

*Technology Transfer –  
Experiences and Best Practices  
from  
Biotech Consortium India Ltd  
(BCIL)*

**By**

**Dr. Suchita Markan  
Asst. General Manager, BCIL  
November 2, 2017**

# Outline

Journey of Tech-Development and Translation

Why Technology-Transfer?

Types of Technology Transfers

Technology-Transfer to MSME and Large Enterprises

Start-up Journey of Licensing and Commercialization

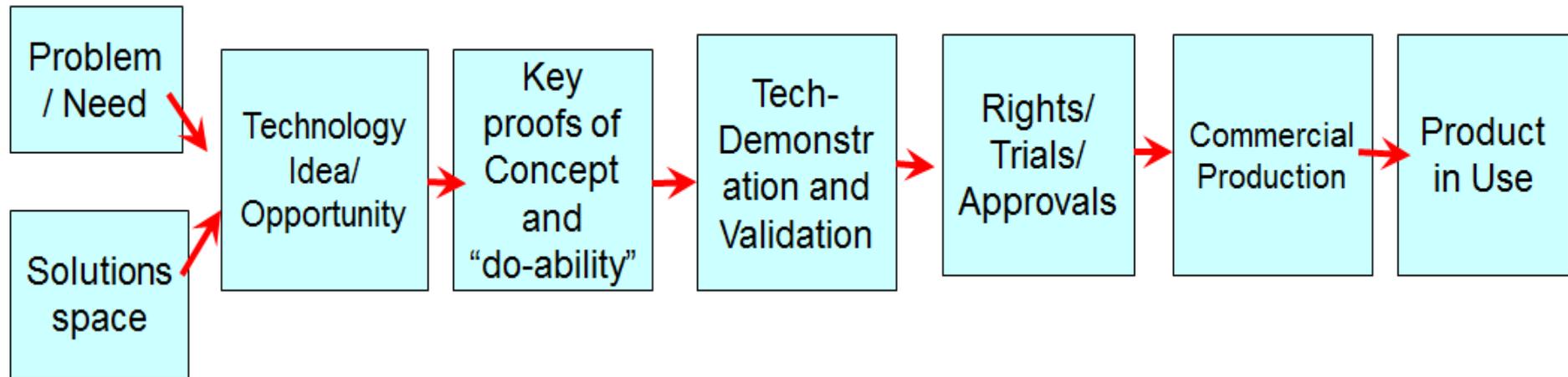
Strategic Collaborations for Facilitating Technology-Transfers

About BCIL and its Best Practices for Tech-Transfer

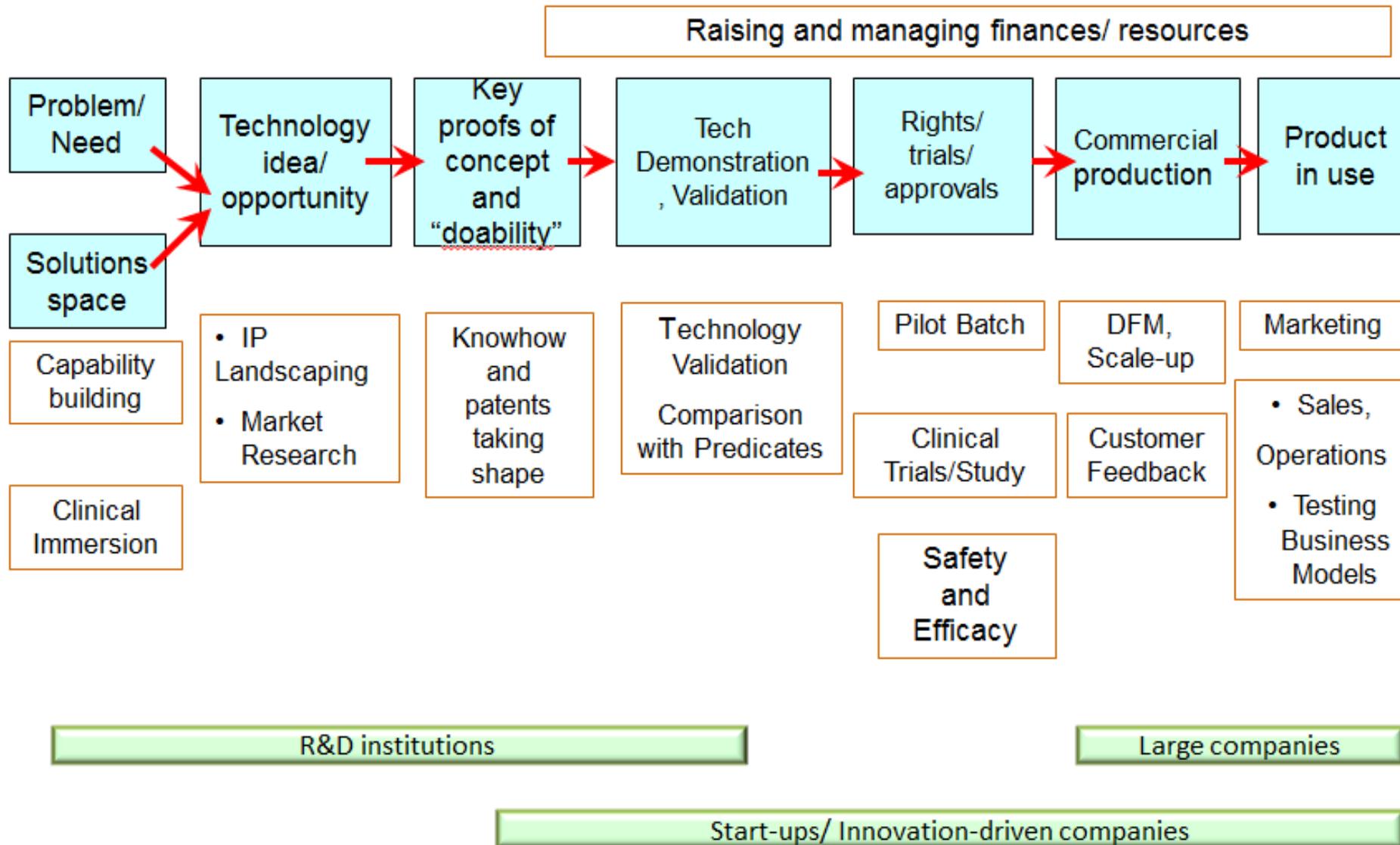
Summary and References

# Journey of Tech-Development and Translation

# Journey of Tech-Development and Translation



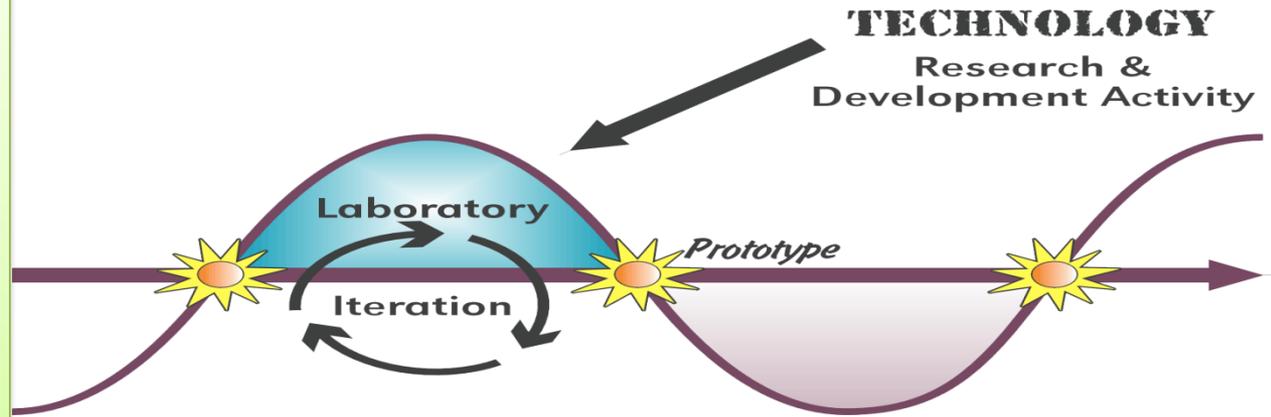
# Journey of Tech-Development and Translation



