Topic: N162-131

Charles River Analytics Inc.

System for Group Learning and Optimization of Collaborative Workflows (GLOW)
Instead of training each Sailor in every mission-relevant skill—a costly proposition—it makes sense to optimize a team's collective expertise. Group Learning and Optimization of Collaborative Workflows (GLOW), is a task distribution, collaboration, and peer review platform that optimizes team output, giving Naval Officers accurate data on Sailors' strengths so they can make better training and tasking decisions to craft diverse, knowledgeable teams. Charles River Analytics, maker of intelligent systems solutions, has successfully demonstrated the feasibility with the development of a prototype Collaborative Workspace. GLOW will support rapid learning and development of group expertise for platforms such as the Distributed Common Ground System-Navy (DCGS-N) Program; teams will be constructed based upon collective expertise and individuals will acquire new knowledge and skills through peer collaboration.

Technology Category Alignment:
None
None
None

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SYSCOM: ONR
Contract: N68335-18-C-0119

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-18-C-0119

Department of the Navy SBIR/STTR Transition Program

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Topic # N162-131

System for Group Learning and Optimization of Collaborative Workflows (GLOW)

Charles River Analytics, Inc.

WHO

SYSCOM: ONR

Sponsoring Program: Distributed Common Ground System-Navy (DCGS-N) Program

Transition Target: The technology will transition to appropriate Navy and commercial training and simulation efforts. We expect this system to immediately and tangibly benefit the Navy and DoD by enabling collaboration across a number of complex tasks, including collaborative intelligence analysis with DCGS-N.

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Other transition opportunities: Navy Personnel Command (NPC) personnel management systems

Notes: The image shows the basic concept of operations of GLOW, which uses automated services to support interface tools centered on a Decompose, Execute, Assess loop.
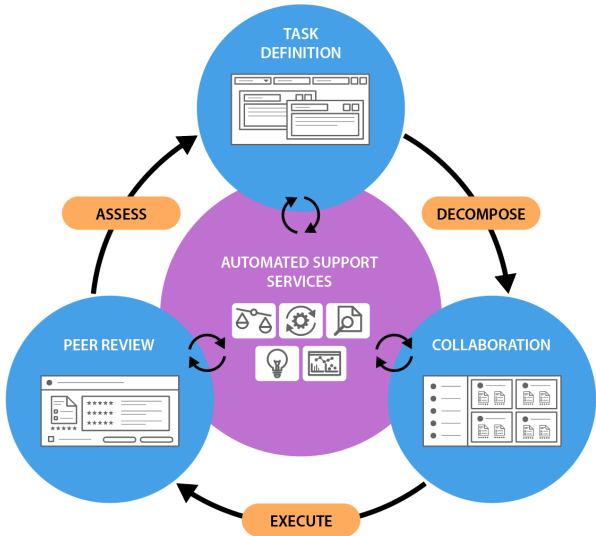

Image courtesy of Charles River Analytics, Inc.

WHAT

Operational Need and Improvement: The Navy must train and deploy effective teams in complex domains, from intelligence analysis to field medicine. Training individual personnel in all the skills and knowledge required by these tasks would be cost-prohibitive and inefficient. Instead, teams should be constructed to optimize their collective expertise. To construct these teams, the Navy needs a team development system that manages task and learning assignments to dynamically build the expertise required to achieve evolving task objectives.

Specifications Required: While adaptive learning methods have been developed for individual learners, new approaches are needed to automatically optimize the whole learning ecosystem by considering not just the parameters of an individual but also parameters of target content, peer interaction, as well as the instructor within group performance. Special focus should be devoted to rapid convergence, and efficient exploration of all ecosystem parameters.

It is clear that in order to develop group expertise, it is not necessary that each individual in a group achieve maximal possible (individual) expertise. Rather, of greater importance is how to develop complementary expertise, and how to develop mechanisms for efficient communication and collaboration among group members. While the potential for large-scale collaboration has been demonstrated in certain domains, further efforts are required to generalize these findings to other domains where expertise is required.

Technology Developed: Group Learning and Optimization of Collaborative Workflows (GLOW) Collaborative Workspace will enable teams to decompose complex tasks into work chunks that can be performed by contributing team members, execute (or learn to execute) those tasks while efficiently applying the collective expertise of the team, and assess performance on those tasks through an integrated peer review process.

Warfighter Value: We expect the full-scope GLOW system to immediately and tangibly benefit the Navy and DoD by enabling collaboration across a number of complex tasks, including collaborative intelligence analysis with DCGS-N. We also anticipate immediate benefits for personnel management; detailers will be able to construct more effective teams with the collective expertise to succeed.

WHEN

Contract Number: N68335-18-C-0119   **Ending on:** February 11, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Formative Prototype Evaluation	N/A	Users report positive value of tool over similar products	3	3rd QTR FY17
Component Evaluation Studies	Low	Each component shows value over control group on key metrics for efficiency, quality, and relevance.	5	2nd QTR FY19
Full-scope Platform Evaluation Studies	Med	Full-scope system shows value over control group on key metrics of efficiency, quality, relevance, and user satisfaction.	6	4th QTR FY19
Targeted Transition Platform Evaluation	Med	Full-scope system shows value over existing tools in operational environment on key metrics of efficiency, quality, relevance, and user satisfation	7	4th QTR FY21

HOW

Projected Business Model: We plan to distribute GLOW as a "freemium" commercial application that allows distributed research teams to effectively collaborate with a free-to-use product designed for that purpose, and then sells add-ons that provide custom options, private environments, and other tools specific to the needs of medium and large companies across a variety of research and development sectors. In these R&D companies, GLOW can be used to characterize the skills and capabilities of research personnel, as well as facilitate the selection of teams and training objectives across those personnel to address target research objectives. Once teams are formed (either using GLOW, or using other, more traditional corporate team management approaches), the GLOW Collaborative Workspace can enable rapid, cooperative research to address project requirements and review team solutions to those requirements.

Company Objectives: Charles River Analytics is seeking Government programs or groups that make heavy use of distributed and/or multi-disciplinary teams, to discuss the potential value of GLOW as a tool to form, manage, and develop those teams. Our interest includes both potential transition partners and interesting use cases that would help refine the technology and suggest key features or constraints to incorporate.

Potential Commercial Applications: This technology will primarily support rapid learning and development of group expertise by developing methods for adaptive presentation of materials and efficient evaluation and testing strategies. Therefore, this technology can be easily transferred to all institutions that require learning, training and evaluation of its personnel. This includes educational institutions as well as businesses that depend on continuous training and re-training of its employees. Commercially, the results of this effort are positioned to significantly impact the do-it-yourself learning community, a $200 million market in the US and UK alone.

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