



प्रौद्योगिकी विकास बोर्ड
TECHNOLOGY DEVELOPMENT BOARD
DEPARTMENT OF SCIENCE & TECHNOLOGY
GOVERNMENT OF INDIA



RDI

Research Development & Innovation

RDI SCHEME

TECHNOLOGY DEVELOPMENT BOARD
SECOND LEVEL FUND MANAGER
STATUS REPORT

APRIL 2026



“

हमने Research, Development And Innovation Scheme भी शुरू की है। और इसके लिए 1 लाख करोड़ रुपये की राशि तय की गई है। हमारा प्रयास है कि Private Sector में भी Research And Development को बढ़ावा मिले। पहली बार, High-Risk और High-Impact Projects के लिए Capital भी उपलब्ध कराई जा रही है। ”

माननीय प्रधानमंत्री
श्री नरेंद्र मोदी



“

The opening of strategic areas such as space and nuclear sectors for private participation has changed long-standing conventions, and the RDI Fund has been designed to support this transition by reducing financial risk while ensuring accountability. ”

Dr. Jitendra Singh

Hon'ble Union Minister of State (Independent Charge)
for Science & Technology and Earth Sciences





“

The ₹1-lakh crore National RDI Fund will be transformative for India's deep-tech ecosystem.

I firmly believe its true success will be measured by the scale of private innovation it unlocks catalysing 10x investments & nurturing globally competitive deep-tech leaders from India.

Prof. Abhay Karandikar

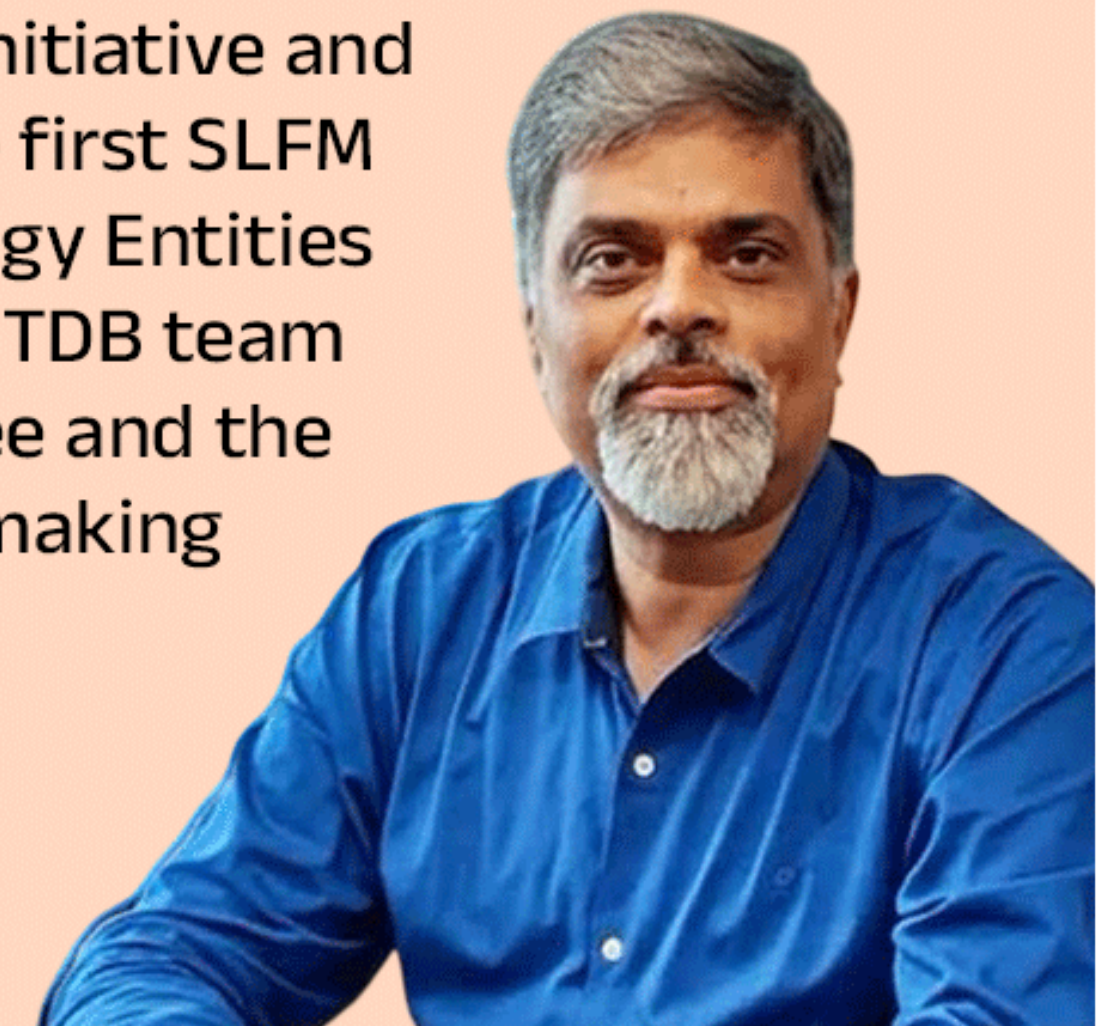
Secretary, Department of Science and Technology

“

Research, Development and Innovation (RDI) Scheme is a path-breaking initiative of the Government of India aimed at strengthening the nation's technology and innovation ecosystem by supporting industry-driven cutting-edge R&D and commercialization of indigenous technologies. I am happy to share that the Technology Development Board (TDB) took the lead in this national initiative and became the first Second Level Fund Manager (SLFM) to launch its Call for Proposal, the first SLFM to receive the RDI Fund, the first SLFM to enter into agreements with Eligible Technology Entities (ETEs), and the first SLFM to disburse funds to ETEs under the RDI Scheme. The entire TDB team associated with the RDI Fund activity, and most importantly the Investment Committee and the Board, deserve immense credit for this achievement. A big thank you to all of you for making this a reality.”

Shri Rajesh Kumar Pathak

Secretary, Technology Development Board



TECHNOLOGY DEVELOPMENT BOARD

The Government of India constituted the Technology Development Board (TDB) on September 01, 1996 as per the provisions of the Technology Development Board Act, 1995 with an aim to promote development and commercialization of indigenous technology and adaptation of imported technology for wider domestic applications.



Provide financial assistance to industrial concerns and other agencies attempting commercial application of indigenous technology or adapting imported technology for wider domestic applications.



Provide financial assistance to such research and development institutions engaged in developing indigenous technology or adaptation of imported technology for commercial application, as may be recognized by the Central Government.



Perform such other functions as may be entrusted to it by the Central Government

About RDIF

Research Development and Innovation Fund (RDIF) is a flagship initiative under the Department of Science and Technology (DST), Government of India.

Designed to accelerate investment in India's R&D and Innovation ecosystem.

Shall support private sector enterprises, startups, and industries working in sunrise and strategic sectors to transform ideas into globally competitive technologies and products

Approved by the Union Cabinet on 1 July 2025, the Research, Development and Innovation (RDI) Scheme aims to catalyse private sector investment in R&D with a total outlay of ₹1 lakh crore over six years, including ₹20,000 crore in FY 2025-26.



Hon'ble Prime Minister launched the RDI scheme on 3rd November 2025 at Bharat Mandapam, New Delhi

RESEARCH, DEVELOPMENT AND INNOVATION (RDI) SCHEME

TDB - AS SECOND-LEVEL FUND MANAGER

TDB has been designated as a Second Level Fund manager under RDI by the Anusandhan National Research Foundation (ANRF)/DST, with an initial allocation of ₹2,000 crore to support projects across all strategic RDI sectors.

Who Can Apply

- ❖ Eligible Technology Entities*
- ❖ Projects at Technology Readiness Level (TRL) 4 and above

RDIF Priority Sectors & sunrise sectors

- ❖ Energy security and transition, and climate action;
- ❖ 'Deep Technology' including quantum computing, robotics, and space;
- ❖ Artificial Intelligence and its application to Indian problems, including in agriculture, health, and education;
- ❖ Biotechnology, biomanufacturing, synthetic biology, pharmaceuticals, and medical devices;
- ❖ Digital economy, including digital agriculture

Eligible Technology Entities*

Any legal entity registered in India, and duly incorporated and governed under the applicable laws of India including

- ❖ The Companies Act, 2013.
- ❖ The Indian Partnership Act, 1932.
- ❖ The Limited Liability Partnership Act, 2008,
- ❖ Startups as defined in the Department for Promotion of Industry & Internal Trade Notification G.S.R. 127(E) dated 19 February 2019, as may be modified from time to time)

Long-Term Loans

- ❖ Collateral-free financing
- ❖ Up to 50% of fund requirement (matching contribution from company or private investor)
- ❖ Nominal Interest rate
- ❖ Tenure up to max 15 years, with moratorium

Optionally convertible Debt

- ❖ Soft loan support with deferred equity participation
- ❖ Up to 20% of sanctioned debt convertible into equity at a pre-agreed discount
- ❖ Exit through promoter buy-back or strategic/block sale

Upfront Equity Support

- ❖ Equity participation up to 25% of TDB assistance
- ❖ Balance to be disbursed as loan
- ❖ TDB equity capped at 25% of total shareholding

Quantum Financing

- ❖ Funding up to 50% of fund requirement
- ❖ Balance to be met through self or private investors
- ❖ Relaxation possible for strategic cases with approval of EGoS




1st Open Call under RDI Fund through TDB-Second Level Fund Manager (SLFM)

For supporting projects across all RDI sunrise & strategic sectors

KEY FEATURES

- Support for projects at Technology Readiness Level (TRL) 4 and above
- Evaluation on the basis of Scientific, Technological, Financial and Commercial Merit
- Funding shall be in the form of Loan, Equity, Hybrid (with option to convert a part of loan as equity)
- Maximum Funding: 50% of fund requirement, matching contribution from company or private investors
- Long tenor loan assistance (Up to maximum 15 years) at nominal interest rate, with moratorium, to enable commercialization
- Collateral securities or personal guarantee or corporate guarantee

RDIF Priority and Implementation Guidelines available at [//rdifund.gov.in/](http://rdifund.gov.in/)



4th February, 2026

TDB: Launch of First Open Call Under RDIF

TDB's Investment Committee

under Research Development & Innovation Fund (RDIF)



Dr. Saurabh Srivastava
(Chairperson)

Former Chairman, NASSCOM & IVCA
& Co-founder, Indian Angel Network



Sh. K. R. S. Jamwal
(Member)

Executive Director, Tata Industries Ltd.



Dr. Lalithesh Katragadda
(Member)

Founder Indihood Swarja Lab,
Co-founder Avanti Finance



Dr. Sudhir Mehta
(Member)

Founder & Chairman,
Pinnacle Industries & EKA Mobility



Sh. Sanjay Nayak
(Member)

Former CEO & Co-founder
Tejas Networks Ltd.



Dr. Anand Deshpande
(Member)

Chairman, Persistent System



Sh. Gopal Srinivasan
(Member)

Chairman & Managing Director
TVS Capitals Fund



Dr. Debashish Bhattacharjee
(Member)

Former Vice President (Tech & R&D)
Tata Steel, Managing Partner,
Lionstead Ventures & TDB Board Member



Ms. Bala C Deshpande
(Member)

Founder Partner of MegaDelta Capital



Sh. Jaswinder Ahuja
(Member)

Former Corporate VP & India MD
Cadence Design Systems, Inc.



Sh. Sudhir Sethi
(Member)

Chairman, Chiratae Ventures



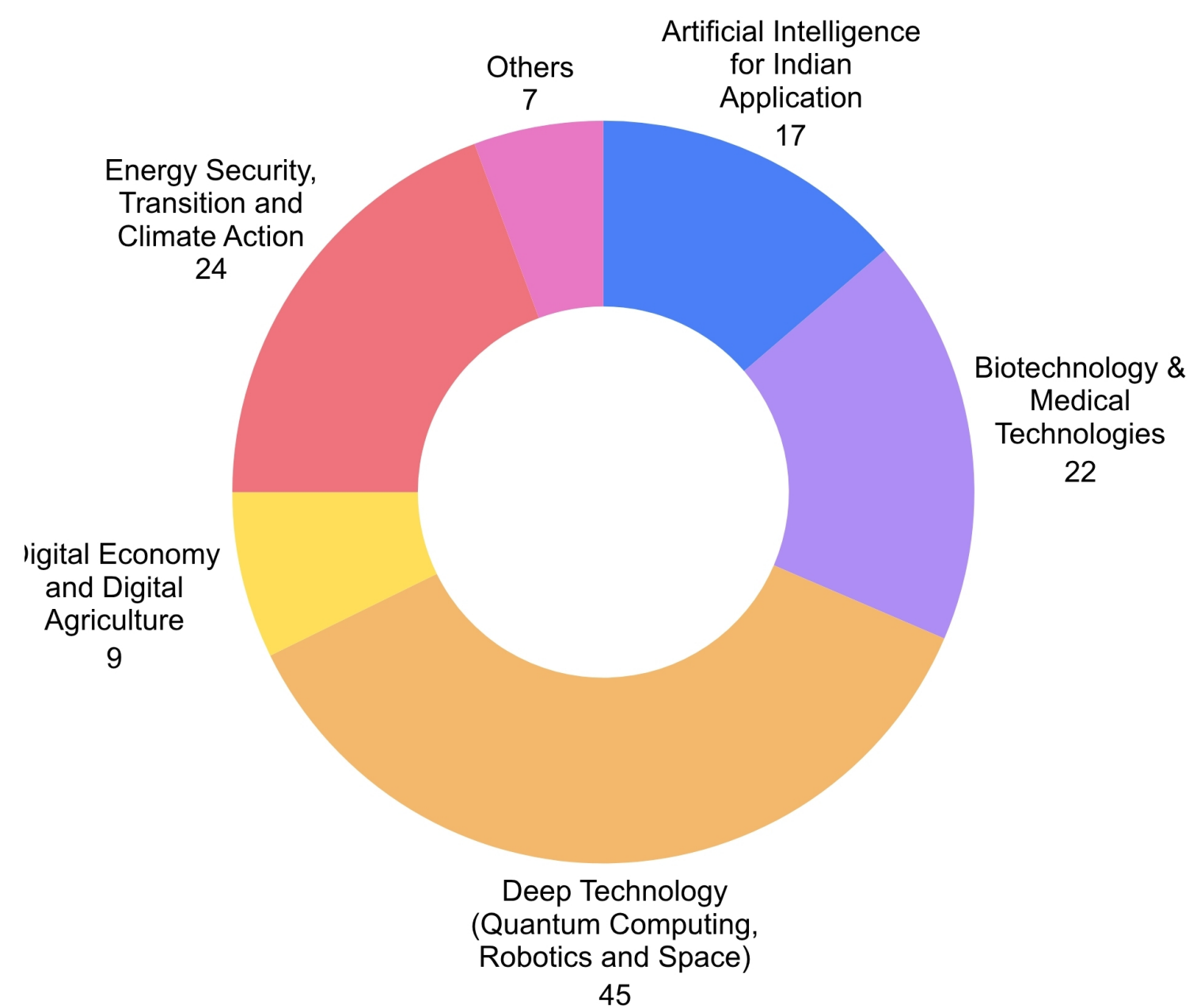
Shri Rajesh Kumar Pathak
(Member-Secretary)

