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Creativity and Knowledge Management

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STRUCTURED ABSTRACT:

Purpose - Innovation within companies seems today mandatory and vital. Within the general framework of Knowledge Based Innovation, which is an approach of innovation related to the strategic capacities of the company, a stimulated creativity for incremental innovation in a high-tech domain is analysed. An experiment in Thales Company was performed to prove operational feasibility and validate theoretical concepts.

Design/methodology/approach - The fundamental assumption is to identify knowledge creation to a process of intellectual corpus evolution process, based on Knowledge workers' creativity, inside the organisation but in interaction with their environment. Their creativity is stimulated by the critical analysis of intellectual capital, which leads to the creation of new technologic trajectories in continuity or bifurcation with existing trajectories. Based on a systemic model of intellectual capital, the analysis of the dynamic of knowledge has shown that the increase of value of intellectual capital may be described as an evolutionist process.

Findings - An experimental means is set up to validate the assumptions coming from the analysis of intellectual capital, on the process generating new items for the intellectual capital, on the regulation of this process by a community of knowledge workers and by the integration of the results into the value chain of the organization. From a theoretical point of view, it shows that creativity is an evolution process of an existing knowledge capital. A triggering event of that process can be obtained as a cognitive stimulus built from an historical representation of the concerned knowledge capital, which models the technological trajectories of the firm. This process involves, individually and collectively, a set of actors implied in the construction of the knowledge capital, and in its strategic evolution in the firm. From an industrial point of view, the experiment leads to a feasible methodology for stimulated creativity that can be deployed in the company.

Research limitations/implications – Main limitation comes from the inventory of Intellectual Corpus, based on individual interviews with experts about their inventive tracks during the past decades.

Practical implications – The described experiment represents the experimental part of the research project presently carried over by the author as a PhD candidate, while going on taking care of his technical radar expert activity within his company without any link with Knowledge management.

Social implications – Social implication includes emphasis on the projection of experts' inventive tracks onto the Knowledge map of the organization

Originality/value – From a theoretical point of view, this paper links Intellectual Corpus and creativity: creation leads to Intellectual property Rights generation. From an empirical point of view, this paper can be seen as a testimony from inside during action research project.

KEY WORDS: Innovation management, intellectual capital, knowledge management, knowledge-based innovation, stimulated creativity

1. Introduction

1.1 General definition of Knowledge Based Innovation

In its more general form, Knowledge Based Innovation represents the innovation driven by the strategic capabilities portfolio of the company, in two different ways. The first way consists in driving the strategic capabilities portfolio as a function of the company environment seen as an eco-system, including competitors, partners, scientific and technical environment and different other stake-holders. The second way consists in driving the strategic capabilities portfolio as a function of available internal resources which are necessary for the development of strategic competences, mainly the company strategic knowledge. Confronting this internal knowledge with the company eco-system allows the emergence of differentiating innovations. The innovation based on knowledge (Knowledge Based Innovation) appears as a Knowledge management process that uses the company knowledge capital to help it innovating.

The link between Knowledge management and Innovation has been studied for a long time (Daghfous & White, 1994; Kerssens-van Drongelen, De Weerd-Nederhof, & Fischer, 1996; Leonard-Barton, 1995; Skyrme & Amidon, 1999; Von Krogh, Ichijo, & Nonaka, 2000), ... According to (Coombes & Hull, 1998), two aspects of Innovation and Knowledge Management become visible in companies: on one hand the image of the company as seen by evolutionist economy and on the other hand the company based on knowledge.

To put it simple, we can say that the first aspect takes part of an endogenous approach of innovation and that it is based on the "Technological trajectory" concept: future knowledge is governed by existing knowledge which leads to innovation. Innovation does not occur by accident: it depends on numerous factors that draw a kind of technological trajectory, which gives consistent control on a large number of potential innovations to convert them into future

products and future success stories. This concept, known as the path dependency concept (Coriat & Weinstein, 1997; David & Foray, 1994), is well known in economic science: it explains the strategic diversifications operated by companies and the innovations emerging inside companies.

The second aspect takes part of an exogenous approach of innovation and deals with the strategic capabilities that are made of organisational competences likely to generate new products and/or services and to be combined to get new operational competences that would generate innovation. They have a dynamic aspect, because they are able to transform themselves in an appropriate way with respect to the economical environment, which is always moving (Prahalad & Hamel, 1990; Teece et al., 1997). This concept implies that the company keeps open to the potential and external acquisition of knowledge in order to generate innovation.

Both concepts are more complementary than antonymic. As a matter of fact, the ability of acquiring external knowledge strongly depends on the knowledge previously accumulated in the company, which cannot use external knowledge without understanding it (Cohen & Levinthal, 1990). If Knowledge capital or the strategic capabilities portfolio are strategically aligned (Tounkara et al., 2009), their analysis can be integrated in the evolutionist hypothesis that we select here.

Knowledge based innovation consists in using the company existing Knowledge capital (his genetic capital) and in facilitating the action of evolution laws (accommodation, assimilation, mutation, ...) on this capital in relation with its environment. It's typically a Darwinian evolutionist hypothesis that is not bright new. Evolutionist ideas from Lamarck and Darwin very soon got a tremendous impact in numerous fields very different from biology: anthropology (Sapir, 1967), cognitive psychology (Piaget, 1976), philosophy (Durkheim, 1884), epistemology quoted in (Versailles, 1999), theory of complexity (Heudin, 1998), history of techniques (Deforge, 1985; Jukes, 1982), information theory (Torres Carbonell & Parets-Llorca, 1996), Knowledge Management (Barthelmé, Ermine, & Rosenthal-Sabroux, 1998; Ermine & Waeters, 1999). Applying this hypothesis to Knowledge Based innovation will allow us to set up efficient operational tools for Innovation (mainly incremental innovation)

1.2 Objective of the research project

The objective of the present work is to provide an operational illustration of the evolutionist hypothesis on incremental innovation in a high-tech field: radar (Skolnik, 2002). More precisely, the point is to show that from an analysis of the technical knowledge capital in the radar domain, it's possible to set up a process able to stimulate the creativity in the organisation and generating innovative technical proposals in line with the industrial strategy.

