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## The involvement of experts in a decision-making process

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**Summary:**

In a context of strong competition, the decision-making becomes a fundamental managerial act. It engages the decision makers in cognitive processes such as: rigour and quickness of analysis, capacity of synthesis, argumentation, negotiation and finally, conscience of their responsibilities. So, in order to fight inherent uncertainty in their decision-making, the decision makers seek to obtain the clearest vision of the future. To support this innovation strategy and to help the decision makers to know all necessary information to a decision-making, the STMicroelectronics Tours site has created a competitive intelligence (CI) team: the Market Intelligence.

After having tested and having improved several processes of watch and in order to support efforts of innovation processes, the last method implemented by the CI team sets up on an active participation of experts groups: the expert group process. The aim of this process is to help the top management in the identification of new strategic orientations and to allow to provide quickly an outlook on a given topic for a steering committee.

The expert group process is based on three entities, the steering committee, the expert group and the Market Intelligence whom the role is

- To link the steering committee and the expert group,
- To be professionals of Science of Information,
- To be the stimulating persons of the process.

Moreover, this process is stated in many methodologies such as:

- The cycle of information i.e. from the analysis of needs to data collection, then the information sharing and lastly the relevant information dissemination
- The part “From the emergence to the concretization of one idea” of innovation process in funnel-shaped i.e. getting information, analyzing its potential of innovation and reinforcing its potential of innovation.
- The decision making process i.e. the analysis of the objective or identification of the problem , then the problem structuring, then the working out of possible options and lastly, the evaluation and the choice among these options

This mix of the processes allows to create a support of the decision-making aid. Compared with the difficulties encountered by many tops managers and decisions makers, the expert group process brings concrete and effective solutions to the decision-making process.

**Plan:**

- Bases of decision making process.
- Description of the expert group process
- Support of the expert group in the decision making

**Keywords:** expert group, steering committee, expert opinion, competitive intelligence, decision, innovation, cycle of intelligence

## **The involvement of experts in a decision-making process**

*“Each time you see a company which  
succeeds, the reason is one day,  
somebody made a courageous decision.”*  
Peter Ferdinand Drucker, economist

In a context of strong competition on its products' portfolio, the management of STMicroelectronics Tours site chose to set up its strategy on differentiation: to implement innovations in order to preserve its technological and competitive leadership.

In this environment, the decision-making becomes a fundamental managerial act. It engages the decision makers in cognitive processes such as: rigour and quickness of analysis, capacity of synthesis, argumentation, negotiation and finally, conscience of their responsibilities. So, in order to fight inherent uncertainty in their decision-making, the decision makers seek to obtain the clearest vision of the future.

To support this innovation strategy and to help the decision makers to know all necessary information to a decision-making, the STMicroelectronics Tours site has created a competitive intelligence (CI) team: the Market Intelligence. After having tested and having improved several processes of watch and in order to support efforts of innovation processes, the last method implemented by the CI team sets up on an active participation of experts groups and on project management methodologies. This method is called at Tours: expert group process.

Then, the aim of this study will be to show the contribution of expert groups in the process of decision-making in connection with strategic and innovation subjects.

First, we will remind the bases in decision-making process. Then, we will study the expert group process. Lastly, we will show the role of expert groups in the decision-making process about innovation topics.

Before making the description of the expert group process in STMicroelectronics Tours site we will remind few bases in decision-making. The decision is an act in which decision makers must choose between several options by taking account criteria such as objectives or available resources. The aim is to bring a thought solution to a given problem.

There are mainly three typologies of decisions:

- Strategic decision: The strategic decisions relate to the links of the company with its environment and the way the position adopted by the company on its market.
- Tactic decision: The tactical decisions must define and organize the resources of the company in the objectives achievement.
- Operational decision: The operational decisions relate to the current exploitation of the company and the optimal use of the resources in the productive process of the company.

