IFALPA
The Global Voice of Pilots

Security Briefing Leaflet

11SECBL01

October 2010

An Introduction to Security Management Systems

Introduction

The intent of this briefing leaflet is to introduce a new paradigm being introduced in the world of Aviation Security – the concept known as Security Management Systems or SeMS. It will discuss in brief and simplified form what SeMS is, the history of the concept, and how the SeMS environment is intended to function.

What is SeMS?
According to the Transport Canada website, a Security Management System is "a formal, risk-driven method of integrating security into an organization's day-to-day business operations and its management systems. It is used to implement the organization's security policy and to fulfil any regulatory requirements, while effectively and efficiently managing security risks, threats and impacts in the context of a formalized risk management framework".

The art of war teaches us to rely not on the likelihood of the enemy's not coming, but on our own readiness to receive him; not on the chance of his not attacking, but rather on the fact that we have made our position unassailable.
Sun Tzu

So what does the above paragraph mean?

To understand that, we should look at the history of SeMS. Traditionally, regulatory bodies worldwide have adopted a philosophy of prescriptively regulating the aviation industry. What is meant by this is simple; when governments saw a deficiency, they regarded it as their function to put into place a rule or law that was very specific and, not only told the industry what they had to do, but how they had to do it.
In the early days of aviation, this was probably appropriate as aviation was virtually unregulated at that time, it was, by extension, unpredictable. Standards were lax, and the accident rate was unacceptably high. Accordingly, measures, regulations and procedures were put into place and the safety record improved dramatically. However, as the industry progressed, it became apparent that this improvement had a ceiling that was difficult to penetrate. In an early 1972 publication on System Safety, Jerome Lederer, who is sometimes thought of as the "father of American aviation safety", advocated a system that became known as Safety Management Systems. He described the system as simply "organising your hindsight where your foresight should be in the identification of management of risks". The management of safety risks cannot be done effectively without incorporating Human Factors concepts and principles. System Safety was developed by the American military with positive results. The concept of SMS is now a significant force, and has actually been implemented formally by the Canadian Government as its primary method of regulatory compliance.

But it would be a mistake to describe SeMS as simply Safety Management Systems with the word "Security" substituted for "Safety". This is due to the difference between what the Safety community does and what the Security community does; that difference, of course, being that the Safety community is tasked with preventing aircraft accidents, whereas the Security community is tasked with the prevention of attacks on aircraft. Therefore, although the basic philosophies are similar, their implementation is quite different. It is, however, an undeniable truth that the similarities that do exist between SMS and SeMS are such that they can – and do – facilitate extensive integration of the two systems, in those cases where they both exist within an organization. Thus, an existing SMS can be used as the foundation for implementing SeMS.

Fools say that they learn by experience. I prefer to learn by the experience of others.
Otto von Bismarck

Here, then, are the core principles of SeMS.

- Regulation should be goal-oriented, instead of merely laying out a "road map" toward achieving an objective or a result.
- The aviation industry must continue to be regulated by government.
- The industry must be accountable for the outcome.

Let's take these core principles and examine them more closely.

Regulation should be goal-oriented, instead of merely laying out a "road map" toward achieving an objective or a result.

In the past, it has been customary for governmental regulation to be prescriptive. In other words, not only does it tell the industry what to do but it tells it how to do it. An example might be a regulation that says something like this: "Each airport must have a fence that measures at least two meters in height and must have barbed or razor wire for the top one-half meter." A performance-based regulation, however, might be worded as follows: "Each airport must have a fence or other suitable obstruction that prevents access to its property by unauthorized persons."

If everyone is thinking alike, someone isn't thinking.
Gen. George S. Patton

Note that the performance-based regulation takes into account that different airports in different areas of a country or state may have different security circumstances or requirements. A performance-based regulation would allow an airport to put up a fence that would serve its specific needs, and conforms to factors that may be present. In other words, performance-based regulation recognizes the fact that "one size does not fit all".

