

**AERONAUTICAL DEVELOPMENT AGENCY**  
**REQUEST FOR EXPRESSION OF INTEREST**

Ref: ADA/COM/IND/EOI/NGTD/2017-2018/SU

Date: 16/02/2018

1. Aeronautical Development Agency is an autonomous Body setup under Ministry of Defence, Government of India for research and development of Indigenous Light Combat Aircraft (LCA), Tejas.
2. ADA is looking for vendors who can take up “**Manufacture of the Next Generation Technology Demonstrator (NGTD)**”
3. The subject Advertisement and following documents can be viewed and downloaded from ADA website [www.ada.gov.in](http://www.ada.gov.in).
  - (a) *Annexure 'A'* – Scope of Work
  - (b) *Annexure 'B'* – Standard Conditions to EOI
  - (c) *Annexure 'C'* – Vendor qualification requirements
  - (d) *Annexure 'D'* – Vendor Summary Form
4. This request for Expression of Interest is issued for pre-qualification of Firms for the above requirement.
5. ADA now invites eligible vendors to indicate their interest in carrying out the above task indicating that they are qualified to perform the job duly providing Brochures, description of similar assignments and experience in similar field.
6. For any technical clarifications, please contact 1) Shri. Krishna Rajendra Neeli, GD (AMCA–Prog. Mgmt), Ph : 080-2508 7041, Mobile : 9449817630 and Email: nkraj@jetmail.ada.gov.in or 2) Dr. Selvaraj P., TD (PS&P), Ph : 080-2508 7390, Mobile : 9449832736 and Email : selva@jetmail.ada.gov.in.
7. Interested vendors may send their EOI and confirmation to the abovelisted Terms and Conditions in Clause 3 (a) to (d), duly superscribed with our Reference No. ADA/COM/IND/EOI/NGTD/2017-2018/SU to reach “**Director (MM), Aeronautical Development Agency, P.B. No. 1718, Vimanapura Post, Bangalore – 560 017**”.
8. ADA reserves the right to accept or reject any EOI without assigning any reason.
9. Formal Request for Proposal along with detailed specifications shall be provided only to those who are considered qualified by ADA after completion of screening process based on “EOI” and the supporting certificate / details.
10. Your response should reach us on or before 1600 Hrs on 15/03/2018 at the above address.

**Director (Materials Management)**



**Expression of Interest Document for**  
**Seeking the participation of the Industries in the**  
**Manufacture of the Next Generation Technology Demonstrator**  
**(NGTD)**

## Introduction

It is required to manufacture, assemble and equip two numbers of fighter aircraft which are named as the Next Generation Technology Demonstrators. Brief details of the dimensions of the aircraft, definition of the modules into which the aircraft is segregated, facilities required for the fabrication, assembly, inspection requirements and the acceptance criteria are given in subsequent sections.

Keeping this objective in view, this EOI is being issued to invite those Firms who are interested in executing the above job with the required facilities, capabilities and capacity. The selected Vendor is likely to be agency for the Prototype manufacture also.

### 1. Scope of the Work

The scope of work is as follows –

*To be executed by the Vendor either by himself or as a consortium:*

- i. Study the part drawings supplied by the design agency ADA of DRDO and develop the Process Plan
- ii. Design and fabrication of the required tooling for the fabrication of the parts
- iii. Manufacture the parts, both metallic and composite
- iv. Prepare the Sub-assembly Jigs
- v. Create the sub-assemblies and equip them in coordination with the concerned System specialist
- vi. Set up the test rigs and carry out the structural tests of the identified components and the full airframe
- vii. Transport the sub-assemblies to the identified Flight Test Facility

*To be executed at the Final Assembly and Check Out (FACO) Facility:*

The required infrastructure, at the FACO Facility, including Hangar space shall be provided by DRDO at Suler Air Force Base, Coimbatore. It will be operated in GOCO (Government Owned Company Operated) model.