Secretary, Technology Development Board

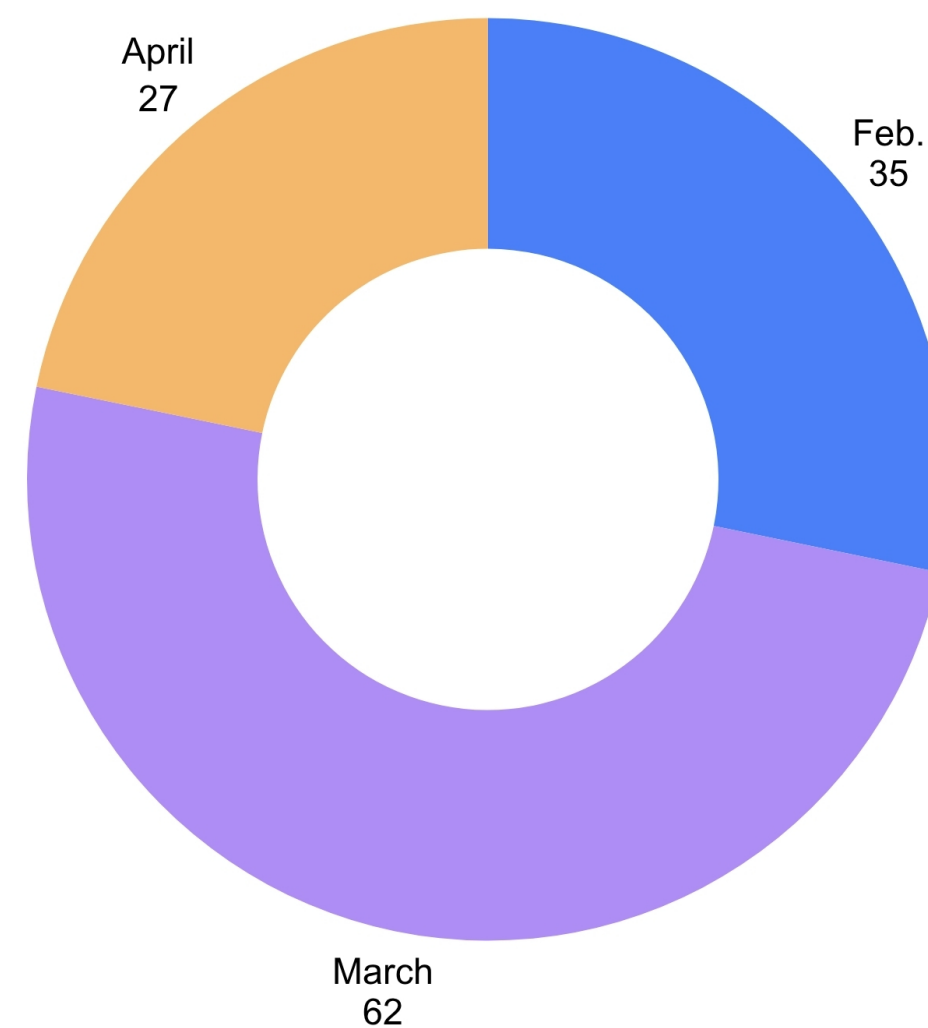
Overview of Proposals Received by TDB Under RDI Scheme

Total Projects	Project Reviewed	Approved	Under Review
124	51	22	73.00

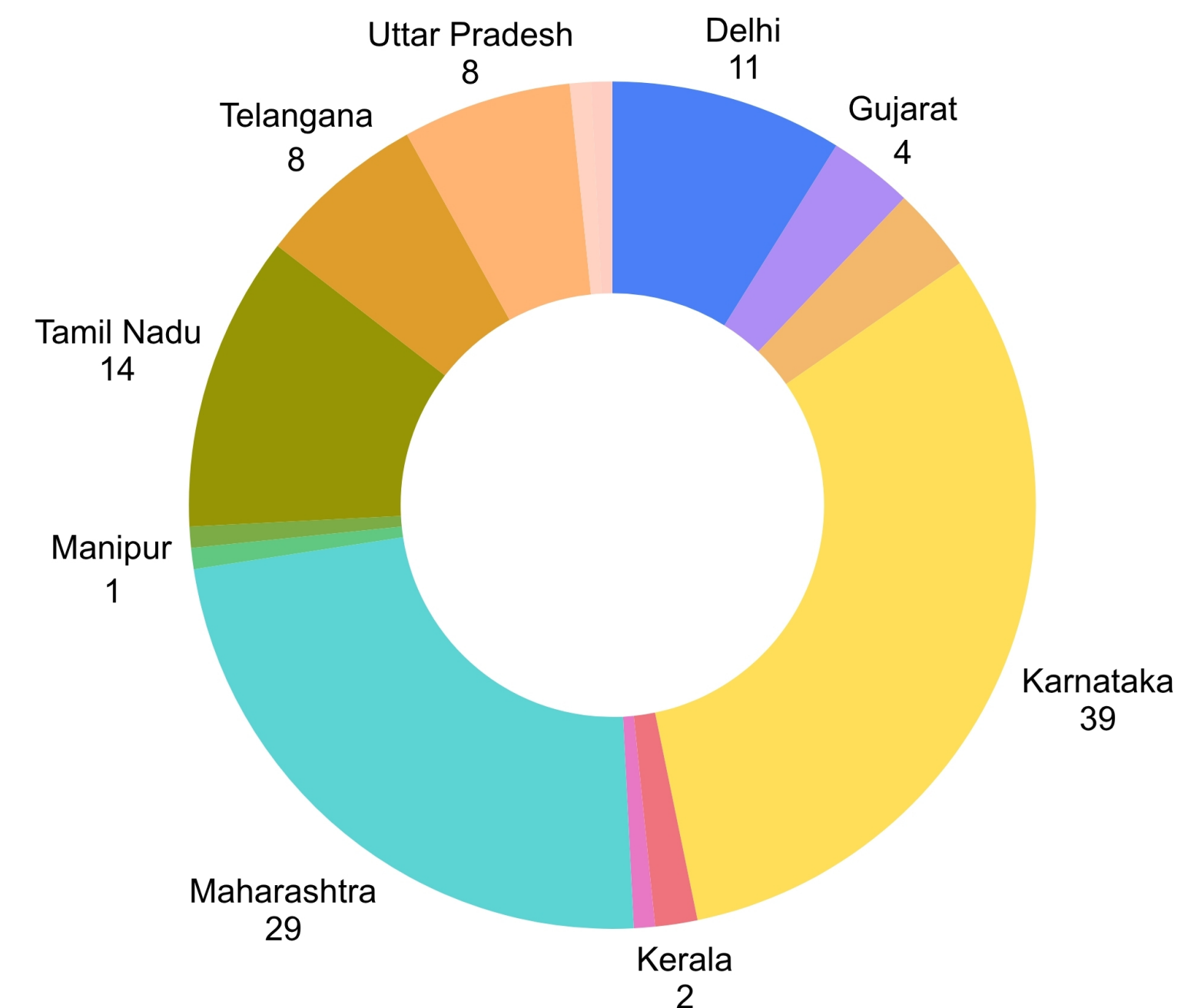
Sector Wise



Month Wise



State Wise



RESEARCH, DEVELOPMENT AND INNOVATION (RDI) SCHEME Projects Approved by TDB

- Total approved project Cost: Rs 4743.99 Cr
- Total approved TDB assistance: Rs 2192.32 Cr
- Total Companies Selected as on 30 April 2026: 22
- States Covered: 5
- Core Sectors Supported- 5 Strategic Sectors
- Sub-Sectors Covered- 15+ Emerging Technology Areas

Startups/ MSMEs/ Companies Supported

- **Deep Technology (Quantum Computing, Robotics and Space)**

Astrome | Dhruva Space | Agnikul Cosmos | GalaxEye | Ubifly | Manastu BigEndian | QuNu Labs | Ather Energy. Multi Nano Sense. Endure Air. IdeaForge. Think Metal

Healthcare, Biotechnology & Medical Devices

Eyestem | Peptris | Serigen | Noccarc

- **Energy security and transition, and climate action**

REPLUS. ETRNL Energy. NEOSEEKAR,

- **AI in Healthcare**

Endimension

- **Digital economy, including digital agriculture**

Tejas Network

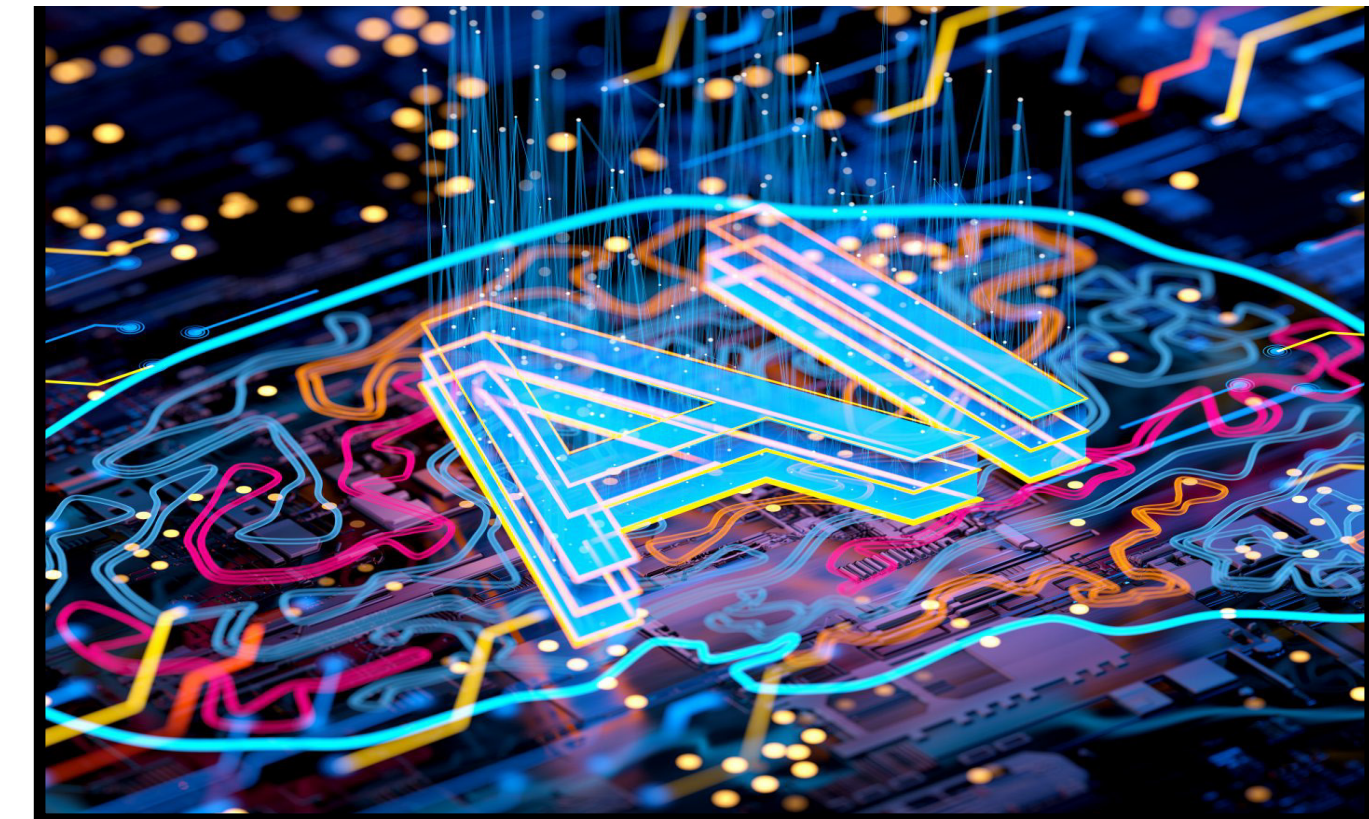
SECTOR WISE DISTRIBUTION OF APPORVED PROJECTS



Energy security/transition and climate action
(3)



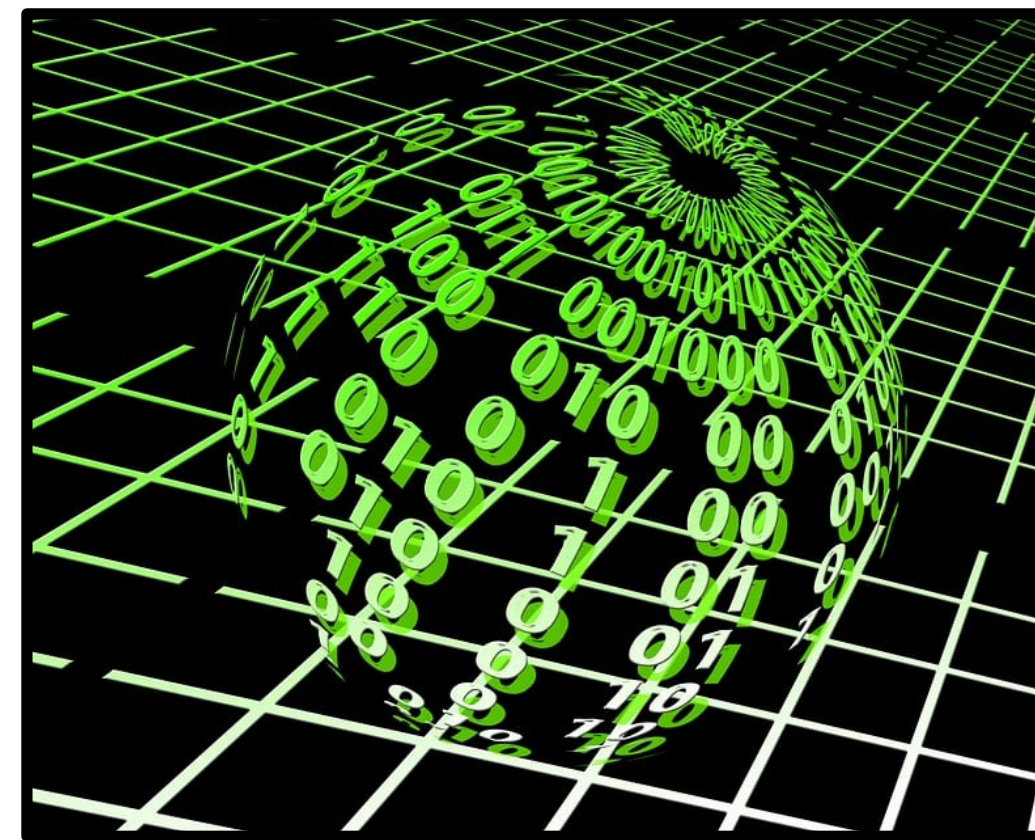
Deep technology including quantum, robotics, and space
(13)



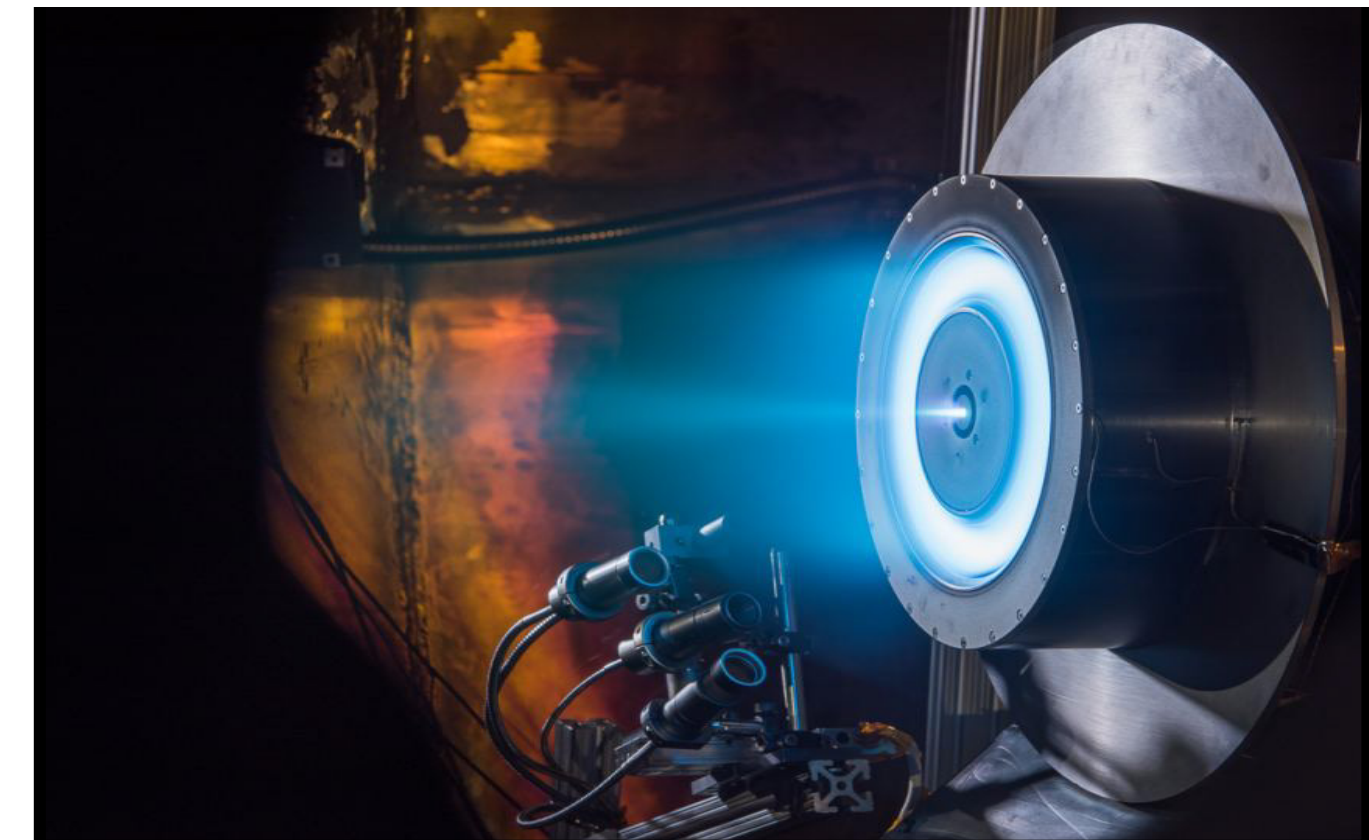
AI & it's applications to Indian problems including in agri, health, and education
(1)



