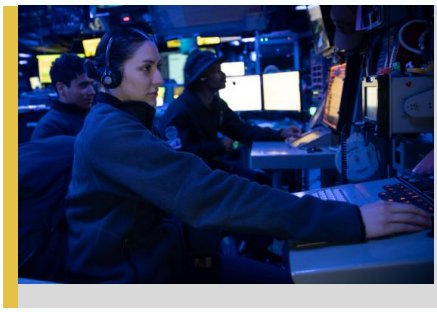
DEPARTMENT OF THE NAVY
SBIR/STTR TRANSITION PROGRAM

SUCCESS STORY

TOPIC NUMBER:
N132-099, N151-015

SBIR INVESTMENT:
$3,819,313

PHASE III FUNDING:
$4,549,851



TYPHON

Architecture Technology Corporation designed and built Typhon, a code profiler software that helps pinpoint scalability issues in CPU and memory usage among large code bases, including the Joint Mission Planning System.

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THE CHALLENGE

The Navy's Joint Mission Planning System (JMPS) contains a significant amount of legacy code that was designed based on older processor legacy software. This legacy code is difficult to reuse because it was primarily written and implemented in a single thread core processor environment. These software tools and capabilities are unable to take advantage of new functionality such as multi-core hardware and multi-threading software and other trends in processor architecture. The Navy wanted a software tool that automatically analyzes legacy software patterns and sequences and identifies segments of the code in which execution can be made more efficient through newer technological approaches.

THE TECHNOLOGY

Architecture Technology Corporation (ATCorp) designed and developed Typhon, a targeted code processor that helps pinpoint scalability issues in CPU and memory usage among large code bases. Typhon automatically runs the application under test and records performance and memory data as the user interacts with the application. Typhon then compares performance and memory data from multiple profiling executions to identify methods whose performance has changed the most and identify performance bottlenecks based on user-specified input. Typhon also identifies peaks in memory use. Typhon quickly identifies performance-limiting functions and excessive memory use in a software application without requiring time-consuming recompilation or source-level access. With the Typhon profiler, a user can focus data collection on particular areas of the code by selecting files, classes, and methods to target during profiling.

THE TRANSITION

Naval Air Warfare Center Aircraft Division (NAWCAD) awarded a basic ordering agreement (BOA) to ATCorp for aerospace and defense research and development. There are five delivery orders under this BOA for SBIR Phase III research and development. ATCorp is actively working with the Navy to help improve JMPS code by using Typhon.

THE NAVAL BENEFIT

Typhon's unique method of targeted profiling reduces the amount of data gathered and displayed and further reduces profiling overhead, significantly saving time and dramatically increasing reliability. Typhon presents the user with the timing data to support decision making without including unneeded data. Typhon features easy user access to many tools for analyzing profiling data, ranging from mathematical analysis to visualizations and graphs for easy identification of performance problems. This intuitive interface minimizes the training needed for operators and software developers.

THE FUTURE

JMPS is the designated automated mission planning system for Naval aviation, supporting over 40 types, models, and series of Navy and Marine Corps aircraft and expeditionary forces. The Navy continues to use JMPS to plan aircraft, weapon, and sensor missions rapidly and accurately. In addition to supporting JMPS, ATCorp has designed and developed a software product, Synapse, for the U.S. Marine Corps JMPS Expeditionary. Synapse operates over a satellite network, connecting USMC large deck ships and disadvantaged ships with low and sporadic network bandwidths. ATCorp has successfully delivered the Synapse software to the U.S. Navy to be installed in amphibious ships supporting the USMC Expeditionary Assault forces. Synapse decreases the Navy's Amphibious Readiness Battlegroup's (ARG) time-to-plan with improved accuracy and efficiency, increasing warfighter effectiveness. The quantifiable benefit to the fleet is estimated to exceed $100M.

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