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

RASG-PA Aviation Safety Seminar

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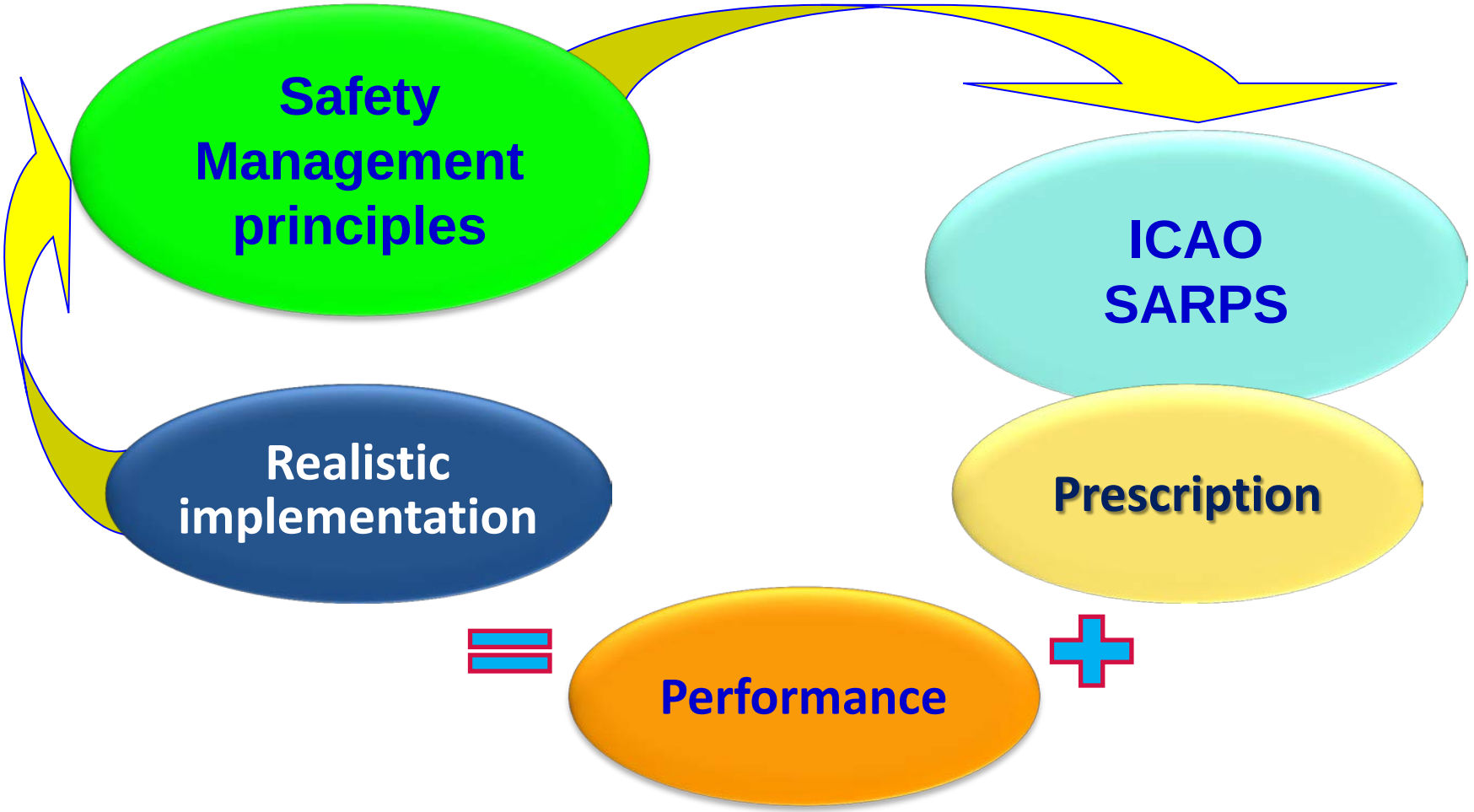
1. Introduction

