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TECHNOLOGY PARKS AS THE LINK BETWEEN MULTINATIONALS AND SMALL AND MEDIUM-SIZE ENTERPRISES

PARALLEL SESSION 2

Choosing your target companies: a strategic decision

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Full paper

THEME 3: SERVING DIVERSITY. Companies' Profiles in STPs and AIs: from start-ups to MNEs

3.1. Companies profiles in STPs/AIs: Addressing different needs

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Title: Technology Parks as the Link between Multinationals and Small and Medium-Size Enterprises

This paper discusses the various models for the transfer of science and research achievements to the market that has been designed within technology and science parks, and highlights a model of best practice in this area at Technology Park Ljubljana.

Background

Innovation and the transfer of research achievements to the market are of key importance in ensuring the greater competitiveness of any national economy and creating greater added value. In order to promote economic growth in times of global economic uncertainty, measures aimed at encouraging research into customers and the commercialisation of research achievements have been given an important priority position in national development strategies of various countries. At the same time, Slovenia, which cannot rely on a natural abundance, a large market or cheap labour as a source of its economic growth, must make use of its inhabitants' top knowledge, innovative and research achievements and build on ensuring the quality of services and products in order to ensure economic prosperity.

Due to the aforementioned, the Government of the Republic of Slovenia has drafted a Strategy of Smart Specialisation, which has clearly specified priority investments in research, development and innovation in the 2014 to 2020 period. Identifying such priority areas considers social challenges and trends, and especially the already developed capacities and competences of the economy as well as knowledge institutions which as such represent generators of growth and development, as well as potential for the development of new activities. Depending on social challenges, both technology and non-technology innovations (e.g. design, new business models, process and organisational innovations, social innovations, etc.) will be encouraged. Investments in development will not only be reflected in the development of new or technologically more demanding products and services, but also in developing comprehensive solutions identified on the market, which carry high added value, as well as solutions to social challenges. At the same time this will strengthen cultural creativity, entrepreneurship and innovation, and ensure a transfer from product development

to customer and user development, as well as lean and agile entrepreneurship both in the broader social environment and in companies.

Contacts of large enterprises with small and medium-size enterprises

Measures and institutions which facilitate and strengthen the transfer of research and innovative ideas to the market comprise the broader innovation environment. Third-generation technology and science parks are engaged in the transfer of research developments to the market. Technology Park Ljubljana has also overstepped its national boundaries and is focused on activities in the broader global environment and is part of international networks. The highly-specialised services of Technology Park Ljubljana help solve the complex challenges faced by its incubated companies and facilitate the forging of long-term cooperation with partners in the global arena. Technology Park Ljubljana is the only case in Slovenia that can be designated as a public-private partnership project, as its founders include both public institutions and the largest companies in Slovenia. The development of Technology Park Ljubljana resembles an amended Finnish model of developing an organisation engaged in transferring scientific and research achievements to the market.

Technology Park Ljubljana brings together its owners and their goal-oriented approach to the goals defined in the national strategic documents covering economy and innovation, ensuring and encouraging the transfer of research and innovation achievements to global markets. Since its very beginnings, the Park has primarily dealt with the research achievements of institutes which are partners of the Park, and with verifying their commercial potential. Furthermore, in partnership with large national companies, the Park provides an encouraging environment for the development of spin-off companies, and facilitates links between start-ups and large enterprises. The Park provides start-up and early growth companies with access to various support services and potential business partners, all of which are located in vicinity. In addition, we have noted positive effects of the informal transfer of knowledge and ideas.

In a world where medium-size and large enterprises find it difficult to achieve technological development with their own resources, the open innovation strategy is gaining importance. Of course it makes more sense to achieve market competitiveness and sustainable development through innovation and making use of new processes, inventions and patents rather than through pricing policies and a policy of exhausting resources. A decline in manufacturing and increased dispersion of development activities represents an increasing threat to European competitiveness. Thus connecting various open innovation stakeholders are of key importance in developing a more competitive society.

