

Safety Oversight Following the Implementation of Safety Management Systems



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This paper was prepared by the Safety Management International Collaboration Group (SM ICG). The purpose of the SM ICG is to promote a common understanding of Safety Management System (SMS) / State Safety Programme (SSP) principles and requirements, facilitating their application across the international aviation community. In this document, the term “organization” refers to a product or service provider, operator, business, and company, as well as aviation industry organizations; and the term “authority” refers to the regulator authority, Civil Aviation Authority (CAA), National Aviation Authority (NAA), and any other relevant government agency or entity with oversight responsibility.

The current core membership of the SM ICG includes the Aviation Safety and Security Agency (AESA) of Spain, the National Civil Aviation Agency (ANAC) of Brazil, the Civil Aviation Authority of the Netherlands (CAA NL), the Civil Aviation Authority of New Zealand (CAA NZ), the Civil Aviation Authority of Singapore (CAAS), Civil Aviation Department of Hong Kong (CAD HK), the Civil Aviation Safety Authority (CASA) of Australia, the Direction Générale de l'Aviation Civile (DGAC) in France, the Ente Nazionale per l'Aviazione Civile (ENAC) in Italy, the European Aviation Safety Agency (EASA), the Federal Office of Civil Aviation (FOCA) of Switzerland, the Dominican Republic Civil Aviation Institute (IDAC), the Finnish Transport and Communications Agency (Traficom), the Irish Aviation Authority (IAA), Japan Civil Aviation Bureau (JCAB), the United States Federal Aviation Administration (FAA) Aviation Safety Organization, Transport Canada Civil Aviation (TCCA), United Arab Emirates General Civil Aviation Authority (UAE GCAA), and the Civil Aviation Authority of United Kingdom (UK CAA). Additionally, the International Civil Aviation Organization (ICAO) is an observer to this group.

Members of the SM ICG:

- Collaborate on common SMS/SSP topics of interest
- Share lessons learned
- Encourage the progression of a harmonized SMS/SSP
- Share products with the aviation community
- Collaborate with international organizations such as ICAO and civil aviation authorities that have implemented or are implementing SMS and SSP

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SM ICG products can be found on SKYbrary at [http://bit.ly/SM ICG](http://bit.ly/SM%20ICG).

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1. Use of Terminology

Throughout this document SM ICG terminology is used. Some terms have different meanings in different regions of the world (e.g., “oversight” and “surveillance”). For additional definitions, see the [SM ICG Safety Management Terminology](#) document. This document may be customized locally with terms amended to reflect local usage.

Reference Links

- [Safety Management Terminology](#)

2. Introduction

2.1. Background

Large volumes of information are readily available globally on the theory of Safety Management Systems (SMSs) and to a somewhat lesser extent on the topic of SMS development and evaluation. When considering the oversight and/or surveillance of Service Providers (SPs) who have an implemented SMS, little tangible information is available. The SM ICG seeks to address this void by providing guidance to assist competent authorities performing oversight and surveillance of SPs who have established SMSs where system componentry is not only “present” and “suitable,” but more specifically “operating” and “effective.”

The SM ICG believes that such a document will be useful in assisting SPs who wish to develop an understanding of the processes that may be applied by their respective Civil Aviation Authorities (CAAs) as part of an SMS oversight regime.

Key themes considered relevant to addressing the requirements include:

- Collaborating to improve surveillance outcomes
- The importance of risk profiling
- Surveillance planning for the performance evaluation of an established SMS
- Conducting surveillance
- Continuous improvement, documentation, and feedback as part of the SMS life cycle

Competent authorities should appreciate that SPs must focus their attention and resources on both regulatory compliance while also delivering effective risk management through their SMS. The ability of the SP to deliver these requirements is fundamental to the issuance of an approval/certificate. While the process of compliance has historically been well established and understood, the characteristics and subsequent assurance through surveillance of an operating and effective SMS continues to be developed.

An SMS provides for a dynamic evaluation of safety performance. Accordingly, an effective SMS requires that safety information and data be systematically analyzed, collected, and processed to examine safety risks and measure progress against expected results (outcomes). An effective SMS must also provide assurance to the competent authority that an organization has ongoing and acceptable measures and processes in place to identify and manage risks. The various features of the SMS design and its outputs require consideration and a level of confidence shared between both the competent authority and the SP. This is to assure that the SMS will continue to be operating and effective.

2.2. Objective

This document has been designed to primarily assist competent authorities and SPs during the SMS post implementation phase. In these cases, system elements have already been deemed to

be at least present and suitable and are characterized by robust SMS componentry including the existence of risk profiling. This document is not designed to be a reiteration of existing surveillance models, but rather a focus on assurance and ongoing effectiveness of an SP's SMS.