- i. Final assembly jigs
- ii. The final assembly of the aircraft and the equipping
- iii. The requisite manpower for aircraft handling during the various phases of testing to be done on the full aircraft
- iv. Flight Testing

## 2. Overall Dimensions

The overall dimensions of the aircraft are given in Table I.

Sl.	Parameter	
1	Fuselage Length (without Nib)	15.90m
2	Fuselage A <sub>max</sub> (Without Duct)	3.60m <sup>2</sup>
3	Fuselage Volume (without Duct)	38.00m <sup>3</sup>
4	Aircraft Length	17.20m
5	Span	11.13m
6	Wing Area	50.0m <sup>2</sup>
7	Aircraft Wetted Area	215.1m <sup>2</sup>
8	Aircraft Volume (without Duct)	43.6m <sup>3</sup>

Table I

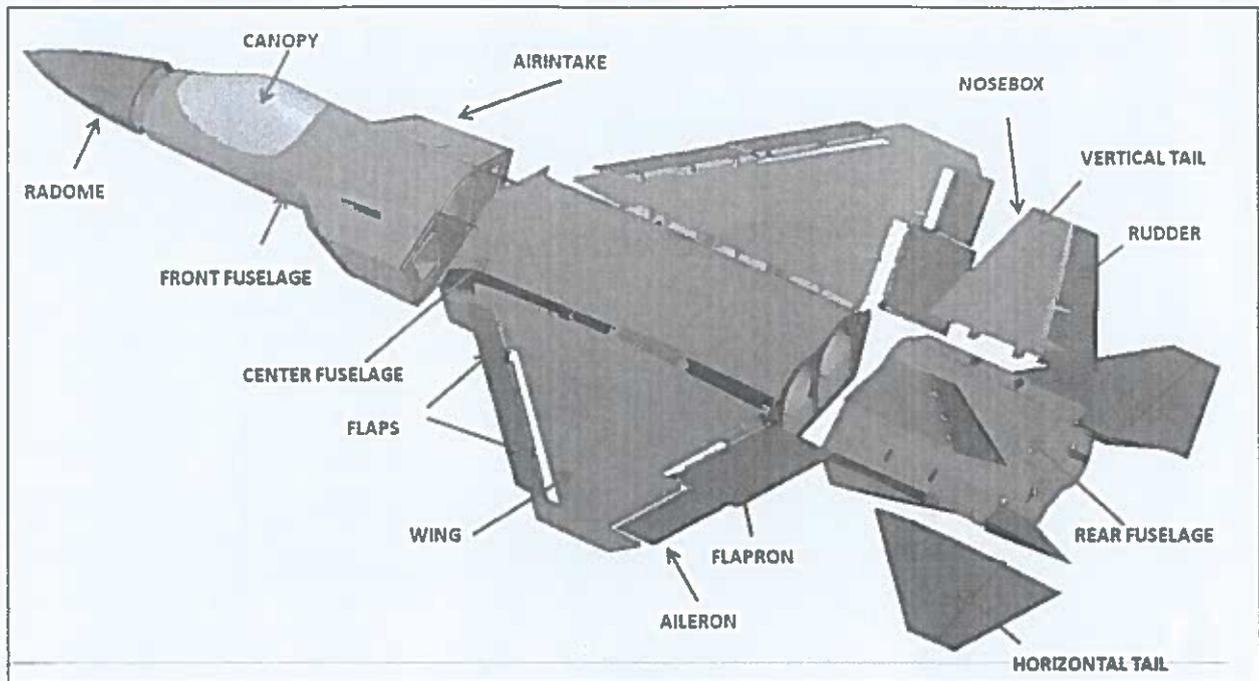
## 3. Description of the Aircraft

The aircraft is a twin fin, twin engine configuration with a horizontal tail and a serpentine air intake. The entire external surface is manufactured using Carbon Fibre Composite material (Fig1).

