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### *Science and Technology Parks - Superb Environment for Effective Exploitation of Open Innovation*

#### *Parallel Session 3: Exploring the new horizons of STPs*

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# Science and Technology Parks - Superb Environment for Effective Exploitation of Open Innovation

## Executive Summary

*Open Innovation can only be implemented effectively when companies make changes in both the internal and external environments in which their R&D is executed. Science and Technology Parks can create a world class external environment by offering not only suitable physical premises for versatile interaction but also by targeted value adding services, which support the process of adapting Open Innovation. This has been demonstrated in the Innovation Magnet - The Best Partner in Open Innovation approach by a Finnish technology centre and business service provider Kuopio Innovation Ltd. The approach is based on an 18-month pilot phase. During the pilot a unique approach was created. This approach combines well set-up Science and Technology Parks, the most enlightened multinational companies, SMEs and the Open Innovation methodology. The Kuopio approach has proved to be highly valuable for both SMEs and large corporations adapting and exploiting Open Innovation.*

**Keywords:** Open Innovation, Science and Technology Parks, Large Corporations, SMEs, R&D Effectiveness, R&D collaboration, Technology Commercialisation, Intermediate

## Opportunity of Open Innovation

Europe has a long-standing reputation as a centre of world-class scientific research. However, excellent results in research have generally not created expected success when commercializing innovations (1). On the contrary, both USA and Asia have overtaken Europe despite the EU's goal of making Europe the leading knowledge based economy in the world. This challenge confronts most countries and regions in Europe, including Finland, which has for several years been one of the world leaders when comparing R&D inputs or competitiveness (2). Compared to the US, Finland hasn't been able to reach its level in translating the results of research into innovative products and services.

In January 2006, Esko Aho, a former Prime Minister of Finland, published his report "Creating an Innovative Europe". In it, he called for radical reforms and a paradigm shift, in particular the need to develop a market in Europe for innovative products and services. The report went on to say that "Europe must break out of structures and expectations established in the post-Second World War era that leave it today living a moderately comfortable life on slowly declining capital. This society, averse to risk and slow to change, is in itself alarming but it is also unsustainable in the face of rising competition from other parts of the world." (3.)

The difficulty of turning research results in commercialized innovations is due to several causes: One of the principal barriers is the difficulty in aligning university and industry interests, especially when trying to create long-term partnerships (1). Another hindering barrier is the approach of closed innovation, which has been used by companies for most of the 20<sup>th</sup> century. In closed innovation, companies generate their own ideas, which they then develop, manufacture and market themselves. Closed innovation abandons numbers of innovations when they fall outside the developer company's current business interest - although these innovations could have market potential for some other company (4).

The model of Open Innovation creates solutions to overcome the above-mentioned barriers. In Open Innovation, a company commercializes both its own ideas as well as innovations from other firms or research institutions and seeks ways to bring its in-house ideas to market by deploying pathways outside its current business. The boundary between company and its surrounding environment is porous, enabling innovations to move more easily. (5.)

In the fierce environment of intense and ever increasing competition, leading companies are searching simultaneously for low cost operations and even more importantly new sources of competitive advantage. The main benefit for big corporations from Open Innovation comes from their ability to conduct strategically important R&D at lower level of risk and resources in order to explore new growth opportunities and extend their core business. In the Open Innovation model competitive advantage can often be achieved from leveraging the discoveries of others. That is exactly what Open Innovation pioneers have been able to do and they also have the ability to utilize the broad concepts of leveraging external sources of technology and innovation to drive their internal growth.

Multinational companies like Procter & Gamble (P&G) have exposed their needs openly: "We will acquire 50% of our technologies and products from outside P&G" (5). The statement by A.G. Lafley, the Chairman of the Board and Chief Executive Officer of P&G, clearly infers that P&G has been able to improve its innovation capability by leveraging external innovation assets and partnership to deliver additional value to the customers. The same applies to many other multinational corporations, which have been able to accelerate the flow of opportunities by adopting Open Innovation principles and have learnt how to implement different collaborative approaches successfully together with other partners from science and technology fields.