According to the categorization of these various topologies of decisions (strategic, tactical and operational) chosen by the company, the development of the internal processes of decision-making will be adapted to their specificities. Generally, the process of decision-making will proceed with the following step:

1. *Analysis of the objective or identification of the problem*: this first stage aims to define the object of the future decision-making. This stage defines the type of decision which the decision maker must reach.
2. *Problem structuring*: it is to diagnose the needs to collect information.
3. *Working out of possible options*: the analysis of information makes possible to define a first whole of decisions in order to provide an adequate response to the given problem.
4. *Evaluation of these options*: this stage consists in comparing the solutions depending on different criteria.
5. *Choice of an option*: it is the decision which is the optimal result of the taken choices during the previous phases of the process.

However, the decision-making is not only a process but also a sequence of decisions, those of the past which impose their constraints and those of the future, already perceived in the strategic vision of the decision makers. Indeed, the strategy of a company is built on a multitude of decisions taken on different levels (management, team leader, employees...). So

we can say that the decision making is a strong and complex management action. A report <sup>1</sup> made by the company Teradata about the decision-making in US companies shows the following results:

- 73% of managers estimate to take more and more decisions.
- 59% of managers estimate that the number of information doubled compared to the previous year. They are bogged down in abundance of information.
- 56% of managers estimate that their decisions are taken owing to increasingly complex elements.
- 53% of managers estimate to have less time in 2003 compared to 2002, to take decisions.

So, these results show the difficulty of the decision-making but also they remind the interest of a watch process in a company. Indeed, the work of a CI team is to select, synthesize, analyze and deliver information at the most convenient time. Thanks to these information provided by the CI team, the decision maker will have also all useful data to take decisions.

In order to increase the chances of success of a decision-making process, the use of the expert judgement is also recommended. So, the STMicroelectronics Tours' management decided to involve scientific expert with professional of Science of Information in this decision making process about its technological choices. This method is called expert group process.

What is exactly an expert group process? It is a process of short duration (six months maximum) whose the aim is to support the management in the identification of new strategic and innovative axes and to provide recommendations in response to a given problems about innovation projects. The expert group process is also an investigation process which depends on the information sharing between experts issued from different teams.

First, we wish to define few words. The main idea of this process of watch is the use of expertise and expert judgment. The expertise can thus be defined as being an opinion recognized, authorized, informed and founded by:

- the formation,

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<sup>1</sup> The 2003-2004 Teradata report on enterprise decision making, this report was made from data from 158 US companies. Each of these companies have their revenues which exceed \$500 million.

- the knowledge,
- contribution of information,
- experience in a given field,

at a given time. Lastly, the expertise is held by an expert; this one is a person who has knowledge, competences and an experience on one precise topic.

So, the elicitation<sup>2</sup> of experts can be regarded as an adequate response facing a technical, industrial or market problem, and especially as a support of the decision-making aid. The judgement of experts is consequently used to supplement or compensate the few data or the irrelevant data available on a given problem and thus, it is used to contribute to an enrichment of knowledge.

How to use this expert judgment in a process of watch? The next part will be about the description of the method used on the STMicroelectronics Tours site.

The expert group is transdiscipline. It was created in order to share information, to analyze them and to build knowledge. Moreover, it allows providing quickly an outlook on a given topic for a steering committee.

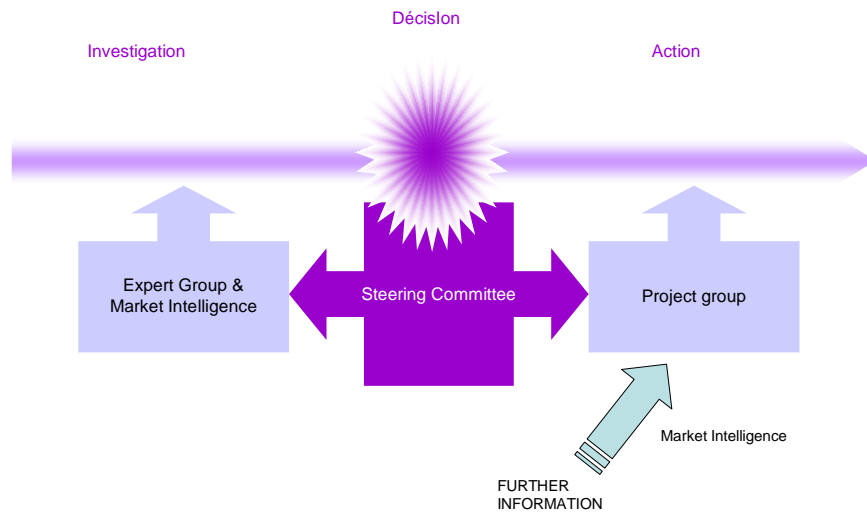
The process is based on three entities:

- *The steering committee* which is formed by the top managers and team leaders. Its role is to decide the research orientations and to execute a follow-up of work.
- *The expert group* which is formed by different experts. They must solve the problematic of the steering committee.
- *The Market Intelligence* whom the role is :
  - To link the steering committee and the expert group,
  - To be professionals of Science of Information,
  - To be the stimulating persons of the process.

Thus, the expert group is upstream to the project (Fig.1). Its action is at the stage of investigation. The steering committee, as for it, has a more transverse approach. It initiates the phase of investigation, controls it and gives its agreement for the conversion of the stage of investigation into a stage of project. So, this carrying out of projects process depends strongly on the results of the phase of investigation.

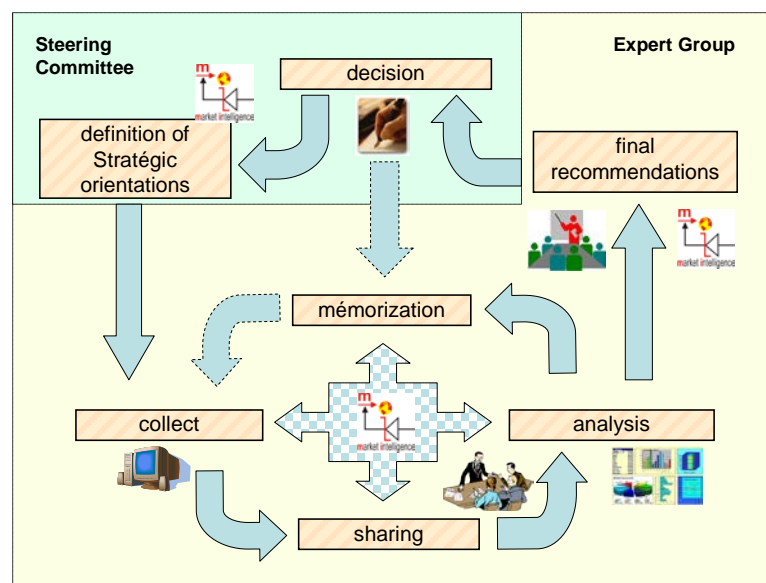
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<sup>2</sup> Elicitation of expert is the method used in order to obtain and organize the experts' opinion thanks to written and oral methods.



**Fig.1 : Position of expert group process**

Moreover, the expert group process uses the cycle of information. Indeed, the expert group process constitutes an iterative process where each new information creates a new state of knowledge and allows determining new research orientations. The process is based on 4 stages (Fig.2):



**Fig.2: Expert group process**



**I – Analysis of needs:** This stage is made by the steering committee and is a prime necessity for the success of the expert group process. First, the steering committee and the CI team must collaborate to identify research orientations. When one or more topics are identified, the steering committee creates an expert group and proposes experts to form the group. The second stage is to provide feasible missions and objectives to the expert group. When all of these elements are accomplished, the steering committee decide the launch of the expert group process for few months (maximum six months).

**II – Search and collect of information:** The search and the collect of information are founded on two main sources of information:

- Sources of information available owing to the Market Intelligence (Web, data bases, market research, patents...)
- Sources of information available owing to experts (their own experience and knowledge, their networks...)

The complementarity of these sources is primordial to obtain the exhaustiveness and the relevance of information. The expert group has thus operational and tactical information to constitute an important whole of heterogeneous information and analyze it.

**III – Analysis and synthesis of information:** As soon as information is collected, it is shared then analyzed by the group. This stage is made by two ways:

- With computer tools (email, protected space in computer network...)
- During periodic meetings of reflexion, animated by the CI team and favourable to the sharing and the analysis of information.

These stages of collect and analysis make thus it possible to the experts to be active in the process of watch and allow enriching the company's knowledge. Thanks to the collaboration between experts and the CI team, the expert group provides a high added value synthesis which will be an important decision making aid.

