



# Defence Technology & Test Centre: A Unique Initiative by DRDO for MSMEs & Startups



**Dr Ashish Dubey**

**DEFENCE TECHNOLOGY & TEST CENTRE (DTTC)**

**DMSRDE, DRDO, Min of Defence, Govt of India**

**Amausi, Lucknow – 226009**

**Phone: 0522-2317619; Email: [dttc-drdo@gov.in](mailto:dttc-drdo@gov.in), [adubey.dmsrde@gov.in](mailto:adubey.dmsrde@gov.in)**

# Brief about DTTC: Genesis

## Memorandum of Understanding (MOU)

For collaboration as knowledge partner

For the

Development of Uttar Pradesh Defence Industrial Corridor

Between

Uttar Pradesh Expressways Industrial Development Authority (UPEIDA)

AND

Defence Research and Development Organization (DRDO)

This Memorandum of Understanding (MOU) is entered into on the 07 day of Feb, 2020 at Lucknow between Uttar Pradesh Expressways Industrial



## Foundation Stone Laying Ceremony 26<sup>th</sup> Dec. 2021

**Objective:** Collaborate as knowledge partner for sharing of ideas, resources and expertise for the successful development of Uttar Pradesh Defence Industrial Corridor.



## Inaugural Ceremony on 11<sup>th</sup> March 2024

# Brief about DTTC: Campuses



**DTTC: Amausi Campus**

← 02 Kms →

**DTTC: Nadarganj Campus**

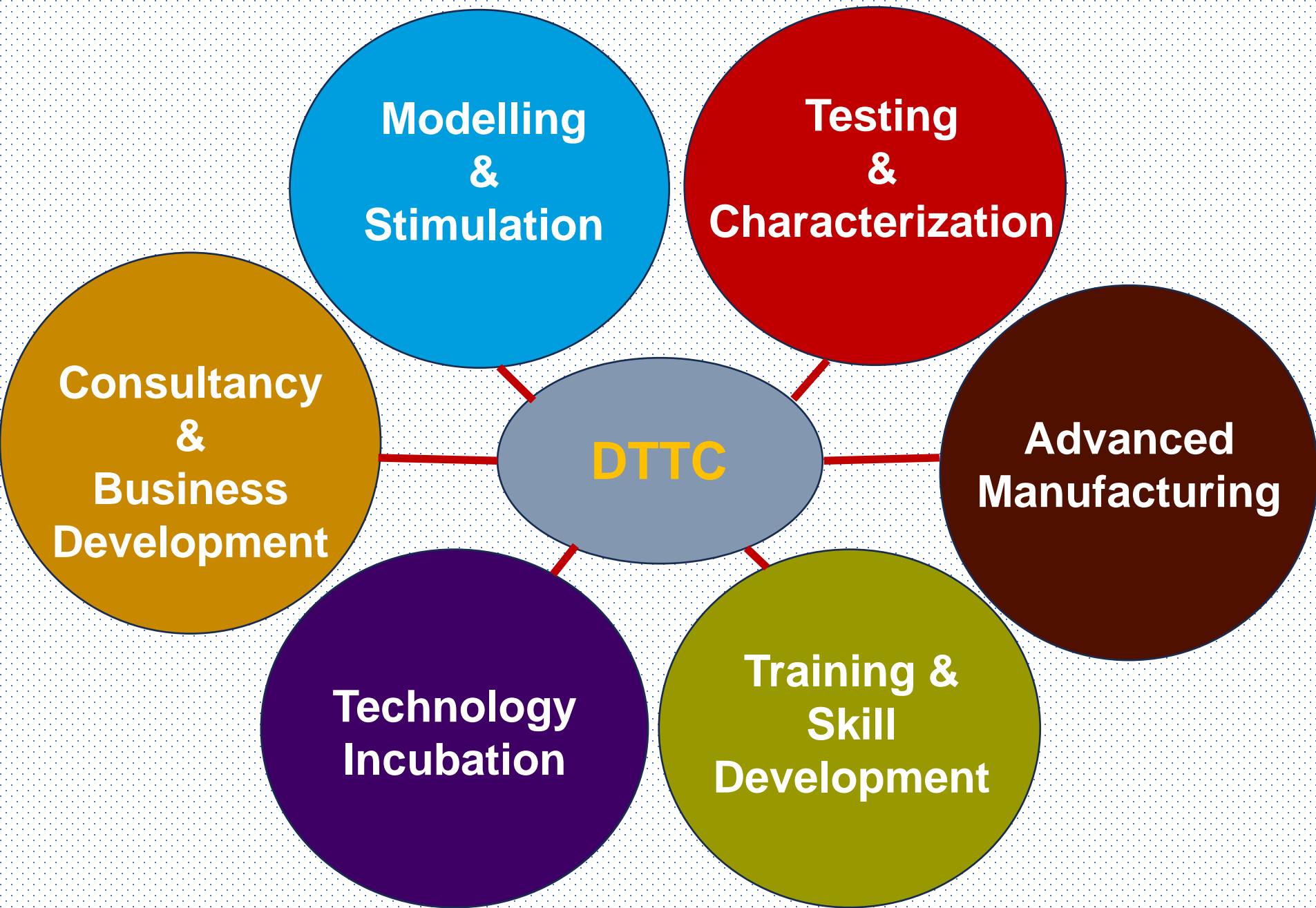
- **Location:** Kanpur Road, Lucknow (Near Amausi Metro Station/Airport)
- **Physical Area:** 5.5 Acres
- **Key Areas:** Modelling & Simulation, Training & Skill Dev., Technical Consultancy & Business Dev.
- **Facilities:** Software, Hardware, HPC/Data Center, Admin/Support Offices

