Tools and Methodology for Effective Human System Integration

S&T Campaign: Assessment and Analysis
Tools, Techniques, and Methodologies
Human Systems Integration

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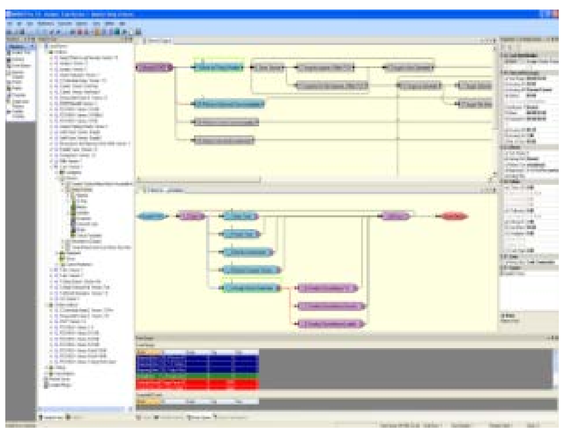
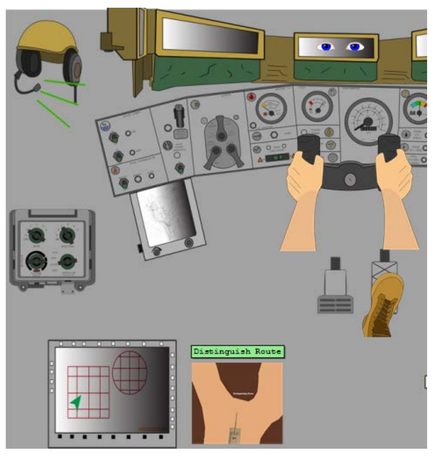
Research Objective

- Assess impact of system and Warfighter capabilities on mission by applying human system integration (HSI) modeling and tools. Develop and apply analytic techniques to produce effective models capable of predicting human, system, and mission capabilities.





Human Performance Modeling Tool (IMPRINT – Pro)

Challenges

- Need to better integrate Systems Engineering Tools with Human Performance Modeling tools early in the acquisition cycle.
- Requires an understanding of the mission profiles, Warfighter tasks, controls, and displays.

Model results showing workload over time, operator performance, and mission/function/task performance

ARL Facilities and Capabilities Available to Support Collaborative Research

- System Assessment and Usability Laboratory
- The Improved Performance Research Integration Tool (IMPRINT - Pro), Command, Control, Communications-Techniques for the Reliable Assessment of Concept Execution (C3TRACE), and Job Assessment System Software (JASS) are state-of-the-art HSI software tools that:
  - Help set realistic system requirements.
  - Evaluate the capability of available manpower and personnel to effectively operate and maintain a system under environmental stressors.
  - Simulate the human components of future missions to identify Manpower, Personnel, and Training related capability gaps.
  - Identify areas to focus test and evaluation resources.
  - Quantify HSI risks in mission performance terms to support milestone review.
  - Predict operational availability based on maintenance and logistics concepts.
  - Evaluate human impacts on operational performance metrics and situational awareness.

Complementary Expertise / Facilities / Capabilities Sought in Collaboration

- Alternative Human Performance Application tools to evaluate design alternatives and impacts on autonomous system teaming and mission performance.
- Expand HSI program efforts to identify requirements and theories for improving system design early (Pre Milestone B).
- Expand a multi-system and task approach to integrate human considerations into system of systems.
- Increase Transition Partners that now include PMs, G1, ATEC, USMA, Johns Hopkins, NSRDEC, NPS, DOD and Contractors.
- Increase collaboration among the HSI domain agencies.