

Inter-organizational learning within innovation projects : critical stages, issues and good practices

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Abstract:

In September 2005, the Walloon Government decided to adopt “the Walloon Marshall Plan”, one of the priorities of which is the setting up of competitiveness clusters bringing together different contributors (businesses, private & public research centres and training centres).

In this context, our aim is to understand how the businesses and the research and training centres are managing to put in place partnership dynamics in order to create innovative projects. To achieve this, we have chosen to focus primarily on the dynamics of inter-organizational learning. Consequently, within the five competitiveness clusters set up in mid-2006, we have opted to focus in particular on 4 projects which have emerged from them.

The conceptual model upon which we have based our initiative is structured around this aim and makes use of various analytical benchmarks. Inspired in particular by the work of Holmqvist (2003), this model constitutes our reading and analysis framework for the projects selected from the four competitiveness clusters selected.

We propose the hypothesis according to which the dynamics of inter-organizational learning in themselves constitute critical stages for project involving various categories of stakeholders, such as those which have emerged within the Walloon competitiveness clusters. In our eyes, each project is likely to go through these different stages during its life cycle, as they amount to the logical outcome of this type of networked cooperation of which the aim is to innovate.

Each stage also raises its own specific issues, which are most frequently expressed in the form of questions facing the partnership, to which it has to endeavour to find a satisfactory response. For each stage identified, therefore, we will present the specific responses which were put in place for the projects which we studied, responses which can be characterised as good practices and are described as such by the parties on the ground. Where applicable, we will specify which contextual factors have an effect on these practices: a moderating influence in certain cases or, a fortiori, a reinforcing one in others.

Key words: inter-organizational learning, competitiveness clusters, innovation, good practices

1. INTRODUCTION

In September 2005, the Walloon Government decided to adopt “the Walloon Marshall Plan”, one of the priorities of which is the setting up of competitiveness clusters bringing together different contributors (businesses, private & public research centres and training centres).

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2. INTER-ORGANIZATIONAL LEARNING IN THE INNOVATION NETWORKS

2.1 INITIAL CHARACTERISATION: THE DEGREE OF CONTROL OF INTER-ORGANIZATIONAL COLLABORATION

Initially, it might be beneficial to consider to what extent the parties in the project are already used to working together, as this would imply both the existence of a relationship of trust developed previously and methods of coordination which are, depending on the case, already established. In any case, this variable appears relevant insofar as the form of the cooperation and the costs of coordination between partners controlling the inter-organizational cooperation to a greater or lesser extent have a possible impact on the form which the subsequent inter-organizational learning takes. In other words, as Barnes, Pashby and Gibbons assert: “*in order to encourage trust, both prior experience of working together and prior experience of collaboration (in the broadest sense) are important factors in the success of university-industry collaboration*” (2002:279).

Numerous parties have emphasised the need for embedded relations in order to cooperate on joint projects (Granovetter, 1973; Uzzi, 1997; Adler and Kwon, 2002; Ahuja, 2000). According to this literature, dense networks characterised by strong interrelations between members facilitate the development of communication and shared standards and lend themselves better to activities which require trust and cooperation, as is the case for innovation projects. In the same school of thought, Faerman, McCaffrey and Van Slyke (2001) identify what they call the “initial dispositions towards cooperation” among the factors for the success of inter-organizational projects: cooperation is facilitated when the partners

institutionally share a form of regulation, when they are linked by interpersonal relations and when they trust each other. In this respect, apart from the presence of legal guarantees or behavioural control mechanisms, it is this experience of shared working which proves decisive. Filippi and Torre (2002: 8) note on this point that “*it is difficult for local contributors from different worlds to develop relations in a voluntary manner. Consequently, the diffusion of knowledge and technology presumes the existence of an organized proximity between the parties, that is to say prior relations based on professional links, possibly supported by a local base.*” We will endeavour to see to what extent this observation is verified in the projects investigated.

2.2 DYNAMICS OF INTER-ORGANIZATIONAL LEARNING: TWO AREAS OF ANALYSIS

Now that the initial scene has been set, we will consider the dynamics of inter-organizational learning more closely. To do this, we have opted for the approach developed by Holmqvist (2003). Two dimensions in particular are the subject of our attention:

- on the one hand, the dynamics linking the method of learning coming under *exploration* and that coming under *exploitation*;
- on the other, the dynamics which characterise the structuring between learning at *intra-organizational* level and that at *inter-organizational* level.

2.2.1 Exploration and exploitation

Two complementary processes can be distinguished when it comes to organizational learning:

- *exploitation* (March, 1991; Marengo, 1993), the process during which organizations learn to refine their aptitudes, make use of their existing knowledge, and centre their activities on certain areas. They learn what brings success and what brings failure. Exploitation consists of creating reliability in the experience, i.e. reaching a certain threshold in terms of productivity, routinisation and development based on existing experience. Things being what they are, this exploitation process also contributes to a gradual increase in simplification or even visual simplicity (view of the activity or the product developed), and a concomitant incapacity to explore new opportunities.
- In order to offset these eventually counterproductive effects, the organizations also need to create variety in the experience, by experimenting, innovating and taking risks. This is where *exploration* comes in (Levinthal and March, 1993) “*In the new economic order based on competition through innovation and the personalisation of services and products, companies have to carry out investigations into new value potentials further and further upstream. For us, this explorative activity consist of the investigation and recognition of new areas for action or, more specifically, of “fields for innovation” (Fixari and Hatchuel, 1998, Aggeri, Fixari and Hatchuel, 1998)*” explains Segrestin (2003:12) “*This activity*”, she adds, “*is necessarily collective, all the more so as it concerns aims which involve several disciplines, mix different issues and do not necessarily come under the usual skills categories.*”

The literature on inter-organizational learning generally considers one or other of these types of learning without examining their interdependence (see, for example, Hedberg, 1981; Levitt and March, 1988; Dodgson, 1993; Hagedoorn, 1993). Segrestin (2000), for example, focuses on exploration partnerships to identify certain conditions for the success of the collaboration.

