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The Role of the Research & Innovation Technology Park PIIT in the strategic creation of INNOVA City

WORKSHOP 1 - STPs, science cities and urban strategies

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EXECUTIVE SUMMARY

Nuevo León's 110 hectares PIIT research park is already booked the totality of its first stage comprising 70 hectares and 33 research centers. The second stage is already underway with a 40 hectares extension totaling 110 hectares dedicated to research and development.

The success of the park has already prompted the establishment of new urban policies in the surrounding area, comprising more than 2400 hectares, and the building of an alliance between the state and municipal governments, landowners and urban developers to build a new urban zone where creativity and innovation are nurtured in an integrated sustainable urban development.

Up to the installation of the first center in the park in 2007, the area was mainly developed as an industrial zone, with low class residential zones to house manufacturing plants' labor workers. Nowadays, the working personnel in the research centers in the park, comprised by engineers, masters and doctors, have reached 950, and the park is expected to create a number near the 6,500 highly qualified jobs by 2015. This type of creative and innovation workers, perceiving higher salaries, are demanding nearby housing and city amenities where entrepreneurs, engineers and designers from different disciplines can mingle and network.

1. Introduction

The Scientific and Technological Parks (STP) are in constant evolution all over the world. This paper approaches the phenomenon of STP as nodes for attraction of high skilled personnel and the creation of new urban infrastructure, according to the needs and demands of knowledge workers and designed as an urban sustainable model for the regions.

Although they may have similar objectives, the experience of building new cities or communities around the infrastructure created for innovation has had different levels of success around the globe, according to the region, the strategy used for implementation and its design. However, the accumulated experience attests that STPs, surrounded by an area where companies of new technologies can be located, are successful in restoring, creating and recover urban areas as to attract projects of industrial content. The STPs concentrates a critical mass of knowledge and technology that allows research and innovation networks, settling up-down flows with the industrial sectors, and helping to develop not only new companies but making existing industry more competitive.

To return to the efforts by policy-makers to model high tech innovation on developments at Stanford and Silicon Valley, it is clear that most approaches have involved the idea of co-locating research centers and innovation-intensive firms in STPs. In some cases this has involved designating whole cities as Science Cities or Technopoles. In the early 80s, where such plans of

technopolis were developing, there are some reviews about how such developments raised a frequent sense of disappointment that more has not been achieved.[1] In cases drawn from France and Japan, countries that have arguably proceeded furthest with the technopolis policy, a certain absence of synergies was observed among co-located laboratories and firms in early times. Nowadays, in response to the improvement in understanding of innovation as an interactive, possibly systemic process, more attention is paid to the factors that lead to collaboration and linkages amongst firms, research entities and innovation support organizations, leading to science cities or innovation cities being developed around the research parks according to the triple helix concept (academy-industry-government).

The clear difference between the earliest linear technopoles and innovative cities' policies is that the former is hierarchically planned, agglomeration is induced but no effort is made to create linkage, while the latter is more organically evolved, networking is promoted and linkage stimulated. At a significant strategic level, an ecosystem for innovation is the support for the creation of systemic knowledge and innovation flows.

Further along the paper, we examine the Model for the Innovation Ecosystem of Nuevo Leon, which, after learning from observing the weaknesses of linear-model approaches was integrated into the design of more networked solutions, creating a sustainable environment for the flourishing knowledge economy and society.

Finally, conclusions will then be drawn concerning the key elements now considered essential to the design and sustainability of an urban development that will bring the region to compete at international level in the new economy.

2. Background

a. Technopoles and innovation cities.

France. Technopoles.

The French were the first to experiment with the idea of Technopoles at Grenoble with Meylan-ZIRST (Industr ial Zone for Research in Science and Technology). Other example is the southern French case of Sophia Antipolis. This eventually succeeded, like Meylan-ZIRST, to attract government research laboratories and larger private investment.

In terms of learning from this experience, the following five points are of considerable significance[2]:

a) there are weak signs of innovative interaction between larger firms seeking, for example, locally available software services,
b) some French firms are being attracted to Sophia Antipolis by aspects of its critical mass and network potential,
c) more new firms are, however, needed to create sufficient critical mass for synergies and creative innovation,

[1] Cooke, From Technopoles to Regional Innovation Systems: The Evolution of Localised Technology Development Policy, Canadian Journal of Regional Science/Revue canadienne des sciences régionales, XXIV:1(Spring/printemps 2001), 21-40
[2] Idem

d) where external networking exists it largely remains as a vertical, subcontracting type or relationship,
e) the public sector policy networks are the most significant factor in potentially building up local innovative networks.

In the last ten years, both Sophia Antipolis and Grenoble have shown that they are evolving from early stage technopoles to more interactive innovation systems, by enhancing social capital, networking and intermediary activity.

Japan. Kansai Science City (Keihanna)

The construction of Kansai Science City ("Keihanna") was undertaken to create a base for activities focusing on the three philosophies outlined below, and for new creative developments in culture, sciences, and research that combine elements of different industries, different disciplines, and different countries. These activities also take advantage of the rich cultural and scientific resources that have been cultivated in the Kinki region.
The three philosophies of the City's construction:

- Creating a base for new development in culture, science, and research
- Contributing to the development of culture, science, and research in Japan and throughout the world, and to the development of the national economy.
- Foundation of the intellectual and creative city that opens doors for the future.

City functions and Development direction of the facilities
The following developments are aimed.

