

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2020-845

Topic # N181-026

Data Science Driven Aircrew Performance Measurement and Proficiency System
2 Circle Consulting, Inc

WHO

SYSCOM: NAVAIR

Sponsoring Program: Naval Aviation Training Systems and Ranges Program Office (PMA-205)

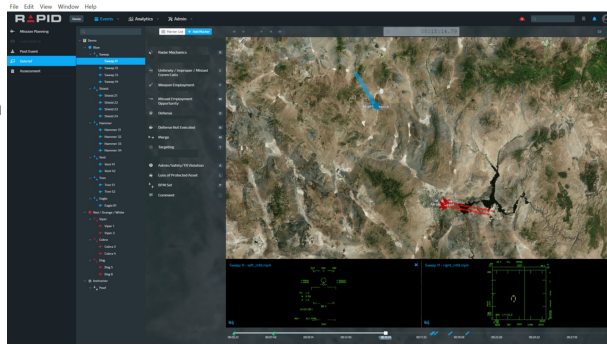
Transition Target: Strike Planning and Execution Systems Program Office (PMA-281)

TPOC:
(407)380-4773

Other transition opportunities:

RAPID is currently being developed in support of F/A-18 Air Warfare analysis, but is scalable to all platforms and missions.

Notes: Reconstruction and Assessment of Proficiency in an Integrated Debrief (RAPID) software provides automated performance assessment capability to all platforms, missions, and training environments. The tool applies a revolutionary, verified/validated methodology for tracking proficiency that has been used to inform training and resourcing decisions across the Naval Aviation Enterprise (NAE) for the last five years. While other systems stop at just identifying "what" occurred, RAPID enables root cause analysis of "why" it occurred by fusing data from multiple disparate sources and logically walking the user(s) through analysis and assessment of their individual and systems performance at the tactical level of execution. At the conclusion of each live, virtual-constructive, or distributed training event, RAPID reconstructs event outcomes, draws attention to critical points in the training, extracts learning points, develops a grade sheet for the user(s), and collects data on important metrics. The collected data is then processed using RAPID's ground-breaking artificial intelligence/machine learning techniques to inform all phases of execution (i.e., policy/planning, syllabi development, pre-event mission planning, real-time re-planning, and post-event remediation/training plan development).



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WHAT

Operational Need and Improvement: Navy leadership has expressed a desire to move from reactive decisions to proactive/predictive solutions leveraging data-driven analytics of warfighter proficiency. To aid in decision-making, systems are required that are capable of collecting, storing, fusing, analyzing, interpreting, and safeguarding proficiency data. Without these systems, warfighters lack the resources to conduct rigorous and objective performance evaluations and, instead, are hampered by manually intensive and time-consuming processes for performance assessment that often result in subjective ratings. This negatively affects the feedback provided to trainees as well as the quality/quantity of data that is fed back to decision-makers. A software tool that fuses data from multiple sources for human performance assessment and proficiency tracking would alleviate burdens on the warfighter and provide continuous data on aircrew performance and associated trends.

Specifications Required: The government requires software that pre-processes, fuses, and stores data from multiple sources for human performance assessment and proficiency tracking using existing hardware. The software must be scalable to support individual, team, and multi-team evaluations and requires the ability to parse and synchronize disparate data from live, virtual, and constructive (LVC) sources such as range instrumentation, aircraft systems, virtual simulators, and constructive applications. Finally, the software must include an intuitive human-machine interface that provides visualization tools to facilitate data synthesis by human-in-the-loop users and display automated data outputs.

Technology Developed: RAPID, which stands for Reconstruction and Assessment of Proficiency in an Integrated Debrief, is a software solution that automates the process used to trace mission outcomes to the tactical level of execution.

Warfighter Value: RAPID provides a common, single solution for reconstructing, analyzing, and assessing performance across all platforms, mission sets, and training environments (live, virtual-constructive, LVC, and distributed). The software enables after-action performance reviews that include details on effects chain execution in order to identify errors at the tactical level that trace to mission outcomes. This reduces the time required to assess performance and improves the quantity/quality of the data collected. Results are fed directly to the warfighter to improve tactical execution as well as leadership to support training and resourcing investment decisions.

WHEN

Contract Number: N68335-19-C-0544 **Ending on:** March 26, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Feasibility Study	N/A	Selection for SBIR Phase II	1	November 2018
Prototype Completed	N/A	Concept demonstration using dummy data	2	July 2019
Baseline Capability (Air Warfare)	Low	Integration of technical components capable of processing air warfare mission data	5	March 2021
Mission Expansion (Strike Warfare)	Low	Integration of technical components capable of processing strike warfare mission data	5	March 2022
Operational System	Med	Demonstration across all operational training environments	7	September 2023
Operational Mission Support	Med	Use during operational mission conditions	9	TBD

HOW

Projected Business Model: 2 Circle will license RAPID to the DoD for incorporation onto Joint Mission Planning System hardware and the Next Generation Mission Planning System as the primary application to support proficiency data collection, analysis, and integration. Technical assistance, platform/tactical subject matter expertise, and analytical support will be included in the license.

Company Objectives: 2 Circle is expanding RAPID technologies to include more platforms and would like to connect with program offices from across the DoD to become the premier provider of automated performance assessment and proficiency data analytical support.

Potential Commercial Applications: RAPID's advanced debrief capability, which integrates proficiency data/analysis into all phases of execution (pre-event, real-time, and post-event) provides a complete solution for conducting performance assessment across multiple industries. 2 Circle is currently developing commercial versions of RAPID to support the transportation and professional sports industries, among others.

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