## 4. Airframe Modules

The aircraft structure is divided into various modules, as shown in the figure, for ease of manufacturing, assembly and interchange ability. The major assemblies of the aircraft are as follows:

- a. Front Fuselage: Front Fuselage Structure, Radome, Canopy, Air intake
- b. Center Fuselage: Centre Fuselage Structure, Air duct, Bulkheads
- c. Rear Fuselage: Main Rear Fuselage, Engine Nozzle
- d. Wing-LH: Main Wing LH, Flaps (I/B & O/B) LH, Aileron-LH, Flaperon-LH
- e. Wing RH: Main wing RH, Flaps (I/B & O/B) RH, Aileron-RH, Flaperon-LH
- f. Horizontal Tail LH: Skins, ribs, fittings
- g. Horizontal Tail RH : Skins, ribs, fittings
- h. Vertical Tail LH: Skins, ribs, fittings
- i. Vertical Tail RH: Skins, ribs, fittings



**Fig 1 Modules**

**5. Airframe Materials**

- a. Aircraft grade Al Alloys
- b. Steel – Maraging, Stainless
- c. Titanium & Nickel Alloys
- d. Inconel
- e. Composites – 914/34%/UD160/AS4/12K  
                   IM7/8552 Epoxy Resin System  
                   Cycom 5250-4-IM7-G45/32%

**6. Experience & Expertise required in the following activities**

The Vendor is required to have experience, related to Aircraft parts manufacturing, in the following areas`:

**i. Manufacturing (Airframe Components)**

- Process Planning Documentation
- Components Manufacturing – Machined, Sheet Metal, Composites etc.
- Sheet Metal Forming – Hand Forming, Rubber press forming, Stretch forming
- Composites Manufacturing – Prepreg layup, Autoclave & Oven curing
- Tooling – Design & Manufacturing

- Manufacture of special components with much higher tolerances
- Surface Treatment & Heat Treatment  
Facilities such as Cadmium / Chromium Plating for Steels and Anodizing for Aluminium
- Pipeline & Cable fabrication facilities

**ii. Assembly**

Experience in successful and fault-tolerant assembly experience, is sought, in the following -

- Tool Design & Manufacturing
- Major Assemblies such as the Centre Fuselage (7m x 3m)
- Minor Assemblies such as Airduct (8m long), fuel tank (spanning the entire Centre Fuselage) etc.
- Final Assembly – E.g. The Fuselage Coupling jig would be 17m long
- Jigs & Fixtures – For Precision Assembly

**iii. Systems Equipping**

Equipping of the sub-assemblies, with the various systems, under the supervision of the concerned System Specialist.

- Propulsion System
- Mechanical Systems
- Flight Control System
- Avionics & Electrical Systems

**iv. Testing**

Design and setting up of the required Test Rigs to carry out the specified structural qualification tests at the-

- Component Level
- Major/Minor Assembly Level

**v. Quality Control**

- The Vendor must have the necessary wherewithal for the following Inspection Procedures-
  - i. Ultrasonic, Dye-penetrant, C-Scan for
  - ii. Assembly inspection through laser tracker

- The manufacturing and test Facilities must have the following -
  - iii. NADCAP approved facilities for finishing
  - iv. CEMILAC, AQA approvals

**vi. Security Related Matters**

As the specified product is in the realm of the Ministry of Defence, it is imperative that utmost care is taken in matters related to -

- Data Security
- Security of Facilities
- Networking with Programme & Design Centres
- A Non-Disclosure Agreement would be signed before the Pre-Bid Meeting

**vii. Stores / Hangars Management**

The Vendor must have the required infrastructure for the following -

- Raw Materials Stores for storing material (Bonded Store)
- Cold Stores – mandatory for storing the Carbon Fibres and Resins required for manufacturing composite parts.
- LRU Stores, Finish Stores – for storing spare LRUs and assembled parts
- Painting Hangar

