

The Impact of Technology-based Clusters on Regional Development: The Case of the Grand Poitiers Futuroscope Technopole

El impacto de los *clusters* basados en tecnología en el desarrollo regional: el caso del tecnopolo Futuroscope de Gran Poitiers

O impacto dos clusters baseados em tecnologia no desenvolvimento regional: o caso do Tecnopolo Futuroscope de Grande Poitiers

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Abstract

Several well-recognized cities in the world have leaped to outstanding levels of economic and social development leveraged by specific breakthrough drivers. For the region of Poitou-Charentes in France, the presence of the Futuroscope Amusement Park in the city of Poitiers has become a significant tourist attraction that now produces a dilemma. Is this infrastructure sufficient for assembling the “Grand Poitiers Technopole” as a successful high-technology cluster? To reach the conditions to assemble this high-tech cluster, the region must have the potential to articulate, manage and govern aggressive innovation strategies.

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Following the results of a study of several innovative cities around the globe, basic enabling mechanisms were found that have broken with the conventional growth paradigms with atypical breakthrough innovations, and have now achieved world-class disrupting performances, a global branding and status as successful poles of technological innovation. The results obtained show the features of the existing technopole as the ones to enhance in order to have a world-class positioning for the region.

Key words: Futuroscope Technopole, high-technology clusters, regional innovation strategies, technology based poles, innovative cities.

Resumen

Un gran número de reconocidas ciudades en el mundo han llegado a niveles excepcionales de desarrollo económico y social apalancadas por innovaciones de punta. Para la región de Poitou-Charentes, en Francia, la presencia del parque de atracciones Futuroscope en la ciudad de Poitiers se ha convertido en una importante atracción turística que actualmente propone una incógnita: ¿es esta infraestructura suficiente para considerar el Grand Technopole de Poitiers como un exitoso *cluster* de alta tecnología?

Para conseguir las condiciones que permitan consolidar este *cluster* de alta tecnología, la región debe tener la posibilidad de articular, gestionar y gobernar agresivas estrategias de innovación.

Con base en los resultados de un estudio sobre varias ciudades innovadoras de todo el mundo, se identificaron mecanismos básicos que permiten romper con los paradigmas convencionales del crecimiento, por medio de innovaciones revolucionarias que permiten tener rendimientos de clase mundial, una marca de prestigio global y el estatus de polo exitoso de innovación tecnológica. Los resultados obtenidos muestran las características de los tecnopolos existentes, que deben de potencializarse para conseguir un posicionamiento de clase mundial para la región.

Palabras clave: tecnopolo Futuroscope, *clusters* de alta tecnología, estrategias regionales de innovación, polos de base tecnológica, ciudades innovadoras.

Resumo

Várias reconhecidas cidades no mundo têm chegado a níveis excepcionais de desenvolvimento econômico e social alavancado pelos direcionadores específicos. Para a região de Poitou-Charentes na França, a presença do parque de atrações Futuroscope na região de Poitiers tem se convertido em uma importante atração turística que agora produz uma questão. É isto suficiente para considerar o “Grand Technopole Poitiers” como um bem-sucedido *cluster* de alta tecnologia?

Para conseguir as condições para consolidar este *cluster* de alta tecnologia, a região deve ter a possibilidade de articular, administrar e governar agressivas estratégias de comunicação.

Com base nos resultados de um estudo de várias cidades inovadoras no mundo todo, se identificaram mecanismos básicos que permitem romper com os paradigmas convencionais de crescimento com inovações revolucionárias, alcançando comportamentos de classe mundial, uma marca global e o estado de pólos de bem-sucedida inovação tecnológica. Os resultados obtidos mostram as características dos Tecnopolos existentes com o fim de ter um posicionamento de classe mundial para a região.

Palavras chave: Technopole Futuroscope, clusters de alta tecnologia, as estratégias regionais de inovação, pólos de base tecnológica, as cidades inovadoras.

I. INTRODUCTION

*Prosperity grows... based on
creative spaces...
economic units... infrastructure...
roads... mobility;
but mainly on the capacity a city has...
to accept new ideas, people from other
places...
to create a new space of
intercultural and diverse ideas...
to innovate... together with
tolerance, talent and technology...*
R. Florida, *Cities and the Creative Class*

A study carried out from 2007-2010 (Scheel, 2011), focused on a small group of cities that have made tremendous transitions in specific periods of time, shows that cities that have changed the traditional paradigm of steady growth to extraordinary breakthroughs, are today well positioned in the global arenas. The eight cities selected that have had remarkable performances in recent years that were able to break with the conventional paradigms of growth, and now are exceptional world-class players in global arenas

were: Auckland (New Zealand), Austin (USA), Bangalore (India), Barcelona (Spain), Curitiba (Brazil), Medellín (Colombia), Metz (France), and Stavanger (Norway). The study had two important objectives: to identify the inflection points where the cities made the great transformations in terms of world-class performances and then to identify the *enabling mechanisms* that produced the transitions and transformations that originated large-scale changes and created interdependent spaces in which the citizens, the social communities, the businesses and their local natural environments articulate a harmonious and balanced development.

In the study it was observed that some of the cities had leapfrogged from steady growth during decades to outstanding levels of economic and social development, under sustainable standards due to the articulation of atypical *enabling drivers*, to the creation of special regional conditions and public policies, and

to the presence of spectacular successes.

These structures include: a) social policies; b) technology policies; c) economic models; d) macro-economic policies; e) education policies; f) science policies, basic research, university policies, etc.

All of these structures are articulated to achieve an economic value added dedicated to generate an outstanding quality of life, equally shared by all. Combining these enablers, the cities have produced “disruptive performances”, mainly through technological innovations, new industrial policies an outstanding social order, and the decision making of exceptional visionaries and champions who have had a “holistic development” vision for the regions (Florida & Gates, 2003; Florida & Mellander, 2008). These are cities that have created highly attractive regional poles, vibrant economies, equitable social growth, and most of them have articulated sustainable civic programs and have created processes designed to preserve the development of future generations.

These cities have broken with the conventional growth paradigms with atypical *breakthrough innovations*, and have now disrupted re-

turns of world-class performances that define what has been adapted from several concepts by Scheel (2011) as an “innovacity”: *a geographic space with nurturing regional conditions and resources that empower citizens, entrepreneurs, policy makers, academics and bankers, with the proper relationships and capabilities, to constantly look for value opportunities so that they can generate, attract and share extraordinary benefits with everyone.*

From these cases, it has been observed that innovation processes become a pivot for human development, societal evolution, economic prosperity and environmental recovery, when they are designed from a *systemic perspective* and as the core process that articulates the regional/national innovation system structures, which can be replicated in other regions around the globe.

Using these findings, we have benchmarked the indicators against the current characteristics and resources of the Poitou-Charentes (P.-Ch.) region in France, and extracted the main capacities that the region must leverage to become a pole of innovation, compared to a couple of European and American technopoles, as well as the conditions that the region must create to attract world class companies,

with all the supporting industries and enablers required to become a well-recognized technopole,¹ with a proper industrial ecosystem of economic, social and environmental world-class performances.