This document was developed to assist competent authorities and SPs in forming insights into ongoing SMS assurance through an understanding of:

- Collaboration and fostering a positive safety culture
- State, sector, and organizational risk
- Safety information and the risk profile relationship
- Assessing organizational risk profiles
- Surveillance and evaluation planning
- Evaluation in terms of performance as opposed to compliance
- Gathering surveillance information
- Continuous improvement, system change, and feedback into the risk profile

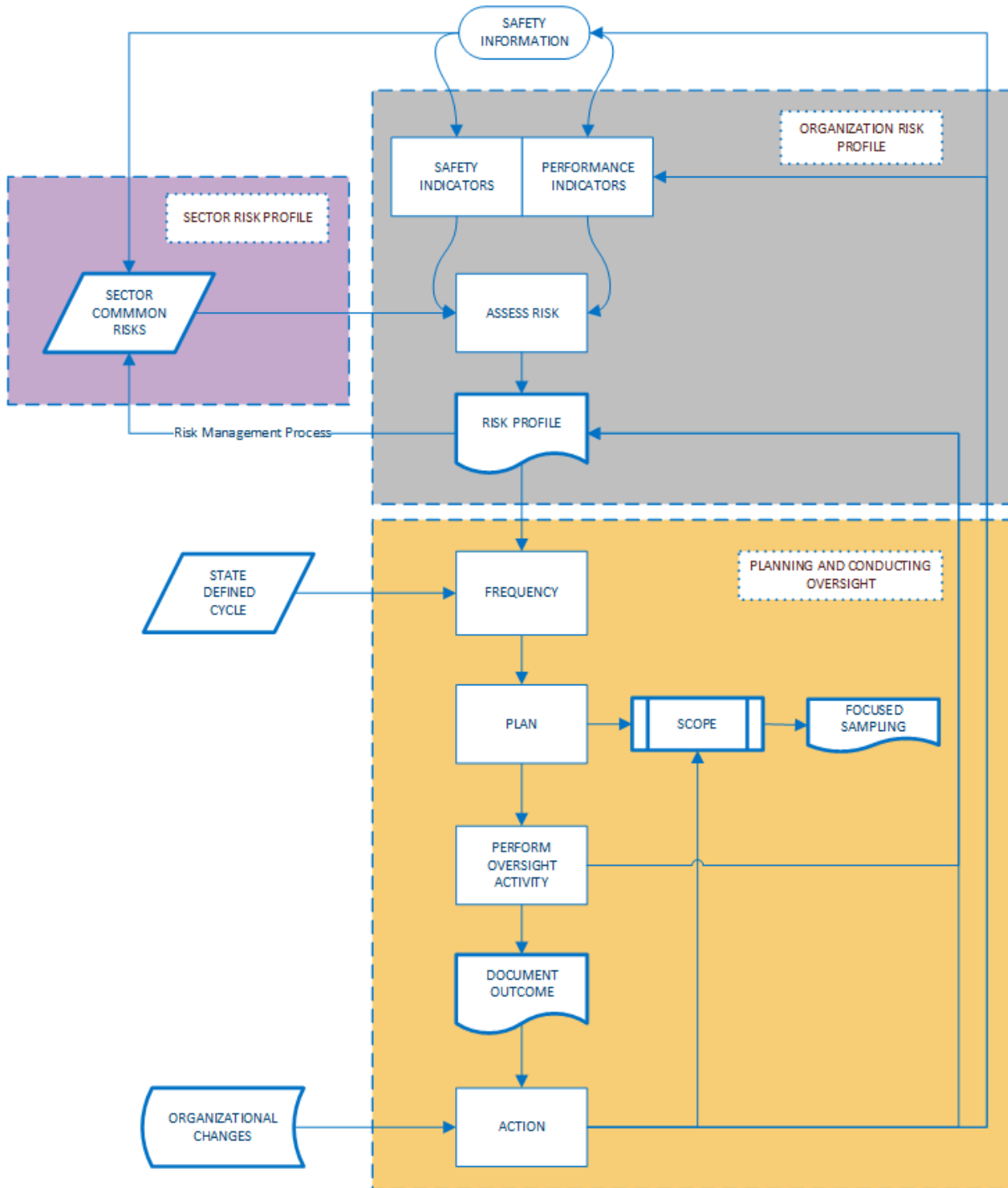
There are a number of SM ICG products that already deal with oversight and surveillance. This document is connected to, and builds upon, those products. Accordingly, this document provides links to existing SM ICG materials. These materials serve as a core basis from which to take the next step in developing effective surveillance and evaluation of an SMS post implementation.

2.3. Oversight Process

The oversight process is depicted in Figure 1. In broad terms, this includes a process that forms the basis of this document including:

- Preparation through gathering/analyzing safety information;
- Developing and performing the oversight activities; and
- Implementing actions.

Figure 1: Oversight Process



3. Working Together to Improve Surveillance

The implementation of SMS, including safety management practices, introduces the dimension of proactive safety risk management and safety performance monitoring. This is combined with traditional regulatory compliance in the competent authorities' safety oversight of the SPs. This requires a shift in the regulatory approach from one that is compliance-based to one that is partnership-based between the competent authority and the SP. The partnership approach enables the assimilation of SMS principles as part of the competent authority and safety oversight processes. It also allows the competent authority to carry out performance-based oversight (PBO) and risk-based oversight (RBO) approaches.

3.1. Working in Collaboration

Various parties need to work together to contribute to the successful surveillance of SMS implementation and its effectiveness. An organization may undergo surveillance by multiple authorities if it holds multiple certificates/approvals from more than one State. In these cases, the authorities performing the surveillance may wish to collaborate or could consider the exchange of information. In the specific instances where SMS is implemented, using tools such as the [SM ICG SMS Evaluation Tool](#) aids the mutual surveillance and acceptance of an SMS by multiple authorities. International bodies which are not competent authorities may issue "approvals" based on an SMS.

