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

Presenters

FAA – Air Traffic Safety Oversight Service (AOV)

- Ms. Yadira (Y) Lacot, Foreign Affairs Specialist
- Mr. George Sempeles, Aeronautical Information Specialist
- Ms. Melissa Wishy, Aeronautical Information Specialist

FAA – Air Traffic Organization (ATO)

- Mr. Michael Watkins, Senior Air Traffic Representative Asia-Pacific

National Geospatial Intelligence Agency (NGA)

- Ms. Jodi Brainard, International Aeronautical Representative
- Ms. Krista Zoller, International Aeronautical Representative

Workshop Guidelines

- Participants are requested to:
  - Sign in
  - 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

ICAO APAC AIS/AIM workshop website

https://www.icao.int/APAC/Meetings/Pages/2020-WS-SO_AIS-AIM.aspx

- Workshop presentations per day
- Workshop activities
- Reference materials

Why Are We Here?

- In 2014, ICAO adopted the target for States to attain 60% Effective Implementation (EI) of the Critical Elements (CEs) of a State safety oversight system by 2017
- The 2020-2022 edition of the GASP established the safety target of all States to reach a safety oversight index (SOI) greater than 1, in all three categories by 2022
- Support the global effective implementation in ANS, Personnel Licensing and Training (PEL), and Aerodromes and Ground Aids (AGA)

Workshop Goals

- Review safety oversight responsibilities and the USOAP CEs of State Safety Oversight
- Discuss strategies for conducting effective safety oversight of AIS/AIM
- Complete individual and interactive activities to complement presentations and discussions
- Identify focus areas to target for measurable improvement
- Encourage knowledge and resource sharing among safety professionals in the Asia Pacific Region

Workshop Objectives

- Address the ICAO USOAP EI in the APAC region, in ANS 61.96%
- Provide best practices on effective implementation of safety oversight of AIS/AIM and continued performance monitoring

The Importance of ANS

- Air Navigation Services support capacity building and efficient civil aviation operations

- Aviation is an economic driver
  - **Safe** and efficient services inspire public confidence and support growth

Workshop Curriculum

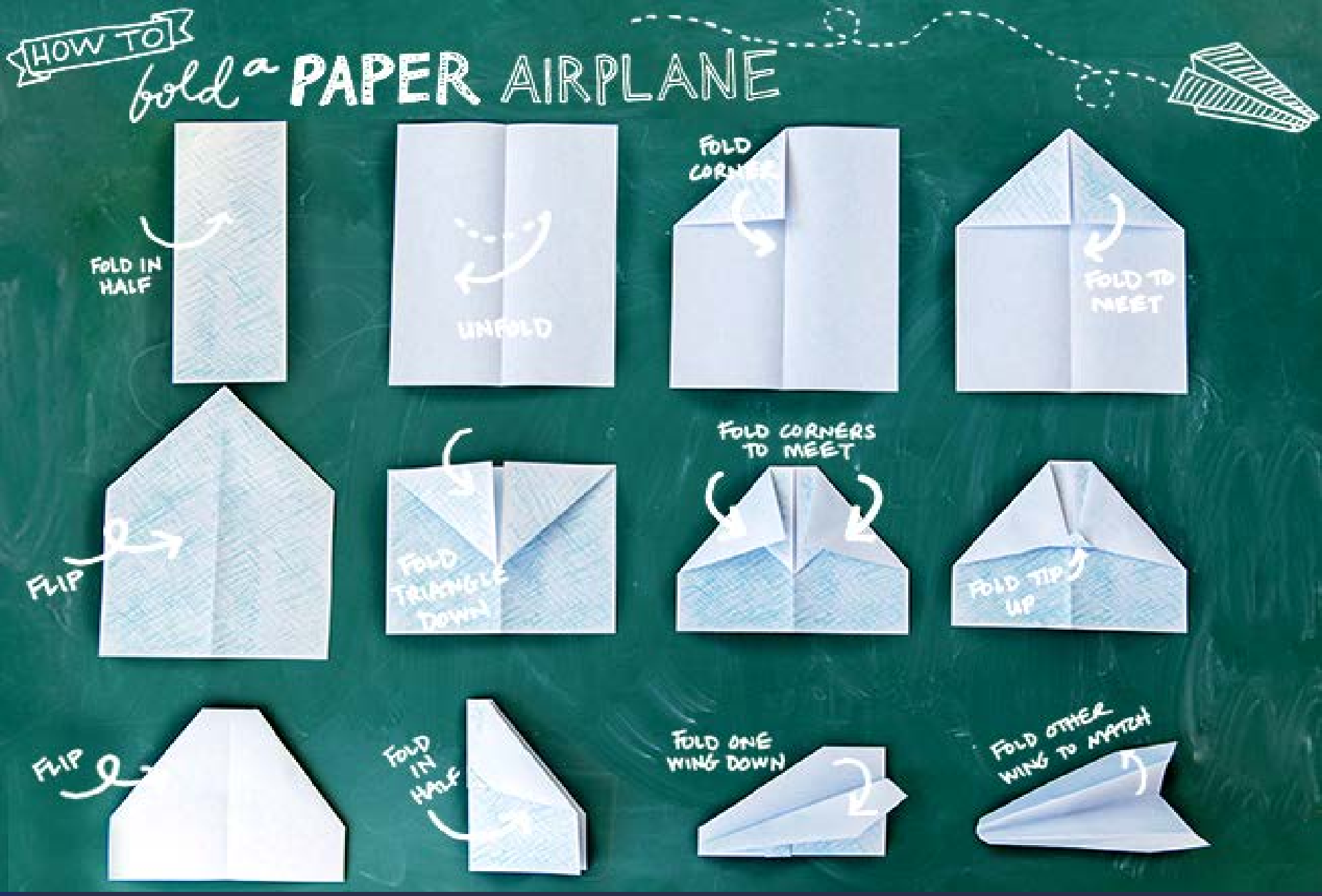
1. Introduction to Safety Oversight
2. Annex 15 and Surveillance Obligations
3. QMS as the Safety Risk Control
4. AIS Oversight
5. Collaboration and Next Steps

Introductions

Activity

Take Flight[1]...

[1] www.womensministrytoolbox.com


HOW TO
fold a PAPER AIRPLANE
FOLD IN HALF
UNFOLD
FOLD CORNER
FOLD TO MEET
FLIP
FOLD TRIANGLE DOWN
FOLD CORNERS TO MEET
FOLD TIP UP
FLIP
FOLD IN HALF
FOLD ONE WING DOWN
FOLD OTHER WING TO MATCH

Turning Point

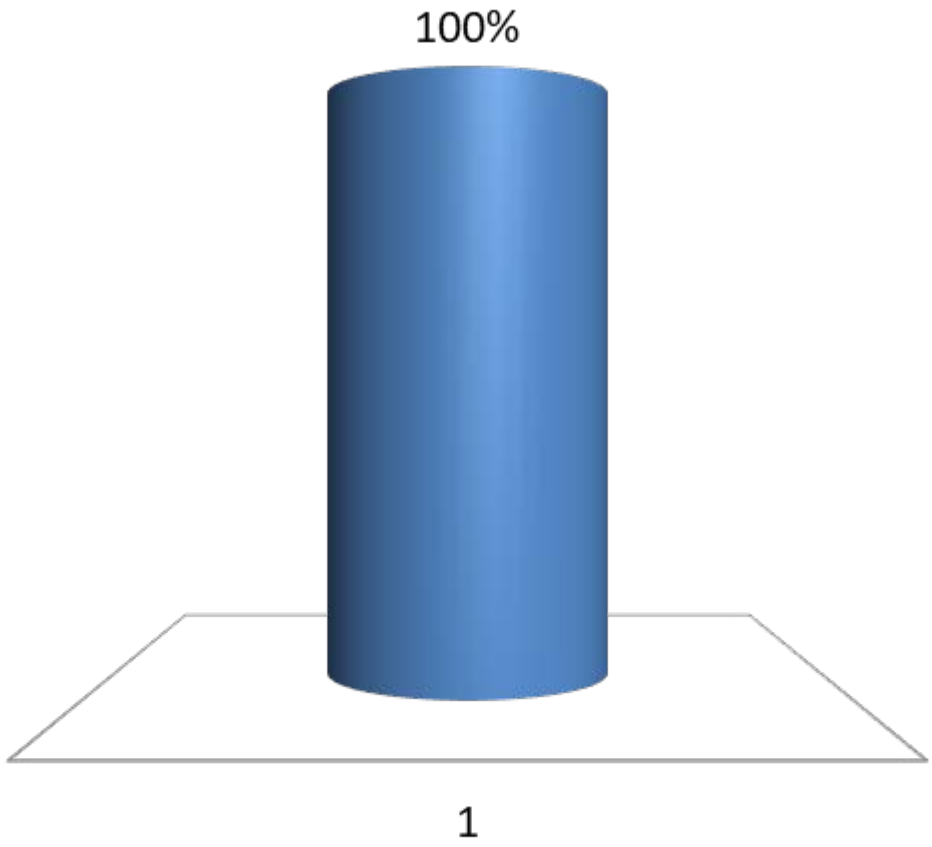
- Discussion tool
- Live voting
- Participating with Turning Point
  - Vote via the web at:

www.ttpoll.com

Session ID: ansoversight

What’s your favorite color?

