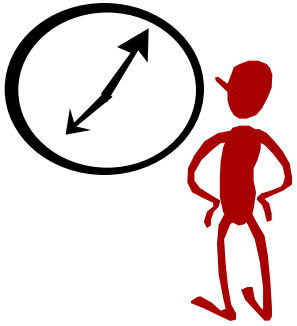
ICAO State Safety Programme (SSP) and Safety Management Systems (SMS) Introduction

Taller Regional de la OACI sobre Implementación del Programa Estatal de Seguridad Operacional (SSP) y de los Sistemas de Gestión de Seguridad Operacional (SMS)

Ciudad de México, México, 21-25 de julio de 2014

Eduardo Chacin, Regional Officer, Flight Safety
ICAO NACC

Housekeeping

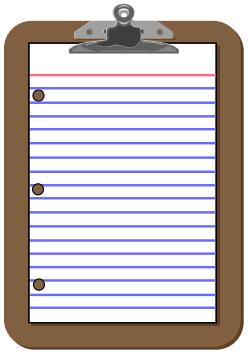


Punctuality

Participation

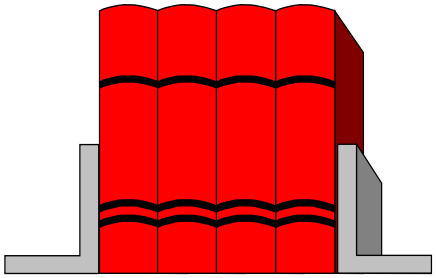
Phones

No smoking



Data forms

Certificates



Documentation

Introduction of participants

- **The 5 W's**
  - **Who** are you ?
  - **Where** do you work?
  - **What** is your job title?
  - **What** are your main responsibilities?
  - **Why** are you attending this seminar/workshop?

Schedule

08:30 – 09:00 – Registration

09:00 – 10:45 – Session activity

10:30 – 11:00 – **Break**

11:00 – 12:00 – Session activity

12:30 – 13:30 – **Lunch**

13:30 – 15:30 – Session activity

Programme

1. Objective of the Workshop
2. ICAO Role
3. Safety Management Fundamentals
4. ICAO SARPs
5. Definitions and Concepts
6. SSP and ICAO SARPs
7. The ICAO SSP framework
8. SSP implementation
9. The role of SSP in supporting SMS implementation
10. Summary
11. Conclusions of SSP/SMS Implementation Workshop
12. Exercises

1. OBJECTIVE OF THE WORKSHOP

Objective

Introduce the framework for development and implementation of:

- SSP
- SMS

Introduce the combination of both elements:

- Prescriptive
- Performance-based

Share experiences on the implementation of the SSP and SMS

2. ICAO ROLE

ICAO Role

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)

Safety is one of the strategic objectives of ICAO

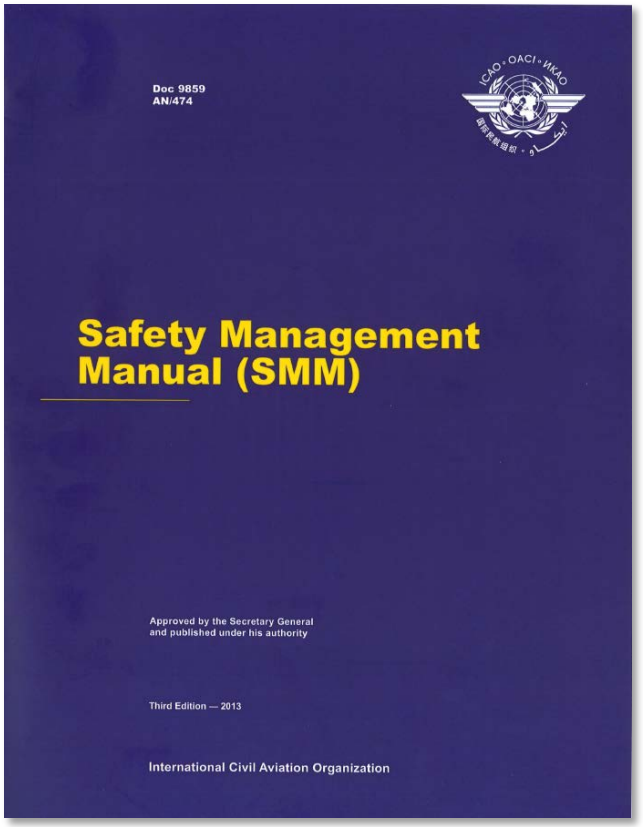
Strategic Approach

- 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
- Safety Initiatives
  - Linked to safety targets
  - Specific metrics will monitor effectiveness

ICAO Safety Framework

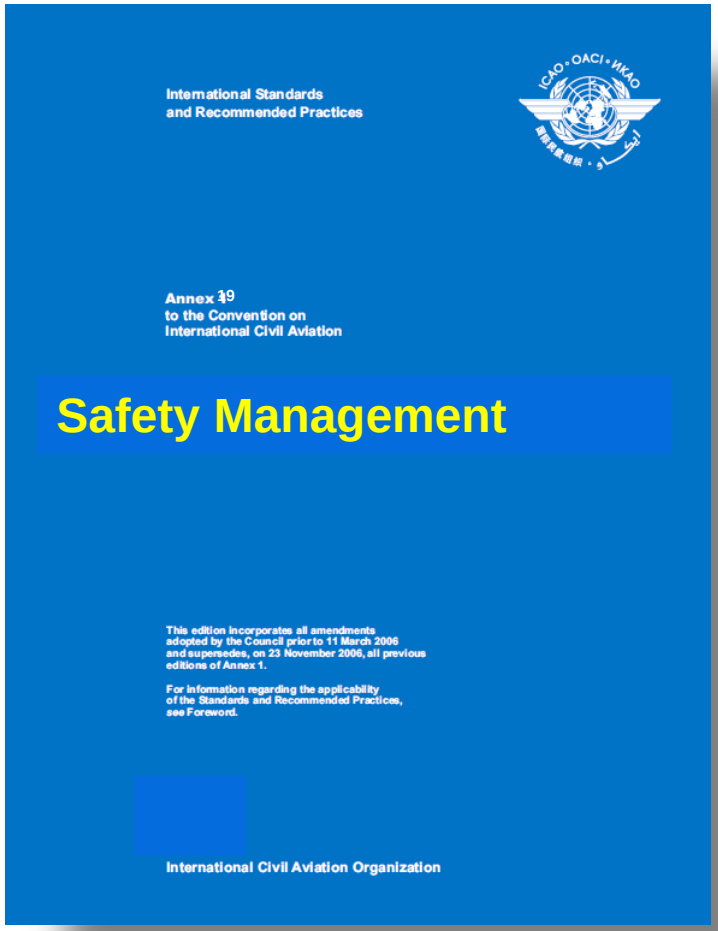
- Safety Data
- Policy & Standardization
  - New GASP
  - Annex 19
- Safety Analysis
  - Evolving to a risk-based process
- Safety Monitoring
  - Continuous Monitoring Approach
- Implementation
  - Global Runway Safety Programme
- Collaboration
  - States, International Organizations, Industry

Safety Management Guidance Material



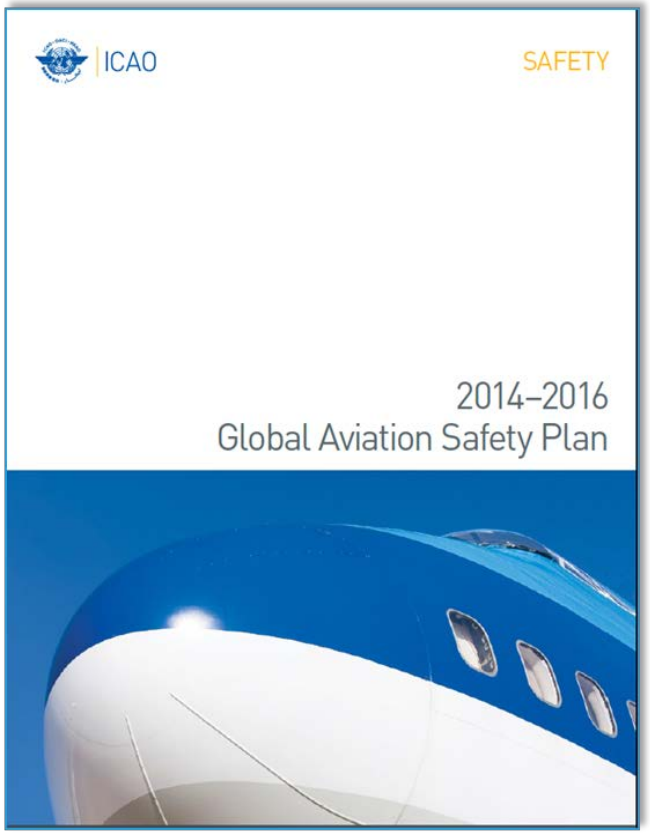
- Safety Management Manual - Doc 9859
  - Third Edition – 2013
  - Detailed guidance for SMS / SSP implementation

New Safety Management Annex 19



- Two phased process:
  - Reorganization of existing SARPs and supporting guidance material
  - In-depth review of SARPs to assess whether they need to be amended or expanded

New ICAO Global Aviation Safety Plan - GASP



GASP

- High-level policy planning and implementation document guiding complementary and sector-wide air transport progress in conjunction with the ICAO Global Air Navigation Plan (GANP)
- Global Plans define the means and targets by which ICAO, States and aviation stakeholders can anticipate and efficiently manage air traffic growth while proactively maintaining or increasing safety

GASP cont.

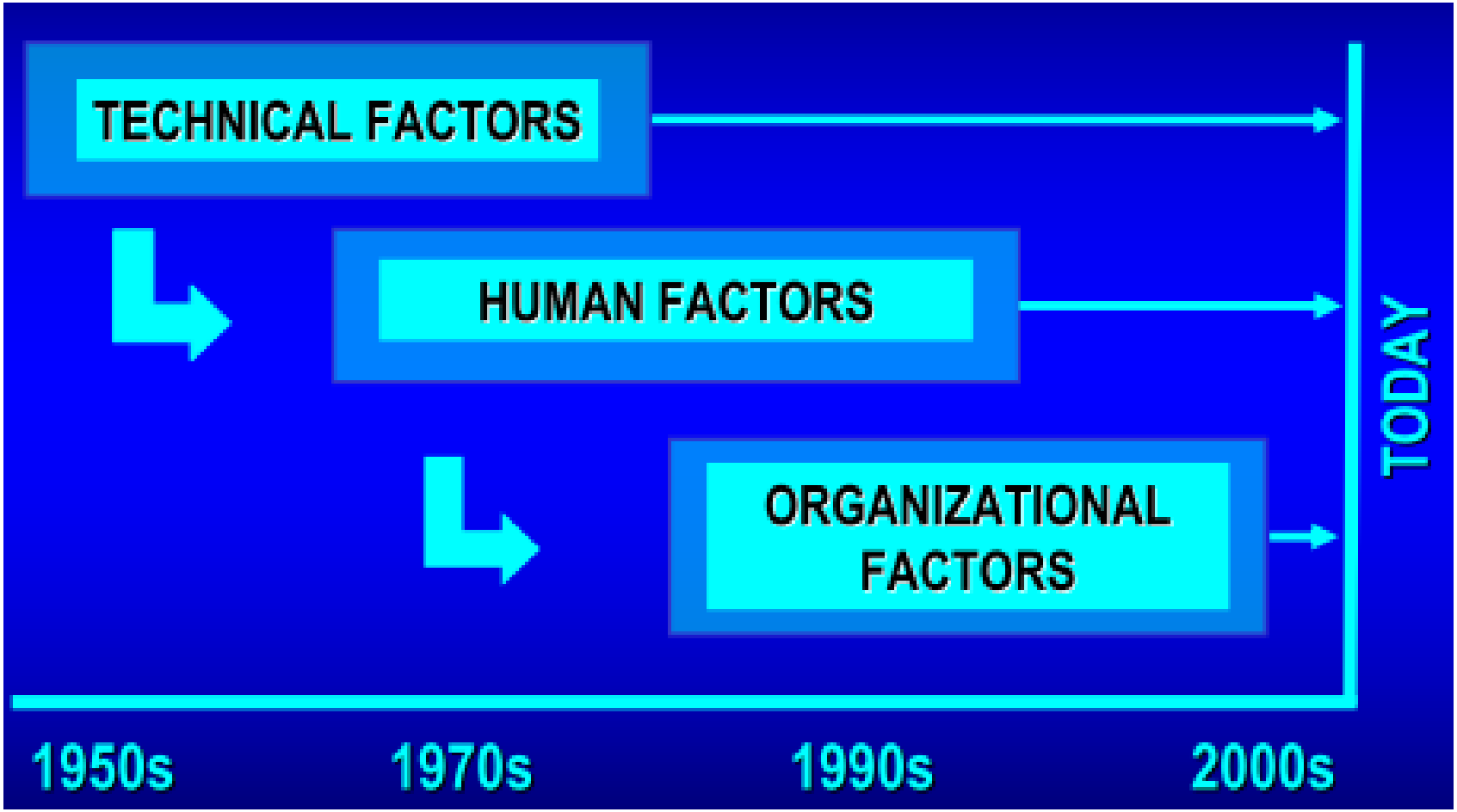
- Assist ICAO States and regions in their aviation safety policy, planning and implementation activities in several ways:
  - Sets out the global air navigation safety objectives including specific milestones and priorities to be addressed by State and regional aviation safety planners
  - Provides a familiar planning framework to assist States and regions to make improvements in safety through the use of the four Safety Performance Enablers: standardization, collaboration, resources and safety information exchange
  - Outlines implementation strategies and best practice guidance material to assist States and regions in their efforts to tailor State and regional solutions to address the global objectives and priorities