In conducting surveillance, the authority may encounter an organization that has implemented an integrated management system. This could combine health and safety and/or security. Most organizations are likely to have a quality management system and may have additional certifications such as ISO 9001.

An organization in a State that has established an SSP should consider the State SSP, including its objectives and indicators, as part of its SMS.

Reference Links

- [SM ICG SMS Evaluation Tool](#)

3.2. Fostering a Positive Safety Culture

To facilitate the integration of SMS into regulatory and safety oversight activities, the competent authority and SPs need to embrace and foster a positive safety culture within their organizations and between each other. This encourages stronger partnerships and the more open sharing of safety data/information between the competent authority and SPs. It benefits the overall implementation of SSP and SMS.

An organization (competent authority or SP) may carry out safety culture assessments to understand its safety culture and identify areas for improvement.

Reference Links

- [Industry Safety Culture Evaluation Tool and Guidance](#)
- [Organizational Culture Self-Assessment Tool for Regulators](#)
- [Pamphlet: Safety Culture for Effective Safety Management](#)

4. Risk Profiling

A key component in assuring the continued effectiveness of a State's SSP is the ability to understand the relationship of State, sector, and organizational risks. The ability to prioritize actions within the State can be enhanced using sector and organizational risk profiles.

Additionally, it is key for the State to collect data, identify safety information, and assess an organization's risk profile for surveillance frequency and scoping purposes.

4.1. State, Sector, and Organizational Risks

A State's safety oversight processes include both compliance oversight and risk management. Risk profiling is a vital part of a State's risk management processes and allows the State to identify priorities and the associated risk mitigation measures. These may be implemented via different safety oversight mechanisms, policy, oversight audits/inspections, safety actions, and safety promotion.

The identification of risks can come from several sources and may be unique or more prevalent in certain sectors of industry or individual organizations. To assure the effective management of risk, it is important to understand the relationship between risk profiles and the impacts they have on one another.

As part of current risk management processes, States may have developed a State risk picture and perhaps sector risk profiles but not developed organization risk profiles. They may decide that organizational risk profiles are unnecessary in some sectors due to activity levels or other reasons.

4.1.1. State Risk Picture

The purpose of safety performance management at the State level is to guide decisions related to resource allocation and aviation system outcomes. The ultimate purpose is to enhance overarching aviation industry safety. If safety is expressed in terms of the risk controls associated with the identified hazards, it follows that measures of safety performance must verify the effectiveness of risk controls managed at the State level.

Authorities should base their system of safety performance management on a defined safety risk picture at the State level, utilizing multiple sources of safety data available in the State. For some States, this would be through the SSP. The safety risk picture should also consider the Regional Priorities that have cascaded from the ICAO Global Aviation Safety Plan. The State takes into consideration constraints such as resource availability, legislative imperatives, and technological capability when defining safety objectives. These eventually provide the overall guidance for safety performance management.

As a starting point, States may elect to develop safety risk registers for hazards and risks. Safety risk registers document the results of analyses that identify the main safety issues of concern that the State wishes to address. It is also helpful to group safety issues on a sector-by-sector basis (e.g., flight operations, airworthiness, Air Traffic Management/Air Navigation Services [ATM/ANS], aerodromes, etc.). A risk assessment also facilitates prioritization of State-level responses.

Reference Links

- [Guidance for Comprehensive Safety Performance Management in an SSP](#) (provides more details on developing the state risk picture)

4.1.2. Sector Risk Profile

A Sector Risk Profile (SRP) contains a description of the risks found that may affect a group of related aviation activities, services, organizations, or products. Members of a sector (e.g., aerodromes) may be exposed to similar operating conditions and, as such, may be exposed to similar hazards. Therefore, the SRP should be considered by all operators and stakeholders connected to that sector.

SRPs use both quantitative and qualitative methods to source the information required. This includes data as well as other information such as knowledge, experience, and perceptions of industry participants and other observers.

There are several ways an SRP can be utilized. For example, an SRP may help inform the competent authority where to target its actions and resources. In the context of surveillance, the SRP serves as the baseline for the development of the organization risk profile.

However, as previously mentioned, the organizational risk is determined using the results of the surveillance activities. In this way, the organizational risk profiles provide feedback to the SRPs, contributing to the identification of risks that will be treated in the scope of the SSP and the organizations' SMS.

Reference Links

- [Sector Safety Risk Profiling at the State Level](#) (provides more details on the SRP)

4.1.3. Organization Risk Profile

A complete and comprehensive picture of an organization's risk profile allows aviation authorities to determine the appropriate surveillance in terms of frequency and scope (including focused oversight) to target surveillance activities on areas of greater concern. These profiles include indicators of inherent risks, compliance, performance (including safety and non-safety data), as well as indicators of safety management effectiveness. Organizational risk profiles may contain the following:

- **Inherent Risks Indicators.** Assess the risk of the organization due to the nature of its activities.
- **Compliance Indicators.** Assess the organization's ability to maintain compliance with regulatory and system requirements.
- **Performance (leading and lagging) Indicators.** Used to assess how well an organization is managing risk.