II. THE POITOU-CHARENTES REGION

France is divided into 27 regions of which 22 are located in metropolitan France. Poitou-Charentes (P.-Ch.) is one of these 22 regions. In this country, a region is a territorial community run by an elected regional council headed by a president. Regions rely on their own financial autonomy and have their own budget. The P.-Ch. region is composed of four departments. Population figures show 1,75 million inhabitants in 2008 for a 25,809 km² area. The survey conducted takes into account the Poitiers and Futuroscope area and the Vienne department resources. Each department promotes a policy favouring its territory.

The P.-Ch. region implements a coordination of the policies between departments within a regional development scheme called the *schéma régional de développement économique*. This regional development scheme includes a segment of the regional innovation system.²

The region's gross product in 2010 was close to 40 billion €, with a regional gross product of 23,190 € per capita. The Vienne department's gross product is close to 10 billion €.³ The analysis developed here focuses mostly on the Futuroscope theme park and on the activities located around the Vienne department.

Additional activities located in the Vienne department in the South of Poitiers such as healthcare (*bio-pôle santé*) or green businesses (*pôle eco-industries*) are outside of the scope of this survey. Some of the regional policies are mentioned when they are related to the Futuroscope or to the Vienne department.

¹ One of the first references of the concept of *technopolis* has been found on documents from the IC2 Institute of the University of Texas, Austin, leading by David Gibson.

² Source: <www.essenregion.org/annuaire/uploads/autres/file/srde%20Poitou%20Charente.pdf>.

³ Source: <www.poitiers.cci.fr/les-chiffres-cles-de-leconomie-de-la-vienne.html>.

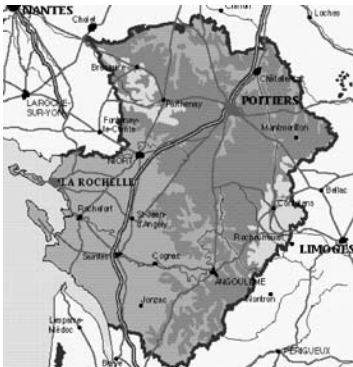
Figure 1. The 22 metropolitan regions



Figure 2. Poitou Charentes



Figure 3: Focus on Poitou



Source: <<http://www.google.com/search?hl=en&q=carte+poitou+charentes>>.

The capital city is Poitiers, and the Futuroscope theme park is located 10 kilometers northeast of Poitiers, within the Greater Poitiers urban community. The Futuroscope opened in May, 1987, and has received 38 million visitors since inception and had close to 1,8 million visitors in 2010. It is now the second theme park in France.

Figure 4. Futuroscope overview



Source: <<http://www.futuroscope.com/parc-loisirs/plan-parc.php>>.

In addition to the theme park, the Futuroscope includes a convention centre and a network of hotels to host thousands of visitors (12 hotels with a total of 1.700 rooms). In 2008, 126.000 foreigners visited the park.

Close to the theme park and the tourism activities a so-called “Technopole” business centre area, established twenty years ago, is located.

It has regrouped, in 2011, 278 companies with 6.961 salaried workers.⁴

An European supported IT incubator is located at the technopole with 28 start-ups currently active. It belongs to the European Innovation Centers' Network.⁵ Within this technopole, ten laboratories belonging to the National Scientific Research Centre (CNRS: Centre National pour la Recherche Scientifique) constitute a grey matter centre. It regroups 10 % of French research in the engineering field. These laboratories have been regrouped in a common structure called PPrism Organization to coordinate their activities.

They received funding from the French Government program Grand Loan or Grand Emprunt, voted by the Parliament in 2009 to revamp French research and engineering activities to pull them to the best world standards.⁶ This national programme aims at investing 30 billion € in a few years in selected projects proposed by universities or clustered laboratories within a national tender.

These innovations could lead in the future to the inception of new start-ups or be integrated within

existing industrial groups in Europe. However, the outcome of this new policy is likely to be assessed only within a few years.

III. IN SEARCH OF THE BREAKTHROUGH INNOVATIONS THAT MAKE REGIONS HIGHLY COMPETITIVE

In the 2007-2010 study (Scheel, 2011), on how certain cities became world-class innovative cities, a series of findings were identified as the core enablers producers of outstanding performances that characterize these cities as different, innovative, good places to live, vibrant and dynamic economics, tolerant in terms of race and religion, highly competitive, etc.

From the surveys and personal interviews with the main actors of the extraordinary results achieved in the selected cities, two groups of findings were determined: the *breakthrough innovations* that were the main drivers, produced, implemented and maintained by the city's stakeholders; and the city's behaviors, that in most of the cases were *disruptive performances* that empowered the cities to reach outstanding levels of competitiveness,

⁴ Source: <www.technopole-futuroscope.com/>.

⁵ Source: <www.cei86.com/55/accueil>.

⁶ Source: <www.emprunt-national-2010.fr/>.

social development, political maturity, and environmental balance.

From all the cases, Scheel (2011) summarized the following outstanding behaviors, product of the cities that have made innovative breakthroughs, and categorized the following characteristics that those cities developed during specific periods of time. Most of them have deployed disruptive performances such as:

1. A holistic (social, economic, environmental) sustainable development;
2. Effective regional attractors (attractors of talent, culture, industrial partners and FDI);
3. Excellent quality of life;
4. Strong and competitive industrial sectors;
5. Worldwide recognition of regional branding;
6. Effective, conscientious environmental protection programs and sustainable urban metabolism activities;
7. Emerging, well-managed regional markets;
8. Excellent standards of urban planning;
9. Strong programs of entrepreneurship and a large number of new high-value start-up industries;
10. Enviably and privileged territorial assets; and,

11. Effective and recognized civic and social entrepreneurial programmes (mainly for the base of the pyramid).

Performances that have been produced mainly by the following *innovation enablers* that were found in the study:

1. Smart Infrastructure; based on special structures built to empower innovative strategies, such as connectivity, e-readiness and ICT infrastructures, universities, R&D centres, laboratories, etc.
2. Associativeness, openness and holistic awareness; based on the capacity to adopt a systemic vision and synergies to assemble interdependent clusters of industries, academies, government, entrepreneurship programs, financial institutions, etc., to move toward a sustainable holistic development.
3. Entrepreneurial/entrepreneurship infrastructure; leveraged by the creation of a culture for transforming knowledge and experiences into high-value business models, start-ups, spinoffs, etc., such as research and technology transfer centers, financial new venture capital (NVC) tools, angel seed capital, etc.

4. Technology; measured in terms of special technological innovations designed to support the breakthrough paradigms, such as technology development infrastructure, R&D centers, transfer centers and techno-parks. planned and executed by locals, led by high-level influencers / visionaries / champions / leading institutions, governmental authorities, politicians, entrepreneurs, pioneers, scientists, businessmen, and foundations.
5. Talent; measured in terms of specialized human resource capabilities to create innovative solutions to support breakthrough innovations; top university/research centers with regional specialization areas. In summary, these cities achieved disruptive performances due to a proper articulation of most of the above-mentioned breakthrough innovations. The purpose of this research work is to benchmark the conditions of the region of P.-Ch. (France) against two of the most successful cities that decided to re-design themselves under a regional technology and innovation strategy in order to become global players. Austin (USA) and Metz (France) were selected because they disrupted common paradigms and become technopoles, applying most of the enabling drivers that have been detected on those cities that can be replicated in the P.-Ch. region to become a new technology-based pole in France.
6. Public policies; special policies designed to leverage, empower and promote innovation strategies, such as State strategic plans, rule of law, effective law enforcement, strong synergies among all industries, academe, business, and local politicians. Based on these indicators, face-to-face interviews were held with the decision-making executives of the leading institutions involved in the P.-Ch. region, the Grand Poitiers Community, the Futuroscope, and the Chamber of Commerce and Industry, guided by a framework of
7. Innovation; based on the existence of effective innovation chains: science education, research, technology, transfer and application of knowledge to innovation processes, innovation strategies, technology transfer, incubators (of start-ups, spin-offs), business accelerators, landing facilities, and parks.
8. Spectacular successes; based on the existence of great events

“enabling drivers”. In addition to these interviews, phone meetings dealing with these enabling drivers were organized with the University of Poitiers engineering school representatives, a technology transfer center as well as with the applied engineering centers.