### **Science and Technology Parks - Environments to Support Open Innovation**

In order to exploit the Open Innovation model effectively, and indeed to develop it beyond the Henry Chesbrough model fully introduced in "*Open Innovation, The New Imperative for Creating and Profiting from Technology*", companies need to transform the environment in which their R&D is executed. First and foremost this means the environment within the

company: how to create an atmosphere, which encourages research-scientists to exploit Open Innovation and to positively look for ideas outside the company and its research lab. It should be noted that not only the environment within the company but also outside the company can support the adoption and effective exploitation of Open Innovation. This has already been noticed by a number of multinational companies operating in the front line of Open Innovation. For instance, to be able to offer the best possible physical environment for Open Innovation, leading companies like Philips and DSM have established in the Netherlands their own high-tech campuses, where they attract both large corporations and research intensive SMEs to operate and interact.

Philips has expressed the need for the supporting external environment as follows: “As for any high tech organization, in order to turn innovation into business, you have to deal with complex technologies, fast moving market dynamics, new applications and rising costs. To reduce risk and increase business opportunities, the sharing of infrastructure and expertise is crucial. This is leading to a global trend of resources and infrastructure being concentrated in centers of excellence. In these innovation hotspots technology and business are co-created in networks of partnerships and public-private collaborations.” (6.)

Science and Technology Parks have the potential to provide the best possible physical and intellectual conditions that maximize the benefits of Open Innovation for companies. These environments greatly support interaction and adoption of Open Innovation: Science and Technology Parks house large numbers of different size innovative and entrepreneurial companies, are often located close to universities or other research organizations, commonly concentrate on selected technology fields with joint synergy opportunities and offer shared premises for interaction. But it's clear that suitable physical premises alone are not enough to genuinely support the adoption of the Open Innovation model. Science and Technology Parks can take a step further, by breaking existing paradigms, and offer through additional services and active involvement a world-class environment, which supports the adoption and exploitation of Open Innovation both in large companies and in SMEs. At the same time Science and Technology Parks can have a true effect on R&D effectiveness and efficiency in the region and be one of crucial elements in accelerating the commercialization process of innovations. This is what Kuopio Innovation Ltd. in Finland has initiated in its Innovation Magnet approach.

### **Innovation Magnet - the Best Partner in Open Innovation**

Innovation Magnet develops a wide range of R&D cooperation between highly potential SMEs and research groups in the Kuopio region and international large, R&D intensive and innovative companies, which exploit Open Innovation actively in their operations. Innovation Magnet is based on the Transformation Template© concept created by Professor Ken Taylor

from European Transformation Network ETN. The template was introduced with a full paper “*A New Template for High Performance Science and Technology Parks in the European Environment*” in the proceedings of the 2006 IASP World Conference in Helsinki (7). The concept was further developed and tested by the Technology Centre Teknia Ltd. during an 18-month pilot phase, which ended at the end of 2007. The emphasis in the pilot was in designing and embedding the right way of action including determination of the operations model and designing of the specific tools to be used in the implementation. In addition, the model was tested in practice: the Innovation Magnet team started to work with few carefully identified international companies and connected local SMEs and research groups in the negotiations directing to wide range R&D cooperation.

Innovation Magnet model has proved to be an effective tool, which creates added value for international innovative companies utilizing Open Innovation and for local companies and research groups with highly recognized expertise and ability to cooperate with the leading global corporations. Furthermore, the Innovation Magnet does clearly its share to distinguish the Kuopio region from hundreds of other regions striving to create connections with the more innovative of the world leading corporations and thus the approach creates significant competitive advantage for the region.

### **Elements and Operations Model of Innovation Magnet**

The systematic approach of Innovation Magnet represents a unique operations model in networking R&D activities, international leading companies and SMEs. The approach consists of four primary components, which are brought together: Open Innovation, Science Park environment, large corporations and SMEs.

#### **1. Open Innovation**

Principal modus operandi of the Innovation Magnet is the Open Innovation approach, which enables multidisciplinary cooperation in research. Open Innovation is actively exploited by a large number of innovative and R&D intensive giant corporations and for many Open Innovation is no longer a competitive advantage, it's a competitive necessity.

