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**From territorial intelligence to competitive & sustainable system**  
*Case studies in Mexico & in Gafsa university*

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**Abstract:** Can we consider, for two separate situations, territorial intelligence approach in common, as a model, at the beginning of a National (Mexico) and internal (Gafsa) System of territorial sustainable Intelligence, to be built? We shall discuss it, after a brief analysis of the state of development of this area in Mexico and in Gafsa University (Tunisia). This paper presents theoretical basis to define, based on system concept, a National System of Competitive & Technological Intelligence and, more practical, on implementing an internal system of I.T into a Tunisian University, based on constructivism approach.

## **First case study: a territorial intelligence proposal onto the way of a national system competitive intelligence**

This part presents the theoretical basis to define a National System of Competitive and Technological Intelligence. It is built from analysis about using notion of systems within innovation studies as well as on the relationship between this latter and competitive, technological intelligence. In addition, a model of application on the sphere of territorial intelligence is discussed, including a brief analysis of the state of development of this area in Mexico.

### **1 Ex ante: territorial Intelligence**

The development of citizenship, democracy, social equity, as well as social and economic progress, is the main objectives of territorial development and territorial governance.

The systems of territorial intelligence need using traditional transmission processes of information through Tics as, Intranet, Extranet or internet Web sites, library, systems of geographical information and method analysis of data

*“The Territorial Intelligence can be compared with the territoriality which results from the phenomenon of appropriation of resources of a territory; it consists in know-how transmissions between categories of local actors of different cultures.”* (Bertacchini, 2004).

In this context, the CAENTI "*Coordinated Action of the European Network of Territorial Intelligence*" is a project financed by the U.E. within the framework of the "6th Research program of Technological Development" which has for objective integration, dissemination actions of current research about tools of territorial intelligence to give them a European dimension.

Fifteen partners relevant of 8 countries are included into CAENTI which began on March first, 2006 for a three years time. The framework research is fulfilled of three research principal activities contributing at the integration of researches about tools of territorial intelligence: 1) the activity tools part of CAENTI, 2) the methods pool, and 3) the governance activity (CAENTI, on 2007).

By the end of the CAENTI project, within the framework of the 7th Program of the European Union for Research & development, will dash the ENTI "Territorial European Network of Intelligence" with a future line of planning the constitution of a *network of excellence*. This project, which will be called for, is planned within the framework of the second call in 2009. Therefore it must be right now prepared because it implies, the extension and the intensification of the Research excellence, the definition of a project joined of additional activities, training, publishing and transfer (ENTI, 2007).

### **2 The notion of system dreaded through publications on technological innovation**

The concept of system was largely covered into the field of studies related to innovation particularly, when three authors (Freeman, 1987), (Lundvall, 1992), (Nelson, 1993), inserted this keyword into a wider approach '*the notion of national system of innovation*'.

These have suggested a global frame analysis, through holistic approach, to consider how understanding interactions between separate elements, in appearance, when they are engaged into innovative processes.

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In spite of some problems, as a relative theoretical ambiguousness (Edquist, 2005), this general frame knew a surprising broadcasting and a miscellaneous of its aspects were adopted by uncountable specialists, policy analysts, international organizations, or adapted as starting point for a similar fine-tuning such as the sector-based and regional systems of innovation and the technological systems (Breschi & Maleaba 1997, (Carlson 1994), (Cooke et Al 1997)

However, thanks to theoretical ambiguousness mentioned previously, this distribution around the notion of systems of innovation implied very varied performances.

At the origin, we can underline that notion of systems cannot be dissociated of studies on innovation itself and it can be found in the own evolution life of the concept of innovation; particularly, when interactive models of this process have been developed, in opposition to the dominant linear vision, because incorporating influences, actions, interactions of a large number of factors into the innovation process.

According to Andersen (1994), this association began during the 70<sup>s</sup> thanks to the works of some researchers, around Christopher Freeman and the research center "Science Policy Research Unit" (SPRU).

These performances were maybe more connected to the notions as social networks than with systems, because this last one has more complex phenomenon than simple interaction between elements.

In every case, it is clear that these premature associations between notions close to systems and to innovation implied conceptualization of this phenomenon as a not linear process which inserts the coordinated participation of actors' large number.