III. THE POITIERS-CHARENTES REGION FINDINGS

The boundaries of the region were identified, a focus survey was prepared, applying the previous indicators, and the following findings on the P.-Ch. region merged:

| Drivers | Poitiers Futuroscope Technopole |
|----------------|---|
| Infrastructure | <p>The Poitiers area was a main stop between Paris and Bordeaux in the 19th century. Many foreigners, especially British citizens, are located in the region for business or retirement purposes (2 flights per day between London and Poitiers from the Biard airport). Poitiers train station is connected to the French high-speed train network to Paris.</p> <p>Poitiers city has a theatre and an auditorium centre with a top quality standard which was opened in 2009. The Futuroscope area has a conference centre with 1.800 seats.</p> <p>The Sainte Croix Poitiers Museum displays 2.000 years of art created in the region.</p> <p>A jazz festival is held every year in May in the city of Chatellerault, the Jazellerault festival (20 km north of Futuroscope).</p> <p>The Futuroscope was founded first home of a theme park and then a business services centre regrouping 278 companies and 6.961 salaried workers. A specific area is dedicated to engineering schools and university R&D labs.</p> <p>The Futuroscope and the Poitiers area have been using high-speed internet since the 2000 and now have a fiber network with ultra high-speed connectivity (2010).</p> <p>The Renater network, a high-speed connection with optic fiber, is a link between universities across the Poitou Charentes region.</p> <p>Poitiers owns beautiful Romanesque churches which attract visitors from all over Europe.</p> |

| Drivers | Poitiers Futuroscope Technopole |
|--|--|
| <p>Associativeness, openness and holistic awareness attractors</p> | <p>In 1997 René Monory, Secretary of State for Education and former President of the Vienne department general council, created the Futuroscope. The Vienne River has preserved its wild character and tourists come from abroad to go canoeing on it. The city of La Roche Posay, 30 km from the Futuroscope, has a manufacturing cosmetic site for the L’Oreal group. The city has a casino and a horse race track. The Vienne Department also created in the early 2000’s a chain of animal parks: the monkeys’ valley, the snakes’ island and the crocodiles’ house. The region has a mild climate –2.250 hours of sunshine per year– which makes it desirable to visit anytime from early spring to late autumn. A 300 mile-long coastline with fine sandy beaches, skirted by fragrant pine forests, lively resorts such as La Rochelle, Royan and the islands of Oléron, Aix and Ré provide attractions to tempt everyone from the beachcomber to the surfer.</p> |
| <p>Entrepreneurship</p> | <p>Companies focused on services and web services represent most of the companies located in the business area close to the Futuroscope. An IT incubator is located in this area with 28 start ups presently. It belongs to the European financed network.⁷ Companies working for the automotive industries (Valeo, Magnetti Marelli, and Les Fonderies du Poitou) are located within the Department. The aerospace industry has plants from Thales Avionics, Snecma Services, and Dassault Aviation. In the southern part of Poitiers, close to the regional hospital, a bio-pole is incubating 25 young companies: biotech, pharmaceuticals and chemical start-ups, well being oriented companies (nutraceutics), water processing and decontamination companies. The region has been promoting organic agricultural food crops. It helps small organic producers sell their products in the greater Poitiers area.</p> |
| <p>Technology</p> | <p>The ENSMA (National Engineering School for Mechanics in Aeronautics) operates a wind tunnel allowing testing of all types of aircraft, with international level certification. The University of Poitiers has a chemistry department renowned for its water decontamination studies. The National Centre for Distance Learning (CNED) is located close to the Futuroscope. The Valagro Institute substitutes renewable carbon for fossil carbon in industrial processes with recognized European skills. The region helps developing local electricity-driven car production. The region has transfer technology centres called CRITT in the fields of new materials and food processing.</p> |

7 Source: <www.cei86.com/55/accueil>.

| Drivers | Poitiers Futuroscope Technopole |
|-----------------------|--|
| Spectacular successes | <p>The President of the Vienne Department Council, René Monory, founded the Futuroscope in 1987, that has European recognition for its theme park and the technopole attracts quoted Chinese companies.</p> <p>The quality of research in some university labs allows them to speed up the integration of the Poitou Charentes University and be eligible for national funding (PPrism organization).</p> <p>The Chinese telecommunication company ZTE (70.000 salaried with 10 billion € revenues in 2010) set up its European maintenance pole in the Futuroscope area in 2010 with a global 40 million € investment. It owns a 10.500 m² property for building its new premises.</p> |
| Talent | <p>Poitiers is home to many important universities: The University of Poitiers, the ENSMA (Ecole Nationale Supérieure de Mécanique Aéronautique), <i>EN-SIP</i> (Ecole Nationale Supérieure d'Ingenieurs de Poitiers), and the ESCEM Business School, among others.</p> <p>René Monory was President of the French Senate in 1992.</p> <p>Jean Pierre Raffarin, former President of the Poitou Charentes region, was the French Premier from 1995 to 1998 during the Chirac mandate.</p> <p>Edith Cresson, member of the parliament in the Vienne area, was secretary of State for Agriculture under Mitterrand then became French Premier and later a European Union commissioner.</p> |
| Public policies | <p>The city of Poitiers has the Greater Poitiers development plan which is linked to the Vienne department development scheme. The region has a regional development package which includes regional innovation systems.</p> <p>Greater Poitiers has a bio-diesel plan for public transportation in the area.</p> <p>The regional council's motto is to promote participative democracy.</p> <p>The region is promoting new energy and photovoltaic companies.</p> <p>The PPrism Technopole laboratories cluster received national funding to promote its works in robotics.</p> |
| Innovation | <p>The region is promoting eco-industries in the field of energy saving and materials retraining.</p> <p>It also promotes the Image Valley between the Futuroscope and the city of Angoulême (100 km south of Poitiers) in a relationship with the film industry on one hand, and the Design and Packaging Institute on the other.</p> |

