TECHNOLOGICAL DRIVERS FOR STI COLLABORATIONS WITH INDIA

INDIA'S STRENGTHS

- India's Market Size - Possibilities to the world
- Low cost of Innovation and R&D – Frugal & Gandhian Engineering
- Robust Economy with High Growth Rate
- Venture Capital Investment
- High Affordability (WEF - Global IT Report)
- Highly Talented and Technical – Manpower
- Success of major Technology Centers Hub (Honeywell, Mobil, GE etc.)
- Leverage India's Soft Power in S&T

HELP PURSUE TECHNOLOGIES FOR 2035

	UPTO 2020	2020-2030	2030-2035
BIO-MEDICAL	Sensors, cardiovascular and in vitro diagnostic devices, cardiovascular clot removal catheters, medical implants, targeted drug delivery systems	Controlled drug, delivery systems, Engineered replacement tissues, artificial skin and hair	Artificial organs, bones, self assembled organs
MATERIALS	Novel materials, Materials with enhanced properties	Tailor made materials	Self assembled parts
ENERGY	Energy harvesting from unconventional sources, Batteries with efficient charging and discharge characteristics, ultra capacitors	Hybrid solar energy, hydrogen energy, Efficient fuel cells, micro-scale fuel cells	Widespread adoption of decentralized energy harvesting using devices made by additive manufacturing
WATER	Filtration devices	Large scale bacterial water purification	Hydro-fracturing during floods to maximize the water recharge
COMPUTING	Foldable displays, miniaturization, new memory devices	Quantum computing, Computing based on nano tubes	Circuit optical interconnects will use 3D nanophotonic solutions
FOOD PROCESSING	Shelf life enhancement, sensors for quality monitoring	Perennial cereal corps	Molecular manufacturing of food
SMART TEXTILES	To develop machines with integrated humidification thus minimizing the energy	Smart clothes through embedded wearable electronics	Production of coloured cotton and new spinning technology with multifold production
AEROSPACE	Micro nozzles for high temperature jets, dust resistant coatings	Automotive paints to charge the plane	For vision system
INFRASTRUCTURE	Use of nano fibres for reinforcement	Energy harvesting glass, brick	Net zero energy buildings
AUTOMOTIVE	Sensors for internal and external monitoring, waste heat converters, wireless devices for vehicle to vehicle communication	Energy harvesting paints	Sensors for driverless vehicles

STRATEGIES FOR COLLABORATION

Downward Filtration	**Create opportunities for exchanges of Indian and Russian students and faculties to train in the Universities and Industrial institutes. Promote STI Skill Development**
Joint Academic Research Programme	Promote more joint researchers and PhDs segmented into two parts as per area of specialization between one Indian university and other American universities. **Boosting opportunities through Scholarships and Grants**
Small scale - Mission Mode Projects for Inclusive Innovation	Public Private Partnership and joint collaborations for **mission mode joint projects** should increase the pace of inclusive innovation for societal impact at grass-root level
Data Base of Universities/Research institutes and industry for each technological area through ext. linkages	**Maintain database** and update availability and readiness of technologies in India and Russian Federation and undertake ground-work to strengthen the possible collaborative alliances. Large scale database of technology forecast and agencies involved in India and worldwide is retained at organizations like TIFAC in India.
Opportunities for successful Startups and Innovation Ecosystems	Integrate with the Indian **STI Ecosystems** by partnering in high technology areas
Cannibalize / Promote Frugal Engg.	Cannibalize existing technologies available with Industry / Institutes by newer **offerings and solutions in the Indian context** with selected Indian partners (MSMEs / Start-ups)

ENABLING TECHNOLOGIES

- **Education – AI, Cognitive Science, Education technologies etc.**
- **Medical Sc. & Healthcare – Robotic Surgery, Genetics etc.**
- **Food & Agriculture – Hydroponics, C3>C4, Apomixis etc.**
- **Water – Re-cycling & Re-use, Trenchless Tech for infra etc.**
- **Energy - PC-SC, PC-USC, Clean Energy, Renewables etc.**
- **Environment – Carbon capture, Waste Management etc.**
- **Transportation – Propulsion tech, Hyperloop, Fuel Cell etc.**
- **Infrastructure – Self healing material, Solar roads etc.**
- **Manufacturing – De-materialization, Zero emission, adaptive etc.**
- **Material – Graphene, Bio-degradable, Biomimetic materials etc.**
- **ICT – Quantum communications, Decision science, IOT etc.**

Accelerating Growth of New India's Innovations (AGNII)

AGNIi: INTRODUCTION

Technology Commercialization Programme

Solution Providers

Startups

Research Labs

Academic Institutes

agnii IGNITING IDEAS

Dedicated support: R&D
innovation commercialisation

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Accelerators/Incubators

State agencies

Investors

Solution Seekers

Corporations

Government

MSMEs

Development Organisations

AGNIi's Services

For innovators

- Market Access
- Technology Showcase
- Derisked adoption
- Derisked development
- Knowledge Sharing
- Mentorship

For solution seekers

- Catalysed Access to Innovation
- Catalysed Access to R&D Capabilities
- Customized tech innovation portfolios: open challenges
- Technology Showcase Events
- Accelerated Pipelines

Thank you

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