Opportunity

Over the past five years, Technology Park Ljubljana has more actively approached drafting a policy of including new companies, making connections with existing companies in the Park, and connecting new and existing companies in the Park with large and medium-size enterprises in the region. Through such a strategic positioning and activities, as well as by ensuring the cooperation of key national institutes as well as key national large enterprises, Technology Park Ljubljana has stepped out of the constrains of a traditional technology park

and is becoming an important factor in regional and on national economy development. A cluster of young high-tech companies has grown around the key partners, large enterprises and national institutes. Criteria such as new technologies, new models, enthusiasm of the team, and their potential impact on increasing competitiveness and improving the position of other companies in the Park's community and in the region, as well as the company's contribution to the community in terms of activities and networking reach, prevail in including new start-ups. In addition, internationalisation potential, the potential to place know-how, technology, products and services as well as gain access to international sales networks are of key importance for any start-up alongside financial resources and infrastructure. Existing large and international enterprises have already established such pathways, have verified the market response, have the necessary ability to rapidly adapt to market changes, and usually have investment funds available to them. In addition, most companies have mastered the "open innovation" principle, which they successfully apply to identifying new ideas, technologies, products or processes outside of the company. Although all stakeholders have recorded the need to give and gain something new, an appropriate mechanism needs to be in place for such a transfer. Partnerships between SMEs, research organisations and existing medium-size and large enterprises represent an opportunity for professionalising such a service on the market. SMEs expect new ways to the market, rapid growth in sales, a global market presence and competitiveness, while medium-size and large enterprise expect to adapt to the market well, global competitiveness and operating stability. In order to realise this opportunity in the region, between 2007 and 2009, Technology Park Ljubljana co-created and implemented the European project Connect2ideas (C2i) project [1] together with its partners (RTC North - North East of England, SEZ - Stuttgart, Germany, Meta Group - Umbria, Italy, Procter and Gamble, UK and Germany and Assindustria – Italy).

The project activities included a meeting of 11 multinationals in Brussels and the pilot projects of particular partners which together contributed to a clearer overview of the shortcomings and potential improvements to the Open system innovation strategy or SME internationalisation through multinationals (MNCs), at least in light of the conditions prevailing in the EU. Communication is mainly aimed at finding, identifying, agreeing and creating new value. This mainly entails a sequence of events and activities with respect to which the following main deficiencies were noted:

- Internal and external communications of the included enterprises (MNCs and SMEs)
- Systems for evaluating the technologies, products and systems offered
- A lack of established commercial models for technology transfer
- Methods for measuring innovation activities within enterprises
- Intellectual property protection strategies
- Platforms for achieving know-how and transferring best practices.

The pilot project clearly showed that the selected and tested models and activities significantly contributed to an understanding of innovative processes, their transfer potential and how these contents can be improved through activities provided by specialist services. In 2011, the International Association of Science Parks and Areas of Innovation (IASP) also designed a similar service referred to as POINT [2], which is designed for the global level by addressing all IASP members and introducing partner companies for professional intermediation. Technology Park Ljubljana developed and retained the methodology mainly

for the purposes of connecting start-ups and regional enterprise at the national and European level.

Communications within companies and between different companies

Connections are built on the communications needs of small and large enterprises in a manner both can understand. Small enterprises are focused on sales, supply and other short-term priorities. To them, large enterprises represent competition, predators. On the other hand, large enterprises are focused on markets, product development and long-term strategies. To them, small enterprises are external suppliers and thus not a factor in corporate decision-making.

Open innovation has brought about a large shift in how large enterprises work. Those responsible for innovation in MNCs are aware of the importance of introducing new dialogue with small enterprises. To this end, Technology Park Ljubljana encourages and organises MNC pitches to small enterprises and start-up companies - at first as a learning process, and later as a manner of coexistence and accelerated cooperation. The T-Plan tool developed by TPLAN [3] and upgraded for use in regional application in cooperation with the Cambridge University was introduced for communications and identification purposes. Some companies also applied this method to their internal needs, especially with respect to market and product development.

Many companies experience issues with internal communication, especially when the company operates through several locations. The major challenges include systematisation, traceability and archiving, while small enterprises perceive this as less of a problem. On the other hand, small enterprises have an irresponsible attitude to innovation, a lack of staff, and bad internal innovation management from development to technology expertise within their existing human resources and financial resources.

Evaluating technologies, products and systems

Based on responses received from 22 large enterprises and approximately 60 small enterprises, two questionnaires for purchasing enquiries and sales offers were developed as part of the project. A systematic approach to and regulating the communication method resulted in a significantly improved understanding of the goods offered or requested. Identification of the most important piece of information the large enterprise must communicate to the small enterprise and identification of the key contents the small enterprise must present to the large enterprise form the basis of understanding and are prerequisite to any further cooperation. To this end, two forms were developed which continue to be successfully used for this purpose to this day. The EEN / IRC network contributed its amendments and suggestions, which were confirmed during project implementation.

Their amended forms are available on the project's web-based platform at various levels and for various areas. [1] Based on multi-level descriptions, the area specialist assesses the matching potential. A fully-qualified person or team within the large enterprise undertake the evaluation.