# WHY TECHNOLOGY TRANSFER ?

## Academic Institute Strengths

- ✓ Excellent Scientific Knowledge
- ✓ Good at Ideation
- ✓ Initial lab. R&D
- ✓ Proof of Principle
- ✓ Preclinical Studies



## **PRODUCT** Research & Development Activity



## Industry Strengths

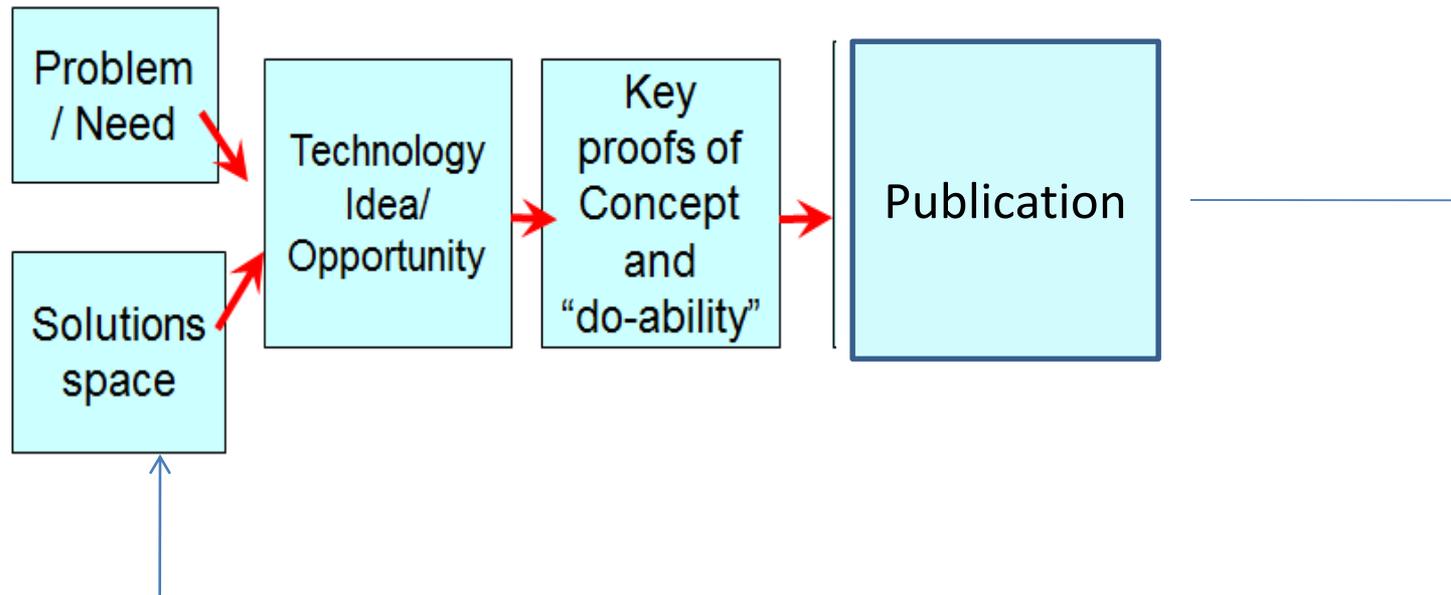
- ✓ Product R and D
- ✓ Clinical Trials
- ✓ Regulatory Compliances
- ✓ Product Commercialisation
- ✓ Market reach-out

**Academia**



**Industry**

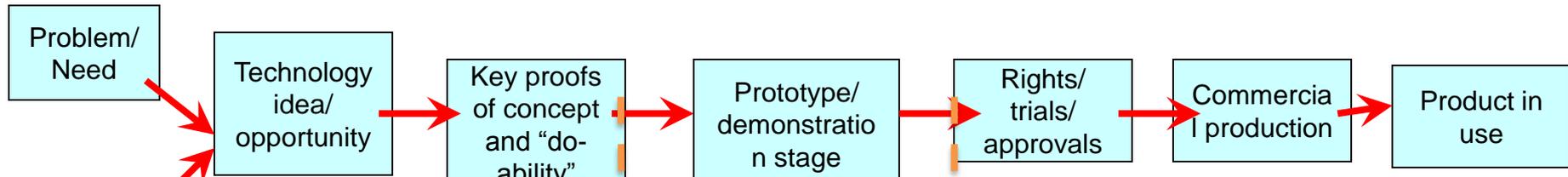
# Journey of Tech-Development.....



# Technology-Transfer??



# Technology Development & Transfer



IP Protection and Licensing



Client-initiated Validated Technologies



# Type of Technology-Transfers

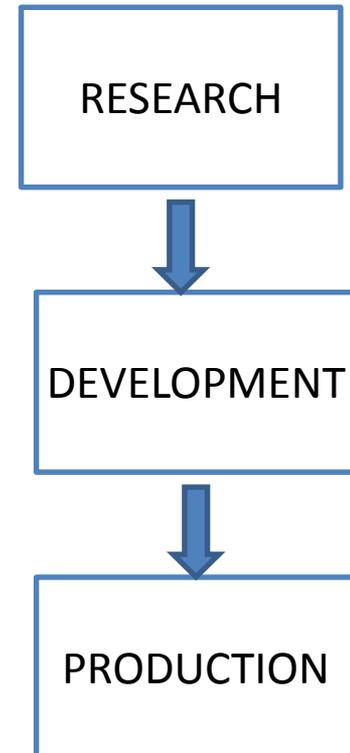
# Type of Technology Transfers

- **Academic Institute- Industry Licensing**
  - Vertical Technology Transfer for commercialisation by Industry
- **Public-Private Partnerships**
  - Government co-financed developments
- **Private-Private Partnerships**
  - Joint Ventures with business fit
- **University-Private Partnerships**
  - Targeted R&D collaboration
- **Technology Intermediaries**
  - NGOs, Government

# Models of Technology Transfer

## Vertical Technology Transfer

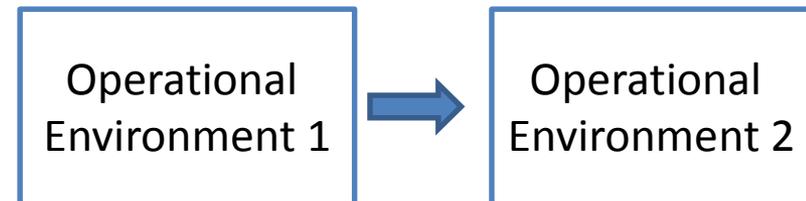
- Technology being transferred from research to development to production.
- Follows the progressive stages of invention, innovation and development, with the technology becoming more commercialised as it proceeds through each stage.



# MODELS OF TECHNOLOGY TRANSFER

## Horizontal Technology Transfer

- Transfer of an established technology from one operational environment to another.
- The technology is already commercialised and the **purpose is to disseminate the technology** and extend its application into other contexts.
- Partnership/JV based
- Long term sustainability



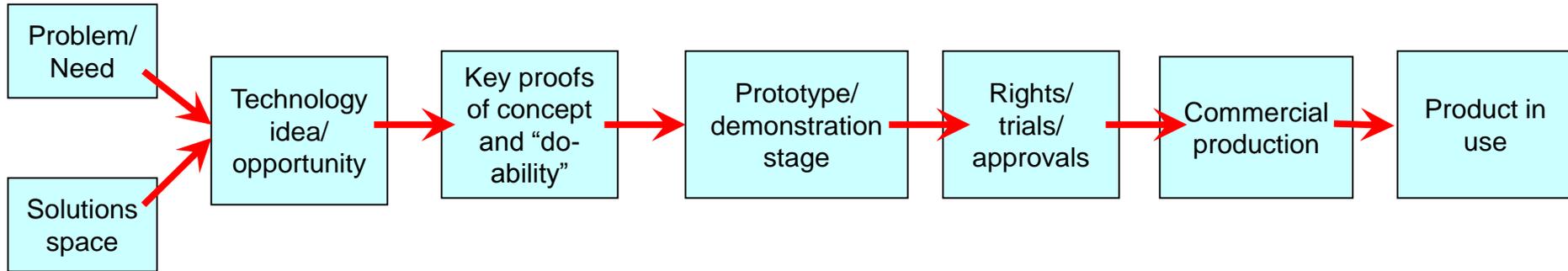
# Modalities for Technology-Transfer-MSME\Large Enterprise



