

# NAVY Transition Assistance Program

NAVAIR Public Release 09-1318 Distribution: Statement A-"Approved for public release; distribution is unlimited."

N07-009 - Torch Technologies, Inc.

## Modeling Algorithms for Unmanned Aircraft/Weapons Management Systems

### NEED & CUSTOMER REQUIREMENT

**Need:** To develop an executable system architecture model to include all of the real-time and safety critical systems found on a Fire Scout.

**Value to the Warfighter:** Weapons control for unmanned air platforms requires an extreme degree of confidence in the aircraft weapons control systems when prosecuting targets with strict rules of engagement and when returning with weapons to the ship. War fighters will not engage targets nor allow the return of weapons to the ship unless the weapons control system is highly reliable and effective.

**Operational Gap:** Real time safety critical systems are required to be highly reliable, and this must be effectively demonstrated during the early stages of development to engender war fighter confidence that the system will not introduce errors or risks.

**Customer Specifications:** Develop an application program interface for the architecture to ensure that third party vendors could easily integrate new subsystems into the Fire Scout because the model would describe all the necessary characteristics.

**Technology Description:** Model Driven Architecture can be used to optimize and manage the real time and safety critical systems thereby increasing war fighter confidence and reducing acquisition and integration costs over the life cycle of the system. Model based approach to software development has the promise of isolating functionality from processing environment which should make for better portability. The utility of models is also earlier determinism in the design process leading to earlier discovery of issues in real time safety critical systems.

### SPONSORSHIP of original SBIR/STTR Topic

**SYSCOM:** NAVAIR

**Transition Target:** Fire Scout

**Original Sponsoring Program:**  
PMA 266

**TPOC Phone Number:**  
(301) 757-5867



### TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Model Based Development Feasibility	3	Moderate	Feasibility Study and Tool Evaluation Complete	Oct 07
Software Development Early Demonstration	4	Moderate	All software modules communicating via realistic interfaces complete	Dec 08
Lab Demonstration	5	Moderate	Software Modules Functional and Integration Complete	May 09
Flight Test Demonstration 1	6	Moderate	Fully Functional Software on hardware flight tested with munition	Mar 10
Flight Test Demonstration 2	7	Low	Fully Functional Software	Oct 10

**Open contract:** N68335-08-C-0114 ending May 2010

### TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

#### Other Potential Applications:

Fire Scout Air Vehicle Weapons Controller  
 Fire Scout Tactical Control Station Software  
 Fire Scout Air Vehicle Payload Processing  
 Army Universal Ground Control Station Software  
 Army's Universal Test Pod

#### Business Model:

Develop model based open architecture software directly for the government or as a 1st tier supplier to unmanned aerial vehicle [UAV] primes using the methods developed under this contract. Will utilize teaming arrangement with primes when it significantly lowers risk.

#### Objective:

Contract to develop weapons control, payload control, and control station software using the proven model based methods. Will team with large business.

**Company:** Torch Technologies, Inc.

**Contact:** Mr. Terry Thomas

**Email:** terry.thomas@torchtechnologies.com

**Phone:** (256) 319-6030