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# TRAINING AND TECH MANUALS

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IMPROVING COST EFFICIENCY  
AND USER EFFICACY

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# INTRODUCTION

Currently in the military realm, **training** and **tech manuals** are delivered as a two-pronged approach. Tech manuals are designed to familiarize, educate and guide the end user at both the operator and maintenance level. Conversely, training and specifically interactive courseware, ranging from Levels 1-4 dependent upon the level of interactivity, is designed to supplement the tech manual.

Where once the systems support, global fielding, training product development, technical manual development and logistics support were all provided utilizing a total systems acquisition strategy, in recent years several of the military services have realized that the strategy of procuring product support and logistics on a single contract has led to efficiencies and cost savings. These cost savings are most evident in coupling training and tech manual development.

To date, requirements and acquisition strategies for training and tech manuals has no requisite in place stating that the individual deliverables are to be provided by one contractor. Thus, the desired outcome in a two-contractor approach is the delivery of a cohesive and comprehensive product. This is not always attainable, and if not executed properly can be costly.

Advances in technology and the introduction of high-fidelity 3D graphics, animation, video and multi-touch, pressure sensitive tools in the last decade has generated thoughtful discussion regarding the feasibility and cost efficiency of utilizing the elements of both interactive courseware and tech manuals into each product deliverable. This method offers the operator or maintainer not only the critical steps to complete the task but also a simulated visual and touch interaction with 3D versions of the hardware. In addition, the adoption of developing multiple products utilizing the same source materials and an integrated team significantly reduces the production cost.

As a government contractor, JHT is intimately familiar with providing innovative training and technical documentation solutions having produced over 10,000 hours of interactive multimedia instruction (IMI) development and a multitude of electronic technical manuals (ETM) and interactive electronic technical manuals (IETMs) for the U.S. military. JHT has a solid foundation at CECOM providing product support and training materials for FBCB2, DCGS-A, JBC-P and now PM MC and PdM MN.

# PROBLEM STATEMENT

The majority of Army commands are facing similar **cost** and **efficiency issues** with providing soldiers comprehensive training and technical manual solutions. The key challenges they face are:

- Duplication of efforts in developing courseware and manuals interdependently
- Improving content management with IETM part changes
- Shorten development to field delivery time

# SOLUTIONS AND CASE STUDIES

## Distributed Common Ground System (**DCGS-A**) Aberdeen Proving Ground

JHT was contracted by prime contractor CACI to spearhead the training and technical documentation development effort for DCGS-A. This program is essentially a framework for the military services to develop a common, interoperable family of systems to task, post and process, use and disseminate Intelligence, Surveillance, and Reconnaissance (ISR) sensor data and intelligence products. Final deliverables included training support packages, software user manuals, and redevelopment of training materials to align with TRADOC standards.

Two key tactics were employed by JHT to ensure that all technical manuals and courseware were developed at maximum cost efficiency:

- Data gathering, validations, and verifications for both the tech manuals and training were completed concurrently – saving time and money
- All key personnel were cross trained on development. Instructional System Designers were introduced to documentation standards and taught to code and edit a manual, while Tech Writers were instructed on training product development and the fundamentals of courseware design.
- Once we combined training and technical data management teams, we were able to add innovations to each interactive product – interactive tech manuals included 2D and 3D animations that were developed as part of the courseware and courseware included imbedded tech manual reference material where applicable.
- As a result of integrating the team we were able to reduce team size from 19 FTEs to 11 FTEs, significantly reduce travel costs and shorten production time resulting in a cost savings to the government of \$5.6M across the three year period of performance.

# SOLUTIONS AND CASE STUDIES

## Product Manager (**PdM**) Mission Network (**MN**) Aberdeen Proving Ground

At present for PdM MN, JHT is developing four new operator/maintainer IETM publications and providing updates, revisions and reformatting to MIL-STD for an additional 41 publications. The suite of deliverables includes a range of Army publications, namely: IETMs, Technical Bulletins, Software User Manuals, and Software Maintenance Manuals.

JHT uses **IADS4** as the platform for all PdM MN deliverables. It is used in conjunction with Arbortext Editor to build, edit and view the IETM throughout XML development. The user interface and navigation within the platform are intuitive and any revisions completed in the RPSTL are reflected in the simulation.

One of the end user platforms for delivery of the technical data is the GETAC Rugged Laptop with a touch enabled monitor. The use of this laptop gave us the opportunity to insert innovation and increase the effectiveness of the IETMs by including enhanced 3D graphics and multi-touch gestures using the **proxSIMity® Advanced Touch System**. ProxSIMity offers a more creative approach for interacting with touch screen devices (smartphones, tablets, etc.) by incorporating realistic, pressure-sensitive movements to complete tasks. Combined with real-time physics, this technology delivers a more intuitive user interaction with technical data.

proxSIMity is the result of a Small Business Innovation Research Grant. Since the government sponsored the research, the SBIR Program Phase III Data Rights affords **any government branch** the option **to sole source** a requirement that includes touch-based gestures.

The PdM MN tech manuals include a demo (fly through) mode similar to a YouTube "how-to" video and an interactive mode. The interactive mode contains a simulation of the system that guides the student through task steps required by the technical manual. Interactive mode also includes:

- A Parts Tool List
- A Navigation Toggle and Return Camera
- A Task Progress Bar
- Audio Sync with Task Completion (door closure, fan blowing, etc.)

# SUMMARY

The technology advances with electronic tech manual development (including 3D graphics, multi touch and pressure sensitive gestures, and animations) have demonstrated the feasibility and cost efficiency of utilizing the elements of both interactive courseware and tech manuals into each product deliverable. This approach is achievable on large 55" touch screens, but may be more desirable for field use with ruggedized tablets or mobile devices.

The Army CECOM program areas highlighted within this white paper offer a glimpse into the feasibility of cost and user efficiency as it relates to concurrent training and tech manual development, while also addressing current challenges faced by military program managers.

The sole source acquisition option afforded by the SBIR Phase III Data Rights clause presents the military with an exceptional tool to overcome what may be one of the most challenging hurdles - expediting the contract award process. Use of the sole source channel provides an avenue to shorten the development to field delivery time and ultimately prepares the soldier for mission success.

## **ABOUT JHT INCORPORATED**

JHT Incorporated, a service-disabled, veteran-owned small business founded in 1990 by retired U.S. Air Force pilot James E. Jardon II, is a privately held company dedicated to developing training programs for the Department of Defense and affiliated agencies. Our sustaining mission is to enhance our customer's success by delivering innovative and cost effective solutions in the areas of simulation and training and technical data management.

## **proxSIMity® Advanced Touch System Contracts**

- Navy: A3C4I Maintenance Trainer
  - Sub to Northrop Grumman
- Army: Product Manager (PdM) Mission Network (MN)
- Commercial: GE Healthcare (various medical diagnostic hardware)

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