Rank	Responses
1	
2	
3	
4	
5	
6	Other



Module Objectives

- Understand:
  - the concepts of safety and safety oversight
  - roles and responsibilities in safety oversight
  - essential safety oversight responsibilities

Essential Safety Oversight Responsibilities

What Does it Mean to Regulate?

"Regulators do so much more than administer laws. They also deliver services, build partnerships, solve problems, and provide guidance."

-- Malcolm Sparrow

What is Safety Oversight?

- The process of ensuring that aviation professionals – such as air traffic controllers, engineering/electronics personnel, and others
  - perform their functions *safely* and *responsibly*
  - effectively implement international Standards and Recommended Practices and associated procedures

Essential Responsibilities

- ✓ Establish rules
- ✓ Perform surveillance
- ✓ Resolve safety concerns

Components of a Successful Safety Oversight Program

- ✓ Establish rules
  - Regulations
  - Implementing Rules
  - Directives/Requirements
  - Personnel Licensing Program
- ✓ Perform surveillance
  - Surveillance Program
  - Monitoring
  - Investigations/Inspections/Audits/Assessments

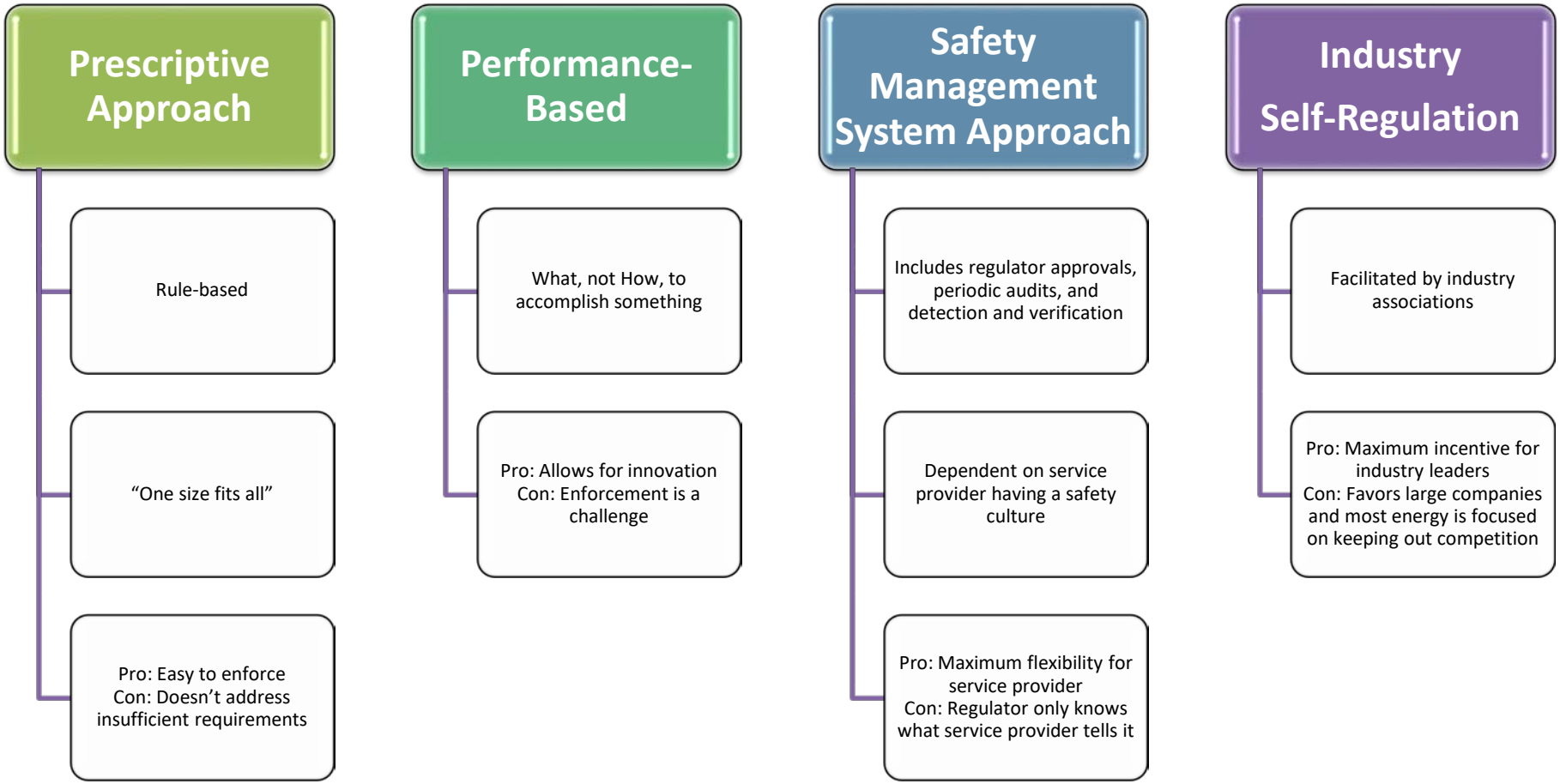
Components of a Successful Safety Oversight Program

- ✓ Resolve safety concerns
  - Enforcement Program
  - Cooperation with other safety services/organizations
  - Regulator-ANSP Safety Information Exchange

ANS Oversight Required by ICAO

- Air traffic control services
- Safety personnel (air traffic controllers)
- **Flight procedures** and flight inspection
- Communication, Navigation, and Surveillance services
- Aeronautical Telecommunication services
- Meteorological services
- **Aeronautical Information Services and Aeronautical Information Management**
- **Cartographic services**
- Search and rescue

