

**REGIONAL INNOVATION SYSTEM: STPI IN THE MAKING OF
BANGALORE AS THE GLOBAL TECHNOLOGY HUB**

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ABSTRACT

Agglomeration of urban centers of growth is not new. It is as old as the birth of human civilization. But when a new development defies established patterns of growth it becomes a powerful locus of intellectual curiosity and further analysis. Rise of Bangalore as the global high technology hub, in relatively backward economic conditions, is one such phenomenon. Although much of the success of software enterprises is attributable to individual entrepreneurial drive and a congruent environment supportive public policies are considered essential in the growth process of a cluster's evolving relationships. Among various public policy initiatives one that outshines and merits serious consideration is the Software Technology Parks of India (STPI). Currently there are 39 STPI centers across the country. But Bangalore still remains the most favored destination for local firms as well as MNCs and STPI (B) the most productive of all the centers. Bangalore attracts foreign equity firms at the rate of 2 per week and STPI (B) has experienced highest rate of export growth in the last three years. Bangalore is the highest contributor of national STPI exports. STPI (B) has played a crucial role in building relationships, intra-industry, industry – government interface, entrepreneur – venture capital interface etc. It pulls along various component of the intellectual ecology thus enhancing the operating synergy in the cluster's exchange relationships. In this paper we seek to explore the contribution of STPI along following parameters: Enhanced Technology Capabilities, Government-Industry interface, Entrepreneur – venture capital interface, Long Range Planning and forward thinking and Leadership.

KEYWORDS: High Technology in Bangalore, Clustering, Software Technology Parks, Science Parks, and Regional Innovation System.

INTRODUCTION

The appearance of regional innovation systems is not a new phenomenon. It is as old as the urban agglomeration of economic activity in the history of human civilization. Regional agglomeration of economic activity symbolizes the existence of multivariate unique factors and that the interaction among those bear some consequence to the innovation process within the region. Their continued existence throughout the ages and increasing relevance even at the dawn of 21st century suggests that such concentration of economic activity in close regional proximity has been a powerful source of global economic growth and competition. Porter's studies on competition demonstrated a historical understanding of this process of industrialization and presented clustering as a strategic theory of competitive advantages among nations. Forceful realization of this fact in recent years has prompted formulation and implementation of various types of public policy measures in both the developed and developing nations to promote regional development activity. Consequently the last decade has witnessed a proliferation of regional high tech centers around the globe.

Bangalore is one such region that has engaged the attention of academic enquiry, policy planners, and development strategists alike in both developed and developing nations. The key issues of concern are centered on understanding how this high tech phenomenon has occurred in relatively backward economic conditions? Can this be replicated? What lessons does it offer to other developing regions? In order to understand the Bangalore phenomenon it is important to put this in perspective.

Although there exists an array of essential common features that underlies all regional innovation systems across the globe but the distinguishing features are critical that lends a unique character to any cluster and makes its study a valuable exercise. Bangalore occupies a far more unique space in the spectrum of high -tech regions located or being promoted around the globe. In the national context Bangalore appears to be the only region to have benefited most from the process of liberalization that began in India in 1991. Following the example of Bangalore several other states in India have tried to replicate the phenomenon, but Bangalore remains the most attractive location even today. There are 39 Software Technology Parks operating across the country, but Bangalore alone employs more than 60 percent of India's IT workforce. It provides 40 percent of all the IT related exports from the country. Bangalore is the highest job creator contributing nearly 100,000 net positions per year. Bangalore attracts foreign equity based firms at the rate of 2.5 per week. Bangalore is the home to highest number of SEI-CMM 5 Level rated companies in the world. Among the top 10 IT exporters of the country all are located in Bangalore.

Bangalore is often called the Silicon Valley of Asia (Saxenian, 2000) and is often compared with the Silicon Valley of California USA. While there may be certain generic features common to such regions, Bangalore differs in several important respects. Bangalore is the only successful high-tech region at that scale to have come up outside the Silicon Valley. Bangalore is the only such cluster to have emerged in relatively backward industrial economic conditions. While Silicon Valley is predominantly hardware and research oriented region, Bangalore is primarily dominated by software companies.