GASP

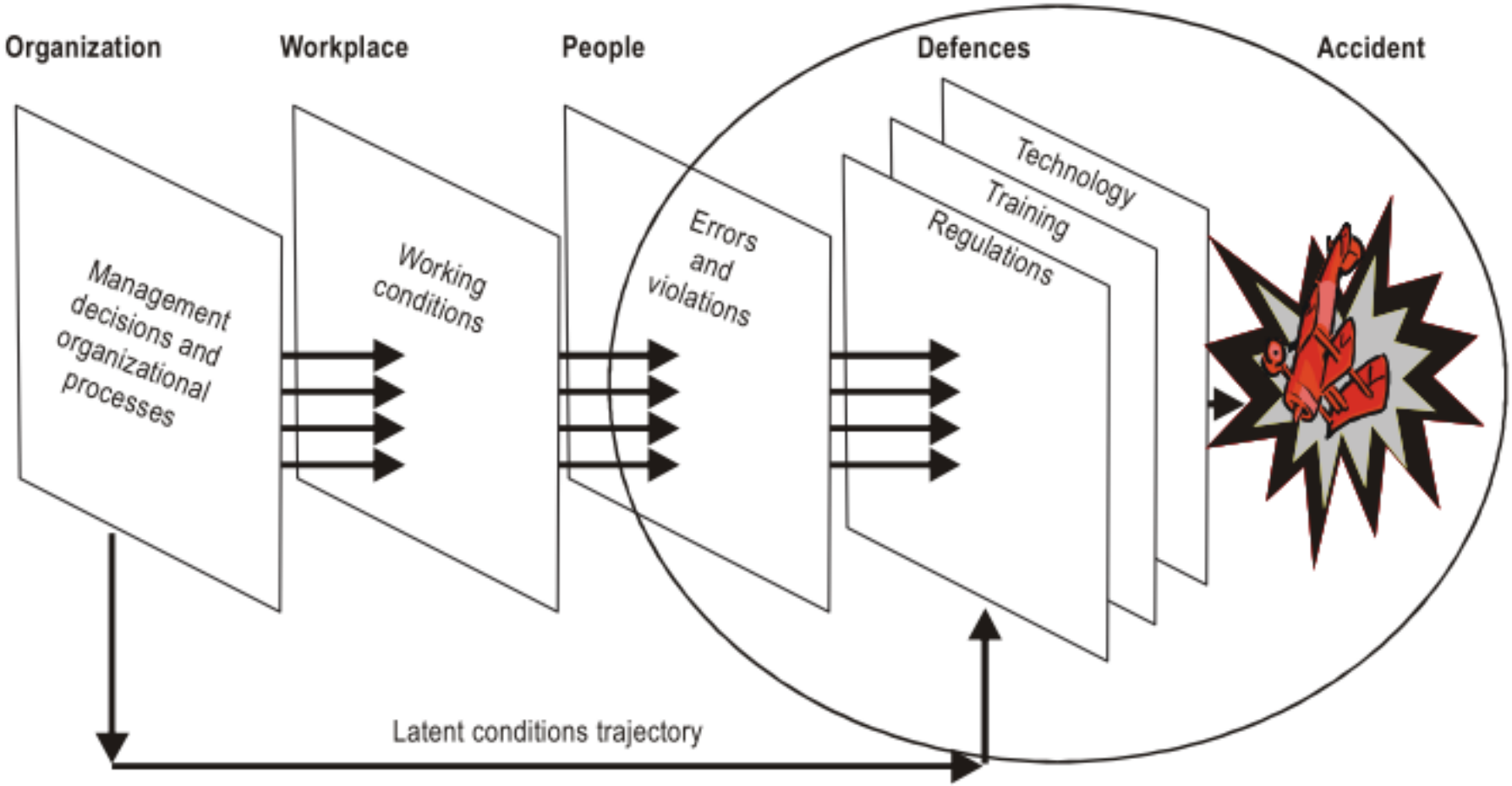
Target Date	Broad Objective
Near-Term (by 2017)	Implementation of an effective safety oversight system
Mid-Term (by 2022)	Full implementation of the ICAO State safety programme framework
Long-Term (by 2027)	Advanced safety oversight system including predictive risk management

3. SAFETY MANAGEMENT FUNDAMENTALS

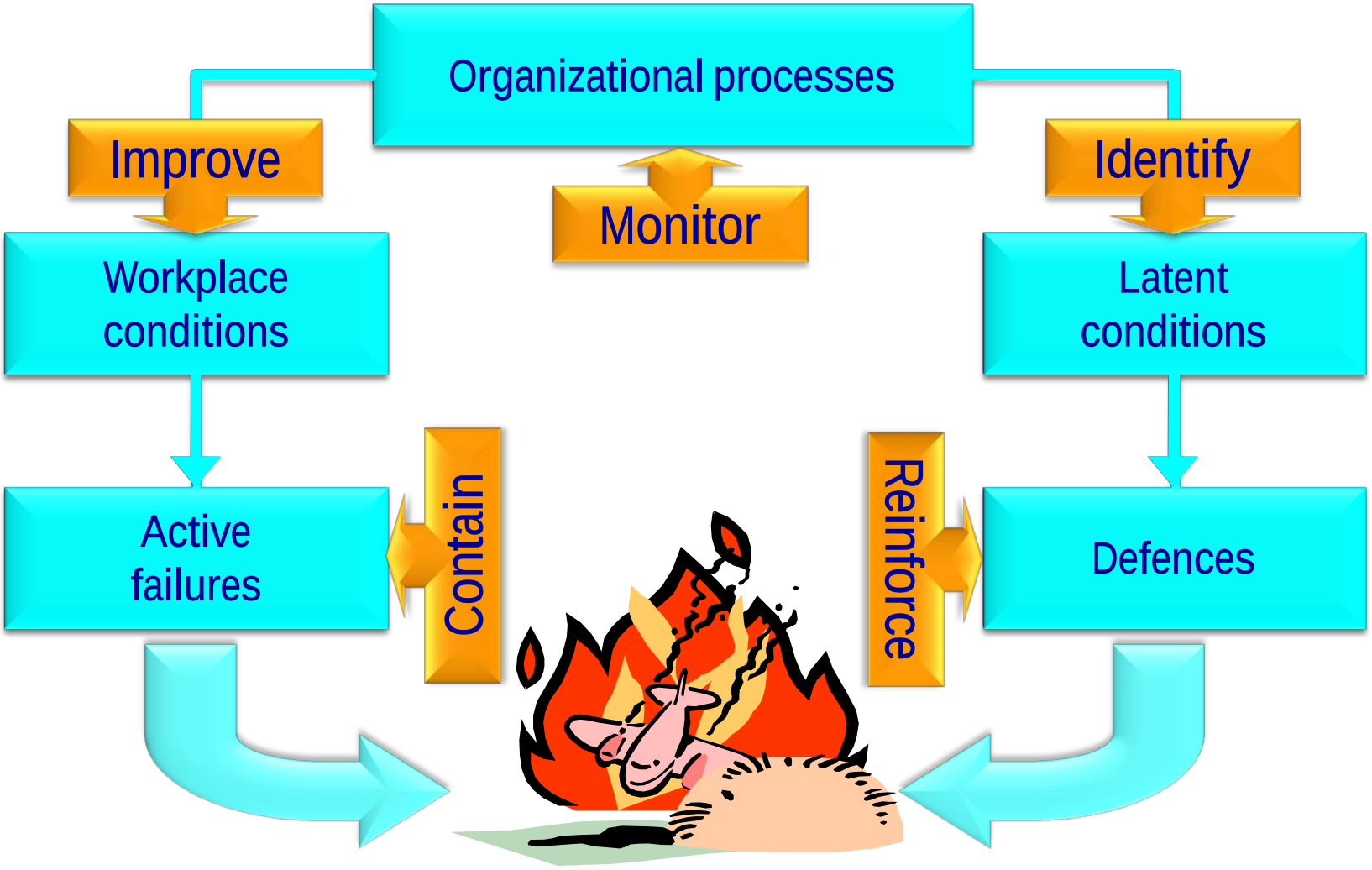
The Evolution of Safety



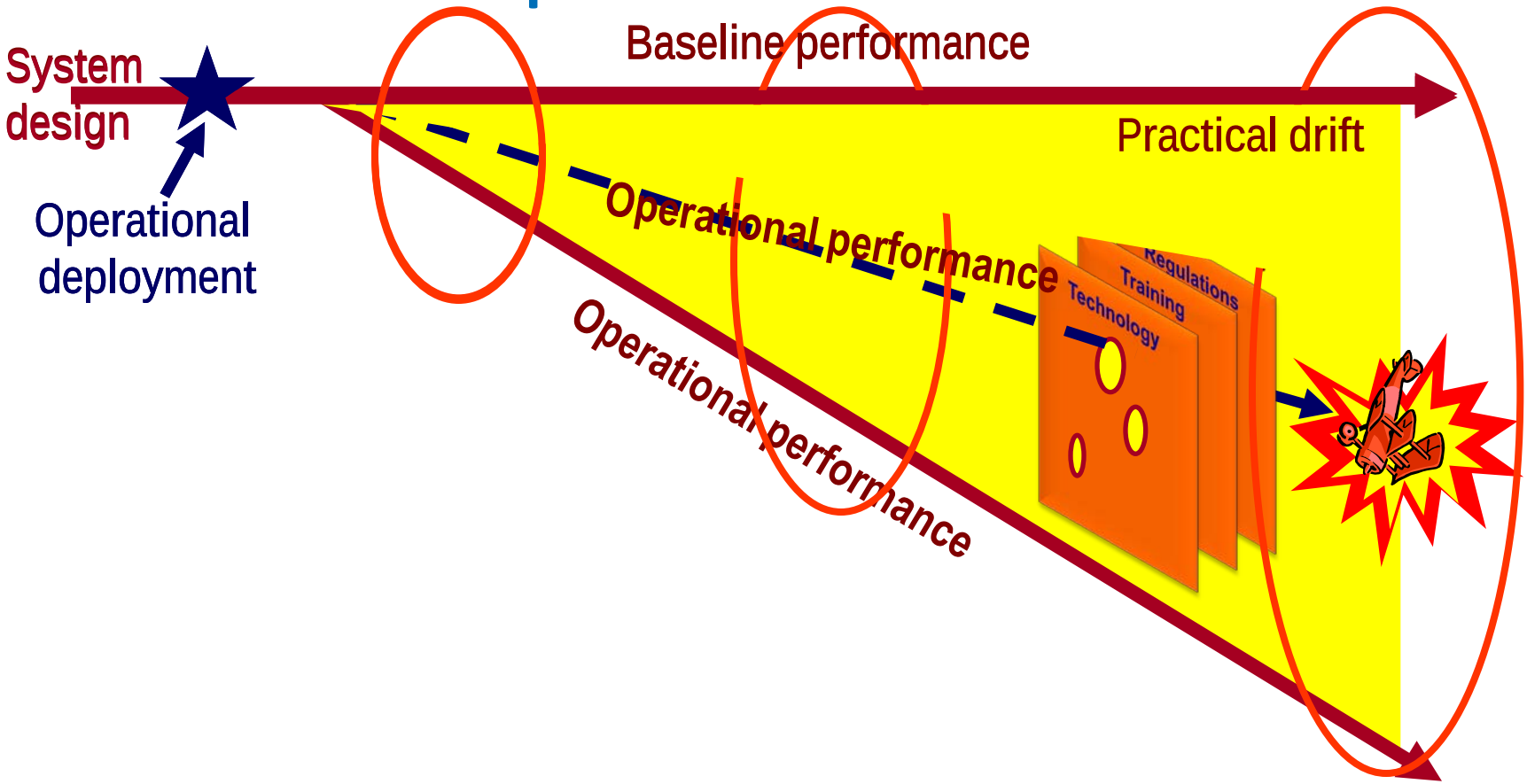
The concept of accident causation



The organizational accident



The practical drift



Workplace interaction

- Aviation workplaces involve complex interrelationships among components
- To understand operational performance, we must understand the interrelationship among components of the work place

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)

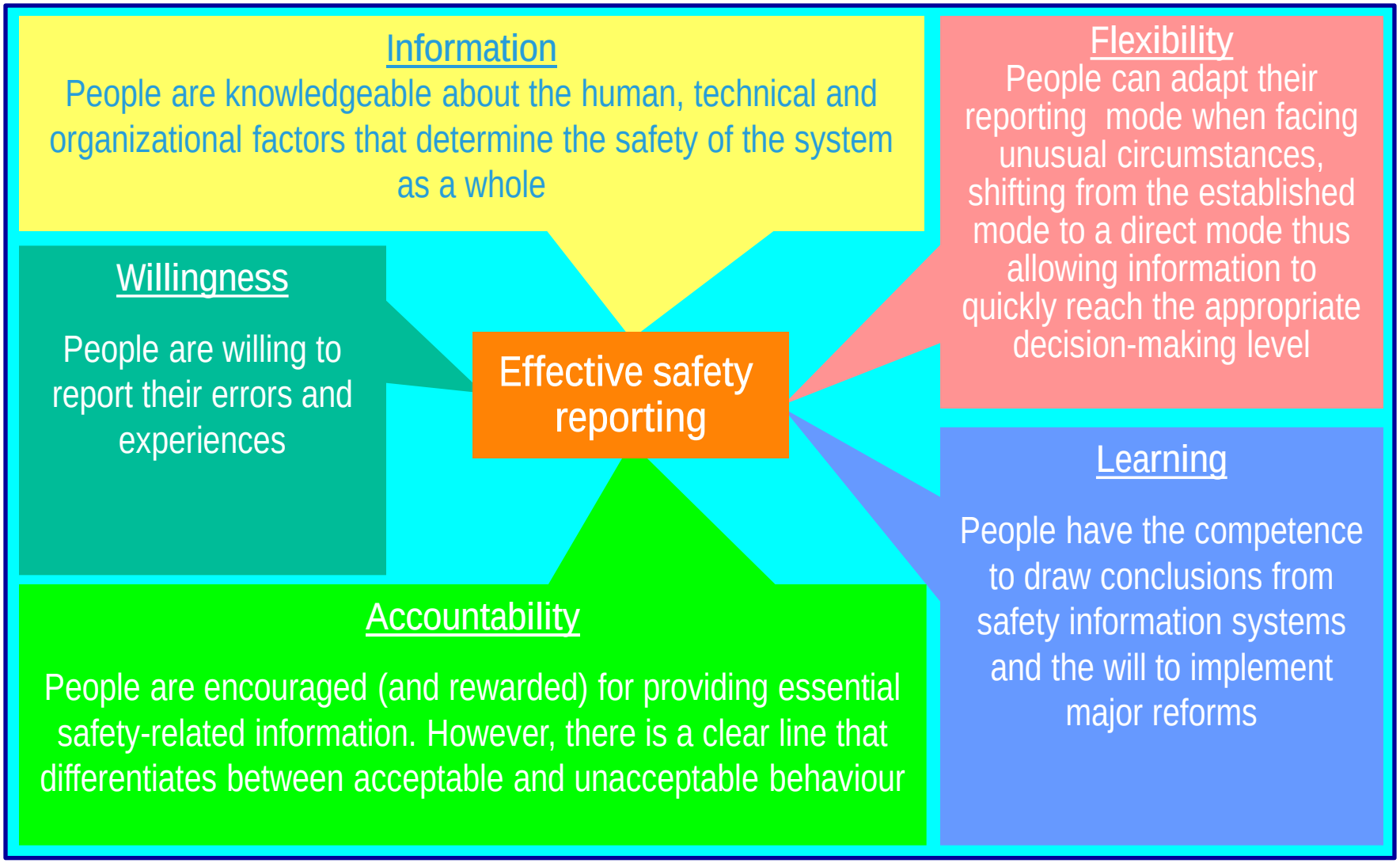
Errors and Violations

- **Error:** An action or inaction by an operational person that leads to deviations from organizational or the operational person‘s intentions or expectations
- **Violation:** a deliberate act of willful misconduct or omission resulting in a deviation from established regulations, procedures, norms or practices

