AVIATION SAFETY MANAGEMENT SYSTEMS AS A TEMPLATE FOR ALIGNING SAFETY WITH BUSINESS STRATEGY IN OTHER INDUSTRIES. AJ Bayuk, Creative Ventures International, LLC., 400 South 2nd Street, Suite 402-B, Philadelphia, PA 19147.

INTRODUCTION

Why Safety Management Systems?

Historically, aviation safety has been built upon the reactive analysis of past accidents and the introduction of corrective actions to prevent the recurrence of those events. With today's extremely low accident rate, it is increasingly difficult to make further improvements to the level of safety by using this approach. Therefore, a proactive approach to managing safety has been developed that concentrates on the control of processes rather than solely relying on inspection and remedial actions on end products. This innovation in aviation system safety is called a Safety Management System (SMS), an expression indicating that safety efforts are most effective when made a fully integrated part of the business operation.

It is now generally accepted that most aviation accidents result from human error. It would be easy to conclude that these errors indicate carelessness or incompetence on the job, but that would not be accurate. Investigations are finding that the human is only the last link in a chain that leads to an accident. These accidents will not be prevented by merely changing people; increased safety can only occur when the underlying causal factors are addressed.

Enhancing overall safety in the most efficient manner requires the adoption of a systems approach to safety management. Every segment and level of an organization must become part of a safety culture that promotes and practices risk reduction.

Safety management is based on the premise that there will always be safety hazards and human errors. SMS establishes processes to improve communication about these risks and take action to minimize them. This approach will subsequently improve an organization's overall level of safety.

SYSTEM SAFETY AND THE BENEFITS OF SAFETY MANAGEMENT SYSTEMS

Today's U.S. aviation industry has achieved a remarkably high level of safety. Maintaining this success will prove challenging as air traffic increases. FAA projections anticipate 1.4 million additional domestic takeoffs and landings each year from 2007 until 2020. This changing aviation environment will therefore require an even more effective approach to reducing risk.

A Safety Management System (SMS) is a formal, top-down business-like approach to managing safety risk that is built on basic system safety principles. This section describes those principles, outlines the differences between SMS and traditional approaches to safety, and details the benefits to be gained from SMS implementation.

System Safety and SMS

System safety is the application of engineering and management principles, criteria, and techniques to achieve an acceptable level of safety throughout all phases of a system. Achieving this definition of system safety is the primary objective of SMS. A well-structured SMS provides a systematic, explicit, and comprehensive process for managing risks. This process includes goal setting, planning, documentation, and regular evaluation of performance to ensure that goals are being met. SMS includes several key system safety principles as shown below:

Management commitment to safety - Because the attitudes and actions of management can significantly influence the entire staff, it is therefore critical that these leaders commit to the success of an SMS implementation.

Proactive identification of hazards - Early identification and reporting of hazards can save a significant amount of time and resources down the road.

Actions taken to manage risks - A system must be in place to determine logical approaches to counteract known risks to safe operation.

Evaluation of safety actions - An ongoing evaluation of the impacts of risk management actions is necessary to determine if further remedial activities are required.

Differences from Traditional Safety Approach

Most of these principles exist in some form in current safety systems. SMS is not intended to be a new safety management system; rather it builds upon an organization's existing safety processes. However, there are a number of ways in which SMS differs from the traditional approaches. One of the key differences is that SMS takes a proactive approach to safety management—it goes beyond prescriptive audits and checklist-based inspections to develop procedures and indicators that anticipate safety risks.

SMS spreads responsibility for safe operations throughout all levels and segments of the organization. This increase in the number of people watching for safety issues makes it less likely that a hazard will go undetected and possibly lead to an accident. Each SMS implementation will have its own customized set of layers that coordinate to create the safety culture of SMS. Each slice has holes that symbolize the potential for a safety hazard to go unnoticed, because the layer does not deal with that type of hazard, or due to human error. However, when these layers are unified by SMS principles, it becomes less likely that a hazard makes it through all the levels without being identified and mitigated.

