DEVELOPMENT OF MCS ACTIVITIES FOR UAV's

Place of work:

Electro Optic Systems, Data link systems and Ground control systems are deployed at ADE, Bangalore and at ATR, Chittradurga and need to be developed as per the scope of work given below. Hence, the work shall be carried out at ADE, Bangalore and at ATR, Chittradurga using systems and facilities available with ADE. The industry partner is not required to supply any equipment or raw material for the job.

1.   Detailed Scope of work of industry partner:

1.1   Developing Software for each data link LRU for no interference in terms of operations and Record generation.

1.2   Data Link LRU firmware for default operations.

1.3   Updating Software for automated testing and Generation of Test reports and its maintenance.

1.4   Data link systems in Ground Control Station and in ARCHER UAV, Testing of its functions thru LTS, Taxi Trials, Engine Runs etc and Generation of Data.

1.5   The EO payload system is enabled by a ground based payload operator to steer the EO payload Line-of-Sight (LOS) in azimuth and elevation axes for acquisition of targets.

1.6   It shall provide the visible/thermal imagery of terrain to enable the operator to detect, recognize and identify the targets at required ranges during day and night.

1.7   The system shall enable the operator to select a target and track manually by manipulation of LOS steer commands or the system tracks automatically using video tracker which enables the operator select a target of interest during day and night.

1.8   The system also enables the operator to designate as well as range the target using a high power LDR.

1.9   The MREO system shall interface with telecom and or telemetry link of TAPAS UAV using RS-422 serial link for its operation remotely from Ground Control Station (GCS). The system shall output sensor video and status/ data for real-time transmission to GCS from information dissemination.

1.10 D&D of software modules for advanced image processing components.

1.11 D&D of software modules for geo referenced navigation modules.

1.12 D&D of Multiple Payload data processing modules for situation awareness.

1.13 HSI testing for all software components for all sub systems involved.

1.14 Validating the software in HILS set up

1.15 Prepare test cases, test reports for the bench level testing in the Rig

1.16 The software developed shall need to undergo rigorous testing to satisfy the standards for clearing the software.

1.17 Integration testing of payload software into GCS UI.

1.18 Preparation of documents for the complete software development lifecycle

1.19 Flight trial support in the field for deployment of GCS systems.

1   Milestones

Following are the quarterly milestones:

Quarter 1:

- The EO payload system is enabled by a ground based payload operator to steer the EO payload Line-of-Sight (LOS) in azimuth and elevation axes for acquisition of targets.
- Development of GUI for LRU testing and ASSPA, RF box.
- D&D of software modules for advanced image processing components
- D&D of software modules for geo referenced navigation modules.

Quarter 2:

- Development of GUI for testing HD GIPPU, ARFT LRU.
- The system shall enable the operator to select a target and track manually by manipulation of LOS steer commands or the system tracks automatically using video tracker which enables the operator select a target of interest during day and night.
- HSI testing for all software components for all sub systems involved.
- Validating the software in HILS set up.

Quarter 3:

- Updating Software for automated testing and Generation of Test reports and its maintenance.
- The system also enables the operator to designate as well as range the target using a high power LDR.
- The software developed shall need to undergo rigorous testing to satisfy the standards for clearing the software.
- Integration testing of payload software into GCS UI.

Quarter 4:

- Data link systems in Ground Control Station and in ARCHER UAV, Testing of its functions thru LTS, Taxi Trials, Engine Runs etc and Generation of Data.
- The MREO system shall interface with telecom and or telemetry link of TAPAS UAV using RS-422 serial link for its operation remotely from Ground Control Station (GCS). The system shall output sensor video and status/ data for real-time transmission to GCS from information dissemination.
- Preparation of documents for the complete software development lifecycle of Rig vedic.
- Flight trial support in the field for deployment of GCS systems.

2 Terms and Conditions:

2.1 The development shall be executed by the industry partner within ADE and ADE trial site premises, using ADE systems and infrastructure. The industry partner is not required to supply any equipment or raw material for the job.

2.2 GST will be paid by ADE at existing rates; any change to the rates in future will be reimbursed by ADE on actual. Industry partner has to produce the proof of the payment of the same along with the bill without which the payment will not be made. Any change in tax system with respect to GST shall be complied by industry partner.