She points in particular to the interdependence between the concepts of coordination (understood as the aim of the collaboration, i.e. the knowledge and the effectiveness criteria for defining the innovation and making it a concrete reality) and cohesion (which comes down to the interests of the parties and their commitment to what they regard as a legitimate aim). Exploration partnerships are therefore, the author explains, subject to a twofold precariousness: at the level of coordination, because the aim is not clearly specified at the start; and in terms of cohesion, because the partners are not certain of having an interest in cooperating. The author concludes by proposing certain specific guidelines for managing these complex partnerships.

The model proposed by Holmqvist, meanwhile, is centred on the dynamics which link exploration and exploitation. In this model, the dynamics of the transition of learning from exploration to that of exploitation and vice-versa are indicated by the terms “focusing” and “opening-up”.

- *Opening-up* occurs when the organization moves from a learning process oriented towards exploitation to a learning process oriented towards exploration. This transition responds to a need to adapt the organization, the ways in which it operates, or its products, to changes in the environment. The old ways of doing things are challenged and declared obsolete. This process therefore involves an upheaval in the existing dominant view and results in a crisis. A stage which involves a degree of critical introspection (as an organization), it often requires the recruitment of new staff or even new management. This decision generally emerges from a sentiment that “something needs to be done differently”. During this opening-up phase, the organization thus brings variety into the system.
- *focusing* occurs when the organization passes from an “exploration”-type learning process to an exploitation-oriented learning process. This transition marks the end of experimentation and is characterised by the search for solutions. Within organizations, this is characterised by the development of formal objectives and strategies. At inter-organizational level, the parties have reached a consensus on how they will continue (to work together) through the development of formal strategies and objectives.

Several studies have shown that organizations oscillate sequentially between these two types of learning (Nonaka, 1994; Weick and Westley, 1996; Cameron and Whetten, 1981; Quinn and Cameron, 1983). This dynamic approach to exploration and exploitation has not however been the subject of abundant literature. We should nevertheless mention Harryson, Dudkowsi and Stern (2008), who regard exploration and exploitation as two consecutive phases in the innovation process and link them to the type and structure of the network. They analyse what type of links, within the different network configurations, help to create, transfer and transform knowledge. They make a distinction between creativity networks (centred essentially on exploration), *intracorporate* process networks (centred on exploitation) and transformation networks (forming the link between these two types of networks and the knowledge resulting from their activities).

2.2.2 Intra- and inter-organizational learning

Moreover, it would appear that the literature generally deals with learning processes:

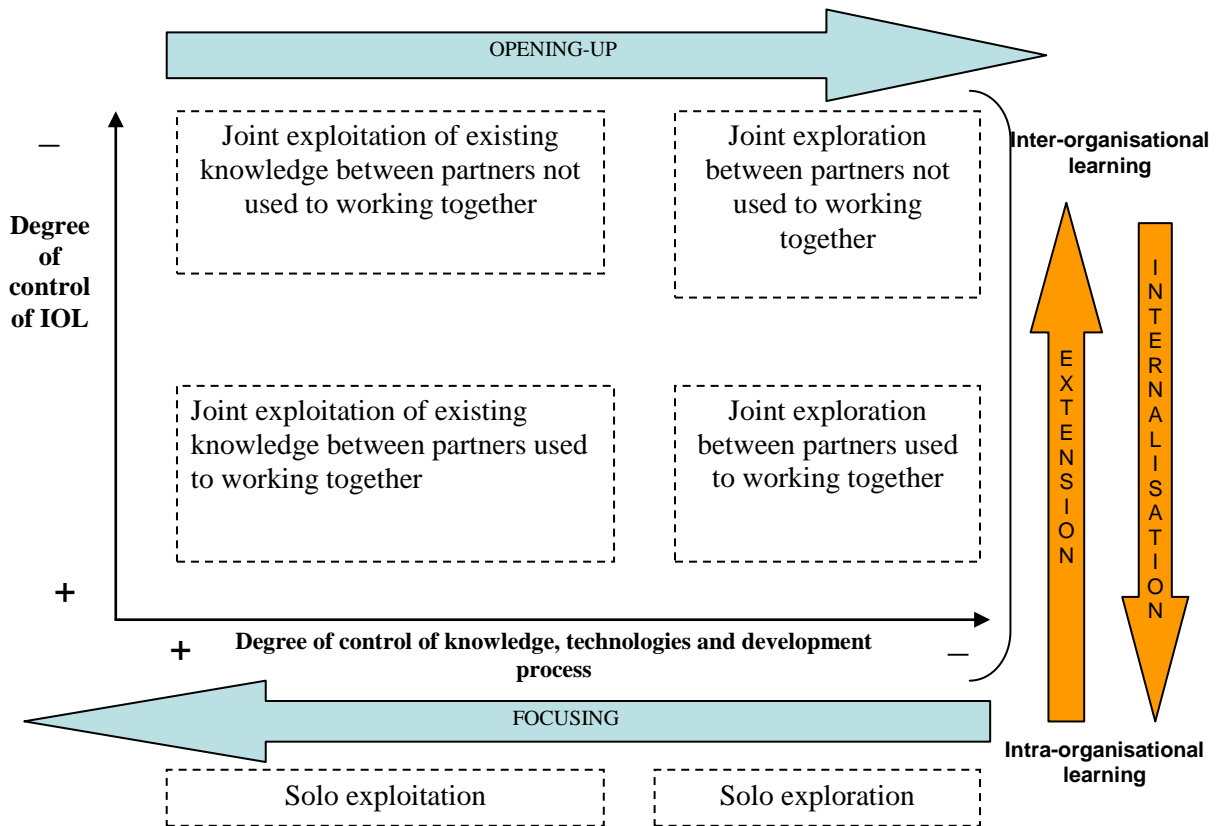
- in terms of the relationship between the individual and the organization (Kim, 1993) – namely how the members of an organization learn within it,
- or describes the learning process within the organization (introducing concepts such as the learning organization, for example) (Argyris and Schön, 1996; Hedberg, 1981; Ingham and Mothe, 2007; Levitt and March, 1988; March, 1991; Zarifian, 1999),
- or addresses the learning process in the inter-organizational relationship (Dodgson, 2003; Hagedoorn, 1993) – namely how organizations learn within the framework of these collaborations-, but these works rarely consider the linkage between these two levels (Ingham and Mothe, op.cit.).

