



GENERAL INFORMATION

(FOR SUBMISSION OF PROJECT PROPOSALS FOR FINANCIAL ASSISTANCE)

Under

TECHNOLOGY DEVELOPMENT PROGRAMME



सत्यमेव जयते

GOVERNMENT OF INDIA

MINISTRY OF SCIENCE & TECHNOLOGY

DEPARTMENT OF SCIENCE & TECHNOLOGY

TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD,

NEW DELHI - 110 016

Last Date and Time of Online Submission: 30.06.2023, 5.00 P.M

GENERAL INFORMATION

The Department of Science & Technology (DST) plays a pivotal role in promotion of science & technology in the country. The Department has wide ranging activities ranging from promoting high end basic research and development of cutting-edge technologies on one hand to service the technological requirements of the common man through development of appropriate skills and technologies on the other. Through an *umbrella scheme* of **Innovation Technology Development and Deployment**, the Department under its **Technology Development Programme (TDP)** has been promoting and supporting activities related to indigenous development of innovative technologies in identified areas. During recent past, DST has supported the development of technologies at various R&D laboratories/ institutions. This has resulted in development and deployment of technologies.

Technology Development Programme (TDP):

One of the key objectives of the Department of Science & Technology is to promote technology development in various fields. The Department has been supporting Technology development projects which include materials, devices and processes. The Programme supports activities aimed at developing technologies both in the advanced/emerging areas and in traditional sectors/areas. Under the Programme, feasibility of fresh ideas/ concepts is also assessed for their potential conversion into useful technology/product.

Mandate of TDP:

The mandate of Technology Development Programme is to convert proof-of-concepts for technologies/ techniques/ processes/products into advance prototypes for validation and demonstration in actual field settings. The commercialization of these technologies needs further assessment/incubation, which does not fall in the scope of the Technology Development Programme. Transfer of technology developed under the project to the industry should ideally be the onus of the host institutions. Proposals for incremental R&D over the existing technologies are also considered for support. Projects related to design and development of Software/IT, as required for products and processes, as a part of technology development project shall be considered. Pure software development **does not fall** in the scope of the Programme.

AIM:

- Support R&D for development of innovative technologies in identified areas.
- Promote application of advanced technology for improving the performance and value addition to existing technology.
- Capacity building in the area of technology development. Identify and support R&D groups which have developed depth/strength in a particular scientific domain.

IDENTIFIED AREAS FOR NEW CALL FOR PROPOSAL:-

In 2023, a **New Call for Proposal** is planned to invite proposals from scientists/engineers/technologists working in academic institutions/R&D institutions/laboratories having adequate

infrastructure/ facilities to carry out Technology Development work/prototype building. Financial support will be provided for indigenous development of innovative technologies in identified areas.

The specific objectives of the Programme are to

- Develop and integrate technologies following a holistic approach in identified areas;
- Promote application of modern/advanced technologies to socio-economic problem solving;
- Encourage developments in application of R&D activities; and
- Promote activities aimed at improving technology, technique, material, methods and other appropriate activities conducive for development of technology status in identified areas.

As parts of a wider set of nation-building initiatives, some of the areas (as given below) are identified from 'Make in India' initiative. Also Hon'ble Prime Minister made a clarion call for an “**Aatmanirbhar Bharat**” or a self-reliant India that would be a source of local ingenuity creating global impact.

1. **Advanced Manufacturing Technologies (AMT)**
2. **Waste Management Technologies (WMT)**
3. **Biomedical Device and Technology Development Programme (BDTD)**
4. **Technology Development Programme (TDP)**
5. **Therapeutic Chemicals (TC)**

1. Advanced Manufacturing Technologies (AMT)

The Department of Science & Technology has initiated a technology development program named “Advanced Manufacturing Technologies (AMT)” during 2015 aligned with the Make in India mission. The scope of R & D efforts envisaged under the “Advanced Manufacturing Technologies” Program encompass the following:

- Design and process innovations to overcome the limitations in conventional manufacturing technology
- Improvements in materials and their processing for better properties and commercial scale production
- Enhancement of productivity and better utilization of resources through ICT
- “Industry 4.0” enablers such as additive manufacturing, near net shape manufacturing, assistive robotics and process automation, industrial IoT implementation, etc.

2. Waste Management Technologies (WMT)

The Department of Science & Technology has initiated a technology development program in the name of “Waste Management Technologies (WMT)” during 2015 aligning to Swachh Bharath Abhiyan. Waste Management encompass a variety of interventions in the generation, prevention, characterization, monitoring, treatment, handling, reuse and ultimate residual disposal of solid wastes. The program aims to promote the development of suitable technologies with potential to ameliorate the environmental load from the huge amount of residuals generated by industrial development and consumption lifestyle. The objectives of WMT includes (i) Take stock of technological development, assess, analyse and look for material recycling systems with low environment loading and improve upon them or find better alternatives (ii) Develop waste management technologies that can be adopted in small & medium scale enterprises in order to improve their productivity and global competitiveness (iii) Establish techno-economic feasibility of proposed methodologies/ technologies.

3. Biomedical Device and Technology Development Programme (BDTD)

Department of Science and Technology has initiated a programme on Biomedical Device and Technology Development (BDTD) during 2016. Department was earlier supporting development of

instruments for Medical and Healthcare applications through Instrumentation Development Programme. BDTD has been evolved considering the concern of medical device industry for R&D to develop new innovative products as per global standards. The mandate of BDTD is to evolve and support projects for design & development of devices for:

- a. Early-Stage Prototype Development: (The integration and testing of basic components in a laboratory environment)
- b. Late-Stage Prototype Development (Fabrication of compact prototype for testing and validation)
- c. Pilot Scale Testing and validation: (Upon completion of the technology's design, fabrication final testing with limited number of prototypes) with mandatory manufacturer industry participation.

