

**GOVERNMENT OF INDIA**

**MINISTRY OF SCIENCE & TECHNOLOGY**

**DEPARTMENT OF SCIENCE & TECHNOLOGY**

**TECHNOLOGY TRANSLATION AND INNOVATION (TTI) DIVISION**

TTI division of DST is inviting project proposals under

Advanced Manufacturing Technologies (AMT) Program



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**TECHNOLOGY TRANSLATION AND INNOVATION (TTI) DIVISION**

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**TECHNOLOGY TRANSLATION AND INNOVATION (TTI) DIVISION**

Through its Technology Development Programs (TDP), the Department of Science and Technology (DST), formerly under the Technology Development and Transfer (TDT) Division, promoted technology development across various fields with strong focus on transforming proof-of-concept technologies, techniques, processes, and products into advanced prototypes for validation and demonstration in real-world settings.

Following the merger of TDT Division with National Science and Technology Entrepreneurship Development Board (NSTEDB), the newly evolved “Technology Translation & Innovation” (TTI) division has taken on an enhanced role. Through TDP, the division is now even more committed to supporting collaborative projects that bring together *Research teams and Translation teams*. The primary objectives include advancing technology development, facilitating its transfer to the suitable stakeholders for further validation & commercialization, and promotion of startups.

# Call for Project Proposals under Advanced Manufacturing Technologies (AMT) Program

The Department of Science & Technology (DST) initiated a technology development program named “Advanced Manufacturing Technologies (AMT)” in 2015. The scope of R & D efforts envisaged under the AMT program encompass the following:

* Design and process innovations to overcome the limitations in conventional manufacturing technologies.
* Indigenous development of machines, apparatus, devices, instruments, tools, etc.
* Improvements in materials processing strategies 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, AI/ML aided smart manufacturing, etc.



**भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
विज्ञान और प्रौद्योगिकी विभाग
प्रौद्योगिकी अनुवाद और नवाचार (टीटीआई) प्रभाग**

**उन्नत विनिर्माण प्रौद्योगिकियाँ**

विज्ञान और प्रौद्योगिकी विभाग (डीएसटी), प्रौद्योगिकी विकास कार्यक्रम (टी.डी.पी) के माध्यम से, जो पहले प्रौद्योगिकी विकास एवं हस्तांतरण (टीडीटी) प्रभाग के अंतर्गत था, ने विभिन्न क्षेत्रों में प्रौद्योगिकी विकास को बढ़ावा दिया है। इसका मुख्य उद्देश्य प्रमाणित अवधारणा वाली तकनीकों, प्रक्रियाओं और उत्पादों को उन्नत प्रोटोटाइप में परिवर्तित करना था, ताकि उन्हें वास्तविक परिस्थितियों में जांचा और प्रदर्शित किया जा सके।

टीडीटी प्रभाग के राष्ट्रीय विज्ञान एवं प्रौद्योगिकी उद्यमिता विकास बोर्ड (एन.एस.टी.ई.डी.बी) के साथ विलय के पश्चात, एक नवीन प्रभाग "प्रौद्योगिकी अनुवाद और नवाचार" (टी.टी.आई) अस्तित्व में आया है, जिसने एक विस्तारित भूमिका निभानी प्रारंभ की है। अब यह प्रभाग प्रौद्योगिकी विकास कार्यक्रम (टी.डी.पी) अंतर्गत अनुसंधान टीमों और प्रौद्योगिकी रूपांतरण टीमों के बीच सहयोगात्मक परियोजनाओं को और अधिक समर्थन देने के लिए प्रतिबद्ध है। इसके प्रमुख उद्देश्य हैं—प्रौद्योगिकी विकास को आगे बढ़ाना, उपयुक्त हितधारकों को इसका हस्तांतरण करना ताकि आगे इसका सत्यापन और व्यावसायीकरण किया जा सके, तथा स्टार्टअप्स को प्रोत्साहित करना।

**उन्नत विनिर्माण प्रौद्योगिकियाँ(एडवांस्ड मैन्युफैक्चरिंग टेक्नोलॉजीज) कार्यक्रम के अंतर्गत परियोजना प्रस्तावों के लिए आमंत्रण**

