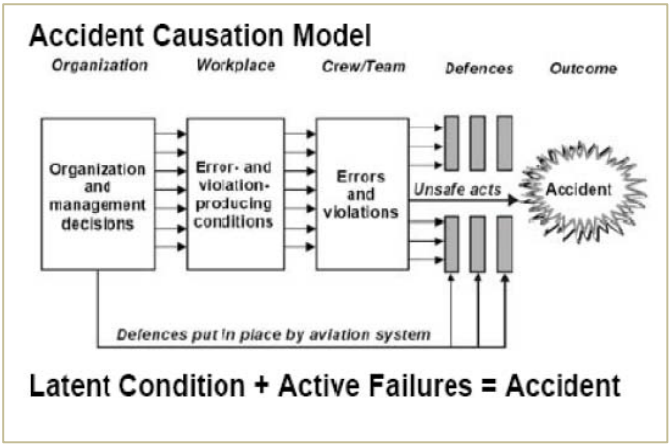
# SMS for Flight Training Organizations

Safety Management Systems (SMS) have recently been developed and implemented by airlines, airports, manufacturers, civil aviation authorities, and air traffic control units worldwide. The International Civil Aviation Organization (ICAO) has further emphasized SMS implementation with the requirement that by January of 2009, all airlines, ATC providers, aviation maintenance organizations (AMOs) and airports implement an SMS program. Conspicuously absent from these SMS initiatives are flight training organizations. Flight training, by its very nature, is a unique and specialized component of the aviation world. In spite of this, an FTO should not be exempt from implementing an effective and robust SMS. A description of SMS, safety factors specific to flight training operations, and requirements/solutions for FTO SMS program implementation follow.




Current aviation safety management has shifted from its traditional reactive stance and now utilizes a proactive, organizational-based focus. Aircraft accidents have become statistically rare events. That does not mean, however, that there is no room for improvement. SMS employs advanced system management theory and practice to drive the occurrence rate of serious safety events down to an even lower level.

A definition of safety must be provided to grasp the fundamental concepts of SMS. Safety can be defined as *the state in which the risk of harm to persons or damage to property is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management.* The terms hazard and risk also need to be defined. Hazard is *the condition or circumstance that can lead to physical injury or damage* and risk is *the consequence of a hazard measured in terms of likelihood and severity.*

SMS is *a systematic and comprehensive process for the proactive management of safety risks that integrates the management of operations and technical systems with financial and human resource management.* Note that the preceding definition stresses the systems aspect of SMS as its core operational concept. A system can be thought of as *a group of processes that act together to transform inputs into a desired output.* A system has a clear objective and processes to achieve that objective. A means of measuring the degree to which the objective has been achieved is also necessary to evaluate system performance. The definition furthermore stresses that an SMS is a comprehensive process; it includes all aspects of the operation.

Functionally, SMS uses proven procedures and techniques to identify and analyze hazards, and their associated risks, inherent to the operation. The hazards are then eliminated, if possible. If not, the associated risks are managed to a level as low as reasonably practicable by reducing the likelihood of an occurrence or the severity outcome of an occurrence, should one happen. Tracking of the risk mitigation efforts is done to analyze system effectiveness. Concurrent with these efforts, new emerging hazards, and/or hazards initially overlooked, are identified for attention. These effort are all conducted within a structured framework of safety targets, policies, procedures, and departmental/personnel accountabilities. The preceding is simply an overview of SMS, many resources are available that provide a much more in-depth knowledge of SMS design, implementation, and operations.

Many organizations that have adopted an SMS program have realized that the program does indeed add to the bottom line of the company. Aviation organizations, especially FTOs, exist to deliver a service (provide flight training), achieve production output (produce safe and professional pilots) and generate some level of return on investment to allow growth and continued operations. In spite of the often-stated phrase that “safety is #1 around here”, in reality, generation of revenue is what allows an FTO to keep its doors open. No aviation organization has ever been created to deliver only safety. Indeed, safety truly is **not** the first priority for aviation organizations. Effective safety management is just one of many organizational processes that allow a firm to deliver its services and generate profits. SMS, through positive management of safety, has become a good business operational practice. It stands alongside any other core business management function. In today’s litigious society, the cost of even one serious aviation safety event can be staggering. A high-profile accident has the potential to end the very existence of the company. Resources intelligently allocated to an SMS can ensure the survival of the organization and greatly assist in the continued operation of the firm.

