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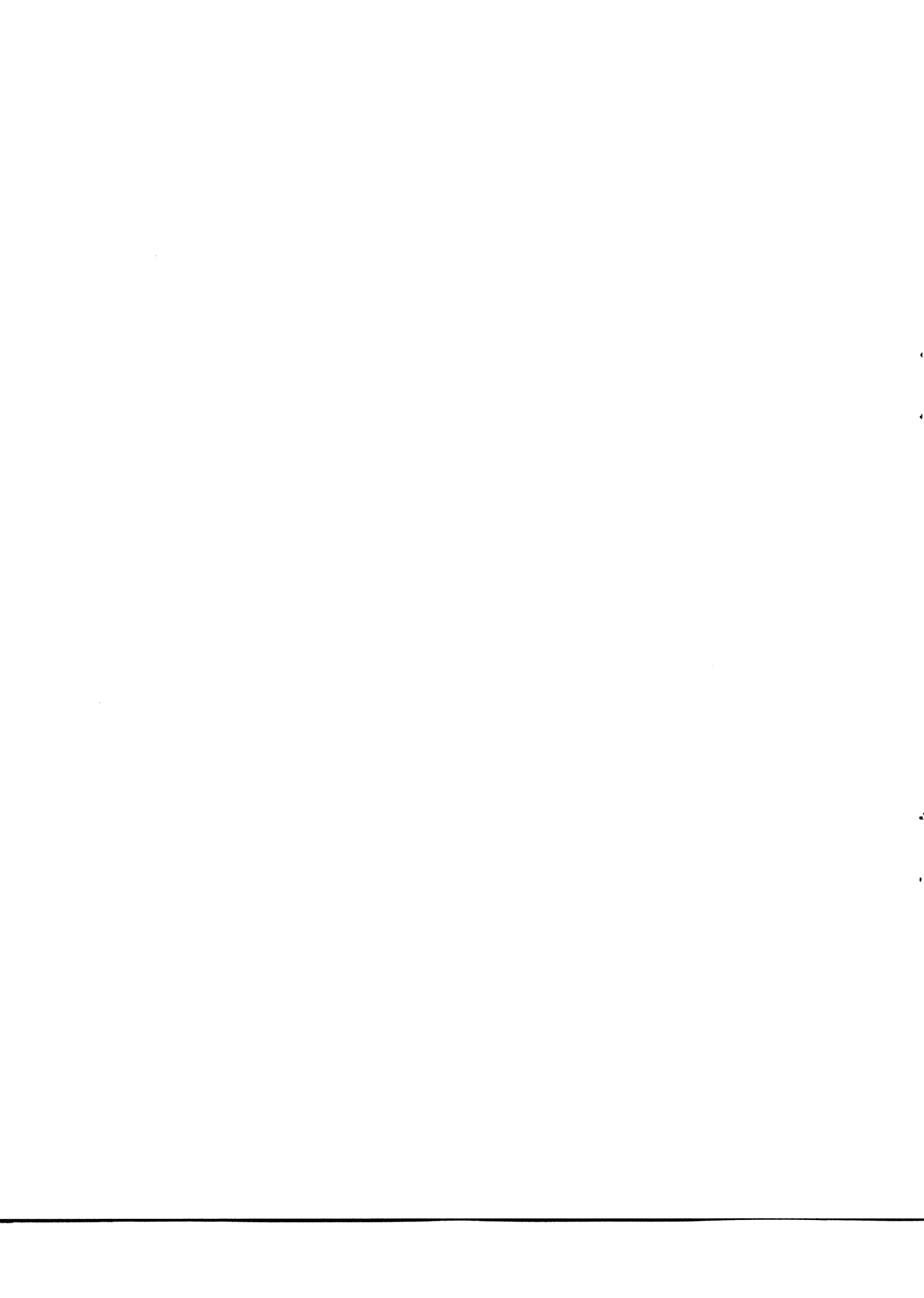
**MODERN TRENDS IN THE MANAGEMENT OF  
SCIENCE AND TECHNOLOGY PARKS**

by

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## **Introduction.**

The real target of any Science Park in the world is to foster the competitiveness of its territory of influence through the innovation lever.

Science Parks started to be developed since the end of the Second World War, and are today spread all around the globe.

The best worldwide observatory to understand Science Parks is their worldwide association, IASP, which counts more than 200 Science and Technology Parks in 52 countries, in all the continents.

Just analyzing the examples in the IASP database, we can synthesize the basic common characteristics of all the Science and Technology Parks as follows, independently on their peculiarities. So, each Science Park:

- has operational links with Universities, Research Centers and other Institutions of Higher Education.
- is designed to encourage the formation and growth of knowledge-based industries or high value-added tertiary firms, normally resident on site.
- has a steady management team actively engaged in fostering the transfer of technology and business to tenant organizations.

However, a deeper analysis of the same database will immediately show up that there is definitely no recipe for the establishment and the management of a Science Park.

