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VALETEC Park (Brazil): an innovative Science Park enhancing a traditional industrial cluster to leap forward in the knowledge-based economy

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Abstract

The Sinos Valley region, in Brazil, has been one of the most comprehensive and competitive shoemaker cluster in the world. This industry, however, is being eroded by the competition from emerging economies as part of Globalization.

One of the responses to this challenge is the VALETEC Park. Initially conceived as a *traditional campus-like science park*, bound to a 36 hectares tract, VALETEC Park has been transformed into a *science park disseminated throughout the region* in the form of segments adjacent to the clusters of the innovation assets, which are scattered across the territory.

In this process, the park became one of the leading driving vectors of the *Sinos Valley Project for the Future*, a farsighted and innovative regional development program.

The paper presents an analysis of the evolution of VALETEC Park and suggestions regarding science parks in regions where industry is being stifled by the competition within the Global Economy.

Key-words:

VALETEC Park, Sinos River Valley, Rio Grande do Sul, Brazil, FEEVALE, Campo Bom, Novo Hamburgo, Science Park, Shoemaker Cluster, Regional Project for the Future, Regional Development.

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I. Introduction

Sinos Valley Region, 40 km from Porto Alegre, capital of Rio Grande do Sul state, Brazil, at latitude of 30° south, has an area of 1,200 sq.km, 1,300,000 people and income of US$ 10,000 per capita per year. The region encompasses areas where thousands of German immigrants - mostly farmers - settled in the first half of the 19th century. In the second half of the 20th century, the region was one of the world's most comprehensive and competitive shoemaking clusters, with features such as:

- 4,000 private local companies dedicated to the manufacturing and international commercialization of shoes and related items, such as raw materials, basic components, production equipment, fashion design, exportation companies, and logistics;
- A Regional Community University (FEEVALE), created in 1969 as a non-profit organization;
- Several technical schools and research and development centers focusing on shoes, leather treatment and environmental technologies;
- US$ 10 billion output per year in shoes and related items;
- Local companies with manufacturing operations in other countries.

The international competition from emerging shoemaker clusters around the world, as part of Globalization, has eroded this situation. One of the reactions to this is a *regional science park*, created in 2002, aiming to contribute to maintaining and enlarging regional competitiveness and to founding new economic vocations. The park's initial stakeholders were FEEVALE, the Business Association of Novo Hamburgo, Campo Bom and Estancia Velha cities, Campo Bom Municipality, Sinos Press Group, and Liberato Technical School.

II. Methodology

VALETEC Park counts on the support of the *Methodology of Regional Innovative Development,*[1] stemming from a *Latin American School of Thought in Innovative Regional Development*, and which has been described in previous IASP world Conferences.[2] This *School of Thought* is a network of people and institutions that share visions and principles regarding innovative development programs, such as Science and Technology Parks - STPs, *entrepreneurial universities,*[3] and innovative regional development processes. Some of the characteristics of this methodology are described below.

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[1] See, for example:
SPOLIDORO, R., et al.: Science Parks designed as entities of …, Proc. IASP W. Conf., Helsinki, 2006.
_____: Design and operation of Business Incubation …., Proc. IASP W. Conf, Beijing, 2005.
_____: Key-elements to attract investments to a …, Proc. IASP W. Conf., Bergamo, 2004.
_____: Science Parks as key elements of innovative …, Proc. IASP World Conf., Quebec, 2002.
SPOLIDORO, R.: Science Parks as gateways to technopoleis …, Proc. IASP W. Conf., Istanbul, 1999.
_____: The Paradigm Transition Theory, *in* FORMICA, P. and TAYLOR, D. (Editors): *Delivering Innovation* …, Malaga: IASP Publication, 1998.
_____: Tecnhopoleis and Innovative Urban …, Proc. IASP W. Conf., Bordeaux, 1994.

[2] See, for example:
- BARROSO, F. R.: Fatores de localização de empresas de TI em Parques Tecnológicos do RS, *Dissertação de Mestrado*, Universidade Federal do Rio Grande do Sul, Porto Alegre, 2007.
- LAHORGUE, M. A.: Science Parks in metropolitan regions…, Proc. IASP W. Conf., Helsinki, 2006.
- SPOLIDORO, R., et al.: Social networks … Digital Capital Park, Proc. IASP W. Conf., Bergamo, 2004.
- GALIAN, C. et al.: Attracting Knowledge-Based Companies: Lessons from Posadas (Argentina) - Pato Branco (Brazil) Innovation Corridor, Proc. IASP W. Conf., Bergamo, 2004.
- ALVES J. Fº et al.: Promoting business and … SergipeTec, Proc. IASP W. Conf., Bergamo, 2004.
- MAZZAROLO, C. et al.: Pato Branco Technology Park and the …., Proc. IASP W. Conf., Lisbon, 2003.

[3] See, for example:
- CLARK B. R.: Pursuing the Entrepreneurial University, *in* AUDY, J. N. and MOROSINI, M. C. (Org): *Innovation and Entrepreneurialism in the University*, Porto Alegre: EDIPUCRS, 2006.
- AUDY, J. N. and FERREIRA, G. C.: Entrepreneurial University: a view from the Pontifical Catholic University of Rio Grande do Sul - PUCRS, *in* ibid.

II.1. Essential elements of a Science and Technology Park

According to the quoted methodology, the essential elements of an STP are the *Conceptual Framework*, the *Functional Base*, the *Physical Base* and the *Feasibility Base* (Figure 1[1]).

- The *Conceptual Framework* is built from the *interpretation of the circumstances* [4] in which the park is inserted.
- The *Functional Base* encompasses the objectives, philosophies, management structure, strategies, and procedures of the STP.
- The *Physical Base* corresponds to real estate and infrastructure related to the park.
- The *Feasibility Base* is the ensemble of conditions (political, economic, cultural, technical, etc.) that ensure the existence and success of the STP. It relies heavily on the institutions that back the STP – the *Support Network*.

