



National Science and Technology Entrepreneurship Development Board (NSTEDB)  
Department of Science and Technology  
Government of India

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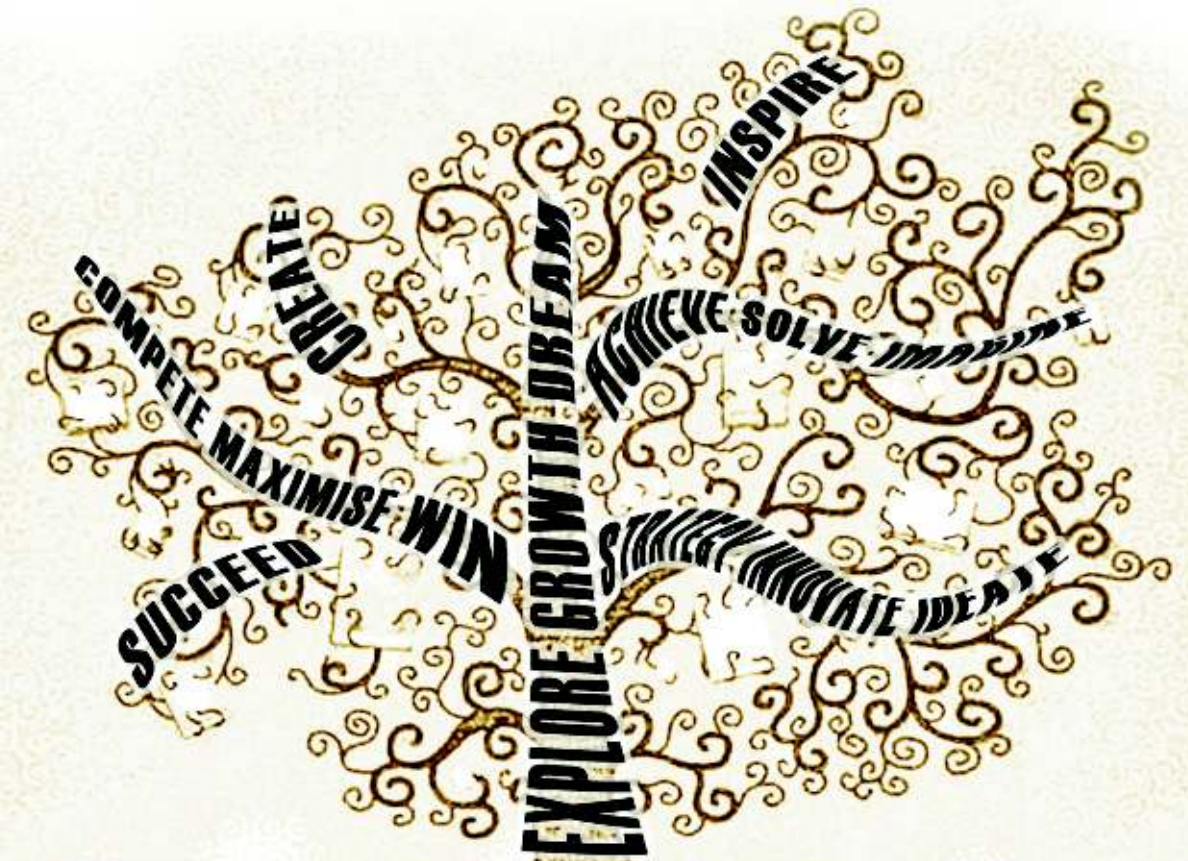
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DEVELOPING ECO SYSTEM FOR  
KNOWLEDGE TO WEALTH CREATION

TECHNOLOGY BUSINESS INCUBATORS

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**Designed and Published by  
COMCUBATOR, MICA EDC**  
Mudra Institute of Communications, Ahmedabad  
Shela, Ahmedabad 380 058, India



**Developing Eco System  
for  
Knowledge to Wealth Creation**



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## Message

Innovation and Entrepreneurship in India is on the rise with highly qualified experienced professionals taking the initiative to set up innovative ventures. There has been a continuous growth of knowledge based industries in India for the last couple of decades which makes India an attractive destination for techno-entrepreneurship and early stage start-ups. In order to give desired impetus to the growth of new enterprises, systematic interventions have been introduced to create the enabling environment. These knowledge based and innovation driven enterprises also harnesses and engage our resources of Science and Technology infrastructure and manpower, productively.

The world wide growth of the business incubators during last two decades to provide enabling environment to new ventures, has benefited many countries. This has also helped in utilizing technology as a means for their economic development. With the growth of technology led start-ups in new and emerging areas such as ICT, biotechnology, nanotechnology, materials, energy and environment etc., incubators have become an integral part of the business support framework to offer critical mentoring and infrastructure support for start-ups.

Incubator's true strength lies in its ability to accelerate the development of young entrepreneurial companies from the idea stage to independent self-sustaining successful business. An incubator should be able to guide, mentor and grow the promising start ups as fast as possible. In the incubator operations, provision of critical business support services is essential, speed is vital and networking support is critical.

The National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology has been steering the national initiative on Technology Business Incubator (TBI). While the TBI and similar initiatives are being supported by the Government, equally important is to create its awareness across the country for wider reach and systematic utilization of the facilities by innovators and entrepreneurs. I am pleased to note that an informative document on TBIs is being brought out by NSTEDB to fill the gaps in the availability of information on all aspects of the business incubation activity. I hope that the information drawn from various sources including inputs from the practicing incubator community would be very useful to all concerned and would be a guiding source for the various institutions implementing TBIs or interested to set up one in near future.

  
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## FOREWORD

The National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology has been instrumental in establishing and overseeing the implementation of Technology Business Incubators (TBIs) in India. While the pre-conditions required to set up an incubator in an academic environment are existent in most of the locations, it requires the alignment of entrepreneurship with the academic environment, building up the entrepreneurial competencies and ecosystem along with a sound vision and a focused approach to make an incubator succeed.

Over the years, the incubation program has been supplemented with number of enabling initiatives to make it more useful and effective. Having a portfolio of over 50 incubators spread all over the country in varied sectors of technology based on locally relevant model, throws up some challenges. As incubation process is a product of interplay and synergies from people and organizations both from public and private sectors, it is very important that each player in this activity fully understands the concept, system, role, responsibilities and the expectations from them throughout the planning, development and growth phases of an Incubator.

The idea to bring out this document on TBIs emanated from Prof. S. K. Joshi, Chairman, National Advisory Committee (NAC) on STEP/TBI which oversees and guides the National Incubator Program of NSTEDB. Dr. Anita Gupta has put in sincere efforts to plan and structure the contents based on our experience of administering the incubation program and supplemented the same with various available sources. Prof. S.K. Joshi took great interest in guiding the team and contributed immensely in shaping up this document. Other noteworthy contributors are Dr. Vivek Chaudhry, Mr. Nalin Kohli and Mr. Rajdeep Sehrawat. The valuable practical inputs from those who are actively involved in managing the incubators particularly Ms. Poyini Bhatt, Mr. R.M.P. Jawahar, Mr. Kunal Upadhyay and Dr.R.Raghunandan would guide the incubators in evolving and formulating incubation systems, processes, refinement and scaling it up further to meet new requirements. Contribution from all those who were directly or indirectly involved in this exercise is also acknowledged. Finally, the credit for printing the document in the present form with its layout and design goes to MICA, which has really made it more appealing and lucid.

The book comes at a propitious moment when innovation, incubation and entrepreneurship is playing a vital role in shaping national economies. It is designed as a base level information source on incubators that will be constantly expanded and updated. It is expected that the contents presented in the book would help institutions to devise a good incubator program, which would enable incubatee entrepreneurs to be successful and incubator to succeed.

(H.K. Mittal)

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## PREFACE

# Charting Routes to Take Entrepreneurial Innovation to the Market

**P**ost liberalization, India has seen a rising level of interest in entrepreneurial and innovative ventures, particularly in technology related fields. Keeping this in view, the Government of India (GoI) has initiated setting up of Technology Business Incubators (TBIs) to nourish and promote these ventures through incubation. The process is aimed at enabling individual and group level technology ventures to contribute towards wealth creation and new job creation in their regions.

The National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology (DST), GoI is the instrument promoting TBIs among academic and research institutions which are interested in setting up such a mechanism to help their students turn their entrepreneurial visions into reality through an incubation experience. NSTEDB had launched this process in the 1990's, and so far has created 53 TBIs in collaboration with premier academic and research institutes with an investment of Rs. 100 crores. The cumulative revenue generated by these incubated enterprises now stands at Rs. 595 crores.

Institutions which are willing to gain from such beneficial TBI experiences, are required to do necessary groundwork before they are equipped to initiate the process of setting up a TBI at their premises. Most of the time, institutions do not have the required conceptual understanding about entrepreneurship,

and about how an entrepreneurial vision needs to be aligned to the overall vision of the institute before initiating such a mega project. Moreover, the basic operational mechanism of a TBI and its activities, the different phases of growth for a TBI and the elements which need to be in place for the success of the incubation process can be tricky questions that need to be answered thoroughly.

This document is set to be the solution to all the above mentioned trick questions, and more! It explains the basic incubation process and its phases, the essential elements of an incubation proposal, its implementation issues and operational challenges. Additionally, it also lists a few good business incubation practices, which can be handy for any institute willing to set up an Incubator.

The evaluation and monitoring of incubator performance are also challenges to be met which are discussed in detail in this book. It also has a chapter on NSTEDB's selection mechanism and funding pattern. Several other new initiatives of the GOI to promote techno-entrepreneurship are also thoroughly covered.

New institutions willing to set up Incubators, as well as those which are already actually involved in managing an incubator stand to gain from this document. The basic aim is to aid the sincere ground work that institutions need to put in before the proposal for the TBI is initiated and submitted to NSTEDB.



## CHAPTER 1

# Innovation-driven Entrepreneurship: Putting India in the Global Map

**D**espite India's phenomenal economic rise and proven dominance in technology-related fields on a global scale, the country has consistently been plagued by disparity in the economic status among its people. One can fathom this from the fact that though there are four Indians in the global list of top ten richest people, there is a large population which lives below poverty line. While the brilliance of India's technical professionals have taken the country to the position of a global R & D hub, there is a large pool of semi skilled and unskilled workforce in various sectors.

**Indian policy makers are faced with the magnanimous task of balancing:**

- ➔ **Skilled manpower and their aspirations**
- ➔ **Basic needs of the manpower at the bottom of the pyramid**

Therefore, despite the obvious advantages of a young talent pool, there have been constraints while forming development policies. Indian policy makers are faced with the magnanimous task of balancing the aspirations of the skilled and talented with the basic needs of those at the bottom of the pyramid.

One ray of hope towards the balancing act shined when liberalization dawned in the horizon in 1991, with the India economy being plugged in to the global network through a major policy shift. Globalization has created opportunities for both skilled and semi skilled workforce, and since then

India is making steady progress in moving up from merely being supplier of human resources to encouraging its talented manpower to start their own entrepreneurial ventures.

The process of being a human resource supplier had started with the migration of unskilled and skilled workforce towards greener pastures, and through simple software development and BPO level operations. Then the trend shifted and moved to higher and more intensive knowledge domains within a very short span of time. Today, India has made commendable progress in terms of growth of a scientific and technological culture. It occupies a prominent place in the world map with regards to its contribution towards knowledge driven products and services, its emergence as a global R&D hub, and the quantity and quality of its professionals related to science and technology.

In order to sustain this growth in an ever-changing, ever-challenging global business environment, the speedy translation of innovative ideas into products, processes and services for the market is the need of the hour. Solely individual talent, hard

**To sustain growth in an ever ever-changing, ever-challenging global business environment:**

- ➔ **An appropriate environment must be created**
- ➔ **A support system needs to be developed**

work and initiatives would not be able to guarantee such speed in the face of tremendous pressure and demands of global standards. For that, an appropriate environment and support system need to be built comprising funds towards initial investment, a much needed enabling environment and networking opportunities.

### Need for Innovation and Entrepreneurship

As mentioned earlier, globalization has created a new world order in which entrepreneurship and systematic innovation play important roles by offering competitive advantage for much needed sustainability. These two weapons can help countries, governments, regulators, and public policy makers balance technological possibilities and limited public resources. While entrepreneurship and systematic innovation hold the key for addressing the challenges, these two tools also require appropriate

Innovation can happen at two levels. First is through research and development initiated and nurtured by the large corporate sector, SMEs, R&D institutions, national laboratories and academic institutions. In India, through all these channels, and especially through institutes like the IITs, NITs, and universities, innovation is encouraged.

Second is through the vision, initiative and hard work of individual innovators who address local problems and find innovative and viable solutions. Innovation at the individual level is harder to sustain, because a well set support system to nurture their ideas and turn them into realities is hard to find. In India, while there are a good number of individual level innovations happening, the systems to productize them through commercial ventures are yet to be fully developed. This is aggravated by the absence of linkages of researchers and innovators with the market, and the social milieu that does not accept failure very kindly. Few examples of Non Resident Indians (NRIs) who have done well abroad in the high growth technology ventures have helped to bridge this gap to some extent, yet the road is far less traveled due to the risks.

Owing to the influence of globalization, and the opportunities thereof, India in recent times, however, has witnessed a spurt in innovation and entrepreneurship. To keep up the momentum, the development process of innovative ideas into products require alignment with the changing business paradigms, market dynamics and prevailing economic scenario.

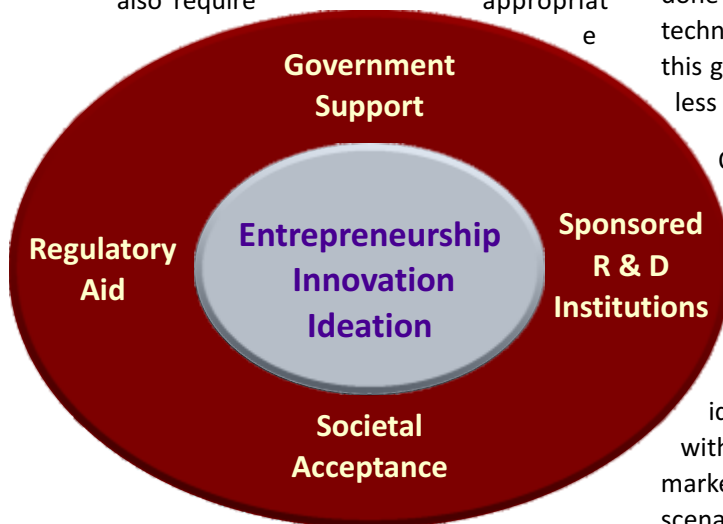


Figure 1 : Support System for Innovation

One of the methods of inspiring the alignment between innovative products and the current market scenario is through setting up of small and medium enterprises (SMEs), which is a recognized practice in both developed and developing economies. Policies supporting these are widely promoted as their role for economic and social development is universally recognized. In most developing countries, micro- and small-scale enterprises account for the majority of firms and a relevant share of employment,

and play a crucial role for economic growth. Support programs at the government level range from technical assistance to tax incentives, from direct supply of capital to regulatory provisions, training, support to innovation and many other types of incentives.

The other mechanism of upping the innovation and entrepreneurship quotient of individual innovators is through the process widely known as “business incubation”.