The safety performance dimension of the organization risk profile is based on the measurement of the achieved performance during the surveillance cycle. Indeed, these activities are essential to obtain safety information that will be used to provide feedback on the risk profile of the organization. Moreover, a tangible benefit of obtaining good, quality safety information is the improvement of sector risk profiles. The assessment of the risk profiles across multiple organizations could identify adverse trends in specific areas (e.g., emerging from compliance assessment or safety performance evaluation) that may help identify safety issues as part of the State's risk management process and that may be added to the SRP.

Reference Links

- [ICAO Safety Management Manual Doc 9859](#) (Figure 8-4)
- [Risk-Based and Performance-Based Oversight Guidance](#) (provides more details on the development of an organization risk profile)

4.1.4. Safety Information

The ability to identify and assess State, sector, and organizational risks is highly dependent on the ability to properly capture and analyze safety information and data. There are several data gathering techniques from a multitude of sources for safety information and data. The data gathering technique, the sources, and the use of data is dependent on the sector, the organization, and the risks or hazards being managed. It may include information obtained through:

- Safety oversight activities

- Agreements with industry
- Regional or global agreements
- Occurrence reporting systems
- Accident or incident reports
- ICAO reports
- CAA Quality Management System (QMS) data
- Other CAA reports
- Industry association reports
- Flight Data Monitoring (FDM) data

It is also important to remember that some of this data may be subject to specific confidentiality, data protection, and appropriate use requirements that must be respected.

Reference Links

- [Guidance for Comprehensive Safety Performance Management in an SSP](#) (provides more details on collection and use of safety information)

5. Surveillance Planning

An organization's risk profile allows authorities to determine the appropriate surveillance (in terms of frequency and scope) in order to focus surveillance activities on the areas of greater concern or need. Pertinent performance outcomes and safety data inputs are used to adjust/calibrate the surveillance frequency and scope of an individual SP.

5.1. Evaluation Preparation

5.1.1. Frequency and Scope

When considering frequency and scope of surveillance activities of a Product/Service Provider (P/SP) with an SMS, competent authorities should not be bound by fixed cycles traditionally used for a sector. Rather, they should rely more on the safety performance and risk profile of the P/SP.

NOTE: The competent authority may be bound by a couple of factors requiring the minimum frequency-based regulation or the resources available to authorities (inspectors).

Where there is a limited amount of data or performance history to assess the effectiveness or the maturity of an SMS (e.g., during initial development and implementation of an SMS), a competent authority should establish a baseline of surveillance activities (frequency and scope).

As more data becomes available through the safety oversight activities, safety performance monitoring, and other safety intelligence on the SP, a more complete risk profile of the organization could be formed. This *informed* risk profile could then be used to vary the frequency of surveillance activities. Using a suitable framework, the competent authority could then increase (if the risk profile is higher) or decrease (if the risk profile is lower) the frequency of surveillance activities on an organization from the baseline frequency.

Similarly, when the risk profile changes, the scope of the surveillance activities should be varied along with the oversight cycle. Competent authorities need to carefully consider and balance the depth of any given surveillance event with the breadth that the event is hoping to cover. At times, greater benefit is realized through a more focused (narrow scope) and "deep-dive." At other times, a higher-level, "whole-system" review is more appropriate.

Notwithstanding the above, competent authorities should maintain sufficient agility to account for the dynamic nature of the operating environment of the SP and the risk picture. Surveillance planning must be agile enough to react to safety issues that may arise and that may need to be

addressed using targeted surveillance. Some examples that may prompt targeted surveillance are accident/incident investigations, airworthiness directives/bulletins, or medical assessment results.

5.1.2. Tools

A tool might be used to determine the surveillance for each operator. This tool might be built into the surveillance planning software or a database containing the list of approved organizations. In addition to the standard checklists, the [SM ICG Evaluation Tool](#) is recommended.

Reference Links

- [SM ICG SMS Evaluation Tool](#)

5.2. Planning Activities: Final Evaluation Preparation

The scope of the evaluation has already been defined based on the risk-based oversight considerations discussed in Section 4.1. However, the evaluation team has a greater degree of proximity with the organizations. Therefore, it is reasonable to expect that the inspector/evaluator can contribute to refining the scope of the evaluation and increasing the efficiency of the CAA supervision of safety of the aviation system. The evaluation may consider the following:

- **Evaluation Checklist:** Reviewing the details of the evaluation checklist can help in ensuring that the scope of the evaluation is fully understood, including any new items arising from the risk profile assessment.
- **Previous Evaluations:** Reviewing previous evaluation records in the areas within the scope of the evaluation allows the evaluation team to assess the specific details of previous evaluation findings and corrective actions. They can use this to identify if any further on-site verification is necessary.
- **Relevant Documented Reports:** The organization's risk profile may identify adverse trends in some areas; therefore, the inspector may need to review the details in relevant documented reports in advance of the evaluation.
- **Operational Procedures Manuals:** Reading the organization's manuals helps the evaluation team become familiar with the processes and procedures associated with the areas highlighted by the risk profiles and associated evaluation scope.
- **SMS Evaluations:** In the case of an SMS review, previous SMS evaluations help the evaluation team identify the trends of SMS components and elements and the relative level of implementation toward effectiveness.
- **Safety Performance Monitoring Results:** Reviewing the safety performance monitoring results relevant to the evaluation scope provides greater insight to the inspector; it may also be useful to compare the organization's safety performance indicators with indicators of other organizations within the sector, if available.
- **Safety Culture Evaluation:** It may also be beneficial for the inspector to become familiar with an evaluation of the organization's safety culture, if available.