*Tech-Transfer*



# Tech-Development and Translation | | Role of BCIL



## Licensing of Technologies

# TECHNOLOGY TRANSFER

## Technology Transfer

Preliminary  
Screening

Evaluation  
and  
Packaging

Valuation  
and Pricing

Marketing  
and  
Identification  
of potential  
licensee(s)

Negotiations  
and  
Technology  
Transfer

Post Transfer  
Monitoring

# SWOT Analysis

## *Risk Assessment Analysis*

Parameter	Level 1	Level 2	Level 3	Level 4	Level 5
<b>Demand Level</b>	No existing demand	Spurious demand	Low demand	Medium demand	High demand
<b>Customer Segment</b>	Unidentifiable	Identified and growing slowly	Identified and small size	Identified and moderate size	Identified and huge size
<b>Technology</b>	New and not tested	New and tested but with marginal results	New but positive results	Existing and growing rapidly	Existing and well established but not growing rapidly
<b>Product</b>	New and not tested in the market	New and tested but with marginal results	New but positive feeling	Existing	Old product, re-launch
<b>Substitute Products</b>	Numerous and very good	Number fairly high	Few and very good	Few but with old technology	No substitutes
<b>Strength of the patents</b>	Low; Clustered domain of patents	Moderate; Numerous other patents	Moderate; Few patents in the domain	High; Few patents in the domain	Very High; Are key patents

# Drafting Appropriate Agreements

- ❖ Non-disclosure Agreements are used to protect the confidentiality of any non-public information.
- ❖ **Materials Transfer Agreements and Evaluation Agreements** : Used to provide companies with certain rights to use the technology for short term evaluation purposes only.
- ❖ If intellectual property is developed by more than one institution, an **Inter Institutional Agreement is often negotiated to set out the terms** under which the two universities will cooperate to assess, protect, market, license and share revenues from the jointly-owned property.



# Key Elements of a License Agreement

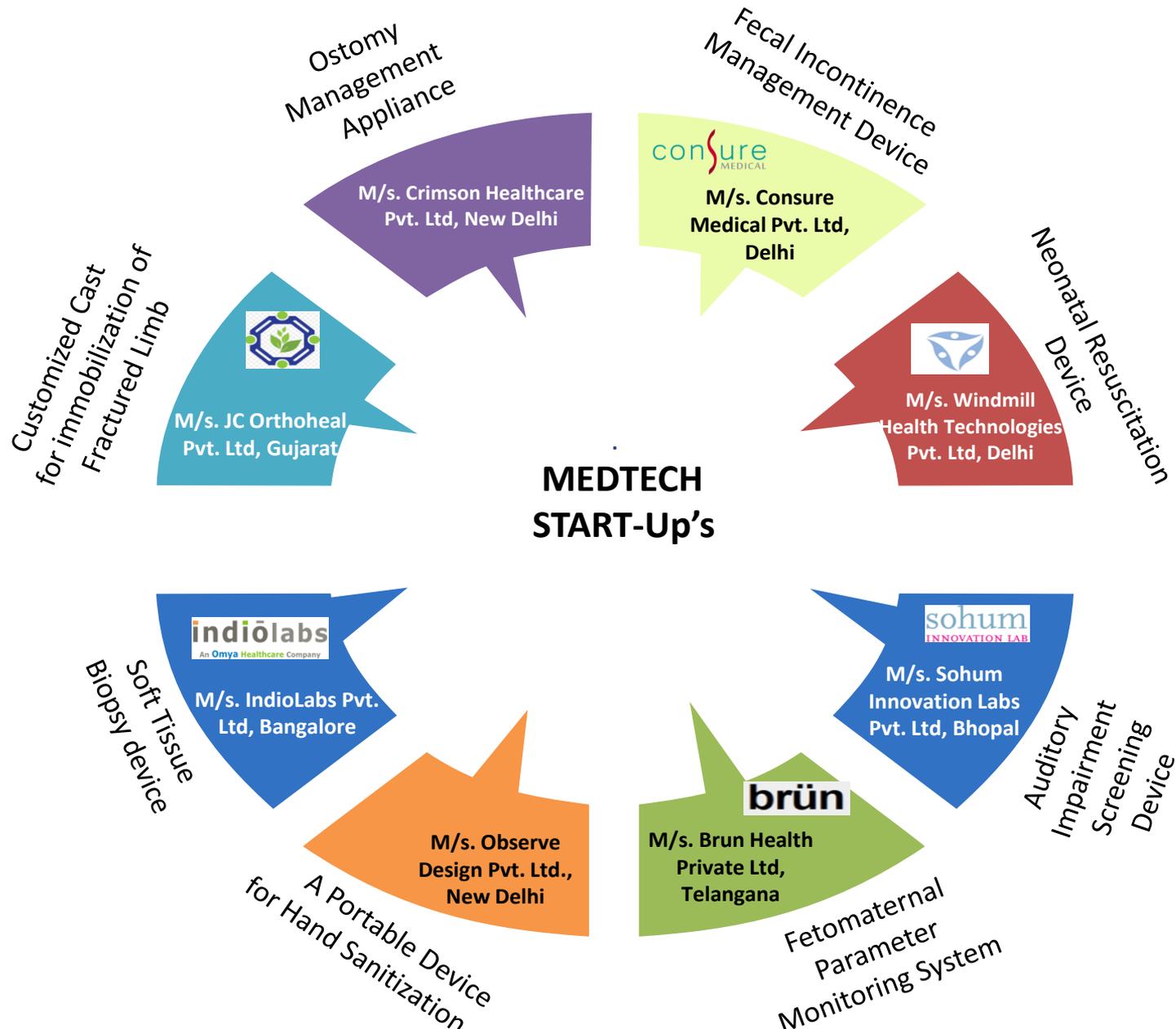
- Parties
- Definitions
- **Grant of Rights**
  - Extent & Scope of licensed rights
  - Right to sub-license
  - Field of Use
  - Territory
- **Term & Renewal**
- **Payable fees**
  - Lump Sum
  - Royalty
  - Payment terms
  - Overdue payment
  - Taxes
- **Parties rights & obligations**
  - KPI
  - Quality control
- **Confidentiality**
- Accounts, records & audit
- **Ownership & Enforcement of IPR**
- Improvements
- **Representations, Warranties & Indemnities**
- Termination
- **Consequences of Termination**
- Miscellaneous provisions
  - Entire agreement
  - Compliance with laws
  - Severability
  - Notice
  - **Governing laws and dispute forum**

