

# ***ICT Parks for Sustainable Development: Experiences from India and Sweden***

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## ***Abstract***

In this paper the concept of ICT parks is discussed as a tool for sustainable technology deployment and economic development of countries with developing economies. The paper will be presented based on ICT park experiences gained by the author from India and Sweden. The ICT park in Bangalore, India and the ICT parks at IDEON-Lund, in Sweden will be used as case examples. The basic motivation for ICT Parks in these aforementioned countries is that, the parks are used as incubators of potential *ideas* emanating from higher educational institutions. ICT parks provide the organization and tools used to incubate these ideas and develop them into a prototype or a product, and based on that the building of an industry that will generate employment and economic development for a society. The concept and organization of ICT parks for development (IDPs) in developing countries will be discussed

## ***Introduction***

The concept of ICT parks stems from the need to look into the future of a society, and the desire to catch up with the winds of change in technology and societal development in *an organized manner*. ICT parks are also known as Technology & Science parks, in many parts of the world, to include the other sciences which might benefit from the use of new ICT technologies and tools. As an example, the composition of IDEON science park, in Sweden with respect to areas of technology, is shown in figure 1. A further premise of ICT parks is to make use of the knowledge and educated manpower available within higher educational institutions and create new growth companies with local ties. For this reason, ICT Parks almost always are organized in the vicinity of higher educational institutions. The multidisciplinary nature of ICT/Science Parks promotes the emergence of new ideas, services, products and industries. In this way, ICT Parks can help promote sustainable development and tackle the problems of unemployment and underdevelopment in a region.

## **ICT & Development Parks**

Based on the discussion above one can raise the following question: *Can we in the developing countries specifically in Africa learn from the experience of Science parks in Europe, Asia and the US ?* Can we start ICT & Development Parks (IDPs) to differentiate

it froms ICT parks in the developed countries, since we need these IDPs to develop our economy, agriculture, and the fragile small IT companies & industries while at the same time generating revenues for the investors) in the same way as the ICT parks of the west, to bring about a sustainable development environment. IDPs will function as incubators of indigenous ideas by being the interface between higher educational institutions, existing private & state owned industrial and agricultural sector and the society. IDPs will provide a unique environment for meeting between people and ideas and help ideas to develop into:

- 1 Indigenous appropriate technology products
- 2 Software and hardware ICT solutions.
- 3 Intellectual property documents.
- 4 Prototypes that can be sold and mass-produced inside or outside of the country of origin. If the product can also be exported it will be a source of export income to the country.

## **ICT/Science Park Experiences from Sweden and India**

In this section the author will describe the experience of other countries, specifically India and Sweden, on the need and formation of ICT/ parks.

### ***The Bangalore ICT park in India***

The Bangalore ICT park is a result of a concerted effort by the government of India to promote technology oriented higher educational institutions by the name Indian Institute of Technology (IITs). The first IIT was built in 1950, today there are seven IITs catering the needs for high level technology education at different parts of India, and forming centers of excellence in the ICT area. These technology institutions are opened at different parts or states of India, and formed a nucleus at the Indian Institute of Science (IIS), in the city of Bangalore, India. Researchers and professors at the different IITs were given a sabbatical leave to visit and work at the IIS in Bangalore and abroad strengthening the education, research and development at the IIS and the different IITs.

Seedling companies began to pop up near and around the city of Bangalore, making and utilizing the research outputs and well educated manpower from the different IITs and the IIS in Bangalore. Today over 500 hundred high technology companies employing hundreds of thousands of people all over India can be traced to the IITs and IIS R&D outputs. The city administration of Bangalore has given the highest priority to the well functioning of this motor of growth and provided state of the art communication and services to the ICT park. Today high-technology companies are standing in queing to invest in this high-tech silicon valley of Asia. The spin-off and propelling effect of this ICT park near the IIS in Bangalore is not limited to the region in Bangalore alone, but ICT Parks are popping up at the IITs in the different states of India, with seedling companies being established with tens of thousands of employees and drawing investment from abroad to the country.