Biotechnology, bio-manufacturing, synthetic biology, pharma, medical devices
(4)



Digital economy including digital agriculture
(1)



Technologies imp. for *Strategic Autonomy
*Economic Security *Atmanirbharta
(0)

First Agreement signing with ETEs

And

**First Fund Release to ETEs
Under RDI Scheme**

M/s EndureAir Systems Private Limited (Noida)



M/s Dhruva Space Private Limited (Hyderabad)



M/s e-TRNL Energy Private Limited (Mumbai)



M/s Noccarc Robotics Private Limited (Pune)





Frist Fund Transfer & Agreement Signing with ETEs

M/s Esystem Research Private Limited (Bangalore)





Compendium launch

TDB's Investment Committee Under Research Development & Innovation Fund (RDIF)



LIST OF APPORVED PROJECTS

S. No.	Company Name
1	M/s Astrome Technologies Private Limited, Bangalore
2	M/s Dhruva Space Private Limited, Hyderabad
3	M/s BigEndian Semiconductors Pvt Ltd., Bangalore
4	M/s EndureAir Systems Private Limited, Noida
5	M/s e-TRNL Energy Pvt. Ltd., Mumbai
6	M/s Eyestem Research Private Limited, Bangalore
7	M/s Peptris Technologies Private Limited, Bangalore
8	M/s Serigen Mediproducts Private Limited, Pune
9	M/s Ubifly Technologies Private Ltd, Mumbai
10	M/s Noccarc Robotics Private Limited, Pune
11	M/s ThinkMetal Private Limited, Chennai

LIST OF APPORVED PROJECTS

S. No.	Company Name
12	M/s Agnikul Cosmos Private Limited, Chennai
13	M/s Ather Energy Limited, Bengaluru
14	M/s Tejas Networks Limited, Bengaluru
15	M/s QuNu Labs Private Limited, Bengaluru
16	M/s Galaxeye Space Solutions Private Limited, Chennai
17	M/s Multi Nano Sense Technologies Private Limited, Bengaluru
18	M/s Neo Seekermetals Pvt Ltd, Hyderabad
19	M/s Manastu Space Technologies Pvt Ltd, Thane
20	M/s Replus Engitech Pvt. Ltd, Pune
21	M/s ideaForge Technology Ltd, Thane
22	M/s Endimension Technology Pvt. LTD, Mumbai

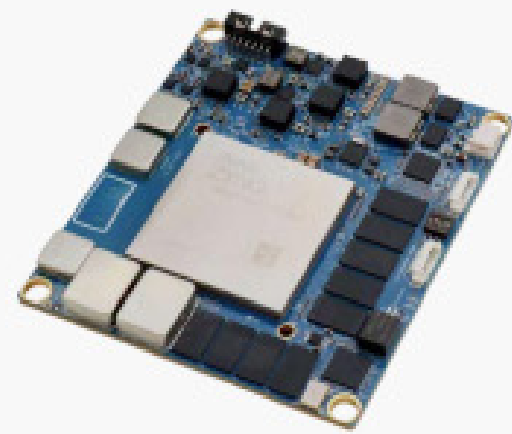
Plugging the Intelligence Gap: A Sovereign Space-Based AI-ELINT constellation for National Security

Start TRL: 4
Target TRL: 9

Core Systems Developed in this Project

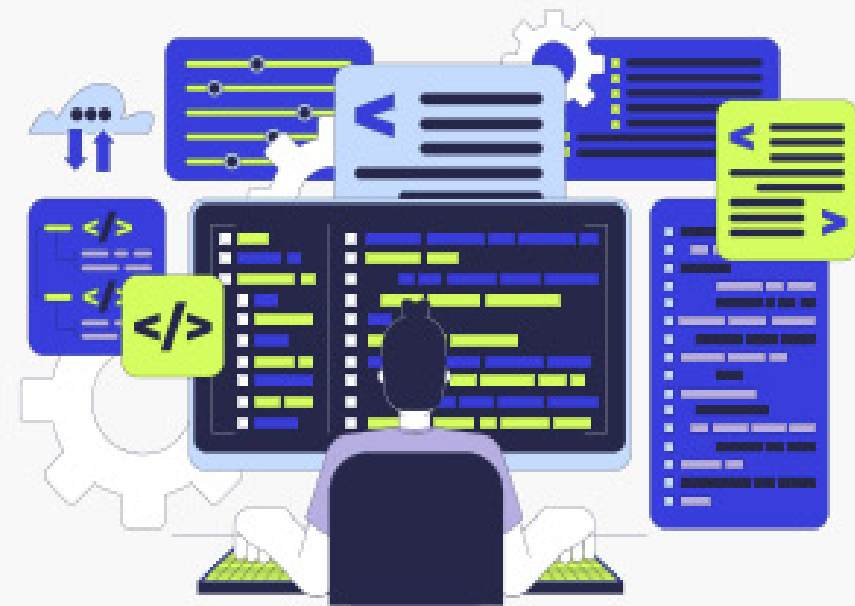


1



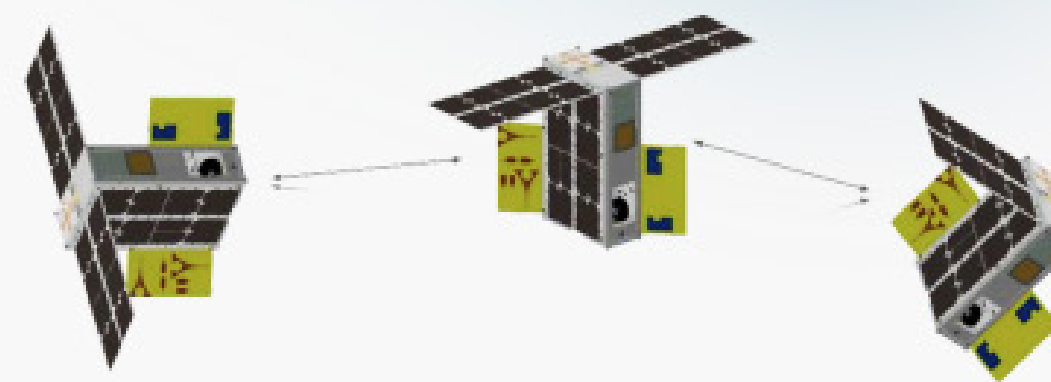
**ELECTRONIC
INTELLIGENCE (ELINT)
PAYLOAD**

2



**AI-BASED GROUND
PROCESSING SOFTWARE**

3



**INTER-SATELLITE (ISL)
COMMS LINK**

Project Goals

- Build & Launch 3 AI- ELINT micro satellites (50kg Class) satellites
- 70MHz to 18GHz coverage
- Equipped With Inter- Satellite communication
- Highly sensitive to detect satellite phones to missile

Specifications:

- Inclined Orbit- 40 degrees
- Altitude: 600 Km
- Number of Satellites: 231
- Progressively launched to increase coverage frequency

Constellation Aim:

- Fully Cover the area of interest
- Maximize time over area of Interest
- Near to 24*7 Coverage



Project Garud: Indigenous, Modular, Mass Producible 500 kg-Class Communication Satellite Platform

START TRL: 4
TARGET TRL: 7

Introducing Project Garud as a Solution



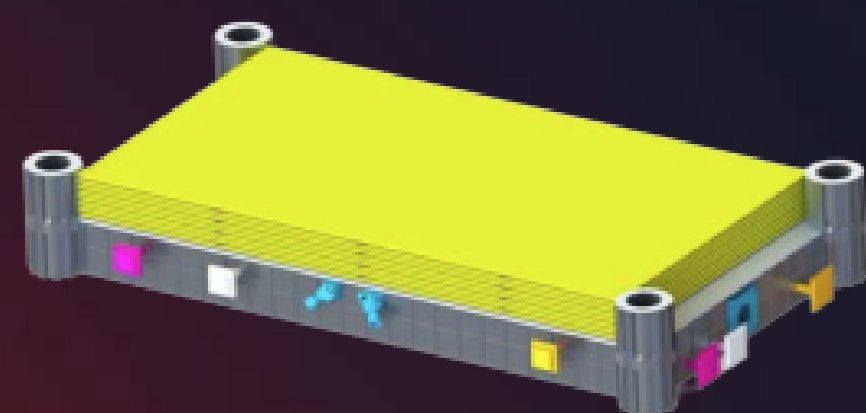
- Cost-effective, flat-pack 500 kg-class SmallSat platform for Low Earth Orbit, enabling rapid constellation deployment for telecom, Quantum Key Distribution, secure government and defence communications, and military intelligence missions (Signals Intelligence/Electronic Intelligence)



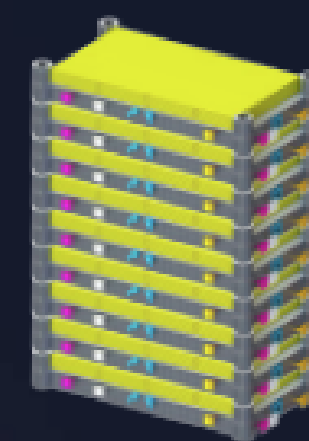
- Fully indigenous, mass producible satellite platform developed in India with Dhruva Space expertise and a **550+** vendor ecosystem



Representative Image the Project Garud Satellite



Representative Image of the Project Garud Satellite (with solar panels stowed)



Representative Image of Stacked Project Garud Satellite for Constellation Deployment

www.dhruvaspace.com

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Key features:

- Constellation-ready
- Easily stackable on the launch vehicle, enabled by a flat-pack architecture
- Communication payload-agnostic
- Cost competitive
- Manufactured indigenously for sovereign capability
- Designed for rapid scale-up and strategic autonomy
- Manufactured through local supply chains to reduce cost
- Positioned to meet strong domestic and global demand

₹ TOTAL APPROVED PROJECT COST: Rs. 210.00 Cr

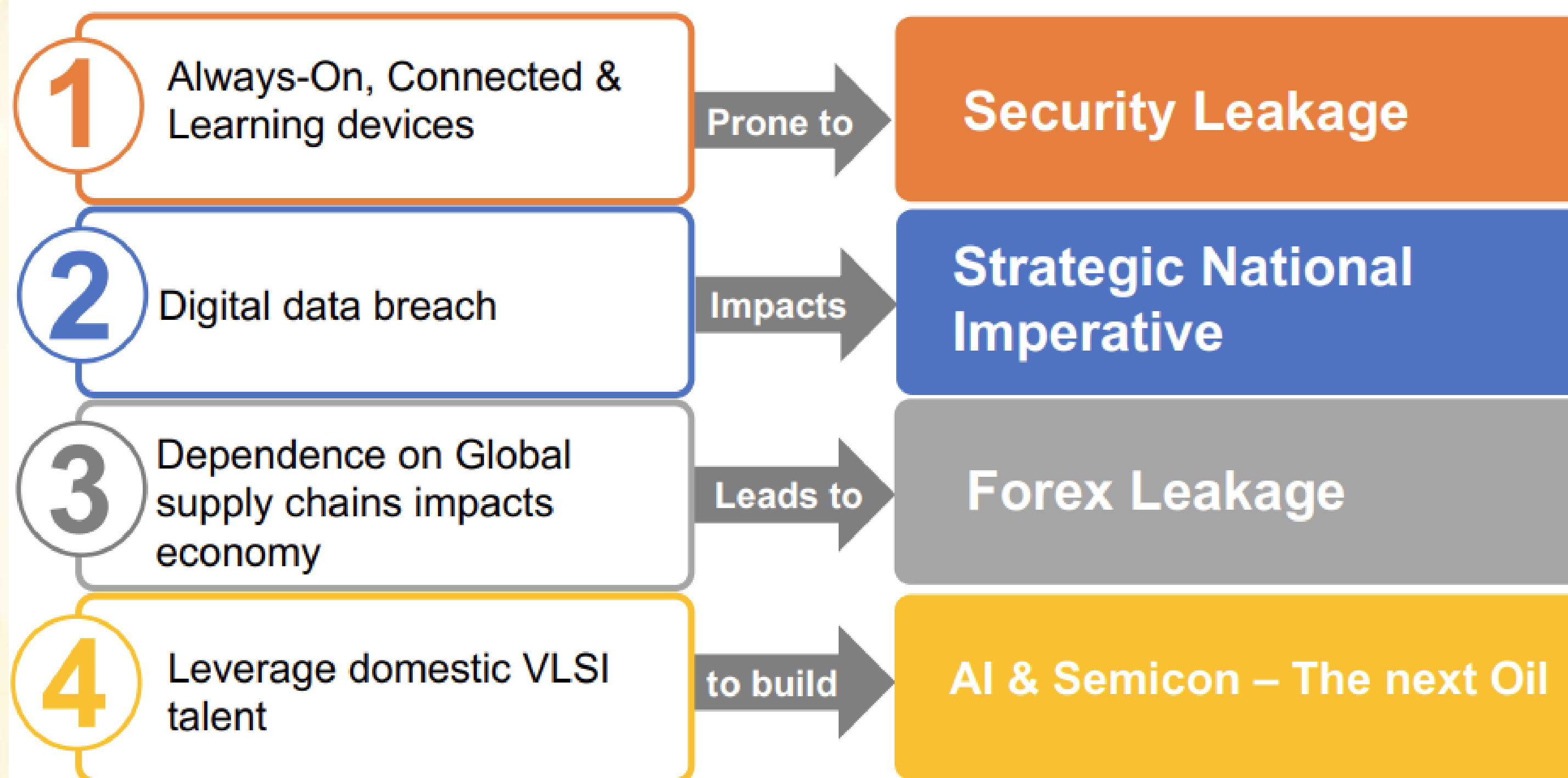
₹ RDIF FUNDING APPROVED: Rs.105.00 Cr

🤝 MODE OF FUNDING: DEBT

Project VeerAI

START TRL: 5
TARGET TRL: 9

Problem with current Semicon Supply Chains



- 1st company in India to build Secure AI Chip for Surveillance markets – CCTVs
- Address India's security challenges - build sovereign CCTV solution platform
- Address global US\$300Bn AI Vision market – Made in India for the globe
- Scale beyond surveillance – Defence, Automotive, Industrial and Medical

BigEndian – can actually disrupt

Build Usage specific SoC; NOT general-purpose chip
Disruption won't come from "general-purpose SoCs".