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

Prescription and Performance



Prescriptive & Performance based environment

Prescriptive based environment

Regulations as <u>administrative</u> controls

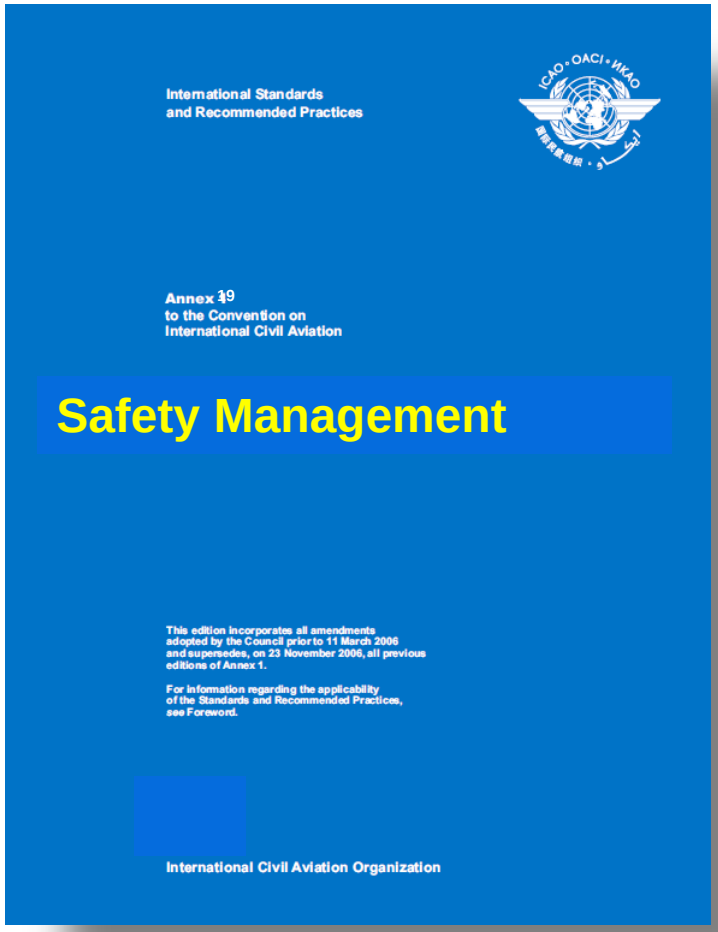
- ❖ Rigid regulatory framework
  - ➢ Inspections
  - ➢ Audits
    - ✓ *Regulatory compliance*

Performance based environment

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

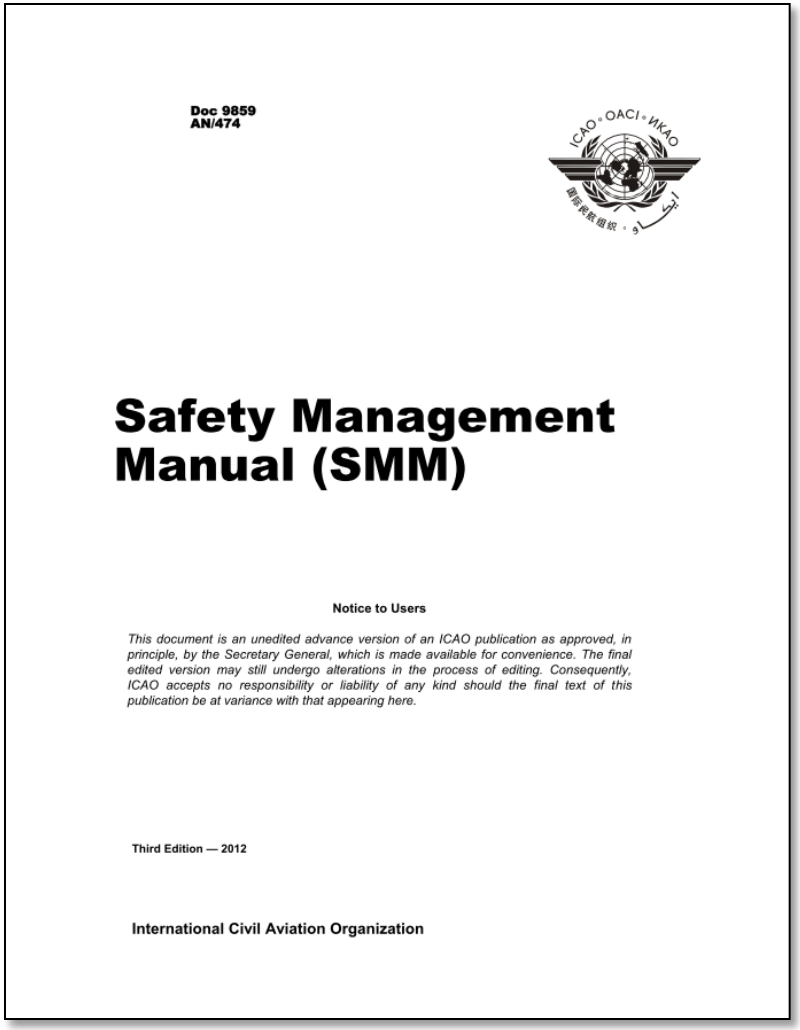
- ❖ Dynamic regulatory framework
  - ➢ Data based identification
  - ➢ Prioritization of safety risks
    - ✓ *Effective safety performance*

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

Safety Management Guidance Material



Doc 9859
AN/474

Safety Management Manual (SMM)

Notice to Users

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Third Edition — 2012

International Civil Aviation Organization

- Safety Management Manual - Doc 9859
  - Third Edition – 2012 (Unedited advance version)
  - Detailed guidance for SMS / SSP implementation
- ICAO Safety Management website
  - http://www2.icao.int/en/ism/Pages/GuidanceMaterials.aspx