Safety Culture

- **National culture** differentiates the characteristics of particular nations
- **Organizational culture** refers to the characteristics and safety perceptions among members interacting within a particular entity
- **Professional culture** differentiates the characteristics of particular professional groups
- **Reporting Culture** emerges from personnel beliefs and attitudes toward the benefits and potential detriments associated with reporting systems and the ultimate effect on their acceptance or utilization of such systems

Effective safety reporting



Objective of a business organization

To achieve its production objectives

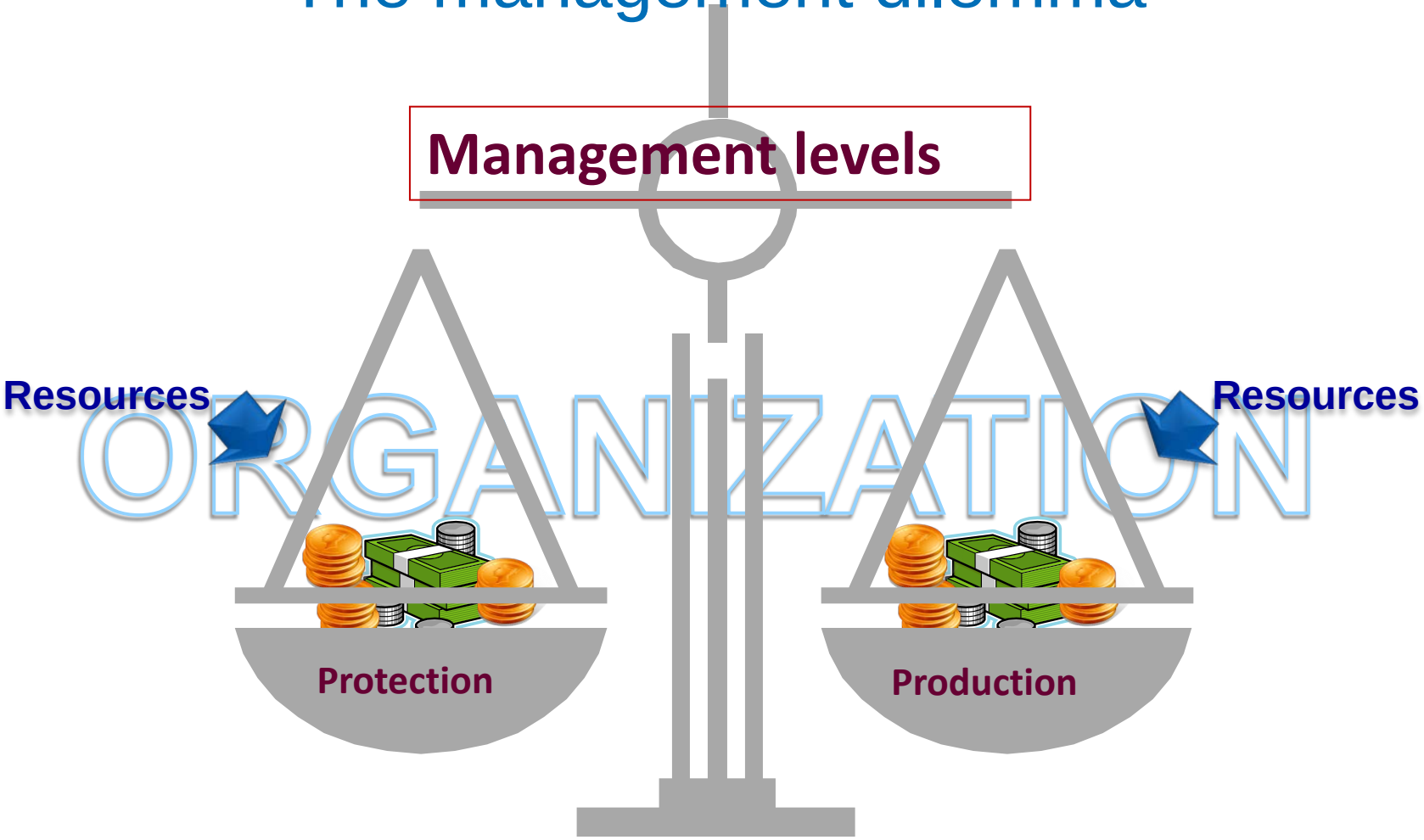
Safety management – Rationale

- 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

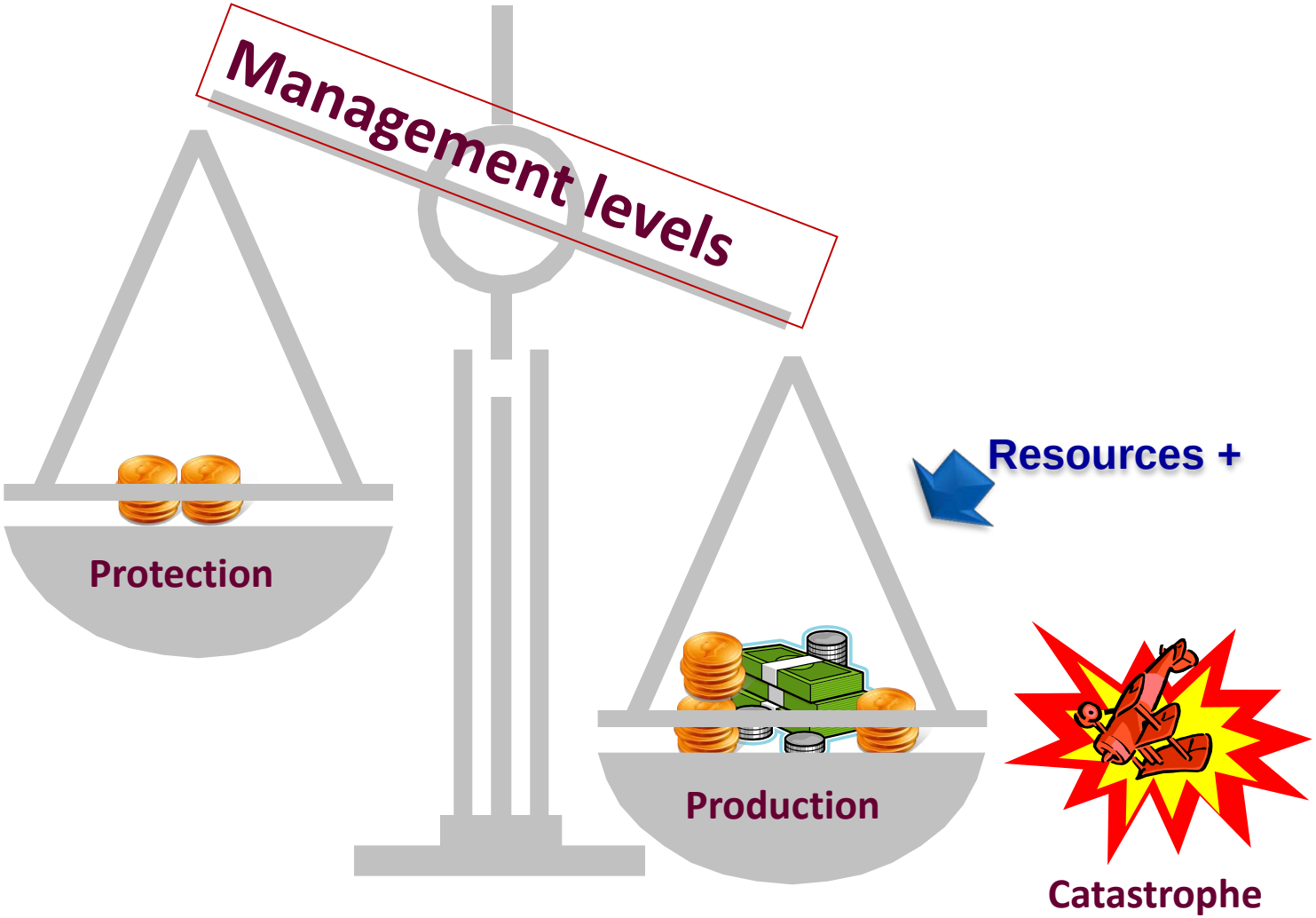
Safety management – Rationale cont.