Open Innovation has advantages for Science Parks aiming to create connections between local SMEs and large corporations: International corporations active in Open Innovation are constantly and globally seeking centers of excellence and potential innovative partners. Leading corporations have also recognized the Open Innovation method as a strategic tool to explore new growth opportunities at reduced risk. For those corporations Science Parks can offer a value adding service by connecting ready-made clusters of companies and research groups with clusters that cross

traditional boundaries and stimulate synergy and innovative solutions. In addition, Open Innovation is a win-win approach - to be able to fully benefit from the cooperation, all partners need to have value from it. This extra value is best extracted when all partners contribute their unique skills and competences irrespective of their size - ideally a partnership of equals whether they are a four person SME or a global giant.

## 2. State-of-the-art Science Park environment

It can be said that the leading Science Parks with critical mass, clear expertise fields and availability of both academic research and highly innovative SMEs, are already existing Open Innovation environments. In this type of environment, operators both in companies and in research institutions know each other, have constant clusters-crossing cooperation and their networks are open for innovative newcomers, which business incubators in Science Parks generate regularly. These environments offer outstanding value for an international corporation concentrating its R&D to centers of excellence with superb collaboration opportunities. It is however the case that most Science Parks have the attraction and development of SME's as their first and overriding priority. To be truly effective in this new environment the attraction, integration and enhancement of the big corporations takes equal priority. This requires new paradigms and a move away from traditional mindsets.

## 3. Carefully identified large corporations

According to Henry Chesbrough competitive advantage now often comes from leveraging the discoveries of others. Rather than relying entirely on internal ideas to advance the business, an open approach to innovation leverages internal and external sources of ideas. (6.) This approach is increasingly pursued by international innovative corporations and for these corporations Science Parks can offer clear additional value. At the same time these corporations can offer a great value for a region and its SMEs and research institutions by coming to the region - either physically or virtually - to collaborate.

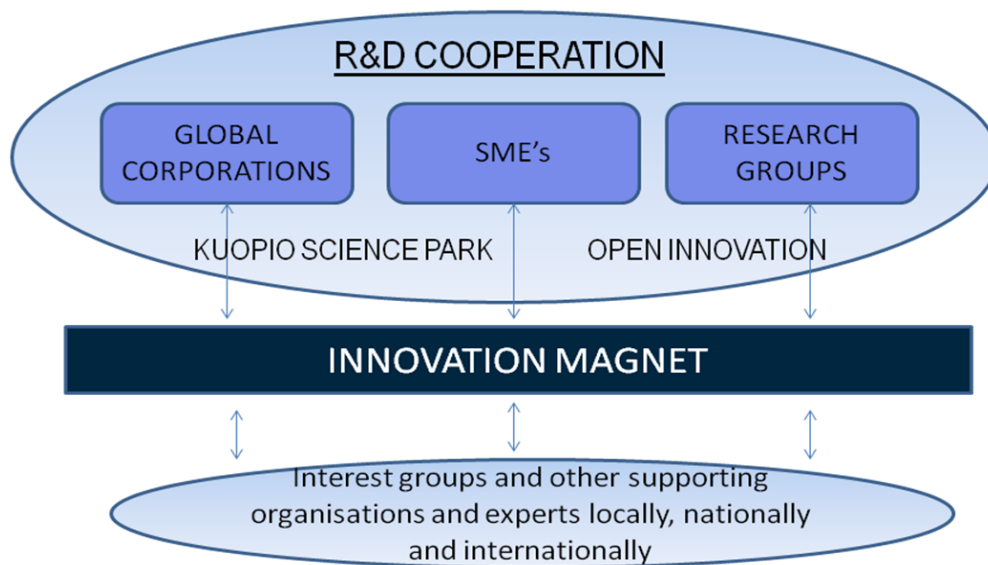
It's essential that Science Parks identify clearly which of the corporations they are able to offer the greatest value and thereupon target the resources accordingly. Without clear targeting, the value adding potential is easily diluted and large corporations lose interest.

The ideal advantage comes from the complementary breakthrough technologies (often called disruptive technologies or innovations) and ideas, which will fill the role in a new market in a way that the older technology couldn't do. The technology has no value in itself without a business model, which creates greater value when fine-tuned adequately according to the business needs.

