International Civil Aviation Organization

ICAO perspective on State Safety Programme (SSP) and Safety Management Systems (SMS)

3rd RASG-PA Aviation Safety Workshop

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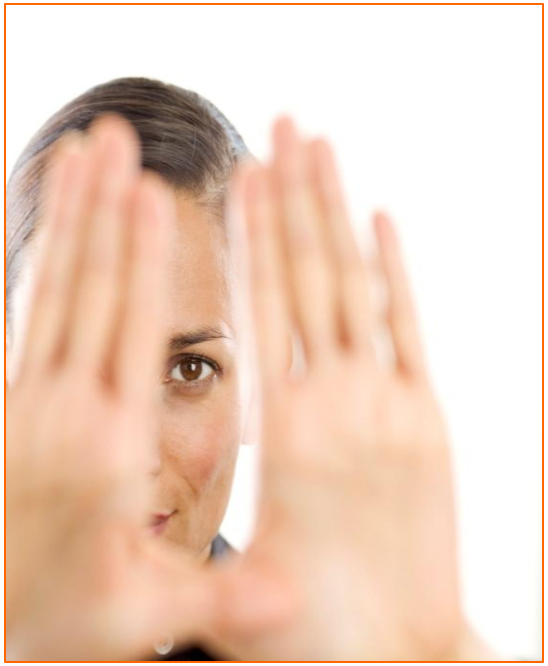
ICAO

Programme

1. Objective
2. Background
3. Introduction
4. Definitions and concepts
5. SSP and ICAO SARPs
6. The ICAO SSP framework
7. SSP implementation
8. The role of SSP in supporting SMS implementation
9. Summary
10. Conclusion of SSP/SMS Implementation Workshop

1. Objective

Objective



- Introduce the framework for development and implementation of a State Safety Programme (SSP) and Safety Management Systems (SMS)
- Introduce the combination of both elements: prescriptive and performance-based approaches to the management of safety

2. Background

ICAO Role

ICAO role in promoting a safety and efficient industry

- To meet the needs of the peoples of the world for a safe, regular, efficient and economical air transport (Chicago Convention, Article 44)

ICAO Strategic Objectives

2011 – 2013:

- Safety
- Security
- Sustainability

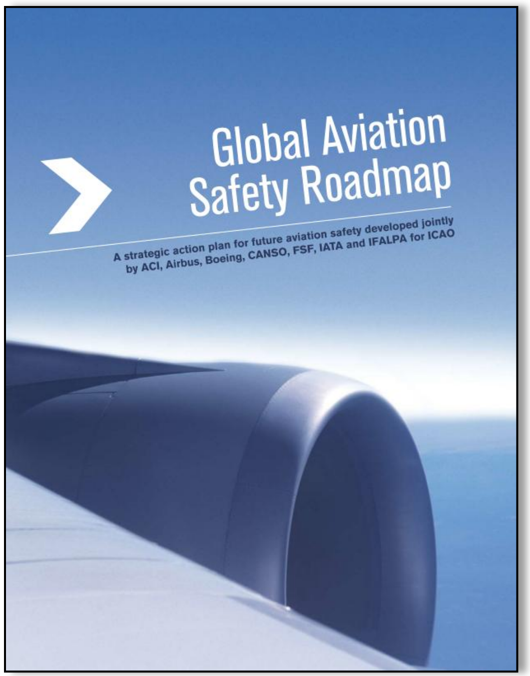
Strategic Approach

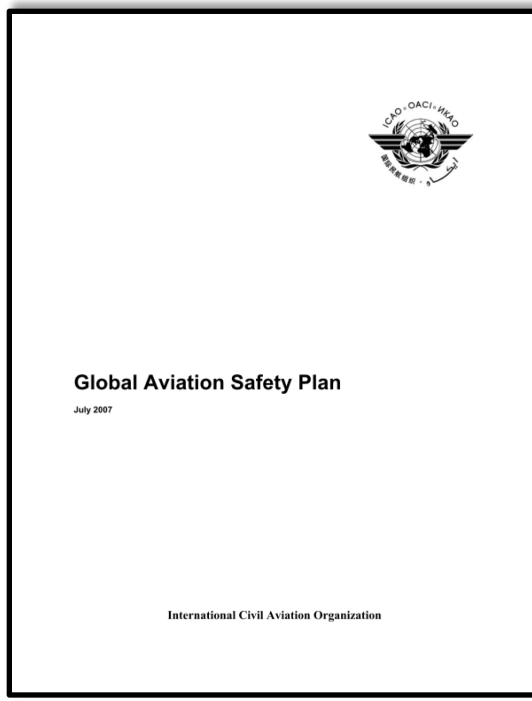
- Goal
  - Reduce the risk of loss of human life through continuously enhancing aviation safety
- Safety Targets
  - Safety targets will be defined according to risk criteria
  - Continually measured for significant change
- Global Safety Initiatives
  - Linked to global safety targets
  - Specific metrics will monitor GSI effectiveness

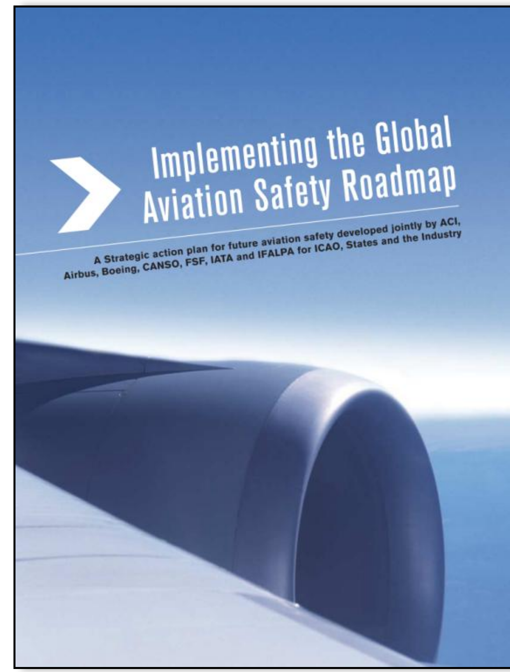
ICAO Safety Framework

- Safety Data
- Policy & Standardization
  - GASP Update
  - Safety Annex
- Safety Analysis
  - Evolving to a risk-based process
- Safety Monitoring
  - Continuous Monitoring Approach
- Implementation
  - Runway Safety
- Collaboration
  - States, Regional and International Organizations, Learning Institutions, etc.

ICAO GASP & ISSG GASR







GASP: Global Aviation Safety Plan
ISSG: Industry Safety Strategy Group
GASR: Global Aviation Safety Roadmap

Visit: www.icao.int/fsix/

Global Aviation Safety Plan - GASP

- High-level policy document
  - Guiding efforts of the States, industry and international organizations
- Update scheduled for 2011
  - Introduce safety management principles to create a strategic approach to implementation of Global Safety Initiatives (GSIs)
  - In parallel and harmony with the update of the Global Aviation Safety Roadmap (GASR)

Current Global Safety Initiatives (GSIs)

- (GSI-1) CONSISTENT IMPLEMENTATION OF INTERNATIONAL STANDARDS AND INDUSTRY BEST PRACTICES
- (GSI-2) CONSISTENT REGULATORY OVERSIGHT
- (GSI-3) EFFECTIVE ERRORS AND INCIDENTS REPORTING
- (GSI-4) EFFECTIVE INCIDENT AND ACCIDENT INVESTIGATION
- (GSI-5) CONSISTENT COORDINATION OF REGIONAL PROGRAMMES
- (GSI-6) EFFECTIVE ERRORS AND INCIDENTS REPORTING AND ANALYSIS IN THE INDUSTRY
- **(GSI-7) CONSISTENT USE OF SAFETY MANAGEMENT SYSTEMS (SMS)**
- (GSI-8) CONSISTENT COMPLIANCE WITH REGULATORY REQUIREMENTS
- (GSI-9) CONSISTENT ADOPTION OF INDUSTRY BEST PRACTICES
- (GSI-10) ALIGNMENT OF INDUSTRY SAFETY STRATEGIES
- (GSI-11) SUFFICIENT NUMBER OF QUALIFIED PERSONNEL
- (GSI-12) USE OF TECHNOLOGY TO ENHANCE SAFETY

Objective of Updated GASP

- Strategic coordination of global safety activities
- Guide the prioritization and allocation of aviation safety resources
- Measureable achievement of global safety targets

Proposed Global Safety Initiatives (GSIs)

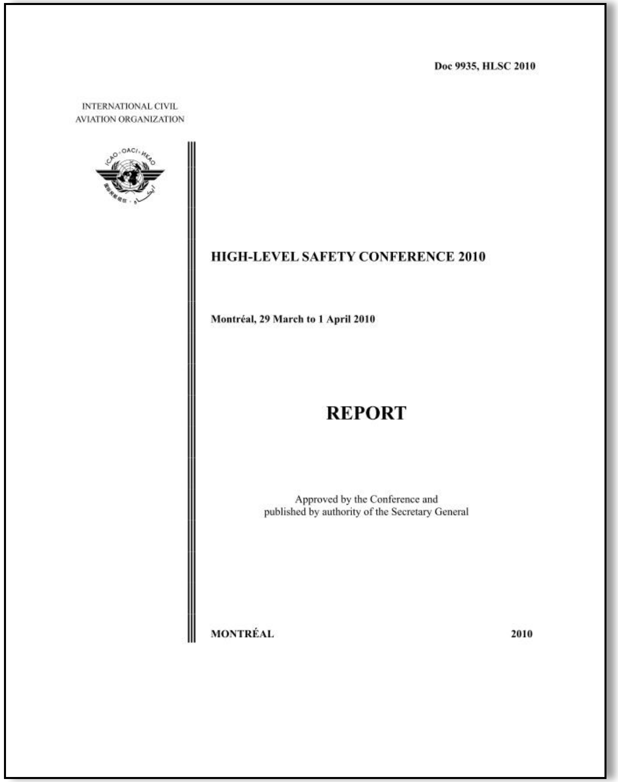
- GSI 1: Implementation of International Standards and Recommended Practices
- GSI 2 - Establishment and Management of a Regulatory Oversight System
- GSI 3 - Maintaining Sufficient Number of Qualified Personnel
- GSI 4 - Establishment and Management of Accident and Incident Investigation Capabilities
- GSI 5 - Establishment and Management of a Safety Reporting System
- GSI 6 - Alignment and Coordination of Regional Programmes
- **GSI 7 - Implementation of State Safety Programme (SSP)**
- GSI 8 - Use of Technology to Enhance Safety
- GSI 9 - Continuous Monitoring and Improvement of State's Aviation Safety System

ICAO High-level Safety Conference 2010

Recommendation 2/5

- ICAO should develop, in close collaboration with States, international and national organizations, a new Annex dedicated to safety management responsibilities and processes which would address the safety management responsibilities of States framed under the State Safety Programme (SSP)

- The new Safety Management Annex should facilitate the provision of State and air carrier safety information to the travelling public, in addition to specifying the high level safety responsibilities of States


Doc 9935, HLSC 2010

INTERNATIONAL CIVIL AVIATION ORGANIZATION

HIGH-LEVEL SAFETY CONFERENCE 2010

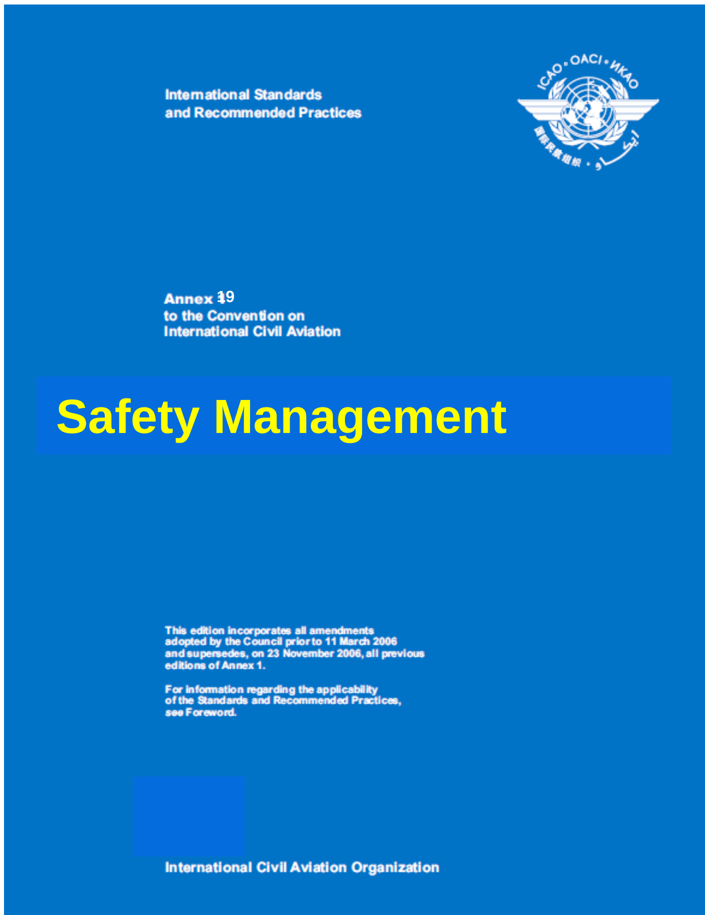
Montréal, 29 March to 1 April 2010

REPORT

Approved by the Conference and published by authority of the Secretary General

MONTRÉAL 2010

New Safety Annex


International Standards
and Recommended Practices

Annex 19
to the Convention on
International Civil Aviation

Safety Management

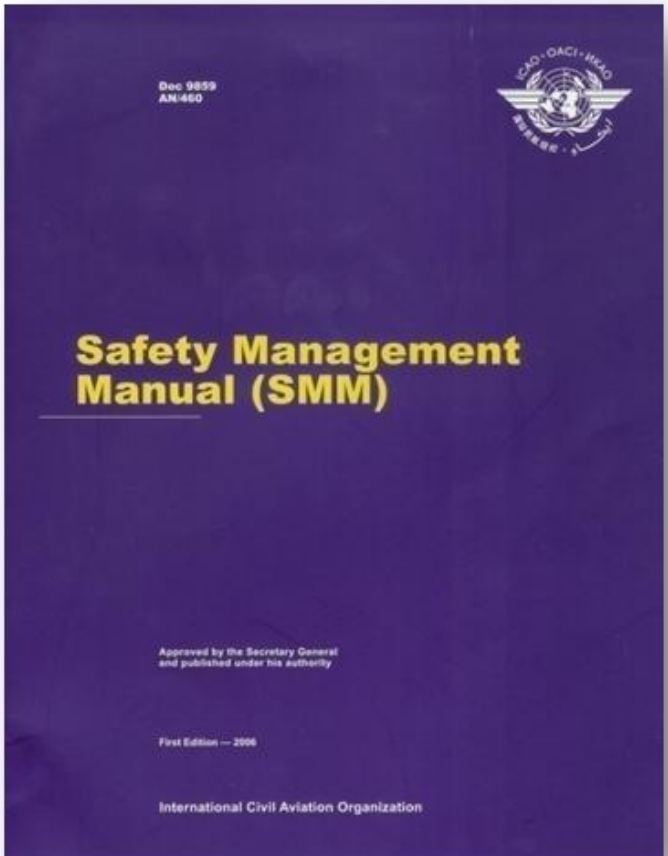
This edition incorporates all amendments adopted by the Council prior to 11 March 2006 and supersedes, on 23 November 2006, all previous editions of Annex 1.

For information regarding the applicability of the Standards and Recommended Practices, see Foreword.