Proposing the consideration of the linkage between intra- and inter-organizational learning, Holmqvist identifies the following dynamics:

- *extension*: this occurs when the learning, previously concentrated within the organization taken individually, is extended to inter-organizational level. The extension is thus the result of an increase in the transparency of the individual organization, which denotes a willingness to share experiences with other organizations.
- *internalisation*, in contrast, is the process via which the learning carried out at inter-organizational level is re-appropriated at the level of the individual organization. Internalisation thus represents the receptive capacity of the organization as regards the experiences of the other organizations.

The conjunction of the variable “degree of control of inter-organizational cooperation” and the two types of learning dynamics identified by Holmqvist results in an integrated model, representing the dynamics of cooperation and inter-organizational learning. The diagram below summarises this model:

2.3 SUMMARY MODEL: DYNAMICS OF COOPERATION AND INTER-ORGANIZATIONAL LEARNING



This diagram provides us with information on the greater or lesser degree of uncertainty which surrounds the project, either in terms of the collaboration (vertical axis, the upper section representing a high degree of uncertainty), or in terms of the degree of control of the knowledge, technologies and development process (horizontal axis, the right-hand section representing a high degree of uncertainty, correlating to a low degree of control).

The cross-referencing of these two axes in fact results in the identification of the most potentially innovative projects in the upper right-hand section, characterising the most experimental projects in terms of both content and the cooperation. It is fair to presume that it is in this type of project that there is the greatest probability of radical innovation. Conversely, the projects located in the lower left-hand section of the diagram, characterised by a low degree of uncertainty in terms of both cooperation and content, would tend to be more routine in nature or at least consist of closely controlled situations.

3. METHODOLOGICAL CHOICES

We have conducted our empirical procedure within four inter-organizational innovation projects. Chosen from within competitiveness clusters, these projects each illustrate in their own way, the various parties' different methods of operation and dynamics. It is this diversity which strikes us as particularly interesting, as it lends itself to the identification of a variety of relevant practices that can be linked to their context of emergence. They are the Alpha

(aeronautics sector), Bravo (biotechnologies sector), Golf (mechanical engineering sector) and Lima (logistics sector)² projects.

In order to acquire a detailed understanding of these projects in their multiples dimensions and components, we have constructed our data collection system around two types of information related to the projects:

- ***Factual data***: this type of material is essentially collected through the observation-participation of the researchers within the projects. This methodology consists of the observation and/or participation of the researchers in a maximum number of events in the life of the project such as, for example, coordination meetings, work meetings, plenary meetings, presentations, etc. These two methodological options (observation/participation) are combined in different proportions according to the situation. By these means, information is collected concerning the choices made during the project, the decisions taken and the way in which they are arrived at, the way in which each partner carries out their role, the emphasis that is placed on certain issues rather than others at meetings, etc. Furthermore, a good number of documents and written material emanating from the projects are also incorporated into the body of the data analyzed. These include meeting minutes, reports, websites and presentation leaflets, administrative documents such as application packs, agreements or regulations internal to the projects.
- ***Data resulting from interviews***: particularly suited to the aim of the research, this method places the accent on the parties involved and their accounts and experience in relation to the project. Through its focus on the parties' words, the narrative approach highlights the nuances and wealth of feeling of the latter. Through semi-structured interviews or more informal discussions with various of the projects' key players, the researchers are thus able to gain knowledge of the different accounts and perceptions surrounding the project, how it is experienced by the partners, how they interpret the different dynamics and developments of the project, what meaning they give to the practices implemented as part of the inter-organizational collaboration, etc.

The structuring of these two methods permits the cross-referencing of the subjective (speech) and objective (factual elements) data and the constitution of a rich, balanced and reliable body of material.

The collection of the qualitative data is thus structured in three linked phases:

- interviews with the project participants (analysis of speech);
- longitudinal follow-up of several key actions in the project by means of regular interviews;
- participation in the project's work meetings (observation).

