



Foundation for Innovation and Technology Transfer (FITT)

Quarterly NEWSLETTER

April-June 2024



R&D Projects & Partnerships

Collaborative R&D |
Technology Development |
Expert Consultancy
Skill Development Programs |
Workshops & Conferences
Industry |
Government | Academia |
Multilateral Organizations |
CSR Funding



Intellectual Property & Technology Transfers

IP Analytics & Due Diligence |
IP Filings & Management |
IP Audits
Technology Scouting |
Match-making |
Technology Transfers & Licensing
IP Awareness |
Techno-legal Support



Incubation & Entrepreneurship

Infrastructure |
Lab/Office Space |
Specialized Equipment |
Access to IITD Labs
Technical Mentoring |
Business Mentoring
Business & Market Connects |
Investor Connects |
Networking | Funding Support



Research & Innovation Park

Managed Facility for creating
a knowledge and innovation
ecosystem
Spaces for corporates in
manufacturing, R&D, D&D,
Process Engineering
Auditorium | Meeting/
Conference Rooms | Training
Rooms | Service Apartments

R&D Projects & Partnerships



FITT actively engages with corporates, industry bodies, and academic institutions to expand its outreach and enhance technology commercialization efforts. These partnerships facilitate collaborative research, technology transfer, and entrepreneurial support, driving regional economic development. These

projects serve as catalysts for innovation and knowledge exchange between academia and industry.

From April to June 2024, FITT Facilitated 73 R&D, technology development and consultancy projects totalling INR 50Cr.

Notable projects initiated during this period

Project Title	PI	Department
Establish and operate Centre of Excellence for Learning (CoEL) in Government Technical institutions in Odisha	Brejesh Lall	Electrical Engineering
To develop a comprehensive storm water drainage decision support system and early warning system for Patna Nagar Nigam	Kumar Neeraj Jha	Civil Engineering
Design and development of light weight auxetic armours	Kusum Meena	Mechanical Engineering
Accelerating the acceptance of LC3 in structural applications	Shashank Bishnoi	Civil Engineering
Inspection of Grossly Polluting Industry(GPIs)	Vivek Kumar	Centre For Rural Development And Technology

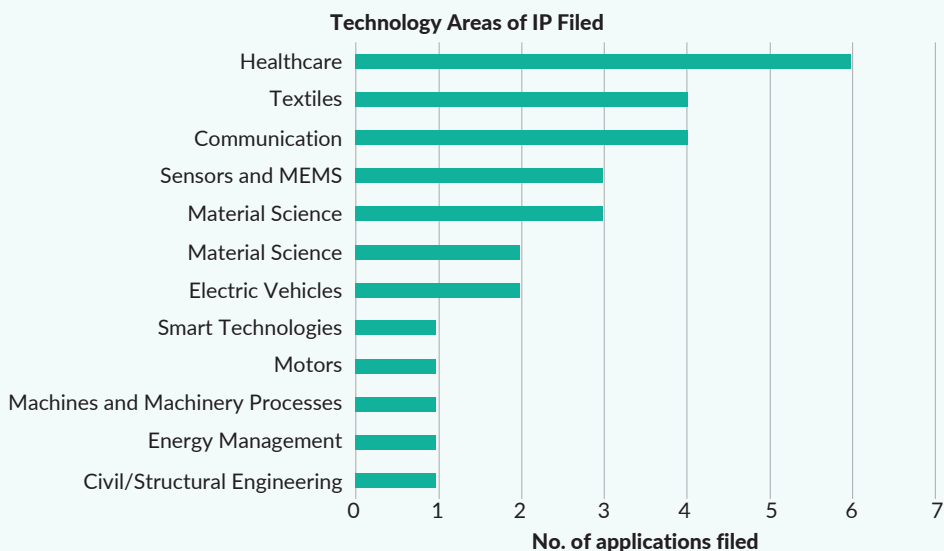
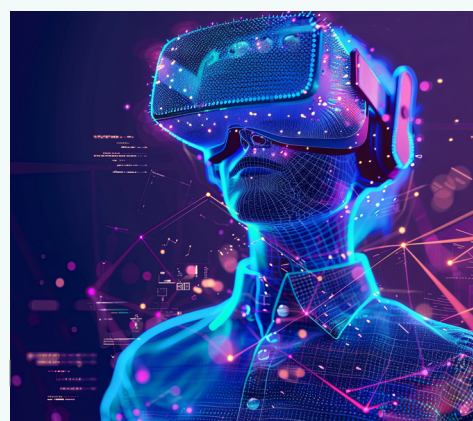
Project Title	PI	Department
Development of Edge-AI Applications and Systems	Manan Suri	Electrical Engineering
Project ABHAY for Truck Driver vision, wellbeing and road safety	Vivek Kumar	Centre For Rural Development And Technology
Developing Machine Learning Models for Air Quality Forecasting and decision support in non-attainment cities of India	Sri Harsha Kota	Civil Engineering
A POC (Proof of Concept) of immersion cooling for a 2W EV battery pack, that basically focuses on the Battery Thermal Management	Dibakar Rakshit	Centre For Energy Studies
Bio-energy projects in the state of Uttar Pradesh physical inspection and meeting	Virendra K. Vijay	Centre For Rural Development And Technology
Development of repair methodology for structures affected by premature reinforcement corrosion	Shirole Deepanshu	Civil Engineering
Performance of reconfigurable intelligent surfaces aided 6G communication systems	Shankar Prakriya	Electrical Engineering
Geotechnical Peer review	Ramana G.V.	Civil Engineering
Design curriculum of Vocational Education in Digital Design and Development (D3)	Jyoti Kumar	Design