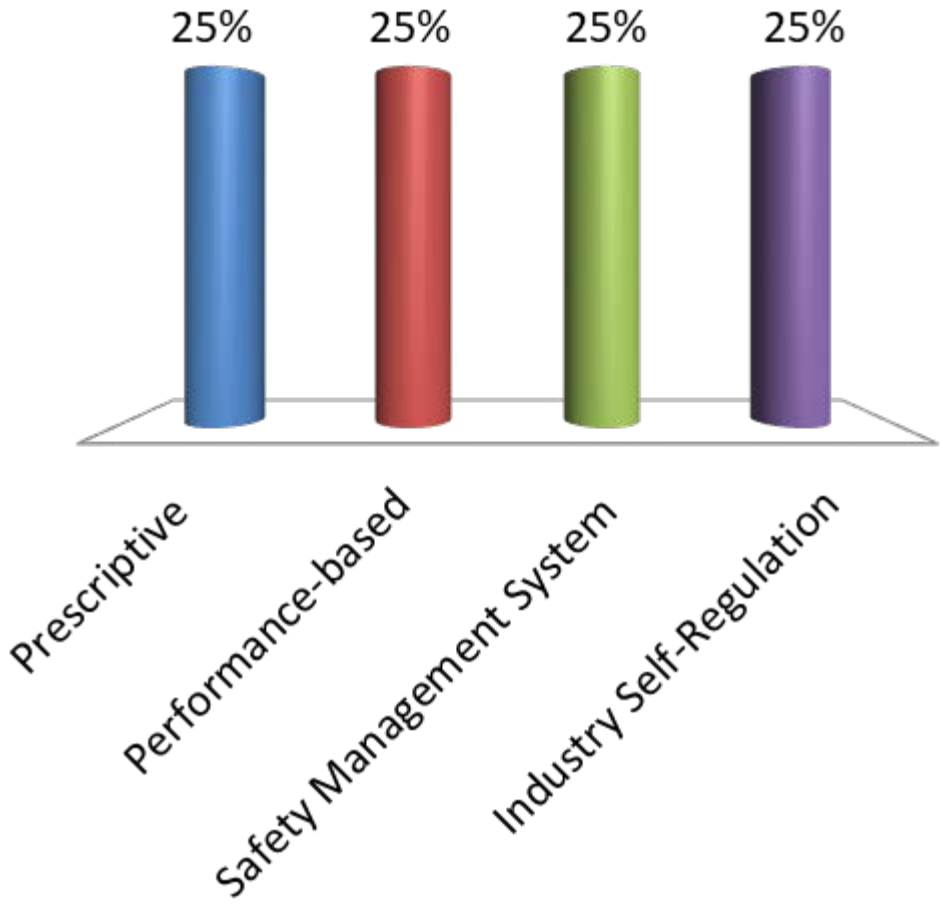
Regulatory Models



[1] Based on models discussed by Malcolm Sparrow

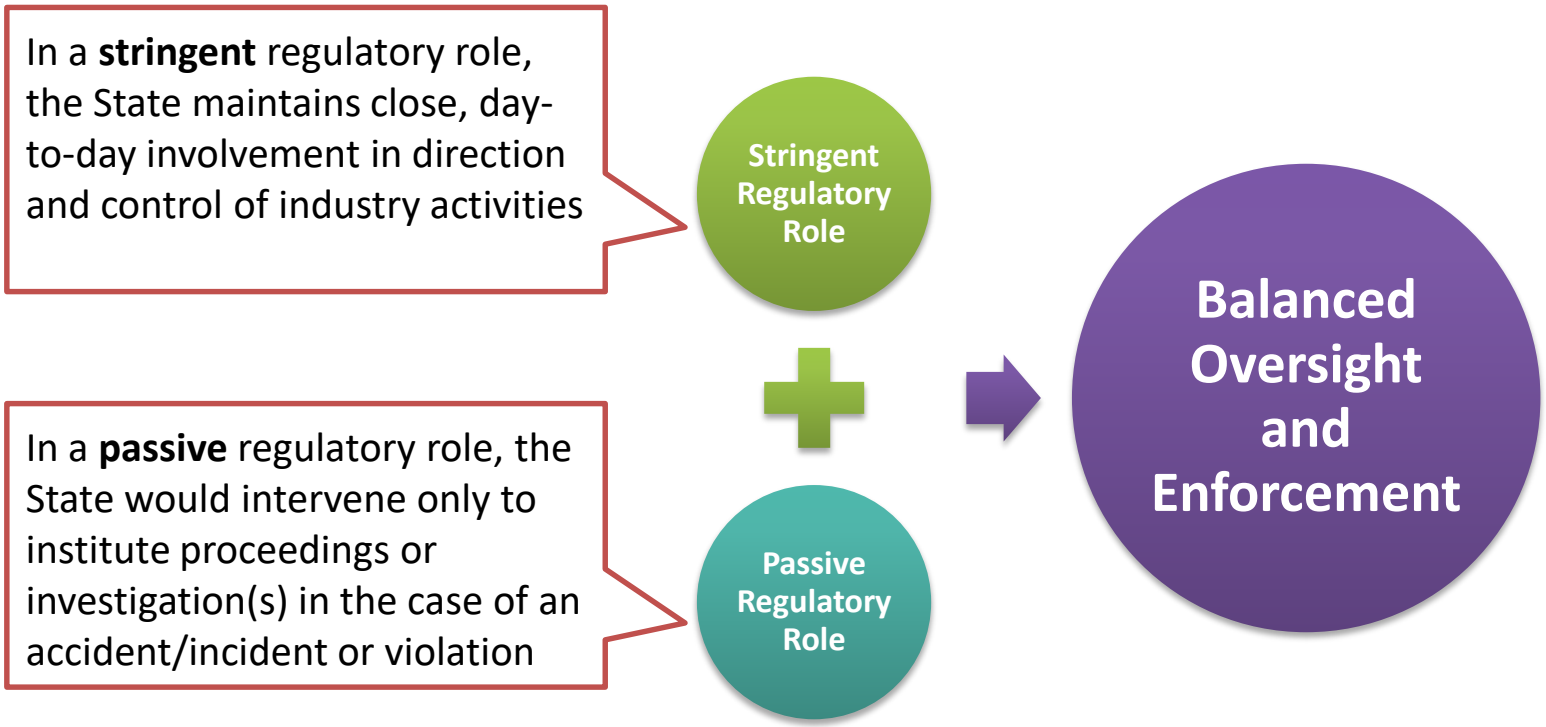
Which model describes the regulatory approach in your State?

A. Prescriptive
B. Performance-based
C. Safety Management System
D. Industry Self-Regulation



Achieving Balance

- In a balanced regulatory environment, the State and the aviation community share responsibility for the safe, regular and efficient conduct of civil aviation activities