² For reasons of confidentiality, we have modified the names of the projects studied

4. CRITICAL STAGES, ISSUES AND GOOD PRACTICES

4.1 DEFINITION OF THE PROJECT

Of the different stages which we will be addressing, this stage is the only one that is chronologically determined, insofar as it originates from the project's inception. The definition of an inter-organizational innovation project raises two major issues:

- combining exploration and exploitation;
- developing trust within the network.

The first issue, namely the *combination of the two types of learning* (exploration and exploitation), is in our view an issue emerging from the dynamic of the social stakeholders, which predetermines the goal of the network. For example, a network will not deliberately position itself from the outset as more explorative or more exploitative, but the pursuit of a certain ambidextrousness (O'Reilly and Tushman, 2004; Mahmoud-Jouini, Charue-Duboc and Fourcade, 2007; Parmentier and Mangematin, 2007) can nevertheless be understood as an aim, insofar as this specific configuration presents various advantages and thus constitutes a relevant strategic positioning for the network.

Among all of the projects, we have been able to locate exploitation more at an intra-organizational level, whereas exploration is located at an inter-organizational level. In other words, each partner has been chosen and actively carries out tasks involving its core business, thus implementing knowledge, expertise, methodologies or processes over which it has control. It is the pooling of the expertise of each partner that will enable them to widen their initial area of skills together and to jointly explore research paths which they would not have taken alone. This observation seems to converge with those of various authors (Gulati, 1998, 1999; Hagedoorn, 1993, 1995; Segrestin, 2003; Vanhaverbeke et al., 2002), according to which inter-company cooperation has become the favoured place for innovation, for various reasons such as the complementary nature of the resources and the interdependence of products, the pooling of sometimes highly advanced expertise, and the sharing of the costs and risks of increasingly uncertain research. The projects are structured around “*Work Packages*”, “*Workpackages Blocks*”, “themes” or even “tasks”, within which meetings of sub-groups or sub-projects are held, permitting the project to be carried out. These meetings are the place where exploration is expressed most frequently or in the most visible manner. They are also the location where the transition from exploration to exploitation – and vice versa – takes place.

The second issue, the *development of trust*, originates from this network constitution stage but will also be found in a transverse manner throughout the project. For example, consortium agreements, officially signed at the start of the project with the aim of solidifying long-term trust, are constructed initially upon relations of mistrust, most notably in anticipation of the internalisation stage, which we will address later.

The issues which we have just underlined (combining exploration and exploitation, developing trust) are inherent in the following two questions, which are asked during the project definition stage: firstly, how should the partnership be composed? And secondly, how should the project be structured? We will deal with these two questions successively.

4.1.1 How should the partnership be composed?

The choice of partners is a crucial issue, from the moment the project is launched, as it responds to various concerns: does the project bring together the correct and necessary skills? What degree of control of the inter-organizational collaboration is desirable? During the development of the project itself, this issue could easily come up again: depending on the project requirements and the directions taken over time, is it possible to add new partners or, conversely, to part company with certain ones whose presence is no longer relevant? In other words, both the initial composition of the partnership and flexibility during the project's development are addressed under this point. There are several possible scenarios in response to these concerns:

- *Making use of existing networks* allows the coordination costs to be reduced to a certain extent. On the other hand, this option presents a degree of risk of routinisation, of less discovery of new talent, new processes and new skills to be deployed in service of the project. In this regard, it may be advantageous to put in place actions enabling the network to remain open to the outside, to introduce “new blood” in order to maintain a certain element of exploration in the partnership, at the start of the project or after a market study, for example. A possible recomposition of the partnership would probably be permitted by the project's financial backers (in this case, the Walloon Region), by suggesting that the project be structured in two phases: first of all, a phase of exploration by all the partners, conducted in parallel with an a priori “exploitability” study, followed by a recomposition of the partnership (integration, or conversely, exclusion of one or more partner/s) depending on the orientation of the study, i.e. during the focusing phase.
- *Making use of non-pre-existing networks*, in contrast, presents the advantage of potentially opening up the network to more new contributions, methods of operation to be invented, and the search for skills where they are located rather than involving a partner by chance. However, the risk which presents itself here is that of longer mutual learning and possible “disappointment” at the mutual contributions. In order to alleviate these potential difficulties, it may be beneficial to implement managerial actions designed to strengthen the inter-organizational collaboration. It may be a question of organizing regular plenary meetings, or having “business card” or “speed-dating” sessions involving each partner in order to optimise their knowledge of each other. Another interesting option in response to this issue is to stimulate the development of a collective identity, a project culture, through, for example, systems favouring skills mobility within the network, staff exchanges, or possibly the creation of a platform of researchers, qualified technicians, etc. However, an element of context may have a significant moderating or even prohibitive effect at this level: in the case of staff shortages, it is highly likely that the good practices in terms of personnel exchanges or skills mobility will not be implemented, in view of the risk which the partners will see there in terms of the loss of resources and revenue from a sought-after member of staff. We have also observed other practices favourable to the development of a collective identity, consisting of the collective organization of external communication activities, as such actions involve reflection on visual identity, the message passed on by these actions, and their concerted implementation.
- Finally, a *formula mixing the two alternatives* presented above perhaps constitutes the most interesting solution, taking for example the form of an enlargement of initially bilateral partnerships. This configuration permits a “hardcore” of initial partners, to which are added other partners on the basis of their specific skills or their special relationships with one of them (for example, by “gradual affiliation”, a partner known

to one of the partners joins the “hardcore”). This addition thus permits the strengthening of the network and the introduction to it of collaborations based on elements linked to the specific skill identified among the partners, or even their anticipated degree of commitment to the project.

