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The role of Science Parks in the Knowledge-Economy

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Abbreviations used in this paper:

STP = Science and Technology Parks
BIC = Business Incubators
MNE = Multinational Enterprises

Foreword

The analysis of the history and results of the Science and Technology Parks (STPs) around the world during the last 20 years or so shows that, generally speaking, STPs have been and still are a very powerful tool for regional development.

There are several models of STPs and different classifications can be attempted, like for instance:

- classification by models according to geographical areas: (Californian model, Scandinavian model, Mediterranean model, Japanese model etc.).
- classification by the structure of ownership and management: (public, private, mix).
- classification by activity: (generalist, specialised).

But regardless of the different models existing, most STPs do have some common denominators that constitute its main axis of activity and concern, and that can be summarised as follows:

- entrepreneurial innovation
- creation of new companies
- links with Universities
- increase entrepreneurial competitiveness

There is also a certain degree of terminological confusion, and expressions such as "Science Park", "Technology Park", "Technopole", "Research Park", "Technology Precinct", etc. are often used, but the subtle differences that may exist among these different labels are not relevant for the purpose of this paper.

Definition:
The International Association of Science Parks (IASP) defines a Science Park as a property-based initiative which:

- Has operative links with Universities or High Educational and Research Institutions.
- Focuses on the formation and growth of knowledge-based companies often resident on site.
- Has a steady management team, actively engaged in technology transfer and innovative processes.

This definition is nowadays widely accepted all over the world. Yet I believe that it will soon need to be revised, for the "property-based" element (that is: the existence of a

physical space and specific infrastructures) may no longer need to be considered a requisite for the existence of a Science Park.

In fact we already know of projects without a specific space, but that should be regarded as Science Parks for all the other elements contained in our definition do exist. These are what we could call "virtual Science Parks", where the associated companies or "virtual tenants" have access to a number of added-value services supplied by the management team of the virtual park, although they are not located in a space-unit common to them all.

There is a debate going on as whether these projects can be called Science Parks or something else. My personal opinion is that they can be recognised as Science Parks, and that such terminological discussion lacks of any practical interest.

STPs: involving the private sector

Science Parks are normally long term projects, and require some consistent initial investments. It is therefore logic that most of them have been fostered and launched by the Public Administrations and with public funding. This is the natural role of the public sector, among other things. Governments at different levels are good and necessary promoters of this kind of projects. However, they tend not to be good 'managers'. It is therefore advisable to incorporate the private sector to the actual management, total or partial, of the STPs.

STPs:
Involving the private sector

- Public funding + private management
- Outsourcing
- Corporate governance

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To do so, I propose to consider three main mechanisms:

- *A purely private company to manage the STP:*

The STPs are initially fostered by the public sector (Governments, public Universities, etc.), but further agreements are reached with private companies, by which these ones will be fully responsible for the management of the Park, including its real estate aspects, marketing and promotion, incubation activities, set-up of a wide range of value-added services for the tenant companies, etc.

The positive aspect of this approach is that it enhances the best potential and expertise of both the public and the private sectors:

- The public Administrations launch the Parks as crucial tools for the regional development and the territorial competitiveness of their area of influence, and set-up the global strategy, thus fulfilling their natural role of policy-makers.
- The private sector fully exerts its business skills and market-driven approach to ensure an efficient management of the Park, obtaining a profit out of the Park's operations.

However, this approach does require a very careful contractual agreement between the public administration and the private managers, to avoid the undesirable situation in which the "privates" make their business and obtain a benefit with public funds. In other words, the private company should be asked to 'invest' and take their share of risk in the operation, in a carefully studied, fair and proportional balance.