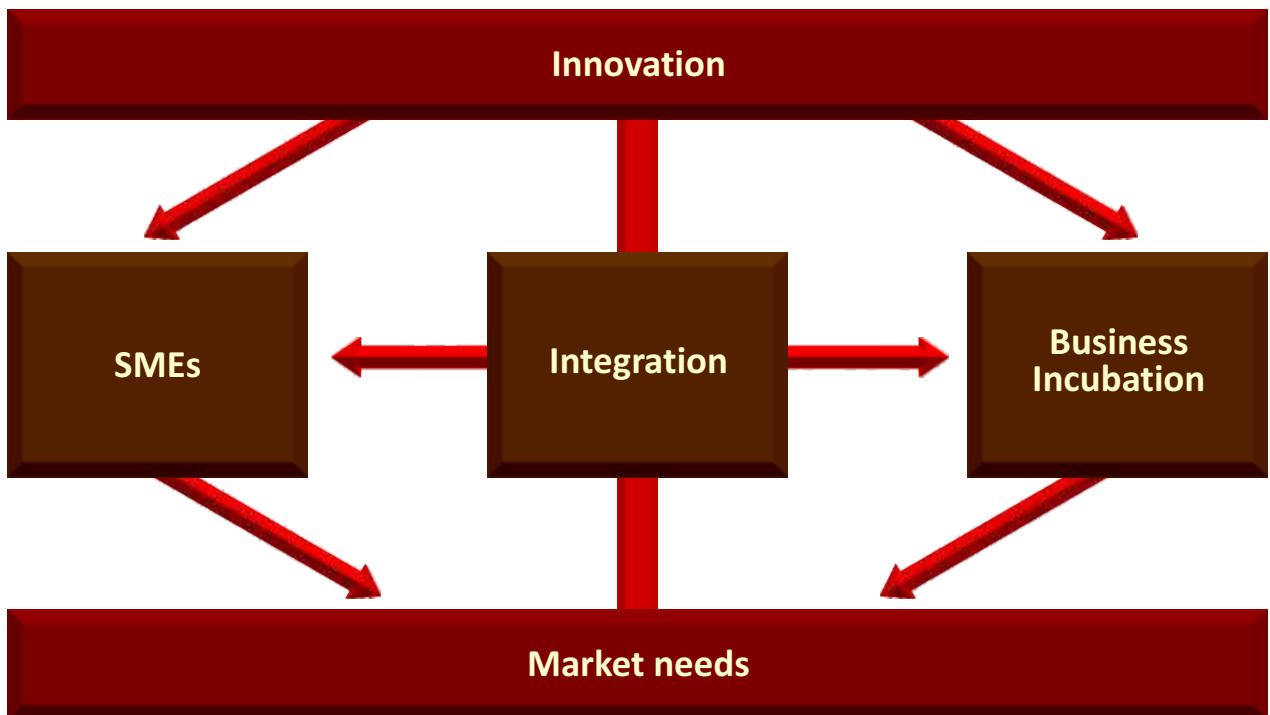


Figure 2 : Linking Innovation to Market Needs

## Business Incubation in India

Business Incubation has been globally recognized as an important tool for economic development and job creation. Hence, NSTEDB which focuses on tapping and incubating the potential ideas and innovations through a well defined venture /enterprise creation process and by effectively utilising requisite expertise, facilities and other infrastructure available within an institution and its adjoining region has initiated TBI as a flagship programme across the country. Technology based new enterprises are typically characterised as high risk and high growth ventures, and as such, they require an enabling environment like TBIs to enhance the prospects of success.

The agenda for incubating such high risk business ventures finds its root in the national agenda marking “Technology based Economic Development”. This agenda initiated the Green Revolution, introduced through new technologies in agriculture to achieve self sustainability in food grains and the White Revolution which introduced new technology and

systems in the Dairy sector which helped India to become a leading producer of milk and milk products, and saw its culmination in the Grey Revolution which through the use of Information and Communication Technology (ICT) has placed India on the world map as a leading nation in this area.

The information technology revolution has paved way for new class of knowledge based technology driven new services and products. This new class of enterprises have made significant impact on the nation's economy and demonstrated entrepreneurial successes in software development, biotechnology, pharma and telecommunications.

In India, technology business incubation efforts are two decades old. In these two decades, incubation has helped weave many inspiring and motivating success stories of young entrepreneurs, and have helped in creating a positive environment for entrepreneurship in general and for incubators in particular.

There are approximately 120 Technology Business Incubators (TBIs) in the country. Out of this, 53 are promoted by the National Science & Technology Entrepreneurship Development Board (NSTEDB) of Department of Science and Technology, Government of India (GoI), 40 are Software Technology Parks (STPs) promoted by the Ministry of Information and Communication Technology, remaining 30 are promoted by other government departments/ banks and financial institutions and private companies.

Although no comprehensive study has been carried out to measure the impact of all the incubation mechanisms put together, but the estimates are that all

**Total Technology Business Incubators: 120**

- **NSTEDB Sponsored: 53**
- **Ministry of Information & Communication Technology: 40**
- **Other Govt. Departments / Banks/ Financial institutions: 30**

these incubators help to graduate about 500 enterprises every year. Out of this number, 60% would be technology based startups.

### **NSTEDB Business Incubators: A Snapshot**

Around 53 Science and Technology Entrepreneurship Parks and Technology Business Incubators have been set up across the country by NSTEDB, DST. The role donned by NSTEDB as a nodal agency for implementing various initiatives and programmes for strengthening and giving fillip to techno-entrepreneurship across the country supports innovation and entrepreneurship in the following ways:

**Technology Intensive Knowledge Based Venture Promotion:** By offering major funding to academic and research institutions for setting up Technology Business Incubators (TBIs) to promote technology based start-ups.

**Entrepreneurship Education And Training:** By offering small funding to conduct entrepreneurship training for students and faculty members

**Bottom Of The Pyramid- Grass Root And Inclusive Growth** By offering medium range funding for establishing institutional support mechanisms like entrepreneurship cells in academic institutions, and for nurturing micro enterprises at rural level.

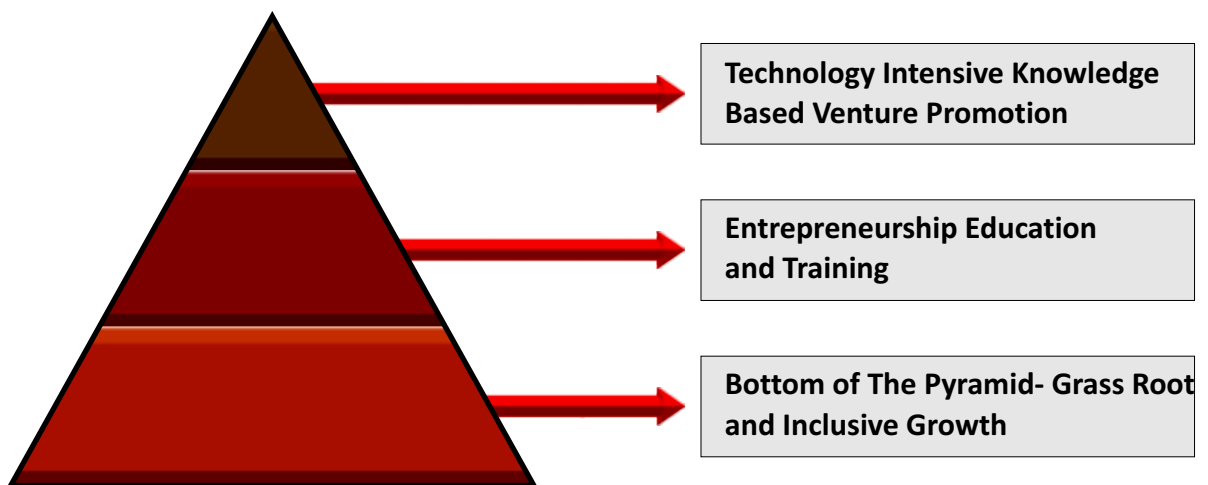


Figure 3 : NSTEDB's Three Pronged Role in Technology Led Economic Growth in Entrepreneurship

Apart from these, recent new initiatives of NSTEDB include:

**Business Plan Competitions:** Funding for organizing business plan competitions. This is seen as a popular and much participated mechanism to spot, recognize and reward student led innovative business ideas

**Seed Support:** Seed support to entrepreneurs being incubated in DST-supported incubators

**Fiscal Incentives:** Such incentives include service tax exemptions to incubators, and also to the incubatee entrepreneurs with certain conditions

Incubators supported by NSTEDB focus on various technology-related areas such as:



Figure 4 : Sectors Preferred for Incubation

Among the above mentioned sectors, Energy and Environment are the priority sectors because of global concerns on depleting energy resources and environmental de-gradation. Incubators

are being encouraged to evolve appropriate incubation programmes on clean and green energy, waste minimization, water conservation, pollution control etc.

## CHAPTER 2

# Understanding Business Incubation

**W**ikipedia mentions Business Incubation as a programme designed to accelerate the successful development of entrepreneurial ventures through an array of business support resources and services developed and orchestrated by incubator management, and offered both in the incubator and through its network of contacts. Successful completion of the business incubation programme increases the likelihood that a start-up company will stay in business in the long term.

Incubators vary in the way they deliver their services, in their organization structure and in the type of clients they serve. Incubators are characterized by some relevant features which include:

- A managed workspace providing shared facilities and a nurturing environment for resident companies;
- A small management team with core competencies;
- Advisory, training and financial services;
- Resident companies up to 10-20 in number. These companies generally graduate out after after 2-3 years of incubation.

### Business Incubation Ecosystem

Incubation needs a favourable eco-system for nurturing and growth of technology based entrepreneurship. If Incubators aim at taking innovation to the market, then those who have the technology concepts, those who have the entrepreneurial capacity to implement these concepts in the market and those who have the funds to finance this exercise must come together under the roof of this system. The

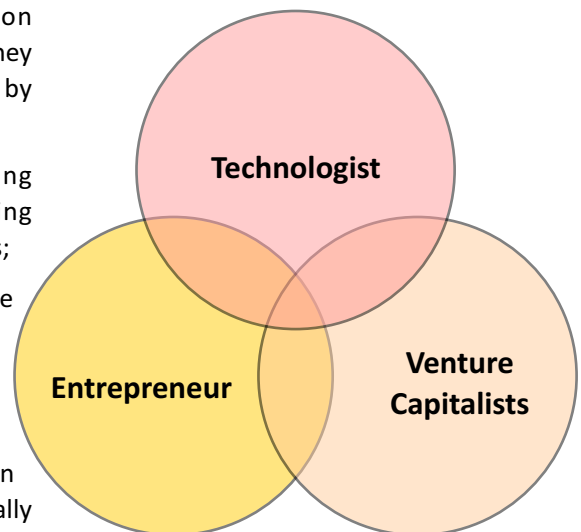


Figure 5 : Incubator Ecosystem

*IIT Bombay provides an ambience for creating new research, technologies and knowledge, and supports technology commercialisation. SINE at IIT Bombay extends the role of the institute by facilitating the conversion of research activity into entrepreneurial ventures. SINE provides anecosystem for early stage technology start-ups, which contributes to social and strategic sectors besides being responsible for generating employments and economic value. Presence of the business incubator on the campus keeps the entrepreneurial spirit vibrant.*

Prof. Devang Khakhar, Director, IIT Bombay.

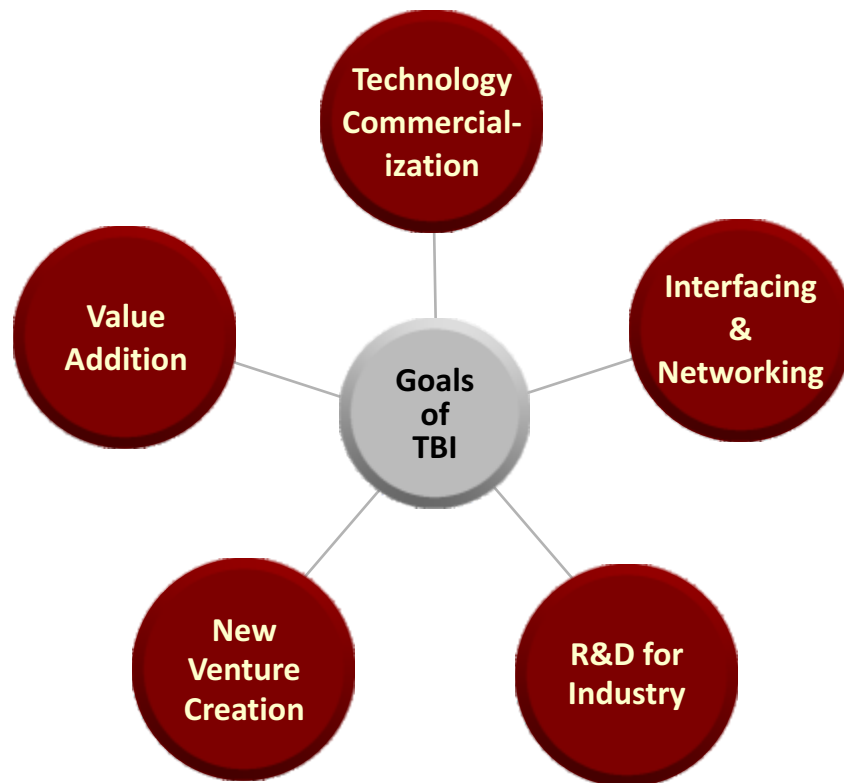


Figure 6 : Goals of TBI

The ecosystem functions well when the three groups involved understand the field of application, that is, have domain knowledge. But each group must look beyond its normal frame of reference. For instance, the technologist must see innovation from the perspective of market prospects, the entrepreneur must look beyond current market conditions to grasp the potential of new products, processes or business models, and the VC funds must be ready to accept higher risks of failure than in a normal financing operation.

Therefore for the institution and the region where the business incubator is being hosted, the presence of the following ingredients is critical for building up a conducive business incubation environment:

- Institutional policy that promotes innovation, encourages entrepreneurial culture and facilitates venture creation

- Host Institution's commitment on infrastructure/ funding for Incubator
- Interest and awareness on technology commercialization and entrepreneurship within target region
- Private sector partnerships for mentoring and marketing
- Availability of venture funding through private and public sector institutions.
- Networking platforms for entrepreneurs

### Goals of TBI

In the Indian context, the TBIs are aimed at achieving the following objectives:

- **New Venture Creation:** TBIs are appropriate tools for economic development as these promote technology/ knowledge-based businesses, culture of entrepreneurship and creation of value added new jobs.



- **Technology Commercialization:** Is another prime area for TBIs, targeted at providing a much needed platform for speedy commercialization of technologies developed in the academic and R & D institutions to reach the end users
- **Interfacing and Networking:** These TBIs would also boost the much needed networking between academic, R & D institutions, industries and financial institutions
- **R&D for Industry:** It also enables small industry to take up R&D activity and the technology up gradation activities
- **Value Addition:** Through its services provided to its incubatees as well as to the existing technology dominated SMEs, TBIs aim at value addition

Business incubation in India has so far taken serious steps towards realizing these goals through various institutional initiatives from the Government of India. The next chapter talks about how such a system can be put in place by institutions through support and guidance of NSTEDB, the government instrument towards promoting business incubation.

## CHAPTER 3

# Starting an Incubator

It is universally recognised that there is no single model or template for the running and structuring of a business incubation environment, since each one of them reflects a unique combination of internal and external factors, thereby making the 'one size fits all' model a challenge.

However, there are ways through which institutions can identify how to initiate an incubator suiting their circumstances. This Chapter will help readers study and understand the feasibility and planning issues that underpin the establishment of a new incubator.

- Select the type of business incubator
- Develop a business plan
- Identify the services to be offered, and ways to raise necessary finances
- Plan in detail towards identification and selection of start-ups to be incubated
- Set up a governance structure and generate human resources - in-house and through contract

The information covered in Chapter 5 helps to navigate this decision-making process and assists in planning the incubator through various development phases.

### Feasibility Study and Planning

A feasibility study is an important and necessary step to design the business incubator and assess whether or not, and how an incubator might be feasible. This process starts with developing an understanding of the target entrepreneurial needs, and thereby identifying that starting an incubator is the right response to the market conditions in the existing environment. Subsequent to this, one may need to:

### Key Components of a TBI

There are a number of catalytic factors that encourage successful incubation of start-up companies practicing new technology. These include, among other things, support system from government, policies and framework for the growth of business incubators and enterprises, financial systems that support venture creation, operational framework of the incubation

***VITTBI has a synergic fit with the mission of the University by providing Students & Faculty ample opportunities for innovating and venturing. Our University is really proud of the role played by the TBI.***

- Mr.G. Viswanathan, Chancellor,  
VIT University, on setting up a TBI in the University

centers, value added services that the incubators provide to enterprises, and local environment that is open to innovation and entrepreneurship.