On using the concept of systems of innovation, by the end of the 80s and at the beginning of the 90s, involved an extended research area. The key role played by agents' networks in the innovation process have pushed ahead institutions in the front line joining to, in a certain direction, some aspects of the economy evolutionist current.

These new performances, discussed in a vast way, did not bring to us to a unified notion of innovation system probably because the main actors belong to various research traditions in which, maybe, the common denominator was affinity with Schumpeter thesis.

However and fare away similarities between the opinion suggested by Edquist (2005), we can add that the main original interpretation of systems of innovation was dedicated to explain national plans of growth and economic development read, through the analysis of interactions between actors and participating institutions to the networks of innovation.

Also there was an implicit and, sometimes explicit, orientation of the innovation policies more clearly explained in the Lundvall & alii version, defined in terms of institutional learning (Dalum and Al, on 1992).

We could say while this original interpretation called an evolutionist frame to explain the innovative development in national contexts.

As a national context is made of a basic structure with established agents, institutions and interactions, comparison with a system was easy to make and relate all these national components to national innovation systems.

In spite of an orientation towards general policies of innovation, none of the original interpretations included an effective fine-tuning version of systems of innovation. This one was fundamentally developed by the OECD which adopted the notion since the end of the year 80 (OECD, 1992); David and Foray, 1994).

From this point follows what we can name generalize interpretation of innovation system. It means that the specific national systems can be enough described the enumeration of main components, agents, institutions which participate in the innovation process and analysis of its most characteristic interactions.

From the question «How these interactions generate winning innovation systems ? », gets loose identification of " better practices", fundamental components which then act as guide for institutional and organizational learning within the international environment.

This wide-spread performance was improved in many OECD reports (OECD, 1994, 1999, 2002) as well as in studies carried out by abroad organizations as the European Union (Edquist and al, 1998) ; (Soete & al, 2002), and it is normally the main one which is used in large number of studies published into the literature referring to innovation systems.

Until now, we briefly saw revised both main aspects of performance referring to technological aspects in innovation, the most wide-spread and original vision; these refer to what we could name excellent innovation systems (major or first level).

If we try to improve a little more the concept, based on the fine-tuning of systems, it would be possible to conceptualize the third performance one corresponding to innovation systems of second order (medium level). It would consist of mechanisms, or systems, specifically designed to promote creation and broadcasting economically useful knowledge.

We find the main difference between this third performance and the previous in the fact that agents and their interactions, which compose the innovative processes, establish a reliable, complex and multidimensional system which has specific purposes and comments (Lopez-Martinez, on 2006).

The analysis in detail of this third performance exceeds the target of our present contribution, but it is necessary to say that model of a competitive and technological intelligence system we shall discuss then, is in an intermediate point between the first level, (major one), system and the second one, (medium one).

### **3. National system of competitive & technological intelligence and the situation in Mexico**

Then, from starting notion of system which aims at the durability, we underline that functions of innovation and intelligence are confidentially bound, to support productive activities which guarantee system survival, we present a short description of elements which establish a National System of Competitive & technological Intelligence in agreement with the model proposed by Rodríguez (2005). We shall also point out conditions of its development in Mexico.

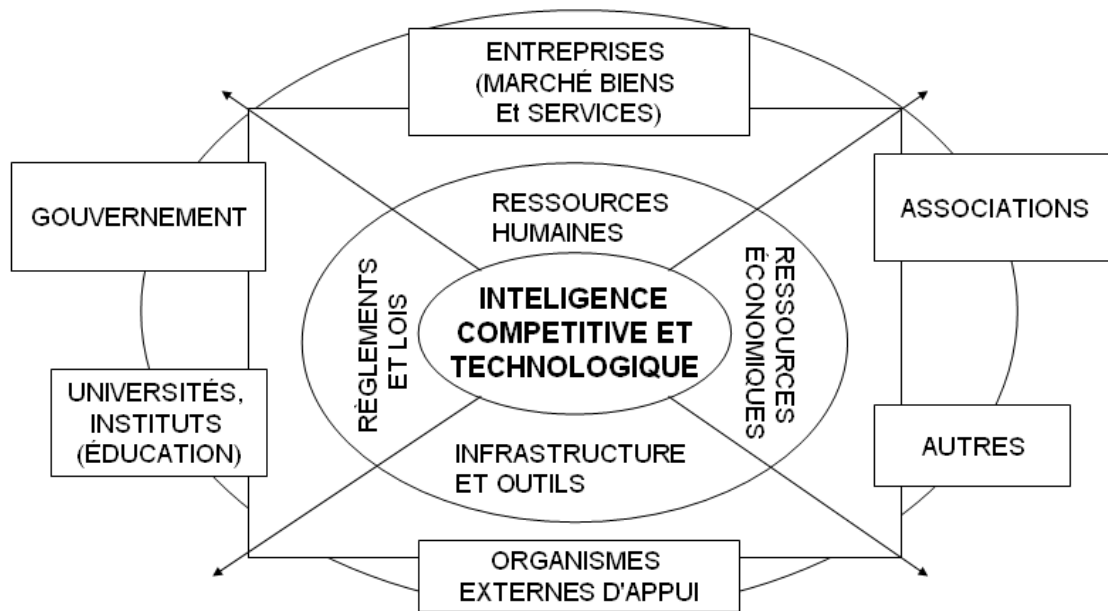
The SNICYT is defined as: all the actors who act with each others in the national environment during the process of information conversion towards a strategic knowledge through effective intelligence process cycle operation.

