NATIONAL CAMPAIGN – 1 AIRSPACE ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AND
UNMANNED EXPERTS INC.
UNDER SPACE ACT UMBRELLA AGREEMENT

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of allowing Partner to test its Advanced Air Mobility (AAM) airspace management services in robust NASA airspace simulations of AAM operating environments in the National Campaign 1 activity (NC-1) and demonstrate key integrated operational AAM scenarios.

ARTICLE 2. RESPONSIBILITIES

A. NASA will use reasonable efforts to:

1. Dedicate NASA management and systems engineering teams to develop and execute the NC-1 airspace simulation activity by coordinating with NC-1 Partner airspace services to demonstrate NC-1 integrated scenarios in a relevant airspace simulation environment.
2. Provide an Airspace liaison to facilitate participant system connection to the NASA Urban Air Mobility (UAM) Core Services, including development of an Interconnection Security Agreement.
3. Define and provide the NC Testbed, a Federated Airspace Management system architecture to support the connection of the Partner airspace system and data collection.
4. Provide a NASA UAM Core Services Application Programming Interface (API) and interface acceptance tools for Partner to check connection and data formats with NASA AAM airspace simulation.
5. Provide access to NASA UAM Core Services and test matrix for connectivity testing of Partner airspace services.
6. Provide guidance documentation on NC-1 data gathering and data collection requirements. Guidance will include Data Recording Documents, and any other needed documents, that define Partner and NASA data collection during NC-1 airspace X4 simulation activities.
7. Provide an experiment plan that exercises the integrated X4 simulation scenarios defined in the NC-1 Scenarios document.
8. Execute NC-1 X4 airspace simulation activities with Partner airspace technologies and services and collect data in accordance with the Data Recording Documentation.
9. Provide a NASA flight test opportunity for Partner to demonstrate and evaluate their airspace systems and services in a light flight environment as part of a NASA flight test of representative AAM operations.
10. Publish a final report with the findings from NC-1 that covers the Partner activities and results.

B. Partner will use reasonable efforts to:

1. Provide an airspace operations management system (or system components) that can be demonstrated in simulation for the NC-1 X4 simulation activity.
2. Provide initial design documents specifying airspace management capabilities, input requirements, and intended final use.
3. Provide an airspace concept of operations, assumptions and system design.
4. Provide a description of software design assurance approaches that will be used for the AAM Airspace management system, and indicate any software design assurance approaches that will be applied for software used during the X4 simulation.
5. Provide virtual aircraft target generation with the following capabilities:
    a. Ability to dynamically re-route around constraints as well as accept a specific re-route from the regulatory authority similar to UTM, X3, or other activities.
    b. Ability to handle contingencies (as outlined in NC-1 scenarios) dynamically and not scripted.
    c. Ability to strategically de-conflict scheduled operations similar to UTM, X3, or other similar activities.
    d. Ability to generate up to vehicle traffic consistent with 100s of simultaneous operations with their target generators and also conform to those trajectories.
6. Provide models and associated connections of virtual AAM aircraft for use in the X4 airspace simulation.
7. Interface with the NAS UAM Core Services through NASA defined NASA UAM Core Services API.
8. Provide an existing company System Security Plan to be reviewed by NASA for content required for the Interconnection Security Agreement.
9. Obtain a signed Interconnection Security Agreement with NASA.
10. Share Partner-recorded data to verify system functionality.
11. Demonstrate data transfer to and from NASA UAM Core Services interface vehicle flight data (virtual) and/or external services (surveillance, weather, etc.).
12. Complete NASA-provided experiment plan that exercises the integrated NC scenarios defined in the NC-1 Scenarios document.
13. Participate in a NASA provided flight test involving representative AAM operations in order to demonstrate and evaluate Partner airspace systems and services, including deployment to the flight test range as appropriate.
14. Provide necessary data to evaluate system response times and message latency information.

ARTICLE 3. SCHEDULE AND MILESTONES

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

NASA to provide NASA UAM Core Services API and documentation of connection services (based on NASA UTM TCL4 https://utm.arc.nasa.gov/index.shtml)	Within 1 month of signing Annex

NASA to provide an Airspace liaison to facility Partner connection to NC Testbed and development of an Interconnection Security Agreement	Within 1 month of signing Annex
Partner to provide Airspace system ConOps and design, including documentation describing airspace services, required data sources and integration plans	Within 1 month of signing Annex
Partner to provide existing System Security Plan – System Security Plan covering Partner test network, to be reviewed by NASA for content required for Interconnection Security Agreement	Within 1 month of signing Annex
NASA to provide X4 Simulation System Design – System design based on NASA UAM research system, including updated NASA UAM Core Services API	2 months after signing Annex
Partner to provide Airspace software system functional description – Document describing the functionality of the Airspace software components to be used for the NC-1 simulation system	3 months after signing Annex
NASA to provide a X4 Simulation Test Plan – Test matrix based on UAM Concepts and NC-1 simulation system design	3 months prior to simulation
NASA to provide Data Recording Documents, and any other needed documents, that define NASA and Partner data collection during NC-1	3 months prior to simulation
NASA to provide X4 Simulation System – Integrated NC-1 simulation complete with partner airspace system	April 2022
Partner to demonstrate airspace services in simulation – Execution of NC-1 simulation with airspace components	June 2022
Partner and NASA to share final data from NC-1 execution – Delivery of relevant data collected during scenario testing	2 months after completion of simulation
NASA to provide a flight test opportunity of AAM operations and include Partner airspace systems and services for demonstration and evaluation.	July 2022 – November 2022
NASA to write and deliver final NC-1 report – Report documenting the NC-1 simulation execution	5 months after completion of simulation

ARTICLE 4. 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 five (5) 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 5. 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 6. RIGHT TO TERMINATE

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

ARTICLE 7. POINTS OF CONTACT

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

Technical Points of Contact

NASA
Kevin Witzberger
ATM-X/UAM Subproject Manager
Mail Stop: 210-6
Moffett Field, CA, 94035-1000
Phone: 650-604-2035
Email: kevin.e.witzberger@nasa.gov

UNMANNED EXPERTS INC.
OPERATIONS
KEVEN GAMBOLD
CEO
720 STH COLORADO BLVD
PH NTH
DENVER, CO 80246
Phone: 334 578 2900

Email: KAGAMBOLD@UNMANNEDEXPERTS.COM

ARTICLE 8. 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 9. 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

JON MONTGOMERY Digitally signed by JON MONTGOMERY Date: 2021.07.06 21:14:11 -04'00'

BY:_____

Mr. Jon Montgomery
Deputy Associate Administrator for Policy, Aeronautics Research Mission Directorate

DATE:_____

UNMANNED EXPERTS INC. OPERATIONS

BY:_____

KEVEN GAMBOLD
CEO

DATE: 6/16/21