



TITLE:

Virtual Technological Park, an innovation towards the Federal Institute Identity

1. INTRODUCTION:

The Federal Institute (FI) has about six hundred units spread out in the country. The most of these units are in the small cities where the local market is sometimes inappropriate regarding to the formation given by the Institute. So, in general, many graduate students have two bad options in these small cities: take a local inappropriate job or go away to a big city.

Unfortunately, this reality threatens the FI mission because when it happens the small cities lose their potential young people able to transform the local society. To mitigate this problem, one among the solutions is to create appropriate jobs for these young people. This is an important challenge to be considered by the FI National Network.

In this context, another problem with most of young people is to have a public job as a priority for their professional future, although the market is calling for entrepreneurship. To have their own business is sometimes outside of their professional plans. Maybe it's a cultural problem. In general, the young people that comes to the FI have a lack of initiative and capability to solve problems.

To try to solve these two problems above we propose the Virtual Technological Park, a new concept of Park without a physical space, different of the traditional ones. In this new concept, the FI labs are used for all activities.

We believe it's a FI mission to help the students for their professional career in terms of creativity, initiative, management knowledge and other activities needed to become them entrepreneur even though isn't in their plans. Therefore, creativity, initiative and management knowledge are important skills for any kind of professional activities.

In fact, there are two approaches in this Virtual Technological Park strategy:

- Pedagogical approach: creativity, initiative and management knowledge are very important for graduate students independently if they decide to become the owner of their business, a public or private employee.
- Citizen approach: the knowledge about the set up and management of a company can help the students to become a conscious citizen and to collaborate much better to the society.

The FI must open the students' mind for the perception of this understanding and motivate them to become an entrepreneur, independently of their professional choice. The process of the production and sales of products and services is not easy and evident for the students, and this understanding is indispensable for the company survival. This kind of subject about management knowledge hasn't been developed properly in pedagogical programs by the FI teachers.

2. OBJECTIVES

2.1 General objective

Creation a methodology to develop and manage a Virtual Technological Park based on the Aracati Digital (www.aracatidigital.com.br), an experience taken by the IFCE, Aracati campus. The proposal is to use this methodology as an innovation pilot project for a new pedagogical initiative to be adopted by the FI network. For that, we expect to be supported by the private local, national and international companies and public programs as EMBRAPPII, SEBRAE, Governmental Sponsored Agencies (FINEP, CNPq, FUNCAP, etc.).

2.2 Specific objectives

- 1) Elaborate a study about the Aracati Digital experience in terms of its social and economic impacts and other technological parks available in the country and abroad, their successes and fails.
- 2) Define a Virtual Technological Park as a new concept, and highlighting the advantages and disadvantages comparing it to the traditional Parks based on physical spaces.
- 3) Prepare a Strategical Plan based on the innovation management concepts, using IMP framework.
- 4) Describe a new methodology composed by the steps able to develop and manage a Virtual Technological Park.
- 5) Elaborate a business model to involve the FI community (students, administrative and teachers) and the entrepreneurs about the importance of the Virtual Technological Park to the FI mission and the socioeconomic advantages for the local society.
- 6) Prepare an installation and operation Guide of the Virtual Technological Park based on the IMP innovation framework.

3. PLAN of EXECUTION

In order to achieve the objectives above, we propose:

- 1) Visit the following case studies:
 - Porto Digital (<http://www.portodigital.org>),
 - São José dos Campos (<http://www.pqtec.org.br/>),
 - Sapiens Parque de Florianópolis (<http://www.sapiensparque.com.br/>);
- 2) Perform the partnership with the sponsors mentioned in General Objective: EMBRAPPII, SEBRAE, Governmental Sponsored Agencies (FINEP, CNPq, FUNCAP, etc.).
- 3) Install new cell productions based on the lab models that work properly in the Aracati Digital experience.
- 4) Training new cell productions using the installation and operation Guide of the Virtual Technological Park based on the IMP innovation framework.
- 5) Make a marketing plan for the consolidation of the Virtual Technological Park.

4. STRATEGICAL PLANNING

4.1 PESTAL

4.1.1 Political Aspects

- **New Elections in the country:**

CURRENT SITUATION: In Brazil when we have national or regional elections and change of political parties running the country many governmental programs don't continue. For instance, the Virtual Technological Park project depends on the programs involving strong relationship between FIs and the private companies, as proposed by the EMBRAPII strategy. Unfortunately, this is still a cultural behavior in Brazil that we consider as a challenge for the education system to be changed.

TENDENCY: Nowadays, the new vision and perception about the innovation concept is spread out in all private and even more in public companies worldwide. So, it is easier to conclude innovation concept that support the relationship with the market has a big chance to remain, independently of the political ideology running the country.

- **Lack of an integrated internal policy of innovation**

CURRENT SITUATION: Supposing the FI Superior Council decides to approve an innovation policy to improve the integration of the Institution with the society. For that, this council, through the FI main board, proposes to apply this policy in all FI units. Nowadays, each unit is a little bit independent to adopt or not the policies that are out of the FI regular education statute, because each general director is elected by the local community. If this is good to the FI democracy practical, on the other hand is more difficult to introduce the innovations in the Institute.