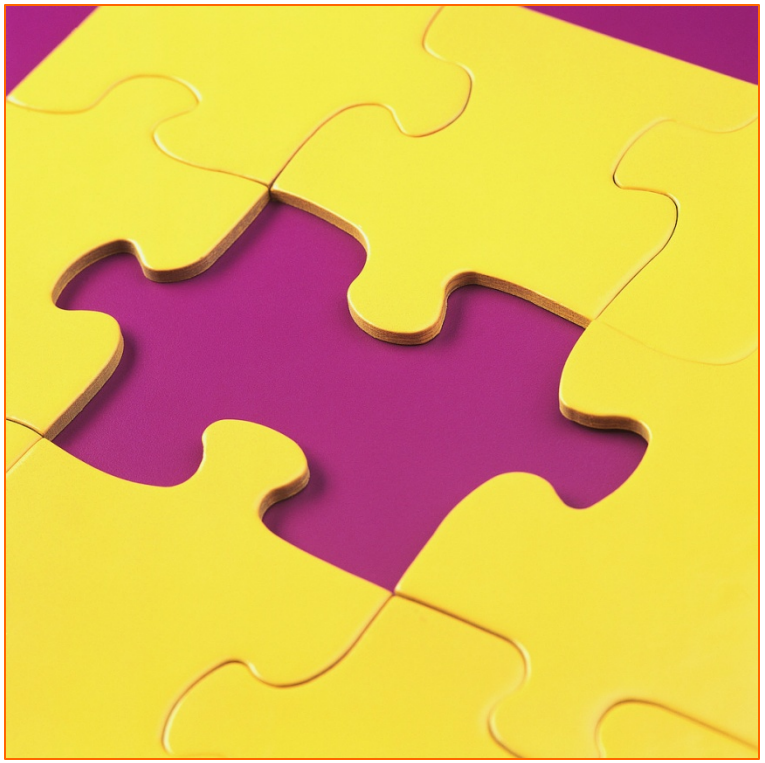
ICAO Safety Management SARPs
(Standard and Recommended Practices)

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

2. SSP and SMS

State Safety Programme definition

- SSP is an integrated set of regulations and activities aimed at improving safety



SSP

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

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

SSP

- States shall establish the SSP in order to achieve an acceptable level of safety performance (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

Core operational activities of an SSP

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

Safety Management Systems - SMS

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

SMS State requirement

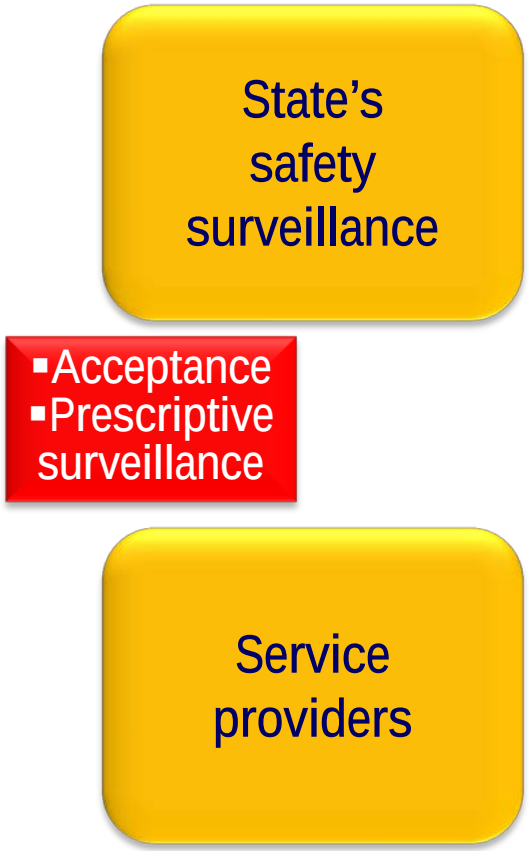
- That a service provider implement the SMS acceptable to the State that:
  - Identifies safety hazards
  - Ensures the implementation of remedial action necessary to maintain agreed safety performance
  - Provides for continuous monitoring and regular assessment of the safety performance
  - Aims at 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

SMS cont.