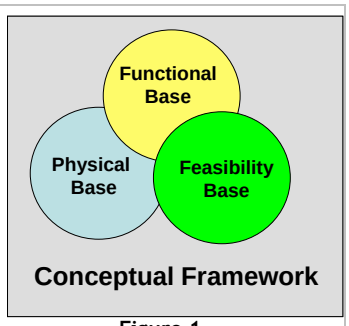
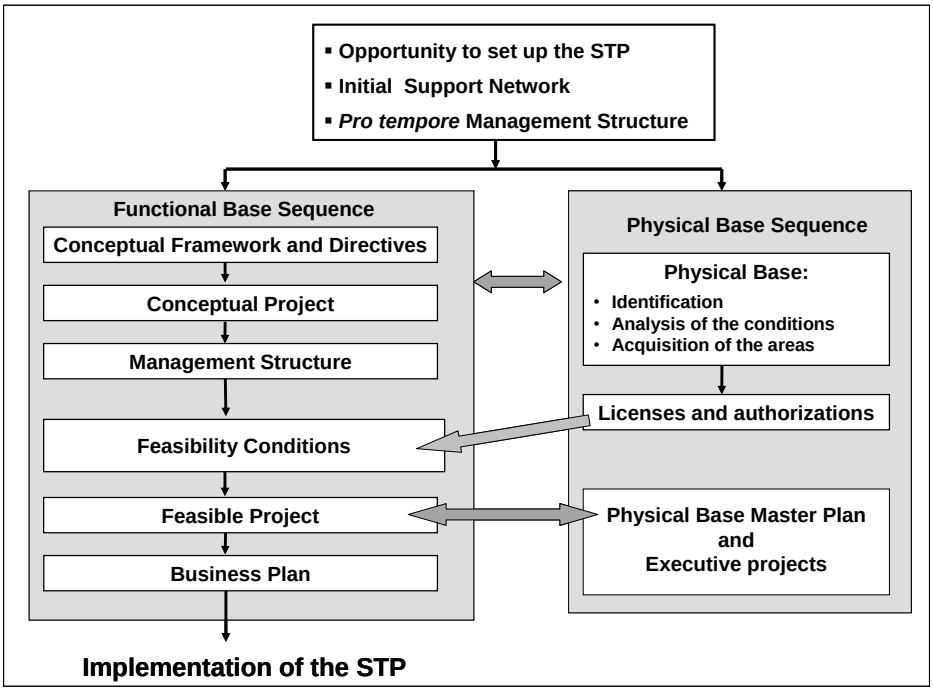


Figure 1

II.2. Main steps

The main steps involved in implementation of an STP are outlined in Figure 2.[1]

Figure 2



The content of each step is suggested by its title. The important points to be emphasized are:

1. The first steps of an STP are detection of the opportunity for the initiative, setting up the *Support Network*, and creation of the *pro tempore* Management Structure.
2. Next, two interconnected sequences of steps must be taken: the *Functional Base sequence*, and the *Physical Base sequence*.
3. The first move within the Functional Base sequence is to construct the park's *Conceptual Framework* and the *Ensemble of Directives* that will guide the whole project.

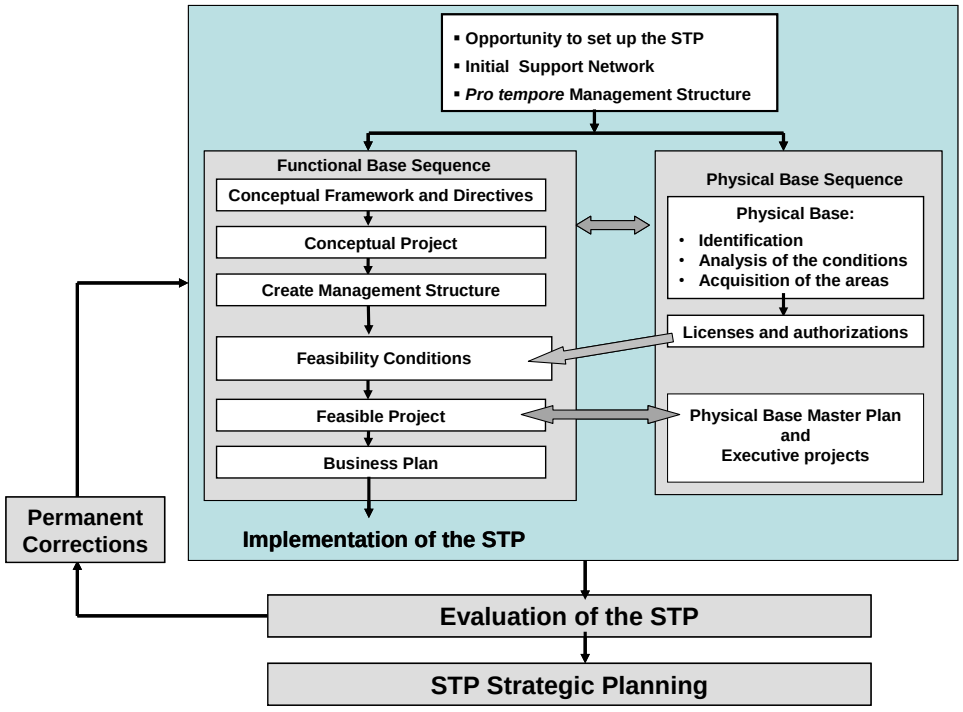
[4] The concept of *circumstance* has been inspired by MARÍAS, Julián: *Historia de la Filosofía*, Madrid: Alianza Editorial, 1941; and *Introdução à Filosofia*, São Paulo: Livraria Duas Cidades, 1960.

These constructions stem from the interpretation of the *circumstances* [4] in which the park is inserted – including the desired characteristics for the initiative. This interpretation requires multidisciplinary teams working along several *lines of research*, such as context analysis, characteristics of *paradigm transitions*, future tenants' expectations, desired profile for the regional development, and lessons from the STP worldwide network.