BigEndian will build camera focused **AI Vision SoC** on a **sovereign platform**



Vertical focus = faster PMF + stickier customers.



Project Sabal-200

START TRL: 5
TARGET TRL: 9

TECHNICAL ADVANTAGE OF SABAL-200

Other Multirotor UAVs



FIXED
PITCH



10 - 15%

PAYLOAD FRACTION

30 - 35%

30 km/hr

SPEED

60 km/hr

20 km/hr

GUST RESISTANCE

40 km/hr

1 Trip

NO.OF DELIVERIES/TRIPS

for same battery capacities

2 Trips

SABAL with Variable Pitch



VARIABLE
PITCH

- Indigenous developed variable-pitch propulsion for higher stability & speed (Patented)
- 2x mission efficiency with 30-35% payload fraction and ~2.5+ hour endurance.

SYSTEM ARCHITECTURE

Fuel-injected propulsion + variable-pitch rotor enabling ~2.5 hr endurance and stable heavy-load thrust control.

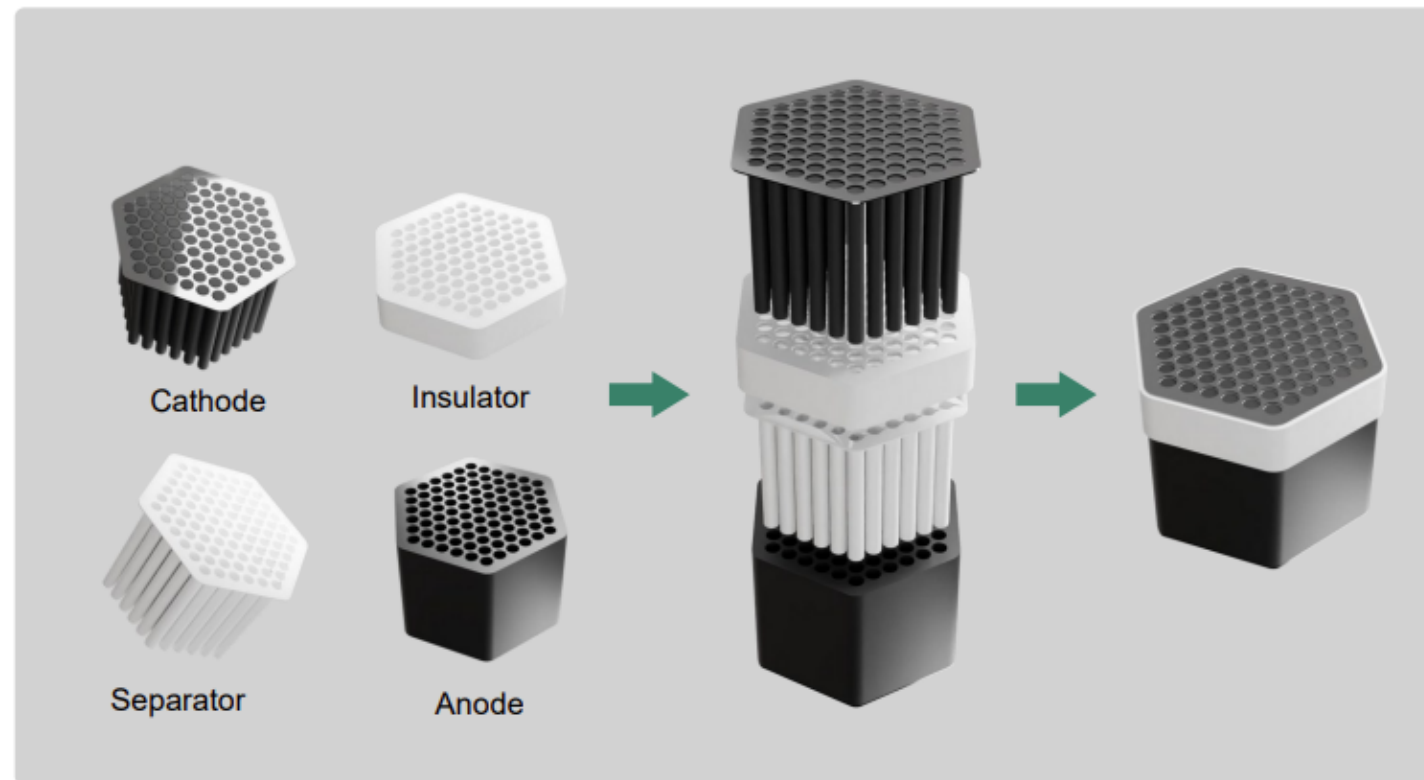
200+ kg class optimized airframe with software-defined precision hover, load stability, and redundancy management.



Technology Development and Manufacturing of Lithium-ion battery

START TRL: 4
TARGET TRL: 8

3DEA®: A revolutionary **chemistry-agnostic cell design** that eliminates heat
Current flows through short, straight parallel paths reducing heat generated by 90%



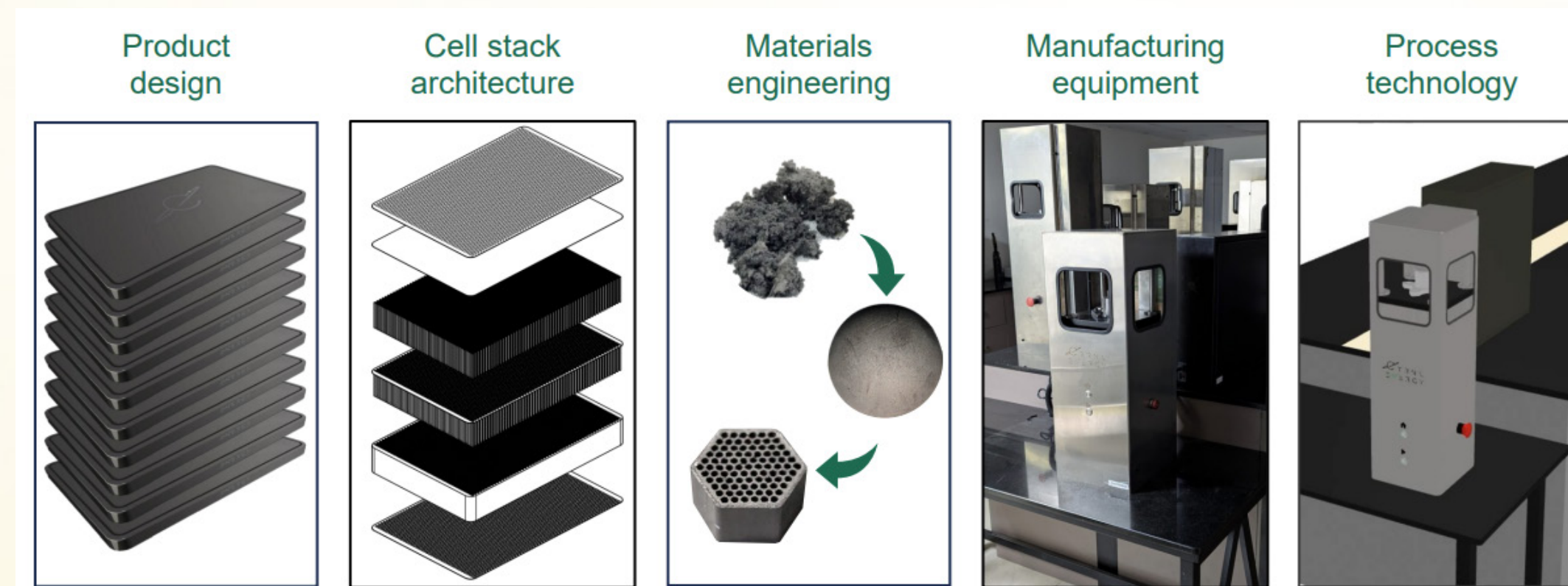
- <15 min**
CHARGING TIME
As compared to 30+ minutes at present
- >2x**
CYCLE LIFE *
- +20%**
ENERGY DENSITY *

3D architecture & performance Process & manufacturing

- 90% lower internal resistance ▪ -90% heating
- Up to 2X cycle life ▪ Unlocks 15-min fast charging
- All-ceramic separator ▪ Prevents thermal runaway
- Eliminates Copper & Aluminium ▪ Improves energy density

Process & manufacturing

- Simplified process flow
- Less machines = -80% CAPEX
- Less floorspace = -65% OPEX
- Modular architecture
- Unparalleled capital efficiency
- In-house machine development
- No import dependency





First in class, innovative therapies for two globally incurable diseases - Dry Age-related Macular Degeneration and Idiopathic Pulmonary Fibrosis

START TRL: 6

TARGET TRL : 9

START TRL: 4

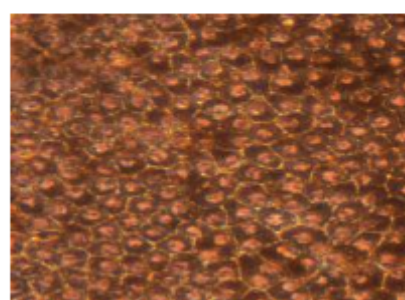
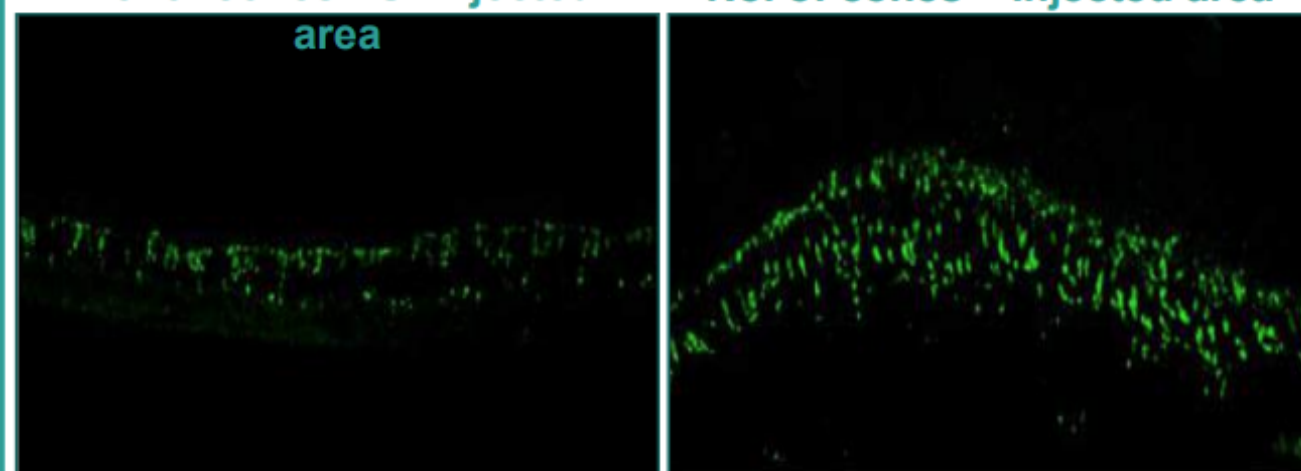
TARGET TRL : 7

A: Cell Therapy treatment for Moderate to Severe Dry Age -related macular degeneration (Geographic Atrophy)

Our product - EyeCyte-RPE™ is a suspension of fate committed Retinal Pigment Epithelium cells with the potential to reverse vision loss.

EyeCyte-RPE™ is a suspension of RPE cells with the potential to arrest and reverse vision loss associated with Geographic Atrophy

No. of cones - Uninjected area No. of cones – Injected area



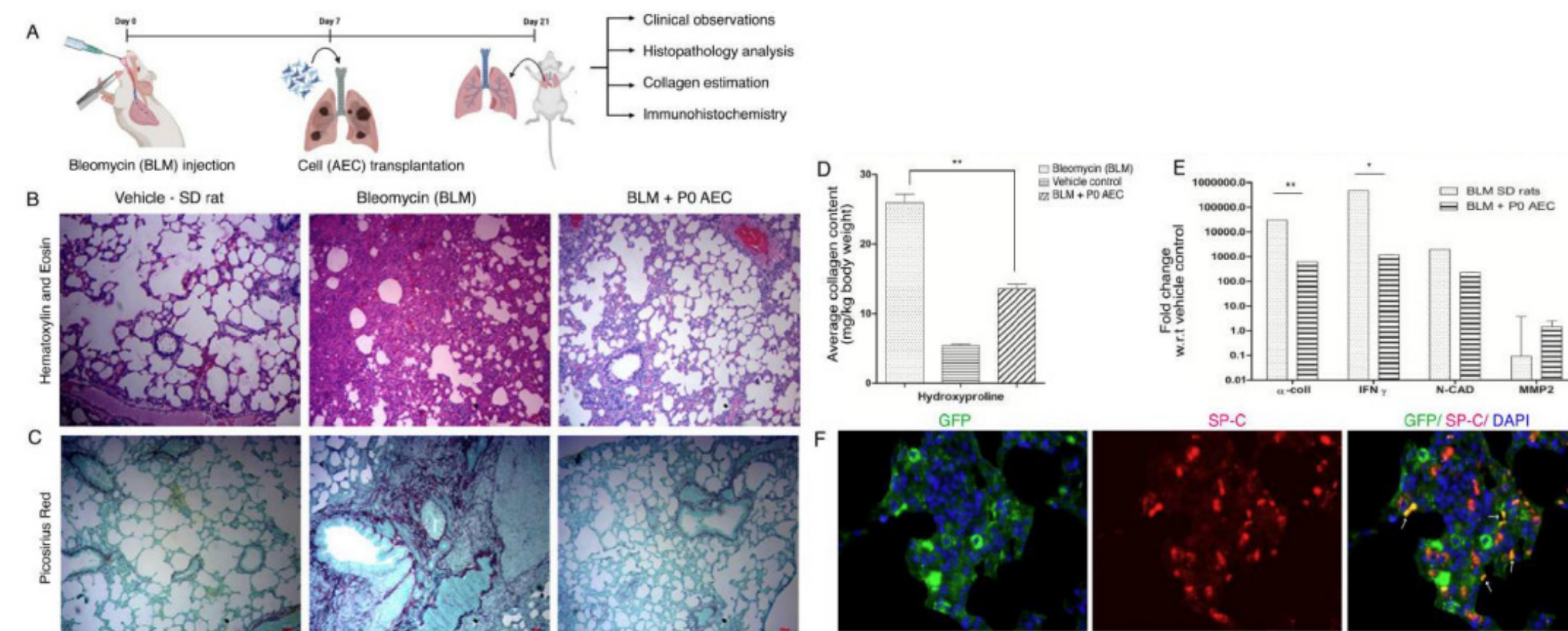
RPE cells grown in a dish at Eyestem

How is EyeCyte-RPE™ different from competition?

