



Program Guide

Acquisition Analytics for Counter Unmanned Aircraft Systems

2 - 4 March 2021

Welcome!

On behalf of the Military Operations Research Society (MORS), we would like to welcome you to the MORS Counter-Unmanned Aircraft Systems (C-UAS) Workshop.

C-UAS protects critical assets and events against UAS. UAS are being used in various conflicts around the world and small UAS are a rapidly emerging threat domestically in the US. An important objective of the Department of Homeland Security (DHS) and the Department of Defense (DoD) is to cost-effectively field C-UAS capabilities that will protect the nation and its residents against UAS threats.

This workshop will share information and analysis used in support of C-UAS requirements development, acquisitions, deployment, and sustainment. Our workshop targets Government Agencies' (DoD, DHS, Department of Justice, Department of Energy, etc.) Requirements, Acquisition, Risk Analysis, Program Analysis, and Operational Analysis communities.

- **Workshop Objective #1:** Identify C-UAS best practices for mission metrics, cost analysis, and risk methodologies.
- **Workshop Objective #2:** Facilitate crosstalk between the C-UAS communities (e.g., DoD, DHS, Bureau of Prisons).

To accomplish these objectives, we have scheduled – as our Plenary Speakers – **Mr. Brent Cotton**, Director, C-UAS Program Management Office (PMO), DHS Headquarters and **Mr. Al Sciarretta**, Chair of the Assistant Secretary of the Army for Acquisition Logistics, and Technology's (ASA(ALT)) Board on Army Research, Development, Test and Evaluation (RDT&E), Systems Acquisition, and Logistics (BARSL), together with presentations and panels by four working groups:

- **Working Group #1:** Mission Effectiveness Analysis
- **Working Group #2:** Cost Estimation
- **Working Group #3:** Development of C-UAS Risk Analysis Measures and Techniques
- **Working Group #4:** Synthesis

We hope you enjoy the networking, professional education, and knowledge the Workshop offers over the next few days!

C-UAS Workshop Planning Team

Microsoft Teams**How to log into the Acquisition Analytics for C-UAS Workshop**

We will be using Microsoft Teams (MS Teams) for this Workshop. MS Teams works best in Google Chrome or Microsoft Edge browsers. Participants will be allowed in the “main room” via the “lobby” but will not be allowed to record sessions or call in from mobile devices or landlines. Prior to the start of the Workshop, download the MS Teams Desktop App [here](#).

Workshop Links:

MORS will be using separate links in MS Teams for the Main Conference Room and each of the Working Groups. After the Keynote presentations, each participant will need to use the link provided to access the Working Group he/she plans to attend. You can return to the Main Conference Room at any time and there will be a link for a Collaboration Room if you wish to have a private meeting.

Main Conference Room: [Link](#)

WG 1 Mission Effectiveness Estimation and Assessment: [Link](#)

WG2 Cost Estimation: [Link](#)

WG3 Development of C-UAS Risk Analysis Measures and Techniques: [Link](#)

MS Teams Operating Tips:

Manage your call setting in MS Teams [here](#).

(If participating on a MAC, visit the link of helpful tips for MAC users [here](#).)

Assistance With MS Teams: Contact Ms. Taniesha Sims, taniesha.sims@mors.org

**MORS APP****Download the MORS App**

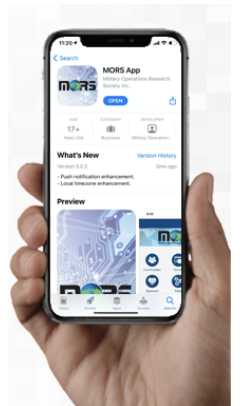
Stay up to date on all things regarding this workshop by downloading the MORS App! To download, search for “MORS App” in either the Apple Store or Android Store. You can also access the app on your desktop at <https://mors-virtual.eventpedia.us/>. Your MORS website login is also your app login.

App Download URL

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Assistance With MORS APP: Contact Mr. Rafael Lomba, rafael.lomba@mors.org

**Recommended Reading List and Workshop Resources**

The Workshop Committee has added some reading resources for participants which can be accessed [here](#) under the “Participant’s Guide” tab. The website can only be accessed by registered participants. If you are not able to access the site, contact MORS staff member, Mr. Rafael Lomba, rafael.lomba@mors.org for log-in assistance.

Workshop Contacts

Please feel free to contact us if you have any questions!

