plan Study Group
- Global Aviation Safety Oversight System Study Group
- Cross-Board Transfer
- Safety Indicators Study Group
- Fatigue Risk Management Study Group
- **PBN Study Group**
- Visual Proscribed Track RNAV Study Group
- UAS Advisory Group
- Next Generation of Aviation Professionals
- Global Summit
- Global Aviation Training and TRAINAIR Plus Symposium
- Safety Management Panel
- Surveillance Panel
- **Aviation Security Panel**
 - **Cybersecurity Panel**
 - Cargo Security Panel
 - Passenger Security Panel, etc.





Standards and Recommended Practices

Primary Responsibility of States is adherence to SARPs:

- **Article 37** - “Each Contracting State undertakes to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization...such uniformity will facilitate and improve air navigation”
- **Article 38** - “Any State which finds it impracticable to comply in all respects to any such international standard or procedure...shall give immediate notification to ICAO of the differences between its own practice and the established international standard”

Source: Chicago Convention to the International Civil Aviation Organization

Standards and Recommended Practices

Primary Function of ICAO is the development of SARPs:

- **Standard** - “any specification to whose uniform application is recognized as necessary for the safety or regularity of international air navigation”
- **Recommended Practice** – “any specification whose uniform application is recognized as desirable for the safety, regularity, or efficiency of international air navigation”
- **Procedures for Air Navigation Services (PANS)** – “standards that need further explanation and require detailed procedures (or provisions) to be applied are contained in the PANS (most relevant PANS document for ATCOs is PANS-ATM, also known as Doc 4444)”

Filing Differences to ICAO SARPs

- Dissemination of differences **enhances transparency of safety information**, and, consequently, facilitates States decisions to accept or not accept other States aircraft and operators, and usefully complements Universal Safety Oversight Audit Programme (USOAP) continuous monitoring activities, safety ramp checks data, and other safety information at the disposal
- Incorrect notification of differences potentially **misleads the international community**, may cause safety issues and result in undesirable operational situations, such as grounding of aircraft.
- Absence of notification of difference **casts doubts as to the situation in the State**, with potential negative consequences in terms of recognition of certificates and licences, ramp inspections, and ultimately traffic rights.
- The notification of differences is an important tenet of the Chicago Convention, and contributes to **ensuring the safe and orderly growth of international civil aviation around the world**.



Thoughts...

- FAA international obligations
- Review of ICAO and the FAAs interactions
- Standards and Recommended Practices



Questions and Discussion



References

- ICAO Annex 15
- ICAO Annex 4
- ICAO State Safety Program



ICAO Annex 15 SARPS



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Module Objectives

- Interoperability
- Review ICAO requirements
- Understanding aeronautical data and information

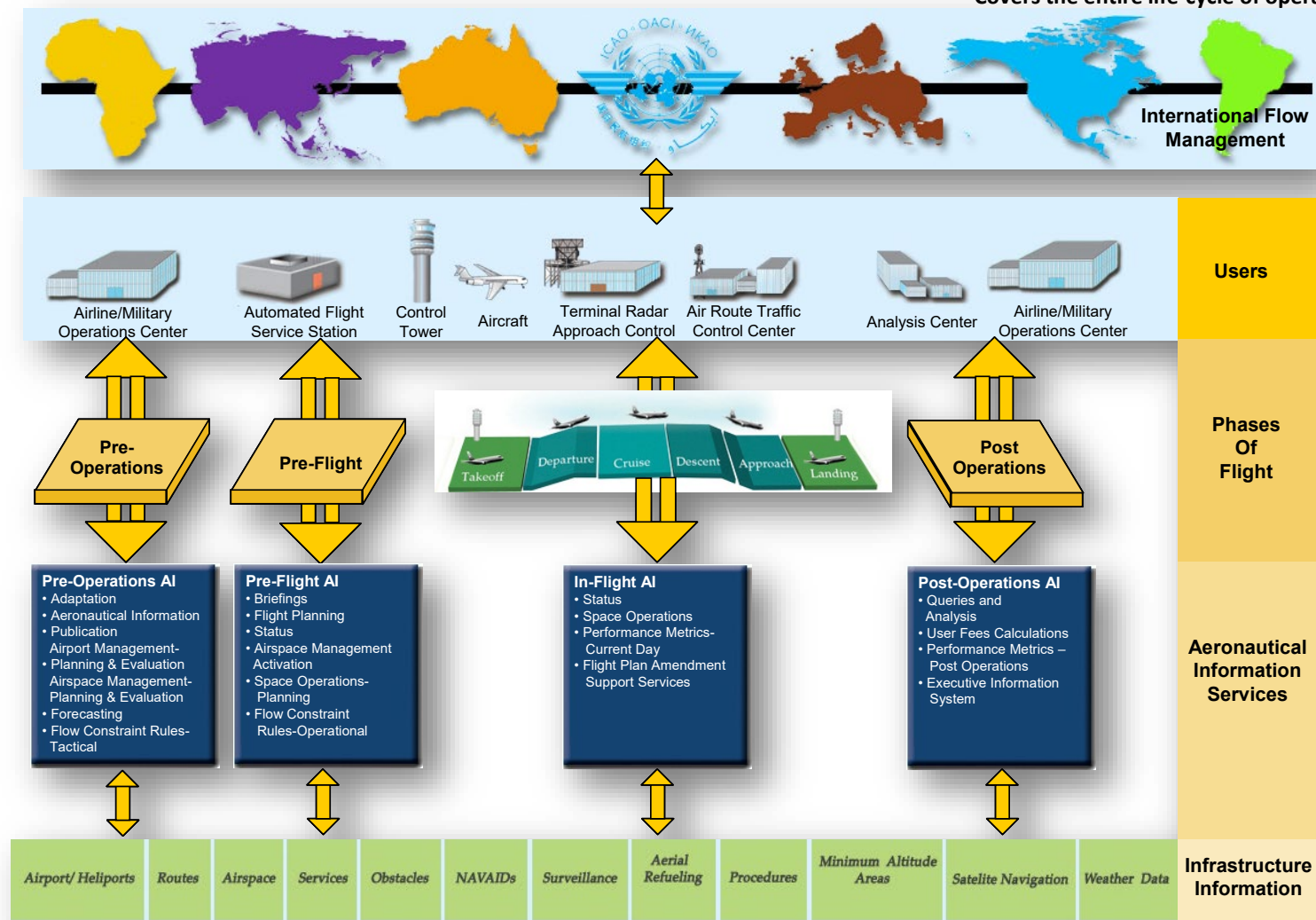


How could we make the global airspace system perform like a seamless operation?

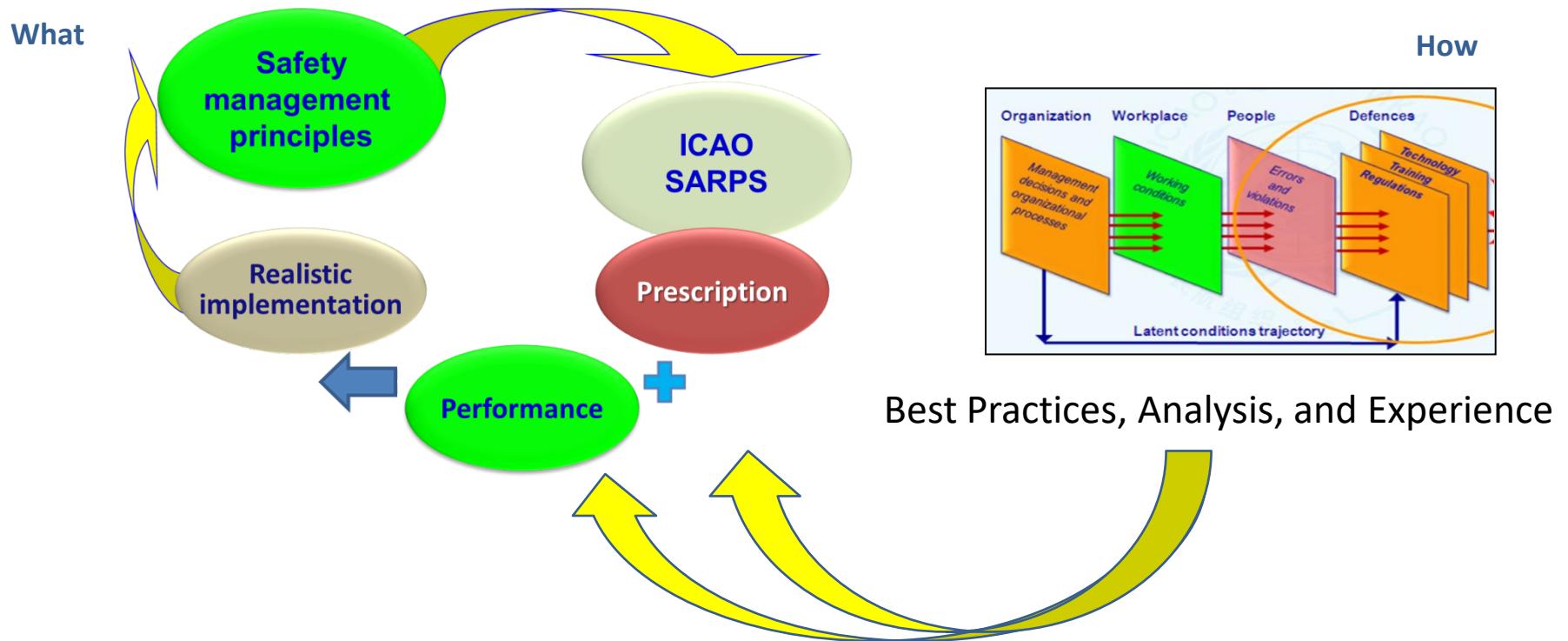


Operations-Oriented Services

"Covers the entire life-cycle of operations"