International Civil Aviation Organization

- Two phased development process:
  - Initial phase focused on the reorganization of existing SARPs and supporting guidance material
  - Concurrently, an in-depth review of SARPs will be initiated to assess whether they need to be amended or expanded

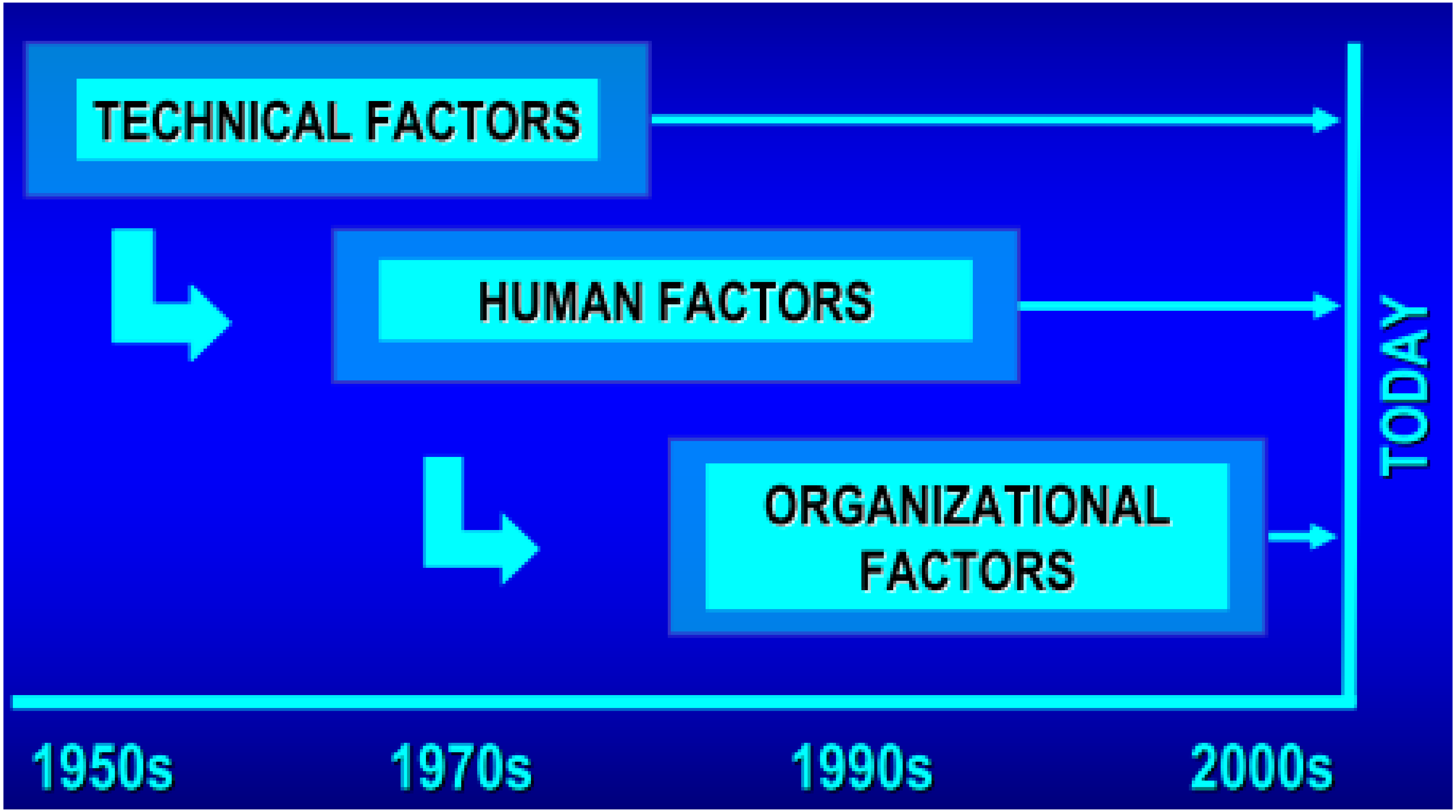
Safety Management Guidance Material



- Safety Management Manual
  - Update planned for 2011
- Detailed guidance to be developed for SMS / SSP implementation
- ICAO Safety Management website:
  - www.icao.int/anb/safetymanagement
  - www.icao.int/fsix
    - ICAO *Safety Management Manual* (Doc 9859 – AN/460 – Second Edition)

3. Introduction

Evolution of Safety Thinking



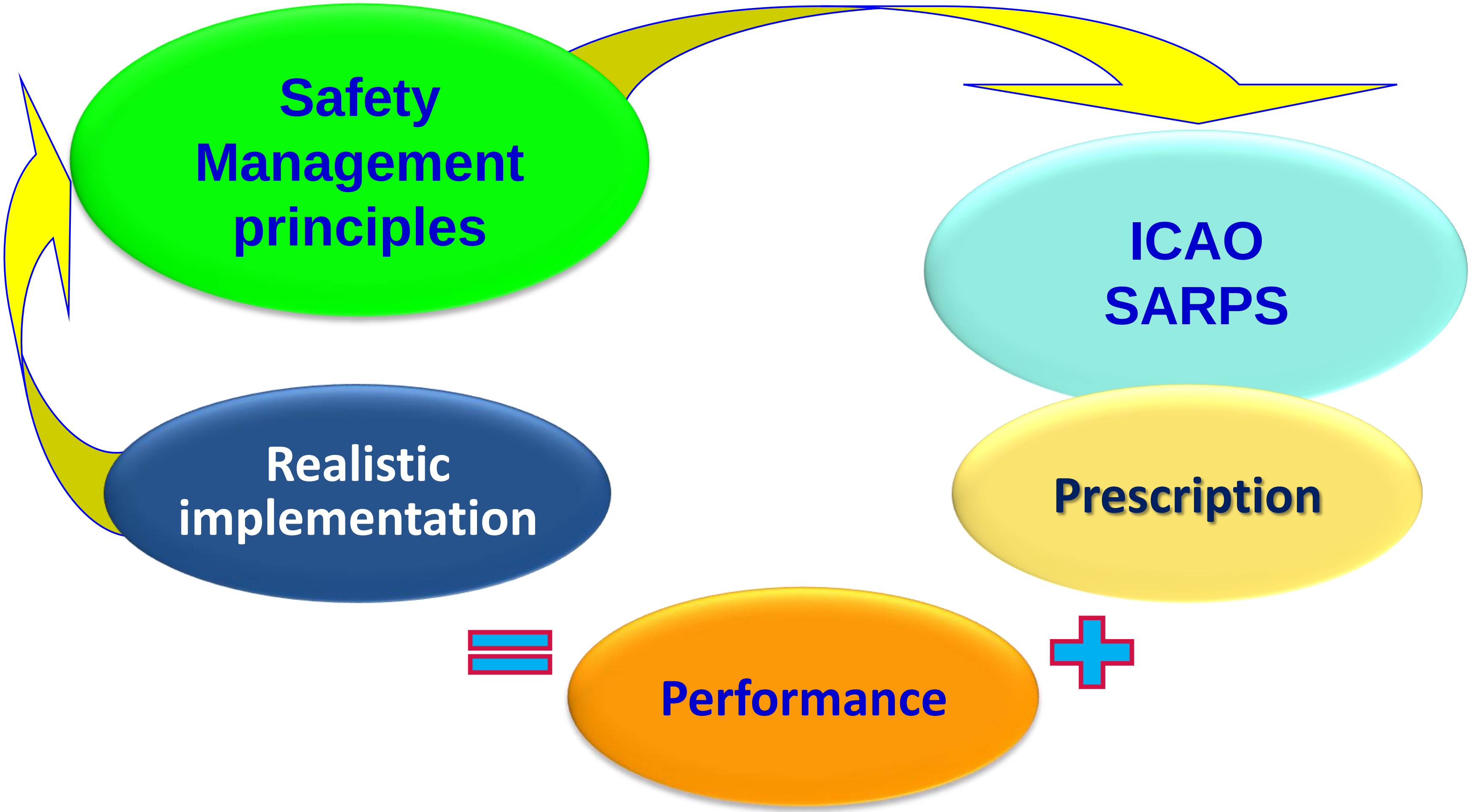
Workplace interactions/human evolution in understanding safety

- Aviation workplaces involve complex interrelationships among its many components
- To understand operational performance, we must understand how it may be affected by the interrelationships among the various components of the aviation work places

SHEL MODEL

Software (S) (procedures, training, support, etc.); Hardware (H) (machines and equipment); Environment (E) (the operating circumstances in which the rest of the L-H-S system must function); and Liveware (L) (humans in the workplace)

Prescription & Performance



Prescription & Performance cont.

- Prescriptive regulations
  - Prescribe what the safety requirements are and how they are to be met
- Performance based regulations
  - Specify the safety requirements to be met, but provide flexibility in terms of how safety requirements are met

Prescriptive & Performance based environment

Prescriptive based environment

Regulations as <u>administrative</u> controls

❖Rigid regulatory framework

- ➢Inspections
- ➢Audits
  - ✓***Regulatory compliance***

Performance based environment

Regulations as <u>safety risk</u> controls

❖Dynamic regulatory framework

- ➢Data based identification
- ➢Prioritization of safety risks
  - ✓***Effective safety performance***

ICAO safety management SARPs
(Standard and Recommended Practices)

- **Two audience groups**
  - States
  - Service providers
- **Three distinct Standards**
  - State safety programme (SSP)
    - Acceptable level of safety (ALoS)
  - Safety management system (SMS)
    - Safety performance of the SMS
  - Management accountability

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AIRWORTHINESS OF AIRCRAFT

ANNEX 8
TO THE CONVENTION ON INTERNATIONAL AVIATION

PART I – DEFINITIONS

. . .

***Safety management system**. A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.*

***State safety programme**. An integrated set of regulations and activities aimed at improving safety.*

. . .

APPENDIX 6. FRAMEWORK FOR
SAFETY MANAGEMENT SYSTEMS (SMS)
(See Chapter 2, 2.27.4)

Introduction

This appendix specifies the framework for the implementation and maintenance of a safety management system (SMS) by an air traffic services provider. An SMS is a management system for the management of safety by an organization. The framework includes four components and twelve elements representing the minimum requirements for SMS implementation. The implementation of the framework shall be commensurate with the size of the organization and the complexity of the services provided. This appendix also includes a brief description of each element of the framework.

1. Safety policy and objectives

   1.1 – Management commitment and responsibility
   1.2 – Safety accountabilities
   1.3 – Appointment of key safety personnel
   1.4 – Coordination of emergency response planning
   1.5 – SMS documentation

2. Safety risk management

   2.1 – Hazard identification
   2.2 – Safety risk assessment and mitigation

3. Safety assurance

   3.1 – Safety performance monitoring and measurement
   3.2 – The management of change
   3.3 – Continuous improvement of the SMS

4. Safety promotion

   4.1 – Training and education
   4.2 – Safety communication

ICAO requirement

- States shall establish a State Safety Programme (SSP), in order to achieve an acceptable level of safety (ALoS) in civil aviation

Current SARPs for SSP / SMS

Safety Management SARPs for States		
Date	Denomination	Annex
Nov 2006	Safety Programme	6, 11,14
Nov 2010	SSP	1, 8,13
Nov 2010	SSP Framework (Attachment)	1, 6, 8,11,13,14

Safety Management SARPs for Service Providers		
Date	Denomination	Annex
Nov 2001	Safety Management Programme	11,14
Jan 2009	SMS	6, 11,14
Nov 2010	SMS	1
Nov 2010	SMS Framework (Appendix)	1, 6, 11,14
Nov 2013	SMS	8

SARPs: Standards and Recommended Practices

ICAO State Safety Programme - SSP

- An SSP provides the means to combine prescriptive and performance-based approaches to:

1. Safety rulemaking
2. Safety policy developmen
3. Safety oversight

SSP

- SSP is a consequence of the growing awareness that safety management principles affect most activities of a civil aviation authority (CAA):
  1. Safety rulemaking
  2. Safety policy development
  3. Safety oversight

Civil Aviation Authority activities

1. **Safety rulemaking**: is based on comprehensive analyses of the State's aviation system
2. **Safety policies:** are developed based on hazard identification and safety risk management
3. **Safety oversight:** is focused towards the areas of significant safety concerns or higher safety risks

SRM & SA

- SSP development is based upon two basic safety management principles:
  - Safety Risk Management (SRM)
  - Safety Assurance (SA)

- SSP is the bridge that closes the gap that could potentially develop between:
  - Internal and external safety processes of a State
  - Internal safety processes of service providers

4. Definitions and concepts

What is the fundamental objective of a business organization?

To achieve its production objectives

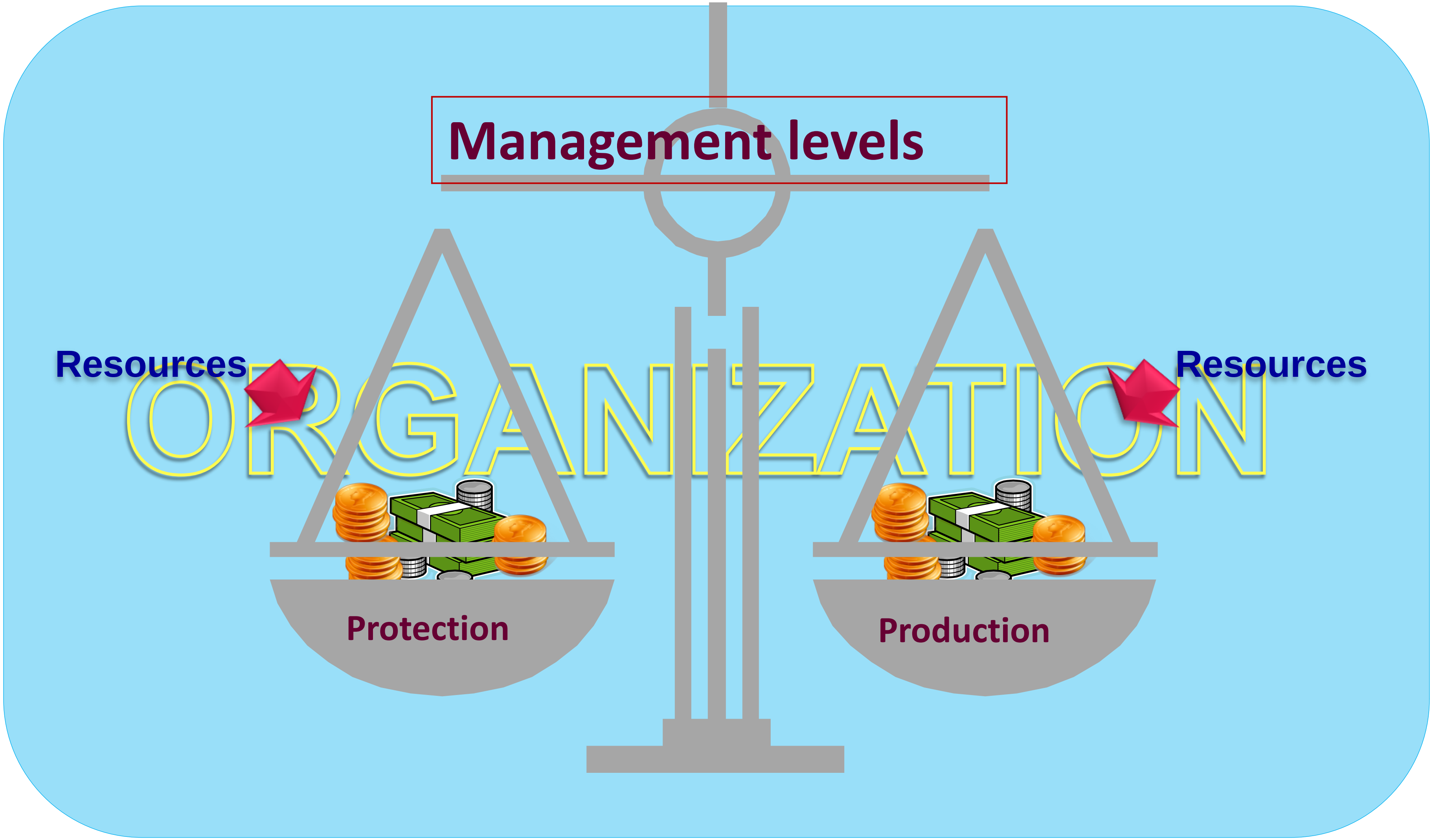
Safety management – Rationale

- In order to achieve its production objectives, the management of any aviation organization requires the management of many business processes
- Managing safety is one such business processes

