



# AOSP Newsletter

Airspace Operations and Safety Program (AOSP)

OCT-DEC 2018 | Quarter 1



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## AOSP IN THE NEWS

### [Awards gala to honor feds' public service innovation](#)

Federal Times (10/02) reports that Parimal Kopardekar, Senior Technologist for Air Transportation Systems at NASA's Ames Research Center, and his team will be awarded the Promising Innovations Medal for their cross-agency efforts to design a traffic management system for commercial drone use.

### [Looking Ahead: 11 Predictions On How Drone Deliveries Will Work](#)

Forbes (10/04) reports while regulatory obstacles remain, drone technology continues to improve at rapid pace. Significant investment in the field has accelerated technology and adoption. NASA estimates 7 million drones in the sky by 2020, with 2.6M in the commercial space. NASA's involvement in air traffic control for drones is paving the way for governments and businesses to use them for many different courier needs.

### [NASA Plans For Urban Air Mobility 'Grand Challenge'](#)

Aviation Week (11/2) "Seattle—NASA has rolled out its Grand Challenge plan to help guide, foster and enable the coming generation of urban air mobility (UAM) vehicles and is seeking feedback from industry to fine tune and guide the initiative."

### [NASA Rolls Out Urban Air Mobility 'Grand Challenge' Plan](#)

Aviation Week (11/8) "Widely viewed until recently as bordering on science fiction, the age of urban air mobility (UAM) is fast approaching reality and is poised to transform both aviation and society, says NASA. Now, with international activity in this new market accelerating, the agency has unveiled plans to cultivate the development of a U.S.-led urban air revolution."



## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

### **DRAW Human-in-the-Loop Simulation #4 Completed**

POC: [DOUG ISAACSON](#)

The Airspace Technology Demonstration-3 (ATD-3) team completed the fourth in a series

of planned Human-in-the-Loop (HITL) studies of the Dynamic Routes for Arrivals in Weather (DRAW) tool, at the Air Traffic Control simulation laboratory at Ames Research Center in California, from October 22 - November 2.

The purpose of this simulation was to evaluate arrival metering and weather impact mitigation benefits for Atlanta En Route Center (ZTL) arrivals, to assess the effects of different schedule freeze horizon distances on DRAW performance,



*Subject controller using the DRAW tool during HITL simulation #4.*

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

and to evaluate DRAW reroute coordination with expanded (relative to HITL simulation #3) operations into Jacksonville En Route Center (ZJX) airspace. Study participants included four recently-retired traffic management coordinators (TMCs), two each from ZTL and ZJX, and seven recently-retired Sector Controllers (two from ZTL, one from ZJX and four from Oakland Center). A pair of TMCs (one from ZTL, one from ZJX) participated as a team each week of the study, with the ZTL TMC participating as the primary DRAW user and the ZJX TMC providing consultation for reroutes impacting ZJX airspace and operations. Each TMC team evaluated two weather-impacted arrival traffic scenarios at two schedule freeze horizon distances, both with and without DRAW functionality, across 16 runs. The DRAW functions included TMC reroute advisories and schedule impact/delay information. TMCs used the DRAW trial planning capability to evaluate candidate reroutes for weather avoidance, assess their schedule delay impact, coordinate reroutes with sector controllers when required, and amend flight routes as necessary to maintain effective arrival metering.

The inclusion of ZJX personnel in HITL simulation #4 allowed researchers to investigate the

coordination required for reroutes across center boundaries. Data collection included questionnaires and DRAW performance data. Researchers gained valuable feedback toward DRAW use in operations that may include extended metering and coupled scheduling. Data analysis is currently underway.

### **ATD-2 Continues CLT Training for Phase 2 Field Demonstration**

POC: [LINDSAY STEVENS](#)

Due to the impacts of Hurricane Florence on the September Airspace Technology Demonstration–2 (ATD-2) Phase 2 field demonstration training session, a second round of training was conducted at Charlotte Douglas International Airport (CLT) during the week of October 16-20. The ATD-2 team provided training for American Airlines (AAL) ramp controllers and regional carrier staff, FAA Air Traffic Control Tower (ATCT) traffic management coordinators (TMCs), and front-line managers (FLMs) on the new features for Phase 2, as well as refresher training for all features introduced since September 2017. Each training session enabled users to learn about the features while being fully hands-on with the system. In the ATCT, 11 TMCs and FLMs were trained on the

updated system; in the AAL ramp, 22 AAL personnel received full training and a handful of others received partial updates as available.