Noteworthy R&D collaborations

- Total Energies One Tech
- EPFL, Switzerland
- Qualcomm Technologies Inc, USA
- DLF Limited
- NBCC (India) Ltd.
- Boston Consulting Group
- Cyran AI Solutions, Delhi
- Uttar Pradesh New & Renewable Energy Development Agency
- iHub Anubhuti-IIITD Foundation
- Skill Development & Technical Education Department, Govt. of Odisha
- Ministry of Road Transport & Highways, Govt. of India
- Patna Smart City Limited
- Central Pollution Control Board, Govt. of India
- Indian Army

Intellectual Property & Technology Transfer

As the intellectual property asset management arm of IIT DELHI, FITT filed 29 IP applications from April 2024 to June 2024 applications, apart from conducting IP awareness sessions at various departments and one-on-one sessions with the faculty members.



List of IP applications filed during April – June 2024:

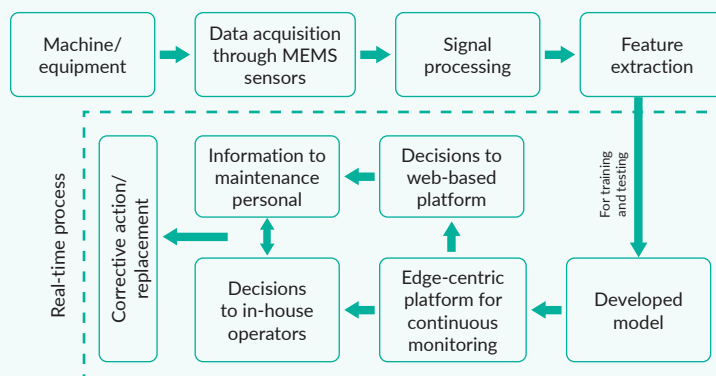
Title	Inventor	Department
A method and a system for three-dimensional (3d) underwater acoustic imaging	Arun Kumar	Centre for Applied Research in Electronics
Distal upper limb rehabilitative vr module	Amit Mehndiratta	Centre for Biomedical Engineering
A 2d woven hybrid chiral auxetic structure and a method for manufacturing an auxetic woven fabric	Bijoya Kumar Behera	Department of Textile and Fibre Engineering
Wool blended denim with low felting shrinkage and improved mechanical and comfort properties	Bhupendra Singh Butola	Department of Textile and Fibre Engineering
A multifunctional fabrics based upon bio-derived molecule and process of preparation thereof	Syed Wazed Ali	Department of Textile and Fibre Engineering
An annulative π -extension (apex) method for synthesis of 9-arylphenanthrene	Sudipta Raha Roy	Department of Chemistry
A compressed gas driven double-stage shock tube and method of operation thereof	Vikrant Tiwari	Department of Applied Mechanics
Method and system for evaluating a stereoacuity threshold of a user in ambient lighting	Tapan Kumar Gandhi	Department of Electrical Engineering
An optical interferometric instrument for dynamic characterization of nanomechanical devices	Ankur Goswami	Department of Material Science and Engineering
A bi-directional three-phase ac-dc converter for an electric vehicle charging	Soumya Shubhra Nag	Department of Electrical Engineering
A process for forming a three dimensional (3d) woven basalt cellular structure	Bijoya Kumar Behera	Department of Textile and Fibre Engineering
Nano curcumin treated fabric and methods for preparing the same	Syed Wazed Ali	Department of Textile and Fibre Engineering
System and method for velocity detection of a radar target	Amol Choudhary	Department of Electrical Engineering
Plant-based ready-to-eat transitional food, compositions and the process of preparation thereof	Jatundra Kumar Sahu	Centre for Rural Development and Technology
