

WHO

**SYSCOM:** NAVAIR  
**Sponsoring Program:** PMA-272  
**Transition Target:** Navy CRANE  
**TPOC:** (812) 854-6251  
**Other Transition Opportunities:** NAVSEA, USAF

**Notes:** Still images from simulated dynamic chaff release scenario for jet and rotorcraft showing wake and interacting chaff elements. Software includes flexible configuration features, quick-look dynamic signature estimation, and rapid turnaround to support tactics development of release/maneuver scenarios.

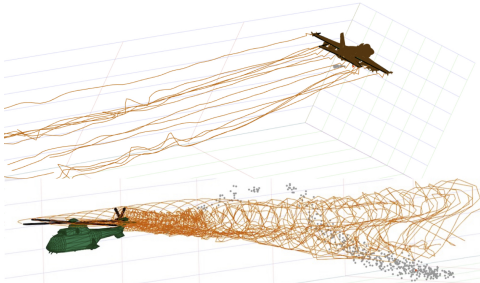


Image courtesy of Continuum Dynamics, Inc.

WHAT

**Operational Need and Improvement:** Successful deployment of advanced countermeasures requires sufficient modeling detail and fidelity to incorporate potential strategy and tactics to achieve aircraft survival from threats. Simulation software that can provide design guidance on effective countermeasure use is key to the development of techniques to subvert adversaries.

**Specifications Required:** Advanced chaff and countermeasures modeling tools should support the generation of physical effects known to be used in target discrimination and detection systems, and provide realistic transient data that can be used in engagement scenarios and weapons effectiveness analysis.

**Technology Developed:** CDI has coupled its state-of-the-art wake models for fixed- and rotary-wing aircraft to represent the multiple domains of countermeasure interaction following release for accurately modeling dispersion and settling behavior. The resulting dynamic time histories of release data can be used in signature analysis, weapons effectiveness analysis, and release and maneuver tactics development.

**Warfighter Value:** Improved modeling of dynamic countermeasure release physics will lead to increased survivability in threat environments, and better understanding of engagement scenarios and tactics.

WHEN

**Contract Number:** N68335-21-C-0242      **Ending on:** Oct 03, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Base software release	Low	Dynamic release demo	5	4th QTR FY22
Added component models	Medium	Initial comparison with test data	6	3rd QTR FY23
Coupled analysis features	Medium	Integration with DoD toolset	6	4th QTR FY23
Software completion	Medium	Final deliverable and tutorial	7	2nd QTR FY24

HOW

**Projected Business Model:** This software tool would see both continued development and spin-off application work, through the inclusion of additional aircraft models and features, and the exporting of the dynamic aircraft wake models for use in other weapons analysis and survivability software tools already used within DoD. The product is a natural extension of other CDI developed aerial particle tracking/release simulation tools that include aircraft pesticide deposition, icing accretion analyses, rotorcraft brownout operation, store release clearance, fuel jettisoning, and C/B hazard surface contamination.

**Company Objectives:** CDI supports DoD, NASA, FAA and industry aerospace engineering design and development work through the generation of cost-effective state-of-the-art analysis tools and software that generate timely and validated results for vehicle configuration and operational improvements.

**Potential Commercial Applications:** Dynamic countermeasure simulation and modeling support may be applied DoD-wide, and may be extended to include ship-borne and other survivability analyses.