The aviation industry must continue to be regulated by government.

Some in the aviation community have expressed concern that a non-prescriptive regulatory environment would be more lax and would be more open to interpretation. However, this can be mitigated by the clear understanding that if an airport does not achieve the anticipated result, a heavy penalty would result. The government of the day would be the one who determines whether or not the result is achieved. In other words, there is no change in the role of government to enforce the regulation, whether it is prescriptive or performance-based. There are, of course, instances where prescriptive regulation is necessary. Additionally, some regulation may fall in between. We will discuss this in more detail later in this paper.

The industry must be accountable for the outcome.

At the end of the day, the industry will be responsible to ensure that the desired goal is indeed achieved.

The way that the Safety Management Systems philosophy achieves this – and this is also a vital function of the Security Management Systems paradigm – is the Accountable Executive. The Accountable Executive, to use a phrase borrowed from the US President Harry Truman, is the person with the sign on his desk that says, "The Buck Stops Here". In other words, he will be held responsible for ensuring that the entity to which he belongs or is employed by – whether it be an air carrier, an airport, or a tenant – fulfils its obligations to ensure that the regulatory regime is complied with. A properly-designed SeMS program will require that the carrier/airport/tenant establishes this Accountable Executive as a regulatory requirement.

Where are we with SeMS Internationally?

According to the Transport Canada website, the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) have successfully adopted SeMS. This is a rather sweeping statement and should be clarified. IATA has been promoting a SeMS concept at ICAO for several years now. We noted at the 19th Meeting of the ICAO AVSEC panel several years ago that IATA put forward a Working Paper on SeMS. Several other countries, notably Australia, Canada and New Zealand, also submitted their own papers. These countries were all solidly in favour of the SeMS concept. IFALPA was present at these meetings, and was represented by the Chairman and Vice Chairman of the Security Committee. We noted that there were three definite categories that State representatives seemed to be falling into:

- Those that fully supported a SeMS concept. These included Canada, Australia and New Zealand, among some others.
- Those that were "on the fence" and seemed to wish further study into the idea. These included the United States, the United Kingdom and most of the EU countries.
- Those who were very wary, and looked upon the idea of SeMS as simply another layer of regulation. These included most of the African and Middle Eastern nations as well as some Eastern European and Asian nations.

At the 20th meeting of the Panel in March/April of 2009, New Zealand presented a Working Paper that called for SeMS to be placed into ICAO Annex 17 as a Recommended Practice. This is currently the subject of a separate Working Group at ICAO. Also, IATA last year sponsored a symposium on SeMS that the Chairman of the Security Committee attended. Therefore, it is accurate to say that ICAO is very interested in the concept of SeMS, and that the likely result will be some sort of a recommendation for at least a Recommended Practice. However, to suggest that ICAO has "successfully adopted" SeMS might be premature.

Therefore, I say: Know your enemy and know yourself; in a hundred battles you will never be in peril. When you are ignorant of your enemy and know yourself, for each victory you will suffer a defeat. If ignorant of both yourself and your enemy, you will forever be in peril.
Sun Tzu

Prescriptive vs. Performance based vs. Hybrid regulation

We have discussed briefly the conceptual difference between Prescriptive and Performance-Based Regulation. Let's examine these concepts a bit more closely. As was said earlier, a Prescriptive Regulation is one where it is clearly spelled out not only what a regulatory requirement is, but also specified how it will be complied with. A Performance-Based Regulation sets out an objective or a result, but leaves flexibility as to how that result is achieved.

In reality, very few regulations can be categorized as either Prescriptive or Performance-Based. There are, many "shades of grey". We call these regulations that fall between these two ends of the spectrum "Hybrid Regulations". A great number of these types of regulations will be required.

Let's look at some examples of some hypothetical regulations, and decide which categories that they fall into and why. We are going to use a five-level descriptive menu:

1. Prescriptive.
2. Mostly prescriptive.
3. Hybrid.
4. Mostly performance based.
5. Performance based.

Let's take a closer look at some examples of each of these five types.