The lessons learned from Kansai City are that the development of the city must convey underlying cooperation of industries, academies and government. Each party performs the properly allocated roles and develops public beneficial facilities related to the Science facilities, habitations, other habitats and urban functions, such as:

- To be a base of the cultural creations and lead future activities of the academic pursuits and industries
- To realize developments of the city where cultures and hospitability are integrated.
- Development direction of the facilities for the cultural and academic pursuits
- Promotion of the industries
- Habitats
- Extensive transportations and fundamental facilities for information and communications

Finland. Oulu Technopolis, Technology Park.

The University of Oulu is largely responsible for its international success, having set up the Technical Research Centre in 1974, the Oulu technology park in 1982, and the Medipolis medical science park in 1990.

Over the past 200 years, Oulu has seen industries come and go, from tar and wood in the age of sail to leather goods, fishing and heavy equipment manufacturing. When heavy industry went into steep decline, the Nokia Research Center and small-to-midsize enterprises (SMEs) became Oulu's biggest employers. But city leaders remained alert to "the Nokia threat"—employment

concentrated in a single large company—and founded the Oulu Technology Park to incubate more SMEs. Despite the financial crisis that hit in 2007, Oulu has managed to create 18,000 jobs in high technology, thanks to risk-taking in education and strong public-private collaboration. The government of Oulu has also created an intensive culture of use for information and communications technologies. It is Finland's leading development environment for mobile technology, technical innovations as well as the service and trade sectors.

In 2012, Oulu was named one of the seven most intelligent communities in the world, among Austin Texas, Quebec Canada, Riverside California, St. John New Brunswick Canada, Stratford Ontario Canada, and Taichung City Taiwan[3].

The lessons learned from this initiative, in terms of success for urban and economic development, point towards a planned, interactive enterprise-support approach, based on close university-research centers-industry and government cooperation, combined with excellent connections to the world via Helsinki, high quality of living and extensive leisure activities to keep free time and working life in balance.

Each of the examples outlined in the previous section is clearly more successful in the measure that the regional innovation system built around them is designed to promote the flow from the science base to the market through commercialization, particularly through systemic, innovative new firm formation and new processes and products.

In Nuevo Leon, the model for the innovation ecosystem implemented in the state is extended to the new urban development around the research and technology innovation park PIIT. The interactivity and association in the model with the different actors involved in the triple helix concept is a crucial point for the success of the city planning around the park, named Innova City.

3. Model for the Innovation Ecosystem of Nuevo Leon

Nuevo León has substantial taxing, spending and policy authority. Companies in the region belonging to the strategic industrial sectors defined jointly with the state government, have formed clusters in which innovation is promoted through the linking with university, research center, obtaining partial funds from the government. Policy-making is inclusive and open to influence from key private actors; monitoring and foresight functions are well-established. For example, every three years, the state long term program in Science, Technology and Innovation is revised to ensure its alignment with the goal of steering the state towards the goal of being one of the most competitive regions in the world based on the development of STI as base for the knowledge economy and society. One of the key features for competitiveness is increasing the productivity of the economic sectors, improve the Gross Domestic Product (GDP) per capita and the job quality to produce goods and services of high added value that are competitive local and internationally. To achieve these goals, an economy requires having a wide control over knowledge and technology.

Knowledge allows the individual and society as a whole to solve common problems and to draw on opportunities in fields such as health, education, environment, safety, or social development.

[3] Intelligent Community Forum Announces Top Seven Intelligent Communities of 2012
http://www.intelligentcommunity.org/index.php?src=news&refno=682&wpos=0,5000,10941

As a society sophisticates its economy and increases the quality of its human talent, it starts to fit on a Model for an Economy and Society based on Knowledge, which is characterized for the following attributes, among others:

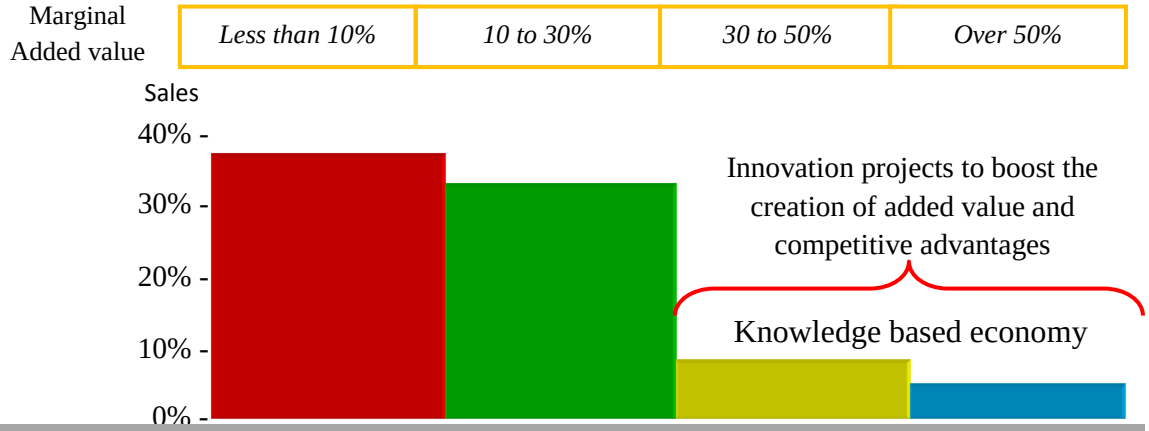
1. Equilibrium of its economic sectors (primary, secondary and tertiary)
2. High added value of its products and services
3. GDP per capita between $30,000 and $50,000 USD
4. High level of schooling of its economically active population
5. Sustained growth rates
6. Large attraction of foreign and domestic investment
7. Solid educational institutions with national and international renown
8. Strong capacities for research and development (R&D)
9. Good government, and respect of the law and the environment
10. High entrepreneurship culture and development of new businesses

To foster the Knowledge based economy it is required:

- to have high skilled human resources;
- specialized scientific and technological infrastructure;
- skills and means to advance knowledge; and
- a culture of taking risks in the productive sector for implementing the results of experimentation done at laboratory level.