# Licensing and Commercialization

## The Start-up Journey

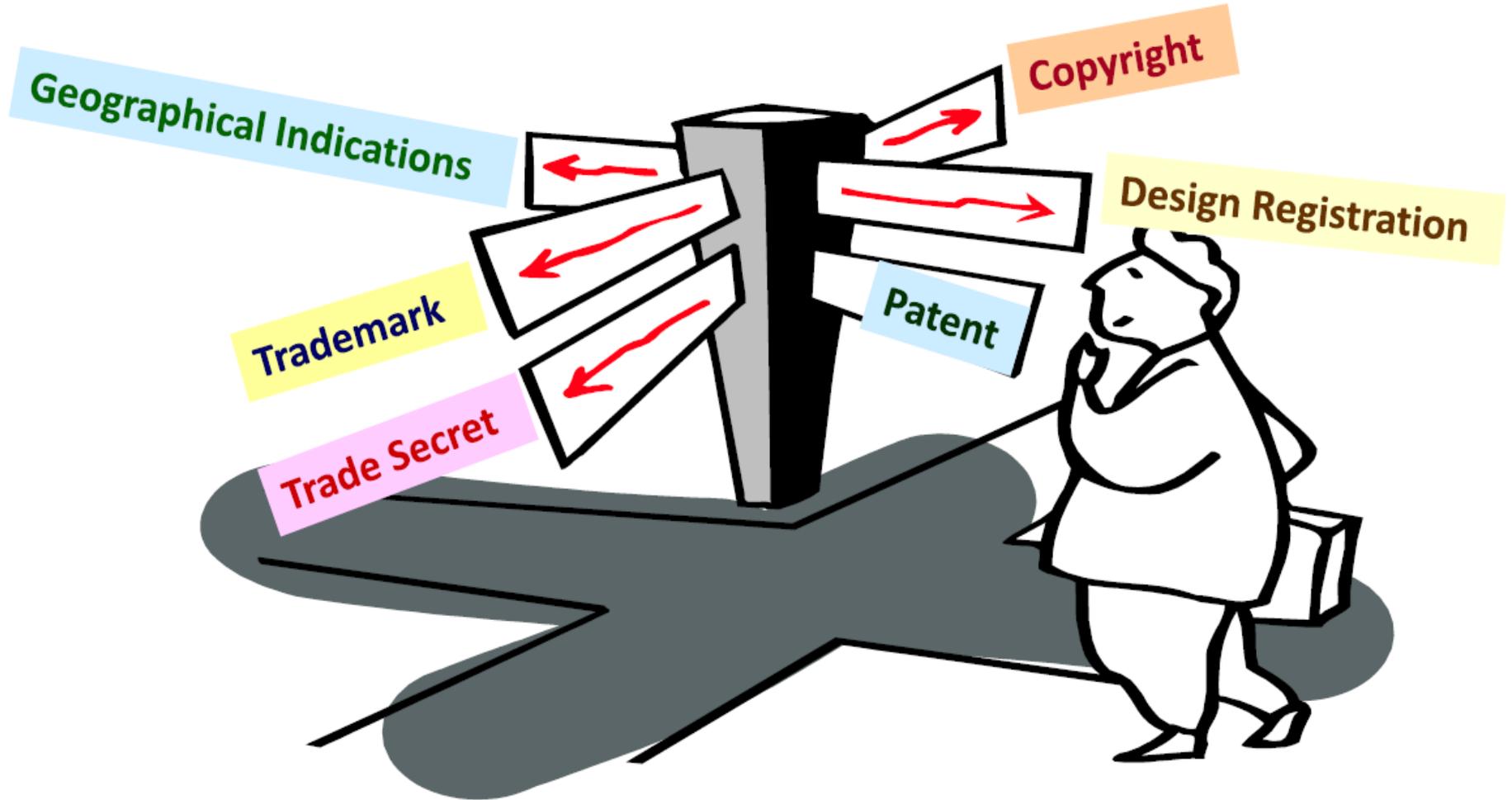


# Experience- Tech-Transfer To Start-ups

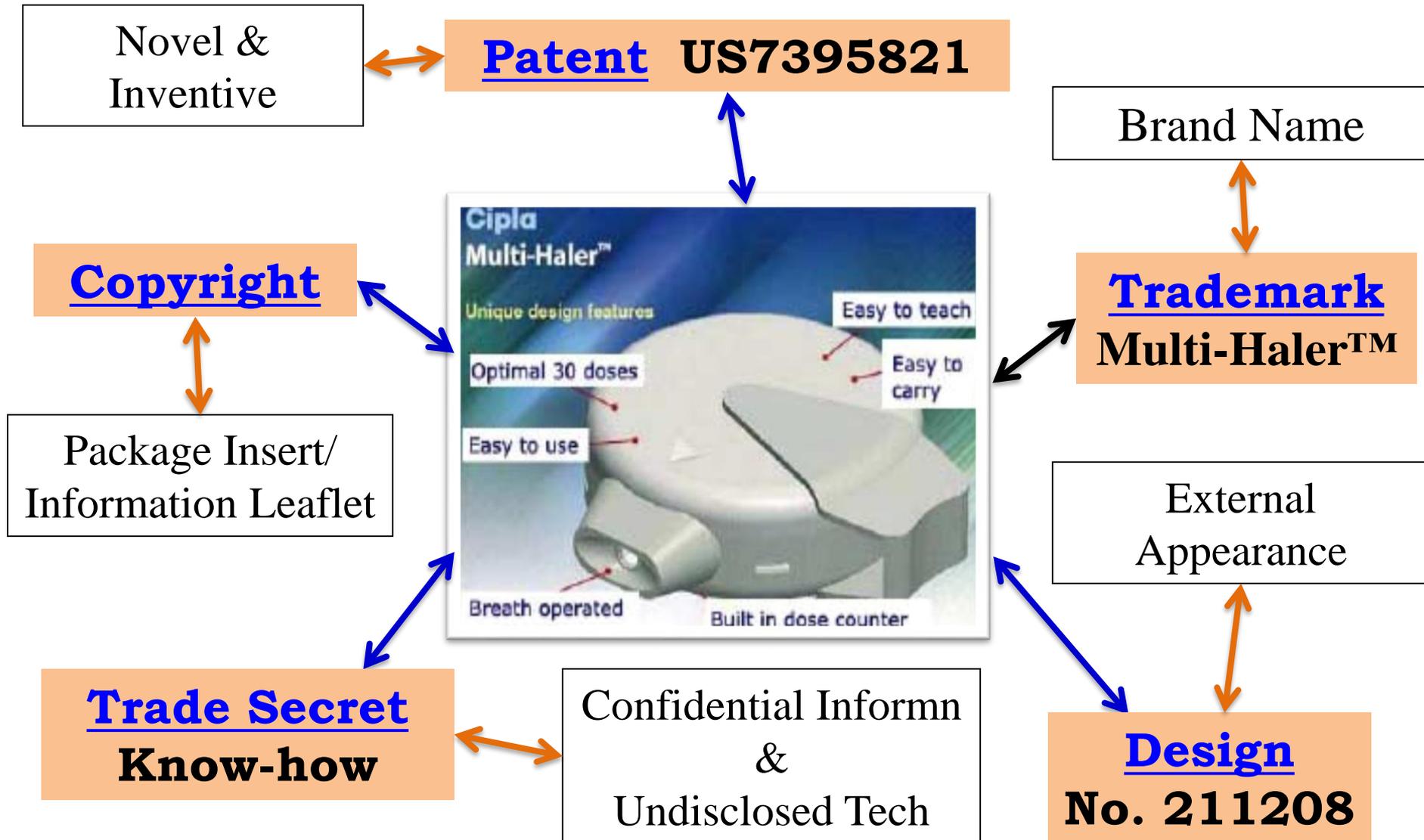


***IP Advisory and Protection  
to Young Entrepreneurs/Scientists***

**I have an innovation .... How do I protect it in the market ???**



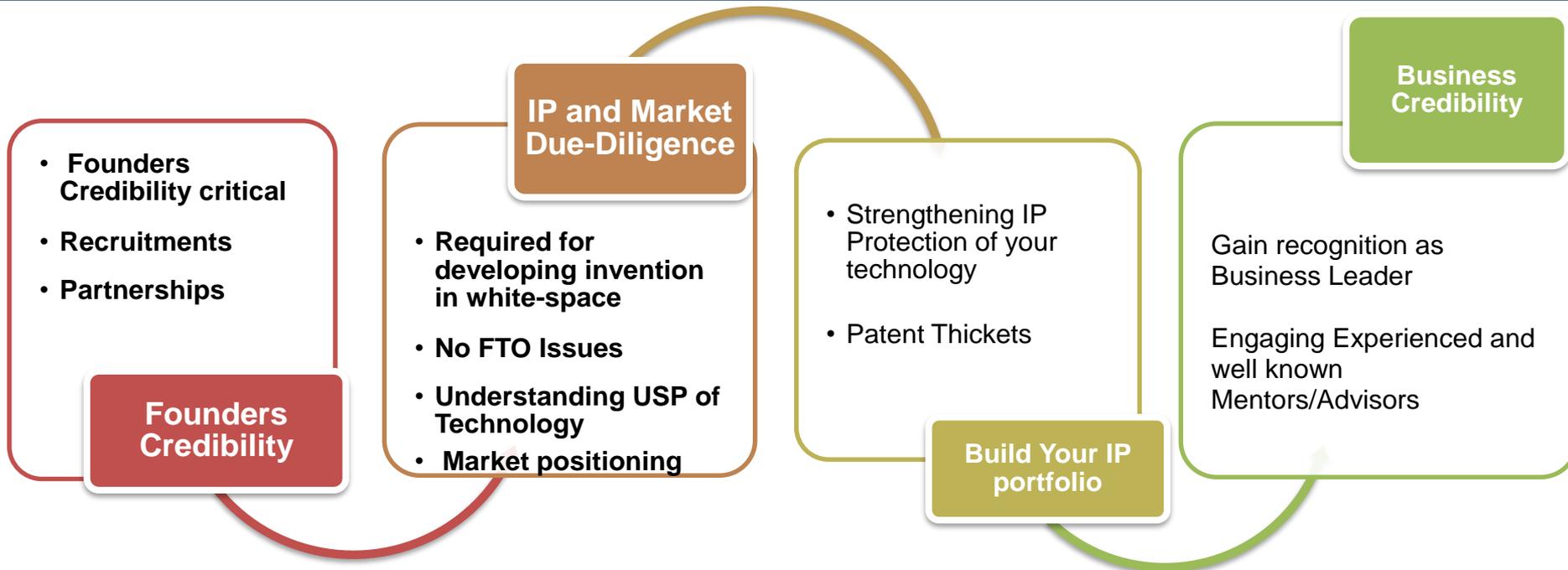
# “IP Portfolio- Invention”