METHODOLOGY:

Any regional innovation system is so characterized by its implied specificity. As mentioned above that Bangalore is far more unique in many respects than most other high-tech regions around the world. In this paper we are focusing on a specific public policy initiative the consequences of which are felt much strongly in Bangalore region than in any other part of the country. Innovation success factors obviously owe much more to spatial specificity. In order to capture the special features of STP Bangalore a methodology combining multiple tools including literature survey, questionnaire and personal interview was followed.

Since the clusters of economic activity have existed throughout the ages, there certainly are identifiable generic factors yet spatial specificity is what defines the character of any given cluster. A survey of existing literature, which is abundant, is useful in identifying precisely the character of Bangalore's innovation system within national as well as international context. This survey facilitated a comparative view and a theoretical discussion on the nature of clustering activity identifying generic factors and regional specific drivers.

First set of questionnaire was aimed at the organizational structure of STP with a view to understand formal operational mechanism and the dynamics of its complex relationships. STP is an autonomous body created by the central government. Government agencies are often subject to various pulls and pressures. Being autonomous, and armed with a combination of statutory powers, STP itself could become a power centre. While the creation of STP as single window channel may have eased many of its functions but the nature of its responsibility to coordinate between the Central government, the State government agencies and the industry lends a degree of complexity to STP's operational mechanism. Second set of questionnaire was aimed at understanding the actual process of delivery and the role of STP's leadership. A third set of questionnaire was aimed at understanding the industry's perception of the STP.

In the first case of data collection we relied on a combination of tools i.e. literature survey focused on policy documents; public documents etc and personal interviews. In the case of second set of data collection we relied exclusively on personal interviews. For the third set, although a questionnaire was prepared and sent to a select number of companies particularly in the SME segment but the response rate being abysmally low, we had to take recourse to personal meetings and interviews.

Literature Survey:

Throughout the globe as many as 415 such clusters have been identified existing and functioning under some name suggesting high technology connection. Clusters are group of inter-related industries. They are found to have two key elements. Firstly, firms in the cluster must be linked. Secondly, groups of inter-linked companies locate in close proximity to one another. Put another way clusters are, "Geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example universities, standards agencies, and trade associations) in particular fields that compete but also co-operate". (Porter, 1998) The links between firms are both vertical and horizontal. Most of these linkages involve social relationships or networks that produce benefits for the firms involved. A Technology Park housing a number of firms may emerge as a cluster or a large cluster can have various Technology parks. In our study we are focusing on the Software Technology Park in Bangalore. A Technology Park is usually defined as a property based development with high quality physical infrastructure to exploit available resources in proximity to develop high technology enterprises, which coalesce together to form a cluster. However, for a long-term success the governing factors of cluster functioning must focus on real innovation the drivers of which are embedded in social relationship of the region. Morosini defines, that " an industrial cluster is a socioeconomic entity characterized by a social community of people and a population of economic agents localized in close proximity in a specific geographic region. Within an industrial cluster, a significant part of both the social community and the economic agents work together in economically linked activities, sharing and nurturing a common stock of product, technology and organizational knowledge in order to generate superior products and services in the marketplace." (Morosini, 2004)

A number of common features are found across successful clusters around the world. These can be grouped as (a) 'Soft' elements such as networks and institutional development for skills, expertise and innovation culture, (b) 'Harder' aspects such as the physical infrastructure and the presence of large firms etc; and (c) Intangible elements such as leadership, entrepreneurial culture, access to sources of finance etc.

Historically, all the clusters have appeared in forms that can be grouped in two broad categories, namely;

- (1) **Endogenous Clusters:** These regions have emerged out of their own steam naturally coalescing together without much public policy intervention. Policy initiatives in these regions, to be successful, have been modulated in way to accelerate the operating synergies towards cluster formation or its functioning. Bangalore falls in the category of endogenous clusters.
- (2) **Exogenous or grafted:** These regions are artificially created geographical spaces where high technology industries are being promoted primarily through public policy initiatives. Most such clusters are facing crisis of existence unless accompanied by extensive social engineering.