- 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

SSP and SMS components

SSP components

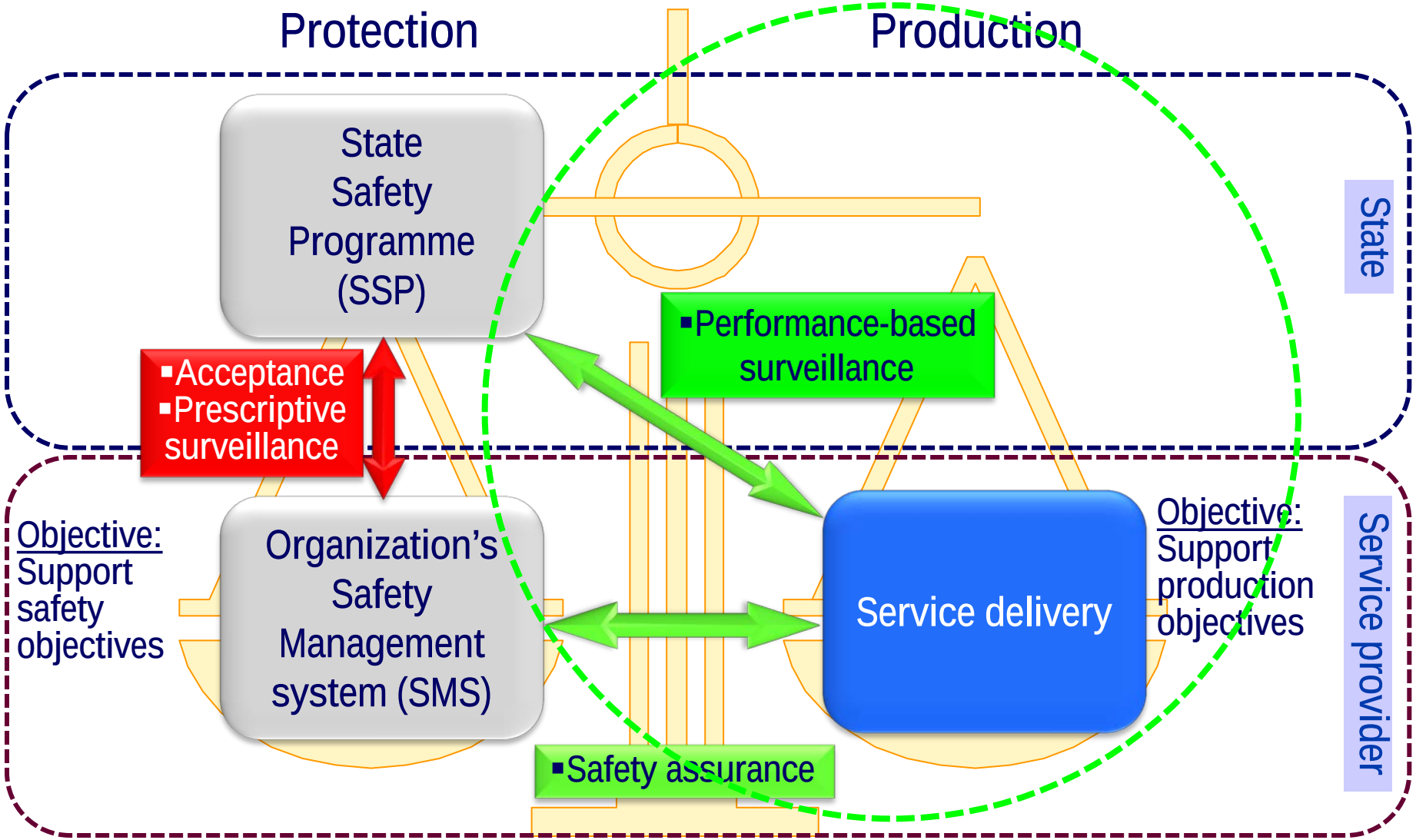
1. State safety policy and objectives
2. State safety risk management
3. State safety assurance
4. State safety promotion

SMS components

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

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

3. SSP implementation

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

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 as Service Provider

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

SSP gap analysis

- Allows to assess the existence and maturity within the State of the elements of an SSP
  - Guidance in the SMS Manual
- 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

Why a phased approach to SSP?

- To manage the workload associated with the implementation of the SSP
- To prevent the “compliance by ticking boxes”
- 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. 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

