Technology business incubators are a powerful economic development tool. They promote the concept of growth through innovation and application of technology, support economic development strategies for small business development, and encourage growth from within local economies, while also providing a mechanism for technology transfer.

Business incubation is the temporary, facilitative support provided to start-up enterprises through the delivery of complex services and special environment with the aim of improving their chance of survival in the early
phase of the life span and establishing their later intensive growth.

The term incubation refers to the process of support, while incubator stands for the organization and infrastructure that are set up for these purposes.

Technology business incubators have emerged from two influences:

1. An increasing interest in fostering indigenous business development, particularly small business entrepreneurship, as an economic development strategy.

2. The desire to develop high-technology businesses in the era of globalisation.Since business incubation is a very complex area it has been looked at variously, from different angles, by scholars and practitioners alike, who do not yet have consensus on the definition for this important economic development activity. A few relevant definitions are given in succeeding paragraphs to illuminate our understanding.

Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies, also referred to as ‘clients’ [of the incubator], by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts.

A business incubator’s main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies.

CLASSIFICATION OF INCUBATORS

Incubators vary in the manner they deliver their services, in their organizational structure and in the types of clients they serve. Highly adaptable, incubators have differing goals, including diversifying regional economies, providing employment for and increasing wealth of their local areas, and transferring technology from universities and major corporations. Incubator clients are at the forefront of developing new and innovative technologies creating products and services that improve the quality of our lives in communities around the world.

Incubators differ from research and technology parks in their dedication to start-up and early-stage companies. Research and technology parks, on the other hand, tend to be large-scale projects that house everything from

corporate, government or university labs to very small companies. Most research and technology parks do not offer business assistance services, which are the hallmark of a business incubation program. However, many
research and technology parks house incubation programs.

There are a variety of incubators, which are defined below:

A. Business incubators promote continuous regional and national industrial and economic growth including increasing employment through general business development or stimulating specific economic objectives such as industrial restructuring and wealth generation or utilization of resources.

The incubator combines a variety of small enterprises support elements in one integrated affordable package. It has a special niche, i.e. nurturing early stage, growth-oriented ventures, through focussed assistance within a supportive environment.

B. **Technology Incubators (TI) :** The primary goal of technology incubators is to promote the development of technology-based firms, and assist in completion of the technologies under development. These are located at or near universities, R&D institutes, and Science and Technology parks. They are characterized by institutionalized links to knowledge sources including universities, technology transfer agencies, research centres, national laboratories and skilled R&D personnel. The aim is also to promote technology transfer and diffusion while encouraging entrepreneurship among researchers and academics.

C. Technology Innovation Centres (TIC): The TICs conduct research and development (R&D) and technology innovations required by the industrial field, which aims to jointly invest resources into university campuses or research institutions and achieve commercialization with support from business enterprises or public institutions. As a concept the TIC is similar to that of the Technology Parks, and, at the R&D stage, to the TI.

D. Technology Business Incubators (TBI): The TBI is a venture of universities, public research institutes,local government and private institutions to promote and bolster a new technology intensive enterprise.

TBI refers to the type of incubation where the focus group consists of innovative, mostly technology-oriented or knowledge-intensive service sector enterprises and interactions with the academic sphere giving a substantive element of the incubation process. The pushing forward of TBI occurred in parallel with the vigorous transformation of today’s spatial economic processes, it can be interpreted as a reply for the challenges of the learning-based economy.

As TBI intervenes into the spatial processes of the learning-based economy, integrates innovation and enterprise-policy, and is implemented with the active participation of the academic sphere, it has certain unique
characteristics that deserve mention:
• TBI fosters innovative start-up firms, thus the process of incubation is strongly intertwined with the innovation process that occurs in the supported enterprises.

• The objective of TBI is the realization of certain local economic development goals (ultimately the enhancement of the competitiveness).
• TBI aims at the development of new innovative industries by stimulating the establishment and early growth of start-up firms.

What differentiates technology business incubators from other incubators?

Most general business incubator programmes hope to increase the rate of new business formation, expansion, and development, and to increase the chances of survival among client firms — whether they are focused on
technology-based businesses or not.

Another difference is that general business incubators tend to focus on client firms that have or are developing proprietary advanced technology with marketable products or services. Such firms usually have a strong R&D component. Technology business incubators offer a slightly different array of services. Incubators associated with universities typically offer access to advanced technology laboratories, equipment, and other research and technical resources such as faculty, staff, students, and libraries.