In cooperation with Meta Group - Terna Italy, Technology Park Ljubljana has developed its own system of assessing the innovation potential of enterprises, which is a necessary

condition for including the company and technology in MNC cooperation processes according to open innovation principles. The methodology is based on a questionnaire and an interview which address the human resources function (capacity to realise the plan), the ability to cooperate (openness to change and concluding partnerships), the market and business models (ability to assess the market and opportunities) and finances (capacity of realise the financial plan). Members of Technology Park Ljubljana were assessed for their potential to connect with larger enterprises using this tool.

The benchmark analysis also revealed a lack of ambition in some key areas, which is more characteristic of "lifestyle" companies compared to rapidly growing enterprises. However, the companies received the tool very positively; as it allows them to self-reflect and identify segments special attention should be paid to.

Benchmarking analysis (companies > 24 months)

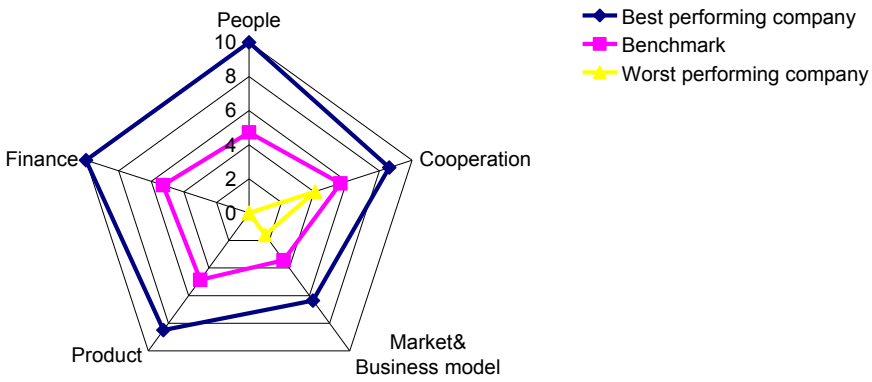

Figure 1: On average, enterprises younger than 2 years old gained 5.41 points out of 10 possible. According to the benchmark analysis, only 30 % of companies were classified as excellent or good.

Lack of established commercial models for technology transfer

The EU is facing a lack of practice in the self-sufficient implementation of technology transfer. The technology transfer process has been found to be expensive and time-consuming. There is virtually no transfer of key personnel from technology research environments into companies and back. The process itself, which comprised a well-defined enquiry in 16 cases, required 20 work days of highly qualified staff. The question of public money is of course important when transferring technology to a large private enterprise. We also verified the various manners of payments, fund allocation and manners of providing assistance to technology transfers according to the Eureka! Ranch example [4].

Methods for measuring innovation activities within enterprises

We identified a general frustration with the clarity of assessing the progress and success of innovation activity. The Stage Gate Process [5] was selected as the most appropriate

method, which was subsequently complemented with a special range of control indicators in various phases (enquiry, identification, agreement, value creation). More recently the method for assessing process progress has been complemented with insights of lean and agile entrepreneurship [6], while the indicators of individual phases are designed in light of the insights of the EY team [7].

Intellectual property protection strategies

Small companies and their advisers generally believe that medium-size and large enterprises are in search for any opportunity to profit from their intellectual property. On the other hand, large enterprises usually avoid singing non-disclosure agreements as they can hinder them in their global market presence.

Establishing greater trust mainly depends on the characters of those involved and on good advisers or intermediaries. It is very important to organise training sessions for small enterprises on all forms of protecting intellectual property and on the neutrality of intermediaries. Technology parks can also have a key role in organising training sessions and in intermediation.

Platforms for achieving know-how and transferring best practices

During the project we designed a network support tool for communication between the multinationals included in the project with small enterprises, innovators and research organisations as the initiators of communication. Demand and supply for technology transfer contents, divided into 13 main industries (from agro-industry to logistics) and with further categories within each industry, can be entered into this tool. As the POINT application, it is aimed at broader communication at the European or global level. It also allows searching, reviewing, connecting and informing. Without being part of the operations of an intermediary company, the purpose-build platform built as part of the project is stagnating. Technology Park Ljubljana is using the tool for systematic work in individual cases of connecting incubated start-ups with local medium-size or large enterprises.

