



भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

I-DAPT-HUB FOUNDATION @ IIT (BHU) Varanasi

Call for Innovative and Entrepreneurial Project Proposals
Under

Technology Incubation Hub (TIH) of National Mission on Interdisciplinary Cyber
Physical Systems (NMICPS) for
Data Analytics and Predictive Technologies
(Guideline effective from April, 2026)

Preamble

Interdisciplinary Data Analytics and Predictive Technology (I-DAPT) at IIT (BHU) under Technology Incubation Hub (TIH) targets to leverage the Research and Engineering capabilities of Sustainable Development Goal 7 and achieve the mandate of the National Mission on Interdisciplinary Cyber Physical Systems. The I-DAPT at IIT (BHU) promotes the progression of Technology Readiness Level (TRL) for the development of indigenous systems mainly in the domain areas, i.e. Telecommunication, Power, Defense Research and Development, Road Transport and Highways, Health and Family Welfare including other areas like Energy and Environment, Agri-Tech etc. The I-DAPT at IIT (BHU) also encourages leveraging other related areas for technology development, innovation, professional education, entrepreneurship, brand building, technology commercialization and product management for disseminating and deploying intellectual property; and for public outreach. At IIT (BHU), I-DAPT under TIH acts as a Section 8 Company to spearhead the activities in "Data Analytics and Predictive Technologies" and other related areas under TIH.

Proposal Call

I-DAPT-HUB FOUNDATION at IIT (BHU) under Technology Incubation Hub (TIH) of National Mission on Interdisciplinary Cyber Physical Systems (NMICPS) is inviting project proposals for a multidisciplinary program on **Data Analytics & Predictive Technology (DAPT)**. A critical aspect is that the DAPT project proposals are at a high level of TRL (**above TLR readiness levels 4**) for (i) concrete development of technologies, products, IPRs, as well as research bases and (ii) Entrepreneurship Development, including Startups and Spin-off companies, along with significant employment generation, techno-commercial incubation and innovation acceleration. The proposals are invited under the following sub-themes of **five areas (A to E) and any other areas (F) that are well-fitted in the NMICPS – IDAPT theme**.

A. Telecommunications

- B. Power**
- C. Defence Research and Development**
- D. Road Transport and Highways**
- E. Health and Family Welfare**
- F. Other areas (Agritech, Energy and Environment, etc.)**

Some indicative/directed areas are given below; however, the investigators may also choose any other related areas.

A. Telecommunications: The proposal should be in the following (or related) sub-themes, leveraging Design, Applications & Use Cases for DAPT in the next generation telecommunication paradigm:

- i. Industry 4.0 – 5G Hyper-Connection Air Interfaces
- ii. Time Sensitive Networking (TSN)
- iii. Hyperconverged - Multi-access Edge Computing (MEC)
- iv. Software Defined Networks (SDN) and Network Function Virtualization (NFV)
- v. Ultra-Reliable Low-Latency Communication (URLLC)
- vi. Deterministic Networks for Critical Infrastructure Supervisory Control
- vii. Massive Machine Type Communications (mMTC): M2M/ V2V/ V2I Communication
- viii. Low Power Wide Area Technologies (LPWA), including NB-IoT enhancements and alike
- ix. Smart City Command and Control Centre – Optimal Design and Performance Test
- x. Intelligent Sensors and Systems
- xi. Any other relevant area

B. Power: The proposal should be in the following (or related) sub-themes:

- i. Mix Energy Source Renewable Integration in Sustainable Smart Power Grid.
- ii. Solar PV Integrated DAPT Driven IoT-Based E-Vehicle Charging Infrastructure.
- iii. Data Analytics and Predictive Technology based Multidirectional Power Management for Smart Homes.
- iv. Environmental Prediction Model for IoT Based Smart Agriculture.
- v. Optimization and Power Management of Energy Storage System.
- vi. Wireless Power Transfer and Energy Harvesting.
- vii. High Power Density High Efficiency Hybrid Processor Technology.
- viii. Smart Power Grid Infrastructure with Cyber Security.
- ix. Power Quality in Standalone and Grid Tied System.
- x. DAPT-based IoT-enabled Demand Response Management in Distribution System.
- xi. Power Optimization in Smart Microgrid Infrastructure.
- xii. Reconfigurable Power Processors for Variable Futuristic Loads.
- xiii. Any other relevant area