### ***The IDEON Science Park in Sweden.***

Ideon was founded in 1983. At that time, the Skane region in the southern part of Sweden was hit by the collapse of many basic industries, such as the shipbuilding and textile industries, caused by changes in the industrial structure. This was the starting point for a

unique collaboration between the university and industry: The Concept of the IDEON Science Park was born. The aim was to make use of the knowledge available within Lund University and create new growth companies with local ties, and in that way, to increase employment in the region. Inspiration was drawn from the USA, where similar activities had proven to be very successful. The concept was adapted to Sweden, and work started on creating Scandinavia's first research and ICT park. Today IDEON can boast itself with a well organized ICT park with a steering group, incubators and greenhouse for taking care and develop ideas into productable prototypes. Over 400 companies have been formed since IDEONs inception through the facilitation and incubation provided by IDEON Science park. It has provided an organization which is friendly to researchers in academia, industry and investors. IDEON provided legal support, financial services and business prospect analysis to seedling companies with the aim to reduce the burden for researchers and investors during the start-up phase of companies with productable Ideas. Regional and city administration offices also provided the best information and communication facilities, service & daycare centers and offices for the seedling companies. The composition of the companies represented in the IDEON Science park in the year 2000 is shown below. Today IDEON is a center of excellence for wireless, information technology, bio/nano-technology and high-tech research for the Oresund region encompassing Sweden, Denmark and northern Europe.

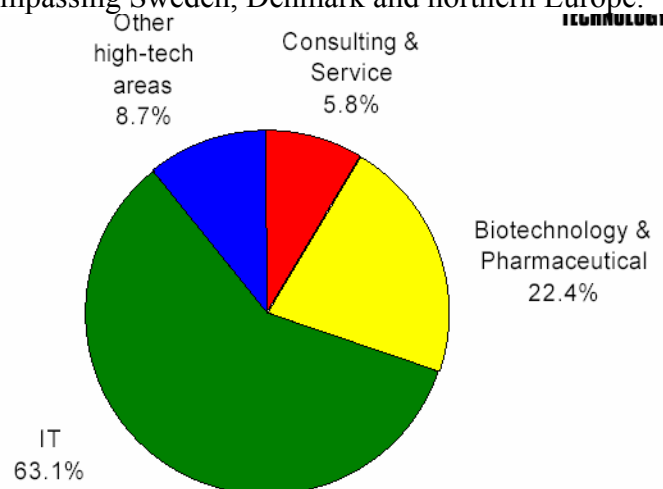


Figure 1. Composition of seedling and R&D companies at IDEON 2000. Courtesy of IDEON.

## Organization of ICT Parks for Development: IPDs

Well-organized and run IPDs, in my opinion, can be one way out of the miry clay of poverty and economic backwardness of developing African countries? However, the organization of IPDs should be given due attention. Because of the multidisciplinary nature of the interaction between the actors that make up the IPDs, a well functioning legal system is a corner stone of an IPD. The legal protection of inventor's ideas and prototypes from indigenous and foreign unlawful takeover and theft, legal support for inventors during negotiation deals with companies and investors are important functions of IPDs. This will make sure fair play and is a good incentive for inventors to bring their ideas into light for their and the societies benefits. The engagement of non-governmental organisations (NGOs), ADB, UN agencies are also crucial in the initial stage of the

formation of ICT Parks. ICT Parks in different developing countries could connect to each other and with ICT parks in the west through a web based structure to share information.