This issue is all the more important depending upon the extent to which the degree of control of inter-organizational cooperation, i.e. being used to working in partnerships, is pronounced within the network. Moreover, the type of cooperation implemented is also an important contextual factor in this respect: it is not necessarily a question of equal-to-equal negotiations between peers of the same size in the network who are at the basis of its constitution, but sometimes also large companies which leave their subcontractors in their wake, without the latter necessarily being in a position to maintain their own autonomous role in the project.

Finally, it should be noted that the Marshall Plan itself carries a certain amount of limitation in the composition of the partnership, in that it stipulates a business-university-operator trio as the basis for all partnerships. However, there is still some room for manoeuvre relating to the size of the partner company or companies, the number of partners within the network, etc.

4.1.2 How should the project be structured?

This question aims to shed light on the manner in which the different stages of the project are divided up and structured, as well as the way in which the partners’ roles are defined at each of these stages. In this respect, it would appear that the presence of certain identical partners in several sub-projects (playing the role of “linking agents”) accentuates transverse learning (from sub-project to sub-project), a fortiori if there is a strong interdependence of activities from one sub-project to another. We have observed this type of structuring, particularly in the Golf project.

The learning concerned here is more frequently of a processual nature (project management, management methodologies) than content-based (more likely to be the subject of protection of a contractual nature). This learning will vary, however, in terms of its level of moderation and restriction, according to the presence (or not) of more or less stringent confidentiality agreements, differing from one sub-project to another.

It is also a question of distinguishing between interpersonal dynamics and institutionalised exchanges within the project. “What is said to whom?” clearly leads us to the issue of trust within the network, as although present at interpersonal level, this trust is not necessarily the same at institutional level. One interesting option in this respect would be to put in place systems (regulatory bodies) transcending the confines of the sub-project, permitting the regulation of any friction which might arise between these two levels.

In certain cases, this knowledge-sharing role is assumed by a certain category of stakeholder at cross-team level, while the rest of the partnership may wish to restrict itself to more bilateral collaborative relations.

Another good practice which we would like to underline consists of structuring the project not by input (i.e. where partners do the same thing or play the same role, in different sub-projects) but rather by output (where partners do different things, with the same objective).

This was notably the case in the Bravo project, structured per pathology studied and not per group of tasks.

A final point to which we wish to draw attention is that of management within the network. Depending upon the degree of interdependence of the activities within the project, it can occur that parties performing the same task do not benefit from the same status or the same working conditions – salaries, hours, etc. For example, the management and HRM literature (see in particular Culie, 2006; Lam, 2007; Culie and al., 2006, Defélix, Colle and Rapiou 2007; Defélix, Mazzilli and Picq, 2008) highlights the risk of certain tensions or incoherencies within the network, connected to the cohabitation of several different models. From this perspective, it may prove useful to consider the implementation of networked HRM. However, in the analysis of the projects, we did not detect the presence of these tensions referred to in the literature. Nevertheless, one can posit the theory that this risk will be potentially heightened when the project's sustainability is being ensured, in the industrialisation phase. We will return to this point during the focusing stage.

4.2 FROM EXPLORATION TO EXPLOITATION: THE DYNAMICS OF FOCUSING

Focusing is the dynamic of transition from exploration to exploitation, during which the organization (or the network) exploits a chosen solution and perfects it. In other words, it is a case of choosing, from among the numerous initial options, those that will be the subject of exploitation, i.e. improving the reliability of the experience, its routinization and its moving into production with a view to marketing.

Focusing is potentially a moment of crisis or tension in a partnership, because the choices and trade-offs made are the moments where the partners' different logics come up against each other. For example, the difference between industrial and university issues can appear more prominent here and are sometimes the source of dissatisfaction for certain partners if the focusing takes place to their disadvantage. The strategies and dynamics of focusing are driven by different categories of contributors. Due to this fact, decisions relating to the "focusing" action are very often a powerful issue or even a potential source of conflict, since the focusing phase, where structural choices are decided on, is synonymous with a reduction of freedom and can lead to a reconfiguration of the initial partnership.

This involves issues in terms of losses and gains for the project's different partners, as the financial investment agreed to by the companies, research centres and universities, as well as their aims in the projects, will lead them to expect returns on their investment of differing natures and over different time frames. This invalidates the observations of Holmqvist, according to whom the opening phase is the scene of calling into question and doubts that are potentially factors in a crisis, whereas the focusing phase is characterised by the search for solutions, by the fact that the partners have reached a consensus on the way to continue the collaboration through the development of formal strategies and goals.

The importance of constructing a language, a frame of reference shared by all partners therefore constitutes a good practice that helps the partnership to advance in a single direction.

The Bravo project, for example, has chosen to use the reference, jointly accepted within the partnership, of Proof of Concept, in order to select the results regarded as exploitable and to thus continue on the most promising research path.

During the focusing stage, we have also been able to observe that the fact of concentrating the discussion or reflection of the partners on a practical objective, on a tangible achievement, even if intermediate, seems to produce a facilitating effect on inter-organizational learning, in

that this goal stimulates the convergence of the different contributors' roles. It may be a question of a result of experience, an objective, a prototype that materialises the state of advancement of the project at a given moment. This "shared joint aim" in which each party has a shared role, prefigures the outcome of the project. In a general sense, making reference to a concrete objective allows the partners to get their bearings in relation to the progress of the project and allows the clarification of the coming stages and thus the initiation of the focusing or at least more marked targeting within the project. The reference to a shared common aim can encourage the cohesion of the team and most notably help to reassure the partners on the ability to bring the project to fruition. It is also a matter of good practice, which illustrates the central role played by the aims as a method of structuring what are significantly different knowledge bases and worlds.

