Expert Insights

The International Air Transport Association

The importance of a strong and adaptable safety culture

Summary

As a safety risk management expert in the aviation industry, we interviewed Matthew Lillywhite to understand IATA's approach to safety management systems (SMS), the importance of a strong and adaptable safety culture, and how they have integrated bowties into their audit and quality assurance approach.

This expert insight is a two-parter aimed to give you a comprehensive view of the steps needed to implement your SMS framework in an evolving environment.

About us

Bowtie Suite is the leading provider of barrier-based risk management solutions. It's an off-the-shelf, intuitive, risk management software solution that support your organization during every step of your safety journey to enable safe and efficient operations.

Expert Profile

The International Air Transport Association (IATA) is a trade association for the airline industry. It represents more than 300 airlines across the globe, which account for around 82% of global air traffic. IATA's primary focus is supporting their members.

Their mission is to represent, serve and lead the airline industry. As such, they offer a wide range of products and services (including Bowtie Suite) to support airlines in various areas, from improving operational efficiency and financial performance to enhancing safety. Their products and services are designed to meet the diverse needs of their members, helping them thrive in a competitive industry As a trade association in the Aviation industry, IATA is also liaising with a wide range of stakeholders; predominantly, the airlines but other organization and regulators, like the ICAO (International Civil Aviation Organization) as well.

SMS: An integral part of an organization

It's really important to start with the fundamentals. A safety culture is absolutely key, and alongside that, safety leadership is something we strongly promote at IATA – with a [program dedicated to it.](#) These elements are critical to making an SMS work effectively. But what are a safety culture and SMS?

People often overcomplicate things — writing lengthy, 1000-page manuals — when, in reality, it's quite simple. It's about identifying what might cause harm, and putting in place mitigations to manage the associated safety risks.

A key part of this depends on your risk appetite. For example, as an operator, you might have a profitable destination that's in a mountainous area, which attracts a lot of tourists for skiing. However, that location may also come with increased risks. Your SMS should help you assess whether you're comfortable operating there, and if so, how to mitigate the risks you'll face.

An SMS isn't just a manual that sits on a shelf—it should be fully integrated into everything the organization does. It's part of the DNA of the organization, ensuring that safety management is considered in every decision and operation.

In short, safety management should be embedded into every aspect of the organization's activities, not treated as a separate or isolated process.

Matthew Lillywhite is based at IATA's Geneva office as Senior Manager, Safety Risk; responsible for leading various safety risk activities to support IATA's members and more widely IATA's audit programme - IOSA. Prior to joining IATA, he held various regulatory roles at the UK CAA - developing their SMS Strategy, leading SMS assessments, undertaking performance-based oversight of airlines, as well as involvement in risk management activities.

View full bio →
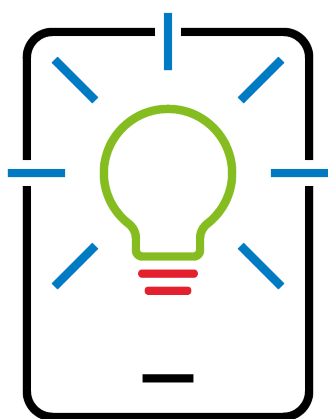
Supporting your SMS

IATA's safety strategy is built on three pillars: safety leadership, safety risk, and safety connect. Something that is at the center of their everyday approach as Matthew explains: "As part of our safety strategy addressing safety risk our members are exposed to is a central focus."

"One of our key tools available to the industry is the Safety Issue Hub, a repository of identified safety issues, that resided within our IATA Connect Platform. You might think of it as a risk register. In the hub, we've listed around 100 safety issues that we believe operators might encounter.
These issues are assessed for potential exposure, meaning some apply regardless of where you're operating. However, the hub also allows for filtering by region—North America, Africa, Asia Pacific—so organizations can identify safety issues specific to their part of the world."

