NONREIMBURSABLE INTERAGENCY AGREEMENT
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
THE DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
FOR
TECHNICAL SUPPORT TO THE
ROBOTIC SERVICING OF GEOSYNCHRONOUS SATELLITES (RSGS) PROGRAM

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration, located at 300 E St SW, Washington, DC 20546 (hereinafter referred to as "NASA") enters into this Interagency Agreement (hereinafter referred to as "IAA") in accordance with 51 U.S.C. § 20113(e). The Defense Advanced Research Projects Agency, located at 675 N. Randolph St, Arlington, VA 22203 (hereinafter referred to as "DARPA"), enters into this IAA in accordance with Department of Defense (DOD) Directive 5134.10, "Defense Advanced Research Projects Agency." NASA and DARPA may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

This agreement enables collaboration activities between DARPA and NASA to complete the development, integration, test, and on-orbit demonstration of robotic satellite servicing technologies through DARPA's Robotic Servicing of Geosynchronous Satellites (RSGS) program.

Under this agreement, NASA civil servants and contractors, as available, will provide subject matter expert (SME) support to DARPA as part of the Government team on the RSGS program. NASA will leverage expertise developed on their On-orbit Servicing, Assembly, and Manufacturing 1 (OSAM-1) program and other relevant efforts to provide subject matter experts (SME) to perform direct and meaningful hands-on support in the areas of space robotics, systems engineering, spacecraft subsystems, integration & test, operator training, and spaceflight operations.

The construct of this agreement reflects the unique circumstances of OSAM-1. NASA and DARPA will benefit mutually from this endeavor, which will advance the US space capabilities in the area of in-space servicing, assembly, and manufacturing (ISAM), to the benefit of commercial, civil, and national security space architectures. This collaboration directly supports several items in the 2022 National ISAM Implementation Plan which were identified as joint DOD and NASA responsibilities:

1.1.2. Develop an ISAM test or demonstration capability for specific ISAM technologies, consistent with national and international Orbital Debris guidelines. Develop plans to make this capability available to academia, and commercial entities. (Lead: DOD and NASA)

1.2.2. Prioritize basic and applied ISAM-related research, ranging from technologies, capabilities, and services – including experimental, demonstration, and prototype missions, where appropriate. (Lead: DOD and NASA)

2.1.1. Engage with the private sector, industry partners, domestic and international bodies, and academia in universal standards development for ISAM technologies. (Lead: Department Of Commerce (DOC); Support: DOD, Department Of State (DOS), NASA)

2.1.3. Support the flight qualification of standard interface hardware, to facilitate commercial interface component availability for future spacecraft. (Lead: DOD; Support: DOC, NASA)

3.1.1. Adopt commercially-developed modular infrastructure, as appropriate, to reduce the barrier of entry for ISAM innovation and improve the efficiency of U.S. government space operations. (Lead: DOD and NASA; Support: DOC)

5.1. Develop options to procure services to repair, upgrade, and extend the lifetimes of U.S. government space assets, thereby reducing the need to launch more spacecraft which may contribute to the creation of harmful debris. (Lead: DOD; Support: NASA)

Through this collaboration, NASA will benefit from the direct hands-on experience gained during test and flight operations of the RSGS robotic payload, at both the individual and the agency level. This collaboration will further develop NASA's cadre of experienced space professionals, who can share and apply their expertise to the design, test, and operation of future NASA missions. The experience will also yield valuable lessons-learned to inform the design and development of the next generation of robotic ISAM systems.

NASA will also gain access to the full suite of ground test and flight data that the Government will collect and receive through the RSGS commercial partnership. This will help them to become informed consumers of commercial servicing offerings, able to perform their own independent assessments and analyses. NASA will also be able to share much of the data and system design information with other potential service providers, helping to encourage the development of a robust ISAM infrastructure and benefiting legacy programs as well as new.

The successful completion of the RSGS program will establish an on-orbit platform for future ISAM flight experiments and demonstrations. New tools, payloads, and algorithms can be developed and launched separately over the course of RSGS' operational lifetime, taking advantage of its mission flexibility and dexterous robotics to perform missions which have not yet been conceived.

DARPA's RSGS payload and spacecraft integration and test (I&T) activities are being worked at the Naval Research Laboratory (NRL) and Northrop Grumman's Dulles campus.