### **FY18 Annual Program Review for AOSP Projects**

POC: [JOSEPH DAVIS](#)

From October 17-19, AOSP hosted its FY18 Annual Program Review at NASA Headquarters in Washington, DC. The purpose of the review was to look back at the 2018 challenges and accomplishments for each of the four AOSP projects: Airspace Technology Demonstrations (ATDs), Air Traffic Management-eXploration (ATM-X), System Wide Safety (SWS), and Unmanned Aircraft System Traffic Management (UTM). At the Program Review, review panels were asked to assess the quality and performance of the four AOSP projects. Following the conclusion of the project presentations, the review panels were given an opportunity to discuss findings, make comments, and provide recommendations, which were presented to the program office at the end of the Program Review.

### **Assurance Checklist Meeting**

POC: [YURI GAWDIAK](#)

On October 23, members of AOSP's Risk Team met with Dr. Homayoon Dezfuli, NASA

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

Office of Safety and Mission Assurance (OSMA), to review the concept of a checklist for assurance for planning and risk management. The checklist is a matrix consisting of work-breakdown structure, product breakdown structure, and lifecycle phases. The System Wide Safety project performed an initial evaluation of the checklist to assess if it would help them search their risk trade space. OSMA agreed there is no standard checklist and no systematic way to ensure that the risk identification processes are thorough and complete. There was an agreement to work together on several related activities with OSMA in order to meet completeness/assurance requirements that could leverage the matrix concept.

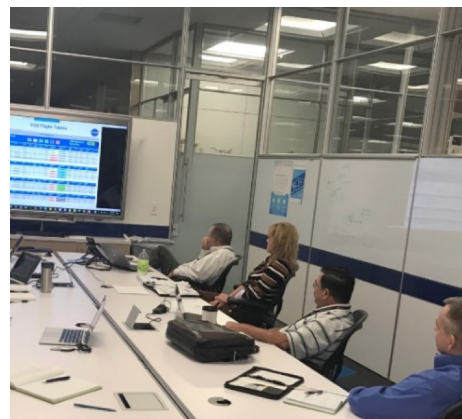
### ATD-2 Team Conducts Working Sessions with Phase 3 Airline Field Demo Partners

POC: [ERIC CHEVALLEY](#)

On October 23 and 24, NASA engineers met with field



demonstration partners to discuss the Airspace Technology Demonstration-2 (ATD-2) Phase 3 effort. The NASA team discussed the Phase 3 terminal departure capability with Southwest Airlines and American Airlines at their headquarters in the Dallas-Fort Worth (DFW) region. The team had robust discussions on the use of Trajectory Option Sets (TOS) to provide alternative routes out of the DFW Terminal Radar Approach Control Center (D10) region during periods of demand/capacity imbalance. The team also discussed methods to leverage existing coded departure routes to simplify initial evaluation of the concept, specific criteria that would help NASA identify good TOS candidates for airline operational use, and early mock-ups of the user interface. The discussions were productive and follow-up working sessions were scheduled in November.



NASA met with Southwest Airlines (left) and American Airlines (right) to discuss ATD-2 Phase 3.

### Briefing to Smart Buildings Action Cluster

POC: [YURI GAWDIAK](#)

On October 24, Yuri Gawdiak, Associate Director for AOSP, provided a Web-Ex briefing to the Smart Buildings Action Cluster on the latest status of Urban Air Mobility (UAM) activities. The meeting was hosted by the National Telecommunications and Information Administration. For now, this community of practice is flight—following NASA's UAM efforts— but will likely become more engaged once prototype vertiports will become part of the downstream Grand Challenges beyond 2020.