However, the hub is more than just a

list of issues: "For each one, we provide descriptions, as well as links to additional documentation to help organizations understand and mitigate the risks. This might include external sources or guidance materials from IATA. For high-priority safety issues, we go further by producing detailed, generic safety risk assessments.

This is where we leverage BowtieXP to its fullest. For example, in recent months, we've released a safety risk assessment for runway incursions and loss of control, complete with a generic Bowtie model. This model helps organizations conduct their own safety risk assessments. In addition, we include suggested safety performance indicators, recommended actions, and other guidance.
These detailed risk assessments, built on Bowtie models, are some of our flagship documents in the Safety Issue Hub, and they play a crucial role in supporting organizations with their safety management efforts."

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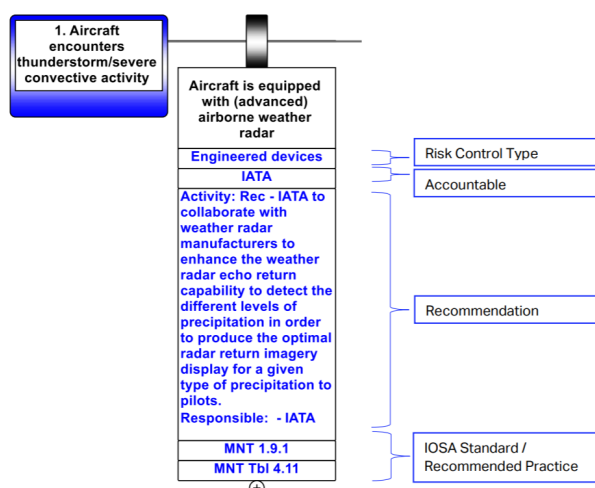
Example de risk control tagging in "Loss of control - Environmental conditions"

Empowering Airlines with Effective SMS Tools and Training

At an SMS level, IATA's goal is to ensure airlines have the right tools and knowledge to implement and maintain an effective Safety Management System.
To achieve this, Matthew describes the different approaches taken "We produce guidance material and offer training to equip our members with the knowledge they need for a successful SMS. We also work closely with ICAO. I sit on ICAO's Safety Management Panel with other IATA colleagues, which allows us to contribute to the development of safety management standards and recommended practices. These eventually filter down to our members through IATA internationally recognised audit program - IATA Operational Safety Audit (IOSA)

The IOSA program is risk based, which includes evaluating an organizations's SMS maturity and identifying areas for improvement."

One of the key aspects of SMS is its scalability—it's designed to adapt to the specific needs of each organization. For Matthew, this means that SMS will look different for every operator, "and there are varying levels of maturity across the board. Everyone is on their own journey, and building a robust SMS takes time. Some operators may be more advanced than others, which is expected, especially for those just starting out compared to airlines that have been operating for many years."

Where to start?

"I think it comes back to those two fundamentals: Establishing a safety culture in place early on and having safety leadership from the senior management.
When you have those in place, it's about setting the building blocks. This means establishing a strong reporting system, which is essential for identifying hazards, assessing risks, and conducting safety assurance activities. For new organizations, it's especially important to have a user-friendly reporting system that encourages reporting safety issues.

The Safety Issue Hub can support organisations that are just starting out and beginning to compile their risk register. They can review the safety issues in the Hub to see if they are relevant to their operationbased on their region of operation. This process is essentially a gap analysis and an implementation plan.
By introducing their reporting system and initiating their safety risk management processes, their SMS will begin operating It won't happen overnight; though it's a gradual process that will evolve and improve over time."
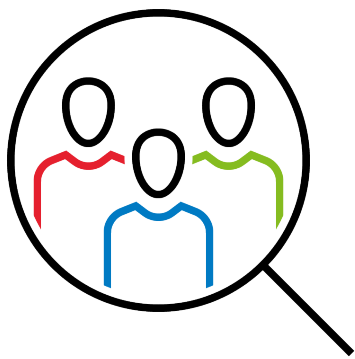
Going to the next level

"Historically, we are very good at focusing on things that went wrong. However, there is a tremendous opportunity to learn from what went well. For more mature organizations, this can be a key focus—adopting principles that encourage learning from all operations."