SMS has much in common with Quality Management (or Quality Assurance) systems in that they both require planning, performance monitoring, communication, and the participation of all employees. Moreover, SMS recognizes that human and organizational errors can never be entirely eliminated and seeks to reduce them by developing a safety-oriented culture. This kind of environment focuses on eliminating hazardous conditions before they can become something more serious.

It is important to note that implementing SMS does *not* involve imposing an additional layer of oversight or regulations on the organization. Rather, it is an organizational shift that is seamlessly integrated into the routine day-to-day operations.

Benefits of SMS

Clearly, the ultimate goal of SMS is increased safety—in particular, fewer accidents and injuries. Moreover, increasing a system's level of safety leads to reduced material losses and enhances productivity. This makes the case that safety is good for business.

Some further benefits include:

- Reduction of the direct and indirect costs of accidents – Fines, repair costs, damage claims, and increased insurance premiums are a few of the potential economic consequences of an aviation mishap.
- Improved employee morale and productivity – Promoting communication between management and the rest of the organization prevents disenfranchisement and lifts morale.
- Establishing a marketable safety record – A record of consistently safe operations can be used to attract new business and investment.
- Logical prioritization of safety needs – SMS emphasizes risk mitigation actions that provide the biggest impact on both safety and the bottom line.
- Compliance with legal responsibilities for safety – Airport certification requirements mandate a number of safety processes and standards that can be included in an organization's SMS.
- More efficient maintenance scheduling and resource utilization – Effective hazard reporting in SMS allows proactive scheduling of maintenance tasks when resources are available, increasing the likelihood that maintenance is performed on time and more efficiently.
- Avoiding incident investigation costs and operational disruptions – Improved communication and risk mitigation will prevent many accidents from ever occurring.
- Continuous improvement of operational processes – SMS allows for lessons learned to be incorporated into the system and lead to superior operations.

Finally, ICAO and the FAA have announced or proposed requirements or plans to implement safety management systems for air traffic services, airline oversight, and airports. This demonstrates their confidence in the safety management capabilities of SMS.

"A safety management system necessitates a cultural change in an organization so that the safety of operations is the objective behind every action and decision by both those who oversee procedures and those who carry them out. The system leads to standardized and unambiguous procedures for each crewmember, during both routine and emergency operations. Duties and responsibilities are specified for each staff member and for standard and emergency operations. Supervisory and subordinate chains of command are also delineated."

Mark Rosenker, Chairman
National Transportation Safety Board

THE COMPONENTS OF SMS

Every SMS implementation is based on four primary components, or pillars. This section describes how each one contributes to improving safety and briefly details the activities that make up each pillar.

Safety Policy

SMS will only be effective when a Safety Policy is developed and communicated to the organization. A policy statement should be issued to clearly reflect top management's commitment to safety. The Safety Policy also must indicate how safety management principles will be integrated into the organizational structure and define the procedures necessary for a successful SMS implementation.

Policy Statement - The Safety Policy is a written document from senior management that is communicated to all employees. Other affiliated entities with a stake in organizational safety should also be informed. In an airport environment, for example, these might include airlines and other operators, local police, and concourse vendors. The Safety Policy should include the following:

- Commitment to implementation of the SMS.
- Assurance that executives are monitoring safety performance just as keenly as financial performance.
- Encouragement for all employees to report potential safety issues without fear of reprisal.
- Establishment of clear standards for acceptable behavior related to safety.
- Commitment to providing the necessary resources.

Organizational Structure - The Safety Policy also includes the organizational structure that will be relied upon to achieve and maintain the stated safety objectives. The organizational structure should be appropriate to the size, complexity, and operating environment of the organization. Large organizations may be best served by a formal SMS that utilizes a cross-functional Safety Committee, while smaller organizations may adequately perform the same functions with a more informal approach.