The *Ensemble of Directives* must be constructed with exhaustive attention to detail. An erroneous or incomplete ensemble provokes disasters, as sadly reminded by the Titanic tragedy. The number of lifeboats was proportional to the displacement of the ship – according to the British law at that time, not to the number of people onboard. Lifeboats for everyone were considered unnecessary since the North Atlantic route was supposed to have plenty of steamboats that could easily respond to a distress call sent by the Titanic through the newborn wireless telegraph system.[5]

4. The *Conceptual Project* of the park is formulated on the basis of the *Conceptual Framework* and the *Ensemble of Directives*. This project is understood as an *ideal model* since it is built on expectations regarding the future park.
5. The parks' Management Structure is then created (or confirmed) according to the *Conceptual Project*.
6. Next, the Management Structure analyses the conditions that can be achieved in order to implement the *Conceptual Project*. The available conditions transform the *ideal model* into the one that can be achieved in the real world: the *Feasible Project*.
7. The *Feasible Projec*t then guides the development of the *Urban Master Plan*. The surprises that often occur at this level may impose further changes to the *Feasible Project*.
8. The *Business Plan* is then constructed as a synthesis of the whole work, describing the *Feasible Projec*t, including items as objectives, management structure, feasibility conditions, Master Plan, strategies, cost, sources of resources, and other relevant characteristics.
9. The park is then set up according to the Business Plan. A continuous evaluation of the results provides corrections and allows for *Strategic Planning*, as depicted in Figure 3.

Figure 3



[5] HEYER, P.: *Titanic legacy: disaster as media event and myth*, Westport: Praeger Publishers, 1995.

10. Finally, anticipating item II.3, an STP must be conceived and set up as an *entity of the new paradigm* - the Knowledge-based Society, and not as an *entity of the exhausted paradigm* - the Industrial Society. This means, for example, that an STP must transcend *industrial park* concepts and, whenever possible, must be one of the pillars of a *Regional Project for the Future*, as commented on below.

II.3. Lines of research

As noted previously, the formulation of the Conceptual Framework and Ensemble of Directives requires the creative conjugation of several *lines of research*, such as those described below.

II.3.1. Context analysis

The main conclusions of the analysis of the context in which the VALETEC Park is inserted are:

- The *Industrial Society*, the era inaugurated by the Enlightenment and the Industrial Revolution in the 18th century, is being replaced worldwide by a radically different era, the *Knowledge-based Society*, engendered by the acceleration of the advancement of science and technology in the last forty years.
- The Global Economy - stemming from Knowledge-based Society's characteristics - and difficulties that stifle the private sector in Brazil (commented on below) are major threats to the Sinos Valley shoemaker cluster. The region must search for innovative ways to maintain and enlarge its competitiveness in this sector and to identify and implement – urgently – new economic vocations appropriate to the new realities.

> The World Bank described Brazil, in 2006, as:[6] "An industrial power, ninth world GDP ... with the largest population in Latin America and the Caribbean ... Sustained growth is the major challenge for the Brazilian economy. Macroeconomic stability has laid the foundations, but average growth has remained close to half of the global and Latin American averages. Despite some advances in microeconomic and institutional reforms, activity by the private sector remains stifled by various barriers and regulations that prevent the country from achieving its growth potential. Bottlenecks include inadequate infrastructure, poor business climate, high tax rates, high cost of credit and rigid labor markets".

II.3.2.Characteristics of paradigm transitions

The *Paradigm Transitions Theory*, formulated by SPOLIDORO,[1] aims to help the construction of answers to overcome the challenges brought up by the *Knowledge-based Society*. Basic axioms of the theory, commented on at previous IASP Conferences,[1] are:

1. A social paradigm corresponds to the *standard form* with which a community perceives reality and responds to its challenges. The *Knowledge-based Society*, the *Industrial Society*, *European Middle Ages* and the *Renaissance* are primarily understood as *social paradigms*.
2. A social paradigm stems from a conjunction of temporal factors (such as knowledge and institutions), spatial factors (such as geographic position), and natural resources (such as available raw materials and energy sources).
3. A new paradigm generates a break in the *status quo*, which creates extraordinary opportunities for newcomers who are able to apply their creativity to opportunities in the new realities.

[6] Worldbank: Brazil Country Brief: http://go.worldbank.org/C7LQJLFV30

4. It is very difficult for people and institutions that were educated under a certain paradigm to perceive the advent of a new paradigm and to move on to it.
5. Efficient answers to the challenges created by a new paradigm do not come from ideas and tools of the former paradigm, but from new and revolutionary concepts and instruments.
6. The development of these new concepts and instruments requires courage to challenge dogmas and consecrated behavior, and intellectual boldness to dream beyond any limit.
7. A new paradigm creates *new entities* that can only be developed within the new paradigm, as for example, *cyberspace* and *science parks*.

A brief comparison between perceptions in different social paradigms is presented in Table 1.[1]

Table 1

Aspect	Industrial Society	Knowledge-Based Society
Market	Domestic markets, expanded through wars.	Global market, expected to be regulated through international treaties.
Nation competitiveness	Cheap labor, natural resources, capital etc.	Education of the people and their capacity for generating and using knowledge and innovations.
Main economic sectors	Chemicals Automotive industry Electronics Civil Engineering Agribusiness Pharmaceuticals Information Technology Telecommunications Electrical Energy	Though many economic sectors from the Industrial Society will remain important, promising new sectors will emerge from domains such as: 1. The synergy of education, culture, leisure, sports, healthcare, the arts and modern technologies. 2. The convergence of Information Technology, Communications and Information Content. 3. The convergence of Healthcare, based on biotechnology, IT, image processing, nanotechnology, pharmaceuticals, and robotics. 4. The convergence of Agribusiness based on biotechnology, IT, image processing, and advanced logistics. 5. The synergy of a wide spectrum of specializations aiming at solving problems with increasing complexity, such as the global warming and the approach to *singularity conditions*.[7]
Political models	1. Centralized government. 2. Representative democracy. 3. Nation-state.	1. Decentralized government. 2. Participative democracy fuelled by online interaction between Elected representatives and citizens. 3. *Virtual Region-states* within *Nation Communities*.
Government	Strong intervention in the economy and in other fields.	1. More regulatory and less executive. 2. Promotion of global socially responsible development processes.
Development	1. Centered on economy, little concern with social and environment fairness. 2. Centralized planning.	1. Development focused on socially responsible models. 2. Growing importance of innovative regional development programs, such as *Regional Projects for the Future*.
Universities	19th Century models[8]	*Entrepreneurial university* model,[3] created in the 1980s.
Environment	Irresponsible use of natural resources.	1. Ecological awareness. 2. International regulations.
Approaches	1. Knowledge fragmentation. 2. Little interaction between specializations.	1. Multidisciplinary approaches. 2. Synergy between institutions. 3. Very strong networking between people and institutions.
Information Infrastructure	1. Few local TV channels and newspapers. 2. Limited access to telecommunication services.	1. Optoelectronic interactive worldwide networks, with a virtually unlimited number of channels. 2. Easy access to global telecommunication services. 3. Easy access to interactive global database services.