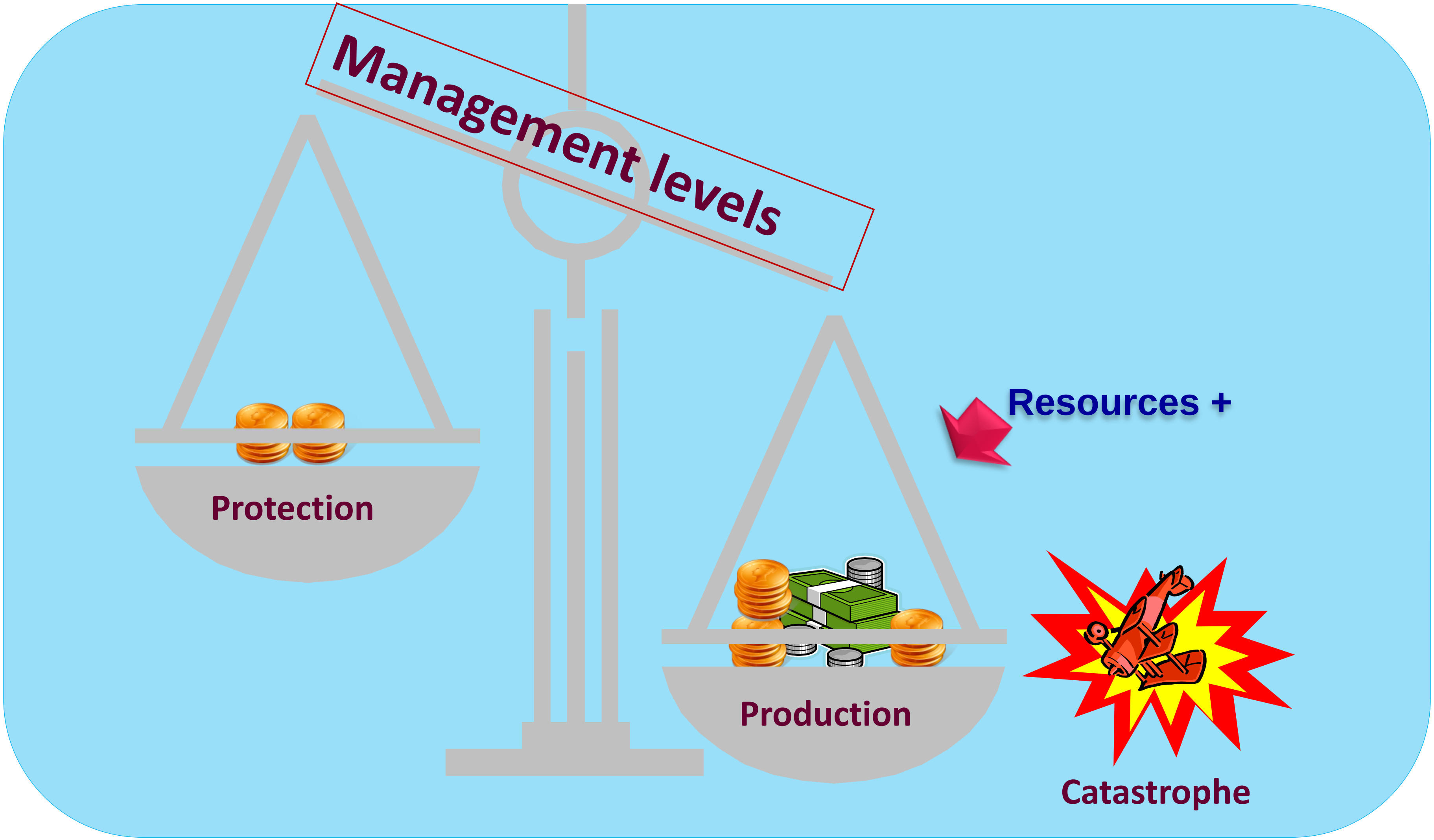
Safety management – Rationale cont.

- Safety management is a core business function just as financial management, HR management, etc.
- There is no aviation organization that has been created to deliver only safety
- This brings about a potential dilemma for management

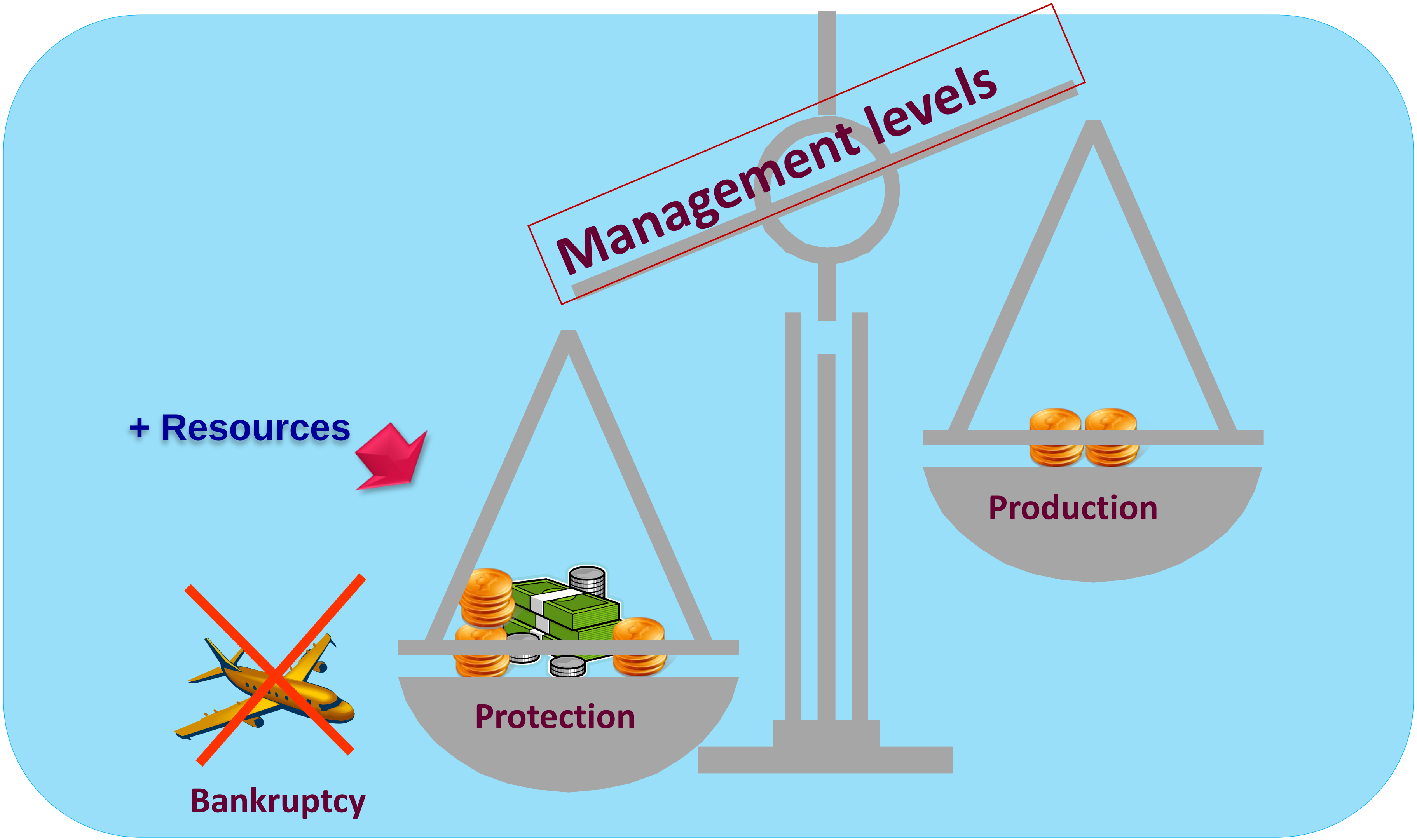
The management dilemma



The management dilemma



The management dilemma



Safety management – The response to the dilemma

- Safety issues are a by-product of activities related to production/services delivery
- An analysis of an organization's resources and goals allows for a balanced and realistic allocation of resources between protection and production goals, which supports the needs of the organization
- The product/service provided by any aviation organization must be delivered safely

Concept of safety

ICAO Doc 9859:

- Safety is the state in which the possibility of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management

Safety facts

- The elimination of accidents (and serious incidents) is unachievable
- Failures will occur, in spite of the most accomplished prevention efforts
- No human activity or human-made system can be guaranteed to be absolutely free from hazard and operational errors
- Controlled safety risk and controlled error are acceptable in an inherently safe system

Safety approach

The traditional approach: preventing accidents

- Focus on outcomes (causes)
- Unsafe acts by operational personnel
- Attach blame/punish for failures to "perform safely"
- Address identified safety concern exclusively
- Regulatory compliance

Safety

The traditional approach:

- Identifies:
  - What
  - Who
  - When
- But not always discloses:
  - Why
  - How

Key definitions

- **Hazard:** condition or object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function
- **Consequence:** potential outcome(s) of the hazard
- **Safety Risk:** the assessment, expressed in terms of predicted probability and severity, of the consequence(s) of a hazard taking as reference the worst foreseeable situation

Other important definitions

- **Probability:** the likelihood that an unsafe event or condition might occur
- **Severity:** the possible effects of an unsafe event or condition, taking as reference the worst foreseeable situation

Hazard analysis

State the generic hazard

(Hazard statement)

- Airport construction

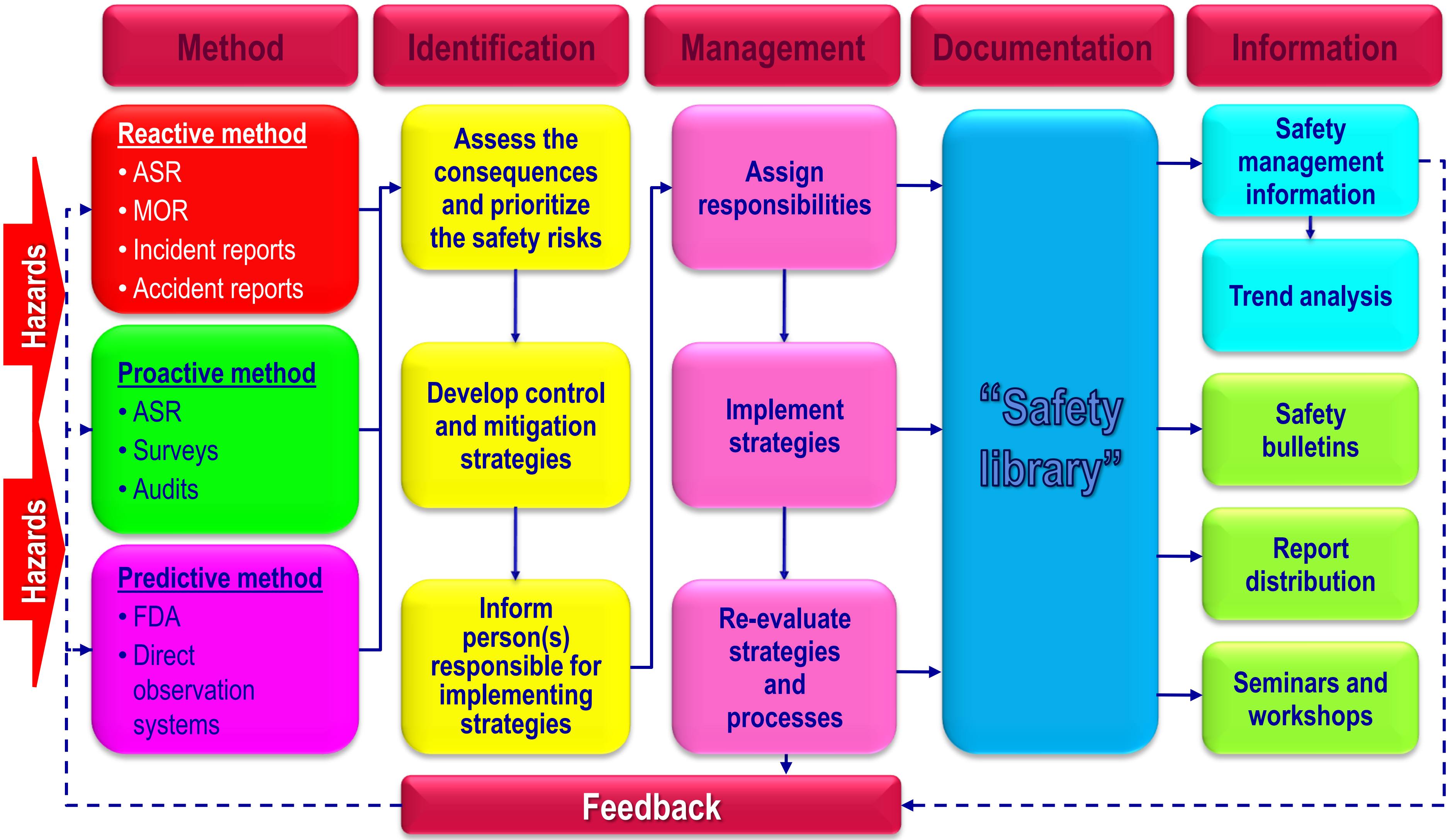
Identify specific components of the hazard

- Construction equipment
- Closed taxiways
- Etc.

Naturally leading to specific consequence(s)

- Aircraft colliding with construction equipment
- Aircraft taking wrong taxiway
- Etc.