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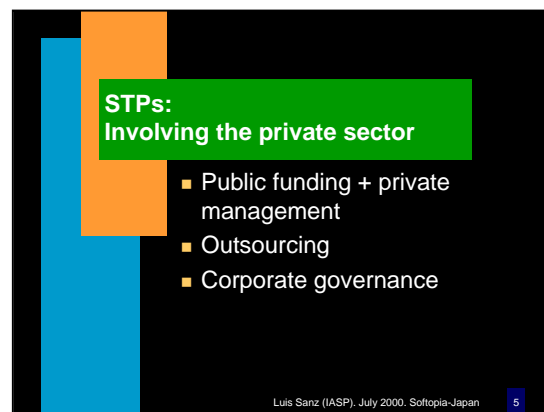
- *Outsourcing*

Generally speaking, STPs management teams should be small, although highly professional. The management team will then have to outsource many different parts of their job to private companies, that will therefore integrate, although indirectly, in the operations of the Park.

- *Involving the private sector in the corporate governance of the STPs*

Even when the Public Administration that has launched the project and has made most of the investments will have a large representation in the Board of Directors of the company that runs the Park, it is a very sound policy to incorporate prominent private businessmen to the Board. Their experience will be of great value for the managers, and the Park will gain in recognition and support from the private sector, which is a great asset for the project.

STPs: overall balance

Among the positive effects that STPs have so far produced, I would like to underline the following ones:

- Social awareness about the role of technology and innovation, not only as a key element for the economics, but also in our cultural and social evolution and new patterns.

- Assessed methodology for the creation (incubation) of new innovation-based business. Although STPs and BICs are different types of projects, there is a growing synergy among them, and most STPs do have their own incubator. The phenomenon of business incubation has a positive impact in employment and in self-employment problems and solutions.
- STPs have been highly important elements in facilitating the access of their territories of influence into international networks, favouring their integration in the globalisation trend.
- STPs have enhanced a culture of 'quality' among companies and even among institutions.
- Great impact in their areas of influence. The impact of STPs is not usually limited to their own tenant companies, but often reaches other companies that are not physically located in the park itself, but that use many of its services and established links with the park tenants and Institutions.

On the other hand, some less positive aspects should also be mentioned:

- Excessive political interference: a large number of STPs are public initiatives, and sometimes, the role of the politicians as different to the one of the professional managers is not differentiated well enough.

- Insufficient links to Universities: this is true in certain regions or countries where Universities have not a long tradition of relationship with businesses.
  In these areas, STPs must often function, not only as the providers of a common space and as co-ordinators of joint programmes, but also as "translators" of the often-distant 'languages' and 'culture' pertaining to the Academy and the Industry.
- STPs should make greater efforts in creating, or attracting, seed and venture capital funds, which are very important for their general purposes. However, with some exceptions, STPs have not been too successful in this task.
- Finally, I think that there is certain confusion about the actual role of STPs. They are sometimes regarded (especially by the media and the public authorities of their region) as a tool for attracting foreign investment and MNEs, whereas I am convinced that their focus should be on the local framework of industries.

STPs in the Information Age

Social and economic patters are rapidly and profoundly changing. It is therefore necessary for STPs to ensure that they will efficiently adapt to such changes.

I am firmly convinced that the **main strategic aim of STPs today** should be to **facilitate the entry of its tenant companies and of its regions into the Information Society.**

The "bit" symphony (allegro con brio):
STPs in the Information Age

- To facilitate the entry of its clients and regional economies into the Information Society:
  - knowledge management
  - 'glocalisation' (global+local)
  - ICTs

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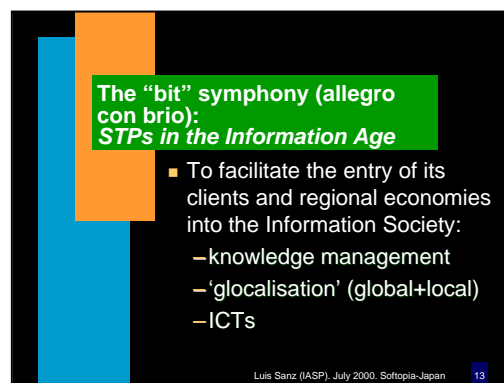
Therefore, STPs must pay special attention to three key elements that constitute a good deal of the new economy's essence:

- Knowledge: its creation, gathering, processing and distribution. In other words: knowledge-management.
- The dialectics between the "local" and the "global" trends, that leads many companies to a certain "schizophrenia" that we may like to call **glocalisation** (global + local). This produces inevitable tensions and requires new ways of thinking and of managing businesses that are not always easy to handle by SMEs.
- The enormous importance of the information and communication technologies, that requires deep changes in many company-cultures.