2. Theoretical approach

2.1 Creativity and inventivity in the innovation process

Recently the « *Gestion des Connaissances* » Club made a synthesis of the numerous operational innovative methods within companies: The conclusion is that almost all the methods follow the same process, depicted in figure 1¹.

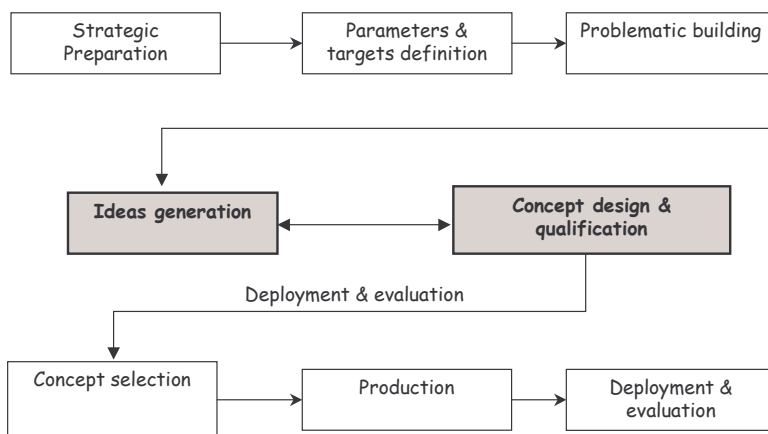


Figure 1: One of the generic innovative processes

In this process, one can notice the notions of creativity and inventivity illustrated by the two parallel activities, ideas generation from one hand and concept design and qualification on the other hand. We can say that creativity is seen here as ideas generation and that inventivity corresponds to Knowledge creation from these ideas. There is often no

¹ The Knowledge Management Club is an association, which was created in 1999 and still chaired by Jean-Louis Ermine. Its aim is to develop a common reference set of concepts and of pragmatic tools liable to implement Knowledge Management within companies.

distinction between creativity and inventivity. Creativity techniques are often decorrelated both from existing knowledge and from the creation of new knowledge able to be materialized in the Information system. The current techniques are based on three existing types of principles:

➤ The divergence-convergence principle

On the divergence-principle principle are based the most popular creativity tools, with numerous classical methods (Louafa & Ferret, 2008). They include a phase of divergent thinking (getting away from the given problem, calling for subjectivity, analogy, imagination in order to come back later to the problem from another angle) and a phase of convergent thinking (transforming ideas into solutions answering the initial problem, using a logical reasoning). This process is not able to find “the” solution to a given problem, but to produce numerous possible options. Classical divergence is based on an open-loop process without any feedback or control: in that sense, it’s not optimal.

➤ The analogy principle

The analogy is the principle on which is based the famous TRIZ method, Russian acronym standing for *Theory of resolution of Inventive Problems*, dedicated to the resolution of technical problems needing innovative solutions (Altshuller, 1984). It shows that, when facing such kind of problem, it’s possible to find inspiration in another fields to solve similar problems. TRIZ is the archetype of knowledge-based innovating design method: it looks after existing ideas in data bases and the so-generated solutions are all based on existing knowledge. It’s typically a creativity method, as long as it provides no mean to concretise the chosen solution and it needs extra process to provide innovative design and knowledge able to be patented as an invention.

➤ The expansion principle

For (Hatchuel & Weil, 2009), the expansion principle is a central notion for every conception theory. It’s an intuitive notion that expresses talent, discovery, invention, originality. Expansion requires further notions. It’s a notion related to a group of designers, who depend from his own existing knowledge: a specialist can see an innovation where a non-specialist can’t see anything new. Hatchel and Weil developed the C-K theory in design engineering in order to formalise a true approach of creative design. It’s one of the current examples of knowledge-based approach, as long as design innovation is permanently controlled by the Knowledge capital of the systems or of the actors. This approach can be represented by a K space (Knowledge capital) and a C space (Space of Concepts) which can be seen as the space of not yet validated innovative ideas. The C-K process consists in a loop between these two spaces (figure 2), which works as follows: the initial concept (classical example is a «flying ship») is partitioned according to existing knowledge. This partition is disjunctive as long as initial concept is analysed thanks to known elements such as wings, ...) and it adds new properties and create new concepts (such as a ship with wings). Then one has to come back in the K space in order to check the feasibility of the concept according to conjunction (is a flying is with wings feasible ?) by use of means well adapted to the situation (experiment, simulation, ...). Then an expansion of K is produced: the Knowledge capital is increased. This loop goes on up to getting a validated concept. A real illustration of this theory can be found in (Soulignac, Ermine, Paris, Devise, & Chanet, 2012).

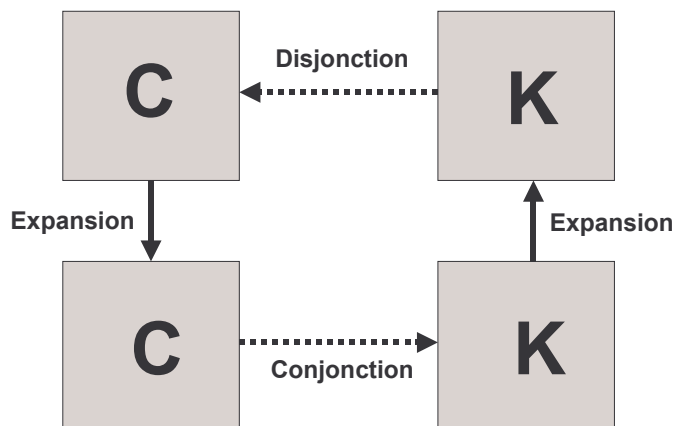


Figure 2: The C-K process

In the present work, we propose to base our research on a new principle, the emergence principle, linked with the evolution theory and the Chaos theory.