The focus of DST-BDTD will be on development of devices and related technologies. The targeted categories include screening, diagnostic, surgical and life support equipments for clinical applications in healthcare sector.

4. Technology Development Programme (TDP)

Technology Development (TD) Programme supports activities aimed at developing and integrating technologies to evolve materials/process/techniques both in the advanced/emerging areas and in traditional sectors/areas. Under the Programme, feasibility of fresh ideas/ concepts is assessed for their potential conversion into useful technology/product. Applications of R&D for socio-economic benefits is consciously promoted under this programme. The primary objective of the Programme is to facilitate and support development of products or techniques/technology aimed at specific end use. The Programme stresses on clearly identifying the needs for development of the technology so that the developmental effort could be useful to the target beneficiary. It envisages active user involvement and association in the development effort. The intention is that the products/technologies developed under the Programme become useful for the benefit of the people at large.

5. Therapeutic Chemicals (TC)

Through "Therapeutic Chemicals" program of Technology Development and Transfer (TDT) Division, Department of Science and Technology (DST) is pursuing to have self-reliance on key starting materials, intermediates and other raw materials that are required by Indian Health care sector and also trying to develop therapeutic strategies for prevalent rare/orphan disorders as well as for Antimicrobial resistance (AMR). Through this call on AMR, DST aims to address the urgent need for innovative solutions to combat the growing threat of antimicrobial resistance. DST may support for creation of Centers with reasonable geographical spread in the country, for up-to a period of 5 years (3+2), to nurture an ecosystem of research, innovation and translation in AMR research. These centres are expected to work in collaborative mode.

MODES OF PROJECTS:

Under this Call for Proposals, Department is looking for development of technologies in the following modes of projects starting at TRL-3 [TRL 3 – Proof of Concept Demonstrated] :-

- ❖ Development of technologies in association with an industry/ user agency.
 - ❖ Pilot plant demonstration for techno-economic analysis.
 - ❖ Nationally coordinated project to develop a specific technology platform.
 - ❖ Development of a technology of societal importance with commercialization plan.
 - ❖ Field level demonstration of a developed technology for social acceptance.
- Priority will be given to the projects with industrial partners, leading to successful field deployable prototypes. TDP support shall be more relevant, if available knowledge-base is used to target newer applications having large market size / higher societal impact. Such Research

groups will be supported to take translational research projects with definitive outcome/timelines. Research groups, which have demonstrated and transferred technologies for certain applications, will also be given preference for diversifying the application demonstration / transfer of technology in other high impact fields.

- Preference should be given to such project proposals having clear roadmaps for field testing in carefully identified markets, for making a business case and for technology transfer / commercialization.
- Projects, integrating co-arising technologies with a potential impact on improved processes / products, should also be considered for elaborate assessment.

Basic research proposals will not be supported under this Programme.

ELIGIBILITY CRITERIA:

1. Proposals must be submitted using **ONLINE portal (<https://onlinedst.gov.in/>)** only by Scientists/Engineers/ Technologists working in Universities and other Academic institutions; R&D institutions/ Laboratories having adequate infrastructure and facilities to carry out R&D work. PIs may submit the proposal under the division of “Technology Development and Transfer” after registration on portal or using their already registered IDs.
2. The project proposal will be reviewed only if the PI has completed proof of concept. The proposals falling under TRL 3 to 6 [TRL 3 – Experimental proof of concept, TRL 4 – Technology validation in lab, TRL 5–Technology validation in relevant environment, TRL 6 – Technology demonstrated in relevant environment] are only to be submitted. The fundamental R&D proposals will not be supported under this call.
3. It is mandatory to **demonstrate lab prototype** to become eligible for consideration under this call.
4. The PI or groups already having ongoing projects under any of the AMT, WMT, BDTD, TDP, and TC programs of DST may apply only if six months or less are due for the completion of the project.
5. For submitting application under the program area of Biomedical Device and Technology Development Programme (BDTD), a clinician should be involved with investigating team as Co-PI.

POINTS TO BE KEPT IN MIND WHILE SUBMITTING PROJECT PROPOSALS:

1. Financial support is provided only for temporary staff salaries, equipment (if necessary, and not available with PI's Institute, and specific to project requirement), consumables, domestic travel and other miscellaneous items. **No support is provided towards basic infrastructure, buildings and International travel.**
2. The investigators/ R&D Group must have adequate experience and expertise in the relevant area of proposal. The proposals should be based on innovative technologies/ ideas. Proposals should have specific, concrete, quantifiable objectives/deliverables. Results of ongoing and completed projects of the PI must be reflected while the formulating new proposals.
3. Co-PI from host institute is mandatory.
4. The technology demonstration plan should be clearly spelled out with achievable milestones, timelines, justifiable budget requirement, and engagement with prospective technology transfer partners or technology transfer facilitating bodies.
5. It is envisaged that the end product of development shall be transferred to industries/suitable stakeholders for technology implementation. Hence, project should be proposed with appropriate industry/suitable stakeholder participation, clearly stating the technical as well as financial terms of participation.