**IV – The delivery:** It is accomplished during restitution meetings. Indeed, at defined time, the expert group delivers the high added value results of its investigations to the steering committee since meetings gathering all the participants. Lastly, with the recommendations and the conclusions of the expert group, the steering committee must choose between:

- The continuation of the expert group by providing new research orientations i.e. the beginning of a new cycle

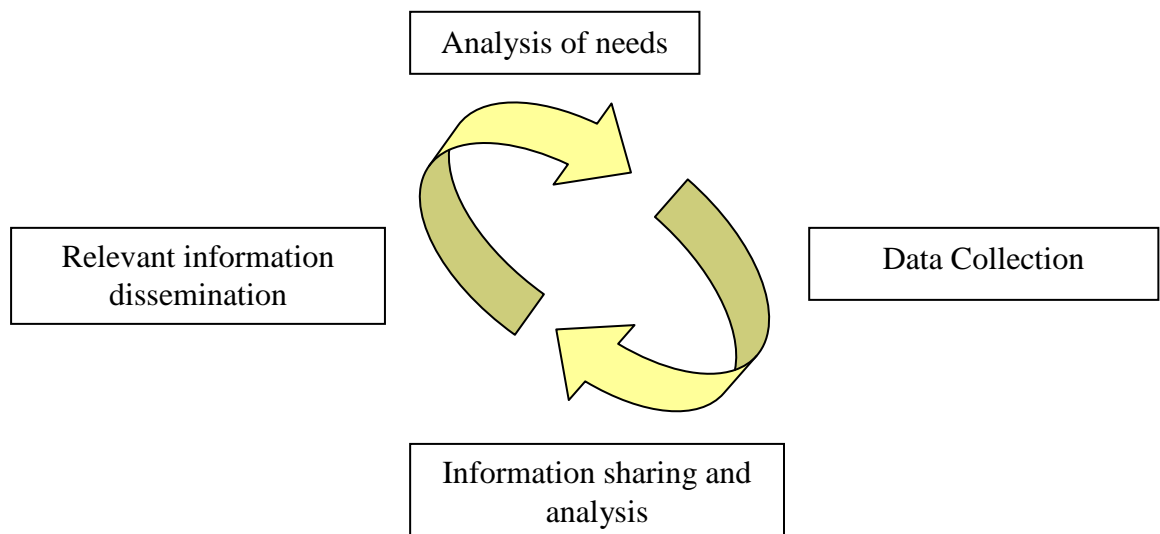
- The end of the process if it considers that the expert group answered all of its waiting. At this moment, the steering committee must decide to the continuation or not of the investigations in a new organization: the project group.

Following this stage, each information is memorized by the CI team and only available for the management and the members of the expert group process.

The expert group process uses methods of project management and meeting animation. In the future, the CI team hopes to use problem solving method in order increase the effectiveness of the process. However, this process has been elaborated in order to be the most effectiveness. So, the expert group process is based on other reliable processes:

- *The cycle of information* (Fig.3)

The analogy between the cycle of information and the expert group process appears obvious. Indeed, the steering committee, in collaboration with the CI team, identifies the research orientations (analysis of needs). Then, the expert group and the CI team collect any available information (data collection). Next, the experts share and analyze information during periodic meetings (information sharing). Lastly, a high added value synthesis of the results and actionable proposals are realized then, they are delivered to the steering committee during restitution meetings (relevant information dissemination)



**Fig.3 : cycle of information**

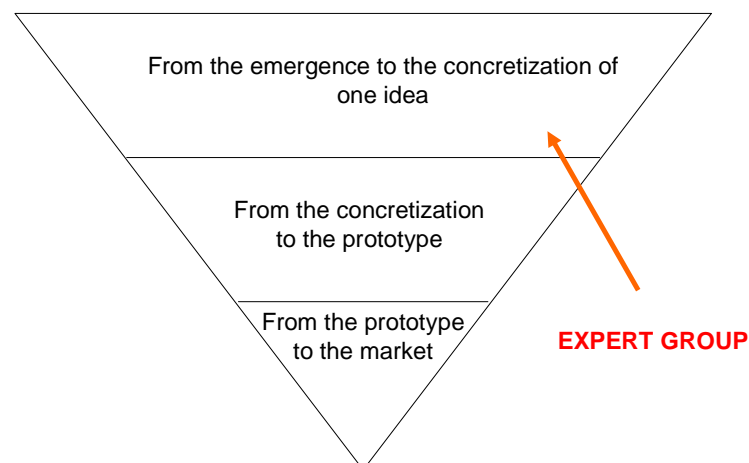
- *The innovation process in funnel-shaped* (Fig.4)

