

A large jet engine is the central focus, mounted on a metal stand in a hangar. The engine's fan blades are visible, and the central hub has some text on it, including "CAUTION OVERHAUL" and "INVERTED BLADES". The background shows the interior of a hangar with wooden walls and other equipment.

CYIENT

CYIENT INSIGHTS LEVERAGES ANALYTICS TO AUTOMATE VALIDATION OF AIRCRAFT MAINTENANCE FOR A LEADING AIRCRAFT OEM

How we work with our clients to help
overcome challenges
for a better tomorrow

Overview

A leading aircraft manufacturer needed help to automate the validation process for their aircraft maintenance data

A leading aircraft manufacturer collects maintenance operations and Schedule Interruption (SI) data from customers (aircraft operators) in order to provide aftermarket services, process warranty claims and develop deeper insights into the performance of aircraft systems.

However, given the diverse sources, formats and local variations from operators across the globe, the OEM found the task of collecting, categorizing, enriching and validating data to be cumbersome. We employed advanced algorithms and big data programming techniques on historical data to build a data validation system that automates the validation process, saving over 80% of the effort and close to half a million dollars annually.

Client's process of data validation was time consuming and domain intensive

We combined our extensive experience in engineering operations and advanced analytics and applied it to the non-traditional purpose of building a validation system with the potential to save over 15,000 hours of engineering effort annually.

Client

A leading aircraft OEM

Industry

Aircraft manufacturing

Offering

Innovation through advanced analytics

About the Client

Our client is a global corporation that designs, manufactures and sells fixed-wing aircraft, rotorcraft, rockets, and satellites. The company provides leasing and product support services. Our client is among the largest global aircraft manufacturers and is one of the largest aerospace and defense contractors in the world.

Business Challenge

Our client collected maintenance and SI data from more than 170 operators across the globe in various formats and local flavors.

Understanding this data, extracting the right information and enriching it with missing information were domain-intensive tasks. Moreover, it took equal time per record to validate and ensure that the data was in the format accepted by the client.

Validation of SI records involved preparing an SI casebook with about 50 different parameters. The values for some of the parameters were not readily available from the source and had to be derived from the collected information. It thereby required subjective assessment of the case in order to prepare a meaningful, complete casebook.

Often validation of such records had to be done by senior engineers with thorough domain understanding and whose time is highly valued. Automating this task would result in direct cost and effort savings.



Our Solution

Our solution leveraged advanced analytics to automate the validation process, resulting in a saving of close to 0.5 million dollars a year while significantly improving speed, volume and quality

We identified an opportunity to automate the validation process using the historical data accumulated over five years on this exercise.

The team built a comprehensive profile of all scheduled interruption cases for those with sufficient historical data. We then designed an algorithm to validate any given record by matching possible values with each parameter from the pre-built profile book and specific SI event.

Furthermore, we built a web based application on .NET and SQL server platforms that communicated with the algorithm in the backend. It also provided an intuitive user interface that enabled the simultaneous upload of hundreds of records that could be automatically validated. Our engineers manually validated the 5-10% of those records that failed the automated validation process.

Our solution leveraged advanced analytical methods like classification techniques, market basket analysis and text analytics.

About Cyient Insights

Cyient Insights is a subsidiary of Cyient Limited, a leader in Engineering, Network and Operations services and solutions. Combining domain expertise and data sciences core competence, Cyient Insights helps clients across several industries leverage business and operational insights through advanced analytics solutions.

Results

Using the power of advanced analytics, our validation system not only eliminated most of the human effort in testing the processed maintenance records, but also demonstrated significant improvements in speed, volume and quality compared to earlier manual processes. This allowed the client to make quicker and more informed business decisions and serve their customers better.

Speed

Overall validation time was reduced by 80% including the manual effort for invalidated records.

Volume

Number of records validated per hour increased by 300 times.

Quality

With over 12000 records processed per month, our analytics powered validation system eliminated sampling and ensured quality.

About Cyient

Cyient (Estd: 1991, NSE: CYIENT) provides engineering, manufacturing, geospatial, networks, and operations management services to global industry leaders. We leverage the power of digital technology and advanced analytics capabilities, along with domain knowledge and technical expertise, to solve complex business problems. As a Design, Build, and Maintain partner, we take solution ownership across the value chain to help our clients focus on their core, innovate, and stay ahead of the curve.

Relationships lie at the heart of how we work. With more than 15,000 employees in 22 countries, we partner with clients to operate as part of their extended team, in ways that best suit their organization's culture and requirements. Our industry focus spans aerospace and defense, medical, telecommunications, rail transportation, semiconductor, utilities, industrial, energy and natural resources.

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