V. THE BENCHMARKING

We developed a benchmark of the Poitiers' Futuroscope Technopole with the regions of Metz (France)

and Austin (Texas, USA), which have developed world class technopoles, and have used technological innovation as a regional competitive advantage. Here are the findings:

| Drivers | Austin |
|---|--|
| Infrastructure | <p>Austin Technology Incubator (ATI). One of the leaders in technical business incubators in the U.S.</p> <p>The Travel Channel considered Austin America's No. 1 College Town in 2006.</p> <p>Austin was determined to be the least stressful large metro area by <i>Forbes</i> magazine in 2009.</p> <p>The University of Texas (UT) at Austin, The Silicon Hills (concentration of high-tech companies).</p> <p>The median home price is 23 % below the national average and Austin has the highest per capita income of Texas cities (2009).</p> |
| Associativeness, openness and holistic awareness attractiveness | <p>No. 2 best big city in "Best Places to Live", by <i>Money</i>, in 2006, also the "Greenest City in America" in 2009 by MSN.</p> <p>Austin is recognized across the globe for its great quality of life and dynamic high-tech economy, with over 3.300 technology companies and 100.000 technology workers.</p> <p>According to CNN Headline News and <i>Travel & Leisure</i> magazine, Austin ranks No. 2 on the list of cities with the best people, referring to the personalities and attributes of the citizens in 2007.</p> |
| Entrepreneurship | <p>The IC2 Institute (Innovation, Creativity and Capital) of the UT, leader in technological entrepreneurship, and technological developments around the world. Part of the UT System-AusTech Alliance.</p> <p>Hub for pharmaceutical and biotechnology companies (approximately 85 companies such as: 3M, Apple Inc., Hewlett-Packard, Google, AMD, Applied Materials, Cirrus Logic, Cisco Systems, eBay/PayPal, Hoover's, Intel Corporation, National Instruments, Samsung Group, Silicon Laboratories, Sun Microsystems and United Devices, Sematech, a Consortium of most of the U.S. semiconductor manufacturers. Based in Austin, is IBM large operations/research and manufacturing; major operations for Samsung and 3M (first headquarters operations away from Minnesota).</p> <p>Overall, approximately 38.000 private business establishments have chosen Austin to grow their businesses.</p> <p>Texas Healthcare and Bioscience Institute. Composed of biotechnology, medical devices, and pharmaceutical companies, universities, private research institutions and companies devoted to providing goods and services to core organizations.</p> <p>Home-grown multinational companies: Dell, Whole Foods Market and Free Scale Semiconductors.</p> |

| Drivers | Austin |
|-----------------------|---|
| Technology | <p>Austin is second amongst the world's knowledge regions, according to a 2004 study conducted by Robert Huggins Associates. Based on criteria related to number of patents, IT manufacturing, spending for education, and strong economic activities.</p> <p>Microelectronics and Computer Technology Corporation (MCC). Country's first private sector, high-technology consortium. Based in Austin.</p> <p>Major Centre for high-tech and software development companies.</p> <p>Strong semiconductor industry. Nearly 100 semiconductor-related companies employ over 16.000 people.</p> <p>Wireless industry. Austin is home to a vibrant wireless cluster. More than 100 companies employing 4.000 people do business in the wireless industry as either software or hardware developers or service providers.</p> |
| Spectacular successes | <p>Champions: George Kozmetsky, technology innovator, businessman, educator, author and philanthropist. Cofounder of Teledyne Inc., Dean of The University of Texas College of Business Administration, and founder of the IC2 Institute.</p> <p>Michael Dell, John Mackey, Mayor Kirk Watson, and scientist Dale van Holiday.</p> |
| Talent | <p>The University of Texas at Austin (headquarter of the UT System) academic strength, with eight colleges and universities, with renowned academic programs and enrolment of over 118.000 students.</p> <p>UT Austin attracts more federal research grants than any American university without a medical school. The university exceeded \$ 590 millions a year in research funding and has earned more than 400 patents since its founding.</p> <p>Has the largest endowment of any public university in the nation.</p> <p>UT's total research expenditures increased 82 % between 1999 and 2005 (\$0,9 to \$1,7 billion).</p> <p>University/corporate collaboration. UT's associated programs include the Austin Technology Incubator, IC2 and the Office of Technology Commercialization.</p> <p>The region has one of the fastest growing major job markets in the U.S., with a youthful, well educated workforce.</p> |

| Drivers | Austin |
|-----------------|---|
| Public policies | <p>ATC: Austin Technology Council, dedicated to ensuring the city’s position as a world-renowned technology community. By means of research, entrepreneurial culture, venture funding, support services and a pool of intellectual talent and leadership.</p> <p>The city has developed a very consistent strategy with city council current priorities, the development of: rich social and cultural communities; Vibrant urban fabric; healthy, family friendly, safe city; and a sustainable economic development and financial health. With a profound linkage between quality of life and economic development through science and technology.</p> <p>Corporate initiatives: Greening Austin, Pulling Together, Sustaining Healthy Finances, Managing Change, Engaging Communities, Keeping Austin Safe, Building for the Future.</p> <p>City organizational vision: Making Austin the most livable city in the world.</p> <p>Organizational values: Gutsy, Green, Creative, Committed, Collaborative, Inclusive, Spirited, and Accountable.</p> <p>Special commitment between Government and civil society: the Texas Technology Initiative (TTI), collaboration between Government, academics and private industry in order to address converging advanced technology R&D challenges; the Human Capital National Technology Initiative (NTI), a convergence of advanced technologies programs; and the Business Retention and Expansion Council.</p> |
| Innovation | <p>Market maker: High-tech sectors (microelectronics, software, biotechnology, nanomaterials).</p> <p>Diversity and synergy: A strong and unique balance of technology, business services, education and government.</p> <p>The Central Texas Regional Center of Innovation and Commercialization (CenTex RCIC) serves as a catalyst for emerging technology research, development, commercialization, and start-up incubation in Central Texas as part of Texas’ efforts to remain globally competitive.</p> <p>Clean energy technologies. As the capital of Texas, Austin offers unmatched access to the powerful players of the global energy industry. Austin has the infrastructure and talent to support pioneering clean energy efforts. From major manufacturing to services and start-ups, Austin is a proven location for the knowledge-based economy.</p> <p>New concept (originated in Germany) of “hyper local mobility”, which consists of a network service for the car rental (<i>car2go</i>: currently 200 cars for 3.000 subscribers in 2010), installed around the downtown area, and has been used as testing of a new concept of flexible, environmentally and friendly car rental.</p> |

The following are the breakthrough innovations of the city of Metz (France):

| Drivers | Metz |
|---|--|
| Infrastructure | <p>The French city of Metz and its surroundings have 230.000 inhabitants and more than 15.000 companies with 100.000 employees. It is located in the Lorraine region at around 100 km from Luxembourg and Saarbrücken (Germany), and is close to the Belgium border also.</p> <p>It has the Metz-Nancy Lorraine airport, located less than 60 km from the Luxembourg airport.</p> <p>The Metz train station is connected to the French high-speed train network and is served by the Lorraine TGV station. The Pompidou Centre for the Arts was opened in 2010, and has more than 3.000 visitors per day.</p> <p>Museums, such as Metz Métropole de la Cour d'Or, Les Arènes auditorium, Metz Opera Theatre and the concert area Arsenal are some of the city's meeting places.</p> <p>Multicultural music festivals such as the Metz' Art, or the festival of Young Talents.</p> <p>France's first city to have cable connection for television and Internet.</p> <p>In 2005, the city signed the "Charte" agreement to operate national telecommunication services for France Telecom (now Orange). Metz received the degree of Internet city for five years.</p> <p>The Renater network, a very high-speed fiber optic connection, is a link between universities across the Lorraine region.</p> |
| Associativeness, openness and holistic awareness attractors | <p>Due to the world wars, Metz has been German and French. This double influence caused a great tolerance towards the foreign population. There is a very important Franco-German heritage in the region.</p> <p>The Moselle River forms a lake, and there is significant tourism on it and many festivals take place here throughout the year.</p> <p>The city has plenty of parks and public gardens.</p> <p>In 1972, Dr. Jean Marie Pelt created the European Institute of Ecology. Many actions have been proposed since then to encourage sustainable development. He also developed the concept of urban ecology.</p> |
| Entrepreneurship | <p>Many companies focused on telecommunications issues for the technopole, which was opened in 1983. Currently, Technopole 2 is being created to extend the possibilities of developing innovative companies.</p> <p>Due to its location, Metz is home to many famous companies, such as PSA, Peugeot-Citroën, Claas, IKEA logistics for all of Eastern Europe, Arcelor Mittal, etc.</p> <p>It is home to business incubators, such as the Incubator of Lorraine (IL) and the business center Cescom, which have strong links with universities and local schools.</p> |