This system includes two categories. The closest to the nucleus is the most important and it is made of: human resources (intellectual assets), economic resources, infrastructure and tools of support (data bases, methodologies, software of treatment, information analysis, and institutions which define, plan kind of operation.

While the second category includes: government, universities institutes and various other agents engaged in education, companies of goods and services, non profitable organization, services abroad and other actors as group of researchers, agencies, other organizations.

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Source: Rodriguez, M.( 2005)

Following, the second category will be analyzed in details by underlining some aspects of the international situation by including Mexico.

### **3.1. Government, plan & action**

For several years, some governments, throughout the world, recognized the activities of competitive and technological intelligence as fundamental for economic development of a country. Let us mention the case of Japan, which is considered as a country pioneer and leader in competitive intelligence (Fuld, 1995; Herring, 1992; Kodama, 1992; Strap there Marti, 1995). Intelligence activities of this country were encouraged since the Japanese Constitution statutes of 1868, which dedicated one of its paragraphs to "*Look for the contemporary knowledge all over the world to strengthen foundations of an imperial power*" (Rouach, 1996).

In France, we can mention the tenth report of the C.G.P advisory committee (*Information & Competitiveness*, 1990) where is marked the strategic character of professional information inside the French approach by recommending a "*social & technical device of technological attentiveness*" (Mayer, 1990). Furthermore in the 1994 report, we already speak about "*economic intelligence*", which is defined as: "*Set of actions of research, treatment and broadcasting, with the aim of its exploitation, of useful information for economic actors*" (Marten, 1994). This report is considered as an important reference in the domain".

More recently, we can refer to Jean-Pierre Raffarin's initiative, former French Prime Minister, which have gave a parliamentary mission of evaluation of economic intelligence in France to Bernard Carayon, who committed an official report in return, named : "*The economic Intelligence, competitiveness and social cohesion*" (Carayon, 2003). By consequence, a senior official of economic intelligence was appointed and some initiatives were mainly spread within framework of territorial intelligence.

#### **1.1.1 Gouvernemental entities of Support.**

For example in Japan, the Japan Patent Office, Ministry of Economy, Trade and Industry, Japan Science & Technology Agency (JST) was merged in 1996 between Research Development Corporation of Japan (JRDC) and Japan Information Center of Science and Technology (JICST), etc...

In Mexico, even if there is some more things to be made. However, there are various state departments which support scientific and technological activities and which can also take a strategic role to measure and canvass the competitive and technological environment.

We can quote the National Council of Science and Technology (CONACYT) which has for mission to impulse and to strengthen the scientific development and the technological modernization of Mexico by training high-level human resources, the promotion and support of specific research projects and the broadcasting of the scientific and technological information (CONACYT, on 2003). This department is also responsible for the researchers' National System whose general objective is to promote development of activities to strengthen its quality, its progress and its efficiency (CONACYT, 2005).

Another organization which should also occupy a key role in the manner to develop watch activities of the technological environment (as in the case of France, for example) is the Mexican Institute of the Intellectual property (IMPI), a public decentralized department with a legal personality, appropriate background and with legitimate authority to administer the system of industrial property in Mexico (IMPI).