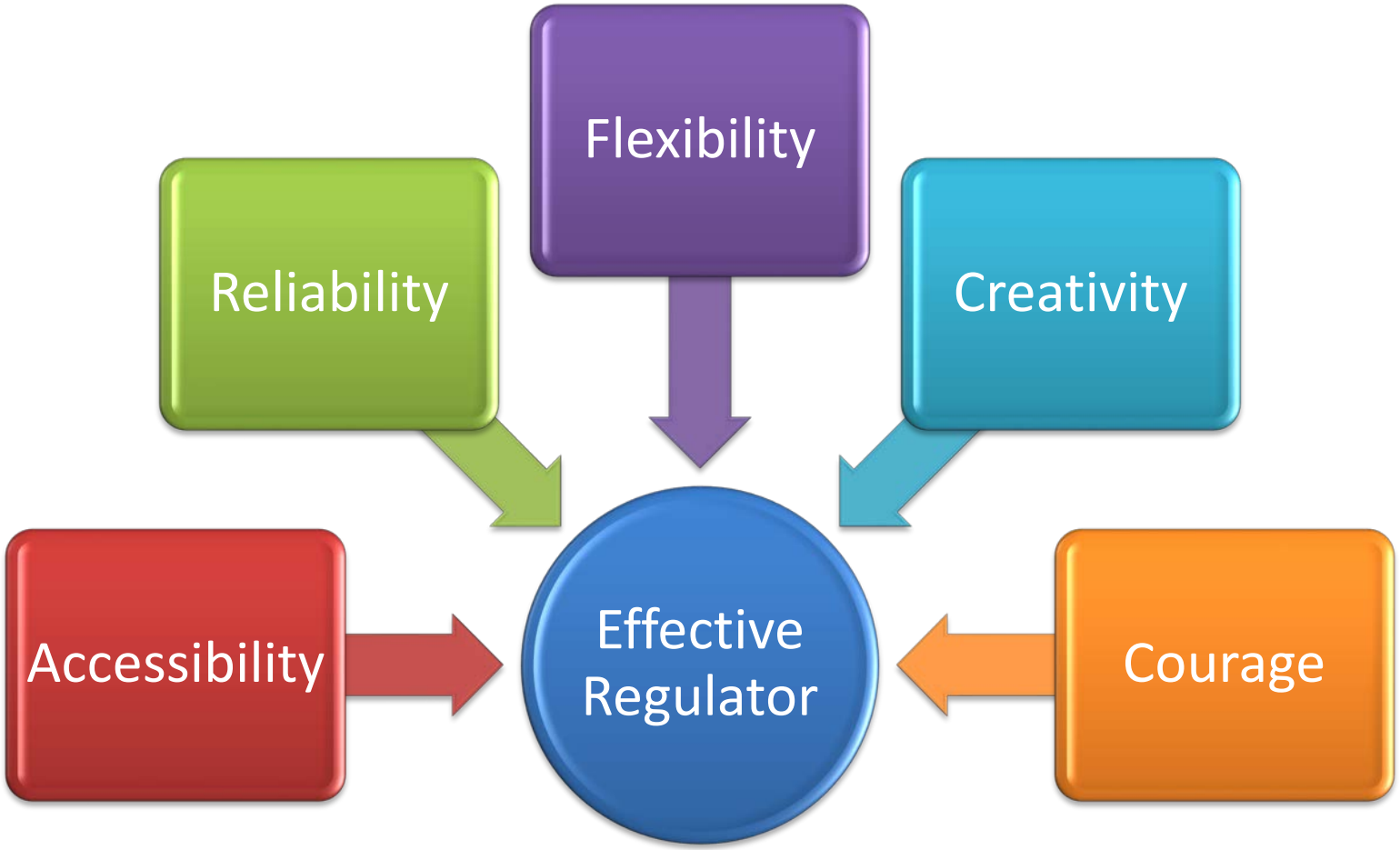
Strategies for Risk-Based Regulation

Strategies for Risk-Based Regulation

- Consider whether it is more effective to focus on identifying and reducing “bads” (risks/harms), or on defining and promoting “goods”
- Use risk mitigation as the foundation for partnerships (shared responsibility)
- Fit different regulatory structures to different classes of risk (structural versatility)
- Understand types of risk that pose special challenges

[1] Based on concepts discussed by Malcolm Sparrow

Characteristics of Effective Regulators



Characteristics of Effective Regulators, Robert Eric Borgström

What other characteristics do you think are important to be an effective regulator?

Rank	Responses
1	
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3	
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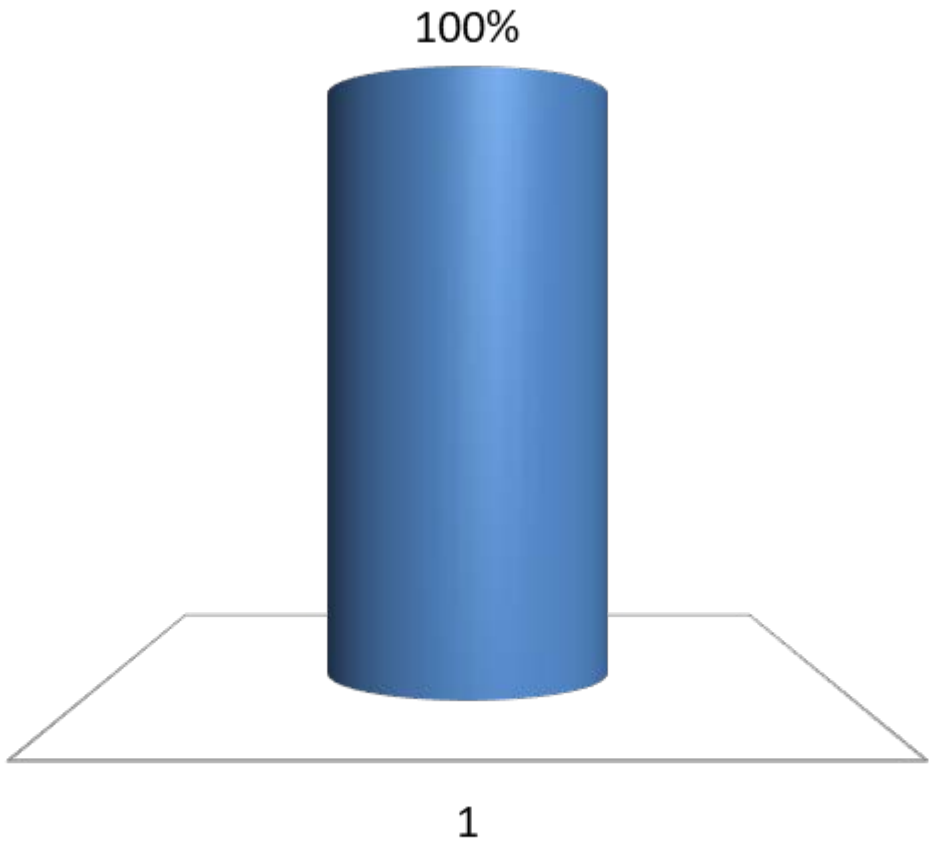
6	Other



The Regulatory Continuum

References

- *Characteristics of Effective Regulators*, by Robert Eric Borgström
- List of ICAO ANS Reference Documents
- ICAO Safety Oversight Manual, Doc 9734
- The Regulatory Craft, by Malcolm Sparrow

Basic Safety Oversight of an ANSP

Module Objectives

- Review Air Navigation Services responsibilities
- Become familiar with the ICAO USOAP Critical Elements

Establishing a Safety Oversight Program

- Key Questions to Consider:
  - Who provides ANS/ATS?
  - What are their responsibilities?
  - What are the applicable requirements?
  - How will you determine whether requirements are met?
  - How will you resolve safety concerns?

ANSP Responsibilities

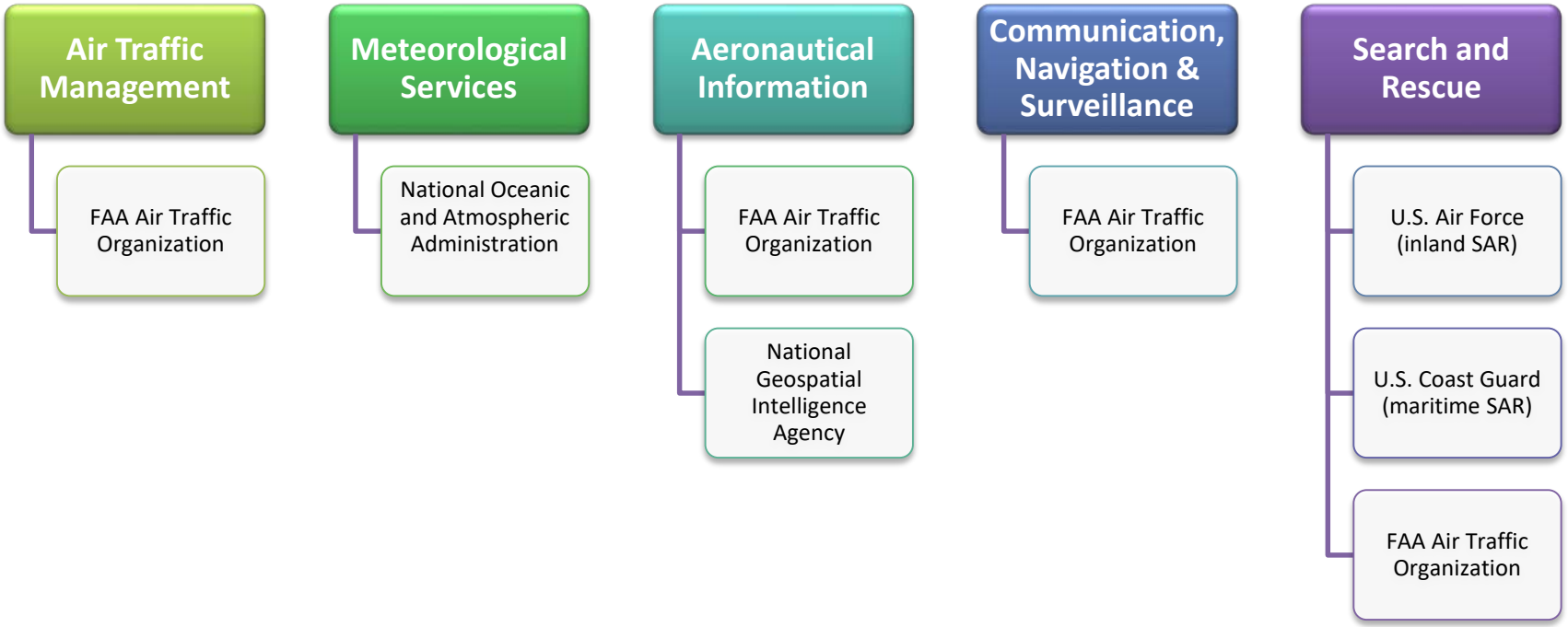
- Promote a safe and orderly flow of air traffic
  - Prevent collisions between aircraft operating within the system
  - Conduct and maintain an orderly flow of traffic
  - Notify concerned organizations of and assist in search and rescue operations
- Provide Air Traffic Services
  - Air Traffic Control
  - Air Traffic Advisory
  - Flight Information
  - Alerting