Each territory has its own characteristics, is part of a national culture, has peculiar specialization, weaknesses and strengths and its science park should always be customized accordingly, focusing on the most important critical points.

## **The classic ‘real estate approach’ of Science Parks**

Many Science and Technology Parks, including the very first experiences in USA and Europe, dating back the 50’s and 60’s, are characterized by a strong ‘real estate’ approach.

Its basic assumption, in synthesis, is the following:

Given a university or a research center, any action aimed to foster the spin off or the start up of new economic activities and the attraction or re-location of existing activities in an area surrounding the campus, almost automatically ensures a strong breakthrough of the competitiveness and the welfare of the territory.

Just the actual proximity between research people, entrepreneurs and managers is considered a necessary and sufficient condition to achieve important results in terms of technology transfer and business development.

Consequently, investments have to be done in terms of providing modern, high tech and expensive buildings for the future tenants, hoping that they will arrive and grow prosperous thanks to the local connections with scientific facilities and technical knowledge.

The model has many successful examples of application, and even now, in particular conditions, is still applied with satisfactory results.

However, it is clear that it has many limits.

For instance the availability of space for new enterprises in many cases is not a critical point because it is possible to find alternative solution in the market.

In other cases, even the attraction and the relocation of new businesses in the territory has no positive effect on the competitiveness and welfare of the territory itself (there are many cases with full employment figures,

where any re-location of new businesses generates problems of housing for the new employees), or is not the most important problem to be solved (for instance, when the territory has problems of competitiveness in the mature sectors of its traditional economic activities, the skills of its science park may be successfully applied to revitalize them, and the business space availability is not the issue).

What is in any case getting really evident in the last decade, is that a pure 'real estate approach' alone does not create many real advantages, because it is just one of the many elements that are concurring in a better competitiveness performance. This awareness has forced a spontaneous development of new approaches, new services to tenants, new entrepreneurial skills in the Science Park management.

### **The evolution of the approach**

The spectacular and rapid changes in most of the aspects of the business life that we have been experiencing in our last ten years had a strong impact on the concept of competitiveness and on the definition of its most important parameters influencing it.

Being the major player on the competitiveness of the economy of its territory, the Science Park concept itself has seen a strong evolution in the last ten years.

Trying to describe the effects of the changes in all society aspects on the concept of Science Park and on its management techniques and skills, I summarize them, assuming that the main issue of our moment is already well known to everybody, with the following common 'slogans': globalization, information society, knowledge economy, network age, ICT driven society, etceteras.

Out of the many attempts to describe our transition moment, the most effective one to explain the evolutions in the Science and Technology Parks' management is the Negroponte's one, pointing out that we are passing from an economy based on *atoms* (value added thanks to actual industrial transformation of raw materials for production of goods, transported to the markets, then consumed and wasted) to an economy based on *bits* (value generated by the transfer of knowledge, know how, experience, information, contacts, networks, sold and transported mainly electronically, with limited atomic manipulation).

While there is no doubt that the second one (*bit economy*) cannot produce value without the first one (*atom based economy*), it is also now clear that the competitiveness of the first one is actually tremendously enhanced when skill and expertise in managing the 'intangible issues' are available in the territory, and when entrepreneurs capable to make business and to create value out of the knowledge available in the territory itself are operating.

It is now time to compare the previous description of the 'real estate' approach with these considerations: it becomes more and more evident that just managing space and location issues is not creating value and competitiveness.

Now, when Science Parks (already existing or in the process of being established) are managing properties and physical infrastructures, it is because it helps to generate income to be devoted to other tasks more correlated to the competitiveness, and the time devoted to the real estate issues is just a minimal part, sometimes outsourced to external specialists.

### **New managerial practices and skills of Science and Technology Parks to foster competitiveness in the 21<sup>st</sup> Century**

Given a territory, given a cluster of SME's or bigger industrial groups, given one or more academic institution/research centres in the territory, what really does a modern science park do to achieve his target to improve competitiveness?

Again, there is not a fixed recipe, but it is now possible to introduce a discussion on a series of activities that are almost always present in the most effective Science Parks in the world. The hierarchical importance of these activities is not fixed as well, because it depends, as usual, on the characteristics of each territory and on the needs perceived.

### **Networking**

It means internal and external networking.

Internal networking: there are many needs of a better information flow between SME's (especially those with more intensive knowledge and with higher added value), local R&D expertise and facilities, local administrations, local banks.

A better information flow, managed and assisted by the science park management produce a huge demand for other actions strictly connected to the value creation.

For instance, a better reciprocal knowledge between entrepreneurs/managers and professors/scientists typically generates a demand for new R&D activities, which the Science Park organizes and manages. Local banks are typically involved in assisting the start-ups from universities or outsourcing policies of the tenant companies, thanks to venture capital funds typically connected to the STP.

Local administrations involve the network generated by the STP every time there are initiatives or decision to be taken involving entrepreneurial interests.

External networking.

