

CASE STUDY: Design and Usability Analysis of a Complex Training System

Client

United States Navy Training Systems Division

Client's Challenge

The Navy is making a transition to the use of computer-based applications to provide training opportunities for soldiers. With this transition, two challenges have arisen. First, systems must be designed to be as transparent as possible while targeting training objectives. Second, systems must be easy to use. To ensure the training system under development was usable and ultimately effective for training targeted objectives, the following tasks were completed as part of this project:

- Evaluated usability of student, operator, instructor, and maintainer workstations.
- Determined information that must be presented within displays to ensure effective training.
- Developed system improvement recommendations based on evaluation results.
- Determined what training technologies should be used to train targeted task/skill.

Technical Solution

The team reviewed available documentation and worked closely with subject matter experts (SMEs) to develop an accurate and comprehensive understanding of the tasks to be performed. Interviews were conducted at multiple training centers across the US and observations of current tasks were completed to determine (1) areas where training technology could improve performance, and (2) how training technology should be designed to do so.

Expert evaluations and field observations were performed to evaluate the usability and utility

of each system currently used in the training course as well as those under development. Field observations took place at multiple US sites. Results of expert evaluations and observations were used to provide preliminary redesign and training system integration recommendations.

To validate the utility of the redesigned system, a training effectiveness evaluation was carried out. A series of multi-site field evaluations were performed and metrics were developed to evaluate human-system performance. Evaluations focused on determining if system improvements ultimately had a positive effect on training system utility.

Results

By performing interviews and evaluations at multiple sites with multiple target users, the training system was designed to support a wide spectrum of users. This flexibility ultimately reduced overall development costs because a single system can effectively be used to support multiple sites instead of developing separate training systems for each.

Tools/Techniques Used

- Contextual Task Analysis
- Interviews
- Field Observations
- Expert Evaluations/
Heuristics Evaluation
- Metric Development
- Instructor Comment Analysis

Deliverables

- Cue Fidelity Requirements
- System Capability Analysis
- Training System Integration
Recommendations
- Redesign Recommendations