SCIENCE AND TECHNOLOGY PARKS (STP): THE EVOLUTION

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Adopting relevant imperatives from the economic and social environment is the type of evolution science parks need. We are already witnessing the evolution of the traditional science park models into new ones.

"Science Parks – argues David Rowe (2003) – started by spending their early years creating infrastructure and buildings. This emphasis on property is hardly surprising. In the early years Science Parks had to establish what built environments worked well for the high tech sector and then huge energies were required to raise the substantial capital required for what was seen as a highly speculative and risky activity. But, by the early 1990s, it was time for the more adventurous to move on. The next step was to start taking more seriously the ways in which a Park could stimulate technology transfer between their associated University(ies) or centres of research and businesses on their Park, or perhaps develop ways assisting the development of start up and young high tech businesses in and around the Park or even stimulate the creation of new business support or research centres. The message from innovative Science Parks with strong business creation and support programmes became increasingly of interest. This gave Science Parks a significant role as a serious economic development actor for the first time and several leading Parks have thrown themselves strongly behind this role. The above evolutionary path is typical of many of the more successful Science Parks in Europe".

The 4th-generation STP leverages on:

- BRAIN EXCHANGE
- CIRCULAR CAUSALITY IN THE RESEARCH DOMAIN
- MULTIPLE STAKEHOLDERS
- EXPERIMENTAL LABS

1. BRAIN EXCHANGE

This implies a two-way flow of expertise between a sending country and a receiving country.

The 4th generation embraces the creation of an inter-cultural context of mobility and integration, opposed to a multi-cultural context of emigration and separation.

In particular, universities and other higher education institutions embedded in a 4th-generation STP develop global networks, onsite and online, for the purpose of linking student-centred learning to on-the-job activities.

This is the co-operative environment where participants can cultivate new business ideas and turn them into commercial realities. Participants can move from one learning location to another, and, in each location, the diversity and ethnic mix of both the student population and the faculty members play an important part in reducing the risk of a brain drain from developing countries and regions.

Open boundaries, education without border, new connections, physical and virtual journeys into other places and disciplines: all these are ingredients that foster new ideas. Thanks to mobility within the network, informal circles of exchange take shape that are sources of creativity and cross-fertilization of ideas (Formica, 2003).

2. CIRCULAR CAUSALITY IN THE RESEARCH DOMAIN

Clairvoyance is a distinctive trait of “pure” scientists and researchers who look ahead, beyond the frontier of the known domain. They yearn to go beyond the utmost limits of the current knowledge domain. They have a long-term commitment to solve problems that appear impossible.

There is a subtle point at issue that descends from clairvoyance - that is, how research is to be exploited.

Companies would be ready to invest to acquire insight and understanding of research once their capacity to assimilate advances in research were reinforced through entering into meaningful dialogue with research institutions.

The 4th generation replaces the linear model of transferring with its underlying law of unidirectional causality by the law of circular causality. Non-linear feedback loops link research to industrial innovation. A spiral model with a reverse flow from industry to research enhances the performance of the latter - which contributes in turn to amplification of the virtuous cycle.

In the context of a market-driven transfer process, researchers, business strategists and patent experts coalesce in “invention-to-innovation teams”, which are knowledge pools whose participants are accustomed to working together by following a Faraday-style behaviour, for which “applied goals also tackle the basics”.

Each team looks like a research enterprise whose “product” is a specific project with a limited lifetime (say, five years), unlike the bureaucracy of the conventional, age-old research institutes and laboratories where research projects often drag on for decades. At the end of the period, the project is discontinued and a new one with an entirely fresh team will take its place (Formica, 2003).

3. MULTIPLE STAKEHOLDERS

In a 4th-generation STP what is of most value is the combination of multiple stakeholders involved in it. These are competitors, partners, complementors, suppliers, and customers. Connectedness, that is bringing closer together providers and users of “innovation power”, is a must for the 4th-generation STP. Their managers can develop connectedness through the formation of business communities centred round the consumer and communities of knowledge practice as well. 4th-generation STP managers must also try to muscle in on the trend towards networking of human intelligence by expanding their role as a motor for the digital economy.

4th-generation STP managers operate within the area of discontinuity between a current technological domain and an incoming one. Technology, even a good one, does not sell itself. Anecdotal evidences and surveys conducted in various countries suggest that young, high tech companies suffer from a marketing and sales gap that hampers the transformation of inventions into marketable innovations.

4. EXPERIMENTAL LABS

4th-generation STPs are endowed with experimental labs to allow laboratory experiments where the function and performance of high-expectation start-ups are evaluated.

4th-generation STPs foster special focus on high- expectation entrepreneurship because of its oversized impact on economic growth. According to the Global Entrepreneurship Monitor, less than 7% of nascent entrepreneurs expect to employ fifty or more employees within five years; however, the economic impact is disproportionally positive as high-expectation entrepreneurs are responsible for up to eighty percent of total expected jobs by all entrepreneurs.

The results of experiments give entrepreneurs, financiers and policy makers a deeper understanding of the actual workings of real-world new markets. Experiments point out how high-expectation entrepreneurs should cultivate market outcomes, which behaviour should guide trust building between the formers and their potential financiers, and how policy makers should design and test “rules of the game”. Persistent beta states for the business model and underpinning venture offerings become the norm. Rapid experiment iteration and rapid solution prototyping go hand-in-hand for the high-expectation entrepreneur, with plateau’s of stability introduced to the iteration cycles, to enable commercialization and value capture from the evolving offerings.

References

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