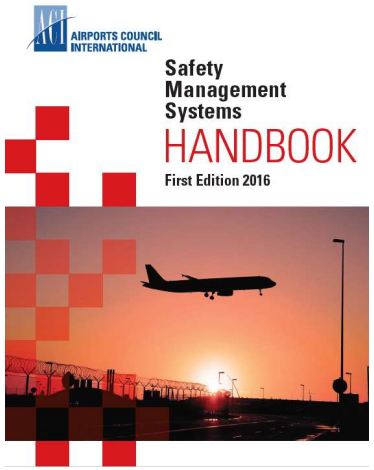
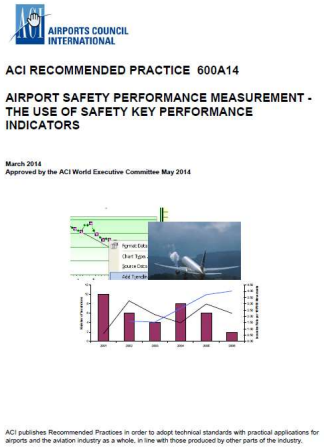
# WORKING TOGETHER TO ENHANCE AIRPORT OPERATIONAL SAFETY

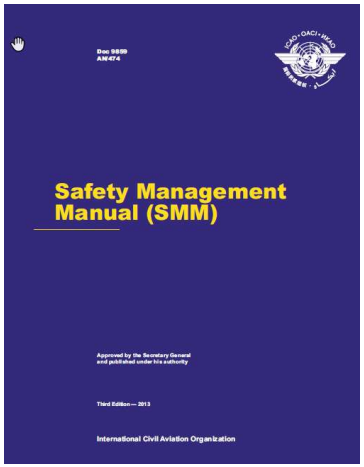
APEX, SAFETY MANAGER: Ermenando Silva

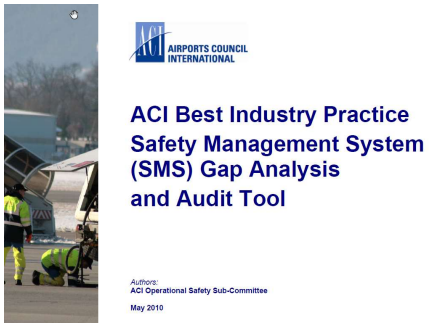
ICAO-ACI Aerodrome Certification Workshop
(Lima, Peru 6-7 October, 2016)

# Establishment of Aerodrome Safety Management System and KPI construction (Operator)



# SMS Implementation Plan

**Identify the SMS accountable executive**

**Establish an SMS implementation team**

The SMS implementation team needs **specialized SMS training** in order to have a better understanding of implementation of the SMS, some examples are:

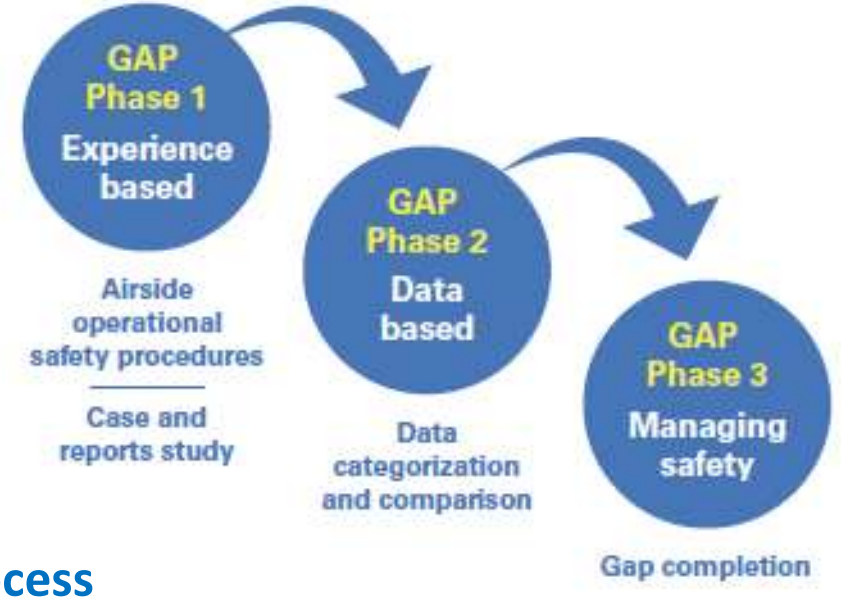
- Introduction to safety management;
- Hazard training;
- Human factors;
- Root cause analysis;
- Risk management.