2.2 Emergence principle

The creativity process described in previous paragraph is similar to a so-called chaotic process (Gleick, 1987; Prigogine, 1993; Prigogine, 1996; Miller 1996; Trinh, 1998). Such a process is characterized by its sensitivity to initial conditions. This means that, during the resolution of a given problem, the smallest context variation leads to a very different result. This property is characteristic of a divergence process. It's well known that a large part of natural processes get a chaotic nature, whatever physical, chemical, biological or even psychological they can be. Yet, introducing a regulation loop within these phenomena leads to the emergence of a stable structure (which is called attractor) thanks to the filtering of the outputs generated by divergence. This structure is new and matched to the given problem. The creativity problem is located within this perimeter: by which regulation is it possible to make a new and matched solution emerge from a divergence phenomenon?

The evolutionist assumption for innovation, stated at the beginning of the present paper, allows referring to the theories of evolution to formulate new principles able to guide the innovation process. Heudin (1998) formulated a general model for system evolution, depicted in figure 3.

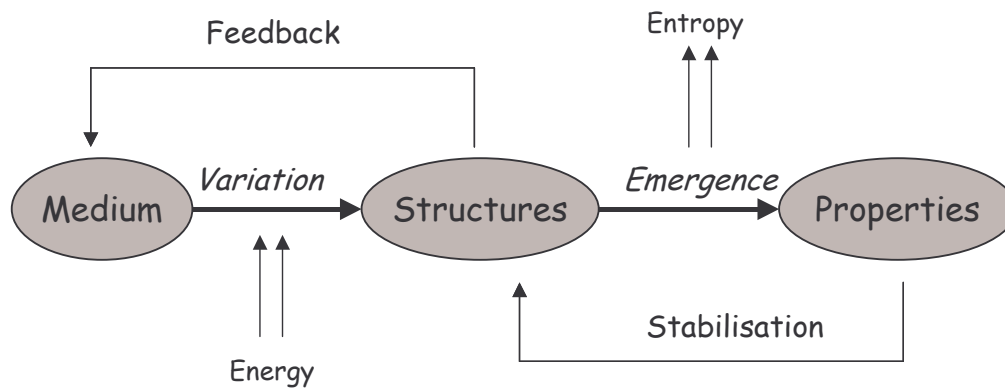


Figure 3: General model for systems evolution

A system is built on structures that can evolve thanks to a contribution in energy. This transformation is regulated by its confrontation with environment. The finality of these structures is expressed by their properties. During the transformation, these structures acquire new properties. Thanks to the stabilization loop in the evolution process, only properties in strict accordance with the system finality are kept. The other ones are called entropy of the system. This operation of relevant properties generation can be seen as an emergence phenomenon since it's a new solution matched to the evolution of given system.

In (Saulais & Ermine, 2011), this model was adapted to the evolutionist assumption for ideas generation. The matched model is depicted in figure 4.

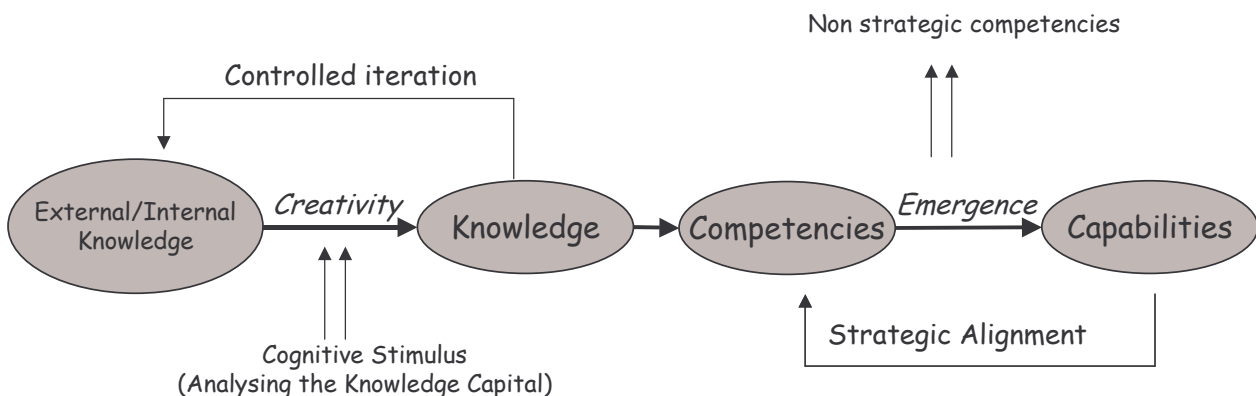


Figure 4: Knowledge evolution model

For the Knowledge capital, the evolutive structures of the general model are represented by organised Knowledge. This knowledge will become richer thanks to a cognitive stimulus (similar to the energy for the general model), which results from a structured analysis of the Knowledge capital. This stimulus consists in confronting this analysis with the Knowledge capital of the Knowledge actors (professional experts) who hold reference Knowledge

within their external environment (markets, state of the art) as well as internal environment (tangibles and intangible specific resources of the organization). This Knowledge capital plays the same role as the environment in the general model. Confrontation will result in generating variations in the knowledge structures represented by Knowledge capital evolution projects. This creativity is controlled by a feedback loop: variations that are too far or too close to the reference are dropped. In this loop appears new Knowledge that is filtered in the organisation by the ability to activate it that is to say to generate competences (Knowledge in action). The finality of the organisation activity is mainly production, so that new competences must generate productive capacities. Conformity of these emergent competences with the organization objectives is controlled via strategic alignment. The competences which are considered as non strategic are dropped (they are similar to entropy in the general system model).

This capacities generation operation can be seen as an emergence phenomenon, since it results in a complete structured innovative product that gets sense for the organization. This emergence phenomenon corresponds to what biologists call “emergent quality” and what psychologists call “Gestalt” [The verb gestalten means « to put in form, to give a significant structure»] (Goldstein, 1951; Merleau-Ponty, 1942; Raoult, 2003). The above-described evolution process leads to the building of an operational mechanism able to generate new ideas, fully regulated, weighted and aligned with the organisation objectives.

