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**THE GLOBAL DIMENSION IN SCIENCE AND
TECHNOLOGY PARKS: THE CASE OF TECNOPUC**

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Managing the global dimension

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Executive Summary

The presence of a Science and Technology Park - TECNOPUC at the Pontifical Catholic University of Rio Grande do Sul (PUCRS) represents the university, industry and government interaction, joining forces and fostering collaboration. Due to its excellence and commitment with innovation, TECNOPUC has received important awards and it is considered a remarkable experience in Brazil. Besides the set of benefits that the Park offers for all the companies, the highlight is for the strong commitment with RD&I (research, development & innovation) projects. Moreover, TECNOPUC favors a strong link with academia and fosters research mainly in the areas of information technology and communication, energy and the environment, life sciences and creative industry. The significant growth as an ecosystem of innovation increased the relationship between the park and its surrounding areas, allowing TECNOPUC to become reference not only in Brazil, but also beyond borders. Therefore, in the last years the park has put a lot of effort in the global dimension, including collaboration, networking, open innovation and internationalization, with the purpose of attracting new businesses and partnerships. For this reason, in this paper we present Global TECNOPUC, an innovative proposition that involves the construction of a new building and the development of several activities based on four dimensions in order to foster better synergy among people and knowledge sharing, and promoting the internationalization efforts of the park.

Introduction

TECNOPUC - PUCRS' Science and Technology Park - is the product of joint efforts by PUCRS, government and industry with the purpose of creating an environment for interdisciplinary research and innovation to make stakeholders more competitive, improve quality of life and bring the academic competence of the university to society, thus promoting science and technology development mainly in the region. The park was officially opened in 2003 in the city of Porto Alegre, and it is currently focused on four main areas: Information Technology and Communication, Energy and the Environment, Life Sciences and Creative Industry. Characterized and recognized as a modern and contemporary innovation system, harboring distinct size entities and actions of the university in the areas of RD & I, it facilitates technological development of all actors involved. Within this context, it brings together organizations representing the voluntary and business segments, major companies active in the global market (e.g. Dell, HP, and Microsoft), small and medium enterprises, as well as incubated companies and spin-offs. Several PUCRS research centers are located within the park as well, focusing on Electronics and Telecommunications, Nanotechnology, Molecular and Functional Biology, Photovoltaic Solar Energy, Radiation and Energy, Oil, Gas, Carbon Storage and Tuberculosis, among others. The park also manages a technology-based incubator called RAIAR.

Due to the strong bound with PUCRS, TECNOPUC operates aligned to the University strategic plan, including projects, goals and actions. Therefore, since 2004, TECNOPUC defined its mission and its vision as follows:

Mission
To create a community of transdisciplinary research and innovation through collaboration between academia, industry and government to increase the competitiveness of its actors and to improve the quality of life of their communities.
Vision
In 2015, TECNOPUC will be a national and international reference due to the relevance of its research with the mark of innovation, promoting the technical, economic and social development of the region.

The structural framework of TECNOPUC consists fundamentally of its mission and vision articulated with governance, objectives and procedures. Furthermore, the success of TECNOPUC is based on solid factors, such as political, social and economic status of the city of Porto Alegre. There are 1.5 million inhabitants in the city and almost 4 million people in the metropolitan region. Porto Alegre is the capital of Rio Grande do Sul state and holds a strategic geographic localization in MERCOSUL, a sub-regional block with the purpose of promoting free trade and the fluid movement of goods, people and currency between most of the countries in South America. The metropolitan area offers a great potential for business as well as an excellent infrastructure for science and technology development.

Furthermore, after almost 12 years it is now possible to characterize the scenario that supports this widely recognized Brazilian initiative. On one hand, the formation of a national innovation ecosystem over this period. On the other hand, the significant growth of its relevance and its relationship with the city and society that surrounds it, producing both products and services, as well as becoming a benchmark innovation ecosystem. Additionally, in order to track the growth of its initiatives, TECNOPUC measures its activities by using a set of Key Performance Indicators (KPIs). The 2014 KPIs are presented in Table 1.