# SMS Implementation Plan

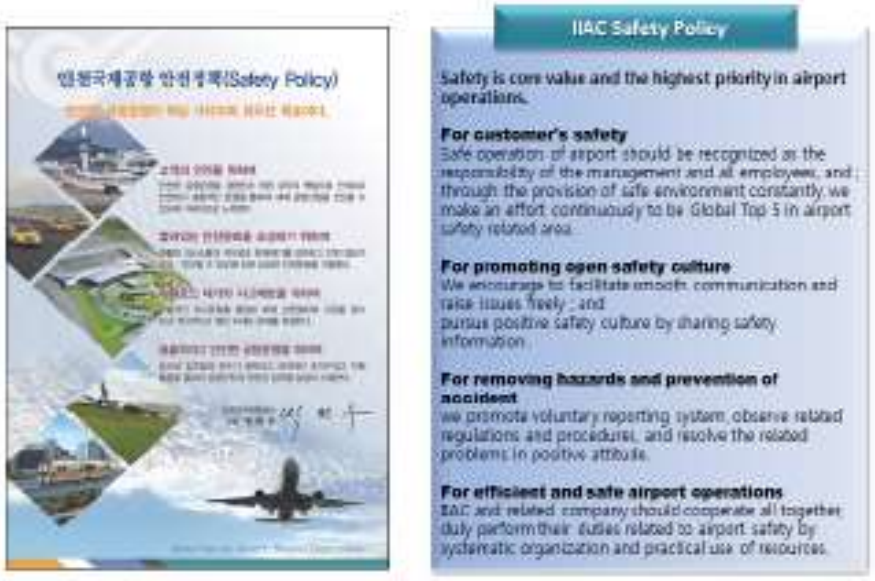
**Define the scope of the SMS**

**Perform an SMS gap analysis**

**Development of safety management process**



# Safety policy and objectives




## Non-reprisal reporting policy

# Establishment of an SMS committee

- Review and comment on **safety-management strategies**;
- Review and comment on s**afety risk-mitigation strategies**;
- Review and accept **safety risk-assessment analysis performed** by aerodrome staff;
- **Promote the SMS programme** at the aerodrome by leading by example;
- Promote **safety awareness** to the aerodrome and its **stakeholders**.


# Development of SMS manual and procedures

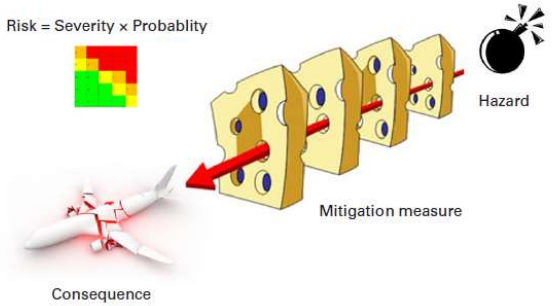
- Overseeing the **collection and analysis of safety data**.
- Working with management to **identify hazards and determine associated risks.**
- Guiding management in **developing and implementing intervention strategies to mitigate risks**.
- Tracking and **evaluating the effectiveness of safety interventions**.

# Development of SMS manual and procedures

- Providing **safety awareness** among all employee groups and contractors.
- Promoting safety by **disseminating the results of safety investigations and analysis.**
- **Sharing safety lessons learned** both internally within the aerodrome organization and externally from or with stakeholders, as warranted.

# Establishment of the safety-risk management process

- Building **risk matrices** which are relevant to the organization's operational or production processes and the instructions within the SMS manual.
- Identifying **current and/or potential hazardous** scenarios for equipment, property and personnel.
- Assessing the **severity** of each hazard and the **likelihood** that consequences will occur.
- Monitoring **acceptable risks** determined to be within safety performance criteria.
- **Mitigating unacceptable risks** to levels that are acceptable.



# Establishment of the safety-risk management process

- **Evaluating the effectiveness** of measures implemented to mitigate risk.
- Ensuring **risk management is applicable to all divisions** within the organization's structure.
- Ensuring **risk assessment is initiated** when the need to use the risk-management process is identified.

| Risk probability | | 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 |

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

| Risk index range | Description | Recommended action |
|---|---|---|
| 5A, 5B, 5C, 4A, 4B, 3A | High risk | Cease or cut back operation promptly if necessary. Perform priority risk mitigation to ensure that additional or enhanced preventive controls are put in place to bring down the risk index to the moderate or low range. |
| 5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2A, 2C, 1A | Moderate risk | Schedule performance of a safety assessment to bring down the risk index to the low range if viable. |
| 3E,2D,2E, 1B, 1C, 1D, 1E | Low risk | Acceptable as is. No further risk mitigation required. |

# Establishment of the safety-risk management process

- Ensuring risk assessment applies special technical managerial skills to the **identification and control of hazards throughout the life cycle of a project, programme and/or activity**.
- Establishing an **internal reporting and investigation system—this** should include mandatory and voluntary reports.
- Establishing **data collection, processing and analysis of safety reports**.