[7] See, for example: KURZWEIL, R.: *The Singularity is Near*, New York: Viking Penguin, 2005.
[8] See, for example: http://assets.cambridge.org/052136/1079/excerpt/0521361079_EXCERPT.HTM and www.napoleonicsociety.com/english/Life_Nap_Chap21.htm

II.3.3. Desired profile for the regional development

The analysis indicates that the Sinos Valley community values regional development that is democratic, socially fair, laic, moral, sustainable in all aspects (economically, environmentally, culturally, demographically and so on), that generates high quality of life, promotes local and Brazilian culture and values, is competitive in the global economy of the Knowledge-based Society and is integrated to the local and Brazilian collective imagination.

II.3.4. Lessons from the STP worldwide network

Regarding VALETEC Park planning, relevant lessons extracted from the STP worldwide network are:

1. Science Parks disseminated throughout the region

Many STPs transcend the traditional model - a campus-like park on a single site - and split into several segments distributed throughout the region, including within urban areas.

This model is illustrated, for example, by *The Science Center at University City*, University of Pennsylvania,[9] and the Science Park associated to Rennes Atalante (France).[10] In this case, as depicted in Figure 4, the Science Park is composed of segments adjacent to higher education and research institutions.

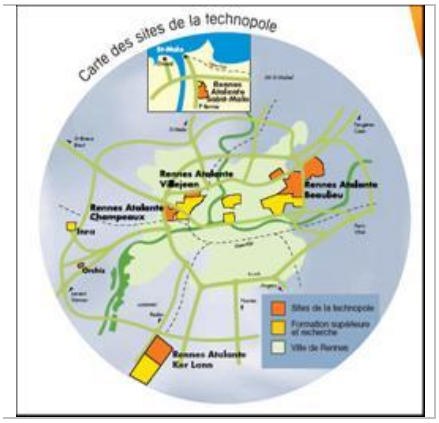


Fig. 4. Science Park associated to Rennes Atalante, Rennes. Image:[10]

2. Science Parks restoring and using deactivated assets

TECNOPUC - Pontifical Catholic University of Rio Grande do Sul Science Park (Porto Alegre, Brazil)[11] and the Australian Technology Park (Sydney, Australia)[12] illustrate the use of disused buildings as cornerstones of science and technology parks.

Before

Today

Fig.5: Buildings of a former barracks of the Brazilian Army became the initial physical base of the TECNOPUC. Photos:[11]

Before

Today

Fig.6: A disused 19th century factory became the nucleus of the Australian Technology Park. Photos:[12]

[9] The Science Center at University City, University of Pennsylvania: www.sciececenter.org
[10] Technopole de Rennes - Saint-Malo: www.rennes-atalante.fr
[11] TECNOPUC - Pontifical Catholic University of Rio Grande do Sul Science Park: www.pucrs.br
[12] Australian Technology Park: www.atp.com.au

3. Science Parks engendering *innovative regional development platforms*

Science and technology parks and technopoleis have been contributing significantly to engender *platforms for innovative regional development*.

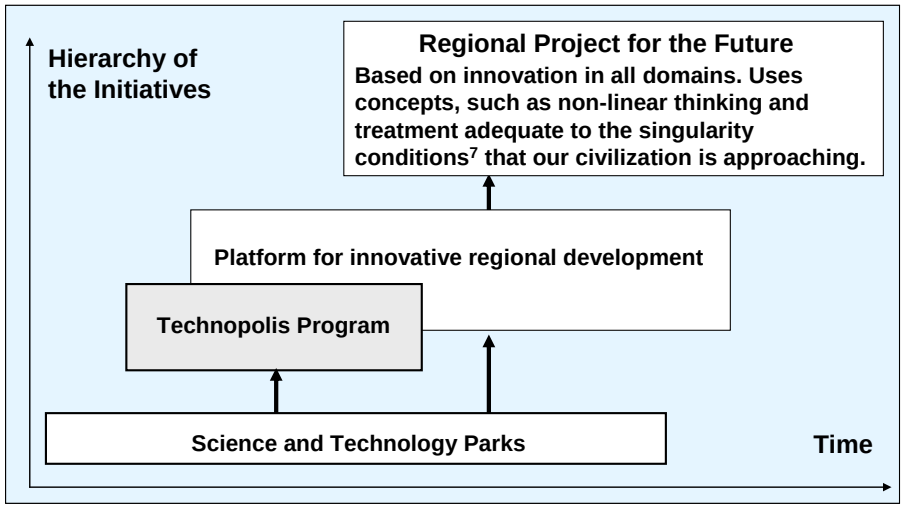
One may remind that in 1975 six small municipalities in the South-East of Toulouse, France, created an association – SICOVAL – aiming to avoid deleterious inter-municipal competition and to accomplish development projects that isolated municipalities would hardly undertake. The set up of a science park (*Labège Innopole*), in 1980, was one of the main achievements of the association.[13] The park became one of the driving forces toward the *SICOVAL Commonwealth of Municipalities*, created in 2002 as an innovative format of inter-municipal relationship in France. Nowadays, besides other attributions, SICOVAL promotes the implementation of the *South-East Toulouse Project for the Future*.[14]