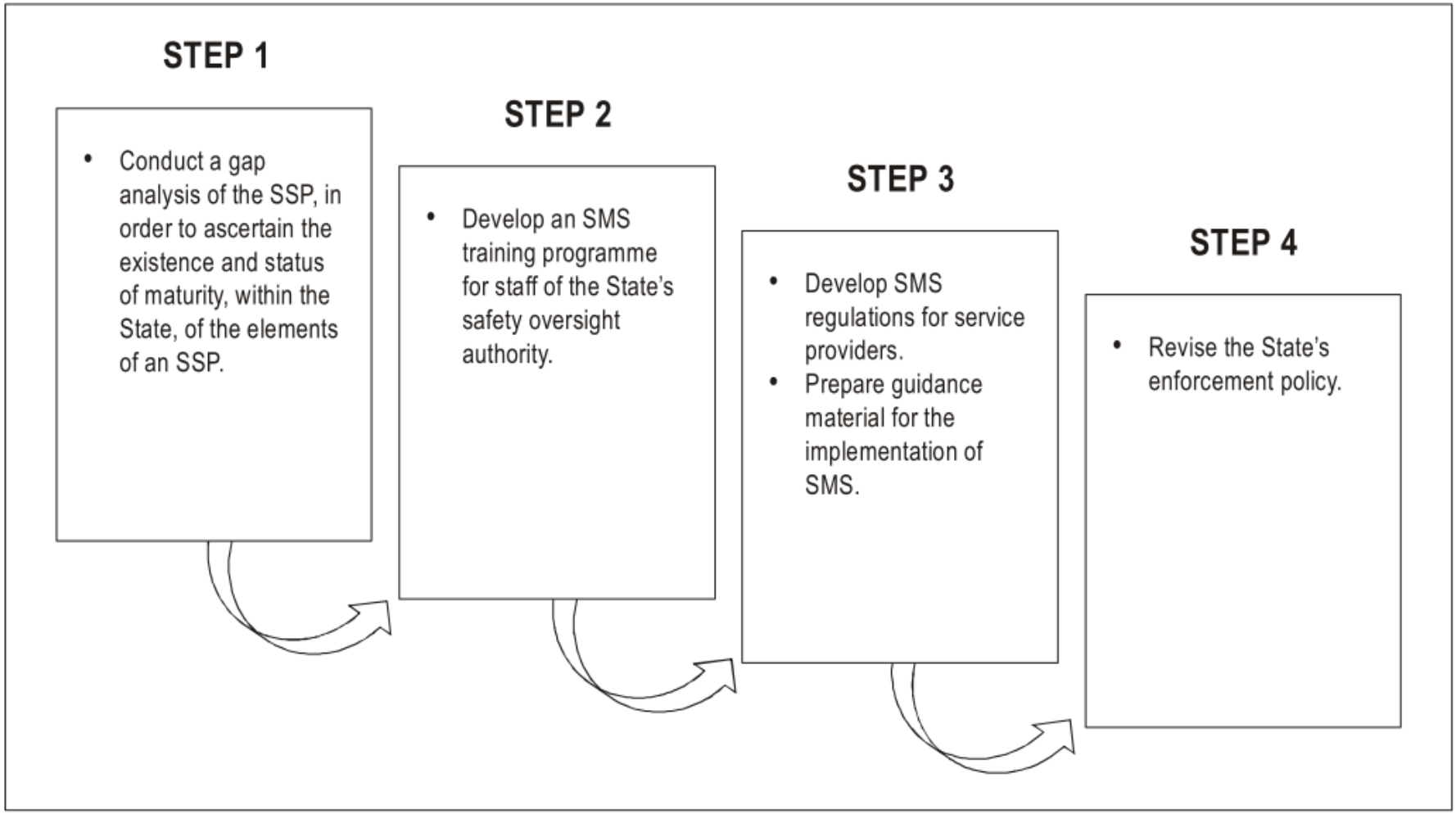
The role of the SSP in supporting SMS implementation

- 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

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
- CAA's process for acceptance of SMS and agreement of their proposed safety performance should also be made known in such requirements or guidance materials as appropriate

State activity supporting SMS



Reasons for a phase approach to SMS implementation

- Provision of a manageable series of steps
- Allow implementation of SMS framework elements in sequence
- 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

Four phases of SMS implementation

Phase I	Phase II	Phase III	Phase IV
1. SMS element 1.1(i): a. Identify SMS Accountable Executive b. Establish SMS Implementation Team c. Define scope of the SMS d. Perform SMS Gap Analysis **2. SMS element 1.5(i):** a. Develop 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 SMS training program for personnel, with priority for SMS implementation team. **5. SMS element 4.2(i):** a. Initiate SMS/ Safety communication channels	**1. SMS element 1.1(ii):** a. Establish Safety Policy & Objectives **2. SMS element 1.2:** a. Define safety management responsibilities & accountabilities across relevant departments of the organization b. Establish SMS/ Safety coordination mechanism/ committee c. Establish departmental/ divisional SAGs where applicable **3. SMS element 1.4:** a. Establish Emergency Response Plan **4. SMS element 1.5(ii):** a. Initiate progressive development of an SMS Document/ Manual & other supporting documentation	**1. SMS element 2.1(i):** a. Establish voluntary hazards reporting procedure **2. SMS element 2.2:** a. Establish safety risk management procedure **3. SMS element 3.1(i):** a. Establish occurrence reporting & investigation procedure b. Establish safety data collection & processing system for high consequence outcomes c. Develop high consequence SPIs & associated targets & alert settings **4. SMS element 3.2:** a. Establish Management of Change procedure that includes safety risk assessment **5. SMS element 3.3(i):** a. Establish internal quality audit programme b. Establish external quality audit programme	**1. SMS element 1.1(iii):** a. Enhance existing disciplinary procedure/ policy with due consideration of unintentional errors/ mistakes from deliberate/ gross violations **2. SMS element 2.1(ii):** a. Integrate hazards identification from occurrence investigation reports with the voluntary hazard reporting system b. Integrate hazard identification & risk management procedures with sub-contractor or customer SMS where applicable **3. SMS element 3.1(ii):** a. Enhance safety data collection & processing system to include lower consequence events b. Develop lower consequence SPIs & associated targets/ alert settings **4. SMS element 3.3(ii):** a. Establish or integrate SMS audit into existing internal & external audit programs b. Establish other operational SMS review/ survey programs where appropriate **5. SMS element 4.1(ii):** a. Ensure SMS training program for all relevant personnel is completed **6. SMS element 4.2(ii):** a. Promote safety information sharing & exchange internally and externally
SMS element 1.5: SMS Documentation (Phase I to IV)			
SMS element 4.1, 4.2: SMS Training, education & communication (Phase I & thereafter)			