Regardless of the size of the organization, a Safety Manager should be designated as the focal point for implementation and maintenance of the SMS. While it is preferable for the Safety Manager to have no additional roles, this may not be possible in smaller organizations. In that case, the Safety Manager's other responsibilities should not present a conflict of interest with safety management. The Safety Manager should be high enough in the organization to be able to communicate directly with top management.

Procedures - Safety procedures will lay out the process by which the organization identifies and remedies safety risks. They are subject to revision as circumstances change or more effective procedures are developed. It is critical that any changes be clearly communicated to all affected staff, and that the procedures are easily accessible to all for reference or continuing education purposes.

Safety Promotion

Safety Promotion is necessary to ensure that the entire organization fully understands and trusts the SMS policies, procedures, and structure. This pillar is achieved by establishing a culture of safety, training employees in safety principles, and allowing open communication of safety issues.

Culture -The main goal of safety promotion is to create a "safety culture" that allows the SMS to succeed. Having a safety culture means that all employees are responsible for safety. Such a culture is led by top management example, especially in the manner with which they deal with day-to-day activities. Employees must fully trust that they will have management support for decisions made in the interest of safety, while also recognizing that intentional breaches of safety will not be tolerated. The result is a non-punitive environment that encourages the identification, reporting, and correction of safety issues.

Training - In order to fulfill their responsibilities in an SMS-based organization, each employee must be trained in, or at least be aware of, safety principles. All personnel must understand the organization's safety philosophy, policies, procedures, and practices. They must also know their roles and responsibilities within the safety management framework. The depth of the training should be appropriate to each individual's position and vary from general safety familiarization to expert-level training for safety specialists. Recurrent training may also be necessary to keep personnel up to date on any changes to SMS procedures.

Communication - Individual safety training is supplemented by an ongoing two-way communication process that helps ensure that employees benefit from safety lessons learned, see the results of their actions, and continue to improve their understanding of the organization's SMS. When new procedures are introduced, the associated underlying safety analysis should also be communicated to the appropriate employees. In addition to written communications, it is important for employees to witness evidence of the commitment of top management to safety.

Safety Risk Management

Aviation is an activity that faces numerous risks on a daily basis. It is impossible to completely eliminate all risks; however, risk can be reduced to an acceptable level through Safety Risk Management (SRM) techniques. These consist of hazard identification, risk assessment, and risk mitigation and tracking.

Hazard Identification - The first step in Safety Risk Management is to identify hazards that the organization faces in its operational environment. A description of the system or operation that is going to be changed or implemented must be developed as part of this step in order to be able to identify what could go wrong. A hazard is any existing or potential condition that can lead to an accident or incident. In an SMS, all identified hazards are documented and analyzed to determine what action is required to eliminate or reduce the safety risk associated with the hazard.

Risk Assessment - Each identified hazard undergoes a risk assessment to determine its potential consequences. The assessment considers both the severity of the consequences and the probability of such an event occurring. The assessment may show that certain hazards have an acceptable level of risk, while others require mitigation.

Risk Mitigation and Tracking - Mitigating actions should be fully analyzed to ensure that they address the root cause of the hazard. It may be beneficial to explore a range of mitigating strategies before choosing the preferred option, basing the decision upon factors such as timeliness, cost, organizational capabilities, and overall effectiveness. It is essential that management provide adequate resources to address the identified safety concerns.

A system must be in place to determine logical approaches to counteract any risks to safe operation. This can be accomplished by reducing or eliminating a hazard's likelihood of occurrence. Alternatively, a risk might be managed by reducing the severity of its effects. Occasionally, both may be possible. Finally, the mitigations that have been put in place must be monitored and tracked in order to ensure that the control strategies are working correctly.

Safety Assurance

Safety Assurance functions provide confidence that the organization is meeting or exceeding its safety objectives. The functions—internal audits, external audits, and corrective action—provide feedback on the performance of the organization, as well as the effectiveness of implemented risk mitigation strategies.