Similarly, other STPs have been contributing toward innovative regional programs, such as *University of Warwick Science Park* and the *Coventry, Solihull and Warwickshire Technology Corridor*;[15] *Cummings Research Park* and the *Huntsville Regional Economic Growth Initiative*;[16] and *Research Triangle Park* and the *Competitiveness Plan for the Research Triangle Region.*[17]

The French technopoleis, mostly created in the 1990s and oriented to promote innovation within a region, are contributing to give rise to higher hierarchy programs within the new French inter-municipal formats. For example, *Orléans Technopole* contributed to engender *Orléans Val de Loire Technopole* and *Orléans Val de Loire Développemen*t, [18] and *Montpellier Technopole* contributed to engender *Montpellier Languedoc-Roussillon Technopole* and *Montpellier Agglomération*.[19]

The international experience indicates that STPs are contributing to create *platforms for innovative regional development* able to give rise to farsighted and innovative regional development programs, such as a *Regional Project for the Future*, as depicted in Figure 7.

Figure 7



[13] Labège Innopole: www.sicoval.fr/
[14] www.sicoval.fr/documents/SyntheseDevDurablesept04.pdf
[15] www.uwsp.bit10.net/information/conference_papers/documents/UWSPCaseStudy.pdf
[16] www.huntsvillealabamausa.com
[17] A Competitiveness Plan for the Research Triangle Region: www.rtp.org
[18] www.orleans-valdeloire-business.com/orleans_val_de_loire_business-fr-page-accueil.html
[19] www.neteco.com/42570-montpellier-technopole-met-en-place-cap-omega.html and www.montpellier-agglo.com

III. Highlights of VALETEC Park

III.1. Objectives

The objectives of the VALETEC Park are:

1. To promote the competitiveness of the Sinos Valley shoemaking cluster through the addition of knowledge, creativity and innovation to all activities.

   Sinos Valley region became, in the second half of the 20th Century, one of the world's most comprehensive and competitive shoemaking clusters. Exports used to exceed two billion US dollars per year. The international competition, mainly from emerging shoemaker clusters in Asia, eroded this situation. One of the responses was to orient Sinos Valley production to costly fancy shoe models. Although local industrial capacity became more sophisticated, the once great factories producing popular shoes are vanishing. Unemployment is growing, and it is getting more difficult to create jobs in order to replace those which are disappearing.

2. To enhance the development of new economic sectors, mainly those related to the knowledge-based economy.

   The perspectives for the shoemaking cluster oblige a search for new regional economic vocations. VALETEC Park stimulates this search to focus on the promising sectors emerging world-wide, as commented in Table 1.

3. To support the transformation of FEEVALE (Sinos Valley Community University) into an *entrepreneurial university*.[3]

   Created by the local community in 1969, FEEVALE has 18,000 students and offers a wide spectrum of Undergraduate and Graduate Programs. By becoming one of the pillars of the VALETEC Park, FEEVALE is accelerating its own transformation into an *entrepreneurial university*.

4. To contribute to creating a *platform for innovative regional development* and, based on this platform, to contribute to the continuous development and implementation of the *Sinos Valley Project for the Future*.

   The Sinos Valley region has fourteen municipalities, some of them established more than a hundred years ago. It is not easy for municipalities that began as autarchic entities in the Industrial Society to get together around a new inter-municipal pact and a farsighted and innovative regional development project.

   > A *platform for innovative regional development* is built by networks of innovation actors, mechanisms to promote its synergy, and a strategic plan. Such platforms are often promoted by entities created within the new paradigm, such as *Orléans Val de Loire Technopole* and *Orléans Val de Loire Développement*,[18] *GrandLyon*,[20] *Nantes Metropole*,[21] *Boston Metropolitan Area Planning Council*,[22] and *Cambridge Futures*.[23]
   >
   > The construction of the platform described above is a prerequisite for the implementation of the *Regional Project for the Future*. Such a project, which is an entity of the new paradigm, in addition to the partnership of business, government, and academia, must use innovative planning concepts, such as non-linear evolution and adequate approach to singularity conditions.[7]

[20] www.grandlyon.com/
[21] www.nantesmetropole.fr/
[22] Metropolitan Boston Planning Council: www.mapc.org/
[23] www.cambridgefutures.org

III.2. Management Structure

VALETEC Park is administered by VALETEC, a non-profit organization, created in 1998. It brings together FEEVALE, the municipalities, technical schools, business associations, enterprises and R&D centers in the Sinos Valley, as well as state and federal government agencies. VALETEC Board of Directors defines the strategies while an Executive Director and a small staff run the operations.

There are plans to set up an *Advisory Committee* in the near future, comprising distinguished scientists, entrepreneurs, and statespersons working in Brazil and abroad.

III.3. Strategy

1. VALETEC Park acts in order to be one of the pillars of the *Sinos Valley Project for the Future*. The main characteristics of this project are:
    - The project shall target a development process that is democratic, socially fair, laic, moral, sustainable in all aspects, that generates high quality of life, promotes local and Brazilian culture and values, is competitive in the global economy of the Knowledge-based Society and is integrated to the local and Brazilian collective imagination.
    - The project shall take into account similar initiatives worldwide, such as the *Sicoval Program*,[14] *Huntsville Regional Economic Growth Initiative*,[16] *GrandLyon Program*,[20] *Nantes Metropole Project*,[21] *Seoul Digital Media City*,[24] *Multimedia Super Corridor*,[25] *Barcelona Strategic Plan*,[26] and *South West England Regional Economic Strategy*.[27]
    - The project shall be developed and implemented continuously, with the participation of the community, in a bottom-up approach through driving vectors called *Structuring Initiatives*. Besides the VALETEC Park, other *Structuring Initiatives* are, for example:
        - All-day classes and advanced educational programs in all elementary public schools in the region. A major step toward this goal is the *Integrated Education Center*, in Campo Bom[28] (Figure 8). Note that the normal Brazilian system is of two or even three "shifts" using the same school each day.
        - Free access to the Internet up to a certain bandwidth.
        - The promotion of entrepreneurial culture through support for business incubation.
        - Plans for a light rail regional public transportation system (Figure 9).
        - The expansion of the Sinos Valley bike ways as a network of interconnected bicycle routes in the region (Figure 10).
        - Increased efforts to preserve what remains of the Subtropical Atlantic Rainforest in the region.
        - The promotion of social responsibility practices at all levels of activities.
2. Sinos Valley innovation assets (such as higher and technical education institutions, R&D centers, and innovative enterprises) are scattered across the region. They are very unlikely to move to a conventional science park precinct. Therefore, VALETEC Park must be dispersed throughout the region, with segments adjacent to the innovation assets.
3. Brazilian culture cherishes living and working within an urban environment, ideally with a short distance between home and office. Therefore, VALETEC Park encourages the setting up of segments within the urban texture for activities that do not require especial infrastructure.