1. Fate-committed RPE cells which may have more efficacy than other products
2. Unique patented process (US and India) with a unified approach which increases consistency
3. Scaled-up cell therapy platform enables a 48x scale from baseline
4. Current scale of ~\$2.2k per dose achieved in manufacturing

B: Cell Therapy Treatment for Idiopathic Pulmonary Fibrosis

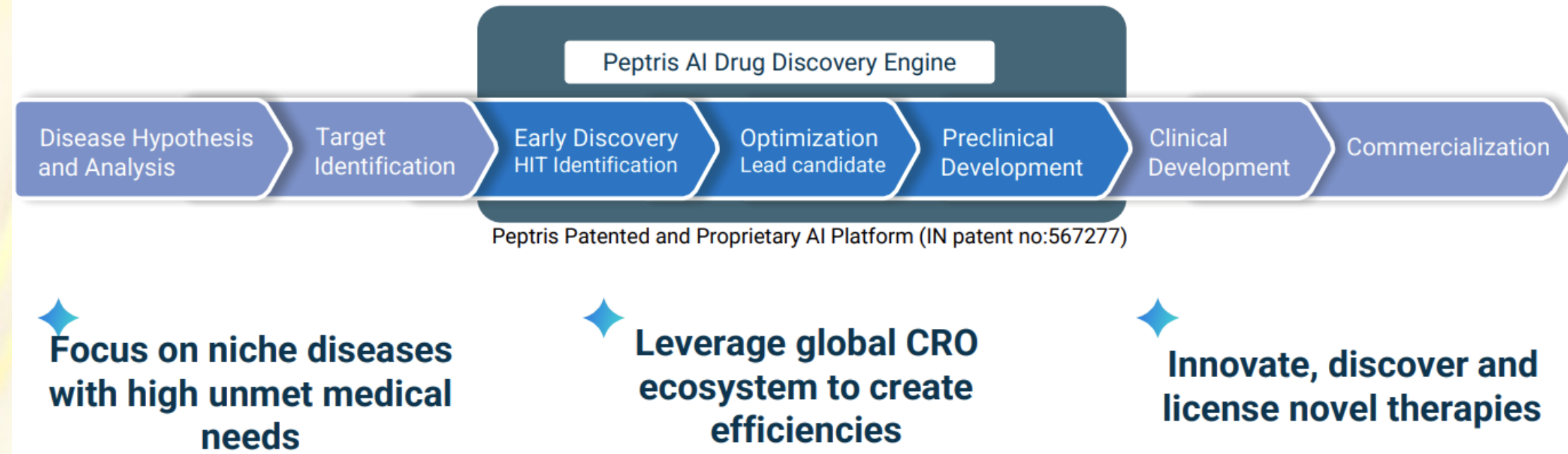
Animal study in BLM-induced rats demonstrated reduction in collagen



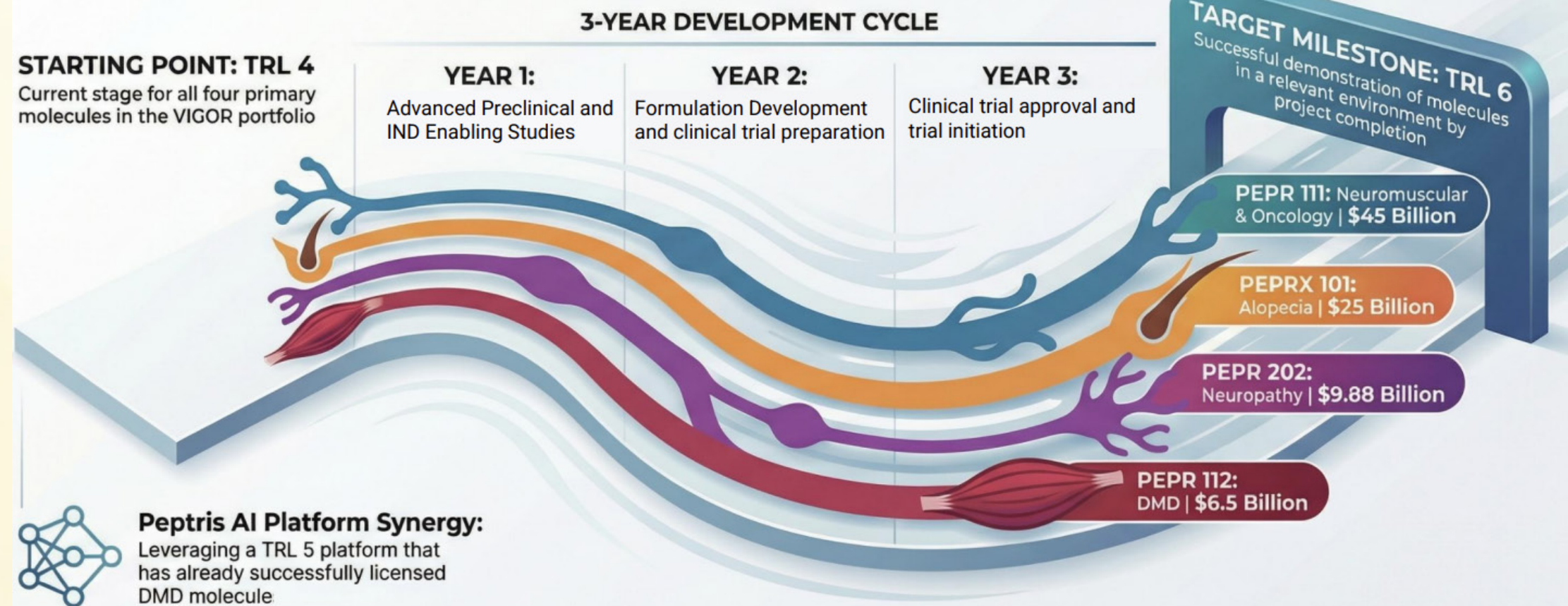
Intratracheal transplantation of alveolar progenitor cells reduced inflammation and fibrosis in animal model



Vigor: Advancing AI-Discovered Molecules from Bench to Clinic



Accelerating Peprtris Drug Discovery



DRUG	START TRL	TARGET TRL
PEPR 111	4	6
PEPRX101	4	6
PEPRX202	4	6
PEPR112	4	6

₹ TOTAL APPROVED PROJECT COST : Rs. 172.00 Cr

₹ RDIF FUNDING APPROVED: Rs. 86.00 Cr

🤝 MODE OF FUNDING: OCD



Scaling Indigenous Silk-Protein Medical Devices: A Pathway to Commercialization and Market Leadership

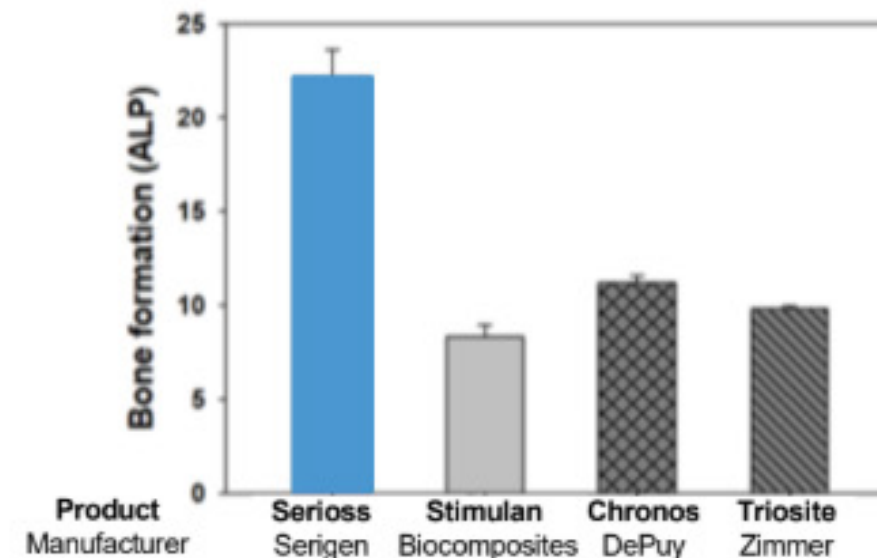
PRODUCT 1

Serioss® : Outstanding bone regeneration

Available in various forms, shapes and sizes



Serioss® outperforms leading global products by a factor of 2 in all bone repair parameters (in-vitro data)



Clinical data establishing superiority to leading J&J bone void filling product; 3+ years follow-up data in patients demonstrating outstanding fracture healing



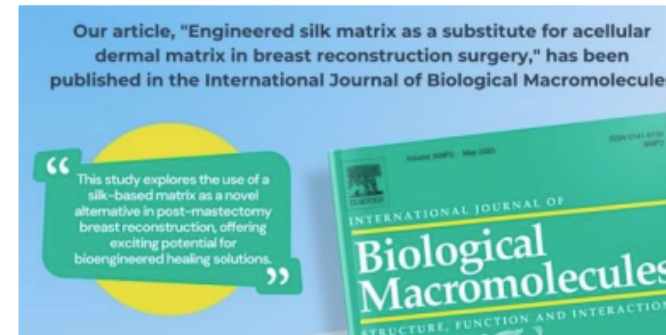
PRODUCT 2



Serimat® : Superior Soft Tissue Regeneration

Serimat is a soft tissue regeneration matrix used at bottom pole of breast with the silicone implant during breast reconstruction surgery.

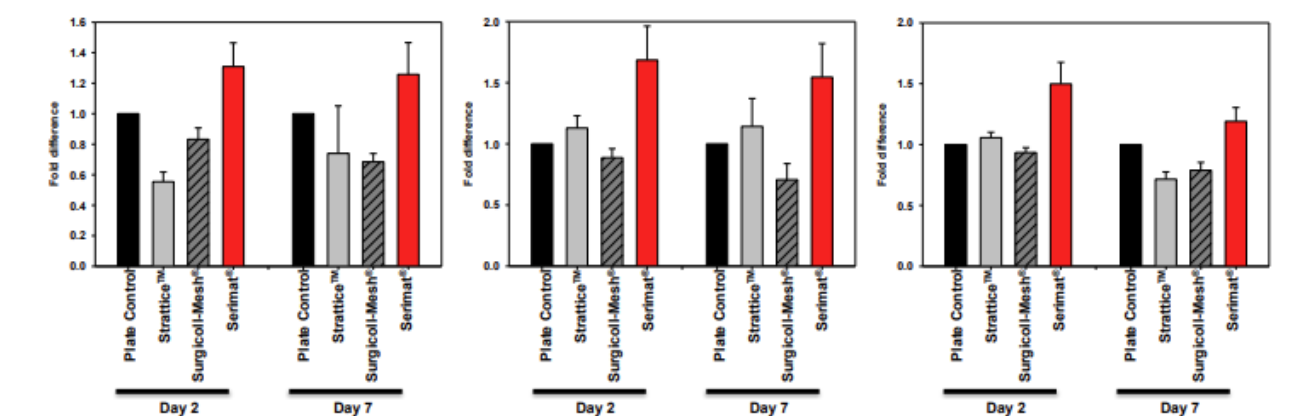
Status: Pilot clinical trial



Serimat can be used in diverse organ reconstruction surgeries

- Dermal regeneration
- Dura repair
- Vaginal wall reconstruction
- Abdominal wall reconstruction

Serimat has proven biocompatibility and outperforms leading global products in soft tissue and blood vessel formation



START TRL: 5
TARGET TRL: 9

START TRL: 4
TARGET TRL: 6



THE
ePLANE
CO.

ePlane - Advanced Air Mobility Solution

START TRL: 6
TARGET TRL: 9

The most compact, safe, zero-emission, innovative advanced air mobility



3 Seater
1 Pilot + 2 PAX

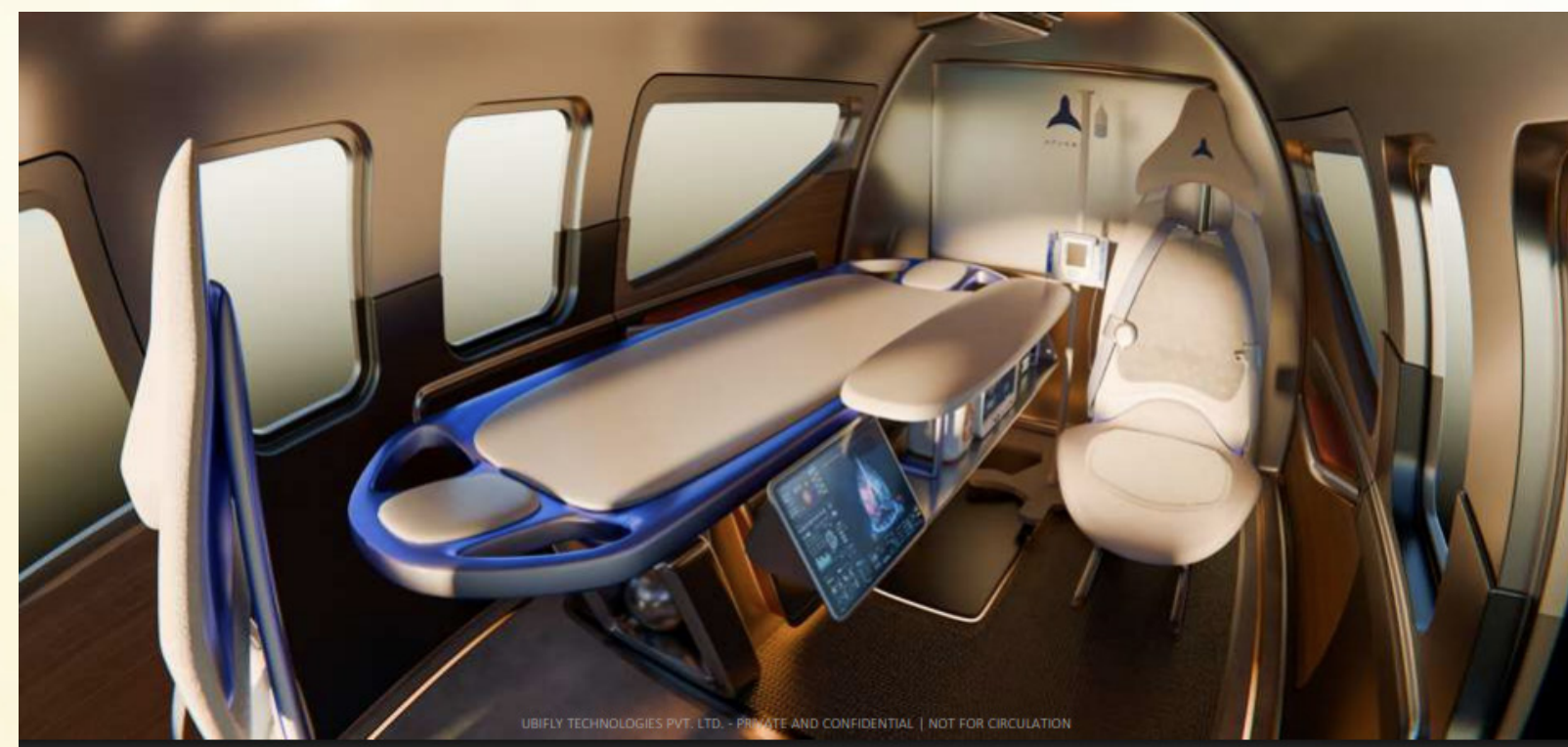
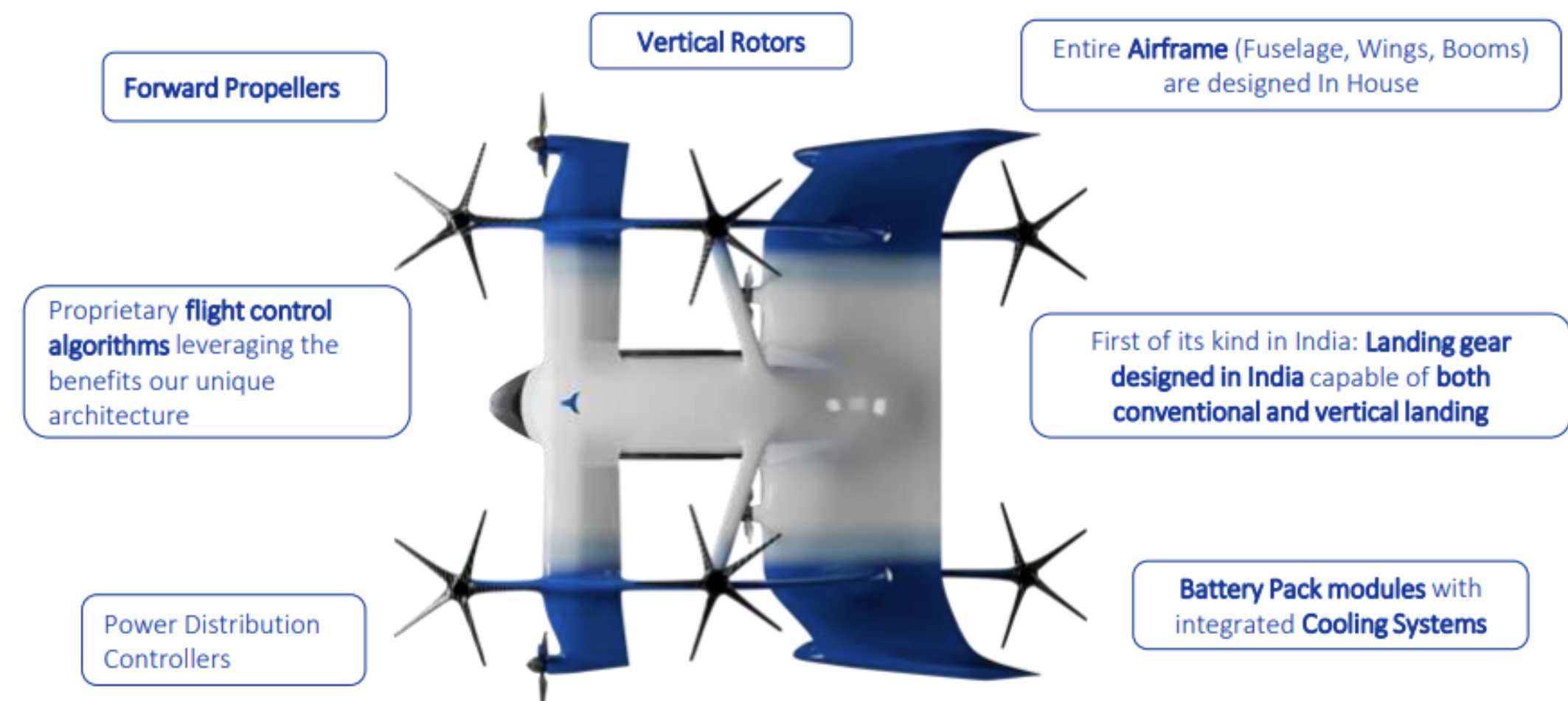
Range
110 km

e200X

Compact
8m x 10m

Ideal Speed
160 kmph

Built to land in **small spaces**, make **multiple trips** in a single battery charge to **maximize the ride density per day** for the better operating profits