MS Teams: Ms. Taniesha Sims, taniesha.sims@mors.org

MORS App: Mr. Rafael Lomba, rafael.lomba@mors.org

Registration Questions: Ms. Tina Yan, tina.yan@mors.org

Tuesday, 2 March

- 1030 – 1035 EST** **Welcome**
Dr. Michael Hieb, Chair

- 1035 – 1045 EST** **MORS Presidents Welcome**
CAPT Brian Morgan (Retd.), MORS President

- 1045 – 1120 EST** **Keynote**
Mr. Brent Cotton, Director, C-UAS Program Management Office (PMO), DHS HQ

- 1120 – 1200 EST** **Keynote - Challenges in Assessing Counter-sUAS Systems for DoD and DHS**
Mr. Al Sciarretta, Chair of ASA(ALT)'s Board on Army RDT&E, Systems Acquisition, and Logistics (BARSL)

- 1200 – 1300 EST** **Lunch**

- 1300 – 1400 EST** **Threat UAS Brief**
Mr. Andy Dreby, Director of Risk Management, Red Six Solutions

- 1400 – 1415 EST** **Break**

- 1415 – 1800 EST** **Working Group Sessions**

Working Group 1: Mission Effectiveness Estimation and Assessment	Working Group 2: Cost Estimation	Working Group 3: Development of C-UAS Risk Analysis Measures and Techniques
1415 – 1500: Introductions and Overview	1415 – 1445: Introductions / Overview / Expectations / Intended Deliverables	1415 – 1430: Introductions/Level Setting/Intended Outcomes Overview Presentation
1500 – 1600: "System Considerations and Lessons Learned from C-UAS Testing and Evaluation" – Dr. Gabriel C. Birch, Sandia NL "Counter UAS Systems Effectiveness; Data Collection and Analysis Challenges and Successes" – Mr. David Kovar, Ursasecure	1445 – 1615: Presentation on Authoritative Databases to Educate and Level-set Audience Before Brainstorming discussion. Presented by Ms. Crystal Rudloff, Mr. Brian Davis and Mr. Marc Stephenson, the Defense Cost & Resource Center, DCARC Brainstorming (Database) (Part 1) – Moderator: Mr. Brian Strevens	1430 – 1500: "Risk Assessment for C-UAS: An Overview" – Mr. Chris Adams and Dr. Arch Turner, Co-Chairs
1600 – 1615: Break	1615 – 1630: Break	1500 – 1515: Break
1615 – 1800: Brainstorming Effectiveness Metrics – Mr. Gordon Banks, DTRA	1630 – 1800: Brainstorming (Database) (Part 2) – Moderator: Mr. Brian Strevens	1515 – 1600: "Threat of Small UAS (sUAS)" – Mr. Andy Dreby, Director of Risk Management, Red Six Solutions
		1600 – 1630: "Small Unmanned Aerial System Adversary Capabilities" – Mr. Bradley Wilson, RAND Corporation
		1630 – 1700: "sUAS Capabilities Evaluation Using ASTM Standard Test Methods" – Mr. Philip Mattson, Science and Technology Directorate, Department of Homeland Security
		1700 – 1715: Break
		1715 – 1800: Guided Discussion

Wednesday, 3 March

- 1020 – 1030 EST** **Welcome**
Dr. John Dargan, Chief, Systems Engineering and Standards, DHS

- 1030 – 1200 EST** **Working Group Sessions**

Working Group 1: Mission Effectiveness Estimation and Assessment	Working Group 2: Cost Estimation	Working Group 3: Development of C-UAS Risk Analysis Measures and Techniques
1030 – 1130: "Counter Directed Energy Warfare and the Defense of Naval Unmanned Aerial Vehicles" – Dr. Bonnie Worth Johnson, NPS "Bayesian Updating with a Gaussian Mixture Model for Assessing Limited Data CUAS Experiments" – CDT Bennett Hellman, West Point	1030 – 1200: Q&A Session with Mr. Brent Cotton, DHS C-UAS PMO	1030 – 1200: Panel Discussion – "Lessons Learned from Federal Risk Assessment Approaches" - Ms. Jodi Terhorst (Moderator) – C-UAS Program Management Office, DHS Policy - Mr. Todd Consolini – Federal Protective Service - Mr. Don McKinnon – DHS Office of Operations Coordination - Mr. Scott Parker – Cybersecurity and Infrastructure Security Agency