**viii. Desired Vendor Requirements**

- Planning & Procurement of Aircraft Grade Raw Materials
- Experience in Manufacturing of aircraft components
- Experience in realization of Aircraft Assemblies
- Experience in Tool Design & Manufacturing
- Experience in Aircraft Assembly Jigs & Fixtures
- Availability of Skilled Manpower
- Availability of NADCAP/CEMILAC/AQA approved facilities
- Experience in working with Aircraft Industry
- Experience in working with Certification Agencies in India and abroad
- Availability of the required Hangars & facilities

**ix. Evaluation criteria of the Vendors**

In order to evaluate the capability of the Vendor, to execute the specified task, the following information is required -

- Annual Turnover
- Details Previous/Ongoing Projects related to aircraft manufacturing
- Details of the qualification, experience of the manpower and the number to be deployed
- Report of a Composite Team, comprising officials from DRDO, ADA and IAF, after visiting the Vendor's facilities if required

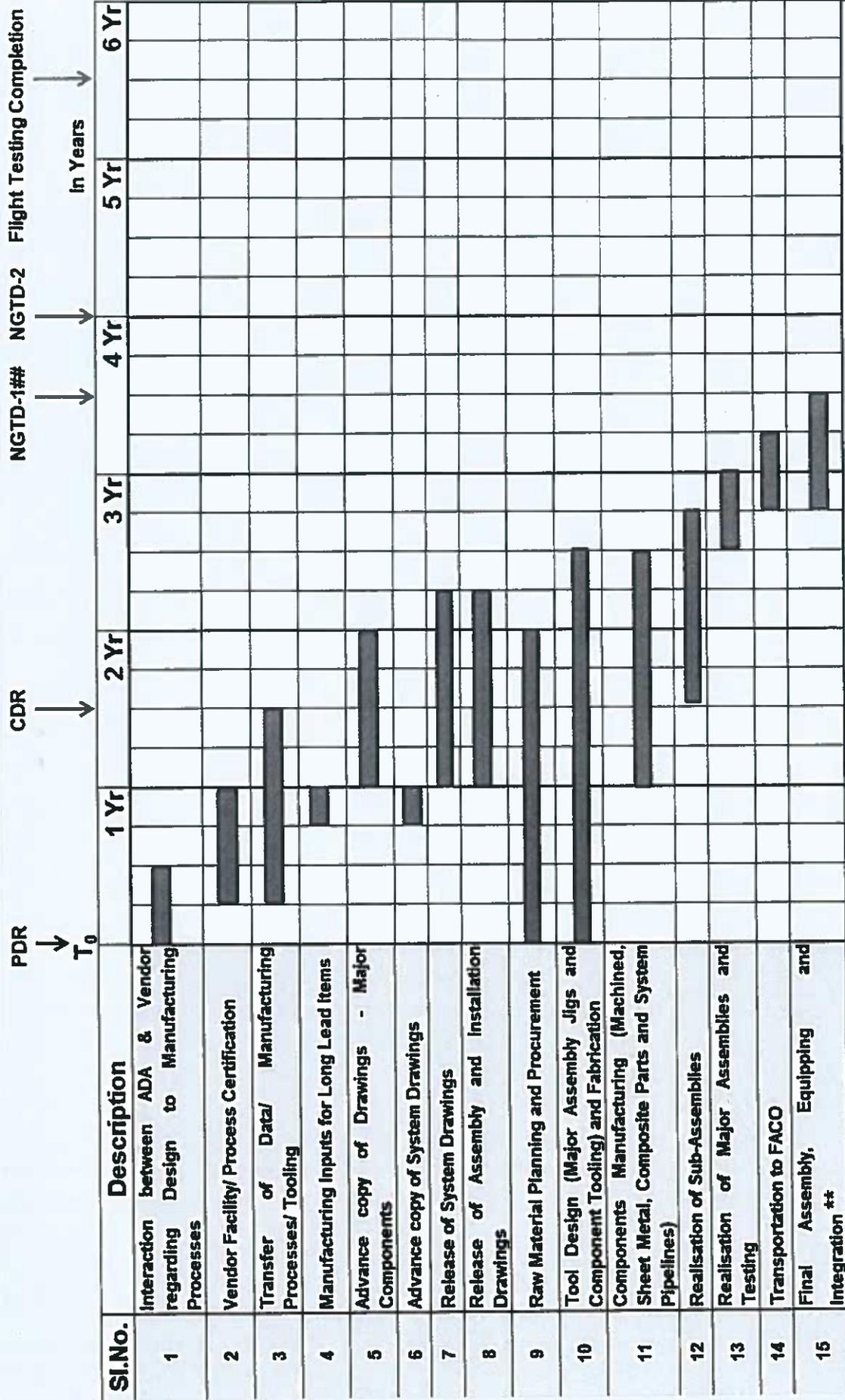
**x. Timeline**

The schedule for the project is given in Annexure A.



# Annexure - A

## NGTD Realization - Major Activities and Timelines



## Roll-out of fully equipped Technology Demonstrator - 1 and commencement of Flight Testing

\*\* Activities at FACO (Final Assembly and Check Out) incl. GVT (Ground Vibration Test) and SCT (Structural Coupling Test)



## VENDOR SUMMARY FORM

Annexure – 'D'

NAME AND YEAR OF ESTABLISHMENT OF THE ORGANIZATION / FIRM:					
	ADDRESS	TELEPHONE / MOBILE	FAX	CONTACT PERSON(S) WITH DESIGNATION	JURISDICTION OF POLICE STATION
REGIS- TERED OFFICE					
ADMINIS- TRATIVE OFFICE					
LABORA- TORIES					
BRANC- HES ABROAD					