*Catalysing Ideation to Commercialisation*

*The Start-up Journey*

# FI device- Entrepreneurial Journey



## Consure Medical Entrepreneurial Journey

- ✓ Scientific Publications
- ✓ Review Articles
- ✓ Industry Conferences
- ✓ Networking

- ✓ Did FTO
- ✓ IP Landscape
- ✓ Planned to make different product variants at differential pricing
- ✓ Long term use

- ✓ Patents
  - ✓ Industrial Design
  - ✓ Trademark
- Patents Filed
- ✓ USA, Canada
  - ✓ Japan, Israel
  - ✓ Singapore
  - ✓ India, Australia
  - ✓ Europe

- ✓ Engaged Mentors
- ✓ Stanford University
- ✓ Industry Mentors
- ✓ AIIMS Mentors
- ✓ Regulatory Consultant
- ✓ IP Foreign Associates

- Focus on developing Workable solutions
- Optimise Cost
- Number of Parts
- Workability
- Product should have – USP, Competitive Edge

## Commercial Feasibility

## Funding Pitch

- Business Plan
- Identify source of Funding
- Govt. funding, Angel Investors
- Cash Flow Analysis
- Market strategy

- Thorough due-diligence by
- potential customers
- Sub-Licensees,
- Marketing partners
- Maintain open dialogue with advisor/mentors and investors

## Marketing Tie-ups Exit Strategy

## Consure Medical Entrepreneurial Journey

- Consure Product
- ✓ Cost Effective
  - ✓ USP, competitive edge
  - ✓ Regulatory Clarity
  - ✓ USFDA 510K requirements

- ✓ Non-Dilutive Seed Funding:
- IndoUS - INR 2.25Cr;
- Grand Challenges Canada - 50 lacs.
- ✓ Series A: Indian Angel networks
- ✓ Series B: VC's

- Seed the Market Strategy
- Creating Markets
- Product used in India & USA hospitals
- Sub-Licensing/Acquisition being explored

# FI Entrepreneurial Journey

## Handholding and Monitoring

Drafted Milestones for timeline based development and commercialization

Advisory for fund raising

Facilitated clinical validations

Advisory regarding marketing strategies

IP Management



Robust Business Plan

Raised fund to the order of 2.5 Crore for technology development from Indo US Endowment fund and Grand challenges Canada

Technology validated

Patent granted in four jurisdictions

Regulatory approval from USFDA

Europe

USA

Japan

Singapore

Key outcomes

# FI Device- Product Launching



Product Launch In the presence of Honourable Minister of State for S&T Shri Y.S. Choudhary and Secretary DBT Dr.K VijayRaghavan





## Commercial Launch

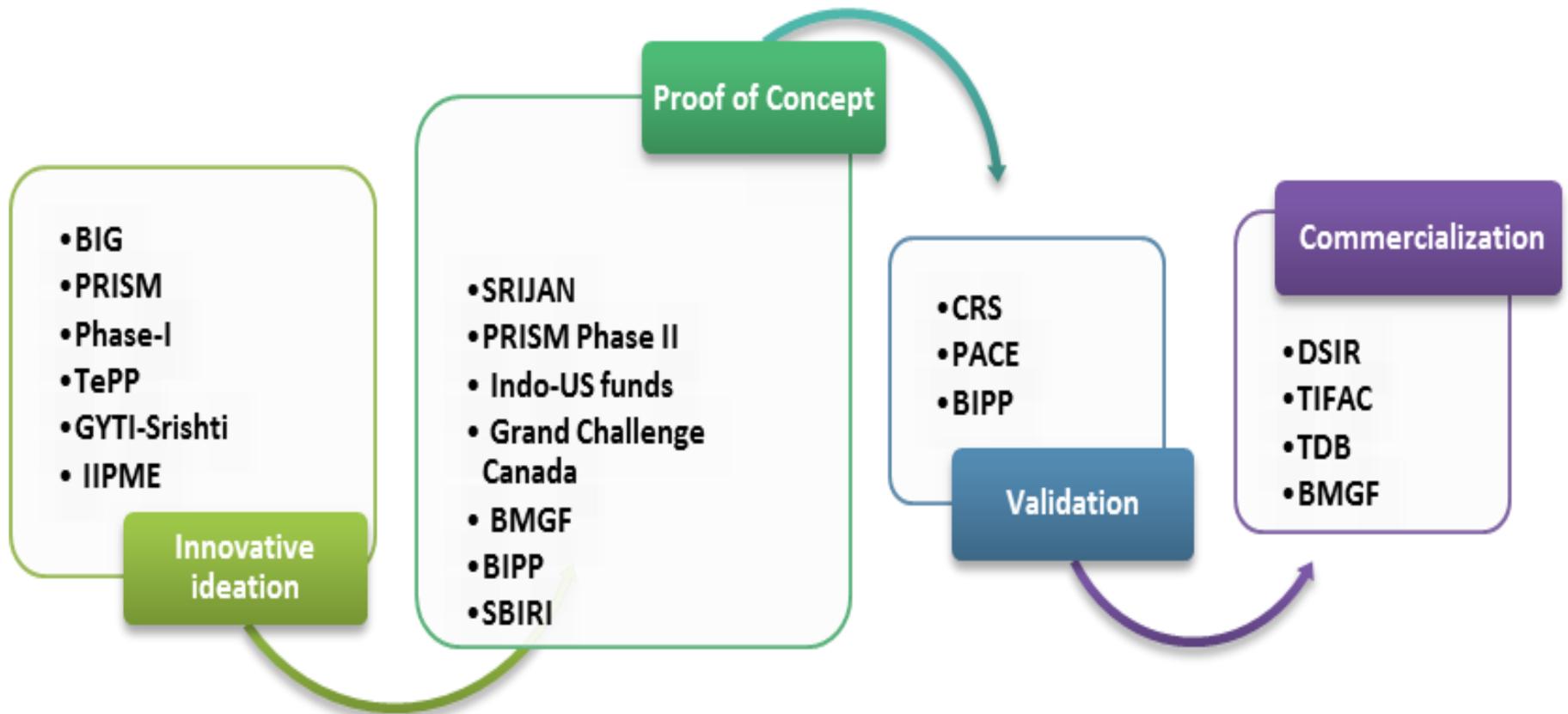
Now available in India and USA

- 600 plus care providers approached
- 50 plus hospitals in India
- 20 plus hospitals in USA
- Home health services
- Distributors
- Govt. Agencies

