

Department of the Navy SBIR/STTR Transition Program

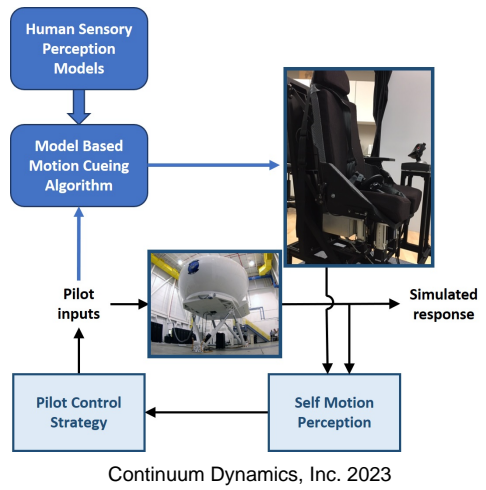
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Topic # N172-109
 Advanced Body Force Cueing for Dynamic Interface Simulation
 Continuum Dynamics, Inc.

WHO

SYSCOM: NAVAIR
Sponsoring Program: NAVAIR PMA-275 V-22 Osprey
Transition Target: PMA-205
TPOC: (301) 757-0836
Other Transition Opportunities: Programs that support simulator development and operation: H-60, H-53, H-1

Notes: The image to the right is a process mapping diagram of Continuum Dynamics, Inc. (CDI) Dynamic Seat and Model-based Integration Strategy.



WHAT

Operational Need and Improvement: Flight simulation is a valuable tool for pilot training and development of operational procedures in a cost-effective and safe environment. It is desirable to advance models and systems for rotorcraft flight simulation to improve effectiveness and extend capabilities.

Specifications Required: Motion cueing is important for flight simulator fidelity, in particular for rotorcraft applications. It is desirable to provide motion cues in a compact system to benefit fixed-based simulators.

Technology Developed: A "dynamic seat" has been developed to provide body force / acceleration / vibration cues for rotorcraft flight simulators. Motion cues are enabled using compact, retrofittable actuators in combination with model-based algorithms to optimally tailor the environment for the pilot.

Warfighter Value: Enhanced simulator-based training provides an effective and safe means to perform mission rehearsal and operations training while reducing actual flight time in aircraft resulting in a reduction of training costs.

WHEN

Contract Number: N68335-19-C-0190 **Ending on:** Jan 15, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial prototype	Low	Prototype ready for test in CDI sim lab	4	4th QTR FY21
Initial pilot evaluation	Low	Evaluation showed fidelity improvement in Navy sim lab	5	3rd QTR FY22
Seat Rv1 / pilot eval	Low	Enhanced system ready for use by Navy / pilot evaluation	6	1st QTR FY24

HOW

Projected Business Model: Flight simulation is an integral part of aircraft development and life cycle support, and hardware systems are continually upgraded as technology advances. The core technology transition strategy will leverage the compact, retrofittable nature of the dynamic seat system to provide improved simulator fidelity with modest investment from stakeholders.

Company Objectives: CDI has an extensive record in supporting aircraft design and simulation through modeling and analysis software for advanced rotorcraft systems. CDI is seeking partners to expand our customer base to include flight simulator system development and integration.

Potential Commercial Applications: The adaptive dynamic seat cueing technology and development methods are generic and applicable to any rotorcraft platform. Other applications can be found in commercial helicopter operations and electric vertical take-off and landing (eVTOL) aircraft as part of the next-generation Advanced Air Mobility (AAM) systems.

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