YEAR AND TYPE OF REGISTRATION OF THE ORGANIZATION / FIRM (INDIAN COMPANY ACT 1956, INDIAN PARTNERSHIP ACT 1932, INDIAN FACTORIES ACT 1950, SMALL, MEDIUM OR LARGE SCALE INDUSTRY ETC. (PLEASE ATTACH COPY OF MEMORANDUM, ARTICLE OF ASSOCIATION AND OTHER RELATED DOCUMENTS IN SUPPORT))					
BRIEF DESCRIPTION OF THE ORGANIZATION / FIRM (HISTORY, AREA, SET UP, VISION & MISSION STATEMENTS ETC). (PLEASE ATTACH SEPARATE SHEET, IF REQUIRED):					
TYPE OF COMPANY (PLEASE ✓ AS APPLICABLE)			TYPE OF BUSINESS (PLEASE ✓ AS APPLICABLE)		
<input type="checkbox"/> PVT. LTD. <input type="checkbox"/> PUBLIC LTD. <input type="checkbox"/> PARTNERSHIP <input type="checkbox"/> PROPRIETARY <input type="checkbox"/> GOVT. ORGANISATION <input type="checkbox"/> SEMI GOVT. ORGANISATION			<input type="checkbox"/> MANUFACTURER <input type="checkbox"/> AGENT <input type="checkbox"/> DISTRIBUTOR <input type="checkbox"/> STOCKIST <input type="checkbox"/> TRADER <input type="checkbox"/> SUPPLIER <input type="checkbox"/> DEALER <input type="checkbox"/> RETAILER <input type="checkbox"/> CONTRACTOR		
NAME & ADDRESS OF DIRECTORS, MANAGING DIRECTOR, PROPRIETOR, MANAGERS, PARTNERS ETC. (AS APPLICABLE)					
PERSON TO BE CONTACTED FOR ANY FURTHER INFORMATION:					
NAME & DESIGNATION:					
CONTACT NOS. : OFFICE			RESIDENCE		
ADDRESS :					
LIST OF PRINCIPAL CUSTOMERS & THEIR ADDRESSES. WHETHER REGISTERED WITH DEFENCE / DRDO LABS / DGS&D / GOVT. DEPARTMENTS? IF YES, GIVE DETAILS ALONG WITH DOCUMENTARY PROOF. PLEASE ATTACH SEPARATE SHEET, IF REQUIRED:					
ARE YOU PROVIDING AFTER SALES SERVICE?					
IF YES, GIVE DETAILS OF (a) POST WARRANTY SERVICE: (b) SCOPE OF SERVICE:					
DETAILS OF PATENTS / COPY RIGHTS OWNED BY THE ORGANIZATION / FIRM:					
INCOME TAX REGN. NO. UNDER SECTION 12AA		G.S.T. REGN. NO.			
PAN NO. OF THE ORGANIZATION				TOTAL CAPITAL EMPLOYED	
DGFT'S IMPORTER / EXPORTER CODE NO. & DT.			RBI CODE NO. & DT.		