6. No financial support will be provided to industry. An endorsement letter from the participating industry/stakeholder with a detailed breakup of their contribution for the proposed project has to be submitted.
7. **Fund support under non-recurring grant for the required equipment will be given only if the same or similar facility is not available in the PI's institution or nearby institutions.**
8. A PI can submit only one proposal against this DST-TDP Call. Submission of more than one proposal from a PI would be liable for disqualification.
9. It is desirable to have the contribution of the host institution/grantee institution for the capital cost of the project.
10. The quarterly deliverables should be clearly mentioned in the proposal in the form of a Gantt chart/ matrix.
11. The projects should be time-bound normally for duration of 2-3 years depending upon the device/technology to be developed.
12. Implementation of the projects will be monitored regularly through Progress Reports, Audited Financial Statements and Committee of Experts in Group review meetings and onsite review as well.
13. **The CoEs will be supported for period of five years (3+2).** The Centers will be evaluated after three years for continuity and will be further extended for two years depending upon their performance.
14. **Maximum two CoEs will be established under each thrust area.** CoE should be multi-institutional and collate the strength of partner institutes. Industry(ies) participation and contribution is mandatory for CoE applications.
15. Interested Institutes may submit the concept note/ full proposal of CoE within the duration of the call.

PROCEDURE FOR SUBMISSION OF PROJECT PROPOSALS:

Application will be accepted only through online mode of project submission through e-Project Management System (e-PMS Portal) (<https://onlinedst.gov.in/>). Applicants should register as a PI in DST's Online Portal. Registered PIs may get an option of "submit proposal", under calls that are open. Soft copy of the project proposal along with requisite/supporting documents should be submitted in the enclosed format. Please ensure that following documents have been completed and attached in the proposal.

- i. Certificate from the investigator; and
- ii. Endorsement from Head of the institution on Letter Head

Application received without compliance with eligibility criteria/above documents/with incomplete information/ will not be entertained. PIs are advised not to send any hard copy of the project to the DST.

NO HARD COPY REQUIRED

Any query/correspondence regarding the above Call for Proposal may be mailed to the following address: -

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Last Date and Time of Submission: 30.06.2023, 5.00 P.M

(Note: Please complete the online submission of proposal well in advance to avoid last day rush)



Department of Science & Technology (DST)
Technology Development & Transfer (TDT) Division

Project Proposal
under
TECHNOLOGY DEVELOPMENT PROGRAMME (TDP)
DST/TDP/Project_Proposal_Format

Table of Contents

S.no	Title	Page No.
1	Section-1. Overview of the Project	
1.1	Proposal Submitted for Programme Areas under TDP	
1.2	Project Title	
1.3	Thrust Area	
1.4	Category	
1.5	TRL (at present)	
1.6	Total Cost	
1.7	Project Duration	
1.8	Relevance to	
1.9	Lead Investigators	
1.10	Details of Collaborating Institutes and Industry	
2	Section-2. Forwarding Letters	
2.1	Certificate from Investigator	
2.2	Endorsement from Head of Organisation	
2.3	Undertaking from collaborating Industries/ Agencies	
2.4	Conflict of Interest	
3	Section-3. Relevance of Proposed Project	
3.1	Current Status of the technology	
3.2	Significance of the project	
4	Section-4. Project Work Summary	
4.1	Detailed Objectives	
4.2	Technical Details	
4.3	Project Work Plan	
5	Section-5. Budget Summary (in ₹ lakhs)	
5.1	Consolidated Budget	
5.2	Budget – In case of Multi Institutional Project	
6	Section-6. Itemised Budget	
6.1	Manpower	
6.2	Consumables	
6.3	Contingencies	
6.4	Other Costs (Outsourcing/ Fabrication/ Testing/ Patenting)	
6.5	Domestic Travel – from – DST Grant (in ₹ lakhs)	
6.6	Equipment proposed to be procured	
6.7	List of equipment available with participating agencies, relevant to the project	
7	Section-7. Annexure: Justification for Itemized Budget	
7.1	Consumables	
7.2	Contingency & Travel	
7.3	Other Costs	
7.4	Permanent Equipment	
8	Section-8. Biodata of Investigators	
	Annexure-1	

Section-1. Overview of the Project

1.1. Proposal Submitted for Programme Areas under TDP:

(Please tick ✓ any of the below)

(**Note:** A PI can submit only one proposal against this DST-TDP Call under only one of the Programme Areas. Submission of more than one proposal from a PI would be liable for disqualification.)

Advanced Manufacturing Technologies (AMT)

Waste Management Technologies (WMT)

Biomedical Device and Technology Development Programme (BDTD)

Technology Development Programme (TDP)

1.2. Title:

1.3. Thrust Area (Refer to Annexure-1):

1.4. Category (Please tick ✓ any of the given category):

Innovation

(A technological innovation is a new or improved product or process whose technological characteristics are significantly different from before.)

Industrial Application

(An invention shall be taken to be capable of industrial application if it can be made or used in any kind of industry, including agriculture/An application capable of being made or used in an industry)

Societal Need

(An underserved component of society would benefit from the furtherance of this technology)

1.5. TRL (at present) (3-6 scale)

(attach results and demonstration of lab prototype)

1.6. Total Cost:

1.7. Project Duration:

1.8. Relevance to:

1) Sustainable Development Goals (SDGs):

2) National Mission:

1.9. Lead Investigators

1.9.1. Principal Investigator (PI)

Name	
Designation	
Organization & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.9.2. Co-Principal Investigator (Co-PI)

Name	
Designation	
Organization & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.10. Details of Collaborating Institutes and Industry

1.10.1. Partner-1

Name	
Designation	
Organization & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.10.2. Partner-2

Name	
Designation	
Organization & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

Section-2. Forwarding Letters

2.1. CERTIFICATE FROM THE INVESTIGATOR(S)

Project Title:

1. I/We agree to abide by the terms and conditions of the R&D grant.
2. I/We did not submit the project proposal elsewhere for financial support.
3. I/We have explored and ensured that equipment and basic facilities (enumerated in the proposal) will actually be available as and when required for the purpose of the projects. I/We shall not request financial support under this project, for procurement of these items.
4. I/We undertake that space time on permanent equipment (listed in the proposal) will be made available to other users.
5. I/We hereby submitting the Project Proposal complete in all respect, along with (a) Endorsement from the Head of the Organisation (on letter head), and (b) Undertakings from the Collaborating Industries/Agencies.
6. I/We shall ensure that the project will be executed as per the General Financial Rules of (GFR) 2017 and the project fund will be kept only in a Zero Balance Subsidiary (ZBS) account of the Host Institute in Union Bank of India. I/We shall also ensure that the above said account will be registered in the Public Funds Management System (PFMS) and the EAT module has been successfully implemented before the submission of the proposal.
7. I/We shall acknowledge DST and the TDT division in all the Papers, Publications and Patents generated out of the proposed research work in every possible platform.

Name & Designation:	Date:
Signature:	Place:
Stamp/ Seal:	

2.2. Endorsement from Head of Organisation (On the official letter-head)

Project Title: “ _____ ”

Cost:

Duration:

1. Affirmed that the Organisation welcomes the participation of Dr./Mr./Ms. as the PI and Dr./Mr./Ms. as the Co-PI for the Project and that in the unforeseen and legitimate event of discontinuation by the PI, the Co-PI will assume full responsibility for completion of the Project. Information to this effect, endorsed by me, will be promptly sent to DST
2. Affirmed that the equipment and basic as well as other administrative facilities as per the terms and conditions of the award of the Project, will be made available to the Investigator(s) throughout the duration of the Project. All the equipment purchased under the projects will remain the administrative custody of the DST unless any order regarding the same issue by the DST.
3. The Organisation shall ensure that as per the rule of GFR 2017, purchase of the equipments may done through the Government e-Marketplace (GEM), to the extent available there as the project involves government funding.
4. The organization shall ensure that under any circumstances, parking of Government Fund will not be done. The Fund will be utilized only for the purpose it was granted.
5. The organization/ institute shall ensure to use Expenditure Advance & Transfer (EAT) module of PFMS.
6. The Organisation shall provide timely the Audited Statement of Expenditure and the Utilization Certificate of the Funds under the Grant as required by DST in the prescribed format and all interests and other earnings against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. www.bharatkosh.gov.in), immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant.
7. The organisation will abide by all the terms and conditions mentioned in the sanction order.

(Head of Organisation)

Seal/Stamp

Date:

Place:

2.3. Undertaking from collaborating Industries/ Agencies

1. Name of Agency: _____
2. I have gone through the Project Proposal entitled _____ submitted by Dr./Mr./Ms. _____ of _____ (Name of the Organization) for DST funding and I hereby affirm that my Organization/ Company is committed to participate in the Project to the full extent as indicated in the Project Proposal including following the technical and financial commitments described in the project proposal.
 - a) Technical
 - b) Financial

Name & Designation:	Date:
Signature:	Place:
Stamp/ Seal:	

2.4 Conflict of Interest

DEPARTMENT OF SCIENCE AND TECHNOLOGY

POLICY ON CONFLICT OF INTEREST

FOR REVIEWER & COMMITTEE MEMBER or APPLICANT or DST OFFICER ASSOCIATED/ DEALING WITH THE SCHEME/ PROGRAM OF DST

Issues of Conflicts of Interest and ethics in scientific research and research management have assumed greater prominence, given the larger share of Government funding in the country's R & D scenario. The following policy pertaining to general aspects of Conflicts of Interest and code of ethics, are objective measures that is intended to protect the integrity of the decision making processes and minimize biasness. The policy aims to sustain transparency, increase accountability in funding mechanisms and provide assurance to the general public that processes followed in award of grants are fair and non-discriminatory. The Policy aims to avoid all forms of bias by following a system that is fair, transparent and free from all influence/ unprejudiced dealings, prior to, during and subsequent to the currency of the programme to be entered into with a view to enable public to abstain from bribing or any corrupt practice in order to secure the award by providing assurance to them that their competitors will also refrain from bribing and other corrupt practice and the decision makers will commit to prevent corruption, in any form, by their officials by following transparent procedures. This will also ensure a global acceptance of the decision making process adopted by DST.

Definition of Conflict of Interest:

Conflict of Interest means "any interest which could significantly prejudice an individual's objectivity in the decision making process, thereby creating an unfair competitive advantage for the individual or to the organization which he/she represents". The Conflict of Interest also encompasses situations where an individual, in contravention to the accepted norms and ethics, could exploit his/her obligatory duties for personal benefits.

1. Coverage of the Policy:

- a) The provisions of the policy shall be followed by persons applying for and receiving funding from DST, Reviewers of the proposal and Members of Expert Committees and Programme Advisory Committees. The provisions of the policy will also be applicable on all individuals including Officers of DST connected directly or indirectly or through intermediaries and Committees involved in evaluation of proposals and subsequent decision making process.
- b) This policy aims to minimize aspects that may constitute actual Conflict of Interests, apparent Conflict of Interests and potential Conflict of Interests in the funding mechanisms that are presently being operated by DST. The policy also aims to cover, although not limited to, Conflict of interests that are Financial (gains from the outcomes of the proposal or award), Personal (association of relative / Family members) and Institutional (Colleagues, Collaborators, Employer, persons associated in a professional career of an individual such as Ph.D. supervisor etc.)

