Department of the Navy SBIR/STTR Transition Program
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ONR Approval #43-3252-17

Topic # N141-071
Cognitive Adaptation of Management Behavior of Information via Observation (CAMBIO)
Boston Fusion Corp.

WHO

SYSCOM: ONR

Sponsoring Program: Code 34

Transition Target: Command Decision-Making (CDM)

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Other transition opportunities:
Distributed Common Ground System-Navy (DCGS-N)
Office of Naval Intelligence (ONI)
Air Force National Air and Space Intelligence Center (NASIC)

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WHAT

Operational Need and Improvement: Many military domains require an agile, time-critical decision making capability in order to maintain speed of command. Current information systems often get in the way of decision making because they are data-centric rather than task-centric, requiring substantial warfighter intervention to sort out what data is relevant to current mission demands.

Specifications Required: The desired solution is an adaptive workflow support tool that facilitates data composition and analysis in response to mission demands, enabling command staff to more rapidly plan and execute objectives in a dynamic environment. One key feature is the ability to integrate and enhance the utility of existing analytical tools, especially in a service-oriented computing framework.

Technology Developed: Boston Fusion Corp. has developed CAMBIO, an information management tool that monitors and adapts to the warfighter's workflow, topic-of-interest, and cognitive state. CAMBIO learns to predict a warfighter's data collection/analysis workflows using advanced pattern mining and machine learning algorithms, and monitors stress level using newly-developed lightweight, non-invasive metrics. CAMBIO leverages this knowledge to assist the warfighter in three ways: (1) by pre-staging information for upcoming tasks, so the warfighter spends less time collecting data and more time applying it to their mission, (2) by recommending next steps for data analysis and application, so the warfighter can take advantage of complex but powerful analytical tools to get the most out of the available data, and (3) by tailoring the content and presentation of this assistance to meet the changing cognitive needs of the warfighter as their stress-level fluctuates with mission demands.

Warfighter Value: CAMBIO improves the speed and accuracy of warfighters engaged in a broad range of data analysis activities. It tracks the warfighter's workflow and cognitive state, and uses this knowledge to automatically and unobtrusively meet information needs and recommend analytical steps that maximize the utility of this information.

WHEN
Contract Number: N00014-16-C-3023   **Ending on:** June 30, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Web Service Implementation	Low	ONR CDM Program Demonstration	TRL 4	September 2017
Integration into NASIC IDEAS Platform	Med	NASIC IDEAS Platform Demonstration	TRL 4	March 2018
Test and Evaluation in NASIC Plugfest	Med	Faster analyst task workflow observed	TRL 4	September 2018
Test and Evaluation in Navy Exercise	High	Faster PEDs processing in exercise	TRL 6	March 2019
DCGS-N warfighter task workflow improvements	High	Faster warfighter task workflow observed	TRL 7	March 2020

HOW

Projected Business Model: Boston Fusion Corp. plans to license CAMBIO technology for use in both DoD and commercial decision support systems. We are also open to selling the IP rights to a large prime for integration into a larger-scale product offering.

Company Objectives: Boston Fusion Corp. specializes in the development of advanced machine learning and data fusion technology. Our near-term objective to is build relationships with potential transition partners and to demonstrate CAMBIO capabilities in customer-specific pilot studies. We would particularly like to have the opportunity to demonstrate CAMBIO to DCGS-N and ONI representatives for their feedback.

Potential Commercial Applications: CAMBIO has commercial application in any data-gathering and analysis task. It is capable of supporting domains that require time-critical decision making based on information resources, such as air-traffic management, sea port surveillance, and disaster relief.

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