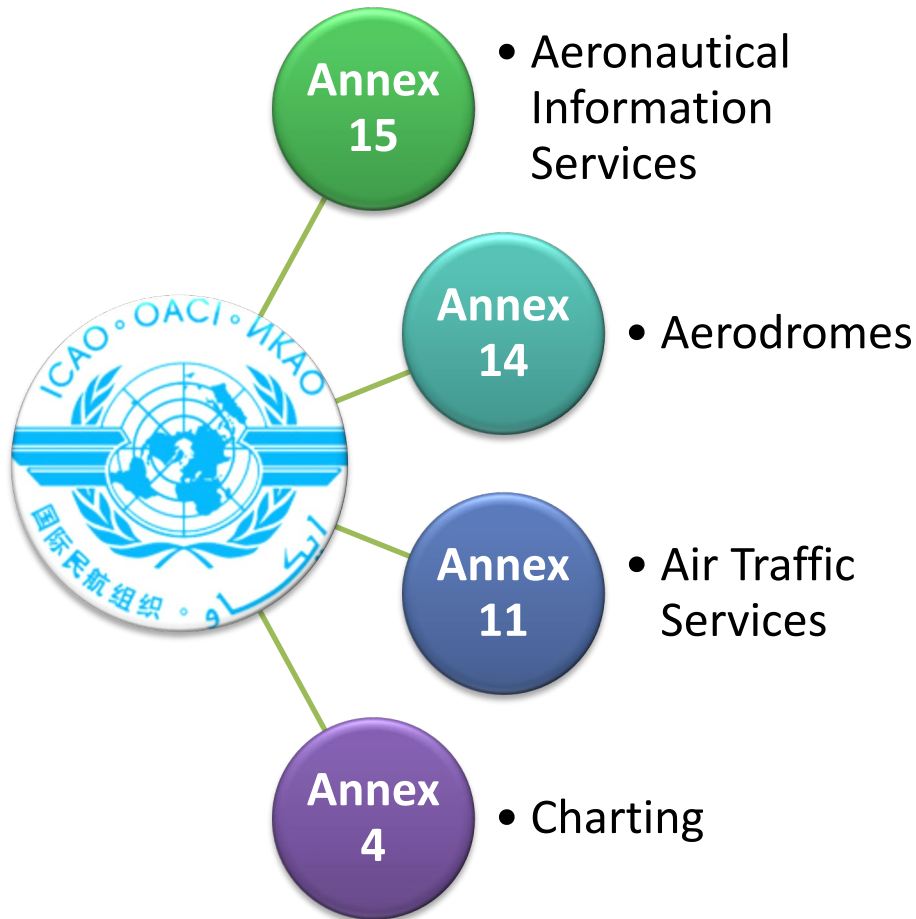


How Does ICAO Drive Performance?



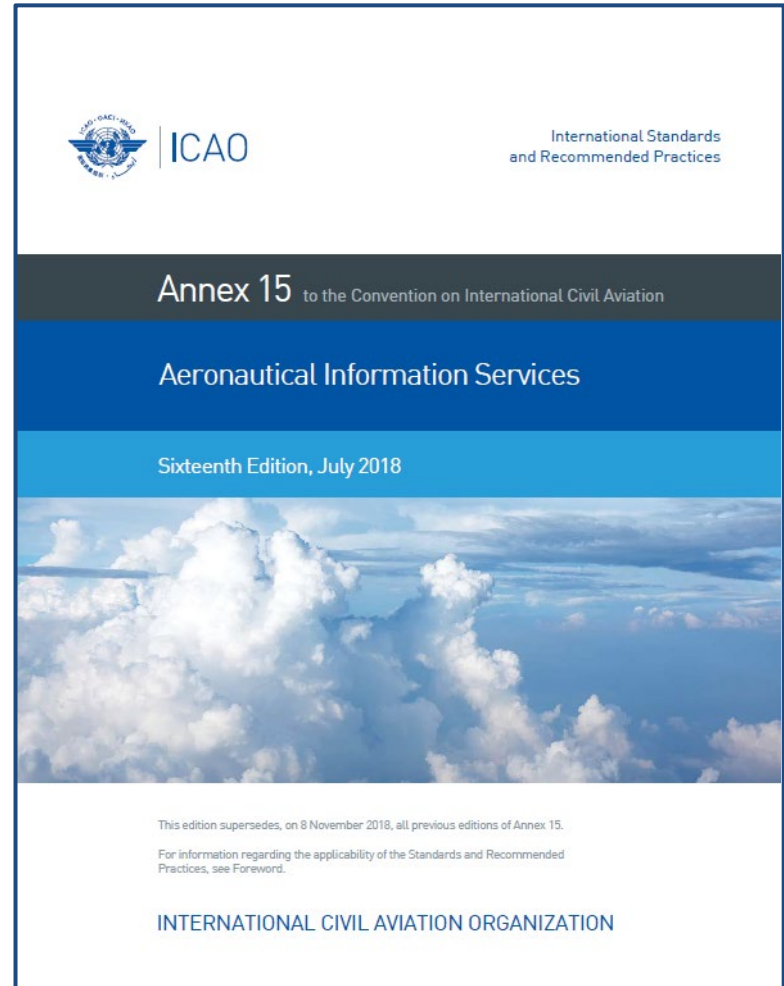
Resource: ICAO State Safety Program (SSP) Implementation Course, lessons 4 and 6

ICAO Data and Information Standards



Annex 15 Standards

What are a State's obligations?



Aeronautical Information Service

- Provide an AIS
- Receive, collate or assemble, edit, format, publish or store, and distribute data and information
- Establish formal arrangements between data originators and AIS provider



AIS Standards (continued)

- Aeronautical data and information are:
 - complete, timely and of required quality
 - available for the operational requirements of the ATM and flight operations communities
 - protected using data error detection, security, and authentication techniques
- Issue and receive Notice to Airmen (NOTAM) information by telecommunication



A0004/23 NOTAMR A0255/22
Q) HECC/QMXLC/IV/BO/A/000/999/3007N03125E005
A) HECA B) 2301090955 C) 2304101000 EST
E) TWY (G) PORTION BTN 60 M AFT TWY (G2) TILL 60 M BFR TWY (A)
CLSD DUE TO MAINT.

AIS Standards (continued)

- Exchange aeronautical data and information with ICAO contracting States
- Implement verification and validation procedures



- Collect and maintain metadata

AIS Standards (continued)

- Automation is introduced to improve timeliness, quality, efficiency and cost effectiveness
- Quality management system is implemented and maintained to include all functions of an AIS



Open Discussion

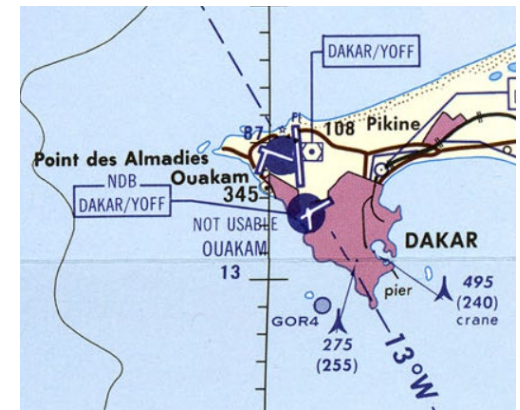
What are the key products and services listed as standards for AIS?



AIS Standards (continued)

Products and services:

- Aeronautical Information Publication (AIP)
- AIP Amendments and Supplements
- Aeronautical Information Circulars
- NOTAM
- Pre-flight and Post-flight Information Services
- Aeronautical Charts in accordance with ICAO Annex 4

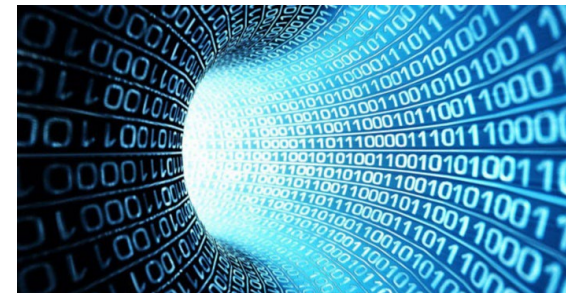


Understanding Aeronautical Data

A representation of aeronautical facts, concepts or instructions suitable for communication, interpretation or processing.