In initial phases of start-up and MNC matching, we used the Technology road mapping (TRM) method developed by RTC North as a service [8]. The method allows for the consensus of a greater number of stakeholders in applying various technologies and market insights into future activities of medium-sized and large enterprises. This method comprises a one- or several-days interactive group workshop (brainstorming) of key representatives of large enterprises, researchers, small enterprises and financial experts in order to recognise the current and future needs of the industry, identify the shortfalls of the industry, perceive barriers and form the relevant goals, cooperate and identify the interests of the participants, etc. Road mapping method has been tested and utilized by Technology Park Ljubljana at the intensive workshops where three large Slovene companies in three different sectors (ICT, engineering and manufacturing) met with the suppliers and potential subcontractor in order to present their vision and strategy for the next five to ten years. Road mapping has proven to be appropriate and very useful tool to utilize in order to connect SMEs and large companies. SMEs have very limited access to large companies yet alone access and an insight to the vision and strategy of development of large companies in order to approach them and substantially present them their services and capabilities to assist large companies to achieve their short and long term objectives. Facilitated road mapping represented a positive outreach to all concerned parties large companies, small companies and as well as to the

facilitator. By using the road mapping tool large companies presented their future development plans and constructively communicated with small companies with which some of them became afterwards also their suppliers. Benefits to the small companies were three fold: access to development plans and vision of large companies, offering its own solutions and services in order to assist large companies to achieve development plans, and finally to pitch to the large companies their services for further talks as well as negotiating for contracts. Facilitator of the road mapping tool e.g. Technology Park Ljubljana tested the road mapping tool and due to its positive and encouraging outcomes it has developed it further and incorporated it into its business support service's package for its clients.

Amending the selected tools

The methods which have been presented in this papers have been confirmed and tested and were confirmed by representatives of multinationals as one of the ways they can cooperate with small and medium-sized enterprises. Methods have been introduced as one of the specialised services of Technology Park Ljubljana. This service represents one of the key methods for connecting large enterprises with small and medium-size enterprises that form part of the Park community.

In addition to the already mentioned methods, when forging connections between large enterprises on the one hand and small and medium-sized enterprises on the other, Technology Park Ljubljana also applies state-of-the-art lean company insights, such as "design thinking", the "lean start:up methodology" and "business model generation" methodology. As part of the "Master of Start:ups" [9] specialised training programme which is aimed at both target groups, we encourage the principles of lean entrepreneurship and research in order to reach the appropriate market - customer fit of products and services. The exchange of experiences and viewpoints of particular products and services allows entrepreneurs to obtain additional insights, expand the area, sometimes become part of chains, or sometimes pivot the product or even reboot the company as a whole.

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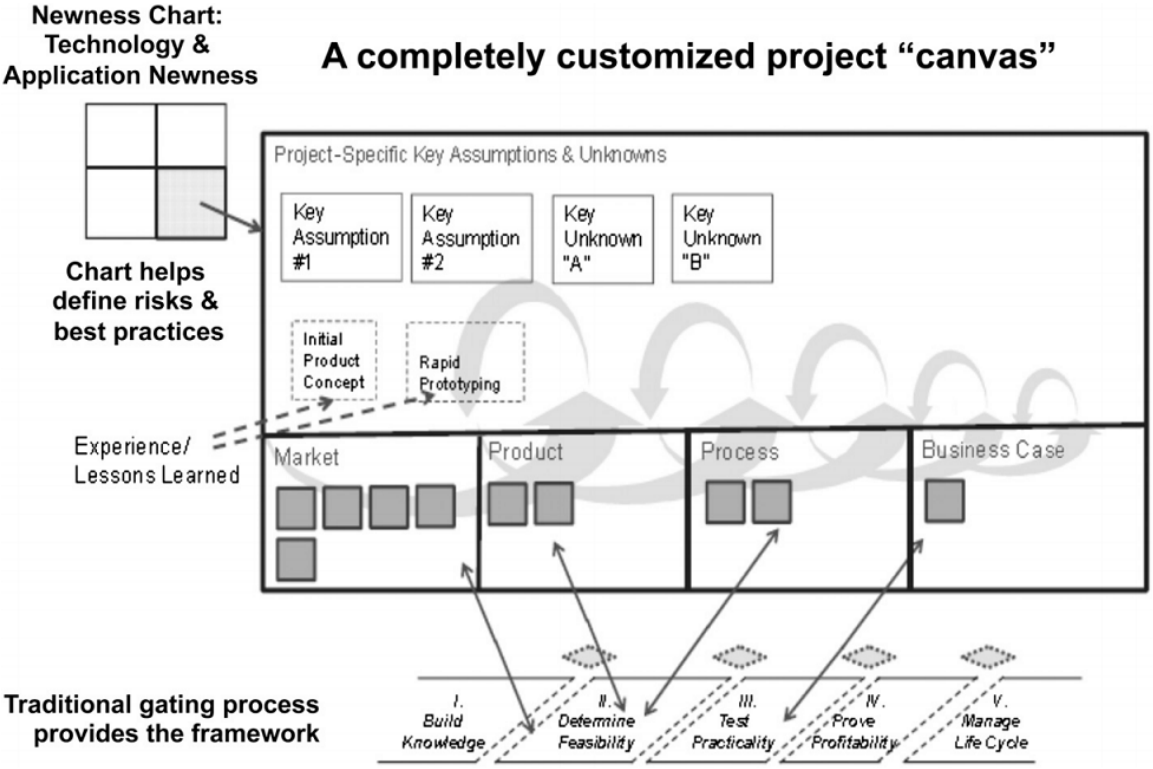