Finally, in Mexico many other departments exist, and could play a more important role on running activities about measures of the environment, for example various departments of State (Economy, Foreign office), the Bank of Foreign trade (BANCOMEXT), etc.

## **1.2 Universities & Other Actors of the Education**

Various programs were developed in the world for training to this discipline, since PhD, masters and licenses (for example Mercyhurst College in U.S, Aix Marseille university in France, University from Stockholm to Sweden) as well as certifications and diplomas.

In Mexico, education in this field is still at its beginning, but certain efforts went in this direction. For example at the beginning of 2000 the programme built up itself in the ITAM (one of the main business schools of this country) «Systems of Competitive and technological Intelligence» (Rodríguez, 2000), who was launched for programs to the level Master (information technologies and businesses) and this day this programme is always operating.

Another institution, where this domain was introduced little by little, is the Technological Institute and Higher education of Monterrey (ITESM). It is about a private institute with more of 30 campus in all the country, besides offices in Europe, in Asia, in North America and in Latin America.

In 2001, the Competitive and technological Intelligence for Innovation branch built up itself in the Center of Design and Innovation of Products. Various training programs have been developed for students (License, Master) and entrepreneurs, with an office —advice & research-. At the present day this branch is located in the center of Quality and of Factory (Rodríguez, on 2007).

## **1.3 Organisations**

Companies are taking on a fundamental role in this System by adopting methodology and also developing new methods of information collect, analysis, and broadcasting. In this way, under the executive frame of the National Intelligence System, impact goes beyond the own borders of company environment, external and internal, transforming company's management, prospective in general, and so development of interactions.

On the other hand, when we relate to companies, it does not mean that each of all is individually running its own intelligence activities without sharing background with each others. In Japan for example, culture, actions of government support with appropriate organized structures (for exple, *keiretsus*, *sogo soshas*), have facilitated the fulfilment within companies, by sharing research actions, collecting, analysing eminent information so obtained. In Mexico, a few of them are engaged in competitive intelligence program and in the small-médium companies, we are at the beginning point.

## **1.4 Non profitable organisation**

Various associations exist in the world connected with this domain, for example, the French Association for the Development of the Economic Intelligence (AFDIE) The French Society of Bibliométrie Appliquée (SFBA), Competia (Canada) etc... We shall quote in particular the case of, SCIP, Society of the Professional Competitive Intelligence which appeared in 1986 in the United States and counts more than 3500 members distributed through out the world.

The role of this association was very important; among its activities we list organization of price, lesson, international matches, congresses, conferences and promotion of publications in this domain.



To strengthen its presence, the SCIP has more than 50 branches in the world, two in Mexico, but their presence here was not asserted as in the other countries, the interaction is thus made in a more direct way with the headquarter in the U.S.

### **1.5 External entities of Support**

It is also necessary to consider interactions which occur outside. Through agreements or strategic alliances between companies, universities, N.P.O of the other countries it is possible to combine efforts and to realize joint actions for measuring, analysing the external environment. It goes beyond sharing material resources; it is a question of strengthening also immaterial, intellectual assets to be connected. For that purpose, it is required to establish working networks which, besides common purposes, look for generating new capacities and which add a value to his group.

### **1.6 At last but not the least**

Last element to be indicated: during operation of the system of competitive and technological intelligence, other actors also interfere, non formal associations, agencies, organizations which can accelerate and strengthen this activity.

To end, we have to indicate that our proposition could be found inside category of a System where there are not individual actions which have an impact engendered between them. Effects exist under various dimensions which can promote or prevent stream, conversion and assimilation of information until the strategic knowledge.

In summary, all these elements should act through establishment and durability process of synergies set up between various actors. For such a result, we need shared objectives, encouraged relations between various organizations at a local, international, private and state level. We put in front of our research that territorial approach, summed as Bertacchini & al described from 2000 to 2007, can be, ex ante and ex post, resources for such innovation management to sustainable development.

## **2. Conclusions**

Incorporation, using of fine-tuning of systems has measured, substantial advantages for explanation of phenomena, and for building a competitive & collaborative environment. In particular case of productive activities and innovation process, this incorporation finds the origin in the same systematic properties of the innovation. It is taking advantages live in a complete explanation of complex phenomenon, which allows on, one, hand global diagnosis, identification of master agents & valuable interactions.

