

# Technology Transfer - CSIR India Experience

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# CSIR

- ❖ **Council of Scientific and Industrial Research (CSIR)**
- ❖ **India's civilian research and development organization**
- ❖ **Responsible for managing 37 national laboratories**
- ❖ **Processes and technologies in diverse areas ranging from aerospace, biotechnology, chemicals, pharmaceuticals, electronics, environmentally sound technologies, food technology, materials and petroleum processing**
- ❖ **Consistently filed highest number of patents from India**

# Two Tier Structure for Technology Transfer

- ❖ **Central Project Planning and Business Development Directorate**
  - Develops policies, processes and guidelines for utilisation of knowledgebase and technology transfer and supports all the constituent units
- ❖ **Research Planning and Business Development Divisions at laboratories**
  - IP management, licensing, technology transfer and business development

# Research Planning and Business Development

- ❖ **Relay to scientists information on technological and market requirements**
- ❖ **Bring together companies and appropriate scientists**
- ❖ **Arrange for appropriate contract work to be undertaken by organization**
- ❖ **Act as principal commercial agent for marketing institute research and technology**
- ❖ **Maximize returns from contract research and consultancy**

# Research Planning and Business Development

## Activities

- ❖ **Opportunities Assessment**
- ❖ **Market Research**
- ❖ **Techno-economic Evaluation**
- ❖ **Technology and Industry Monitoring**
- ❖ **Assistance in Product and Application Development**
- ❖ **Business Development and Licensing**

# Pre-requisites for Technology Transfer

- ❖ **Market for processes, products and services**
- ❖ **Techno-commercial viability**
- ❖ **Selection of right partners**

# Evaluation of Inventions

- ❖ **What need in the market might this fill?**
- ❖ **Is this market need recognized now or will it have to be developed?**
- ❖ **Is the market minuscule or large?**
- ❖ **How is the market being filled now?**
- ❖ **How does it differ from present solution?**
- ❖ **Is anyone investing in that market?**
- ❖ **How sure are we that this invention will work? Can we demonstrate on a reasonable scale?**

# Evaluation of Inventions

Contd...

- ❖ **Do we have patents? Patentability?**
- ❖ **What is the nature of claims?**
- ❖ **Dominating patents?**
- ❖ **Is the invention too early?**
- ❖ **Rate of obsolescence?**
- ❖ **Regulatory issues? Address them upfront**



# Evaluation of Inventions

Contd...

- ❖ **Application of technology must make economic sense**
- ❖ **Estimate production methods (and costs)**
- ❖ **Estimate the investment of resources**
- ❖ **Companies license 'profits', not 'ideas'**
- ❖ **Businesses do not get carried away by elegance of technical solutions**
- ❖ **The end user must see value in the final product**

## Increase Capacity of Resource Team

- ❖ **Converting invention into innovation requires additional skill sets**
- ❖ **Complement the team with engineers and technology facilitators**
- ❖ **As project moves from one stage to another stage, it requires different kind of leadership**
- ❖ **There is need for downstream product, application and market development**
- ❖ **This requires industrial partners at an early stage**

# What Should We Look for in Partners?

- ❖ **Who is the customer**
  - Identifying targets
  - Qualifying targets
- ❖ **Appreciation of technology and willingness to invest in R&D, take risks and patience to wait for returns**
- ❖ **Technical, financial and marketing strengths to take ideas to the market place**
- ❖ **Past track record (in house R&D investments)**
- ❖ **Synergy of efforts and business**
- ❖ **Time frame and budget**

# Marketing to Partners

- ❖ **Emphasize the benefits of the invention rather than the features**
- ❖ **Describe what the invention does rather than how it does it**
- ❖ **Compare the invention to one or more current alternatives**
- ❖ **Highlight advantages (also prepare disadvantages)**
- ❖ **Describe the market potential**
- ❖ **Tailoring to your customer (fit between Technology and Needs)**

# Communication with Management

- ❖ **Profits**
- ❖ **Cost cutting**
- ❖ **Market share / Expand the product range**
- ❖ **Valuation**
- ❖ **Possibilities of M & A**

# What is Being Transferred?

- ❖ **Paper Licence**
- ❖ **Process Report / Know-how Package**
- ❖ **Demonstration / Prototype**
- ❖ **Engineering Drawings**
- ❖ **Everyone has his own understanding of technology**
- ❖ **Very often leads to mismatch of expectations and delivery**

# Knowledge Spin-off Possibilities

- ❖ Don't expect all great ideas to find a customer
- ❖ Look for underlying skills to capitalize on generated knowledgebase

## Examples:

- Metallocene catalyst for polyethylenes - drag reducers, lube additives
- Bioremediation of PCBs - HCCP biodegradation
- Polyurethane foam making machine

# Lessons Learnt

- ❖ **Know your customer - go to the field and talk to few key stakeholders**
- ❖ **Attention to economics is crucial at every stage**
- ❖ **Dirty your hands at shop floor**
- ❖ **Involve right R&D partners in decisions from early stage**
- ❖ **Commit to hold hands till product reaches market**