

ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
AND
LOUISIANA STATE UNIVERSITY
UNDER
SPACE ACT UMBRELLA AGREEMENT
NO. SAA8-2439946, DATED _____ SAA8-2439946.1

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of development of a multi-agent control scheme for use as part of the Electrostatic Solar Sail (E-Sail) System.

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).

ARTICLE 2. RESPONSIBILITIES

A. NASA MSFC will use reasonable efforts to:

1. Provide the in-house E-Sail Guidance, Navigation and Control (GNC) software to LSU.
2. Host monthly meetings with LSU.
3. Provide LSU with the understanding of the software and general know-how for the E-Sail System.

B. LSU will use reasonable efforts to:

1. Provide simulation results to NASA MSFC.
2. Participate in monthly meetings with NASA MSFC.
3. Provide any improvements and increased fidelity on the E-Sail software and its associated engineering models to NASA MSFC.

ARTICLE 3. SCHEDULE AND MILESTONES

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

- | | |
|---|--|
| 1. NASA MSFC will provide the in-house E-Sail GNC Software to LSU | Effective Date or Software Release Approval Date, whichever is later |
| 2. LSU will provide simulation results to NASA MSFC | Milestone 1 + 4 months |

3. LSU will provide any improvements and increased fidelity on the software and its associated engineering models to NASA MSFC

Milestone 2 + 2 months

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 one year.

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:

None

2. Third Party Proprietary Data:

None

3. Controlled Government Data:

None

4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement: Electrostatic Solar Sail (E-Sail) System
NASA SUA number: TBD, in progress.

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 one year 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.

Technical Points of Contact

NASA George C. Marshall Space Flight Center
John Inness
AST Nav, Guidance, and Controls
Mail Suite: EV41
Marshall Space Flight Center, AL 35812
Phone: 919-561-3505
john.p.inness@nasa.gov

Louisiana State University
Department of Mechanical and Industrial Engineering
Marcio de Queiroz
Professor of Mechanical Engineering
Louisiana State University
Baton Rouge, LA 70803-0001
Phone: 225-578-8770
mdeque1@lsu.edu

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
GEORGE C. MARSHALL SPACE
FLIGHT CENTER

LOUISIANA STATE UNIVERSITY
DEPARTMENT OF MECHANICAL
AND INDUSTRIAL ENGINEERING

BY: _____
Larry Leopard
Associate Director, Technical

BY: _____
Marcio de Queiroz
Professor of Mechanical Engineering

DATE: _____

DATE: _____