ANSP Responsibilities

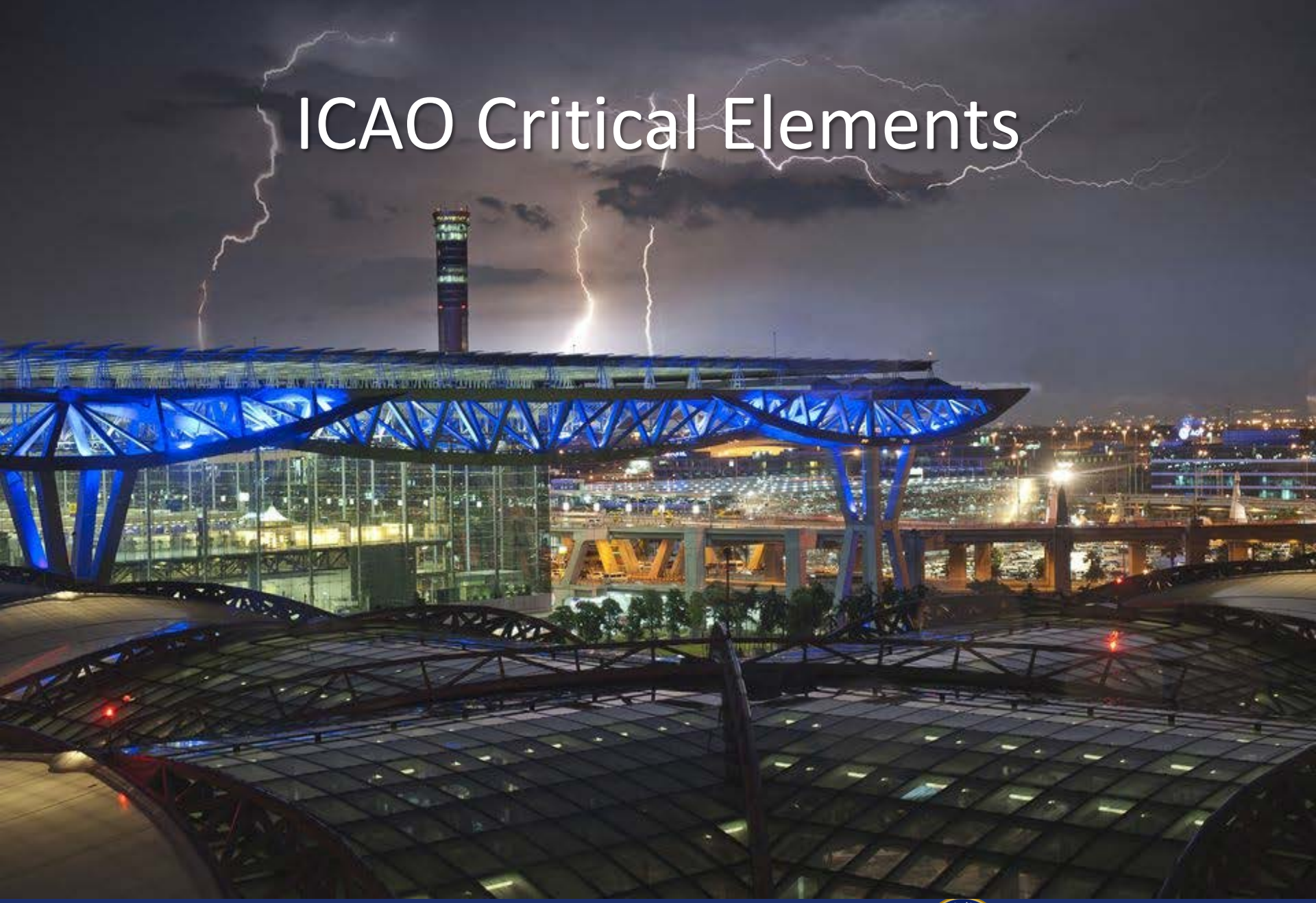
- Acquire and maintain communications, navigation, and surveillance equipment and infrastructure
- **Provide Aeronautical Information Services/Aeronautical Information Management**
- **Provide meteorological services**
- **Design routes and procedures**
- Plan and manage airspace
  - Cooperate with military aviation authorities (ICAO Circular 330)

Example: ANS Responsibilities

The following U.S. entities have ANS responsibilities:



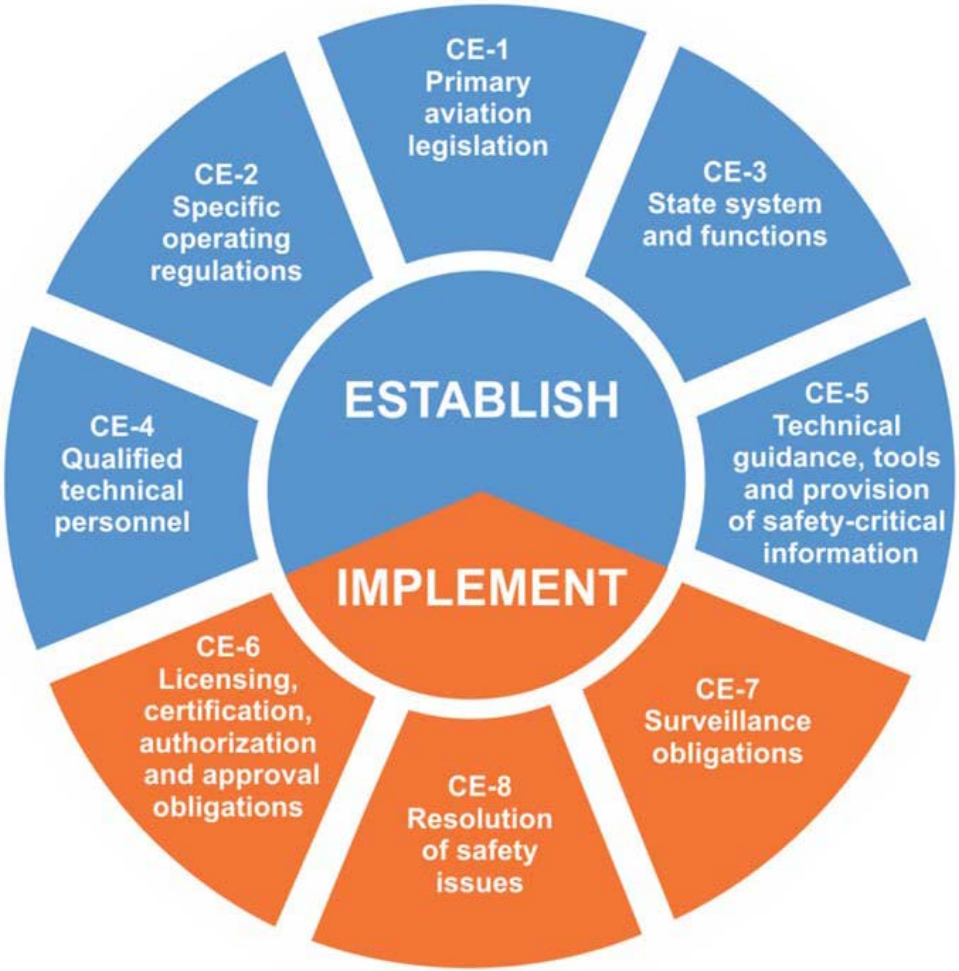
ICAO Critical Elements



ICAO Critical Elements

- ICAO's CEs of a safety oversight system encompass the whole spectrum of civil aviation activities
- They are the building blocks upon which an effective safety oversight system is based
- The level of effective implementation of the CEs is an indication of a State's capability for safety oversight