Matthew Lillywhite
Senior Manager Safety Risk
IATA

When asked, Matthew wanted to make clear that "there's always space for some continuous improvement for sure. I'm a big advocate for approaches such as learning from all operations, sometimes called Safety II.

Historically, we are very good at focusing on things that went wrong. However, there is a tremendous opportunity to learn from what went well. For more mature organizations, this can be a key focus—adopting principles that encourage learning from all operations. By taking a broader view of their data, they can shift from focusing solely on failures to understanding how mitigations are performing on a day-to-day basis.

Again that's where our safety issue hub for a mature organization comes into action. They probably have quite a mature risk register, but they can still use the safety issue hub to perhaps validate some of the information that they already have.
There are also the safety risk assessments we produce that have bowties models - created using BowTieXP - that can help them validate or update their own risk assessments even though they might have them in place if they're more mature."
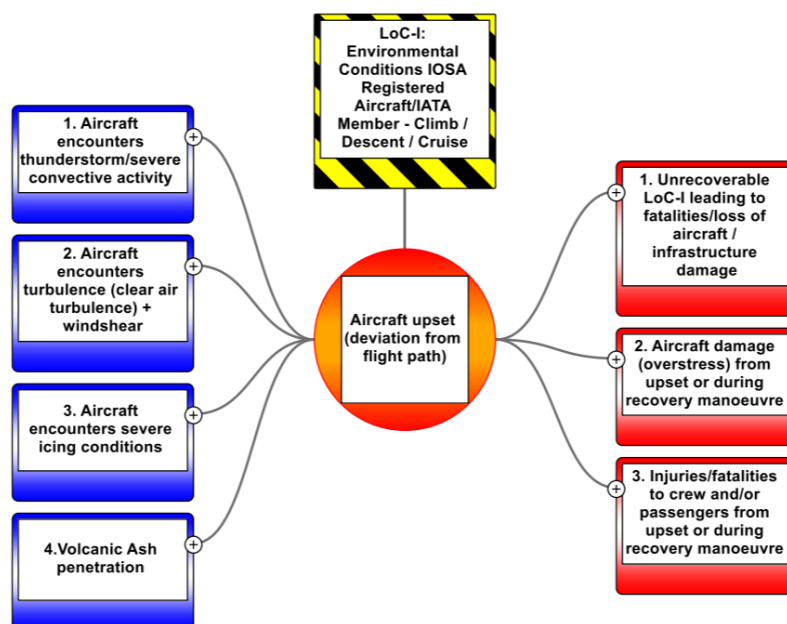
Bowtie created by IATA for their "Loss of control - Environmental conditions" in their safety issue hub

Selecting the right risk management software

You really need to consider what your needs are and what the specific use case is. For us, it's not so much about what we need in IATA, but what our members can benefit from. The tool has to be relatively simple to use and not overly complex. There are many approaches to risk management, ranging from straightforward 5x5 risk matrices to more advanced models like STAMP (System Theoretic Accident Model and Processes).

STAMP is quite complex—often requiring a high level of expertise to implement, possibly even a PhD. While it's highly regarded, it can be difficult for many organizations to use due to resource or knowledge constraints.

That's why I really appreciate the bowtie approach. It's something that people can grasp quickly, and it's visually intuitive. If I'm trying to explain a safety issue, I can pull up a bowtie diagram, and the person immediately understands what mitigations are in place, what might be missing in their operation, and the strength of the risk controls.

It's a case of "a picture paints a thousand words." The bowtie diagram allows for more meaningful conversations about safety issues. We can focus on the mitigations, identify what can be changed, what's weak, and what needs strengthening. It's an effective way to foster a dialogue and evolve the conversation around safety.

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To understand how IATA uses the bowtie methodology in their audits and quality assurance, go to the second and final part of this expert insights.

Read part 2