In summary, in a knowledge based economy, the productive sector would be able to generate new products and services of higher added value, shifting its offer towards more competitive products with higher margin that generated competitive advantages at global level. (Figure 1)

Figure 1. How can we improve the margin and foster the growth through innovation?



R&D Intensity	*Low*	*Medium - Low*	*Medium - High*	*Medium - High*
Skills	Basic	Medium	Specialized	Specialized
Human Talent	Basic	Medium – High	Superior	Superior
Resources	Basic	Standard	Specialized	Specialized

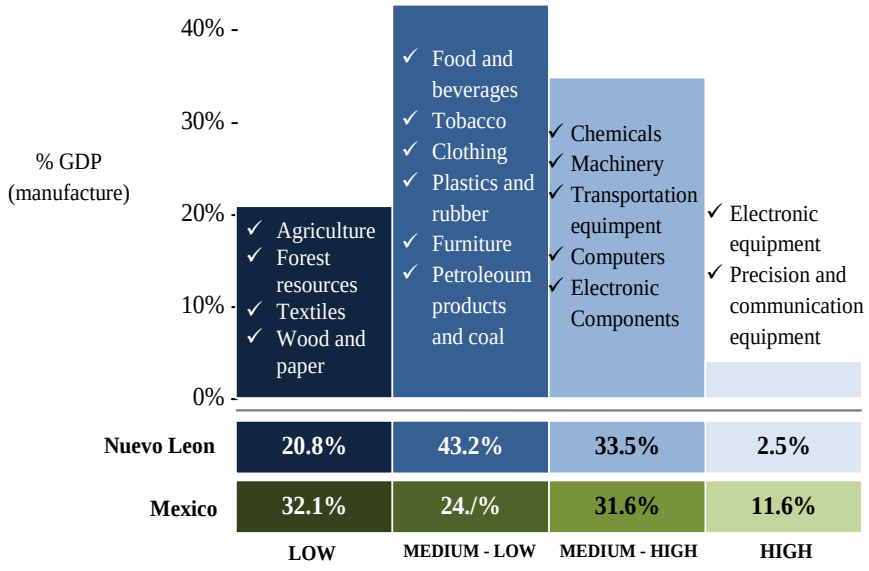
In 2003, the government of the state of Nuevo León started a program to endow and articulate an innovation ecosystem in Monterrey and its metropolitan area that would accelerate the inclusion of Monterrey into the new knowledge economy. National policies and programs developed under the Special Science, Technology and Innovation Program by CONACYT were used as models to tailor the local government's instruments and to obtain funds for the promotion of the innovation in the region.

According to the study published by PricewaterhouseCoopers (Hawksworth et al., 2007) detailing the largest city economies in the world and how this might change by 2020, Monterrey is predicted to be placed 54th of the largest urban economies for 2020. With the implementation of the Innovation Model, this position will be surpassed, according to the projections of the model.

The successful Innovation Model is based on a knowledge culture, the establishment of a state policy and the sufficient allocation of resources, the clear and defined roles of its participants and the way they interact, the definition of the strategic areas of knowledge in which the program focuses, the creation of the organizations and structure needed to boost them and to implement the key initiatives, the statement of the strategy and the key activities, the evaluation of the advances and the results, and its impact on the creation of value for citizens, institutions, and companies.

The state of Nuevo Leon had a GDP of more than $84 million USD (1 dollar = 12.3 pesos) ($1,035,043 millions of pesos) on 2011(approximately 8% of the national total). The state's GDP structure is composed by 3% from primary activities, 38% secondary activities, and 59% tertiary activities. The GDP per capita in Nuevo Leon, although the highest for Mexican States at $18,500 vs. avg. 8,500 USD in Mexico, can be increased as the change in the composition of the economy is attained, achieving a greater percentage in the sectors where high value added activities influence the value of the products and services, as shown in figure 2. It can be seen that 20.8% of the goods and services produced are of low value, 43.2% of low-medium value, and only 36% of the goods and services are of medium-high and high value added.

Figure 2.Nuevo Leon's Economy (in terms of value added)



Source: OCDE Studies on Regional Innovation. 15 Mexican states, 2009.