Note: This table is for discussion purposes only and is not intended to reflect actual or proposed regulation.

Provision	Prescriptive vs. Performance Analysis	Rating
The airport operator shall designate the following areas as restricted areas: a) sterile areas; b) baggage make up areas; c) the movement area; and d) the air terminal building where screening is conducted.	**Prescriptive:** Provision is very specific in defining areas as "restricted areas" and does not allow for flexibility in interpretation or change; i.e. no other areas could be defined as "restricted areas". The act of designating and defining areas is the process.	1
The airport operator shall ensure that a person who has been issued a temporary pass does not enter a restricted area unless: a) they are acting in the course of their employment; or b) the temporary pass is a temporary pass for a special event in the restricted area.	**Performance-Based:** Provision clearly sets out expected outcome/results (no access by persons with temporary pass to restricted area except for work or a special event, such as an air show) but gives the operator full discretion to determine the means of achieving compliance, e.g. process for verification.	5
A live exercise involving agencies identified in the emergency plan to test the emergency plans and procedures for response to either a bomb threat or a hijacking incident shall be carried out by the airport operator once every two years.	**Mostly Prescriptive:** Provision specifies "how" (particular process to be followed – live exercise involving certain participants to test scenarios within specified time frames) to achieve the results (testing of plans) with a lesser degree of specificity and leaves some room for change or innovation (type of incident – bomb threat, hijacking, etc.) The aerodrome operator has some flexibility as to timing and content of the exercise.	2
Every airport operator shall ensure that arrangements are instituted, maintained and carried out for the immediate notification of police and for the provision of assistance from the police, the appropriate air carrier and screening authority supervisory personnel when summoned by a screening officer at the screening checkpoint. Responsibility for such arrangements is shared between the airport operator and the screening authority.	**Mostly Performance-Based:** Provision clearly sets out expected outcome/results (requirement to ensure arrangements in place, etc. for immediate notification of police and provision of assistance to screening officer at checkpoint) but gives the regulated entities (airport operator and screening authority) some discretion to determine the means of achieving compliance. Since procedures have to be developed in cooperation with another party, the operator does not have full discretion.	4
The airport operator shall regularly assess its restricted area access control process and provide the assessments to the regulator on reasonable notice given by the regulator.	**Hybrid:** Provision clearly sets out expected outcome/results but gives the operator some discretion to determine the means of achieving compliance. The operator can decide on the assessment process and has some flexibility on determining what is defined as "regularly".	3
Every airport operator shall maintain a current written emergency plan containing the procedures to be followed in response to an act of unlawful interference with civil aviation.	**Performance based:** The provision is entirely performance or goal-based. However, clarifications could be given in subsequent sections that might be more prescriptive.	5
No airport operator shall install or permit the installation of a baggage locker service in the terminal building or other public areas of the airport.	**Prescriptive:** While it does not describe a process on how to achieve the results, it is very specific in prohibiting the installation of baggage locker services in public areas of airports. There is no flexibility, alternate interpretation or discretion in terms of compliance.	1
Unless otherwise directed by the police force with jurisdiction at the airport, every operator of an airport shall use portable explosive detection trace equipment and an explosive detection dog in combination during the investigation of a specific bomb threat to a flight, a bomb threat to an aircraft or the airport or a suspected explosive substance or explosive device.	**Mostly Prescriptive:** Provision specifies "how" to achieve the results (investigation of bomb threats require use of portable explosive detection trace equipment in combination with explosive detection dog), but there is some flexibility with the option of alternative direction by the police force.	2
A bomb disposal facility for the disposal of bombs and suspected bombs found on an aircraft or on the airport shall be provided.	**Hybrid:** Provision clearly sets out expected outcome/results (provision of a bomb disposal facility) but gives the regulated entity some discretion as to its location, physical characteristics and installation.	3

