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## Joint HSI Considerations in a UAV System of Systems

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Abstract: Historically, Service human systems integration (HSI) communities have not coordinated and shared acquisition program HSI studies, management lessons, or research findings. Lack of coordination between Service HSI communities during system development has not been an issue in DoD because the Services' battle space environments and warfare systems were very different. However, this significantly changed with the arrival of systems that support all Services (e.g. UH-60s), an ever-expanding range of integrated electronic networks and equipment that are essential for all Services, and the increasing overlap of the battle spaces. In addition, the new DoD acquisition policy and guidance (DoD Instruction 5000.2, 12 May 2003) emphasizes the need for joint coordination and joint concept exploration. It strongly encourages the development of new materiel under a system of systems strategy. Consequently, it is imperative that the Service HSI communities coordinate their efforts in these large, multi-Service, system-of-systems acquisition programs that cross over the traditional Service boundaries. Moreover, HSI leaders must learn what effective consideration of HSI means in a system of systems approach where the key mechanism used to control essential features of the system is the rule set of the overarching system architecture. The HSI communities need to learn to coordinate with each other to identify important HSI issues, risks, and opportunities. They need to work with each other to create key HSI constructs and development rules and get these integrated into the system of systems architecture. They must look for and create situations where a standard module for human control of the mission system (human-control-interface module) can be widely used as a standard system component across many platforms. Success in creating a small set of standard human-control-interface modules with large-scale use of each would enable the HSI community to jointly explore human performance improvement options and potentially powerful joint lifecycle cost saving actions. Moderate investments could bring large returns. For example, with only a few standard human-control-interface modules to manage, the joint HSI community would be able to establish a spiral development strategy for each managed module and with relatively small R&D investment dollars conduct design actions to improve the human performance associated with the module and thereby the performance of a wide array of force systems. Force performance would grow through incremental improvements to the human performance associated with the module. Additionally, large-scale use of a standard human interface module by many platform types across multiple Services, could lead to joint Service training strategies, large-scale joint modular training systems (including embedded training), and joint recruiting and personnel management strategies that deliver trained, qualified personnel at reduced costs.