- **Location:** Nadarganj Industrial Area
- **Physical Area:** 16.9 Acres
- **Key Areas:** Technical Testing, Advanced Manufacturing, Training & Skill Development, Tech. Incubation
- **Facilities:** Test & Processing Equipment, Manufacturing Facilities, Workshop, Support Facilities

**Nodal Lab: DMSRDE**

[More Details: https://drdo.gov.in/drdo/defence-technology-test-centre-dttc](https://drdo.gov.in/drdo/defence-technology-test-centre-dttc)

## Scope of the DTTC: Uniqueness



# Prospective Areas/Technical Domains

(Based on Industrial Survey done by the DTTC)

- 
- Drone/anti-Drone Systems
  - EW Sensors
  - UAVs
  - Electro-Optic Systems
  - Precision Components
  - Fire Safety Equipment
  - Small Arms & Ammunition
  - Paints & Coatings
  - Titanium Casting
  - Polymers/Ballistic Materials
  - Safety gears
  - Missile Propulsion Systems
  - Defence Clothing & Packaging

# Technology Verticals

## DTTC

### Modelling & Simulation

- Mech Design & Sim. Lab
- Elect Design & Sim Lab
- Material Simulation Lab
- Computational Tech. / AI-ML Lab
- High Performance Computing Lab

### Technical Testing

- Textile Testing Lab
- Thermal Testing Lab
- Mechanical Testing Lab
- Non-Destructive Testing Lab
- Mat. Ch. & Spectro. Lab

### Advanced manufacturing

- Additive Manufacturing Lab
- Composite Fabrication Lab
- PCB Design & Fabrication Lab
- Precision Machining / Workshop

### Training & Skill Development

- Short Courses / CEPs
- MSME Meet/Interactions
- Webinars / Seminars
- Real Time Case Studies / hands-on
- PLM/Smart Factory
- AR/VR Lab