The five key components which are needed for a TBI are as follows:

- **Partners:** Persons and institutions engaged in promoting and managing the incubator.
- **Value Added Incubation Service Package:** Array of value added business support services to enable systematic translation of innovation/ technologies into a viable market proposition through creation of new companies.
- **Networks and Linkages:** Means by which an incubatee is linked with relevant resources, people and organisations. Nurturing businesses and entrepreneurs is a multifaceted activity and requires appropriate linkages and networks with academics, industry, management experts, financial institutions, legal experts, funding agencies, entrepreneurs, incubator community, local, state and central government and others.
- **Outcome:** A tangible and a primary outcome of an incubator is a successful incubatee who is able to sustain/ grow in the market.
- **Impacts:** Measurable impact of an incubator includes generation of wealth both for incubatee and incubator, returns to the government in the form of taxes (income /service tax) and creation of new jobs.

*I was planning to set up a gamma irradiation processing facility and could not get help from anybody. Then I came across the advertisement of agri-business incubator at ICRISAT which is incubating such start-up ventures & then I joined the incubator*

- Mr. Kaginalli, M.D., Gamma Agro Processing Pvt. Ltd.  
on the support received from ABI, ICRISAT, Hyderabad

An incubator combines the key components as illustrated in Figure 7 in the next page.

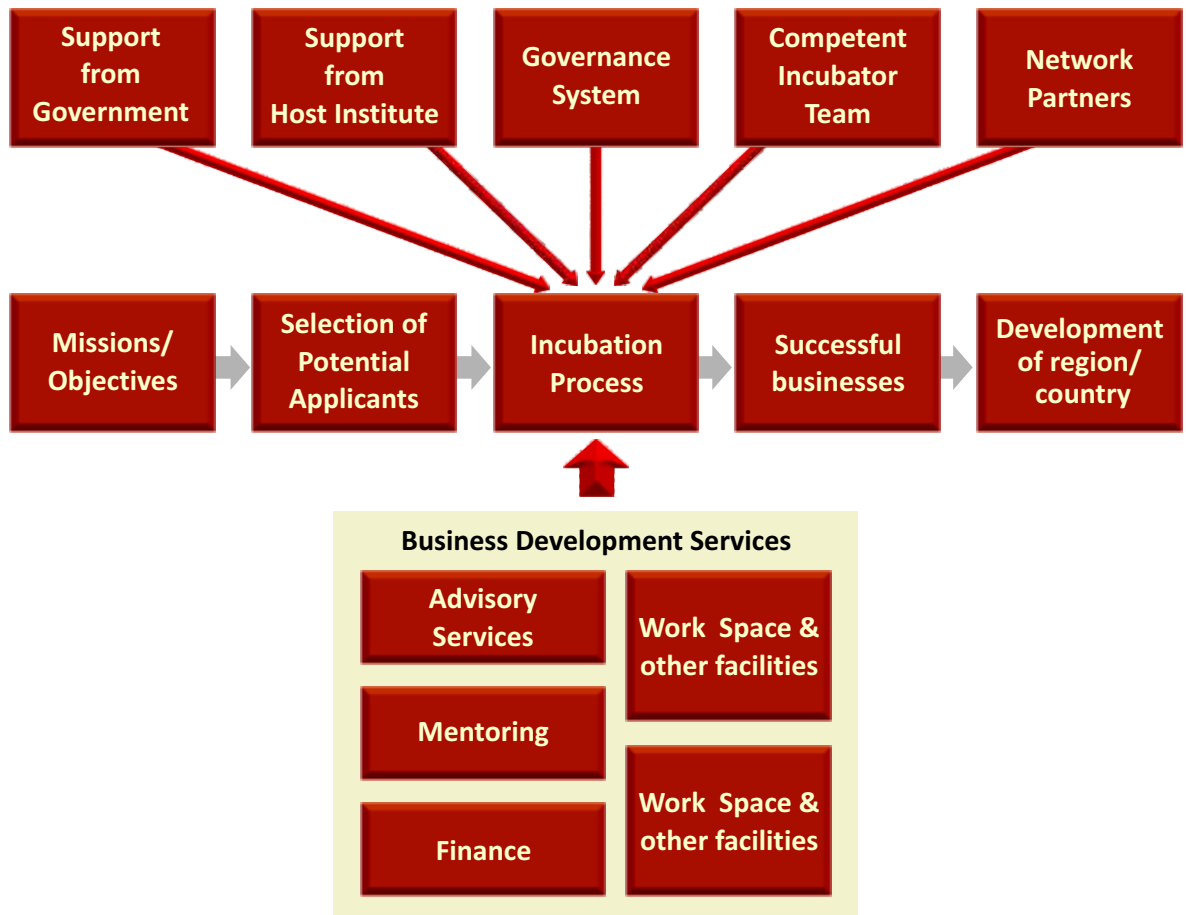


Figure 7: Incubator System

The development phases are discussed in the next chapter.

## CHAPTER 4

# Development Phases of TBI

**A** Technology business incubator goes through three development phases:



Figure 8: Development Phases of an Incubator

The table (Table 1) given below captures the development phases of an incubator:

Sr. No.	Development Phase	Key Elements	Time span
1.	Preparatory	Appointing a nodal person from the host institute, enhancing preparedness to host TBI, preparing a good TBI proposal with focus, vision, mission , milestones and viable business plan	6-12 months before formal launch
2.	Development	Flow of funds from funding agencies, creation of infrastructure and facilities, good governance and management systems, core incubator team, incubation process and value added incubation services, flow of incubatee entrepreneurs, networks and linkages, sustenance of incubator operations	5-7 yrs after formal launch
3.	Mature	Good incubation environment, consistent flow of incubatee entrepreneurs, visibility in the region, financially sustainable incubator, expansion and scaling up, hand holding of new incubators	This phase comes after the development phase and should continue for long

Table 1 : Development Phases of an Incubator

After attaining maturity, a TBI should continue flourishing and help the growth of entrepreneurship in the region. Incubators are generally classified as “not for profit” type, however, it is expected that they become self-supporting within a period of five years or so.

Each of these phases is discussed in detail below:

### **Preparatory Phase**

The initial period, termed as Preparatory Phase of a TBI may last for six to twelve months. During this phase, institutions gear up for setting an incubator through a series of selection process and brainstorming sessions. One major requirement to be met during this phase is the TBI proposal.

It is also essential to enhance the preparedness at the institute level for hosting the TBI. An institution should clearly chart a path towards orienting its faculty members towards understanding market dynamics, undertaking innovative projects, and also industry interaction for problem solving. Enthusiastic faculty members willing to devote time and efforts towards these activities should be made part of the think tank, which will steer efforts to inculcate and nurture innovation and entrepreneurship through technology incubation. Such endeavours should not merely be restricted to students and faculty members from the host institute, but also should extend to the academic community and institutions in the neighbouring region. Organising a few workshops and brain storming sessions are helpful in creating awareness

about the utility and benefits of incubators to the community including students and faculty, local industry, business experts, entrepreneurs, banks and investors, and other local and government agencies.

Such orientation would lead the host institute towards achieving the basic requirement of the preparatory phase, i.e., identification of a nodal person to steer the incubator proposal. The person should have conceptual understanding of the TBI and be able to prepare a sound TBI proposal.

### **How to Prepare a Good TBI Proposal**

For preparing a good TBI Proposal, the interested institutions have to go through a period of planning, discussion and feasibility study. In this period, they also need to analyse issues related to organising finances, exploring markets, and structuring an organizational plan for the management of TBI. Some of the key aspects which are crucial and need to be incorporated in the TBI proposal are:

- Incubation strategy and business model
- Policy for identifying management team and governance structure
- Targets and milestones for the next five years
- Selection mechanism for incubatees
- Exit policy for incubatees



Figure 9: Components of a Good TBI Proposal

The following section briefly touches upon all these components of a proposal for TBI.

**a) Incubation Strategy and Business Model**

The initial requirement of a good TBI proposal is to detail out an incubation strategy and a feasible business model for long term sustenance.

The incubation strategy needs to emphasise the conducive conditions to facilitate development of start-ups. Some of the elements of this strategy require to be dynamic in nature so as to include the changing needs of the market and the incubatees over a period of time. The essential features of an incubation strategy are:

- Emphasise on the high quality of services proposed to the incubatees
- Clear indication of identified sources from which a steady flow of incubatee entrepreneurs would be generated
- Ensuring of quality of business development resources available to incubates, which are subject to up gradation whenever and wherever needed.
- Clearly identifying the nature and availability of resources related to the key areas of the proposed TBI
- Modern and adequate facilities and infrastructure for creation of competitive products
- Quantifiable targets set for admitting and graduating incubated entrepreneurs

- Indicate the requirement of a feasible business model, with methods of revenue generation through various related business activities clearly identified

Overall, an incubation strategy should include a clear plan as to how the TBI would continue its activities once the subsidy funding from the government is reduced and ultimately stops in 5 years of time frame.

### **b) Policy for Identifying Governance Structure and Management Team**

During the various phases of development, a TBI may encounter a series of problems related to:

- Technology transfer issues in case a start-up is based on research / technology development carried out within the institute.
- Intellectual property (IP) issues which broadly involve the aspects of ownership rights, mechanism for IP transfer and IP valuation.
- Implication of legal and commercial liabilities
- Institutional issues relating to conflict of interest in the host institute arising from sharing of faculty time, use of infrastructure and so on.

A competent and active governing board is very important for providing directions for the success of an incubator. Most

incubators in academic environment will have academicians (in some cases also government representatives or past government officials) on their board. If there is no industrial experience, they bring very little business or commercial understanding to the incubator. Also, in many cases, they do not have time to spare for incubators. It is always important to have right blend of academicians, successful entrepreneurs, industry professionals, investors and consultants on the board, who are able to spend time to provide guidance to the incubator.

Also, the success of TBI derives largely from the intelligence, imagination, insight and entrepreneurial skills of the management team. Therefore for managing day to day incubator operations, a management team with the right set of people (specifically with industry experience) is also critical. The manager/team has to be able to balance the needs and expectations of its incubatees, the TBI management board, stakeholders, financiers and others involved in the incubator. Most incubation management teams also monitor progress of their incubatees during incubation period.

Depending on the focus of the incubator, the manager/team may also need specialist skills and experience (e.g. technical, legal, intellectual property, fund management, etc.). These specialised services and expertise could be available to incubatees on outsourced mode, by utilizing a pool of external expert/mentors.



### **c) Targets and Milestones for Next Five Years**

TBI applicants are required to project year-wise targets and milestones for the next five years. These include:

- Year-wise number of incubatees to be admitted
- Number of incubatees to be graduated yearwise
- Projected cash inflows,
- Number of events related to entrepreneurship
- Number of technologies transferred from the host institute to incubatees,
- Generation of new employment

### **d) Selection Mechanism for Incubatees**

For a resource-intensive activity like business incubation, it is vital that proposals from prospective incubatee/incubatees are assessed and only those that will meet the objectives of the incubation environment and will benefit from it are selected. Most incubators do this by operating a selection policy. The selection policy differ from one incubation environment to another, depending on the mission and overall objectives of the incubator. Generally incubatees admitted to an incubator should have the following characteristics:

- A Sound idea and a relevant business plan, pertinent to the core strength of the incubator

- Commitment and integrity of the promoter(s)
- Potential for growth
- Willingness to accept and follow mentoring/advice, and
- Capacity to meet targets
- Willingness to pay for the facilities and services

An Incubator should develop a legal framework with the incubatee companies which includes commercial agreements, facilities agreement, agreement for consideration, indemnification and disclaimer.

### **e) Exit Policy for Incubatees**

The aim of a well-designed incubator should be to bring the incubatees to a level where they are no longer dependent on the services of the incubator i.e. they have outgrown the incubator's capacity and can stand on their own feet. Subject to satisfactory performance, business incubators typically keep the incubatees to a maximum of three years. Exit/Graduation terms should be formalised, and all incubators should discuss their graduation policy with incubatees at the time of entry. However, there should be scope for review of the policy throughout the incubation period.

An exit policy might include:

- Setting a maximum time limit (e.g. two/three years)
- Stepped up rent (gradually increasing each year)

- Incentives to exit
- Gradual reduction of subsidies
- Non-performance

Exit criteria should be incorporated in incubation agreements and should be shared with the incubatees.

### **Legal Status of TBI**

The legal entity for TBIs may be in the form of a not-for-profit registered society or a registered trust or a section 25 company and the host institute can decide the legal status of their TBI. Each of these two forms has their own advantages and disadvantages and differs on formation and compliance requirements.

Most of the incubator applicants being from academic background have little awareness about implications of legal entity that needs to be created for managing incubator and therefore host institute may seek legal advice and help from experts and incubator networks. An incubator proposal should include host institution's decision regarding the legal status of TBI.

NSTEDB recommends for a separate legal entity for TBI because of following reasons:

- Flexibility in administrative and financial management
- Managerial/decision-making agility.
- Less possibility of institutional bureaucracy
- Provision of tax incentives/exemptions

### **Development Phase**

In the early years after launch, an incubator will primarily focus on ensuring the flow of funds and creation of sustainable businesses. As incubation environments mature, they are able to build specialized services and resources that can be offered to incubatees. Incubators will also be concerned with issues such as availability of space for their graduating incubatees. However, this is also a period in which incubators should anticipate a decrease in the government /other subsidies/grants. Therefore, in the development phase, the emphasis on developing a sustainable business model comes to the fore.

Once the incubator has been launched, there follows a period of development, refinement, and growth. The development phase can span 5-7 years after the launch. The core elements of this phase include the development and growth of:

- I. Business development services
- II. Infrastructure
- III. Incubator Team

### **Business Development Services (Incubation Process)**

The incubators should provide the following services:

- Mentoring
- Networking for Business Development
- Innovative Finances
- Technology and Innovation

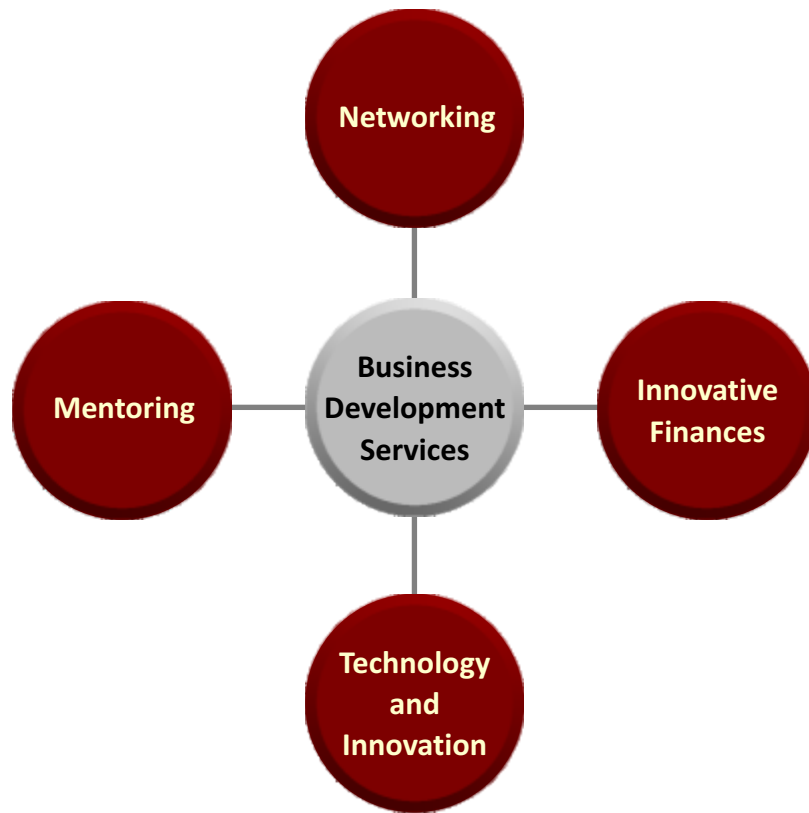


Figure 10: Business Development Services

### **Mentoring**

Incubators should provide mentoring or access to mentors (i.e. an experienced and trusted adviser). It is desirable to have a right mentor. The mentoring could be provided by TBI managers or by external experts whenever needed and be suitably compensated by cash or equity. Some of the sources of mentoring are domain area experts, middle and senior level executives, successful entrepreneurs and investors.