2. Specifications as to what constitutes Conflict of Interest.

Any of the following specifications (non-exhaustive list) imply Conflict of Interest if,

- (i) Due to any reason by which the Reviewer/Committee Member cannot deliver fair and objective assessment of the proposal.
- (ii) The applicant is a directly relative# or family member (including but not limited to spouse, child, sibling, parent) or personal friend of the individual involved in the decision making process or alternatively, if any relative of an Officer directly involved in any decision making process / has influenced interest/ stake in the applicant's form etc.

- (iii) The applicant for the grant/award is an employee or employer of an individual involved in the process as a Reviewer or Committee Member; or if the applicant to the grant/award has had an employer-employee relationship in the past three years with that individual.
- (iv) The applicant to the grant/award belongs to the same Department as that of the Reviewer/Committee Member.
- (v) The Reviewer/Committee Member is a Head of an Organization from where the applicant is employed.
- (vi) The Reviewer /Committee Member is or was, associated in the professional career of the applicant (such as Ph.D. supervisor, Mentor, present Collaborator etc.)
- (vii) The Reviewer/Committee Member is involved in the preparation of the research proposal submitted by the applicant.
- (viii) The applicant has joint research publications with the Reviewer/Committee Member in the last three years.
- (ix) The applicant/Reviewer/Committee Member, in contravention to the accepted norms and ethics followed in scientific research has a direct/indirect financial interest in the outcomes of the proposal.
- (x) The Reviewer/Committee Member stands to gain personally should the submitted proposal be accepted or rejected.

The Term "Relative" for this purpose would be referred in section 6 of Companies Act , 1956.

3. Regulation:

The DST shall strive to avoid conflict of interest in its funding mechanisms to the maximum extent possible. Self-regulatory mode is however recommended for stake holders involved in scientific research and research management, on issues pertaining to Conflict of Interest and scientific ethics. Any disclosure pertaining to the same must be made voluntarily by the applicant/Reviewer/Committee Member.

4. Confidentiality:

The Reviewers and the Members of the Committee shall safeguard the confidentiality of all discussions and decisions taken during the process and shall refrain from discussing the same with any applicant or a third party, unless the Committee recommends otherwise and records for doing so.

5. Code of Conduct

5.1 To be followed by Reviewers/Committee Members:

- (a) All reviewers shall submit a conflict of interest statement, declaring the presence or absence of any form of conflict of interest.
- (b) The reviewers shall refrain from evaluating the proposals if the conflict of interest is established or if it is apparent.
- (c) All discussions and decisions pertaining to conflict of interest shall be recorded in the minutes of the meeting.
- (d) The Chairman of the Committee shall decide on all aspects pertaining to conflict of interests.
- (e) The Chairman of the Committee shall request that all members disclose if they have any conflict of interest in the items of the agenda scheduled for discussion.
- (f) The Committee Members shall refrain from participating in the decision making process and leave the room with respect to the specific item where the conflict of interest is established or is apparent.

- (g) If the Chairman himself/herself has conflict of interest, the Committee may choose a Chairman from among the remaining members, and the decision shall be made in consultation with Member Secretary of the Committee.
- (h) It is expected that a Committee member including the Chair-person will not seek funding from a Committee in which he/she is a member. If any member applies for grant, such proposals will be evaluated separately outside the Committee in which he/she is a member.

5.2 To be followed by the Applicant to the Grant/Award:

- (a) The applicant must refrain from suggesting referees with potential Conflict of Interest that may arise due to the factors mentioned in the specifications described above in Point No. 2.
- (b) The applicant may mention the names of individuals to whom the submitted proposal should not be sent for refereeing, clearly indicating the reasons for the same.

5.3 To be followed by the Officers dealing with Programs in DST:

While it is mandatory for the program officers to maintain confidentiality as detailed in point no. 6 above, they should declare, in advance, if they are dealing with grant applications of a relative or family member (including but not limited to spouse, child, sibling, parent) or thesis/ post-doctoral mentor or stands to benefit financially if the applicant proposal is funded. In such cases, DST will allot the grant applications to the other program officer.

6. Sanction for violation

6.1 For a) Reviewers / Committee Members and b) Applicant

Any breach of the code of conduct will invite action as decided by the Committee.

6.2 For Officers dealing with Program in DST

Any breach of the code of conduct will invite action under present provision of CCS (conduct Rules), 1964.

7. Final Appellate authority:

Secretary, DST shall be the appellate authority in issues pertaining to conflict of interest and issues concerning the decision making process. The decision of Secretary, DST in these issues shall be final and binding.

8. Declaration

I have read the above "Policy on Conflict of Interest" of the DST applicable to the Reviewer/ Committee Member/ Applicant/ DST Scheme or Program Officer # and agree to abide by provisions thereof.

I hereby declare that I have no conflict of interest of any form pertaining to the proposed grant *

I hereby declare that I have conflict of interest of any form pertaining to the proposed grant*

* & # (Tick whichever is applicable)

Name of the Reviewer/ Committee Member or Applicant or DST Officer

(Strike out whichever is not applicable)

(Signature with date)

Section-3. Relevance of Proposed Project

3.1. Current Status of the technology

3.1.1. Internationally

3.1.2. Indian scenario and technological gap

3.1.3. Development status at the participating Institutions (Summary of data generated by investigator(s) in their lab)

3.2. Significance of the project

3.2.1. Major applications of the proposed technology

3.2.2. Target Beneficiaries & Expected Impact

3.2.3. What further works will require after the project, for commercial exploitation of technology?

Section-4. Project Work Summary

4.1. Detailed Objectives

4.1.1. Specific Objectives

4.1.2. Scientific Basis and Methodology

4.2. Technical Details

4.2.1. Targeted level of development under the project

(Describe the Prototypes/ Process Demonstration; with reference to Technology Readiness Levels)

