AIA /ATA/ ASD
S1000D Users Forum

"S1000D: Realizing the Benefits of Integrated Logistics Support"

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Global Hawk - Realizing S1000D

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AEROSPACE INDUSTRIES ASSOCIATION

Air Transport Association

Global Hawk - Realizing S1000D

- Global Hawk Overview
- Global Hawk Technical Data
- Technical Order Manager Roles, Responsibilities and Requirements
- Technical Order Development Approach
- S1000D Impact on Technical Order Management Authority (TOMA) Roles and Responsibilities
- Advantages and Disadvantages
- Summary
- Questions

Global Hawk Overview

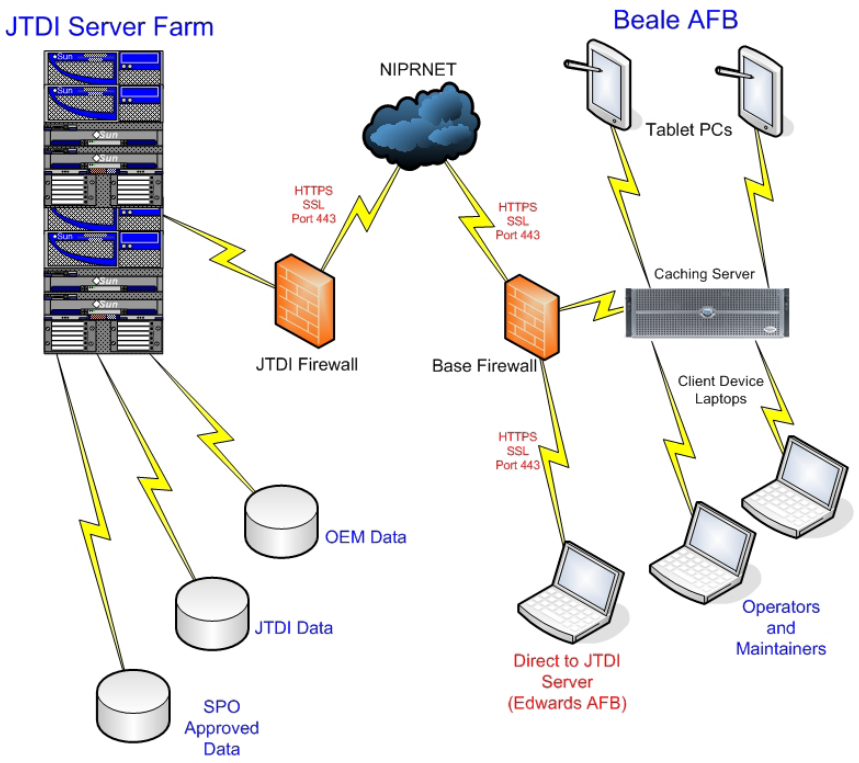
- Global Hawk started out as a Aerospace Concept Technology Demonstrator (ACTD)
  - Fully Autonomous Unmanned Aerial Vehicle
  - No Initial Logistics Supportability Analysis
  - Accelerated from development straight to combat operations
  - Path Finder Program
  - Concurrently executing production , sustainment and development
  - Spiral development approach
  - Block 10, 20, 30 and 40 with different Sensor Suites
  - Low Rate Initial Production
  - Normalizing sustainment

Global Hawk Technical Data

- Publication Types
  - S1000D Operations and Organizational Maintenance (IETM)
  - ATA – Commercial Engine Manual (IETM)
  - Commercial Manuals – Various PDF
  - Mil-Spec Manuals – Various PDF
- Publications Delivery System
  - Joint Technical Data Integration
- Viewing System (IETM)
  - SpecView IETM

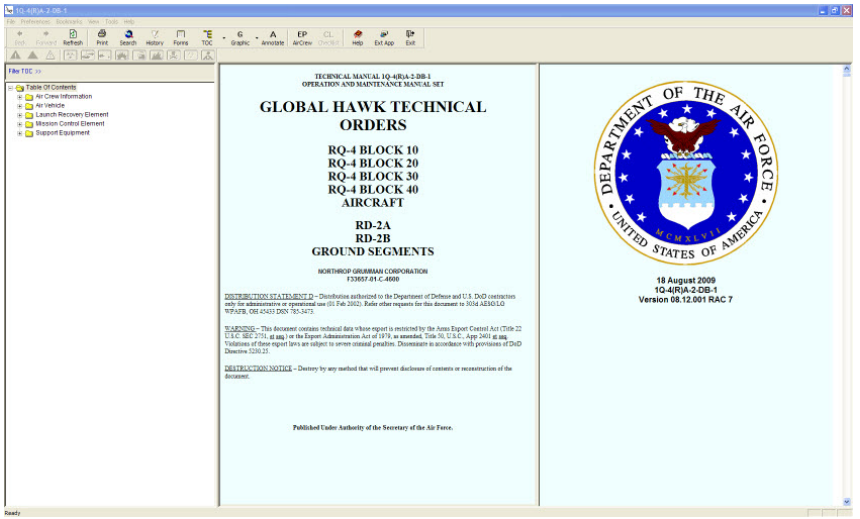
Publications Delivery System

- Joint Technical Data integration
  - Provides an all encompassing Tech Data and Engineering Web-site
  - Supports Depot Level requests (107's) and publication change request workflows (AFTO Form 22's)
  - Techcam is a collaborative tool used by leadership, operators and maintainers
  - Allows the data to be pulled to user device (anywhere in the world)
  - Citrix view from any web browser without downloading the publications