Internal Audits - Internal audits are performed by each department within the organization to ensure that they are following the proper procedures and are achieving their safety objectives. These audits should be performed on a regular basis and may include surveys of employees and formal or informal inspections performed within a department. Both short- and long-term effectiveness of safety actions should be evaluated.

External Audits - External audits are conducted as part of the independent safety oversight of the organization. Audits can be scheduled or unscheduled and they provide a means for ensuring compliance with SMS standards, policies, and processes. For example, in a regulatory environment, the regulatory agency may conduct external audits.

Corrective Action - If an audit finds that prescribed procedures are not being followed, then corrective action should be taken by that department within the framework of Safety Assurance. Corrective action may also be taken to ensure that identified safety hazards are resolved.

SMS IN OTHER INDUSTRIES AND AVIATION SEGMENTS

System safety principles have been used in many industries other than aviation. The examples in this section summarize safety experiences in the petroleum, nuclear, railroad, marine, and chemical industries, as well as other segments of the aviation industry. They illustrate how past mishaps have led to the development and adoption of critical components of SMS. The

evolution of system safety has been predicated on the need to avoid the injuries, loss of life, and financial consequences experienced by the entities highlighted here.

Background

Safety regulation of industry has traditionally been reactive and prescriptive. It generally occurs in response to a significant safety failure and only addresses the issues that directly led to the failure. Although this has led to an improved level of safety, the current rate of growth in the aviation industry in particular requires a more systematic approach.

In fact, in today's dynamic industries with increasingly complex production processes and high-volume operations, prescriptive regulations become less effective because they primarily seek to prevent the reoccurrence of failures. In many industries, prescriptive measures have been replaced by SMS processes, which are better suited for these dynamic systems.

Lessons from Other Industries

Petroleum Industry - A good example of a change from prescriptive safety to an SMS approach can be found in the British offshore oil drilling industry.

Piper Alpha Oil Rig, July 1988
The Piper Alpha oil pumping station accounted for 10% of the UK's North Sea oil production at its peak. It experienced a fire that caused 167 deaths, loss of oil production, and an insurance payout equivalent to $2.8 billion. The public inquiry found the management company directly responsible for a series of preventable failings and errors. The report recommended a change from a prescriptive safety system to a safety risk management approach based on Quantitative Risk Assessment. This approach assesses risk by determining the likelihood of an event and identifying the severity of the consequences. This is the basis of the Safety Risk Management pillar of SMS.

Nuclear Industry - Safety has always been a primary concern in the nuclear industry. There have been two significant historical accidents: Three Mile Island in the United States and Chernobyl in the Ukraine. Both events have led to improvements in nuclear technology and the safety culture required to use it effectively.

Three Mile Island, March 1979
The nuclear plant's reactor core was starved for coolant and about half of the fuel melted. Containment was not breached, and fortunately the accident did not cause any deaths. However, the cost for the cleanup was around $975 million and the reactor was permanently closed. The investigation called for a restructuring of the Nuclear Regulatory Commission with more emphasis on the agency's responsibilities for reactor safety. In particular, it called for improving person-to-machine interfaces and risk assessment procedures. After this accident, the Nuclear Regulatory Commission increased its focus on a formal risk assessment approach, which has been the basis for many subsequent improvements in plant design and operation. In addition, changes were made in the area of control room operations, such as licensee training, program certification, and simplified procedures to mitigate a hazard.