4.2.2. Proposed target specifications & performance standards

4.2.3. Innovative Elements/Components of the Project

4.3. Project Work Plan

- a) Milestones with Dates, Work Elements & Organization responsible for it (in the form of Gantt Chart)
- b) Schedules/ Work-Packages (in the form of Gantt Chart) by PI/Co-PI/Partner institutes/Collaborating Industry

Section-5. Budget Summary (in ₹ lakhs)

5.1. Consolidated budget

Item	1st Year			2nd Year			3rd Year			Total		
	DST	HI**	Industry***	DST	HI*	Industry***	DST	HI*	Industry***	DST	HI*	Industry***
1. Manpower												
2. Consumables												
3. Contingency												
4. Other Costs*												
5. Travel												
6. Permanent Equipment												
7. Overhead Charges												
Total												
Gran Total												

(*Outsourced work, Fabrication & Testing)

(** Host Institute Contribution), (***) Industry's Contribution)

Total Project Budget = ₹ lakhs

Request for DST Grant = ₹ lakhs

Host Institute Contributions = ₹ lakhs

Industry Contribution = ₹ lakhs

5.2 Budget – In case of Multi Institutional Project

5.2.1 – Institute 1

Item	1st Year	2nd Year	3rd Year	Total
	DST	DST	DST	DST
1. Manpower				
2. Consumables				
3. Contingency				
4. Other Costs*				
5. Travel				
6. Permanent Equipment				
7. Overhead Charges				
Total				
Gran Total				

(*Outsourced work, Fabrication & Testing)

5.2.2 – Institute 2

	Item	1st Year	2 nd Year	3 rd Year	Total
		DST	DST	DST	DST
1.	Manpower				
2.	Consumables				
3.	Contingency				
4.	Other Costs*				
5.	Travel				
6.	Permanent Equipment				
7.	Overhead Charges				
	Total				
	Gran Total				

(*Outsourced work, Fabrication & Testing)

Norms for Manpower, Travel, Contingency & Overheads:

Manpower:

Pls may refer the following Office Memorandums for the manpower positions suitable for R&D

1. Positions for JRF/SRF/RA - OM: SR/S9/Z-05/2019 dated 10 July 2020
2. Positions other than JRF/SRF/RA - OM: SR/S9/Z-08/2018 dated 30 January 2019
3. For HRA OM No. 2/5/2017-E.II (B) issued by Ministry of Fin. dated 07 July 2017
(HRA has been revised to 27%, 18% and 9% with respect to the cities under the category of X, Y and Z respectively)

Travel & Contingency:

₹50,000/- each per annum will be provided for Travel and Contingencies. Higher amount, based on the recommendations of the Expert Committee, to be provided where the research work involves field work or/and project has many investigators/institutions and larger manpower. The contingency amount may also be used for paying Registration Fees for attending international conferences.

Overheads:

Overhead amount is towards meeting the cost of academic expenses including infrastructural facilities at the host institutes, and is permissible as given below:

- a) For projects costing upto ₹1 crore, 10% of the total cost for educational institutions and NGOs and 8% for laboratories and institutions under Central Government Departments/Agencies;
- b) For projects costing more than ₹1 crore and upto ₹5 crore, overheads of ₹15 lakh or 10% of total cost whichever is less;
- c) For projects costing more than ₹5 crores and upto ₹20 crore, ₹20 lakhs will be provided as overheads; and
- d) For projects costing more than ₹20 crores, the quantum will be decided on a case to case basis.

Section-6. Itemised Budget

6.1. Manpower

Budget for Salaries - DST Grant

Designation	Qualification	Salary per month	Number of Persons	Amount (in ₹ lakhs)	Role Description
				₹ lakhs	

6.2. Consumables

Please provide the quantified list of consumables along with cost estimates/quotations in the Annexure (Item, Quantity & Unit cost)

Budget for Consumable Materials - DST Grant (in ₹ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

6.3. Contingencies

Please provide the basis of cost estimates in the Annexure.

Budget for Contingencies- DST Grant (in ₹ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

6.4. Other Costs (Outsourcing/ Fabrication/ Testing/Patenting)

Please provide the basis of cost estimates/quotations in the Annexure.

Budget for Other Costs-DST Grant (in ₹ lakhs)

Item	1st Year	2nd Year	3rd Year	Total
Outsourcing	₹	₹	₹	₹
Fabrication	₹	₹	₹	₹
Testing	₹	₹	₹	₹
Others (Define if any)	₹	₹	₹	₹

6.5. Domestic Travel - from - DST Grant (in ₹ lakhs)

Please provide the basis of cost estimates in the Annexure. (journeys, purpose)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

6.6. Equipment proposed to be procured

Please provide justification in Annexure on the use of equipment in project. Provide supporting Quotation

Budget for Permanent Equipment – DST Grant

Description of Equipment	Foreign/Indigenous	Unit Landed Cost	Number	CIF, Custom Duty of Items etc.)	Total(in ₹ lakhs)	Whether the equipment is already available in the institute or not (if yes justify)
		₹			₹	
		₹			₹	
		₹			₹	

6.7. List of equipment available with participating agencies, relevant to the project

Description of Equipment	Foreign/Indigenous	Agency where it is located

Section-7. Annexure: Justification for Itemized Budget

Please provide justification against each sub-heading below, along with supporting Quotation.