### Cybersecurity Systems Modeling and Simulation

POC: [PAUL NELSON](#)

The AOSP Cybersecurity Engineering Team recently completed initial training in October to enable an operating capability for cybersecurity systems modeling and engineering. The capability consists of software technology from Scalable Networks, dedicated hardware supported by the Air Traffic Management-eXploration (ATM-X) Glenn Communications Testbed, as well as software development, modeling, simulation, and mathematics expertise. The software and hardware components



## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

are a result of significant FY18 contributions from the AOSP ATM-X and System Wide Safety projects, as well as the Unmanned Aircraft Systems Integration in the National Airspace System project from the Integrated Aviation Systems Program. The initial modeling will consist of current public key infrastructure concepts being proposed or pursued for unmanned aircraft systems or urban air mobility.

These concepts are mostly focused on terrestrial networks operations and it is anticipated that significant research will be needed to mature these concepts from strict Internet-based technologies to support these highly different future environments.

### **ICAROUS Sense and Avoid Characterization Phase 3 Testing**

POC: [RON JOHNSON](#)

On October 25, Phase 3 testing for the Independent Configurable Architecture for Reliable Operations of Unmanned Systems (ICAROUS) Sense and Avoid Characterization research was initiated at Beaver Dam Airpark in Elberon, Virginia. One requirement for the widespread use of small Unmanned Aircraft Systems (UAS) is the capability to autonomously sense and avoid other aircraft, both manned and unmanned. ICAROUS Sense and

Avoid Characterization is being performed to develop technologies required for cooperative, autonomous sense and avoid for small UAS. “Cooperative” in this sense implies that all vehicles involved are broadcasting their location. ICAROUS Sense and Avoid Characterization uses Automatic Dependent Surveillance-Broadcast (ADS-B) technology, developed for manned aircraft, for small UAS applications. The objectives of ICAROUS Sense and Avoid Characterization research are to: evaluate the efficacy of representative small UAS micro ADS-B receivers to provide ADS-B in; evaluate the ability of using ADS-B to provide effective autonomous sense and avoid; assess the performance of ICAROUS to deconflict traffic; evaluate the effectiveness of reduced power ADS-B for small UAS applications (low-power ADS-B is required to mitigate potential overload of the ADS-B system that could be caused by large numbers of small UAS); assess the “well clear” definition for small UAS; and acquire high-resolution, position-correlated video for Image Object Detection algorithm development. Phase 2 testing was performed using two small UAS vehicles to evaluate small UAS versus small UAS autonomous sense and avoid in preparation for Phase 3. Phase 3 testing utilizes

manned general aviation intruder aircraft. For the testing on October 25, the SR-22 N504NA aircraft from the Langley Research Center in Virginia performed several hours of vehicle encounters with tremendous success for both head-on and crossing patterns. Phase 2 and Phase 3 testing is planned to be completed in November and is funded by the UAS Traffic Management project.

### **ATD-2 Briefs the Latest Updates to the Surface CDM Team**

POC: [YOON JUNG](#)

On October 30, NASA engineers participated in the Surface Collaborative Decision Making (CDM) team (SCT) meeting at Charlotte Douglas International Airport (CLT). The SCT membership consists of representatives from FAA, airlines, and airports. During the second departure bank in the morning, the SCT visited CLT Tower/Terminal Radar Approach Control Center and American Airlines Hub Control Center (i.e, ramp tower) to observe surface metering and overhead stream insertion managed by the Airspace Technology Demonstration-2 (ATD-2) system. NASA also briefed the SCT on ATD-2 capacity usage and the upcoming ATD-2 Industry Day workshop tentatively scheduled

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS



*Pete Slattery, National Air Traffic Controllers Association representative for Terminal Flight Data Management, gives a brief on the ATD-2 system.*

January 20-22, 2019, at Ames Research Center in California. In the afternoon, the SCT and NASA discussed further collaboration opportunities, especially for the ATD-2 Phase 3 work with the CDM Flow Evaluation Team. Phase 3 is planned to demonstrate the capability of combined surface metering and terminal airspace scheduling in the spring of 2019. The next January SCT meeting will be held at Ames in conjunction with the ATD-2 Industry Day workshop.

