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Air Transportation Oversight System

Solutions Through Innovation

MillenniuM INFORMATION SYSTEMS

Background

In the accident investigations and assessments following the ValueJet crash in the Florida Everglades in 1996, the FAA realized that it needed a new approach for the surveillance of air carriers. The traffic cop approach with spot inspections conducted at the discretion of individual inspectors was not able to identify systemic problems. At best, it caught problems in the performance of activities by an air carrier, but with the limited number of Inspectors, many problems were going undetected.

The FAA decided that a system safety approach utilizing risk management processes would provide the ability to target inspector resources where they can make the most difference.

The FAA needed contract support that would not only support the FAA in developing an information system for the new approach— it also needed development services that could provide unbiased system support that addressed process engineering and business management support as well as ensure the integrity of the capabilities and their on-time and secure delivery.

The Challenge

Applying a system safety risk management approach represented a new way of doing business. This change was not a minor change but a paradigm shift. When the approach was selected there were no examples or academic models to reference of how to apply system safety risk management practices to aviation safety oversight. There was no process blueprint to follow in engineering these new processes, nor were there any measures already identified that would help guide the development of this process.

The Inspector workforce, and its union, was vocally opposed to changing the way it had been doing business for years. The workforce was also opposed to using any automation—viewing it as a level of complexity that would only provide the need for training and lack benefit to the surveillance of an air carrier.

Another challenge faced by the FAA was the degree of direct interest taken by Congress and the press. Congress and the press had made very public proclamations that there were questions regarding the FAA's effectiveness in ensuring aviation safety. Thus changes in the way FAA did business were portrayed as essential to gaining the confidence of Congress and the public.

The Solution

MillenniuM implemented an evolutionary system design approach for the FAA in developing the Air Transportation Oversight System (ATOS). This approach leveraged joint application design (JAD) sessions to simultaneously garner requirements and process definition for not only the system, but the functional processes and ways to get organizational buy-in and support. MillenniuM provided all program management, design, development, implementation, maintenance, and administration support services for ATOS.

The FAA's initial idea for ATOS was to have Inspectors carrying around gummed pads of paper to write surveillance down, and then send it to a data entry team to enter it into a computer. Instead, MillenniuM was able to show how a thin-client architecture for ATOS would allow Inspectors to access automation whether in the office or traveling with their laptops—and made that information immediately available for use in safety oversight.

The ATOS system provides a framework and tools to manage and target resources in a coordinated fashion for carrier oversight. ATOS utilizes vulnerability assessment capabilities and management support of strategic and tactical processes and operations.

MillenniuM's experience with ATOS includes a comprehensive understanding of ATOS oversight and the knowledge and expertise to aid the ATOS inspector in their day-to day application.

The Results

- ATOS is the FAA's primary surveillance system for certificated US-based air carriers—implementing a system safety risk management approach to aviations safety.
- ATOS provides the FAA with a way to manage and target its resources to provide oversight of the processes employed by air carriers and the actual performance of those processes.
- With ATOS, data and information gathered through the surveillance process is dynamically used to target areas of greatest risk to maximize the effectiveness of the Inspector workforce.
- MillenniuM helped the FAA develop ATOS as a system that can naturally evolve and continuously improve in a controlled manner. As this model of applying system safety risk management to aviation safety matures, additional process and automation capabilities are defined, designed, and implemented.
- MillenniuM developed ATOS so that improvements can be made in a constructive manner, building off the ever-increasing support for the system from both internal and external parties.

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