

**PILOT TRAINING
OUTSIDE THE COCKPIT**



PROJECT	CH-47 CHINOOK PILOT TRAINING
CLIENT	UNITED STATES ARMY AVIATION CENTER OF EXCELLENCE (USAACE)
KEY OBJECTIVES	<ul style="list-style-type: none"> ▶ OVERCOME LACK OF EQUIPMENT FOR TRAINING ▶ PROVIDE KNOWLEDGE AND VISUALIZATION OF INTERNAL SYSTEMS AND COMPONENTS

CHALLENGE

At Fort Rucker, pilot training includes 159 hours of classroom time focused on systems operation. It is a critical component in pilot training. The knowledge gained helps pilots assess the viability of aircraft in a variety of flying environments as well as in the event of a malfunction so they can determine the best course of action.

“If there is an engine failure, the pilots must quickly determine the cause and whether they can continue fly,” said John Scott, Cargo Branch Chief, 110th Aviation Brigade, USAACE, Fort Rucker. “This information is imperative to pilot training and in combat environments. Pilots need an intimate knowledge of the aircraft they’re flying to successfully complete their mission no matter what the circumstance.”

BACKGROUND

Fort Rucker in Alabama is home to the United States Army Aviation Center of Excellence (USAACE) and is considered the premier helicopter training facility in the world. Responsible for the training of military, civilian and international personnel in aviation, the USAACE supports the Army’s ability to provide combat support and combat service around the world.

Within the USAACE, flight training at Fort Rucker is conducted by the 110th Aviation Training Brigade. The Brigade provides pilot and instructor pilot training for the AH-64A Apache, AH-64D Longbow Apache, CH-47 Chinook, and UH-60 Black Hawk among other aircraft.

The Brigade is responsible for teaching new airmen the skills required to safely and effectively fly a helicopter, and provides training to returning pilots with the desire to learn new aircraft platforms.



CH-47 Chinook helicopter

At Fort Rucker, systems operations is taught in a classroom with instructors using a combination of lectures and hands-on review of equipment. However, instructors were often teaching without the use of the physical equipment in the classroom. As a result, instructors were challenged by the inability to show students the highly detailed and complex aircraft systems. In addition, it was difficult to show students the systems within the context of the airframe.

“It is very difficult – nearly impossible – for students to understand what equipment looks like and where it is located without the aircraft available. And when they finally do work on an aircraft, much of its systems are protected by insulation and cowlings which cannot be removed easily without significant delay,” said Mr. Scott.

SOLUTION

To address these training challenges, Fort Rucker incorporated NGRAIN® interactive 3D simulations — called 3D Knowledge Object™ or 3KO® files — of helicopter systems and components into its curriculum. The 3KO is a highly realistic and interactive 3D simulation that users can freely interact with; rotating, zooming, cross-sectioning and removing and installing parts, receiving real-time automated feedback when mistakes are made. Each 3KO can be repurposed in a variety of applications, including Microsoft Word®, PowerPoint®, Adobe® PDF and HTML pages.



NGRAIN 3KO of CH-47 Chinook helicopter

“We looked at a lot of 3D solutions and NGRAIN is the only one that offers us the ability to reuse, repurpose and evolve our training ... we’ve barely scratched the surface in how we can leverage this technology.”

**John Scott, Cargo Branch Chief
110th Aviation Brigade, USAACE, Fort Rucker**

NGRAIN has delivered 3KO solutions correlating to a range of key subsystems within the CH-47 Chinook helicopter including the Auxiliary Power Unit, Hydraulics System, Axial Pistons Pump Assembly, Power Control Module, Utility Cooler Fan, and Utility Reservoir Depressurization Accumulator.

In addition, the Brigade is using NGRAIN Producer® to update, modify and extend the use of each 3KO. Producer is an easy-to-use tool that enables subject matter experts (SMEs) to produce and modify 3KO solutions. With no previous 3D experience, coding, or scripting required, anyone with basic Microsoft Office experience can create 3D animations and interactive tasks with Producer.

RESULT

Leveraging the uniquely interactive and highly usable NGRAIN solutions, the USAACE is able to overcome a lack of access to aircraft for training. Instructors are not only able to leverage the virtual equipment simulations to help students understand, but the school is able to repurpose, reuse and update each 3D simulation solution as training requirements change. In addition, Fort Rucker is able to share the NGRAIN technology with the correlating helicopter maintenance training programs held at Fort Eustis.

“Since we began using NGRAIN, our students and instructors have been requesting more and more 3KOs so that they can use them outside of the classroom for independent learning,” said Mr. Scott.

“We looked at a lot of 3D solutions and NGRAIN is the only one that offers us the ability to reuse, repurpose and evolve our training. It truly is the modern way – and we’ve barely scratched the surface in how we can leverage this technology.”