विज्ञान एवं प्रौद्योगिकी विभाग ने वर्ष 2015 में एक तकनीकी विकास कार्यक्रम “उन्नत विनिर्माण प्रौद्योगिकियाँ(एडवांस्ड मैन्युफैक्चरिंग टेक्नोलॉजीज)” की शुरुआत की थी। इस कार्यक्रम के अंतर्गत ‘अनुसंधान एवं विकास’ प्रयासों की परिकल्पना निम्नलिखित क्षेत्रों में की गई है:

* पारंपरिक विनिर्माण तकनीकों की सीमाओं को दूर करने के लिए डिज़ाइन और प्रक्रिया में नवाचार।
* मशीनों, उपकरणों, यंत्रों, औजारों आदि का स्वदेशी विकास।
* बेहतर गुणों और व्यावसायिक स्तर पर उत्पादन के लिए सामग्री प्रसंस्करण रणनीतियों में सुधार।
* सूचना एवं संचार प्रौद्योगिकी के माध्यम से उत्पादकता में वृद्धि और संसाधनों का बेहतर उपयोग।
* "इंडस्ट्री 4.0" से संबंधित तकनीकों का विकास, जैसे कि ऐडिटिव मैन्युफैक्चरिंग, नियर नेट शेप मैन्युफैक्चरिंग, सहायक रोबोटिक्स एवं प्रक्रिया स्वचालन, औद्योगिक आई.ओ.टी.कार्यान्वयन, ए.आई./एम.एल. आधारित स्मार्ट मैन्युफैक्चरिंग आदि।

**DST is inviting proposals translational research in the following specified areas of AMT for financial support:**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Thrust Area** | **Topics** |
| **1.** | Additive Manufacturing (All the areas mentioned are AM focused) | * 1. Development of foolproof qualification protocols of feedstock for metal additive manufacturing and components manufactured by metal additive manufacturing technologies.
	2. Development of novel mechanical testing methodologies to characterize additively repaired/refurbished metallic components.
	3. Development of refurbishment methodologies of strategic components manufactured using super alloys.
	4. Defect-free printing of highly reflective materials such as aluminum.
	5. 4D printing of biopolymers for soft robotic actuation in bio-medical applications.
	6. Development of additive and subtractive hybrid manufacturing methodologies.
	7. Development of additive manufacturing techniques for fabricating components (for example, the components required in the EV sector) using advanced magnetic materials, especially rare earth and rare earth free permanent magnets..
 |
| **2.**  | Sheet metal forming | * 1. Die-less forming – development of die-less and robot-assisted forming techniques for sheet metal components in automobile, aerospace, and bio- medical applications.
	2. Formability enhancement at room temperature through energy-assisted technologies such as servo press forming, ultrasonic assisted forming, electrical assisted forming, etc.
 |
| **3.** | Welding/Casting/Forming techniques | * 1. Welding – Any challenging problem related to friction welding, friction stir welding, LASER welding, e-beam welding, linear friction welding, or Gas tungsten arc (GTA) welding may be proposed. However, the application and materials must be meticulously chosen and should be explicitly part of the proposal.
	2. Casting – Any challenging problem related to 3D printing for mold-making, improving process efficiency, and integrating with modern digital tools. However, the critical component to be cast must be meticulously chosen and should be explicitly part of the proposal.
	3. Forming – Any challenging problem related to the integration of forming with AM, development of other hybrid processes, high-speed forming, and precision forging to demonstrate enhanced performance, cost-effectiveness, and sustainability quantitatively.
	4. Micro forming for sensor housing and accessories. Development of micro forming processes and scale-dependent mechanistic models for process modeling. Use of small-scale tests for components of smaller length scales.
 |
| **4.** | Processing of Advanced Materials | * 1. Process technology for AI/ML-assisted design and processing of new alloys for light-weighting (for example: 6XXX series Aluminium alloys) for additive manufacturing.
	2. Development of bulk processing methods of advanced magnetic materials.
	3. Development of formable structural ceramics and operational-ceramic waveguides and antennas for 5G–Sub6GHz communication applications.
	4. Development of processes for biodegradable and other packaging materials. However, the application and materials must be meticulously chosen and should be explicitly part of the proposal.
	5. Developing hydrogen embrittlement-resistant materials. However, the project must demonstrate the processing of seamless pipes and welding technologies along with the development of materials. Here, the intended applications should be hydrogen storage and hydrogen transport
 |
| **5.** | Surface Engineering | * 1. Development of highly thermally and electrically conductive and wear-resistant coatings for rapid transport systems.
	2. Development of hard and conductive coatings for arc erosion applications.
	3. Deposition of large to very large area thin film for various applications. However, the demonstration of the application and the thin film materials must be meticulously chosen and should be explicitly part of the proposal.
	4. Recycling and reuse of powder waste for coatings and/or powder metallurgical applications Demonstration of large-area selective surface functionalization and large-area surface texturing techniques. However, the demonstration of the