Key Performance Indicators	Results
Companies	77
Incubated companies (Residents and Associated)	24
PUCRS Units (including Research Centers and Labs)	16
Professional entities and associations	9
Collaborators	6157
RD&I projects developed in collaboration between the companies and the researchers at the University	+ 150
Researchers involved in the RD&I projects	+ 60
Graduation level grants	+ 160
Under graduation level grants	+ 300
Trainees and interns within the companies	+ 330

Table 1: TECNOPUC Innovation Ecosystem KPIs.

These indicators tend to reflect the added value of this initiative and its adherence to the urban context of the city of Porto Alegre. In addition, TECNOPUC's overall goal continues to be based on promoting the economic and social development process of the nation, aligned with the global dimension. For this reason, the main goals of the park are:

- attracting businesses with RD&I projects to work in partnership with the University;
- promoting the creation and development of new technology-based companies;
- developing RD&I projects in general;
- stimulating innovation and triple helix (government-university-industry) interaction;
- generating positive synergy between academia and business;
- acting in coordination with governmental spheres, both in the city, the state, the country and beyond borders.

Consequently, internationalization comes to this scenario as an irreversible process, especially because it is a subject insistently addressed in the last years. Moreover, "over the past thirty years, one of the most frequently researched topics in international marketing has been the one of the internationalization of the firm, and this concept has gone through important changes ". Along these lines, TECNOPUC recognizes that one of its goals as a science and technology Park is to facilitate the process for the partner companies for expanding abroad and acting in a global dimension. At this point it is important to highlight that the global dimension context covers all the activities related to promoting the Park and its tenants (companies, associations, etc.) within international markets (including networking, open innovation, collaboration, etc.), also offering opportunities for international companies interested in operating from and in Brazil, stimulating the exchange of experiences among entrepreneurs in Brazil and abroad.

Global TECNOPUC

It is clear that internationalization has become a key word in both the University and the Park strategic plan, given their evolution and the experience accumulated since the beginning. PUCRS considers the internationalization process as one of the most important measure to be stated as a university of excellence. For that reason, PUCRS has been developing actions to encourage academic mobility of students and professors and also to stimulate the consolidation of strategic alliances for research development, allowing

1. FILIPESCU, Diana. Innovation and Internationalization. A Focus on Exporting Firms. Autonomous University of Barcelona, 2006. Page

the expansion of opportunities for academic and management experience at an international level.

As previously mentioned, over the last years TECNOPUC has put a lot of effort in the global dimension, including collaboration, networking, open innovation and internationalization, with the view of attracting new businesses and partnerships. Nowadays, all these actions are justifying the deployment of Global TECNOPUC – Center for Innovation, Creativity and Networking, offering an innovative proposition both for its spatiality as the interconnected functionality of its multiple activities. A new building with a modern infrastructure (inside TECNOPUC) is going to house this Center, offering an environment to foster better synergy among people and knowledge sharing, and promoting the internationalization efforts of the park. The four dimensions of Global TECNOPUC are summarized as following:

Dimension 1 – Co inhabiting: many of the facilities offered to TECNOPUC collaborators are exclusively on PUCRS' campus, external to where the Park is located. On one hand, it offers the stakeholders a complementary view to the University, but on the other hand, it inhibits the creation of multiple networks inside the Park. Therefore, the integral elements of this dimension are:

- Reception atrium;
- Cafeteria;
- Cultural facilities (bookstore and library);
- Services (drugstore, post office, ATM);
- Auditorium;
- Arena for open and innovative activities.

Dimension 2 – Networking: the focus is the convergence of multiple actors, fostering the externalization of knowledge in the various fields. As integral elements of these dimensions are communication rooms; multifunctional meeting rooms with collaborative tools, spaces for entrepreneurial, professional or institutional associations, space for co-working.

