



Implementing a next generation Weight and Balance system to make flights safe.

An aircraft's Weight and Balance system is a critical component of Departure Control and ensures that the aircraft is loaded correctly, in order to fly safely. Unfortunately, many airlines and ground service companies still utilize manual Weight and Balance processes and legacy systems that lack the ability to automate load planning. This reduces efficiency and raises operating costs, due to complex training and inefficient resource utilization.

Here is how Mindtree helped the world's leading airline vendor, specialized in air transport communications and Information Technology (IT) implement a next generation Weight and Balance system, and migrate to a more agile technology footing that, both, improved business responsiveness as well as increased the Return on Investment (ROI) on delivery and operational work.

The challenge

The customer sought to migrate from a 30 year-old legacy, centralized load control system to a next generation Weight and Balance system that would provide their business with greater agility and assurance in the face of rising market pressures.

The inherent problems of the legacy system included:

- Lack of automation functionality that could utilize algorithms to improve load planning
- Lack of Graphical User Interface (GUI) features for ease of operation
- Lack of programming support
- High maintenance costs
- High single-vendor license fees

The customer engaged Mindtree as a technology partner to realize their vision of being a Next Generation System Provider and market leader.

They defined the following business objectives:

- To increase the ROI on current and future delivery and operational work, thereby decreasing cost, time and risk of the delivery. This would allow a more competitive pricing structure based on a monthly fee or a charge per load sheet

Business impact

- Six airlines migrated to the new system successfully, with 150+ to follow in the next 18 months
- Reduced number of flight delays due to improved load planning
- Up to 100% increase in agents' productivity
- 2% reduction in fuel bills due to optimal load distribution
- Quality standard maintained at 0.46 defects per Function Point – a 50% lower defect rate than that set by the customer

- To attract talent and expand market share by employing a next generation Weight and Balance system
- To enable entry into new, attractive markets like Military, Corporate, General Aviation, Airports, and Clearing houses

Our solution

Mindtree collaborated with the customer to implement Horizon Weight and Balance, a state-of-the-art new generation load planning product providing complete functionality to safely load and dispatch flights efficiently. The new product features GUI functionality for all load control and aircraft / flight dispatch functions, and enhanced navigation features to improve usability, reduce staff training time and provide greater flexibility to load control agents.

This new system was developed using Services Oriented Architecture (SOA), and runs on an open systems platform. The four architecturally significant layers in the design model are:

Access: A thick client running on an agent's workstation provides primary access to the Weight and Balance function.

Integration: This layer includes an Identity Management Service, Oracle Service Bus, and adapters. Requests from the workstation client are processed by the gateway server before being validated by the identity manager. The Oracle Service Bus is used to route each request to the requested endpoint / service.

Business: This layer consists of a collection of Weight and Balance services as well as business and technical utilities provided by Audit Manager, Error Manager, Identity Manager, Location Manager, Notification Broker, Reference Data Manager, Scheduler, and Subscriber Manager.

Persistence: All data is stored in Oracle 11g.

Customer testimonial

'This entirely new system developed using SOA runs on an open systems platform, which unlike legacy systems, gives the ability to add enhancements and system modifications very quickly. What we are doing is not just about delivering state-of-the-art systems, it is about truly addressing industry requirements and meeting demands in the new decade.'

About Mindtree

Mindtree is a global information technology solutions company with revenues of over USD 400 million. Our team of 11,500+ experts engineer meaningful technology solutions to help businesses and societies flourish. We enable our customers achieve competitive advantage through flexible and global delivery models, agile methodologies and expert frameworks.