VFS Technical Meeting
Development, Qualification and Affordability of Complex Systems
CALL FOR PAPERS
September 13th - 14th, 2022
Radiance Technologies, Inc., Huntsville, AL

The Redstone Chapter is planning for an in-person event in 2022. In case of unexpected COVID pandemic restrictions or resurgence, the conference may be moved to a fully virtual or hybrid event.

The Redstone Chapter of the Vertical Flight Society (VFS) is sponsoring a Technical Meeting on the Development, Affordability and Qualification of Complex Systems. To achieve the desired capabilities of next generation vertical lift, the modern aircraft has evolved into a highly interconnected assembly of disparate systems. Acquisition strategy now values experimentation, learning through prototypes, and speed of acquisition over traditional approaches. This is currently being showcased in the FARA (Future Armed Reconnaissance Aircraft) and FLRAA (Future Long Range Assault Aircraft) development programs and increased focus on MOSA (Modular Open Systems Approach). The complexity of the system continues to accelerate, while assessment and qualification methods race to address the scale and interactive, non-deterministic nature of the solutions. Leading experts from the government, academia, and industry will discuss the challenges of affordably developing and qualifying these complex systems. The Technical Meeting offers an excellent opportunity to present and discuss advances across the aircraft system as well as new approaches targeting the challenging subject.

Papers and technical briefings from all disciplines are invited. Current topics of interest include but are not limited to the following areas.

Development of a Complex System

- New approaches utilizing a highly connected air vehicle, air vehicle management system, multiple vehicles or air-launched effects.
- Digital Engineering, Model Based Systems Engineering implementation
- Physics-based modeling or simulation of complex interactions, modeling of multiple dependent systems for overall performance
- Application of mission architecture or framework
- Human/computer interaction, Human Systems Engineering, interfacing and displays, optionally or optimally manned aircraft, Machine Learning, Autonomy, applications of artificial intelligence/decision making for Multi-Domain Operations.
- eVTOL applications
- Data sharing and synthesis, driving solutions to what can or can't be done inside the aircraft.

Qualification of a Complex System

- Digital Engineering, the digital thread, single source of truth
- Substantiating MOSA goals during design and qualification
- Software and Architecture implementation/best practices
- Verification, Validation, Accreditation, Certification methods at large scale

- Applications to Probabilistic or non-deterministic solutions

Affordability of a Complex System

- Lifecycle cost modeling to include development, equipping and operations/support costing. Estimates of system resource requirements beyond weight-based parametrics
- Applying models and simulations to save on qualification costs
- Realization of cost savings through digital enterprise/digital twins

Abstract submissions should be sufficient to enable the reviewer to determine the quality, scope, significance, and current completion status of the information that will be submitted in the final paper. Priority will be given to papers in which significant results and conclusions will be provided and in which future research and development are clearly defined. Abstracts should also:

- Limited to no more than 1,000 words and in WORD or PDF format.
- Include paper title, author name and organization and email contact information.
- Present the status of work and the background data to be used.
- Summarize figures and illustrations to be used (samples encouraged).
- Include a summary of important conclusions with a statement as to whether similar results have been (or may be) presented or published elsewhere.
- Download abstract template from the event page at vtol.org/complex
- **Abstract deadline submission extended to May 23, 2022 to** Complex2022@redstone.vtol.org.
- Authors will be notified of abstract acceptance in mid-June. Acceptance of an abstract is a professional commitment to write the technical paper and present during the meeting.

Note: ***Presentation-Only* submissions may be accepted if space is available; the abstract should clearly state the intent to be *Presentation-Only*.**

General Chair: Mr. Eric Grigorian, Georgia Institute of Technology, Phone: 256-716-2176

Technical Chair: Marty Moulton, US Army DEVCOM AvMC

The VFS Complex Systems Technical Meeting is open to all interested parties of all nationalities and all organizations. As such, it is the policy of the VFS that all material submitted in the final technical paper (for inclusion in meeting Proceedings) and all presentations are completely unrestricted. That is, they are not allowed to contain any proprietary, sensitive, classified, or otherwise controlled information. It is the author's responsibility to obtain appropriate clearances.

COMPLETED PAPERS/PRESENTATIONS:
- Final written technical papers will be due Sept 5, 2022 (in PDF) and will be published as online meeting proceedings.
- Presentations will be given in an open forum during the meeting dates and will be due the week before the meeting.
- A "no paper, no podium" policy will be observed for this conference (unless accepted as presentation only.)
- The author is responsible for any necessary clearances and approvals.
- **All questions should be directed to** Complex2022@redstone.vtol.org