

NASA SBIR/STTR Technologies

A3.05-9362 - Variable Complexity Weight Estimation for Conceptual Aircraft Design Optimization (VaC-CADO)



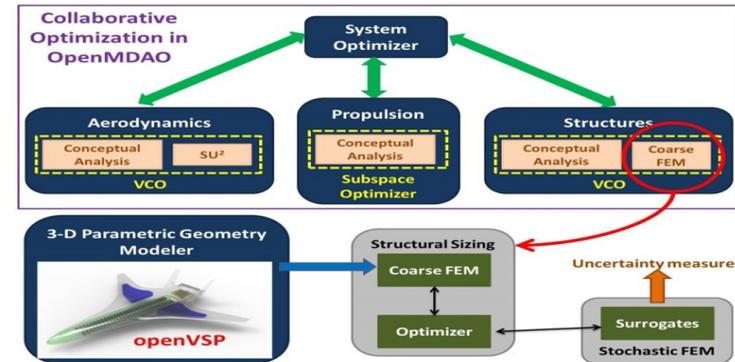
PI: Nikhil Nigam

Intelligent Automation, Inc. - Rockville, MD

Identification and Significance of Innovation

NASA has identified ambitious goals for N+2 and N+3 that will only be realized through design of unconventional aircraft platforms. VaC-CADO is a tool for conceptual aircraft design that addresses this need by including physics-based analysis in the conceptual design phase. A particular innovation in this effort would be to combine variable complexity techniques with FEM-based weight estimation for improved weight estimation techniques.

Estimated TRL (1 ? 9) at beginning and end of contract: 2-5



Estimated TRL at beginning and end of contract: (Begin: 2 End: 5)

Technical Objectives and Work Plan

VaC-CADO prototype tool with novel variable complexity and weight estimation techniques

Develop MDO architecture for conceptual design

Develop 3D parametric modeling and visualization

Develop high accuracy weight estimation techniques based on FEM

Design variable complexity optimization techniques

Demonstrate prototype VaC-CADO tool

NASA Applications

NASA: The proposed technology directly contributes to the Fundamental Aeronautics Program's goal of revolutionary aircraft concepts PB-MDAO design tools.

Non-NASA Applications

Non-NASA: Several groups across DOD, including AFRL's conceptual design group will directly benefit from such a tool. The design groups at Boeing and Lockheed have also shown considerable interest in such methods.

Firm Contacts

Mark James
Intelligent Automation, Inc.
15400 Calhoun Drive, Suite 400
Rockville, MD, 20855-2737
PHONE: (301) 294-5221
FAX: (301) 294-5201

NON-PROPRIETARY DATA