

2025 Models and Simulation Structures for the Future of the DAF Test Community

Dr. Brett Pokines | May 20-21, 2025 | Edwards AFB, CA - hybrid

Headquarters, 412th Test Wing,
195 E Popson Ave, Bldg. 2750, CR 204*
Edwards, CA 93523

Military: UOD
Civilian: Business
Content: Distribution A
Edwards AFB Access: see note last page of this agenda.

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Virtual Link: Emailed to all registered participants 5/19/25

Registration Link: <https://community.apan.org/wg/afosr/w/researchareas/41211/2025-models-and-simulation-structures-for-the-future-of-the-daf-test-community/>

Objective: Strengthen connections yielding transformation of test capability, capacity and cost between AFOSR and AFTC, through a two-day Spring engagement with the goals: (1) Delineate vision, strategy and programmatic metrics of Models and Simulation Structures for the Future of the Department of the Air Force (DAF) Test Community; (2) Execute an event to link emerging science and DAF test needs leveraging fundamentals such computational methods, modeling, experimental measurements, and intelligent learning held with the 412th Test Wing, researchers from across Air Force Research Laboratory Technical Directorates, industry and academia. Outcomes include identifying and expanding project teams that may realize revolutionary test methodologies and define the future of modeling and digital structures for DAF Test missions.

Agenda Day 1 | 20 May 2025 [Pacific Time]

Time	Topic	Speaker
Check-in and Meeting Plan		
8:00-8:05	Arrival to HQ 412 TW, Bldg. 2750, CR 204 and check-in	
8:05-8:10	Meeting Objectives and Ingredients of Success	Dr. Brett Pokines, AFOSR/AFRL
8:10-8:20	Introduction of AFTC	Mr. John Grigaliunas, AFTC/CZ – AFTC
8:20-8:40	Programs and Future Needs	AFTC 96th Test Wing
8:40-9:00	Programs and Future Needs	AFTC Arnold Engineering Development Complex
9:00-9:15	Benchmarking, Verification, and Authentication of Resource Restricted Quantum Hardware Using Novel Quantum Control Protocols	Dr. A. Minnich, Caltech
Test Facility Visits		
9:15-10:45	Joint Simulation Environment and Test Pilot School <u>Please confirm Test Facility visit participation through registration link, as space is limited.</u> [(Bus in position at Bldg. 2750 by 0845)]	
10:45-11:00	Reconvene at CR 204	

Vision, Strategy, Metrics		
11:00-11:30	Steward of the Digital Thread	Mr. John Grigaliunas, AFTC/CZ – AFTC, AFTC
11:30-12:00	Delineate programmatic methods and discovery/development elements – strategies to accelerate and maximize basic science impact on DAF capabilities.	Dr. Mark Lewis, Purdue University
12:00-12:30	Elements of basic science and technology transition for the DAF – metrics of success	Dr. Leo Kempel, Michigan State University
Lunch and Teaming		
12:45-14:00	<p>Lunch at Club Muroc (No host), 275 Doolittle Parkway, Edwards AFB <u>Lunch participation is encouraged to continue partnering and discussion time, please conform through registration link [Bus in position at Bldg. 2750 by 12:30 to Club Muroc].</u></p> <p>Lunch Menu: Fajita Bar: Flour Tortillas (3 per person) filled with your choice of steak or grilled chicken, grilled onions, and peppers. Served with lime cilantro rice and black beans. \$13 per person.</p> <p>*If unable to attend please notify 412 TW Protocol (661.277.4413) no later than 16 May. Please, You will be required to pay for any reserved meal if not canceled by 16 May</p>	
13:50-14:10	Return to CR204	
Test Methods for Modeling		
14:10-14:30	Compositional Test Methods for Advanced Battle Management Systems	Dr. Ufuk Topcu, UT Austin, Dr. Sebastian Zanlongo, JHU APL
AFTC/CC and Model Futures		
14:30-14:50	AFTC Perspectives	Maj. Gen. Scott A. Cain is the Commander, Air Force Test Center, Edwards Air Force Base
14:50-15:20	Computational Methods, Models and Simulation Structures of the Future – Model and Simulation Transformation over the Next Decade	Dr. Karen Willcox, University of Texas at Austin
15:20-15:25	BREAK	
Test Measurements for Modeling		
15:25-15:45	Reduced-Order Aerodynamics Models in Support of Test and Evaluation	Major D. (KNOTS) Harp, USAFA DF/DFAN
15:45-16:05	Boundary Layer Transition 1B (BOLT-1B) Flight Experiment	Dr. Brad Wheaton, APL
16:05-16:25	Fundamental Spectroscopy of Oxygen at High Temperatures and Pressures in Support of Quantitative Sensing for Hypersonic Air Flows	Dr. Ronald Hanson, Stanford University
16:30-17:30	Move to Club Meroc for Teaming and Partnering Opportunity	