Flight instruction as a specific category of operations is not inherently dangerous, at least when compared to other General Aviation (GA) operations. This is due to the large proportion of instructional operations conducted under direct supervision. Training typically occurs in a relatively safe environment, with limited exposure to hazardous weather. Exceptions are operations around airports, congested practice areas, and repeated takeoff and landing practice. Experience levels also factor in to the flight training safety equation. Due to the established structure of professional pilot career development, flight instructors are often still in the early stages of their careers. Flight instruction often serves as a progression step for young pilots aspiring to fly for a regional or major airline. This lack of accrued flight experience potentially can result in additional hazards. Many a flight instructor has been surprised by their “best” student, often while conducting safety-critical maneuvers (stalls, slow flight, steep turns, simulated emergency off-airport landings, and takeoff/landing operations).

Organizational factors also introduce hazards. Except for colleges and large training academies, many FTOs are relatively small organizations. These smaller organizations may not have sufficient resources to employ a full-time safety manager. Safety duties are often assigned as a collateral function to a mid-level manager, such as the Chief Pilot or Manager of Training. Safety management can therefore unintentionally become a secondary priority, especially considering the substantial effort required to manage safety. A small FTO may therefore possess a relatively weak safety culture. To maximize safety management efforts, an FTO must have commitment from upper level management to

allocate both personnel and financial resources to the critical functions of safety management. A robust and extensive SMS program can serve as a force multiplier for just such a situation, enabling positive and measurable results to be generated due to the inherent advantages of SMS.

For an FTO to utilize an SMS, the interrelated topics of requirements and solutions must be addressed. An SMS program relies on five key components: upper level management buy-in, a just culture, safety event reporting and feedback, training and education, and program ownership. Upper level management absolutely must both support and interact with the SMS program. The entire organization must see management not just giving the appearance of promoting the SMS program, but also being involved with it. Considering the many demands upon upper level management, this critical requirement is an extreme challenge for an organization. A just culture of non-punitive action towards personnel involved with the program is also crucial. A single instance of punishment applied to personnel engaged in an SMS can destroy the entire program. Of course, an organization must clearly define the limits of what is acceptable behavior, such as typical human factors-related events (slips, errors, mistakes) as opposed to willful deviations from policies and procedures (violations, “work-arounds”, intentional disregard of SOPs). Safety event reporting is a key foundation of SMS. If safety personnel are not informed of event occurrences, there can be no investigations. Training on program basics, implementation, and continued operation is essential. All personnel, from senior management to new-hires, must receive understandable and documented SMS training. This training must be tailored to the personnel receiving it. The organization’s accountable manager does not need to become an instant expert in SMS, just as personnel on the “pointy edge of the spear” (flight instructors, students, and maintenance technicians) should receive operationally-specific training. Even if the organization does not have a dedicated safety manager, someone must be tasked with ownership of the program. Regardless of the complexity level of the SMS, documentation plays a key role in sustaining an effective program. This work can’t be shared or structured as a volunteer or part-time duty.

With a firm understanding of flight training and SMS, potential solutions for an FTO to utilize SMS can now be evaluated. Once the decision to implement an SMS has been made by an FTO, structured program support (software) can be incorporated. Several firms and organizations have now developed SMS software. Some of these programs are even available at no cost. The following table provides some SMS software packages that are available (the data in no way constitutes an endorsement, the references are **strictly for informational purposes only**):

| Organization/Company | SMS Software | Contact |
|---|---|---|
| Omni Air Group | Quality SMS | http://omniairgroup.com |
| International Safety Systems | AIRS | http://www.safeware.com.au |
| Northwest Data Solutions | SMS Pro | http://www.aviation-sms.com |
| AirCharter Safety Foundation | AVSIS | http://www.acsf.aero/avsis |
| Advanced Logistics Development | FavoWeb FRACAS | http://www.aldservice.com |
| Superstructure Group | AQD | http://www.superstructuregroup.com |

Any SMS software program will greatly assist the responsible FTO personnel in the operation of the program. Typical functions such as event reporting, analysis, data tracking,

report management, and trend analysis are all easily performed with these software programs. The smaller the FTO, the more software programs such as these will assist the organization. Perhaps one of the above software providers will soon develop a simplified, yet thorough and robust, software program aimed specifically for use by an FTO.