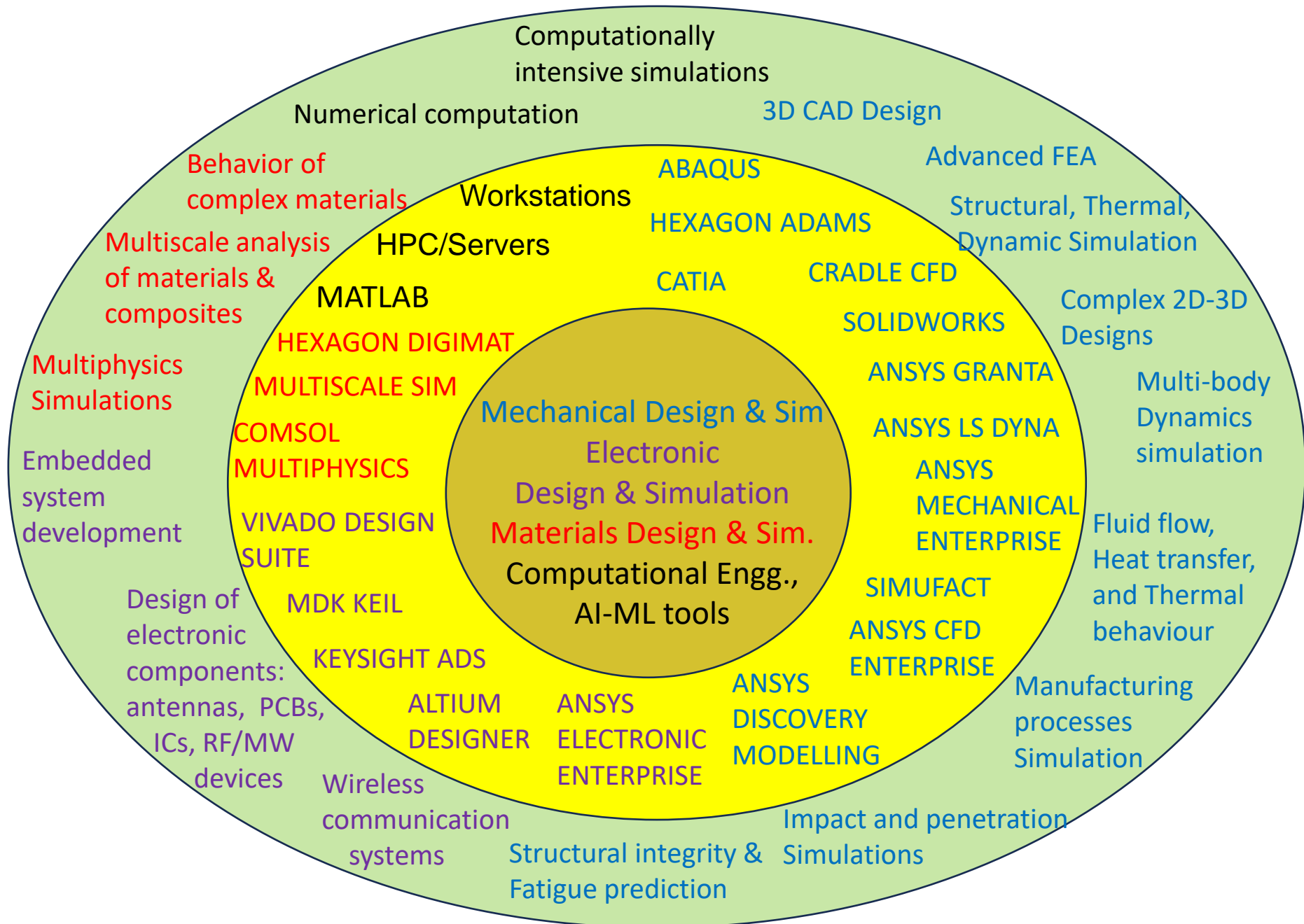
### Technology Incubation

- Technical Support
- Space Allocation
- Mentorship & Monitoring
- SIDBI Processes
- User Interaction
- Support / TDF/TDB/iDEX