The mentor networks are quite active in the business hubs and metropolitan cities but their real support and impact at the next level of towns are yet to be felt. One

of the missing pieces is the ways and means to actively engage and reward these mentors suitably in a transparent and fair manner.

### **Networking for Business Development**

Networking is important as it gives incubatees access to a wide range of professional services (legal, accounting, taxation, IP), business support, skills, markets and customers, and finance. Networks might include banks, business angels, venture capitalists, business links, customer-based networks, local authorities, higher education

### Technology and Innovation

Incubation environments should also act as a gateway to knowledge as well as new ideas/technologies. Not only does access to knowledge benefit the incubatees, helping them to become more innovative to accelerate their development, but it is also of benefit to the incubation environment itself. An incubation environment that is at the cutting edge of new ideas and technologies will be more attractive to potential incubatees, funding streams (for both the incubator and its incubatees) and other important business development resources. Good incubators often become the focus for innovative activity in an area and act as a catalyst for businesses emerging from the research base.

### Infrastructure

Incubators need to provide a package of competitively priced basic facilities and infrastructure to allow incubatees to concentrate their efforts on building their businesses. Some incubators will also need to provide specialist facilities and equipment (e.g. wet labs in case of biotech incubators)

Examples of basic facilities required by most incubatees include:

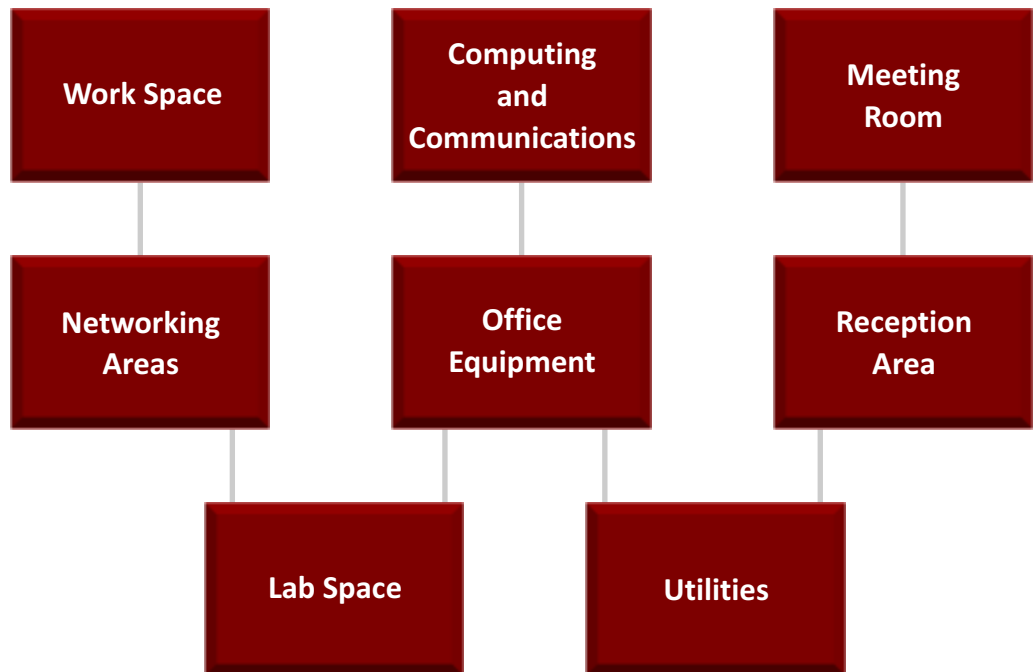


Figure11: Basic TBI Infrastructure

The space, infrastructure and facilities provided should be tailored to the needs of incubates, and yet be flexible enough to meet their changing needs over time. The infrastructure needs to be able to keep up with technological advances. Most incubators aim to offer a range of different sized units for this reason.

*We have received excellent support from ABI in the form of technical support from ICRISAT scientists, help on biosafety guidelines, lab facilities, and glass house in order to carry out our biotech research”.*

- Dr. Dwarkesh Parihar, Bioseed Research [I] Pvt. Ltd. on ABI, ICRISAT, Hyderabad

The incubator should offer a well-maintained reception area to create a 'business-like feel ' and offering the right business 'address', which is important to many incubatees (high-tech businesses, for example, often prefer to be located on good institutions/science parks in modern, purpose-built innovation centres). Visibility is also important if the incubator is to act

as a flagship or catalyst for entrepreneurial activity in an area. In order to enhance its visibility, TBI should be well-signposted, the incubator should be promoted within the wider business support community, adequately published (e.g. a web presence, adverts, media) and be a part of incubator association for peer group networking and interactions.

*SINE plays an important role in mentoring the startups besides providing necessary infrastructure support in initial stage of a company. An entrepreneur friendly ecosystem that includes high quality infrastructure, key professional services, business network of mentors, advisors, investors helped in shaping business model of the company, and also raising equity investment. SINE helped us in converting a small business entity into a scaleable professional business venture.”*

- Gagan Goyal, Co-promoter, TRI Techno solutions Pvt. Ltd. on TBI Support from IIT Bombay

### **Safety and Security**

Many of the incubators have incubatees with valuable ideas, intellectual property and expensive equipment. In order to protect these assets, incubators need to be

safe and secure and incubatees need to trust that their interests are being protected. Examples of good practice in this area include: 24-hour security; adequate procedures for protecting physical and intellectual property.

### Incubator Team

Success of an incubator depends on the quality and competence of the dedicated incubator team available on a full time basis. Different incubators will employ different numbers of staff depending on issues such as funding, size of incubator, scope of business support activities, sector focus, and stage of development. For an incubator of 5000-10,000 sq. feet, it is generally accepted that there needs to be a small team for making up the incubator management. These include an incubator director, an incubator manager, a receptionist and an administrative assistant. While forming the incubation team it is appropriate to emphasize on functional requirement which includes the following:

- Business Development and Networking Facilities
- Infrastructure Management
- Financial, Tax-related and Regulatory Compliances
- General Administration and Secretarial Support

However, at the outset, it is likely that there will be a shortfall and an individual may have to perform number of different roles and tasks. It is therefore vital that the staff is multi-skilled and is able to undertake most of the core tasks at some time or the other. The following skill sets are of key importance:

- Business Experience
- Entrepreneurial Attributes and Ability to Run the Incubator
- Networking Skills
- Ability to Empathise and Communicate
- Ability to Influence (key decision makers)

### Mature Incubation Phase

After successful completion of the development phase, a TBI enters the mature phase. Most incubation management teams in this phase would like to run a high quality, flexible, 'full service' incubation environment that is sustainable on its own, generates wealth, can be a catalyst for economic development, and is creating successful, sustainable ventures. Therefore the incubator management puts great efforts not only in consolidation but also in scaling up the incubator operations and in providing more value added services to attract good incubatees.

A mature TBI may develop additional/specialist services and facilities to meet the particular needs of their incubatee entrepreneur base e.g. seed fund, patenting facility etc. The mature TBI should become more specialized in their core area of strength. Many develop a group of former incubatees as part of the business support networks for existing incubatees. Recently, concept of "partner"

incubator system is also emerging in which some of the successful mature incubator may start formal mentoring and hand holding other new Incubators/institutions in the preparatory phase of their incubation program, helping them to overcome initial implementation hurdles. Some incubators at this stage also align with international agencies and incubators to have exchange of ideas/incubatees, helping its incubatees to explore international markets and alliances.

A full fledged developed Incubator also need to have a well developed monitoring system, which is discussed in the next chapter.

**The mature phase leads to:**

- ➔ **Consolidation**
- ➔ **Scaling up the incubator operations**
- ➔ **Providing more value added services**

## CHAPTER 5

# Monitoring of Incubators

The best incubation environments put in place processes to monitor and measure whether they are meeting their objectives and whether they are meeting their incubatees' expectations and needs, as well as those of their sponsors. Monitoring can also be a way of tracking the usefulness of services and adjusting them according to need and time.

The success of a TBI is judged from the efficacy of its operations, number of successful enterprises, social impact created in the region and good financial health of the TBI. The TBI should be a visible and known entity in the region for stimulating new enterprises. A considerable emphasis is placed on the social impact in terms of incubating technologies which have large social impact e.g. water technology, energy and environment related projects, waste management, literacy and education based projects, the impact of the incubator in building business mind set amongst faculty and students, creating success stories

which set examples for others to emulate, number of employment opportunities created etc.

Monitoring of incubator can be done informally through self-monitoring against the set milestones and benchmarks. This should be done periodically on quarterly basis. Formal monitoring of Incubator is done at two levels: one at the local level and another at national level. At local level, the advisory group/governing board (consisting of Head of the local host institution, bankers, VCs, domain experts, industrialists, officials of the local support system and a nominee of NSTEDB) reviews and monitors the [performance of the incubator. This group is expected to meet every quarter and review the performance of the incubator. This group helps the incubator manager to fix targets and also supports in achieving them. This monitoring by the governing board is done in its meetings.

Following indicators (Table 2) are helpful in monitoring:

S.No.	Incubator performance parameters
1.	Average capital investment cost per incubatee over five years
2.	Average operating cost per annum per incubatee
3.	% of revenue from govt. grants
4.	Incubator space(sq. ft)
5.	Number of incubatees
6.	Incubator functions (offerings)
7.	Incubator occupancy range(s)
8.	Average Length of tenancy ( months)
9.	Number of Incubator staff
10.	Survival rates of incubatee entrepreneur firms in 3 yrs
11.	Average growth in incubatee turnover in five years
12.	Average jobs per incubatee entrepreneur company
13.	Jobs generated by graduated companies per incubator p.a.

**Table 2 : Monitoring of an Incubator**



It is also important to take feedback on satisfaction of the stakeholders and incubatee companies. Successful incubators also result in enhancing entrepreneurial skills and self-esteem.

Review mechanism followed by NSTEDB is through the National Expert Advisory Committee (NAC) which is chaired by a person of eminence, and comprises members drawn from within the Government systems, Industry, National entrepreneurial support systems, VCs, Entrepreneurs, Bankers and Domain experts. The NAC meeting takes place twice a year to monitor and review the performance of the incubators against the set physical and financial targets and milestones. The decision about continuation of support to incubator is taken at this level. There have been instances when the support has been withdrawn because of non-performance and good performers have been rewarded as well. In addition NAC also evaluates new proposals for hosting TBIs and provides necessary directions to make the programme effective.

Visits to the incubators are also undertaken by the Department officials and other experts from time to time. In addition, sometimes services of Independent agencies are also utilized to review and analyse the performance of the incubators. In case when incubators face problems/or exhibit performance below the expected level, then special interventions proposed by NAC are also put into practice. A new on-line system called 'Promosys' ( Project Monitoring Software) has been put in place recently.

Through this, the incubators have the facility to feed their achievements and shortcomings on a regular basis. The system generates reports in the desired formats for effective monitoring.

The incubator is also required to monitor the performance of its incubatee/incubatee entrepreneur through periodic monitoring by a formal Committee. Frequent interactions of incubatees, and the external mentors with the Incubator team and special measures adopted by incubator for under performing incubatees helps a great deal in assisting the incubatees to attain set targets. It is important that the companies go through frequent monitoring at initial stage as the start-ups do lack organizational discipline during initial period. This is partly because of the attitude of young entrepreneurs and partly because of their lack of knowledge and experience. Typical review of incubatee includes–progress achieved during the period against the milestones, reasons for non-achievement of targets, corrective measures, milestones for the next review period.

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## CHAPTER 6

# Impact Assessment of Incubators

The diversity and complexity of internal and external incubator environment pose problems in developing a uniform incubation model, and also in developing a framework for the impact assessment of business incubation environments, both in terms of indicators used (qualitative indicators are needed in addition to quantitative indicators) and in terms of methodology (who should and how to collect the data).

However, from the perspective of stakeholders, carrying out impact assessment is important. It should normally be done from the fifth year onwards, and typically every two years thereafter.

The incubator impact can be measured based on three indicators:

- I. Impact and outreach
- II. Effectiveness
- III. Sustainability

Each of these indicators are discussed below in more detail.

**I. Impact and Outreach:** It is measured through the following parameters.

- Number and profile of enterprises created and graduated

- Survival rate of enterprises after graduation
- Jobs generated in approximate 5 years

**II. Effectiveness:** It is basically the total effect of value which an incubator provides to its incubatees. It is measured through the following parameters.

- Taxes paid and returns to the Exchequer
- Growth of incubatee in terms of net worth and sales in 5-7 years
- Technologies commercialized
- Seed venture capital mobilized by incubatees
- Time to break-even
- Scaling up of Incubator operations

**III. Sustainability:** In terms of achieving revenue surplus (after 5 years). A TBIs cash flow, based on good accounting practices should indicate the overall financial health, towards financial self-sustainability.

Chapter 7 will discuss some good incubator practices.

*SINE Incubator helped turn our dreams into a concrete reality. The ambiance and the atmosphere were particularly conducive during the early ideation and R&D stage of the product. The SINE & IIT Bombay branding helped us in winning marquee customers even after graduating from the incubator and also helped attracting the right talent. A hope to establish a global product company, with a "Made in India" brand, had its humble beginnings in the incubator.*

- Dr. Ram Ramdas, CEO, Herald Logic Pvt. Ltd.

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## CHAPTER 7

# A List of Good Incubator Practices

Some important lessons have been learnt in the two decade-long history of implementing Science and Technology Entrepreneur's Park (STEP) and nearly a decade of Technology Business Incubators. These lessons are important and are preferred to be initiated by incubators for reducing the planning and feasibility study period, overcoming initial challenges, improving performance and execution, and enhancing the probability of its success. Some of the good practices which will be useful for incubators are mentioned here.

### Incubation Environment

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- Establish a unique culture and environment in the incubator which has mutual trust, shared values and resource sharing at its core
  - Incubator is a business organisation requiring flexibility and speed in decision making. A separate legal unit under the host institutions provides autonomy
  - Have a lean but motivated incubator team
  - Establishing a clear and transparent entry procedure and exit criteria for incubates
  - Having formal regular and frequent monitoring meetings with each entrepreneur helps. In case of 3 major defaults on performance, this should be reported to the selection group and decision should be taken
- It is important to recruit specialised and full-time human resource. Using existing manpower of the host institute on part-time basis for the TBI is not effective
  - Designing value added, adequate monetary and motivational compensation package including training and retraining for the incubator team
  - Build a knowledge data base on each company and client, a repository of business, technical and design knowledge; start creating a reference library in the incubator
  - Organising awareness programmes is useful as on an average 2 out of 100 students from the host institute become incubatees. Pre incubation programme is also useful for incubatees.

### Networking

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- Building network of resource persons/mentors
- Informal meetings & networking between entrepreneurs, clients, and suppliers are of significant value
- Establish technology collaboration within the country or outside. Provide network opportunity to incubators by organising and offering opportunities to participate in international events in some of the relevant organisations like ISBA, and IAPN

- Strengthen the Public Private Partnership (PPP) network. It helps in bringing all kinds of resources especially market linked commercial knowledge and intellectual resources apart from better execution skills and faster decision making processes
- Organising exhibitions and product showcases occasionally

A few other observations are the rural/ social incubators find it difficult/ take longer to achieve self sustainability and establish support networks. Also, charging for services needs to be clear and transparent; and incubators should realize that free service is not valued.