# Facilitating Fund Sourcing for Facilitating Tech Validation and Transfer

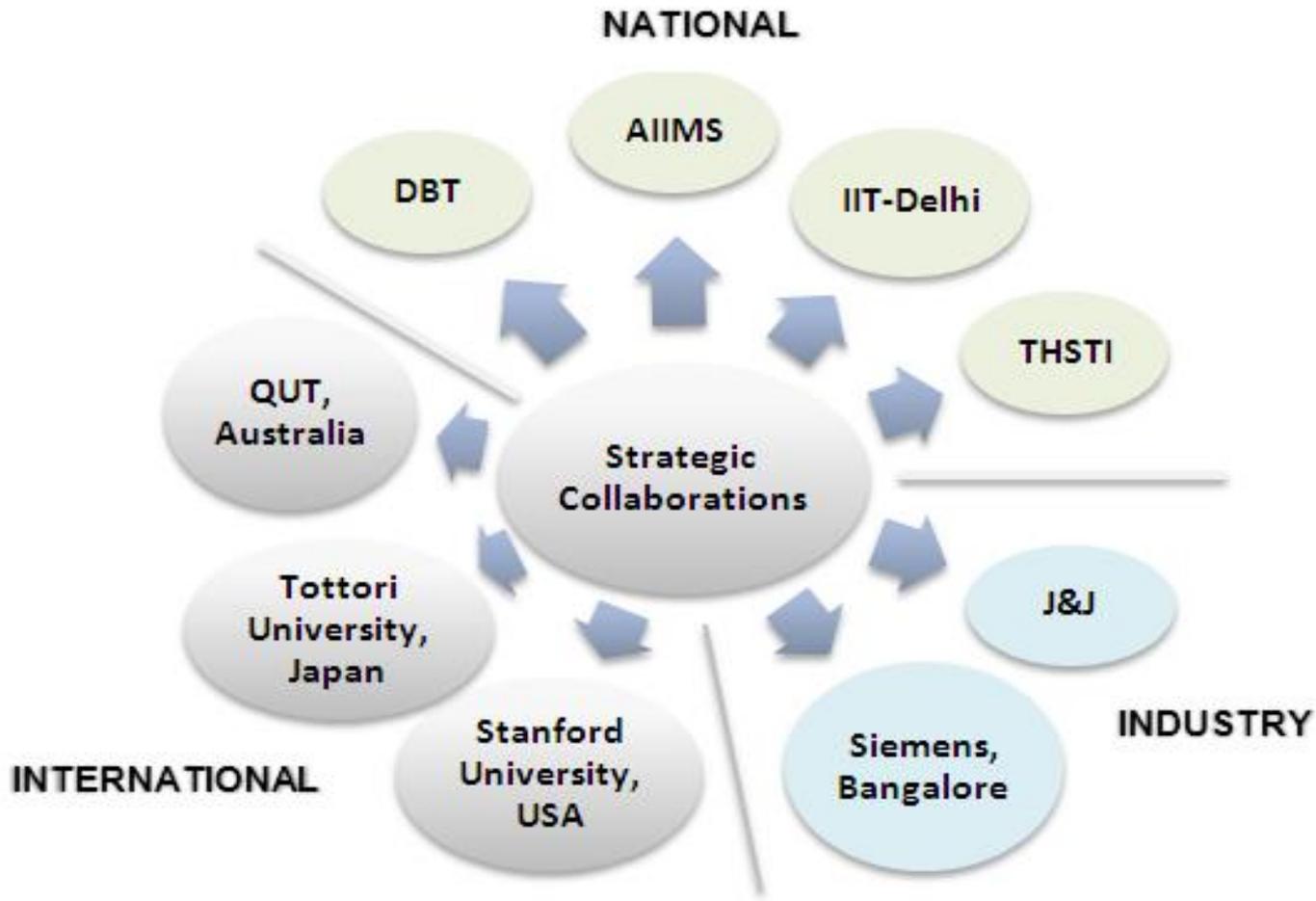


# Funding Opportunities



# Strategic Collaborations for Facilitating Tech-Transfers

# Facilitating Strategic Collaborations, Technology Validation and Transfer





# Driving Collaborations

Understanding the Objectives of the Agreement and preparing the contours

**INVENTORSHIP  
ISSUES**

**OWNERSHIP  
ISSUES**

**RIGHTS TO  
ENHANCEMENTS  
OR  
IMPROVEMENTS**

**DRAFTING  
AGREEMENTS**

**TERMS OF  
LICENCE  
AGREEMENTS;  
EXCLUSIVITY,  
TERRITORY,  
DURATION etc.**

**RIGHTS TO  
SUB-  
LICENCE/ASSIGN**

**POST TRANSFER  
ISSUES –  
INFRINGEMENT/  
TERMINATION/  
ARBITRATION**

# About BCIL and its Best Practices for Tech-Transfer

# BCIL-Snapshot

**INCORPORATED**

**: 1990**

**PROMOTER**

**: Department of Biotechnology,  
Government of India**

**SHAREHOLDERS**

**: All India Financial Institutions**

**Incorporated as a Public Limited Company under the Companies Act, 1956 (Now Companies Act, 2013) on September 14, 1990.**

**Conceived by DBT as an independent Nodal agency to facilitate**

- ✓ **Biotechnology commercialization**
- ✓ **Provide linkages among Central and State Governments; Universities, Research Institutes, Industry, Entrepreneurs, Experts and International Organizations**

# BCIL Linkages

contd...