Stage Gate Process

The stage gate process is customised to suit specific requirements for program and project governance

Business Case	Feasibility	Schematic Design	Design Development	PreConstruction	Construction
• Project Brief • Options Study • Business Case • Project Org • Feasibilty Plan	• Project Scope • Project Quality Plan • Procurement & Funding Strategy • Updated Business Case • Concept Design • Cost Plan B • Programme B • Feasibility	• Schematic Design Report • Cost Plan C • Programme C	• Design Developement Report • Cost Plan D • Programme D	• Construction Documentation • Cost Plan E • Programme E • Construction Programme • Tender & Award	• Construction Deliverables • Practical Completion
Business Case Approved	Project Approved	Schematic Design Complete	Design Development Complete	Pre-Construction Complete	Construction Complete
Gate A	Gate B	Gate C	Gate D	Gate E	Gate F

The progress of every project is monitored at each stage gate to ensure status, key dates, funds and cost plans satisfy requirements.

Baseline and forecast are established and updated as required for each project at each stage gate. This information is then aggregated to enable an accurate, consistent and reliable measurement of the performance of the entire capital program.

LEAD USER METHOD									Survey results*	
A] Initiation phase	I-P-O-O	Category	Measurement of	Key Performance Indicator					Arithmetic mean	Median
	Input	Top Management Commitment	Degree of freedom	Freedom given by top management to establish search fields outside of the core business					1,6	1
	Outcome	Market potential	Customer potential	Degree to which Lead User represents the mass market that the company is targeting for the future					1,5	1
B] Implementation phase	I-P-O-O	Category	Measurement of	Key Performance Indicator					Arithmetic mean	Median
	Input	Staff	Diversification	Number of Lead Users participating in workshop relative to internal staff members					1	1
		Quality	Heterogeneity	Degree of heterogeneity of the Lead Users, e.g. variation in interests and expertise of the Lead User					1,3	1
	Process	Quantity	Adaptation effort	Number of times feedback is gathered from Lead Users for each developed prototype					1,1	1
	Output	Quality	Strategic fit	Compatibility of solutions with existing business strategy					1,2	1
		Knowledge generation	By-product	Additional number of interesting suggestions and ideas that emerge during the workshop					1	1
		Customer loyalty	Lead User network	Percentage of participating Lead Users with whom you establish contact for potential future collaborations and/or full-time employment					1	1
	Outcome	Profitability	Profit ratio	Ratio of expected profits from the Lead User innovation compared to those generated by projects run with more traditional internal innovation processes					1,2	1
Overall KPIs	I-P-O-O	Category	Measurement of	Key Performance Indicator					Arithmetic mean	Median
	Input	Top Management Commitment		Degree of top management commitment to open innovation initiative					2,6	3
		R&D	Cost-to-market	Cost to market of development using open innovation					1,1	1
	Process	Time	Time-to-market	Time to market of the innovation					1,3	1
		Risk	Intellectual Property	Degree of protection of intellectual property in cooperation with external partners					1,3	1
	Output	Sustainability	Culture	Increase in corporate-wide open innovation culture through the open innovation activity					1,2	1
	Outcome	Creativity	Originality	Customers benefit from the innovation provided (fit to market)					1,9	3
		Profitability	Revenues	Expected increase in revenue from new customers as a percentage of total sales					1,7	1
	Base of data collection of arithmetic mean and median		Qualitative rating scale	Very Important	Important	Neutral	Un-important	Very Un-important	n = 87 (August 2012)	
			Numeric rating scale	3	1	0	-1	-3		

Source: EY, Open Innovation KPI Study 2012

1. http://www.connect2ideas.com/

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