2.3 The industry partner should be capable of assuring that the manpower attrition of the company shall not cause delay in execution of work at ADE. In order to ensure timely completion of the

work, continuity of personnel is a must and ensuring the same shall be the sole responsibility of the firm. In the event of any change in the person(s) deployed in the course of execution of the outsourced work, the industry partner must ensure overlap of one week between the outgoing and incoming person(s) for smooth handing/taking over. Progress of the work shall be reviewed by ADE.

2.4 Quarterly payments in equal installments will be made on completion of quarterly milestones.

2.5 If ADE finds any of the persons deployed by the industry partner to execute the work is not up to expectations (including competence, behavior, communication and interaction) it reserves the right to ask for a replacement from the industry partner without any compensation and/ or assigning any reason for the same. Any change to the team shall be done in consultation with ADE.

2.6 ADE shall not be responsible for any injury or loss of life that may take place while on the said job. Any compensation or expenditure towards treatment towards this shall be the sole responsibility of the firm. It is the whole and sole responsibility of the Companies, and they clearly make every arrangement to look after the safety of their Employees, as well as any mishaps and / or injuries, whatsoever may be the order, which may arise during the execution of Contract. ADE will not take any responsibility in this regard.

2.7 The activity shall be strictly confined to the indicated place of work and shall not enter any other restricted areas within ADE premises.

2.8 Non-conformance of the industry partner to the satisfaction of ADE shall lead to cancellation of the order and forfeiture of the security deposits made by the industry partner.

2.9 Every human resource deputed by industry partner will have to strictly adhere to each and every Security norms of ADE. As per policy of DRDO, prior to starting of work at ADE, every Personnel need to fulfill the mandatory requirement of Police Verification (cost will not be borne by ADE), as well as need to submit relevant Documents to ADE.

2.10 No removable / portable Medias like CDs, USB Drivers, etc. would be allowed to be carried inside or out of ADE, even as part of present Contract.

2.11 Industry partner personnel shall make their own arrangements for Transport, Food, Accommodation, etc. during regular working hours, the personnel may use common refreshment facility available in ADE Campus, but no refreshments are available beyond office hours as well as on non working days. Any expenditure towards transport, accommodation, refreshment, etc will not be borne by ADE.

2.12 ADE will reserve the right to terminate the contract if the PDC date has reached. Payment on termination of the contract will be done for the quarter according to the targets met for that particular quarter.

2.13 ADE reserves the right to short close the contract if progress of work is found unsatisfactory during the course.

2.14 The vendor should not claim and quote the work carried at ADE. The entire work will come under ADE Intellectual Property Right.

2.15 TEC committee will evaluate the service provider based on the previous experience for all the work.

2.16 The service may be extended further three months based on the project requirements.

2.17 Proof of payment/statutory dues to resources to be deployed is to be provided by the industry partner.

3 **Indicative Minimum qualification required for the Industry partner personnel to carry out the activities**

As per ADE's estimation, four Engineers with following minimum qualifications are required to execute the job as per the scope of work.

3.1 BE/B TECH in Electronics/ ECE with at least first class marks.
3.2 Minimum of 2 years of relevant experiences in subject.

4 **Time Schedule**

4.1 Estimated duration for execution of work as per ADE requirement: 12 months.
4.2 Delivery Schedule: **One year**.

5 **Outstation work requirement**

5.1 ADE had deployed one telemetry station at ATR, Chittradurga. These systems also need to be upgraded and maintained as per the scope of work. All the up-gradations carried out at ADE shall be first tested at ADE systems and the same has to be upgraded at ATR systems and verified.

5.2 About 48 to and fro trips to ATR, Chittradurga are expected during the period of 12 months. Two Engineers needs to be deputed for the work at trials site as and when required. Estimated man days at outstation is 720 (48 weeks x 3 Engineers x 5 days a week).

6 **Firm eligibility**

During the technical evaluation, the Firm will be assessed and evaluated for the following points.

6.1 Industry partner must attend the pre-bid conference at ADE to understand the tasks clearly. Offers from those Industry partners who had not attended the pre-bid conference will not be considered.
6.2 Industry partner should have carried out technical contracts with good track record at ADE or any other government establishments or any reputed private organization.
6.3 Vendor should enclose proof for earlier technical contracts carried out in ADE/other establishments.