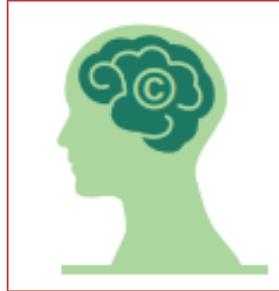


**Networking closely with Stakeholders**

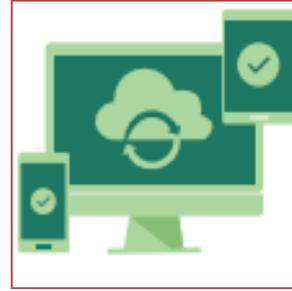
# Services offered by BCIL



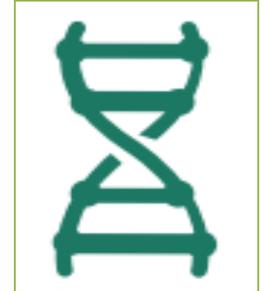
**Project Management**



**IP Management**



**Technology Transfer**



**Biosafety Services**



**Information Dissemination**



**Consultancy**



**Human Resource Development**

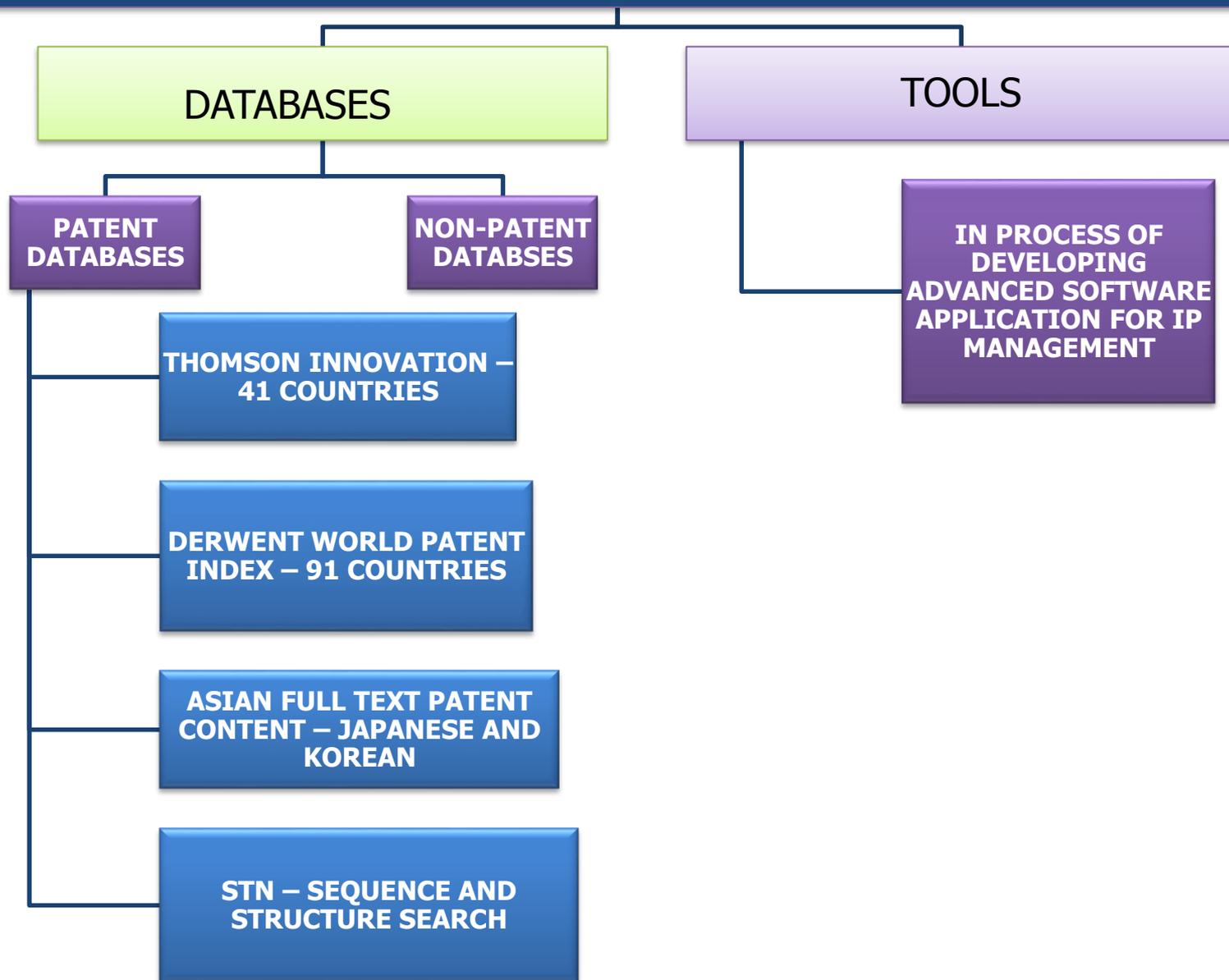


BCIL recently celebrated its silver jubilee event on December 19th 2015, in the august presence of Honorable Union Minister of Science and Technology and Earth Sciences Dr. Harsh Vardhan, Prof. K. VijayRaghavan, Sec, DBT, Prof. Ashutosh Sharma, Sec, DST; Dr. Renu Swarup, Sr. Advisor, DBT and MD, BIRAC, etc.

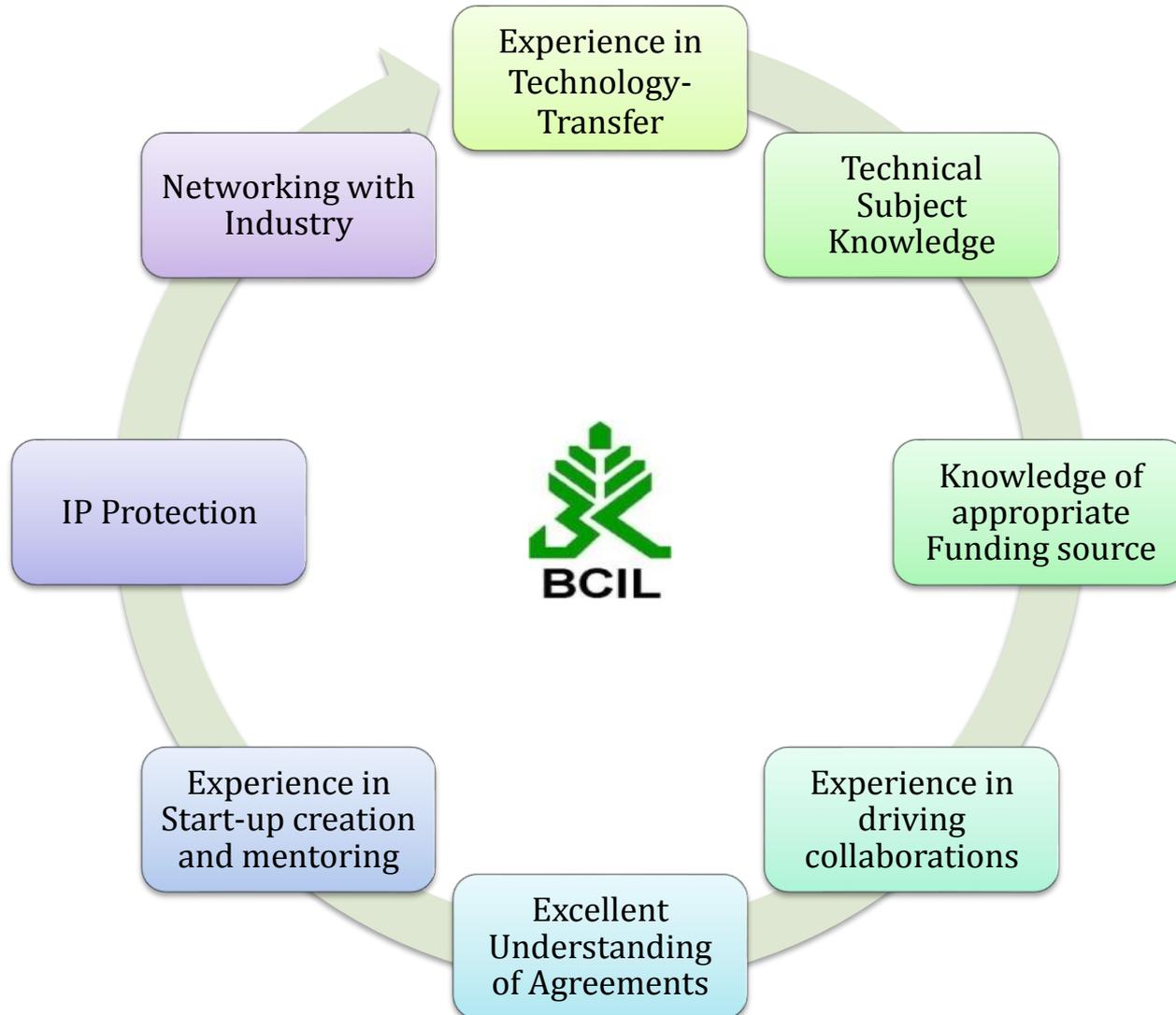


Dr. Purnima Sharma, MD, BCIL briefing Prime Minister Shri Narendra Modi about activities of BCIL.

