

Department of the Navy SBIR/STTR Transition Program

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ONR Approval # 43-2203-16

Topic # N14A-T024

Information and Decision Recommender

Securborator Inc

WHO

SYSCOM: ONR

Sponsoring Program: ONR Code 30

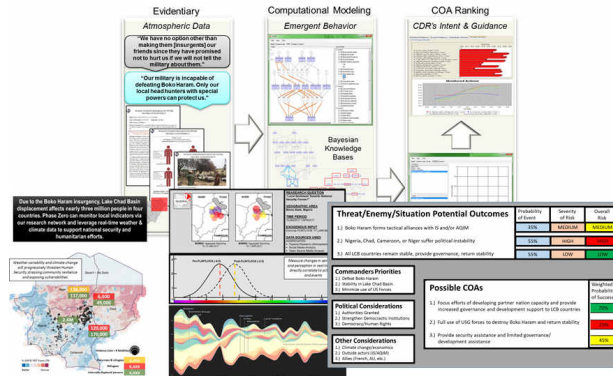
Transition Target: Distributed Common Ground System-Navy (DCGS-N)

TPOC:

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Other transition opportunities:

Marine Corps Common Aviation Command and Control System (CAC2S); United States Africa Command (USAFRICOM); Special Operations Command Africa (SOCAFRICA); United States Central Command (USCENTCOM)



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Notes: Securborator is postured to provide relevant Course of Action Recommender Services (COARS) products to support a live demonstration for joint military exercises that include Trident Warrior and the Multinational Flintlock 2017 Military Exercise. COARS will be able to support Intelligence & Situation Assessments, Capability Assessments, and Adversary Military Force and Country Study products leveraging near-real-time atmospheric reporting and the detection of socio-culturally attuned emergent behavior for dynamically-updated Courses of Action (COAs) to meet the Commander's intent & guidance.

WHAT

Operational Need and Improvement: Overtaxed commanders and C2 operators require intelligent, automated support for evaluating COAs respective to mission operational goals/objectives and the most relevant information set for a particular decision. An information recommender system is needed with a predictive capability to suggest COA recommendations to an overtaxed commander. This includes understanding the effects of ongoing and potential COAs on the dynamics within environments of rapidly evolving security, governance, economic, development, political, social, cultural, religious, and civil and human rights activities.

Specifications Required: The information and decision recommender prototype system should be capable of supporting a diverse set of COA. The prototype system should allow human entered COA for a specific mission and return COA recommendations based on past behavior, as well as have the ability to dynamically adjust COAs as new data becomes available during mission execution. The prototype should also present pedigree information on recommendations with traceability back to key data features.

Technology Developed: COARS uses a combination of technologies to process unstructured data from a variety of sources to drive probabilistic reasoning algorithms. The distinguishing, predictive capability of these algorithms help identify emergent behavior among groups in an operational area (OA). Such behavior is non-linear, i.e. it cannot be derived by analysis of the individual groups, but rather by the complex interactions among them that cumulatively result in non-linear, non-intuitive and non-expected behavior.

Warfighter Value: COARS will enable C2 operators to account for potential emergent behavior when ranking COA; identify knowledge gaps needed to evaluate success of current COAs; and explain events in the OA in terms of the goals, actions, and beliefs of OA stakeholders. Therefore, COARS streamlines mission planning, improves mission effectiveness and reduces risk to the warfighter by continual COA alignment to Commander's objectives.

WHEN

Contract Number: N68335-16-C-0113 **Ending on:** October 21, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Information Extraction from Atmospheric Reports	Low	Manually evaluate extracted data	7	July 2017
Semi-auto generation of computation model	Med	Auto-construction of Bayesian Knowledge Bases	7	July 2017
Emergent behavior detection	Med	Identify non-linear behavior	7	April 2018
COA Ranking and Reordering based on OA	Med	Manual Evaluation of COA ranking	7	April 2018
Transition	High	POR adoption or Exercise Participation	7	October 2019

HOW

Projected Business Model: Our business goal for this technology is to gain adoption either by: (1) being subsumed into a Program of Record (POR) such as DCGS-N, or (2) as a stand-alone, but integrated component as part of a larger suite of tools, such as the Marine Corps CAC2S. Our model for DoD-related deployment does not include any licensing restrictions or cost. Instead, our goal is to continue to fund, evolve, and sustain the technology through SBIR-related efforts to execute the second Option of this SBIR and achieve TRL 8.

Company Objectives: In the short term, Securborator plans to identify a viable technology platform and transition partner capable of utilizing COARS and supporting its advancement to viable U.S. Government customers. Achieving these goals requires introduction, support, and coordination among our DoD customer with larger-scale prime system integrators. Longer term objectives mature COARS for funding and sustainment through a Program Objective Memorandum (POM) cycle.

Potential Commercial Applications: COARS can be extended into the Business Intelligence domain subscription service to provide continuous awareness of progress towards meeting strategic company goals while being confronted with a highly competitive, dynamic marketplace. For publicly traded companies, failure to react and counter competition can have disastrous consequences. Another application of COARS can extend recommendation systems beyond the traditional collaborative and content based filtering used by companies today (e.g. Amazon, Pandora, Netflix). For example, by infusing additional features such as socio-cultural indicators from social media, a movie recommender could consider current sentiment and activity.

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