Critical Elements of a Safety Oversight System

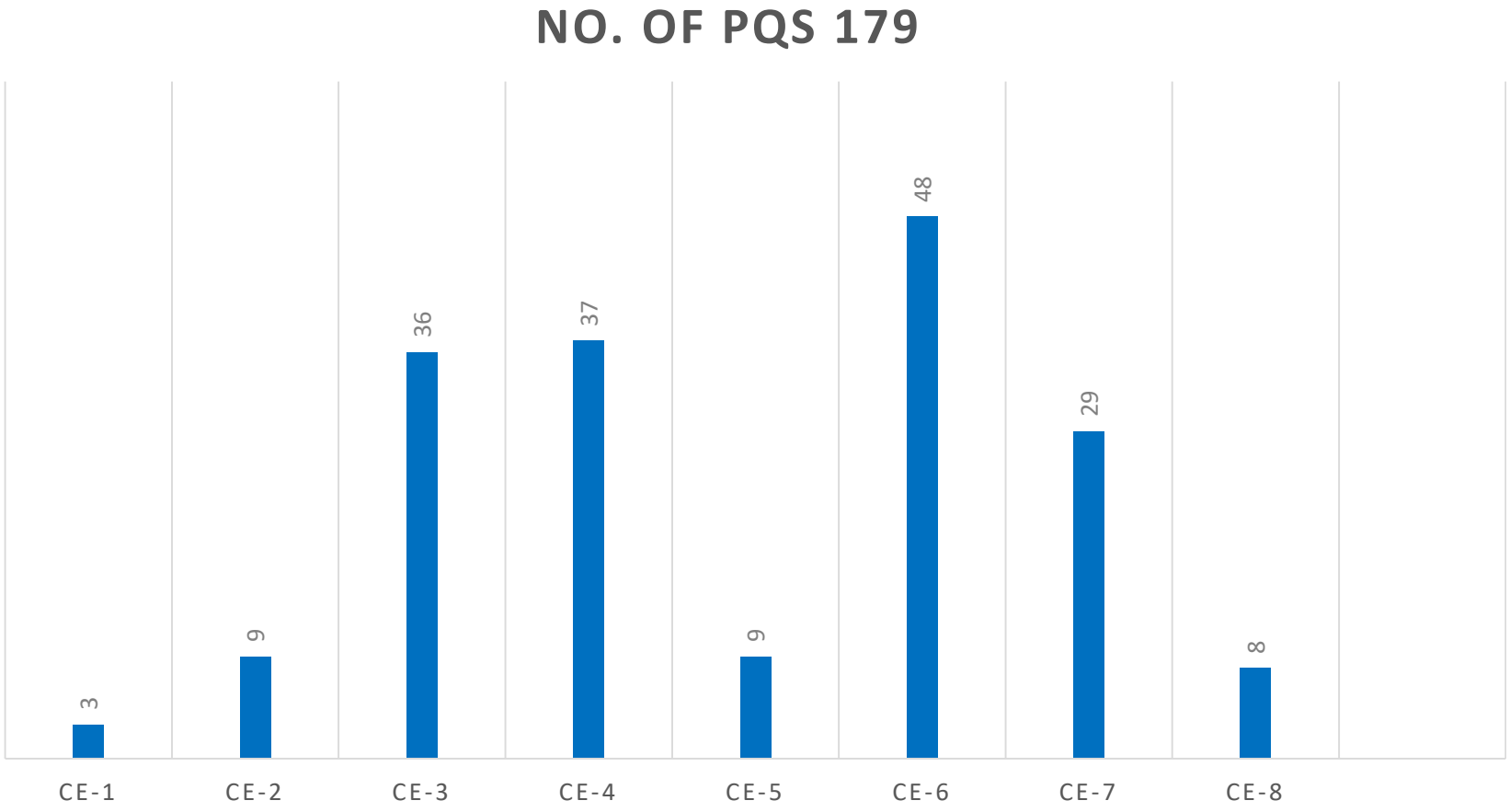


USOAP Protocol Questions (PQs)

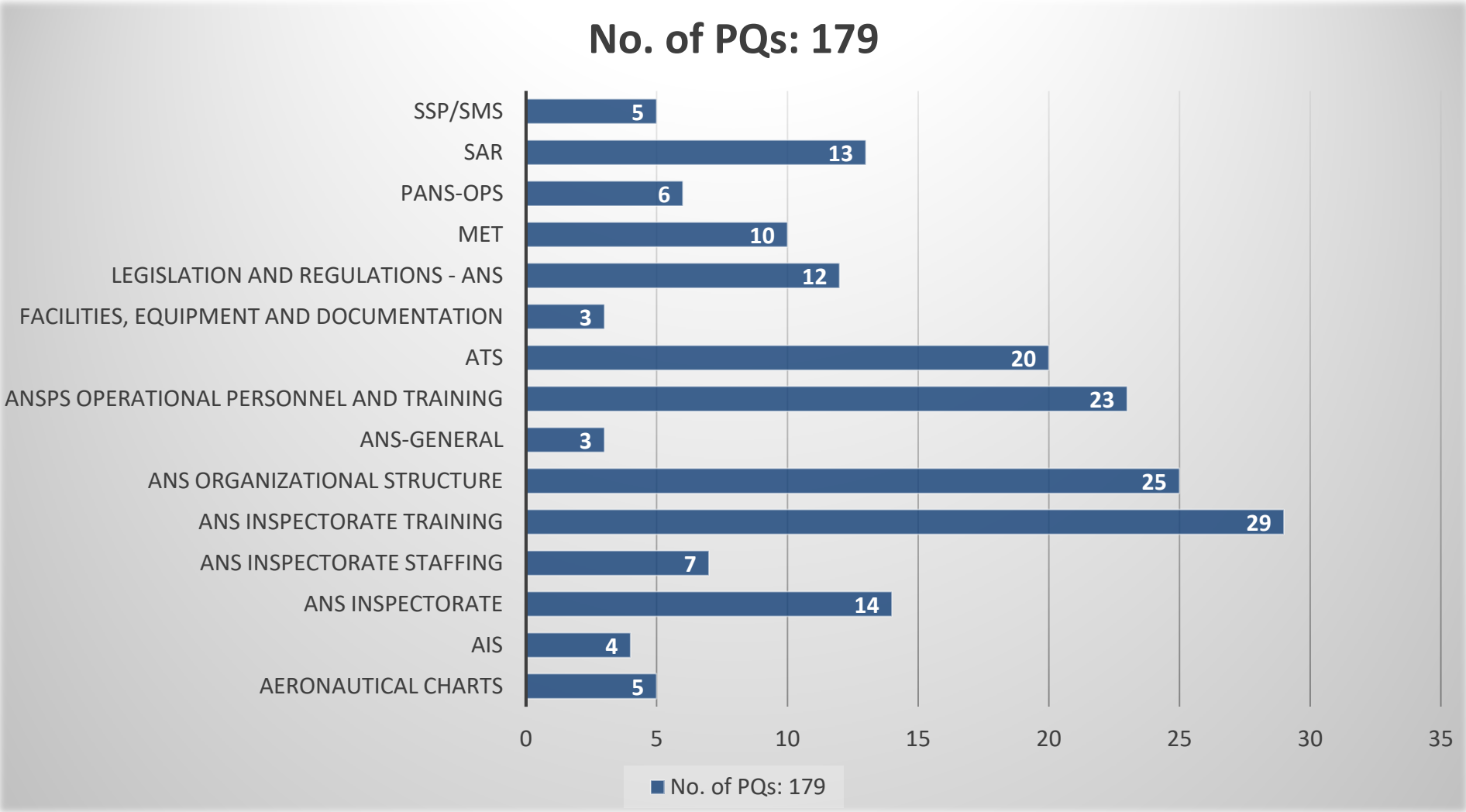
- PQs are the main tool used during ICAO USOAP audits and continuous monitoring to assess a State's safety oversight capability