The innovation process in funnel-shaped is based on 3 parts:

- From the emergence to the concretization of one idea
- From the concretization to the prototype
- From the prototype to the market.

The expert group process fits into the part “From the emergence to the concretization of one idea” which can be stated in three stages:

- *Getting information* in order to obtain new ideas by the carrying out of a process of technology watch and competitive intelligence process.
- *Analyzing its potential of innovation* in order to validate the initial idea and to confront it with the strategic objectives of the company
- *Reinforcing its potential of innovation* in order to support a strong potential of creativity, a multiplicity of knowledge and a pooling of competences.



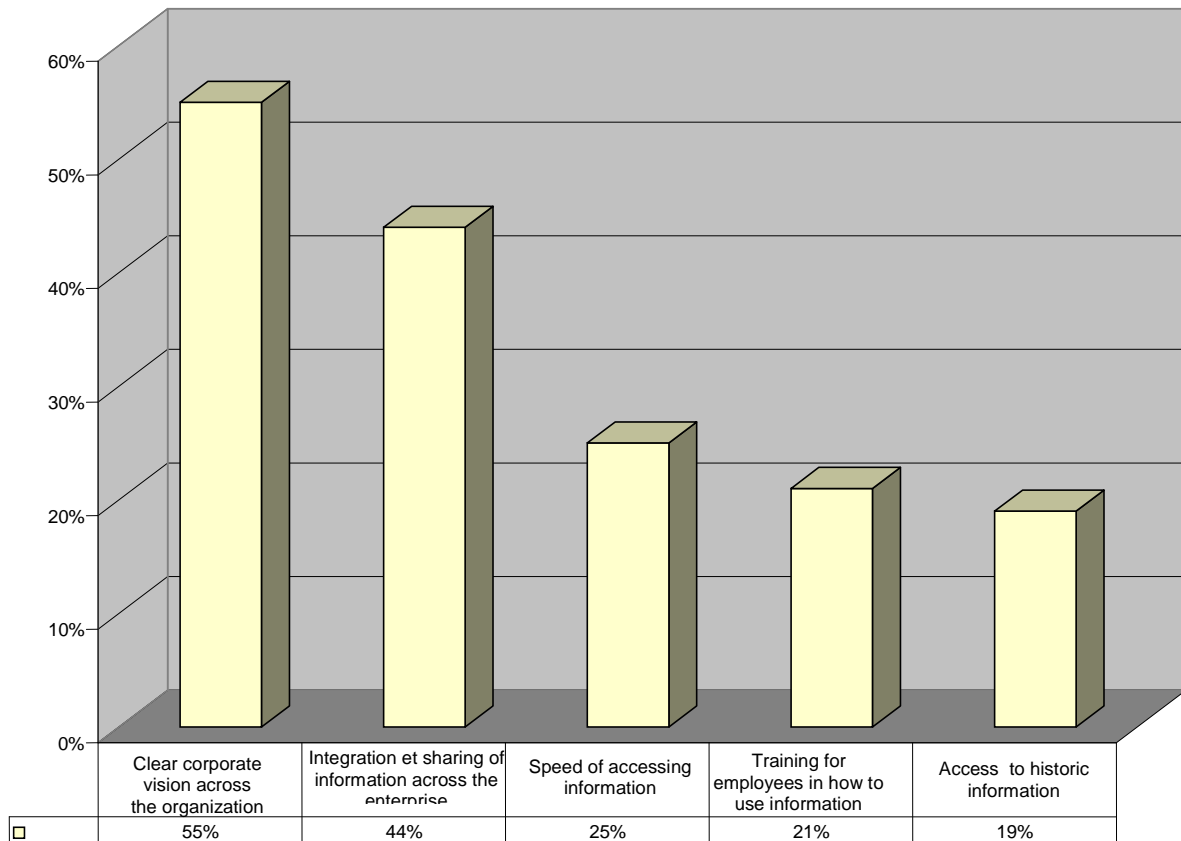
**Fig.4: The process of innovation in funnel-shaped**