Dimension	Diameter (D)	Final Approach & Take Off (FATO = 1.5*D)	Safety Area (SA = 25% of D)	Total (FATO+2 x SA)
e200x	12.8 m	19.2 m	3.2 m	25.6 m

₹ TOTAL APPROVED PROJECT COST : Rs. 570.00 Cr

₹ RDIF FUNDING APPROVED: Rs. 285.00 Cr

🤝 MODE OF FUNDING: OCD



Critical Care on Wheels: iMLSS (Intelligent Mobile Life Support System)

START TRL: 4
TARGET TRL: 9

Solution: iMLSS - Intelligent Mobile Life Support System

A practical, field-ready solution to strengthen time-sensitive critical & emergency care in India

Key Features & Highlights

- **ICU Grade Transport Ventilator:** works in ambulances, intra hospital transport and ICUs
- **Integrated ICU grade 7 Para Patient Monitor:** monitors ECG, SpO₂, NIBP, RR, Temp, EtCO₂ and IBP
- **Connectivity and Telemetry:** built-in LTE, WiFi enables real-time data transmission b/w device & higher centres
- **AI-Based Clinical Assistance:** On-device AI continuously interprets data from both ventilation and monitoring streams to generate actionable insights
- **Multilingual Voice Support:** The system will feature voice prompts and alerts in regional languages



iMLSS Concept

Key features & offerings

- Designed for low-resource setups: in ambulance/ PHCs/CHCs that lack central gas supply lines
- Built for Real World Abuse: Rugged design (IP65/MIL-STD-810G) prone to dust/heat/vibration
- Cost-Effective: ₹4-6Lakh/unit vs. 8-15Lakh/unit imports; 1/3rd lifecycle costs
- Skill-Proof: Multilingual voice + AI bridges paramedic training gaps, standardizes
- Connected & Intelligent: Live data sharing to hub hospitals + on-device AI insights and alerts for clinical guidance
- Aatmanirbhar: 100% indigenous design & IP, potential to replace 350-400 Cr annual imports

Unique Value Proposition

- One device for all the needs
- Stabilize patient with-in the golden hour leveraging device connectivity and intelligence during movement to the nearest hospital

RDI Intensity (TRL 4→9)

- 16+ patents granted, 10+ in pipeline

	 Made in India
Technology Stack	1 Integrated Rugged Unit
Clinical Support System	AI based Guidance
Telemedicine & IOT platform	Real-time Data Sharing and Visualization
Sturdiness	Rugged for possible abuses on ground
Pricing & Cost of Ownership	₹4-6L +(1/3rd ownership cost)

₹ TOTAL APPROVED PROJECT COST: Rs. 22.83 Cr

₹ RDIF FUNDING APPROVED: Rs. 11.41 Cr

🤝 MODE OF FUNDING: OCD



Next-Gen Metal Manufacturing: 10X Speed, 50% Cost

START TRL: 8 TARGET TRL: 9



USE CASES

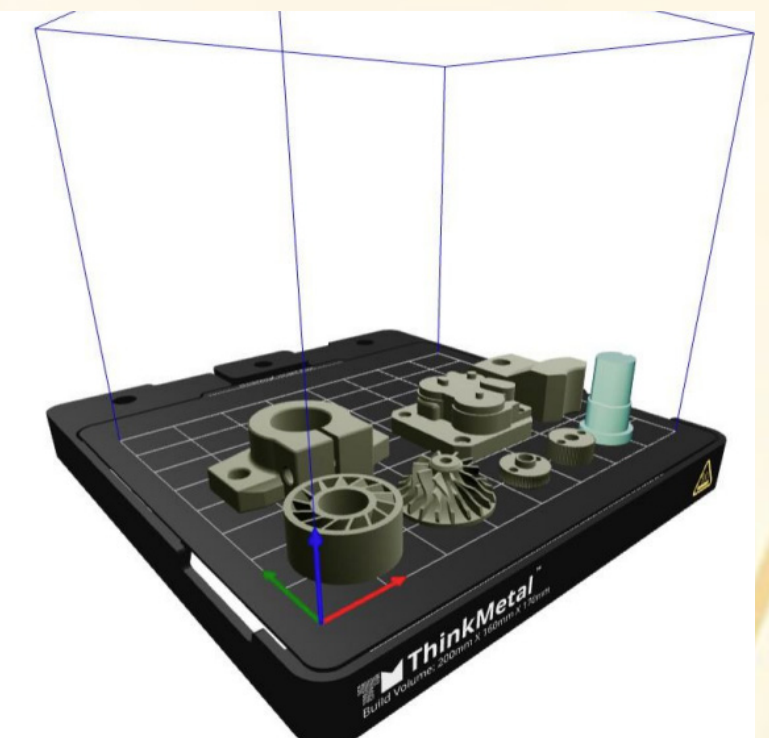
Basis current FuseX material library

Tools

1. Punch & die
2. V- tool, radius tool,
3. Mould cavity,
4. End-mill shoulder
5. Jigs & fixture

Functional prototyping

1. Proto- tooling
2. Low-volume production,
3. Machine spare part production,
4. Component prototyping



*Photo credit: Metal 3D printed parts produced from ThinkMetal's patent-pending process and systems. All technology and creative rights reserved by ThinkMetal.



Development of reusable launch vehicle -Agnibaan RLV

START TRL: 4 & above
TARGET TRL: 8

Full-system reusability (not just first stage)

- 50% reduction in launch & manufacturing cost
- 90% reduction in space debris

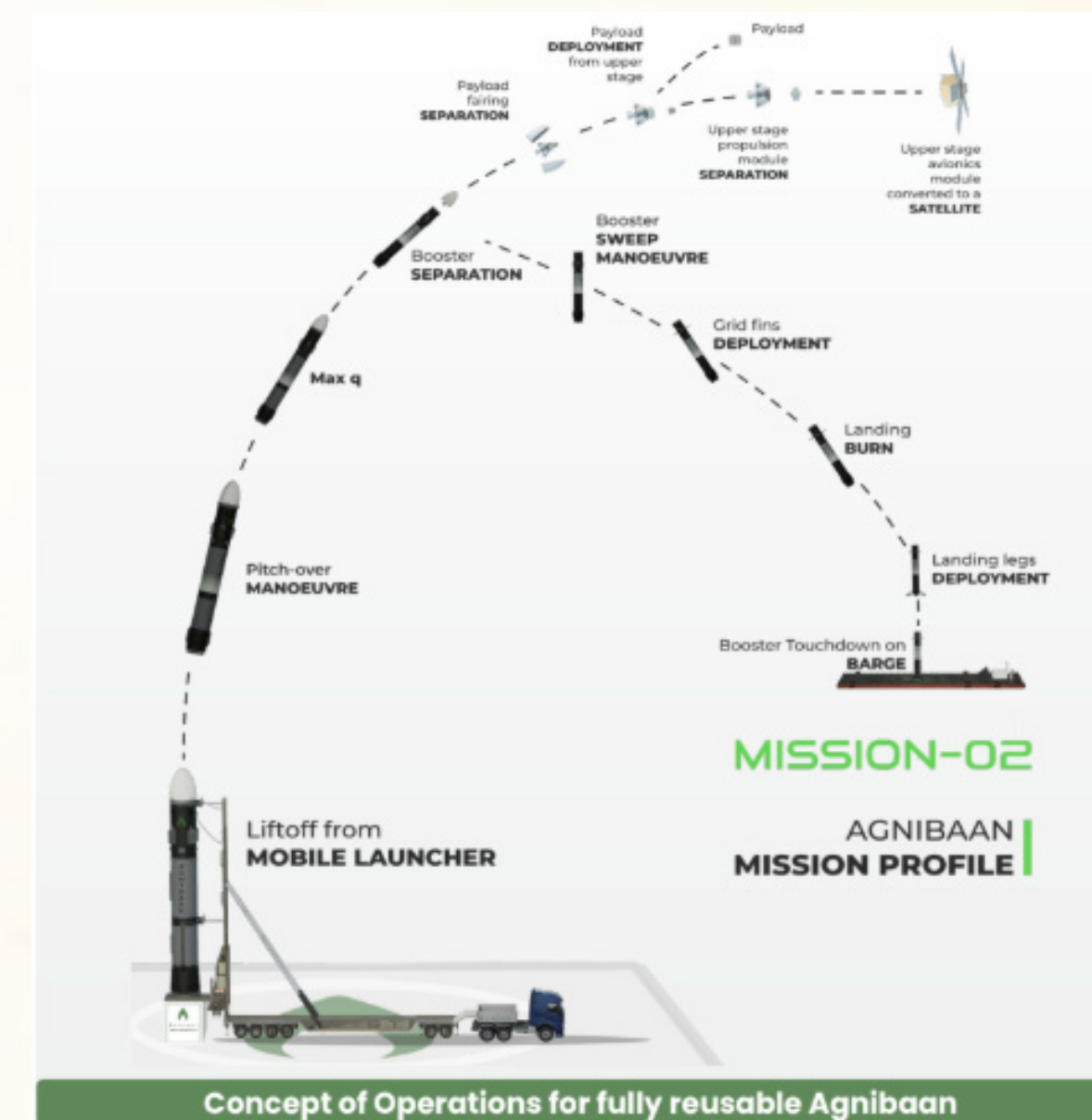
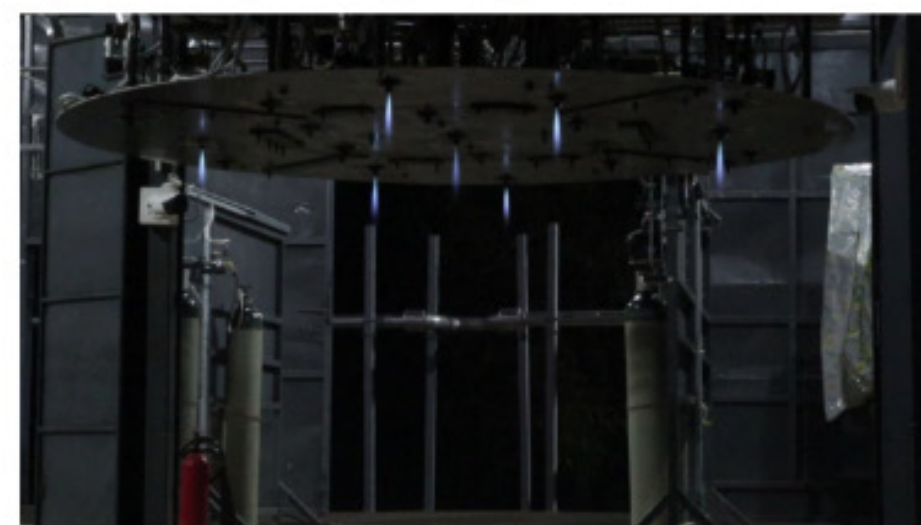
- Enables high-frequency, repeatable launches
- Eliminates need for separate satellite bus
- Semi-cryogenic liquid propulsion - deep throttling + restart capability

- Lightweight upper stage + precise orbital insertion
- Patented EUS technology (India, US, Europe)
- TRL-7 validated ascent systems (SOrTeD mission)

CTE 1: Extendable Upper Stage (TRL 4)



CTE 2: Descent Propulsion System (TRL 4)



ATHER

Project ASTRA - Global E2W Electronics stack

START TRL: 4/5
TARGET TRL: 9



Project aimed at enabling India to become a global leader in technologically advanced, efficient, safe E2Ws

High performance, cost-effective

Projects aimed to achieve high performance, efficiency and safety in a cost-effective manner

Economic Impact

Creates high-value engineering jobs, positioning India as a global hub for R&D

Global Competitiveness

Enables export-ready products for Southeast Asia, Africa, and Latin America

Solutions 1/4: Developing Next-Gen High Power-Density Power Electronics

Solutions 2/4: Enhancing vehicle stability & rider safety

Solutions 3/4: Developing efficient and de-risked powertrain architecture

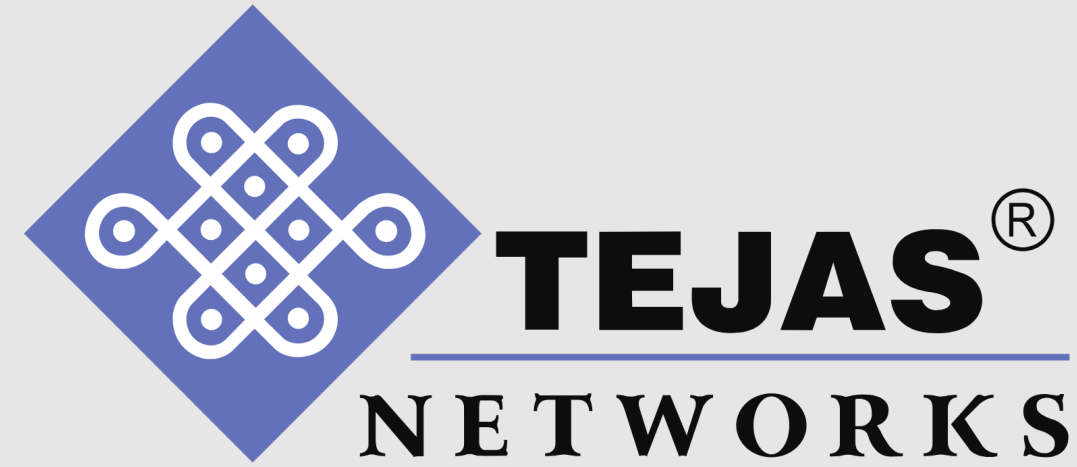
Solutions 4/4: Pioneering safer and more efficient battery systems

₹ TOTAL APPROVED PROJECT COST: Rs. 432.78 Cr

₹ RDIF FUNDING APPROVED: Rs. 211.89 Cr



MODE OF FUNDING: DEBT



5G Advanced and 6G network Infrastructure solutions

START TRL: 6
TARGET TRL: 9



Tejas Networks 5G Advanced and 6G Network Infrastructure solution includes the following network elements:

1. Compact 2nd Gen 32T32R Radio with 192AE
2. Advanced 64T64R Radio with 128 AE
3. FDD 32T32R Radio with 128AE
4. Next Gen Macro RUs (4x40W 4T4R)
5. Converged Multi-Technology Baseband Platform
6. AI based Network Management / Observability
7. 5G Advanced Core
 - NTN
 - Network Slicing
 - Location Management Function LMF
 - Ultra-Reliable Low-Latency Communication (URLLC)
 - RedCap
8. 6G Radio (FR3)

Part of Tata Group





Proactively
Quantum™

Sector- Deep Technology (Quantum Computing, Robotics and Space)

Sub Sector- Quantum Technology

Build World Class Technology Backbone and Fabric of India's Quantum Secure and Sensing Networks (IQSN)

START TRL: 4/5
TARGET TRL: 9

QNu Labs proposes to advance a **sovereign quantum security technology stack** forming the foundation of India's Quantum Secure Network (IQSN). This initiative focuses exclusively on advancing critical technologies from TRL-4 to TRL-8/9 through structured research, engineering refinement, system integration, and validation.

