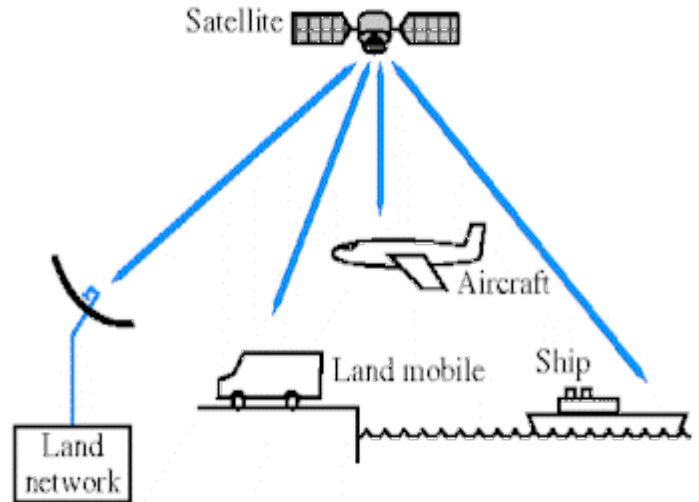


ASSEMBLER - Litton/PRC - SESI

Litton/PRC Northrop Grumman)
System Engineering and Sustainment Integrator
US Strategic Command and Air Force Space Command

Assembler & FORTRAN

History: The System Engineering and Sustainment Integrator system includes ground-based radars, space surveillance sensors, ground-based missile warning, and optical systems operated by United States Strategic Command and Air Force Space Command. Command and control for these radar systems was written in multiple legacy languages. Litton/PRC needed a proof-of-concept demonstration to illustrate the cost effectiveness and feasibility of using automated transformation methods to modernize the J3 JOVIAL of BMEWS, SNX 360 Assembler of PARC radar facility, and FORTRAN of EGLIN radar facility into a common modern software language.



Challenge: By modernizing multiple legacy languages into a common modern object-oriented language, the software systems could be moved from out-dated hardware reducing long-term maintenance costs. TSRI was required to demonstrate its automated modernization capabilities by documenting and transforming multiple radar system legacy languages into the common target language, C++. TSRI adapted its automated FORTRAN to C++ capabilities to perform 100% automated transformations of the representative code samples taken from several different radar systems. TSRI adapted its IBM 360 (BAL) Assembler capability to accept SNX 360 Assembler. This variant of Assembler was a one-of-a-kind legacy language for which vendor compiler support had been discontinued in the late 1980's. Using a two-phase strategy, TSRI engineers first lifted a 5,000-line module of Assembler into C then the C code was re-factored into object oriented C++. These demonstrations supported Litton's bid for the this contract by illustrating the feasibility of automated radar system consolidation into a single modern target language.

Results: TSRI presented a pre-rehearsal demonstration at their facilities and supported the final presentation at Litton/PRC's facilities in Colorado Springs, CO for the US Space Command and Air Force Strategic Command. TSRI also provided a tape demonstration showing the transformation SNX 360 Assembler, IBM 360 Assembler, J3 JOVIAL, and FORTRAN into C++. The modernization strategy demonstrated received outstanding marks by government evaluators for risk mitigation.