ARTICLE 3. <u>RESPONSIBILITIES</u>

NASA will use reasonable efforts to:

1. Provide support to RSGS payload and spacecraft integration and test (I&T) at the Naval Research Laboratory (NRL) located at 4555 Overlook Avenue SW, Washington DC, at Northrop Grumman's Dulles (Washington DC area) campus, and launch site processing at Kennedy Space Center in Florida, in the areas of:
    a. Quality assurance
    b. Thermal vacuum chamber operations
    c. Technical writing
    d. Script development
    e. Robotic operations
    f. Systems engineering
    g. Technical management
    h. Test direction
    i. Subsystem engineering
2. Provide support to RSGS mission operations development, planning, and training at NRL and Northrop Grumman's Dulles campus, in the areas of:
    a. Subsystem engineering
    b. Robotics subject matter expertise
    c. Spacecraft servicing system expertise
    d. User documentation and training materials
    e. Classroom and hands-on training sessions
3. Provide support to RSGS on-orbit checkout and mission operations at NRL and Northrop Grumman's Dulles campus, in the areas of:
    a. Subsystem engineering
    b. Robotics subject matter expertise
    c. Spacecraft servicing system expertise
    d. On-console operations
    e. Back-room analysis and engineering support
4. Infrastructure/IT support at Goddard Space Flight Center (GSFC)
    a. Office space for NASA employees doing virtual (to RSGS) work
5. Explore options to utilize existing OSAM-1 hardware and software resources in conjunction with RSGS, to help inform development of future NASA systems.
    a. Hardware includes flight hardware, development hardware, testbeds, and ground support equipment
    b. Software includes robotic control, rendezvous and proximity operations, flight, ground support, and operations support software
6. Provide DARPA with NASA-approved briefing charts to utilize for presentations.

DARPA will use reasonable efforts to:

1. Provide RSGS program information necessary to the accomplishment of NASA's responsibilities, to include:
   a. RSGS program status, including adequate fidelity of schedule and schedule forecast information
   b. Review packages, such as those provided at the various Design Reviews
2. Provide NASA with technical data collected or received as part of the RSGS program, as described in Technical Exchange Document 1.
3. Coordinate with NRL and Northrop Grumman to provide site access for NASA employees and NASA contractors as needed to perform program activities at NRL and/or Northrop Grumman facilities, including:
   a. Payload and spacecraft I&T at NRL and Northrop Grumman's Dulles Campus
   b. Launch site processing at the payload processing facility in Florida
   c. Operations development and training at NRL and Northrop Grumman's Dulles Campus
   d. Mission operations at NRL and Northrop Grumman's Dulles Campus
4. Coordinate with NRL and Northrop Grumman to provide required infrastructure and IT support at their locations.
   a. Hot-desking office space for NASA personnel
   b. Computers with appropriate software and access to allow NASA personnel to perform required program activities.
5. Provide NASA with an opportunity to utilize reserved servicing window(s) at pre-negotiated assured pricing set forth in Technical Exchange Document 2 and include NASA representation at bi-annual manifest reviews with the RSGS Commercial Partner. Funding for the acquisition of servicing is not included in this IAA and would be implemented separately through Treasury's Government-wide G-Invoicing system.
6. Facilitate evaluation of potential incorporation of NASA flight software into RSGS systems for ground or on-orbit test to reserve future opportunities to use RSGS as a flight testbed for NASA ISAM algorithms or operations.
   a. Explore options to utilize existing OSAM-1 hardware and software resources in conjunction with RSGS, to help inform development of future NASA systems.
7. Manage security for the RSGS program.
8. Provide NASA with DARPA-approved briefing charts to utilize for presentations.

<center>ARTICLE 4. <u>SCHEDULE AND MILESTONES</u></center>

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

Milestone	Estimated Planning Date	Activities
Progress Meetings	Quarterly	• Leadership meetings to discuss schedule and milestones
Integration and Test:		
Integrated Robotic Payload (IRP) Delivery	September 2024	• IRP functional and performance testing • IRP thermal vacuum testing • Shipment of IRP from NRL to Northrop Grumman in Dulles • Maps to item 4 under NASA Responsibilities
Ship to Launch Site	September 2025	• Bus to payload mate • Payload functional testing • Integrated system testing • Spacecraft environmental testing
Launch	Early 2026	• Launch site processing • Limited payload testing
Operations Development & Training:		
Demonstration Operations Baselined	November 2025	• Develop nominal and contingency scenarios for mission rehearsals • Prepare testbeds and rehearsal materials • Conduct mission rehearsals • Produce user documentation to support mission operations
Commercial Partner Training Complete	Early 2026	• Develop training materials • Conduct classroom training sessions • Conduct hands-on operator training sessions with robotic testbed and integrated robotic workstation
Flight Operations:		
Early Orbit Checkout Complete	November 2026	• Launch lock release • Payload initialization & calibration • Payload functional and performance testing
Arrive at GEO	May 2027	• Electric propulsion orbit raising complete

Complete Capabilities Demonstrations	November 2027	• Payload operations supporting demonstration of key system capabilities:
		  o Ultra-close inspection
		  o Client relocation
		  o Anomaly resolution
		  o On-orbit augmentation

ARTICLE 5. <u>FINANCIAL OBLIGATIONS</u>

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).