Aeronautical data is:

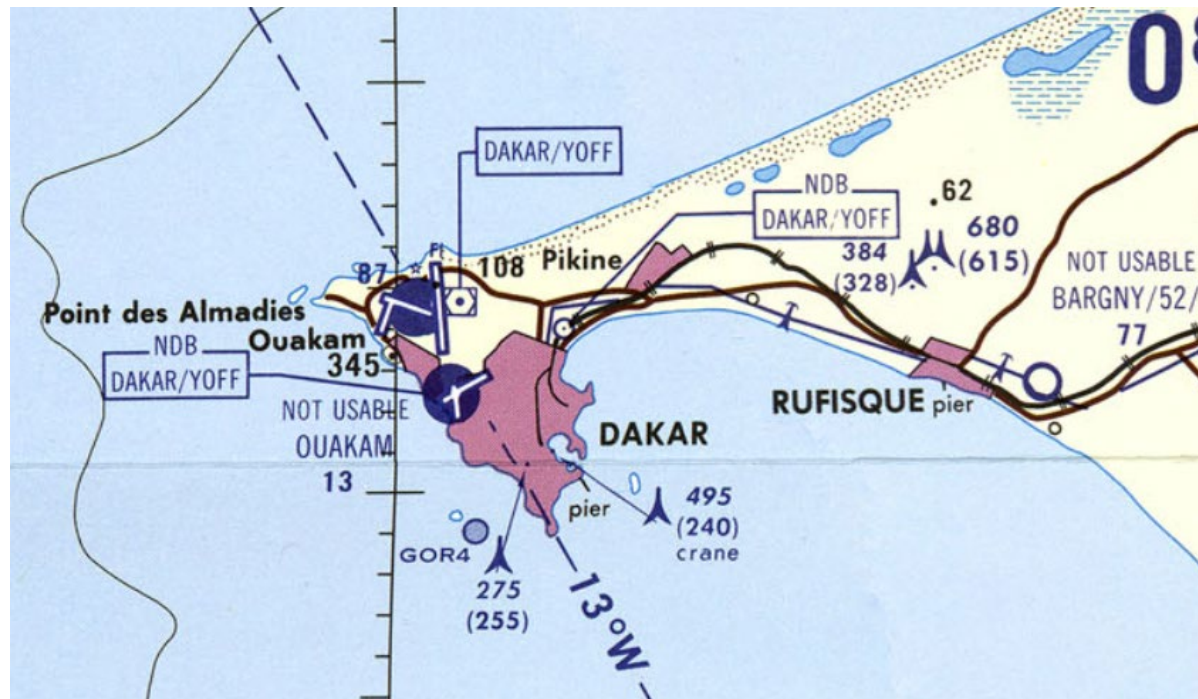
- used to make aeronautical information products and services
- managed in a chain from the originator through the AIS to the next intended user



Understanding Aeronautical Information

Aeronautical information is:

Information resulting from the assembly, analysis and formatting of aeronautical data



AIS vs. AIM

The AIS organization performs the **service** of providing aeronautical data and information in accordance with ICAO Annexes 15 and 4

AIM is the **management** of aeronautical information requirements to support air traffic management



AIS to AIM

Managing Product

AIS

publish documents

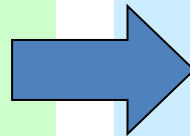
AIP



SUP,
NOTAM,
AIC

Document content and format per ICAO Annex 15:

- Chapter 5 – AIP
- Chapter 6 – NOTAM



AIM

manage data



- Aeronautical Information Exchange Model (AIXM)
- Digital NOTAM
- Electronic AIP (eAIP)

Managing Data

Thoughts...

- Annex 15 describes State responsibilities for the provision of aeronautical data and information products and services
- Current Annex 15 provisions are the conceptual foundations for AIM environment
- AIS to AIM transition equals major changes to processes and procedures which require risk mitigation and oversight



Questions and Discussion



References

- ICAO Annex 15
- ICAO Annex 4
- ICAO State Safety Program
- ICAO State Safety Program Implementation Course, lessons 4 and 6
- EUROCONTROL
- EUROCAE ED-76A

Aeronautical Data Source Management



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ICAO Standard Aeronautical Information Products and Services

Discussion

- ICAO Member State Products
 - Aeronautical Information Publication (AIP)
 - Aeronautical Information Regulation and Control (AIRAC)
 - AIP Amendment
 - AIP Supplement
 - Notices to Airmen (NOTAM)
 - Aeronautical Information Circular (AIC)
- Non-Standard AIPs
- Product and Service Quality

Aeronautical Information Publication (AIP)

- AIPs:
 - Exchange aeronautical information
 - Provide essential information for air navigation
- AIPs contain material for permanent information and long duration temporary changes



AIP (continued)

AIPs contain 3 parts:

- General (GEN)
- En Route (ENR)
- Aerodrome/Heliport (AD)



AIP General (GEN)



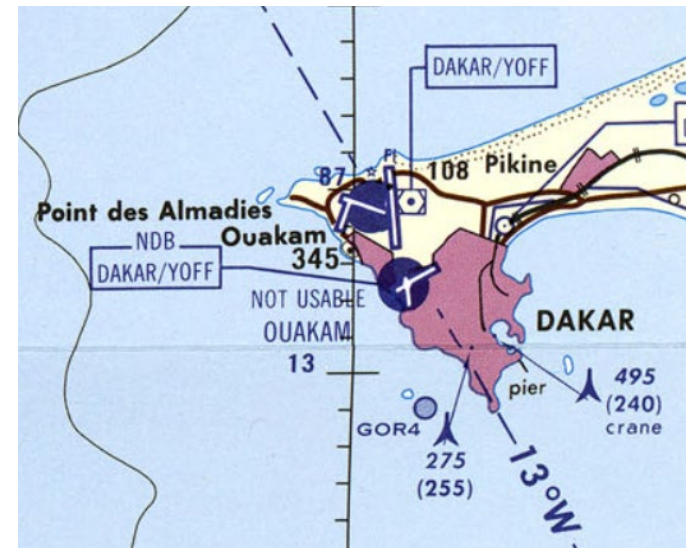
GEN section provides the following:

- Responsible party for the information
- Contact information
- Differences that exist between the State and ICAO standards
- Conditions under which the services or facilities are available
- Units or standards used

AIP En Route (ENR)

ENR section provides the following:

- General rules
- Airspace classification
- Description of the routes
- Navigation Aids
- Navigation Warning areas



AIP Aerodrome/Heliport (AD)

AD section provides the following:

- Aerodrome and heliport information
- Physical information for aprons, taxiways, or runways
- Services available
- Obstacles
- Lighting
- Procedures



Aeronautical Information Regulation and Control (AIRAC)

- Establishment, withdrawal or significant changes on a common effective date, every 28 days
- Information shall not be changed for at least 28 days after the effective date

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

AIRAC (continued)

Types of data and information subject to AIRAC:

- Airspace
- Routes
- Positions, frequencies, call signs, identifiers of navigation aids
- Flight Procedures
- Aerodrome physical attributes
- Obstructions
- Hours of operation



AIP Amendment



AIP amendment shall provide:

- References to the serial number of the AIP supplement or the series and number of the NOTAM which is in the amendment
- A cover sheet describing subjects affected by the amendment
- A checklist giving the current date of each loose-leaf page in the AIP, and a recapitulation of any outstanding manuscript corrections. The checklist shall carry both the page number and date

AIP Supplement



- When issued as a replacement of a NOTAM, include a reference to the series and number of the NOTAM
- A checklist of valid AIP supplements shall be issued at intervals of not more than one month as part of the checklist of NOTAMs required by 5.2.5.3 and with distribution as for the AIP supplements
- Each AIRAC AIP supplement shall include a publication and effective date

NOTAM

ICAO Definition

A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

A0614/23 NOTAMN

Q) GOOO/QWRLW/IV/M/W/000/003/0714N01718W999

A) GOOO B) 2305220600 C) 2307181300 EST

D) 0600-1300

E) FOR SPREADING FERTILIZER OR PHYTOSANITARY PRODUCTS A FLIGHTS WILL BE OPERATED AS FOLLOW :

FLIGHT AREA : ABOVE THE SUGAR CANE CROPS OF RICHARD TOLL (CSS)

ALTITUDE : 2 TO 5 METERS

COORDINATES :

CSS1 : 16DEG30'17.99"N-15DEG51'25.59"W

CSS2 : 16DEG30'47.52"N-15DEG33'53.83"W

CSS3 : 16DEG20'48.54"N-15DEG38'34.96"W

CSS4 : 16DEG20'43.42"N-15DEG50'34.73"W

ATC COMMUNICATION : (+221) 785331240 - (+221) 775744050

F) GND G) 300FT AGL

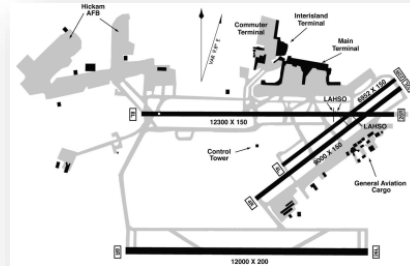
Resource: ICAO Annex 15

Aeronautical Information Circular (AIC)

ICAO Definition

A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but relates to flight safety, air navigation, technical, administrative or legislative matters.