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

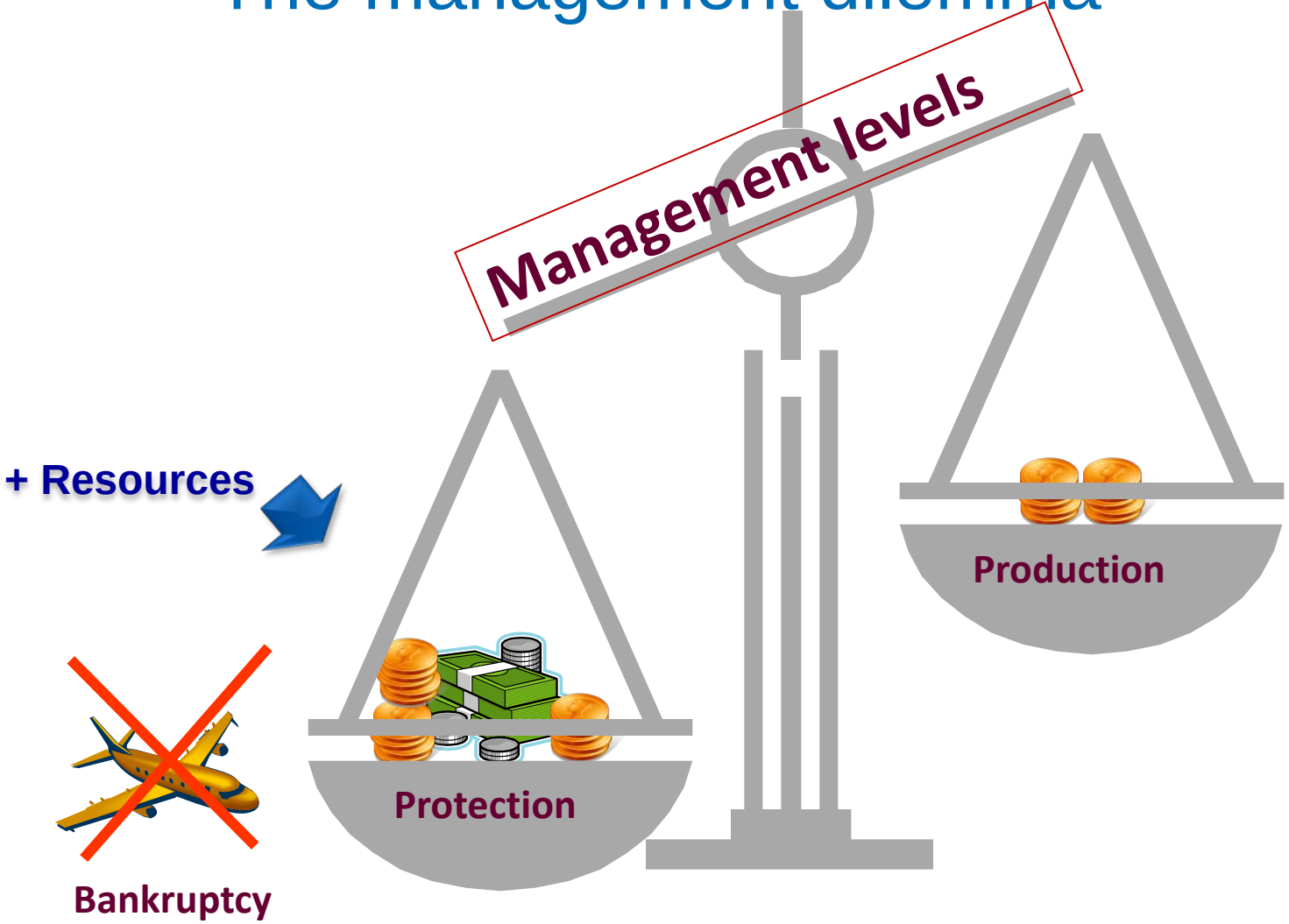
The management dilemma



The management dilemma



The management dilemma

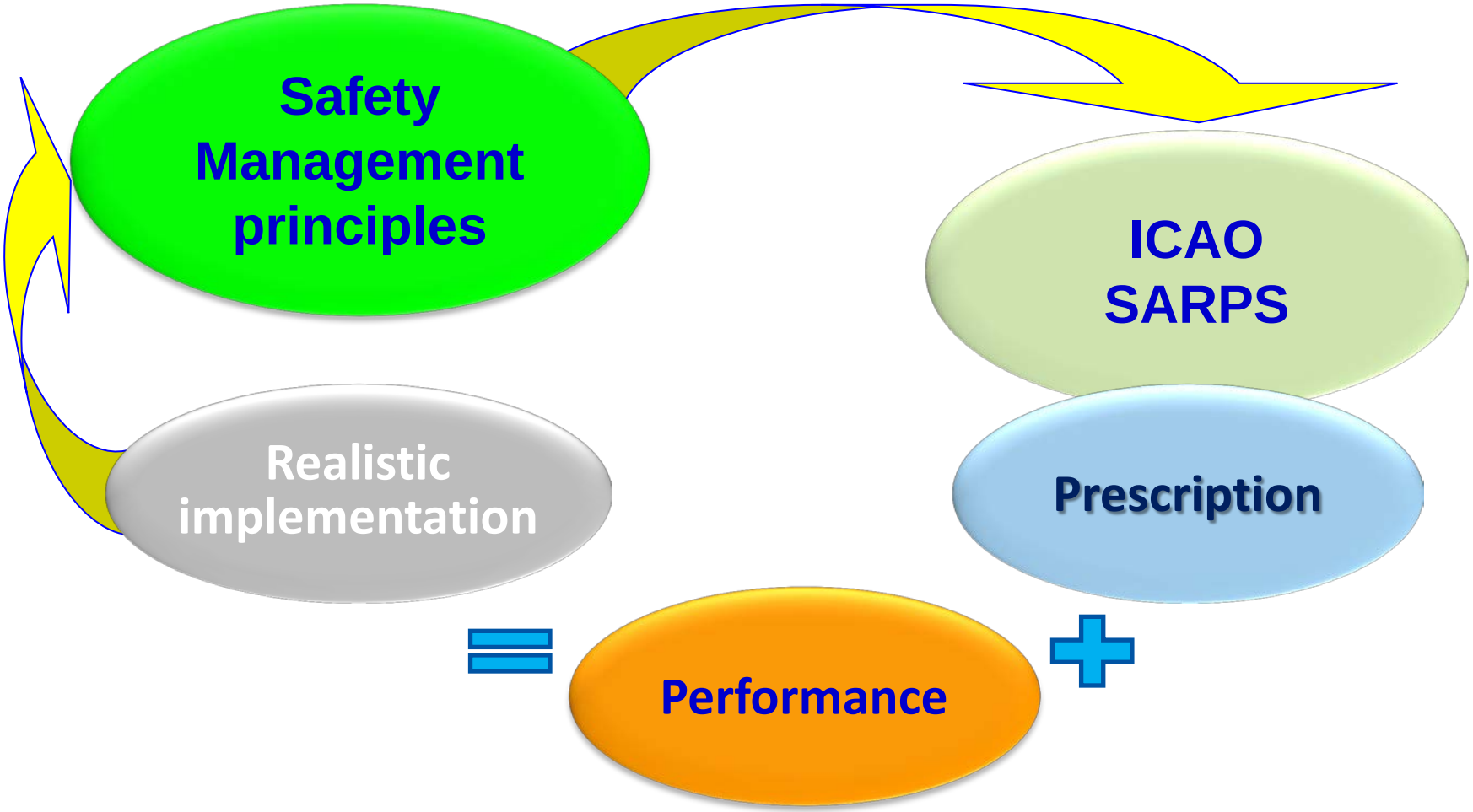


Safety management – The response

- Safety issues art 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
- The product/service provided by an aviation organization must be delivered safely

4. ICAO SARPs

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 based environment

Regulations as administrative controls

- ❖ Rigid regulatory framework
  - ➢ Inspections
  - ➢ Audits
    - ✓ *Regulatory compliance*

Performance based environment

Regulations as safety risk 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 (ALosP)
  - Safety management system (SMS)
    - Safety performance of the SMS
  - Management accountability

ICAO requirement

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

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

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

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

CAA 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 management principles:
  - Safety Risk Management (SRM)
  - Safety Assurance (SA)
- SSP is the bridge that closes the gap between:
  - Internal and external safety processes of a State
  - Internal safety processes of service providers

5. DEFINITIONS AND CONCEPTS

Concept of safety

ICAO Annex 19:

The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

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 Approach cont.

The traditional approach:

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

Key definitions

- **Hazard:** 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
- **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 Identification Methodologies

- **Reactive**: involves analysis of past outcomes or events. Hazards are identified through investigation of safety occurrences. Incidents and accidents are clear indicators of systems‘ deficiencies and therefore can be used to determine the hazards that were both contributing to the event or are latent

Hazard Identification Methodologies

- **Proactive:** involves analysis of existing or real time situations, which is the primary job of the safety assurance function with its audits, evaluations, employee reporting, and associated analysis and assessment processes. This involves actively seeking hazards in the existing processes

Hazard Identification Methodologies

- **Predictive:** involves data gathering in order to identify possible negative future outcomes or events, analyzing system processes and the environment to identify potential future hazards and initiating mitigating actions

Hazard analysis

State the generic hazard

(Hazard statement)

- Airport construction

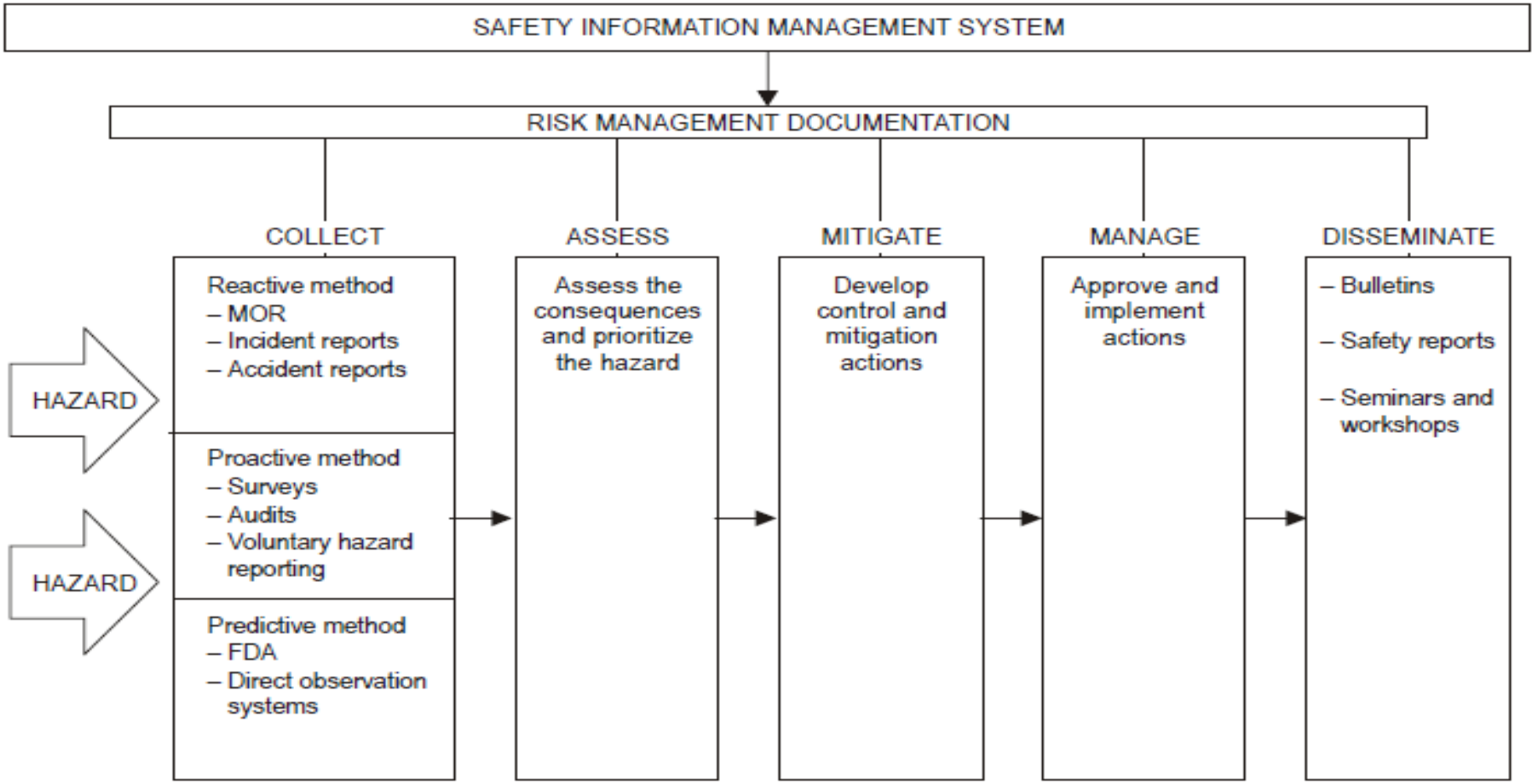
Identify specific components of the hazard

- Construction equipment
- Closed taxiways
- Etc.

Naturally leading to specific consequence(s)

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

Hazard documentation & follow-up risk management process



Safety Risk

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

Safety Risk Probability

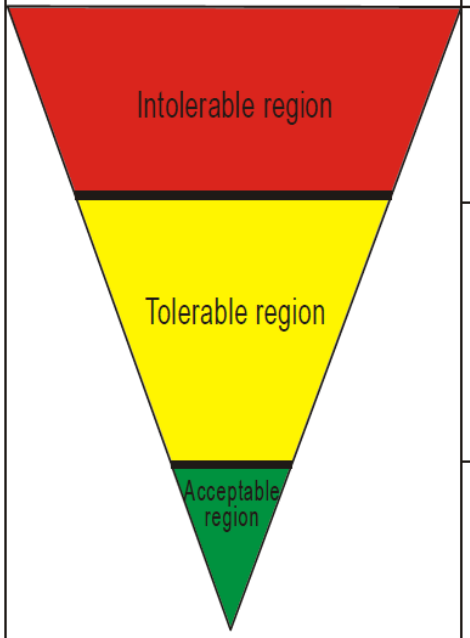
- Safety risk probability is defined as the likelihood or frequency that a safety consequence or outcome might occur.

Safety Risk Severity

- Safety risk severity is defined as the extent of harm that might reasonably occur as a consequence or outcome of the identified hazard

Safety Risk Tolerability

- Describes the tolerability criteria for the particular organization

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

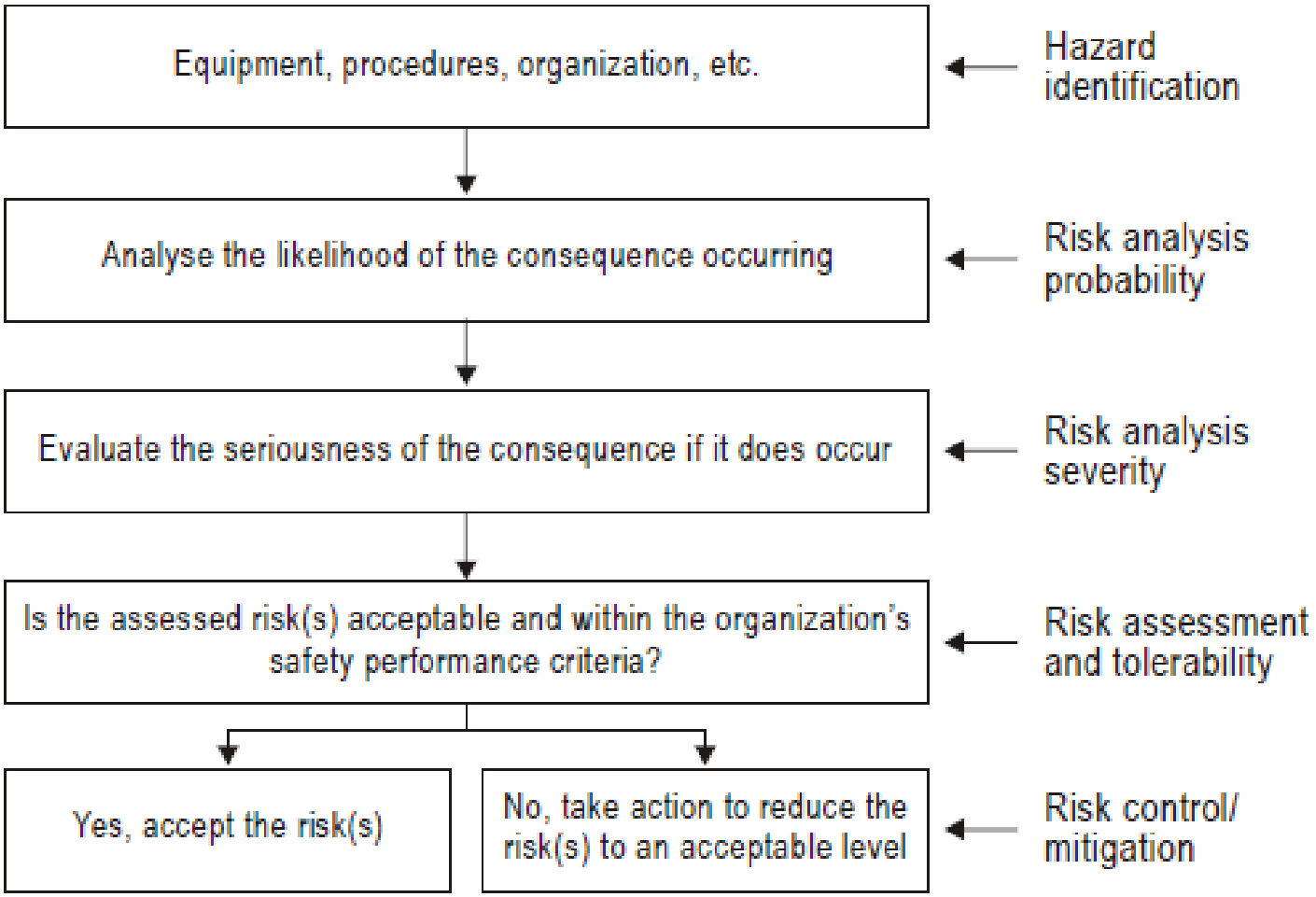
Safety risk assessment matrix

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 management (SRM)

- 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:
  - Data-driven approach to safety resources allocation, thus defensible and easier to explain