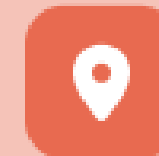


Pillar 1

Identity Security

Objective: Establish non-replicable hardware-based device identity and sovereign authentication infrastructure.

- ▶ Quantum-Secure PUF – Chip-level entropy from quantum randomness
- ▶ Quantum-Safe TPM – Post-quantum cryptographic hardware anchor



Pillar 2

Location Integrity

Objective: Ensure trusted navigation and spatial integrity in adversarial or spoofed environments.

- ▶ Compact Quantum Magnetometers – EM tampering detection
- ▶ GPS-Denied Navigation – Assured navigation for defense platforms



Pillar 3

Network Security

Objective: Build a full-stack quantum-secure communication ecosystem.

- ▶ Chip-Based QKD – Miniaturized, deployable modules
- ▶ Satellite QKD – Long-distance quantum backbone
- ▶ QSDC, SKML, 10G Encryptors, AI-QKD



Pillar 4

Time Integrity

Objective: Establish tamper-proof national time infrastructure.

- ▶ Indigenous Atomic Clock – Sovereign high-precision timing
- ▶ Secure Time Sync – QKD-authenticated distribution



Integrated Outcome: Unified Quantum Trust Fabric

✓ Device Authenticity ✓ Secure Communications ✓ Trusted Navigation ✓ Tamper-Proof Timing

₹ TOTAL APPROVED PROJECT COST : Rs. 300.00 Cr

₹ RDIF FUNDING APPROVED: Rs. 150.00 Cr



MODE OF FUNDING: OCD



Multisensor Satellite to enable High Resolution (<0.5m) SyncFusion OptoSAR

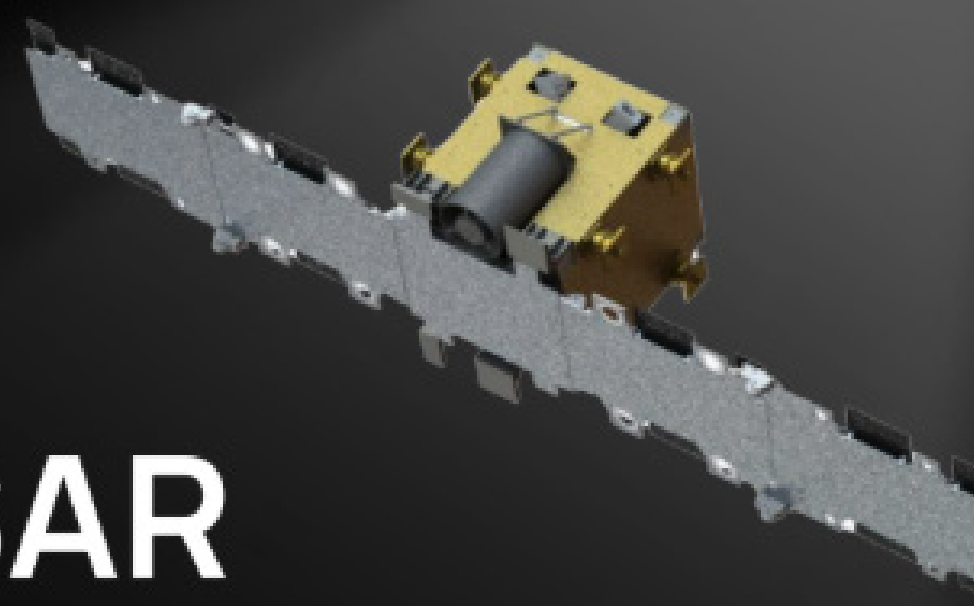
START TRL: 6
TARGET TRL: 9



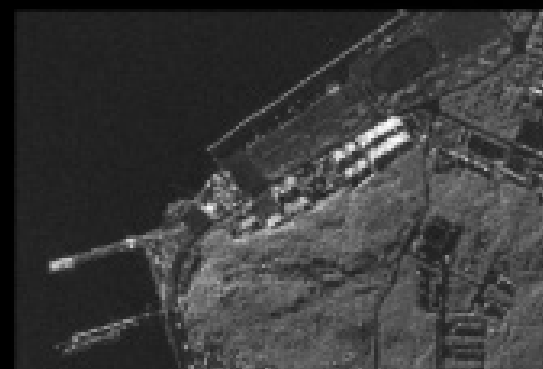
WORLD'S FIRST

SyncFused OptoSAR

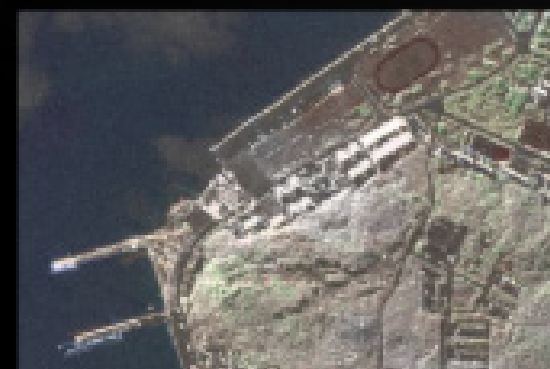
EARTH IMAGING SATELLITES



Cloud Cover in Optical Image



SAR Image

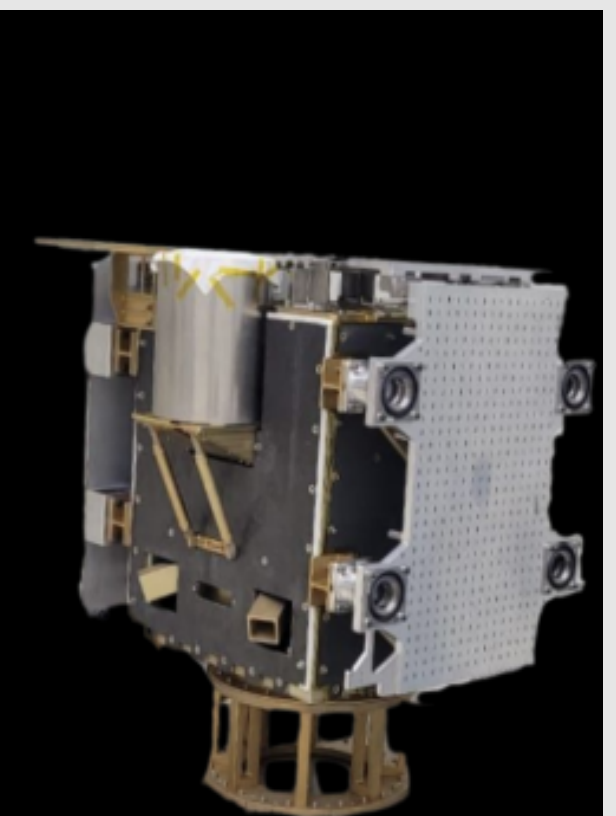


SyncFused OptoSAR Image

SURVEILLANCE RAIN OR SHINE | DAY OR NIGHT

WITH WORLD'S FIRST & ONLY SYNCFUSED OPTOSAR SATELLITE

Parameter	Specification
Operational Altitude	100 - 1000 m AGL
Sensor Type	SAR (X-Band, HH Pol (or) VV Pol) + EO RGB
Resolution (SAR)	0.15 m (at 500m) 0.50 m (at 1000m)
Resolution (EO)	0.06 m
Swath Width	SAR: 750 m EO: 950 m
Max Range	2 km (at 500 m altitude) 8 km (at 1000 m)
Weight	< 1.5 kg
Look Angle	30° - 60°
Endurance / Duration	1 Hour
Speed of Platform	5-30 m/s
Modes of Operation	<ul style="list-style-type: none"> SAR + EO Co-Registered Imaging Human/Vehicle Detection (MTI) Wide Area Surveillance Long-Range Surveillance
Special Features	<ul style="list-style-type: none"> Real-time onboard SAR/EO fusion Target classification under foggy conditions



MULTI
NANO
SENSE

Platform MEMS + AFE SoC Multi-Gas Sensor

START TRL: 4
TARGET TRL: 9

MEMS TCDIR Gas Sensor + AFE SoC

Reliable & Scalable Multi-Gas Sensing - Horizontal use cases across 10+ industries

Size, Cost, Scale, Performance Benefits

Leak Safety | Process Control | Health Monitoring

Chip 1
MEMS
Gas Sensor

Chip 2
CMOS
AFE SoC

Tape-out: November 2026

India Sensor TAM: 20,000+ Crores

Refineries | Petrochemicals | Power | PNG Infra | Industrial Safety | Batteries | H2 Economy

Unique Features



High Performance
Response Time < 200 mS
0% to 100% Operating Range.
10 to 15 Years Maintenance Free. Auto-Cal.



Miniature, Low Power, Scalable
Less than 25mm x 25mm x 15mm
Enables battery operated applications
Wireless deployment capable



Intelligent Processing
Drift, Temp, Pressure, RH Auto Correction
Software Based Gas Library
Innovative sensor data processing algos



Harsh & Hazardous Environments
-40°C to 125 °C Operation
IP 68 Housing. EMI/EMC Protected
Intrinsic Safety capable IEC 60079-11

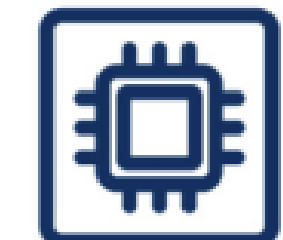


MULTI
NANO
SENSE

Unique Features



High Performance
Response Time < 200 mS
0% to 100% Operating Range.
10 to 15 Years Maintenance Free. Auto-Cal.
High accuracy with 50 ppm resolution.



Miniature, Low Power, Scalable
Average power < 6mA (continuous mode)
Less than 25mm x 25mm x 15mm
Enables battery operated applications
(duty cycle)



Intelligent Processing
Drift, Temp, Pressure, RH Auto Correction
Software Based Gas Library
Time Stamped Information
Innovative sensor data processing algos



Harsh Conditions Operation
-40°C to 125 °C Operation
IP 68 Housing. EMI/EMC Protected
Intrinsic Safety capable IEC 60079-11



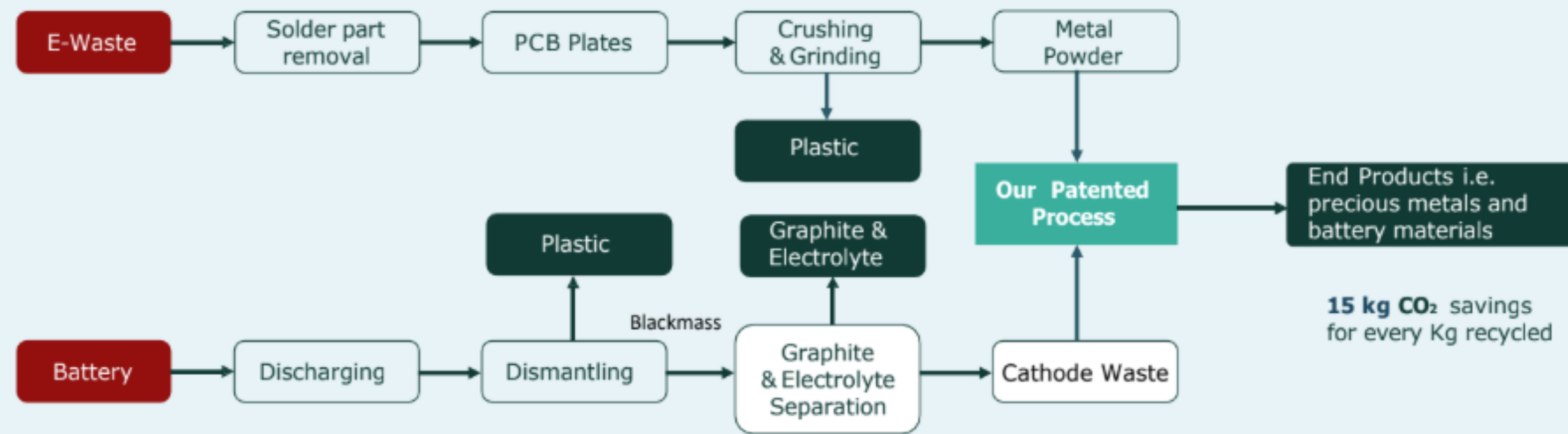
Security & Safety
Secure boot, PMP, secure firmware frameworks
Redundancy, OBD, over-current protection
Optimized heated surface and low energy preventing auto-ignition

Extractions of Critical Metals by Recycling of E-Waste and Lithium Ion Battery Waste

START TRL: 5
TARGET TRL: 9

Neo Seekermetals: Transforming Tech Waste with Innovation

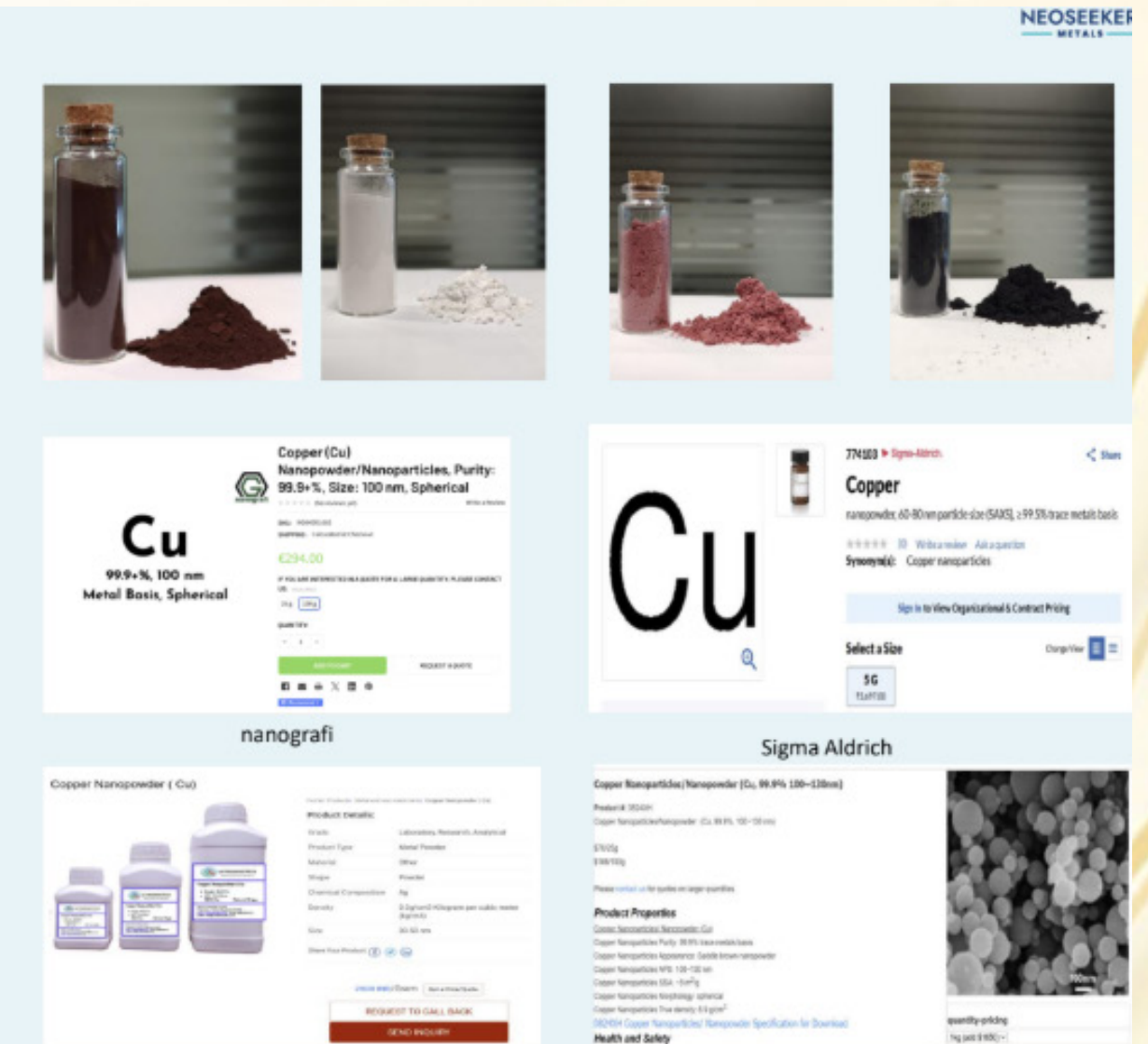
Neo Seekermetals aims to transform the industry with its unified patented process, which processes Li-ion and E-waste simultaneously with considerably better efficiency, when compared to industry standards.



