Q-Pulse®
Gael

The 4 pillars of aviation safety:
Part 2 - How are aviation organisations successfully managing risk with SMS solutions?

Executive Summary

Since 2009, the International Civil Aviation Organisation (ICAO) has required member states to make the implementation of safety management systems (SMS) that comply with ICAO standards and recommended practices (SARPs) mandatory for aviation organisations.

As put forward by ICAO, an SMS comprises four basic components, or pillars, of safety management:

1. Safety policy
2. Safety assurance

2. Safety risk management
4. Safety promotion

The second of these four pillars, safety risk management, enables aviation organisations to identify hazards in order to analyse, assess and control safety risk at all levels and in all areas of the organisation.

This white paper considers how an integrated SMS solution can help implement safety risk management whilst streamlining processes and identifying improvement opportunities.

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Introduction

What is safety risk management?

As one of the key components of an ICAO-compliant SMS, the function of safety risk management is to identify hazards in order to analyse, assess and control safety risk at all levels and in all areas of the organisation.

The ICAO defines a hazard as any condition, object or activity with the potential to cause:

1. Injury to personnel
2. Damage to equipment or structures
3. Loss of material, or
4. Any reduction of ability to perform a prescribed function

Similarly, risk is defined by the ICAO as the probability of the consequences above occurring, measured in terms of likelihood and severity.

The matrix on the right shows how aviation organisations can determine the risk of occurrences by quantifying and considering their severity and likelihood together.

This enables risks to be identified in terms of its relative acceptability to the organisation, and is vital in setting appropriate controls to manage safety risk.

By implementing safety risk management effectively, aviation organisations can develop and encourage safety as the core of every aspect of activities and actions throughout the organisation.

As a concept, safety risk management, then, can be thought of as having three components:

1. Hazard identification
2. Risk assessment
3. Risk control

Risk Matrix

Severity	improbable	remote	occasional	probable	frequent
catastrophic	5	10	15	20	25
significant	4	8	12	16	20
moderate	3	6	9	12	15
low	2	4	6	8	10
negligible	1	2	3	4	5

Likelihood

Catastrophic	■	STOP OPERATIONS
Unacceptable	■	URGENT ACTION
Undesirable	■	ACTION
Acceptable	■	MONITOR
Desirable	■	NO ACTION

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What is an integrated SMS solution?

An integrated safety management system (SMS) solution offers software and services that provide a framework for a systematic and holistic approach to SMS. By improving the identification of hazards and the assessment and control of risk, an integrated SMS solution enables aviation organisations to effectively manage safety risk.

Such solutions also provide a centralised system to implement and manage safety processes. By supporting the management of safety, an integrated solution enables aviation organisations to extend and support SMS processes in every area and at every level of the organisation.

From documenting and distributing policies and procedures through to identifying opportunities for continuous improvement, an integrated SMS solution enables aviation organisations to adopt a systematic approach to managing safety, and at the same time attain a holistic viewpoint of their SMS status throughout the organisation.

With an integrated solution that enables the efficient and effective management of safety risk, aviation organisations can:

- improve hazard identification
- improve risk assessment
- improve risk control

In improving the identification of hazards, and in improving the assessment and control of risk, an integrated SMS solution can help to establish and maintain systematic processes for managing safety which assure that safety goals and objectives can be achieved, and which contribute to the continual improvement of safety and quality.

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How can an integrated SMS solution help to identify hazards?

Document management

An integrated SMS solution enables organisations to give appropriate personnel on-demand access to relevant, accurate information at the point of need. With an integrated solution that incorporates a comprehensive document management system, organisations can ensure that SMS policies and procedures are up-to-date and directly available.

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Notification and escalation

As well as a centralised system to manage documents, such solutions can also offer automated change control management, including the ability to notify relevant personnel of actions for which they are responsible, and to escalate outstanding approvals and acknowledgements to the appropriate person.

Occurrence management

Integrated solutions provide tools and techniques to ensure that safety-related information, including accidents, incidents and occurrences, as well as hazards, can be reported by staff at any point in all areas and at all levels of the organisation. In addition to enabling effective safety assurance, safety reporting with an integrated solution enables the continual improvement of the SMS.

Audit management

Effective safety risk management requires that SMS processes, technologies and people can be fully understood. An integrated solution enables the monitoring and measurement of safety reporting within the SMS, which enhances the identification, reporting and tracking of potential hazards throughout the safety risk management process, and ensures the continuing effectiveness of hazard identification procedures.

CA/PA management

With an integrated solution that enables the identification, reporting and tracking of corrective and preventive actions resulting from findings raised, management can monitor all information related to internal and external evaluation programmes at each and every stage of the safety risk management process.

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How can an integrated SMS solution help to assess risk?

Analysis and improvement

As well as being able to ensure that SMS policies and procedures meet and exceed safety requirements through regular internal and external evaluation, an integrated SMS solution enables organisations to analyse information related to aviation safety in order to identify root causes.

