

2027 Transformative Vertical Flight

14th Annual Electric VTOL Symposium
Rotorcraft as a Service for Public Good
February 23–25, 2027
Long Beach, California



Workshop on Modeling and Simulation for Certification

Description and Call for Contributions

To be held as part of the 2027 Transformative Vertical Flight (TVF) Conference — February 23–25, 2027, Long Beach Marriott, Long Beach, California, USA — organized by the Vertical Flight Society (VFS) and the VFS SoCal chapter. The workshop will take place on Wed., Feb. 24, 2027

Background and Motivation

Airworthiness certification has traditionally relied on a combination of analysis, ground testing and flight testing to demonstrate compliance with the applicable requirements. Flight testing, in particular, is costly, time-consuming and may carry significant risk; moreover, a number of failure conditions and cases close to edge of flight envelope simply cannot be performed safely, or with unambiguous results. Modeling and Simulation (M&S) offers a route to **de-risk, complement, and in some cases replace** physical testing — provided that the credibility of the simulation can be established with the same rigor that is applied to a physical test article.

The rotorcraft community — spanning conventional helicopters, tiltrotors, and the rapidly emerging class of eVTOL aircraft — is at a turning point. Novel configurations rely on highly complex, tightly coupled technologies (fly-by-wire flight control, distributed electric propulsion, high levels of automation) whose behaviour is difficult, or even impossible, to test exhaustively. At the same time, the regulatory framework (EASA CS-27/29, the Special Condition VTOL and its Means of Compliance, FAA Advisory Circulars) and several standardization efforts are converging towards structured, requirements-based processes for *Certification by Simulation and Analysis*.

This workshop brings together the leading initiatives shaping this field:

- the European Clean Sky 2 project **RoCS (Rotorcraft Certification by Simulation)**, which produced the RCbS guidance manual and the recent open-access Springer volume *Rotorcraft Certification by Simulation and Analysis — An Introduction to the Principles and Practices*;
- the **SAE International G-35** committee, and specifically the **G-35C** technical sub-committee developing **ARP7094**, *Using Modeling and Simulation for Certification of Aircraft, Products, and Systems*;
- the **EUROCAE Working Group WG-112 (SG-4 Flight)** developing **ED-342**, *Guidance on Using Simulation in Handling Qualities Certification of VTOL*.

Aim of the Workshop

The workshop is an opportunity to **present and discuss recent advances** in the use of M&S as a means of compliance for rotorcraft certification, to **compare the methodological approaches** emerging from these parallel efforts, to identify common ground and open issues, and to foster a direct dialogue among regulators, industry and academia. Particular attention will be devoted to the

concepts that cut across all three initiatives: requirements capture, fidelity assessment, uncertainty quantification, and credibility of simulation in support of airworthiness decision-making.

Format

The workshop will consist of a series of invited and contributed presentations, followed by a **closing round table**. Confirmed presentations include:

- an account of the **RoCS project experience** and the RCbS process;
- a **status update from the SAE G-35C** sub-committee on the development of ARP7094;
- a report on the **current status of EUROCAE ED-342**.

The closing round table will bring speakers and panellists together to **compare the different approaches** — their scope, underlying assumptions, treatment of predictive and perceptual fidelity, uncertainty quantification and credibility assessment — and to discuss possible routes toward harmonization and broader adoption.

Who Should Attend and Contribute

We warmly invite the participation of:

- **Certification authorities** — EASA, FAA, and other national and international authorities;
- **Rotorcraft OEMs and suppliers** working on helicopters, tiltrotors and VTOL aircraft;
- **Academic and research institutions** actively engaged in flight modeling, simulation, validation and certification.

Call for Contributions

We invite the submission of contributions presenting research results, industrial experience, regulatory perspectives, and lessons learned. Topics of interest include, but are not limited to:

- Requirements-based processes for certification by simulation and analysis
- Influence, Predictability and Credibility frameworks; influence–predictability matrices
- Fidelity assessment of Flight Simulation Models (FSM) and Flight Simulators (FS)
- Predictive and perceptual fidelity; prediction of handling qualities
- Uncertainty quantification and credibility/confidence metrics (e.g. validation uncertainty, confidence ratio)
- Domains of validation, interpolation and extrapolation; the "sufficient fidelity" concept
- Flight Test Measurement Systems and pre-certification testing in support of validation
- Validation of physics-based versus phenomenological / machine-learning-based models
- Application to helicopters, tiltrotors and eVTOL / distributed-propulsion configurations
- Case studies of M&S used as a (partial or full) means of compliance
- Routes to standardization, harmonization and regulatory acceptance

Submission

Prospective contributors are invited to submit a **1-page abstract** by **October 4th, 2026**. Notification of acceptance will be communicated by **November 1st, 2026**. Submissions should be made through

the email events@socal.vtol.org specifying that the submission is for the Workshop on Modeling and Simulation for Certification.

Key Information

- **Submit 1-page abstract by Oct. 4, 2026** to events@socal.vtol.org
- **Workshop title:** Workshop on Modeling and Simulation for Certification
- **Event:** 2027 Transformative Vertical Flight (TVF) Conference, Vertical Flight Society (VFS)
- **Dates:** **Wednesday February 24, 2027**
- **Venue:** Long Beach Marriott, Long Beach, California, USA
- **Workshop Chair:** Giuseppe Quaranta, Politecnico di Milano (DAER), Marilyn Pearson, Chair of the SAE G-35 Modeling, Simulation, Training for Emerging AV Tech
- **Contact:** Giuseppe Quaranta — giuseppe.quaranta@polimi.it
- **Registration:** Through the VFS / TVF 2027 registration system
<https://vtol.org/events/2027-transformative-vertical-flight>

Workshop Chairs

Giuseppe Quaranta is a Professor at the Department of Aerospace Science and Technology (DAER) of Politecnico di Milano, where his research focuses on rotorcraft dynamics and aeroelasticity, flight modeling and simulation, and the certification of rotorcraft and VTOL aircraft. He is a co-author of the open-access Springer volume *Rotorcraft Certification by Simulation and Analysis — An Introduction to the Principles and Practices*, one of the key outcomes of the Clean Sky 2 RoCS project, and a member of **EUROCAE Working Group WG-112 (SG-4 Flight)**, contributing to the development of **ED-342**.

Marilyn Pearson is a retired FAA Aviation Safety Inspector and ATP rated pilot with fifty years of experience in aviation certification and safety. She has led UAS exemption and waiver teams and contributed to rulemaking efforts for ground-breaking regulations. Her breadth of experience includes advancing airplane, rotorcraft, glider, seaplane, UAS, and VTOL operations and safety management. She chairs **SAE International G35 Committee – Modeling, Simulation and Training for Emerging Aviation Technologies and Concepts**, contributing to the development of **AS7094 and AS7062**, advancing VTOL aircraft, pilot and FSTD certification and operations.

This workshop is organized in connection with the ongoing standardization efforts of the SAE G-35C sub-committee (ARP7094), the EUROCAE WG-112 working group (ED-342), and the outcomes of the Clean Sky 2 RoCS project.