DISCUSSION AND CONCLUSION

Although STPI has been created by the Government of India, its autonomous character has had significant bearing on its functioning. Being a government body its operational and administrative levers are attached to the central government. The Minister of Communication and information Technology is the Ex-officio head of STPI and its Governing Council comprises of representatives from all the concerned departments and ministries that have any bearing on the decision making process. Such composition at times is helpful in coordination and speedier decision making. Software development activity or by implication any high technology related business has come to occupy an esoteric position that alleviates much politicking and obstructive debate. The success of software related business coincided with the progressive liberalization and deregulation in Indian economy. IT related business has become an important source of wealth generation, therefore, each individual party to decision making that affects this business, would like to appear as an active contributor.

While STPB's relation with the government may be governed by formal structure, its coordination mechanism with the industry is more informal. Informal relationships are hallmark of open atmosphere mutually reinforcing and flourishing. Being driven by proactive organizational culture STPB is extremely sensitive to informal ideas. There is uniform perception across the industry that howsoever futuristic, non-feasible, imaginary they may be, ideas never die in STPB. Since STPI has been created with an express objective of providing high quality technology infrastructure, there is an abiding faith in the power of technology. The seemingly imaginary ideas of today may become successful product or process tomorrow is the motto on the basis of which ideas are stored in STPB. Since there is no prescribed format to receive business ideas, STPB provides shape to such intuitive ideas through technological expertise and explores business potential through its market research and environmental scanning. These processes serve as an effective tool for STPB in gap analysis and determine the feasibility of the project. Though STPB does not maintain any in-house R & D facility, it helps companies in technology sourcing and tie-ups.

INCUBATION: This informal process of idea generation has had a tremendous impact on incubation activity within the Park. STPB claims to have successfully nurtured around 50 companies (Failures, however, are not recorded). The science and technology entrepreneurship and incubation activity in India began much earlier when the Department of Science and Technology initiated NCSTED and STEP schemes. But the incubation activity gained real momentum when STPI, particularly STP Bangalore successfully nurtured some of the software majors such as Infosys, WIPRO, Tata Information Services, Sonata etc, which now stand at the forefront of this industry. Incubation as business proposition and tool of building high technology based competitiveness gained new meaning and respectability.

First Generation Incubation-Brick, mortar and stand-alone: Evolution of incubation process at STPB is a saga of technological excellence, tenacity, strategic planning, and organizing. It all began way back in 1991, when STPB was established in the Electronic City, a Technology park near Bangalore, as what the STPB Director calls " a table-chair and telephone based incubation centre". In those early years, there was little conceptual understanding of incubation. The prevalent thinking was dominated by the industrial age hardware-based machine paradigm wherein promotion of industrial activity meant the provision for physical infrastructure alone and the rest was left to the concerned entrepreneur. The entrepreneur was expected to have his own business plan and largely tap his own financial resources. Even during this period STPB nurtured dozens of companies that have now become global IT majors. Primarily driven by the newly unleashed entrepreneurial energy resulting from progressive liberalization, availability of STP type facility (see Annexure I) and stimulated by international demand for software solution to the impending, real or imaginary, Y2K crisis, many small companies successfully laid foundation for future software development facility. Overtaking Y2K demand, e-commerce boom and demand for online services fuelled new businesses focusing on application software. Successful transition of global companies through Y2K boosted India's image as potential centre for software development since most of the Y2K solutions were outsourced from India. Since most of this work was undertaken through body shopping, Indian software talent earned the sobriquet " Cyber Coolies" or "High-tech Coolies". STPB had much to do with the body-shopping business model. As the subsequent developments would suggest that this proved to be an important strategic tool for accumulation of liquid assets that enabled companies to venture into more sophisticated areas of software development (Banerjee, 2004). Cost-based competitive strategy for product and services in international market is as much sensitive to labour value as to the cost of capital. Availability of liquid assets through internal accrual has become the basis for cost-to-quality advantages that Bangalore based firms enjoy today.

