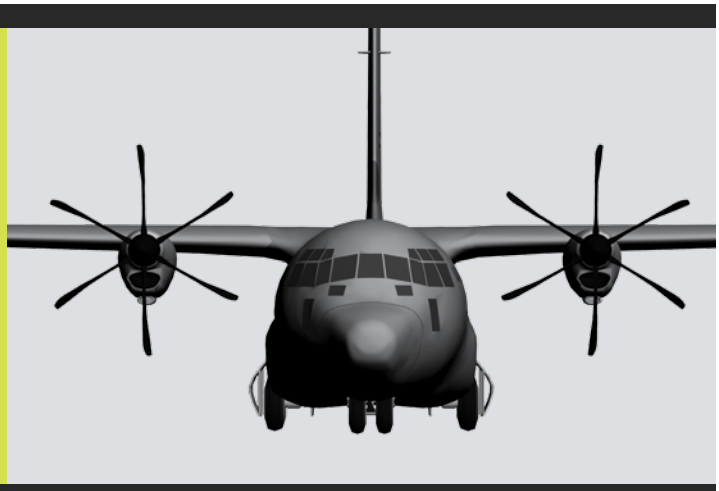
nGRAIN®

CASE STUDY

LEVERAGING NGRAIN-ENABLED IETMS FOR PERFORMANCE SUPPORT



PROJECT	STANDARDAERO STUDY OF NGRAIN-ENABLED IETM
CLIENT	CANADIAN FORCES
KEY OBJECTIVES	▶ IMPROVE TRANSFER OF MAINTENANCE TRAINING INFORMATION TO NOVICES ▶ REDUCE TIME TO PROFICIENCY ▶ INCREASE TECHNICIAN PERFORMANCE

BACKGROUND

There are more than 8,000 personnel around the world acting on behalf of the Canadian Forces. However, like many other militaries, the Canadian Forces (CF) is experiencing a lack of incoming qualified workers – especially in the technical trades. Successful recruiting has been offset by the departure of experience personnel who are retiring in increasing numbers.

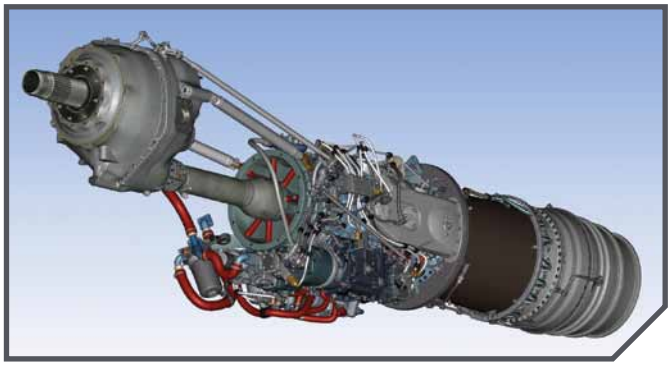
CHALLENGE

Due to demographic shifts, the Canadian Air Force's technician workforce is both smaller and less experienced than before, yet must meet increasing demands for aircraft availability. To help address these issues, the Air Force looked to introduce new technologies to provide aircraft technicians with critical, up-to-date technical knowledge at the point of performance.

SOLUTION

The CF sponsored StandardAero to integrate electronic technologies into the Interactive Electronic Technical Manuals (IETMs) currently used by CF CC-130 technicians. The resulting Advanced Interactive Electronic Technical Manual (A/IETM) delivered by StandardAero to the CF was designed to transform performance support and enable novice aircraft maintenance technicians to perform corrective maintenance procedures at the same level as seasoned experts.

As part of the A/IETM, in partnership with StandardAero, NGRAIN developed an interactive 3D model of the T-56 engine, as well as interactive animations of maintenance procedures. The animations provided a visual representation of the procedures, while also incorporating the written materials, and gave the technicians the option to pause, restart, and repeat the procedures.



NGRAIN-enabled T-56 Engine

RESULTS

As detailed in the paper, *Field Evaluation of Advanced Feature for an Aircraft Interactive Electronic Technical Manual*, issued at the 2009 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC), the CF commissioned a third-party Field Evaluation to measure the extent to which the NGRAIN-enabled A/IETM assisted technicians in performing tasks more quickly and accurately.

The participants involved in the Field Evaluation included Air Force Aviation technicians varying in age, rank, gender, and experience level, which ranged from Apprentice to Expert. Two groups were formed, an Experiment Group and a Control Group, each of similar size and experience. The Control Group had more general technical experience and CC-130 specific experience, and was more comfortable with computer use.

"Technicians using NGRAIN perform 25 percent faster and with a 22 percent increase in accuracy."

FIELD EVALUATION OF ADVANCED FEATURE FOR AN AIRCRAFT INTERACTIVE ELECTRONIC TECHNICAL MANUAL

During the test period, the technicians were asked to partially disassemble a turbine Rear Bearing Support on the aircraft. The technicians in the Experiment Group used the NGRAIN-enabled A/IETM, while the Control Group technicians referenced the current written Technical Manual. The time required by the technicians to complete the exercise, as well as the accuracy of their work, was tracked.

At the conclusion of the test period, results showed that technicians who used NGRAIN were able to complete the task both 25 percent faster and 22 percent more accurately than those using the Technical Manual alone. Additionally, when demographics of the test subjects were reviewed, it was found that Apprentice technicians using NGRAIN were able to perform the task faster than the journeymen and in approximately the same as the expert technicians in the Control Group.