Safety Risk Management Process



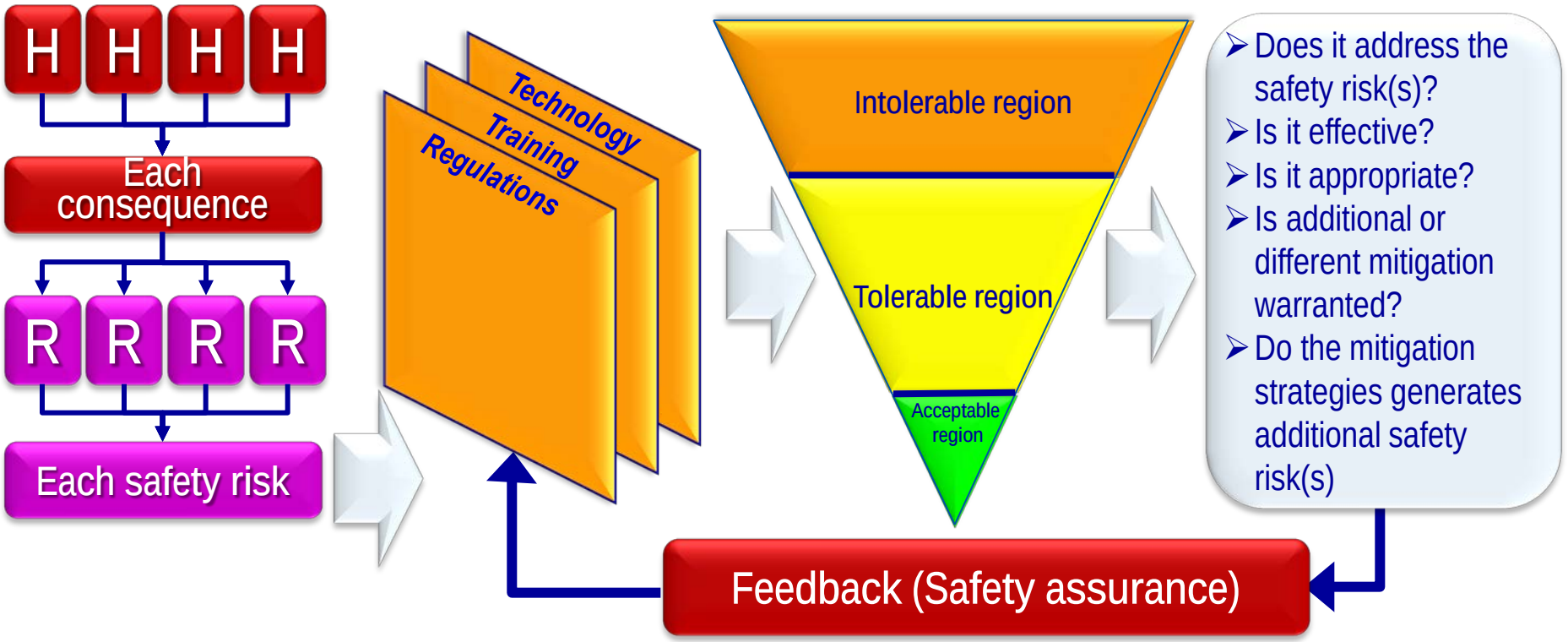
Safety risk mitigation at a glance

Hazard/consequence identification and safety risk assessment

Assessment of the defences within the safety system

Control and mitigation of the safety risk(s)

Accepting the mitigation of the safety risk(s)



Acceptable Level of Safety (ALosP)

- 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 ALosP
  - 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

- ALosP to be achieved shall be established by the State
- When establishing ALosP, 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 ALosP

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

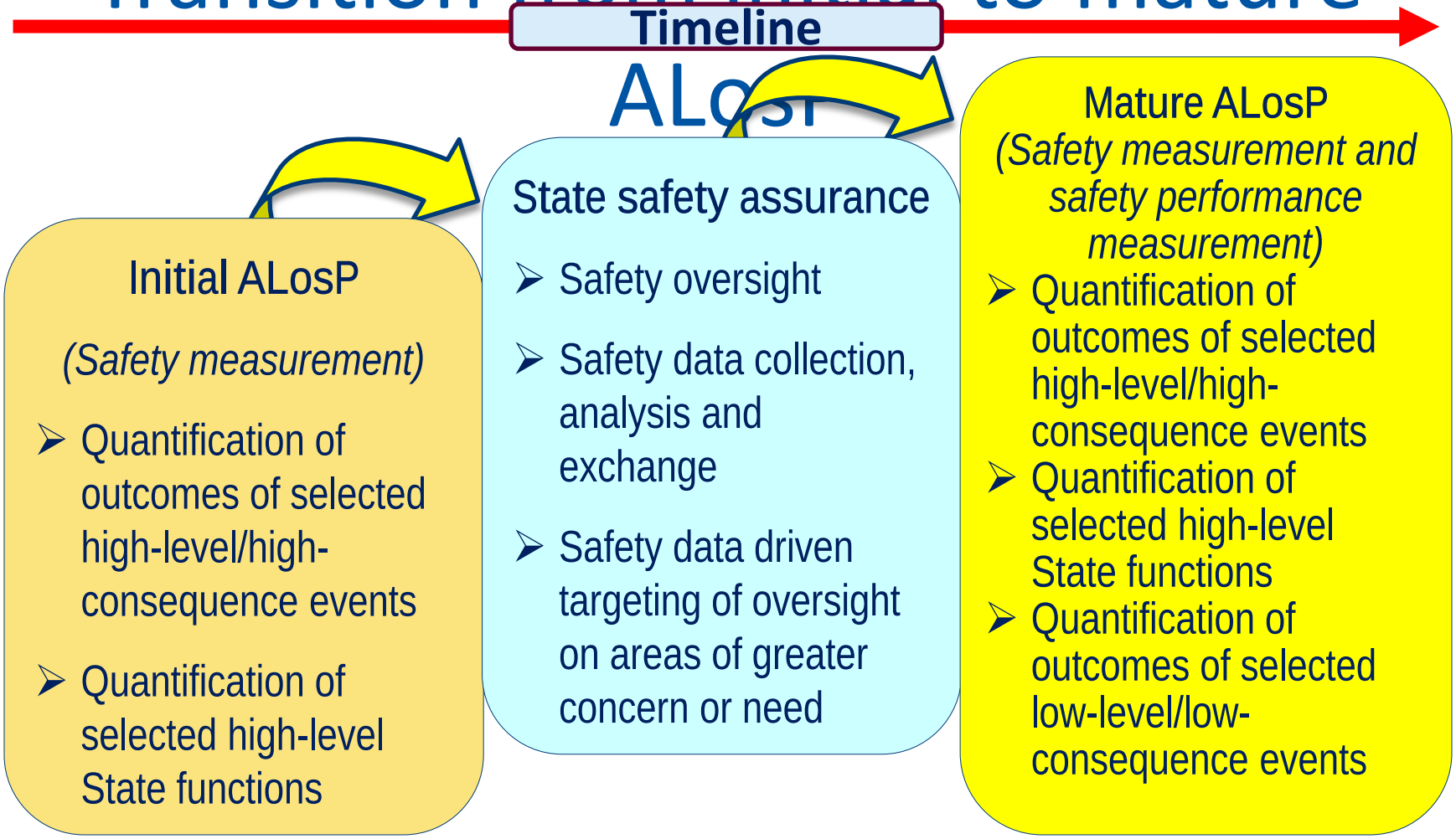
ALosP – Mature SSP

- Once States develop safety data collection and analysis capabilities under the Safety Assurance component of the SSP, ALosP should reflect a combination of:
  - Safety measurement
  - Safety performance measurement

ALosP – Legal considerations

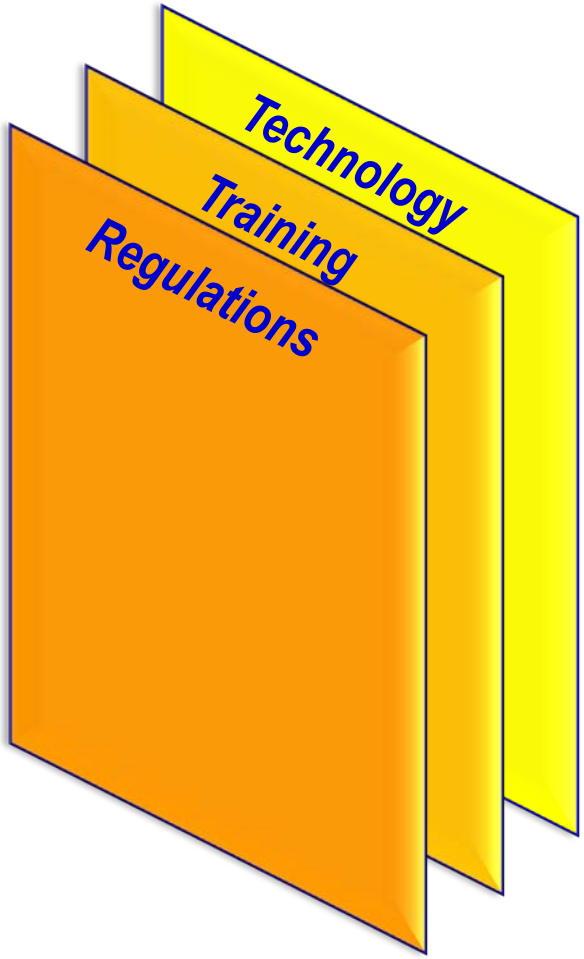
- Establishing ALosP related to the SSP:
  - Does not replace legal, regulatory, or other already established requirements, but it must support compliance with them
  - Leaves unaffected the obligations of States, and does not relieve States from compliance with SARPs