# Establishment of the safety-risk management process

**Developing an agreement with the oversight authority on safety performance indicators and safety performance targets.**

*The steps of safety performance monitoring*

# Establishment of the safety performance indicators

| Safety objective | Reactive indicators | Proactive indicators |
|---|---|---|
| Reduce damage to aircraft as a result of FOD incidents | Number of FOD incidents causing damage to aircraft on runway<br><br>Number of FOD incidents causing damage to aircraft on apron<br><br>Number of FOD items reported | Number of FOD inspection hours<br><br>Completion rate of runway inspections<br><br>Number of FOD walks with stakeholders |
| Reduce number of runway incursions | Number of runway incursions in each category (aircraft, vehicle, pedestrian)<br><br>Rate of incursions per 10,000 movements (aircraft, vehicle, pedestrian) | Number of Airside Vehicle Operator licensing tests passed<br><br>Number of staff completing training |
| Reduce number of aircraft deviations due to airside construction and modification to facilities | Number of instances where a pilot deviated from intended clearance | Green Tagging inspections performed prior to returning a modified facility to service<br><br>No unplanned surface or gate closures after returning a modified facility to service<br><br>Increase in number of safety alerts/ bulletins |
| Reduce bird strikes | Total mass reduction of birds struck by species group: Raptors and Geese | Increase in the number of wildlife harassment hours |

# Establishment of the safety performance indicators

| Safety objective | Safety performance indicator | Safety performance target |
|---|---|---|
| Reduce damage to aircraft as a result of FOD incidents | Number of FOD incidents causing damage to aircraft on runway | Zero FOD incidents causing damage to aircraft on runway (absolute measure) |
| | Rate of FOD incidents causing damage to aircraft per 10,000 movements | Decrease of 10% in average rate of FOD incidents causing damage to aircraft per 10,000 movements compared to prior year (relative measure) |
| Reduce number of runway Incursions | Number of runway incursions | Zero runway incursions in each category (aircraft, vehicle, pedestrian) (absolute measure) |
| | Rate of runway incursions per 10,000 movements | Decrease of 10% in rate of runway incursions per 10,000 movements (aircraft, vehicle, pedestrian) compared to prior year (relative measure) |

# Management of change

There needs to be **a formal process for the management of change.**

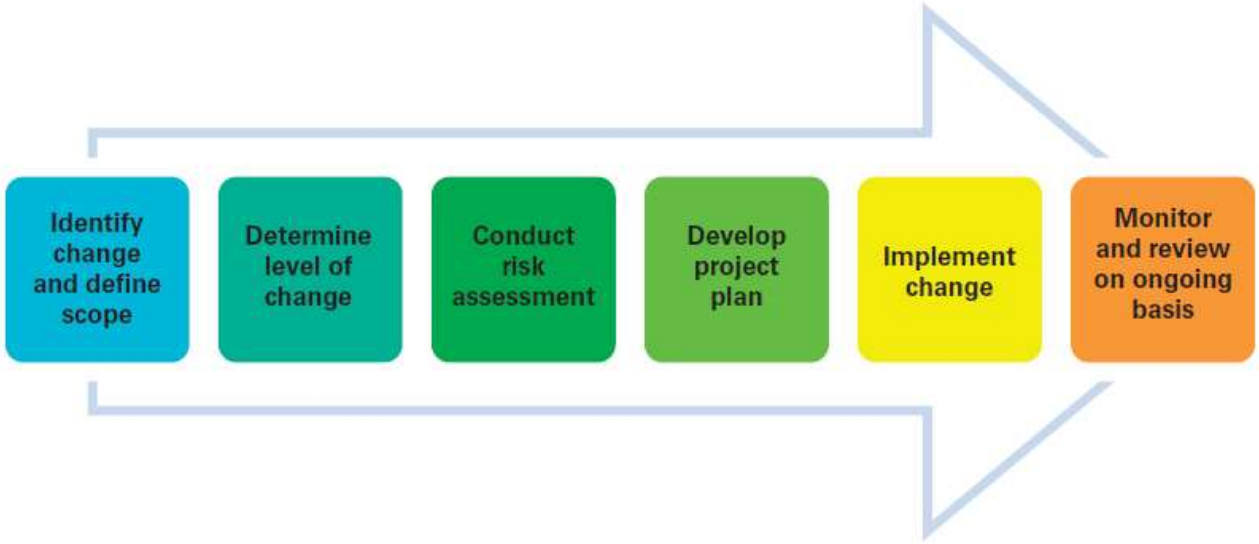
This process should address the **stability of systems** and **operational environments, past performance and regulatory, industry and technological change**.