Relationship SSP and SMS

State

Service providers

5. Summary

System today

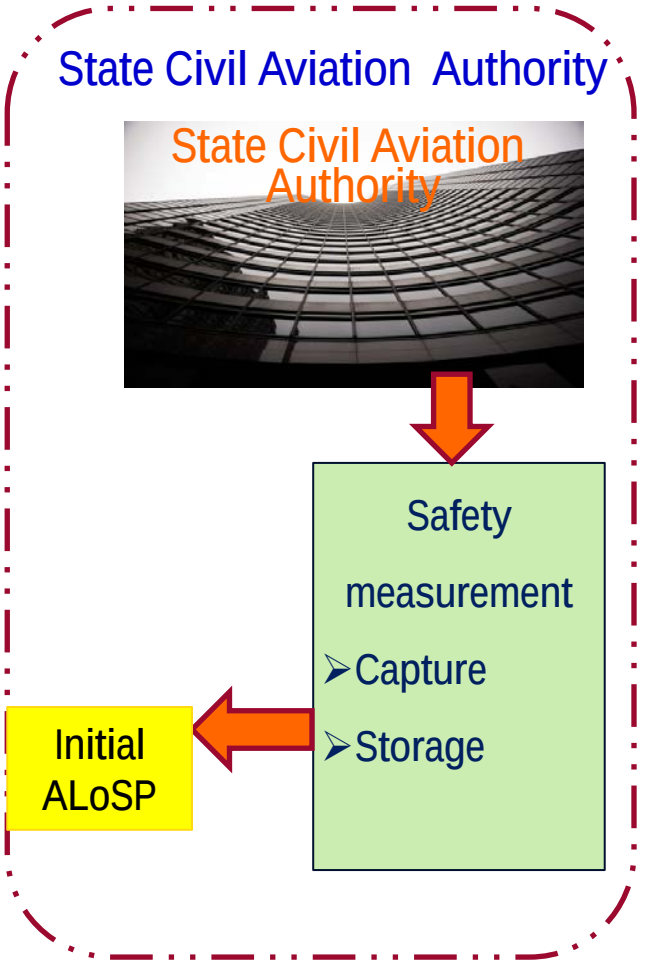
Service providers

State Civil Aviation Authority

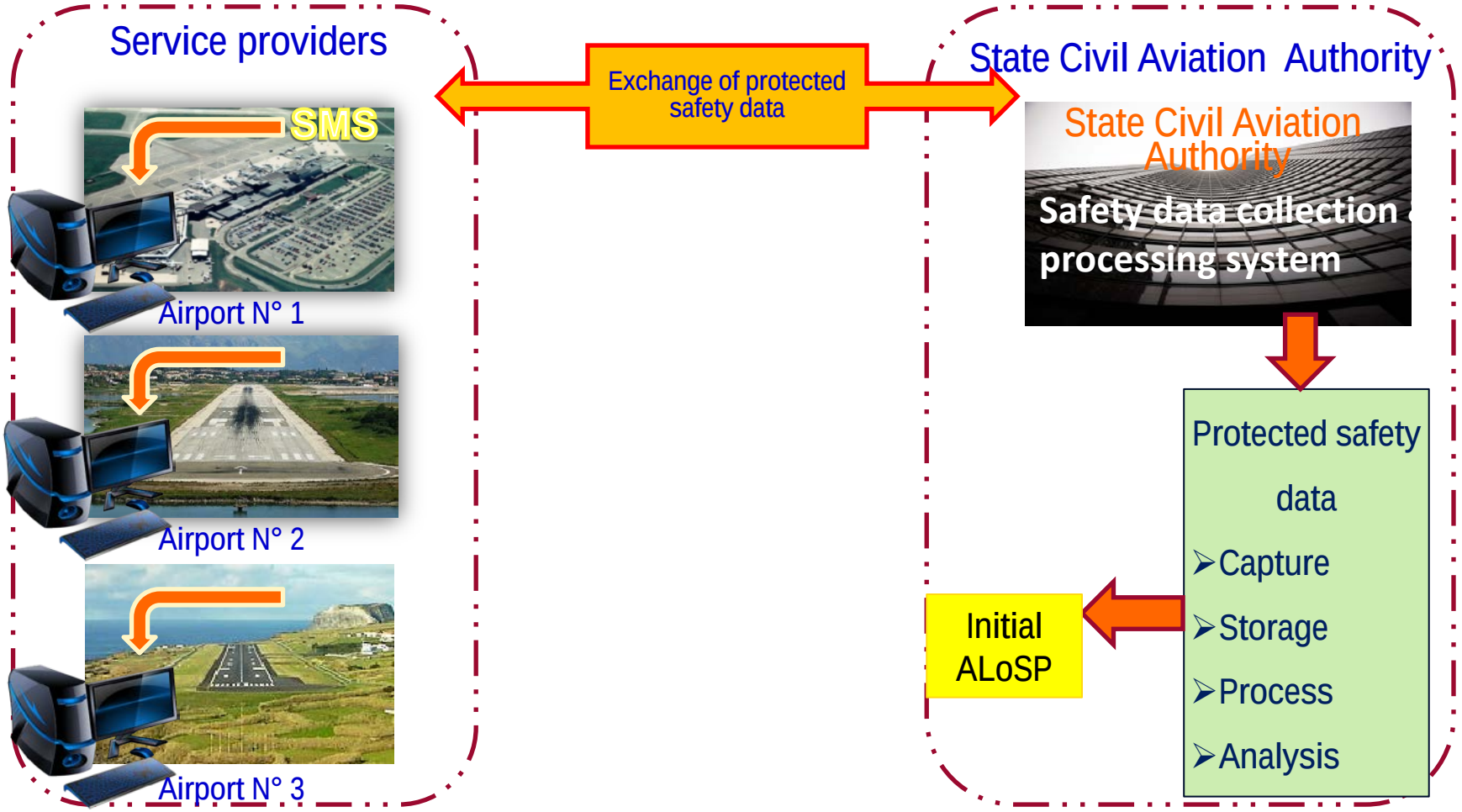
Safety measurement

- Capture
- Storage

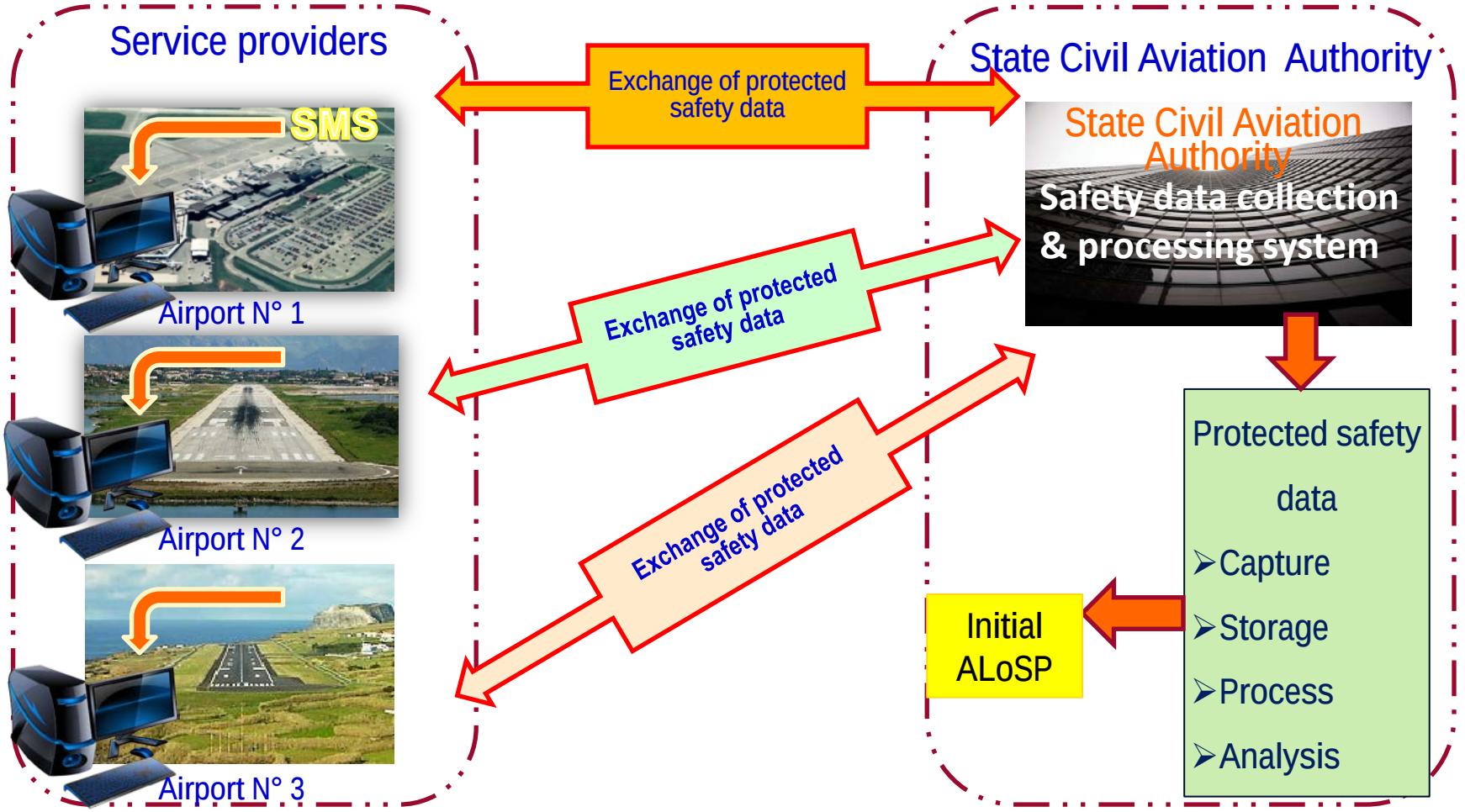
Initial ALoSP



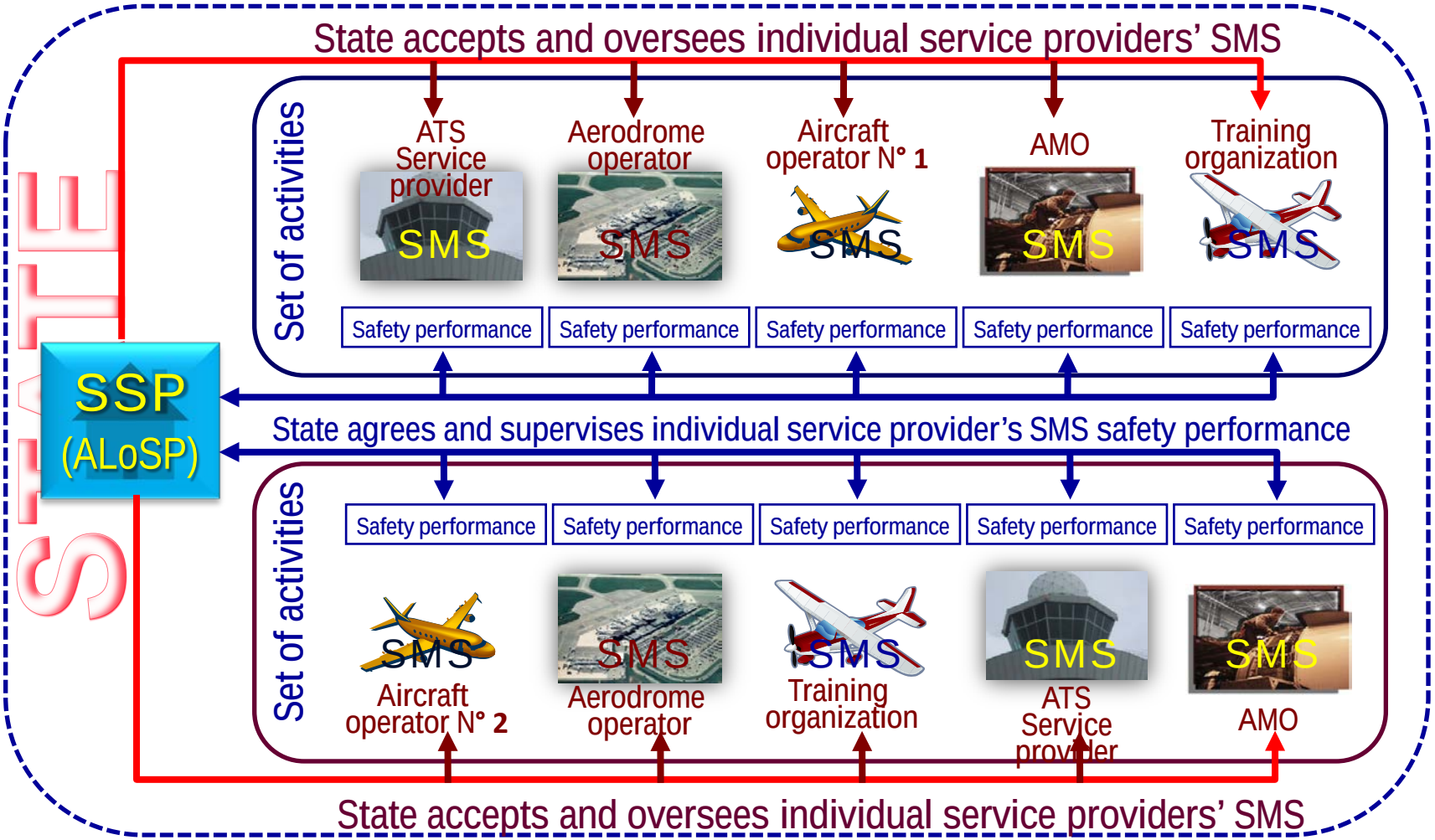
Initial ALoSP



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
operator
Training
organization
ATS
Service
provider
AMO
State accepts and oversees individual service providers' SMS

Summary

- Aviation is the safest mode of transportation
- There is no perfect safety system
- Successful safety management requires participation of all levels of management and supervision
- A clear understanding of the relationship between the SSP and SMS is key

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 ALoSP
- Services providers are required to establish SMS

Summary cont.

- The objective of a State (SSP) is to ensure public safety during service delivery by service providers
- Achieved by defining the ALoSP and the control of safety risks within the State by Safety Risk Management (SRM) and Safety Assurance (SA)
- ICAO is supporting the implementation of SSP and SMS

Questions?

For additional información:

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Thank You!