2.3 Analysis of creation seen as intangible asset

2.3.1 From the Intellectual property work to the Intellectual corpus

The French Intellectual Property Code states that the author of an Intellectual property work has an exclusive right of ownership arising out of its creation. This right can be opposed to anyone and it includes moral rights on one hand and economic rights on the other hand (Article L 111-1). By essence, this intangible property is separated from the tangible property of the physical support of the Intellectual property work. So, the concept of Intellectual property work emphasizes the duality between the content and the container. By essence, the content is immaterialised thanks to its pure intellectual nature: for this reason, we will say that contents issued from an intellectual creation recognized by intellectual property rights (i.e. Intellectual property work) compose the Intellectual corpus. The container belongs to the sensible world: it can be transmitted and also used for all kinds of transaction. The container belongs to the Information System, here considered as repository of containers that materialize the creation of Intellectual property work.

2.3.2 Distinction between Intellectual corpus and Intellectual capital

Intangible capital is a notion currently used today to refer to all the intangible elements the possession of which is liable to bring an economic advantage to a company on its market. (Laperche, 2001; Bounfour, 2006a; Bounfour 2006b). According to Breesé (2004), these elements can be seen as “intangible” assets, i.e. assets dedicated to intangible elements. They also lead to numerous classifications (Reilly & Scheihs, 2001; Smith & Parr, 2000).

So, we can distinguish:

- The Intellectual property works, which are tacit, not formalized and non appropriable by the organisation and which give intellectual property rights (IPR). Creation recognized by IPR is part of the Intellectual corpus
- The “intangible” assets, which are materialized and made explicit through a tangible support, having given intellectual property rights either registered (patent rights, trademarks,...) or not (copyrights including moral rights and economic rights) and which include the IPRs. “Intangible” assets are part of the Intellectual capital.

According to our view, Intellectual corpus is a collection of intellectual abstractions recognized as a creation (and materialized on supports included in the Information System) while Intellectual capital is a collection of assets dedicated to intellectual elements.

2.3.3 Intellectual corpus systemic model

The representation of the activity concept seen as a creation generating intangible assets is widely detailed in Saulais & Ermine (2011).

As the Intellectual corpus acts as a sub-system of the Knowledge System, the model proposed here is derived from the AIK model proposed in Ermine (2008) in which we transformed the K system of knowledge of the initial model into the L system of Intellectual Corpus. The AIL model that we got is made of three fundamental components which are three subsystems linked by flows (figure 5), where A stands for the knowledge actors, I for Information System and L for the Intellectual corpus, creativity is seen as a cognitive flow from A towards L and it corresponds to the ability of generating ideas. Inventivity is seen as a flow from L towards A, then eventually towards L and it corresponds to the instantiation of the capacities leading to the creation of mind works based on the generated ideas and liable to be materialized by information supports.

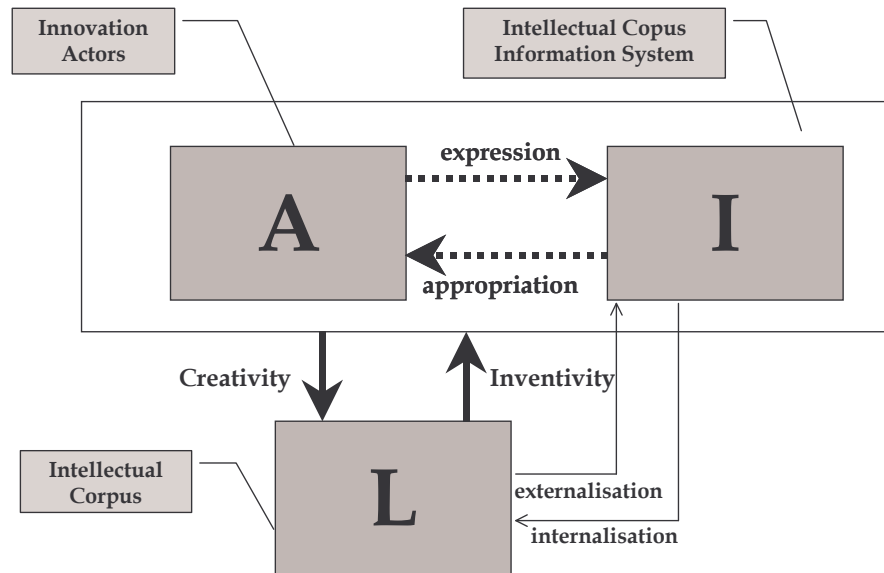


Figure 5: The AIL systemic model of Intellectual Corpus

To sum up, it seems that putting emphasis on the creator (mainly as involved in his own creation) is a necessary condition to stimulate his inventive activity. Furthermore, as the Intellectual Corpus of the organization is intimately linked to the personal Intellectual Corpus of all the experts (creators, inventors), encouraging the creation of an Intellectual property work demands investments on the cognitive profile of the experts and, more globally, on Knowledge. Managing the inventive activity means managing human beings (experts) and knowledge. The research consists in working out conditions and processes that promote the inventive activity.

3. Methodological approach

Proposed methodology is based on the representation of the explicit elements of the inventive part of Intellectual capital which we here named "Intellectual Corpus". This representation is then used as a cognitive stimulus (figure 4) to stimulate Knowledge actors' reflexion on the potential evolution of knowledge within several knowledge domains of their organisation.