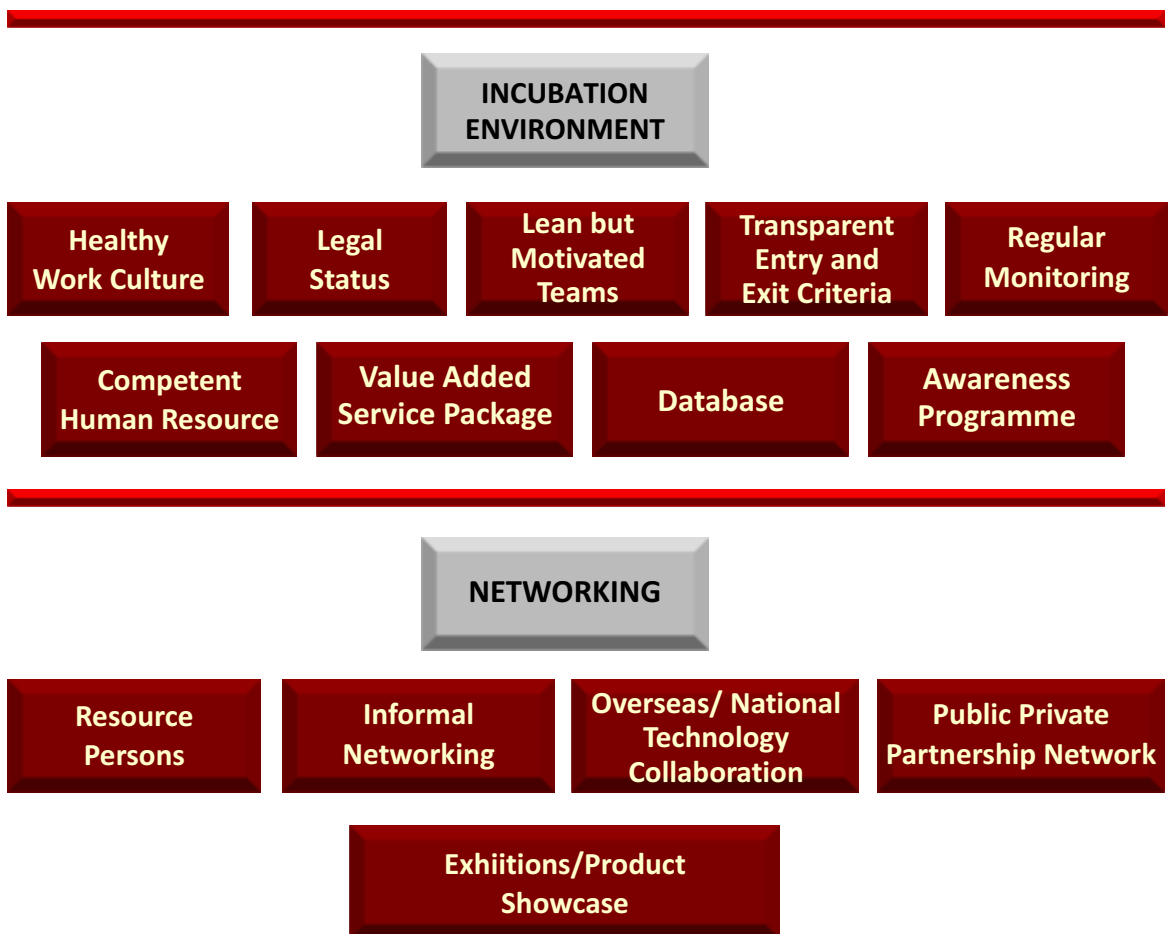


Figure 12: A List of Good Practices

**Some of the lessons learnt while funding the incubators are:**

- Incubators tend to succeed more if there is an industrial and business climate in the region
- The commitment of the host institution is vital for success of the incubator
- There should be a good competent, dynamic incubation manager
- A good R&D base and a system for commercialisation within the host institute helps to get early success
- The ability of the host institute to network both for knowledge as well as resources is helpful

## CHAPTER 8

# Selection and Funding Mechanism of NSTEDB: The Final Cut

A TBI can be set up in a single or multiple technological domain(s) after thorough study and analysis. The prerequisites for the Institutions keen to establish TBIs within their premises are as follows:

- Strong commitment and willingness of the host institution
- Reputation of the institute, facilities and expertise available in the identified technological domain(s) and, level of R & D work carried out
- Good industrial milieu of the region for adequate industry –institute interaction
- Experience of undertaking industry oriented activities such as technical consultancy, innovative product, process and service development
- In addition, the following aspects are the important considerations while evaluating the TBI proposal
- Merit of the TBI proposal; quality of business plan, identified goals and milestones backed by action plan
- Business potential of identified technological domain(s)
- Availability of land , furnished building with essential utilities which is arranged by the host institution

### Steps for Sanction of TBI by NSTEDB

The project cost for the TBI normally ranges between Rs 400-700 lakhs. NSTEDB support to establish a Business Incubator is

limited under capital account for procuring specialised equipment, softwares, creating business support facilities and on recurring account for partially meeting operational expenditure for five years. The building and other basic infrastructure cost will have to be borne by the sponsoring institution, which may be from the public or private sector. Therefore, nearly 50 percent of the project cost comes from the private sector in some cases.

The main steps being followed by NSTEDB for sanctioning a TBI to an institution are listed below. It may take 6 to 12 months from submission of the TBI proposal and issue of formal sanction of the TBI (from step 1-step 9).

1. Submission of the TBI proposal as per the format available online at <http://www.nstedb.com/institutional/tbi.htm>
2. Scrutiny of initial TBI proposal by NSTEDB
3. Submission of the modified proposal based on feedback from NSTEDB
4. Proposal consideration by NAC
5. Budget approval by Technical Committee on recommendations by NAC
6. Decision of host institution on the proposed form of separate legal entity for the incubator(Not for profit registered society or registered trust or section 25 company)
7. Internal financial approval at NSTEDB, DST
8. Issue of sanction order

9. Execution of MOU between NSTEDB, DST and host institution
10. Execution of bond for utilization of grants-in-aid for the intended purpose i.e. TBI activities
11. Disbursement of First installment of funds to incubator



Figure 13: Steps towards Sanction of a TBI Proposal

### **Fund Disbursement Mechanism of NSTEDB**

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After the disbursement of first installment of funds, subsequent releases are made on receipt of financial reporting which includes submission of utilisation certificate, statement of audited expenditure, activity progress report, audit report, action plan for the following year, and periodic review of performance and recommendations by National Advisory Committee ( NAC). The financial year is from 1st April to 31st March.

### **Expectations from Host Institution and TBI**

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TBI is organically linked to the host institution even if it has a separate legal status. No incubator can attain success

without the support and encouragement from the host institution at every development phase of the incubator. TBI has to actively work in close co-ordination with the host institution and the funding agencies. TBI adds to the brand image of the institution and is not only accountable to its funding agencies but also to the host institution in meeting their expectations. It is expected that the TBI in a five to seven year time frame be known in the region for good functioning aided by good team, processes and network partners. The TBI should demonstrate the creation of positive environment for promoting new entrepreneurial ventures through a good number of successful start-ups which enter the market after graduating out of the incubator. TBI should gradually reduce dependence on government funding and should attain self sustainability in five years time.



## CHAPTER 9

# Successful Ventures: Few Snapshots

Over 1150 entrepreneurs have been nurtured and incubated in the NSTEDB supported incubators up to 2008. There are many encouraging success stories of these entrepreneurs. Few successful case studies of these entrepreneurial ventures are given below:

### A Successful Case of Student Led Start-up

#### Ceeyes Reclamations Pvt. Ltd, Tiruchirappalli, Trichy



#### Incubation Support:

Tiruchirappalli Regional Engineering College - Science & Technology Entrepreneurs Park (TREC-STEP), Trichy, a leading Science Park promoted by the Department of Science and Technology, Government of India and Regional Engineering College, Trichy.

#### The Genesis:

This 1991 venture is a classic case of the mentoring by Professor S. Ananthakrishnan of Production Engineering, National Institute of Technology (NIT), Trichy to one of his students. The student-teacher duo received incubation support from

Tiruchirappalli Regional Engineering College - Science & Technology Entrepreneurs Park (TREC-STEP), Trichy, and Regional Engineering College, Trichy and created CEEYES Metal Reclamations, which is now an ISO 9001:2000 certified private limited company.

Ceeyes is dedicated to the field of manufacture and reclamation of heavy duty camshafts for diesel engines deployed in locomotives, ships and power generators. The focus of the venture is on 'Off Highway Diesel Engineering components' such as cam shafts, cam rollers, push rods and lifters. Their flagship product is Camshafts for high Horse power Diesel Engines, from 1300HP and above.

Ceeyes has developed inroads into the world's largest employer – the Indian Railways and is now considered one of its choicest vendors with state-of-the-art infrastructure including custom made CNC production, conventional production lines, latest testing facilities, computerized cam profile measurement machines, induction hardening equipment etc. A firmly established number one manufacturer of these specialized units in the country, the company has also diversified into manufacture and export of automotive components, through a tie-up with Transmec Engineering Pvt. Ltd., of Sri Lanka.

### The Campus



### The Infrastructure



### Product Range



#### Key technologies:

- Converting coal-firing system to oil fired system. They initiated it in the Nilgiri Mountain Railway steam locomotives, which has earned them the “Best Innovator” award from Railway Board
- CNC machining for manufacturing heavy-duty camshafts
- DLW design for fuel-efficient camshafts

**List of Clients:** Indian railways consider Ceeyes its choicest customer. In 1993, CEEYES’S engineering department indigenously developed a special purpose grinding machine for grinding locomotive camshafts. This was followed by the development of a successful process for reclamation of camshafts. As a direct result, there was an onslaught of orders from Indian Railways.

Apart from that, they also have clients and collaboration with:

- Diesel Locomotive Works, Varanasi, India
- Microcars Ltd., Srilanka
- Sanvision Energy Technology USA

## A Case of Strategic Partnership

### Laurus Laboratories, Hyderabad:



#### Incubation Support:

Life Sciences Incubator at ICICI Knowledge Park, Hyderabad

#### The Genesis:

Aptuit Laurus is an iconic success story of a pharmaceutical start up “Laurus Laboratories” turning into a leader, following its strategic partnership with Aptuit, UK.

The combined company provides integrated services, technologies and manufacturing capabilities that span the entire drug development continuum for established and emerging pharmaceutical companies. It provides services in early-stage drug discovery, medicinal chemistry, lead optimization, process development, scale-up and process optimization, safety and hazard assessment, formulation



development and analytical chemistry.

Aptuit Laurus has got a full fledged 200 employee-strong 7 acres establishment in the ICICI Knowledge Park near Hyderabad. This location offers over 40 labs for process chemistry, formulation and analytical development and kilo lab production, including an ability to handle highly potent active pharmaceutical ingredients and low temperature and high pressure chemistry.

It has its Bangalore site which is a “center of excellence” for software design and development along with the 'manufacture' of Clinicopia, the industry leading clinical packaging and supply management product suite in use at 8 major pharmaceutical companies.

It is also developing one upcoming manufacturing site in Vishakhapatnam.

### Laurus Laboratories: Campus Infrastructure and Technology



**Clean Technology, Energy Efficient Innovations in Agriculture for Enabling Farmers**

**Rusni Distillers, Hyderabad**



**Incubation Support:** Agri-Business Incubator set up under ICRISAT

**The Genesis:**

Rusni Distilleries was incubated at the Agri-Business Incubator set up under ICRISAT at Patancheru, Hyderabad. The initiative of the startup was to produce energy efficient innovations in agriculture for enabling farmers. The Distillery has successfully

tested and deployed sweet sorghum to ethanol, a practice delegated to thousands of small-scale farmers. With the Indian government making it mandatory to blend petrol and diesel with ethanol up to 10%, the demand for industrial alcohol is on the rise and this technology is making huge impact on the farmers' earning.

The distillery is the first of its kind in the country. The aim is to leverage sorghum production with zero liquid effluent discharge, unlike other bio-fuel which is conventionally produced through the molasses route. The arrangement supports 30,000 farmers with technical inputs and advice, transport and processing of the crop, and an assured price.

Currently ICRISAT is helping a Rusni subsidiary company - Rusni Biofuels Ltd. - to establish an 'ethanol from sweet sorghum' plant in Mozambique.



Mr. Palaniswami of Rusni Distilleries Pvt. Ltd.

**Founder Speak:**

*ICRISAT helped us in commercializing Sweet Sorghum based ethanol production technology. They helped us in business planning, escort services & distillery commissioning. I am thankful to ABI-ICRISAT for giving me global recognition & accolades*

- Mr. A.R. Palaniswamy, M.D.

## Case of Revitalising the Local Economy



### Robosoft Technologies Pvt Ltd., Udupi:



**Incubation Support:** NITK-STEP, Surathkal, Karnataka

#### The Genesis:

Robosoft Technologies Pvt. Ltd. is a case of revitalising the local economy, with its most modern and technologically sophisticated company at Udupi in Karnataka, the hometown of Mr. Rohith Bhat, the founder of Robosoft. A B.E., Mr. Bhat was a hard-core, enthusiastic, highly committed engineer on the lookout for a state of the art technology and break through products for the export markets during 1998, when NITK-STEP nurtured his dream project.

#### The Founder and the team



Today it is one of the leading employment providers to the young technically educated population of the region with a team of about 350 engineers specialized in C/C++, Java Product Development for Mac-OS and Microsoft Windows Xp besides creating employment for about 1000 people indirectly.

Over the years Robosoft has developed very good project management skills in functional areas such as product design, engineering and building product architecture by closely working with clients located at different time zones. Robosoft's competitive edge and differentiation in core technology domains has brought about worldwide recognition that has resulted in productive partnerships with leading software and hardware companies like Apple Computers Inc. Canon Inc. Hewlett Packard, UMAX Inc Intuit etc. with clientele spread across USA, UK, Taiwan, Singapore, France, Italy, Australia, Finland, Germany, South Korea and Ireland.

#### The Products:



## The IIMA Startup

**Vmukti, Ahmedabad, Gujarat, India**



**Incubation Support:** Centre for Innovation, Incubation and Entrepreneurship (CIIE), IIM Ahmedabad, Gujarat

### The Genesis:

VMukti, an incubatee company of CIIE has developed a unique open source platform that combines telephony and internet protocol to enable video, voice and data communications between multiple locations at a very low cost. VMukti is built using next generation .NET 3.0/ 3.5 technologies including WPF, WCF, IPv6 and P2P. The platform provides built-in support for access to platform features through a) personalized, customizable web-interface b) widget for 3rd party sites c) desktops d) PSTN e) mobile and f) IP phones. It is being widely used as a web-conferencing and webcasting solution across the world by Google, T-Mobile, IIMA and Gujarat Government, among the marquee clients for the company.

### The Campus



### The Founders and the Team



The company is currently deploying this unique solution for providing low cost access to education and medical support for rural and marginalized community. The company has been promoted by Hardik Sanghvi & Kushal Sanghvi and is being funded by Indian and NRI angel investors. It was recently awarded the Best Incubatee in Information and Communication Technology by ISBA and has been rated as a Top 100 IT Innovation in India by NASSCOM.

The VMukti core features like VMukti BizCom, VMukti Meeting Place, VMukti SoLite, VMukti SureVideo, VMukti PBX, VMukti Messenger, VMukti Callshop, VMukti Softphone and VMukti PDA provide fourth generation conferencing services with real time data transaction. VMukti Beta 1.0 is a developer/user preview release of VMukti's next generation collaborative conferencing service, which is an impressive assortment of new features and interface improvements.

## A Case of Successful Commercialization of Academic Research

### Zeus Numerix Pvt. Ltd., Mumbai:



**Incubation Support:** Society for Innovation and Entrepreneurship (SINE), IIT Bombay

#### The Genesis:

Zeus Numerix Pvt. Ltd. is the first and only company in India to have developed software for various engineering analysis problems. The Company started with its flagship product in CFD (computational fluid dynamics) and now has diversified into stress analysis, dynamics, electromagnetics for stealth and RADARs, Corrosion etc. Zeus is now developing new products with its state of the art optimization algorithms. It envisages the products so designed will be functionally more efficient.

The value offering of the company in defense and government labs is that it essentially brings down the dependence

on foreign technology. It operates in a technology area which came under sanctions from other countries after nuclear (Pokhran II) tests, and thus contributes to projects of national importance like hypersonic technology, fast breeder reactors, missile & rocket systems, smaller aircraft development. Zeus as a consortium partner of Godrej will now offer to undertake turnkey projects including designing, manufacturing, supply and support.

The company has received the prestigious Lockheed Martin award for its innovations.

