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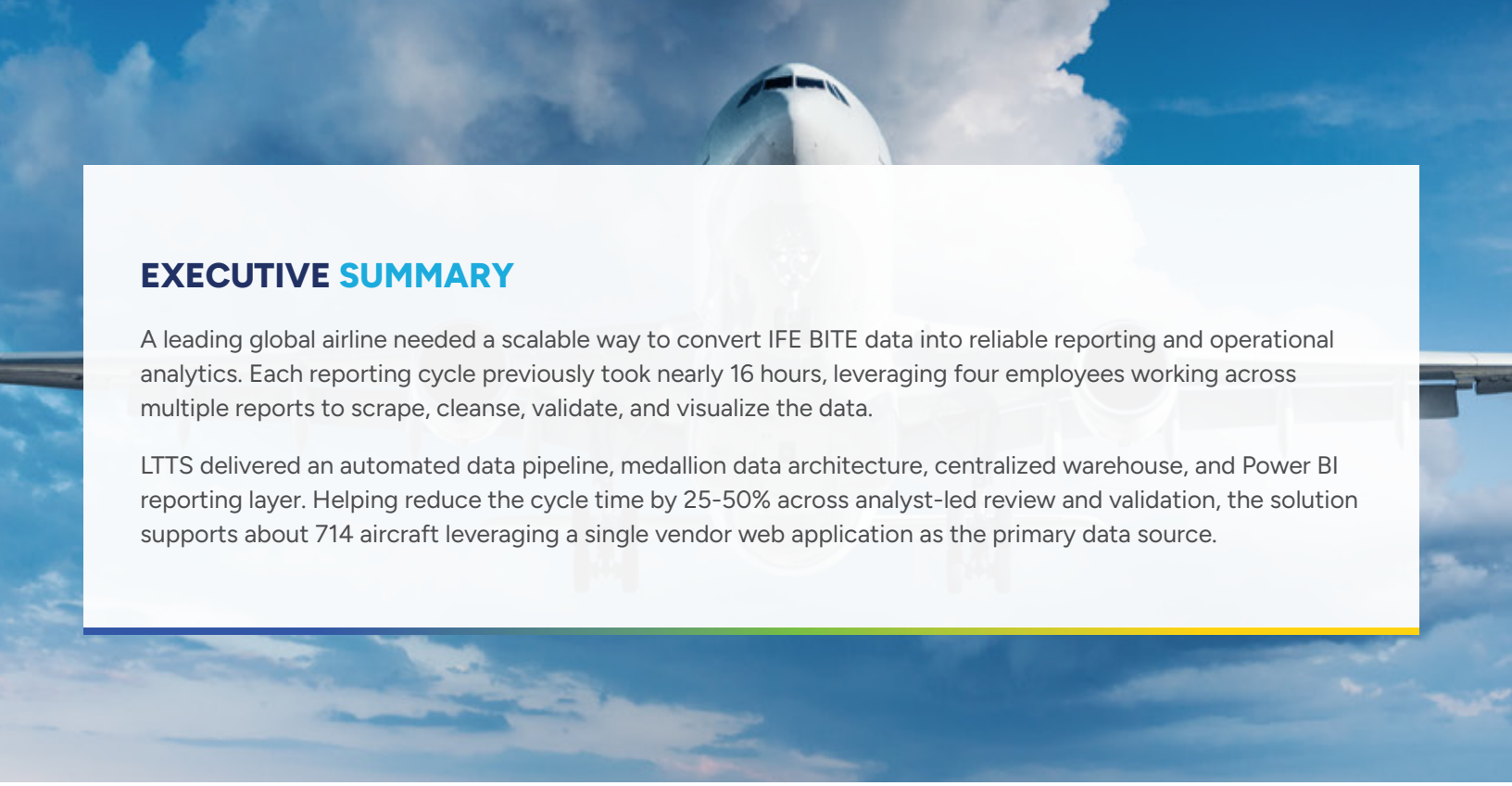
Accelerating aviation intelligence with a unified IFE data warehouse

Turning offload data into trusted aviation insights

CASE STUDY



engineering intelligence



EXECUTIVE SUMMARY

A leading global airline needed a scalable way to convert IFE BITE data into reliable reporting and operational analytics. Each reporting cycle previously took nearly 16 hours, leveraging four employees working across multiple reports to scrape, cleanse, validate, and visualize the data.