- Each PQ is linked to one of the CEs

USOAP ANS PQs by CEs



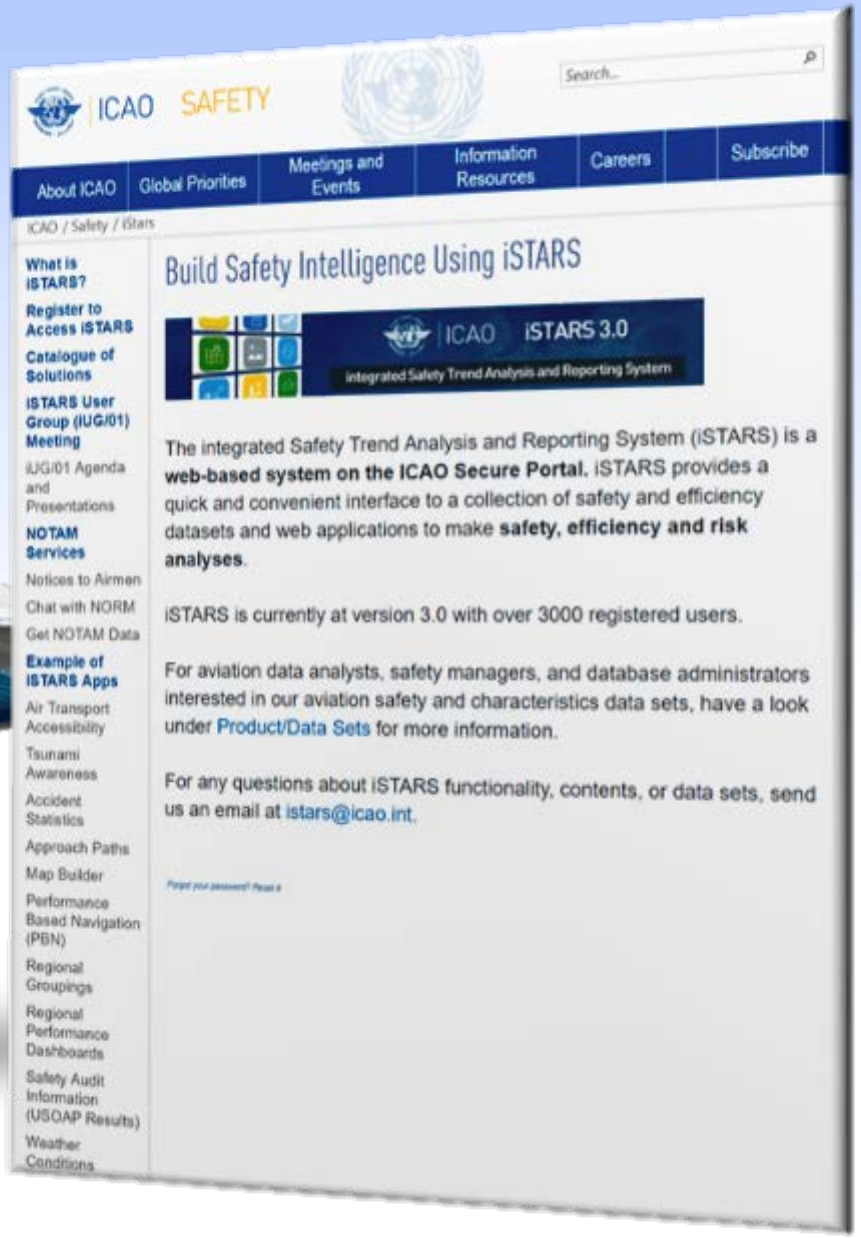
ANS Functional Areas by PQs



ICAO Reference Material related to ANS PQs

- Convention on International Civil Aviation (Doc 7300)
- Annexes 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 15, 19
- Regional Supplementary Procedures (Doc 7030)
- PANS-ATM (Doc 4444)
- Air Traffic Services Planning Manual (Doc 9426)
- RVSM Manual (Doc 9574)
- Performance-Based Navigation (PBN) Manual (Doc 9613)
- PANS-OPS (Doc 8168)
- PANS-AIM (Doc 10066)
- AIS Manual (Doc 8126)

ICAO iSTARS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Catalogue of Solutions
iSTARS User Group (iUG/01) Meeting
iUG/01 Agenda and Presentations
NOTAM Services
Notices to Airmen
Chat with NORM
Get NOTAM Data
Example of iSTARS Apps
Air Transport Accessibility
Tsunami Awareness
Accident Statistics
Approach Paths
Map Builder
Performance Based Navigation (PBN)
Regional Groupings
Regional Performance Dashboards
Safety Audit Information (USOAP Results)
Weather Conditions
Build Safety Intelligence Using iSTARS
ICAO iSTARS 3.0
Integrated Safety Trend Analysis and Reporting System
The integrated Safety Trend Analysis and Reporting System (iSTARS) is a web-based system on the ICAO Secure Portal. iSTARS provides a quick and convenient interface to a collection of safety and efficiency datasets and web applications to make safety, efficiency and risk analyses.
iSTARS is currently at version 3.0 with over 3000 registered users.
For aviation data analysts, safety managers, and database administrators interested in our aviation safety and characteristics data sets, have a look under Product/Data Sets for more information.
For any questions about iSTARS functionality, contents, or data sets, send us an email at istars@icao.int.

ICAO iSTARS

- Web-based system on the ICAO Secure Portal
  - Access must be requested through the ICAO Portal, which requires an ICAO Portal user account
- iSTARS contains safety information and statistics, available through a catalogue of individual applications
  - View the list of USOAP PQs
  - Check EI of the CEs and functional areas (e.g., ANS) for a single State or group of States
  - View Significant Safety Concerns
  - New Safety Oversight Index application

Applying the USOAP CEs to the Safety Oversight of AIS/AIM

Federal Aviation Administration

Module Objectives

Understand each of USOAP CEs and the alignment to the safety oversight of AIS/AIM

Information Challenge

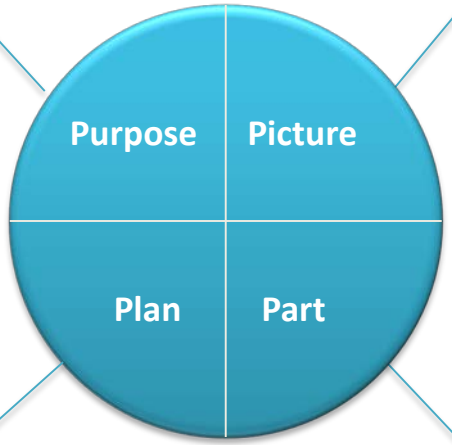
How could we ensure the global airspace system performs as a seamless operation?

Strategic View

Seamless user experience with respect to information

Global ATM Support
Situational awareness and global harmonization of information

Global Information Space
High Quality Operational Information Space



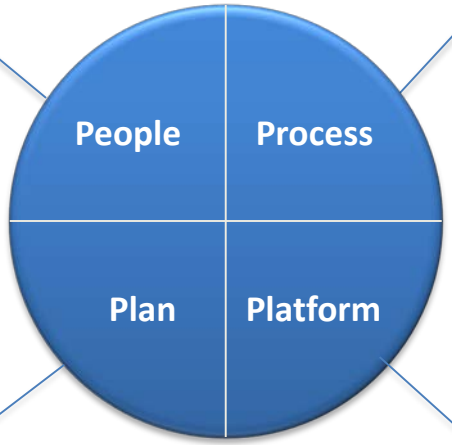
Global IM
Minimize variation of operational data, rules, and implementation of Information Management

Trust Relationships
Support a collaborative approach among global oversight and operational partners

Tactical View

Global Competencies
Raise knowledge, skills and abilities through accreditation

Global Information Standards
Common information management models, business rules, and standards



Global Performance-Based IM
Common principles and practices enable seamless operations developed using collaboration

System-Wide Information Management
Highly Interoperable systems allowing exchange of information and services

Critical Element 1

Primary Aviation Legislation

- The provision of a comprehensive and effective aviation law consistent with the environment and complexity of the State's aviation activity and compliant with the requirements contained in the Convention on International Civil Aviation (Chicago Convention)
- Primary aviation legislation should establish a safety oversight organization independent from air navigation service providers (ANSPs)

- The legislation should include:
  - Authority to set standards and issue licenses, approvals, and waivers
  - Authority to review any differences proposed by the ANSP to be filed to SARPs and ICAO Doc 4444
  - Authorization for inspectors to have free, unimpeded access to facilities and records
  - Qualification and training of safety oversight personnel
  - Ability to issue technical guidance
  - Ability to receive and disseminate safety-critical information
  - Monitoring and surveillance capability
  - Enforcement and resolution authority

Critical Element 2

Specific Operating Regulations

• The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Chicago Convention.