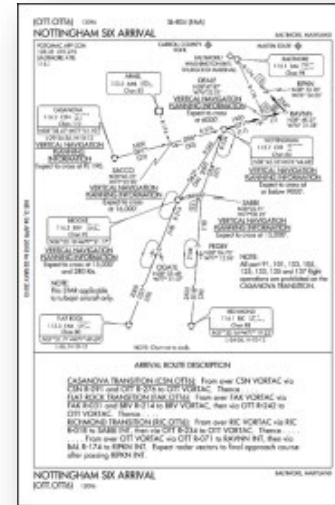
Resource: ICAO Annex 15



ISLE 08/020 (KSLE A0140/15) SLE NAV ILS RWY 31 GP OUT OF SERVICE 1508191700-1508192200

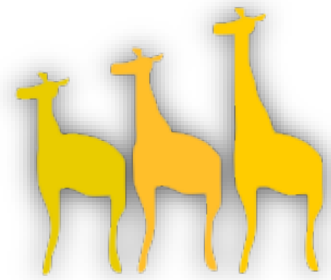
ISLE 08/007 SLE OBST TOWER LGT (ASR 1061557) 445554.80N1225728.00W (2.3NM NE SLE) 389.8FT (179.8FT AGL) OUT OF SERVICE 1508110906-1508260906

IFDC 5/5793 (KSLE A0082/15) SLE IAP MCNARY FLD, SALEM, OR. LOC/DME BC RWY 13, AMDT 8... ADD NOTE: CIRCLING TO RWY 16 NA AT NIGHT. VDA 3.05/TCH 37 NA. ADD PROFILE NOTE: DESCENT ANGLE NA. ADD NOTE: HELICOPTER VISIBILITY REDUCTION BELOW 1 SM NOT AUTHORIZED... 1505041131-1510311129EST



NON-STANDARD AERONAUTICAL PRODUCTS

NON-STANDARD AIPs



FAA

- A suite of aeronautical charts and products

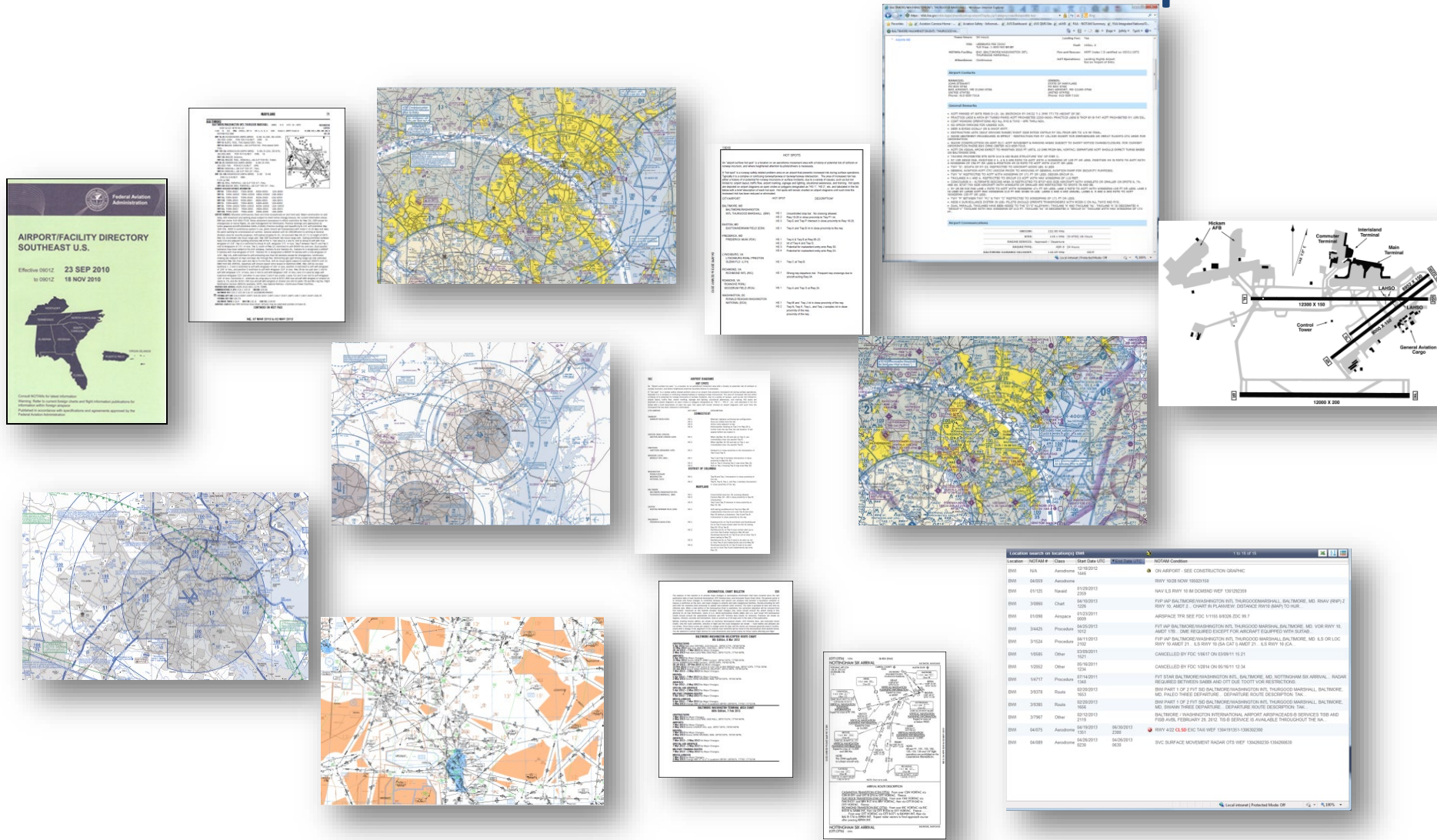
Flight Information Publication. These publications are designed more for users or operations

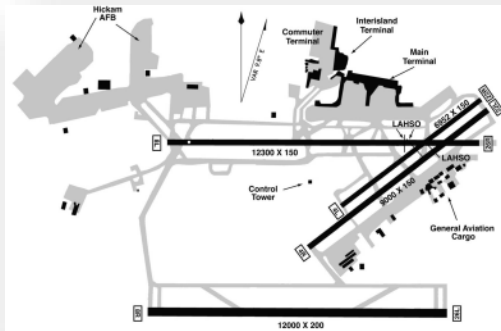
- Have different publications for data and information groupings
- There are only 3 civilian producers; primarily military data providers

7-Part AIP

- Previous standard of ICAO Annex 15
- Only 2 left in world (civil)
 - Lesotho and Switzerland VFR

FAA Non-Standard AIP Example





PRODUCT AND SERVICE QUALITY

The Scope of Quality Oversight

What could go wrong?

Data and Information Hazards

Incorrect

Incomplete

Untimely

Unsynchronized

Unavailable

*Unprotected

What does risk look like?

Variation

Competency

Business Rules

Process

Traceability

What prevents things from going wrong?

Controls/Barriers

Formal Arrangements

QMS

Production Control

Configuration Management

How will I know if controls are working?

Safety Oversight Activities

Continuous Monitoring

Audits and Assessments

Inspections

AIRAC - Is It Timely?

Received: March 10, 2017 → 03-10-17P01:04 RCVD

AIRAC

AIP Amendment
17/17
19 FEB 2017

EFFECTIVE DATE: 30 MAR 2017

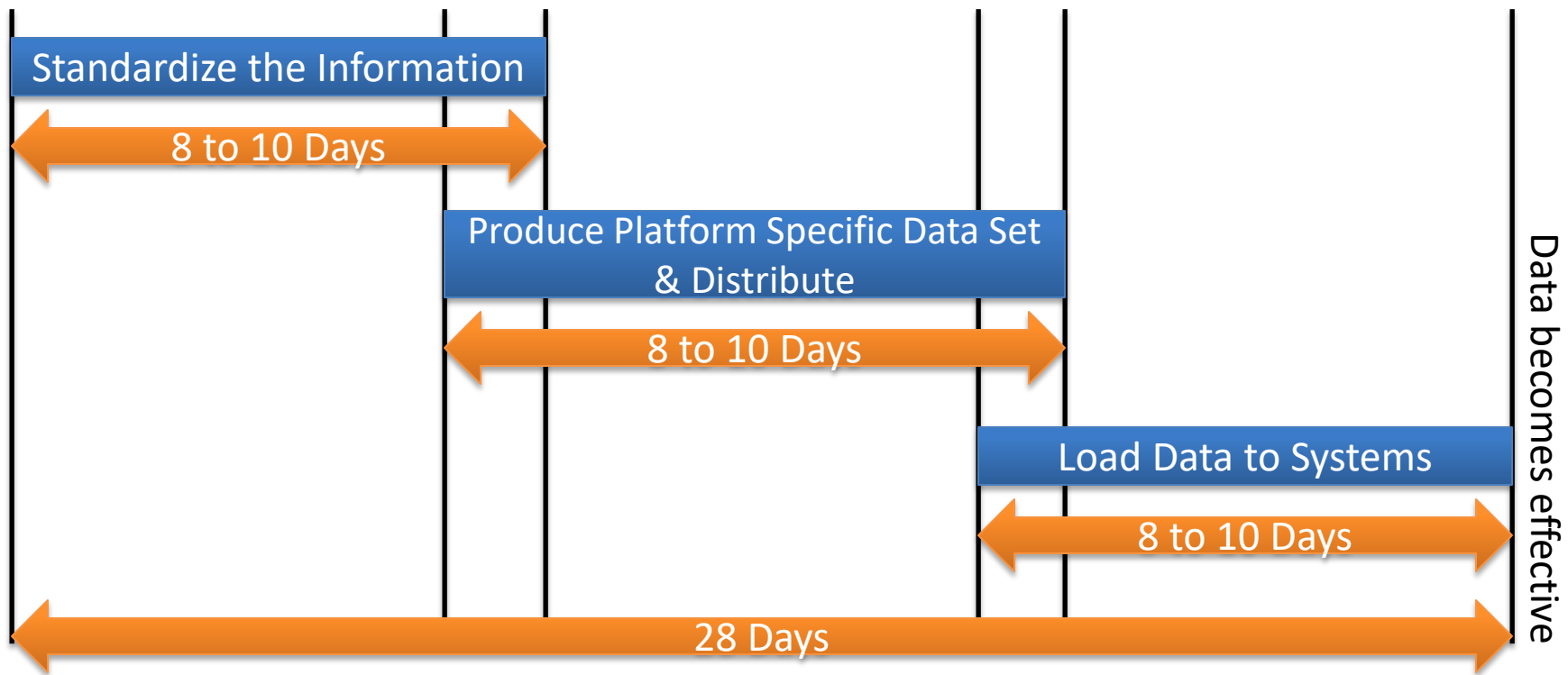
Insert the following pages: Delete the following pages:

GEN GEN

- Was this AIRAC amendment timely?
- Do you think the information was integrated into the aircraft?