3.1 Structure of Intellectual Corpus

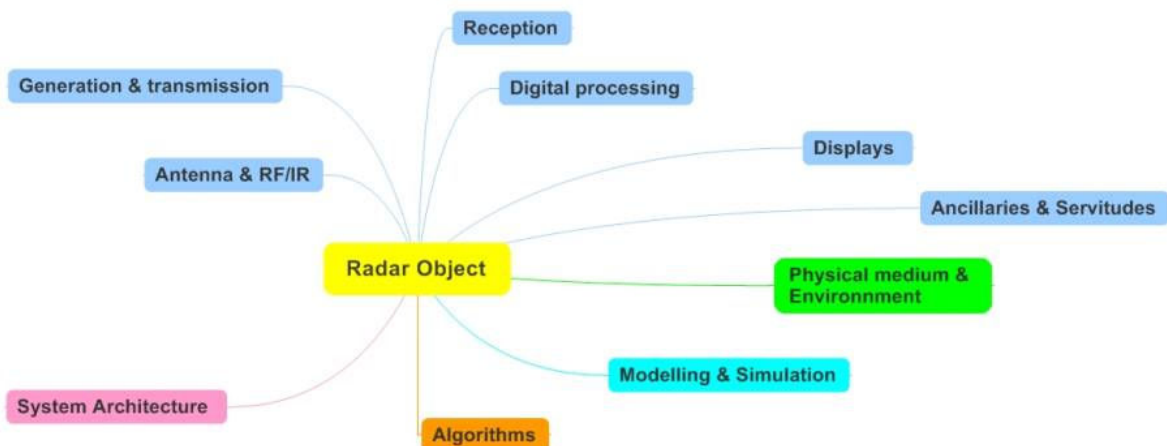


Figure 6: The ten knowledge domains of the Radar object

The Intellectual Corpus is part of the explicit knowledge capital including the inventive tracks of the last thirty years (patents, articles and papers, study reports, internal memos and white papers, presentation slides, training material). These tracks are dated and, as long as possible, weighted by a figure giving the effort (in men-month) needed to acquire knowledge regarding these documents. Each track is attached to one of the Knowledge domain of the technical object. To structure a technical object into Knowledge domains is not an easy task so that a consensus is very difficult to get on it. Figure 6 describes a decomposition of the technical (Radar) object into ten domains, in conformity

with the technical description admitted throughout the world (Barton, 1076; Nathanson, 1991, Skolnik, 2002).

Each domain can be seen as a complex system (Bertalanffy, 1968), which is classically described according to systemic points of view: functional (what the systems does), structural (what the system is), teleological or applicative (what the system is designed for) and a genetic aspect (system evolution) represented by the time axis of the other points of view. Figure 7 gives an example of cognitive map for the Algorithm domain based on eleven points of view representing functional, structural and applicative aspects.

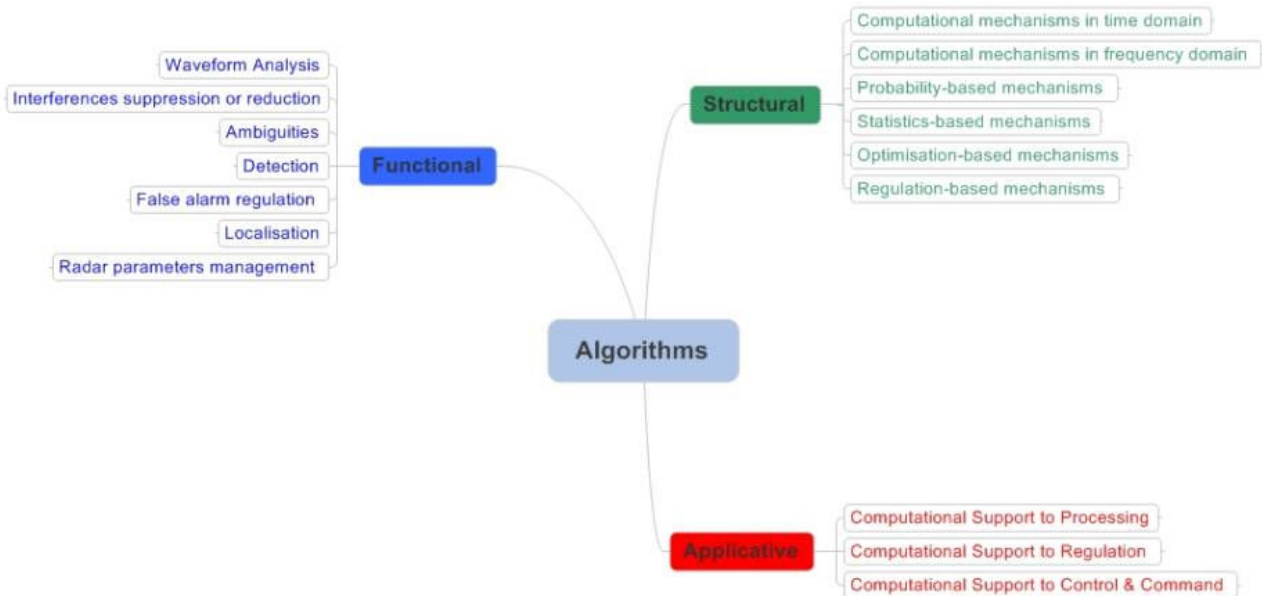


Figure 7: Example of cognitive map for the Algorithm domain

3.2 The involved Knowledge actors

To be efficient in terms of innovation, the method must come within the framework of the organisation, in coherency with the missions and the tasks of any actor. The company created a network called *K & T* (Knowledge & Technology) that includes individuals recognized by the organisation in their domain. During the experimentation, the methodology was deployed within this network. Other actors were mobilized in order to discuss and to validate knowledge created during the experimentation (figure 8):