Transition from initial to mature ALosP



Delivering ALosP – 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

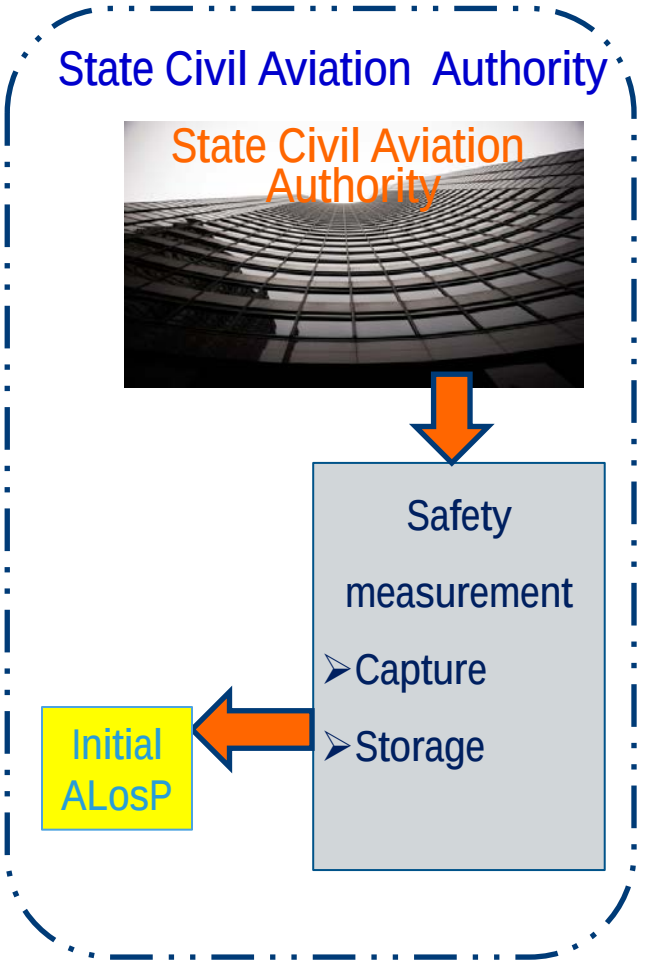
Airport N° 3

State Civil Aviation Authority

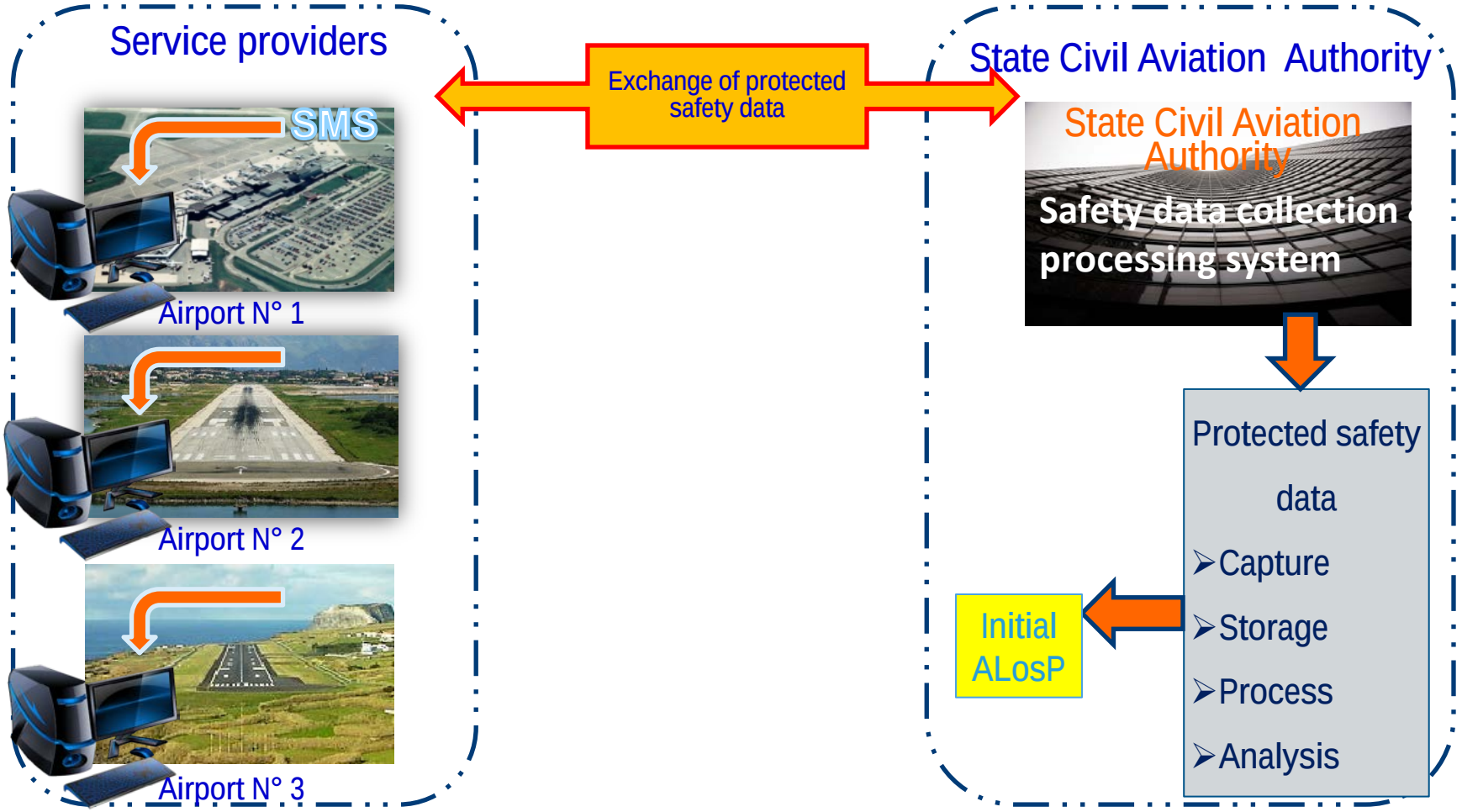
Safety measurement

- Capture
- Storage

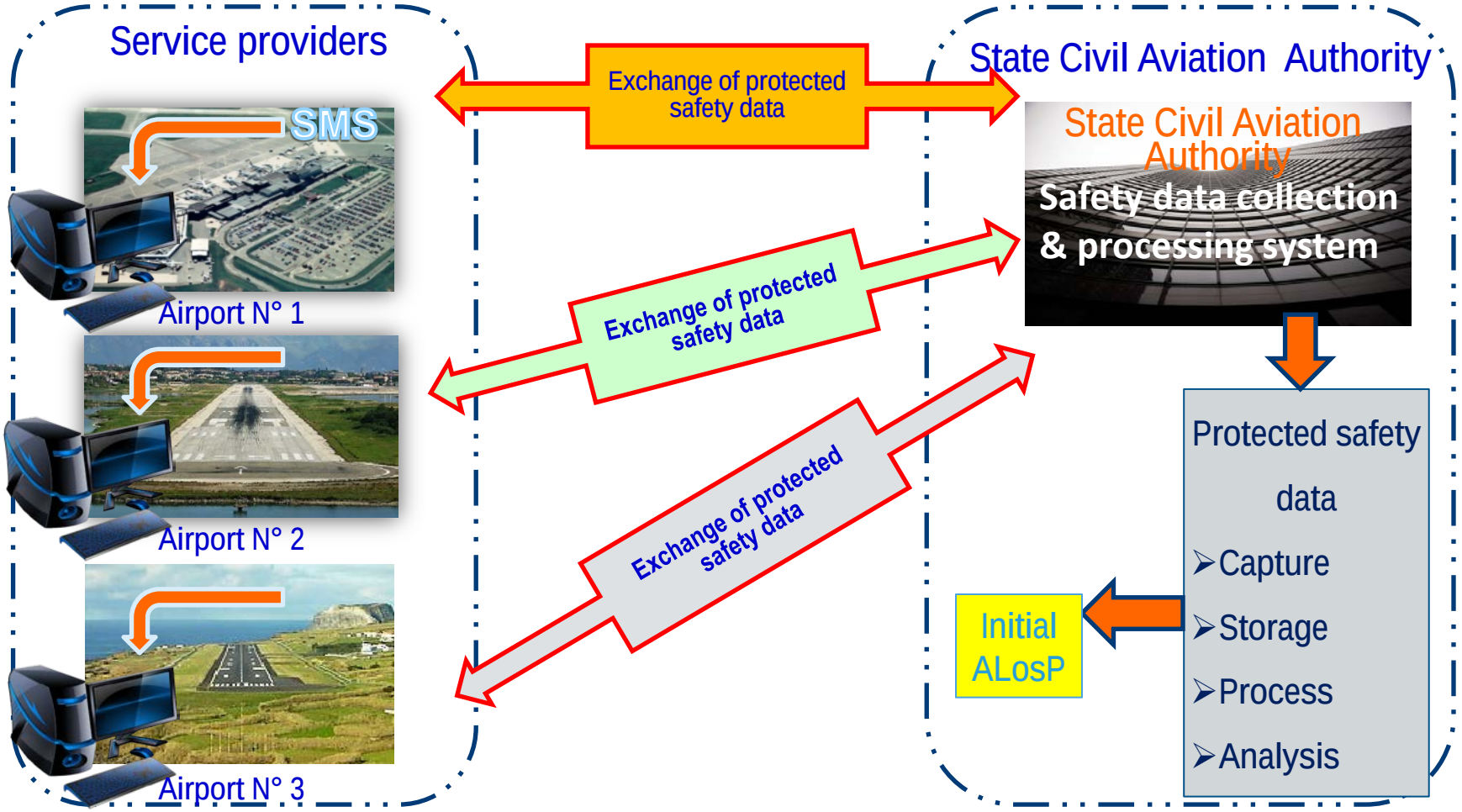
Initial ALosP



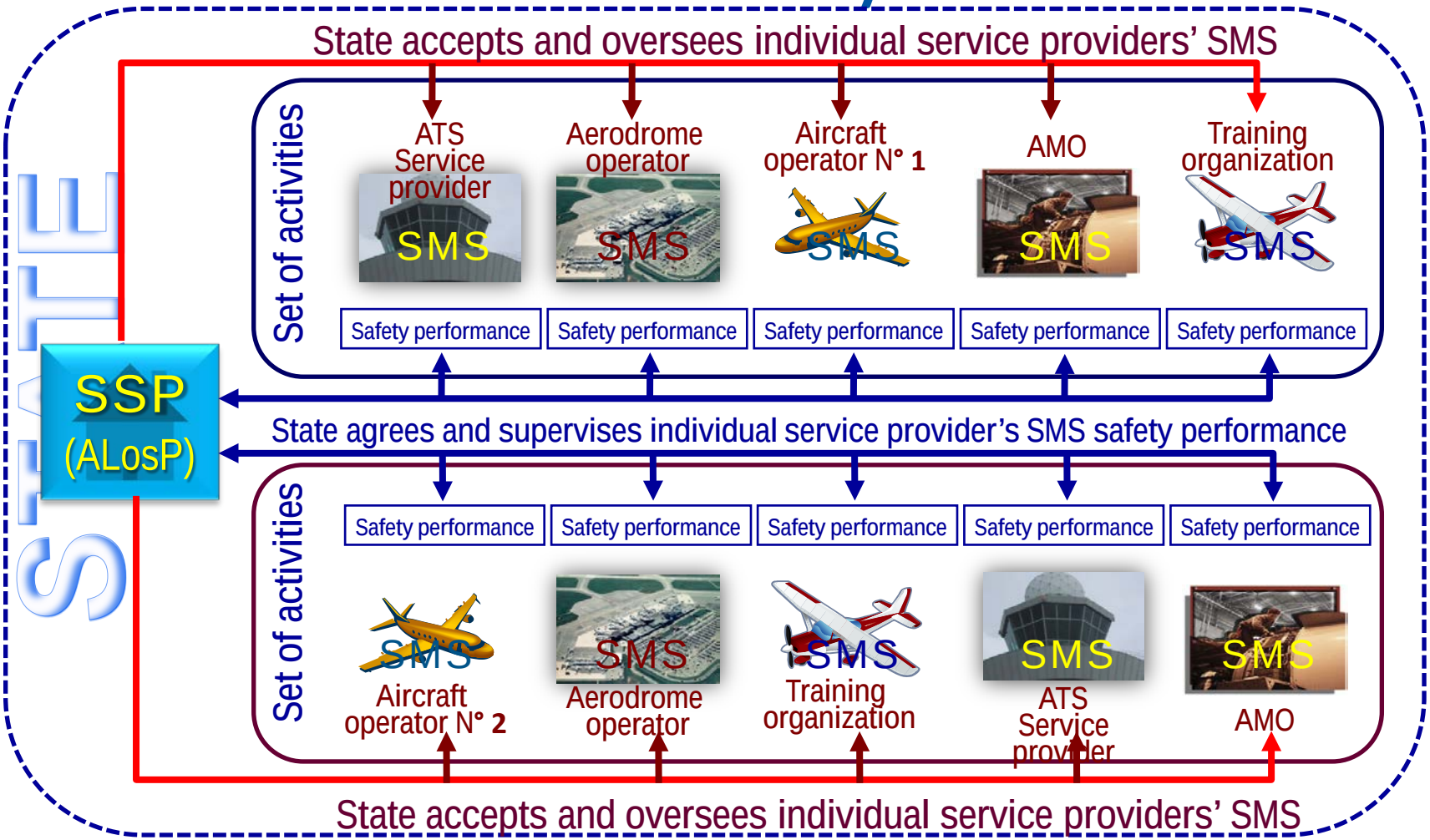
Initial ALosP



Mature ALosP



Summary


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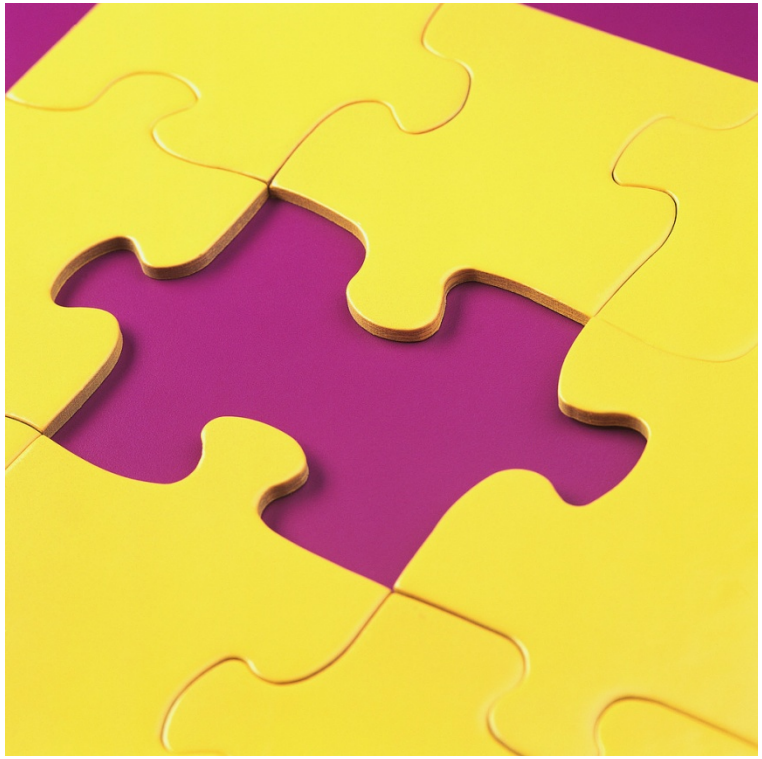
ATS
Service
provider
AMO
State accepts and oversees individual service providers' SMS

5. SSP AND ICAO SARPs

SSP definition



- An integrated set of regulations and activities aimed at improving safety

SSP

- States shall establish the SSP in order to achieve an acceptable level of safety (ALosP)
- ALosP will be set by the State
- 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

- Shall have administrative responsibility and accountability 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

Safety Management Systems - SMS

- A systematic approach to managing safety, including the organizational structures, accountabilities, policies and procedures

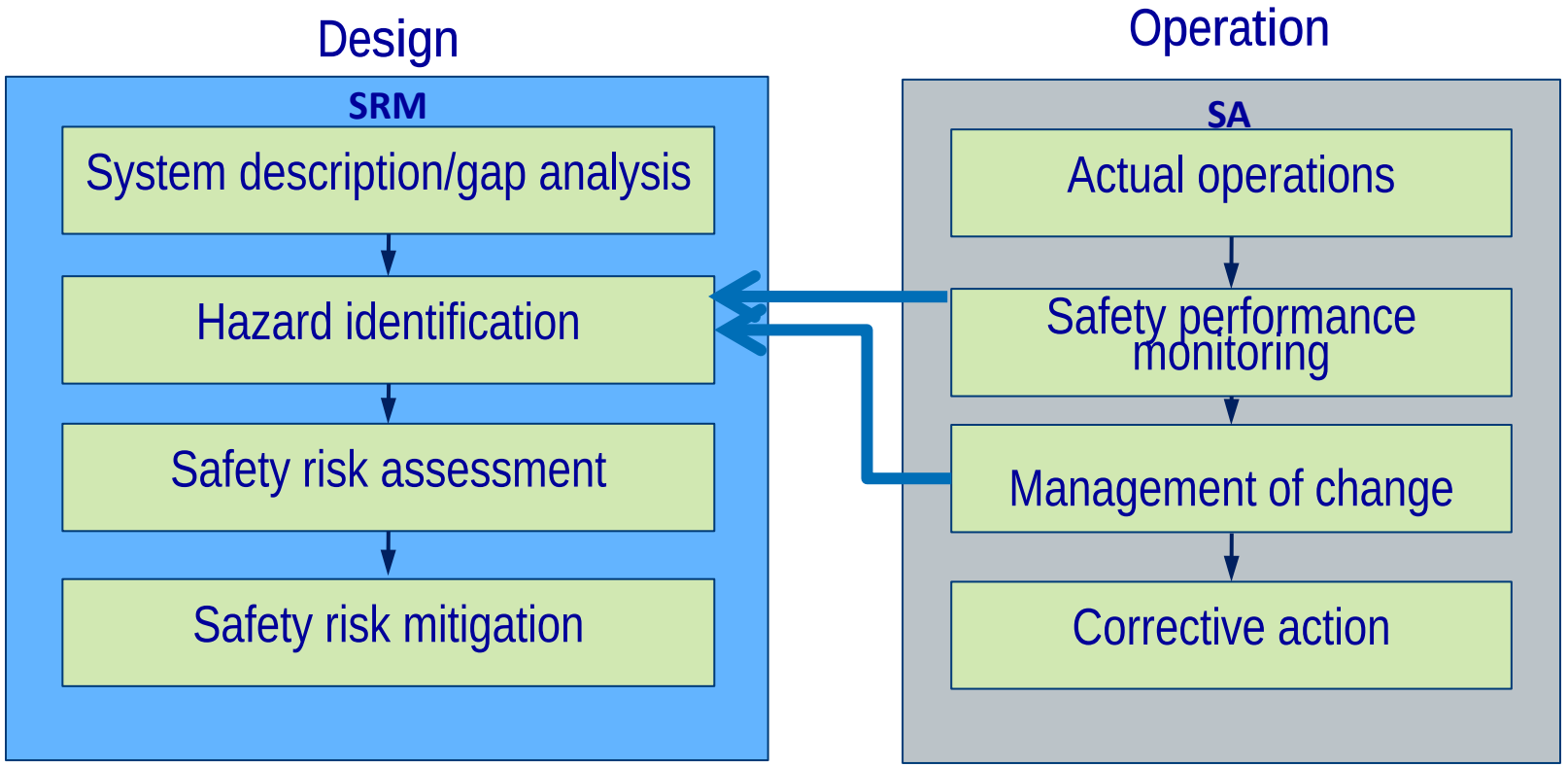
SMS State requirement

- That a service provider implement the 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

SMS

- A system to assure the safe operation of aircraft through effective management of safety risk
- Designed to continuously improve safety by identifying hazards, collecting and analyzing data and continuously assessing safety risks
- Seeks to proactively contain or mitigate risks before they result in aviation accidents and incidents
- Commensurate with the organization‘s regulatory obligations and safety goals

Safety Risk Management (SRM) & Safety Assurance (SA)



SMS

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

Service providers and SMS

Organizations that are required to implement the 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