Why Does AIRAC Timeliness Matter?

Normal timeline for data inclusion into automated systems



Note: Production timelines may vary between data houses

NOTAM

B0328/17 NOTAMN

Q) /QAFXX/IV/NBO/E /000/999/1216N12435E999

A) B) 1701270649 C) PERM

E) AIRAC AIP AMDT 061/16 WEF **02 FEB 17** CHANGED TO
02 MAR 17

CREATED: **27 Jan 2017** 06:49:00



AIP – Is it Synchronized?

What kind of change is this?



FECHA DE ENTRADA EN VIGOR: 24 de julio de 2014

SUP AIRAC 20/2014
SUP AIRAC 21/2014
SUP AIRAC 22/2014
SUP AIRAC 23/2014
SUP AIRAC 24/2014

AD TMA
AD LL-1, LL-2 Y LL-3
AD ILS-1, ILS-2, ILS-3
AD R-1
AD VD-1 Y VD-2

AREA TERMINAL
CARTAS DE LLEGADA POR INSTRUMENTOS
CARTAS DE APROXIMACION POR INSTRUMENTOS
CARTA DE APROXIMACION POR INSTRUMENTOS
CARTAS DE APROXIMACION POR INSTRUMENTOS



This **amendment** incorporates information that is published in the following AIP/SUP and NOTAM which is Cancelled hereby:

SUP	12/2014
SUP	13/2014
ANEXO 3 AL SUP	14/2014
SUP	15/2014
SUP	17/2014
SUP	18/2014

AIC – Is it Correct?

- Does this belong in an AIC?
- If not, where should the information be published?

	AIC A08/17
	Effective from 01 JUL 2017
	Published on 21 APR 2017

TEMPORARY DISCONTINUATION OF OVER-FLIGHT PERMISSION APPLICATION FOR SOME SEGMENTS/ATS ROUTES

1 INTRODUCTION

Therefore, this AIC aims at notifying the temporary discontinuation of over-flight permission application for some segments/ATS routes to reduce conflict at BUNTA as well as reduce ATC's workload.

2 DETAILS

Over-flight permission application shall temporarily not be approved by CAAV for flights operating on the following segments/ATS routes:

2.1 ATS route G221: Direction from PCA to BUNTA.

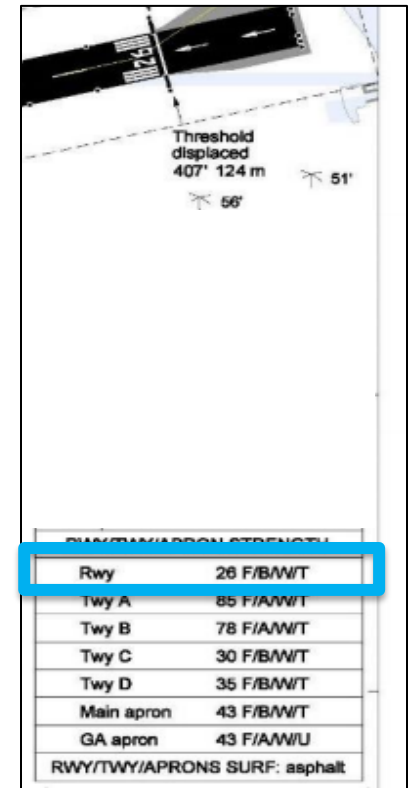
2.2 ATS route segment W1-A1: Direction from TSN - W1 - DAN - A1 - BUNTA.

2.3 ATS route segment Q2-A1: Direction from TSN - Q2 - PATNO - A1 - BUNTA.

Is the Data Synchronized?

AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	TRUE & MAG BRG	Dimensions of RWY (M)	Strength (PCN) and Surface of RWY and SWY	THR coordinates	THR elevation and Highest elevation of TDZ of Non-Precision APP RWY	
1	2	3	4	5	6	
08	076° GEO 080° MAG	2136 x 46	60/F/B/X/U Asphalt Grooved	191725.56N 812203.46W	THR 2.4 M/8 FT * see note	
26	256° GEO 260° MAG	2136 x 46	60/F/B/X/U Asphalt Grooved	191742.45N 812052.49W	THR 1.7 M/5 FT * see note	
Slope of RWY-SWY	SWY Dimensions (M)	CWY Dimensions (M)	Strip Dimensions (M)	OFZ	RESA	Remarks
7	8	9	10	11	12	13
Nil	Nil	150 x 150	2 256 x 150	Nil	NIL	
Nil	Nil	150x 150	2 256 x 150	Nil	90 x 90	** see note below



Note: Aerodrome Diagram

- What impact will this have?
- Would it affect the type of the aircraft operating at this airport?
- Will it call into question other data?

Is the Data Accurate?

TBL
GEN
2.6-5

CONVERSION TABLE – NM/ft

NM	0	1	2	3	4	5	6	7	8	9
0	0	607	1215	1822	2430	3037	3645	4252	4860	5467
1	6075	6682	7289	7897	8504	9112	9719	10327	10934	11542
2	12149	12757	13364	13971	14579	15186	15794	16401	17009	17616
3	18224	18831	19439	20046	20653	21261	21868	22476	23083	23691
4	24298	24906	25513	26121	26728	27335	27943	28550	29158	29765
5	30373	30980	31588	32195	32803	33410	34017	34625	35232	35840
6	36447	37055	37662	38270	38877	39485	40092	40700	41307	41914
7	42522	43129	43737	44344	44952	45559	46167	46774	47328	47989
8	48596	49204	49811	50419	51026	51634	52241	52849	53456	54064
9	54671	55278	55886	56493	57101	57708	58316	58923	59531	60138

Is the Data Complete?

Aerodrome Obstacles

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 22R

2.10.1.b Type of obstacle: Tree (70 ft). Not Lighted or Marked

2.10.1.c Location of obstacle: 37 ft from Centerline

2.10.1.a. Runway designation: 13L

2.10.1.b Type of obstacle: Pole (52 ft). Lighted

2.10.1.c Location of obstacle: 327 ft from Centerline

2.10.1.a. Runway designation: 31R

2.10.1.b Type of obstacle: Tree (79 ft). Not Lighted or Marked

2.10.1.c Location of obstacle: 392 ft from Centerline

2.10.1.a. Runway designation: 22L

2.10.1.b Type of obstacle: Tree (50 ft). Not Lighted or Marked

2.10.1.c Location of obstacle: 310 ft from Centerline

What information is missing?

- Direction:
 - Straight out from centerline
 - Left of centerline
 - Right of centerline
- If left or right, how far from the runway end
- Latitude and longitude
- Above Ground Level or Mean Sea Level

Thoughts...



- Understand the AIP and its products
- Non-standard products of the FAA
- AIS are responsible for data quality oversight
- Examples of data and information hazards
- Data quality achieves reliability

Questions and Discussions



References

- ICAO Annex 15

Overview of Safety Risk Management (SRM)



Federal Aviation
Administration



Data Risks and Mitigations

Module Objectives

Understand the concepts and importance of safety risk and safety risk management

Recognize the relationship between safety risk and aeronautical information products and services



Safety Risk Management (SRM)

- A formal method for identifying hazards, developing and implementing effective and appropriate mitigations, and continually assessing risk
- Part of a quality management system (QMS) and a safety management system (SMS)



Importance of SRM

- Ensure processes, procedures and behaviors do not negatively impact safety
- Safety-related systems are becoming more data-intensive and data-centric
 - ...useful as decision support or advisory systems
 - ...complex processes with a large volume of data increases likelihood a user recognizes data errors

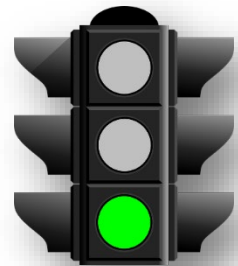


Resource: UK SCSC Data Safety Initiative Working Group, Data Safety Guidance

SRM Safety Risk Control

ICAO Definition

A specific mitigating action or recovery measure put in place to prevent the realization of a hazard or its escalation into an undesirable consequence.