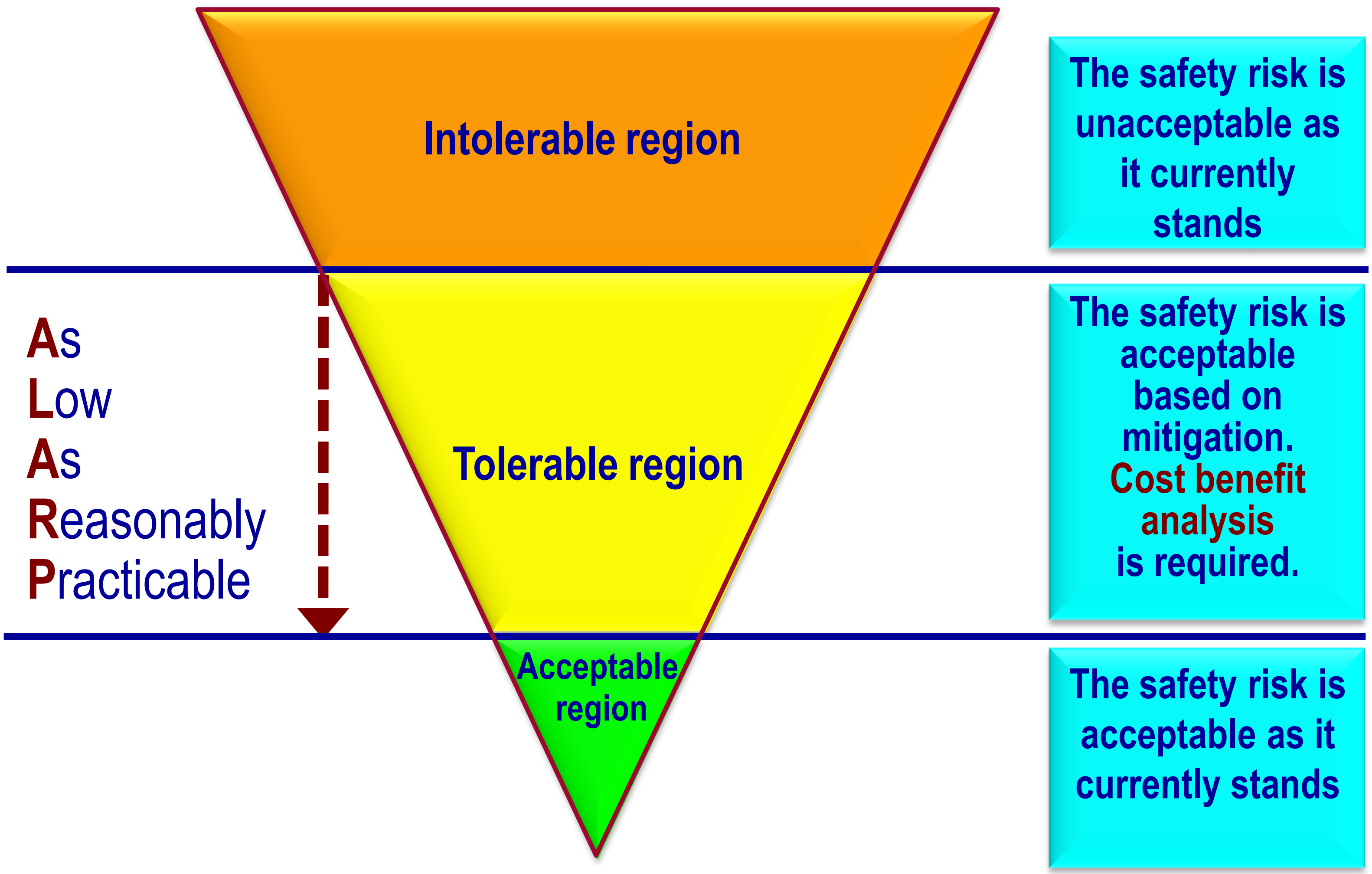
Documentation of hazards



Safety risk management

- Definition:
  - The analysis and elimination, and/or mitigation to an acceptable level of the safety risks of the consequences of identified hazards
- Objective:
  - A balanced allocation of resources to address all safety risks and viable safety risks control and mitigation
- Importance:
  - It is a data-driven approach to safety resources allocation, thus defensible and easier to explain

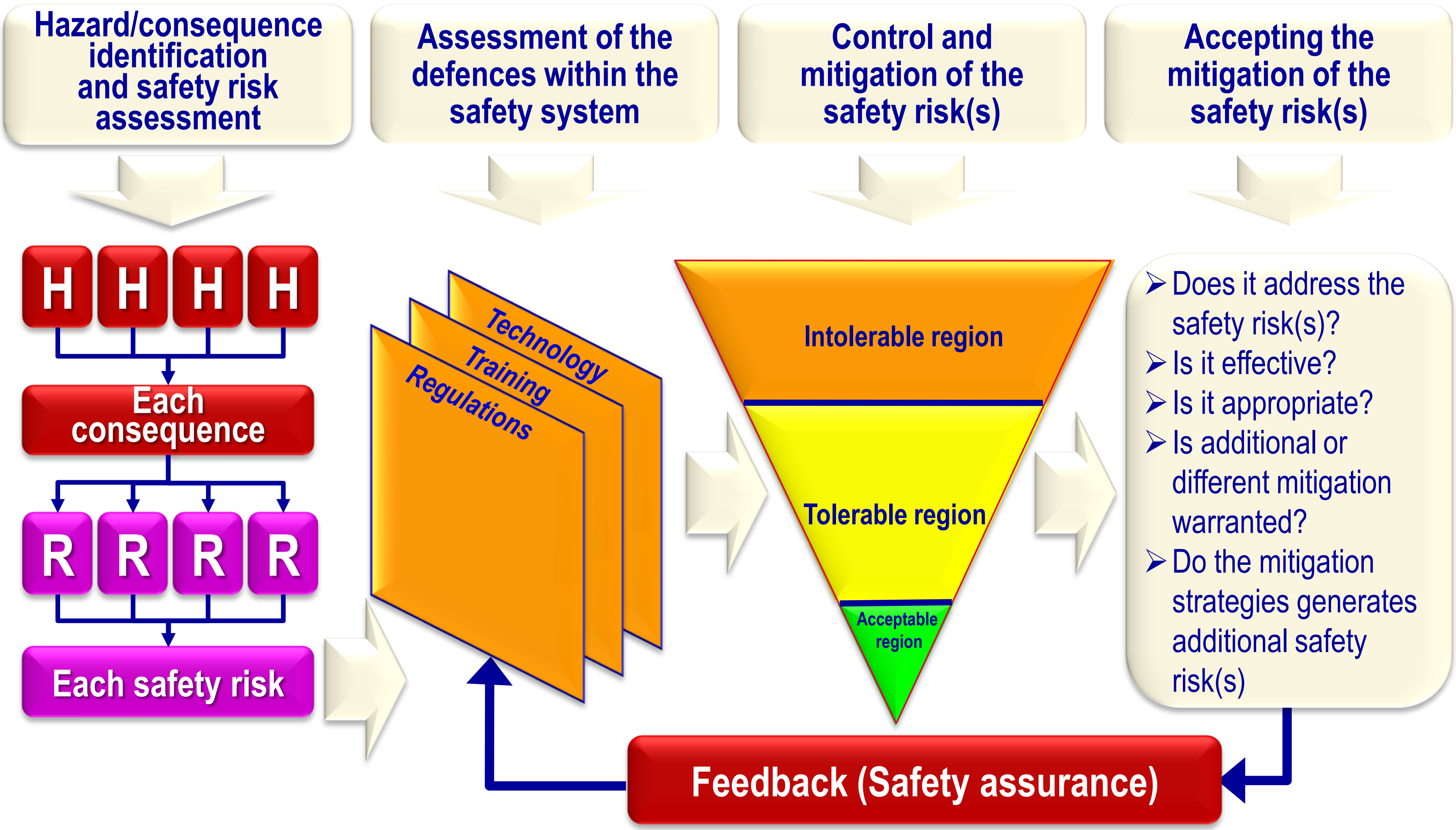
Safety risk management



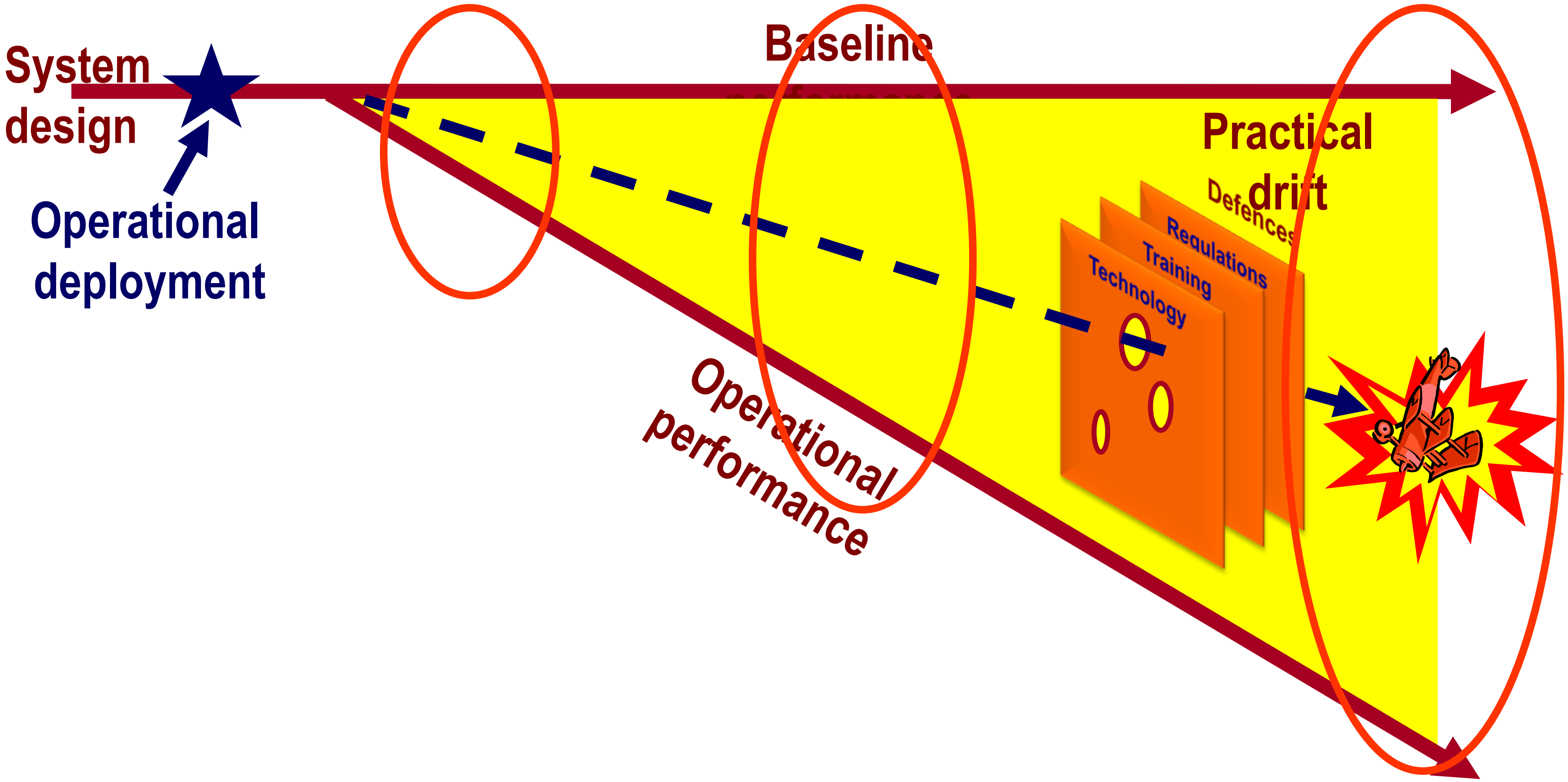
Safety risk index/tolerability

Safety risk probability		Safety risk severity				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible 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

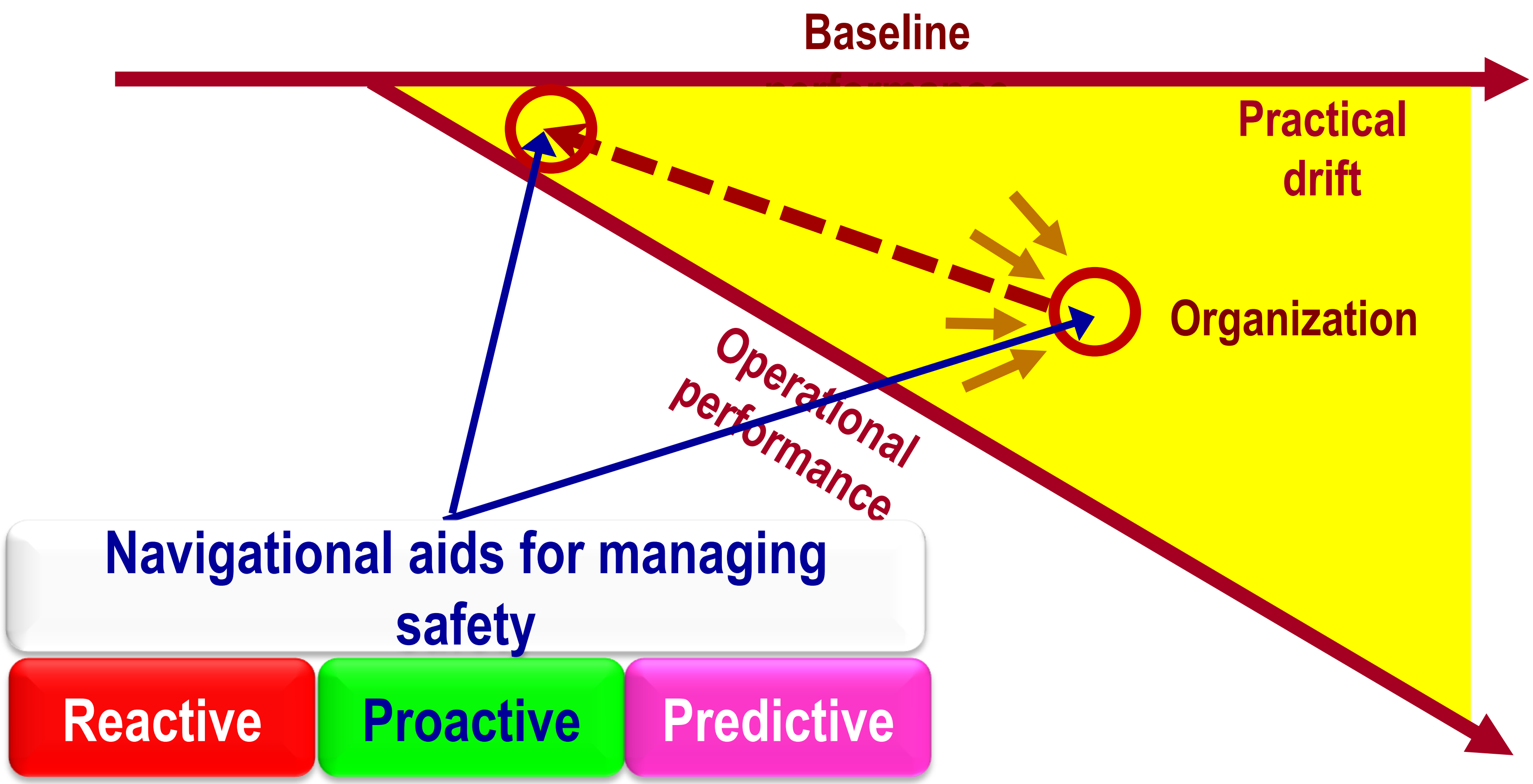
Safety risk mitigation at a glance



System performance in the real world



Managing safety – “Navigating the drift”



Navigational aids

Reactive method

The reactive method responds to the events that already happened, such as incidents and accidents