NASA anticipates funding labor in support of this Agreement based on the time-phasing in the following table:

FY24	FY25	FY26	FY27
$1M	$3M	$3M	$3M

ARTICLE 6. <u>PRIORITY OF USE</u>

Any schedule or milestone in this IAA is estimated based upon the Parties' current understanding of the projected availability of its respective goods, services, facilities, or equipment. In the event that either Party's projected availability changes, NASA or DARPA, respectively, shall be given three months advance notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that NASA's and DARPA's use of its own goods, services, facilities, or equipment shall have priority over the use planned in this IAA.

ARTICLE 7. <u>LIABILITY</u>

Each Party agrees to assume liability for its own risks arising from or related to activities conducted under this IAA.

ARTICLE 8. <u>INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS</u>

NASA and DARPA agree that the information and data exchanged in furtherance of the activities under this IAA will be exchanged without use and disclosure restrictions unless required by national security regulations (e.g., classified information) or as otherwise provided in this IAA or agreed to by NASA and other Federal Agency for specifically identified information or data (e.g., information or data specifically marked with a restrictive notice).

ARTICLE 9. <u>INTELLECTUAL PROPERTY RIGHTS - HANDLING OF DATA</u>

A. In the performance of this Agreement, NASA or DARPA (as "Disclosing Party") may provide the other Party (as "Receiving Party") with:
   1. Data of third parties that the Disclosing Party has agreed to handle under protective arrangements or is required to protect under the Trade Secrets Act (18 U.S.C. § 1905) ("Third Party Proprietary Data"), or
   2. Government data, including software, the use and dissemination of which, the Disclosing Party intends to control ("Controlled Government Data").

B. All Third Party Proprietary Data and Controlled Government Data provided by Disclosing Party to Receiving Party shall be marked by Disclosing Party with a restrictive notice and protected by Receiving Party in accordance with this Article.

C. 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.
   1. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
   2. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.
   3. NASA software and related Data will be provided to DARPA under a separate Software Usage Agreement (SUA). DARPA shall use and protect the related data in accordance with this Article:

D. For such Data identified with a restrictive notice pursuant to paragraph B of this Article, including Data identified in an accompanying funding document, Receiving Party shall:
   1. Use, disclose, or reproduce such Data only as necessary under this Agreement;
   2. Safeguard such Data from unauthorized use and disclosure;
   3. Allow access to such Data only to its employees and any Related Entity requiring access under this Agreement;
   4. Except as otherwise indicated in D.3, preclude disclosure outside Receiving Party's organization;
   5. Notify its employees with access about their obligations under this Article and ensure their compliance, and notify any Related Entity with access about their obligations under this Article; and
   6. Dispose of such Data as Disclosing Party directs.

E. If the Parties exchange Data having a notice deemed ambiguous or unauthorized by the receiving Party, it should tell the providing Party. If the notice indicates a restriction, the receiving Party must protect the Data under this Article unless otherwise directed in writing by the providing Party.

F. Notwithstanding any restrictions provided in this Article, the Parties are not restricted in the use, disclosure, or reproduction of Data provided under this Agreement that is:
   1. Known or available from other sources without restriction;
   2. Known, possessed, or developed independently, and without reference to the Proprietary Data;
   3. Made available by the owners to others without restriction; or
   4. Required by law or court order to be disclosed. If a Party believes that any exceptions apply, it shall notify the other Party before any unrestricted use, disclosure, or reproduction of the Data.

ARTICLE 10. <u>INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS</u>

Unless otherwise agreed upon by NASA and DARPA, custody and administration of inventions made (conceived or first actually reduced to practice) under this IAA will remain with the respective inventing Party. In the event an invention is made jointly by employees of the Parties (including by employees of a Party's contractors or subcontractors for which the U.S. Government has ownership), the Parties will consult and agree as to future actions toward establishment of patent protection for the invention.

