

Executive Summary
Portable Operating System Interface (POSIX) Ada95 Bindings for Sockets
and X/Open Transport Interface (XTI)
PNUM 3A and 3B

Background: Communications play a key role in the new technological advances being developed for the military. Standardization of communication interfaces in an open systems architecture enhances interoperability of military applications as well as providing up-to-date technology that is portable across multiple platforms. Ada95, as a software development and generation environment available to military application developers, benefits by having bindings to commonly used networking interfaces like Berkeley Software Distribution (BSD) Sockets and XTI. The efforts below promote POSIX standardization of Ada95 bindings to sockets and XTI.

The primary goal of this effort is to specify and prototype Ada bindings to the sockets and XTI networking interfaces. These bindings will become extensions to The Institute of Electrical and Electronics Engineers (IEEE) Standard 1003.5b Ada Language Interfaces. The Ada bindings are based on the C language specification defined in POSIX 1003.1g Protocol Independent Interfaces (PII).

Objectives:

Promote POSIX standardization of Ada95 bindings to Sockets and XTI: This effort promotes POSIX standardization of Ada95 bindings to BSD sockets and XTI. Lockheed Martin and Naval Undersea Warfare Center (NUWC) are actively participating in the IEEE POSIX 1003.5c working group to assure the completion of this standardization effort. Review the emerging DoD Joint Technical Architecture (JTA) plan and, as needed, promote POSIX 5.c for inclusion into the JTA. Task personnel perform leadership roles at various POSIX meetings.

POSIX 1003.5c Ada95 BSD Sockets Implementation: This portion of the project produces a prototype implementation of the Ada95 bindings to BSD sockets and prototype implementation of XTI specified in draft IEEE Standard POSIX 1003.5c, using methods consistent with a research/prototype approach. The prototypes will be integrated with the Florida State University POSIX 1003.5b Ada implementation and runtime software (FLORIST). Requirements analysis, design, code, and test efforts will be performed. The implementation software will be based on working drafts of the standard, and changes to the implementation will be made as the draft evolves. The implementation will be complete when it conforms (unit tested) to an approved version of the standard. The completed implementation will be placed in a (TBD) public domain software repository. A summary report shall be prepared at the completion of the prototype development activity.

Base Implementation Integration Support: The implementation tasks described above are based on the POSIX Ada bindings (POSIX 1003.5b) implementation and runtime (FLORIST) software developed at Florida State University. This will include making any necessary additions to the POSIX 1003.5b implementation packages to support XTI/sockets, correcting problems found in the implementations, assisting the developers in the use of the POSIX 1003.5b implementation, and help with the testing of the implementations as they relate to the POSIX 1003.5b implementation. Projects benefiting from this work include NSSN, AEGIS, Scaleable Data Management System, AN/UYQ-70, and AN/UYK-43 OSM.