### Urban Air Mobility Coordination and Assessment Team Industry Day

POC: [KAREN CATE](#)

The Urban Air Mobility (UAM) Coordination and Assessment Team (UCAT) conducted an Industry Day meeting in Seattle,

Washington, from November 1–2. The purpose of this meeting was to gather with interested stakeholders and gain input on the UAM Grand Challenge demonstration, scheduled for 2020. Over 270 people from industry, academia, the FAA, and NASA attended the event. In particular, representatives from AOSP's System Wide Safety, Air Traffic Management–eXploration (ATM-X), and Unmanned Aircraft System Traffic Management projects participated in the event. In support of this effort, NASA recently released a request for information (RFI) about participation in the Grand Challenge, where aircraft and airspace systems can demonstrate

capabilities and technologies in order to further the realization of UAM operations. The announcement for the UAM Grand Challenge Industry Day was posted on FedBizOpps. UAM innovators were invited to discuss the role NASA would play in a UAM Grand Challenge and the utility to participating partners. The event overview and agenda can be viewed on the FedBizOpps RFI listed below.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=57bbdeecd8e64a6a083ecb19e660cfd&tab=core&\\_cvview=0](https://www.fbo.gov/index?s=opportunity&mode=form&id=57bbdeecd8e64a6a083ecb19e660cfd&tab=core&_cvview=0)



*Poster depicting NASA Aeronautics' UAM Grand Challenge Industry Day event.*

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

### Mobile Application Enables Information Exchange Between GA Pilots and ATD-2 System

POC: [DEBI BAKOWSKI](#)

On November 5, the MITRE Corporation's mobile application technology allowed a two-way information exchange between the NASA Airspace Technology Demonstration – 2 (ATD-2) system and General Aviation (GA) operations at Charlotte Douglas International Airport (CLT). The mobile app work is being led by the FAA's NextGen Program Office (ANG). The mobile information-

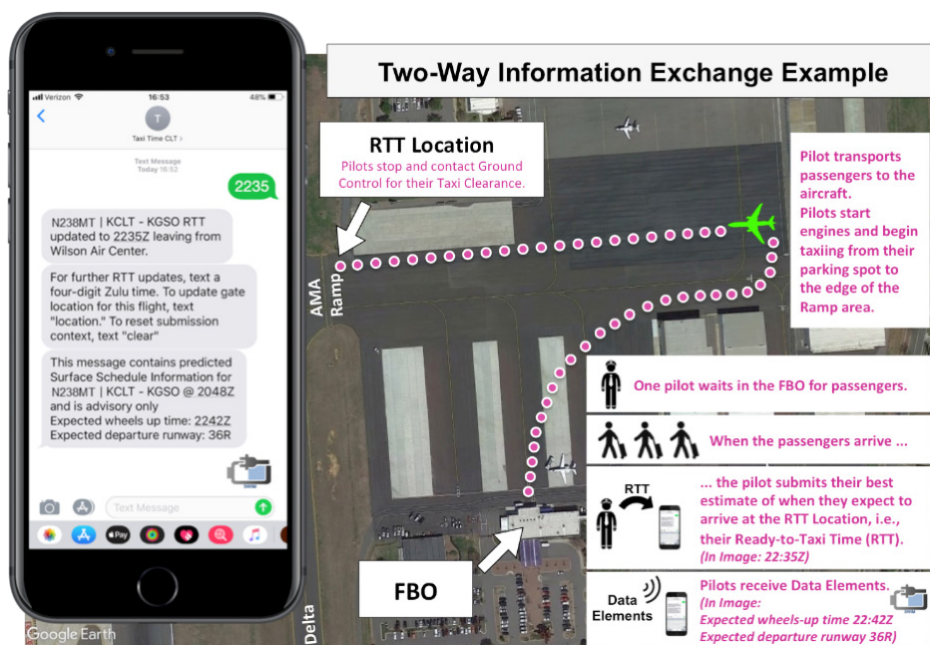
sharing technology will now receive flight-specific schedule and planning information when the GA pilot submits a ready-time for their flight. This exchange is being performed in a manner that is logically consistent with Terminal Flight Data Management (TFDM) interface specifications. Unlike commercial operations at CLT's main ramp, where airlines share Earliest Off-Block Times for each departing flight, GA operations did not have that same mechanism. NASA, the FAA, and MITRE began the initial phase of beta-testing at CLT in October 2017 with a prototype mobile application that allowed