application should be explicitly part of the proposal. |
| **6.** | Development of Advanced Machines, equipment, Tooling, Instruments and critical subsystems including Smart Machines | 6.1 Development of automated furnace for graphitization.6.2 Development manufacturing processes for Microfluidic systems and devices manufacturing.6.3 Indigenous development low-temperature cold spray machines for repairing lustrous and reflective metals and alloys.6.4 Development of high-end instruments and aggregates, toolings and critical consumables (as an import substitute such as TEM holders, TEM grids etc.6.5 Development of cost effective manufacturing methodologies for engineering of advanced medical equipment and devices such as DNA extraction and purification kits, MEMS-based local heaters, liquid cells, mechanical testing systems, polymeric membranes for critical applications, reusable SERS substrates, etc.6.6 Design and development of Smart Manufacturing and Industry 4.0 solutions/systems including smart machines, IIOT solutions, smart factory operations enablers like smart automation systems, hardware and software systems.6.7 Design and development of Testing, inspection and calibration equipments. This may also include product qualification test rigs for advanced applications like Aerospace and defence component manufacturing confirming to specified standards as required. |
| **7.** | Electromagnetic spectrum management; cybersecurity and navigation; communication systems | 7.1 Development of anti-Jamming and anti-spoofing antenna for protecting critical communication and navigation systems from malicious interference7.2 End-to-end fabrication of THz systems sensing, imaging, ultrafast semiconductor devices, wireless communication, and RADAR applications7.3 End-to-end fabrication of table-top operational and preferably high-resolution spectroscopic systems |

**Terms and conditions:**

1. Proposals must be submitted using ONLINE portal (https://onlinedst.gov.in/) only by Faculty/Scientists/Engineers/Technologists working in Indian Universities and other Academic institutions, R&D institutions/ Laboratories having adequate infrastructure and facilities to carry out R&D work. 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. PIs may submit the proposal under the division of “Technology Translation and Innovation Division” followed by the scheme of “Advanced Manufacturing Technologies”.
2. Proposals will be taken into 2 phases

**Phase 1: Concept Note**: The concept note must provide a clear and concise definition of the problem, along with relevant metrics for evaluating the strength of the proposed translational research. It should include evidence supporting the Technology Readiness Level (TRL)/Proof of Concept, as well as comprehensive scientific and technical details of the project. The proposal should also outline the project team, define individual responsibilities/work packages, and offer a justification for the selection of project partners. Declaration and signed endorsement letters of the collaborating partners including industry can be submitted in the later stages while submitting the full proposals.

**Phase 2: Full Proposal**: - Only those Principal Investigators (PIs) who are shortlisted will be invited to submit a full proposal. Complete budget details with justification/Quotations, Declaration letters, disclosures from industry partners should be appended to the full proposal.

1. The concept note 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. Proofs for achieving the claimed TRL/Proof of concept has to be enclosed. The fundamental R&D proposals will not be supported under this call.

1. **Laboratory-level demonstration is mandatory** to become eligible for consideration under this call.
2. **Only collaborative projects** (having research team and translation team) are supported under this call for 2 years. It is mandatory to include a Technology Enabling Center (TEC) or a Technology Business Incubator (TBI) established by DST as a translation team.
	1. Out of the total budget proposed for 2 years, the non-recurring should be limited to 50% and remaining is for recurring items. Budget for non-recurring can be extended to 60% max, if the procurement is done from a foreign country. Remaining budget under non-recurring should be borne by the Host Institute.
	2. **Industry participation is mandatory with 10% contribution in cash**
	3. **Research team:** Collaborative, multi-institutional, and multidisciplinary projects are invited under the technology development initiative, with each participating institution represented by Principal Investigators (PIs), supported by Co-PIs.
	4. **Translation team:** Research team is expected to engage the Technology Enabling Centers (TECs) or a Technology Business Incubator (TBI) established by DST as strategic partners (To promote the translation of the project outcomes) for

facilitating Technology demonstration, Industry engagement (Validation and Economic viability of the developed technology), Managing intellectual property etc. The expected out comes of TEC/TBI engagement would be ToT to the participating industry, on refusal to any other user industry/formation of startup (Can engage any TEC/TBI, but preference may be given to the one in close proximity). While the declaration and endorsement letter formalizing the collaboration with the TECs/TBIs may be submitted at later stages, but, research team can engage the TEC/TBI to consult the user industries so as to narrow down the problem statement based on the industry consultations. Out of the total budget proposed, 10% of the budget will be provided for TEC/TBI engagement.