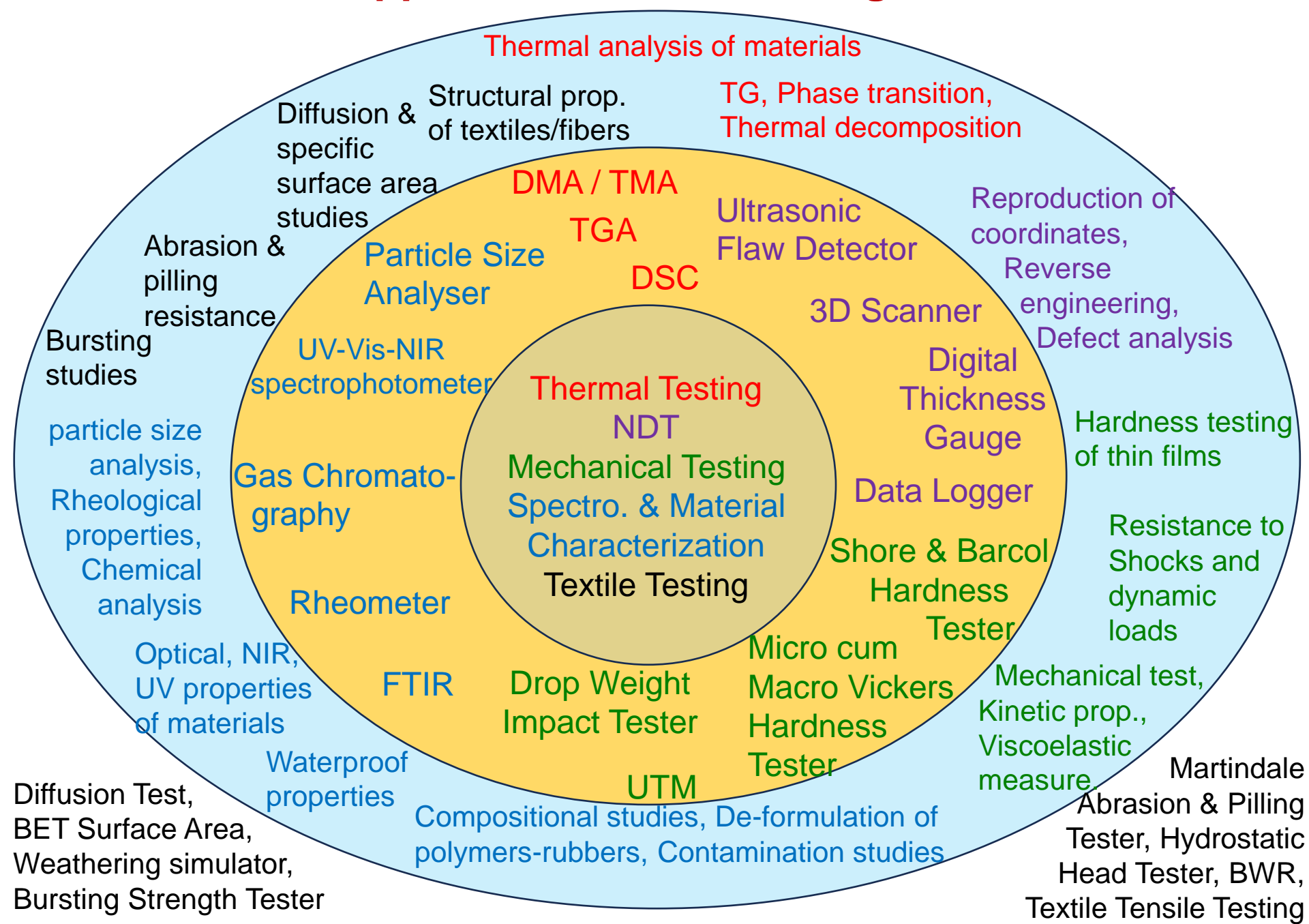
### Consultancy & Business Development

- Interaction with stakeholders
- Publicity & Brand Building
- Sustainability Mechanism
- Resources Creation
- Consultants Panel
- Business Development

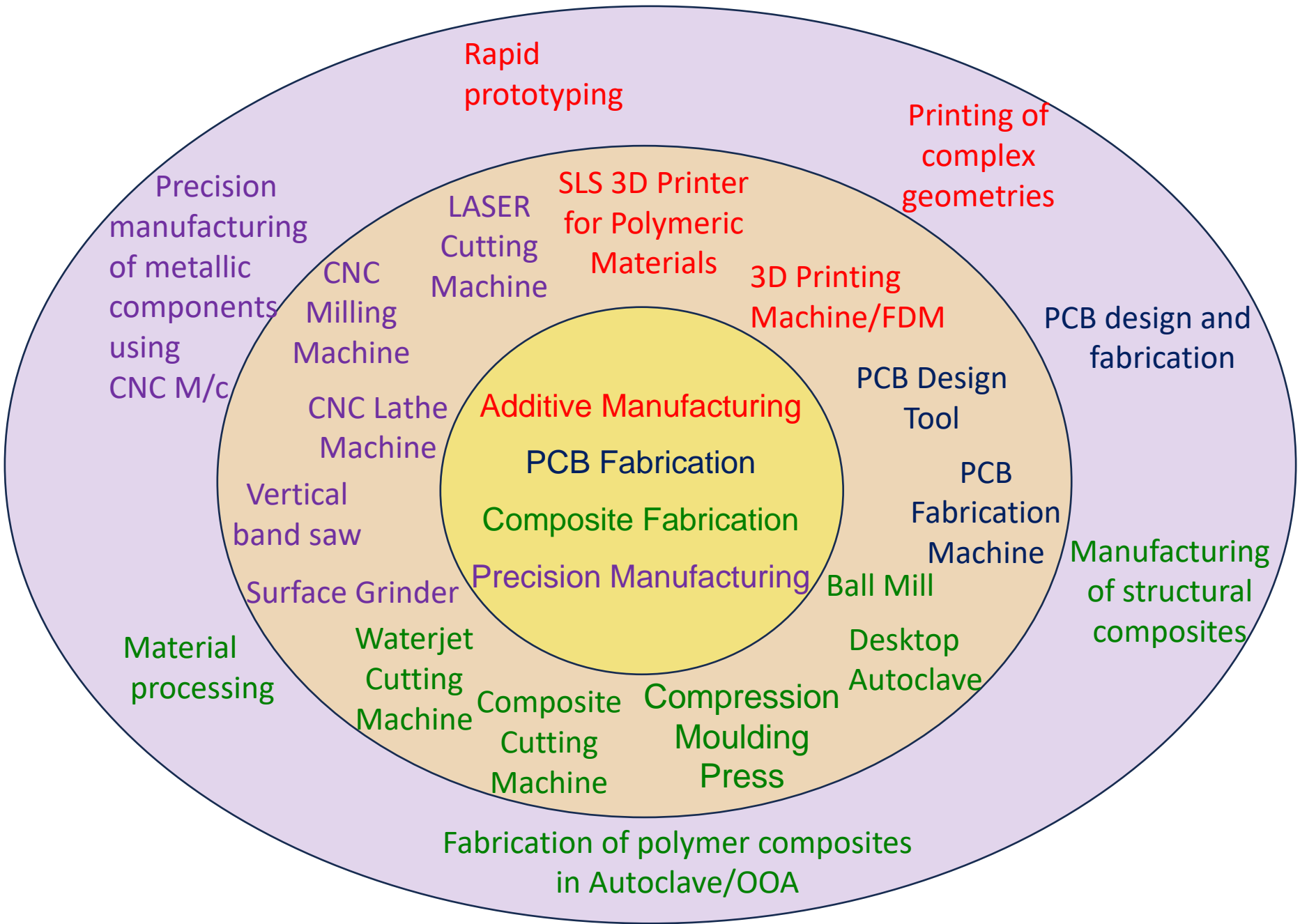
# Infrastructure & Application Areas: Modeling & Simulation