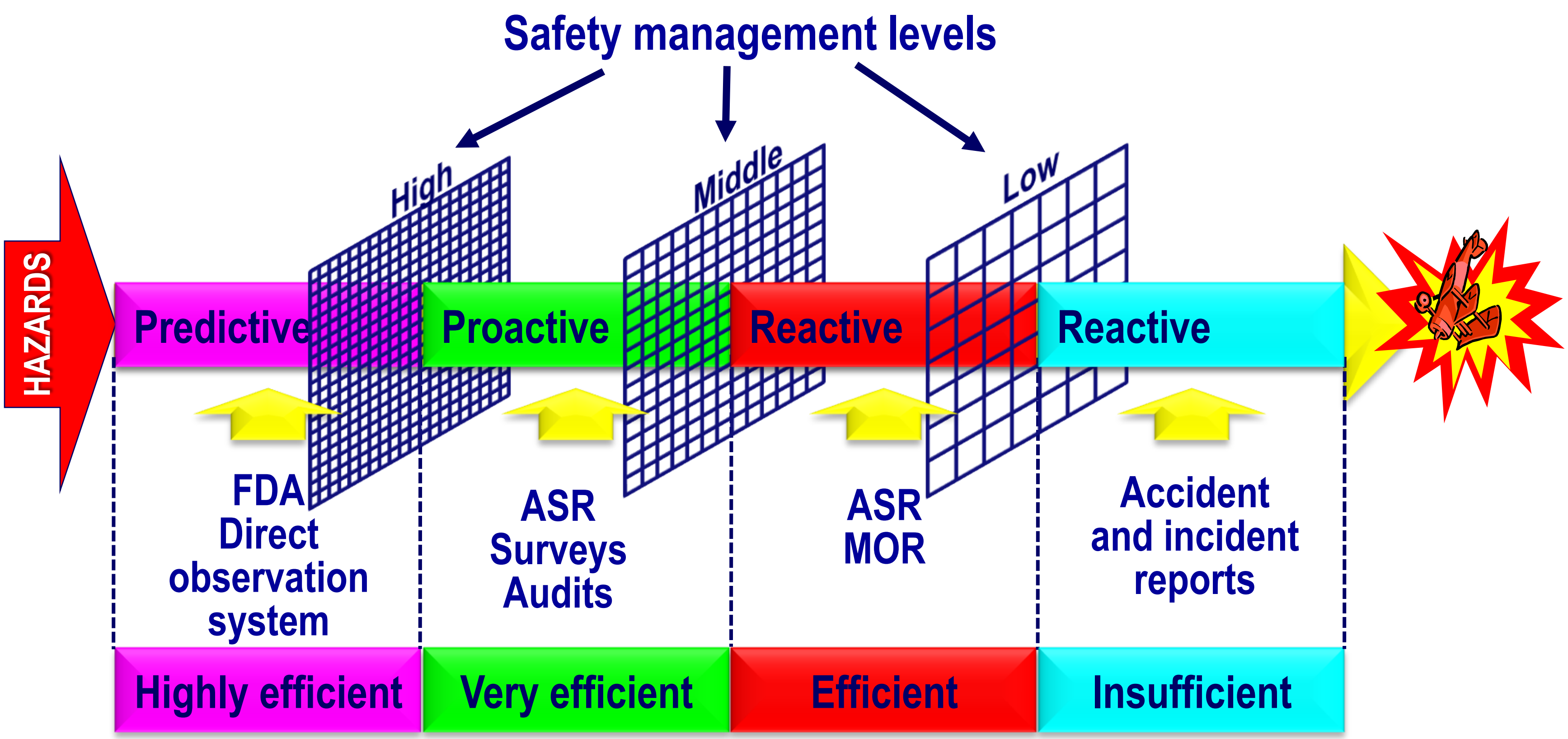
Proactive method

The proactive method looks actively for the identification of safety risks through the analysis of the organization's activities

Predictive method

The predictive method captures system performance as it happens in real-time normal operations to identify potential future problems

Strategies – Levels of intervention and tools



Acceptable Level of Safety (ALoS)

- It is the minimum degree of safety that must be assured by a system in actual practice

Another key concepts

- **Level of safety:** degree of safety of a system, representing the quality of the system, safety-wise, expressed through safety indicators
- **Safety indicators:** parameters that characterize and/or typify the level of safety of the system
- **Value of safety indicators:** quantification of a safety indicator
- **Safety targets:** concrete objectives to be achieved
- **Value of safety targets**: quantification of a safety target

Selection of safety indicators

- The selection of appropriate safety indicators is:
  - An essential foundation for the development and implementation of ALoS
  - A function of the detail to which the level of safety of the system is to be represented
- Meaningful safety indicators must be representative of the elements that characterize system safety

A fundamental differentiation

- Safety measurement
  - Not a continuous process
  - A spot check
  - Conducted following pre-specified timeframes
- Safety performance measurement
  - Continuous process
  - Monitoring and measurement of selected operational activities necessary for the provision of services

Safety measurement

- Strategic and generally associated to the SSP
- Quantification of outcomes of selected high-level or high-consequence events
  - Accident rates
  - Serious incident rates
- Quantification of selected high-level State functions
  - Development/absence of primary aviation legislation
  - Development/absence of operating regulations
  - Level of regulatory compliance
- A measure of achievement of high-level safety objectives of safety interventions and/or mitigations strategies

Safety performance measurement

- Tactical and generally associated to an SMS
- Quantification of the outcomes of selected low-level, low- consequence processes
- A measure of the actual performance of safety interventions and/or mitigation strategies, beyond accident rates and regulatory compliance

Basic safety management SARPs

- ALoS to be achieved shall be established by the State
- When establishing ALoS, consideration must be given to:
  - The level of safety risk that applies
  - The safety risk tolerance
  - The cost/benefits of improvements to the aviation system
  - The public expectations in civil aviation system

Expressing the ALoS

- Values of safety indicators and values of safety targets:
  - Initial ALoS: quantitative action statements on selected high level/high consequence outcomes (safety measurement)
  - Mature ALoS: quantitative action statements on selected high level/high consequence events (safety measurement) and low level/low consequence outcomes (safety performance measurement)

ALoS – Mature SSP

- In the longer-term, once States develop safety data collection and analysis capabilities under the Safety Assurance component of the SSP, ALoS should reflect a combination of:
  - Safety measurement
  - Safety performance measurement

ALoS – Legal considerations

- Establishing ALoS related to an SSP:
  - Does not replace legal, regulatory, or other already established requirements, but it must support compliance with them
  - Leaves unaffected the obligations of States, and does not relieve States from compliance with SARPs

Transition from initial to mature ALoS

Timeline

Initial ALoS

(Safety measurement)

- Quantification of outcomes of selected high-level/high-consequence events
- Quantification of selected high-level State functions

State safety assurance

- Safety oversight
- Safety data collection, analysis and exchange
- Safety data driven targeting of oversight on areas of greater concern or need

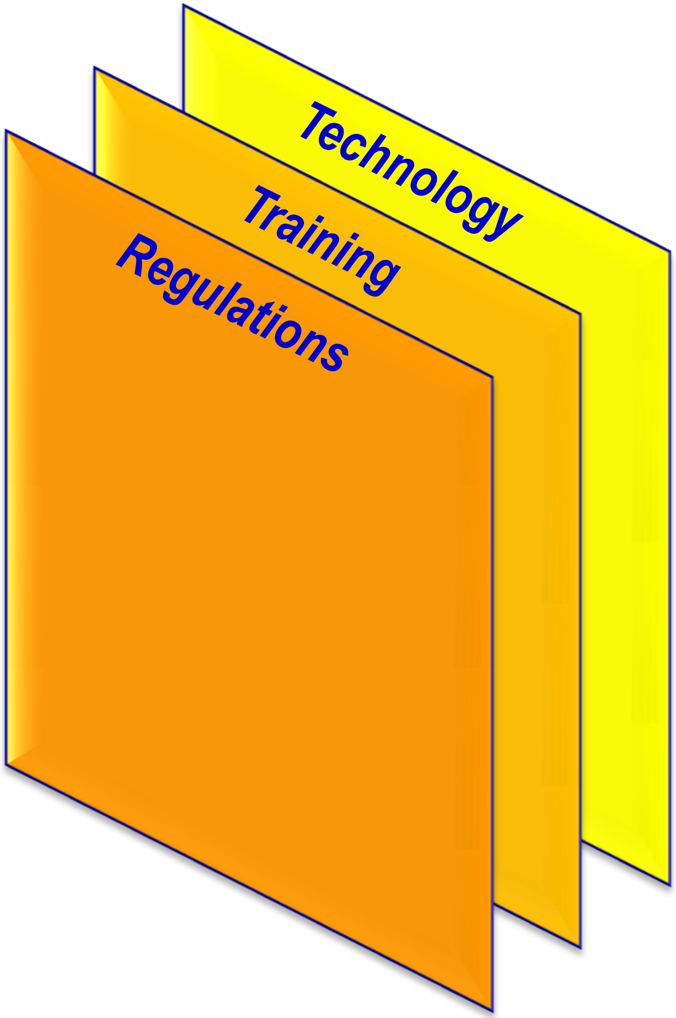
Mature ALoS

(Safety measurement and safety performance measurement)

- Quantification of outcomes of selected high-level/high-consequence events
- Quantification of selected high-level State functions
- Quantification of outcomes of selected low-level/low-consequence events

Delivering ALoS – Safety action plans

- Tools and means to deliver the safety targets of an SSP:
  - Regulations
  - Training
  - Technology