Chernobyl, April 1986
A mismanaged electrical engineering experiment by the operators caused the reactor to lose its coolant. The reactor design was poor from a safety perspective, the operators were not aware that the test performed was potentially dangerous, and they did not comply with established operational procedures. There were 56 immediate deaths, and much more harm due to the release of radiation. According to investigators, the cause of the accident was the "lack of a safety culture." After Chernobyl, remedial measures to enhance nuclear safety were implemented at existing plants with similar reactors. Safety upgrades essentially removed the design deficiencies that contributed to the accident. Progress was also achieved in plant management, training of personnel, non-destructive testing, and safety analysis. As a result, a repetition of the same accident scenario seems no longer practically possible. The new generation of nuclear plants is much safer, due in large part to the lessons learned from these industrial accidents. Several elements of today's SMS were developed as a result, and the strict safety culture of today's nuclear industry is an excellent model for other industries that perform high-risk operations.

Railway Industry - In recent years, the railroad industry safety record has improved. However, from 1994 to 2005 train accidents increased from 3.67 to 4.09 per million train miles, leading to a mandate for adopting system safety measures.

Graniteville, NC, January 2005
A freight train traveling through Graniteville, NC, encountered an improperly laid switch that diverted the train onto an industry track where it struck a parked train. The collision derailed 16 cars of the moving train. One car was breached, releasing chlorine gas. Nine people died as a result of chlorine inhalation and total damage exceeded $69 million. The National Transportation Safety Board found that the probable cause of the accident was the failure of the crew of the parked train to return a main line switch to the normal position after the crew completed work at an industry track. An appropriations bill currently before Congress specifically calls for the establishment of a safety risk reduction program. The program shall "require each railroad to systematically evaluate safety risks, manage those risks and implement measures to eliminate or mitigate risks in its processes and procedures. The safety risk reduction program . . . requires different skills than the activities previously undertaken in the railroad safety program . . ." In this way, SMS will allow continued improvement in railway safety to avoid future accidents.

Marine Industry - Several maritime accidents in the 1980s and 1990s led to a push for a uniformly applicable formal safety management approach.

Belgium, March 1987
One of the most notable accidents was the Herald of Free Enterprise disaster—a car and passenger ferry that capsized. The Herald had doors at both the bow and stern, and due to operator negligence the bow doors had not been closed before leaving the harbor. 193 passengers were killed in the ensuing accident. A public inquiry was conducted, and the resulting report identified a "disease of sloppiness" and negligence at every level of the company's hierarchy. In response, the International Maritime Organization adopted the International Management Code for the Safe Operation of Ships and for Pollution Prevention. This code "establishes safety management objectives and requires SMS to be established by 'The

Company.' " The procedures required by the code should be documented and compiled in a Safety Management Manual, a copy of which should be kept on board. Such documentation of procedures is a cornerstone of SMS.

Chemical Industry - The chemical industry's experience in SMS is exemplified by the DuPont Corporation. DuPont has been a leader in the implementation and promulgation of SMS for almost 200 years. Ever since an 1818 explosion at its gunpowder mill in Delaware, industrial safety has been a major focus of the DuPont culture, and it has received many awards in the field. This promotion of system safety is the first pillar of SMS.

DuPont has established a consulting branch, DuPont Safety Resources, to help other businesses and industries integrate safety management practices, including SRM, into all aspects and phases of their operations. For example, DuPont helped Qantas Airline establish a safety improvement program with the goal of "No Injuries to Anyone at Any Time." Achievements at Qantas include a 50% reduction in lost work days, and $500 million in projected cost savings over 5 years.

DuPont issues annual safety awards for individual and collective initiatives in Europe, the Middle East, and Africa for significant projects in workplace safety. The common thread among the winners is that they understand the strong link between creating a safer workplace and improved business performance.

Aviation Industry

Aviation safety is a fundamental mission of the FAA. The Federal Aviation Act of 1958 created the agency and charged it with establishing and operating the United States' Air Traffic Control system in order to maintain a safe National Airspace System. In 2000, the FAA Administrator commissioned a team to study SMS. Management concluded that the design, development, and implementation of SMS are important next steps in aviation safety.