#### Products:

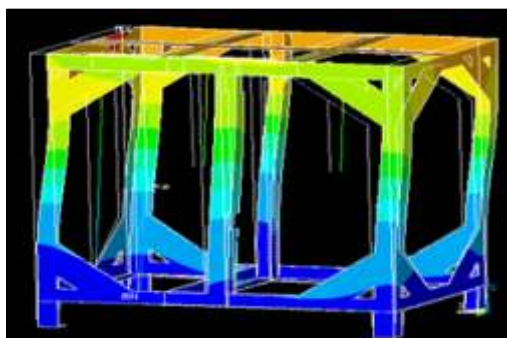
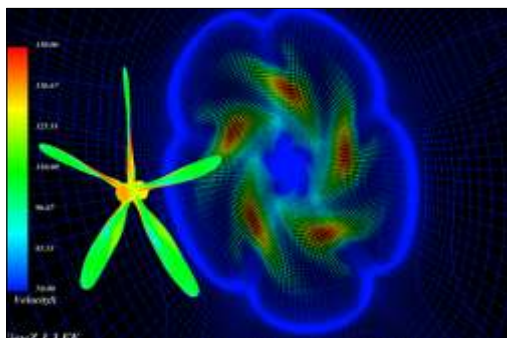
1. Computational aerodynamic solutions (For aerospace vehicles)
2. Computational Fluid Dynamics (Automobiles, Marine, Construction etc)
3. Computational Electromagnetics (Stealth, RADARs and Antenna)
4. Computational Structural Mechanics (Strength of all machinery parts)
5. Electrochemical Corrosion (Marine)
6. Dynamics (Missile, Aircraft movement/precision)
7. Computational Aero-Acoustics (reduction of noise levels)

Pre- and Post Processors (Integrated to all other software)

**The Campus:**



**A Few Products:**



**The key technologies: Also resources**

1. Numerical simulation for various sciences
2. Design and optimization of new products
3. Manufacturing tie up with Godrej PCS division
4. High performance computing MOU with CDAC
5. Consultancy from Professors of IITs for different projects
6. MOU to be signed with NIC for CAD software

**List of Clients:** EADS-Airbus, DRDL Hyderabad, ARDE Pune, ADE Bangalore, ANURAG Hyderabad, L&T Mumbai, Godrej Mumbai, Alstom Kolkata, CNU Korea, Research Center Imarat Hyderabad, BARC Mumbai, IPR Ahmedabad, IGCAR Kalpakkam, VRDE Ahmednagar, Mahindra & Mahindra Nashik, GM Detroit etc.



**Milestones:**

1. Optimization of Winglet for a civil aircraft structure – 2009
2. Generation of four billion grid – April 2009
3. Simulation of one billion grid – April 2009
4. Full nuclear reactor simulation – January 2009
5. Lockheed Martin India Innovation Growth Medal – FICCI 2007
6. Bulls on Parade first prize for Investor friendly company – SJMSOM IIT Bombay 2008
7. Critical feasibility study of indigenous hypersonic program – 2007

Director Speak:

*Zeus Numerix, a business venture spun out of a long term research, is founded by faculty and young alumni of IIT Bombay. The transition from academic research group with no prior business experience into a commercial entity was possible due to presence of SINE. Exposure to business processes and network, support in terms of legal, accounting and mentoring from experienced professionals has been very useful value addition from SINE. An access to initial seed money also took care of a lot of our initial cash flow situation. But for the incubator, the group would have continued as 'IITZeus' research group within IIT Bombay.*

- Basant Gupta, Director

## A Case of Fast Paced Information Delivery

### Torque 360 Degree Solutions:



**Incubation Support:** Technopark TBI

#### The Genesis:

Torque is the first Technology Business Incubated Company at Technopark TBI, that was a student's startup. It has expertise in providing management solutions and application packages with the aid of handheld devices like PDA's and tracking devices like RFID and Smart Cards. Torque is a 360 degree wireless solution and service provider, leveraging a blend of rapid information delivery and communication streams.



MobME, a spin off from Torque, is a Mobile Media and Entertainment startup that continuously strives to make it easier for connecting people using wireless technology. The company provides Innovative Solutions to Mobile Operators, Enterprises and has a Mobile Photo Sharing Platform – Mobshare as its core service to end customers. Mobshare is the leading and preferred platform by leading Mobile Operators, Media Companies and Marketing agencies for Mobile Community, Photo and Video Sharing Solutions. The Mobshare Platform allows users to upload a photo from a mobile phone to the internet in the fastest and easiest way possible and is the corner stone of the various solutions.

MobME provides to Mobile Operators, Media Companies and End Users and is already valued at around \$7 million. The company has won the prestigious NASSCOM Innovation Awards 2008 for its innovative flagship product Mobshare in the business innovation category and the Indian Science and Technology Entrepreneurs Parks and Business Incubators Association (ISBA) award for the best start-up ICT (Information & Communication Technology) company of 2008.

#### Few other products are:

1. FastAlerts: One of India's most popular Web 2.0 Mobile Alerting Tools and
2. BlueZone: Bluetooth Hotspots at 100s of locations across India enabling 2-way communication.

# CHAPTER 10

## Key Information

### Other Useful Information

Some of the useful information relevant to incubators and incubatees is mentioned below.

#### **NSTEDB Seed Fund to Incubatees**

NSTEDB provides seed fund selectively to Incubators for disbursement to their incubatees. The basic idea of seed fund is to equip the TBI with the much needed early stage financial assistance to be provided to deserving incubatees. Timely availability of this fund would enable some of these incubatees to graduate to a level where they can then be fit for seeking next level of funding from angels / VC / normal lending commercial banks /FI's etc. Thus the proposed assistance is positioned to act as a bridge between development and commercialisation of technologies. The fund helps incubator to partner the success of entrepreneurs and help build sustainability. The maximum one time assistance given is Rs. 20.00 lakhs with an upper limit of Rs. 50 .00 lakhs to an incubatee company.

#### **Service Tax Exemption to Incubators and Incubatees**

To encourage innovation and entrepreneurship, Ministry of Finance, Government of India has announced service tax exemptions to incubators and also to its entrepreneurs which are physically located in a TBI/STEP recognized by the NSTEDB of the Department of Science and Technology, Government of India. Notification to this effect and details

related to exemption are available at [www.nstedb.com](http://www.nstedb.com).

#### **National Award for Technology Business Incubators**

In order to recognize and reward the work done in the area of techno-entrepreneurship development through promotion of knowledge driven and technology based start-up ventures by organizations such as Science and Technology Entrepreneurs Park, Technology Parks, Technology Business Incubators, the National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India, has instituted a National Award for Technology Business Incubators. The award carries a Cash Prize of Rs. 1 Lakh, a trophy and a citation. The award is presented every year on Technology Day in Delhi.

#### **Year wise List of Awardees:**

- SJCE- STEP, Mysore (2000)
- TREC-Step, Trichy (2001)
- PSG- STEP, Coimbtore (2002)
- TeNet group, IIT Madras & Grassroots Innovation and Augmentation Network (GIAN) Ahmedabad (2003)
- JSS Academy of Technical Education –STEP,( JSSATE-STEP) , Noida (2004)
- Agri Business Incubator, ICRISAT, Hyderabad (2005)

- STEP-Bagalkot Engineering College (BEC-STEP), Bagalkot (2006)
- ICICI Knowledge Park, Hyderabad & Technopark, Trivendrum (2007)
- VIT- TBI, Vellore (2008)

### **Indian STEP and Business Incubator Association (ISBA)**

The Indian STEP and Business Incubator Association (ISBA) was set up in 2004 as a registered professional body to promote business incubation activities in the country through exchange of information, sharing of experience, and other networking assistance among Indian Business Incubators, Science and Technology Entrepreneurs Parks (STEPs) and other related organizations engaged in the promotion of start-up enterprises. Its current secretariat is at STP, University of Pune, Pune.

A study to analyze and document the business incubator environment in India has recently been commissioned by NSTEDB through the Indian STEP and Business Incubators' Association (ISBA).

### **Other DST Network Partners supporting Incubation and Capacity Building**

Incubators are encouraged to share good practices at their meetings which take place once a quarter. There are thematic interactions such as "Management of Seed Capital by Incubators", "Handling Fiscal Incentives", "Establishing Mentor Networks", "Innovative Financial Resources for the Incubatees" etc.

In recent past, NSTEDB had joined hands with infoDev programme of the World Bank to organize two Global Forums on Business Incubation in India. These programmes will address the challenges faced by the incubators in promoting the technology led enterprises in the region and evolve good practices of incubator management. infoDev has also extended support to strengthen some of NSTEDB's existing technology business incubators (TREC-STEP, Trichy, VIT-TBI Vellore, PSG-STEP, Coimbatore and RTBI, IIT Madras) with special focus on capacity building aspects. Very recently, infoDev and DST have joined hands to establish Incubation Asia Pacific Network (IAPN) with Secretariat at PSG-STEP, Coimbatore. The core objective of the IAPN is to create a dynamic incubation environment in the Asia Pacific Region by bringing in learning, sharing and working co-ordination among the business incubation practice communities for networking, exchanging and partnership to promote Innovation and Entrepreneurship in the Asia Pacific region on a sustainable basis.

In addition to this, the Government has put in place capacity building programmes with active engagement from private sector like Intel and Lockheed Martin to train incubator managers and officials of the support system at institutions like UC Berkeley and University of Texas respectively. There are bilateral programmes with some developed countries like UK and France under which there is an exchange programme for capacity creation of incubation professionals. Talks with several other MNCs like IBM, HP etc are underway to launch more such programmes.

Following is a description of some other prominent networking partners:

### **National Entrepreneurship Network (NEN)**

NEN programme focuses on entrepreneurship education and providing support systems to new entrepreneurs. Sponsored by the Wadhvani Foundation, NEN was founded in 2003, by a team from the Wadhvani Foundation, along with IIT-Bombay, IIM-Ahmedabad, BITS Pilani, SP Jain Mumbai and IBAB, Bangalore.

NEN works with over 450 academic institute members; has developed a pool of more than 1000 entrepreneurship faculty members, growing the number from an initial group of about 50 across the country; has launched more than 350 student e-cells; and reaches over 400,000 young people across 30 cities in India.

NEN member graduates go on to start companies, join existing startups, and launch entrepreneurial careers.

For more information refer to [www.nenonline.org](http://www.nenonline.org)

### **The Indus Entrepreneurs (TiE)**

TiE, one of the largest not-for-profit network for entrepreneurs was founded in Silicon Valley in 1992 by successful entrepreneurs and professionals with roots in the Indus region. TiE is also known as Talent Ideas and Enterprise and is today spread over 53 chapters in 12 countries. TiE currently has 11,000 members and 2,500 charter members which includes top

entrepreneurs, VCs, private equity, angels, law firms, and tech & management professionals.

TiE is the biggest network for Indian entrepreneurs. This network focuses on inspiring and educating entrepreneurs as well as on building the appropriate entrepreneurial environment eco-system for India. Through its various programmes and events, it addresses the generic and sector-specific challenges and opportunities in Indian and Global market. Some of its valued programmes are mentoring clinics for young entrepreneurs, guru sessions as well as individual networking session.

TiE has its chapters in various cities across India and one of the active and vibrant TiE Chapter is TiE New Delhi, which also organizes an annual flagship event “TiECON” for entrepreneurs and relevant partners.

For more information refer to <http://tienewdelhi.org>

### **The Entrepreneurship Development Institute of India (EDI)**

EDI is an acknowledged national resource institute engaged in entrepreneurship education, research & training. EDI is an autonomous body, set up in 1983 and sponsored by apex financial institutions. Recently NSTEDB, Dept. of Science & Technology, Govt. of India has appointed EDI as its National Implementing & Monitoring Agency (NIMAT) for the following training programmes:

1. Entrepreneurship Awareness Camp (EAC)
2. Faculty Development Programme (FDP)
3. Entrepreneurship Development Programme (EDP)
4. Technology based Entrepreneurship Development Programme (TEDP)

For more information refer to :  
<http://www.ediindia.org>

### **Technopreneur Promomotion Programme (TePP)**

TePP under the Department of Scientific and Industrial Research (DSIR), GoI provides two distinct levels of financial support to eligible Indian innovators and start-up companies to enable successful commercial conversion of their original idea/invention/know-how. The first phase aims conversion into working prototype/process, while in the second phase, the objective is to incubate the selected phase –I projects to a commercial scale. The available range of funding is upto Rs. 15 lakhs in phase-I and Rs. 45 lakhs in the phase-II.

Several organisations including the TBIs have been notified as TePP Outreach Centres (TUCs) and direct funding is provided to them to offer a single window service to TePP innovators for converting their idea into a function proving prototype.

For more information refer to:  
[http://www.dsir.gov.in/tpdup/tepp/tepp\\_tpc.htm](http://www.dsir.gov.in/tpdup/tepp/tepp_tpc.htm)

### **Software Technology Parks of India (STPI)**

Software Technology Parks of India (STPI), is a society set up by the Department of Communication & Information Technology, Government Of India in 1991, with the objective of encouraging, promoting and boosting the Software Exports from India. STPIs are synonymous with excellent infrastructure and statutory support aimed at furthering growth of Information Technology in the country.

STPI maintains internal engineering resources to provide consulting, training and implementation services. Services cover network design, system integration, installation, operations and maintenance of application networks and facilities in varied areas ranging from VSATs to ATM based networks. There are 42 STPI Centers all over the country.

For more information refer to :  
<http://www.stpi.in>

### **NASSCOM**

NASSCOM® is the premier global trade body, strategic advisor and the chamber of commerce of the IT-BPO industries in India with more than 1200 members. The members include both Indian and multinational companies that have a presence in India and having business of software development, software services, software products, consulting services, BPO services, e-commerce & web services, engineering services offshoring, animation and gaming. Currently, NASSCOM is headquartered in New Delhi, India with

regional offices in the cities of Mumbai, Chennai, Hyderabad, Bangalore, Kolkata and Pune.

In India and around the world, NASSCOM members are active participants in the new global economy and are reputed for their innovative business practices, social initiatives and thrust for foraying into new emerging opportunity areas.

NASSCOM's varied strengths include advocacy on public policy, international trade development, research and market intelligence services, and access to an international network. Other goals include accelerating trade development efforts, improving talent supply, strengthening local infrastructure, building partnerships and driving operational excellence. It also boosts the process of Innovation; IT workforce development and enhanced cyber security.

For more information refer to :  
<http://www.nasscom.org>

### **Indian Angels Network (IAN)**

Started in April, 2006 IAN is India's first & largest Angel network with successful entrepreneurs and high profile CEOs interested in investing in early stage businesses across India, which have potential to create disproportionate value.

The Network has invested in multiple sectors like Information Technology, Intellectual Property, Hospitality, Mobile, Education, Internet, etc.

With a strong entrepreneurial and operational background of investors, IAN aims at enhancing the success rate of early stage businesses significantly through high quality mentoring, vast networks and inputs on strategy as well as execution.

For more information refer to  
<http://www.indianangelnetwork.com>

### **Mumbai Angels Network**

Mumbai Angels started in November, 2006 as a unique forum where its members may interact and exchange ideas and knowledge. The Mumbai Angels provides a unique platform to start up and very early stage companies by bringing them face to face with successful entrepreneurs, professionals and executives who are interested in and have the funds available to invest in startup companies.

Many members of Mumbai Angels have prior Silicon Valley experience. In addition to the capital of its members, the Mumbai Angels also provides access to high quality mentoring, vast networks in India and abroad and inputs on strategy as well as execution.

For more information refer to :  
<http://www.mumbaiangels.com>

### **Indian Venture Capital and Private Equity Association (IVCA)**

Indian Venture Capital and Private Equity Association (IVCA) is a member based national organization that represents

venture capital and private equity firms, promotes the industry within India and throughout the world and encourages investment in high growth companies.

IVCA members comprise venture capital firms, institutional investors, banks, incubators, angel groups, corporate advisors, accountants, lawyers, government bodies, academic institutions and other service providers to the venture capital and private equity industry.

Members represent most of the active venture capital and private equity firms in India. These firms provide capital for seed ventures, early stage companies, later stage expansion, and growth finance for management buyouts/buy-ins of established companies.

For more information refer to:  
<http://www.indiavca.org>

### **Other Government Support Channels for Incubators and Entrepreneurs**

Following government departments also provide necessary funding to set up incubators and support to entrepreneurs. In some cases, the support from the government is available for a specific industry sector i.e. Biotechnology and Information and Communication Technology.