Resource: ICAO Doc 9859, Safety Management Manual

SRM Roles and Responsibilities



The AIS office is responsible for:

- Establishing and implementing risk management processes to ensure controls are integrated in the SMS and QMS
- Ensuring controls are being practiced as designed, and have the intended effect on safety risks

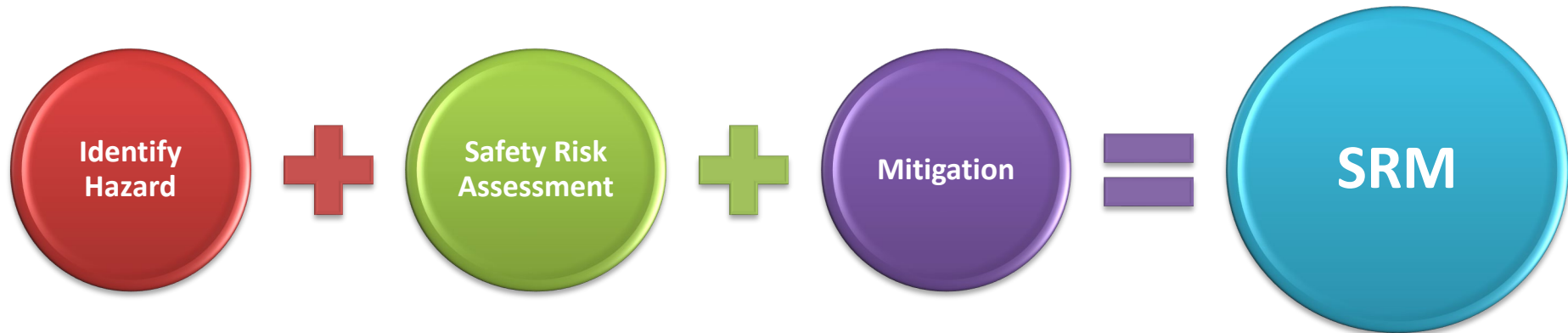
SRM Roles and Responsibilities

The role of a Regulator

- Establish mechanisms to ensure the identification of risks
- Manage safety risks by establishing regulatory controls:
 - Requirements
 - Specific operating regulations
 - Implementation policies



SRM Key Concepts



SRM Hazard

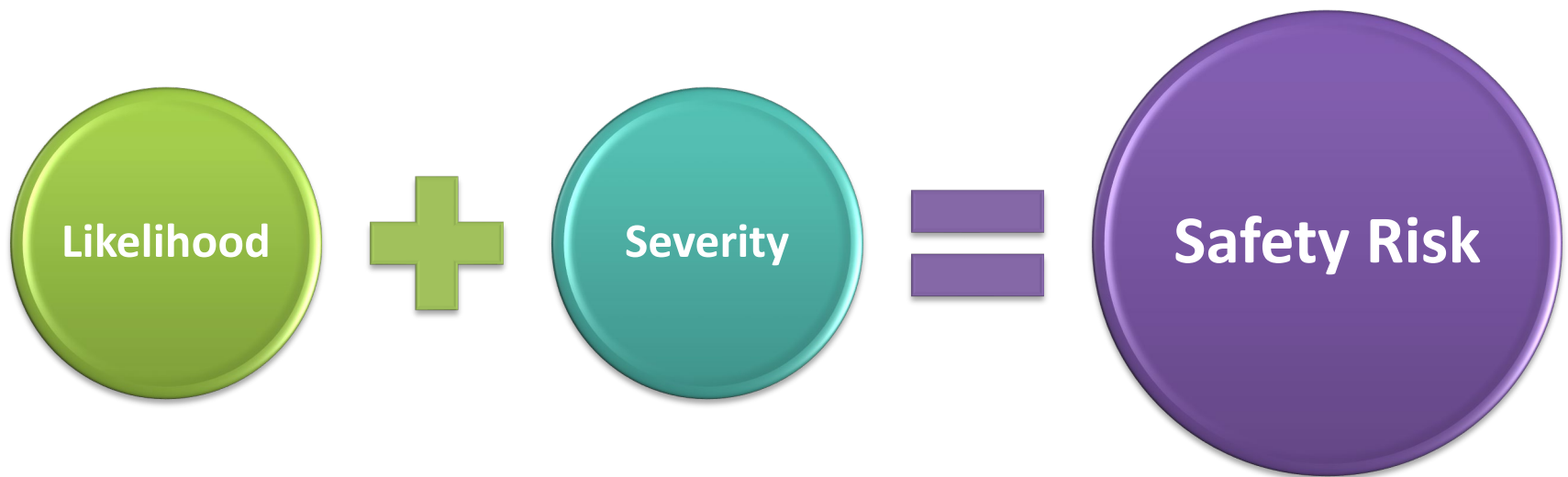
ICAO Definition

A condition or an object with the potential to cause death, injuries to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function



Resource: ICAO Doc 9859, Safety Management Manual

Safety Risk



SRM Likelihood



ICAO Definition

The estimated probability and/or frequency of a hazard's effect or outcome.

Resource: ICAO Doc 9859, Safety Management Manual

SRM Severity

ICAO Definition

The extent of harm that might occur as a consequence or outcome of the identified hazard



Resource: ICAO Doc 9859, Safety Management Manual

SRM Safety Risk

ICAO Definition

The predicted probability and severity of the consequences or outcomes of a hazard



Resource: ICAO Doc 9859, Safety Management Manual

Safety Risk Probability Table

ICAO Definition

Safety risk probability is the likelihood that a safety consequence or outcome will occur.

Likelihood	Meaning	Value
Frequent	Likely to occur many times	5
Occasional	Likely to occur sometimes	4
Remote	Unlikely to occur, but possible	3
Improbable	Very unlikely to occur	2
Extremely Improbable	Almost inconceivable	1

Resource: ICAO Doc 9859, Safety Management Manual

Severity Table

Severity	Meaning	Value
Catastrophic	• Equipment destroyed • Multiple deaths	A
Hazardous	• A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely • Serious injury • Major equipment damage	B
Major	• A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of conditions impairing their efficiency • Serious incident • Injury to persons	C
Minor	• Nuisance • Operating limitations • Use of emergency procedures • Minor incident	D
Negligible	• Few consequences	E

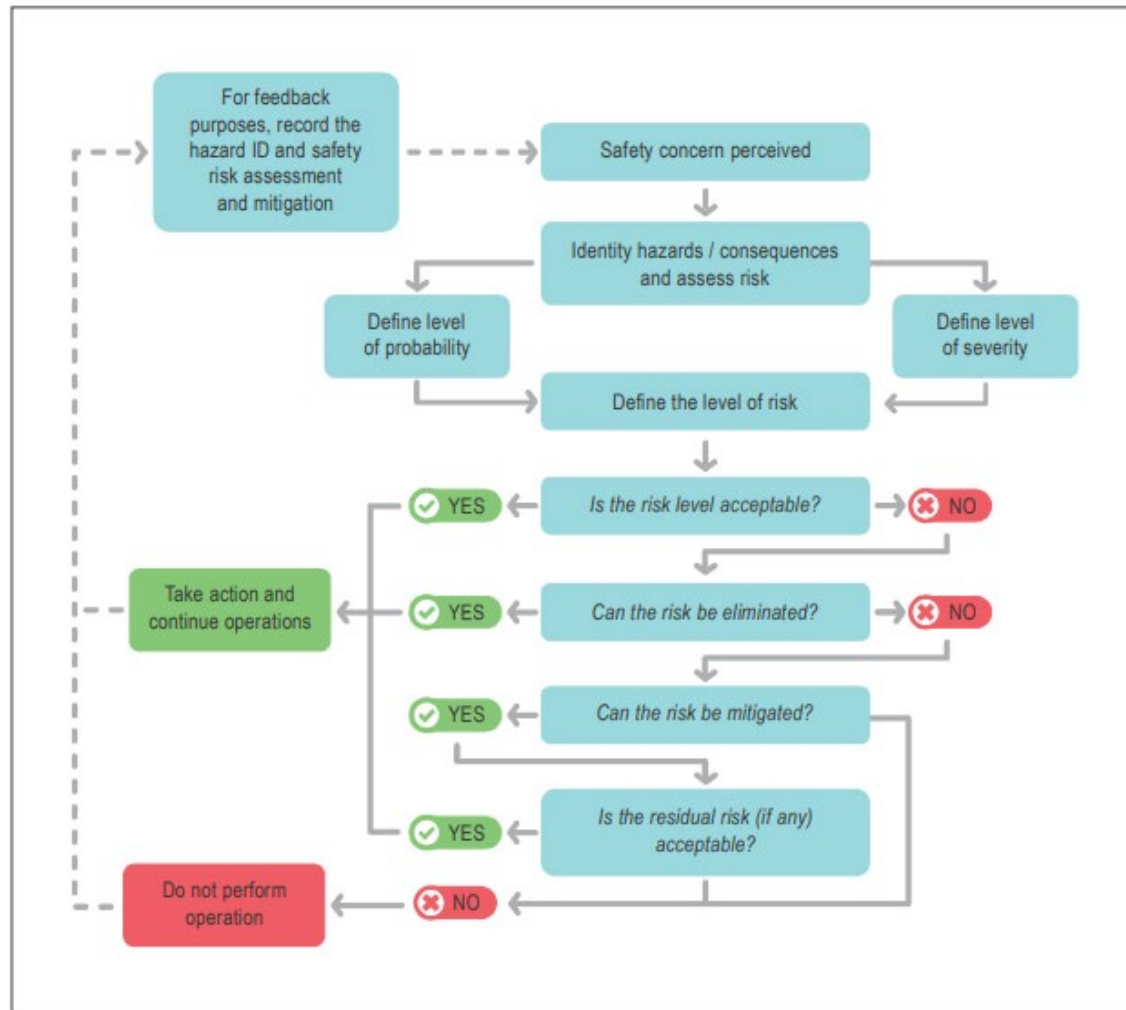
Resource: ICAO Doc 9859, Safety Management Manual

Safety Risk Assessment Matrix

SAFETY RISK		Severity				
Probability		Catastrophic	Hazardous	Major	Minor	Negligible
		A	B	C	D	E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely improbable	1	1A	1B	1C	1D	1E

Resource: ICAO Doc 9859, Safety Management Manual

Safety Risk Management Decision Aid



Resource: ICAO Doc 9859, Safety Management Manual

Safety Risk Tolerability

Tolerability description	Assessed risk index	Suggested criteria
Intolerable region	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
Tolerable region	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	Acceptable based on risk mitigation. It may require management decision.
Acceptable region	3E, 2D, 2E, 1B, 1C, 1D, 1E	Acceptable