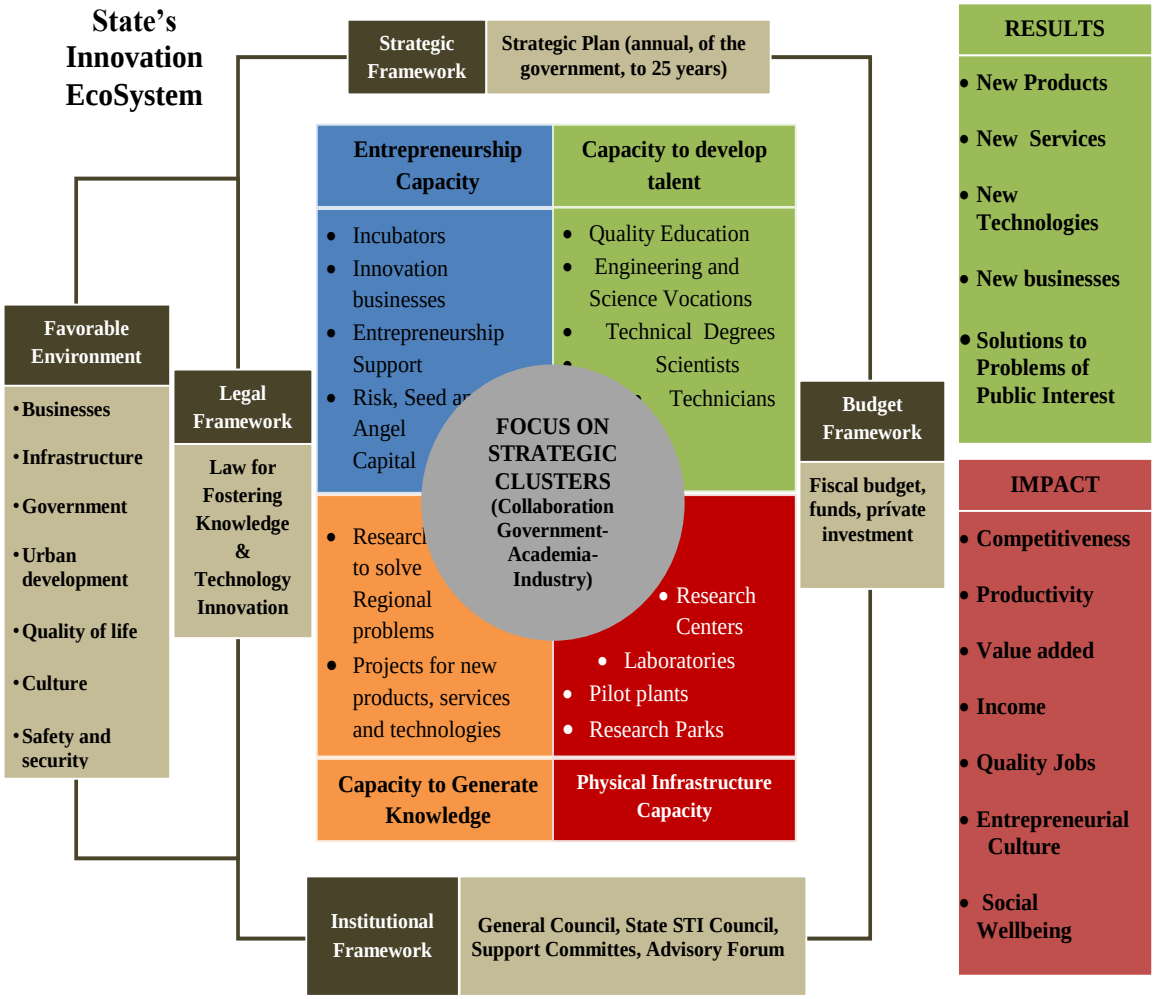
"Only by improving the value added of the products and services of a region, the productivity and job quality will raise".

As we can infer from the collected data, Nuevo Leon has two important economic challenges:

1. To gradually increase the value of the products and services of its productive sector
2. To promote and support the creation of new businesses based on scientific – technological knowledge and innovation

These challenges are fully addressed in the design and implementation of the Model for the Innovation Ecosystem for the state. Nuevo León's people, institutions and companies are characterized by consensual, associative governance, an entrepreneurship culture and a strong learning disposition. These features are cultivated and associated in the innovation model developed in the state. (Figure 3)

Figure 3. Model for the State Innovation Ecosystem



The model consists of the following components:

1. A favorable environment, namely, the necessary conditions for the Knowledge based Economy and Society to be viable.
2. Four reference frameworks as the structural component that supports the model and provides viability on the long term.
3. Legal framework (Laws, regulations and legal dispositions on the subject)
4. Strategic framework (The direction and the defined priorities in the Government plan on the short and long term, regional and sector)
5. Institutional framework (Government offices, advising, designing and supporting the implementation of the programs and projects)
6. Budget framework (All the necessary instruments for fiscal and funding Support, capital and credits)

It emphasizes the structural change needed through investing in Science, Technology and Innovation to propel the knowledge economy and society, and for transforming it in positive outcomes. Besides the general frameworks, the Nuevo Leon's Innovation Ecosystem Model poses four key components, being the critical capacities that need to be strengthened and which are the final destination of the public and private investment on the subject.

1. Capacity to Develop Talent. It's the state's capacity of strengthen and reviewing its higher education institutions for masters and doctorates in several knowledge fields adjusted in order to educate the scientists and technicians for the strategic economic and social development of the region.
2. Physical infrastructure capacity. It includes the physical resources such as laboratories, equipment, pilot plants and experimentation facilities, which are critical for the R&D projects.
3. Capacity to generate knowledge. This component is referred to the duty of structuring a portfolio of R&D projects which should be: relevant, high quality, feasible and value generating for the economy and society of that region.
4. Entrepreneurship capacity. It's the ability to transform the scientific-technological knowledge in new businesses generating jobs, goods and high value services.

The next component in the Innovation Model is to focus on strategic areas and the establishment of the strategic clusters in the State. Those clusters represent the most promising bet for the future productive development of the State. For Nuevo Leon, those strategic sectors are: IT & Software, Automotive, Home Appliances, Biotechnology, Health Sciences, Agribusinesses, Nanotechnology, Aeronautics and Aerospace, Creative Industries and Media, Sustainable Housing and more recently, Transport and Logistics.

The last components of the Innovation Ecosystem Model are the impact and the results of investing in science, technology and innovation. There should be accurate indicators such as new products and services, sales, new processes and technologies, new innovation-based businesses, resolution of common interest problems such as in health, education, safety and urban development among others. The expected outcomes of these results are the increase of the GDP per capita, the improvement on the inequity index, economic growth, jobs, social welfare (health, safety, education, etc.).

In the following section, we will focus on the adequacy of the innovation model for the PIIT Research Park and Innova City.

