

CASE STUDY: LEVERAGING NGRAIN-ENABLED IETMS FOR PERFORMANCE SUPPORT

BACKGROUND

In 2008, the Canada First Defence Strategy provided funding to expand the Canadian Forces (CF) to 100,000 personnel. But despite this influx of additional resources, the CF, much like other militaries, are still experiencing a lack of skilled and qualified workers – especially in technical trades. Successful recruiting has been offset by the departure of experienced personnel who, in increasing numbers, are nearing retirement age.

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 CC130 technicians. The resulting Advanced Interactive Electronic Technical Manual (A/IETM) delivered by StandardAero to the CF had the objective 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 procedure.

“NGRAIN enables Apprentice technicians to operate at the same level as seasoned Experts.”

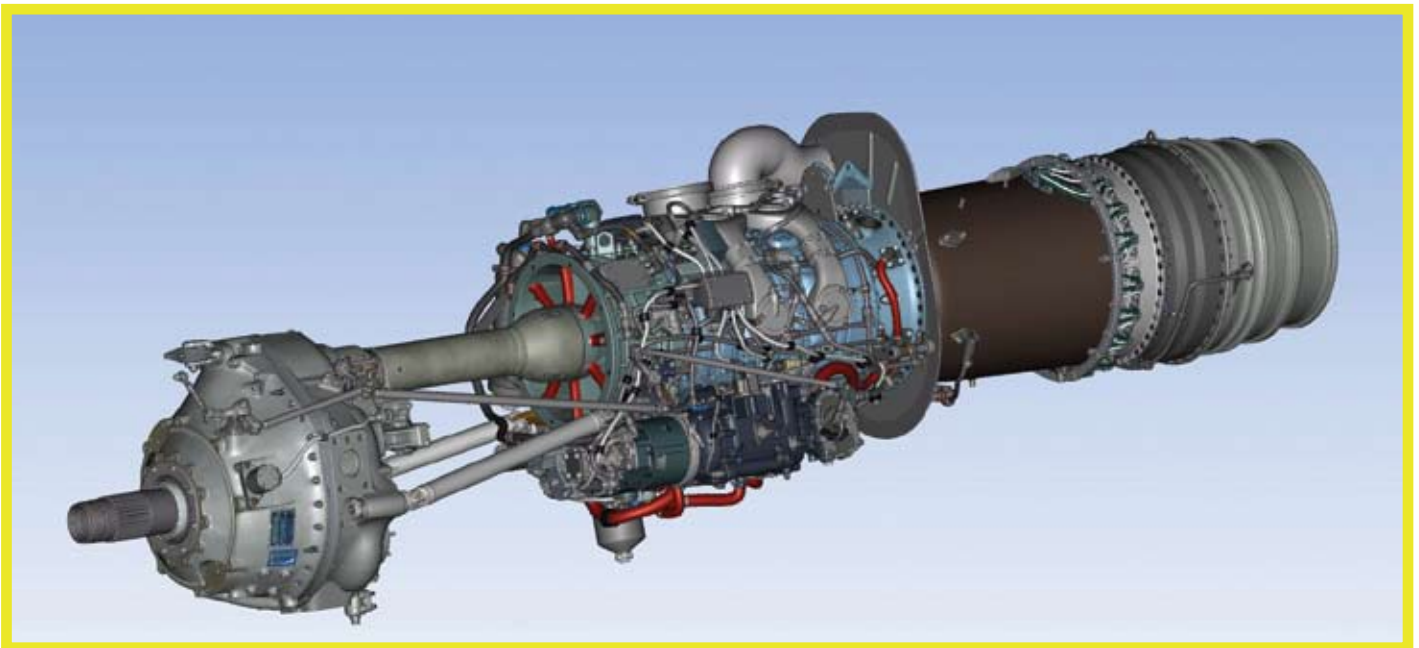
RESULTS

As detailed in the paper, *Field Evaluation of Advanced Features 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 be performed 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 a similar size and experience. The Control Group had more general technical experience and CC130 specific experience, and was more comfortable with computer use.

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% faster and 22% 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 Journeyman and in approximately the same time as the Expert technicians in the Control Group.



“With NGRAIN, technicians performed maintenance tasks 25% faster and 22% more accurately.”