An additive- based electrolyte composition and method of preparation thereof	Vipin Kumar	Department of Energy Science and Engineering
System and method for correcting orientation of an electronic travel aid device	Rohan Paul	Department of Computer Science and Engineering
Bend-compensated optical fibers	Deepak Jain	Optics & Photonics Centre
Intensified co2 capture process with an ionic blend system and absorber	Sreedevi Upadhyayula	Department of Chemical Engineering
An apparatus for knife-edge free schlieren imaging and a method thereof	Manish Kumar	Centre for Sensors, Instrumentation and Cyber Physical System Engineering
A footwear with replaceable heel pad and method of manufacturing thereof	Pulak Mohan Pandey	Department of Mechanical Engineering
System for generation of entangled photon pairs for multi- user quantum communication	Joyee Ghosh	Department of Physics
System utilizing switched capacitor dc-dc converter to provide multiple programmable outputs and multiple conversion ratios	Ankesh Jain	Department of Electrical Engineering
Enhancing the resolution of raman spectra	Soumik Siddhanta	Department of Chemistry
A system for facial expression recognition using attention based vision transformer	Lalan Kumar	Department of Electrical Engineering
Perovskite ink and a method of preparation thereof	Supravat Karak	Department of Energy Science and Engineering
Method and system for speed control of a three-phase squirrel cage induction motor	Amit Kumar Jain	Department of Electrical Engineering
A process for removing gas-phase trace metals, hydrides, and selenides from syngas	Divesh Bhatia	Department of Chemical Engineering
Molybdenum disulphide with edge and basal sites for selective discrimination of amines from mixture of vocs based on gas sensing kinetics	Ritu Gupta	Department of Chemistry
Composite annular sand-pile (casp) foundation system	Ramanathan Ayothiraman	Department of Civil Engineering

FITT facilitates the commercialization of valuable intellectual property through technology transfer and licensing agreements. Notably, 2 technology licensing deals were signed during this period.

Estimation of State of Health on Lithium ion batteries

A solution has been engineered, boasting both affordability and efficiency, with a cost effective prototype. This innovative system enables real-time remote health monitoring through a combination of dedicated hardware and software. Employing an integrated approach that harnesses signal processing and artificial intelligence, the system maintains the essence of traditional diagnosis while enhancing it with robust predictive analytics. Embracing an edge-centric Internet of Things (IoT) framework, it circumvents the cybersecurity risks and time constraints often tied to cloud computing, ensuring swift and secure data transmission.