| Drivers | Metz |
|-----------------------|---|
| Technology | <p>The technopole area is one of the best developed in Europe in terms of telecommunication technologies.</p> <p>The Welding Institute (IS) is globally recognized for its knowledge and experimentation in the field of industrial high precision welding.</p> <p>The University of Metz, in collaboration with the University of Nancy, is building the University of Lorraine, which will group more than 10 research laboratories, worldwide for their work, mainly in the field of mechanics, materials, automation and industrial services.</p> <p>Metz is the site of several schools of engineering (ENIM, Ensam, Supelec), which are very well equipped in terms of laboratories and their practical training, giving them a very high level of expertise in applied technologies.</p> |
| Spectacular successes | <p>The mayor of Metz, Jean Marie Rausch, was the champion who initiated the idea of building a technopole more than 20 years ago, and imagined a technobridge between the city and Saarbrücken, in Germany.</p> <p>Metz has been nationally and internationally recognized for its initiatives in ecological development.</p> <p>The quality of research in laboratories associated with the University of Metz has made them the engine of the integration of the University of Lorraine.</p> <p>The technopole was created to house companies focused on ICT. It is the first French site for the development of advanced telecommunication services (similar to Sophie Antipholis).</p> <p>The city became an attractive place for national and multinational companies. More than 15.000 companies have established operations in or near Metz.</p> <p>The company Demathieu & Bard, famous for civil engineering projects, built in a very short time the new administrative detention centre thanks to innovative procedures for prefabricated walls.</p> |
| Talent | <p>It is home to many important universities: The University Paul Verlaine of Metz, the ENIM (Ecole Nationale d'Ingenieurs de Metz), ESITC (School of Engineering Works and Construction), Georgia Tech (branch from the USA) in Lorraine, ESAMM (Superior School of Arts of Metz Metropole) and the ESM (School of Management), among others.</p> <p>Jean Marie Pelt built the European Institute of Ecology in 1972. The institute has earned international recognition and made Metz a pilot for the most advanced cities in terms of sustainable development.</p> <p>Robert Schuman, regarded as one of the founders of the European Union, with his colleague Jean Monnet, was one of the first to propose economic cooperation in the European territory.</p> |

| Drivers | Metz |
|-----------------|--|
| Public policies | <p>The city of Metz has a plan against discrimination in order to favor the integration of all communities in the city. It is related to the HALD (High Authority Fighting against Discrimination), which operates at a national level.</p> <p>One of the Metz poles is specialized in spatial planning and social cohesion, with the purpose promoting innovation for regional development.</p> <p>The city of Metz worked to develop a strategic plan for the GUP, which allows an integral development of city neighborhoods that meet the needs of the population and sustainable development in coordination with the overall strategy of the city and region.</p> <p>In October 2010, Metz was the first city in France to allow foreigners to participate in local and national elections as if they were French citizens.</p> <p>The city of Metz signed an agreement with local enterprises for sustainable development in the context of civic projects.</p> <p>It has created central biomass heating project.</p> <p>The project EcoCité 128 was developed to convert a former military base site into an area that preserves the environment.</p> |
| Innovation | <p>Metz, in partnership with the department of Moselle, developed the Iseetech (European Institute of Business and Its Techniques), which is responsible for responding to the concerns of firms for innovation projects and linking them with local research and development centers.</p> <p>In 2006 competitiveness poles were designed to focus innovation in local territories. In Lorraine, specifically in Metz, the pole Materialia was developed to promote innovation in materials issues. The federation of research created the GI2M, focusing on industrial engineering, mechanical engineering, and materials sciences.</p> <p>In 2009 a whole innovation dynamic in the health field was created, and a pole was developed through the creation of the central hospital of Metz at the site of Mercy.</p> <p>In May 2011 the Lorraine IRT (Technological Research Institute) was created with a 120 million € budget for a 5 years' period.</p> |

Based on these findings, as well as the performance metrics, the following table is constructed, where capital letters (A to K) are the performance metrics, the breakthrough

innovations found in Metz and Austin are represented by numerals (I to VIII), and the cities are expressed in small characters (a and m).

Table 1. Performance metrics and innovation drivers on the study of eight cities

| Performance metrics | Keyword |
|---|---------|
| Holistic sustainable developed | A |
| Quality of Life | B |
| Branding | C |
| Regional Attractor | D |
| New startups creation | E |
| Competitive industry | F |
| Well planned city | G |
| Conscientious enviroment | H |
| Civic and social entrepreneurship | I |
| Large / Attractive Regional / Global market | J |
| Territorial assests | K |

| Drivers | Keyword |
|-------------------------------------|---------|
| Infrastructure | I |
| Associativness & Holistic awareness | II |
| Entrepreneurship | III |
| Technology | IV |
| Talent | V |
| Public policies | VI |
| Innovation | VII |
| Spectacular Successes | VIII |

| Cities | Keyword |
|-------------------|---------|
| A1 - Austin (USA) | a |
| M2 Metz (France) | m |

Source: Scheel, 2011.

After a detailed analysis of these cities, we arrived at Table 2, that can be read as follows: for instance, in Metz and Austin *Infrastructure* has been used (through a well-supported electronic connectivity, clustering strategies, powerful education centers, excellent research centers, as well as physical communication

ports, etc.) as an excellent puller of *associativeness* and cluster formation for different industries. Also, in Austin the powerful University of Texas has developed selected talent and research to support young entrepreneurs in forming new startups in the high-priced knowledge economy.

Table 2. How the three cities articulated the innovation drivers (I, II,...) in order to produce the disruptive performances (A,B,...)

| | A | B | C | D | E | F | G | H | I | J | K | |
|------|----------|----------|----------|----------|----------|----------|----------|----------|-------|----------|-------|----|
| I | a, m, pf | pf | a, m, pf | a, m, pf | a, m | a | m, pf | m, pf | | a, m, pf | m, pf | 22 |
| II | a, m, | a, m, pf | m, pf | m, pf | m | | a, pf | a, | | m | pf | 15 |
| III | | | a, m, | a, m, | a, m, pf | a, pf | pf | | pf | m, | | 10 |
| IV | | a, m, | a, m, | a, m, | a, m, | a, m, | | pf | | a, m | m, | 14 |
| V | m, pf | | a, m, pf | a, | | a | | m, pf | | | a | 10 |
| VI | a, m, pf | a, m, pf | pf | a, m, pf | a, pf | a, m, pf | a, m, pf | a, m, pf | m, pf | a, m | m, | 28 |
| VII | m, pf | | a, m | a | a, m, pf | m, pf | | | | a, m | | 12 |
| VIII | m, | pf | a | pf | a | a, m, | m | | m, | a | pf | 11 |
| | 13 | 10 | 16 | 15 | 14 | 13 | 9 | 9 | 4 | 12 | 7 | |

pf: Poitiers.
Source: Scheel, 2011.