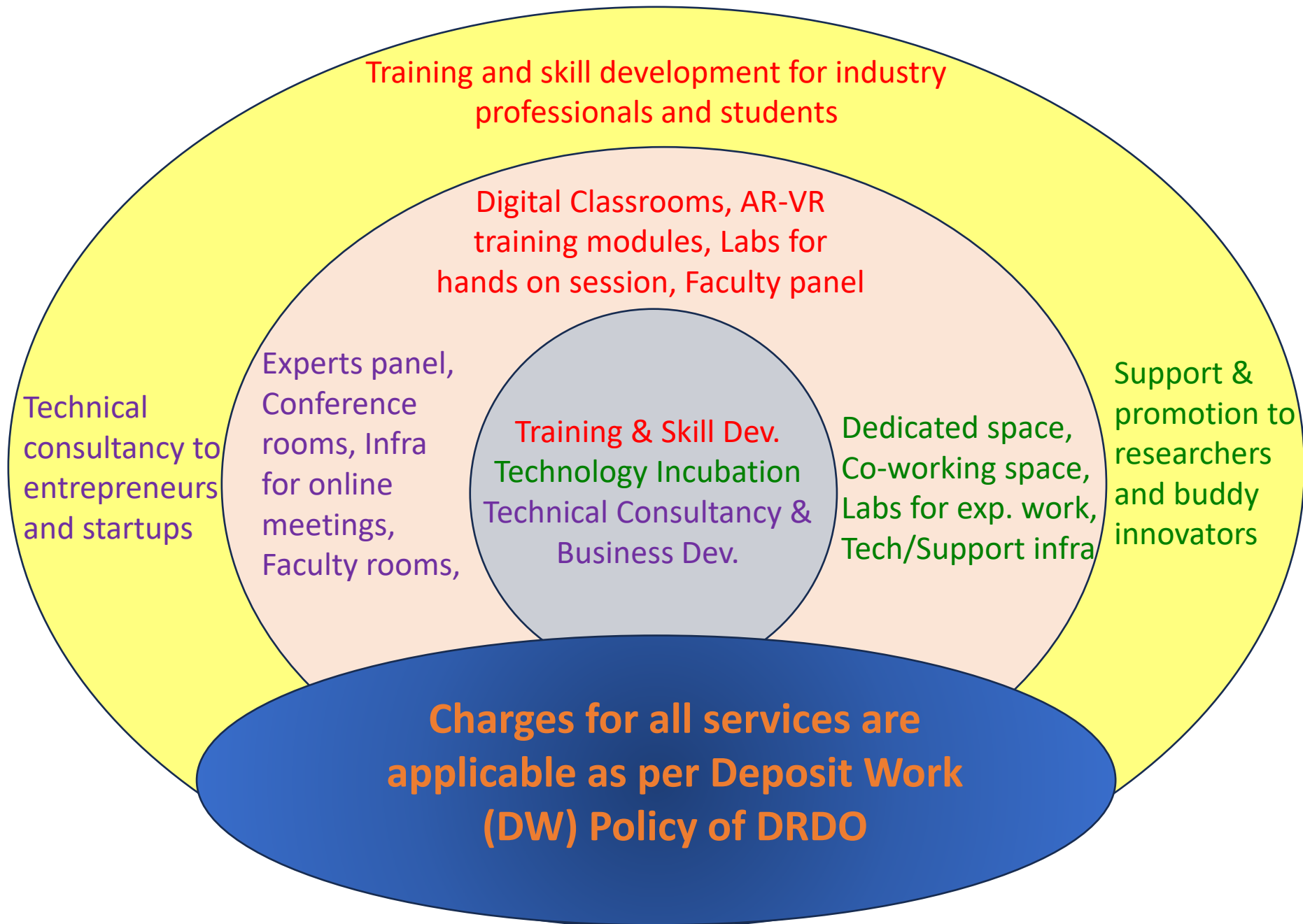
# Infrastructure & Application Areas: Testing & Characterization