Dimension 3 – Open innovation: includes open innovation and creativity to support the incubation of ideas and projects. The purpose is to offer temporary use of flexible spaces, with complete infrastructure, adjusted to demands for initial prototyping of innovative ideas. For educational proposals, there are spaces idealized to be used for academic activities according to interdisciplinary and transdisciplinary concepts. Finally, the laboratory of creativity – CRIALAB - arises to foster group work, with virtual environments, collaborative platforms and complementary activities.

Dimension 4 – Internationalization: this dimension seeks global reach and enhances the planned strategies in order to allow for a global position of TECNOPUC through its companies and its employees, expanding opportunities to the intellectual capital available in our university and its surroundings.

Figure 1 shows the open and synergistic action strategy of GLOBAL TECNOPUC, positioning the internationalization process in a relevant context for the Park.



Figure 1: TECNOPUC – GLOBAL TECNOPUC.

In the next section we present in the details about the internationalization dimension, which is the main focus of this paper.

Internationalization Dimension

Characterized to be a long-term plan, this dimension is mainly based on four pillars: international cooperation, soft landing program, entrepreneurs exchange and international events. Some of these actions started as a pilot before the GLOBAL TECNOPUC project and nowadays they are all connected to consolidate the internationalization program, aligned with the global dimension that the project supports.

A) International Cooperation

TECNOPUC already embraces a significant number of partnerships, due to, for instance, the signing of agreements with other Innovation Ecosystems, Areas of Innovation and Science and Technology Parks. These agreements usually have as their main aim to promote mutual interest in the field of entrepreneurship and innovation as well as to offer support for the cooperation between them and with other related institutions. Moreover, the agreements foster exchange and contacts between industrial networks of the respective countries, including entrepreneurial training and exchange of best practices and assistance that may also include soft landing activities.

TECNOPUC also adhered to programs that are encouraging international cooperation between Innovation Ecosystems, such as the Land2Land Platform, created by ANPROTEC - National Association of Innovative Enterprises Promoters in partnership with APEX - Brazilian Trade and Investment Promotion Agency. This platform has as the main goal to offer mutual support and services among the partners registered in the platform.

Another example is the TECNOPUC association with EBN. The European BIC Network (EBN) is the network of reference for incubation, innovation and internationalization support to individual entrepreneurs, start-up enterprises and innovative SMEs. EBN gathers Business and Innovation Centers (EU|BICs) and other organizations aiming to provide high profile and multi-disciplinary professional assistance such as incubators, innovation centers, accelerators, clusters, entrepreneurship centers and the like.

Results achieved

In the last years, TECNOPUC signed several agreements with other innovation ecosystems, science and technology parks or areas of innovation, including partners in United Kingdom (2012), Germany (2012), Israel (2013), Italy (2013), and China (2014). These agreements generated other results, including soft landing of companies both from and to TECNOPUC, which is described in the next section. The participation in the Land2Land Platform has allowed TECNOPUC and its companies to participate in several internationalization efforts promoted by the Brazilian government.

Last, but not least, by being an associated member of EBN, TECNOPUC already attends to several activities promoted by EBN, such as trainings, workshops and seminars, and the EBN Accreditation Visit, when the RAIAR incubator was assessed as an EU-BIC/Business Innovation Center. The purpose of the EU|BICs criteria is to provide an assurance that EU|BICs meet certain standards in terms of their service offering and performance. This assurance is important to stakeholders, EU-BICs themselves (e.g. by helping to identify management priorities) and to clients. EU-BICs are professional organizations that promote, stimulate and develop innovation in SMEs at all stages of their development, through a comprehensive incubation process. Depending on the characteristics of the territory and the existing business support organizations already present, EU|BICs may focus on fostering the creation of new innovative enterprises and/or developing innovation in existing enterprises, with the goal of contributing ultimately to regional/local economic development, competitiveness and growth.

