Department of the Navy SBIR/STTR Transition Program

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Topic # N111-022
Intelligent Proxies for Automated Mission Planning
Signal Processing, Inc.

WHO

SYSCOM: NAVAIR

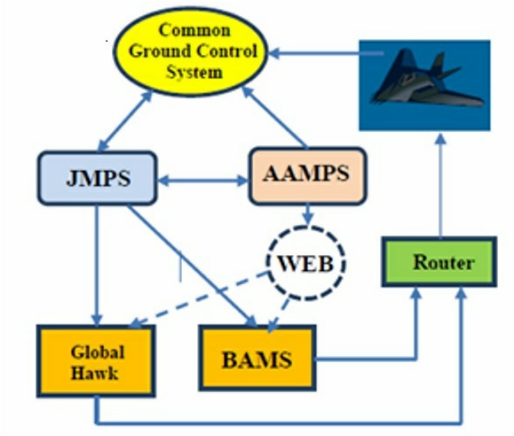
Sponsoring Program: PMA-281, Program Executive Office Unmanned Aviation and Strike Weapons (PEO (U&W))

Transition Target: MQ-4C Triton

TPOC:
(301)757-6179

Other transition opportunities: Other military unmanned aerial vehicles (UAVs).

Notes: BAMS: Broad Area Maritime Surveillance; JMPS: Joint Mission Planning System; AAMPS: Advanced Automatic Mission Planning System. Given a flight plan from JMPS, AAMPS automatically generates a contingency plan and sends it back to JMPS for verification. After approval, the plan is uploaded to UAVs, such as BAMS and Global Hawk for execution. The UAVs are monitored via the Common Ground Control Station.



WHAT

Operational Need and Improvement: There are many processing steps involved in generating contingency plans for a typical sortie. When done manually, this is time-consuming (hours) and the accuracy of the information is error prone due to direct data entry. Automation using machine-to-machine information transfer can solve both of these problems. However, as success will require human-like decision making, balancing alternatives and sometimes conflicting goals, human-like reasoning and decision-making capabilities are needed especially during the mission execution phase.

Specifications Required: A system is required that can perform the following: 1) Automatic generation of contingency plans for a given mission; 2) Can handle contingencies in windy and low altitude conditions; 3) Finish the plan generation process in less than 5 minutes.

Technology Developed: Signal Processing is developing an automated mission planning software tool called the Advanced Automated Mission Planning System (AAMPS) that will interface with the Joint Mission Planning System (JMPS), which resides in the Common Ground Control Station. It will generate contingency plans to handle unexpected problems such as popup threats or electrical and mechanical failures in UAVs. The software system will be adaptive and quick to react to changes detected in the situation context. The contingency plans will be published through Web services to the users.

Warfighter Value: Operator load is reduced; fewer operators are required, meaning low operational costs; mission response is faster; more mission sorties can be developed; UAV safety is improved; collateral damages on ground structures are reduced; software maintenance and use is easy; and investment is reduced.

WHEN

Contract Number: N68335-16-C-0154 **Ending on:** February 28, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
System prototype demonstration	Low	Generation of contingency plan in less than 5 minutes to be demonstrated in a relevant operational environment located at the Naval Air Station Point Mugu.	6	December 2017

HOW

Projected Business Model: Users of military unmanned aerial vehicles (UAVs) will benefit from AAMPS. As a result, Signal Processing's initial customer/buyer will be DOD agencies. Signal Processing will license this technology to government acquisition offices, prime contractors, and other commercial companies.

Company Objectives: Signal Processing is looking for government program offices to fund the development completion for this project.

Potential Commercial Applications: Our technology can also be useful for users of commercial UAVs, as more UAVs will be integrated into the National Air Space (NAS) by 2020.

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