Teaming Opportunity	
17:30-18:30	Teaming and S&T Discussions, Fogleman's Lounge at Club Meroc (No Host Social)

Agenda Day 2 21 May 2025 [Pacific Time]		
Time	Topic	Speaker
Check-in and Meeting Plan		
8:00-8:20	Arrival to HQ 412 TW, Bldg. 2750, CR 204 and check-in	
8:20-8:30	Meeting Objectives and Ingredients of Success	Dr. Brett Pokines, AFOSR/AFRL
Science Digital Model Futures		
8:30-9:00	Test Design	Dr. Daniel DeLaurentis
9:00-9:30	Disruptive Computational Science for Digital Twins Across the DoD Platform Lifecycle: From Design to Predictive Maintenance	Dr. Charbel Farhat, Stanford University
9:30-9:50	BREAK	
Test Methods for Modeling (Session Chair: Dr. Thaddeus Asel, AFRL/RXEE)		
9:50-10:10	Acute Stress Modeling for Credibility Assessment and Training Validation	Dr. Mark Uline, University of South Carolina
10:10-10:30	Quantum Testing and Thermal Management of Bioinspired Devices and Systems	Dr. Ivan Schuller, University of California, San Diego
Test Methods for Modeling		
10:30-10:50	Programs and Future Needs	Dr. Mario Dorado, 772 Test Squadron Technical Director, AFTC Benefield Anechoic Facility
10:50-11:10	Programs and Future Needs	Colonel James Valpiani, Commandant, USAF Test Pilot Schools
11:10-11:30	Testing in the Joint Simulation Environment	Lieutenant Eli Winett, Flight Chief, Data Analysis
11:30-13:00	Lunch at Club Muroc (No host), 275 Doolittle Parkway, Edwards AFB. Lunch participation is encouraged to continue partnering and collaboration time, please conform through registration link [Bus in position at Bldg. 2750 by 11:15 to Club Muroc]. Lunch Menu: BBQ Bar: \$20 per person.	

	*If unable to attend please notify 412 TW Protocol (661.277.4413) no later than 16 May. You will be required to pay for any reserved meal if not canceled by 16 May.	
12:50-13:00	Return to CR204	
AFRL/CC and Test Measurements for Modeling		
13:00-13:30	AFRL Perspectives	Brig. Gen. Jason E. Bartolomei, Commander, Air Force Research Laboratory, and Dr. Kevin T. Geiss, Director, Air Force Office of Scientific Research, Air Force Research Laboratory (Virtual)
13:30-13:50	Quantifying Limitations of Data Reconstruction Techniques for Hall Thruster Diagnostics	Dr. Christine Greve, AFRL/RQRS
13:50-14:10	Nondestructive Evaluation of Integrated Circuits using Excitonic Probes	Dr. Parag Deotare, University of Michigan
14:10-14:30	Break and Partnering Opportunity	
Test Data and Analysis for Modeling		
14:30-14:50	Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results	Dr. Keegan Moore, Georgia Tech
14:50-15:10	Guardrails Program: Run Time Assurance (RTA) methods using Control Barrier Functions (CBFs) realized experimentally as a “safety supervisor” enforcing virtual Guardrails on the F-16 VISTA aircraft	Dr A. Singletary, 3Laws Robotics and Dr. A. Ames, Caltech
15:10-15:30	Transient Electrothermal T&E and Modeling for Wide Band Gap (WBG) Components - Addressing Critical Underlying Test Infrastructure Needs for Future Sub-Systems	Dr. Nicholas Miller, Michigan State University
Partnering and Next Steps		
15:30-16:00	Teaming Discussion <ul style="list-style-type: none"> • Attendee Contact List, AFRL and AFTC Points of Contact • Next Steps <ul style="list-style-type: none"> -Team White Papers (3 June 2025) <brett.pokines.1@us.af.mil> --Email Subject Line: “WP Rev Test” -Virtual 30 Minute Pitch Meetings (Start 9 June 2025 – End 18 June 2025) -Proposals Due (21 July 2025) • Attendees Q&A 	
16:00	REVIEW ADJOURN	

NOTE: Non-CAC Holder must arrange Edwards AFB access.

The process is:

Call 412th: Mr. Brandon Roque, Chief of Protocol (acting), 412 TW/CCP

Edwards AFB, CA

brandon.roque@us.af.mil

Org: 412tw.protocol@us.af.mil

Office Phone: 661.277.4413

Duty Phone: 661.810.8288

Please provide by phone:

- i. Full Name (as shown on Driver's License)
- ii. Driver license number and issuing state
- iii. Date of Birth
- iv. U.S. Citizen (Yes or No)