C. Defence Research and Development: The proposal should be in the following (or related) sub-themes:

- i. Role of drones and radars for border and underwater surveillance.
- ii. Microwave techniques for imaging, including object detecting radars
- iii. Stealth technique based on advanced polymer composites
- iv. Battery for remote areas in defence.
- v. Explosive detection
- vi. Smart sensors for soldiers (Air, Water and health)
- vii. Biosensors to know the readiness of soldiers
- viii. 5G for defence communications
- ix. Advanced Polymer Composites for Defence Applications.
- x. Data analysis and predictive technology related to defence.
- xi. Supply chain (medicine, food, goods, etc.) in defence.
- xii. Any other relevant area

D. Road Transport and Highways: The proposal should be in the following (or related) sub-themes:

- i. Development of pavement monitoring and management system
- ii. Development of low-cost crash prediction and warning system
- iii. Development of a prototype connected vehicle testbed
- iv. Development of pedestrian navigation and mapping system
- v. On-road pavement distress monitoring and prediction system
- vi. Low-cost sensors for on-road vehicular emissions monitoring
- vii. Travel behaviour and demand prediction during a pandemic
- viii. Development of regional parking demand prediction and management system
- ix. Models/algorithms/strategies to reduce air pollution and carbon footprint using Intelligent Transportation Systems
- x. Dynamic road user charges/toll and their economic impact
- xi. Any other relevant area

E. Health and Family Welfare: Proposal should be in the following (or related) sub-themes:

- i. Forecasting and Prognostics
- ii. Disease Prevention
- iii. Rehabilitation
- iv. Screening or Diagnosis
- v. Therapy or Treatment

- vi. Family Welfare
- vii. Brain/Mind Health.
- viii. Any other relevant area

F. Other areas – Energy and Environment, Agri-Tech. with DAPT component

Eligibility:

Applicants [Principal Investigator (PI) and Co-Principal Investigator(s)] should be Indian citizens. Foreign nationals (including OCI and NRI) are also eligible to apply, provided they fulfil the eligibility criteria notified by SERB (SERB Funding Guidelines for foreign nationals dated 27th Oct 2016).

The applicant(s) must hold a regular academic/research position in a recognised academic institution, national laboratory, or other recognised R&D institution in India. Proposals are invited under below category.

Project Category: Category A

<p>Category A (TRL3 and above may apply in this category, to achieve TRL 5 and above)</p>	<p>18 months with a maximum budget of 15 Lakhs</p> <p>The project may be considered for extension with additional funds.</p> <p>Concrete plan to achieve a minimum TRL level 5.</p> <p>An industry/startup partnership of 5% of the proposed budget is desirable. The industry can contribute in terms of bank transfer / matching equity or any other way.</p> <p>One PI/Co-PI from IIT (BHU) is desirable</p>
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Human resources requirements in the project:

Manpower in the project may be provided in the form of Comprehensive and Holistic Advancement of National Knowledge Yield and Analytics (CHANAKYA) fellowships. CHANAKYA top-up fellowships is available.

CHANAKYA Top-up fellowships – These fellowships are primarily available for regular IIT (BHU) students. However, the I-DAPT can consider requests for Top-up fellowships for students of other institutions if a high TRL (Above 7), technology development, transfer, or potential startup is visible/expected from the project. The students can avail the Chanakya top-up fellowship along with a regular fellowship of the institute for doing work related to the project.

Fellowship Type	Top-up per month	Remark

Post Doc Top-up	Rs. 15,000/-	Initially for one year, and extendable on the performance basis
Doctoral Top-up	Rs. 10,000/-	Initially, one year and extendable on the performance basis. The Ph.D. students who have completed SOTA are eligible for the top-up fellowship.
PG Top-up	Rs. 5,000/-	One year only. II year M.Tech. students are eligible for a top-up.
IDD M.Tech. Top-up (from 4th year onwards)	Rs. 5,000/-	One year only. Extendable on the performance basis. 4th year onwards

The UG students (III year onwards and preferably during the UG project) can also be engaged in the project-related work. CHANAKYA UG fellowship of Rs. 4000/- per month may be given to them for an initial period of 6 months and then extended further on a performance basis. A maximum of three UG students may be engaged in the project.