RAIAR was assessed in early 2015 and was the first incubator in the Americas to be granted a license to use the EU|BICs trademark. The grant embodies the recognition by the European Commission and by EBN and it allows RAIAR to the use of the official “EU|BIC” logo and to retain the status of full member of EBN - European BIC Network, a status restricted to EU|BIC’s only. This result reflects the ongoing improvement of the services of RAIAR to a variety of innovative entrepreneurs and SMEs.

B) Soft Landing Program

TECNOPUC considers the soft landing program a powerful instrument to stimulate the internationalization to and from TECNOPUC. The soft landing is implemented by the offer of soft landing services and benefits to all companies that are located in a given science and technology park, area of innovation or innovation ecosystem that has an agreement signed with TECNOPUC. We believe that this initiative is an important tool to attract international enterprises to the park and also to promote the internationalization of the companies located at the park. Some of the soft landing services and benefits are described as follow:

- Soft landing for companies interested to join TECNOPUC through specialized business and legal consulting services, such as market analysis, strategic planning, mapping opportunities/risks for business, evaluation of the economic potential of the region, industry development, legal framework in starting business in Brazil, federal, state and municipal tax breaks. Both the Law School and the Business Schools at PUCRS can provide these specialized services.
- Temporally use of space fully equipped with telecom facilities, furniture and other office facilities for companies that are starting-up their operations at TECNOPUC.
- Support in recruitment of skilled labor for the company startup operation at TECNOPUC.
- Support for research, development and innovation projects in partnership with PUCRS’ several research groups, labs, and research institutes.
- Specialized services in areas such as life sciences and biotech, pharmaceutical, energy and physics, electronics, natural resources labs; electronic products testing and assembly of prototypes.
- Assistance in interacting with national, regional and local government agencies.
- TECNOPUC general services, such as security, gardening and maintenance of the park.
- Access to several shared labs and equipment that can be used by the companies located at the park.

The program may also covers external services, such as:

- Partnership and networking with Brazilian companies and associations to access industry information and

market wages.

- Portfolio of companies that offer specialized services, such as legal support, accounting, intellectual property licensing, market research, foreign exchange, import and export formalities, consular visa, enrollment in language schools with courses such as Portuguese for Foreigners, renting/buying real estate, and many others.
- Portfolio of companies providing maintenance services for companies established at TECNOPUC, such as reception, cleaning, private security, etc.
- Portfolio of services to help the company setup at TECNOPUC, such as telecommunications, painting and carpentry, plumbing, electrical services, etc.

Results achieved

Pandorga, a software development company installed at TECNOPUC bet on England to boost its internationalization plans in searching for new markets and customers. In 2010, after three years incubated at RAIAR Incubator, Pandorga started the operation at TECNOPUC already outlining a strong movement towards the international market. The company went to United Kingdom sharing a co-working space provided by the United Kingdom Trade and Investment Agency – UKTI, one of the partners of TECNOPUC. The experience in the international market boosted the company's position in Brazil, generating visibility. In addition, the company is now driving new expansion plans.

Based on the same agreement signed with the UKTI in 2012, TECNOPUC received the first international startup in 2014. Globosense is a UK-based company created in 2012 and it is a spin-out of the Technology Park from Cambridge University. The company manufactures intelligent systems of energy control for businesses and homes, with sensors that controls energy usage and help you save money on energy bills. TECNOPUC provided support for the company's installation, by offering infrastructure facilities and assistance in hiring new work force.

C) Exchange of Entrepreneurs

Another important pillar of the internationalization dimension involves the exchange of entrepreneurs between TECNOPUC and other science and technology parks or areas of innovation. One example is the CONNECT program, as part of the EBN activities. The program promotes the exchange of new entrepreneurs between Europe and Brazil. It aims to support promising entrepreneurs and SMEs to grow and develop their international outlook and competitiveness, promoting an exchange of experience between Brazil and European countries and enhancing entrepreneurship overall. In this first phase of the project, still running, CONNECT selects highly motivated European new entrepreneurs to enroll in a business mobility scheme in Brazil, offering them the unique opportunity to collaborate and exchange knowledge with an experienced and successful host entrepreneurs in Brazil, for a period of generally 3 months. The stay is partly financed by the European Commission.