GA pilots to submit a Ready-to-Taxi Time (RTT) for their flight. The RTT represents the pilot's best estimate of when they will be ready to contact Ground Control to request their taxi clearance. With better predictions of ready-times for GA flights, the ATD-2 scheduler can more accurately predict runway demand and surface schedules. Based on pilot feedback, MITRE introduced an SMS texting capability earlier this year which allows participants to more conveniently submit their RTT via text rather than through a mobile application. Information generated by the ATD-2 scheduler is then passed to the user via the new TFDM Terminal Publication that NASA is publishing on the System Wide Information Management research and development network. This real-time data includes expected runway assignment, expected takeoff time, and Traffic Management Initiative information when applicable. NASA, the FAA, and MITRE will continue to work with participants to obtain their feedback on the new two-way information exchange.

### ATM-X Testbed Team Training and Development Meetings

POC: [KEE PALOPO](#)

The Air Traffic Management – eXploration (ATM-X) Testbed team



*The mobile information-sharing technology can now receive flight-specific schedule and planning information.*



## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

held multiple training sessions for users this past quarter. The first session was held at Langley Research Center in Virginia on October 18. Training participants included researchers and software developers from Langley, Ames Research Center in California, and Glenn Research Center in Cleveland. The ATM-X Testbed is being developed to address simulation and testing needs for airspace operations research and development. The Testbed provides a sophisticated simulation and evaluation capability to test potential National Airspace System tools, procedures, and concepts. Researchers and developers can create repeatable, consistent air transportation scenarios and use a mix of live and virtual simulation assets during evaluation. This training session was the fourth in a series of training sessions for users in government, industry, and academia. Since September 2018, the team has trained participants from NASA's Urban Air Mobility (UAM) subproject, Convergent Aeronautics Solutions project, System Wide Safety project, Uber, General Electric, Honeywell, and ATAC. The team is also exploring possibly recording the training for use by future audiences.

A second meeting was held at Langley from November 7–8, in which researchers from the respective

centers convened for hands-on software developer training on how to connect to the Testbed at Langley. Nineteen researchers participated at this meeting and are working on the ATM-X and Airspace Traffic Demonstration projects within AOSP. Training included relevant discussion and examples such as UAM mission planning, vertiport scheduling, conflict detection and resolutions, and human-in-the-loop UAM vehicle studies. The intent was to highlight Testbed utilities and research collaboration potential within the Testbed ecosystem.

### FAA NextGen Executive Board

POC: [AKBAR SULTAN](#)

On November 13, Akbar Sultan, Program Director for AOSP, represented NASA at a meeting of the NextGen Executive Board (NEB) at FAA Headquarters in Washington, DC. The NEB, which includes members from FAA, NASA, the Department of Defense, and the Department of Commerce, met to review and discuss key interagency NextGen initiatives. For this meeting, the agenda covered updates on the NextGen Advisory Committee, NextGen Executive Weather Panel, the Aviation Cyber Initiative, Automatic Dependent Surveillance—Broadcast technology, International Harmonization, and Space Traffic Management.

### Meeting with Korean UTM Team

POC: [RON JOHNSON](#)

From November 13–14, the Unmanned Aircraft System Traffic Management (UTM) project team met with members of the Korean UTM team at Ames Research Center in California for discussions about a potential collaboration. Members of the Korean UTM team represent three aeronautical organizations within Korea: the Korea Aerospace Research Institute, the Korea Institute of Aviation Safety Technology, and the Korea Advanced Institute of Science and Technology. The discussions centered on jointly conducting simulations and flight tests primarily exercising the two use-cases of operations in mountainous and maritime environments. The discussions are intended to result in a memorandum of understanding and a technical work plan describing the collaboration that will take place over the next few years.