System today

Service providers

Airport N° 1

Airport N° 2

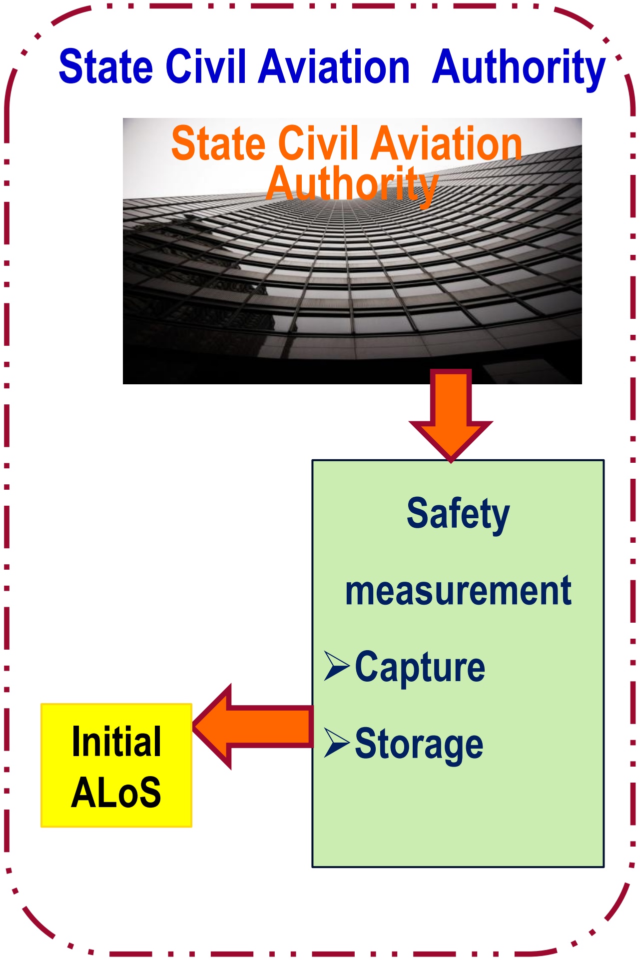
Airport N° 3

State Civil Aviation Authority

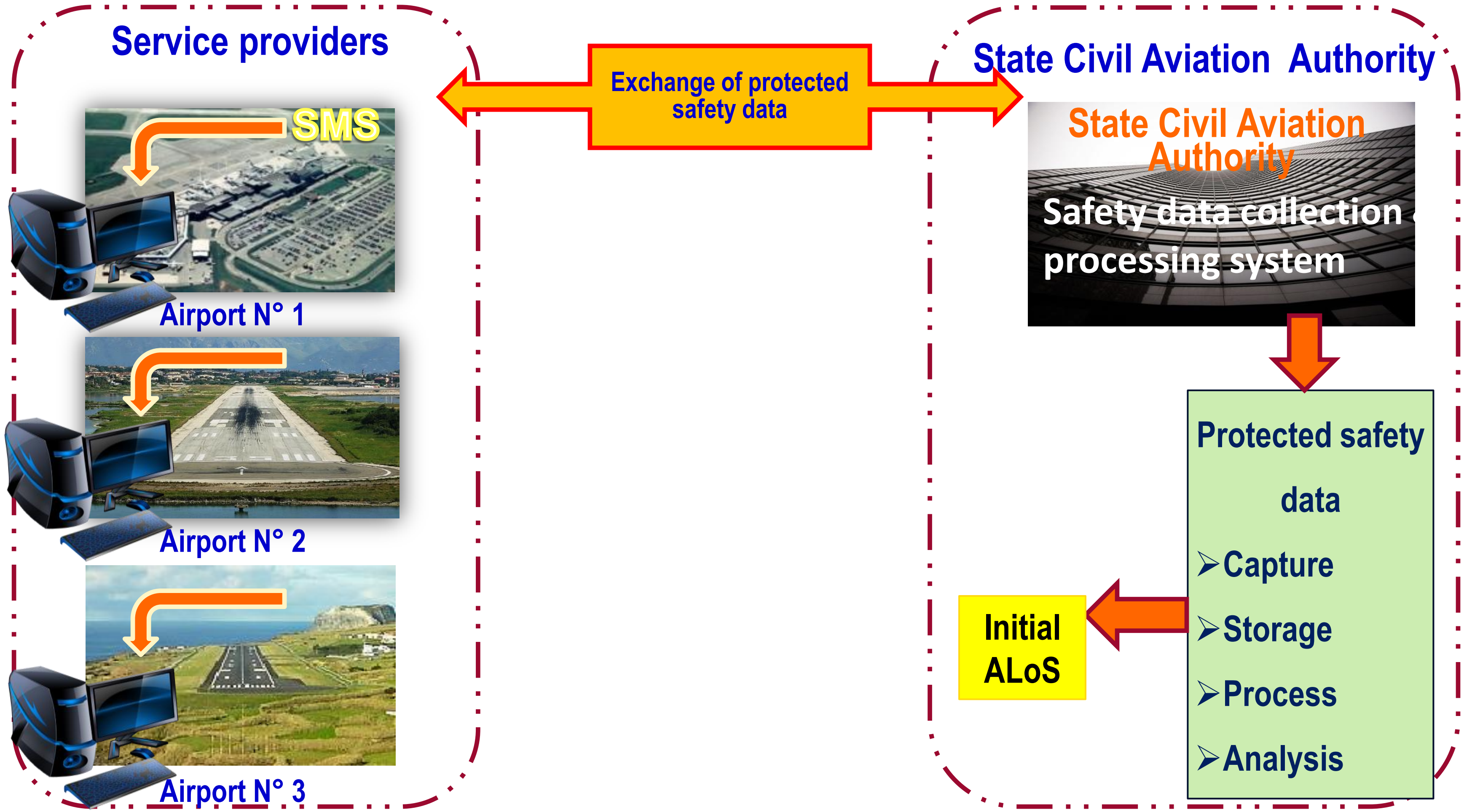
Safety measurement

- Capture
- Storage

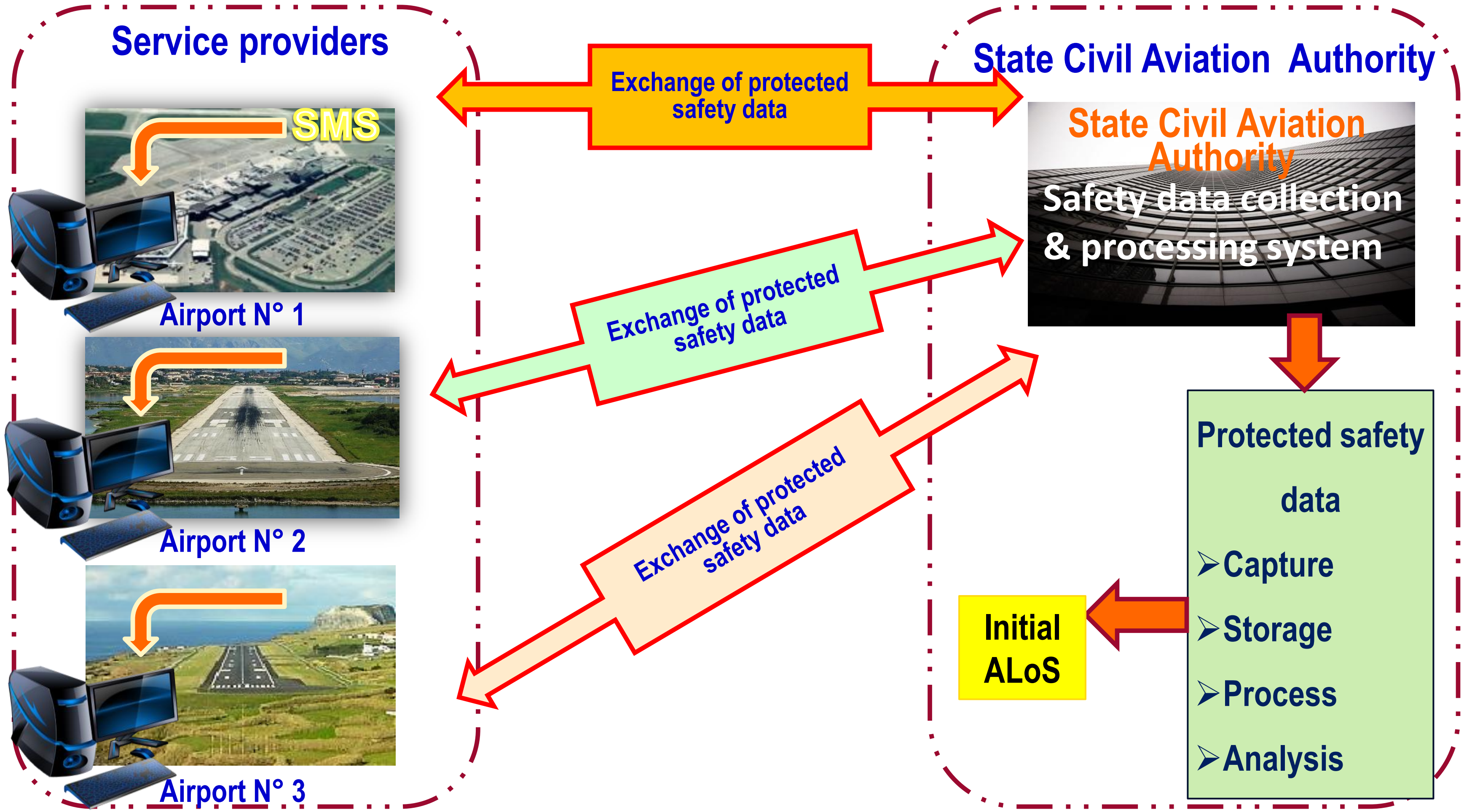
Initial ALoS



Initial ALoS

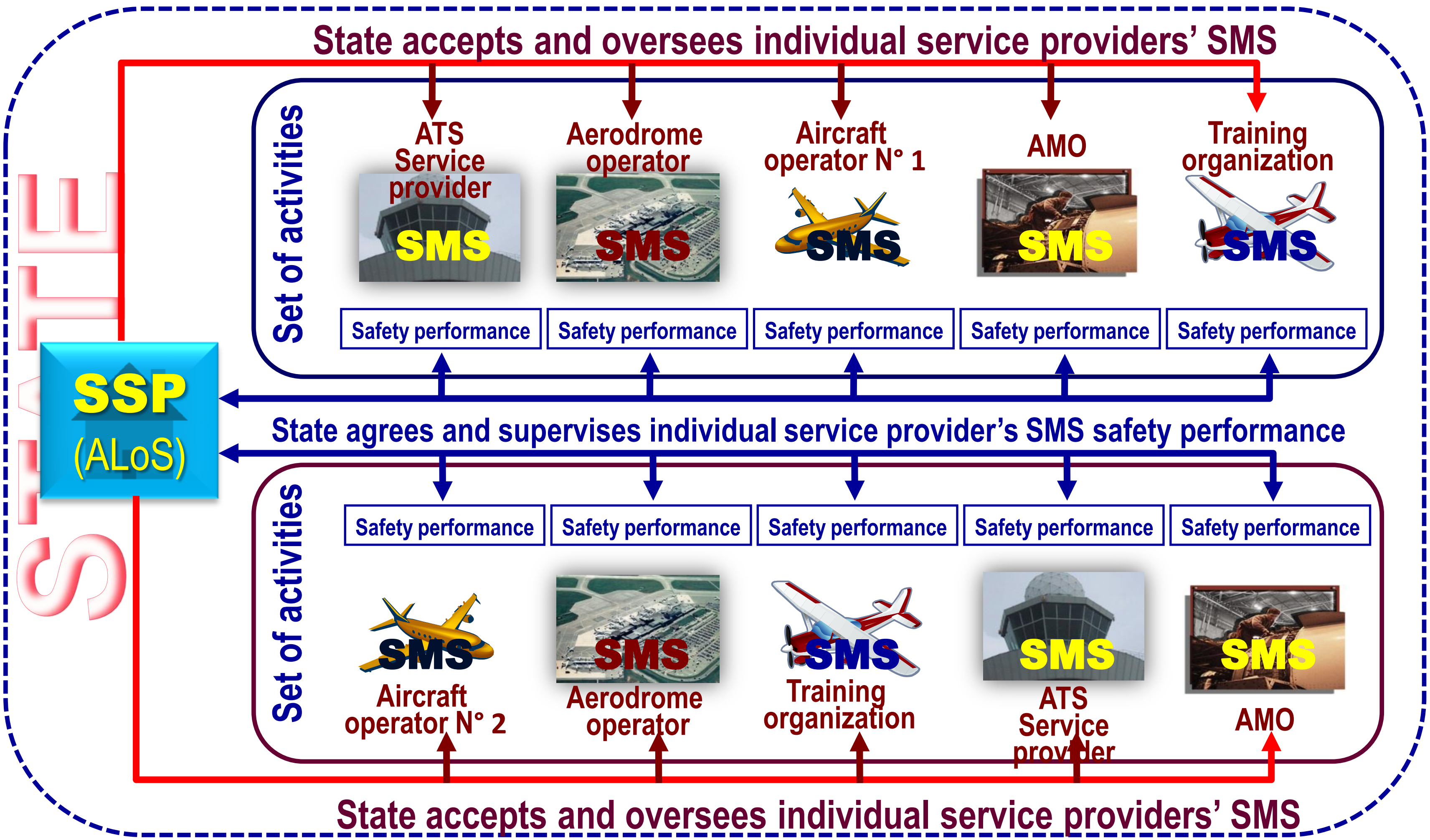


Mature ALoS



Service providers
SMS
Airport N° 1
Airport N° 2
Airport N° 3
Exchange of protected safety data
Exchange of protected safety data
Exchange of protected safety data
State Civil Aviation Authority
State Civil Aviation Authority
Safety data collection & processing system
Protected safety data
Capture
Storage
Process
Analysis
Initial ALoS

Summary



State accepts and oversees individual service providers' SMS
Set of activities
ATS Service provider
SMS
Aerodrome operator
SMS
Aircraft operator N° 1
SMS
AMO
SMS
Training organization
SMS
Safety performance
Safety performance
Safety performance
Safety performance
Safety performance
STATE
SSP
(ALoS)
State agrees and supervises individual service provider's SMS safety performance
Set of activities
Safety performance
Safety performance
Safety performance
Safety performance
Safety performance
SMS
Aircraft operator N° 2
SMS
Aerodrome operator
SMS
Training organization
SMS
ATS Service provider
SMS
AMO
State accepts and oversees individual service providers' SMS

5. SSP and ICAO SARPs

SSP definition

- The State Safety Programme (SSP) is an integrated set of regulations and activities aimed at improving safety

State Safety Programme (SSP)

- States shall establish a SSP in order to achieve an acceptable level of safety (ALoS) in civil aviation

- The acceptable level of safety will be set by the State

- An SSP is a management system for the management of safety by the State

SSP in context

- The implementation of an SSP must be commensurate with the size and complexity of the State's aviation system

SSP in context

- Requires coordination among multiple authorities responsible for individual elements of civil aviation functions in the State

Responsibilities and accountabilities in an SSP

- **Responsibilities:** are functions and duties which describe the safety purpose of what an individual is required to do, with regard to the operation of the SSP

- **Accountabilities:** are statements of what an individual is required to deliver, either directly or through supervision and management of others, including those to whom the individual has delegated responsibility, with regard to the operation of the SSP

Accountable person in an SSP

- He/she shall have administrative responsibility and accountability, on behalf of the State, for the implementation, coordination and maintenance of the SSP, and:
  - Final authority on issues related to the allocation of resources within the State aviation organization that has been designated as the placeholder for the SSP
  - Authority over service provider's certificate management aspects
  - Responsibility for the coordination of the resolution of State's aviation safety issues under the SSP

SMS State requirement

- States shall require, as part of their SSP, that a service provider implement an SMS acceptable to the State that:
  - Identifies safety hazards
  - Ensures the implementation of remedial action necessary to maintain agreed safety performance
  - Provides for continuous monitoring and regular assessment of the safety performance
  - Aims at a continuous improvement of the overall performance of the safety management system

Safety Management Systems - SMS

- The SMS is a systematic approach to managing safety, including the organizational structures, accountabilities, policies and procedures

SMS

- Service providers are responsible for establishing an SMS
- States are responsible, under the SSP, for the acceptance and oversight of service providers' SMS

Service providers and SMS

The following organizations are required to implement an SMS:

- Approved training organizations that are exposed to safety risks during the provision of their services
- Aircraft operators
- Approved maintenance organizations
- Organizations responsible for design and/or manufacture of aircraft
- Air traffic services providers
- Certified aerodromes

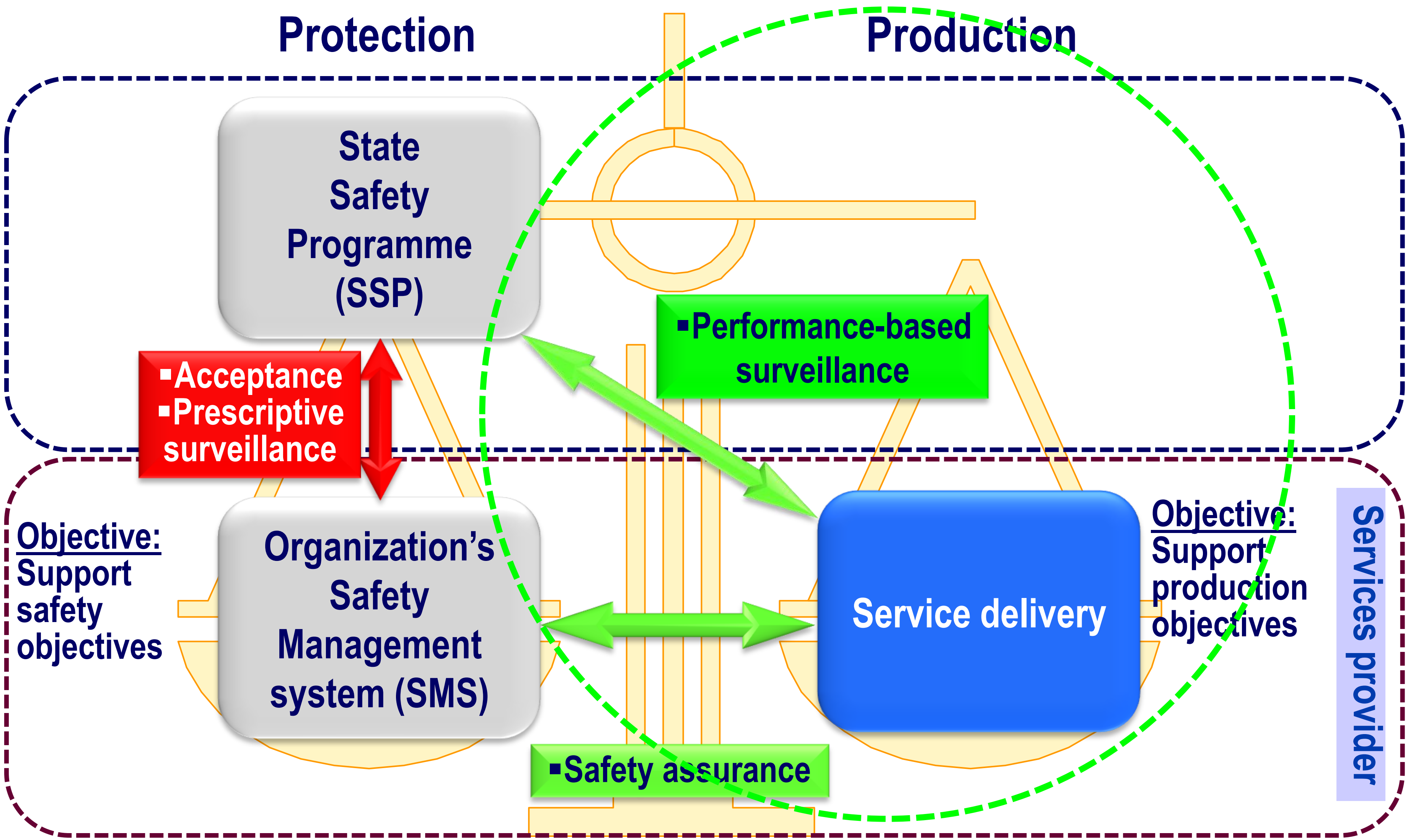
Basic safety management SARPs

- The SMS shall clearly define lines of safety accountability throughout a service provider organization, including a direct accountability for safety on the part of senior management

(Accountability: Obligation or willingness to account for one's actions)

Basic safety management SARPs

SSP – SMS relationship



Summary

States:

- States shall establish a State safety programme (SSP), in order to achieve an acceptable level of safety (ALoS) in civil aviation
- ALoS to be achieved shall be established by the State

Service providers:

- States shall require, as part of their SSP, that a service provider implement an SMS acceptable to the State that:
  - Identifies safety hazards
  - Ensures the implementation of remedial action necessary to maintain agreed safety performance
  - Provides for continuous monitoring and regular assessment of the safety performance
  - Aims at a continuous improvement of the overall performance of the safety management system

6. The ICAO SSP framework

Core operational activities of an SSP

- From the point of view of safety interventions and mitigation strategies, the core operational activities of an SSP are:
  - State safety risk management (SRM)
  - State safety assurance (SA)

Core operational activities of an SSP

- They take place under the umbrella provided by:
  - State safety policy and objectives
  - Supported by the State safety promotion

The ICAO SSP framework

1. **State safety policy and objectives**
   1.1 State safety legislative framework
   1.2 State safety responsibilities and accountabilities
   1.3 Accident and incident investigation
   1.4 Enforcement policy
2. **State safety risk management**
   2.1 Safety requirements for service providers SMS
   2.2 Agreement on service providers safety performance
3. **State safety assurance**
   3.1 Safety oversight
   3.2 Safety data collection, analysis and exchange
   3.3 Safety data driven targeting of oversight on areas of greater concern or need
4. **State safety promotion**
   4.1 Internal training, communication and dissemination of safety information
   4.2 External training, communication and dissemination of safety information