The Canadian experience

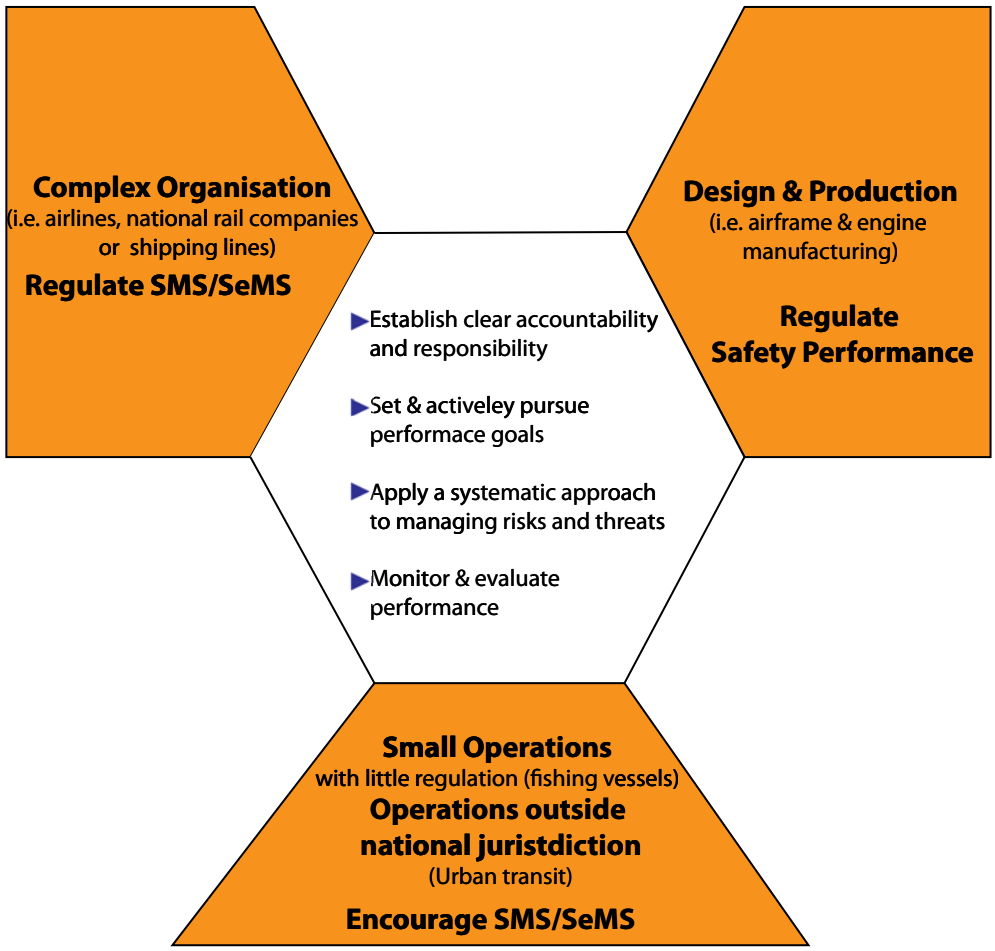
As Canada is leading the way in SeMS adoption it is worth examining the work done by the Canadian Government in SeMS in order to fully integrate SeMS (together with SMS) in to its regulatory framework.
Currently, SeMS implementation is going ahead at full speed. The Canadian Aviation Regulations (CARs) and the Canadian Aviation Security Regulations (CASRs) are being re-written with SeMS in mind. The guiding principles, as listed on the Transport Canada website, are:

- Defining clear accountability and responsibility.
- Setting performance goals and actively pursuing these goals.
- Managing security threats systematically and proactively, including continuous improvement and learning.
- Monitoring and evaluating performance toward goals.