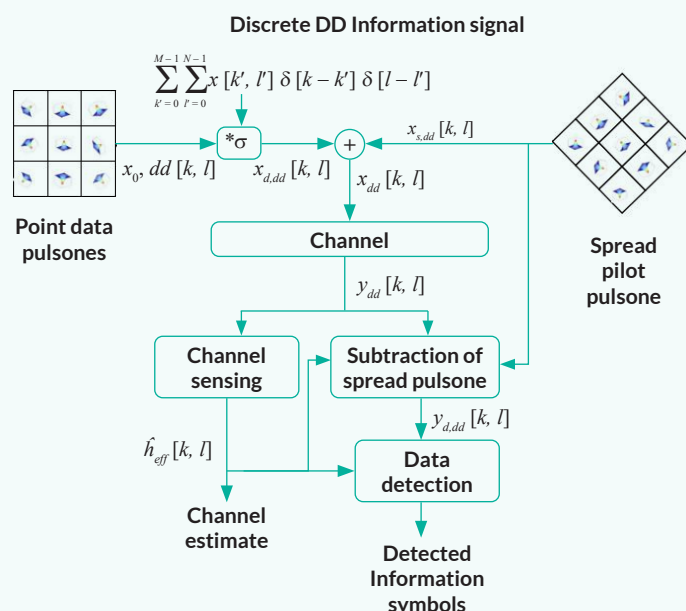
Date of Licensing: 1st April, 2024
Company: Weedy Software Pvt. Ltd.



A modulation method and receiver for achieving high data rates in high mobility scenarios.

Zak-OTFS operates predictably under the crystallization condition, ensuring non-fading input/output relations when delay and Doppler periods exceed channel spreads. Filter taps are directly extracted from a single Zak-OTFS point pulsone waveform, facilitating reconstruction under finite duration and bandwidth constraints. The system's predictability enables model-free operation. A spread pulsone with reduced PAPR (6 dB) is constructed using discrete spreading filters, transforming its self-ambiguity function to a rotated lattice Λ^* . This integration of communication and sensing within an OTFS frame enhances effective throughput without time-sharing delay-Doppler resources.

Date of Licensing: 23rd May, 2024
Company: Cohere Technologies Inc.
 Delaware Corporation, USA



Incubation and Entrepreneurship

The Institute's incubation program aims at converting technology-based innovative ideas into commercially viable prod-

ucts. Over the years, the Incubator has nurtured startups at a high success rate. It has evolved into an ecosystem with its

scale-up at the Research and Innovation Park of IIT Delhi, which has facilities to house more than 125 startups.

Introducing Our Latest Portfolio Additions

- Dr. Shruti Gurbaxani:** The team is upcycling Category 7 plastic waste into high value product.
- Neo Risers Pvt. Ltd:** They are into development of skills, applied learning and innovator mindset through engaging play-learning kits and learning models
- Indigotex Pvt. Ltd.:** Indigo dyed 100% wool blended denim garments for cold climates with low felting shrinkage and improved mechanical and comfort properties
- GB Texcoat Solution Pvt. Ltd.:** The team is working on Multilayered UV Resistant Polymer Nanocomposite Coated and Laminated Textile Structures"
- HYKI Tech Pvt. Ltd:** The team is working on Portable Hydrokinetic Turbine which can be installed at dams without any construction requirement.
- Grokalp H2CNT Pvt. Ltd.:** The company plans to develop a reactor for decomposing Methane into Hydrogen and Carbon Nano Tubes (CNT) under special parameters like temperature etc. and a catalyst. It will use domestic waste for generating Methane. It will produce high quality CNT at low cost and high running time of the reactor."

Major Collaborations

1. FITT and NCIIPC (A unit of NTRO) has collaborated to foster innovation and entrepreneurship in the deep-tech domain.
2. OIL Drift TECH program, a collaboration between Oil India Limited and FITT, has been launched to foster innovation and technology development.
3. FITT signed an MoU with the Sher-e-Kashmir University of Agricultural Sciences and Technology's Innovation and Entrepreneurship center. The MoU will foster a fertile ground for innovation and provide professional growth opportunities for faculty, researchers, and students through joint programs, workshops and training. FITT also organised a half-day workshop on grant writing and funding opportunities for startups and innovators in the agriculture sector. It also highlighted open opportunities like BIRAC BIG and Solve for Tomorrow.

4. ADITI-iDEX - FITT has been selected as a partner incubator for the ADITI challenges of DIO. The ADITI scheme has been introduced to develop advanced defence technologies that require a high amount of funding. The selected startups will get a grant of up to Rupees 25 Cr as a matching contribution to complete the research and development of the project.
5. FITT signed an MoU with Small Industries Development Bank of India

(SIDBI) to promote and accelerate innovation led MSMEs/start-ups in defence and related sectors selected and supported by IDEX under various challenges. As a part of this collaboration, SIDBI has provided an initial seed fund of Rs. 5 crore. This MoU lays the foundation for an institutional funding mechanism to encourage development and commercialization of new technologies and innovations.