Second Generation Incubation - Networked Incubator:

No industrial development in history is marked by such rapid technological changes and levels of business complexity as the IT related industries. Emergence of new technologies and the increasing globalization of R & D and investments are challenging the nature and scope of industrial competitiveness. Knowledge and technological capabilities are becoming increasingly crucial for national development and ability to respond to emerging challenges and opportunities. Promotion of technological ventures through incubation is an important tool for commercializing R & D output and transfer of technology. By the end of last century, as the theory of core competency gained ground, the old " big is beautiful" industrial order gave way to new thinking that began to see "small" and "entrepreneurial" is better. Therefore, promotion of high tech SMEs assumed greater significance in the new order. STPB leadership has been very much aware of changing technology and paradigms. B. V. Naidu, the Director of STPB, began to speak about new phase of software development ever since the high tech venturing entered a down turn in the Californian

Silicon Valley. He realized that now the growth of fledglings had to be encouraged as the older generation companies were growing vigorously and preparing to move up the value chain. "This" he said, "is in keeping with the global trend, where the major contribution to software comes from SMEs." Consequently, along with upgrading the incubation facility in Bangalore STP, new centres, what Naidu termed, "Networked Incubation Centres" have been created in neighbouring cities of Mysore, Mangalore and Hubli. There an entrepreneur can walk in with a business plan and start his operation from the day one. With in a short span of six months a firm incubated with one person has grown to employing a team of 150 persons with a turn over of \$120 million.

Third Generation Incubation - Integrated Incubator:

In one of its latest global research on technology trends Gartner pointed out that:

1. Enterprise partnerships will become a critical focus of IT value
2. Technology, processes and business skills will be blended, organization wide
3. There will be no more IT investments, only business investments
4. Businesses that understand how to generate real business advantage from fusing technology, business process design and business relationships will outperform those who fail to do so.

As a consequence, the complexity of innovation and the increasing quality requirements of investors are driving the services of incubators towards a higher level. STPB is strongly aligned with these trends. Naidu believes that to be successful we need to create valuable partnerships. These create win-win situations, establish mutual goals and objectives, enable the parties to anticipate and resolve problems, reduce administration cost and time delays, build trust and encourage open communication.

Realizing the emerging complexity of software and high-technology businesses, and reflecting the need of rising value chain, a new incubation centre, what Naidu termed as a fully "Integrated Incubation Centre" is being created in Bangalore, which is expected to be operational by August 2005. The "Bangalore Incubation Centre" will provide linkage to venture capitalists, academic institutions and The Indus Entrepreneurs (TiE) to help people with ideas turn into entrepreneurs. This centre will also have international linkages with incubation centres identified in the US, Europe, Israel and Taiwan. People with innovative ideas can work together internationally in real time and start up new ventures. STPB would play the role of a facilitator.

One of the most outstanding features of STPB is its ability to attract 100% foreign equity firms to locate their operations in Bangalore. At present Bangalore attracts foreign equity firms at the rate of 2.5 per week. The fundamental reason appears to be the cluster effect resulting from early mover advantage. Foreign firms would conduct their own market research, scouting around the country and often zero-in on Bangalore because this is the only location capable of providing required resources that add cost-to-quality advantage. Naidu believes that Bangalore has a kind of intellectual ecology that acts as powerful magnet attracting mature foreign firms and helps nurturing new ventures. Because of early clustering, presence of several IT majors now provides anchorage to various SMEs.

Among the major components of that ecology are educational institutions, research institutes, a very large pool of consultants, experienced professionals in every conceivable field, large base of heavy industries, most of them related to cutting edge defense technologies, defense electronics industry. Bangalore also has a large base of Bohemian population, what Richard Florida attributes as common ingredient in the social milieu of all high tech regions around the world. Typical of most innovative regions around the world, Bangalore has a highly cosmopolitan culture. Among all these constituents of Bangalore's intellectual ecosystem, educational institutions play a crucial role not only maintaining steady supply of young technical talent but also quickly responding to emergent skill demands. Bangalore institutes offer several such courses that are not found in any other part of the country (Rawat, 2003). Naidu seems acutely aware about the value of diversity in this ecosystem. When asked about what differentiates Bangalore vis-à-vis other planned high technology centres being promoted by state and central governments, he promptly mentioned two significant factors, firstly the technological infrastructure and secondly the availability of skilled manpower and diversified cultural milieu of Bangalore region.

Naidu asserts that STPB is a process driven enterprise that requires constant updating of skills both technical as well as soft skills. For this purpose STPB maintains a well-planned scheme not only for the members of STP but also for external organizations. Best practices and new technological knowledge are disseminated through seminars, symposia, lectures etc. This activity also contributes to brand building. Overtime, STPB has accumulated an array of specialized skills, which are delivered through its consulting activity.