Another SMS program enabling methodology is that the FTO enter into a commercial agreement with a third party vendor. That business then will develop, implement, and manage the SMS program on behalf of the FTO. This concept, a “virtual safety program”, has been successfully utilized by airlines, manufacturers, and maintenance providers. This safety outsourcing can provide an FTO with professional and competent safety management, especially if the FTO is small or has limited personnel. An added benefit of this practice is that the safety management provider can constantly be prepared to interface with the FTO to conduct crisis management operations should an incident/accident occur. The vendor would then be of great assistance to the FTO in acting as a liaison with government agencies (FAA, NTSB), manufacturers, and the media. Emergency response planning is another core component of an SMS program, therefore using a competent outside vendor will minimize the financial impact of a serious safety event. For the much more frequent occurrence of incidents and near-misses, again, an outside vendor would be a great benefit. The vendor’s safety management plan would include an event reporting system, thereby allowing the FTO to learn of safety gaps in their operation. For the vendor to even become aware of just a single problem area could potentially save the FTO from failure, or at least a large financial burden in the case of an event.

Various aviation organizations could also provide enabling mechanisms to FTOs to assist with SMS programs. An appropriate civil aviation authority (CAA), by means of regulatory guidance and supporting reference material, can greatly assist an FTO with implementing an SMS program. ICAO, Transport Canada, Civil Aviation Authority (New Zealand), and the Civil Aviation Safety Authority (Australia) are but a few of many CAAs that have now completed vast efforts concerning SMS. All of these agencies provide a wealth of practical, “how-to” knowledge, available with just a click of a keyboard or mouse button. The United States Federal Aviation Administration (FAA) is also in the process of developing an extensive SMS effort. So far, the FAA has issued Advisory Circulars, set up an Office of SMS, and initiated an SMS Aviation Rulemaking Committee (ARC). This ARC will assist the FAA in the development of SMS regulations, policies, procedures, and guidance material. Industry trade organizations, aviation advocacy groups, and even private sector firms and consultants all are now focusing on SMS programs. Aircraft Owners and Pilots Association (AOPA), General Aviation Manufacturers Association (GAMA), National Business Aircraft Association (NBAA), International Business Aircraft Council (IBAC), National Air Transportation Association (NATA), and Air Charter Safety Foundation (ACSF) all have completed substantial efforts regarding SMS. These groups have sections of their websites devoted to SMS, often with extensive resources. Regardless of the source, an FTO today should have no difficulty accessing guidance material that can greatly assist with the implementation of an SMS program.

An FTO can successfully implement and maintain an SMS program. As with any program implementation, careful thought and analysis must be completed first. An SMS for a flight training organization is not an impossible task. Case studies done by large organizations bear witness to the fact that an SMS program can be implemented successfully, given the correct environment. Obstacles do exist though. Regarding flight training, there truly needs to be a paradigm shift. Flight training now must be seen as the equal of any other aviation endeavor, at least in terms of hazards, risks, and their associated safety management practices. Certainly there's a huge difference between a Cirrus SR22 and a Boeing 777. However, the results of a serious safety event, such as loss of life, injury, property damage, and damage to the corporate image still are simply too high to not combat with a thorough and robust SMS program. Flight training providers have an ethical, moral, and professional obligation to adopt and use these programs, even if only just because it makes good business sense. Flight instructors, students, and maintenance technicians must gain an understanding of these programs to adequately prepare them to advance successfully and safely in their careers. These insights can only be gained by active participation in an SMS program. Flight training organizations must now answer the call to adopt and use Safety Management Systems to facilitate the core value of aviation safety: that it is absolutely essential to go to any lengths necessary to save even just one life.

Steve Lasday possesses FAA Commercial Pilot and Flight Instructor/Instrument Airplane certificates and works for an aviation safety consulting firm.