Additionally, in November 2001, the International Civil Aviation Organization (ICAO) amended Annex 11 to the Convention, *Air Traffic Services,* to require that member states establish an SMS for the provision of air traffic services. The SMS requirements described in Annex 11 are further detailed in ICAO Document 4444, *Procedures for Air Navigation Services, Air Traffic Management.*

While there were no specific aviation incidents that triggered the move toward SMS in the industry, there are several accidents in recent history that support the need for system safety, including some recent ones that are still being investigated. Two examples follow.

France, July 2000
An Air France Concorde on a charter flight from Paris to JFK struck a 16-inch strip of metal that was left behind by a previous departure. The Concorde's left main landing gear was damaged and debris impacted the wing structure, which led to a rupture of the fuel tank. A major fire under the left wing broke out almost immediately, possibly ignited by electrical arcing due to debris damage and fueled by the leak. 113 people were killed in the ensuing crash, including four

on the ground. A rigorous analysis of previous Concorde incidents involving burst tires and resulting debris might have provided insight into these structural vulnerabilities and subsequent remediation. The Safety Assurance pillar of SMS includes audits and corrective actions to ensure that procedures and materials are in place to pre-emptively mitigate a once-identified hazard.

New Taxi Into Position and Hold (TIPH) Procedures
Safety risk is increased any time an aircraft is holding on a runway and waiting for release under TIPH procedures. The recently announced TIPH procedures are designed to avoid hazardous situations that arise from last minute arrival runway changes. This effort to lower safety risks associated with TIPH procedures was not triggered by one event or incident, but rather is due to continued efforts by the FAA to increase safety. Through the SMS Safety Risk Management (SRM) process, a panel reviewed TIPH operations across the National Airspace System and presented the new proposed procedures in an SMS-defined SRM document. The panel consisted of a staff controller; procedures experts; flight standards personnel; operational safety personnel; a technical operations interface expert; a safety engineer; and personnel from safety assurance, human factors, and FAA contract towers. While SMS will never be able to prevent all incidents and accidents, it does provide an approach that has already resulted in numerous improvements to aviation safety. It encourages proactive behavior that can help prevent mishaps that might have otherwise occurred. Many airlines and airports already have elements of SMS incorporated into their current organizational safety system.

DELTA AIR LINES AND ALIGNMENT

The most important element of a successful SMS, and possibly the best "take-away" for applying SMS lessons to other industries, is alignment. Delta Air Lines serves as a great example of how to align your safety program with business strategy.

Simply put, if you match what you are doing in the safety department to the goals of your business, whether it be growth, building brand loyalty, or entering new markets, you will most assuredly increase your chances for success as a safety professional. More importantly, safety can be used to create a competitive advantage for the company. So how do you achieve this ideal state?

Delta's CEO's Safety Policy - Alignment is more of a social skill than a technical one. How well an organization aligns its safety processes with the business strategy depends on how well the senior safety leader is communicating with C-level colleagues. At Delta Air Lines there is strong evidence that the most senior safety leader has access to the C-level executive suite as demonstrated by the CEO's safety policy memo, "Delta Air Lines is committed to pursuing the safest operational environment possible. To help achieve this, I fully support the implementation of a Safety Management System (SMS) within Delta." The policy goes on to describe in detail how the SMS program will be developed. This is a powerful message from the very top of the organization and is the direct result of being able to communicate exactly what safety is doing and why it is important to the business strategy. The point is to make safety relevant to the strategy.

Alignment is not easy to achieve, but there are ways to increase the chances. Safety leaders need to be able to talk in business terms, which is much easier to do if you have experience in business. Through education, background, and experience, a safety leader must have the understanding of the pressures and demands facing business unit leaders.