Thus, this process integrates mechanisms of selection by successive filters (or stakes) which allow the decision-makings. The aim is then the exploration of a maximum of ideas to

preserve in the later phases only those whose chances of technical and commercial successes are high.

o *The decision making process*

The expert group aims to provide the key elements for the decision-making in order to exceed the obstacles which usually meet the decision makers. To justify our action, we will use the Teradata's report. Teradata's analysts consulted 158 managers in order to know the two key elements essential with their decision-making. The main results are shown in Fig.5.



**Fig. 5 : Key elements for decision-making. Source : Teradata**

In the management activity or during the investigation process, a clear vision seems to be a necessary condition for the decision-making. It's the reason for which the implication of top managers in the steering committee is fundamental.

Moreover, the gathering of experts and the restitution of their analysis to the steering committee encourage the information sharing. In addition, we can say that this process allow to avoid the asymmetry of information: all members have the same information, so the decision will have more chance to be collegial.

Another key element quoted by the senior executives in the Teradata's report is the access time to information. The involvement of the CI team in the expert group process

allows a better speed of information access owing to its techniques to search and collect information. Then, all collected information will be analyzed by the experts and will contribute to decrease the uncertainty and the feeling of a too high taking risk.

Lastly, last factor which is not quoted in the previous figure but which is very important: the time assigned for the decision-making. In fact, many top managers place the speed of the decision-makings within their main objectives and into the keys of success of their company. The expert group allows this speed. Indeed, as the expert group process is limited to six months, the steering committee will have all usefulness information at the good time to take decisions. In order to preserve all the credibility of the work carried out by the expert group, the decision makers announce their decisions within a short time, generally few days after.

From experience of expert groups already carried out, several interesting results arise.

The first is the adhesion and the support of the top management for this concept. Indeed, the results of each expert group were greeted for their quality by the management which has also filled its role of decision maker under the best conditions.

The second result is in the involvement and the enthusiasm of the experts to share information and thus, to take part in the innovation policy of the site of Tours.

Lastly, the third interesting result is in the continuation of the expert group process. Indeed, several expert groups became project groups; the others allowed to avoid to initiate projects dedicated to a probable commercial failure.

These three results show the success of this process. All the expert groups allowed to take decision under best conditions in order to build strategy and perpetuate the activities of the site of STMicroelectronics Tours.

## References

- R. Alvarez, *Discourse Analysis of Requirements and Knowledge Elicitation Interviews*, 35th Annual Hawaii International Conference on System Sciences –Vol. 8, 2002
- N. Boulanger, *La démarche de veille : soutenir la décision dans le processus d'innovation continue*, thèse de doctorat soutenue à l'Université Aix-Marseille III, 2000
- F. Carluer, A. Richard, *Analyse stratégique de la décision*, PUG, 2002
- H. Dou, *Veille Technologique et Compétitivité*, Dunod, 1995
- F. Jakobiak, *L'intelligence économique en pratique*, Dunod, 1998
- H. Kaikova, V. Terziyan, *Temporal Knowledge Acquisition From Multiple Experts*, Proceedings of NGITS'97 - The Third International Workshop on Next Generation Information Technologies and Systems, Neve Ilan, Israel, June - July, 1997, pp. 44 - 55.
- R.L. Keeney , D. Von Winterfeldt, *On the uses of expert judgment on complex technical problem*, IEEE Transactions on engineering management, vol 36, n°2, 1989
- A. Lannoy, H. Proccacia, *L'utilisation du jugement d'expert en sûreté de fonctionnement*, Tec&Doc., 2001
- P. Legohérel & P. Callot, *Prise de décision et perception du risque : influence du profil psychosociologique du décideur*
- Teradata, *The 2003-2004 Teradata report on enterprise decision making*, 2004
- G. Toulemonde, *Les facteurs de performance du processus d'innovation*, I-NOVA, 2003