The application of safety and security management requires a new regulatory approach. Transport Canada is building upon existing regulatory frameworks and focusing on risk management practices. Transport Canada believes that safety and security management systems (SMS/SeMS) are part of this solution, which takes a "systems approach" to managing risks/threats. In other words, consideration needs to be given to how changes in one part of an organization would affect other parts of that organization. For instance, an effective SeMS program could foster more efficient communication between different parts of an organization and help to break down existing barriers, as it recognizes the impact that changes have on other parts of an organization. The idea is that a "systems approach" will produce an environment where the individual components (policies, practices, and procedures) will create a whole that is greater than the sum of its parts.

One fundamental difference that SeMS will bring in is that, in the past, Transport Canada has intervened at the operational level when non-compliance with regulation is found. Under the SeMS philosophy, assessments will occur at the organizational or system level. When an operator is found to have a problem that is not resolved or has been mitigated poorly, the intervention will occur at the appropriate level, depending on circumstances.
SMS and SeMS are being applied in Canada not only to aviation, but to all sectors including Security and Emergency Preparedness, Marine Security, Rail Security and Urban Transit Security. Currently, industry stakeholders are being consulted and the most effective and efficient ways of implementing SMS/SeMS are being examined and explored.

Given the diversity of the transportation industry, this is presenting significant challenges. For instance, Transport Canada regulates all aspects of civil aviation safety (with some small exceptions). In the trucking industry, however, although Transport Canada regulates the manufacture and importation of motor vehicles, Provincial and Territorial governments have jurisdiction over vehicle licensing, traffic laws, road geometrics and policy. The bottom line is that any SMS/SeMS approach must be tailored to meet the specific needs and requirements of any given transportation sector.



This diagram provides an illustration of the a variety of approaches to Safety and Security Management. Clearly, no matter the type of organisation the central goal of a SeMS or SMS programme remain at the centre. *Source: Transport Canada*

For the aviation industry, Transport Canada requires SMS and will soon require SeMS. Some of the components of a formal SMS/SeMS framework will include:

- Management Accountability (Accountable Executive)
- Senior Management Commitment to the Concept
- Employee Involvement
- Safety/Security Policy
- Safety/Security Information
- Safety/Security as a Core Value
- Setting Safety/Security Goals
- Hazard Identification and Risk Management
- Safety/Security Audit/Assessment
- Accident and Incident Reporting and Investigation (Including a Non-Punitive Reporting System)
- Safety/Security Orientation and Recurrent Training
- Emergency Response Plan
- Documentation
- Quality Assurance

Those who cannot remember the past are condemned to repeat it.
George Santayana

Conclusion

Carriers and airports will need to do more than merely implement the component pieces of SeMS. They will need to integrate and interrelate these component pieces completely into the organization in order for the system to achieve the desired results. One of the main benefits that such integration should help to foster is the establishment of a "security culture" amongst workers, who are after all on the front lines and are one of the most under-utilized tools that we have under the present regulatory system.
There is no question that international harmonization of effort will be required in order to make SeMS work effectively on a global scale. As described previously, these efforts are currently taking place at ICAO. Canada is among a small number of countries that are currently spearheading this initiative, in the hope that if the international community can be shown that the concept is a sound one, there will be a wide acceptance of the SeMS model.

SeMS shares many of the core principles and elements of SMS, as they are both system approaches to managing risks and threats. However, important differences exist which preclude a simple transfer of concepts. The key difference is that safety is concerned with unintentional or accidental losses, whereas security is concerned with intentional or planned losses. However, the similarities that do exist can facilitate extensive integration of the two systems where they both exist within an organization, and permit the use of an existing SMS as the foundation for SeMS.

This Bulletin is based on a report given to the IFALPA Security Committee by Capt. Craig Hall, IFALPA SEC Committee Vice-Chairman. It includes information referenced from the Transport Canada website, http://www.tc.gc.ca/eng/tcss/strategicplan-approach-application-menu-90.htm. It has been edited for brevity, clarity and content by IFALPA Staff.