4. Research and Technology Park PIIT

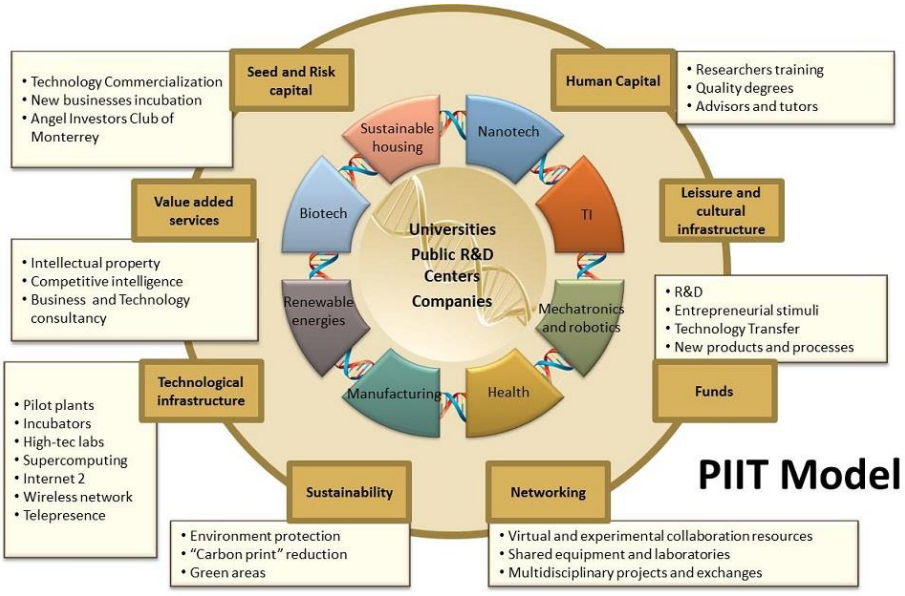
In 2005, Nuevo Leon needed to increase its number of R&D centers in strategic science and technology areas to build a critical mass for success. Today, due to the implementation of the model for the innovation ecosystem, the state has 97 research centers from private and public institutions, and from those, 22 of those centers are currently operating at the Research and Technology Innovation Park (PIIT): 10 from universities, 9 public and 14 private centers. To date, PIIT is housing two of the four planned high tech incubators, one in Nanotechnology and the other one, in Biotechnology.

The PIIT, with a short story of 7 years since inception, can be considered a pioneer in the country, including throughout Latin America, because it is the first park in the region that:

1) Host research centers of local, national and international universities. The University of Texas, UNAM and CINVESTAV as well as local universities and CONACYT's centers are members of the park.
2) Promotes synergy in the use of infrastructure and equipment, offering joint graduate programs between the institutions of the Park.
3) Strengthens the training of highly qualified human resources and innovation in the strategic clusters of the State.
4) It is a joint investment of private capital, public and private higher education institutions and the Government at federal, State and municipal levels, dedicated solely to research and development, manufacturing it is not allowed in the park.
5) It offers high tech Incubators with experimental pilot plants open to private companies, public research centers and entrepreneurs, offering full or partial services in the technical areas as well as consulting and mentoring services in business and technology commercialization, from the stage of ideation of the product to market development.
6) It is full member of the most prestigious international research park associations, IASP and AURP.

The model for the innovation ecosystem of the park is intimately related to the state innovation ecosystem. It preserves the same strategic focus and it is based on the triple helix model. (Fig. 4)

Figure 4. PIIT Innovation Model



The PIIT has been so successful in the attraction of research centers that the first 70 hectares are already engaged to host 34 research centers and four high tech incubators by the end of 2015. (Figure 5).