# Infrastructure & Application Areas: Advanced Manufacturing



# Infrastructure & Application Areas: Training, Incubation & Consultancy



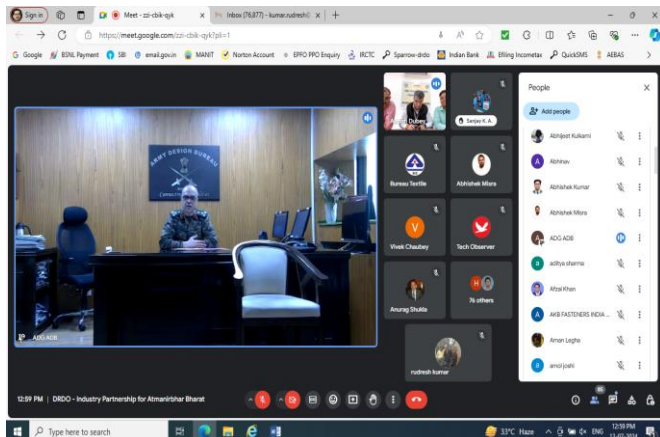
# Recent Interactions, Activities & Initiatives

# INDUSTRY INTERACTION

INDUSTRY	PRODUCT	AREA OF INTERACTION
M/s. Aryan Exporters , Lucknow	Rubber based products for Indian Navy	Testing and Skill Development
M/s. Technocrat Solutions, Lucknow	Electronics sub-systems	Testing and Skill Development
M/s. Datum Composites, Kanpur	Polymer Composites	Testing
M/s. Sunmint Electronics Llp, Lucknow	Drone Sub-systems	Testing
M/s. Tak Technologies (Opto ), Noida	Opto-Electronic Systems	Testing
M/s. Goyal Plywood, Sonipat	Plywood	Testing
HAL, AD, Lucknow	Rubber/Foam	Testing
M/s. Shanti Machinery Works, Lucknow	Systems and sub-systems for Indian Railways	3D Modelling
M/s. THz-Innovations Pvt. Ltd., Indore	THz and Ultrafast Photonics	Technology Incubation
M/s. Empyrean Robotic Technologies, Prayagraj	Drone	Technology Incubation and Testing
M/s. Vymanik Aerospace, Ghaziabad	Drone	Technology Incubation
M/s. Nivora Labs Pvt Ltd, Mumbai	AI based image processing	Technical Consultancy

# WEBINARS / INDUSTRY MEET

- ❖ Webinar on “DRDO-Industry Partnership for Atmanibhar Bharat”, 12<sup>th</sup> July 2024
- ❖ Hybrid Seminar on “Indian Aerospace & Defence Manufacturing Ecosystem: Next-Gen Skill Challenges”, 11<sup>th</sup> March 2025
- ❖ MSME Meet “DRDO INITIATIVES FOR CAPACITY BUILDING OF REGIONAL MSME’S FOR DEVELOPMENT OF DEFENCE INDUSTRIAL COORIDOR IN UTTAR PRADSH”, 6<sup>th</sup> Sept. 2025



# MOU EXCHANGE

- CSJM University Kanpur
- CGSSC, New Delhi
- Laghu Udyog Bharti -UP Chapter
- UPEIDA (UPDIC)