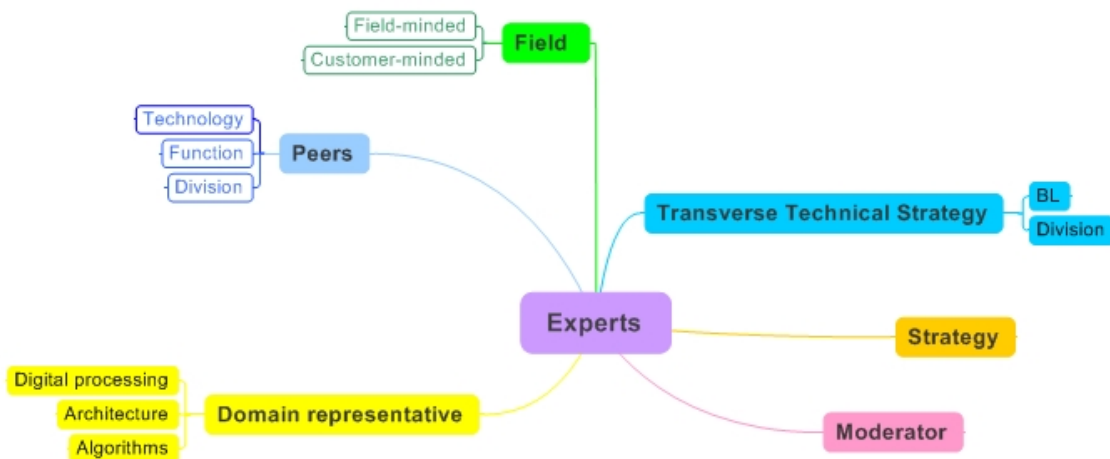


Figure 8: Involved Knowledge actors

- Peers, who have to react on technical prospective material proposed by one of the Domain representatives
- Field experts, who know how the technical object operates in the customer site, whose role is to bring the technical point of view of the customer

- Transverse technical strategy people, whose role is to tell the technical policy of the organisation in terms of technique or technologic fields
- Strategy people, whose role is to bring elements of marketing and product policy