Figure 5. Tenants at the Research Park PIIT

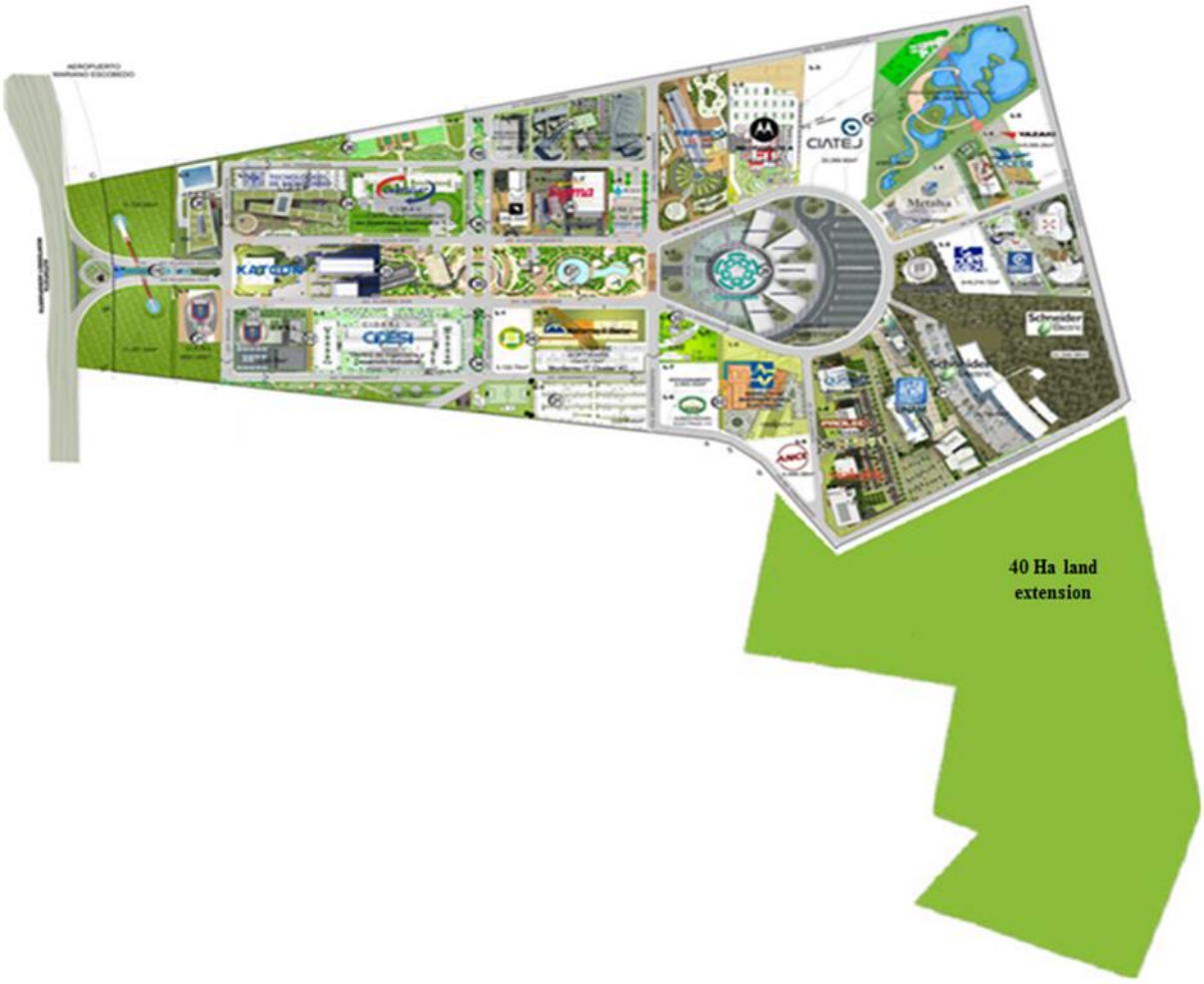
University Centers	Public Centers	Private Research Centers	Incubators
UANL, Innovation and Development in Engineering and Technology, CIIDIT	Water Institute of the State of Nuevo Leon, IANL	Motorola	Nanotechnology
ITESM, Innovation and Strategic Development of Products, CIDEP	CINVESTAV del IPN (2 unidades)	Pepsico – Gamesa	Biotechnology
University ofTexas, Global Center for Innovation and Entrepreneurship	Research in Advanced Materials, CIMAV	Sigma	Information Technologies
UDEM, Packaging and Identification Technologies ABRE	Engineering and Industrial Development, CIDESI	Monterrey IT Cluster/ LANIA	Alternative Energy (Concept Stage)
UANL, Biotechnology and nanotoxicology	Research and Assistance in Technology and Design, CIATEJ	PROLEC – GE	
UNAM, Engineering Faculty	Electric Research Institute, IIECM	VIAKABLE	
UNAM, Chemistry Faculty	Research in Science and Higher Education, CICESE	Katcon	
UNAM, Engineering Institute	Research in Math, CIMAT	METALSA	
ITNL Research Center	Applied Chemistry, CIQA	CAINTRA	
Data Center UANL		Schneider Electric	
		ANCE	
		YAZAKI	
		QUALTIA	
		COPAMEX	
10	10	14	4

In operation | Under construction | Begins construction in 2013 | Construction date to be defined

PIIT has contributed to the transformation of the regional culture into one of innovation and a flourishing academic-industry partnership. To date, it has accumulated an investment of nearly $450 Million USD, $150 Million from federal and state governments and $300 million from third parties.

This fact prompted the extension of the park on 40 hectares more, for a research park of 110 hectares, to accommodate another 20-30 research centers concentrating more than 60 research centers, public and private, by the end of 2020. (Figure 6)

Figure 6. PIIT Master Plan and Extension



To date, PIIT has employed near 1000 researchers, technical and support personnel with salaries higher than the average wages paid in the state. It is expected that, by the end of 2015, more than 6000 researchers, technicians and support personnel will be working in its premises.

This qualified human resource will need to be attracted and retained in the region. They will demand housing, schooling for their children and recreation near their working place. These facts were the main reason that prompted a new urban development. Innova City, integrated to the master plan of the research Park PIIT. The deployment of Internet2 at the park is already being negotiated and it will influence the IT infrastructure and technology readiness in the city.

5. **Innova City.**

We live in a world of cities. And cities need a new way of learning, at a pace that is commensurate with the change that is occurring in our world. It is only through far deeper collaboration and joint action –involving all actors in a trusted network- that we can compete successfully with other cities and regions.

Innova City is located mainly in the municipal area of Apodaca, one of the cities that compound the metropolitan area of Monterrey, the capital of the state of Nuevo Leon. Apodaca is notorious as the municipality with:

- The most successful labor exchange, with 120 new companies, 1 000 new jobs and an increasing of the productivity of over 300%
- 48 industrial parks operating and 6 new ones approved by the Secretariat of Urban Development
- 8 industrial corridors with 1 300 companies and a productive plant with over 180 000 workers, according to data from the Mexican Social Security Institute, also with the best average wage in the country
- Leader in basic infrastructure, foreign investment and job creation
- Home of the first Research and Innovation Technology Park in the country, PIIT.