LTTS delivered an automated data pipeline, medallion data architecture, centralized warehouse, and Power BI reporting layer. Helping reduce the cycle time by 25-50% across analyst-led review and validation, the solution supports about 714 aircraft leveraging a single vendor web application as the primary data source.

THE CHALLENGE

The client relied on a manual, effort-intensive workflow to extract IFE BITE data, and then clean, validate, and prepare it operational reports. This resulted in significant challenges for the airline, including:

01	High effort of about 16 hours
02	Scalability challenges across the need for supporting an over 700-strong aircraft fleet without added effort
03	Data quality gaps with the need for extensive cleansing, validation, and curation
04	Processing limitations across rising offload volumes reduced real-time reliability
05	Delayed insights, with limited visibility into compliance, reliability, and asset health

ENGINEERING COMPLEXITY



Layered data conversion:
Raw vendor data had to move through Bronze, Silver, and Gold layers before becoming dashboard-ready



Built-in quality controls:
Bronze standardized ingestion; Silver handled cleansing, validation, deduplication, and transformation; Gold created curated datasets for analytics



Architecture shift:
Rising log volumes required a move from near real-time to batch processing for stability and scale



Operational dashboard needs:
Media, Configuration, and Offload reports had to serve different users without duplicating processing logic



Actionable reliability analytics:
Historical BITE and aircraft operational data had to reveal recurring failure patterns, reliability trends, and component health indicators

OUR SOLUTION

- **Vendor data integration:**
  Established a reporting and analytics foundation using data from a single vendor web application
- **Automated pipeline:**
  Used AWS for ingestion, storage, and processing, with AWS Glue for ETL and Python for extraction transformation, and automation.
- **Medallion architecture:**
  Implemented Bronze, Silver, and Gold layers to improve data quality, completeness, reliability, and usability
- **Centralized warehouse:**
  Stored curated Gold-layer datasets in Amazon Redshift for scalable reporting and analytics
- **Power BI dashboards:**
  Delivered Media, Configuration, and Offload views covering media status, software and system configuration, BITE offload visibility, and compliance tracking
- **Batch processing model:** Replaced near real-time processing with batch processing to reduce failures and handle higher flight offload log volumes consistently

Prediction and recommendation layer:

- Connected historical BITE and aircraft operational data with reliability analytics to support failure prediction and proactive replacement recommendations
- **Controlled delivery:**
  Used GitLab for source control and CI/CD to support governed development and deployment

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BUSINESS OUTCOMES

LTTS improved the speed, reliability, and usability of IFE BITE reporting by replacing manual data preparation with an automated pipeline, curated warehouse, and dashboard-led insight layer.

- ~16 hrs to ~2-3 hrs: Automated BITE reporting reduced manual effort
- ~714 aircraft: Enabled fleet-scale reporting and analytics
- 3 dashboards: Delivered Media, Configuration, and Offload insights
- Trusted data: Improved data quality through Bronze-Silver-Gold architecture
- Predictive intelligence: Enabled failure prediction, component health monitoring, and proactive maintenance recommendations

THE EI EDGE

LTTS transformed a manual IFE BITE reporting process requiring 16 hours and 4 resources into an automated, AI-enabled analytics platform that reduced effort to 2-3 hours, supported approximately 714 aircraft, and enabled predictive reliability insights through cloud-scale data engineering, medallion architecture, and proactive maintenance intelligence

From manual reporting to predictive IFE intelligence through automated data pipelines, reliability analytics, and actionable fleet insights.



This collateral includes AI-enhanced imagery

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ENGINEERING THE CHANGE

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