List of products

- Lithium Carbonate
- MMO (Cathode Precursor)
- Copper Nano
- Graphite
- Electrolyte
- Cobalt Sulphate
- Gold
- Silver
- Palladium
- Lead
- Tin
- Hi-pure Alumina
- Sodium Sulphate
- Copper Sulphate

- ✓ Majority product prices are based on the market trends (ref. Shanghai metal exchange)
- ✓ 50% products are daily cash and carry business
- ✓ In talks with nanograpfi for the bulk purchase of products

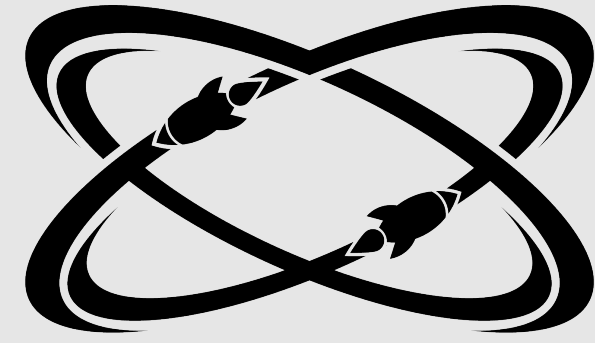


Product images showing various metal powders and nanoparticles in vials and containers.

Market listings for Copper Nanoparticles from nanograpfi and Sigma Aldrich.

nanograpfi
Copper (Cu) Nanopowder/Nanoparticles, Purity: 99.5+%, Size: 100 nm, Spherical. Price: ₹294.00.

Sigma Aldrich
Copper Nanoparticles/Nanopowder (Cu, 99.9% 100-1000nm). Price: \$110.00.



MANASTU SPACE

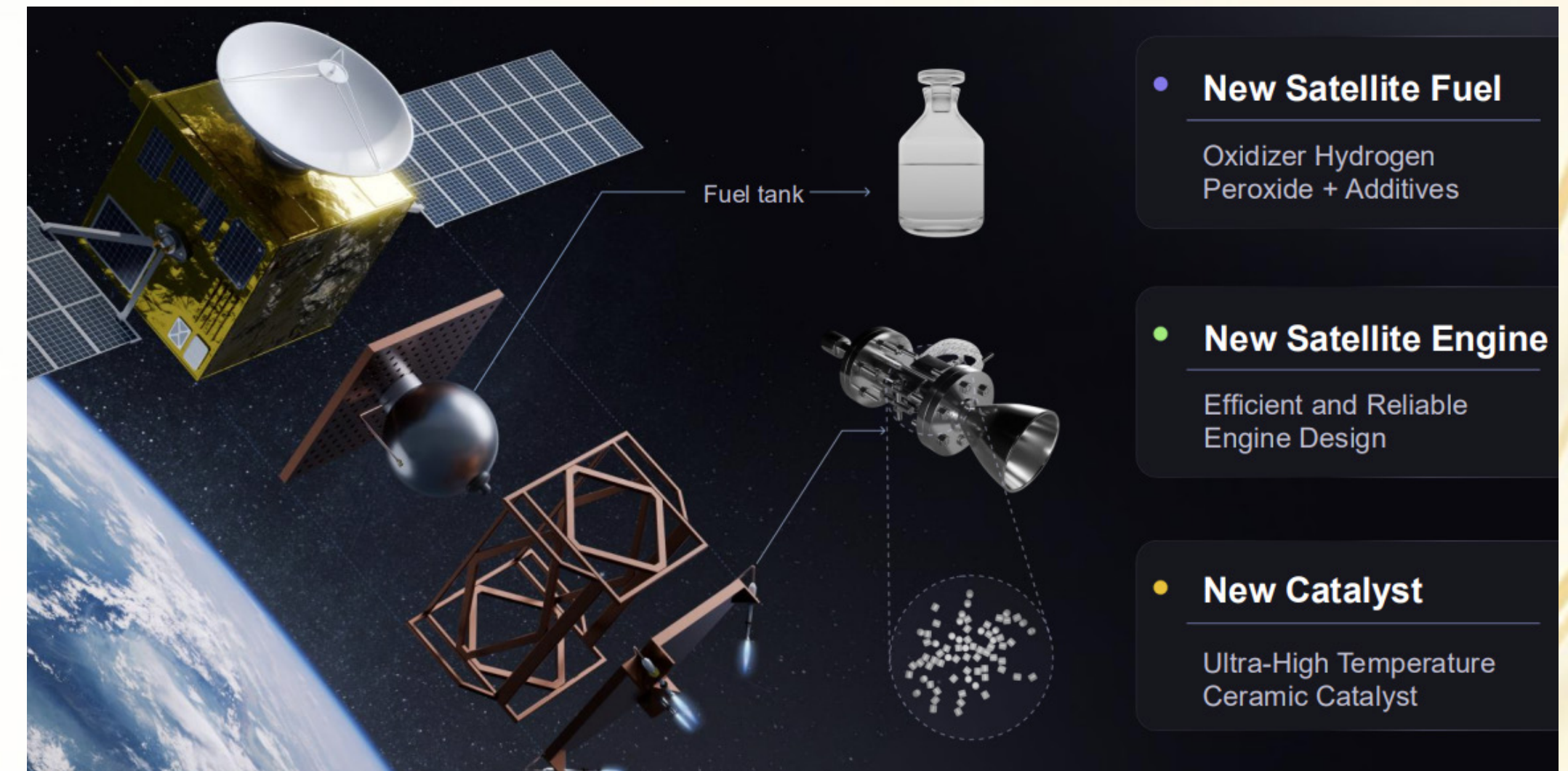
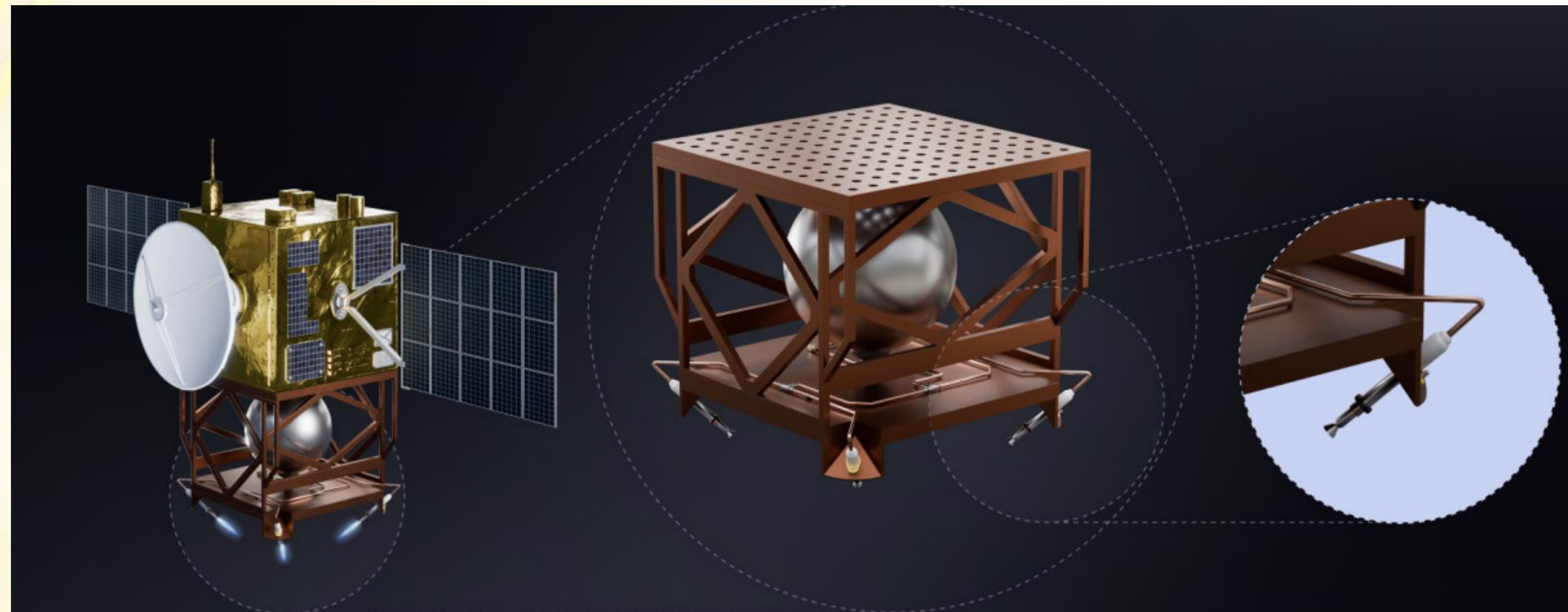
Sector- Deep Technology (Quantum Computing, Robotics and Space)

Sub Sector- Space Technology

Scalable Integrated Green Propulsion System for Satellites and Launch Vehicles for Sustainable Access to Space (5 mN-300 N Class)

START TRL: 6 TARGET TRL: 9

Solution: Indigenous Safe, Efficient and Cost-Effective Complete Propulsion System for Satellites Fuel as Safe as Common Salt (Green Propellant), 50% Higher Performance and 60% Cost Effective (Proven in Space)



Agile, Efficient & Safe (Sustainable) and Cost-Effective System

Proven in Space Propulsion System (Patents Filed) for Satellites

₹ TOTAL APPROVED PROJECT COST : Rs. 277.63 Cr

₹ RDIF FUNDING APPROVED: Rs. 116.00 Cr



MODE OF FUNDING: OCD

Development of Advanced Immersion Cooled Battery Thermal Management System (BTMS) for High C-Rate Battery Energy Storage System (BESS) and Electric Vehicles (EV)

START TRL: 4
TARGET TRL: 8

Immersion Cooling: Better Heat Evacuation, Enhanced Fire Safety

Liquid Immersion Cooling [LIC] of cells in a battery through complete/partial immersion in a dielectric cooling fluid provides distinct advantages

Basic Value Proposition to Customer

Enhanced Safety & Reliability

Increased Safety:

- **100%** fire-safety due to physical isolation from oxygen
- No need for external fire suppression systems
- Possible effective cooling of up to **11C** at lab scale

Thermal Reliability:

- Heat transfer **coefficient increase by ~2-3x** due to direct contact of cell with coolant w.r.t liq. cooling [**Reduced Resistance**]
- Increases heat transfer rate due to heat extraction from multiple cell surfaces as compared to liq. cooling (**4.4x more area** in a 314Ah cell) [**Increased Area**]
- Increased heat sink mass (static)
- Thermal Runaway Propagation (TRP) containment is nearly 100% due to direct physical isolation

Operational Reliability:

- Stable maintenance-free usage of dielectric fluid (**service interval of 3 years**) as compared to water + glycol mixture (**6 month service interval**)
- Low propensity to clogging of tiny microchannels of cooling plate

Increased Round Trip Efficiency

Reduced Auxiliary Consumption:

- Due to reduction in HVAC power requirement, Round Trip Efficiency (RTE) increases by **~1.5%**

Increased Cell Life:

- Due to uniform temperature control, and increased cooling, cells are expected to delivery higher number of charge-discharge cycles as cell derating is reduced (**90% of data-sheet capacity** for LIC, as compared to 80% in Liq. Cooling)
- Effective cooling of cells in the battery also slows down **derating of battery State of Health [SOH]** for a similar number of cycles as compared to traditional liquid cooling
- Battery lifespan [calculated as no of cycles till degradation] can be **extended by ~10-15%** using LIC when compared with liquid cooling.

System Scalability:

- LIC based BTMS designs are scalable linearly as designs are independent of cell type or module size, improving go-to-market

Long term: Use in Freq. Regulation Application (BESS), Fast Charging for E-Bus

Frequency Regulation using BESS:

- For primary frequency regulation (PFR) application using BESS, instant power delivery at high C-rates are required (**1C up to 4C**)
- State-of-art liquid cooling is insufficient for these applications, and a fairly new market
- This is in the backdrop of new draft **CEA and CERC safety guidelines** for grid tied BESS installations

Battery for E-Bus:

- Fast-charging increases the utilization factor for large public transportation such as e-bus, where charging time can be brought down to as low as 20 minutes for 3C charging, **increasing the time on road for a vehicle by 2.5-3x**
- Elimination of fire accidents and thermal runaway propagation risk reduces passenger injury **risk to almost 0%**, eliminating a key safety hazard
- This is also helpful for the improving the perception of electric transport, as fire-risk is a **key consumer concern** in EV adaption [2]



YETI - Heavy lift long range autonomous aerial logistics vehicle

START TRL: 4
TARGET TRL: 9

ideaForge YETI

YETI* is an autonomous VTOL-FW hybrid aircraft engineered to perform reliably in the most extreme environments - high altitude, deserts, and marine. It can take off from unprepared surfaces, resist winds up to 30 knots, and operates day and night**



DISTRIBUTED AND REDUNDANT PROPULSION ARCHITECTURE

T/O AND LANDING FROM 15m x 15m PATCH OF LAND

EASY TO TRANSPORT AND SETUP - FITS INSIDE ALS, AN 32, C17

*Design and configuration patent applied

**Technical specs are provided in annexure

The Solution YETI is a heavy-lift, long-range, autonomous VTOL-fixed wing UAV, purpose-built for demanding environments:

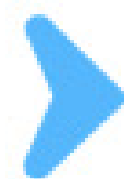
- **Payload:** Up to 200 kg
- **Range:** Up to 200 km
- **Altitude:** Operates up to 6,500 m AMSL
- **Weather-ready:** IP55, wind resistance up to 30 knots
- **Deployment:** Containerized, ready in minutes, lands in 15m x 15m patches
- **Redundancy:** Distributed propulsion and power for fault tolerance
- **Control:** Full C2, GNSS-denied navigation, 200 km link, swarm-capable

Fine-Tuning and Deployment of Advanced AI for Automated Detection, Quantification and Structured Reporting of 50+ Brain Abnormalities from CT and MRI Scans that can enhance Radiologist efficiency upto 5x

**START TRL: 7
TARGET TRL: 9**

PRODUCT - AI BRAIN SOLUTION

- Emergency abnormality detection and Triage
- Detects all acute hemorrhages - SAH, SDH, IPH, IVH
- Measure volume down to 0.4 mL
- Fast and accurate bleed detection



- Detection
- Localization
- Quantification
- Visualization

97.7%
Specificity

95.8%
Sensitivity

99.2%
PPV





Technology Development Board

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<https://tdb.gov.in>