### ATD-2 Team Briefs the System Wide Information Management Industry-FAA Team

POC: [SHAWN GORMAN](#)

On November 15, the Airspace Technology Demonstration–2 (ATD-2) subproject participated

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

in the FAA Program Management Organization hosted System Wide Information Management Industry—FAA team (SWIFT) event in Washington, DC. The purpose of the SWIFT event was to foster discussion and innovation among users of System Wide Information Management (SWIM) data. The venue was well-attended by numerous industry airline operators, vendors that support these operators, the FAA, and NASA, and included a keynote presentation by Southwest Airlines. NASA's presentations highlighted the ATD-2 operation in field environments for over a year, which is almost completely enabled by live SWIM feeds from

six distinct SWIM services. NASA also presented the benefits that have been obtained from this system while illustrating specific operational uses of new data in both air traffic control and operator environments. The Terminal Flight Data Management Terminal Publication feed that NASA is producing on the SWIM research and development network was briefly discussed and the aviation community was encouraged to gain access to it to foster innovation. NASA also presented the challenges of consuming SWIM data from numerous sources, including understanding the data elements in the context of the operational FAA system source,

mapping to consistent internal definitions, transforming to allow for robust handling of SWIM input changes, and producing the right data at the right time. The Fuser component that is used for mediation was briefly discussed as well as some lessons learned and how others in the community might gain access to it.

### Digital Transformation Team Activities

POC: [YURI GAWDIAK](#)

This past quarter, Yuri Gawdiak, Associate Program Director for AOSP, and Tiffany Smith, Aeronautics Research Mission Directorate (ARMD) Knowledge



*ATD – 2 team participated in the FAA Program Management Organization hosted SWIFT event in Washington, DC.*

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

Management Officer, supported ongoing activities for the NASA Digital Transformation team. On October 29, they conducted interviews of ARMD program directors in order to collect and assess their digital transformation maturity, success stories, targets of opportunities, and requirements for agency-wide digital transformations. During the week of December 3, the Digital Transformation team conducted a review workshop. The workshop provided an opportunity to analyze the survey data collected, the implications drawn from the data, and preliminary recommendations for NASA. The workshop provided an opportunity for the centers, support offices, and mission directorates to weigh in on the data assessments and provide feedback on the initial recommendations as well as any additional inputs they may have.

### FAA/NASA Quarterly Review Meeting

POC: [MIKE MADSON](#)

From December 3–5, representatives from the Airspace Technology Demonstration, Air Traffic Management–eXploration, System Wide Safety (SWS), and Unmanned Aircraft System Traffic Management projects met with the FAA for their regularly scheduled quarterly review meeting at Ames Research

Center in California. Each project presented highlights and status since the previous meeting for each of the subprojects. For the first time, the FAA has asked to be briefed on the status of the SWS project.

### ATD-2 Briefs at Collaborative Site Implementation Team Meetings

POC: [JEREMY COUPE](#)

This past quarter, the Airspace Technology Demonstration–2 (ATD-2) team participated in multiple FAA sponsored Collaborative Site Implementation Team (CSIT) meetings. The first meeting, held from October 16-17, was hosted by Delta Airlines (DAL) at their headquarters in Atlanta, Georgia. The two-day event was the

second CSIT meeting that NASA has attended alongside members from the FAA's terminal flight data management (TFDM) office, with the goal of helping airline operators prepare for the future deployment of TFDM across the National Airspace System (NAS). The first day consisted of briefings from both the FAA TFDM office as well as the ATD-2 team. The ATD-2 briefing contained an overview of the ATD-2 system running at Charlotte Douglas International Airport (CLT), the accrued benefits during Phase 1 of operations, and the lessons learned throughout the project. Included in the ATD-2 briefing were early results from automated prescheduling of controlled flights from CLT into Atlanta Center airspace. On the second day, DAL provided



*NASA and the FAA brief American Airlines and Southwest Airlines on the TFDM system.*



## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

a tour of ramp tower operations at Hartsfield- Jackson Atlanta International Airport, where NASA and FAA participants observed live operations. These observations were helpful for the NASA and FAA teams to envision how new data sharing from the future TFDM system might be integrated into the existing operation.