And on the other hand, design of appropriate mechanisms, steered to improve agents' conditions or their interactions, increasing the general progress of the system. These establishments allow then to identify better practices in the international environment which, without being models to be followed, represent the domains of institutional learning which must be adapted to the particular conditions of every specific case.

In this way, under global perspective of the National System of Competitive & technological Intelligence, acuity of this domain takes on various nuances. At the macroeconomic level, it emerges the potential impact which it has for innovative development of the country in general through various actors who compose it.

In this context for some years, it became established, that under new paradigm of innovation, conversion of information in knowledge, is a determining competitiveness factor but not only

at the level of a company but at the level of a whole nation seen as a meta-organisation feed of micro, meso and macro projects.

While innovation processes can be conceived as process of transformation from information in reference, to customers' needs, market demands and technological progress, by generating the knowledge which is expressed through creation of products and new or improved processes (Kerssens-van D.; Weerd-N. and Fisscher, 1996). It is making possible to deduct then, that activities of Competitive & technological Intelligence acquire a fundamental importance in the innovation not only for a level micro but also macro economic.

Finally, it is important to add that countries less developed in this domain, as Mexico, can obtain big earnings in its competitive development and innovation, by means of incorporation political innovation systems as well as from analyses, adaptation of the profits of institutional learning in other nations. Particularly because in the domain on which we based ourselves, complete vision of Competitive & technological Intelligence substantially contributed to processes of innovation, technological development in the developed countries.

### **Second case study: a local project within the University of Gafsa (Tunisia) under constructivist approach**

This second part of our communication takes support on researches led within the university of Gafsa in Tunisia. Our convergent efforts are working towards implementation of 'one to act professional' of multidisciplinary and intercultural nature shall revealed on to the form of an observatory.

Having been chosen as a reception potential center as implementation of the University Observatory and being aware of efforts to display it and required means, to make a success of this project, The University of Gafsa presents down there in this report its strategy and means of action to set up its observatory.

The implementation of a process of Territorial Intelligence (I.T) within the University of Gafsa should operate a specific hierarchical organization and leads many changes in the working customs of which the purpose to help in the decision-making process & cycle.

We shall show in this communication our ambitious experiment supported by experts of the European Commission and we suggest considering Observatory of Gafsa's University as a Territorial Intelligence process on our territory. On this fact, What are our objectives, our means and with which strategy we are going to practise this voluntarist policy ?

#### **1-Complete overview, Territory, Observatory.**

The university of Gafsa is a young university which has been created in 2004, its creation denotes interest of Tunisia, in some new era of decentralization, about higher education in order to show major role of the University attached as locomotive of radiant development.

Decided to be always opened on needs renewed by its studies and requirements for development of the Southwest region, the U.G's aim used to take more advantages of its work and diversifying its services. For insuring this role several devices were operated, in application among others, the Observatory.

#### **1.1. Définition**

The UG's Observatory is, as we can name it, a one to act professional of multidisciplinary, intercultural nature which answers to fundamental objectives of higher education as well as in requirements of various professional groups, putting together actors of diverse geographical parts, economic, cultural previous history. These communities attempt to build a virtual space and use common tools of work and exchange.

### **1.2. University's goals**

In relation with the experimented skill of our young university in particular in the internal and external evaluation, we propose the following objectives:

- promote a culture of evaluation of entry into employment,
- strengthen opening of the educational system on its socioeconomic environment,
- appreciate needs of the working market qualification,
- reducing the distances between both educational and productive systems.

### **1.3. Strategic path**

The UG's reflection on the forward-looking function of observatories allowed to envisage the Observatory development, conceived initially as a technical tool of treatment of university datum, in a strategic tool of national policy of the forward-looking analysis in higher education.

This evolution allows to think, later, at the merger of the BEPP and Observatories, in a single help assistant to decision, connected with the cabinet of the ministry which could be entitled Center of Study and Forward-looking for Higher education (CEPS). It would include functions of, studies, inquiries and the forward-looking evaluation.