The result of the evaluation preparation is an evaluation plan, which helps the CAA perform the surveillance activity. The plan guides the inspectors in verifying compliance with the applicable safety requirements and assessing the safety performance of the organization.

5.2.1. Knowledge and Training

Effective surveillance requires training, knowledge, and abilities for an inspector. The inspector's knowledge of ICAO Annex 19, ICAO Doc 9859, the regulatory framework within the CAA SSP, and an understanding of how risk and performance work together with compliance is also required. The [Training Program Outline for Inspector SMS Competency](#) contains a program of training including

the learning objectives, key learning points, and resources that support the learning points. Formal SMS courses can be found on the [ICAO website](#).

Effective surveillance of SMS outputs is reliant upon a shift in practice from the historically compliance-finding role of the competent authority to a collaborative relationship between the competent authority and the P/SP. A shift in competencies from compliance to system allows the competent authority to assess the system as a whole. Each organization has competency frameworks that define and identify each competency required to work with them and provide effective surveillance.

Reference Links

- [Attitudes and Behaviors for Effective SMS](#)
- [SMS Courses on ICAO website](#)
- [SMS Inspector Competency Guidance](#) (provides more information on competencies for SMS inspectors)
- [Training Program Outline for Inspector SMS Competency](#)

6. Conduct Surveillance

The ICAO Safety Management Manual, Doc. 9859 4th Edition, states “surveillance comprises the State activities through which the State proactively verifies through inspections and audits that aviation license, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.”

In a performance-based regulatory environment where an SSP and SMS are in place and are proactively managing safety, surveillance activities include the verification of both prescribed requirements and safety performance aspects of the organization.

While initially seeking evidence that the SMS elements are present and suitable, ongoing assurance turns its focus toward outputs which demonstrate that the SMS is operating and effective. In practice, ongoing assurance tilts the inspector’s attention from system compliance toward system performance. The conduct of surveillance where an SMS has started to mature requires the surveillance team to appreciate how to conduct their efforts methodically, utilizing various methodologies to build evidence which proves the SMS is operating and effective.

Nonetheless, compliance findings by the CAA still need to be gathered. Performance-based rules and compliance rules are complementary. Therefore, planning surveillance activities must consider the traditional audits and inspections in order to evaluate the validity of certificates, licenses, or authorizations, as well as merge methods to evaluate the effectiveness and the performance of the SMS. Surveillance generally has three steps:

1. Planning surveillance (as discussed in Section 5)
2. Performing the evaluation
3. Concluding the evaluation

6.1. Performing the Evaluation

The process of conducting surveillance involves fact-finding for compliance with safety requirements and the performance evaluation of SMS components and elements. Compliance with safety requirements is demonstrated by the organization to the CAA, who in turn uses the demonstration data to assure compliance with the requirements.

6.2. Evaluation of SMS

SMS cannot be assessed through a simple, check-the-box compliance check or audit.

When an organization is required to have an SMS, the competent authority evaluates how the organization *complies* with the requirements pertaining to an SMS; additionally, they assess how *effective* the SMS is in meeting its ultimate objective of improving aviation safety.

This performance-based evaluation of an SMS is a different approach for many. It requires a specialized tool to assess the performance level of the SMS. The overall effectiveness is a function of compliance and performance, which can both be evaluated using a tool like the SM ICG SMS Evaluation Tool (explained below). While the size and scope of the surveillance may depend upon the complexity of the organization, the surveillance team needs to use a standardized evaluation tool to methodically step through the SMS elements. An evaluation tool has many benefits because it provides:

- Facilitation of an orderly approach which assists all parties
- Efficiency through the adoption of a structure which avoids duplication
- Prompts to the surveillance team for key focal areas in terms of what to look for and what to ask
- A trail of who did what and the results of their efforts
- Evidence for regulatory records

6.3. SM ICG SMS Evaluation Tool

ICAO Annex 19 promotes a common approach to Safety Management across aviation domains—both for States and for organizations. The [SM ICG SMS Evaluation Tool](#) evaluates the overall effectiveness of the SMS as a function of both compliance and performance. It does this through a series of indicators based on ICAO Annex 19 and ICAO Safety Management Manual (Doc 9859) and uses the ICAO SMS Framework. Each indicator should be reviewed to determine whether it is *present*, *suitable*, *operating*, and *effective*, using the definitions and guidance provided in the tool.

Reference Links

- [Industry Safety Culture Evaluation Tool and Guidance](#)
- [SM ICG SMS Evaluation Tool](#)

6.4. Compliance and Performance Evaluation of an SMS

During the initial stages of developing an SMS, compliance is required to ensure the SMS framework is in place and suitable for addressing the safety demands an organization may face. Before issuing an approval or certificate, the authority ensures all processes are present and suitable. However, once an SMS is implemented, the organization should start using the SMS as part of its operations. The focus of authority's assurance is expanded to ensure the SMS is operating and performing satisfactorily (i.e., generating the desired outcomes).