Recent Highlights

Delhi Innovation Summit (DIS)24

The Delhi Innovation Summit (DIS) 24 was an extraordinary triumph, bringing together innovators, entrepreneurs, investors, and thought leaders nationwide! The Summit was inaugurated by Prof Rangan Banerjee, Director at the Indian Institute of Technology, Delhi, followed by a keynote address by Ms. Padmaja Ruparel, Co-Founder, Indian Angel Network.



Here's a glimpse of what made DIS 24 truly special:

Insightful Fireside Chat: Moderated by Mr. Dipinder Sekhon, Founder, KITES AI and featuring Mr. Gaurav Agarwal, Co-founder, Tata 1mg, offered invaluable perspectives on the startup ecosystem and India's vision for 2047.

Panel Discussion on "Lab to Market: Bridging the gap for effective technology transfers".



Startup Pitches and Launch of FIF: Witnessed the launch of the FITT Investment Fund (FIF) and pitches from 8 promising startups, opening doors to new opportunities and growth.

Tech Expo: Showcased 25 cutting-edge technologies developed at IIT Delhi by researchers and startups to a group of Industries, highlighting the institution's commitment to innovation and research.



Investment Nexus: 9 high potential startups pitched for a seed to pre-series funding to a group of 25 Investors.

Networking and Collaboration: With over 350 stakeholders in attendance, DIS 24 fostered connections that will drive innovation and progress in the years to come.

FITT Investment Fund (FIF)

To encourage and boost the spirit of entrepreneurship, FITT has launched FITT Investment Fund (FIF), a syndicated fund that provides vital financial resources to support early-stage deep-tech startups. Early-stage finance is a key to fostering ideas and innovation into successful knowledge-based businesses. FITT has been a part of several seed support programs from various government/public agencies, private investors, CSR funds, etc. However, there is still a wide gap in the modes of financial support available to technology driven start-ups especially to raise first angel/seed capital. The aim of FIF is bridge this gap by supporting early-stage start-ups with promising ideas, innovations and technologies and enable them to raise their initial investment rounds, complete validations/certifications and reach a stage to raise larger equity investments.

Under this scheme, FITT has created an investment committee with relevant experts which will conduct a thorough due diligence of the start-ups to take an informed decision on the investment opportunity. Post the Investment commit-



tee members selecting startups; FITT as the lead investor, will share the details of the selected startups with high-net-worth individuals, venture capitalist's firms and angel investors to co-invest and corporates in the selected/shortlisted start-ups.

The first round of FIF was opened in January 2024 and 89 applications were received. Twenty start-ups were

short-listed based on criteria like revenue generation, USP, product innovation, business model, GTM strategy, etc. Eight start-ups were selected for the final round of pitching before the investment committee which happened in April 2024 during the DIS event. Finally, 4 start-ups have been selected for investment and the fund disbursement is under process. The second round of FIF will be opened in August 2024.

BIG-BIRAC

FITT has invited applications from the Biotechnology Ignition Grant Scheme 24th Call. Program is designed to offer innovators financial support and mentorship, enabling them to develop and refine their technologies into products. The successful applicants can receive a funding grant of up to INR 50 lakh. Till now FITT has been a BIG partner and helped nurture and support these innovators. FITT promotes outreach program for organizations, universities, and Incubators.



NTRO

Cython 2024 - an initiative by NCIIPC (A unit of NTRO), in collaboration with FITT is a premier platform aimed at fostering innovation and entrepreneurship in the deep-tech domain. Cython 2024 : 6th April 2024: brought solutions across domains like:

- Android Security:** Development of Android Security Framework based on OWASP Mobile Top 10 2023 Vulnerabilities,
- Android Security:** Development of tool for Android kernel Debugging enabling vulnerability analysis,



- Authentication Security:** Development of Customisable browser extension in Email & Web Login portals,
- Web Security:** Development of Au-

tomated Web Pentesting & Vulnerability Discovery tool,

- Fuzzing:** Development of Dependency Aware Linux Kernel based Fuzzer

DIO - iDEX

FITT in collaboration with iDEX - DIO, organised an informative session addressing DISC XI challenges and ADITI 1.0.