TECHNOLOGY INCUBATION IN INDIA

The National Science & Technology Entrepreneurship Development Board (NSTEDB), established in 1982 by the Government of India under the aegis of Department of Science & Technology, is an institutional mechanism for promoting knowledge-driven and technology-intensive enterprises. The Board, having representations from socio-economic and
scientific Ministries/Departments, aims to convert "job-seekers" into "job-generators" through Science & Technology (S&T) interventions. The objectives of NSTEDB have been defined to be:

• To promote and develop high-end entrepreneurship for S&T manpower as well as self-employment by utilising S&T infrastructure and by using S&T methods.

• To facilitate and conduct various informational services relating to promotion of entrepreneurship.

• To network agencies of the support system, academic institutions and Research & Development (R&D) organisations to foster entrepreneurship and self-employing using S&T with special focus on backward areas as well.

• To act as a policy advisory body with regard to entrepreneurship.

These objectives have been operationalised by NSTEDB through two major interventions. Namely, the scheme for Science & Technology Entrepreneurs Parks (STEP), which was started in the early 1980’s, and the Technology Business Incubators (TBI) programme launched in early 2000.

Technology Business Incubators (TBI)

The need for instruments such as TBI has been recognised the world over for initiating technology led and knowledge driven enterprises. Studies also show that such mechanisms help not only in the growth of technology
based new enterprises but also in improving their survival rate substantially (from 30 per cent to over 70 percent).

TBIs have been promoted by NSTEDB to achieve the following objectives:
• Creation of technology based new enterprises,
• Creating value added jobs & services,
• Facilitating transfer of technology,
• Fostering the entrepreneurial spirit,
• Speedy commercialisation of R&D output,

These TBI are usually located near a source of technology and knowledge i.e. around R&D Institutions/Academic Institutions or have strong links with such institutions to ensure optimal use of the already existing expertise and facilities thus keeping the cost of the TBI on lower side. Locating TBIs in such location also reduces time lag between technology development and its commercialization. Further, as the success of a TBI largely depends on its location and management besides quality of tenant enterprises, following aspects relating to the host institution (HI) are always kept in view while selecting the location of the TBI:

• R&D track record and subsequent commercialization of R&D output,
• Dedicated team of R&D persons,
• Industrial milieu in the region,
• Proximity to other R&D/academic institutions,
• Infrastructure, facilities and expertise available,
• Strong commitment and willingness of the Host institution.

SCIENCE & TECHNOLOGY ENTREPRENEURS PARK

Science Park initiatives are meant to help in creating an atmosphere for innovation and entrepreneurship; for active interaction between academic institutions and industries for sharing ideas, knowledge, experience and
facilities for the development of new technologies and their rapid transfer to the end user.

The Science & Technology Entrepreneurs Park (STEP) programme was initiated by NSTEDB to provide a re-orientation in the approach to innovation and entrepreneurship involving education, training, research, finance, management and the government. A STEP creates the necessary climate for innovation, information exchange, sharing of experience and facilities and opening new avenues for students, teachers, researchers and industrial managers to grow in a trans-disciplinary culture, each understanding and depending on the other's inputs for
starting a successful economic venture. STEPs are hardware intensive with emphasis on common facilities, services and relevant equipment.

The major objectives of STEP are to forge linkages among academic and R&D institutions on one hand and the industry on the other and also promote innovative enterprise through S&T persons many of whom were otherwise seeking jobs soon after their graduation, and also to:

• Provide R&D support to the small-scale industry mostly through interaction with research institutions.
• Promote innovation based enterprises.

STEPs are autonomous bodies registered as societies under the Societies Registration Act or registered as not-for-profit companies under the provisions of Section 25 of the Companies Act, 1956.

NSTEDB has so far catalysed 15 STEPs in different parts of India, which have promoted nearly 788 units generating annual turnover of around Rs. 130 crores and employment for 5000 persons. More than 100 new products and technologies have been developed by the STEPs / STEP promoted entrepreneurs. In addition, over 11,000 persons have been trained through various skill development programmes conducted by STEPs.

Facilities and Services Provided by STEPs
They offer facilities like nursery sheds, testing and calibration facilities, precision tool room/central workshop, prototype development, business facilitation, computing, data bank, library and documentation, communication , seminar hall/conference room , common facilities such as phone, telex, fax, photocopying.

They also provide services like testing and calibration, consultancy, training, technical support services, business facilitation services, database and documentation services, quality assurance services and common utility services.