Table 3. What was needed by each city to achieve certain performances?

| | I | II | III | IV | V | VI | VII | VIII | |
|----|---------------------|-------------|---------|---------------|---------|-----------------------|-----------|---------|-----|
| a | A,C,D,E,F,J | A,B,G,H | C,D,E,F | B,C,D,E,F,J | C,D,F,K | A,B,D,E,F,G,H,J | C,D,E,J | C,E,F,J | 40 |
| m | A,C,D,E,G, H,J,K | A,B,C,D,E,J | C,D,E,J | B,C,D,E,F,J,K | A,C,H | A,B,D,F,G,H,I, U,K | A,C,E,F,J | A,F,G,I | 46 |
| pf | A,B,C,D,G, H,J,K | B,C,G,K | E,F,G,I | H | A,C,H | A,B,C,E,D,F,G, H,I | A,E,F | B,D,K | 36 |
| | 22 | 15 | 10 | 14 | 10 | 28 | 12 | 11 | 122 |

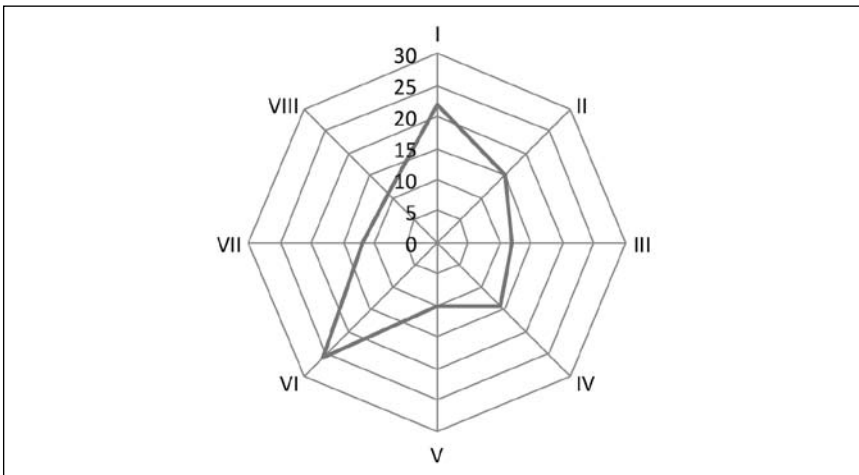
Source: Scheel, 2011.

Table 4. What were the main drivers used by the selected cities?

| Drivers | Keyword | Frequency |
|-------------------------------------|---------|-----------|
| Infraestructure | I | 22 |
| Associativeness & holistic wareness | II | 15 |
| Entrepreneurship | III | 12 |
| Technology | IV | 14 |
| Talent | V | 10 |
| Public policies | VI | 26 |
| Innovation | VII | 12 |
| Spectacular success | VIII | 11 |

Source: Based on the work by Scheel (2011).

Figure 5. Radar Chart of Table 4



Source: Based on the work by Scheel (2011).

Once we have the cross relationship of innovation breakthroughs that have generated disrupted per-

formance in these cities, we can identify the three cities' gaps:

| Drivers | Austin | Metz | Poitiers Charentes region | Analysis of the gap in the P.Ch. region |
|---|------------------|------------------------|---------------------------|---|
| Infrastructure | A, C, D, E, F, J | A, C, D, E, G, H, J, K | A, B, C, D, G, H, J, K | The cities of Metz and Poitiers own high quality physical infrastructure. However, the region of Poitiers needs more connectivity, technology parks infrastructure, and new venture-capital financial instruments to support SME's. Also requires, excellent science and technology research centers and R&D projects associated with the university's specialization fields or large anchor companies. |
| Associativeness and holistic awareness attractors | A, B, G, H | A, B, C, D, E, J | B, C, G, K | Compared to cities with well-established technopoles, Poitiers lacks competitive industries, as well as programs or projects with a holistic regional development goal, and new start-up creation is weak Promotion of diversity and inclusion, social communities, industry, and nature in a win-win synergy is missing. The inherited culture of associativeness that has been found in these types of cities, such as civic entrepreneurship programs, do exist in Poitiers in formal institutions. In general, compared to Metz and Austin, Poitiers lacks a regional system organization . |
| Entrepreneurship | C, D, E, F | C, D, E, J | E | Entrepreneurship is promoted in political speeches but money and entrepreneurial organization to fund start-ups are missing. Technopoles need well-supported R&T transfer centers, specialization (regional sectors) and aggressive leadership, as well as all the elements within the innovation chain. A special leadership represented by: innovation policymakers / leaders, inventors, innovators, investors, and risk taking entrepreneurs. Entrepreneurship also needs infrastructure and training programs, linked to financial NVC tools / angel seed capital. The presence of a home grown multinational company, and/or global winners area needed for assembling geographically integrated facilities for new (high value) business generation. |

| Drivers | Austin | Metz | Poitiers Charentes region | Analysis of the gap in the P.Ch. region |
|------------|------------------|---------------------|---------------------------|--|
| Technology | B, C, D, E, F, J | B, C, D, E, F, J, K | H | <p>Although the Futuroscope has brought in a many new technology-based companies, the R&D oriented toward the development of new technologies is very poor. Very few patents are registered in the region (63 patents registered in 2008 (Source: INPI).</p> <p>The region needs: A better coordinated technology development infrastructure (R&D centers, transfer centers and techno-parks). Technological infrastructure that attracts customers, FDI, creative talent, and new start-ups. Scientific prominence in technology-based research and creation of new knowledge, as well as technology intensive companies. Applied engineering oriented schools and ICT strategy aligned to national programs of science, technology and innovation. E-government, social programs, transport services, food, water distribution, etc., are the most critical pullers of world-class technopole, and these are not strong enough in the Poitiers-Charentes region.</p> |
| Talent | C, D, F, K | A, C, H | A, C, H | <p>There are some local talents in the field of scientific research but they are not well promoted. National organization attracts talent in the Paris area, but not at the periphery.</p> <p>Although the metrics are quite similar, the scope of the schools is different. In Metz there are several schools and graduate schools dedicated to empowering engineering and sciences with specialized programs oriented toward the high-value industrial requirements of the region.</p> <p>Poitiers has a lack of: Specialized HR generation (graduate programs with a technological focus). It needs top university/research centers with specialization areas, as well as excellence in research and education in aligned disciplines (with economic and regional vocations). Enough attractors to attract, recruit, train/educate and retain world-class talent and major techno-scientific-engineering competences.</p> |