- 1200 – 1300 EST** **Lunch**

- 1230 – 1800 EST** **Working Group Sessions**

Working Group 1: Mission Effectiveness Estimation and Assessment	Working Group 2: Cost Estimation	Working Group 3: Development of C-UAS Risk Analysis Measures and Techniques
1230 – 1330: "Analysis of Integrated Air Detection, Tracking, and Engagement System (IADTES) Study for Customs and Border Protection" – Mr. Steven Moyer, CBP "Dynamic Modeling of Counter-Unmanned Aircraft Systems (C-UAS)" – Ms. Julianne Pannell, CAA	1300 – 1330: "Two-Stage Stochastic Modeling Framework for C-UAS Subset Selection" – CDT Frank Rose, West Point 1330 – 1400: Manpower Analysis for C-UAS Programs, Dr. Jennifer Lewis and Ms. Megan McKernan, RAND Corporation	1300 – 1430: "Geospatial Information Sharing as a Tool for Risk Assessment" – Mr. John Stephen Eberhardt, III, Advanced Technology Applications & Mr. Shawn Talmadge, Deputy Secretary for the Commonwealth of Virginia "Countering the ISR Threat from Adversary sUAS" – Dr. Olivia Sun, Institute for Defense Analysis "Assessing C-UAS Detection and Defeat Capabilities Against Adversarial Intrusions" – Mr. William Leonard, US Army Engineer Research and Development Center
1330 – 1345: Break	1400 – 1430: "Analysis of Integrated Air Detection, Tracking, and Engagement System (IADTES) Study for Customs and Border Protection" – Dr. Steven Moyer, CBP	1430 – 1445: Break
1345 – 1615: Brainstorming Effectiveness Metrics Utility Computation – Mr. Gordon Banks, DTRA	1430 – 1445: Break	1445 – 1530: "Integrating UAS Threat and Risk to Set C-UAS Priorities" - Mr. Keon Baxter and Mr. Jim Bamberger, Transportation Security Administration

1615 – 1630: Break	1445 – 1615: "Work Breakdown Structure Development" – Mr. Dan Germony, OSD CAPE Brainstorming (Work Breakdown Structure) (Part 1) – Moderator: Dr. Scott Willette	1530 – 1545: Break
1630 – 1800: Continue Brainstorming Effectiveness Metrics Utility Computation – Mr. Gordon Banks, DTRA	1615 – 1630: Break 1630 – 1800: Brainstorming (Work Breakdown Structure) (Part 2) – Moderator: Dr. Scott Willette	1545 – 1800: "Towards an Extensible Model for C-UAS Risk Assessments" Discussion – Mr. Chris Adams and Dr. Arch Turner, Co-Chairs 1615 – 1630: Break 1630 – 1800: "Towards an Extensible Model for C-UAS Risk Assessments" Discussion Continued – Mr. Chris Adams and Dr. Arch Turner, Co-Chairs

Thursday, 4 March

1020 – 1030 EST **Welcome**
Dr. Michael Hieb, Chair

1030 – 1200 EST **Working Group Sessions**

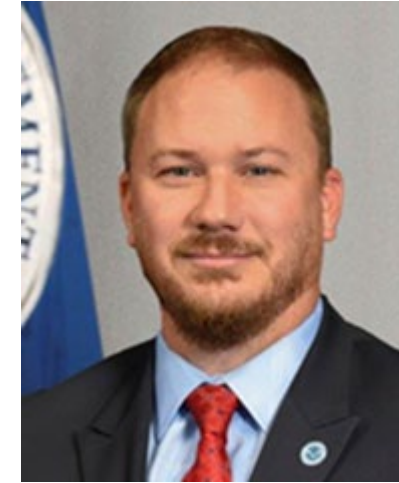
Working Group 1: Mission Effectiveness Estimation and Assessment	Working Group 2: Cost Estimation	Working Group 3: Development of C-UAS Risk Analysis Measures and Techniques
1030 – 1200: Work Group #1 Outbrief Red Team	1030 – 1130: "Developing Rough Order of Magnitude (ROM) Cost Estimates for Novel Science and Technology (S&T) Systems" – Dr. Scott Willette, Innovative Decisions, Inc. "Developing Abbreviated Rough Order of Magnitude (ROM) Cost Estimates for Counter Small – Unmanned Aerial Systems (Cs-UAS)" – Mr. Christopher Edmonds, AFC-TRAC 1130 – 1200: Presentation by Dr. Jeffrey Randorf, DHS S&T Directorate	1030 – 1200: Working Group #3 Outbrief Development

1200 – 1300 EST **Lunch**

1300 – 1430 EST **Working Group 1 and 2 Outbriefs**

1430 – 1445 EST **Break**

1445 – 1700 EST **Working Group 3 and Synthesis Outbriefs**



Mr. Brent Cotton
Director,
C-UAS PMO (Program Management Office),
DHS HQ

Mr. Cotton assumed the role of Director for the Counter Unmanned Aircraft Systems (C-UAS) Program Management Office (PMO) in March of 2020. The Counter-Unmanned Aircraft Systems (C-UAS) Program Management Office (PMO) drives the implementation and management of the statutory requirements found in the Preventing Emerging Threats Act of 2018 ("the Act") and is the Department's single Point of

Contact for Congressional and Interagency C-UAS issues. The PMO develops policy and guidance, enables operational and support missions, manages Interagency partnerships, and integrates strategic-level planning into daily workstreams. The PMO vision includes a fully integrated National Airspace System (NAS) enabling recreational and commercial UAS operations through an Interagency approach to air domain awareness, threat discrimination, and the ability to counter noncompliant and nefarious actors posing risk to the Homeland.