Each actor in the territory has external contacts; what happens if all these contacts are organized in order to be valuable for each tenant? There are many experiences of external networking activities managed by science parks on behalf of their territory that has been extremely successful in creating new business and new opportunities.

### **Information brokerage**

Being competitive means to be able to take advantage of information, for instance about technology, competitors, new patents, available know how to be acquired or applied, etc.

We talk about strategic information, extremely important, but extremely difficult to be achieved.

Let's figure the everyday life of SME's managers: busy people, frustrated by many last minute problems, extremely expert of their business niches, but for the same reason non as knowledgeable about information hunting, patent search, competition analysis, etc.

Science parks, however, are dealing with clusters of companies: they can afford the information brokerage expertise that will work for the local companies, creating value and competitiveness.

### **Technology transfer**

It is another effect of globalization and ICT applied to networks: if you, as a SME, have any technological problem to be solved in order to become more competitive, what probability do you have to find an already existing solution and to avoid starting a new research project to solve your problem? Extremely high.

Secondly, if you are unlucky and you finally know that is necessary to start a new R&D project, what is the probability to actually find the best expertise to solve your peculiar problem in the research labs of the university exactly in your territory? Extremely low.

In an era where knowledge, know how, experience, are products easy to be bought and sold, those territories where there is no technology and knowledge transfer expertise available for the local businesses, risk to become disconnected new 'ghettos'.

Such expertise is now located in Science Parks, available for their territories.

### **Knowledge Management**

The action of Science and Technology Parks has a positive effect on the capacity of the territory to take advantage of the modern knowledge management methodologies.

Just one example as a proof of this statement: between the tenants (shareholders) of the Centuria Science park in Cesena, Italy, after five years of activity it is common to hear that at least 40 % of the information and knowledge owned by the company has to be shared with the other companies in the territory, including competitors: as a matter of fact, the advantages in terms of better understanding of the common problems and the common threads and the consequent probability to make common actions to correct them are higher than eventual risks from information sharing.

The Science Park is then used also to organize those common actions and projects aimed to influence and correct the commonly perceived negative trends.

### **Project management**

This is a consequence of the previous actions: if well performed, all of them will generate a demand for skills in project management on behalf of single tenants or groups of them.

### **Training and human resources management**

The analysis of the needs in terms of management skills needed in the territory and the consequent organization of actions like the organization of training courses or even specific head hunting activities are also getting more and more common.

### **Marketing and trading**

The access to international networks of enterprises, institutions and consultancy (like the IASP itself) is a powerful tool that many Science Parks use to offer to their tenants important international business connections services aimed to expand their sales.

Another typical activity also very important because of its powerful return in terms of competitiveness, is the management of the connections to international contract engineering companies.

Thanks to this type of co-operation, the industrial know how of the tenants becomes available to the engineering companies for the international projects that they manage.

The Science Park in this case has a crucial role because of its local connection to the territory, allowing the company to take advantage of this type of trading of bits of knowledge instead of atoms of merchandise, without any revolutionary re-organisation process, and continuing to concentrate on the core industrial business.

Science parks are also the providers of Internet portals with information and with e-commerce facilities for their partners.

## **An example: the Centuria Science & Technology Park and its cluster of agro-industrial businesses**

Centuria Science Park has some peculiarities that render it particularly interesting as a case to study the practical applications of the previous considerations.

65% of its capital is private, being undersigned by 25 local agro industrial, pre-existing companies. The remaining 35 % is owned by local administrations, banks and research institutions.

The local territory has no particular needs as far as real estate is concerned, so the science park has no responsibility on these issues.

However, its activity with the ‘tenants’ (shareholders) is focused on all the points mentioned before, which are by far much more important for the competitiveness of the territory.

The Science Park has created and manages a strong system of relationships in the territory, is feeding it with valuable information from a constant monitoring of databases with new patents, new technologies and new opportunities for business development, organizes a constant marketing activity with the major contact engineering companies, taking advantage from powerful international networks like the IASP.

This core activity (mainly marketing, information brokerage and networking) generates a huge amount of activities like consulting for project management, data mining, market analysis, assistance for start-up business, head hunting, training, business connection, technology transfer, assistance for the acquisition of know how, or for its sale, even the assistance for the acquisition and the sales of entrepreneurial activities.

Thanks to these activities the Science Park doesn’t need any public funding because today the revenues generated by the second series of activities are enough to pay for the networking costs, that will then generate other revenues, in a self financing figure.

## **Conclusions**

The Science & Technology Parks are really a powerful way to increase productivity and competitiveness in the 21<sup>st</sup> Century, because of their flexibility and their effectiveness in taking advantage of all the tools offered by the modern digital era.

The risk to leave the territory to its spontaneous trend, especially in less dynamic areas, is really to close it in a ‘ghetto’ disconnected from the major flows of information, knowledge and welfare.

The Science Parks, and their international IASP network, have the experiences and the skills necessary to drive and to foster the competitiveness of their territories and to transform into opportunities of business developments most of the potentialities of a territory, even in the traditional and low added value economic activities.