7.1. Consumables

7.2. Contingency & Travel

7.3. Other Costs

7.4. Permanent Equipment

Section-8. Biodata of Investigators

8.1. Principal Investigator (1):

8.1.1. Name, Designation, Agency:

8.1.2. Gender & Date of Birth:

8.1.3. Qualifications:

8.1.4. Employment Experience (Last 10 years) (Academic/Industry/R&D):

8.1.5. Publications (Last 5 years):

8.1.6. Patents:

8.1.7. Research Thesis Guided:

8.1.8. Entrepreneurial Activities:

8.1.9. Technology Transferred:

8.2. Co-Investigator (s):

8.2.1. Name, Designation, Agency:

8.2.2. Gender & Date of Birth:

8.2.3. Qualifications:

8.2.4. Employment Experience (Last 10 years):

8.2.5. Publications (Last 5 years):

8.2.6. Patents:

8.2.7. Research Thesis Guided:

8.2.8. Entrepreneurial Activities:

8.2.9. Technology Transferred:

Annexure-1

Proposals are invited under the following categories/Thrust areas:

Advanced Manufacturing Technologies (AMT):

All the technologies proposed in the project should be at lab/ pilot scale and should have proper authenticated data to claim the proof of concept.

S.NO	Thrust area	Proposals invited for
1	Surface Engineering	1. Development of novel Si-B-C-N-based (including diamond composite) super hard thin films on metallic and ceramic machining tools and machining tool bits. The hardness of the films should be at least 60 GPa. The toughness of the films should facilitate the intended proposed cutting/machining/drilling operations. Proposals should be strictly based on the preliminary work (at TRL 3 or 4) on planar substrates and test coupons.
		2. Development of carbide thin films as a replacement for hard chrome plating (not traditional chrome plating). The benchmark values (of surface hardness, corrosion resistance, operating temperature, surface roughness/coefficient of friction, area of deposition, conformality, wear rate, etc.,) of hard chrome plating for the identified application must be achieved. Identification of the end application should be explicitly needed because the application shall give the benchmark values.
		3. Development of novel self-lubricating solid surfaces with a coefficient of friction less than 0.1, sliding distance of at least 3 m, and a wear rate in the range of 1E-4-4E-5 mm ³ /Nm. Development here means either developing novel and sustainable processing strategies to prepare known self-lubricating surfaces or the preparation of novel self-lubricating surfaces using existing processing strategies to achieve the above-mentioned benchmark values (TRL4-6).
		4. Device-level manufacturing/fabrication and validation of thin film-based sensors such as pressure sensors, strain sensors, temperature sensors, magnetic field sensors, etc. The proposals on preparing and measuring the sensing materials' characteristics are strictly discouraged.
		5. Development of protective coatings/thin films (against mainly hydrogen embrittlement) on the inner surfaces of natural gas pipelines in the event of changing to green hydrogen technologies (TRL 3-4).
		6. Development of laser shock peening of super alloys and components made of super alloys (TRL 3-4).
2	Precision Manufacturing of Small yet Critical Components	1. Manufacturing of support components for high-end instruments
		2. Examples: TEM holders, MEMS based local heaters, liquid cells, mechanical testing systems, etc.
		3. To develop and demonstrate technology at lab/pilot scale for manufacturing various types of DC Motors.

Waste Management Technologies (WMT) :

All the technologies proposed in the project should be at lab/ pilot scale, should have proper authenticated data to claim the proof of concept, should follow circular economy approach and address the sustainability.

S.NO	Theme	Proposals invited for
1	Industrial Waste	1. To develop and demonstrate technology at lab/pilot scale for Import Substitute Products in manufacturing wrought aluminium products (Sheets & Plates) from secondary aluminium recycled from scraps.
		2. To develop and demonstrate a safe and environment friendly technology at lab/pilot scale for the recycling of nonferrous scrap such as scrap of zinc, copper, magnesium, titanium, nickel, etc. and dross.
		3. To develop and demonstrate technologies for bulk volume utilization of Red Mud including extraction of Iron, Titanium, Aluminium, Silica, Rare Earth Metals like Scandium, Cerium, Lanthanum, etc.
		4. To develop and demonstrate technology for holistic utilization of tailings and metallurgical slags including recovery of valuables minerals and metals such as quartz, rare earth metals, precious metals, etc.
2	Toxic and Hazardous Industrial Waste	1. Chemical sludge from Textile sector: Utilization of chemical sludge as energy resource: Production of Biochar/Briquettes etc.; To develop and demonstrate a pilot scale (TRL 5) technology at 0.5 to 1 MT scale with Industry collaboration (Demo at Industry premises).
		2. Chemical sludge from Dye and Dye Intermediate Manufacturing sector: Stabilization/Solidification of ETP sludge of Dye & Dye intermediate for use as building material: To develop and demonstrate a pilot scale (TRL 5) technology at 0.5 to 2 MT scale with Industry collaboration (Demo at Industry premises).
		3. Pharmaceutical residue: utilization of sludge and residue.
		4. Spent pot lining generated from Aluminium smelters: (a) Utilization of carbon portion of spent pot lining as energy source; To develop and demonstrate a pilot scale (TRL 5) technology at 1 to 5 MT scale with Industry collaboration (Demo at Industry premises) (b) Utilization of refractory portion of spent pot lining; To develop and demonstrate a pilot scale (TRL 5) technology at 1 to 5 MT scale with Industry collaboration (Demo at Industry premises).
		5. Concentration and Evaporation residue: (a) Recovery of salt in cost effective manner from Textile, Tannery, Dye and Dye intermediates, Pharmaceutical industry Multi Effective Evaporator (MEE) residue (b) Characteristics of MEE residue and methods of ultimate disposal for non-recoverable materials.
3	Technologies and Products from Agriculture Residues	1. High volume throughput machines for fibre extraction from agricultural waste.
		2. Novel materials for sustainable packaging from agriculture residues.
		3. Extraction of PLA from agriculture residues.
		4. Extraction of novel materials for 3d printing from agriculture residues.