Resource: ICAO Doc 9859, Safety Management Manual

SRM Risk Mitigation

ICAO Definition

The process of incorporating defenses or controls to lower the severity and/or likelihood of a hazard's projected consequence

Mitigation strategies are based on strengthening defenses or developing new ones

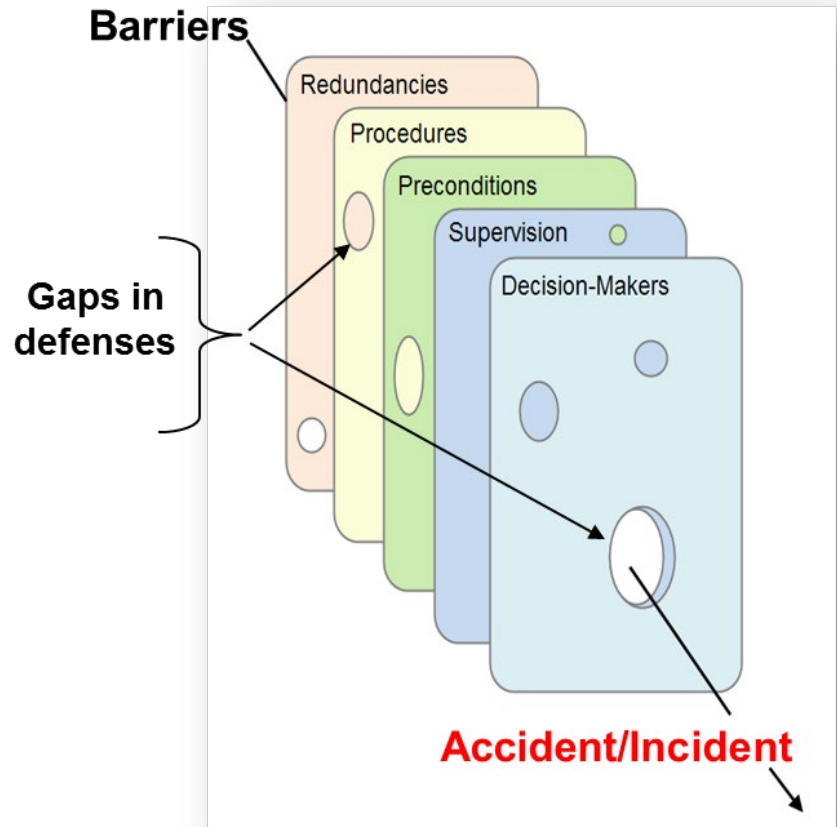
Resource: ICAO Doc 9859, Safety Management Manual

Failure of Controls

- Controls prevent hazards from causing negative safety impact

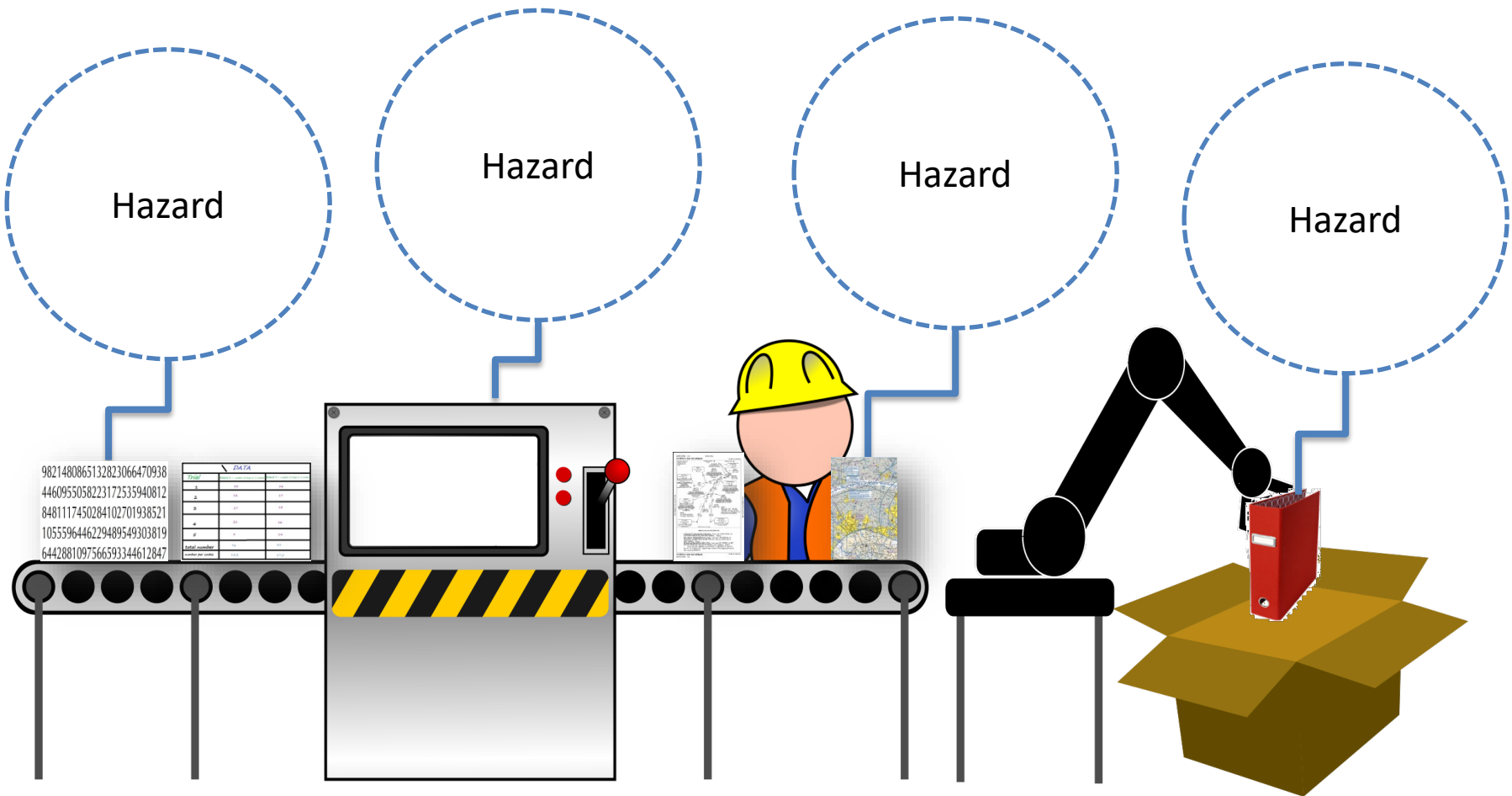
However ...

- Controls are never 100% effective



What Could Go Wrong?

The AIS Information Factory



Importance of SRM

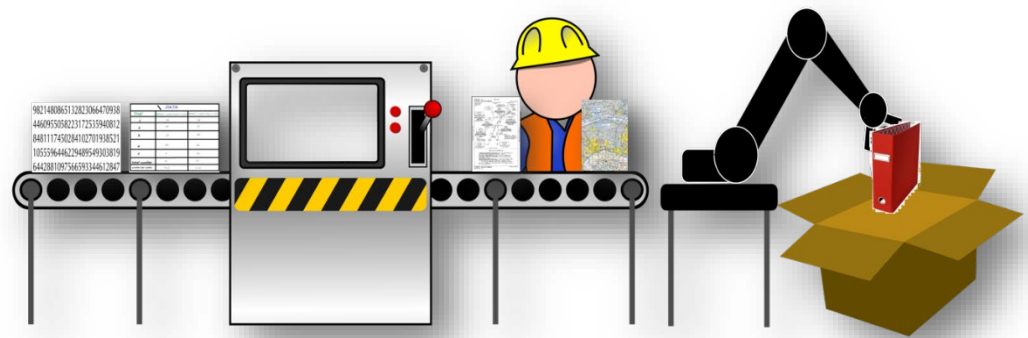
As related to AIS:

- Ensure processes, procedures and behaviors related to data and information management do not negatively impact safety



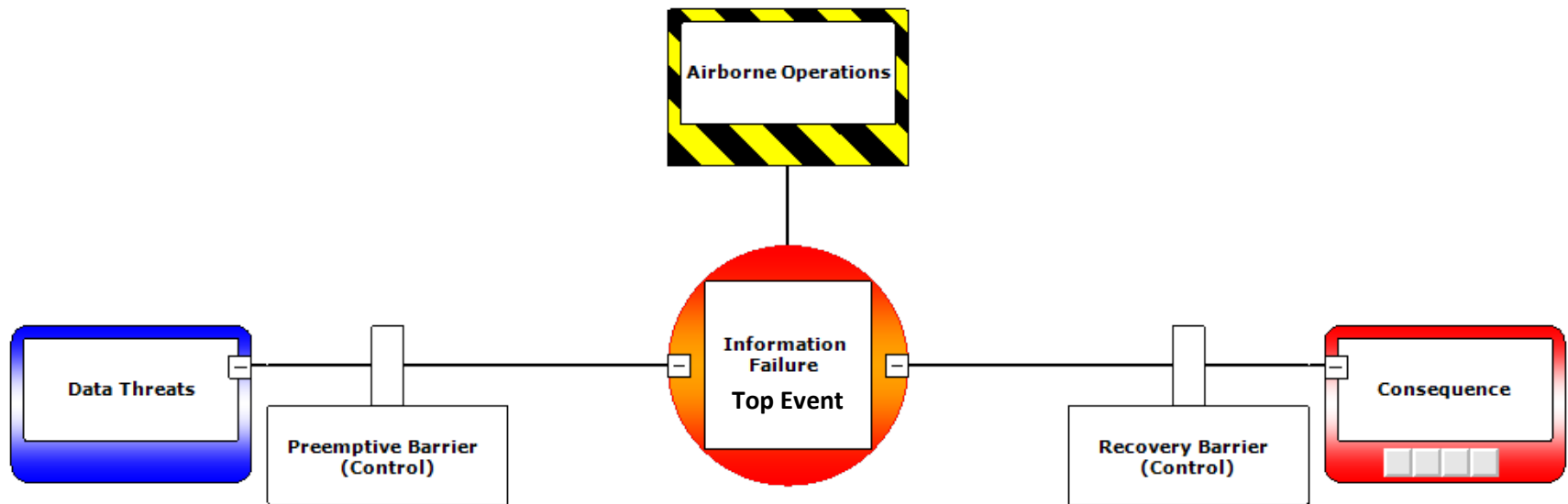
Hazards and Risk in the AIS Information Factory

- What can go wrong?
- What risk looks like?
- What processes and systems are in place to prevent things from going wrong?
- Are controls working?



