ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
AND
JOBY AERO, INC
UNDER SPACE ACT UMBRELLA AGREEMENT NO. 37414 / SAA2-403721
(ANNEX NUMBER ONE)

ARTICLE 1. PURPOSE

This Annex One to the Nonreimbursable Space Act Umbrella Agreement SAA2-403721 (the "Umbrella Agreement") between Joby Aero, Inc. ("Joby" or "Partner") and NASA Ames Research Center ("NASA or "NASA ARC") shall be for the purpose of researching new NASA airspace technologies for UAM and UAM operator research as well as modeling and simulation of UAM in the presence of other airspace users, including both conventional manned (piloted and human-directed) operations. Ames will not be conducting any live flight tests with Joby and will be receiving backend, ground system data to conduct research. NASA and Joby will collaborate on Demand-Capacity Balancing (DCB) for strategic conflict management, scheduling, data exchanges, conformance monitoring, digitized routes and procedures, live flight telemetry, and information exchanges with ATC.

Under this collaboration, NASA will exercise current and new capabilities and technologies developed to gather data for further analysis and development of NASA systems and requirements. Joby will provide data and services to NASA airspace technologies and UAM operator research that may inform scaled operations. NASA and Joby will then collaboratively determine the simulation performance of the connected platforms and tools for supporting future collaborative research and development in future Annexes.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e).

Each capitalized term used in this Annex, but not defined herein, shall have the meaning ascribed to it in the Umbrella Agreement.

ARTICLE 2. RESPONSIBILITIES

A. NASA ARC will use reasonable efforts to:

1. Collaborate with Partner subject matter experts (SMEs) in the activities conducted under this Annex, which include:
    a. Tabletop discussions to define use cases, data exchange requirements, procedures, and technologies required for near-term UAM airspace access; identify data to be gathered; and formulate metrics to be computed;
    b. Part-task simulations with human participants to investigate how UAM operations can be conducted with minimal impact to Air Navigation Service Provider (ANSP) workload in the airspace;
    c. HITL simulations of UAM flights connected to aircraft simulators to evaluate the requirements, procedures, and technologies required for nearterm UAM airspace access.
2. Provide NASA SMEs with appropriate operational and testing expertise;
3. Create joint test plans with the Partner that determines how, where, and what will be tested in a given simulation, and complete those test plans;
4. Determine and provide the appropriate NASA systems in the activities conducted under this Annex;
5. Determine the software and interfaces to Provider of Services (PSU) Network, other supplemental data services, NASA airspace services/technologies for UAM flights and to the NASA data acquisition system required from the Partner;
6. Jointly identify the changes needed to integrate functions and UAM interfaces prior to such simulations;
7. Develop reports on results of the activities conducted under this Annex, which could include joint publications;
8. Create joint data analysis plans to collect and utilize data from UAM simulations, tests, and field evaluations;
9. Obtain NASA ARC Human Research Institutional Review Board (HRIRB) approval for simulations that have human participants.
10. Provide access, including any necessary NASA IT prerequisites or security requirements, such as an Interconnect Security Agreement (ISA), to a prototype UAM software system via a secured Internet connection;
11. Coordinate with Federal Aviation Administration (FAA), National Air Traffic Controllers Association (NATCA), and local facilities and field offices where appropriate to support the tests, simulation and field evaluation;
12. Conduct NASA airspace technologies for UAM flights research efforts using simulations. For research and development of the airspace technologies, use telemetry from Joby's existing ongoing flights over the network;
13. Conduct NASA airspace technologies for UAM flights and adaptations to routes and vertiport locations informed by Joby's preference for simulated airspace site to be leveraged for UAM's Airspace Operational Integration Assessment (OIA) demonstrations.

