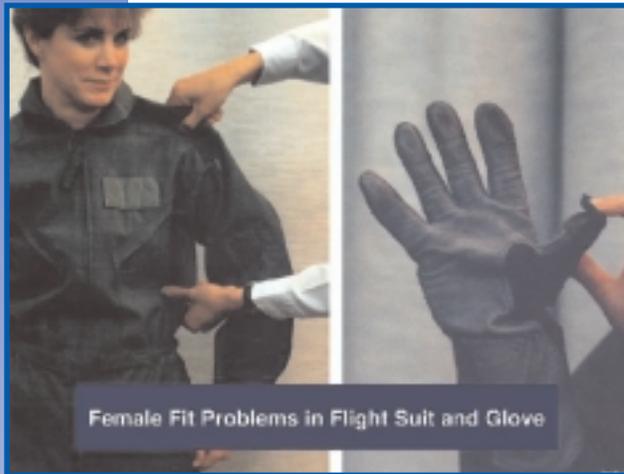




# ASC ENGINEERING FACT SHEET

... AN ENGINEERING SUCCESS STORY

## Human Systems Integration in Systems Acquisition



### DESCRIPTION

System design involves numerous trade-offs in achieving cost, schedule, and performance requirements. Since human systems integration requirements are not always as well defined as typical hardware or software configuration items, their significance in the design process can be often overlooked.

### SUMMARY

#### PROBLEM:

- In the weapon systems development process, consideration of human capabilities and limitations is often overlooked. The aircrew and maintainers are often given less consideration when balancing constraints for weight, cost, and performance. Figure 1 depicts a representative female aircrew member demonstrating ill-fitting flight suit and gloves, both of which were designed for males.

#### SOLUTION:

- The Crew Systems Branch of ASC/EN combined efforts with the recently established Human Systems Integration Office at Brooks AFB. The two organizations are working together to ensure human-centered design is incorporated throughout the design process.

Lack of human systems integration considerations, however, can have significant adverse impacts on pilot or operator performance as well as on aircraft maintainability. These factors may be reflected in decreased aircraft survivability, reduced aircraft supportability, and longer turnaround times.



F-22 mockup evaluation

The F-22 cockpit, for example, was designed to accommodate a much broader pilot population than current aircraft. Figure 2 depicts one of the mockup evaluations conducted during F-22 development.

Human systems integration (HSI) involves incorporating human factors requirements

throughout the development cycle of the system or subsystem. Operational requirements documents are reviewed for human systems integration requirements prior to publication. HSI informational briefings are provided to managers to increase their awareness of how HSI can impact their programs. Managers are provided HSI points of contact and offered an HSI program review to help them assess where HSI can benefit their program. System program offices are encouraged to request human factors support for their programs as part of the engineering development process. ASC/EN provides HSI expertise to a wide variety of acquisition programs and weapon systems throughout their life cycle.

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