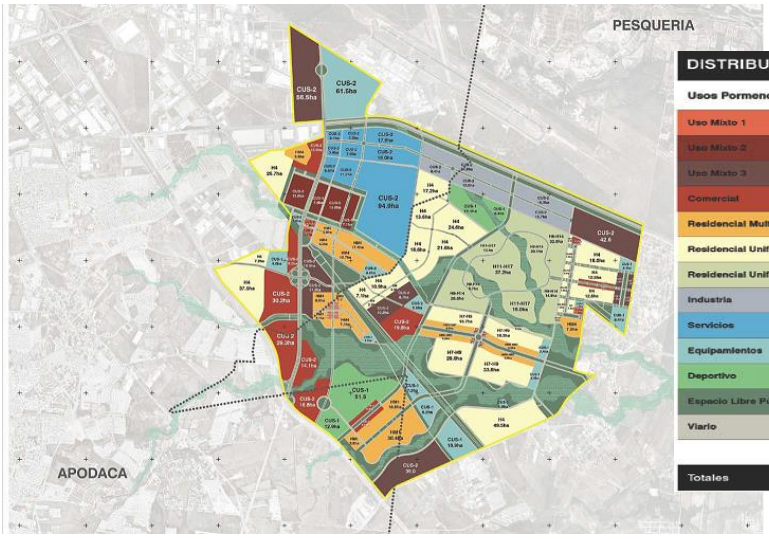
In 2010, 46 new companies were set up in Apodaca; the total investment amounted to 61% of state investment. The main trading partners are the United States and Europe. It is home to 70% of the state industrial parks. It has a significant growth in this area, capturing even more private investment than 23 Mexican states, which certainly favors the creation of new jobs.

As for the type of activity, stands first, the population employed in manufacturing industries, secondly the commercial trade and in third place the population occupied in construction. Activities in electrical industry, mining and agriculture, livestock forestry, hunting and fishing, are not relevant in terms of population size. PITT personnel will contribute to raise the numbers of knowledge workers in the municipality.

The companies currently installed in Apodaca produce 60% of electrical components, 55% of electronic components and 60% of auto parts produced in the State. The annual recruitment investment is $ 700 million USD.

The design of INNOVA city will fulfill the requirements to attract and retain the talented workers at PITT and the entrepreneurs and knowledge workers of the new economy. The master plan is already developed in a conceptual stage, to reach a consensus between all the involved parties (urban developers, land owners and the state and municipal government) on the urban development. In the first stage, Innova city involves an extension of around 2400 hectares (Figure 7)

Figure 7. Secondary zoning proposed for Innova City



DISTRIBUCION DE SUPERFICIES DE SUELO

Usos Pormenorizados	Superficie del Suelo (ha)	% Superficie
Uso Mixto 1	7.5ha	0.3%
Uso Mixto 2	43.5ha	1.8%
Uso Mixto 3	186.6ha	7.7%
Comercial	146.3ha	6.1%
Residencial Multifamiliar	158.4ha	6.6%
Residencial Unifamiliar	356.3ha	14.8%
Residencial Unifamiliar Campestre	206.1ha	8.6%
Industria	80.9ha	3.4%
Servicios	167.1ha	6.9%
Equipamientos	141.6ha	5.9%
Deportivo	89.9ha	3.7%
Espacio Libre Público	574.3ha	23.9%
Viario	249.3ha	10.4%
Totales	2407.8ha	100%

These master guidelines will be bid at international level so the final plan for the INNOVA city competes with the most advanced cities being developed in other countries such as Singapore and Korea. These will also be used to define scope, clarifying the value proposal, identifying and prioritizing specific and inclusive subjects, and help to set up governance that, in collaboration with existing networks, will design the rules and the business model.

INNOVA city will replicate the model already implemented successfully in the PIIT. It will create favorable conditions for the growth of the innovation ecosystem because:

1. It will encourage the development of clusters of innovation, formed by the joint work of universities, research centers and companies that will be established in the city, where the Government acts as a promoter of policies and resources for scientific and technological development.

2. It will promote, because of the community life of the research workers, the interaction and innovation through the strengthening of "cross-fertilization" networks.

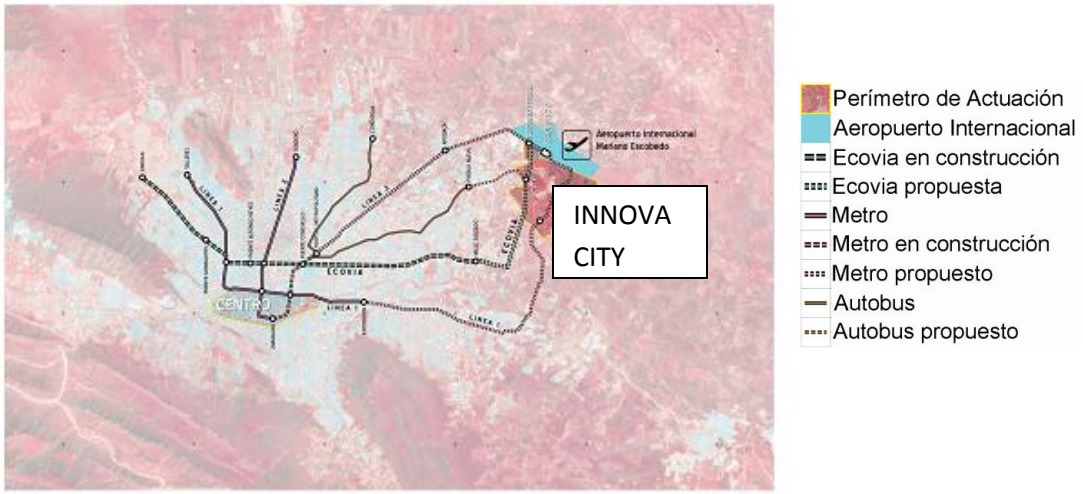
The deployment of Internet2 at the park is already being negotiated and it will influence the IT infrastructure in the city.