Public policy is credited to be an essential ingredient of promoting high technology innovative clusters. This has assumed particular significance since the popularity of Silicon Valley and the rise of Bangalore's Silicon Plateau. Bangalore STP is an interesting case in point from this perspective. While provisions of public policy regime are uniformly applicable to all the regions and STPs in the country but Bangalore continues to retain its leading position. Regional factors of innovation characterized by its unique intellectual ecology supported by the state government initiatives obviously are playing more significant role. Since innovation system is a spatial specific process, the public policy initiatives to be successful must necessarily be subordinated to the dynamics of this system. The autonomous character of STPs has been particularly useful in fine-tuning public policy measures to suit the local needs. Besides, the state of Karnataka has historically maintained a proactive posture in promoting science, technology, education and industry. Its decision to create an 'Electronic City' - a special techno-business zone - came much before STPI scheme was even conceived. Bangalore experience clearly suggests that public policy initiatives must be aimed at promoting regional innovative factors rather than concentrating on regulatory mechanism. Naidu, the head of Bangalore STP is very categorical about the importance of autonomous character of STPI. It is the autonomy of operational mechanism that has enabled STPB leadership to pursue its proactivism in planning process and execution.

In our analysis of STPB, two factors emerge as strong drivers that provide Bangalore a sustained position. First, a highly sophisticated technological infrastructure and secondly,

the leadership. The technological excellence is seen in its data communication structure (Annexure I) and the evolution of incubation facility as mentioned above.

LEADERSHIP:

Success of any such venture is dependent on the leadership that guides multiple processes and coalesces these to converge on the successful trajectory. The kind of leadership role depends upon the stage of development of the cluster. Frederick Emmons Terman, a professor of Electrical Engineering at the Stanford University, is credited to be the father of Californian Silicon Valley. Way back in 1930s he began to inspire some of his students to become entrepreneurs. The most famous of these were William Hewlett and David Packard who laid the foundation of HP Corporation. Terman played the role of mentor, guide, and venture capitalist to many of the ventures attempted by his students.

If one were to identify one such personality who has played a critical role in the evolution of Bangalore Silicon Plateau, it could only be BV Naidu, the current head of Bangalore STP. Naidu has been the longest serving official in STPI. He joined STPB right since its inception and has risen to become its Director. Business success stories within the cluster throw up many heroes. Narayan Murthy, Azim Premji, Som Mittal, Ashok Soota, Jerry Rao, Srinu Rajan and several others can be identified as the icons of Bangalore Silicon Plateau, but Naidu has played much important role of bonding relationships that feed arteries of Bangalore's innovation system. As has been pointed out earlier that much of the idea generation, project initiatives, alliances and partnerships has emanated from informal web of relationships. Converting such ideas into executable business propositions requires a certain type of leadership with wide acceptability and confidence.

In the Indian context, perpetuation of a web of informal relationships may be attributed to a historical factor. In an environment marked by "license-permit raj", creation of STPI, with total autonomy and flexibility, itself was an unusual step. Since there existed no precedence to guide operational mechanisms of STPI, open-house informal exchange of knowledge was allowed as an alternative mechanism and the initial successes have now led to wide acceptance of this process. Naidu, with his self-effacing, non-assertive personality and tenacious attitude is amply suited to facilitate business alliances and partnerships. He, however, attributes "transparency" as a significant factor in crystallizing ideas into real business propositions.

Armed with an engineering degree from the Indian Institute of Technology, Naidu began with almost a missionary zeal to first put together a truly world class technical infrastructure for data communication. STPB's ability to provide state-of-the-art technological facility has won the admiration and confidence of the industry particularly of the SMEs. Naidu enjoys enormous reputation in IT circles and exerts tremendous impact on policy planning, promotion and project execution within STPB, government and industry. This influence is not without any reason. The entire edifice of IT in Karnataka, including the IT Ministry itself has been incubated in STPB. BangaloreIT.com, Karnataka IT Task Force, Karnataka IT Venture Fund, Indian Institute of Information Technology, all

owe their origins to STPB. The presence of STPB in all these bodies is instrumental in maintaining close coordination in planning and concerted execution of projects.