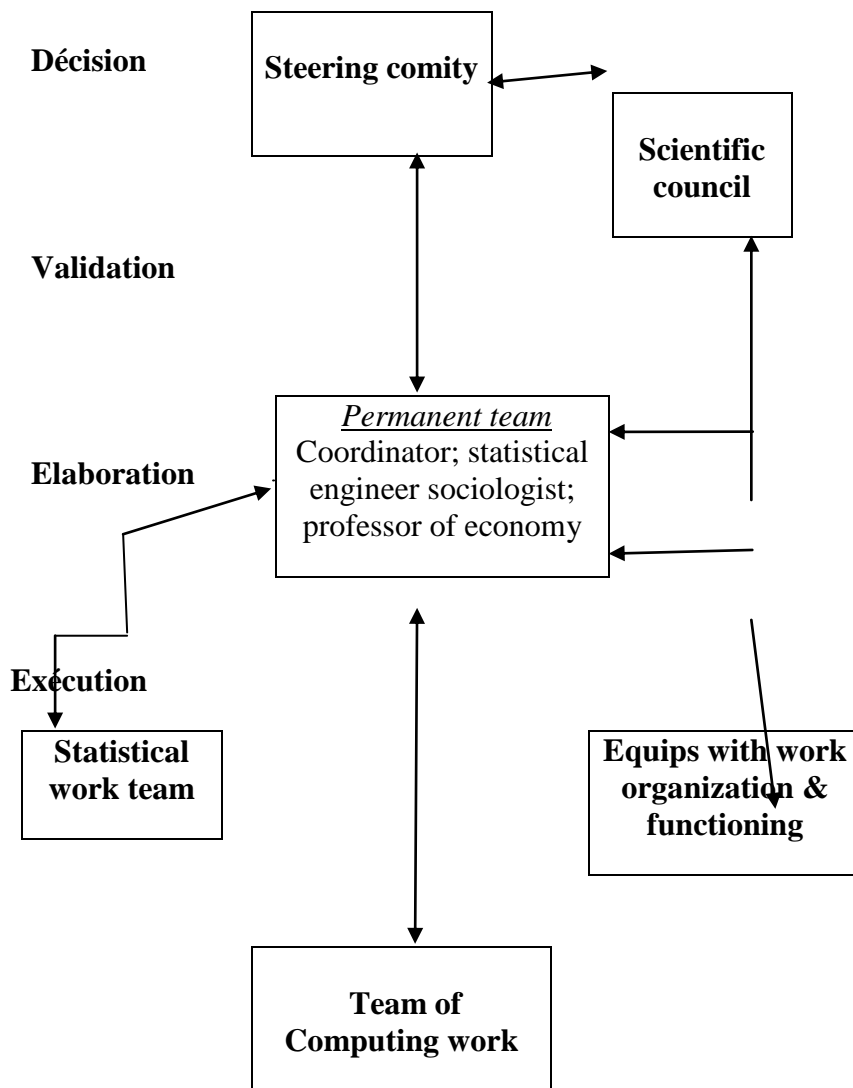
This Observatory will be organized according to the following seven principles: decision, decentralization, partnership, coherence, objectivity, commitment, and quality.

- Principle of decision:  
the observatory is under the full and whole responsibility of the president of the university who is the decision-maker.
- Principle of decentralization:  
the observatory represents decentralized level by the national BEPP. It is collecting of decentralized databases from establishments.
- Principle of partnership:  
the observatory is connected to all regional actors acting with socioeconomic environment and to all actors implied on university information system (SINUS) and the management system of the higher education (SALIMA).
- Principle of coherence:  
observation is integrated, in its starting up step, "*under relations management with environment and professional integration and of the training continuous*" article 16 nouveau du décret n°23-2002 (la décision du MES) – ( cf. rapport de mission d'avril 2006).
- Principle of objectivity:  
the observatory is equipped with structures of advice and with expertise assessment guaranteeing objectivity in results performance.

- Principle of commitment:  
Every socioeconomic or institutional partner is appointing a corresponding person in charge who participates in various structures organized by observatories.
- Quality principle:  
The works of observatory respect working procedures which join a quality step.

#### 1.4. Organization chart

The U.G's functioning requires creation of structures of, dialogues, management, analysis and definition rules of functioning according to the following organization chart:



## **2- New Socio-Technic device of Information & Communication**

Currently, we can thus identify actors who take part in creation of the observatory such as socio-economic partners (BTS, UTICA, API, and District Business), the companies, the university, Association of the former graduates

All these actors are supposed to make circulating flows to achieve centre objectives such as information, coordination, communication, training, valorisation gained experiences and to put available data base composed of project ideas (valorization of research), qualifications companies needs (non satisfied employment offers), students' skill (C.V management, repertory of trades, companies, talks on line ..