In the Lima project, for example, the physical realization of a technological choice was able to be made following a demonstration using equipment in part designed by a laboratory (antenna) and partly purchased by another laboratory (transmitter) and the connection and compatibility test between these physical developments by different partners.

Lastly, a third category of good practices places the emphasis on the need to make the choices that present themselves during the focusing stage neutral and transparent, so that they are collectively accepted as "without suspicion", as focusing basically involves making one choice by excluding others. Consequently, it would appear important to maintain a record of the options dismissed and the reasons for their dismissal. One good practice therefore consists of documenting the history of the choices made and their alternatives in order to allow them to be returned to, leaving open the possibility of their subsequent exploration.

The Golf project, for example, opted for the traceability of decisions taken, in order to be able to reconstitute the history after the fact. This took the form of the recording of all dismissed options and the reasons for their dismissal.

We also observed another practice in the Bravo project, consisting of using an expert external to the project, whose role was to provide a judgement in order to facilitate focusing. The supposed neutrality of this external jury ensures independence of judgement in relation to the respective interests of the different partners. For example, the intervention of a third party – mediation – constitutes a good practice insofar as it helps overcome any conflicts within the partnership. Having said that, the judgement of the jury is likely to be influenced by how the project is presented and its neutrality may not be unanimously recognised.

The focusing phase also reveals some issues concerning the composition of the partnership, which may evolve at any time, either through the inclusion of partners whose skills become necessary, or through the withdrawal of a partner whose contribution or area of expertise is no longer relevant to the choice made. This stage in particular may be the subject of various practices of which the appropriateness can only be judged case by case.

For example, the choices and technological advances will potentially have an impact on the allocation of financial and human resources. Depending on the degree of uncertainty regarding the project's output, the tensions will be more or less acute. In the event that the final result is foreseeable, the focusing will appear less "painful" due to it being more expected.

The consequences of the focusing are highlighted here in terms of the partnership's composition and, as a corollary, the allocation of the resources available.

Based on this observation, it seems advisable to envisage a regulatory body to take charge of these different aspects.

Finally, the focusing stage prefigures the path to which the network commits in terms of ensuring sustainability. On this subject, it appears that the projects adopt different positions. Some think of creating a company in order to continue the efforts undertaken in the project and to market them, while others simply mention or are already working on how to follow up their project, or set up new collaborations with certain of the project's partners. In other cases, the process of reflection centres on the capitalisation of the inter-organizational learning and the network.

Involving several types of issues, these reflections or actions are the framework for numerous sets of stakeholders. For example, it is at this level that the questions of evaluating the output of the project will be addressed: who will be its main beneficiary/ies? What form will this evaluation take? Apart from the initial contractual provisions, how will the problems of patents and intellectual property be experienced in reality?

In other words, it is during the sustainability stage that the question of the structuring between technological and economic innovation will be asked. The concept of return on investment and the economic risk accepted in the project's premises by the different categories of stakeholders are therefore central to the debate, insofar as the investment of the different partners in this respect was different at the project's inception and at its end: the positions may have been reversed. By minimising the extent of the risk linked to financial participation in the project, the Marshall Plan has certainly constituted an opportunity for these parties.

4.3 FROM EXPLOITATION TO EXPLORATION: THE DYNAMICS OF OPENING-UP

According to the sense accepted here, the opening-up dynamic is a stage that occurs following a calling into question of the methods of operation or production within a company. The previously favoured solutions are then considered as insufficient or even obsolete. This situation is potentially destabilising for the company and can lead to a crisis.

In these circumstances, the issue is then to find new ways of doing things, new products, new clients, new staff. For the organization, it is a case of encouraging, implementing, and stimulating exploratory learning. One of the chief consequences of opening-up is an increased level of uncertainty linked to a given question or the addition of other paths for exploration within the project being conducted.

If we follow Holmqvist, we might presume that the businesses involved in the Marshall Plan have already experienced the crisis of opening-up and the process of questioning that can lead to conflict. Our hypothesis presumes therefore that this calling into question has occurred at intra-organizational level, in a period prior to the Marshall Plan application and therefore before entry into the network. From this perspective, this opening-up crisis would, in a way, constitute the "entry ticket" to the partnership logic brought about by the Marshall Plan...

We have identified several good practices designed to provide or maintain this variety of experiences within the projects observed. One of the good practice identified in this respect consists of maintaining the involvement of a partner withdrawn during focusing in order to

retain potential for subsequent opening-up. This involvement may take the form of continuing to provide them with information, by communicating on the progress of the project, or by inviting them to the plenary meetings, perhaps with a rewarding of this presence (for example, allowing for a budget item of x men/days annually to fund this attendance).

We also observed another good opening-up practice concerning collaboration with researchers engaged in doctorate thesis processes within a project. These theses are conducted in parallel with R&D paths followed at the initiative of the companies. Such associations may occur at different stages of the project: exploratory initiatives, tests, one-off developments, etc. This practice constitutes a convergence factor that allows the university partners to carry out their own research while at the same time contributing to the advancement of the work requested by the industrial partners, thereby permitting the satisfaction of all the partners to be ensured.