The policies and steps taken by the government to establish the Park and INNOVA city as the core of regional innovation ecosystem per excellence in Mexico include this city project, with the promotion of strategic clusters, public-private platforms for soft-landing of companies and the political will to carry out the legal and economic commitments necessary for success.

The urban equipment proposed is aimed at attracting new businesses and major institutions in sectors which Nuevo Leon could come to have international recognition and leadership, such as biotech, nanotech, IT and creative media, medical dispositives, energy and design. New fiber optic networks, regulated electricity, general infrastructure and mobility plan are considered in the master plan.

On the transport side, as connectivity is regarded a potential driver, Innova City will have good links within the city and to other cities by air, rail and road. It is the ability of knowledge workers and businesses to go to other places quickly that matters, whether it is to get to work or to exchange ideas with colleagues from another city or country. Sustainable economic growth depends on investment in transport infrastructure. The access to Monterrey international airport is an essential element in the establishment of the research park PIIT and Innova City, connecting them to the complex web of the international economy. (figure 8)

Figure 8. Innova City Connectivity



The centers and institutions at the research park PIIT will promote projects related to this industry sectors to help them grow more competitive. The knowledge economy highlights the importance of knowledge intensive occupations – i.e. high skill occupations (professional, technical and associate professional or technical) that add value through innovation – and knowledge intensive industries. Being able to share ideas with other businesses, universities and individuals at the click of a few buttons is a critical part of innovation in a fast-moving knowledge economy.

The impact of Innova City in the knowledge economy can be measured taking into account the following indicators as proposed by Jones[4]:

1. Proportion of labour force working in 'knowledge intensive occupations' across all businesses
2. Proportion of total businesses that are in knowledge intensive sectors
3. Proportion of labour force employed in 'knowledge intensive sectors
4. Proportion of the labour force working in 'knowledge intensive occupations' in knowledge intensive industries.

Jones explains that it is important to use these four measures because the theory of the knowledge economy suggests that:

• Knowledge increases productivity in any sector, so having a higher number of knowledge intensive occupations should benefit a city's economy (indicator one)
• a high number of businesses in knowledge intensive sectors (indicator two) should increase economic growth in the city, but if many of the businesses are small, there would be lower levels of growth. This means it is important to know what proportion of total employment knowledge intensive businesses account for (indicator three)
• a city could have a high number of knowledge businesses but most people employed in them could be working in lower skilled occupations, making it less likely this sector would add value to the local economy (indicator four).

The design of Innova City takes into account the factors expressed as the most important for quality of life, according to a survey applied to knowledge workers[5]: employment prospects, low crime levels, good public service provision, clean streets and affordable housing. The table below shows the top 15 priorities for all survey respondents.

Table 1: **Priorities for local quality of life**

1 Quality of local healthcare facilities
2 Quality of local education provision
3 Clean streets
4 Level of violent crime
5 Employment prospects
6 Housing quality
7 Pollution levels
8 Housing costs
9 Quality of policing
10 Green spaces, such as parks
11 Cost of living
12 Level of non-violent crime
13 Wage levels
14 Shopping facilities
15 Scenic quality of the area

[4] Jones, Ideopolis: Knowledge city-regions, p.28, The Work Foundation 2006
[5] Jones,

Knowledge intensity clearly has some benefits in terms of quality of life because it generates economic success, which in turn improves people's quality of life. The growth of the service sector in many cities – and the available amenities that come with that – is often attributed to the increasing affluence of local inhabitants. Investment in public art, creative and cultural industries can also improve quality of life for local residents by promoting greater pride in their city as well as access to new facilities.

The design of Innova City demands a holistic approach that embraces the promotion of economic growth and the protection of quality of life. Innova City is a city striving to be model for a City-Region that focuses not only on economic success but in the social and cultural development of its citizens.

Innova City has all the drivers that are considered critical success factors for cities, according to Parkinson:[6]

- Innovation
- Skilled human capital
- Diverse industries within city, creating a vibrant mixed economy
- Connectivity within city and to other cities
- Strategic decision-making capacity of political bodies
- Quality of life

[6] Parkinson, M., Competitive European Cities: Where do the Core Cities stand?

6. Conclusions

Cities matter in the knowledge economy: they are the places that offer companies, institutions and organizations access to highly skilled workers, affluent consumers and the opportunity to innovate and exchange ideas. Innova City is the model of a sustainable urban development with intense knowledge creation and fostering innovation that drives growth in the state of Nuevo Leon. It will give a template and a framework for the development of other cities in Mexico that intend to develop knowledge-intensive industries and be economically successful and improve the quality of life of its citizens.

The development of Innova City will also be a forerunner for the country regarding policy making, providing the decision makers with an insight into how the knowledge economy works at a regional and sub-regional level, and into the policy levers that facilitate knowledge-based cities and knowledge-based growth.

The design of Innova city follows an holistic approach by developing strategies that link economic development, distributive justice and quality of life. Innova city is not only based on science and technology, although they are critical factors for its economic success. Other types of services and industries must be encouraged to flourish in the city, such as cultural, education, health, creative, even light manufacturing, in a way that there is place in the city to grow a more egalitarian society.

The research Park PIIT is a key partner in the regional development strategy of Innova City, as most of its personnel is the primary target of the urban development, but most importantly, because it is expected that can act as a knowledge transfer office for the companies to be installed in Innova City, helping them to succeed at global level.

Innova city will measure its success using some clear indicators, such as those proposed by Jones on knowledge intensity. The leadership and coordination between the actors of the triple helix model, academy, government and industry is vital for the success of the city.