Training the Workforce on Modernized Air Traffic Control System

Engagement Profile: Custom Training

Background

The Federal Aviation Administration (FAA) mission is to move US air traffic safely and efficiently. The nearly 35,000 controllers, technicians, engineers, and support personnel of the FAA Air Traffic Organization (ATO) guide more than 50,000 aircraft daily through the national airspace. The En Route division of ATO manages the largest segment of flights under air traffic control—the long leg at cruising altitudes between departure and destination airports. The division's responsibilities include system acquisition and maintenance, staffing, and training at 20 Air Route Traffic Control Centers (ARTCCs).

Catalyst

The automation system at the core of each ARTCC was developed in the 1960s. During the past several years, Lockheed Martin developed the En Route Automation Modernization (ERAM) system—a modern IT architecture framework for air traffic management. ERAM introduced many significantly different tools for ARTCC workers, presenting an obvious need for critical technical training prior to system transition.

Challenge

The FAA sought a multidisciplinary training program to address planned changes in the workplace under ERAM. FAA requirements included the following:

- The program must address the training needs of six job categories representing more than 10,000 ARTCC employees.
- Training assessment and course design must occur while the system is under development and changing frequently.
- Training strategy must minimize travel and non-duty time.
- Given schedule and resource constraints, minimal training time on the new system equipment must be supplemented with ERAM emulations.
- All work must meet the rigorous ISD requirements of FAA Standard 028C.
- A series of additional training products are required to address ongoing system changes.

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Engagement Profile: Custom Training (Continued)

Solution

Prior to initiating the development program, PDRI, a CEB Company, worked with Lockheed Martin to outline the best strategy for achieving the FAA's training goals for ERAM. The approach relied on interactive media instruction (IMI) to emulate ERAM functions for the initial training phases. PDRI conducted training needs analyses on two critical Air Traffic (AT) disciplines and four Technical Operations disciplines:

- **AT disciplines**—Air Traffic Control Specialist and Air Traffic Supervision

- **Technical Operations disciplines**—System Management, System Administration, Hardware Maintenance, and System Security

We then developed a tailored course of instruction for each discipline, applying a blended strategy of self-paced IMI at the learner's worksite, followed by instructor-led classes stressing practice on ERAM equipment. The narrated IMI courses provided additional opportunities to practice using a simulated ERAM interface. We also supported operational tryout classes for each course and developed ERAM user manuals and job aids for the AT positions.

As part of a continuous updating process, we created delta training solutions for specific audiences during the initial phase-in of ERAM at the ARTCCs in 2010 to address multiple system changes. In 2011, the introduction of new ERAM services required web-based training—self-paced interventions accessed by FAA personnel at their worksites.

Outcomes

ARTCC technicians and air traffic controllers were trained for the initial deployment phase, which required minimal learner travel and non-duty time. The blended strategy allowed for just-in-time training that did not interfere with air traffic safety or daily operations. ERAM continues to evolve and expand, and we will remain engaged in training development and delivery for this program through 2014.

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