Delta's CEO's Reporting Policy - Because of the feedback loops created through an SMS program, innovative solutions can be found to operational problems. Front line workers will know that safety is important from the messages from the top of their organization, and that what they see in their workplace matters. In fact, with a strong safety reporting system, that 'accident waiting to happen' can be fixed before it leads to an incident and loss. It is amazing how many innovative solutions can be found by opening channels of communication. At Delta Air Lines, the CEO issued a policy on Voluntary Hazard Reporting, "Delta Air Lines is committed to the safest operational environment possible. To achieve this, it is imperative that we have uninhibited reporting of all incidents and occurrences which may compromise the safe conduct of our operations. To this end, every employee is responsible for communicating any information that may affect the safety of our operations." What follows this statement is a strict rule on non-punitive reporting. Basically, it guarantees the employee will not get into trouble by pointing out the operational safety issue.

In a company where front line workers do not feel "safe" enough to report potential hazards, the culture must evolve. Once again this is an alignment issue. The front line worker or supervisor who is so focused on production at the expense of protecting an asset or person on the team is part of an organization which does not have a positive safety culture.

Delta's National Recognition - The National Safety Council has selected Delta to receive its prestigious ninth annual Green Cross for Safety medal. The award is presented annually to the CEO of an organization that has distinguished itself for outstanding achievements in workplace and off-the-job safety and health programs, community service, environmental stewardship and responsible citizenship. It honors corporations that embrace safety as a core value. The partnership between the honoree of the Green Cross for Safety Medal and the National Safety Council displays a firm commitment to safety not only in the work place, but also on the roads, and in America's homes and communities. This partnership emphasizes the safety successes both organizations have attained and will generate awareness and necessary funds for the life saving programs of the National Safety Council, which touches the lives of all people. The award will be presented during a formal awards ceremony in the Spring of 2008.

Delta is the first airline to receive this award, and it is thanks the leadership, focus and commitment to maintaining a strong safety culture by every member of the team!

As you seek to improve the safety culture of your organization, remember there is a learning curve – you are looking for solutions, not to fix blame. And at the end of the day, blame is what a lack of alignment is really about. It is the frustration that an investment in safety does not deliver more to the bottom line. Filling this gap will give safety access to the resources they need to focus on strategic safety.

<u>Aligning the Rest of the Firm</u>

Once a culture shift is initiated by the top executive, you must implement a strategy to align the rest of the organization. Here is one example of such a strategy using project teams:

Build a Team – Forge a project team from individuals who are respected subject matter experts and who are inspired by the greater goal of the initiative.

Establish Two Leaders – a project leader from safety to perform traditional project management and drive technical decisions, along with a process leader from the business unit to drive workflow redesign decisions. This pairing mirrors the inherent duality of an SMS implementation or safety-enabled transformation.

Common Space and Goals – Require that team members have a common space, common goals and a functional dependence on one another to succeed. The cultural differences that exist among them will soften over time to create a new shared culture.

Integrated Decision Making – Establish a forum for integrated decision making, where team members from all disciplines must contribute.

No Independent Paths – Nourish the commitment to integration and highlight the successes achieved through collaboration.

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BIOGRAPHY

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Career Highlights

My Bayuk leads aviation programs in the international, private, and public sectors. He is a strategist for start-ups, mergers and acquisitions, and corporate governance. He established, coached, and mentored highly motivated aviation teams within goal-driven programs. AJ managed a team of 140 consultants for major domestic airports. He developed and administered operations and program budgets in excess of $30 million. AJ served as the US Air Force Secretary's representative to Spain as aviation advisor and as a Rotary Group Study Exchange Team member to Cornwall, England.

In the US Air Force he served as a test pilot and instructor pilot. He currently flies for Delta Air Lines as an MD88 domestic pilot.

He is fluent in Castillian Spanish and is a student of Japanese.

AJ is a Member of The Wings Club. He serves on the Board of Trustees for the American Helicopter Museum and Education Center and is on the Industry Advisory Board for the Pennsylvania Institute of Technology.

AJ has an Engineering degree from Michigan Technological University and an MBA from Drexel University’s LeBow College of Business. He hails from Philadelphia, PA.