The project's deliverables are expected from the 1st year onwards. The PI has to update the progress of the project on a quarterly basis. The investigators may use the IIT (BHU) Varanasi facility per the institute's terms and conditions.

The project proposal can be submitted at any time, in the format provided on the website idapthub.org. Projects completed in all respects and as per the format will be reviewed in the subsequent meetings for the project evaluation.

The PI or Chanakya Fellows (through PI as mentor) can approach I-DAPT for registration of a startup based on the expected outcome of the project within six months after sanction of the project. The I-DAPT will help/facilitate the PI/ Chanakya Fellows in the Startups registration process. The Startups may apply for more grants through the Startup funding mode of I-DAPT. The I-DAPT will keep a minimum 5% equity in such startups.

In all Patents filed based on the outcome of the project funded by I-DAPT, I-DAPT will be the main or Co-Applicant. PIs may approach I-DAPT for help in patent filing. All technologies developed, sold, and transferred based on I-DAPT funding projects, I-DAPT will be 50% beneficiary or as per prior mutual agreement signed with PI/Co-PI and I-DAPT.

- For any queries, contact manager2.idapt@itbhu.ac.in and cc to projectdirector.idapt@iitbhu.ac.in. Along with online submission, mail a copy of the project to projectdirector.idapt@iitbhu.ac.in.

Important Note: Please submit PART-I PART-II and PART-III as a single merged file. The signature of the PI and Co-PI is not required in PART II.

Project Format: PART - I

Call for Innovative and Entrepreneurial Project Proposals Under

**Technology Incubation Hub (TIH) of National Mission on Interdisciplinary Cyber
Physical Systems (NMICPS) for
Data Analytics and Predictive Technologies (DAPT)**

Project Ref No. _____
(to be given by the office)

Details of Investigators

1. Principal Investigator (PI)

Name	
Designation	
Department	
Institution	
Postal Address	
E-mail	
Date of Birth :	

1.1 Co-Principal Investigator (Co-PIs)

Name	
Designation	
Department	
Institution	
Postal Address	
E-mail	
Date of Birth :	

2. CVs of PI and Co-PIs (Brief CV includes Google Scholar / IIRs / Institute website profile)

3. Ten key publications (Full Reference with Impact Factor) and Patents (IPR) of the Investigators pertaining to the theme of the proposal during the last 5 years

4. Endorsement letter from the PI and Co-PIs Institute (Please use DST/SERB format)

5. Name of Three to Five reviewers with complete details

5. Project Summary

Title of Project	
Present TRL of the proposed work (If PI is already engaged in the proposed research)	
Expected TRL level after completion of the project	
The proposed work has a "Physical Cyber System"	

component, or fits this theme. If so, how?	
The proposed work has a "Data Analytics and Predictive Technologies" component, or fits this theme. If so, how?	
Proposed Budget	Recurring- Non-Recurring- Overhead-
Expected Deliverable	Patents - Publications- Tech. Transfer/Product Dev – Manpower Training -

6. Assessment of Project by PI (Self-Assessment)

Parameters	Marks on 0 to 10 Scale
Suitability of the proposal for consideration under I-DAPT- HUB FOUNDATION, IIT (BHU) with respect to the identified thrust areas of the hub	
Alignment of the proposal with the theme of Cyber Physical Systems & Data Analytics, and Predictive Technology	
Relevance of the project for the Country's Societal / Industrial / Academic growth.	
Contribution of the project to technology and product development.	
Essentiality of the Equipment.	
Competence of the investigating team (PI, Co-PI) in undertaking the proposed work.	
Whether the proposed research has the potential for Patent/Startup/Commercialization of product/technology.	
Scope for Industry Collaboration	

Signature of PI and Co-PIs

Project Format: PART – II (Maximum 10 Pages)

**Call for Innovative and Entrepreneurial Project Proposals
Under
Technology Incubation Hub (TIH) of National Mission on Interdisciplinary Cyber
Physical Systems (NMICPS) for
Data Analytics and Predictive Technologies (DAPT)**

Project Ref No. _____
(to be given by the office)

1. Area Code (Please tick the appropriate box):

1.	Telecommunications	
2.	Power	
3.	Defence Research and Development	
4.	Road Transport and Highways	
5.	Health and Family Welfare	
6.	Any other area that fits in the National Mission on Cyber Physical Systems (NM-ICPS) - Interdisciplinary Data Analytics and Predictive Technologies (IDAPT)" theme	