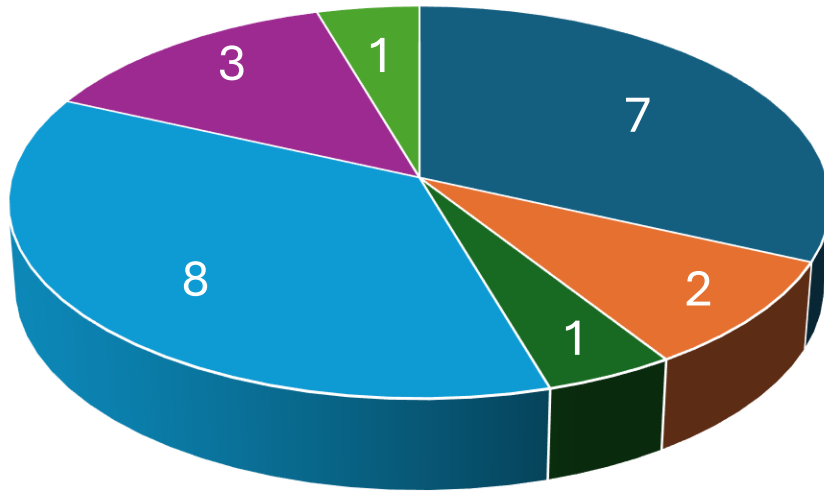
# Recent Visits



## Skill Development Programs in 2025

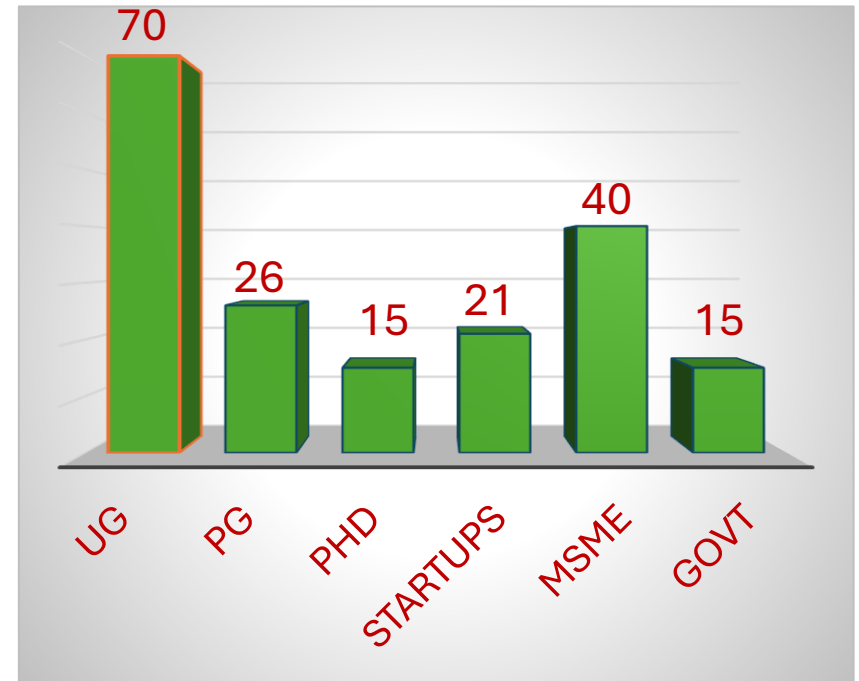
S/N	Course/ Training Title	Date & Duration	Topics to be Covered
1.	<b>Blockchain Technology: Concepts and Applications</b>	<b>21-22 August (02 Days)</b>	<ul style="list-style-type: none"> <li>✓ Introduction to Blockchain</li> <li>✓ How block chain works</li> <li>✓ Key component</li> <li>✓ Block Chain platforms</li> <li>✓ Applications of Blockchain</li> <li>✓ Practical Hands on &amp; Demonstration</li> </ul>
2.	<b>Non-Destructive Evaluation Techniques for Aerospace &amp; Defence Manufacturing</b>	<b>29-30 September (02 Days)</b>	<ul style="list-style-type: none"> <li>✓ Covers the principles, applications, and limitations of various NDE methods, Application of NDE in quality control etc.</li> <li>✓ Basics &amp; Operations of Ultrasonic Flaw detector &amp; Ultrasonic Thickness Guage equipment</li> </ul>
3.	<b>RF and Microwave Circuit Design Simulation using ADS</b>	<b>6-7 October (02 Days)</b>	<ul style="list-style-type: none"> <li>✓ Introduction to ADS and RF Design Flow</li> <li>✓ Linear Simulation and S-Parameter Analysis</li> <li>✓ Nonlinear Circuit Simulation</li> <li>✓ RF System Design and Budget Analysis</li> <li>✓ Layout, EM Simulation &amp; Advanced Applications</li> <li>✓ PCB Layout and Design Rule Check (DRC)</li> <li>✓ Momentum EM Simulation, Co-Simulation &amp; EM Circuit Integration</li> <li>✓ Case Studies and Hands-on Projects</li> </ul>
4.	<b>Advanced 3D Modelling and Engineering Simulation Techniques using Solid Works Premium</b>	<b>25-27 November (03 Days)</b>	<ul style="list-style-type: none"> <li>✓ Covers basics of SolidWorks, sketching techniques, part modelling, assembly, rendering etc.</li> <li>✓ Sheet metal modelling, design validation, product data management, design communication, and CAD productivity tools.</li> <li>✓ Linear and Non-linear analysis.</li> </ul>
5.	<b>Electromagnetic Field Simulation and Analysis using Ansys Electronic Enterprise</b>	<b>18-19 December (02 Days)</b>	<ul style="list-style-type: none"> <li>✓ Introduction to ANSYS Electronics</li> <li>✓ High-Frequency Electromagnetics with HFSS</li> <li>✓ Low-Frequency Electromagnetics with ANSYS Maxwell</li> <li>✓ Hands-on: Basic Simulations in HFSS and Maxwell</li> <li>✓ Signal Integrity, Thermal-Mechanical and System Integration</li> <li>✓ Thermal and Structural Coupling with Ice pak</li> <li>✓ Circuit and System Simulation using Twin Builder</li> <li>✓ Design Automation and Workflow Integration</li> </ul>

## Activities / Skill Development Programs in 2025



- Courses (7)
- Testing Support (8)
- Webinars (2)
- Startups (3)
- MSME Meet (1)
- Consultancy (1)