Prior to joining DHS Headquarters, Brent was Acting Deputy Assistant Administrator (DAA) for the Office of Inspection (OOI), after holding several positions within OOI, including Senior Advisor and Branch Manager in the Special Operations Division (SOD).

Mr. Cotton's security career began during the TSA rollout in 2002, where he trained the first federalized screeners. After the rollout, Brent played an active role in developing and implementing the On-Screen Alarm Resolution Protocol (OSARP) for checked baggage. After arriving at headquarters in 2010, Mr. Cotton was part of the Operations Improvement Branch (OIB) where he helped TSA solve problems associated with rolling out new equipment and procedures. Identified as an unconventional thinker willing to challenge assumptions, Mr. Cotton was recruited as a member of the Risk Based Security Team to create new and innovative approaches to airport security, including TSA Precheck.



Mr. Al Sciarretta
Chair of ASA(ALT)'s Board on Army RDT&E,
Systems Acquisition, and Logistics (BARSL)

Mr. Albert A. Sciarretta, PE, is President of and sole performer within CNS Technologies, Inc. In this position, he works primarily as an independent consultant to various organizations. For more than 35 years, as a U.S. Army officer (retired as a Lieutenant Colonel) and civilian contractor, he has used his operational, research and development, operations research, prototyping and experimentation, mechanical engineering, and human performance assessment experience to assess the military benefits of technologies and develop technology investment strategies.

As a consultant to the DoD Test Resource Management Center (TRMC), he has served more than 17 years as a subject matter expert (SME) for advanced test technologies. Most recently, he is assisting TRMC in identifying test range infrastructure needs for testing counter-small aircraft system (C-sUAS) systems. In another consulting job, the U.S. Bureau of Prisons has asked Mr. Sciarretta to design and execute two tests at Federal Correctional Complexes: 1) a test of C-sUAS systems and 2) a test of devices designed to remotely detect cell phones in federal prison facilities.

Mr. Sciarretta chaired the 2017 National Academies of Sciences, Engineering, and Medicine (NASEM) ad hoc study on "Counter-Unmanned Aircraft System (CUAS) Capability for Battalion-and-Below Operations." The committee report has been downloaded all over the world and is in the top 8 percent of National Academy Press downloads. He previously served as a committee member for six separate NASEM studies, including "Technology Development for Army Unmanned Ground Vehicle," "Advanced Energetic Materials," and "Making the Soldier Decide on Future Battlefields." He is currently a member of the NASEM Board on Army Research and Development (BOARD), a member of the NASEM Intelligence Science and Technology Experts Group (ISTEG), and the Chair of the ASA(ALT) Board on Army RDT&E, System Acquisition, and Logistics (BARSL).

About

MORS offers a wide variety of professional development opportunities each year including 4-5 focused Workshops, the MORS Symposium and 4-6 certificate courses taught by highly respected, well-known members of the OR community. With 22 active Communities of Practice (CoPs), MORS continues to stay relevant in the rapidly changing environment of military operations research. Visit www.mors.org to see all MORS has to offer!

Upcoming Events

Weekly, [MORS - Talk Discussions](#)
 15-19 March, [Certificate in Cyber Wargaming](#)
 23-24 March, [Education and Professional Development Colloquium \(EPD\)](#)
 6-8 April, [Gaming Emergency Response to Disease](#)
 14-15/21-22 April, [Certificate in Survey Process](#)
 26-30 April, [Certificate in Wargaming](#)
 4-5/11-13 May, [Certificate in Excel Functions for Data Analysts](#)
 21-24 June, [89th Symposium](#)
 25-28 October, [AI and Autonomy Workshop](#)

Communities of Practice (CoP)

MORS' 22 CoPs cover all areas of military operations analysis. CoPs are an excellent way to enhance your professional development and get involved in MORS with a limited time commitment. Visit the MORS website for a full list of CoPs or to join. Contact: Ms. Liz Marriott, liz.marriott@mors.org

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The MORS Certificate programs provide the next level of professional development and involve practical knowledge to equip you with essential information and to help prepare you to excel in your professional environment. If we do not offer a course on a specific topic area, we would be happy to customize one for your organization. Visit the website for a full list of current courses. Contact: Ms. Jennifer Ferat, jennifer.ferat@mors.org

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Membership

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Partner Program

The MORS Partner Program provides your organization exposure to government and industry leaders. Receive complimentary MORS memberships, advertising opportunities and other Partner benefits. Visit the MORS website to view all of our current Partner levels. Visit the partner website for more details. Contact: Mr. Ron Sallerson, ron.sallerson@mors.org