3.3 Process description

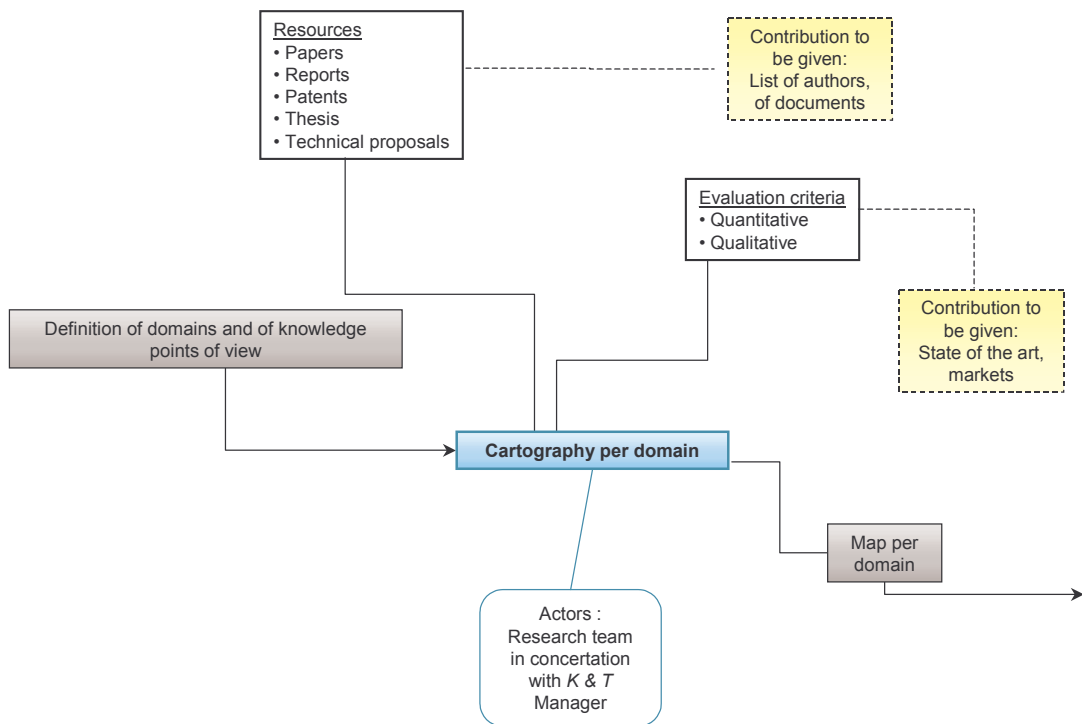


Figure 9: Preliminary Inventory

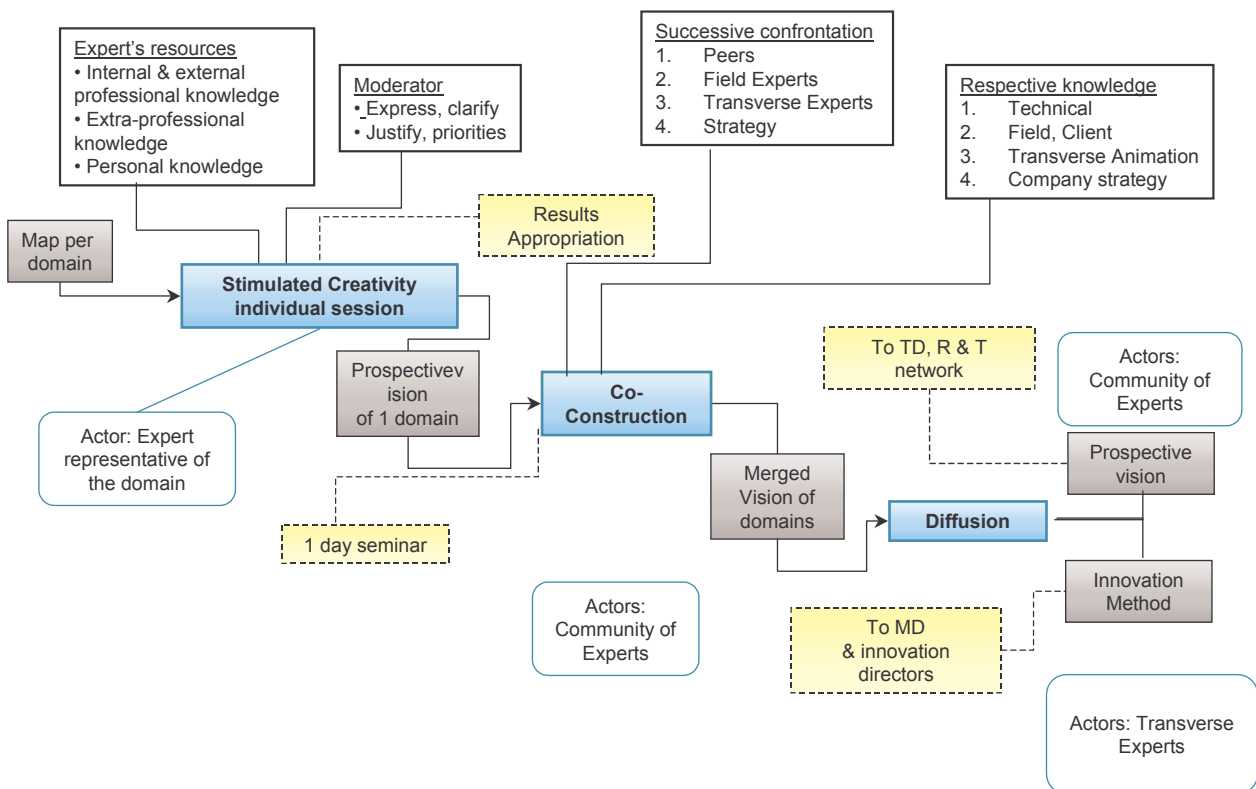


Figure 10: Creativity process

Figure 9 describes the preliminary step, consisting in the inventory of inventive tracks related to one Knowledge

domain, projected onto a Knowledge map, which is the input of the creativity stimulation process.

Creativity stimulation process is applied to the entity Knowledge actors through three steps (figure 10):

- Stimulated Creativity individual session, the output of which is a prospective vision about one technical domain
- Co-construction of a merged vision of all technical domains
- Diffusion of the merged vision towards the experts community and of the innovation method towards Managing director and innovation directors

4. Implementation of the method

Method was implemented during an experimentation called ICAROS (Intellectual Corpus Analysis for Reasoned Openmindness Stimulation) conducted on a reduced scale (3 technical domains out of 10) on September/October 2011. This experiment represents the experimental part of the research project presently carried over by the author as a PhD candidate, while going on taking care of his technical radar expert activity within his company without any link with Knowledge management : there a full decoupling between professional activity and research activity initiated by the author and carried over under his own responsibility. The author took benefit of his own technical expert experience to make the inventory, the organisation and the interpretation of the Intellectual corpus of his organisation.

4.1 Preliminary: Intellectual Corpus inventory

Preliminary work was dedicated to the inventory and to the analysis of the past inventive tracks. It was carried over by the author as completely and objectively as possible. The individual recognised by the organisation as the expert of his domain was asked to give the initial list of the major contributors in his domain. Tracks are collected during individual interviews. The initial list of major contributors was complemented during the interviews by successive co-optation.

Inventive tracks were then projected onto knowledge map, analysed and synthesised by the author. Fortunately, this huge work was facilitated by the fact that the author is himself a technical expert.

For three technical domains, preliminary work necessitated sixty-two interviews (duration comprised between half an hour and two hours and a half, for a total of ninety three hours).

Independently from the ICAROS experiment on creativity stimulation, the inventory of inventive activity of more than sixty experts during the past three decades in the three main fields of the company and its reasoned synthesis leads to a large amount of strategic material that only very few companies search for resources to build.

4.2 Stimulated Creativity individual sessions

Stimulated creativity individual sessions include the following steps: presentation to the expert of the tracks projected in the Knowledge map, analysis of the tracks by the expert and statement of his prospective vision for his domain. Each half-day long session was recorded.

After a detailed analysis of the records, a synthesis of each session led to a prospective document validated by the expert and including:

- The presentation of his domain as seen by the expert,
- For each sub-domain described in the Knowledge map (about ten per domain):
 - The initial analysis of the tracks
 - The expert's comments on the initial analysis
 - The prospective vision suggested to the expert by the current state of tracks
 - A synthesis made by the expert

These documents were validated by the expert.

4.3 Co-construction (one-day seminar)

The prospective elements are successively confronted to different groups, the technical peers, the technical field experts, the representatives of technical strategy and of the strategy of the organisation. This confrontation indicates the transition between the individual creativity to the collective creativity. During this seminar was observed the way a new idea goes through a technical community, how it's accepted or rejected. It's a collective co-construction issued from the critic and constructive reflexion of participants based on their past and current knowledge. This seminar was located outside the premises of the company, to facilitate detachment from today functions and tasks of every participant. This phase also aimed at making the strategic alignment of the result of the co-construction, by putting every R&T

prospective element in the perspective of the mid-term and long-term strategy of the company.

One of the main observations made during the seminar was that the most active participants were the three experts implied in the individual session: they were very implicated in convincing the other participants of the interest of the creativity process. They made their best effort not only in supporting their prospective vision of their own domain but also in pointing out and discussing the links between the domains, especially in the vicinity of the domain borders and in merging the prospective visions. The other experts brought their own contribution to discussions: the main outcome was provided by the technical field experts, who discussed the opportunity of future innovations according to the point of view of their customers and end-users. Contribution to strategic alignment was not given during the seminar.