The components and elements of an SSP

- There are four components of an SSP:
  1. State safety policy and objectives
  2. State safety risk management
  3. State safety assurance
  4. State safety promotion
- Every component is composed of elements:
  - Eleven elements in total

The components and elements of an SSP

1. The State safety policy and objectives component is composed of four elements:
    1. State safety legislative framework
    2. State safety responsibilities and accountabilities
    3. Accident and incident investigation
    4. Enforcement policy

State responsibility on safety policy and objectives

- The SSP can only be effectively implemented as part of an overall framework of accountabilities and responsibilities within the State
- The SSP must include:
  - Explicit policies
  - Procedures
  - Management controls
  - Documentation
  - Corrective action processes to keep the State safety management efforts on track

The components and elements of an SSP

2. The State safety risk management component is composed of two elements:
    1. Safety requirements for the service provider’s SMS
    2. Agreement on the service provider’s safety performance

State responsibility on safety risk management

- Rulemaking and policy development is based on hazard identification and analysis of the safety risks of the consequences of hazards
  - Regulations become safety risk controls when adopted by service providers' SMS

The components and elements of an SSP

3. The State safety assurance component is composed of three elements:
    1. Safety oversight
    2. Safety data collection, analysis and exchange
    3. Safety-data-driven targeting of oversight of areas of greater concern or need

State responsibility on safety assurance

- Surveillance activities under SSP are supported by hazard identification and safety risk analyses
  - Surveillance of service providers is based on compliance monitoring as well as the assessment of safety performance of service providers' SMS
    - It is based on periodic audits and inspections
    - Assessment of safety performance of SMS leads to prioritized surveillance based upon the severity of the safety risks of the consequences of the hazards identified by the SMS

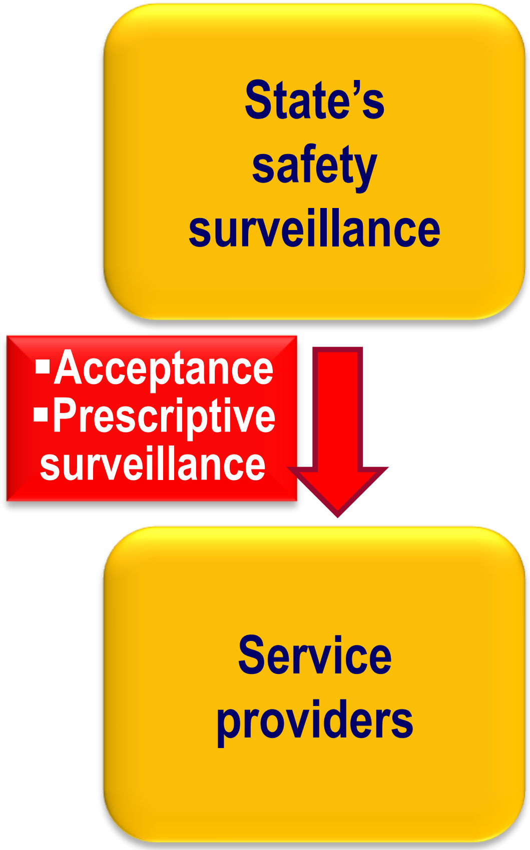
The components and elements of an SSP

4. The State safety promotion component is composed of two elements:
   1. Internal training, communication and dissemination of safety information
   2. External training, communication and dissemination of safety information

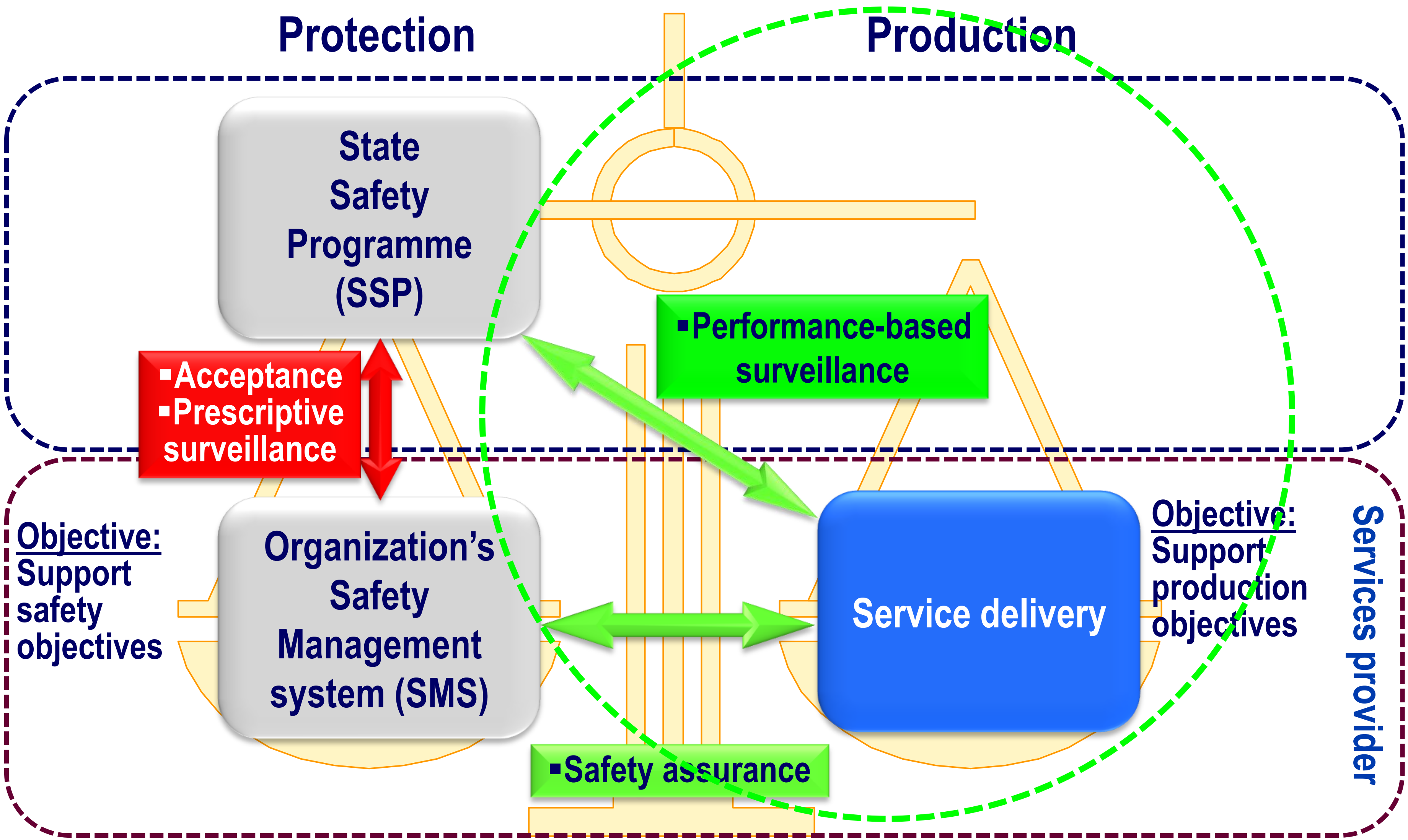
State responsibility on safety promotion

- State must provide its staff
  - Competence and technical knowledge on subject matter
  - Additional knowledge regarding hazard identification and safety risk analysis
- State must communicate its SSP internally and externally

State Safety Assurance (SA) Today: Prescriptive Surveillance



State Safety Assurance (SA) under SSP



ICAO SSP Framework

1. **State safety policy and objectives**
   - 1.1 State safety legislative framework
   - 1.2 State safety responsibilities and accountabilities
   - 1.3 Accident and incident investigation
   - 1.4 Enforcement policy
2. **State safety risk management**
   - 2.1 Safety requirements for service providers SMS
   - 2.2 Agreement on service provider safety performance
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   - 3.2 Safety data collection, analysis and exchange
   - 3.3 Safety data driven targeting of oversight on areas of greater concern or need
4. **State safety promotion**
   - 4.1 Internal training, communication and dissemination of safety information
   - 4.2 External training, communication and dissemination of safety information

Prescription

Performance

Summary

- There are four elements of the SSP
- There are eleven components of the SSP
- The ICAO framework is intended as a principled guide for an SSP:
  - Development
  - Implementation
  - Maintenance

Summary cont.

- Safety management principles provides a plattform for parallel development of:
  - SSP by the State
  - SMS by the service providers
- It allows that both to get ahead of safety risks
- It allows to interact more effectively in the resolution of safety concerns

7. SSP implementation

SSP Implementation

- The availability of such a framework provides a principled guide for SSP implementation
- ICAO has developed guidance for the development of an SSP framework in order to facilitate SSP implementation

SSP – Two considerations

- The implementation of an SSP is commensurate with the size and complexity of the State's aviation system
- It may require coordination among multiple authorities responsible for individual element functions in the State

State – Wearing two hats?

- When the State is responsible for the provision of specific services (e.g. aerodromes, air navigation services, etc.) the organization providing the service should develop and implement an SMS

SSP gap analysis

- The gap analysis allows the State to assess the existence and maturity within the State of the elements of an SSP
  - Guidance in Appendix 3 to Chapter 11 of the SMS Manual
- Once the gap analysis is completed and documented, the components/elements identified as missing or deficient will form, together with those already existing or effective, the basis of the SSP implementation plan

SSP implementation plan

- A “flight plan” that guides the development of the SSP
- The plan allows States to:
  - Identify those tasks underlying the strategy leading to the implementation of the SSP
  - Coordinate the activities by the various State aviation organizations under the SSP in support of the implementation plan

Why a phased approach to SSP?

- To manage the workload associated with the implementation of the SSP
- To prevent the “compliance by ticking boxes”
- Three implementation phases are proposed based on:
  - The results of the gap analysis
  - The sequential application of the different components and elements of the SSP framework

SSP implementation plan – Phase I

Initial SSP

- **Plan and draft**
  - State Safety Policy
  - SSP implementation team
  - Assign responsibilities
  - Coordination with other

SSP implementation plan – Phase II

Initial SSP

- **Collect and evaluate**
  - Selection of safety indicators (initial ALoS)
  - Confidential reporting systems
  - Acceptance on service providers ‘SMS
  - Inspections, audits, surveys

SSP implementation plan – Phase III

Mature SSP

- **Collect and evaluate** (Cont.)
  - State safety data collection and analysis capabilities
  - Agreement on safety performance indicators
  - ALoS with safety measurement +safety performance measurement

SSP implementation plan

SSP

- **Additional requirements**
  - During all the implementation phases, the State must determine if additional safety arrangements are required to implement and maintain the organization's SSP

SSP implementation plan – Summary

Timeline

PHASE I

Initial SSP
Plan and Draft

Elements:
1.1, 1.2, 1.3, 1.4, 2.1, 3.2 and 4.1

PHASE II

Initial SSP
Collect and evaluate

Elements:
2.1, 3.1, 3.2; 4.1 and 4.2

PHASE III

Mature SSP
Collect and evaluate

Elements:
2.2, 3.2, 3.3 and 4.1

Develop SSP documentation – Element 3.2

Establish means for safety communication – Elements 4.1 and 4.2

Develop and deliver training – Elements 4.1 and 4.2

8. The role of the SSP supporting the SMS implementation

The elements of SMS

❶ Safety policy and objectives

1.1 – Management commitment and responsibility

1.2 – Safety accountabilities

1.3 – Appointment of key safety personnel

1.4 – Coordination of emergency response planning

1.5 – SMS documentation

❷ Safety risk management

2.1 – Hazard identification

2.2 – Safety risk assessment and mitigation

❸ Safety assurance

3.1 – Safety performance monitoring and measurement

3.2 – The management of change

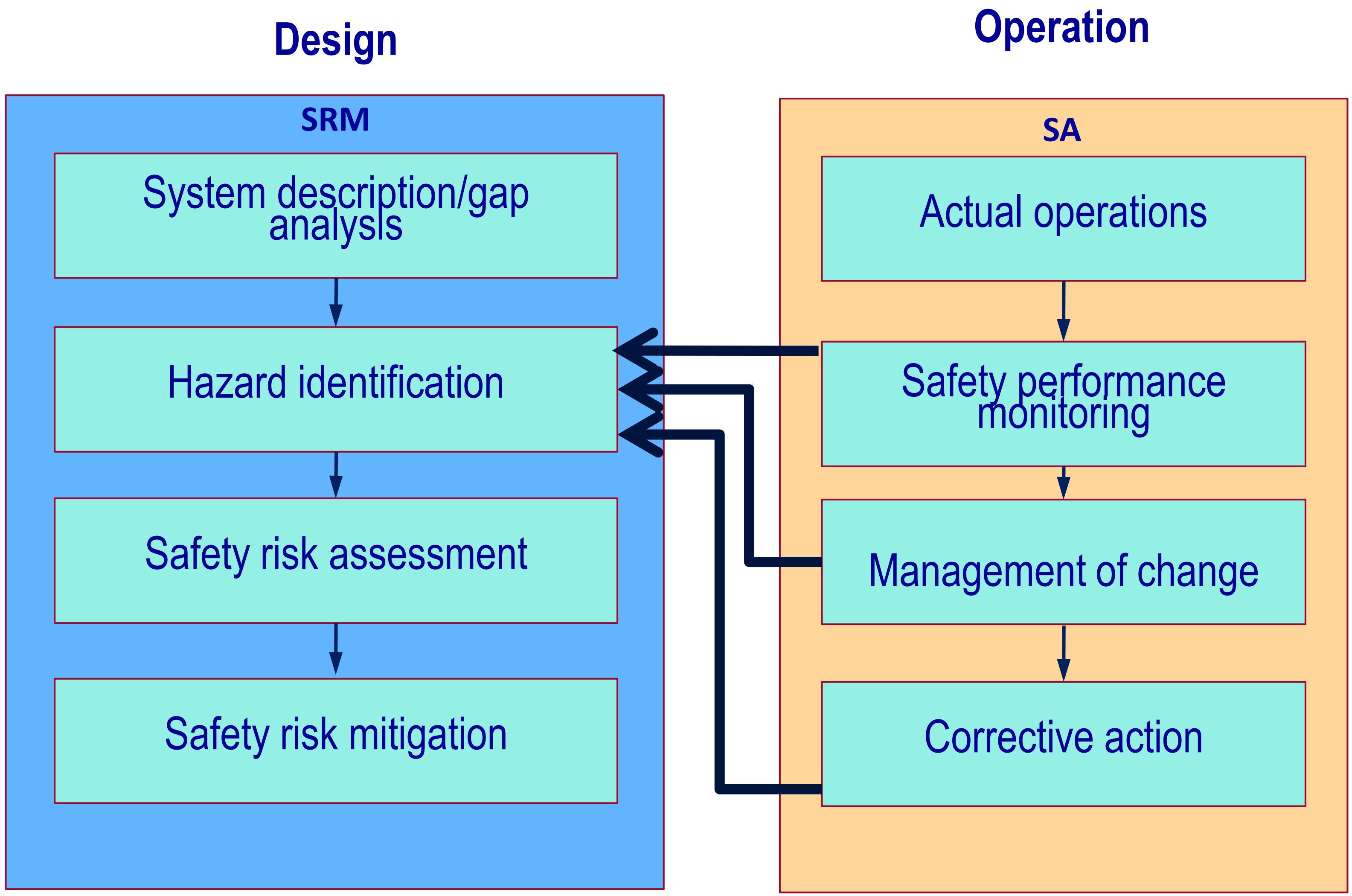
3.3 – Continuous improvement of the SMS

❹ Safety promotion

4.1 – Training and education

4.2 – Safety communication

Safety Risk Management (SRM) and Safety Assurance (SA) – Summary



The role of the SSP in supporting SMS implementation

- One of the objectives of an SSP is to generate a context that supports the implementation of an SMS by service providers
- The service provider's SMS cannot perform effectively either in a regulatory vacuum or in an exclusively compliance-oriented environment