It should:

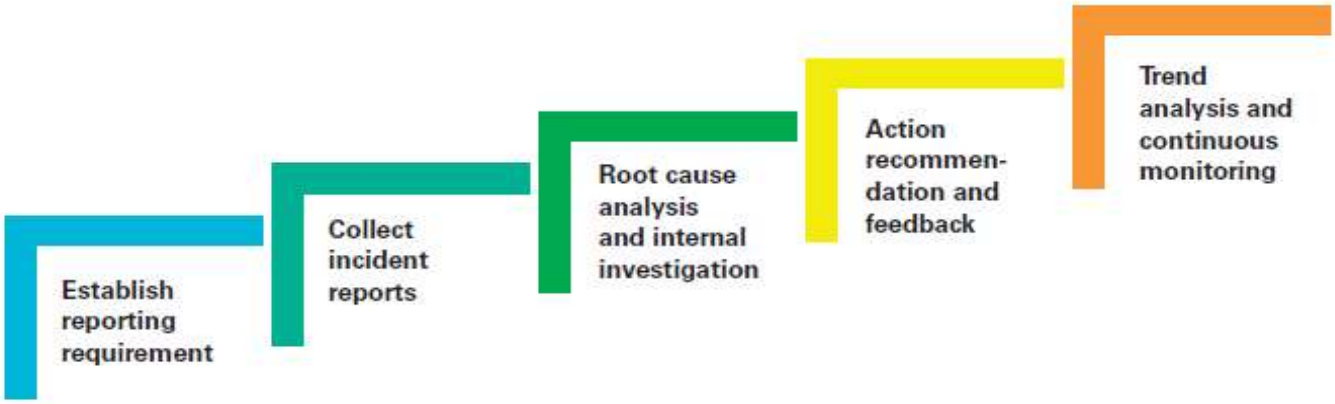
Ensure that management of change procedures addresses the **impact on existing safety performance and risk-mitigation** records before implementing new change.

# Management of change

Establish procedures to ensure that **safety-risk assessments of new aviation operations, processes and equipment** are completed before these are commissioned.



# Improvement of Safety Management System




The final phase of implementation of the SMS is **collecting safety data and analyzing it**, by purchasing or building a database that can track training, incidents and accidents, property damage and payouts of insurance claims.

An **SMS internal evaluation programme** must also be established.

# Improvement of Safety Management System

This phase can take about 18 months to complete and should establish:

**A continuous improvement programme for the SMS**:

As part of the risk-management process, there should be an **SMS continuous improvement programme**;

This involves **establishing an internal evaluation programme**, which is a central part of the SMS.

# Continuous improvement programme for the SMS

It provides the organization with an **independent, systems-oriented evaluation process** (allowing evaluation of both external and internal factors and regulations) which focuses on:

- Evaluating the **organization's compliance with external regulatory requirements**;
- Identifying **areas of non-conformance to internal policies and procedures**.

# Continuous improvement programme for the SMS

- Identifying **opportunities to improve policies, procedures and processes**;
- Evaluating **corrective actions to ensure effectiveness and eliminate recurrences of non-compliance**; and
- Ensuring that technical issues receive the **attention and support of senior management**

| AUDIT PROCEDURES | |
|---|---|
| Document and records review | • Verify activities are conducted in accordance with the documented plan/directive/procedure. |
| Interviews with stakeholders | • Perform assessments of knowledge of individuals with responsibilities under the programme. |
| Site observations | • Verify the airside environment is maintained in accordance with applicable standards. |
| Equipment inspection | • Verify equipment matches description in the prescribed Plan. |
| Training | • The audit should include a review of the training requirements set out in the plan, as well as a review of any training material provided to participants. |
| SMS compliance | • Determine if the audit activity under review is being managed in compliance with SMS Procedures. |

# SMS training programme

This needs to be established to **ensure all relevant staff members** are current in all aspects of safety as required.

**Training and education — A building block**

| Operational personnel | + | Managers and supervisors | + | Senior managers |
|---|---|---|---|---|
| 1) Organization's safety policy | | 3) The safety process | | 6) Organizational safety standards and national regulations |
| 2) SMS fundamentals and overview | | 4) Hazard identification and risk management | | 7) Safety assurance |
| | | 5) The management of change | | |

# SMS training programme

Examples of required training include: i.e **SMS initial training** (this explains what the SMS is and does):

- Airfield driver training;
- Runway safety training;
- First aid/CPR training;
- Blood-borne pathogen training, etc.; and
- Safety training courses, etc.

# Safety data collection

- Management needs to research and authorize acquisition of some type of **database software package** that is designed to track safety data and is able to display trends in the data.

- This software package should also allow users to build dashboards for **comparing current data and historical data**.

- The software also must have a **records management module**, for use by the aerodrome's safety department/division.

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# THANK YOU!