Human-Systems Integration (HSI)

Issues in Standardization for Acquisition Reform

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Briefing Objectives

◆ Discuss Comprehensive HSI Consideration
  - Required For Effective Cost Reductions
  - Includes Human Performance
  - O&M Cost Reduction
    - Staffing
    - Skill Level
  - Operations And Mission Effectiveness

◆ Other Considerations
  - Development versus O&M Cost
  - Metrics
Human-Systems Integration (HSI) Components

Human-Systems Integration (HSI)

Human Engineering (HE)
- Mission Analysis
- Task Analysis
- Allocation of Function

Operations Concept (ConOps)
- Driving Requirements
- Staffing
- Operational Procedures
- Internal/External Interfaces

Related Issues
- Personnel Safety
- Documentation
- Training

Human-Machine Interface (HMI)
User Interface Hardware
- Controls/Displays
- Hardware Design
- Workstation/Workplace Design
- Ergonomics

Human-Computer Interface (HCI)
User Interface Software
- Look & Feel
- User Interface Dialogue
- Data/Information Displays
- Dialogue Navigation

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Human-Computer Interface (HCI) Analysis

- Levels of Standardization
  - GUI Look & Feel
    - X-Windows/Motif
    - - or - Windows NT
    - - or - Win32
    - CDE
  - GUI Style Guidance
    - TAFIM Volume 8
    - JTA HCI Style Guide
    - DII COE Style Guide
  - Screen Design(s)
      - Covers satellite command and control only
      - No equivalent for range operations
  - “Program-specific” Style Guide
Development Versus Lifecycle Cost

Level Of Standardization

- Lifecycle
- Development
- $ 

Look and Feel
- Standard Displays
- Standard Displays, Procedures, and Architecture

Standard Displays, Procedures, and Architecture
Measurable Criteria For HSI Standardization

- Fewer Personnel
- Reduced O&M Costs
- Reduced Training Time And Complexity
- Reduced Software Development And Maintenance
- Fewer Human Errors
- Greater Mission Availability And Product
- ...
Conclusions (1 of 2)

- **HSI Often Is Not Sufficiently Specified**
  - Acquisition Reform’s Focus
    - Reduce the number of standards on contract
    - Use commercial Standards
  - Many HSI standards are only found in military standards

- **Human Performance Usually Is Not Specified**
  - Is Difficult To Specify And Measure

- **HSI Standardization Is A Hot Topic**
  - Efforts To Standardize Must Be Fully Supported
    - For Example: DoD - JTA and USAF - HMICCB
Conclusions (2 of 2)

- **Efforts Required For HSI Standardization**
  - Clearly Specify Standardization As System-Level Requirement
  - Fully Represent HSI Issues In Future Procurements

- **Develop Measures Of Success**
  - Such as:
    - Fewer Personnel
    - Reduced O&M Costs
    - Reduced Training Time And Complexity
    - Reduced Software Development And Maintenance
    - Fewer Human Errors
    - Greater Mission Availability And Product
  - Don’t Guess - Measure The Measures!