

# Enabling 20-25% Higher Uptime with Aircraft Health Monitoring System

## Overview

The client is one of the leading manufacturers of trains. They had recently entered into manufacturing commercial flights. They wanted to provide their customers with value-added services for improved aircraft maintenance, operator efficiency, and productivity. TechM developed an aircraft health monitoring system (AHMS) that supports multiple operational decisions with detailed analysis. The solution was delivered on a revenue-share business model with the client and offered as a subscription to the end customers.

## Client Background and Challenge

A leading manufacturer of trains was newly entering into manufacturing commercial aircrafts in North America. They wanted to offer value-added services to the customers to know the health condition of the aircraft. The goals of this service were:

- ▶ Improve operator's decision making, on aircraft performance and maintenance.
- ▶ Impact operators' business efficiency and profitability with superior dispatch reliability.
- ▶ Propose flexible/tiered services offering allowing them to select what better fits their needs.
- ▶ Create avenues to engage the customer in aftermarket scenario.

They wanted to have their own application system that could do real-time monitoring of the health of the aircraft and provide actionable insights to the flight operators and airlines.

## Our Approach and Solution

Tech Mahindra designed and developed a platform called aircraft health monitoring system (AHMS). This platform is hosted in the cloud and collects the data of aircraft from the ground supporting systems to facilitate real-time and post-flight recorded data management, fault notification, and diagnostic reporting. The on-board maintenance system in the aircraft aggregate's fault messages from all aircraft systems and transmits the data to the ground-supporting systems. Examples include avionics, flight controls, fly-by-wire, landing gear, braking systems, environmental control systems, thrust reversers, engines, electrical systems, and auxiliary power units (APUs).

- ▶ The AHMS system processes and enriches the data that is received from the ground supporting system. This is used to perform detailed analysis of the transmitted on-board data to support a wide variety of operational decisions.
- ▶ This gives the operators and aircraft manufacturers the opportunity to analyze various parameters and take actions that will result in optimal functioning of the aircraft/

component/engine. The operators are presented with the processed information. Alerts are visible on a web-based interface to analyze and assess the data while the airplane is airborne, so the operators can make the required preparations, ensure that the aircraft is air-worthy (fit to fly), and make the right business decision. Performance indicators are configurable for airlines and user.

- ▶ Whenever a fault occurs, the on-board system streams real-time data to enable technicians at the next landing location to be ready with the parts and procedures required to expedite the maintenance activities. The prognostic data related to the on-condition performance of components on the aircraft, along with visual coded alerts about performance degradation, helps in preventing a potential fault before it occurs, thereby maximizing up-time.

## Business and Community Impact

The solution includes capital expenditure sharing (and revenue sharing between TechM and the client) and subscription-based commercials (between the client and the operator on a per tail per year model). AHMS is integrated with other systems like technical publications and is capable to integrate with various third-party tools for further enhancing efficiencies and decision making



AHMS enabled 25-30% improvement in aircraft dispatch reliability rate



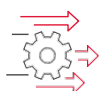
10% reduction in person hours to maintain and analyze flight data



25% of the cost savings with effective troubleshooting via advanced analytics



20-25% improvement in aircraft availability with less flight disruptions



The solution was initiated with one operator and currently we have 10 operators



Subscribed to AHMS serving around 165+ aircrafts

To know more, reach us at [DigitALL@techmahindra.com](mailto:DigitALL@techmahindra.com)



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