* 1. Proposals from institutes (IITs, IISc., CMTI, CSIR etc.), having their own Business Development Units as Translation partner, may be considered without DST's TBI/TEC, on case to case basis, with the recommendation of EAC, and due approval of Secretary, DST.

**POINTS TO BE KEPT IN MIND WHILE SUBMITTING PROJECT PROPOSALS**

1. Financial support is provided only for temporary staff salaries, equipment (specific to project requirement), prototype building, 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 formulating new proposals.
3. The technology demonstration and translational plan by involving TEC/TBI should be clearly spelled out with achievable milestones, timelines, justifiable budget requirement.
4. 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.
5. PI is required to submit an undertaking validated by the Head of the Institute/Competent Authority, stating that if the proposed industry partner withdraws from the project in midway, the host institute will contribute the necessary funds/support to ensure the successful achievement of the intended objectives of the project.
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-AMT-2025 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 Industry and host institution/grantee institution for the non-recurring cost of the project.
10. The quarterly deliverables should be clearly mentioned in the proposal in the form of a Gantt chart /matrix.
11. 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.

**For any queries related to this call, please feel free to write to:**

**Dr. Krishna Kanth Pulicherla,**

Scientist ‘E’, Technology Translation and Innovation Division,

Department of Science & Technology,

Technology Bhawan, New Mehrauli Road, New Delhi Email: kkpulicherla.dst@gov.in

**Shri Anil Kumar Meena,**

Scientist ‘B’, Technology Translation and Innovation Division, Department of Science & Technology Ministry of Science & Technology,

Technology Bhawan, New Mehrauli Road New Delhi – 110 016

Email: anilmeena.99@gov.in

**Last Date and Time of Submission: 31.07.2025, 5.00 P.M**

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



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**TECHNOLOGY TRANSLATION AND INNOVATION (TTI) DIVISION**

**ADVANCED MANUFACTURING TECHNOLOGIES (AMT) PROGRAM**

# Format of Concept Note for Collaborative Project Proposal

|  |  |  |
| --- | --- | --- |
| 1. | Project Title |  |
| 2. | Thrust Area (Tick the appropriate box and write the sub thrust area number as given at Annexure) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  |  |  |  |  |  |  |
| 3. | Whether established the proof of concept for the proposed translation research (Yes/no) |  |
| 4. | Details of the Patent filed by the research team, supporting to the above proof of concept |  |
| 5. | Current status in terms of technology readiness level |  | Expected TRL at the end of project |  |
| 6. | **Investigation Team** |
|  | **1.Research Team Details (Name & Affiliation, Work Responsibility)** |
| Institute 1 (PI 1) | Institute 2 (PI 2) | Institute 3 (PI 3) |
|  |  |  |
| **2.Translation Team** |
| 1. Details of translation team (Refer 5.4 & 5.5 of Call for Proposal)
 |  |
| 1. Anticipated Support (in brief 150 words)
 |  |
| 7. | Current status of work briefly in terms of scientific & technical content(in 100 words) |  |
| 8. | Does your project proposal qualify as translational research project? (if yes please justify in 50 words) |  |
| 9. | Specific quantifiable Objectives of the project |  |
| 10. | Project deliverables (in bullet points) |  |
| 11. | Project outcomes (in bullet points) |  |
| 12. | Details of Industry partner & Anticipated support for technology development |  |
| 13. | Did you conduct any research/survey to identify evidence of demand or interest from Indian industries for the proposed work and project deliverables? If yes, please provide details about the responsibilities and roles of the selected partners, along with the justification for choosing them. |
|  |
| 14. | Research support availed/being availed/applied by the PI from different sources, including DST |
|  | Project title | Funding agency | Project Cost | Project duration | Ongoing /completed | Project Outcome |
|  |  |  |  |  |  |
| 15. | Budget Estimates: | Total Budget | Recurring | Non-Recurring |
|  |  |
| Budget Req. from DST |  |  |
| Industry Contribution |  |
| 16. | Uniqueness/Innovativeness/Novelty of the project: |
| 17. | Technology Transfer / commercialization plan: |
| 18. | Work plan and timelines for the respective activities |
|  | S. No. | Year | Activity | Milestone | Details |
|  |  |  |  |  |  |
| 19. | How will this project contribute to the National Development Goals? (describe briefly)  |
|  |
| 20. | Any other information relevant to project proposal /execution of the project |
|  |