| Drivers | Austin | Metz | Poitiers Charentes region | Analysis of the gap in the P.Ch. region |
|-----------------------|------------------------|---------------------------|---------------------------|---|
| Public policies | A, B, D, E, F, G, H, J | A, B, D, F, G, H, I, J, K | A, B, C, D, F, G, H, I | Metz and Poitiers receive State subsidies to fund the many aspects of social and economic life. However, the P.-Ch. region is only beginning to have a State strategic plan. It does not yet have a world-class regional identity “branding”, nor the strong synergies among industry, academies, business, and local politics that cities like Austin. Both technopoles have had a strong involvement by unique champions (this is a characteristic found in all cities considered as great innovators) and although the presence of Mr. Monory was a key factor for construction of the Futuroscope, continuation of the entrepreneurial factor was diluted as time passed. |
| Innovation | C, D, E, J | A, C, E, F, J | A, E | Innovation is oriented toward technology to support <i>green</i> activities with poor economic results. In the region studied, there is a lack of innovation chains, from science education, research, technology, innovation strategies, technology transfer, incubators (start-ups, spin-offs), business accelerators, landing facilities to technology based parks. The gap in the innovation chain is strong in Poitiers. Transfer and application of knowledge to innovation processes: research, development, dissemination, entrepreneurship and resource allocation managing up to well aligned chain in the region. Regional innovation system (governance, resource allocation management, long-term plans), which has been very well developed in the city of Austin, mainly the social networking, missing in the region. |
| Spectacular Successes | C, E, F, J | A, F, G, I | D, K | Futuroscope is more than 20 years old but nothing new and spectacular has happened since its inception. The region has a lack of high-level influencers/visionaries/champions/leading institutions. New events pulled by “champions” or icons (governmental, politicians, entrepreneurs, pioneers, scientists, businessmen, the foundations), and maybe around the Futuroscope, but with a permanent sense of associativeness among the main players to attract spectacular national high-impact projects. |

Once the gaps have been detected, we can compare the Poitiers' Futuroscope Technopole to the regions developed around Austin and Metz; and determine how the P.-Ch. region can implement state plans, policies and strategies, to become a world-class player like these two highly recognized technopoles.

VI. IS THE REGION IMPROVING ITS INNOVATION PERFORMANCE?

First of all let's determine what the metrics are that innovative cities have developed to become world-class performers. Taking again as best practices the study of *innovacities* by Scheel (2011), we have detected several patterns world-class players have in common.

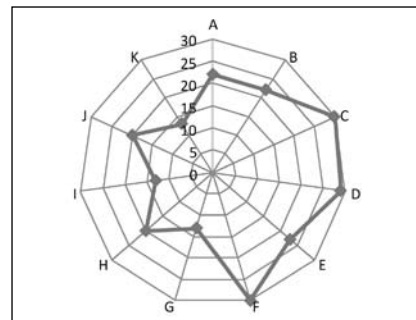
Table 5 shows the performance metrics of the eight surveyed cities (Auckland, Austin, Bangalore, Barcelona, Curitiba, Medellín, Metz and Stavanger), and the level of importance of each one of them:

Table 5. The best practices of disruptive characteristics found on the eight surveyed cities⁹

| Performance metrics | Keyword | Frecuency |
|---|---------|-----------|
| Holistic sustainable development | A | 22 |
| Quality of Life | B | 22 |
| Branding | C | 30 |
| Regional Attractor | D | 29 |
| New startups creation | E | 23 |
| Competitive industry | F | 30 |
| Well planned city | G | 13 |
| Conscientious environment care | H | 20 |
| Civic and social entrepreneurial programs | I | 13 |
| Large / Attractive Regional/Global market | J | 20 |
| Territorial assets | K | 13 |
| | | 235 |

Source: Based on the work by Scheel (2011).

Figure 6. Radar of Table 5



Source: Based on the work by Scheel (2011).

⁹ A complete description of the analysis of how we identified disruptive performances is included in Scheel (2011).

As we can see, most of the cities' best characteristics have been: exceptional branding, highly competitive industries, excellent attractors of talent and technological partners, strong and effective entrepreneurship programs, and the existence of

holistic development programs with world quality standards. Based on this standard, we analyzed the information on Austin and Metz (again, for their technopolis recognition) and made a benchmark against Poitiers' Futuroscope Technopole:

Table 6. Benchmark of the disruptive characteristics found on the three cities

| Performance metrics | Keyword | Austin | Metz | Poitiers |
|---|---------|--------|------|----------|
| Holistic sustainable development | A | 3 | 6 | 4 |
| Quality of life | B | 3 | 3 | 4 |
| Branding | C | 6 | 6 | 4 |
| Regional attractor | D | 6 | 5 | 4 |
| New start-up creation | E | 6 | 5 | 3 |
| Competitive industry | F | 6 | 4 | 3 |
| Well-planned city | G | 2 | 4 | 3 |
| Conscientious care of environment | H | 2 | 3 | 4 |
| Civic and social entrepreneurial programs | I | 0 | 2 | 2 |
| Large/attractive regional/Global market | J | 5 | 6 | 1 |
| Territorial assets | K | 1 | 3 | 3 |

Figure 7. Radar of table 6

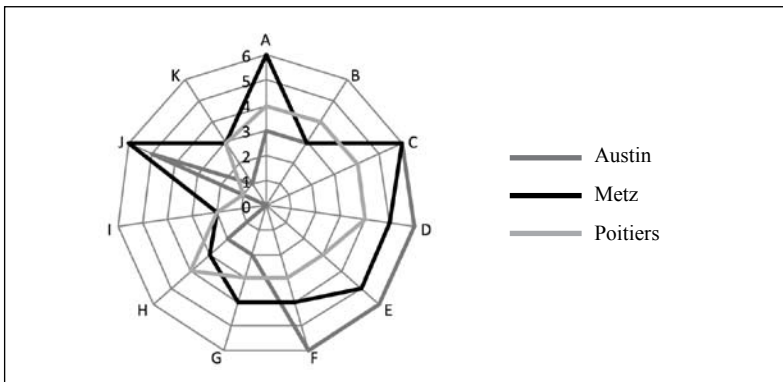
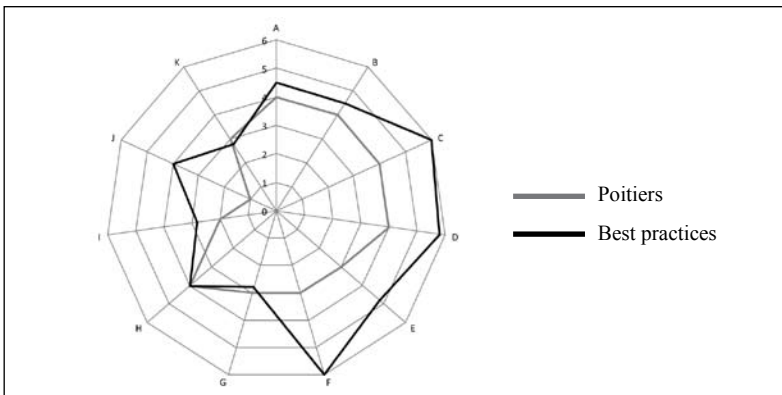


Table 7. Behavior of Poitiers vs. the mean of the practices found in the eight selected cities

| Performance metrics | Keyword | Poitiers | Best Practices |
|---|---------|----------|----------------|
| Holistic sustainable development | A | 4 | 4.5 |
| Quality of life | B | 4 | 4.5 |
| Branding | C | 4 | 6 |
| Regional Attractor | D | 4 | 5.8 |
| New startups creation | E | 3 | 4.8 |
| Competitive industry | F | 3 | 6 |
| Well planned city | G | 3 | 2.8 |
| Conscientious environment care | H | 4 | 4 |
| Civic and social entrepreneurial programs | I | 2 | 2.8 |
| Large / Attractive regional / Global market | J | 1 | 4 |
| Territorial Assets | K | 3 | 2.8 |

Figure 8. Radar of Table 7



From this diagram we can determine where the P.Ch. region falls against world-class best practices, and it is possible to identify the general actions that the region must explore. It is clear that innovati-

ve regions need to create certain conditions and empower specific resources to build a branding to be able to attract new markets and new enterprises to become more competitive at the regional level.