#### 4. SMEs and research groups with world class expertise

SMEs often have the most innovative concepts available within their focused areas of excellence and can work flexibly, innovatively and openly, especially when seeking collaboration. Both independently and jointly with other SMEs or competent research groups these SMEs can offer highly interesting and potent opportunities for international corporations seeking collaboration partners. Often SME's have specific know-how or exploitable ideas beyond their own core competencies but have not enough resources to commercialize them. The growth opportunities for SME's and big corporations come from competencies complementary to each other. The former can offer additional value in very narrow niche area and latter utilize know-how in order to create cutting edge technologies in the markets.

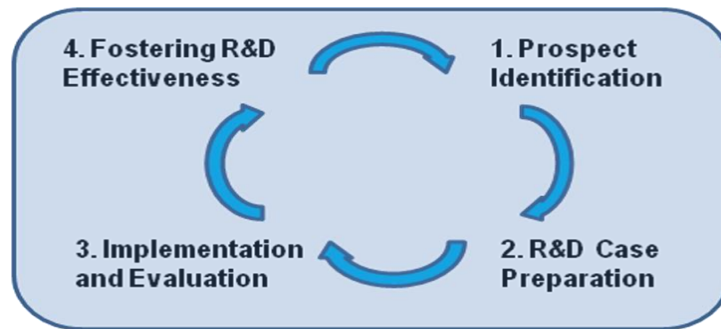
The critical mass of SMEs with synergy opportunities within a Science Park is a crucial element in the Innovation Magnet model since usually SMEs are the most interesting source of expertise for international corporations. It's essential that these SMEs are genuinely having world-class expertise and are capable of international cooperation, since that enables the win-win situation within the collaboration.



**Picture 1: Illustration of the Innovation Magnet approach in the Kuopio Science Park**

To be able to work effectively, productively and credibly a precise operations process for Innovation Magnet approach was created during the pilot phase. The process consists of four separate main stages:





Picture 2: Operations Process of Innovation Magnet

In the first stage the potential international companies are carefully evaluated and from those the prospects selected. For each prospect an individual approach strategy will be made and they will be informed of the targeted potentials available. The second stage concentrates on designing a joint collaboration project between the international company and local operators. This project will be implemented in the third stage of the process. The model also has the potential to increase the R&D effectiveness within the partners included to the collaboration.

In order to set the process in motion effectively and especially to create the connections to targeted leading international corporations, it has been critical for Kuopio Innovation Ltd. to be present in the key forums where the big companies are represented (e.g. different type of conferences). Thus, an early part of the strategy was to identify and get involved in a small number of influential forums. These forums proved to be highly beneficial not only in the beginning of the process but also in the following phases.

One of the main goals is that through the Innovation Magnet approach Kuopio Science Park can create strategic partnerships with international corporations and constantly carry through joint R&D projects, which include a number of local partners from both SMEs and research groups, and thereby extend the benefits comprehensively in the region. Another important goal is that through the approach, versatile clusters crossing R&D cooperation and strategic partnerships Kuopio is in the long-run able to attract foreign direct investments effectively.

Successful implementation of the Innovation Magnet approach and the operations process requires a number of tailor-made tools. Most of the required tools were created and tested during the pilot phase. The toolbox includes for example the Prospect Selection Matrix, Prospect Relationship Matrix, marketing material and specific tools (e.g. Transformation Template©) to support R&D effectiveness. The toolbox requires constant updating according to lessons learnt.



## How to Do It in Practice - a Case Study

In the beginning of the pilot phase the Innovation Magnet team set a target to carefully select 15 large corporations as prospects from the list of 250 corporations, which in some level could be eligible international target companies. To have a ground base for the company evaluation the local interest groups were interviewed in order to identify clear selection criteria for large corporations. Based on the information received both in the interviews and careful study of international corporations the selection of 15 corporations was made and Innovation Magnet team had a clear understanding to which of the global corporations the limited resources should be targeted. In this short case study, it is briefly described how the Innovation Magnet team has worked with one of these identified prospects, a world-known global innovative corporation in the leading edge of Open Innovation, which in this study will be called the Prospect.

