

Transition

SBIR Topic Number:
 AF01-143

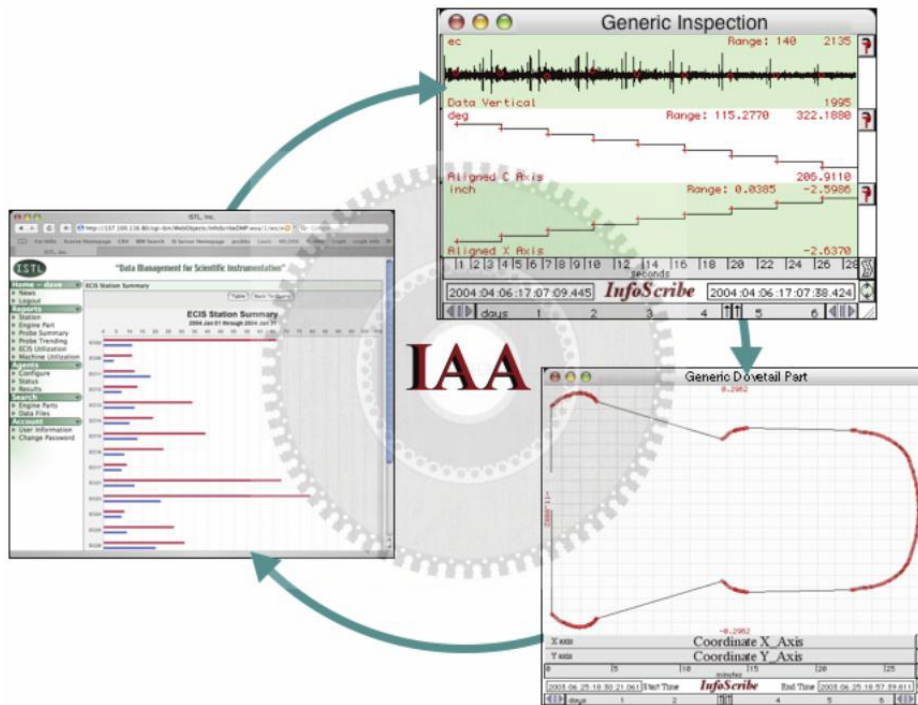
SBIR Title:
 Engine Component
 Life Management
 Technologies

Contract Number:
 F33615-02-C-5703

SBIR Company Name:
 ISTL, Inc.
 Beavercreek, OH

Technical Project Office:
 AFRL Materials and
 Manufacturing
 Directorate
 Wright-Patterson AFB,
 OH

An example of Air Force supported SBIR/STTR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.



Intelligent Agent Architecture (IAA) Underlies Data Search Breakthrough

Engine Data Mining Software Offers New Capabilities

- Air Force SBIR contract focused on finding an innovative tool to wade through voluminous maintenance data information
- Oklahoma City Air Logistics Center has purchased an IAA software license
- Developed tool enables users to quickly search gigabytes of data and generate electronic reports
- Tool will significantly help with inspection and maintenance of Air Force turbine engines

Commercialization Pilot
 Program Series

AFRL/ML 2007-79

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DISTRIBUTION A:
 Approved for public
 release; distribution
 unlimited.

Air Force Requirement

The Air Force needed a dynamic software program that would allow its engineers, researchers, and maintenance personnel to sort and search through fighter jet engine inspection data more efficiently. To extend engine life via data management technology, data had to be collected and organized to elicit patterns, anomalies, and trends which may extend or curtail operating life. Maintenance depot managers, who typically search hundreds or thousands of gigabytes of engine data per year, sought improved search capabilities.

SBIR Technology

Using SBIR contracts with the Air Force, InfoScribe Technology Laboratory, Inc. (ISTL) produced a data mining system in conjunction with the Air Force Research Laboratory (AFRL) Materials and Manufacturing Directorate's Manufacturing Technology (ManTech) Division. Known as the Intelligent Agent Architecture (IAA), this design originally was developed for use with data collected from the Eddy Current Inspection Stations (ECIS) under ManTech's Engine Rotor Life Extension (ERLE) program. Under ERLE's data management activities, this inspection database is the repository for all inspection data, including part numbers, probe information, and inspection time and linkage to the raw data for coordinate and eddy current signals. IAA, a fully developed and demonstrated search capability, enables users to search ECIS data, being stored at the rate of hundreds of gigabytes per year, and generate electronic reports within minutes. It allows the integration of all data sources so users can search for trends ranging from the engine inspection processes to the engine's remaining life. Data users can receive electronic reports within minutes, rather than sorting through paper copies of report information. Users can receive reports on demand or have the software automatically forward updated reports periodically.

Transition Impact

IAA saves time and allows engineers to build specifically tailored reports on the inspections of disks and engine components. Shop managers can narrow their search for engine data, which will be as high as hundreds or thousands of gigabytes per year. Thus, initial estimates show that the data search and reporting methods will save hundreds of man-hours annually. Another benefit is the new capability of pulling information from data that was previously never recorded, such as the start and end times of the inspection process and the specific probe used in the inspection.

The Oklahoma City Air Logistics Center (OC-ALC) at Tinker AFB, Oklahoma, has purchased the IAA software to obtain the capability to develop database search tools and reports for ECIS data. The purchase of the IAA license will allow engineers at OC-ALC to develop tools and reports to evaluate inspection times, test restarts and failures, probe performance and eddy current machine time. This will help with the overall inspection and maintenance of turbine engines on Air Force aircraft.

Company Impact

"The IAA is a component of ISTL's mission to serve the warfighter with reliable and cost effective turbine engine maintenance," said Jeff Heyob, President of ISTL, Inc.

This project has opened the way to perform virtual re-inspection of engine disks to assist engine component life prediction. Building on its Air Force SBIR project experience, ISTL provides data management solutions for scientific and manufacturing instrumentation to improve productivity, capability and to increase return on investment (ROI) for a wide range of processes. ISTL's data management system has been used to identify and improve process capabilities by historical archiving of critical data, analyzing critical current and archival data, substantiating ROI for new technologies and process improvements.



SBIR/STTR

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