The session began with the keynote address of Rear Admiral Iqbal Singh Grewal, ACM (Mod), followed by a discussion on ADITI 1.0 and DISC XI. Dayanand Sharma (Program Director, DIO) discussed the support system for startups to participate in the challenges.

The event held a technical outreach where officers from the Indian Navy briefed about the problem statements of DISC XI, and startups got the opportunity to discuss the core technicalities of the challenges and get crucial insights to take ahead for innovation.

The event opened the door for innovators to discuss their innovations and explore further opportunities, and pave a path towards success in the Indian Defence Ecosystem.

DGCE Visit to IIT Delhi- FITT had an opportunity to host Major General Harpal Singh, VSM, Directorate General of Combat Engineers, Indian Army, on 26th April 2024.

During his visit, he interacted with the startups working in the different areas having possible combat applications. The showcase was followed by a technology briefing session where academicians and scholars presented research projects of



IIT Delhi to him, exploring further opportunities in the combat areas.

He visited the Indian Army cell at IIT Delhi and discussed the academic partnerships and projects between IITD and the Indian Army.

DGIS Visit FITT IIT Delhi – FITT had an opportunity to host Lt General Rajiv Ku-

mar, VSM, Directorate General of Information Systems, Indian Army, on 18th April 2024.

During his visit, he interacted with the startups working in the areas of Information systems/Cyber security, AIML and Communication systems having possible applications for Indian Army.



Samsung SFT

FITT has partnered with Samsung India for the third edition of "Solve for Tomorrow". Its a global program and runs in 63 countries. The Samsung Solve For Tomorrow is a national education & innovation competition using STEM & Design Thinking.

It has two distinct tracks – School Track and Youth Track. The overarching theme for school track is - community and inclusion and youth track is environment and sustainability. In order to maximise its impact, the program reaches out to students/early stage startups /grass root innovators with innovative ideas and solutions to the challenges related to environment and sustainability. For the youth track, over 15 in-person outreach events were conducted across India. For the school track, more than 20 roadshows, including design thinking workshops, were held to expand the program's reach. Additionally, online sessions were hosted to connect with potential participants.



Symposium on 'Women Mean Business'

FICCI in collaboration with FICCI FLO and FITT, hosted an insightful symposium titled 'Women Mean Business'. The event aimed to spotlight the significant influence of female entrepreneurs in shaping the future business landscape. With a focus on addressing challenges, celebrating triumphs, and exploring opportunities, the symposium provided a platform for intellectual exchange and inspiration from accomplished pioneers.



Oil Drift Tech Program

The OIL Drift TECH program, a collaboration between Oil India Limited and FITT, has been launched to foster innovation and technology development. As part of this initiative, FITT has reached out to incubators and prestigious institutions across India to raise awareness about the program. Outreach efforts spanned Chandigarh and Dehradun in the North, Kolkata and Bhubaneswar in the East, Pune and Mumbai in the West, and Chennai and Bangalore in the South. This extensive campaign attracted over 200 distinguished applications. Currently, the first round of screening is underway, and the top 20 candidates will be selected by the end of June. A bootcamp and final pitching session are scheduled for the end of July.

Delegation (Nepal & Sri Lanka)

Exploratory visit by Social Media Influencers of Nepal and Sri Lanka. The influencers were given a brief introduction about FITT's offerings.

Student Excursion

Exploratory visit by the students of Maharaj Surajmal Institute. The students were apprised about FITT's offerings and how it is helping in bridging the gap between industry and academia.

Portfolio Updates

Cluix: CLUIX clinched the top spot in the "Innovation for Planet" category at INSIDEOUT Summit in at ViennaUP.



Nanosafe: Nanosafe, a material science technology startup has raised over INR 3 crore in funding led by the IAN Group and the IIM Lucknow Enterprise Incubation Centre (IIML EIC).