[24] Seoul Digital Media City: http://dmc.seoul.go.kr/english/jsp/about/overview.jsp
[25] Multimedia Super Corridor: www.msc.com.my/msc/msc.asp
[26] Barcelona Strategic Plan: www.bcn2000.es/en/default_en.aspx
[27] South West England Regional Economic Strategy: www.southwestrda.org.uk/res2006
[28] www.campobom.rs.gov.br

4. Sinos Valley's population is growing and available land for future collective installations is becoming scarce. Therefore, effective preservation of the necessary conditions to receive such initiatives in the future is as important as setting them up in the short term.

Figure 8: The Integrated Education Center, in Campo Bom, will host an experimental program of all-day schooling and advanced educational approaches in public elementary schools. The Center was opened in May 2008. The results should motivate the dissemination of the model in the region.

Image: Campo Bom Municipality [28]

Figure 9: The COESTER Aeromovel, developed in Porto Alegre,[29] may be adopted as the light rail public transport system in the Sinos Valley. Photo:[29]

Figure 10: The *Bicycle Ways System* in Campo Bom, adjacent to VALETEC Park. Photo: R. Spolidoro

III.4. VALETEC Park Physical Base

The first physical base of VALETEC Park was a tract of 36 hectares, donated by Campo Bom Municipality, in 2002 (Figures 11 and 12).

Fig. 11: First physical base of the VALETEC Park, partial view, 2005 Photo: VALETEC

Fig. 12: VALETEC Park's first physical base, 2007 Photo: R. Spolidoro.

[29] COESTER Aeromovel: www.aeromovel.com/

In 2005, the analysis of the Conceptual Framework of the VALETEC Park indicated that the park should be distributed throughout the region since:

- Most of the innovation assets in the region are located within a shape that is reminiscent of a crescent moon (in the Southern Hemisphere), as depicted in Figure 13.
- The longitudinal axis of this area contains the necessary roads and infrastructure, as well as urban sites appropriate for transformation into segments of the VALETEC Park.

Today, VALETEC Park boasts nine segments, scattered across 350 square kilometers, that encompass the municipalities of Campo Bom, Novo Hamburgo, and Estancia Velha. VALETEC continually looks for new segments in order to expand the Park and assists local actors with the admission procedures.

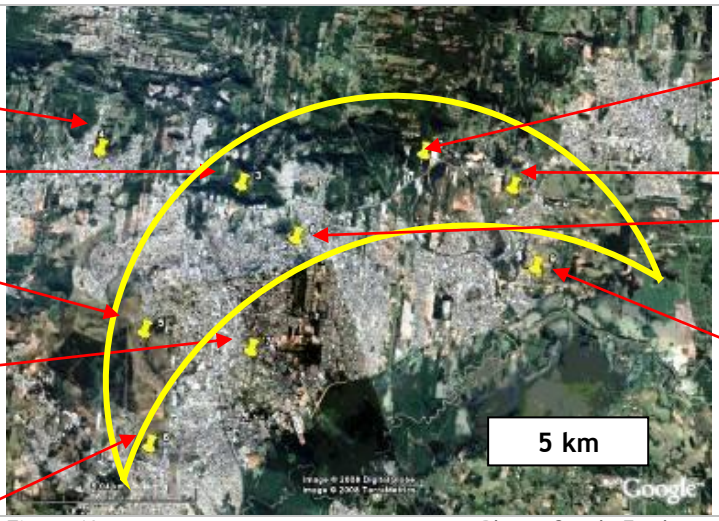


Figure 13. Photo: Google Earth

An overview of some of the VALETEC Park Segments

Segment 1

Segment 1, a 36 hectares campus like site, contains the *Central Building* (Figure 14) of the VALETEC Park and several companies. This building hosts the Park's Administration, a restaurant, a Business Incubator, an auditorium, shared meeting rooms, and the embryo of two R&D centers.

Fig. 14: VALETEC Park Central Building
Photo: R. Spolidoro, 2005

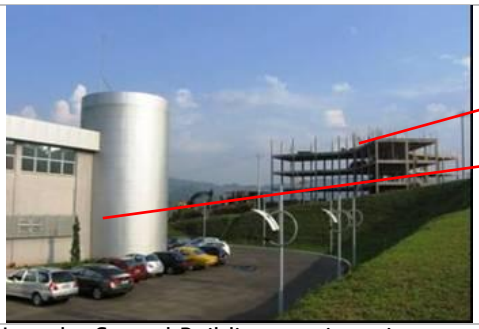


Figure 15: Near the Central Building, a private investor builds an *Enterprise Center* designed to offer flexible office space facility for IT companies, on a "plug-and-play" basis. Photo: R. Spolidoro, 2007

Figure 16: An artistic preview of the Central Building and surrounding *Enterprise Centers*. Image: VALETEC, 2008.

Segment 2

Segment 2, encompassing more than 1,000 hectares, contains several innovative industries and sport clubs open to the park's tenants. Some of the companies, several decades old and initially related to the shoemaking cluster, have been investing in innovation in order to stay competitive and to diversify their customer base. One of these companies, Artecola[30], is partially visible in Figure 17.