TENDENCY: We believe the adoption of an integrated internal policy of innovation is a fact in all units of the FI network, independent of the political vision of the general director because the unit that does not adopt the innovation tendency take a risk to fail in terms of the local administration. There are many opportunities that a unit can miss if it keeps isolated of the society and its market.

4.1.2 Market:

CURRENT SITUATION: The health of the Brazilian economic situation has been very unstable in the past years. One of the consequences of this instability is the fragility of the market for attracting international investments. The result is a low growth rate of our economy. The Virtual Technological Park is a project oriented. So, it depends on the current economy.

TENDENCY: Recently, the Brazilian economy has given signs of growth. We expect the Brazilian economy may recover its growth rate because we recognize a better maturity of the society, mechanisms of the political control despite the inefficiency of current political class.

4.1.3 Social Aspects

CURRENT SITUATION: The most of the FI students come from poor families, especially in the small towns far from the capital. Sometimes, these students leave the course before ending it. Their socioeconomic situation makes them to find a job in order to help their family. Associated to this financial problem, there is another higher problem: the drugs have increased in all the Brazilian cities.

TENDENCY: Unfortunately, different of the economic situation, the social problem has gone up. The Brazilian education model has failed in both problems: to keep the students at school, as it happens in the developed countries, and about the drugs spread out among young people.

4.1.4 Technological Aspects

CURRENT SITUATION: The Information Technology seems to be the one that more affect the youth daily routine. The new generation born in this century is distinguished by the excessive use of smartphone associated to its social medias.

TENDENCY: The studies performed by the social and education researches point out to the influence of the information technology tools in young people lives, added with artificial intelligence structures.

4.1.5 Environmental Aspects

CURRENT SITUATION: Nothing special to remark, except the common proceedings attached the conscious to treat properly the nature: garbage, selected garbage, recycling, energy economy, etc.

TENDENCY: The conscious awareness campaigns are more often at schools, on the news and by the government institutions.

4.1.6 Legal Aspects

CURRENT SITUATION: As the Virtual Technological Park is oriented by projects involving FI and the private companies, it strongly depends on the legal aspects for this relationship.

TENDENCY: The good results got with the first experience inside the FI labs with EMBRAPII strategies seem to be enough to guarantee the continuation of the relationship between FI and the market.

4.2 BCG

4.2.1 HIGH sales growth rate and LOW market participation

- Development of web solutions (front end and back end) in all modern platforms for local market

4.2.2 HIGH sales growth rate and HIGH market participation

- Development of web solutions (front end and back end) in all modern platforms for the international and national market
- The help of the governmental programs to initial support of the Virtual Technological Park

4.2.3 LOW sales growth rate and LOW market participation

- The internal fake image built by the colleagues about the target and the results of the Virtual Technological Park.
- The prejudice of the market about the technical competence of the labs in the FI in the small cities located in the underdeveloped states.

4.2.4 LOW sales growth rate and HIGH market participation

- Development of solutions involving modern technologies (Artificial Intelligence, Internet of Things - IoT, Big Data, Web Semantic) for the international and national market

4.3 SWOT

4.3.1 Strength

- Believe the school is truly a space for the transformation of the society through the good education, awakening their students to become the actors of this transformation.
- The commitment with the FI mission as a real mechanism able to give the opportunities for the students, preparing them to face the society challenges.
- Consider the tradition of the FI network into the solution of the real society problems, due its different trajectory from the formation of the basic professional to the high-level research in all the areas.
- Assume FI network has a mystic identity able to influence the future of each student and, as consequence, the nation.
- The need to have strategies able to motivate the former students to stay in their cities, helping to mitigate their social, cultural, technological and economic problems.
- The FI network has a recognized group of teachers, administrative people and researchers able to perform a high quality of products and services for the market.

4.3.2 Weakness

- Some teachers and administrative employees don't understand the FI identity, its mission, and its capability to change the society. When the new employees are hired they are influenced by this behavior.
- In general, the FI campus doesn't have an efficient marketing strategy able to be known by the society and collaborate with it in many. This situation interferes in the close relationship with the market and, consequently, difficult to catch projects to keep the Virtual Technological Park.

4.3.3 Opportunities

- In terms of technological formation, the FI network is known as an institution of excellence. So, the market is more accessible to our professionals.
- In terms of education, the FI network has (still) a good reputation in the society, in the market and the public and private institutions. This image makes easier the participation of our students in management position.
- The government mentality about innovation is fundamental to keep strategies to grow the development and research involving students towards entrepreneurship and start-up concepts.
- The existence of programs like EMBRAP II are fundamental for the incentive of the creation of the mechanisms like the Virtual Technological Park.

4.3.4 Threatening

- Unstable economy seems to be the first issue that can threaten the creation and maintenance of a Virtual Technological Park.
- A conservative policy in terms of Federal Innovation Law that denies the recent progress achieved, making it harder the relationship between the FI and the private companies.
- The current model of internal elections for rector and general director that sometimes uses the bad procedures used in the regular political elections not recommended for a school. Sometimes, groups that support a candidate receive privileges from the winner.

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Virtual Technological Park:

www.youtube.com/watch?v=qszVROMUpQU

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