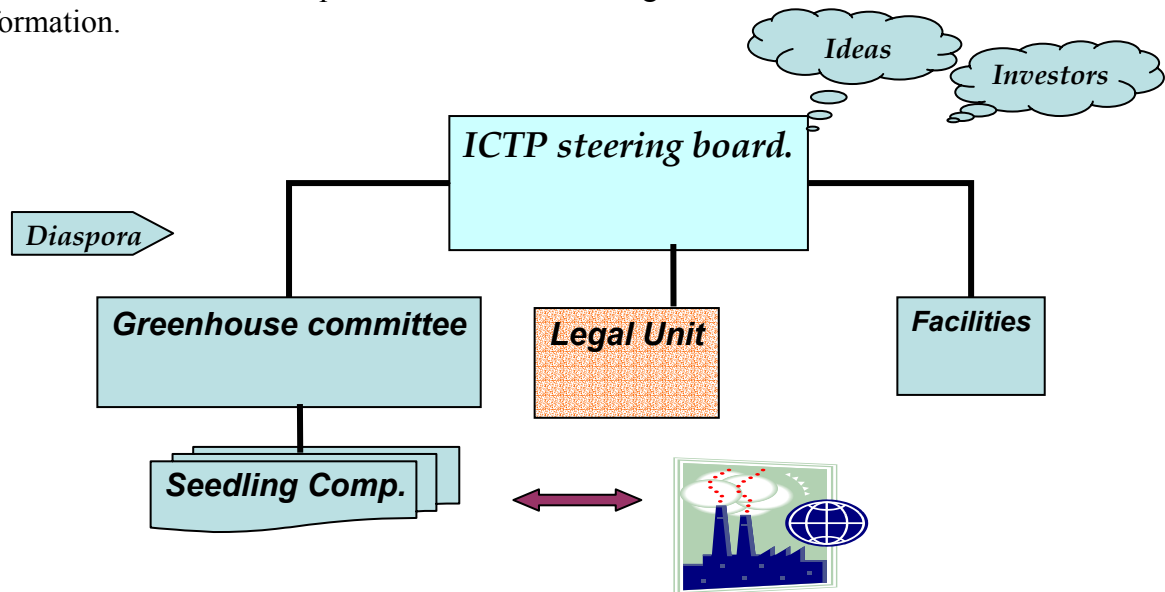


Figure 2. Functional Organization diagram of an ICT park for development: IDP.

### ***Attracting Investment***

Another interesting advantage of science parks is the attraction power of investment. Both indigenous and foreign capital investors who see the potential of the idea and product concept are very eager to spend money on the concept. After having been studying and working inside two of the biggest science parks in the west the Mjardevi, with close connections to the university of Linkoping, and the IDEON, with close connections to the Lund Institute of Technology, in Sweden, for the last 14 years, one can talk from experience that this is a true story for most of the science parks in the west. Innovative ideas convert to prototypes then to products and later to an industry with hundreds or thousands of employees. Whenever a big production capacity is required the intellectual property and possible prototypes are sold to large multinational corporations to generate money to the inventors to continue with new challenges. Investors flock from all over the world, like bees to their queen, to these science parks. Some investors and big multinational companies even open offices and research labs in the neighbourhood to continually monitor the emergence of good productable ideas and invest their capital into these emerging technologies.

### ***Discussion***

Given the right environment, ideas can in any country be converted into instruments of development. Where do new ideas flourish if not in or near the higher educational institutions in the developing countries. That is the reason why science parks in the west almost always are situated near higher educational institutions. ICT parks for Development, IPDs can be a first encounter with a challenging project for freshly examined students. They will be allowed to work on projects based on their own ideas or

ideas that are collected at an IPD. These bright minds can help solve problems popping up in private industries with ideas to further enhance their products, the farming sector with ideas to improve or mechanize the hard labour of farmers and their products or state owned organizations. In a time where the educated elite of African countries are fleeing to the west with their bright minds and ideas, it is becoming an apparent reality that, we Africans must rely first and foremost on our own efforts and resources for developing our countries. IPDs can be one such instrument to that end. It may perhaps be that IPDs can help these bright minds develop their ideas into useful IPRs or products to earn enough money to support themselves and contribute to the development of the society. Perhaps can we even reverse the current state of intellectual exodus and brain drain from Africa to the developed countries. Instead as with the intention of NEPAD (the New Partnership for Africa's Development) developed countries can invest in these IPDs helping ideas be realized into indigenous development products and industry. The support and involvement of the intellectuals in diaspora could also be channelized through such an organization. IPDs can also be a way for well intentioned investors to channel their resources into sustainable and appropriate technology projects. Such projects can develop into small scale industries which can propel other sectors into economic development.

N.B.

The author Dr. Fisseha Mekuria, was affiliated as a senior research scientist with Ericsson Mobile Communications, Lund, Sweden, between 1995 - 2004. From Feb. 2004 he did consultancy as a senior expert to the Ethiopian Telecom Corporation in Addis Abeba, Ethiopia. At present he is a professor and Head of the Telecom Engineering, department at the GSTIT, A.A., Ethiopia. He is the author of a number IEEE publications and 17 US & EPO patents in the areas of telecommunications and system development.

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