Notwithstanding common factors in most successful high tech regions it is the spatial specificity that makes the study of a given cluster a useful study. Nature of public policy initiatives will differ depending on the type of clustering activity. Autonomy of STPB type key coordinating agency is an essential ingredient of success as accelerated pace of change in these regions demands quick modulation of policy measures. Apart from physical infrastructure presence of enlightened leadership can play a significant role in building essential social relationships. It is in these relationships that the innovation energy of the region remains embedded.

ANNEXTURE: I

SOFTWARE TECHNOLOGY PARKS OF INDIA

Software Technology Parks of India (STPI) is an autonomous organization set up by the then Department of Electronics (now part of the Ministry of Communications and Information Technology), Government of India, in 1991, with the objective of encouraging the development and promoting the Software Exports from India. Recognizing the immense potential of the Indian Software Industry, the then Ministry of Information Technology (MIT) brought out in 1986, a policy document on "Computer Software Export, Software Development and Training". Subsequently, in 1990, the Ministry formulated the Software Technology Park (STP) scheme to promote & facilitate software exports from India. Offering new fiscal incentives, state-of-the-art infrastructure and an investor friendly environment, the scheme has contributed to a steep growth in the Software Exports.

Salient features of STP scheme:

- STP is a 100% export oriented scheme for the development and export of computer software using data communication links or in the form of physical media including export of professional services.
- Approvals are given under Single Window Clearance Mechanism
- Projects Costing upto US\$ 10 Millions with Indian Investment & NRI funds on non-repatriable basis are cleared by local STP authorities at centre level itself
- 100% Foreign Equity is permitted
- All the imports in the STP units are completely duty free
- Import of Goods on loan, free of cost & lease basis is permitted
- Re-export of Capital Goods brought on loan/lease/free of cost is permitted
- Domestic purchases are completely excise duty free
- Domestic purchases are eligible for the benefit of deemed exports to the suppliers
- The sales in Domestic Tariff Area (DTA) are permissible upto 50% of the value of Exports

- STP units are exempted from corporate income tax for a period upto ten years.
- Depreciation on capital goods upto 90% over a period of five years and also the accelerated rate of 7% per quarter during the first two years subject to an overall limit of 70% in the first three years.

OBJECTIVES

STPI offers complete environment to software units for their growth and

- Act as a front-end to the Software Industry for the government policies & approvals.
- Provide reliable advanced state-of-the-art data communication services and computing facilities.

Provide incubating infrastructure like office space, general amenities for the Small & Medium Entrepreneurs (SMEs)

- To promote development & export of software & software services through technology assessments, market analysis, marketing segmentation, marketing support etc.
- To train professionals and encourage design and development in the field of software technology & software engineering.
- Perform various functions like issuance of import certificate, software valuation, attestation of declaration etc., for the member units as a single point interface

STRENGTH OF STP

In an endeavour to have India as a place for Software smart sourcing /offshore software development centres, STPI

- Operates 12 international gateways for providing reliable High-Speed Data Communication (HSDC) services to software exporters.
- Provides marketing support.
- Provides incubation facility
- Offers High-end training programs in niche areas.
- Provides consultancy to various State Governments in planning & establishment of STPs in their region.
- Provides consultancy for design & building of customized high-speed captive networks.

TECHNICAL INFRASTRUCTURE

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.

High Speed Data Communication Facilities

Recognizing the importance of efficient and reliable data communication facilities, as a backbone for software exporters, STPI established HSDC facilities providing global connectivity.

- These facilities include F3/E3/H4 IBS earth stations, which serves International Gateways and looking at INTELSAT satellite.
- These gateways are integrated with link of site point-to-multipoint digital TDMA equipment for connecting the user premises located outside the complex by means of microwave links.
- The units operating inside the complex have access to these facilities through the Local Area Network.

SoftNET : Software Exporters Network

- An integrated networks service called "SoftNET" was designed and established in the STPs for providing wide variety of Value Added Services that are needed for software development and export operations. SoftNET provides the following services.
- SoftPOINT, a leased channel digital point-to-point service. different data rate options are available (nX64 kbps, nX2mbps)
- SoftLINK, TCP/IP based multi-vendor network providing access to INTERNET. The customer is connected on the port on a router and has the direct Internet access.
- SoftCONF, two way full motion picture quality videoconference facility between STPI locations and rest of the world.