The seminar report includes, for each domain:

- The so-called focal points, i.e. the major R&T problems that determine the future stakes
- For each focal point, action plans to implement according to
 - Current situation and environment
 - Future trends

5. Lessons learned

Thanks to the experimentation that took place within the company during the ICAROS seminar, several theoretical hypotheses on knowledge based innovation were validated:

- The path dependency hypothesis states that the “technological trajectories” followed by organisations depend on the past technological trajectories. Intellectual corpus includes basic tracks determining numerous technological trajectories of the organisation. Finding out and organising these tracks allows a reasonable extrapolation of the evolutions. Furthermore, the inventory of Intellectual corpus over several ten years, the analysis of its tracks and their projection onto the Knowledge map of the organisation provided a real comprehension and discussion of the past trajectories with respect to the current R&T state of the art of the company
- The above-described tools are made for the representation of the Intellectual corpus and they were used for the stimulation of creativity. The creativity process is based on a chaotic-like emergence mechanism which will be applied on the current Intellectual corpus thanks to the representation tools. The creation of numerous prospective elements from a reasoned analysis of the several temporal sections of inventive trajectories shows the emergence (according to the chaotic process described in figure 4) of new elements liable to increase the Intellectual capital of the company
- The stimulation of the creativity is applied in a first step to every Knowledge actor, who is individually or by combination carrying the technological trajectories of the company. However, these trajectories are not isolated but they do interact according to complex schemes. These interactions can be described by the cross-contribution of all Knowledge actors, who, in a second step, regulate the new knowledge created in the first step
- A reasoned contribution to technical prospective strategy can be carried over through a bottom-up approach initiated and supported by one individual acting as a volunteer and based on the individual and collective use of the inventive knowledge of an Experts’ college
- If, as a PhD candidate, the author chose for his experiment the entity for which he goes on working as an expert in parallel with his research academic project, it’s mainly to take benefit from the confidence existing between the experts (whose contribution he required for free) and him and to avoid asking another extra expert to analyse, organise and interpret the inventive tracks of the Intellectual corpus. However, this does limit the application field of the method, which identifies the inventive activity to an intellectual creation

To validate the last hypothesis, a strategic alignment of the new knowledge created according to the creativity process is still to be performed to insure the relevance of the prospective outcome with respect to the company strategy.

Expected benefits from experiment are depicted in figure 11.

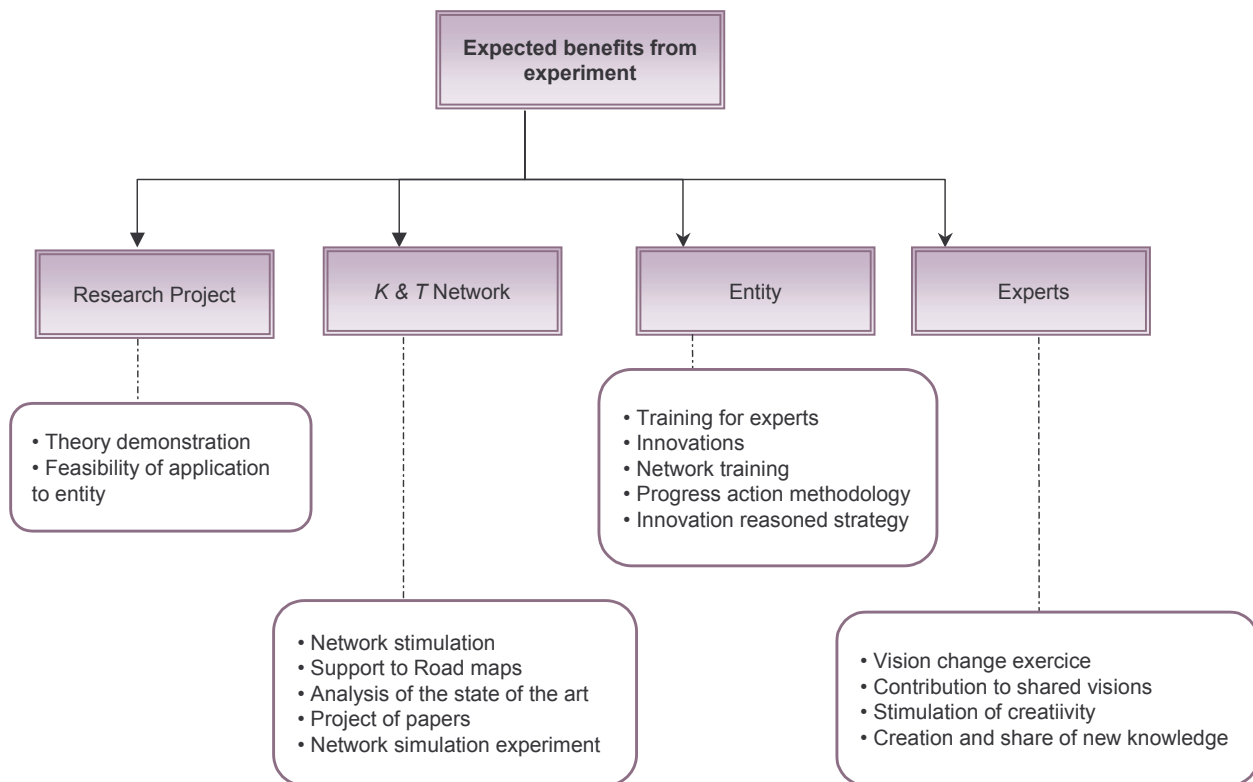


Figure 11: Expected benefits from the experiment

6. Conclusion

Within the Knowledge based innovation approach, the stimulation of creativity by knowledge was introduced and discussed. The case study within the Thales Company provided the opportunity of implementing this approach in an operational way, while validating the theoretical concepts in the framework of incremental innovation.

In theoretical terms, the experimentation demonstrated that the creativity could be associated to the evolution of the Intellectual corpus, inventive part of Knowledge capital. Thanks to a cognitive stimulus build on a historical representation of the Intellectual corpus, it's possible to build a trigger of this evolution process. This process is individually and collectively based on a group of actors involved in the prior determination of this corpus and in its strategic evolution with respect to the company.

In industrial terms, the experimentation demonstrated the feasibility of the process. From this point, perspectives may be described as:

- Appropriation by the company's technical community of the merged prospective vision
- Sharing the experience with the community of innovation directors within the company Group
- Deploying the methodology of creativity stimulation within the company Group
- Building a data base of inventive intellectual tracks in all the technical domains of the organisation

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