

The Human Factor: Enhancing Usability in Complex Systems

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One crucial aspect of systems engineering is the critical interplay between humans and technology. My recent research, titled "Management of Operational Usability Requirements: The Key to Saving Resources and Good Performance of Military Materials," underscores this point. While this research focuses on the Brazilian Army, its findings and recommendations have broader implications for the development of complex systems across various engineering disciplines.

The study highlights an opportunity for improvement within the Brazilian Army's material's lifecycle process, particularly in incorporating usability considerations early in the design phase of military material systems. This aligns with the core principles of Human Systems Integration (HSI), a critical initiative championed by the International Council on Systems Engineering (INCOSE).

HSI emphasizes the integration of human factors throughout the system lifecycle, recognizing that successful systems must be both technologically advanced and user-centered. This approach has yielded significant benefits in various domains. For instance, in healthcare, HSI has led to the development of intuitive medical devices that minimize user errors and improve patient safety. In aviation, HSI has been instrumental in designing cockpit interfaces that enhance pilot situational awareness and decision-making.

By integrating HSI principles into the design, development, and acquisition of military material systems, the Brazilian Army can enhance the usability and effectiveness of its equipment. This involves a systematic approach that considers human capabilities and limitations throughout the system lifecycle.

The role of systems engineering is paramount in this endeavor. Systems engineers can provide a holistic perspective, ensuring that all system components, including the human element, are seamlessly integrated. By addressing usability concerns early in the design process, the Army can optimize resource allocation and improve the overall performance of its systems.

In conclusion, this research serves as a valuable reminder of the importance of prioritizing usability in the development of complex systems across all domains. By embracing HSI principles and adopting a systems engineering approach, we can enhance capabilities, improve the user experience, and ensure the effectiveness of systems in any field. Whether it's a military system, a consumer product, or a healthcare technology, considering the human element throughout the design and development process leads to better outcomes for everyone.