Quality Management System & SMS

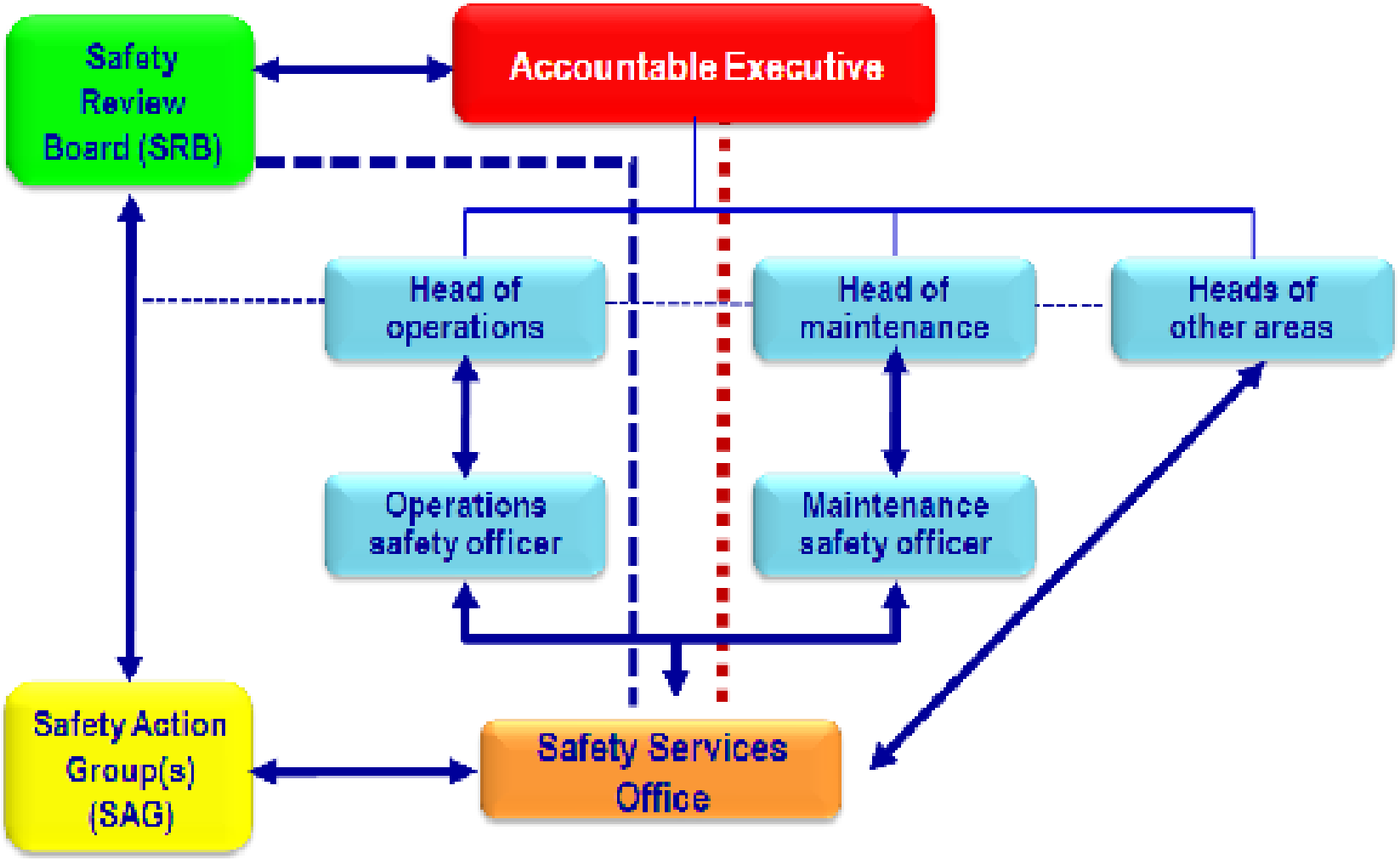
QMS	SMS
Quality	Safety
Quality assurance	Safety assurance
Quality control	Hazard identification & Risk control
Quality culture	Safety culture
Compliance to requirements	Acceptable level of safety performance
Prescriptive	Performance-based
Standards & specifications	Organizational & human factors
Reactive > Proactive	Proactive > Predictive

Basic safety management SARPs

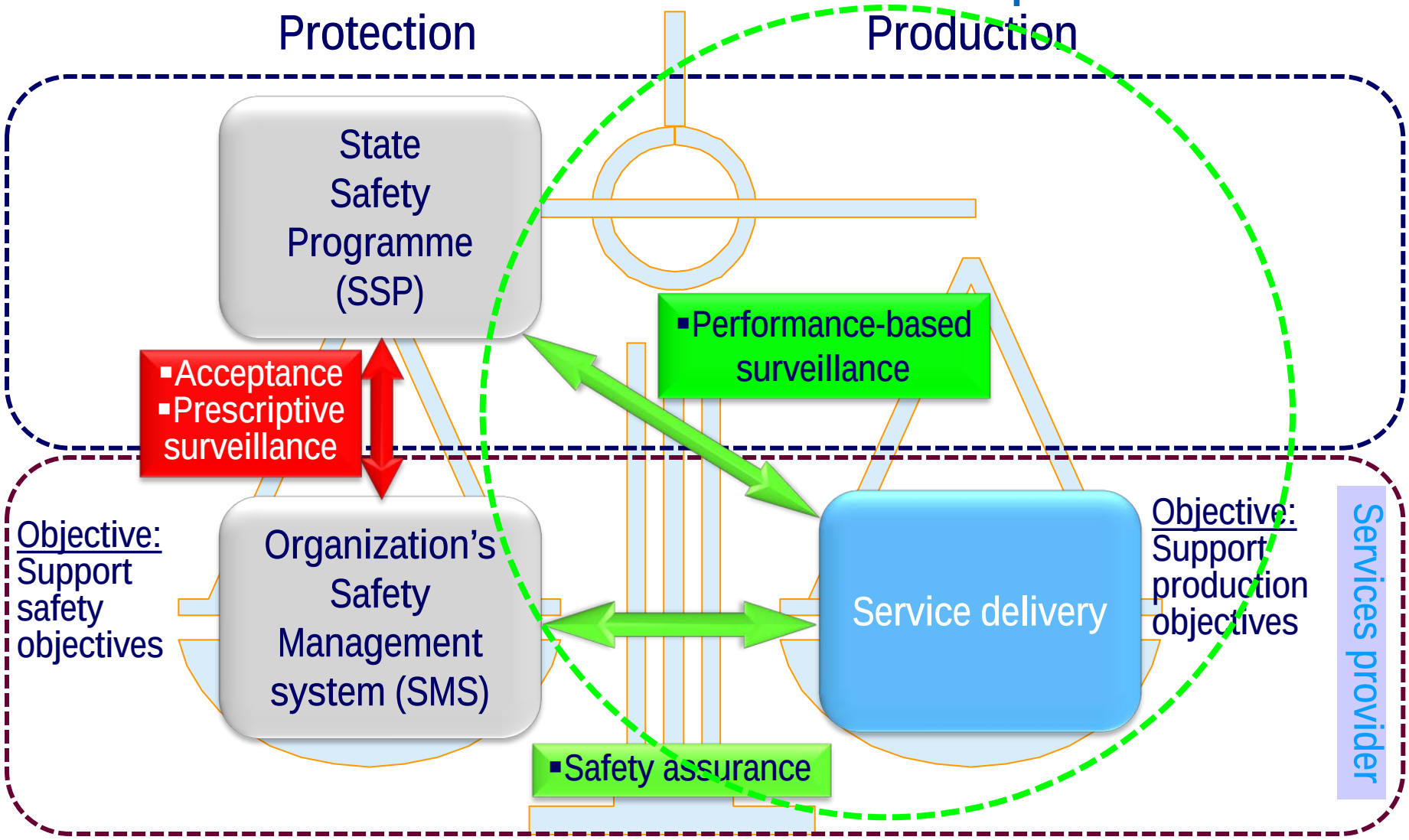
- The SMS shall clearly define lines of safety accountability throughout a service provider organization, including a direct accountability for safety on the part of senior management

(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 (ALosP) in civil aviation
- ALosP 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

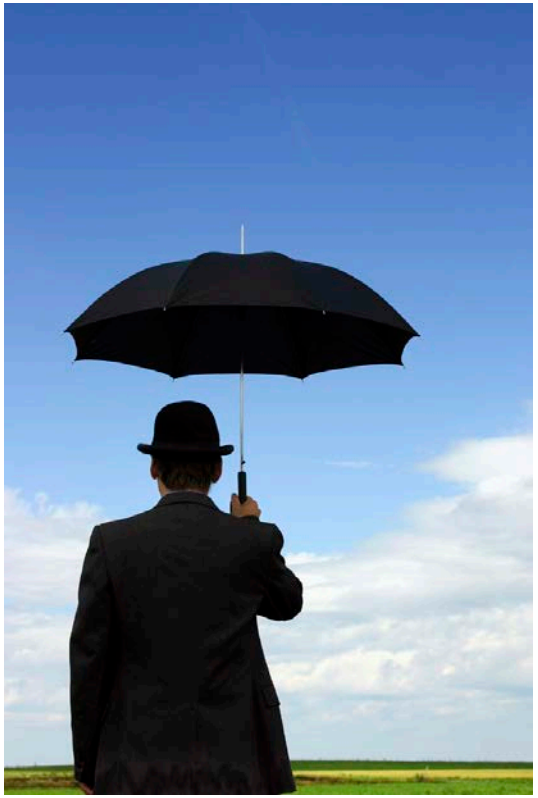
6. THE ICAO SSP FRAMEWORK

Core operational activities of an SSP

- State safety risk management (SRM)
- State safety assurance (SA)

Core operational activities of an SSP cont.

- 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 provider's SMS
   - 2.2 Agreement on the service provider's 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

Components and elements of the SSP

- Four components:
  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

Components and elements of the 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

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

Components and elements of the SSP

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

Components and elements of the SSP

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

Components and elements of the SSP

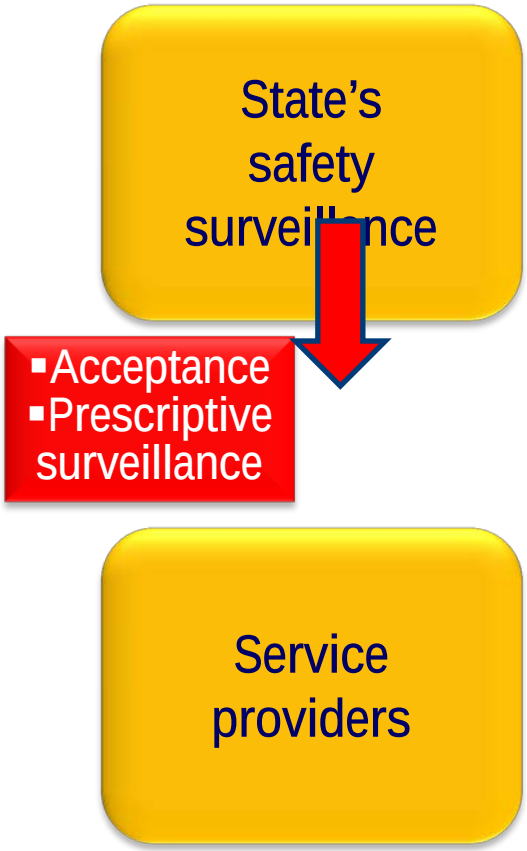
The State safety promotion component is composed of two elements:

1. Internal training, communication and dissemination of safety information
2. External training, communication and dissemination of safety information

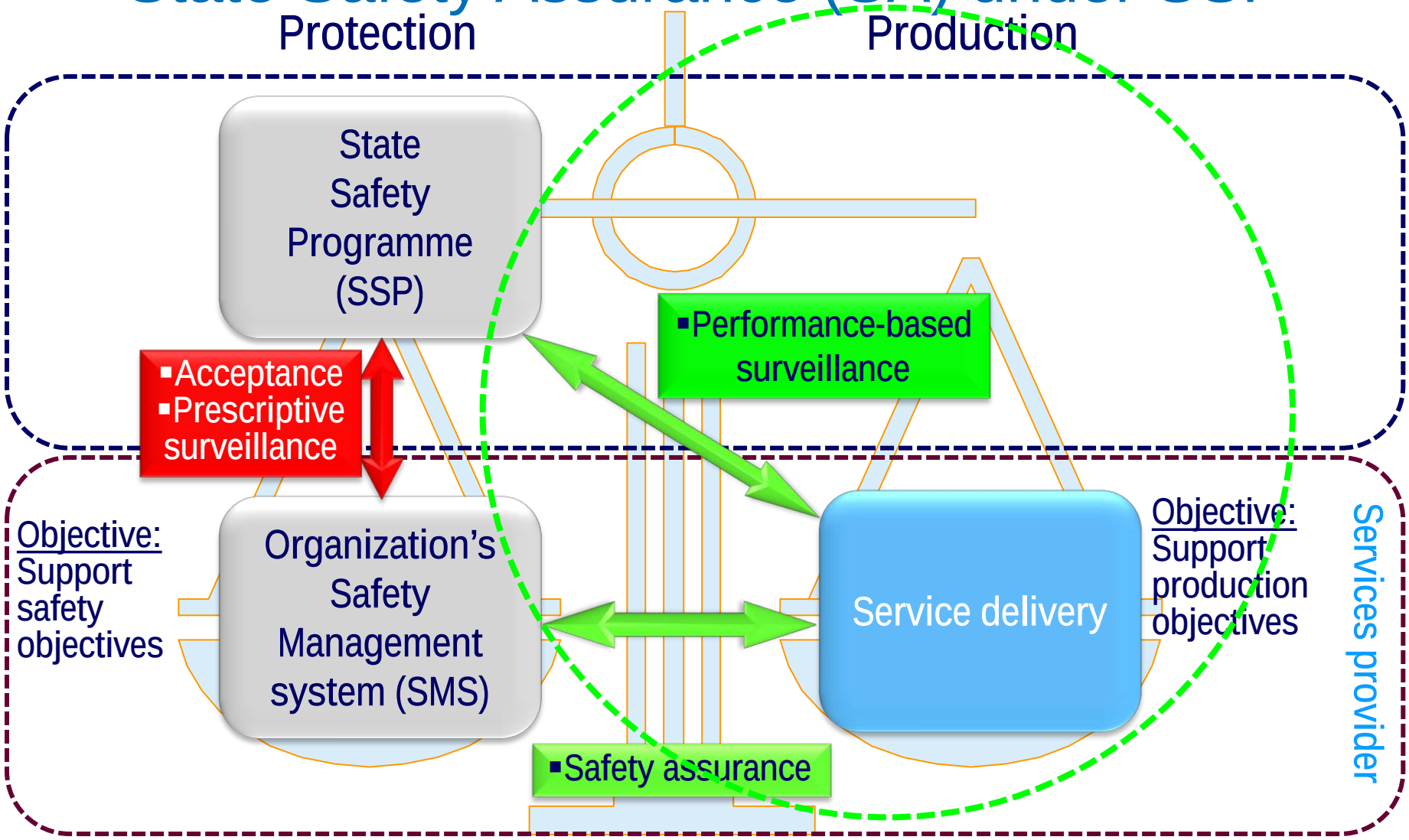
State responsibility on safety promotion