- Department of Bio-Technology, Govt. of India with a focus on biotech. ([www.dbtindia.nic.in/index.asp](http://www.dbtindia.nic.in/index.asp))

- Ministry of Information and Communication Technology mainly on ICT and seed funding for early stage start-ups ([www.mit.gov.in](http://www.mit.gov.in))
- Ministry of Small & Medium Enterprises mainly focused on initial support (angel funding for innovative ideas) ([www.laghu-udyog.com](http://www.laghu-udyog.com))
- Department of Scientific and Industrial Research (recognition for duty free import, direct funding of innovators through TBIs) ([www.dsir.gov.in](http://www.dsir.gov.in))
- State Governments (mainly in form of infrastructure)
- Small Industries Development Bank of India (SIDBI) ([www.sidbi.in](http://www.sidbi.in))
- Banks & Financial Institutions ([www.indiastat.com](http://www.indiastat.com))



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## Disclaimer

The user understands, acknowledges and agrees that NSTEDB, DST intends to provide basic understanding and information on Technology Business Incubators based on the knowledge, experience and available information in good faith to pursue its objective of promoting techno-entrepreneurship. NSTEDB, DST does not undertake responsibility for:

- Ensuring selection of the Incubator proposal, success of the incubator and the incubatee company
- Ensuring quality of support and services provided by incubator and incubatee Entrepreneur to complete satisfaction of the funding agencies,
- Ensuring quality of services of the mentors/consultants engaged by the incubator for the incubatee companies

This document is informative in nature and does not represent the views of the Department or the Government of India and is certainly not a legal document. While due care has been taken to check the accuracy of the information provided, NSTEDB or DST and their officials shall not be held liable for any reason on account of the above.

## ANNEXURE

State/TU	No.	Name and Address of Contact Person - TBI
Andhra Pradesh	1a	<p>Ms. Deepanwita Chattopadhyay            Chief Executive Officer,            ICICI Knowledge Park-Life Sciences Incubator            Level IV, ICICI Bank Tower            St. No. 1, Begunpet, Hyderabad- 560 016            Phone: 9140 2348 0003/ 0022            Email: deepanwita@icicikp.com            Fax: 040 2348 0007            Web:<a href="http://www.iciciknowledgepark.com/icicikp/iciciinnerfilesIncubators.htm">http://www.iciciknowledgepark.com/icicikp/iciciinnerfiles            Incubators.htm</a>            Technology: Life Sciences            Year of Establishment: 2005</p>
	1b	<p>Mr. Dipak Mahajan            Manager, ICICI Knowledge Park-Life Sciences Incubator            Turkapally - Village, Shameerpet - Mandal, Ranga            Reddy - Dist. Hyderabad - 500078            Phone: 91 40 2348 0003/ 0022            Email:dipak@icicikp.com            Fax: 040 2348 0007</p>
	2a	<p>Dr. K. K. Sharma            Principal Scientist &amp; Head , Agri Business Incubator            International Crops Research Institute for the Semi Arid Tropics            ICRISAT, 303 Bldg, Patancheru- 5023224            Phone: 040 30713071            Email:k.sharma@cgiar.org            Fax: 040 30713074, 30713075            Web: <a href="http://www.agri-sciencepark.icrisat.org">http://www.agri-sciencepark.icrisat.org</a>            Technology: Agri Business            Year of Establishment: 2003</p>
	2b	<p>Mr. SM Karuppanchetty            Deputy COO, Agri Business Incubator            International Crops Research Institute for the Semi Arid Tropics            ICRISAT, 303 Bldg, Patancheru- 5023224            Phone: 040 30713071            Email:karuppanchetty@cgiar.org            Fax: 040 30713074, 30713075            Web: <a href="http://www.agri-sciencepark.icrisat.org">http://www.agri-sciencepark.icrisat.org</a></p>
	3	<p>Prof. V. Venkata Ramana            Dean, School of Management Studies &amp; Coordinator –            TBI-UOH, University of Hyderabad, P.O. Central University            Hyderabad- 500 046.            Phone: 40-23135000/23011091            Email: vedulla@hotmail.com            Fax: 040-2301-1091            Technology: Pharma Biotechnology, Renewable Energy and IT            Year of Establishment: 2008</p>

## ANNEXURE

	4a	Dr. J. S. Yadav Director, Indian Institute of Chemical Technology Uppal Road, Hyderabad- 500 007. Phone: 40-27193030 Email: yadav@iict.res.in Fax: 040-2716 0387, 27160757 Technology: Medicinal Chemistry Year of Establishment: 2008
	4b	Dr. N.V. Satyanarayana Deputy Director , Research Management Division Indian Institute of Chemical Technology Uppal Road Hyderabad- 500 007. Phone: 040 27193195 Email: nvs@iict.res.in Fax: 27160757 Technology: pharma related chem technology
<b>Delhi</b>	5	Prof. Rajendra K. Saxena Coordinator TBI, Technology Business Incubator Society University of Delhi South Campus, Benito Juarez Road New Delhi -110021 Phone: 24116559 rksmicro@yahoo.co.in , rksmicro@hotmail.com Fax: 24115270 Technology: Microbiology and Bio-molecules. Year of Establishment: 2007
	6	Dr. R.K. Khandal Director, Shriram Institute for Industrial Research 19, University Road, P.B. No. 2122, New Delhi -110007 Technology: Rubber, plastic, specility materials Year of Establishment: 2003
<b>Gujarat</b>	7	Mr. Mahesh Krovvidi Chief Operating Officer, National Design Business Incubator National Institute of Design (NID), Paldi, Ahmedabad-380007 Phone: 079-26603289 Email: ndbi@nid.edu, coo_ndbi@nid.edu Fax: 91 079 26603289 Web: <a href="http://www.ndbiindia.org/">http://www.ndbiindia.org/</a> Technology: Consumer goods, design consultancy, Year of Establishment: 2005
	8	Dr. K.K.Patel Co-ordinator, Nirma Labs Nirma University Campus,S.G. Highway, Ahmedabad- 382 481 Phone: 2717-241900-04. Ext. No. 664, 614 and 642, -241228 Email: info@nirmalabs.org Fax: 2717-241916 Web: <a href="http://www.nirmalabs.org/">http://www.nirmalabs.org/</a>

## ANNEXURE

		<p>Technology: Information Technology, Telecommunications, Bio-informatics Year of Establishment: 2004</p>
	9a	<p>Mr. Kunal Upadhyay CEO Centre for Innovation Incubation and Entrepreneurship (CIIE) Indian Institute of Management, Vastrapur Ahmedabad- 380015 Phone: 079 666324203 Email: kunal@iimahd.ernet.in Fax: 79 66324203, 66324207 Technology: Market oriented products/technologies</p>
	9b	<p>Mr. Pranay Gupta Joint – CEO Centre for Innovation Incubation and Entrepreneurship (CIIE) Indian Institute of Management, Vastrapur Ahmedabad-380015 Phone: 079 666324203 Email: pranay@iimahd.ernet.in Fax: 79 66324203, 66324207 Year of Establishment: 2008</p>
	10	<p>Dr. Gautam Raj Jain Senior Professor and Faculty In-charge Technology Business Incubator Entrepreneurship Development Centre Mudra Institute of Communications Ahmedabad, Shela Ahmedabad - 380 058 Phone: 02717-237946-51 Email: gautam@mica.ac.in Fax: 02717-308349 Technology: Communication Tech Year of Establishment: 2008</p>
<b>Harayana</b>	11	<p>Dr. G. R. Patil Joint Director (Academic) Society for Innovation and entrepreneurship in Dairying National Dairy Research Institute Karnal-132 001 0184-2254751/2259003/2259007 Email: grpndri@yahoo.co.in Fax: 0184-2250042 Technology: Dairy technology Year of Establishment: 2002</p>
<b>Karnataka</b>	12	<p>Dr. R. Gopalan Executive Director, Composites Technology Park 205, Bande Mutt, Kengeri Satellite Township, Bangalore-560060 Phone: 080 6599 7605, 65581005, 28482768</p>

## ANNEXURE

		<p>Email: drgopalan2003@yahoo.com Fax: 080 28482771 Web: www.compositestechnologypark.com, Technology: Composites based on Coir, bamboo, jute Year of Establishment: 2008</p>
	13a	<p>Prof. Shivaram Malavalli Chairman &amp; Managing Director, E health-TBI Pesit Tech Park, 2nd Floor, 100 Feet Ring Road BSK 3rd Stage, Bangalore- 85 Fax: 080-26420001 Email: shivaram.mallavali@gmail.com, ehealthtbi@mail2business.com Phone: 080 - 26420304 Technology: IT enabled health management Year of Establishment: 2008</p>
	13b	<p>Mr. Rama Subramaniam Director, E health-TBI Pesit Tech Park, 2nd Floor, 100 Feet Ring Road BSK 3rd Stage, Bangalore-85 Phone: 80 25726922 Email: rams@biopure.in Fax: 80 25726921 Year of Establishment: 2003</p>
<b>Kerala</b>	14	<p>Ms. Preethi M. Manager, TBI, National Institute of Technology, Calicut-673601 Phone: 0495 2286604, 2286162, 2289061 Email: tbi@nitc.ac.in, preethi@nitc.ac.in Fax: 0495 2287250 Web: <a href="http://nitc.ac.in/nitc/misc/tbi/public_html/index.htm">http://nitc.ac.in/nitc/misc/tbi/public_html/index.htm</a> Technology: Information Technology and electronics Year of Establishment: 2007</p>
	15a	<p>Mr. Marvin Alexander CEO, Technopark TBI Technopark Campus Trivandrum-695 581 Phone: 471-2700222 Email: marvin@technopark.org Fax: 471-2700171 Web: <a href="http://www.technopark.org">www.technopark.org</a> Technology: IT and Bioinformatics</p>
	15b	<p>Mr. K C Chandrasekharan Nair Secretary and Registrar, Technopark TBI Technopark Campus, Trivandrum - 695 581 Phone: 471-2700222 Email: kccnair@technopark.org Fax: 471-2700171</p>

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		<p>www.technopark.org Year of Establishment: 2008</p>
	16a	<p>Dr. Krishna Shree CEO, Amrita TBI Phone: 0476-2896318 Ex 4503 Email: Krishna@amrita.edu Web: www.amritatbi.com e-learning, IT and innovative tech.</p>
	16b	<p>Mr. Kalaingar T Operational Manager-Amrita TBI, Amrita Vishwa Vidhyapeetham Amritapuri Campus, Clappana, P.O.Kollam, Kerala-690 525 Phone: 0476-2896318 Ex 4503 kailash@amritapuri.amrita.edu Web: www.amritatbi.com Year of Establishment: 2004</p>
<b>Maharashtra</b>	17a	<p>Mr. Sushanto Mitra Chief Executive Officer, SINE, Society for Innovation and Entrepreneurship Indian Institute of Technology-Bombay, Powai, Mumbai-400 076 Phone: 022- 2576 7072/ 7016 Email: sushanto.mitra@sineitb.org Fax: 022- 2572 1220 Web: www.sineitb.org Technology: Innovative technologies across all sectors</p>
	17b	<p>Ms. Poyni Bhatt Chief Administrative Officer SINE Society for Innovation and Entrepreneurship Indian Institute of Technology-Bombay Powai, Mumbai-400 076 Phone: 022- 2576 7072/ 7016 Email: poyni.bhatt@iitb.ac.in Fax: 022- 2572 1220 Year of Establishment: 2002</p>
	18a	<p>Dr. Pradeep Bavadekar Managing Director MITCON Biotechnology Business Incubation Centre Udyog Prabodhini Building, Ground Floor, Agriculture College Campus, Next to District Industries Centre Office, Shivaginagar, Pune -411 005. Phone: 020-66289452/53, 020-25521607/25533206 Web: <a href="http://mitconindia.com/biotech_aboutUs.htm">http://mitconindia.com/biotech_aboutUs.htm</a> Technology: Agri Biotechnology</p>
	18b	<p>Sh. Chandrashekhar Kulkarni Chief Consultant MITCON Biotechnology Business Incubation Centre Udyog Prabodhini Building,</p>

## ANNEXURE

		<p>Ground Floor, Agriculture College Campus, Next to District Industries Centre Office, Shivaginagar, Pune -411 005. Phone: 020-66289452/53 Email: shekhukulkarni@yahoo.com Year of Establishment: 2008</p>
	19a	<p>Dr.V.Premnath Venture Center, National Chemical Laboratory 100 NCL Innovation Park National Chemical Laboratory Campus Pune-411008 Phone: 20-2590-2185 Email: v.premnath@ncl.res.in Fax: 20-2590-2618 Web: www.venturecentre.co.in Technology: Material centric products</p>
	19b	<p>Dr. V. V. Panchanadikar Venture Center, National Chemical Laboratory 100 NCL Innovation Park National Chemical Laboratory Campus Pune-411 008 Phone: 020-2590-2986 Email: vv.panchanadikar@ncl.res.in Year of Establishment: 2004</p>
<b>Rajasthan</b>	20a	<p>Prof. Arya Kumar Co-ordinator, TBI, Birla Institute of Technology and Science (BITS) Pilani-333031 Phone: 01596 245073 Email: aryakumar@bits-pilani.ac.in Fax: 01596 244183 Web: <a href="http://discovery.bits-pilani.ac.in/Other/TBI/fs_tbi.html">http://discovery.bits-pilani.ac.in/Other/TBI/fs_tbi.html</a> Technology: Nurture enterprises through Embedded systems and VLSI design area.</p>
	20b	<p>Dr. Anu Gupta Manager, TBI Birla Institute of Technology and Science (BITS) Pilani-333031 Phone: 01596 245073 Email: anug@bits-pilani.ac.in Year of Establishment: 2002</p>
<b>Tamil Nadu</b>	21a	<p>Prof. S. Balamurugan Executive Director – Technology Business Incubator Kongu Engineering College Perundurai - 638 052 Phone: 4294 226650, 226633 Email: balamurugan@kongu.ac.in, tbi-kec@kongu.ac.in Fax: 4294 226649</p>

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	<p>Technology: Digital Signal Processing(DSP and Electronic PCB testing, repair and fabrication.</p>
21b	<p>Mr. S. Ravikumar Sr. Manager, KEC - TBI, Kongu Engineering College Perundurai - 638 052 Phone: 4294 226650, 226633 Email: balamurugan@kongu.ac.in, tbi-kec@kongu.ac.in Fax: 4294 226649 Web: www.tbi-kec.org Year of Establishment: 2003</p>
22	<p>Sh. Balachandran General Manager -TBI Vellore Institute of Technology (VITVBI) Vellore - 632014 Phone: 0416 2243097 Email: vittbi@vit.ac.in, balac68@yahoo.com Fax: 0416 2243097 Web: http://www.vittbi.com/ Technology: Automotive Engg., Biotechnology and Leather products Year of Establishment: 2002</p>
23	<p>Dr. S. Meenakshisundaram Business Manager, Technology Business Incubator Centre for Biotechnology, Anna University, Chennai - 600025 Phone: 044 22350772, 98403 48173 Email: meenakshi@annauniv.edu Fax: 044 22350299 Web: www.annauniv.ed Technology: Biotechnology Year of Establishment: 2005</p>
24	<p>Dr. Gangi Reddy Managing Director - TBI, University of Madras Dr. A L M PGIBMS, Taramani campus, Chepauk Chennai - 600113 Phone: 044-24540038/39 Email: tbi_unom@yahoo.com, tbi@unom.ac.in Web: Website: www.unom.ac.in/taramanitbi.html Technology: Health related Herbal and Biotech industries Year of Establishment: 2006</p>
25a	<p>Prof. Ashok Jhunjunwala Chairman RTBI IITMs, Rural Technology and Business Incubator 331A, Electrical Engineering Department IIT Madras, Guindy Phone: 44 2257 0428/2257 5441</p>