Process development is based on the Quality Management System, which STPI also adheres to in the form of ISO 9001 certification for own process.

Bangalore STP is the first park to have been assessed for OCTAVE level security of its network, data communication structure, disaster recovery technologies etc. SISA Information Security has implemented OCTAVE, a risk assessment methodology, at STPI Bangalore. The company has a tie-up with the Software Engineering Institute (SEI), Carnegie Mellon University, for training and implementation of OCTAVE.

Future Plans

- Expand high speed datacom facilities
- Bandwidth availability on demand
- No last mile problem
- Dispersal through seamless connectivity
- Development of Secondary cities
- Promote Small & Medium Scale Entrepreneurs
- SoftMOF: Market, Opportunity & Technology Forecasting

Quality Objectives:

- To strive for the upgradation of the technology to meet customer requirements in ever changing market
- To upgrade the technology knowledge of all STPI personnel through continuous improvement training
- To provide state-of-the-art data communication services as per acceptable international standards
- To provide comprehensive service including project approvals, import attestation, software export certification etc., in a time bound manner
- Achieving customer satisfaction through the combined efforts of planning the infrastructure and executing the projects through dedicated workforce.

Role of STPI

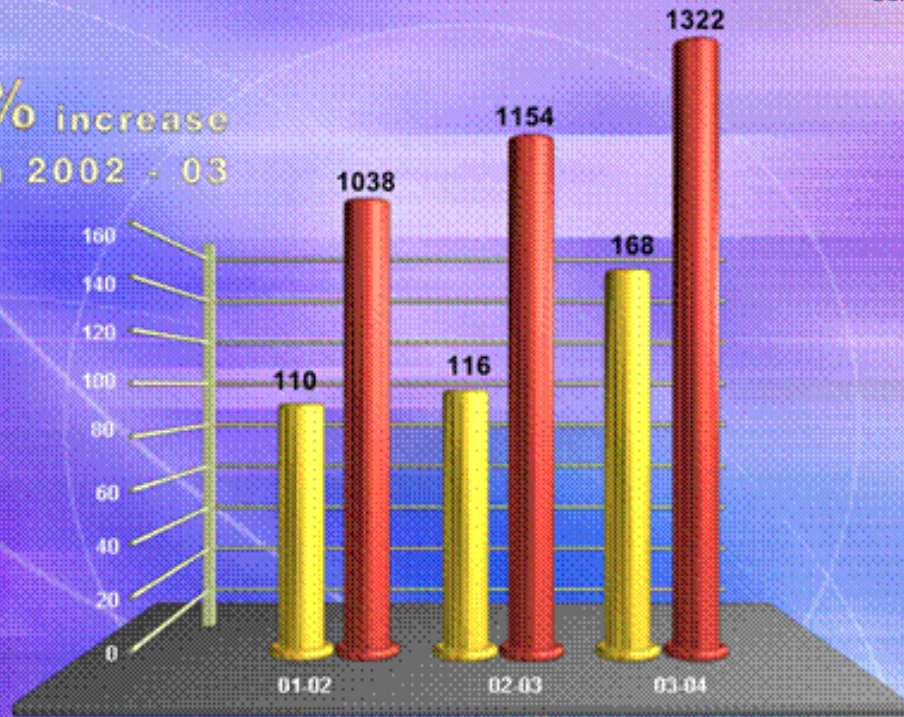
- Promotional Role/Regulatory Role
- Facilitator/Catalyst
- Incubating Infrastructure Provider
- Dedicated Datacom Services
- To establish and provide Data Communication facilities, Computer Facilities and Infrastructure facilities like Office Space and General Amenities.
- Provides best interface between industry and Government
- Vital Role in attracting MNCs
- Front-end on behalf of MIT/Govt. of India
- To act as front-end to the Software Industry for the Govt. policies and approvals
- Effective projection of India through Road shows in USA, Europe & Japan
- To promote development and export of software & the services through technology assessments, market analysis, marketing segmentation, marketing support & related areas.
- To train professionals and to encourage design and development in the field of Software Technology and Software Engineering

