TECHNOLOGY DEVELOPMENT FUND (TDF) SCHEME

TITLE: Replacement of Existing Payloads of Remotely Piloted Aircrafts

1. Objective:

To design and develop advanced payloads for Remotely Piloted Aircraft (RPAs), replacing existing systems to enhance operational capability, efficiency, and mission readiness. The new payloads will address emerging operational requirements and integrate cutting-edge technologies.

2. Background:

The current RPAs are equipped with legacy payloads that may not fully address the demands of modern warfare and surveillance operations. These payloads are limited in terms of resolution, range, and data processing capabilities. Upgrading to state-of-the-art payloads is essential to maintain the operational superiority and relevance of RPAs in dynamic battlefield scenarios.

3. Problem Statement:

Existing payloads lack advanced capabilities such as higher resolution imaging, extended operational range, real-time data analytics, and multi-role functionality. They also face challenges in integrating with new-age systems, reducing their effectiveness in modern warfare. There is an urgent need for payload replacement to meet evolving mission requirements and maintain technological parity with global standards.

4. Proposed Solution:

1. **Advanced Payload Design:** Develop modular payloads featuring high-resolution Electro-Optical (EO) and Infrared (IR) sensors, Synthetic Aperture Radar (SAR), and other mission-specific tools.
2. **Real-Time Analytics:** Integrate onboard data processing for real-time analysis and actionable insights during missions.
3. **Multi-Mission Capability:** Design payloads capable of supporting intelligence, surveillance, reconnaissance (ISR), and combat operations.
4. **Seamless Integration:** Ensure compatibility with existing RPA platforms and future upgrades.
5. **Indigenization:** Prioritize indigenous development to reduce dependency on foreign technologies.

5. Expected Outcome:

1. Enhanced operational capabilities of RPAs in surveillance, target acquisition, and combat roles.
2. Improved mission efficiency through real-time data processing and actionable insights.

3. Strengthened self-reliance in defense technology with indigenously developed payloads.

6. Key Deliverables:

1. Prototypes of advanced payloads tailored to requirements.
2. Testing and validation reports under simulated and operational conditions.
3. Integration framework for existing and future RPAs.
4. Maintenance guidelines and technical documentation for operational use.

7. Strategic Relevance:

The replacement of existing RPA payloads is strategically vital for enhancing ISR capabilities, ensuring precise target tracking, and real-time analytics for modern warfare. It supports indigenization, reducing dependence on imports while fostering cost-efficiency and adaptability to evolving threats. The upgraded payloads strengthen operational readiness and integrate seamlessly with network-centric systems, boosting national security. Additionally, it drives innovation in India's defense R&D ecosystem and opens avenues for global defense exports.

8. Future Expectations:

1. Improved Operational Readiness: RPAs equipped with advanced payloads will be better prepared for a wide range of missions, ensuring faster deployment and higher mission success rates.
2. Enhanced Surveillance and Reconnaissance: New payloads with high-resolution sensors and advanced analytics will significantly improve ISR capabilities, providing superior situational awareness.
3. Adaptability for Future Missions: Modular designs will allow for easy upgrades and adaptability to emerging mission profiles, ensuring long-term operational relevance.
4. Cost Efficiency: Indigenously developed payloads will reduce procurement costs and long-term reliance on foreign suppliers.
5. Integration with Modern Warfare Systems: The advanced payloads will seamlessly integrate with other modern warfare systems, including AI-based analytics and network-centric operations.
6. Export Potential: Proven technologies can be marketed to allied nations, opening new avenues for defense exports.
7. Technological Edge: The payload upgrade will position the user as a technologically advanced force, capable of meeting the challenges of modern and future warfare.
8. Support for Indigenization Goals: This project aligns with the national objective of achieving self-reliance in defense manufacturing and technology.

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TECHNOLOGY DEVELOPMENT FUND (TDF) SCHEME

FEASIBILITY CUM RFI RESPONSE FOR THE PROJECT REQUIREMENT UNDER TDF SCHEME

(PROFROMA)

1. **Name of the Institute** (Industry/Academia):
2. **Contact details:**
    a. Email
    b. PoC
    c. Address
3. **Title of the project requirement:**
4. **Project Description** (Define broad understanding of the project requirement and proposed solution under the project).
5. **Briefly detail the proposed technical solution in terms of subsystem/submodule levels.**
6. **Road map for achieving the proposed outcome (Development Plan Phase wise -Max 5 phases).**
7. **Development and production Estimates:**
    i. Estimated time required for development of the proposed technology /product (In Months).
    ii. Estimated cost required for the for development of the proposed technology /product (BQs of submodules/subsystems if any pls attach).
    iii. Estimated production cost of the end product after successful development (per unit or batch cost).
    iv. Whether the industry has already done any Suo moto design and development of the proposed product/technology at Technology Readiness Level – Yes/No
    v. Details of Suo moto design and development done if marked Yes in previous question (within 250 words).
    vi. Essential infrastructure required for development of the proposed product/technology for which funding is required.
8. **Technical strength in terms of manpower.**
9. **Relevant Work Experience.**
10. **Any other relevant information**

Queries if any and the reply in **PDF FORMAT** to be submitted online addressing to;

TO,

THE DIRECTOR TDF, DRDO

DRDO BHAWAN, RAJAJI MARG, NEW DELHI 110011

Email to, arjunk.hqr@gov.in, CC to dir.tdf-drdo@gov.in,