Sufficient time should be allowed for the organization's SMS to start generating these outcomes before post-implementation/ongoing surveillance is scheduled. This subsequent evaluation strives to determine whether the processes remain present and suitable, and are now operating and possibly effective. Effective SMS processes may take some time—potentially a few review/surveillance cycles—to be achieved. In order to check that SMS processes remain operating and effective, the SMS should be re-evaluated on a regular basis to confirm ongoing performance. The review should evaluate all of the items in the evaluation tool which can be done through various evidence gathering methods discussed in Section 6.5.

In summary, initial assurance measures target the inputs to the SMS (compliance), while ongoing assurance focuses on the suitability of the outputs (compliance and performance). Some examples which demonstrate this shift are included in Table 1, which includes specific examples of indicators from the SM ICG SMS Evaluation Tool.

Table 1: Surveillance Focus Shift from Component Presence to Performance

SMS Component	SMS Evaluation Tool Indicator (example)	Initial Assurance Focus (example)	Performance Focus (example)
Safety Policy and Objectives	There is a means in place for the communication of the safety policy	Policy is visible and distributed as required	Evidence confirms that employees read, understand, and abide with its requirements
Safety Risk Management	There is a confidential reporting system to capture errors, hazards, and near misses that is simple to use and accessible to all staff	There are forms/ procedures to capture mandatory occurrences and voluntary reports	Evidence of occurrence reports that are acted on in a timely manner and utilized as part of a risk management process to improve safety
Safety Assurance	Responsibilities and accountability for ensuring compliance with safety regulations are defined and applicable requirements are clearly identified	The responsibilities and accountabilities are documented and available to employees	Evidence that employees review, understand, and deliver on compliance as detailed
Safety Promotion	There is a process to determine what safety critical information needs to be communicated and how it is communicated throughout the organization to all personnel, as relevant	Evidence of a process to communicate safety critical information	Affirm that safety critical information has been received, understood, and acted on appropriately by viewing organization analysis and speaking with employees

Once the surveillance team understands the nature of performance evaluation, the conduct of the surveillance event may be undertaken within the general constraints of the frequency and scope (as described in Section 4).

6.5. Methods for Gathering Surveillance Information

Obtaining quality evidence is necessary to provide proof and assure that the organization is performing as required. There are a number of methods to obtain the information when conducting surveillance.

6.5.1. Documentation Review

Documentation review is perhaps the most common means of obtaining evidence. The methodology typically involves obtaining/sampling manual content and other data sources (e.g., from the SMS). The clear benefit is that the person undertaking the surveillance can request information in advance for the purposes of off-site surveillance as part of the process.

6.5.2. Interviews

Interviews are an important part of SMS surveillance and may be conducted in person or via telephone/video conference. They provide an opportunity to gather relevant and accurate information from the people within the organization, including third party interfaces in the form of testimonial evidence. There are a number of different ways to conduct an interview. The most appropriate type of interview depends on the nature of the event and the type of person being interviewed (e.g., person directly involved vs. subject matter expert). Types of interviews include:

- **Structured Interview.** In a structured interview, the interviewer asks a set of pre-planned questions about specific areas and the organization in general.
- **Free Recall.** In this type of interview, the interviewee is asked to recount an event or a process at their own pace and with the freedom to discuss as they recall it. The interviewer prompts the interviewee with open-ended questions as necessary and listens for specific details of interest.
- **Cognitive Interview.** This type of interview is a systematic approach used to increase the amount of information elicited about a particular event that the interviewee was either involved in or witnessed. This kind of interview is best reserved for incident investigation and is usually undertaken by individuals who are trained in cognitive techniques.

6.5.3. Observation

This methodology can be extremely effective when seeking to determine that the performance of an organization is in accordance with the documentation and procedure. Observation provides flexibility to capture details regarding the performance of the organization in a live environment to assess if the performance is as expected.

6.5.4. Physical Examination/Inspection

Physical examination builds upon the previous methodologies and provides the opportunity to verify that implementation (e.g., product, infrastructure, etc.) is as planned. Physical examination may be particularly useful when a safety process results in the implementation or maintenance of a physical control. The physical evidence can assist the surveillance team in assuring that the safety system is providing an effective final product/control that is fit for its purpose.

6.5.5. Testing

Testing is a powerful tool in surveillance; however, it can be intrusive for the organization being audited. Where testing is preferred as the means of assuring performance, it may be more appropriate for the surveillance team to request attendance as guest observers during routine testing, as opposed to mandating a test situation specifically for the surveillance event.

6.6. Dealing with Multiple Certificate Holders

In the case of an organization holding multiple certificates or approvals, the use of the SMS Evaluation Tool should follow the rule “1-Organization = 1-Evaluation.” Therefore, if one organization integrates all activities within a single SMS, the evaluation should consider the SMS as a whole.