With the ability to carry out detailed analysis of all audits, incidents, occurrences and audit findings throughout the organisation, such solutions can enable the analysis of root cause trends to enable the identification of improvement opportunities, to reduce overhead costs and to reduce exposure to risk.

Notification and escalation

An integrated SMS solution can also enhance participation with the SMS by offering point-of-need access from notifications of overdue or upcoming actions. An integrated solution can enable overdue actions to be automatically escalated, and can notify relevant personnel of upcoming actions. Conditional messaging ensures that every person can define the circumstances in which they should be notified of activities and actions.

Encourage a culture of safety

SMS solutions can also support an effective reporting culture by providing a robust and scalable system for the distribution of relevant safety-related information to appropriate personnel. By enabling the notification of SMS activities and actions at all levels and in all areas within the organisation, such solutions provide greater visibility of safety-related information and encourage greater participation in SMS activities.

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How can an integrated SMS solution help to control risk?

Vital to the concept of safety risk management is the implementation of processes in order to monitor and measure the effectiveness of controls. From internal and external audits of an organisation and its suppliers, to third-party audits by customers and regulators, aviation organisations are audited continually.

Where controls have been implemented to ensure that risk remains within acceptable levels, aviation organisations must maintain and improve systems to verify their effectiveness, in order to ensure that evaluation programmes continue to be effective and that safety can continue to be assured.

Audit management

By providing a centralised system to manage all audits, an integrated SMS solution can support the complete audit cycle from scheduling, planning and conducting to reporting, follow-up and conclusion. Integrated SMS solutions can enable organisations to monitor safety-related information more effectively by enabling multiple audit programmes to be integrated within a single system.

Procedure-based training

By automatically identifying those personnel impacted by changes to safety and quality policies, an integrated solution can enable the scheduling of relevant procedure-based training. In addition, an integrated solution can enable the effective scheduling, tracking and recording of training events, activities and actions by automatically notifying appropriate personnel of upcoming safety and quality training events.

Regulatory compliance

An integrated SMS solution can also provide a systematic and holistic view of the SMS status in every area and at every level. Being able to demonstrate regulatory compliance on demand in this way also means that completed, outstanding and overdue SMS activities and actions throughout the organisation can be tracked and continually monitored.

How can an integrated SMS solution help to implement a framework for risk management?

Q-Pulse from Gael Ltd comprises a series of interconnected modules which provides aviation organisations with an integrated framework that supports Safety and Quality management processes.

Through a flexible and user-friendly interface, Q-Pulse supports staff interaction with an organisation's SMS which helps to cultivate a culture of safety and risk awareness. As each user has visibility of their own outstanding safety actions, they are encouraged to take ownership of their tasks through to a timely completion.

Based on the PLAN-DO-CHECK-ACT cycle, Q-Pulse applies a systematic and holistic approach to QMS and SMS management, from documenting and distributing policies and procedures through to identifying opportunities for continual improvement.

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The Q-Pulse Integrated Safety & Quality Framework

1. Document and distribute

Q-Pulse enables the documentation and distribution of SMS and QMS policies and procedures, all with watertight Document Control.

2. Promote corporate culture

Q-Pulse enables the promotion of a

corporate Safety and Quality culture through a robust and scalable framework for training and development.

3. Assure regulatory compliance

Q-Pulse enables you to ensure your

regulatory compliance across the organisation through regular internal and external audit.

4. Manage incident investigations

Q-Pulse enables the promotion of a

corporate reporting culture, with the easy creation of safety reports and subsequent investigations to be performed in a structured, methodical manner.

5. Analyse and improve

Q-Pulse enables detailed analysis of

incidents, occurrences and audit findings with its powerful graphical analysis functionality, resulting in the highlighting of opportunities for continuous Quality and Safety improvement.

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Safety risk management – the Q-Pulse advantage

With SMS an international regulatory requirement from 2009, assuring safety effectively at all levels and in all areas of the organisation is of paramount importance for aviation organisations. The effective management of safety risk is vital to successfully implementing SMS that comply with ICAO SARPs and contribute to the continual improvement of safety and quality throughout the organisation.

With an integrated SMS solution developed around the four components of safety management, organisations can put into place a robust and scalable framework that supports the effective management of safety risk and the implementation of ICAO-compliant SMS at all levels and in all areas.

Based on the PLAN-DO-CHECK-ACT cycle, Q-Pulse from Gael Ltd is the world leading solution that provides a centralised and standardised framework for maintaining and improving safety and quality management in every area and at every level of your organisation.

From documenting and distributing policies and procedures to continually identifying opportunities for improvement, Q-Pulse is your solution for improving hazard identification and risk assessment and control of risk, as well as continuously improving the SMS in compliance with ICAO requirements.

With Q-Pulse, operators can adopt a systematic and holistic approach to managing safety and quality that meets the requirements of multiple regulations, from ICAO SMS, ISAGO and IOSA, to FAR-OPS, FAR-FCL and FAR-145, through to EU-OPS, JAR-FCL and EASA-145.

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Contact us now at **aviation@gaelquality.com** to find out how you can effectively establish safety policy throughout your organisation with Q-Pulse.

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