

**TOPIC NUMBER:**

AF01-145

**TOPIC TITLE:**

Computational  
Materials Science

**CONTRACT  
NUMBER:**

FA9101-12-C-0013  
FA9101-13-C-0010

**SBIR  
COMPANY  
NAME:**

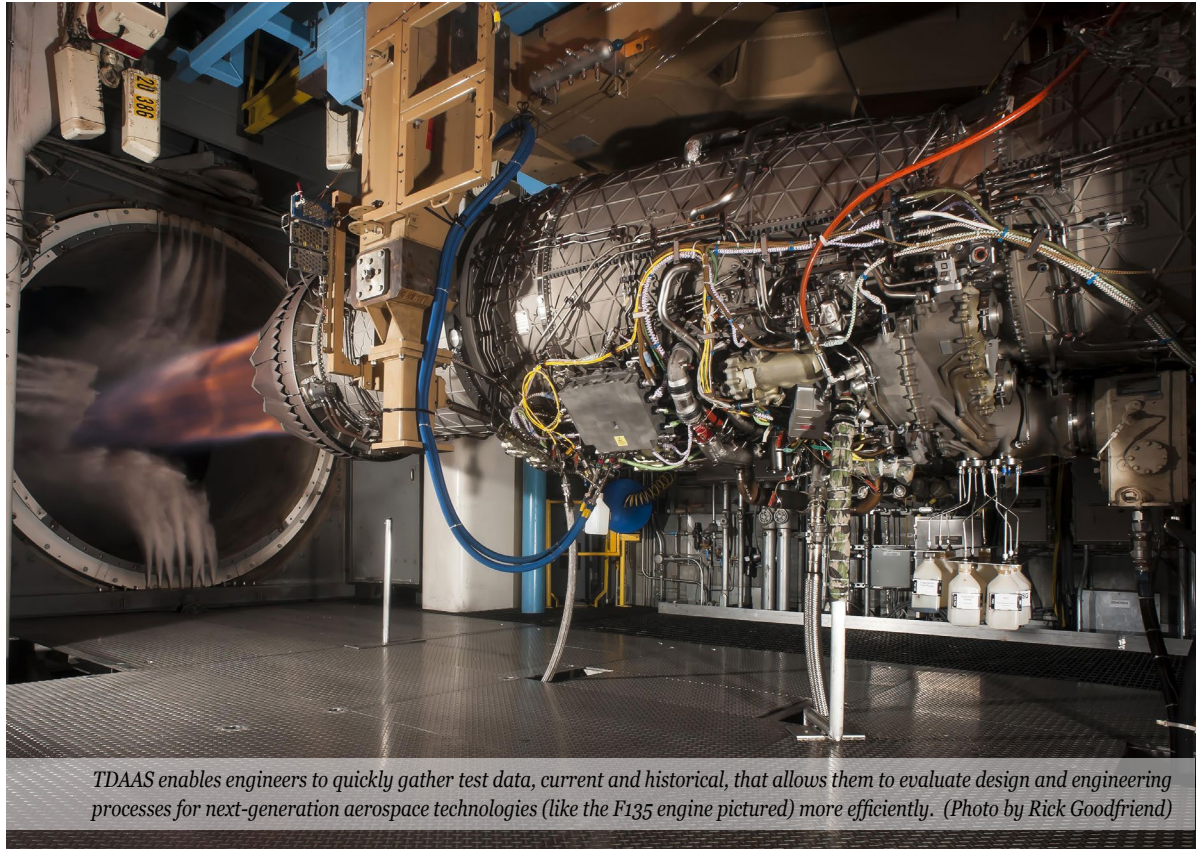
RJ Lee Group  
Monroeville, PA

**TECHNICAL  
PROJECT  
OFFICE:**

Air Force Test Center  
Arnold AFB, TN

**PUBLISHED:**

April 2016



*TDAAS enables engineers to quickly gather test data, current and historical, that allows them to evaluate design and engineering processes for next-generation aerospace technologies (like the F135 engine pictured) more efficiently. (Photo by Rick Goodfriend)*

## **SMALL BUSINESS DELIVERS BIG DATA SOLUTION TO DRIVE THE NEXT GENERATION OF AEROSPACE TECHNOLOGIES**

Advancements in aerospace platforms hinge on the reliable assessment of components, but making sense of the vast, disconnected sources of historical test information to accomplish that task is a formidable challenge.