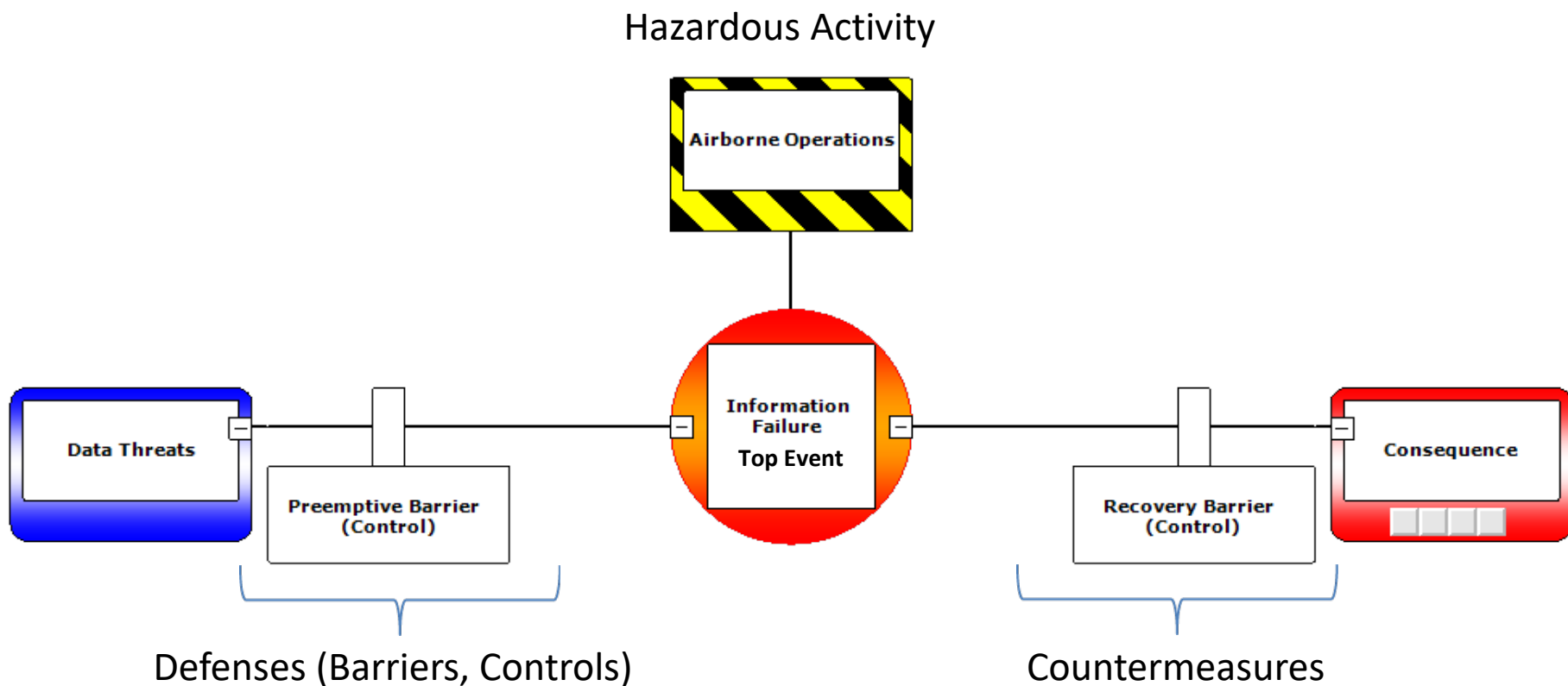
Bow Tie Methodology

A diagram resembling a bow tie depicting hazards and potential outcomes with controls

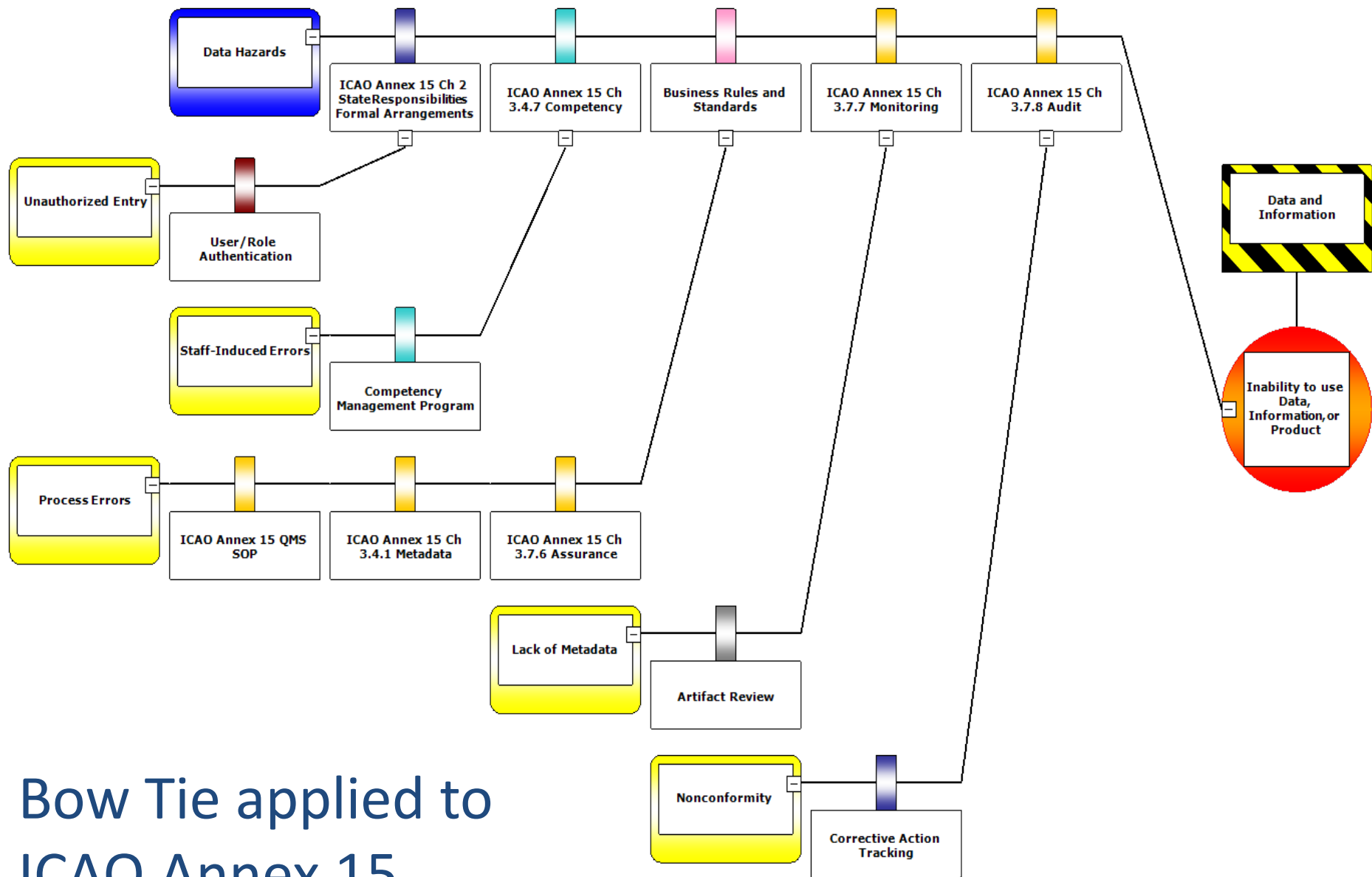


Resource: CGE Risk Management Solutions, The Bowtie Method (www.cgerisk.com/knowledge-base/risk-assessment/thebowtiemethod)

Bow Tie Diagram (continued)



Resource: CGE Risk Management Solutions, The Bowtie Method (https://www.cgerisk.com/knowledgebase/The_bowtie_method)



Bow Tie applied to ICAO Annex 15

Thoughts...

- SRM includes the identification of hazards, assessment of risk associated with the hazards, and implementing mitigations
- Safety risk controls are mitigation measures that are demonstrated to be effective
- Hazards, barriers and controls can be illustrated in a bow tie diagram



Questions and Discussion



References

- ICAO Annex 19
- ICAO Safety Management Manual, Doc 9859
- UK Data Safety Initiative Working Group, Data Safety Guidance (SCSC-127B)
- SKYbrary: Bow Tie Risk Management Methodology
- CGE Risk Management Knowledge Base/CGE Academy (https://www.cgerisk.com/knowledgebase/Main_Page)