## ANNEXURE

		<p>Email: ashok@tenet.res.in office@telnet.res.in Technology: Low-cost technologies for rural areas</p>
	25b	<p>Ms. Lakshmi Vaidyanathan Senior Manager Technology - RTBI Dept. of Electrical Engg. Centre for Industrial Consultancy and Sponsored Research Indian Institute of Technology Madras Chennai- 600036 Phone: 44 2257 0428/2257 5441 Email: lvaidya@tenet.res.in,office@telnet.res.in Fax: 4.42E+09 Technology: Telecom, Health, education Year of Establishment: 2007</p>
	26	<p>Dr. K.Subramanian Professor, CEO In-charge of BIT-TBI Bannari Amman Institute of Technology Sathyamangalam-638 401 Phone: 04295-221289 Email: bitsathy@bannari.com Fax: 04295-23775 www.bitsathy.ac.in/ Technology: App of biotechnology in agro, industrial and rural sectors. Year of Establishment: 2006</p>
	27	<p>Ms. .A.P. Aruna Chief Executive Officer Periyar Technology Business Incubator Periyar Maniammai University Periyar Nagar Vallam - 613 403, Thanjavur Phone: 04362-264520 Email: info@periyartbi.org; ap_aruna@yahoo.co.in Web: www.periyartbi.org Technology: Herbal health products, medicinal plants Year of Establishment: 2000</p>
<b>Uttar Pradesh</b>	28	<p>Dr. R. Raghunanadan Chief Executive JSSATE-STEP/ ITBI J.S.S. Academy of Technical Education, C-20/1, Sector-62, Noida-201301 Phone: 0120-2401514/16 Email: ce@jssstepnoida.org Fax: 0120 – 2401516/2401451 http://www.jssstepnoida.org/incubator.as Technology: IT Year of Establishment: 2007</p>
	29a	<p>Mr. Aseem Chauhan Chief Executive Officer Amity Technology Incubator</p>

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	<p>AKS House, E - 27, Chauhan Road Defence Colony, New Delhi - 110 024 Phone: 41888312, 41888314 Email: achauhan@crossbordergroup.com Fax: 24339100, 24339500</p>
29b	<p>Mr. Apoorv R. Sharma General Manager Amity Business Incubator E-3 Block ,1st Floor, Sector 125, Amity University Campus Noida Phone: 0120-43292242/ 243 Email: arsharma@abs.amity.edu Technology: Information and Communication Technologies and Bio-Informatics. Year of Establishment: 2006</p>
30a	<p>Dr. Ajay Sharma Chairman-TBI, Krishna Institute of Engineering &amp; Technology 13 KM Stone, Ghaziabad - Meerut Road Ghaziabad - 201206 Phone: 01232-262059 Email: tbi@kiet.edu Web: Website: www.tbikiet.com Information Technology, Electronics and Mechanical Engineering</p>
30b	<p>Mr. Satyendra Kumar General Manager, Technology Business Incubator Krishna Institute of Engineering &amp; Technology 13 KM Stone, Ghaziabad - Meerut Road Ghaziabad Phone: 201206 Year of Establishment: 2008</p>
31 a	<p>Dr. B.V. Phani Coordinator SIDBI Innovation and Incubation Centre Indian Institute of Technology Kanpur-208 016 Phone: 0512-2596646-7979 Email: bvphani@iitk.ac.in Fax: 0512-2597057 Technology: IT and other innovative technologies Year of Establishment: 2008</p>
31 b	<p>Sudha Selvaraj Manager TBI SIIC, Indian Institute of Technology Kanpur - 208 016 Email: sudha@iitk.ac.in Year of Establishment: 2008</p>

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	32	<p>Dr. P. K. Mishra Chief Co-ordinator Malviya Centre for Innovation Incubation &amp; Entrepreneurship, Institute of Technology, Banaras Hindu University Varanasi - 221 005 Phone: 0542-2307045, 2307065 Email: drpkm18@gmail.com Fax: 0542 – 2368092, 2368428 Technology: ICT, Biotechnology, Food Sector, Agriculture &amp; Allied Sector. Year of Establishment: 2008</p>
West Bengal	33a	<p>Prof S Sengupta VC WBUT, West Bengal University of Technology BF-142, Sector – I, Bindhannagar Kolkata- 700 064 Phone: 033-23217578 Email: vcwbut@sify.com; vc@wbut.ac.in Fax: 033-2334-1030 Email: <a href="http://www.wbutekta.org/">http://www.wbutekta.org/</a> Technology: Pharma-biotech, Bioinformatics and Information technology Year of Establishment: 2008</p>
	33b	<p>Dr. A.K.Chakrabarty Director, Ekta Incubation Centre West Bengal University of Technology AQ 13/1, Salte Lake City, Sector V, Kolkata - 700 091 Email: akchakrabarty@gmail.com Phone: 033-2367-3843</p>
	34	<p>Dr. Dhrubes Biswas Science &amp; Technology Entrepreneurs' Park Indian Institute of Technology Kharagpur-721 302 Phone: 03222-281091, 278618 Email: mdstep@hijli.iitkgp.ernet.in, dbiswas@src.iitkgp.ernet.in Fax: 03222-278618 Web: <a href="http://www.stepiitkgp.in">www.stepiitkgp.in</a> Technology: Technology: ICT Year of Establishment: 2005, 1985, 1987, 1994</p>
<b>LIST OF STEPS</b>		
Gujarat	1	<p>Mr. V. R. Trivedi Dy. General Manager NSIC Technical Services Centre, Aji Industrial Estate, Bhav Nagar Road, Rajkot- 360 003 Phone: 0281 2387613 Email: ntsraj@nsic.co.in</p>

## ANNEXURE

		<p>Fax: 0281 2387729            Web: <a href="http://nsic.nic.in/welcome.htm">http://nsic.nic.in/welcome.htm</a>            Technology: energy conservation and environment (industrial).</p>
<b>Jharkhand</b>	2	<p>Prof. D. Bhagat            Executive Director            STEP-Birla Institute of Technology            Mesra, Ranchi- 835 215            Phone: 0651- 2275895/ 2276008/ 2275896            Fax: 0651- 2535401            Web: <a href="http://www.bitmesra.ac.in/">http://www.bitmesra.ac.in/</a>            Technology: Mechanical            Year of Establishment: 1987</p>
<b>Karnataka</b>	3	<p>D. P. Shivakumar            Chief Executive, STEP-SJCE,            JSS Technical Institutions Campus,            Mysore- 570 006            Phone: 0821- 2548321            Email: <a href="mailto:sjce-step@rocketmail.com">sjce-step@rocketmail.com</a>            Fax: 0821 – 2548321            Web: <a href="http://www.sjce.ac.in/">http://www.sjce.ac.in/</a>            Technology: Electronics &amp; IT            Year of Establishment: 1987</p>
	4	<p>Sh. Suresh Bhat            Director, NITK-STEP,            National Institute of Technology - Karnataka            P.O. Srinivasanagar D.K. District.            Surathkal - 575025            Phone: 0824 2475490, 2477847            Email: <a href="mailto:directorstep@hotmail.com">directorstep@hotmail.com</a>            Fax: 0824 2477590            Web: <a href="http://www.nitkstep.org">www.nitkstep.org</a>            Technology: IT            Year of Establishment: 2004</p>
	5	<p>Dr. M. Mahadeviah            Director, BEC-STEP            Basaveshwar Engineering College            Science &amp; Technology Entrepreneurs Park (BEC-STEP),            STEP Road, Behind BTDA Campus, Bagalkot - 587102            Phone: 08354 233204            Email: <a href="mailto:mmbecstep@yahoo.com">mmbecstep@yahoo.com</a>            Fax: 08354 233204            Web: <a href="http://www.becbgk.edu/beckstep.html">http://www.becbgk.edu/beckstep.html</a>            Technology: food processing, textiles and building technology.            Year of Establishment: 1987</p>
<b>Maharashtra</b>	6	<p>Dr. Rajendra P. Jagdale            Director General            Science and Technology Park</p>

## ANNEXURE

		<p>University of Pune, Pune - 411007            Phone: 20 25699206/25693449            Email: stppune@gmail.com; dirstp@unipune.ernet.in            Fax: 20 25699206            Technology: IT and innovative technologies.            Year of Establishment: 1994</p>
<b>Madhya Pradesh</b>	7	<p>Director            Maulana Azad National Institute of Technology,            M.P.STEP, Bhopal - 462 007            Phone: 0755-2761577            Email: mpstep-mact@hotmail.com            Fax: 0755-2554562            Web: www.manit.ac.in</p>
<b>Punjab</b>	8	<p>Dr. Dinesh Goyal            Executive Director            STEP, Thapar University, Patiala- 147001            Phone: 0175 2393011, 3314            Email: d_goyal_2000@yahoo.com; dgoyal@thapar.edu            Fax: 0175 2393011            Web: tapher.edu/step/index.htm            Technology: agribiotechnology, Biofertilizer,            Food Biotechnology, Tissue Culture.            Year of Establishment: 1998</p>
	9	<p>Mr. J.S. Khullar            General Manager,            GNEC-STEP, Guru Nanak Dev College of Engineering,            Ludhiana - 141 006            Phone: 0161 2814748/ 2814183/5040439            Email: step_gne@yahoo.com            Fax: 0161- 2814748            Web: http://www.gndec.ac.in/            Technology: Mechanical and IT            Year of Establishment: 1986</p>
<b>Tamil Nadu</b>	10a	<p>Mr. R.M.P. Jawahar            Executive Director, TREC-STEP            TREC-STEP, NIT Campus, Tiruchirappalli - 620015            Phone: 0431 2500085,2500697            Email: jawa_ts@yahoo.com / ed@trecstep.com            Fax: 0431 2500175            Web: http://www.trecstep.com/            Technology: Mechanical and IT            Year of Establishment: 1987</p>
	10b	<p>Ms. Gita Chengappa            Manager, TREC-STEP            TREC-STEP, NIT Campus, Tiruchirappalli - 620015            Phone: 0431 2501681            Email: g_chengappa@yahoo.com</p>

## ANNEXURE

	11	<p>Mr. K. Suresh Kumar            Manager, PSG-STEP            Coimbatore- 641004            Phone: 0422 4363300            Email: psgstep@vsnl.com, step@psgtech.edu            Fax: 0422 2573833            Web: <a href="http://www.psgstep.com/">http://www.psgstep.com/</a>            Technology: Mechanical and IT            Year of Establishment: 1998</p>
Uttar Pradesh	12	<p>Mr. Gopal Mehrotra            Manager, HBTI-STEP            Harcourt Butler Technological Institute            Nawab Ganj, Kanpur - 208 002            Phone: 0512-2560831/ 2562536/2 214210            Email: gm_step@rediffmail.com            Fax: 0512- 2562536            Web: <a href="http://www.hbti.ac.in/">http://www.hbti.ac.in/</a>            Technology: Paints, Chemical, IT            Year of Establishment: 1987</p>
Uttarakhand	13	<p>Prof. Devdutta Das            Co-ordinator , STEP, Indian Institute of Technology , Roorkee,            Opposite State Bank Building, Roorkee - 2476679            Phone: 01332-272337            Email: step@iitr.ernet.in, devdsfwt@iitr.ernet.in            Fax: 01332-273967, 273560            Web: <a href="http://www.stepiitroorkee.com">www.stepiitroorkee.com</a>            Technology: Environment, Materials and IT            Year of Establishment: 1996</p>
West Bengal	14	<p>Dr. Dhruves Biswas            Managing Director, STEP, Indian Institute of Technology            Kharagpur - 721 302            Phone: 03222-281091, 278618            Email: mdstep@hijli.iitkgp.ernet.in            Fax: 03222-278618            Web: <a href="http://www.stepiitkgp.in">www.stepiitkgp.in</a>            Technology: Agri Products, Mechanical            Year of Establishment: 1988</p>
<b>LIST OF TBIS UNDER CONSIDERATION (Yet to be sanctioned)</b>		
	1	<p>Dr. S. Selvan            Principal,            St. Peter's Engineering College Avadi, Chennai - 600 054            Phone: 044-26558080-84            Email: selvanpeter@hotmail.com            Fax: 044-26555430            Technology: Refrigeration and cold chain</p>

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## ANNEXURE

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|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>Prof. P. V. Kadole<br/>D.K.T.E. Society's , Textile &amp; Engineering Institute,<br/>P.O. Box – 130, "Rajwada". Dis. – Kolhapur<br/>Ichalkarnaji - 416 115<br/>Phone: 0230-2421300,2432340, 2437316<br/>Email: skrw@sancharnet.in, edcdkte@yahoo.com<br/>Fax: 0230-2432329<br/>Technology: Textile Technology</p>                                         |
| 3 | <p>Dr. Manohara Pai M<br/>Associate Director, Manipal Institute of Technology<br/>Innovation Centre, Manipal - 576 104<br/>Phone: 0820 2925375, 2925051<br/>Email: mmmpai@manipal.edu<br/>Fax: 0820 2571071<br/>Technology: Information Technology &amp; Health Care</p>                                                                                     |
| 4 | <p>Prof. R. Raghunanadan<br/>Chief Executive JSSATE-STEP/ ITBI<br/>Global Incubation services (G-INSERV)<br/>JSS Mahavidyapeetham<br/>JSS Technical Institutions Campus, Mysore - 570006<br/>Phone: 0120-2401514/16<br/>Email: ce@jssstepnoida.org<br/>Fax: 0120 – 2401516/2401451<br/>Technology: Information and Communication Technologies</p>            |
| 5 | <p>Dr. Arindam Dutta<br/>Professor-in-charge], KIIT Centre for Innovation and<br/>Entrepreneurship –<br/>KIITCIE<br/>KIIT University, Campus-XI, Patia, Bhubaneswar - 7510204<br/>Phone: 0674-2725466<br/>Email: bapjan@gmail.com<br/>Fax: 0674-2725732<br/>Technology: Pharma-biotech, bio-informatics,<br/>qexploitive micro-biology, Agri-Tech and IT</p> |

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## LIST OF ABBREVIATIONS

AABI	Asian Association of Business Incubator
BPO	Business Process Outsourcing
DST	Department of Science & Technology
F.I.'s	Financial Institutions
GOI	Government of India
H.I	Host Institution
HP	Hewlett-Packard
IAPN	Incubation Asia Pacific Network
IBM	International Business Machine
ICRISAT	International Crops Research Institute for the Semi Arid Tropics (ICRISAT), Patancheru
ICT	Information and Communication Technology
IIM	Indian Institute of Management
IIT	Indian Institute of Technology
IP	Intellectual Property
ISBA	Indian STEP & Business Incubator Association
JSSATE	J.S.S. Academy of Technical Education, Noida
MNCs	Multinational Company
MOU	Memorandum of Understanding
NAC	National Expert Advisory Committee
NBIA	National Business Incubator Association
NID	National Institute of Design
NIT	National Institute of Technology
NRI	Non –resident Indian
NSIC	National Small Industries Corporation Ltd., Rajkot
NSTEDB	National Science & Technology Entrepreneurship Development Board
PPP	Public Private Partnership



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## LIST OF ABBREVIATIONS

PSG	PSG College of Technology, Coimbatore
R&D	Research & Development
RFID	Radio Frequency Identification
RTBI	Rural Technology Business Incubator, IIT, Madras
SE	Statement of Audited Expenditure
SIDBI	Small Industries Development Bank of India
SINE	Society for Innovation & Entrepreneurship
SME	Small & Medium Enterprises
S&T	Science & Technology
STEP	Science and Technology Entrepreneur's Park
STPs	Science & Technology Parks
TBI	Technology Business Incubator
TREC	Tiruchirappalli Regional Engineering College, Trichy
UC	Utilization Certificate
UC, Barkley	University of California
UKBI	United Kingdom Business Incubation
UT	University of Texas
VC	Venture Capitalist
VIT	Vellore Institute of Technology, Vellore

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## References

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5. infoDev Incubator Support Centre (website : [www.idisc.net](http://www.idisc.net))
6. National Business Incubation Association (website: [www.nbia.org](http://www.nbia.org))
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13. Anita Gupta and B. K. Jain, Technology Business Incubators, Opportunities and Challenges for India, APCTT Publication, Tech- Monitor, Jul-Aug 2002
14. UNESCAP (2001), Strengthening Technology Incubation System for Creating High Technology-Based Enterprises in Asia and the Pacific