Executive Summary

Integrated Sensor System Open System Architecture (ISS OSA)

PNUM 31 and 32

Background: The ISS OSA Program is developing standards, recommendations, and guidelines for use in the area of Integrated Avionics Sensors. The activity has consisted of two segments to date: OSA1 began in June 1996 and was completed in December 1996. OSA2 began in June 1997 and will complete in December 1997. ISS OSA activities are the cooperative and combined efforts of the Boeing and Lockheed Martin ISS teams.

OSA1 Summary: The ISS OSA activity has been a Team effort with the major players in the development of the Joint Strike Fighter (JSF) Integrated Radio Frequency (RF) Electronics working very cooperatively. OSA1 concentrated on doing the background work to develop framework that will lead to the greatest affordability gains for an ISS OSA. Studies addressed a number of topics to prioritize and maximize the standardization effort. Major accomplishments of OSA1 included:

- The Team examined the Boeing (at the time, McDonnell Douglas) and Lockheed Martin ISS architectures to develop a common functional partitioning identifying interfaces for potential standardization.
- The Team examined the Life Cycle Cost (LCC) and Supportability aspects of an OSA in the context of integrated RF. Concentration was on quantifying the LCC of an OSA in the Engineering and Manufacturing Development (E&MD) and Production phases and qualifying the LCC in the Operations and Support program phase.
- The Team assessed the effects of new technology to determine likely evolution in the ISS architecture. Understanding how ISS may change is key to laying the right foundations now. Simply developing a stack of specifications and standards does not address the goal of maximizing affordability. We refer to this study as architecture evolution.
- The Team performed a preliminary assessment of the business issues associated with OSAs.
- The Team examined the process by which standards are developed by the Institute of Electrical and Electronics Engineers (IEEE) and Society of Automotive Engineers (SAE).
- The Team examined the process used by the commercial airline business in developing de facto standards which can then be adopted by a recognized standardization body.
- The Team developed a draft format to be used for standards. This format or characteristic baseline is consistent with IEEE and SAE.
- The Team developed a plan for further standard development in OSA2.
- The Team briefed our results to the Principal Deputy Under Secretary of Defense for Acquisition and Technology.

OSA2 Summary: OSA2 is building on the strong foundation laid by OSA1. Specific activities include:

- We are continuing and expanding the LCC and Supportability studies. Particular emphasis is on quantifying the LCC savings potential of an OSA in the Operations and Support program phase.
- We are continuing the architecture evolution study. OSA2 is updating the technology assessment and is expanding the study to evaluate the effects of adding new functions to ISS. The results from this study ensure that the OSA developed now will accommodate future technology and requirements.
- We are continuing and expanding the OSA business study. The business concerns of all participants must be considered for an OSA to be workable. Our ISS Team covers the range from the government, to weapon system primes, to avionics suppliers.
- We are concentrating on the development of Standards. Four task groups have been assigned to develop de facto draft standards that will then be submitted to IEEE or SAE for adoption. Several members on the ISS OSA Team have extensive experience with international standardization bodies.

OSA3: OSA3 will provide for coordination of standards at a modest pace while continuing OSA coordination with the Joint Strike Fighter program and studies on LCC, business issues, and architecture evolution.