Biomedical Device and Technology Development (BDTD) :

S.NO	Theme	Proposals invited for
1	Healthcare and Medical Wearable Sensors /Devices	1. Point of care devices for monitoring blood analytes, (heart health monitoring : trop I, Creatinine Kinase, CKMB, etc.).
		2. Wearable sensors for cardiac biomarkers - Troponin for heart attacks, BNP for heart failure.
		3. Remote monitoring devices of cardiac arrhythmia detection, Monitoring for lung congestion (infrared / acoustics) in heart failure to predict clinical worsening and prevent readmissions.

2	Portable Medical Imaging	1. Portable medical imaging instruments / devices for remote site applications: Optical imaging, NIR imaging, Optical coherence tomography.
		2. Development of GENERIC Multi-channel SoC which can be used in Low power, low weight EEG, ECG, EMG machines. Involves design, fabrication and testing of SoC. and then integrating in EEG, EMG, ECG machines.
3	Medical Device Development	1. Cardiopulmonary rehabilitation devices.
		2. Wired or wireless 16/32 channel EEG Headset with AI capabilities.
		3. Multichannel fNIRs (Functional Near Infrared Spectroscopy) system for screening and diagnosis of neurological disorders.
		4. Devices for prediction of exacerbations of heart failure or COPD.
		5. Design and development of indigenous portable cardiac biosensor to diagnose and predict cardiac arrest.
4	Bio Inspired Technological Solutions and Wound Care Technologies	1. Bio adhesives, Adhesive solutions, staples, locking films.
		2. Hemostatic agents, devices, and technologies for diabetic wounds, monitoring prognosis, Trauma bleeding control products.
5	Women and Child Health Care Devices	1. Innovative products in menstrual Hygiene, devices for post-partum hemorrhage.
		2. Continuous high risk pregnancy monitoring point of care device.
		3. Design and development of indigenous intrapartum device with multiple sensors for precise monitoring.

Technology Development Programme (TDP):

S.NO	Theme	Proposals invited for
1	Advanced Materials and Processing	1. Development of powders for coating applications.
		2. Development of Technology for Low-cost, high-quality Graphene from Indian mineral resources and 2d materials production for industry applications.
		3. Development of Electrically conductive 3D printable materials, Flexible part 3D printing, Metal 3D printing using wire material by Induction Heating.
		4. Bulk synthesis of advanced functional materials including Rare earths, High-performance Permanent Magnets Components using AM Techniques, Development of rare earth-free magnets, Recycling of rare earth permanent magnets.
		5. Development of materials for high-temperature applications.
		6. Development of formable structural ceramics and operational- ceramic waveguides and antennas for 5G-Sub6GHz communication applications.
2	Agro Tech and Food Processing	1. Development of Sensors and Automation in on field application post-harvest technology.
		2. Food processing and preservation for reduction in post-harvest losses, Food quality and safety (non-destructive evaluation, instrumentation, packaging, waste to wealth , etc.).
		3. Development of Technologies for prevention of wild-animal related losses to agricultural fields.
		4. Development of Technologies for horticulture and millet mechanization.
		5. Development of Advanced technology for storage systems: Seed Storage, Solar based cost effective storage systems.

3	Construction/ Infrastructure and Low-cost Building Materials	<ol style="list-style-type: none"> 1. Structure Health Monitoring: Indigenous technology for Smart embedded sensing for continuous health monitoring of structures. 2. Automation in construction such as 3D printing, for improving construction productivity, Hybrid Steel Construction, Composite bridge construction, Interlocking block masonry technology, Carbon capture in concrete, Indigenous adaptive control devices for seismic response reduction. 3. Development of Composite rebar for RC structures / civil infrastructure, Deployable structures, Infrastructure: Smart building materials, Building energy efficiency improvement.
4	Spectroscopy/Sensors /Devices/ Environmental Technology Solutions	<ol style="list-style-type: none"> 1. Development of devices and systems for natural calamity forecasting/detection and handling applications. 2. Development of portable spectroscopy technique for evaluating pesticide content in fruits, vegetables, and meat products and other applications. 3. Development of Technologies for soil erosion prevention and soil health restoration in hill ecosystems.

PROJECT SUMMARY

(in max three pages)

1. **Project Title:** -

2. **Summary of Lab Prototype Already Developed by PI in the Host Institute** (in 100 words):

3. **Principal Investigator:**
(Name, Designation and Affiliation with email/contact)

4. **Date of Birth:**

Age:

GENDER

5. **Collaborating Institutions/Agencies/Industries (if any):**

6. **Duration (max Upto 3 years):** -

7. **Total Budget: Rs.**

7.1 **DST Share: Rs.**

7.2 **Institute/Industry' Share: Rs.** (in case of Cash)

7.3 **Manpower: Rs.**

7.3.1 **Manpower Details:**

7.4 **Equipment Proposed: Rs.**

7.4.1 **Name of Equipment Proposed:**

8. **Objectives** (*In bullet form*):

9. **Novelty/Innovative Elements/S&T Components of the Project:**

10. **Outcome/ Deliverables and their Expected Impact** (*In bullet form*):

- **TRL to be achieved:**
- **Scale up model:**
- **Business plan:**
- **Techno Economic Analysis:**

11. **Target Beneficiaries & Benefits to the country:**

12. **Role of Industry/Co-PI in the proposed project:** -

13. **Any other relevant information:** -