It may be the case that different teams of inspectors oversee the same SMS with regard to different certificates, and a single evaluation may be impracticable. In such cases, the different evaluations should be shared with the various teams of inspectors. In addition, a common message from the competent authority/authorities should be provided to the organization.

6.7. Post Surveillance Activities

While the primary aim of an oversight program and indeed surveillance is to provide the competent authority with assurance of the SP's performance, a tertiary benefit comes from the external review and subsequent continuous improvement (if necessary). Accordingly, many competent authorities may not consider a surveillance event concluded at the exit meeting. Instead, it may be concluded after the organization's corrective action plan is accepted or even only after the improvements are implemented.

Therefore, at the end of the surveillance event, the evaluation team meets with the organization's management personnel to summarize the findings. This includes informing them of the more effective SMS areas and the SMS areas needing further improvement. This discussion may also cover the organization's safety objectives and their degree of achievement; their relationship to the States objectives through the relevant SSP; and clarification of any possible findings requiring specific action (including timelines). The evidence-based evaluation report should not only focus on any missing elements of an SMS (i.e., compliance approach, being present and/or operating) but also on the performance of the SMS as to whether the safety outcomes are appropriately established, monitored, and met (i.e., being suitable and/or effective). This report shall indicate the organization's overall level of maturity to effectively identify risks, mitigate them, and ultimately manage safety.

From here, the focus of the competent authority is the monitoring of these safety outcomes and the implementation of a robust SMS. This should not only address the sound application of investigative techniques, risk assessment/management procedures, and putting in-place tangible resilient barriers, but also the ability of the organization to monitor its performance, remain alert to changes, and effectively manage safety.

7. Continuous Improvement, Documentation, and Feedback

The overall objective of regulatory oversight is to facilitate continuous improvement in a SP's safety performance. Surveillance activities also provide competent authorities with information needed to maintain the currency and accuracy of SP risk profiles.

Surveillance and other monitoring activities provide information that supports continuous improvement and further monitoring. These processes provide a feedback loop to the P/SP's system, including the current organization risk profile. Continuous improvement and monitoring serves to increase the competent authorities' confidence in the validity of the risk profile and the likelihood of continued satisfactory performance on the part of the P/SP.

Where needed, two methods may be used to ensure continuous improvement and monitoring: (1) maintaining system changes and (2) assuring continuing effectiveness of the SP's systems and the SMS used to manage their safety by documenting the result of surveillance activities.

7.1. System Changes

Effective safety management on the part of the SP, as well as their business activities, inevitably results in changes to their systems. Some changes are initiated by the SP to modify their business practices, infrastructure, equipment, or procedures. Other changes are made either to comply with regulations or to improve operational and/or safety performance. Still others are made in order to adapt the SP's systems and operations to changes in their operational environment.

Many changes need decisions by the competent authority to accept or approve them, but all changes have the potential to change the SP's organization risk profile. Surveillance and associated analysis activities provide competent authorities the information needed to assess potential impacts of these changes, which may affect acceptance or approval decisions.

Additionally, these changes need to be monitored to assure that initial assumptions regarding their potential impact were accurate or revised accordingly.

Surveillance actions regarding these changes should be planned to address the initial actions taken by the SP to integrate them into their systems as well as their continued performance over time. This may affect both the frequency and scope of surveillance actions considering the scope, complexity, and potential impact on safety of the changes.

7.2. Output of Surveillance

Upon completion, the outputs of surveillance activities are documented by the competent authority to assist in the continued determination of the risk of a P/SP's system. When documenting the results of surveillance activities, the competent authority should identify:

- Areas of good performance
- Areas of ineffective risk controls (including those that are addressed by regulations and those that may be unique to the P/SP that led to opportunities for improvement)
- Areas of non-compliance
- Areas of new/emerging risks

When documenting the results of surveillance, the following are examples of areas that could be captured:

- The areas in the system that were assessed
- Sample size (i.e., number/percentage of product or system elements observed)
- Representativeness of sampling (e.g., distribution of locations, organizational units, levels of management, employee groups)
- Documentation of interviews conducted
- Whether or not the findings of non-compliance were a result of unclear regulatory guidance

7.2.1. Documenting Performance

To support the determination of risk and future frequency and scope, after concluding surveillance activities, competent authorities should document areas of the P/SP's system that are performing well and where no opportunities for improvement or non-compliances were noted. The documentation of performance helps determine:

- The robustness of the P/SP's safety risk management
- Areas where regulatory oversight could be reduced due to good performance
- The level to which the P/SP self-identifies hazards/associated risk and how effective their risk controls are; this includes both those prescribed by regulations and those which are products of their SMS
- The effectiveness of the SP's safety assurance process to identify, assess, and treat (or correct) identified deficiencies

7.2.2. Documenting Opportunities for Improvement

As a result of surveillance, there may be instances where potential opportunities for improvement were identified in order to strengthen the effectiveness of a P/SP's SMS, including operational processes to which the SMS is applied. In these cases, the competent authority should work with the SP to determine what actions can be taken to increase effectiveness and strengthen any weaknesses within their SMS. Opportunities for improvement support the ability of the P/SP to continuously improve their system and could result in activities such as updating documents or work procedures, increasing change management, or streamlining workflows to increase effectiveness.