**TYPE OF WORK / JOBS EXECUTED BY THE ORGANIZATION / FIRM IN LAST 05 YEARS**

YEAR	DETAILS OF SIMILAR JOBS UNDERTAKEN	CLIENT'S NAME AND ADDRESS	START AND END DATE OF JOB
REMARKS			

DETAILS OF PLANTS, MACHINERIES, TEST EQUIPMENTS / FACILITIES, ETC. OWNED BY THE ORGANIZATION / FIRM:

DETAILS OF ASSISTANCE FROM EXTERNAL AGENCIES:

HAS YOUR PRODUCTS BEEN TESTED BY ANY AGENCY? IF SO, INDICATE DETAILS WITH COPIES OF TEST CERTIFICATE / REPORT)

DETAILS OF FOREIGN COLLABORATIONS IF ANY (INDICATE PRODUCT, NAME & ADDRESS OF COLLABORATOR, YEAR OF COLLABORATION, WHETHER CURRENT OR NOT ETC:

WHETHER THE FIRM IS HAVING ISO / CMM / ISI OR ANY OTHER CERTIFICATION? IF YES, GIVE DETAILS WITH PROOF:

**TOTAL NO OF MANAGERIAL / TECHNICAL PERSONNEL WORKING IN THE ORGANIZATION / FIRM**

ADMINISTRATIVE	TECHNICAL	QC INSPECTOR	SKILLED / UNSKILLED	FOREIGNER	OTHERS

**ANNUAL SALES TURNOVER FOR LAST 03 YEARS (IN LAKHS)**

YEAR	TURNOVER (Rs.)	NET PROFIT (Rs.)	REMARKS

BANKER'S NAME, ADDRESS & A/C NO.:

ANY FUTURE PLANS? (EXPANSION PROGRAMME, INSTALLATION OF NEW MACHINERY, ADDITIONAL TEST FACILITIES ETC.):

ANY OTHER RELEVANT INFORMATION? (COLLABORATIONS / ASSOCIATES ETC.):

DETAILS OF ENCLOSURES (PLEASE ✓ AS APPLICABLE)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> CERT. OF INCORPORATION   | <input type="checkbox"/> CERTIFICATE OF REGISTRATION             | <input type="checkbox"/> INCOME TAX CLEARANCE CERT. FOR LAST 5 YRS.                |
| <input type="checkbox"/> SSI UNIT REGISTRATION  | <input type="checkbox"/> AUTHORISATION FROM PRINCIPAL FOR AGENCY | <input type="checkbox"/> COPY OF PAN CARD  |
| <input type="checkbox"/> ATTESTED COPIES OF PURCHASE / WORK ORDERS / LETTER FOM CUSTOMERS |  | <input type="checkbox"/> AUDITED COPY OF BALANCE SHEETS FOR LAST 3 FINANCIAL YEARS |
| <input type="checkbox"/> AN AFFIDAVIT AS PER SL. NO. 10 (VENDOR'S QUALIFICATION)          |  |  |
| <input type="checkbox"/> ORGANIZATION'S BROCHURES, CATALOGUES CERTIFICATES, ETC           |  |  |

**DECLARATION:**

- I / We \_\_\_\_\_ (Name of Director / Partners/Proprietor / Share Holders) do hereby declare that the information furnished above is correct to the best of my / our knowledge and that I / we shall be bound by the acts of duly constituted attorney.
- I / We also hereby declare that all information related to ADA / DRDO shall be treated as CONFIDENTIAL and no information shall be passed on to any unauthorized person without written permission by ADA.
- I / We also undertake the responsibility to inform all subsequent changes in the constitution OR working of firm, affecting the accuracy of the answers now given will be promptly communicated to ADA.
- Mr. \_\_\_\_\_ whose signature are given below is an authorized representative of this firm.

