— Working Group Session Summary —

Human Systems Integration: Tools and Techniques

Session 4B

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GSAW2007
Ground System Architectures Workshop

Session Goals

- Background:
  - Space systems acquisitions have inherent human systems integration challenges (user integration accounts for 40-60% of lifecycle costs):
    - Increasing information demands on operators/maintainers
    - Requirements for operators/maintainers to perform jobs in new/different ways
    - Continuing pressure to reduce manpower
- Goals:
  - Discuss perspective of key stakeholders responsible for acquiring, developing, operating and maintaining systems
  - Understand human factors tools and techniques that can be used in the development of operational systems

Presenters/Panelists

- United States Air Force (USAF)
  - Capt. Denise Hadley, 1st Lt. Florencio Mendoza
- United States Army
  - Mr. Craig Bergquist
- Northrop Grumman
  - Mr. Jose Fernandez, Mr. Butch Lucero, Ms. Janeen Sharma, Ms. Jennifer Rousey, Mr. Lee Harkless
- The Aerospace Corporation
  - Mr. Norman Goyette

Presenters/Panelists

- Paper: Is less more when using and creating checklists?
  - Graphical User Interface (GUI) assessment checklists
- Paper: Transportable Mobile System: Amputation by Antenna (Almost)
  - Need for operational considerations in design
- Panel Discussion: Views from participants in an Operability Working Group.
  - A realistic look at Operability Working Groups via the viewpoints of panel members with experience in developing, conducting, and participating in operability working groups

Key Points

- Addressing humans in the design often occurs too late in the process – “Humane Engineering”
  - Should start in the requirements phase
- Human factors engineering expertise required at both the contractor and government team
- Need to develop adaptable human factors tools that can be used throughout the development lifecycle – dynamic checklists
- Successfully incorporating user into the design requires commitment by multiple stakeholders
  - Management buy-in essential
  - Need “enlightened” individuals to drive process

Key Points (cont'd)

- Successful Operability Working Groups
  - Have clearly defined goals as well as an approved charter
    - Stable representation
    - Document agreements and action items
  - At the outset, approve/define CONOPS, operator roles and responsibilities
    - Resolve different interpretations (contractor, operator)
    - CONOPS may differ by sites (fixed vs. mobile) and user communities
  - Address full range of human factors concerns including: Staffing, Hardware, Software, Procedures, Training

Key Points (cont'd)

- Successful Operability Working Groups
  - Keep focus on operability issues
    - Minimize discussions on programmatic issues
    - Address topics in user terms
  - Minimize stovepiping
    - What is good for one operator position may not be appropriate for all operator positions in system

Key Points (cont'd)

- Human Performance Testing (operability assessment) –
  - Must be conducted by unbiased HFE third parties
  - Select representative users for full range of operator experience - Novice to experienced
  - Piggy-back on existing testing where possible
  - Test under off-nominal conditions most likely to expose operability issues
- Government must ensure appropriate human factors related requirements, products, standards and specifications are on contract

To Sum it Up

Golly-gee-whiz technology is great, however…

If the human can't operate it, maintain it, and support it, it's no good.

Remember the warfighter!!!!!