The Prospect clearly stood out in the evaluation even though Kuopio had no previous connections to it. It was clear that Kuopio could offer added value for the Prospect and there would be several opportunities for R&D collaboration. Since there was no existing connection, the Innovation Magnet team decided to create the first contact in one of the key forums, where the Prospect is active, in an informal and casual environment where networking and discussing is easy. After the discussions, the prospect was convinced that the visit to Kuopio would be justified because of two reasons: the approach itself was highly interesting and more overtly the expertise areas in the Kuopio Science Park were in most parts consistent with the Prospect's business areas.

The Innovation Magnet team started to prepare a carefully tailor made program for Prospect's Kuopio visit. In the program, it was important not only to show the R&D collaboration opportunities but also concretize the fact that through Innovation Magnet Kuopio offers a unique approach, which creates added value for the Prospect when exploiting Open Innovation.

The most relevant local players were engaged in Prospect's visit and committed to put their time and efforts for the visit. Thus, the local players included the leading representatives and experts from the City of Kuopio, University of Kuopio, several state research institutes and local companies. In all, the Prospect was highly impressed with the visit and very satisfied in its findings related to collaboration opportunities. The careful follow-up was made after the visit and further information related to the most interesting collaboration options was offered during the next months.

Based on the meetings and its findings from Kuopio the Prospect decided at the first stage to start negotiations concerning three different R&D collaboration opportunities with local companies and research groups. In addition, the Prospect committed to make Kuopio Innovation Ltd. its Strategic Partner. This partnership means that the Prospect looks

continuously to Kuopio for further collaboration opportunities. In addition, in future the Prospect scans innovations through Kuopio Innovation Ltd. not only from Kuopio region but also from the whole Finland.

### **Experiences from the Innovation Magnet**

Experiences from the Innovation Magnet approach have been extremely positive: The model has created great interest among all targeted research intensive giant corporations. Several of them have already visited the Kuopio region to become acquainted with the possibilities for R&D cooperation with region's SMEs and research institutions and one has shown its belief and commitment by making Kuopio one of its Strategic Partners. Altogether, ten joint R&D projects are under preparation. Also innovative SMEs in the region are committed to model and adapt Open Innovation.

It is now clear that the targeted global corporations at the leading edge of Open Innovation have recognized the Innovation Magnet to be a fresh and innovative concept, which genuinely offers added value for corporations actively utilizing Open Innovation. It is very challenging for the less well-known regions like Kuopio to be recognized among the leading R&D intensive companies. Through Innovation Magnet Kuopio is now able to stand out and be noticed by the target corporations: after running the Innovation Magnet approach for 20 months, Kuopio Innovation Ltd is currently negotiating with a number of the universally recognized industry leaders.

Innovation Magnet has demonstrated that Science and Technology Parks can offer additional value both for large corporations and SMEs when adapting and exploiting Open Innovation: STPs not only offer a suitable physical environment but can also be actively involved in the process and thus create valuable synergy. Further more, the pilot has proved that a combination of a Science Park environment and Open Innovation concept offers a powerful methodology for a region to intensify innovation process and to attract new R&D intensive operators.

### **Partnering Science and Technology Parks to Innovation Magnet**

Innovation Magnet is implemented by the Kuopio Innovation Ltd. It's a company founded in 2008 by the City of Kuopio (ownership 76 %) and Technopolis Plc (ownership 24 %) after Technopolis Plc acquired Technology Centre Teknia Ltd. The company is responsible for implementing the Center of Expertise Program and various regional development projects earlier carried through by the Technology Centre Teknia Ltd. Kuopio Innovation Ltd. is located at the Kuopio Science Park, where over 150 innovative companies, University of

Kuopio, Savonia University of Applied Sciences, Kuopio University Hospital and several national research institutes operate.

Kuopio Innovation Ltd has recently started the next phase of the Innovation Magnet operations lasting next three years. One of the goals is to enlarge the operations by linking with other Science and Technology Park partners and thus create added value both for the approach and for all the operators in the network. In the first stage the partners should be European well-established leading Science and Technology Parks with the needed critical mass, world-class expertise and international mindset. Together with the chosen partners Kuopio Innovation Ltd. will continue to develop the concept and offer on a wider scale the unique opportunity for innovative companies, research groups and regions in the frontline of Open Innovation.

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