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_  
 (Specimen signatures of firm's authorized representative)

SEAL OF THE COMPANY  
DATE:

SIGNATURE OF AUTHORISED SIGNATORY:  
NAME:  
DESIGNATION:



Standard Conditions to EOI

Annexure 'B'

Ref: ADA/COM/IND/EOI/NGTD/2017-2018/SU

Date: 16/02/2018

<b>SUBJECT</b>	<b>Manufacture of the Next Generation Technology Demonstrator (NGTD) as per Scope of Work</b>
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1. Please superscribe the EOI Reference number and date, title as "EOI Response for Manufacture of the Next Generation Technology Demonstrator (NGTD)" on the sealed cover to avoid the proposal being declared invalid.
2. The proposal shall be addressed to the **Director (Materials Management) Aeronautical Development Agency, Post Box No.1718, Vimanapura Post, Bangalore – 560 017, India.** Please superscribe reference number on the envelope as ADA/COM/IND/EOI/NGTD/2017-2018/SU and your response should reach us on or before **4 PM, 15 March 2018** at the above address.
3. The proposal is being issued with no financial commitment and ADA reserves the right to:
  - (a) Change or vary any part thereof at any stage,
  - (b) Withdraw the proposal, should it become necessary at any stage or
  - (c) Accept or reject any offer without assigning any reason.
4. Late proposals received beyond the scheduled time and date shall not be considered.
5. The proposal shall be in English language and shall be kept valid for a period of 180 days from the last date of submission.
6. Those who require clarifications regarding the contents of Scope of Work (refer **Annexure 'A'**) shall notify ADA in writing about the clarifications sought not later than 7 days prior to the date of closure.
7. Company's profile indicating the ownership, registration as per law of the land, range of services offered along with list of references/buyers to whom similar services were provided.
8. All information provided by ADA shall remain the property of ADA and shall not be divulged or cause to be divulged to any third party or otherwise made public for which confidentiality agreement need to be signed by the Supplier.
9. Vendor Summary Form enclosed herewith as **Annexure 'D'** duly filled in should be sent along with EOI.
10. Bidders shall also comply in respect of Security related matters as per SOW (**Annexure 'A'**).
11. The proposal forwarded by the firms will be evaluated by a Technical Evaluation Committee and would shortlist the firms. Evaluation Criteria is also mentioned in Clause ix of SOW (**Annexure 'A'**).

**Director (Materials Management)**



**Vendor Qualification Requirements**

**Ref : ADA/COM/IND/EOI/NGTD/2017-2018/SU**

**Date: 16/02/2018**

- 1) The Bidder should be registered under the Companies Act, 1956 or a registered firm. Copy of registration of the company in India along with relevant documents should be submitted.
- 2) The Bidder should possess the experience and expertise in various activities, meet the desired vendor requirements as mentioned in Scope of Work (**Annexure 'A'**). Documents indicating the above should be submitted as part of EOI response.
- 3) Bidders having prior experience as mentioned in the Scope of Work (**Annexure 'A'**) are welcome to participate in the bidding process. Purchase Order copies of previous/ongoing projects to be submitted.
- 4) Registration detail with DRDO or any other Govt. Institutions/Autonomous Bodies/PSUs etc. if any, should be enclosed with EOI.
- 5) Vendor shall enclose with its EOI an affidavit stating that the company is / has not been black listed by Central / State Government / PSU.

**Director (Materials Management)**