The second meeting was held from December 4–5 and was hosted by American Airlines (AAL) and Southwest Airlines (SWA) at Southwest Airlines Headquarters in Dallas, Texas. The meeting with AAL included NASA and FAA representatives briefing AAL on the upcoming plans to deploy TFDM across the NAS. The briefing highlighted the similarities and differences between the ATD-2 Integrated Arrival/Departure/Surface (IADS) system and the TFDM system. NASA and the FAA briefed the company on the design of TFDM and its deployment plan across the NAS, and the accrued benefits of the IADS system at CLT. The meetings helped AAL and SWA get a better understanding of the TFDM system and how the transition from ATD-2 to TFDM will take place at both CLT and the North Texas region.

### ATD-2 Briefs its Phase 3 Plans to the CDM-Flow Evaluation Team

POC: [ERIC CHEVALLEY](#)

This past quarter, NASA engineers provided multiple briefings to the Collaborative Decision Making (CDM) Flow Evaluation Team (FET) on the Airspace Technology Demonstration–2 (ATD-2) Phase 3 field demonstration plans. The first meeting was held on October 18, in Orlando, Florida, in which the NASA team introduced its terminal departure scheduling concept that leverages multiple departure route Trajectory Option Sets (TOS) as well as the ATD-2 Integrated Arrival/Departure/Surface predictive

engine to identify opportunities for rerouting departures during terminal demand/capacity imbalances.

The initial phase of the Phase 3 field demonstration research is scheduled for the summer of 2019 in the North Texas metroplex. The NASA ATD-2 system includes a user interface to coordinate the use of departure TOS that is shared among field demo partners, as well as new technology in its predictive engine that assesses when flights have sufficient surface departure delay to warrant alternative routes as specified by the flight operator's relative trajectory cost input. The CDM-FET provided helpful input, expressed interest in the project, and invited the NASA



*Members of the CDM-FET participating in the ATD-2 Phase 3 concept of use deep-dive briefing.*

## TECHNICAL AND PROGRAMMATIC HIGHLIGHTS

team to collaborate in future meetings as the work progresses.

The second meeting occurred on December 6, in Washington, DC. At this meeting, the NASA team presented a deep-dive into the Phase 3 concept with a storyboard that featured early mock-ups and data elements that will be used during the departure TOS operation. The CDM-FET group provided

feedback on the concept of use and the data elements, and committed to providing ongoing support to NASA's ATD-2 Phase 3 activities.

### **National Transportation Safety Board Informative Tour**

POC: [YURI GAWDIAK](#)

On December 18, the National Transportation Safety Board (NTSB) hosted members of the FAA and

NASA Aeronautics for an overview of NTSB operations, a walkthrough of related complex and highly automated mishaps and incidents, as well as a tour of the NTSB facilities.

## RECOGNITION

### Dr. Parimal Kopardekar Selected for the Samuel J. Heyman Service to America Medal

POC: [PARIMAL KOPARDEKAR](#)



*Dr. Parimal Kopardekar selected for the Samuel J. Heyman Service to America Medal.*

On October 2, Dr. Parimal H. Kopardekar, Senior Technologist for Air Transportation Systems at Ames Research Center in California, was presented a prestigious medal for government service at a gala in Washington, DC. Dr. Kopardekar was selected from more than

300 nominees to receive a 2018 Samuel J. Heyman Service to America Medal for his vital role in designing a first-of-its-kind traffic management system for unmanned aerial vehicles, paving the way for the safe, expeditious, and large-scale use of commercial drones in the National Airspace System.

### Drones – Technology, Policy, and Society

POC: [PARIMAL KOPARDEKAR](#)

On October 18, Dr. Parimal Kopardekar, Senior Technologist for Air Transportation Systems, presented “Private Unmanned Traffic Management” at the “Drones: Technology, Policy and Society” conference sponsored by Honeywell, CITRIS, and the Banatao Institute. The conference was held at the University of California, Berkeley.

### Small Unmanned Aerial Vehicle Coalition Meeting

POC: [PARIMAL KOPARDEKAR](#)

On October 23, Dr. Parimal Kopardekar, Senior Technologist for Air Transportation Systems, represented NASA at the Small Unmanned Aerial Vehicle (UAV) Coalition meeting. The Small UAV Coalition is a partnership of leading consumer and technology companies who promote U.S. leadership in the research, development, production, and application of UAVs and advocate for risk-based regulations which will allow for the safe and expedited integration of small UAVs into the National Airspace System.



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