STPs must fully realise that the ghettos of the 21st century will be made up of "disconnected" societies.

In other words: starting from the premise that well-managed STPs are still powerful tools for regional development, I argue that, in order for them to remain so, they now must become privileged suppliers of advanced IT-based infrastructures and services, including their use and learning.

Networks and networking

All in all, the balance of STPs is so far highly positive, which accounts for the fact that an increasing number of Parks is being created all over the world.

However, I contend that we are at the threshold of a new era, and STPs must be aware of it. We are not witnessing "the end of history", as some would have it, but rather a spectacular "acceleration of history".

> **STPs:**
> **the importance of Networking**
> - This is also a Network economy and society
> - STPs must network for their own benefit
> - STPs must provide access to networks to their tenants
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This new era has received many names, such as "Information Age", "Information Society", "New economy", "Knowledge Economy", etc., and STPs must carefully think about what their role will be from now on, what changes must be implemented and how they should perhaps be "re-engineered".

Networking is one of the main features of today's economy, and I contend that STPs must pay a great deal of attention to it.

On the one hand, it is essential that STP's managers network among each other, for this can considerably shorten their learning curve on park management issues.

But they should also network on behalf of their tenant companies, providing them with professional contacts and facilitating their internationalisation.

∗A survey of the IASP (1988) among CEOs of companies located in STPs in Europe showed that *access to international networks* and *support to their internationalisation strategies* are among the higher valued services that a Park can provide to its tenant companies.

It is also important to approach the networking activities in a professional way, for often 'networking' is regarded as simply travelling around the world to attend some conferences, whenever there happens to be some free time or some extra-budget left available.

On the contrary, networking should be regarded as an essential part of any business activity.

> **About Networking**
> - "Networking": included in strategic and business plans
> - Specific budget
> - Adequate human resources
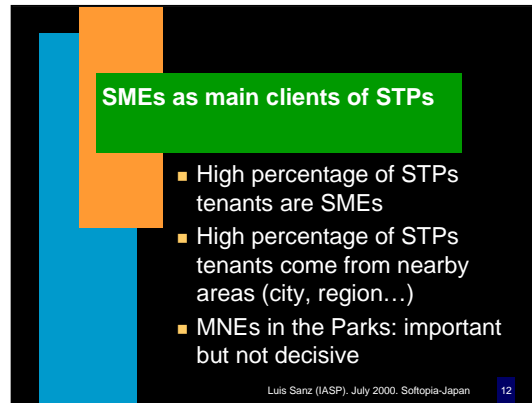> - Quantify and 'qualify' objectives
> - Check results
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This implies that it should always be an integral part of any Strategic and Business Plans, it should have its own budget and the most adequate human resources must be assigned to the job. Objectives to be reached by the networking activity must be set and evaluated on regular basis.

SMEs are the main clients of STPs
Statistics show that the large majority of companies located in STPs are SMEs. Moreover, most of them come from the same region of the Science Park itself. In other words SMEs are beyond any doubt the main client of Science Parks.

Although many STPs have big multinationals as tenants, their efforts should concentrate on serving the smaller clients.

MNEs are important for Science Parks because they add prestige and visibility. They may attract some of their suppliers to the Park and they contribute to spread the culture of "quality management" among local SMEs, but they all have enough resources to carry on their activities, and therefore do not really need the services that the STP usually provides.