# INFORMATION TECHNOLOGY TOOLS AND DATABASES



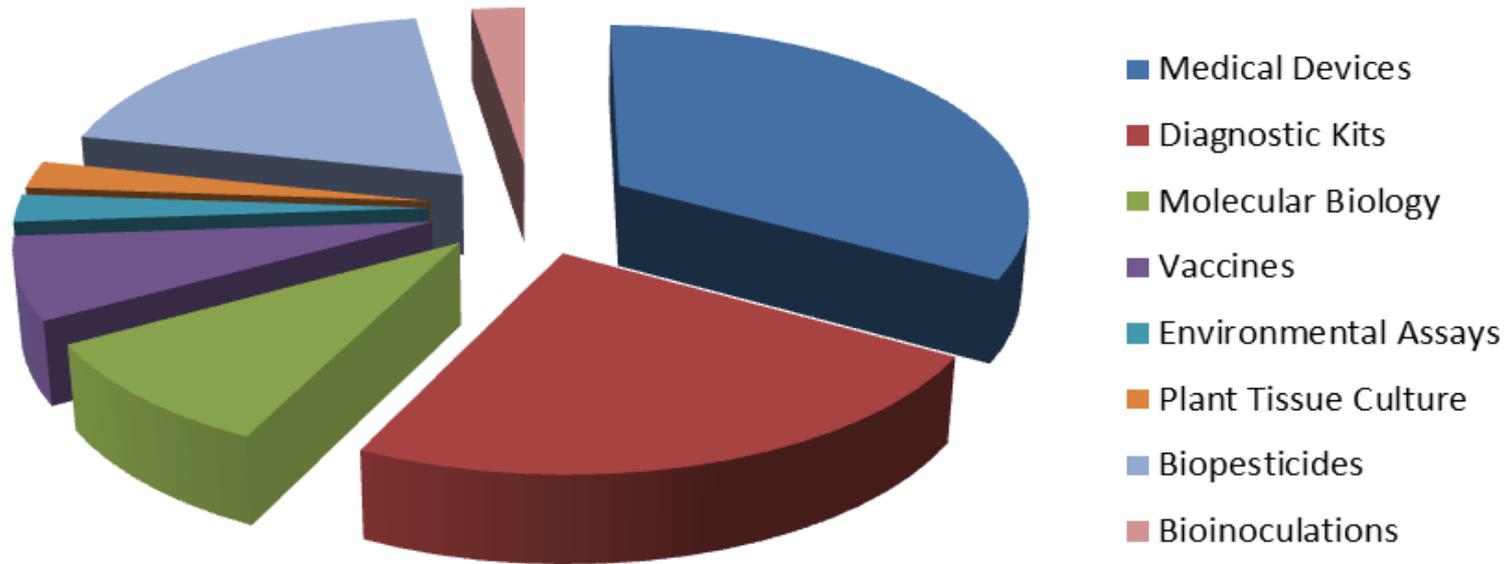
# Strategic Positioning of BCIL



# Technologies-Transferred

*Transferring Govt. of India Funded technologies*

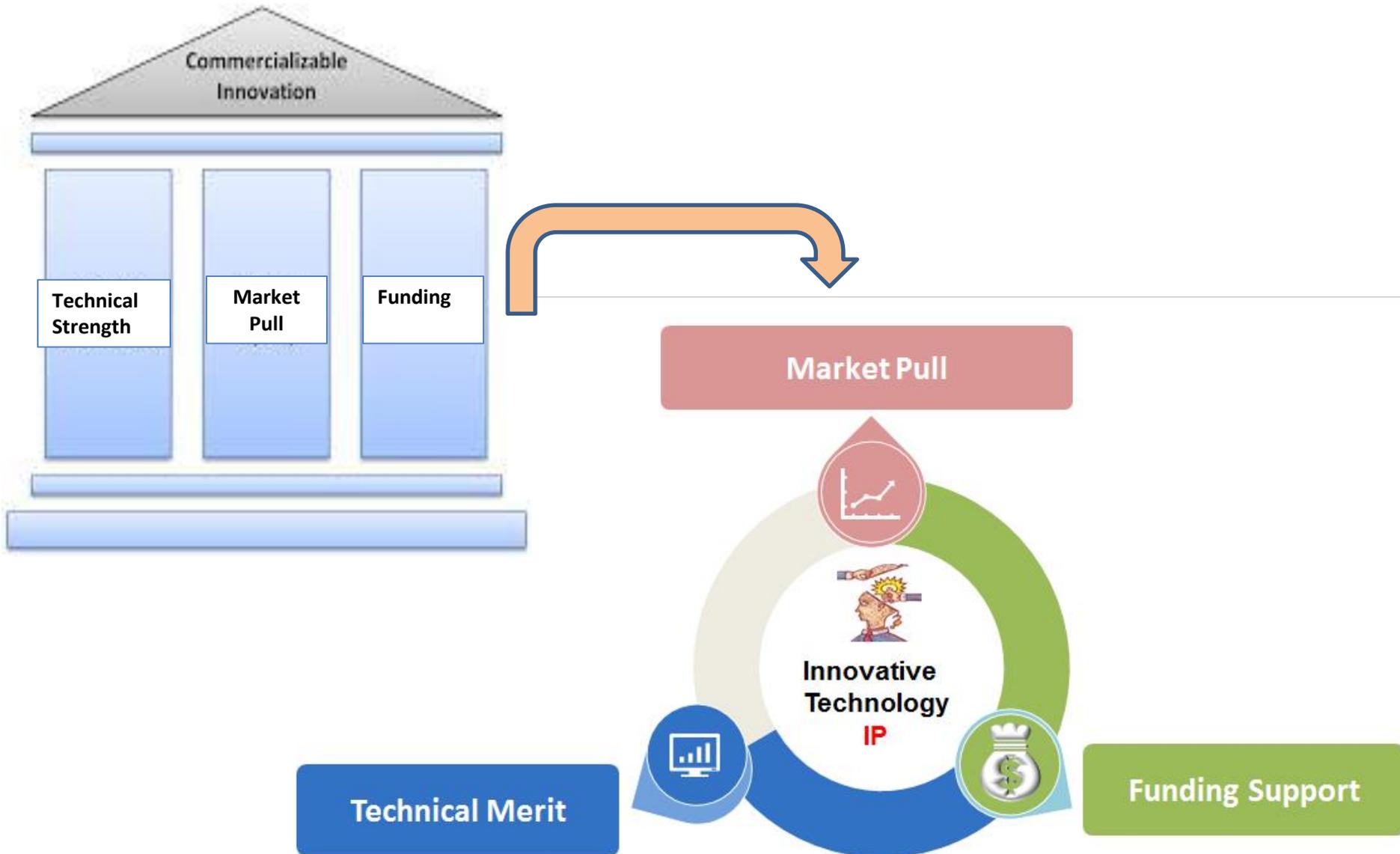
## Sectorwise Technologies Transferred by BCIL



**Technologies transferred by BCIL in various sectors of life sciences.**

# *Summary*

# Intellectual Property – Core of Technology Development



# Journey of Tech-Development and Translation

**Intellectual  
Property  
at the Core of  
Technology  
Development**

**Two  
Essential  
Elements**

**Strategic  
Partnership  
/Licensing Imp. for  
Expeditious  
development and  
Commercialisation**



# Summary

1. Technology Transfers-Immense Potential
2. Smart IP protection essential- competitive advantage
3. Collaborate/License for Synergies to expedite technology development and commercialisation.
4. Bring absolute clarity in terms of collaboration/Licensing and document them through Agreements.
5. File Patents prior to Publications
6. Effectively undertaken-Royalty benefits, New products for public good
7. Delegation/Partner Experienced Organization

ORIGINAL ARTICLE

## Indian medical device sector: Insights from patent filing trends

Suchita Markan, Yogmaya Verma

Project Management and  
Technology Transfer, BCLIL, New  
Delhi, India

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Residential Complex, Saket,  
New Delhi 110017, India;  
[suchitamarkan@gmail.com](mailto:suchitamarkan@gmail.com)

**ABSTRACT**

In this study, patent application filing trends in India for the last decade (2005–2014) were analysed to understand the medical device patent filing profile. As India is the key emerging market with huge market potential, this study was also undertaken to identify the

growth rates. The medical equipment market in India was US\$6.36 billion in 2013, an annual growth rate of 15.5% and has the potential to be a US\$50 billion market by 2025. This fast growth can be attributed to factors such as improved

Leaders' Perspective



## Fostering Medtech Innovations in India

Having evolved significantly in the last decade, the Indian medtech industry is witnessing a high growth trajectory. But due to a number of ecosystem constraints, this industry sector has not been able to achieve its full potential. The recent policy changes initiated by the government to create a predictable and enabling ecosystem are expected to set the ball rolling to make India a powerhouse in manufacturing of medical devices, writes **Dr Suchita Markan** for **Elets News Network (ENN)**.

<http://www.expressbpd.com/healthcare/it-healthcare/a-paradigm-shift-and-the-way-forward/389244/>

<http://ehealth.eletsonline.com/2017/03/fostering-medtech-innovations-in-india-2/>

## References contd..



REVEAL PHENOT  
ACHIEVE CONSISTENT RE  
MINIMIZING VARIATIONS

PHARMA HEALTHCARE COMPUTER TRAVELWORLD FOOD & HOSPITALITY WORLD

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Home / A paradigm shift and the way forward

# A paradigm shift and the way

By EH News Bureau on August 9, 2017

*Dr. Suchita Markan, Asst. GM, BCIL, speaks on the compelling need to foster and deliver efficient healthcare, Asst. GM, BCIL, speaks on the integrate IT into healthcare to foster and deliver efficient healthcare*

Healthcare is the world's largest and fastest growing industry. In India, pu

<http://www.expressbpd.com/healthcare/strategy/from-idea-to-reality-the-funding-landscape-for-healthcare-innovations-in-india/382999/>



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Home / From idea to reality: The funding landscape for healthcare innovations in India

# From idea to reality: The funding landscape for healthcare innovations in India

By EH News Bureau on March 10, 2017

*Dr Suchita Markan, Asst GM, BCIL and Dr Yogmaya Verma, Technology Management Professional, in this article talk about how funding opportunities made available to healthcare enterprises promotes innovation-based technological inventions leading to development of new products, processes, infrastructure development, capacity building leading to economic growth and sustainability*

It is true that nothing is more powerful than an Idea whose time has come. But it is equally true that in today's technology- driven world, the idea needs, *inter alia*, a lot of funds, so that it takes the shape of a socially useful innovative product.



Innovation is a key driver of sustainable and equitable economic growth for any country. When it comes to healthcare sector, adequate funds are indispensable for progressing on the path of innovation. Funding opportunities made available to healthcare

Ad



Google Cloud Platform.  
Google Cloud Platform

FEATURED VIDEO

<http://innovations.bmj.com/cgi/content/abstract/bmjinnov-2016-000131>

Thank  
You

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