Reducing Flight Test Cycle Time from Weeks to Hours

SensorCloud solution improves data aggregation and on-site analysis of large data sets

Case Study - Boeing S-100 Unmanned Aerial Vehicle

Immediate data feedback allowed flight engineers to make critical adjustments shortly after each test, enabling multiple tests per day. Previous test programs required week-long delays between flights for data analysis.

Multiple technology requirements - *Flight testing of the UAV included collecting in-flight data from torque, strain, vibration, and temperature sensors, and a GPS-integrated inertial measurement unit.*

Solution

Boeing recently selected the SensorCloud™ platform for evaluation during the S-100 unmanned aerial vehicle (UAV) flight test program.

Connect: Flight test engineers installed a wireless sensor network consisting of torque, strain, vibration, and temperature sensors, an inertial measurement unit (IMU), and a flight-rated data collection gateway on the test platform. Data was collected over the course of two days.

Monitor: Data collected during the flight tests was uploaded to the SensorCloud platform allowing it to be viewed and shared shortly after landing. The quick data availability allowed flight test engineers to evaluate aircraft performance at test points and make go/no-go determinations from a flight test and safety perspective. This capability often enabled multiple flight tests in the same day by eliminating the downtime between flights for external data analysis.

Analyze: Flight test engineers were able to use SensorCloud's embedded MathEngine® analytics tool to begin interpreting flight data immediately. This reduction in cycle time between testing and preliminary analysis allowed flight test groups to respond to results in an agile manner and adjust future test plans accordingly.

Challenge

Flight test programs are notoriously data and time intensive, and legacy management and analysis tools have become cumbersome in the face of ever increasing data demands.
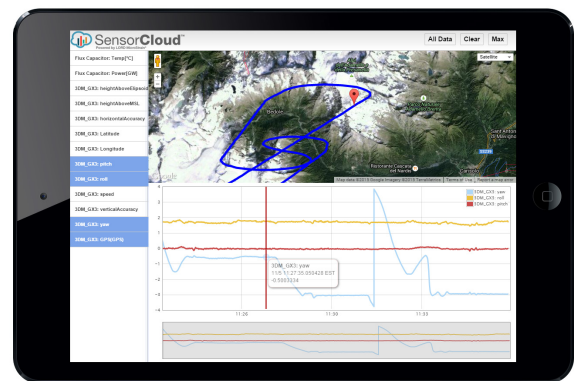
On-site data analysis - *Using SensorCloud with MathEngine analytics tool, engineers were able to review the flight data immediately and adjust the test plan as needed.*

Flight Test Benefits

- Reduce flight test down time, and overall program expense
- Maximize flight data collection
- Share data with remote colleagues immediately
- Quickly respond to program impediments

Features

- Big data time-series visualization
- Ultra-reliable & secure data archival
- Flexible and programmable data analytics
- ITAR approved options available
- White-label branding, embeddable widgets & custom portals

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