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**ADVANCED MANUFACTURING TECHNOLOGIES (AMT) PROGRAM**

# Annexure – I

## 1. List of Technology Enabling Centers (TECs)

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **TEC** | **TEC Coordinator / Contact Person** | **Email- ID** |
|  | Birla Institute of Technology and Science-Pilani, Rajasthan | Dr. Deepak Chitkara | deepak.chitkara@pilani.bits-pilani.ac.in |
|  | Bundelkhand University , Jhansi, Uttar Pradesh | Dr. Lavkush Dwivedi | lavkush@bujhansi.ac.in |
|  | Career Point University, Hamirpur, Himachal Pradesh | Dr. Kuldeep Kumar | kuldeep.che@cpuh.edu.in |
|  | Dr. Harisingh Gour Central University , Sagar, Madhya Pradesh | Dr. K. B. Joshi | kbjoshi77@gmail.com |
|  | G. B. Pant University of Agriculture and Technology , Tanda Range, Uttarakhand | Dr. S.K. Kashyap | kashyapsk@gmail.com |
|  | GITAM University, Visakhapatnam, Andhra Pradesh | Prof. Raja P Pappu | rpappu@gitam.edu |
|  | Guru Ghasidas Central University , Bilaspur, Chhattisgarh | Prof Alok Kmar Singh Kushwaha | alokkushwaha@ggu.ac.in |
|  | Medicaps University, Indore, Madhya Pradesh | Prof. Birajashis Pattnaik | tec@medicaps.ac.in; pvc@medicaps.ac.in |
|  | Pandit Deendayal Energy University, Raysan, Gujarat | Dr. Anirbid Sircar | sircar1970@gmail.com |
|  | Rajiv Gandhi University, Arunachal Pradesh | Dr. Rahul Chandra Kushwaha | drahulck@gmail.com |
|  | University of Ladakh, Leh, Ladakh | Dr. Mehaboob ali | mehbobaali@gmail.com |
|  | Amity University, Noida, Uttar Pradesh | Dr. Meenakshi Kanoji  | mkanojia@amity.edu |
|  | Amrita University, Kochi, Kerala | Dr. Krishnashree Achuthan | krishnashree.achuthan@gmail.com |
|  | Anna University, Chennai, Tamilnadu  | Dr. S. Meenakshi Sundaram | tecannauniversity@gmail.com |
|  | Chitkara University, Rajpura, Punjab | Prof Sagar Juneja | sagar.juneja@chitkara.edu.in |
|  | KIIT University, Bhubaneswar, Odissa | Dr. Mrutyunjay Suar | msuar@kiitbiotech.ac.in |
|  | Mizoram University, Aizawl, Mizoram | Dr. Lahmingliana | renthleiming@gmail.com |
|  | NITTE University, Mangalore, Karnaraka | Prof Dr. Indrani Karunasagar | indrani.karunasagar@nitte.edu.in |
|  | Panjab University, Chandigarh, Punjab | Prof. Manu Sharma | manu@pu.ac.in |
|  | SP Pune University, Pune, Maharashtra | Dr. Aditya Abhyankar | aditya1210@gmail.com,aditya.abhyankar@unipune.ac.in |
|  | Tezpur University, Tezpur, Assam | Prof. Nayan Kakoty | nkakoty@tezu.ernet.in |
|  | University of Hyderabad, Hyderabad, Telangana  | Prof Rajagopal Subramanyam | srgsl@uohyd.ac.in |

## 2. DST-Technology Business Incubators (TBIs)

The comprehensive list of DST-supported Technology Business Incubators (TBIs) can be accessed through the official website of the Department of Science and Technology (DST-NIDHI) at the following link: <https://nidhi.dst.gov.in/>