With funding from the Air Force Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program, RJ Lee Group crafted a solution. The Pennsylvania-based company developed TDAAS - the Test Data Aggregation and Analytical System - which acts with Google-like speed to locate data needed to answer difficult questions driving the design, development and deployment of defense systems.

“This is pure gold in terms of providing better human understanding and decision making for test processes,” said Brandon Hoffman, a program manager at the Arnold Engineering Development Complex.

## A REAL NEED

Scientists and engineers are increasingly challenged to provide insightful analysis to fuel the progress of engine propulsion, aerodynamics of systems and ordinances, and space systems. However, they often are not able to find the information from a similar test - or cannot trust prior test results because of a lack of complete documentation – which leads to new testing and increased costs.

Located at Arnold Air Force Base in Tennessee, the complex sat on a massive library of test data, more than a petabyte, spread across countless unrelated databases.

“With more than 50 years of systems and component test data, Arnold Engineering Development Complex leadership recognized the uniqueness and amount of data and meaningful research at their fingertips,” Hoffman said.

The new TDAAS effectively reduced the search of test data and related documents from months to minutes and allows for hundreds more analytical iterations because of its speed at finding new information.

## ADDITIONAL BENEFITS

Across the Department of Defense, there is a great need to collect, index and link this type of testing information together in a way that provides meaning. However, the ability to share, much less discover data across multiple locations and sources, is limited.

“TDAAS enables the ability to connect to these multiple locations and sources making all of the information searchable without changing the data’s original location or owner,” Hoffman said.

Additionally, TDAAS has increased the amount of information accessible by allowing individuals to add their own data and analysis results directly into the system.

Dr. Klaus Schug, a chief architect at Arnold Air Force Base, said the systems’ potential to eliminate billions of dollars of reengineering costs through the application of past lessons learned is one of the best value propositions for the Arnold Engineering Development Complex to the Department of Defense.

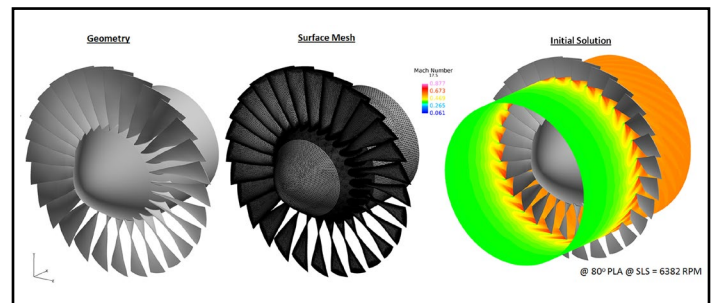
## SUCCESS ATTRACTS ADDITIONAL SUPPORT

Success with the SBIR/STTR effort helped RJ Lee Group land a Rapid Innovation Fund award to mature the TDAAS prototype. The company was scheduled to transition TDAAS to production at the Arnold Engineering Development Complex in 2016, which will provide users with the best and most complete understanding ever of weapon systems cost, design and performance as well as the optimum tradeoffs across these three areas.

Officials say this is a precursor to more expansive applications of TDAAS.

“It will be evaluated as a potential search capability for an Air Force Test Center knowledge management capability under initial development,” said Dr. Edward Kraft, Technical Advisor at Arnold Air Force Base. “TDAAS also has potential as a tool for managing technical data in the Air Force Digital Thread in support of the broader Air Force Engineering Knowledge Management system.”

Based on technology achievements and demonstrations during the TDAAS development, RJ Lee Group secured additional funding to help the Air Force create a 21st Century Digital Thread Infrastructure. This separate initiative is focused on identifying and expanding technologies that can help capture and maintain material and other scientific data along the entire cradle-to-grave (or cradle-to-cradle) life cycle of a component.



The application of big data principles are bringing efficiencies to military jet engines. (Courtesy photo)



U.S. AIR FORCE

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