## Students and Industry Professional Trained in 2025



# Training Schedule under Skill Development Program -2026

S/N	Title	Classification	Date	Topics	Co-ordinator
1.	AI/ ML applications in Defence Sector	Basic	11-12 February 2026	<ul style="list-style-type: none"> <li>• Introduction to AI/ML in Defence</li> <li>• Core Techniques in AI/ML</li> <li>• AI/ML in Cybersecurity and Counterintelligence</li> <li>• AI/ML in Intelligence, Surveillance, and Reconnaissance (ISR)</li> <li>• Application of AI/ML in Material Science</li> <li>• AI/ML in Space Defence and Satellite Technology</li> <li>• Ethical and Legal Frameworks for AI/ML in Defence</li> </ul>	Sh. Atul Kumar, Sc-E
2.	Electronic Systems Design, Fabrication & Realization (RF PCB/ MMIC/IC)	Intermediate	23-24 April 2026	<ul style="list-style-type: none"> <li>• System Requirements &amp; Architecture Planning</li> <li>• Analog, Digital &amp; Power Circuit PCB Design</li> <li>• PCB Design Principles &amp; Layout Practices</li> <li>• Design Validation &amp; Manufacturing Documentation</li> <li>• PCB Fabrication Processes &amp; Materials</li> <li>• Assembly, Soldering &amp; Workmanship Standards</li> </ul>	Sh. Virendra Prasad, Sc-E
3.	Emerging areas and Challenges for Startups and Entrepreneur in Defence and Aerospace	Basic	18-19 June 2026	<ul style="list-style-type: none"> <li>• Introduction to Defence &amp; Aerospace Startup Ecosystem</li> <li>• Emerging Technology Areas in Defence &amp; Aerospace</li> <li>• Defence Procurement &amp; Startup Entry Pathways</li> <li>• Business Models &amp; Go-To-Market Strategy</li> <li>• Technical, Regulatory &amp; Operational Challenges</li> <li>• Funding, Investment &amp; Government Support</li> <li>• Infrastructure, Testing &amp; Certification Facilities</li> <li>• Case Studies of Successful Defence &amp; Aerospace Startups</li> </ul>	Sh. Rudresh Kumar, Sc-E
4.	EMI/EMC: Fundamentals, Measurement, Testing of Defence System	Advance	20-21 August 2026	<p>Introduction to EMI/EMC in Defence sector</p> <ul style="list-style-type: none"> <li>• EMI/EMC Standards &amp; Compliance Requirements</li> <li>• EMI Control at System &amp; Subsystem Level</li> <li>• EMI Mitigation Techniques in Defence Hardware</li> <li>• MI/EMC Test Facilities &amp; Instrumentation</li> <li>• Conducted &amp; Radiated Emission Measurements</li> <li>• Susceptibility / Immunity Testing</li> <li>• EMI/EMC Test Planning, Documentation &amp; Reporting</li> </ul>	Sh. Virendra Prasad, Sc-E
5.	Drone and Anti-Drone Technologies for Strategic Sector	Advance	27-28 October 2026	<ul style="list-style-type: none"> <li>• Introduction to UAV / Drone Technologies</li> <li>• Drone Architecture &amp; Subsystem Overview</li> <li>• Navigation, Communication &amp; Payload Systems</li> <li>• Autonomous Flight, Ground Control &amp; Mission Planning</li> <li>• Strategic &amp; Defence Applications of Drones</li> <li>• Drone Threat Landscape &amp; Security Challenges</li> <li>• Drone Detection &amp; Tracking Technologies</li> <li>• Anti-Drone Neutralization Techniques</li> </ul>	Sh. Aneesh Kumar Singh , Sc-E
6.	Composite Material: Design, Fabrication & Testing	Advance	17-18 December 2026	<ul style="list-style-type: none"> <li>• Fundamentals, Materials &amp; Design of Composites</li> <li>• Reinforcements &amp; Matrix Materials</li> <li>• Mechanical Behaviour &amp; Failure of Composites</li> <li>• Composite Laminate Design &amp; Analysis</li> <li>• Composite Fabrication Techniques</li> <li>• Defects in Composites &amp; Quality Control</li> <li>• Mechanical Testing of Composite Materials</li> <li>• Non-Destructive Testing (NDT) of Composites</li> <li>• Defence and Aerospace Applications, Case Studies</li> </ul>	Sh. Amit Kumar, Sc-F

# Approach to DTTC: Who & How ??

Individuals, Industries, MSMEs, Startups, Armed Forces, R&D labs & Academia

- **Looking for Product design & simulations**
- **Material level testing as per ASTM / MIL standards**
- **Rapid prototyping for proof of concept**
- **Training on advanced defence technologies**
- **Technology Incubators for technical mentorship & support**
- **Technical consultancy in defence manufacturing eco-system**

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**Phone Nos.: 0522-2317619, 20; Fax: 0522-2982993**

**Email: [dttc-drdo@gov.in](mailto:dttc-drdo@gov.in), [adubey.dmsrde@gov.in](mailto:adubey.dmsrde@gov.in), [director.dmsrde@gov.in](mailto:director.dmsrde@gov.in)**



**Thank You !!**