IETM Viewer

- Viewing System
  - Display of S1000D data
  - Display of non-S1000D data
  - Allows ease of navigation of the Library
  - Applicability filtering
  - Special display modes
  - Wire Trace capability
  - Provides flexibility to individual users



Technical Order Manager Roles, Responsibilities and Requirements

- Creates contracting requirements for development of Technical Orders
- Communicate requirements to development contractor
- Ensure Verification is completed IAW Air Force guidance
- Deliver a publication that can be reviewed, utilized and commented on by multiple organizations simultaneously
- Allow feedback to contractor for technical publication incorporation
- Facilitates Technical Order Library Management
- Track multiple changes for specific retrofit actions
- Distribute Technical Orders to the end user (worldwide)

Technical Order Development Approach

- Initially started with Mil-Spec publications
  - Government supplied materials in beta testing for critical manuals
  - Did not have schedule/budget to test and provide fixes and feedback
  - Paper infrastructure did not meet vision of a total digital environment
  - MIL-Specs did not have a viewing or delivery system
- Decision to convert to S1000D
  - Analysis of MIL-Spec vs. S1000D: Schedule, Cost, Performance, Spec Supportability, Technical Support
  - Result was less risk with S1000D (Schedule was paramount)
  - Positive outcome for Global Hawk

Technical Order Development Approach - S1000D

- Cost comparison completed
  - Savings of approx 500K in initial approach savings
  - Development was already 25% complete to the Mil-Spec
  - Took into account estimated and actual costs
- Life cycle cost savings for reusing data
  - Difficult to determine actual dollar value
  - Eliminated duplicate content common in book based publication
  - 2,000+ reused content items used in thousands of data modules
- Tools
  - Use established F-117 viewer
    - Modified to add functionality
  - Joint Technical Data Integration used for delivery
    - Existing DoD program

S1000D Impact on TOMA Roles and Responsibilities

- Creates contracting requirements for development of Technical Orders
- Communicate requirements to development contractor

S1000D simplifies these processes:

- Does not have circular references to other specifications
- Compliant with current accepted program standards
- Custom tool sets are not required to create content

S1000D Impact on TOMA Roles and Responsibilities

- Ensure Verification is completed IAW Air Force guidance
- Deliver a publication that can be reviewed, utilized and commented on by multiple organizations simultaneously
- Allow feedback to contractor for technical publication incorporation

S1000D supports these processes:

- Verification at procedure level without having a completed publications
- Supports limited asset availability
- Front Matter and other boiler plate information is not duplicated
- Applications and other processes assist in display and tracking

S1000D Impact on TOMA Roles and Responsibilities

- Facilitate Technical Order library management
- Track multiple changes for specific retrofit actions
- Distribute Technical Orders to the end user (worldwide)

S1000D simplifies this process:

- Distribute all S1000D data as a single publication that supports several different platforms (Block 10, Block 20, several variations of two separate Ground Segments)
- Single publication can be updated incrementally and can include data in various stages of Validation and verification
- Can deliver a modification that would normally impact six different paper publication as a few dozen modified files simultaneously with a retrofit order and support before and after applicability with the same data set
- Using a S1000D IETM/P and JTDI, can distribute all publications overnight to all users around the world

Advantages - S1000D

- Technology - Uses current open standards technology that are supported by industry
- Commercial tools support the standards
- Ease of delivery (database vs. multiple publications)
- Process simplified by referencing a single specification
- Generic, Country, Service, and Project specific rules can be layered to achieve common implementations
- Functionality matrix defines functionalities
- Common definitions help understanding of functionality and costs

Advantages - S1000D

- Legacy data can be represented in S1000D
- Data can be neutral, which allows transferability between various software tools
- Distribution - Electronic publications distributed quickly
- Commonality - Standard structure supports familiar and efficient data creation and presentation
- Interoperability and cost savings have tremendous potential

Disadvantages - S1000D

- Can be confusing
- Guidance Lacking – DoD and Service guidance is critical to achieve interoperability potential
- Legacy Requirements – Drive blended approaches that impact efficiency and interoperability
- Acceptance in DoD – Not quite there, but close!

Summary- S1000D

- Global Hawk is an unmanned aerial vehicle
  - ACTD
  - Deployed to support the war fighter
  - Uses a digital environment to create, distribute and display Technical Orders
    - S1000D, JTDI and Specview
- Program converted from traditional Mil Spec to S1000D
  - Saved schedule and cost allowing for accelerated delivery
- S1000D supports Technical Order Manager requirements
- S1000D advantages far out weigh the identified already in work disadvantages

Intro information

- Name: Donald Shontz
- Retired in 2003 from the United States Air Force at the rank of E-7 (MSgt),
  - 15 yrs as a F-15 Avionics Technician
  - 5 yrs as a Logistics specialist
- Currently the Lead Global Hawk Technical Order Manager at the 303d AESG/SYL, WPAFB, Oh.