Fig. 17: Innovative industries in Segment 2.
Photo: VALETEC

Fig. 18: Enterprise Centers built by a private investor in Segment 2 in 2007.
Photo: R. Spolidoro.

Segment 4

The Segment 4 contains the Sinos Valley Community University (FEEVALE), a Business Incubator and several innovative industries (Figures 19 to 21).

Fig. 19: Innovative industries, Segment 4.
Photo: VALETEC

Fig. 20: FEEVALE central campus, Segment 4.
Photo: R. Spolidoro

Fig. 21: Business Incubator at FEEVALE central campus.
Photo: VALETEC

[30] www.artecola.com.br

Segment 8 - Campo Bom

Segment 8, in the urban texture of the town of Campo Bom,[28] contains innovative industries that were born when entrepreneurs from the shoemaking cluster recently decided to invest their assets (including former manufacture buildings) in the creation of knowledge-based enterprises. GetNet[31] is one of these new companies, and it uses the premises of a former shoe factory (Figure 22).

Fig. 22: An IT enterprise at a former shoe manufacturer in Segment 8. Photo: GetNet [31]

Segment 8 also contains old shoe factories that could be refurbished to host knowledge-based companies that do not need special infrastructure, such as IT and creative industry sector businesses (Figure 23).

Fig. 23: Old shoe manufacture premise in Campo Bom urban texture. Photo: R Spolidoro

Segment 9 - Hamburgo Velho

Segment 9 is within the historical borough of *Hamburgo Velho*, birth place of the town of Novo Hamburgo[32], more than a hundred years ago. The main activities in this Segment are in the sectors of Healthcare, IT, Education, and creative industries.

A partnership between government, business and academia aims to restore and refurbish old houses and factories in the borough (Figure 24) in order to provide affordable and pleasant areas for the development of a local innovation cluster centered on the quoted sectors.

Figure 24: Historical premises and disused shoe manufactures in Segment 9 that could be refurbished to host knowledge-based companies.
Photos: R. Spolidoro, 2007.

[31] www.getnet-tecnologia.com.br
[32] www.novohamburgo.rs.gov.br/

III.5. Services and conditions offered by VALETEC Park

Among the main services and conditions offered by VALETEC Park, the following stand out:

- Promotion of synergy between innovation actors (such as higher and technical education institutions, R&D centers, business, and government agencies).
- Organization of *Cooperative R&D Projects* bringing innovation actors together.
- Auditoriums, meeting rooms, exhibition halls, restaurants, and catering services in the Segments.
- A wide spectrum of value-added services, such as legal administrative procedures, intellectual property, accounting, certification, trainees programs, venture capital, and government incentives.
- Support for the creation and development of innovative enterprises, especially in fields that complement the existent industrial substrate.
- Organization of real estate in the Segments to sell, lease and rent to companies and other innovation actors.
- Promotion of the quest for innovation in all domains.
- Participation in the development of the Sinos Valley Project for the Future.
- Promotion of social responsibility practices as one of the labels of the region.
- Marketing of the tenants as participants of an outstanding innovative initiative, tuned-in to the social responsibility practices that must underlie any undertaking in the modern world.
- Special access to sport clubs in the region (Figure 25).

III.6. Conditions offered by Sinos Valley region

Among the main conditions offered by Sinos Valley region, the following stand out:

- High quality of life.
- Attractive and well-paid working possibilities.
- Porto Alegre International Airport (35 km).
- A rich and diversified cultural environment.
- A peaceful country, without internal conflicts and offering political and economic stability.
- An open-minded and hardworking people.
- Privileged position in the MERCOSUL[33]: São Paulo, Montevideo, Buenos Aires, and Asuncion within less than 1,000 km.
- Splendid tourist spots nearby.

Figure 25: Club in the Segment 2 of the VALETEC Park. Photo: VALETEC, 2007.

Figure 26: Partial view of Campo Bom and Novo Hamburgo (at the horizon). Photo: VALETEC, 2007

[33] MERCOSUL: http://www.sice.oas.org/trade/mrcsr/mrcsrtoc.asp

III.7. Present situation of VALETEC Park' Segments

Segment 1, with 36 hectares, is fully operational. For the other Segments, the development plans, finance projects and formal procedures to integrate them into VALETEC Park are being produced. The work represents a major undertaking of VALETEC in close collaboration with the leaders of regional community and of innovation assets. The tenants of the Segments are listed below.

Segment 1

Institutions and enterprises	Website	Institutions and enterprises	Website
VALETEC	www.valetec.org.br	Kenda Farben do Brasil	www.kendafarben.com.br
FEEVALE Extension Nucleus	www.feevale.br	Netwall Tecnologia	www.netwall.com.br/
Regional IT R&D Center	www.feevale.br	Polly Química	pollyquimica@netwizard.com.br
Regional Integrated Circuit Design Center	www.feevale.br	Prisma Compostos Termoplásticos	www.prismatermoplasticos.com.br
Astrasand do Brasil	www.astrasand.com.br	Refrasul	www.refrasul.com.br/
BMP-Proar	www.proar.net	Sellpro Tecnologia e Gestão	www.sellpro.com.br
Direction IT		SG Info	www.inforep.com.br/
Engelmann Papéis	www.engelmannpapeis.com.br	Sys4Web Sistemas de Informática	
Essenziali Produtos Cosmecêuticos	www.essenziali.com.br	Transvilmar	
Idea Marketing Digital	www.ideamkt.com.br	zNit Informática e Tecnologia	
Idéia Livre	www.ideialivre.net/	Secullum Informatização	www.secullum.com.br