7.2.3. Documenting Non-Compliances

When findings of regulatory non-compliance are identified, the appropriate action should be taken to identify the cause, restore the degree of risk mitigation intended by the regulation or other risk control, and correct the issue to prevent reoccurrence. Where regulatory non-compliances are identified, the level of corrective action needed depends on the complexity of the issue, the criticality of the issue, and most importantly the behavior of the P/SP towards the issue (i.e., was there intent, are they willing to correct the issue). The following are initial considerations for determining the appropriate action:

- The non-compliance was a result of flawed procedures, simple mistakes, lack of understanding, or diminished skills.
- The P/SP recognizes the degree of risk involved and that their performance must be corrected.
- The P/SP is willing and able to apply the resources (time, people, and/or technology) to correct the non-compliance.
- There is the presence of intentional or reckless behavior by the P/SP.
- The competent authority believes the non-compliance can be corrected and an appropriate level of risk control can be applied to prevent future failures.

The P/SP should conduct follow up monitoring analysis and performance evaluation to ensure effective performance of the control. The P/SP should employ the safety assurance processes of their SMS, but these results should always be verified by independent surveillance and analysis by the authority.

In some cases, enforcement actions are appropriate when other, more proactive actions have failed or where the service provider is unwilling or incapable of improving their performance without punitive or deterrent actions.

When documenting non-compliances and corrective actions the competent authority should:

- Analyze the finding against past findings, including trend analysis
- Document and advise the P/SP of the non-compliance
- Verify the P/SP's applicable SMS processes
- Document the P/SP's root cause analysis and corrective action plan
- Document the corrective action validation

7.2.4. Documenting Emerging Risks

Changes in the environment in which the SP operates often requires changes in their systems and practices. Monitoring and responding to these changes is an important task for the SP's SMS. At the same time, competent authorities must assure that the SPs that they oversee remain aware of these changes, as well as ensuring that their approval, acceptance, and authorizations for the organization are kept up to date. Current documentation on the elements of the P/SP's operational environment forms an important part of the P/SP's risk profile. Surveillance should include activities to maintain information on these elements as well as to ensure that the P/SP is appropriately aware and responsive to these changes.

Gaps in system configuration or practical drift in system performance may also present hazards that may not be satisfactorily mitigated. As discussed earlier, these may or may not be subject to regulatory control but in all cases, represent opportunities for improvement. Both the P/SP's SMS safety assurance processes and the competent authority's surveillance should be vigilant for these conditions and their possible implications. Both should document these emerging risks and the efforts to address them.

7.3. Feedback

7.3.1. Feedback into the Organization Risk Profile

Each noted change and the output of surveillance activity should flow back into the P/SP's established risk profile. These results are used to identify changes and trends in performance in the operational environment; assess how well the P/SP is managing their risk; and help determine the best future oversight strategy. Maintenance of the risk profile should be thought of as a dynamic process, updated as new information is obtained. Surveillance activities, including analysis of information acquired from the P/SP, provides a source of risk profile maintenance. Surveillance planning should include activities that provide information to maintain the currency and accuracy of the risk profile.

7.3.2. Feedback to the Product/Service Provider

At the same time, competent authority personnel and those of the P/SP should establish a common understanding of the status of the risk profile and actions to address the associated risks in order to continually improve the associated systems. Interaction with the P/SP should recognize the maturity of the P/SP's SMS and their safety culture. P/SPs at earlier stages of their evolution or otherwise at lower levels of maturity may need more frequent and/or direct input as well as more detailed follow-up oversight. Conversely, more mature organizations may respond more positively to performance-based input. Additional information on this concept can be found in the [SM ICG Organizational Culture Self-Assessment Tool for Regulators](#).

Risk profiles of individual organizations should also be analyzed collectively to maintain the accuracy of sector risk profiles and the State's safety objectives and associated safety performance indicators and targets. This, too, is a dynamic process of continuous adjustment of the State's processes and subsequent dissemination back to P/SPs and the competent authorities' oversight organizations.

7.3.3. Feedback into Regulations and Policy

Analysis of aggregate surveillance (safety assurance) information should also be used to inform the competent authority about emerging risks that may affect entire sectors of the aviation system. These analyses may suggest the need for new regulations, amendments to existing regulations, changes in oversight policies or practices, or safety promotion activities.

Quick Reference Summary

- [Attitudes and Behaviors for Effective SMS](#)
- [Guidance for Comprehensive Safety Performance Management in an SSP](#) (for more details on developing the state risk picture)
- [ICAO Safety Management Manual Doc 9859](#) (Figure 8-4)
- [Industry Safety Culture Evaluation Tool and Guidance](#)
- [Organizational Culture Self-Assessment Tool for Regulators](#)
- [Pamphlet: Safety Culture for Effective Safety Management](#)
- [Risk-Based and Performance-Based Oversight Guidance](#) (for more details on the organization risk profile)
- [Safety Management Terminology](#)
- [Sector Safety Risk Profiling at the State Level](#) (for more details on the SRP)
- [SM ICG SMS Evaluation Tool](#)
- [SMS Courses on the ICAO website](#)
- [SMS Inspector Competency Guidance](#) (for more information on competencies for SMS inspectors)

- [Training Program Outline for Inspector SMS Competency](#)