ARTICLE 11. <u>RELEASE OF GENERAL INFORMATION TO THE PUBLIC AND MEDIA</u>

NASA or DARPA may, consistent with Federal law and this Agreement, release general information regarding its own participation in this IAA as desired. Insofar as participation of the other Party in this IAA is included in a public release, NASA and DARPA will consult with each other prior to any such release, consistent with the Parties' respective policies. Pursuant to Section 841(d) of the NASA Transition Authorization Act of 2017, Public Law 115-10 (the "NTAA"), NASA is obligated to publicly disclose copies of all agreements conducted pursuant to NASA's 51 U.S.C. § 20113(e) authority in a searchable format on the NASA website within 60 days after the agreement is signed by the Parties. The Parties acknowledge that, if this IAA is entered into pursuant to NASA's 51 U.S.C. § 20113(e) authority, this IAA will be disclosed, without redaction, in accordance with the NTAA.

DARPA will remain the office of primary responsibility for external relations (public and congressional affairs) for matters pertaining to the RSGS program. All external requests for information will be submitted to DARPA's Communications Office (outreach@darpa.mil), which has sole responsibility for public release authorization determinations regarding RSGS while the program is managed by DARPA. DARPA will coordinate with NASA prior to release of any information related to this IAA. All data, information, briefings, and documentation related to RSGS intended for external release must be submitted to the DARPA Public Release Center for "Distribution Statement A" approval (Public_Release_Center@darpa.mil).

ARTICLE 12. <u>TERM OF AGREEMENT</u>

This IAA 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.

ARTICLE 13. <u>RIGHT TO TERMINATE</u>

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

ARTICLE 14. <u>CONTINUING OBLIGATIONS</u>

The rights and obligations of the Parties that, by their nature, would continue beyond the expiration or termination of this Agreement, e.g., "Liability and Risk of Loss" and "Intellectual Property Rights" and related clauses shall survive such expiration or termination of this Agreement.

ARTICLE 15. <u>POINTS OF CONTACT</u>

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

<u>National Aeronautics and Space Administration</u>	<u>Defense Advanced Research Projects Agency</u>
Trudy F. Kortes	Stephen Forbes
Director, Technology Demonstrations	Program Manager, Tactical Technology Office
300 E Street SW	675 N. Randolph Street
Washington, DC 20546	Arlington, VA 22203
Phone: 216.433.3632	Phone: 703-526-2236
Email: trudy.f.kortes@nasa.gov	Email: stephen.forbes@darpa.mil

ARTICLE 16. <u>DISPUTE RESOLUTION</u>

All disputes concerning questions of fact or law arising under this IAA shall be referred by the claimant in writing to the appropriate person identified in this IAA as the "Points of Contact." The persons identified as the "Points of Contact" for NASA and DARPA will consult and attempt to resolve all issues arising from the implementation of this IAA. If they are unable to come to agreement on any issue, the dispute will be referred to the signatories to this IAA, or their designees or successors, for joint resolution after the Parties have separately documented in writing clear reasons for the dispute. As applicable, disputes will be resolved pursuant to the Department of the Treasury's Intragovernmental Transaction Guide (Treasury Financial Manual, Vol. 1, Chapter 2, Part 4700, Appendix 10 (hereinafter, the "Intragovernmental Transaction Guide")).

ARTICLE 17. <u>INVESTIGATIONS OF MISHAPS AND CLOSE CALLS</u>

In the case of a close call, mishap or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation. For all NASA mishaps or close calls, DARPA agrees to comply with NPR 8621.1, "NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping" and any and all NASA Center-specific safety policies, as applicable.

ARTICLE 18. <u>MODIFICATIONS</u>

Any modification to this IAA shall be executed, in writing, and signed by an authorized representative of NASA and the DARPA.

ARTICLE 19. <u>APPLICABLE LAW</u>

U.S. Federal law governs this IAA for all purposes, including, but not limited to, determining the validity of the IAA, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 20. <u>LOAN OF GOVERNMENT PROPERTY</u>

The parties shall enter into a NASA Form 893, Loan of NASA Equipment, for NASA equipment loaned to DARPA.

ARTICLE 21. <u>SIGNATORY AUTHORITY</u>

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION

BY: Makenzie Lystrup
Digitally signed by Makenzie Lystrup
Date: 2024.08.19 12:06:51 -04'00'

Makenzie Lystrup, Ph.D.
Director
Goddard Space Flight Center

DATE: _____

NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION

BY: CLAYTON TURNER
Digitally signed by CLAYTON TURNER
Date: 2024.08.19 18:00:04 -04'00'

Clayton P. Turner, Ph.D.
Associate Administrator (Acting)
Space Technology Mission Directorate

DATE: _____

DEFENSE ADVANCED RESEARCH
PROJECTS AGENCY

BY: PLAKS.KENNETH.1159492660
Digitally signed by PLAKS.KENNETH.1159492660
Date: 2024.08.05 09:40:38 -04'00'

Kenneth Plaks, Ph.D.
Director
Tactical Technology Office

DATE: _____