Gathering all these actors from various origins geographical, economic and cultural, these common *space* and tools run of work and exchange, undertaking their activity in the field research in social sciences. These communities melt their programs and methods of social in a structure of decision-making aid as regards formation, insertion and opening on environmen This project seems to be an intelligent process as regards operation, information treatment and diffusion. Our territory which must evolve in its culture and reach a true mutualisation of information within a territorial intelligence process whose Bertacchini (2004 & 2007) suggests the following definition: "*one can regard the territorial intelligence as an informational, anthropologic process, regular and continuous, initiated by local actors physically present and/or distant, who transform resources of a system territorial into project capacity*", (Bertacchini 2004)

The Territorial Intelligence process that one can describe, as step of information and territorial communication, finds here its full justification in assistance brought to decision-making as regards training, insertion and opening on environment.

It is thus necessary to underline heuristic character of this approach and that on an ontological level; we are referring to pragmatic of territory and its actors, of the researcher in his relation with society (Bertacchini, Penalva, 2006)

Lastly, we believe useful to specify that territorial intelligence could not be limited and reduced to a watch step process, relative rather of a '*Bottom up*' project logic which will try to spread elements of a pro-active attitude at risks and ruptures which can affect the territory (Herbaux, 2006).

## **3.Setting up a Numerical Communication device**

This numerical communication device will be made of three sub features. Firstly, on the "academic" forms of scientific paper: publication of articles in reviews at reading Comity, presentation of communications in scientific conferences, etc. Secondly, during training seminars, targeted in the OUG on contexts of teaching. Thirdly, on its Web site which has been just created.

In this way, the OUG answers is facing major concerns of its financiers. For doing it, members of Osberatory learnt communication strategies, to add value to actions by shaping and structuring in a better way their publications.

It resulted from it, a better targeting, a more precise information, a far more frequent updating of shown documents and broadcasting improvement" of the scientific results obtained.

#### **4. Conclusion of the second part**

The Observatory of University of Gafsa, this ambitious project, is leading by a strategy, based on a territorial organization, information systems, social networks, knowledge production processes around common spaces of exchanges.

This 'one act project' can be shown, from this particular point of view, as one of a most decisive components of a Territorial Intelligence constructivism process (Bertacchini, 2004; Girardot, 2004) whom scientific communities networks are, at the same time, actors and the more efficient vectors of broadcasting.

#### **General conclusion**

Onto these two case studies and, as announced in summary, we would have had as initial intention to show if, when actors' project were referring to territorial approach, they have spoken with '*the same background*' at the beginning or an already started project. We are able to make an answer to the main running question: no. It appeals to justify the negative point of view mentioned above.

We have to precise what we called '*the same collective background*'.

In other words, could we considered a territorial intelligence approach, announced for a project, as acquired, at the beginning of a National (Mexico) and internal (Gafsa), System of territorial sustainable Intelligence, to be built? In fact, was it the same approach we are considering it into the CAENTI network? In other words again, are we speaking onto the same territorial intelligence manner?

We were discussing it, after a brief analysis of the state of development of this area in Mexico and in Gafsa University (Tunisia). This article has firstly presented theoretical basis to define, based on a systemic concept, a National System of Competitive & Technological Intelligence and, more practical, on secondly implementing an internal system of I.T into a Tunisian University, based on constructivism approach.

The first case study at a national level, in Mexico, proposed to set up competitive intelligence and sustainable development approach from the analysis about uses of notion systems within innovation studies as well as on the relationship between this latter territorial intelligence with competitive intelligence.

The second case study communication has taken support on researches led within the University of Gafsa in Tunisia. We have mentionned why convergent efforts were working towards implementation of '*one to act professional*' multidisciplinary and intercultural nature shall revealed on to the form of an observatory.

It acted to explain how, various professional groups, putting together actors of diverse geographical parts, economic, cultural previous history, could joigned themselves and co-constructed, through a specific organization chart, in the goal of regional development.

In that case, it was a project led by a university, i.e. in higher education field, decided to be always opened on needs renewed by its studies in order to take more advantage of its watching attitude and work.

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We have mentioned these communities attempt to build a virtual space and use common tools of work and exchange. Thus, we have seen physical and virtual territories in action and in such a territorial intelligence approach as we have considered in CAENTI.

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