Results achieved

TECNOPUC already hosted three entrepreneurs supported by the CONNECT program, as follows:

- An entrepreneur from Belgium was hosted in 2014. His company is specialized in digital communication and marketing in urban music.
- An entrepreneur from Poland was also hosted in 2014. His company develops a mobile solution which will considerably shorten the emergency first response delay in case of accidents and life threatening situations, where an underqualified person may perform some lifesaving activities before a professional emergency response team arrives.
- An entrepreneur from United Kingdom was hosted in 2015. His company is a materials company focused on the sustainable and ethical sourcing of fibers and fabrics for the fashion and apparel industries.

Based on the CONNECT experience, TECNOPUC is already developing an entrepreneur exchange program

to be able to host entrepreneurs from all over the world. In addition, we are also developing programs to allow the exchange of entrepreneurs from TECNOPUC to other areas of innovation and science and technology parks.

C) International Events

This pillar involves both participating in international conferences and trade missions and organizing events that promotes internationalization at TECNOPUC. For this reason, park representatives are constantly attending such events and also involved in organizing activities within the park. The participation of at least one representative in a trade mission on potential partner's countries is very relevant for better competitive positioning of the institution in the international scenario. In general, the technical and commercial missions enable trade agreements and partnerships.

Results achieved

Representatives of TECNOPUC have participated in several trade missions. In 2012 there were missions to Canada, Germany, and Austria. In 2013 there were missions to China, Italy, Belgium, The Netherlands, Israel, England, and Ireland. In 2014 there were missions to China, and Finland. In 2015 there were missions to the United States, France and missions to China and South Korea are also planned. Several of these missions have generated cooperation agreements listed in the previous sections.

Another important participation in an international event was made possible due to the EBN membership. This was the EBN TechCamp organized in Germany in 2014, where TECNOPUC had presented the Raiar business modeling program called Startup Garage. This program helps students and researchers of PUCRS who have ideas and do not have the knowledge of the tools needed to validate their hypotheses and turn them into sustainable businesses. It works on the most important pillars for any endeavor: the entrepreneur skills, understanding the problem and the customer, the value proposition and the business model itself. In addition, issues related to law, accounting and intellectual property protection are also covered in the program.

TECNOPUC has also organized several events to promote internationalization for its tenants companies. One of them was organized together with the PUCRS nucleus of innovation support, and it is called "Cultures of Innovation". This is a series of events partially funded by the State of Rio Grande do Sul Government, and it is also in partnership with REGINP – the Rio Grande do Sul State network for incubators and science and technology parks. The objective is to promote the sharing of ideas and potential interactions with the world's key innovation markets. It has been an opportunity for representatives of systems and innovation environments from North America, Europe, Asia and the Middle East to bring to Brazil cases of success, their experiences in project management and generation of new knowledge. It is a two-day seminar with and rounds of business, aiming to stimulate international business of the companies not only located at TECNOPUC, but also from Rio Grande do Sul State as a whole. Since 2012, we have organized "Cultures of Innovation" with representatives from Israel, France, United Kingdom, Italy, South Korea, the United States, and Mexico.

Final Thoughts

The organic growth of TECNOPUC, together with the permanent deployment of new and innovative mechanisms, has increased the perspectives of pioneering actions. The internationalization process, as mentioned before, is irreversible, becoming also an attractor of new creative and innovative actions, assuring the global dimension actions.

Therefore, TECNOPUC expects to expand its global operation having Global TECNOPUC as a reference and offering a unique program to promote the internationalization of its tenants and to also allow external companies to have TECNOPUC as their entry door in the Brazilian market.