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A Standardized Process for Medical Modeling and Simulation

CHALLENGE

The AFMS Surgeon General needed to standardize its medical modeling and simulation training for better skill acquisition and retention

SOLUTION

ICF developed and staffed a multi-course, leading-edge training program based on unique client needs and best practices

RESULT

Effective, sustainable, and cost-effective delivery of medical simulation training to thousands of medical personnel each year at over 80 sites worldwide

The Air Force Medical Service Surgeon General (AFMS/SG) contracted ICF International in April of 2007 to help manage the integration of leading-edge medical modeling and simulation (MODSIM) into the basic and continuing medical education of the AFMS at all provider levels—with the goal of improving the existing Air Force Medical Modeling and Simulation Training (AFMMAST) program.

With its rapid expansion and distributed nature, AFMMAST allowed more individuals and teams worldwide to be trained in critical medical skills with personnel at each site developing simulation training scenarios and curricula to meet the needs of medical professionals. This success led to increased demand to deploy the training at more sites. ICF addressed this need by working with the client to create a program that would support training expansion while ensuring standardization and improved skill acquisition and retention.

A QUALIFIED PARTNER FOR A FORMIDABLE CHALLENGE

ICF's focus? Designing and implementing standardized processes and training within decentralized operational platforms and difficult-to-navigate command structures. While this presented a formidable challenge, ICF's breadth and depth of experience were uniquely suited to the task. ICF has helped medical personnel achieve critical skills in multiple procedures via multi-dimensional blended medical scenarios, web-based training, and mobile applications to train and evaluate medical providers and staff—for both the U.S. Air Force and U.S. Navy.



Screenshot of the Simulation Operator Basic Course. Coach Victor helps users conduct simulation training.

CHALLENGES

1. Independently operating Medical Treatment Facilities (MTFs)
2. A general lack of total asset visibility
3. Underutilized or inadequately used simulation technologies
4. A lack of consistent staffing to run and maintain new equipment
5. A need for a standardized, validated, and shared training curriculum



SOLUTION

ICF'S MULTI-COURSE, BLENDED LEARNING TRAINING PROGRAM

ICF's solution aimed to train team members with limited medical simulation experience—such as part-time simulation operators at small medical treatment facilities (MTFs). Divided into two courses, the training builds skills around performing simulation using a standardized pre-programmed scenario in a high fidelity simulator (Simulation 101) and then effectively building on this foundational knowledge and skills to conduct simulation training using other simulation equipment (Simulation 201). Rather than an endless outline of “buttonology” that often characterizes vendor training, ICF's solution offers a practical application whereby operators learn not only how to perform these operations but why they are performed and how the equipment can be used to accomplish simulation's larger goal—training medical professionals to be safer and more effective practitioners.

THE BASELINE ASSESSMENT: UNDERSTANDING RESOURCES, CAPACITY AND NEEDS

Before designing the solution, ICF began with a baseline gap assessment and analysis to get a clear view of the existing program's resources, capacity and needs—helping experts better understand what new capabilities were necessary and how best to implement them. Using a combination of site visits, surveys, and data collection tools, ICF consultants recommended a range of changes, including policy changes, infrastructure development, and standardized



The multi-mode approach to training.

DESIGNING AND DEVELOPING THE SIM 101 AND 201 COURSES | FOUR PHASES

A technique used to streamline analysis and design phases of the project. All key stakeholders met and agreed on a path forward.

Once design documents and storyboards were approved, the WBT modules and mobile learning applications were developed.



A phased approach that started with a proposed graphical user interface (GUI) and content outlines, then became a prototype, and finally a storyboard of all course modules.

The WBT and mobile learning applications were tested with the target audience before the final files were provided to the AFMMAST.

procedures for organization-wide adoption of the new MODSIM curricula. Putting assessment into action, ICF:

- Recruited, hired, and placed simulation center coordinators and simulator operators across the AFMMAST sites
- Incorporated standard taxonomies and classifications for designing, developing, conducting, and evaluating simulation-based training operations across the AFMS
- Rolled out a standard curriculum-development process, a broad set of simulation training templates, and a full-array of associated learning evaluation tools

A MULTI-MODE APPROACH TO TRAINING SUCCESS

ICF's program utilizes multiple training methods to address learning from different angles. Web-based training and mobile learning applications provide "just-in-time" information, while print-based self-study aids provide logical flows and contain increasingly advanced content focused on the use and maintenance of simulation equipment and the management of simulation centers.

Web-based training modules (WBT) provide on-demand skills acquisition

Convenient, online training enables learners to navigate through training modules with the assistance of an experienced simulation operator who explains key concepts and provides real-life examples. Scenario-based exercises help contextualize information with considerations for how to apply learning to individual simulation centers. Self-assessments allow learners to determine their proficiencies in key areas, all online.

Self-study aids fulfill specific training gaps

With self-guided study modules, learners select a piece of medical simulation equipment and practice using it, all the while achieving key learning objectives. Completion of both web-based and self-study modules is followed by a capstone project in which learners develop a simulation scenario to meet a key training gap at their site. Feedback from the AFMMAST Central Program Office enables refinements of scenarios and improvement conducting scenarios with medical professionals.

Mobile learning applications provide on-the-job answers

ICF developed three mobile apps designed to augment the full training curricula. Keyword search functions and information databases enable learners to access tutorials and images to answer specific questions while on the job.

RESULT

EVALUATING THE PROGRAM: BENCHMARKS OF SUCCESS

Following a successful roll-out, ICF consultants used their expertise in advanced research to provide the AFMMAST program with a detailed program metrics model designed to measure and report the program's training return on investment (ROI) and cost-benefit analysis (CBA). Future iterations of this metrics model are also expected to report on improvements in patient outcomes, helping ICF's client to measure not only the monetary value of the program, but also its success in enabling better medical care.



LOOKING AHEAD: CUTTING-EDGE MODSIM SOLUTIONS FOR MILITARY CLIENTS

ICF continues to dominate the cutting edge of MODSIM training for government clients. Currently, discussions are ongoing with the Air Force to consider implementing this training into the standard curriculum required for all Air Force officers. In addition, ICF is now supporting the U.S. Navy Medical Simulation Center efforts with a training curriculum and multi-dimensional blended medical scenarios using Advanced Human Patient Simulators and Medical Part Task Trainers to train and evaluate medical providers and staff. ICF staff provides state-of-the-art medical training to Navy and Marine Corpsmen at six Navy medical simulation training centers at Naval and Marine bases across the U.S.



Mobile application to provide on-the-job answers

To learn more about how ICF International provides training to assist federal and state agencies in preventing, detecting, and responding to global health security issues, visit: icfi.com/GHSecurity

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About ICF International

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