On the other hand, SMEs can benefit enormously from such services and from the economies of scale created by their host Science Park.
In today's economy **SMEs are under great pressure**. They are constantly being told by everybody that they must embrace the Internet and the digital economy, that they must go into e-commerce and that they must become global. But whereas everybody tells them that, not many people tell them how to do it.

Science Parks should!

And they should do it in a practical way by organising seminar and training courses, creating specific consulting schemes dealing with IT and Internet-related matters, and by efficiently networking on behalf of the smaller companies.

We must bear in mind that ITs and the Knowledge Economy affect the whole company life and activities: they have a major impact in knowledge management, information management, human resources, marketing, training, production, etc. All these areas and many others must now undergo in-depth transformations.

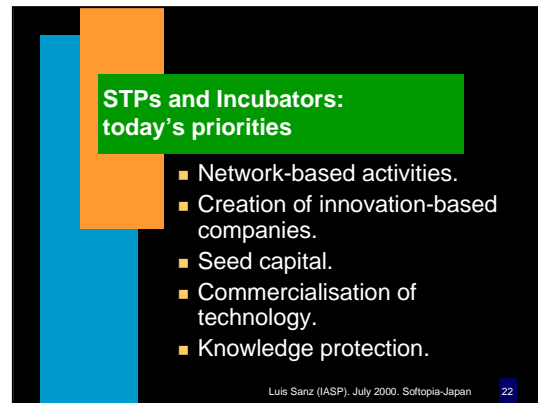The dimension of this task is big and SMEs do need as much support as they can get.

If STPs are able to provide such support, their role in the future will pass from being important to being crucial.

STPs and Incubators: Today's priorities

Among the most important actions that both STPs and BICs must focus on, I would like to mention five:

- Networked-based activities
- Creation (incubation) of innovation-based companies
- Seed capital
- Commercialisation of technology
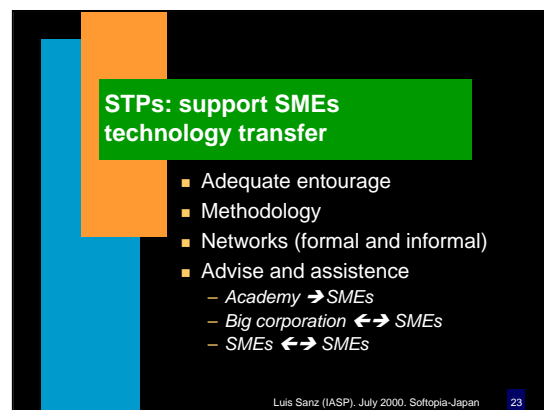- Knowledge protection (patenting and licensing)

Of course, special attention must be paid to supporting SMEs in their technology transfer schemes. This means that Science Parks must pay attention to creating and adequate personal and professional entourage for this to happen; they must develop a methodology specifically tailored to the needs and features of the companies of the region and they must provide advice and assistance to enhance the transfer of technology and knowledge from the academy to the SMEs, from big corporations to the SMEs and vice-versa and among SMEs themselves.
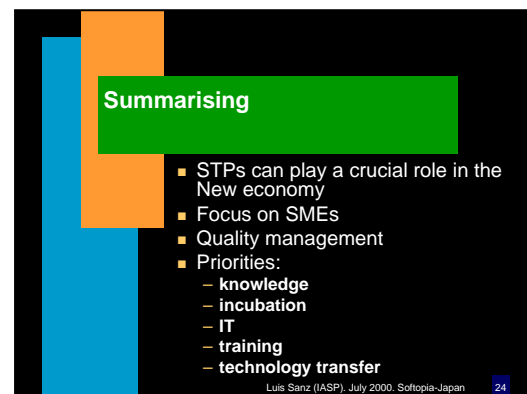
Summarising

STPs can and must play a crucial role in the new economy. They should concentrate on the SMEs of their territory, they should ensure a good management of the Park by incorporating the private sector to its management or governance, and the main axis their activity should be:

- Knowledge
- Incubation
- IT
- Training
- Technology transfer

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