In the Alpha project, the carrying out of theses within the project was envisaged right from the original negotiation of the project. The businesses became gradually interested in the results of this work, even making suggestions. The inclusion of academic works in the project makes it possible to reconcile the interests and needs of the industrial and university partners. This thesis work stimulates the presence and maintaining of exploration around themes which interest the businesses. Here, the consortium is open to the exploration of new materials of which the tangible results will probably only emerge on a timescale extending beyond the completion of the project. It should be noted that the completion of the theses and the industrial developments are independent from one another. Therefore, the progress made in the theses does not govern the results of the developments, which remain first and foremost an industrial R&D project. It is worth underlining that the university contributors, whose original role was comparable to “straightforward” contractors, have been able to add a more fundamentally academic aspect to this, which corresponds to their aims as stakeholders.

Finally, it is noted that practices of opening-up can make sense in a socioeconomic context which requires innovation not only immediately but also in the long term. We can cite, for example, the aeronautics sector which is facing up to a revolution in construction materials. The mechanical engineering (metallurgy) sector needs to halt the decline of its industry by finding numerous commercial outlets through the development of products with high added value. Lastly, numerous sectors need to conform to changes in the international regulations, such as the logistics sector, for example, which has to comply with the ERTMS standards concerning the eurocorridors and multimodal transport.

4.4 FROM SOLO ORGANIZATION TO THE NETWORK: THE DYNAMICS OF EXTENSION

This stage refers to the dynamic which occurs when the learning, previously concentrated at organizational level, is extended to inter-organizational level. In practical terms, this means the moment when one of the network partners share with the other members the results of research, experience, or solo production, which it “puts into the kitty”.

One of the key issues raised by this stage is that of the legitimacy of the partners, depending on the expertise that they attribute to themselves, as it is during this sharing procedure that the trust concerning the skills asserted by the partner is challenged, and will be confirmed (or not) according to the degree of correspondence between the content which the partner provides

and the expectations of the network's other partners. In other words, once the cooperation comes into effect, there is a risk of trust in this capability deteriorating. These problems of legitimacy are posed in particular at the time of the project's launch. During the project, a collective dynamic is gradually installed and becomes stronger and stronger, thus reducing the impact of doubts of this type.

This phenomenon was observed in the Lima project, where at the moment of extension, a partner presented its work to all the other partners, work which did not live up to their hopes. We subsequently noted a deterioration in trust in competence. In this respect, it is interesting to note that trust now emerges as a resource (a trust reserve) rather than as an ability.

Consequently, in order to avoid all disappointment linked to a lack of awareness or poor interpretation of what to expect from a partner, one of the responses to this issue, identified as a good practice by the parties on the ground, consists of optimizing the partners' mutual knowledge: in other words, more effectively identifying their strengths and abilities and their role in the project. Various systems can be put in place in order to encourage this dismantling of barriers, such as collective brainstorming sessions and rotating meetings, provision of personnel, or the sharing of equipment or infrastructures.

However, the degree of competition between partners at sectoral level may constitute a moderating factor in these possible collaborations. Conversely, a degree of geographical proximity between partners may strengthen it (under the effect of sub-regional forms of structuring).

Moreover, another good practice which emerges from the ground is to ensure that the partners have good teaching skills and are attentive to providing a certain simplification of the content which they share, in order to ensure optimum comprehension on the part of the other members of the network. From this point of view, it may be beneficial to envisage the involvement of an authority or a stakeholder who takes on the role of "translator", the aim of which will be to reflect upon the logical reference system used by the different categories of stakeholders, in order to lead them gradually to adopt a shared language.

In the Alpha project, the circulation within the partnership of a summary document christened "the month's actions" meets this need of the partners for a simplified but global view of the work conducted by all of the partners at sub-network scale.

In the Golf project, the project manager performs this role of coordinator-translator and constantly ensures that everyone understands and incorporates the contribution of all.

Another issue which emerges during this extension phase is that of the possible points of tension between intra-organizational level and the project level (i.e. the inter-organizational level). Although the positioning within and outside the project and the management of "double allegiances" (to one's employer but also to the project) or double loyalties are presumably an issue present at any point in an inter-organizational collaboration, this issue seems more visible and appears more critical at the moment of extension. These tension points can be varied in nature: tension between the workload linked to the involvement in the project and that outside it; tension between the orders of the internal manager and those of the

project coordinator; tension between what is shared in terms of know-how and expertise with the members of the network, and what the company keeps to itself due to possible competitive relations that it might face with these same contributors.

Concerning the first two categories of tension mentioned, one of our recommendations would be to create a consultation space between the project coordinator and the representative of the solo organization (or their superior). Such tensions could then be regulated, most notably through the clear definition of duties and the methods for running the project and making decisions.

The third category of tension mentioned, regarding the sharing of expertise, constitutes in itself an issue concerning the development of trust within the framework of the inter-organizational cooperation. This is because the materialisation of the cooperation within the framework of a contract probably constitutes the only concrete formalisation of each party's contributions and the respective tasks. Moreover, each partner involved in the project is most likely to be aware of the risk necessarily represented by any inter-organizational collaboration. In other words, the tension between "collaborating" and "not saying too much" can be anticipated, but does not necessarily have a solution. We have not detected good practices and we cannot formulate any recommendation in this respect, as it strikes us as illusory, not to say naïve, to advocate complete cooperation and total transparency between the members of the network.