Companies Registered under STPI - Bangalore

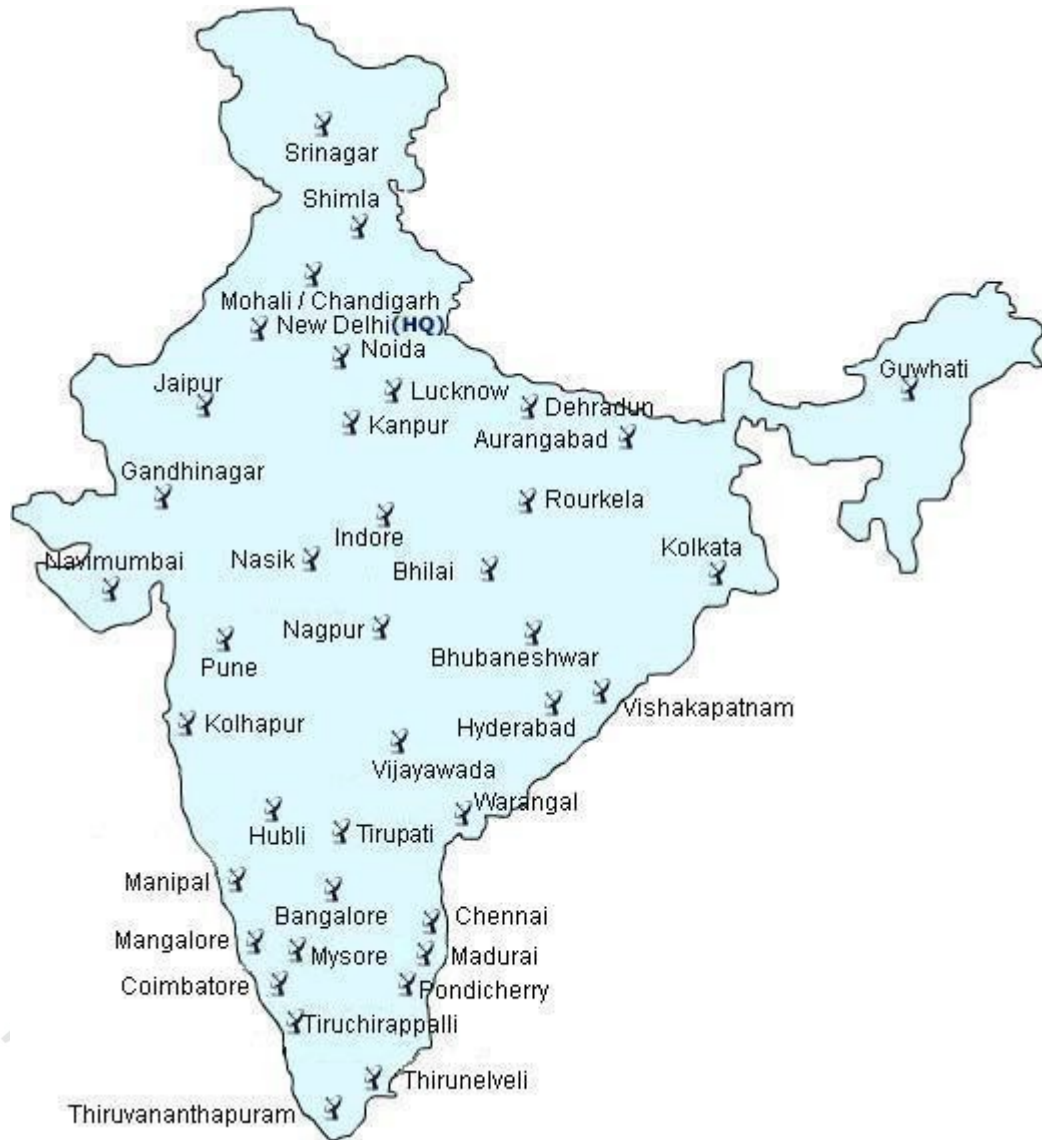


45% increase
from 2002 - 03

“Karnataka remains the favorite IT destination with a strong presence of 1322 companies “



Dr.



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