B. Partner will use reasonable efforts to:

1. Collaborate with NASA SMEs in the activities conducted under this Annex, which include:
    a. Tabletop discussions to define use cases, data exchange requirements, procedures, and technologies required for near-term UAM airspace access; also, identify data to be gathered and formulate metrics to be computed;
    b. Part-task simulations with human participants to investigate how UAM operations can be conducted without impact (or with minimal impact) to Air Navigation Service Provide (ANSP) workload and information requirements in the airspace;
    c. HITL simulations of UAM flights with aircraft simulators to evaluate the requirements, procedures, and technologies required for near-term UAM airspace access in a real-world environment;
2. Provide appropriate SMEs for the activities conducted under this Annex;
3. Collaborate with NASA to write joint test plans for simulations of UAM operations and complete those test plans;
4. Provide, coordinate, or connect systems (e.g vehicles and airspace technologies/ services, PSU network) needed to conduct the activities under this Annex; vehicles used to generate telemetry data may be surrogate UAM vehicles (e.g. helicopters) operated by an organization other than Joby. Joby will coordinate any implications of obtaining data from other organizations with this agreement with
NASA;
5. Provide software and interfaces to PSU Network, other supplemental data services, the NASA data acquisition system, or NASA airspace technologies for UAM flights;
6. Collaborate with NASA to identify the changes needed to integrate functions and UAM interfaces prior to simulations listed in item 1;
7. Collaborate with NASA to develop reports on the results of the activities conducted under this Annex, which could include joint publications;
8. Collaborate with NASA to create joint data analysis plans to collect and utilize data from UAM simulations;
9. Participate, collect, and provide UAM data that results from simulations for UAM, as NASA and Joby jointly determine. Data collected by UAM partners generally includes performance of their UAM aircraft; interactions with the PSU; command, control, and navigation data; and pilot operations;

10. Cooperate with NASA and follow NASA IT prerequisites and security requirements, such as an ISA, for obtaining access to NASA's airspace technologies for UAM flights;
11. Protect credentials and access to NASA UAM systems that may be provided by NASA in accordance with NASA regulations and policies;
12. Provide electric Vertical Takeoff and Landing (eVTOL) aircraft performance and configuration data and information to NASA that allows NASA to assess the effects of weather constraints on vehicle operations;
13. Provide operational information, potentially including but not limited to (a) mission profiles that include aircraft speed, horizontal route and altitude, (b) procedures for departure, enroute, and approach, (c) procedures to access and exit controlled airspace (e.g., Class B), (d) representative vertiport locations and relevant operational parameters, and (e) Joby's proposed operational tempo.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

Milestone	Estimated Completion Date
Provide guidance on vertiport locations and expected trip demand for each location (Joby)	12 months after Effective Date
Provide preliminary vehicle performance and operational data, including mission profiles, for the Joby eVTOL aircraft (Joby)	12 months after Effective Date
Provide air traffic scenarios including expected operational tempos (Joby)	15 months after Effective Date
Simulation and report (Joint)	21 months after Effective Date
Table Top Exercise with FAA SMEs (Joint)	27 months after Effective Date
Conduct Simulation (Joint)	33 months after Effective Date
Completion of reports and publications (Joint)	39 months after Effective Date
Table Top Exercise with FAA SMEs	45 months after Effective Date

Conduct Simulation (Joint)	51 months after Effective Date
Completion of reports and publications (Joint)	60 months after Effective Date

ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of two years.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.

1. Background Data:

The Disclosing Party's Background Data, if any, will be identified in a separate technical document.

2. Third Party Proprietary Data:

The Disclosing Party's Third-Party Proprietary Data, if any, will be identified in a separate technical document.

3. Controlled Government Data:

The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.

4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement:

None.

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or five years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

NASA Ames Research Center
Matt Holtrust
Agreement Manager
Mail Stop: 223-3, Room 100
Moffett Field, CA 94035
Phone: (650) 604-4069
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Joby Aero, Inc
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Phone:
Email: tom.prevot@jobyaviation.com

Technical Points of Contact

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Phone:
Email:
eric.r.mueller@jobyaviation.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AMES RESEARCH CENTER

BY: HUY TRAN Digitally signed by HUY TRAN Date: 2022.12.20 14:16:53 -08'00'

Huy K. Tran
Director of Aeronautics

DATE:

JOBY AERO, INC.

BY: DocuSigned by: Eric Allison F255C811D676454...

Name: Eric Allison Title: Head of Product

DATE: 11/11/2022