• ICAO has developed Sample Civil Aviation Regulations for Air Navigation Services, which address the following:
  • Air Traffic Services
  • Safety Management Systems
  • **Instrument Flight Procedure Design Service**
  • **Aeronautical Information Services**
  • Aeronautical Telecommunication
  • Aeronautical Meteorology Services

• The Sample Regulations are based on ICAO Standards
  • Aeronautical data and AIS requirements in Parts 11.3 and 11.4

Critical Element 3

State Aviation System and Safety Oversight Functions

- The establishment of a Civil Aviation Authority (CAA) and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources
- The State authority must have stated safety regulatory functions, objectives, and safety policies

- AIS is one domain within the safety oversight organization that provides oversight of the 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

Critical Element 4

Qualified Technical Personnel and Training

- The establishment of minimum knowledge and experience requirements for the technical personnel performing safety oversight functions and the provision of appropriate training to maintain and enhance their competence at the desired level.
- The training should include initial and recurrent (periodic) training

- The AIS safety oversight organization and the ANSP/AIS organization both maintain qualified, experienced, and competent technical personnel

Critical Element 5

Technical Guidance, Tools and Provision of Safety Critical Information

- Technical guidance, tools and the provision of safety-critical information
  - enables technical personnel to perform their safety oversight functions in accordance with established requirements
  - allows for standardized application of requirements
  - includes provisions from the oversight authority to the aviation industry on the implementation of applicable regulations and instructions

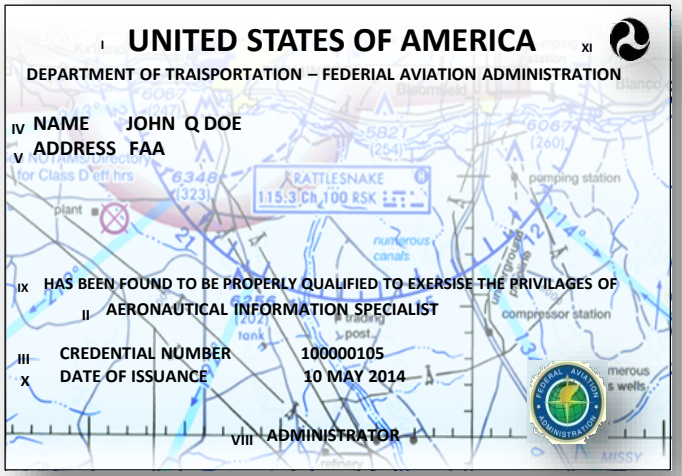
- The regulatory authority must ensure that AIS/AIM safety oversight personnel understand their duties as well as the responsibilities associated with specific roles within the organization

Critical Element 6

Licensing, Certification, Authorization and Approval Obligations

- The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a license, certificate, authorization, and/or approval to conduct the relevant aviation activity

- Credentialing of AIS personnel
  - Credential ensures AIS practitioners demonstrate proficiency in a common set of competencies



Critical Element 7

Surveillance Obligations

- The establishment of processes, such as inspections and audits, to proactively ensure that aviation license, certificate, authorization, and/or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State to undertake an aviation-related activity for which they have been licensed, certified, authorized and/or approved to perform
- This includes the surveillance of designated personnel who perform safety oversight functions on behalf of the CAA

- Surveillance
  - Collect data about ANSP/AIS operation
- Analysis
  - Review data to measure the degree of compliance with requirements and processes

Critical Element 8

Resolution of Safety Concerns

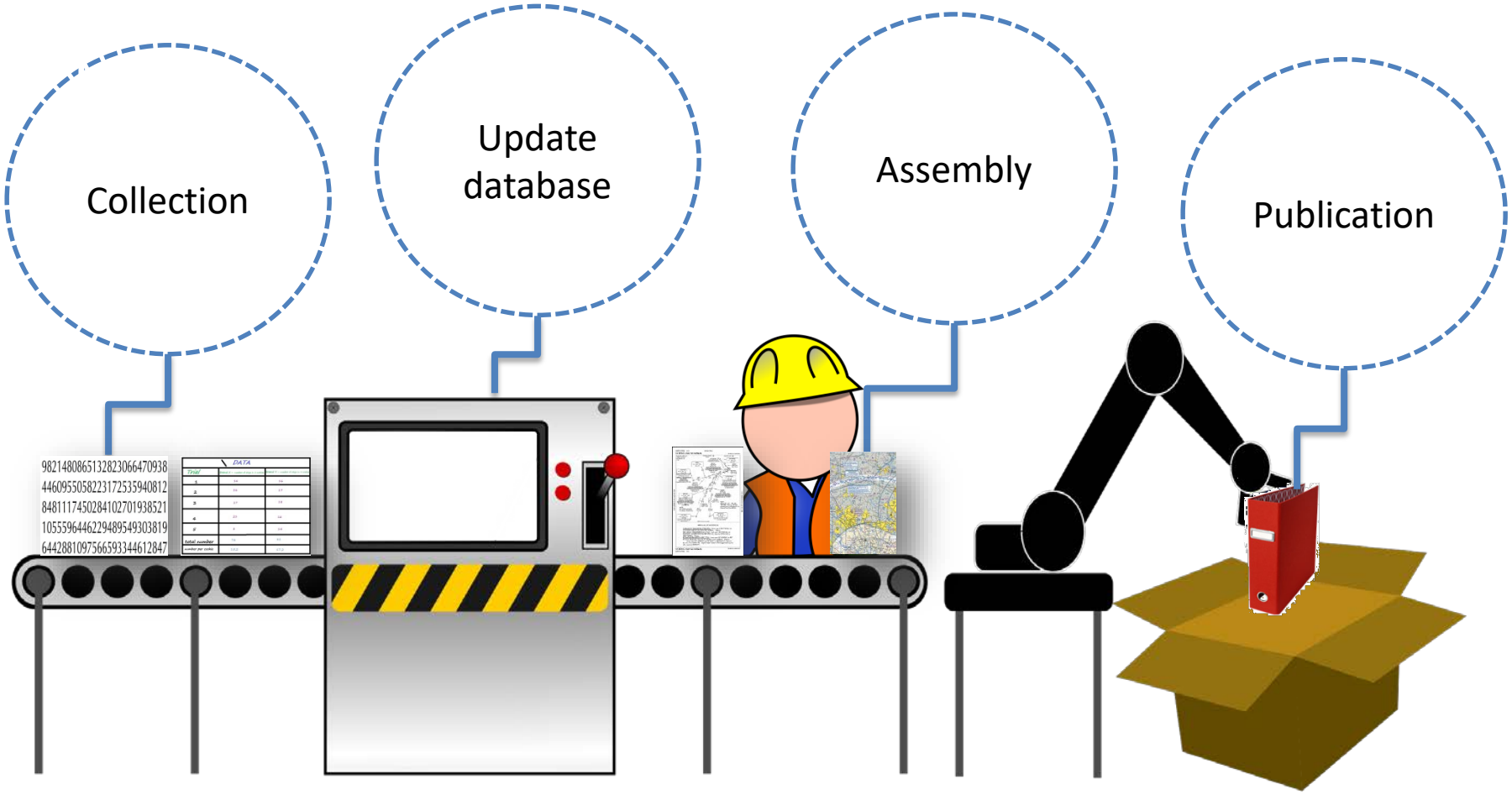
•The implementation of processes and procedures to resolve identified deficiencies impacting aviation safety, which may have been residing in the aviation system and have been detected by the regulatory authority or other appropriate bodies

•This includes the ability to analyze safety deficiencies, forward recommendations, support the resolution of identified deficiencies, as well as take enforcement action when appropriate

- Corrective Action
  - ANSP/AIS develops, implements, and monitors corrective actions to identified deficiencies as a result of surveillance and analysis
- Follow-Up
  - The regulatory authority must ensure that service providers resolve compliance and safety issues in a thorough and timely manner

Aeronautical Information Services

The Information Factory



References

- ICAO Annex 19
- ICAO Safety Oversight Manual, Doc 9734-A
- ICAO Sample Civil Aviation Regulations for Air Navigation Services (ANS), 11.3 and 11.4
- FAA Order 1100.161, Air Traffic Safety Oversight

Questions and Discussion