- 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 the service provider 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

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

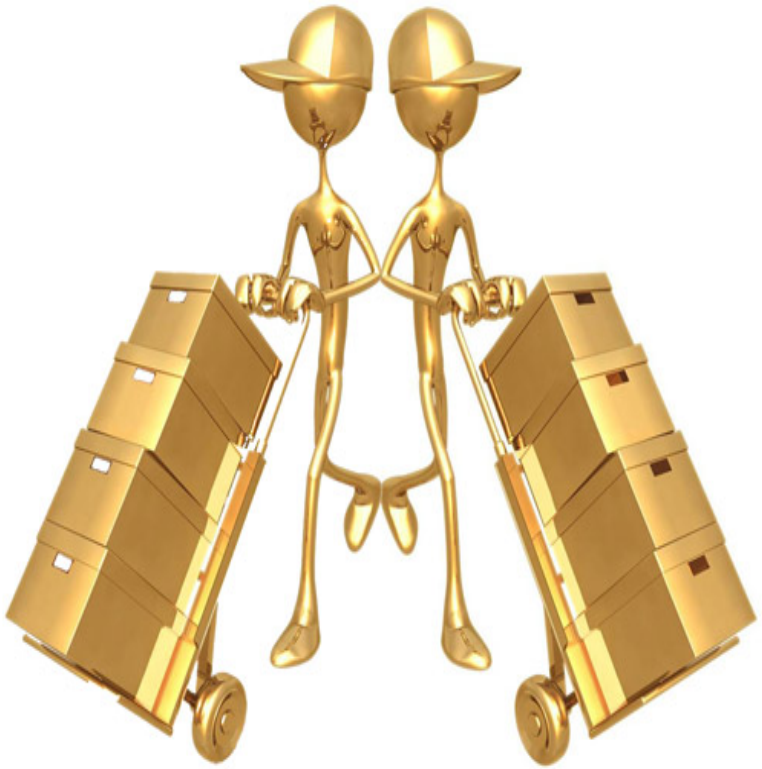
- The availability of a framework provides a principled guide for SSP implementation
- ICAO has developed guidance for the development of an SSP framework in order to facilitate SSP implementation

SSP – Two considerations

- The implementation of the 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 its SMS



SSP gap analysis

- Allows to assess the existence and maturity within the State of the elements of an SSP
- 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
- 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

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

4 phases of SSP implementation – Example

Phase1 (12 mths)	Phase 2 (12 mths)	Phase 3 (24 mths)	Phase 4 (24 mths)
1. **SSP element 1.2(i):** a. Identify SSP Place Holder Organization and Accountable Executive b. Establish SSP Implementation Team c. Perform SSP Gap Analysis d. Develop SSP Implementation Plan e. Establish SSP coordination mechanism f. SSP Documentation including the State's SSP framework, its components and elements.	1. **SSP element 1.1:** National aviation legislative framework 2. **SSP element 1.2(ii):** a. Safety management responsibilities & accountabilities b. State Safety Policy & Objectives 3. **SSP element 1.3:** Accident and serious incident investigation 4. **SSP element 1.4(i):** Establish basic enforcement (penalty) legislation 5. **SSP element 3.1(i):** State safety oversight and surveillance of its service providers 6. **SSP element 2.1(i):** SMS education & promotion for service providers	1. **SSP element 1.4(ii):** Enforcement Policy/ Legislation to include: a. Provision for service providers operating under an SMS, to deal with and resolve safety and quality deviations internally b. Conditions and circumstances under which the State may intervene with safety deviations c. Provision to prevent use or disclosure of safety data for purposes other than safety improvement d. Provision to protect the sources of information obtained from voluntary/ confidential reporting systems. 2. **SSP element 2.1(ii):** Harmonized regulations requiring SMS implementation 3. **SSP element 3.2(i):** a) Safety data collection & exchange systems b) Establish high consequence State safety performance indicators and target/ alert levels	1. **SSP element 2.2:** Service provider safety performance indicators 2. **SSP element 3.1(ii):** Incorporation of service providers' SMS and safety performance indicators as part of routine surveillance program 3. **SSP element 3.2(ii):** a. Implement voluntary/ confidential safety reporting systems b. Establish lower consequence safety/ quality indicators with target/ alert level monitoring as appropriate c. Promote safety information exchange with and amongst service providers and other States. 4. **SSP element 3.3:** Prioritize inspections and audits based on the analysis of safety risk or quality data where applicable 5. **SSP element 3.1(iii)** Establish internal review mechanism covering the SSP to assure continuing effectiveness and improvement
SSP element 4.1, 4.2: Internal SSP & SMS training. Promotion of external SMS training. Internal & external communication and dissemination of safety information are progressively implemented through Phase 1 to 4.			
Note: Phase period (eg 12 months for Phase 1) is an approximate timeframe only. Actual implementation period depends on scope/ complexity of a State's aviation system, actual gaps within each element and organization structure.			

8. THE ROLE OF THE SSP SUPPORTING THE SMS IMPLEMENTATION

SMS 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 – 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

Regulation on SMS

- A regulation on SMS should address the provision of SMS guidance or advisory materials by the State
- Such guidance materials should also include any provision for a phased SMS implementation approach
- The CAA's process for acceptance of individual service provider SMS and agreement of their proposed safety performance should also be made known in such requirements or guidance materials as appropriate

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

Role of the SSP in supporting SMS implementation

- Generate a context that supports the implementation of an SMS by service providers
- SMS cannot perform effectively either in a regulatory vacuum or in an exclusively compliance-oriented environment

Role of the SSP in supporting SMS implementation

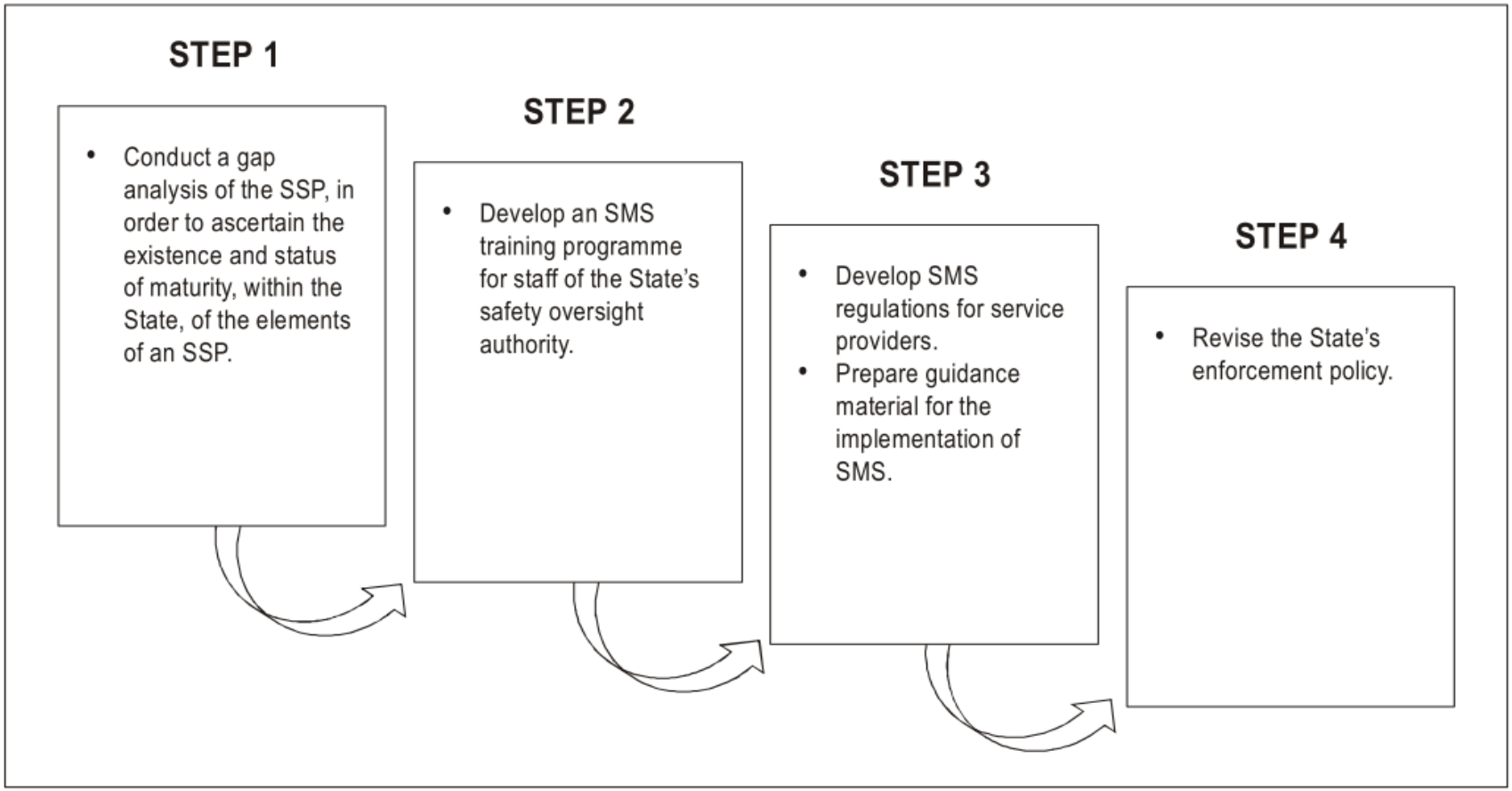
- SMS can flourish only under the enabling umbrella provided by an SSP
- SSP is a fundamental enabler of the implementation of an effective SMS

Role of the SSP in supporting SMS implementation

State

Service providers

Summary of the role of the SSP in supporting SMS implementation



Reasons for a phase approach to SMS implementation

- Provision of a manageable series of steps to follow in implementing an SMS, including allocation of resources
- Need to allow implementation of SMS framework elements in various sequences, depending upon the results of each service provider‘s gap analysis
- Initial availability of data and analytic processes to support reactive, proactive and predictive safety management practices
- Need for a methodical process to ensure effective and sustainable SMS implementation

4 phases of SMS implementation

Phase 1 (12 months)*	*Phase 2 (12 months)*	*Phase 3 (18 months)*	*Phase 4 (18 months)*
1. SMS Element 1.1 (i): a) identify the SMS accountable executive; b) establish an SMS implementation team; c) define the scope of the SMS; d) perform an SMS gap analysis. 2. SMS Element 1.5 (i): a) develop an SMS implementation plan. 3. SMS Element 1.3: a) establish a key person/office responsible for the administration and maintenance of the SMS. 4. SMS Element 4.1 (i): a) establish an SMS training programme for personnel, with priority for the SMS implementation team. 5. SMS Element 4.2 (i): a) initiate SMS/safety communication channels.	1. SMS Element 1.1 (ii): a) establish the safety policy and objectives, 2. SMS Element 1.2: a) define safety management responsibilities and accountabilities across relevant departments of the organization; b) establish an SMS/safety coordination mechanism/ committee; c) establish departmental/ divisional SAGs where applicable. 3. SMS Element 1.4: a) establish an emergency response plan. 4. SMS Element 1.5 (ii): a) initiate progressive development of an SMS document/manual and other supporting documentation.	1. SMS Element 2.1 (i): a) establish a voluntary hazard reporting procedure. 2. SMS Element 2.2: a) establish safety risk management procedures. 3. SMS Element 3.1 (i): a) establish occurrence reporting and investigation procedures; b) establish a safety data collection and processing system for high-consequence outcomes; c) develop high-consequence SPIs and associated targets and alert settings. 4. SMS Element 3.2: a) establish a management of change procedure that includes safety risk assessment. 5. SMS Element 3.3 (i): a) establish an internal quality audit programme; b) establish an external quality audit programme.	1. SMS Element 1.1 (iii): a) enhance the existing disciplinary procedure/ policy with due consideration of unintentional errors or mistakes from deliberate or gross violations. 2. SMS Element 2.1 (ii): a) integrate hazards identified from occurrence investigation reports with the voluntary hazard reporting system; b) integrate hazard identification and risk management procedures with the subcontractor's or customer's SMS where applicable. 3. SMS Element 3.1 (ii): a) enhance the safety data collection and processing system to include lower-consequence events; b) develop lower-consequence SPIs and associated targets/alert settings. 4. SMS Element 3.3 (ii): a) establish SMS audit programmes or integrate them into existing internal and external audit programmes; b) establish other operational SMS review/survey programmes where appropriate. 5. SMS Element 4.1 (ii): a) ensure that the SMS training programme for all relevant personnel has been completed. 6. SMS Element 4.2 (ii): a) promote safety information sharing and exchange internally and externally.
SMS Element 1.5: SMS documentation (Phases 1 to 4) >>			
SMS Elements 4.1 and 4.2: SMS training, education and communication (Phases 1 and thereafter) >>			

Note 1.— The implementation period indicated is an approximation. The actual implementation period is dependent on the scope of actions required for each element allocated and the size/complexity of the organization.

Note 2.— The SMS element numbers indicated correspond to the ICAO SMS element numbers. Suffixes such as a), b) and c) indicate that the element has been subdivided to facilitate the phased implementation approach.

9. SUMMARY

Summary

- 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

Summary cont.

- 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 ALoSP to be achieved
- Services providers are required to establish SMS

Summary cont.

- 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 ALoSP 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

ICAO NACC Regional Office, December 2011

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 responsables de las áreas • Centro de Instrucción	1 Mes	
4	Cultura del reporte/cultura 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 Responsable • SMS/SSP Manager • Cabezas responsables 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 Responsable • SMS/SSP Manager	2 meses	
6	Estandarización									Open

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!