2. Details of the Proposed Project:

1.	Title of the Project	
2.	Present TRL of the proposed work (If PI is already engaged in the proposed research)	
3.	Expected TRL level after completion of the project	
4.	Project Duration	
5.	Project Category (Tick <input checked="" type="checkbox"/>)	Category A

Note: Details about different categories and the duration of project proposals

Category A (TRL3 and above may apply in this category, to achieve TRL 5 and above)	18 months with a maximum budget of 15 Lakhs The project may be considered for extension with additional funds. Concrete plan to achieve a minimum TRL level 5.
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3. Industry Collaboration: Provide role of the industry partner

4. Summary of Ongoing / Completed Projects with the Principal Investigator (Last 5 Years) : (Title, Funding Agency, Duration, Amount, Deliverables in the completed project)

5. Review of the status of Research and Development in the subject (Maximum of 1 page)

5.1. Please explain how your proposed project fits in the "National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) - Interdisciplinary Data Analytics and Predictive Technologies (IDAPT)" theme (Max 1 page).

5.2. Importance of the proposed project in the context of status (Maximum 1/2 page) (Highlight the new area or gap which will be solved in the project. This is a very important section to project the

novelty of the proposal)

5.3 Objective (Bullet form):

6. Work Plan:

6.1 Methodology: (Maximum of three pages) (It should contain all the details of how each objective will be addressed. This section must be detailed and have clear plans, not vague and generalized statements. Diagrams/figures are preferred to explain the work plan.

6.2 Time Schedule of activities giving milestones through the BAR diagram.

6.3 Suggested Plan of action for utilization of research outcome expected from the project.

(Maximum one page)

7. Expected Deliverables:

Technologies, Products, IPRs:	
Research articles:	
Entrepreneurship Development/ techno-commercial incubation:	
Startups and Spin-off companies:	
Training / Employment generation:	

8. Risk analysis: (Maximum ½ page)

9. Budget:

Head	First Year	Second Year	Total Grant (in INR only)	Justification
Recurring (Max 25% of the total budget) (Consumables, Contingencies, Travel, etc.)				
Non-Recurring (Equipment)				
Overhead (Max 10%)				
Total				
Manpower (Budget will be provided separately in the form of CHANKYA Fellowship)	Apply for the Chanakya Top fellowship linking with this project. Please go through the guidelines available on the I-DAPT website for details.			
Short Term Course (STC)	STC format is available on the I-DAPT website. PI can apply as per the STC guidelines. Approval of STC will be			

	provided along with the project, but fund transfer will be according to STC guidelines.	
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10. Expertise:

10.1 Expertise available with the investigators in executing the project: (Maximum 1 page)

(Professional expertise existing with each of the investigators in terms of publications (provide only number), Patents (provide only number) and preliminary results, to execute every component of the proposal should be highlighted)

11.1 Infrastructural facilities available with PI:

11.2 Equipment available with the Institute/ Group/ Department/ for the project: (Related to this project)

PART –III (If applicable) – CHANAKYA Fellowship / Short Term Course

PI can share the details of the students he wants to engage/propose for the CHANAKYA top-up fellowship. The top-up fellowship is primarily for the IIT (BHU) students. However, the I-DAPT can consider requests for Top-up fellowships for students of other institutions if a high TRL (Above 5), technology development, transfer, or potential startup is visible/expected from the project. The students can avail the Chanakya top-up fellowship along with a regular fellowship of their respective institutes for doing work related to the project. Please see the available **CHANAKYA top-up fellowships** in the CHANAKYA fellowship section on the I-DAPT website.

For the CHANAKYA Regular Fellowship, the PI has to select a suitable candidate as per I-DAPT guidelines and their institute norm (if manpower in the form of CHANAKYA fellowship is approved for the project by I-DAPT). Final approval of I-DAPT is required for selected fellows, and then funds for the fellowship will be released.

PIs can plan a **Short Term Course (STC)** in the area of the project as per the guidelines and the format available on the I-DAPT website. The project with the STCs component will be given weightage in the funding. Approval of STC will be provided along with the project, but fund transfer will be according to STC guidelines.

Note: Please go through the guidelines carefully.