WNDRVR Studio

OPERATE: DIGITAL FEEDBACK LOOP

USING DIGITAL TWINS AS A COMPETITIVE ADVANTAGE

THE CHALLENGE

A small aircraft manufacturer has created a digital twin of its popular modern geared propulsion engine, currently deployed in the market. The digital twin is primarily being used by the platform development team to simulate the hardware and execute test plans, which has helped accelerate production schedules.

The engines run on VxWorks®, and the digital twin was created using a simulated hardware model in Wind River® Studio Virtual Lab.

The competitive landscape for high-performance commercial engines has intensified with rising fuel costs. The development team, confident that it can improve the efficiency of the engine if it has better usage data, wants to use the existing digital twin to adjust design characteristics and tune operational performance. The airline operator has agreed to collect and share the in-flight data with the engine manufacturer.

THE SOLUTION

Studio includes a digital feedback loop capability that can ingest the engine data supplied by the airline operator. The engine manufacturer's team can then analyze this engine performance, atmospheric conditions, and sensor data. Next, using the interactive visualization powered by the open source Grafana platform, it can create a visual dashboard that displays the data during changes in conditions and variables.

From this point, developers can use artificial intelligence and machine learning algorithms and adjustments to the data parameters to better simulate what would happen to the engines in different "what if" scenarios. From within Studio, the team can adjust the digital twin model with the new data and tune the engine for greater efficiency.

THE RESULTS

Dynamically evolving the digital twin model gives development teams the insights they need to improve engine performance and efficiency. The improvements in the engine will make the manufacturer build more competitive products, and the airline company will benefit by saving on fuel costs.

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