Other Segments

Institutions and enterprises	Website	Institutions and enterprises	Website
Brazilian R&D Institute on Leather, Footwear and Accessories	www.ibtec.org.br	Info Representações	www.inforep.com.br/
Campo Bom Municipality	www.campobom.rs.gov.br	Injetaco Injetados	
Estancia Velha Municipality	www.estanciavelha.rs.gov.br	Injetados Cepaplast	
FEEVALE Sinos Valley Community University	www.feevale.br	Kenda Farben do Brasil	www.kendafarben.com.br
Liberato Technical School	www.liberato.com.br	Knnor Produtos Técnicos	www.knnortec.com.br
National Network of Technical Schools (SENAI), Rio Grande do Sul Industry Association (FIERGS)	www.senairs.org.br www.fiergs.org.br	Máquinas Becker	www.beckermaquinas.com.br
Novo Hamburgo Municipality	www.novohamburgo.rs.gov.br	Metalgrin	www.metalgrin.com.br
Novo Hamburgo, Campo Bom & Estancia Velha Busienss Association	www.acinh.com.br	Milton Kirsch	www.miltonkirsch.com.br
Brazilian Agency for Support to Small Enterprises, Rio Grande do Sul	www.sebrae-rs.com.br	Parquímica	www.parquimica.com.br
Artecola Indústrias Químicas	www.artecola.com.br	R&H Shoes	
AT&M Informática	www.atminfo.com.br	Sellpro Tecnologia e Gestão	www.sellpro.com.br
Binario Internet	www.binariointernet.com.br	THOLZ - BMT	www.tholz.com.br
Boxflex Componentes para Calçados	www.boxflex.com.br	Thoth Tecnologia	www.thoth.com.br
Comercial e Construtora Modelo	www.construtoramodelo.com	Transportadora Josp	www.transjosp.com.br
Get Net Tecnologia	www.getnet-tecnologia.com.br	Via Digital	www.viadigital.inf.br
Goper Engenharia de Software	www.goper.com.br	WBuild Technology	www.wbuild.com.br
GVD Tranding	www.gvd.com.br	WS2 Web Solutions	www.ws2.com.br

Investment possibilities in VALETEC Park

VALETEC Park and Sinos Valley welcome innovative companies and R&D centers. VALETEC will be pleased to provide further information on the subject.

III.8. Aspects of daily life in VALETEC Park

VALETEC Park promotes events in order to stimulate synergy between its tenants and all innovation actors in the region.

Meetings, conferences, product expositions, and business round tables are held in the Central Building and appropriate premises in other Segments. VALETEC Park welcomes, in its auditoriums and restaurants, meetings organized by professionals working for tenants and associated institutions (Figures 27 and 28).

Fig. 27: A *business innovation breakfast*, Central Building, 2007.
Photo: R. Spolidoro.

Fig. 28: Auditorium of the Central Building: a gathering of professionals from a company in Segment 1.
Photo: [34]

IV. Conclusions

1. A science and technology park - STP may be an appropriate instrument for promoting competitiveness and new economic vocations for regions whose industries, although still strong, are being eroded by competition from emerging economies as Globalization progresses.

2. In these regions, STPs should be conceived and set up as *entities of the new paradigm*, the Knowledge-based Society, and not as *entities of the exhausted paradigm*, such as, for example, sophisticated business parks.

   > Although important, an industrial park is not a science park. According to the U.S. Science Park Administration Act of 2005,[35] a business park (or industrial park) is "primarily a for-profit real estate venture of businesses or industries which do not necessarily reinforce each other through supply chain or technology transfer mechanisms".

3. The design and implementation of an STP as an entity of the new paradigm requires the support of methodologies formulated under the aegis of the new paradigm. One must discard methodologies that were conceived under the exhausted paradigm, based on strategies such as linear evolution, fragmentation of knowledge, spatial separation of correlated institutions and groups, and absence of strategies to approach *singularity conditions*.[7]

[34] www.bmp-proar.com.br/bmp/
[35] Science Park Administration Act of 2005: www.govtrack.us/congress/bill.xpd?bill=s109-1581

4. In the regions described, the innovation assets (such as universities, R&D centers, and high technology industries) are usually scattered across the territory. These assets are hardly likely to move to newly created science park precincts in campus-like environments. It is the STP that must move and join the innovation assets. Therefore, the best model for the STP is possibly a network of segments distributed throughout the territory and adjacent to the innovation assets.

   A science park distributed throughout a territory is somehow an innovation, since the STP's traditional model is associated to a single campus. The set up of such a diffused park requires a major effort from all participants since it is difficult to overcome paradigms. The work is, however, a singular opportunity to establish a fruitful dialogue, about innovative approaches to regional development, congregating the park, government, innovation assets, and the community.

5. If the regional culture values living and working within an urban environment, the park should encourage the setting up of segments in the urban texture for activities that do not require plenty of space and special infrastructure, such as those of the IT and creative industry sectors.

6. If the regional population and business are growing, the availability of land for future collective installations will become scarce. Therefore, effective preservation of the conditions necessary to host relevant initiatives (such as segments of a distributed STP, a light public rail system, bicycle ways systems, and attractive residential areas near the segments of the science park) in the future is at least as important as setting them up in the short term.

7. In these regions, the science park must be one of the driving forces toward the creation of a *platform for innovative regional development*.

   Such a platform relies, for example, on *entrepreneurial universities*[3] - and not on universities anchored in the 19th century models[8] - and on forums for coalescing the innovation actors around a collective construction of the future.

8. Based on this platform, the STP must contribute significantly to the continuous formulation and implementation of the *Regional Project for the Future*.

9. There are no recipes for the *Regional Project for the Future*. It is an entity of the new paradigm and the international experience on the subject is still lacking. Nevertheless, a project for the future must be able to count on at least:

   - a partnership between business, government, higher and technical education institutions, and R&D centers;
   - a Governance entity, congregating multidisciplinary teams, including philosophers;
   - innovative planning concepts – such as non-linear thinking, synergy of all sectors, and adequate approaches to singularity conditions;[7]
   - *Structuring Initiatives*, as defined in item III.3., such as a science and technology park;
   - comparative analysis of the worldwide experience on innovative regional development processes, including strategies as STPs, technopoleis, and communities of municipalities;
   - the understanding that, as there are no isolated islands any more and as the planet becomes quite limited, a region that is able to formulate and set forth an adequate *project for the future* must help regions that need to to do the same.