The role of the SSP in supporting SMS implementation

- A service provider's SMS can flourish only under the enabling umbrella provided by an SSP
- The SSP is a fundamental enabler of the implementation of an effective SMS by service providers

SSP and SMS components

SSP components

1. State safety policy and objectives
2. State safety risk management
3. State safety assurance
4. State safety promotion

SMS components

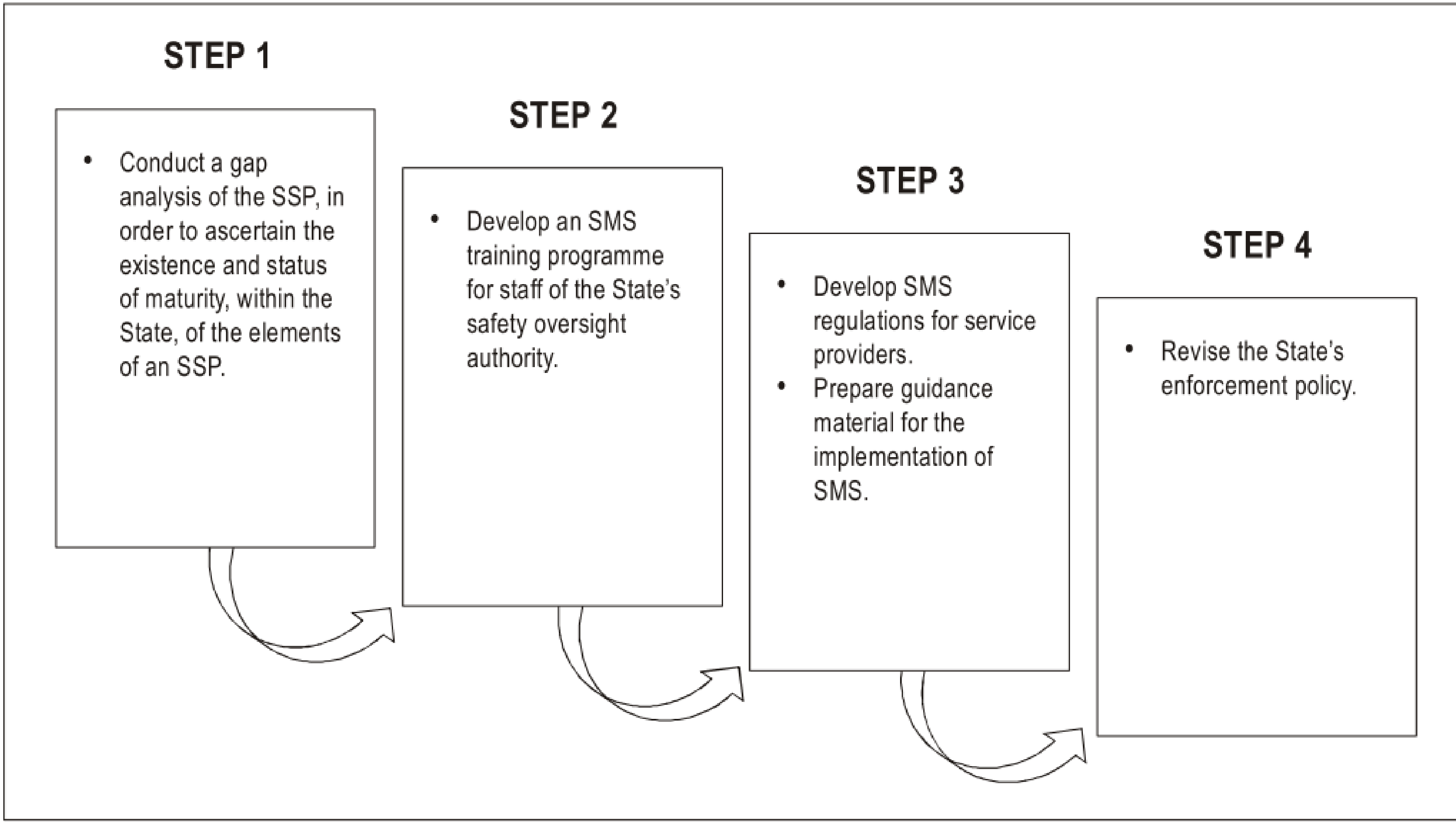
1. Safety policy and objectives
2. Safety risk management
3. Safety assurance
4. Safety promotion

The role of the SSP in supporting SMS implementation

Why a phased approach to SMS?

- To provide a manageable series of steps to follow in implementing an SMS
- To effectively manage the workload associated with SMS implementation
- To pre-empt a "ticking boxes" exercise
- Four implementation phases are proposed
- Each phase is based upon the introduction of specific SMS elements

Summary of the role of the SSP in supporting SMS implementation



SMS implementation phases – Summary

Timeline

PHASE I

Planning SMS
Elements:
1.1; 1.2; 1.3 and 1.5 ; [and 1.4]

PHASE II

Implementation of reactive safety management processes
Elements:
2.1 and 2.2

PHASE III

Implementation of proactive and predictive safety management processes
Elements:
2.1 and 2.2

PHASE IV

Implementation of operational safety assurance
Elements:
1.1; 3.1; 3.2 ;3.3
4.1 and 4.5

Develop documentation – Element 1.5

Develop and establish means for safety communication – Element 4.2

Develop and deliver training – Element 4.1

9. Summary

Summary

- States and service providers have safety responsibilities
- ICAO standards requiere States to establish a SSP
- SSP is an integrated set of regulations and activities aimed at improving safety
- States are required to establish an ALoS to be achieved
- Services providers are required to establish SMS
- ICAO provides guidance material for the implementation

Summary cont.

- Aviation is the safest mode of transportation
- There is no perfect safety system
- Successful safety management requires the active participation of all levels of management and supervision
- A clear understanding of the relationship between an SSP and an SMS is essential for concerted safety management action within States
- The basic objective of a State, through its SSP, is to ensure public safety during service delivery by service providers
- It is achieved by defining the ALoS for the SSP and through the control of safety risks within the State by the two “operational components” of the SSP: Safety Risk Management (SRM) and Safety Assurance (SA)
- ICAO is supporting the implementation of SSP and SMS

10. Conclusions of SSP/SMS Implementation WS

Metodología

- Siguiendo la metodología propuesta por el facilitador de la OACI, los participantes identificaron dichas problemáticas
- Los participantes trabajaron en 3 grupos y se dividieron la tarea de analizar y proponer acciones recomendadas las cuales se presentan en las tablas siguientes
- Los participantes debatieron sobre las acciones recomendadas presentadas por los grupos

Introducción

- Participaron en el Taller: autoridades de aviación civil, proveedores de servicio: tránsito aéreo, líneas aéreas, aeródromos, organizaciones de mantenimiento aeronáutico y la OACI
- A lo largo de las presentaciones los participantes identificaron diferentes barreras para la implementación exitosa tanto del SSP como del SMS

Grupo I

Group # I										
#	Problem	Reference	Recommended Action	Impact	Changeability	Indicator	Priority	Responsible	Time Frame	Notes
1	**COMO MANEJAR EL GRAN VOLUMEN DE DATOS Y/O INFORMACIÓN DE SEGURIDAD OPERACIONAL**	SMS/2.1,2.2,3.1	Definición de un formato único en software amigable, hardware con capacidad adecuada	ALTO	FÁCIL	P1	2	DIRECTOR/JUNTA DE CONTROL DE SEG-OPERACIONAL	1 AÑO	Se deberá difundir la cultura del reporte no punitivo y confidencial
2	**LO RELACIONADO CON EL CONTRATO Y SUPERVISIÓN DE LOS PROVEEDORES DE SERVICIOS EN LOS AEROPUERTOS Y ACUERDOS ENTRE LÍNEAS AÉREAS (BENCHMARKING/ISAGO/CODESHARE/IOSA)**	SMS/1,2,3,4.	DEFINICIÓN DEL PROVEEDOR DE SERVICIOS CERTIFICADO ACORDE CON OACI	ALTO	DIFÍCIL	P3	2	RESPONSABLE DEL SMS/OPERACIONES	6 MESES	
3	**LOS DIFERENTES AOCs/FUSIONES/ALIANZAS/ CLONE AIRLINES EN LAS REGIONES CAR/SAM**	SSP/2.1	DEFINIR UN SMS ESTANDARIZADO APLICABLE A LOS DIFERENTES AOCs	ALTO	DIFÍCIL	P3	1	DIRECTOR/JUNTA DE CONTROL DE SEGURIDAD OPERACIONAL	2 AÑOS	
4	**CASO DE MRO PERTENECIENTE A UNA LÍNEA AÉREA/SMS CORPORATIVO**	SMS/1,2,3,4./ SSP/2.1	UN SMS PROPIO DEL PRESTADOR DE SERVICIO, ACORDE CON EL SMS DEL CLIENTE EN LO APLICABLE	ALTO	DIFÍCIL	P3	1	COORDINADOR SMS DE MANTTO DEL MRO	3 AÑOS	
5	**LA COORDINACIÓN CON OTROS SMSs DE OTROS PROVEEDORES DE SERVICIOS**	SSP/2.2	EMPATAR LAS POLÍTICAS Y PROCEDIMIENTOS	ALTO	MODERADO	P2	1	LOS RESPONSABLES DEL SMS	6 MESES	

Grupo II

Group # II										
#	**Problem**	**Reference**	**Recommended Action**	**Impact**	**Changeability**	**Indicator**	**Priority**	**Responsible**	**Time Frame**	**Notes**
1	Falta de tratamiento multidiciplinario para la implementación del SSP/SMS (inclusión)	1.2 – Responsabilidades de seguridad operacional 4.2 – Comunicación de seguridad	• Definir alcance del SMS (Áreas Involucradas) • Identificar personas líderes de cada área. • Definición de responsabilidades de cada área para la Implementación del SMS/SSP por parte del ejecutivo responsable. • Definir canales de comunicación adecuados entre áreas (Comités de Seguridad en cada nivel Organizacional)	3	MODERATE	P2	2	• Ejecutivo Responsable • SMS/SSP Manager	3 meses	
2	Software (SRM, Safety Library)	1.5 – Documentación del SMS (SMS) 3.2 – Colección, análisis e intercambio de datos de Seguridad Operacional. (SSP)	• Identificar las herramientas necesarias de acuerdo al alcance de cada organización. • Asignar el presupuesto necesario para adquirí herramientas • Generar políticas bajo las cuales se debe desarrollar la ejecución del las herramientas (TI) • Definición del personal responsable por la administración de las herramientas. • Capacitación del personal encargado de la administración de las herramientas. • En caso de contar con herramientas se debe garantizar la integración de las bases de datos de las herramientas. • Definir taxonomías estandarizadas para la clasificación de los peligros en las herramientas.	3	DIFFICULT	P3	4	• Ejecutivo Responsable • SMS/SSP Manager	12 meses	

Grupo II cont.

3	Capacitación (Train the trainers)	4.1 – Entrenamiento y educación (SMS/SSP)	• Definición de perfil de selección de los instructores. • Identificar y seleccionar los instructores de acuerdo al perfil • Evaluación y certificación del instructor	3	3 EASY	P1	5	• SMS/SSP Manager • Cabezas responsabl es de las áreas • Centro de Instrucció n	1 Mes	
4	Cultura del reporte/cultu ra nacional	1.1 – Responsabilidad y compromiso de la dirección 4.2 – Comunicación de seguridad (SMS/SSP)	• Definición de implementación de una política de reportes no punitiva enforzada por el ER • Definición del sistema de reportes. • Promoción de la cultura del reporte a través de medios de comunicación definidos	3	DIFFICULT	P3	3	• Ejecutivo Responsabl e • SMS/SSP Manager • Cabezas responsabl es de las áreas	4 Años	
5	Publicación de política y objetivos	1.1 – Responsabilidad y compromiso de la dirección	• Definir medios adecuados para la comunicación y difusión de las políticas y objetivos • Definir un sistema de gestión documental que garantice la recepción y lectura de la política y objetivos	2	EASY	P4	1	• Ejecutivo Responsabl e • SMS/SSP Manager	2 meses	
6	Estandarizaci ón									Op en

Grupo III

Group # III										
#	**Problem**	**Reference**	**Recommended Action**	**Impact**	**Changeability**	**Indicator**	**Priority**	**Responsible**	**Time Frame**	**Notes**
1	Falta de Recursos (SSP)	1. Políticas y objetivos	a-Descentralizar la autoridad. b-Facilitación de instructores/personal	3	1	P3	2	Estado	Primera etapa (a):3 años Segunda etapa (b): 6 años	Dificultad a raíz de cuestiones políticas, cambio de administraciones. Proceso de autorización de normas y transmitir el espíritu de la necesidad de la aviación.
2	Accident Investigation Group (SSP)	1. Políticas y objetivos	Descentralizar la autoridad. Facilitación de instructores/personal Uso de tecnologías	3	1	P3	6	Estado	Primera etapa (a):3 años Segunda etapa (b): 6 años	
3	Norma (Tiempo) / Cambio	1. Políticas y objetivos	Autoridad tenga acercamiento proactivo con los prestadores de servicio	3	2	P2	4	Autoridad	2 años	El impacto-beneficio hacia la industria comercial y ejecutiva
4	Inclusión de grupos	4. Promoción de la seguridad	Foros, talleres, mesas de trabajo	2	1	P4	5	Estado e industria	1 año	
5	Compromiso (accountable person)	4. Promoción de la seguridad	Concientización Sensibilización	3	2	P2	1	Industria	1 año	

Grupo III cont.

6	**Competencias del personal**	**1. Políticas y objetivos**	**Reclutamiento Especialización Desarrollo profesional**	**3**	**2**	**P2**	**3**	**Estado e industria**	**Constante**	
7	Recursos (SSP)	1. Políticas y objetivos	a-Descentralizar la autoridad. b-Facilitación de instructores/personal	3	1	P3	2	Estado	Primera etapa (a):3 años Segunda etapa (b): 6 años	Dificultad a raíz de cuestiones políticas, cambio de administraciones. Proceso de autorización de normas y transmitir el espíritu de la necesidad de la aviación. Acciones tomadas derivadas de la degradación de categoría.
8	Accident Investigation Group (SSP)	1. Políticas y objetivos	Descentralizar la autoridad. Facilitación de instructores/personal Uso de tecnologías	3	1	P3	6	Estado	Primera etapa (a):3 años Segunda etapa (b): 6 años	
9	Norma (Tiempo) / Cambio	1. Políticas y objetivos	Autoridad tenga acercamiento proactivo con los prestadores de servicio	3	2	P2	4	Autoridad	2 años	El impacto-beneficio hacia la industria comercial y ejecutiva
10	Inclusión de grupos	4. Promoción de la seguridad	Foros, talleres, mesas de trabajo	2	1	P4	5	Estado e industria	1 año	

Conclusiones

- Los participantes al término del evento manifestaron su conformidad con dicho taller, considerando que se cumplió el objetivo fijado
- Asimismo, consideraron que el mismo les será de mucha utilidad para la implementación exitosa del SSP/SMS en sus respectivas organizaciones
- Los participantes instaron a la OACI a continuar impartiendo este tipo de talleres

Questions?

For additional información:

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Thank You!

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