DIA TECHATHON 2.0

EMPOWERING INNOVATIONS: IDEATE, DESIGN, INCUBATE

Innovation Tracks & Thematic Domains

for "TECHATHON 2.0" and "TECHATHON 2.0 – NAARI SHAKTI"

Participants are invited to develop and present innovations within any one of the following tracks:

1. **Advanced Manufacturing & Processing:** This domain invites innovations in next-generation fabrication and processing technologies, including additive manufacturing, laser-based processing, micro-machining, and dissimilar material joining. Solutions should demonstrate clear potential for industrial scalability and real-world deployment in manufacturing ecosystems.
2. **Biophotonics, Medical Diagnostics & AI:** Sitting at the powerful convergence of photonics, medicine, and artificial intelligence, this domain covers photonics-based diagnostic tools, theragnostic systems, and regenerative medicine technologies-augmented by. A special challenge track within this domain invites cost-effective solutions for extremely weak magnetic field mapping, with applications in medical diagnostics.
3. **Advanced Materials, Sensors & Detectors:** This domain targets the development of enabling materials and technologies that form the backbone of modern sensing and detection systems, including nano-photonic materials, advanced sensor materials, and next-generation detector technologies designed for precision and performance.
4. **Lasers, Optics & Metrology:** Focused on the science of precision measurement and optical engineering, this domain encompasses high-performance laser sources-including fiber lasers, diode-pumped lasers, and Nd:YAG systems alongside optical metrology, adaptive optics, and advanced coating systems. Innovations pertaining to laser-based material processing are addressed separately under Track 1.
5. **Power Electronics, RF & Precision Control:** This domain addresses the critical infrastructure of high-performance electronic systems, including high-efficiency power converters, system drivers, RF and microwave sources, and subsystems for precision control. Photonics integration is welcome within this domain specifically in the context of RF and microwave applications.
6. **Clean Energy & Hydrogen Technologies:** With sustainability at its core, this domain seeks innovations in energy generation, harvesting, and advanced conversion technologies — with a particular focus on hydrogen generation as a clean, scalable, and strategically significant energy carrier for India's sustainable future.

7. **Plasma Technologies for Industry & Society:** This domain explores the transformative plasma-based technologies for industrial and societal applications including agriculture, environment, water, waste to energy, energy, space sectors, positioning plasma science as a powerful tool for both industrial efficiency and societal well-being.
8. **Agriculture & Food Irradiation Technologies:** Bridging frontier science with food security, this domain focuses on irradiation-enabled innovations that enhance agricultural productivity and improve food processing outcomes — addressing safety, shelf-life extension, preservation quality, and supply chain efficiency for a more resilient and food-secure India. As part of Swatchch Bharat Abhiyan waste mangement and water purification technologies.