Can the Futuroscope detonate a technopole for the region? In Poitiers,¹⁰ the Futuroscope has the potential resources and the attractiveness to assemble a world-class technopole. It has e-services and web-oriented companies (of low and medium technology), and most of them produce a low and/or insufficient value added to the industry of the region.

The situation here is how to transform this initiative into a highly recognized pole of industrial development, starting “if the Futuroscope is enough to provoke a disruptive change in the conventional growth of the region regarding better standards of living for the inhabitants, attraction of foreign investors, technological partners, etc; and become a global player region?”.

Based on the performances of the (eight) surveyed cities established by the following indexes, is possible to determine where the P.-Ch. region wants to position itself as a result of its public policies and innovation strategies: branding and global recognition; regional industrial competitiveness index; attraction of talent, culture, industrial partners (FDI, global partners, etc.) and ample recruiting of young tech-based entrepreneurs; effective economic,

civic and social entrepreneurial programs; world-class regional markets; and quality of life index.

Let’s see how the influence of the Futuroscope and specific clustering strategies, innovation strategies and public policies, could achieve these best practices for the region:

- **Branding:** Austin is clearly international, while Metz has local and national recognition. Poitiers is mostly known nationally for its theme park while the technopole has yet to gain national recognition. Given the lack of associativeness, the region must articulate an effective synergy in order to create a critical mass among all stakeholders and interrelationships, all in tandem toward a common goal, and create a regional branding. The region has to strongly promote the technopole concept as a regional asset in France and in the neighboring countries of the EU.
- **Competitiveness index:** The Futuroscope Technopole should become the central core of new high-value industries within the department and the region. The goal would be to promote competitive companies in sectors

¹⁰ Futuroscope Technopole, Conseil General de la Vienne. Pub. 2011 (more information on: <www.technopole-futuroscope.com>).

where there is a certain regional vocation (energy, automotive industry). The P.Ch. region is promoting participative democracy as a development principle to implement its core policies. This principle underpins the economic actions found in the regional development scheme. The environmental excellence regional goal tries to combine “agriculture, tourism and industry”.

- **Attractiveness:** The P.Ch. region has to put more emphasis on the Futuroscope Technopole integration within the regional development scheme. The region has to implement programs enhancing ICT practices and the building of cluster networks from high-value industries. The Futuroscope might be the leverage to attract companies and promote the design of networks around leading firms. The connection between Poitiers’ Technopole and the city of Poitiers has to be improved to attract world class anchor companies and specialized talent more easily.
- **Entrepreneurial programs:** The Futuroscope should attract start-ups with innovative product lines and be able to empower them with VC funds. Austin is leading in this field with powerful incubation programs, techno-
- **World class regional markets:** The Poitiers’ Futuroscope Technopole has strong potential in different fields (robotics, avionics, images, IT services) which needs to be reinforced to be able to expand all over Europe and then on a worldwide basis. Companies have to increase to facilitate this growth process. The region’s attractiveness needs to be enhanced to get foreign investors to relocate in the area. The Futuroscope has to become a reference brand to attract anchor companies and start-ups to create regional and global markets. The current regional scheme intends to foster the following industries: green industries (electric cars, water processing, materials recycling), biotechnology, food industries, and the Image Valley between the Futuroscope and the Angoulême region on insurance and aeronautics industries.

parks and venture capital funds. An ambitious program with a well-structured innovation system must be implemented in the region. Poitiers has to move from subsidized social entrepreneurship to assemble profitable (high-value balanced accounts) social entrepreneurship ventures.

- Quality of Life: The Poitiers region should continue to promote the “green” aspects of its policy to become more attractive and to develop more green areas and eco-efficient urban projects.
- In summary, it is possible for the Poitiers region and its Grand Poitiers Futuroscope Technopole to become international well positioned if the gaps in the innovation drivers are bridged and the goals proposed as regional strategies are focused on the best practices of the recognized world-class technology-based regions.

VII. FINAL REMARKS

Innovative regions (cities) have achieved recognition around the world because their proper enabling environments or “regional ecosystems”, with the entrepreneurial environment to nurture ideas, business models, etc., not just because they have the markets, but because they have a tremendous associativeness empowerment capable of assembling networks, as well as the mobilization of high-value resources (human resources, specialized parts, natural resources, etc).

We have to shift from an industrialized economy... to a service economy... to a knowledge eco-

nomy... to a creative economy... to a systemic sustainable economy, and finally to a “*holistic sustainable development*”... *where all eco-sub-systems (social, economic, environmental) co-exist and are common drivers of wealth creation.* Cities must be re-designed to handle these new paradigm shifts.

The era of land, labor and capital has ended, and on the rise are a knowledge-economy, network economies and highly creative societies, with a great deal of creativity and the preparation for inserting new ideas into innovation chains ending in great value differentiators of important clusters of innovation.

From the data and the information integrated in the benchmark approach, it can be observed that the Futuroscope Technopole houses companies with a moderate technology level. The goal is to raise the global technological level to turn the existing Technopole into a real high-tech cluster and an innovative pole. From this point of view, cities that are concentrated on typical manufacturing as a unique engine of development may be within declining trend, for now the entrepreneurship age of the creativity economy is emerging.

We also observed the trend to create mega-regions but keeping the *cities' identities*, which means that

geography may help in wealth creation, but through an excellent and effective connectivity and “State” plan, such as the Barcelona-Lyon, the Metz-Strasbourg, or the Austin-San Antonio axes, etc. Thus, an innovative city is able to create this type of relational capital among regions, producing a win-win process for all the inhabitants in a more viable way.

In the case of the Poitiers-Charentes region, the benchmark cities’ drivers show that an excellent infrastructure already supports the local development. Therefore, the region has to enhance the existing *innovation value chains* from R&D to the final creation of high value regional wealth. Emphasis has to be put on facilitating new ventures with the support of seed capital and venture capital, so that Entrepreneurship programs have to be promoted.

The Vienne Department development Agency or the P.-Ch. region could also support the acquisition of external technologies in the Paris area for instance, to boost the local start-up developments waiting for local R&D to provide the breakthrough innovations. In addition to these entrepreneurship programs, more foreign companies have to be attracted to the Technopole. Those companies might come from emerging countries (Brazil, Mexico, India, China and Korea) that

want to have a stake in the French and European wealth and an attractive 400 million customers market. This means the promotional efforts in favor of the Technopole have to be enhanced. The coordination of the development policies is likely to be accelerated by good coordination between the Vienne Department and the Poitou Charentes region.

A city that practices this systemic approach would be ranked as a modern and sustainable innovative city, capable of assembling and operating highly inclusive “innovation clusters”; transforming ideas from visionaries into a valuable system of capitals (interconnecting the social, economic and environmental meta-systems simultaneously) in order to break with the conventional development trends and achieve world-class performance within the standards of holistic development regions.

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