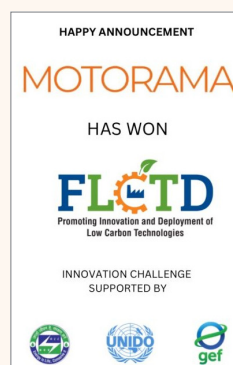


Eco Ratings: Eco Ratings, a cleantech startup, has secured USD 1 million in pre-seed funding from a consortium of investors, including We Founder Circle, 888 VC, Vinnars, Indigram Labs Foundation, and Google, in a mix of equity and grants.



EcoRatings, a cleantech firm, raised \$1 million (INR 8.3 crore) in a pre-seed fundraising round from a number of investors, including We Founder Circle, 888 VC, Vinnars, Indigram Labs Foundation, and Google through a combination of equity and grants.

MOTOR AMA: MOTOR AMA has won Facility for Low Carbon Technology Deployment (FLCTD) innovation challenge 2023 supported by UNIDO, Bureau of Energy Efficiency (ऊर्जा दक्षता ब्यूरो) and Global Environment Facility.



Creatara Mobility: Creatara Mobility, received a grant funding of INR 3.9 Cr from the Ministry of Heavy Industries, GoI under the scheme of Capital Goods for the development of Indigenous Technology



Team CREATARA showcased their cutting-edge technology to Hon'ble Lt. Gen. Gurmit Singh, PVSM, UYSM, AVSM, VSM, Governor of Uttarakhand.



TSAW Drones: TSAW Drones partnered with AIIMS, Raebareli, to start futuristic drone delivery.



AHODS: AHODS Technologies emerged as the national winners of the 'Uber Sustainovate' startup challenge.





Research & Innovation Park

Research and Innovation Park at IIT Delhi is a managed facility with focus on innovation and product development where IIT Delhi, industry, entrepreneurs and government agencies interact and enable the creation of advanced technological solutions.

- To accelerate research translation
- Provide avenues for IIT Delhi students and faculty to interact more closely with industry and bring to market technological breakthroughs through incubation
- Amplify technological and societal impact of R&D at IIT Delhi
- Galvanize entrepreneurial aspirations

Event	Brief
Delegation from Dominican Republic	A delegation led by Mr. José Ramón Holguín Brito, Deputy Minister of Monitoring and Government Coordination of the Presidency of the Dominican Republic. Deputy Minister Holguín visited the R&I Park to explore the innovation ecosystem at IIT Delhi.
25th ATB meet	25th Army Technology Board (ATB) meet was conducted at R&I Park. The meeting was chaired by Deputy Chief of Army Staff (CD&S) and 20 niche technology proposals were shortlisted.
NEDO-IITD Japanese Deep Tech Collaboration	The New Energy and Industrial Technology Development Organization (NEDO), in collaboration with IIT Delhi, held an interactive event where 5 Japanese startups made presentations for Indian students. NEDO Director, General Takeshi Yoshida, shared his plans to partner with IIT Delhi's students for Japanese deep-tech startups. This collaboration aims to boost innovation and growth for both the nations.

Facilities in Research & Innovation Park

- Auditorium (Capacity up to 110 People)
- Board Room (Capacity up to 35 People)
- Mini Board Room (Capacity up to 14 People)
- Conference Halls (Capacity up to 10 People)
- Meeting Rooms (Capacity up to 5 People)
- Training Room (Capacity up to 26 People)
- Cafeteria
- Suite Rooms (Single & double occupancy)
- Electronic Laboratory
- Mechanical Lab Laboratory
- Bio-Nest Lab Laboratory

For booking R&I Park facilities for events, conferences, workshops, etc., please **contact Facility Manager @** ripark.iitd@gmail.com

List of Current Corporate Partners

National Center for Assistive Health Technology	Novo Nordisk Foundation India
CoE Process Safety & Risk Management - Nayara Energy	DS Centre for Entrepreneurship
INRM Consultants Pvt Ltd	LetsVenture Technologies Pvt Ltd
Foundation for Innovation and Social Entrepreneurship	BotLab Dynamics Pvt Ltd
DV2JS Innovation LLP	Aftershoot Pvt Ltd
Tata Consultancy Services	Mitsui Kinzoku Components India Pvt Ltd



Foundation for Innovation and Technology Transfer

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