



## TECHNO-SCIENCES, INC.

### OPERATIONS SCHEDULING TOOLS FOR NAVAL AVIATION UNITS



STORM system used to manage progress of student aviators for F-14 training program

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Topic Number: N90-351  
(ONR)

SBIR Investment: \$814K  
Project Revenue: \$14.2M

Techno-Sciences, Inc.

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### About the Technology

Many mission planning and execution tasks can be automated or assisted by the use of artificial intelligence (AI) or expert system technologies. Techno-Sciences, Inc. (TSi) has developed an automated scheduling system, which incorporates constraint directed reasoning with stochastic operations research ideas and leverages existing software from another resource allocation system. TSi's Scheduling Tool for Readiness Management (STORM) system applies advanced AI and Neural processing techniques to solve mission planning and execution problems to help increase mission effectiveness, reduce aircrew workload and operational readiness.

Scheduling algorithms are dynamic list policies and are motivated by the stochastic nature of the availability and demand models. Because of advances in processing technology, this automation system can be accomplished economically at low to medium risk. STORM enables constraint directed reasoning to allow for the explicit representation of the relationship between scheduling constraints and unsatisfied (mission) demand, and provides a mechanism for relaxing active constraints in a rational way. The Norfolk base, which trains Naval Aviators for fleet replacement (Squadron VF-101), has used TSi's automated system continuously for several years. The Naval Artificial Intelligence Research Center at the Naval Research Laboratory at Norfolk contracted with TSi to develop the STORM system for use by Naval scheduling officers in managing the progress of student aviators through the 39 week training program for F-14.

### Military and Commercial Significance

TSi's STORM improves naval aviation unit operational readiness and mission effectiveness. The system minimizes schedule turbulence, reduces mission risk, allow Navy personnel to respond to aviator scheduling request, view and archive aviator status information, and automatically schedule and reschedule aircrews.

### About the Company

Techno-Sciences (TSi) is a growing employee-owned, high technology company with four main divisions: Search and Rescue (COSPAS-SARSAT [Space System for the Search Vessels in Distress - Search and Satellite-Aided Tracking]), Defense Systems, Systems Engineering, and Aerospace Engineering. TSi's early experience covered an extensive range of advanced technical feasibility studies and advanced software designs in communications, remote sensing, and search and rescue. Over the past 10 years TSi has evolved from providing research into a company that develops innovative products and engineering solutions.

### APPLICATIONS

- ▶ Naval Artificial Intelligence Research Center NRL - Manage the progress of student aviators and the availability of instructors
- ▶ Naval Base at Norfolk, VA: Training naval aviators fleet replacement (Squadron VF-101)