4.5 FROM THE NETWORK TO THE SOLO ORGANIZATION: THE DYNAMICS OF INTERNALISATION

Internalisation is the dynamic according to which the company re-appropriates the learning carried out at network level. Although this stage is inevitable and even desirable in the context of inter-organizational innovation projects, it does however bring with it the potential for conflict. Essentially, it is important to be attentive to the moment and to the conditions of the unfolding of this stage, which is perceived as problematic if it appears detrimental to the project. The moment at which internalisation occurs thus emerges as a major issue within the partnerships: internalisation adjudged to be too early will often be met badly or negatively perceived by the other members of the network, who might interpret this "re-appropriation" of the collective knowledge as illegitimate, if the conditions of this stage have not been collectively negotiated and decided on in advance. Consequently, this process can, in our view, be of two types:

- it is either a case of "virtuous" internalisation, desirable insofar as one of the aims of the inter-organizational collaboration is for the partners to benefit from it within their organization in terms of learning, but without this being detrimental to the project/network,
- or it is a "perverse" internalisation, if it turns out that it is occurring to the detriment of the inter-organizational level (through its nature or due to the moment at which it occurs). The moment and conditions of internalisation are indeed sensitive dimensions: if the internalisation is too early – i.e. if it occurs before the innovation has been evaluated at project level – or if it occurs in an implicit or hidden manner – i.e. outside conditions of transparency adjudged acceptable by all of the partners –, it will be perceived as a process conflicting with the aims of inter-organizational cooperation.

There is one qualification, however: the content of the internalisation appears to be less problematic for exploration than for exploitation, without doubt due to the implications of economic benefits which this second form of innovation contains more directly (or more in the short term). Similarly, the internalisation of “content” innovations (i.e. relating to the technological aim itself) is more sensitive than the internalisation of “managerial” innovations (methods of operation, methodologies, project management), probably for similar reasons.

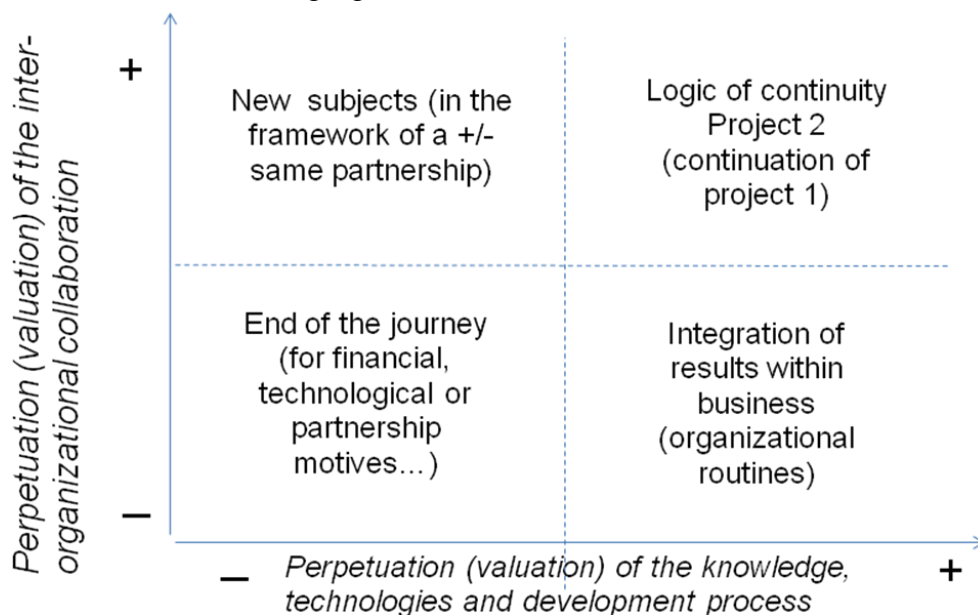
The main issue raised by the internalisation stage concerns the problem of intellectual property. With a view to lessening as much as possible the risks of “illicit” internalisation and allowing all of the partners in the network to appropriate the numerous issues and implications of the inter-organizational collaboration in terms of intellectual property, we have observed a good practice which consists of the collegial design of intellectual property agreements.

Moreover, in certain cases, the imposition on all the partners to produce a register of the licences which they possess, right from the project’s premises, contributes to a certain transparency within the network. To conclude, we should point out that this type of agreement, designed to solidify trust starting from the project’s launch, does however introduce a degree of initial mistrust, which fades as the project progresses and trust and cohesion develops between the partners.

Moreover, it appears highly relevant to impose an explicit renegotiation of intellectual property agreements during the project, as the agreements concluded and signed at the start of the project do not seem to cover all of the emerging innovations, indeed far from it.

4.6 ENSURING THE PROJECT’S PERPETUATION

This last stage is relating to perpetuation concerns for the project. This perpetuation of inter-organizational projects can be considered under two dimensions: the perpetuation (or valuation) of the collaboration itself (the partnership) and/or the perpetuation (valuation) of the project’s results and outputs. To cross those dimensions leads to four possible scenarios, as shown in the following figure:



These scenarios need, of course, to be contextualized according to different variables, among others the type of innovation, the specificities of the partnership (size, composition, etc.) and of the sector (customs of collaboration, acuteness of the competition, etc.).

These scenarios express, in our view, the balance and compromise found between the partners, according to which dimension they decide to emphasize: scientific and technological, collaborative and partnership; or economic. Such articulation can be identified through several indications within the practices in the project development: the design of a business plan, actions of end-user involvement, market studies, involvement of third parties (from authorities, from the cluster...) in the reflexion, design of new projects or definition of new objectives, new subjects, etc.

At the moment we write this text, we didn't identify related good practices in the projects we investigate. One of the reasons is that these projects are still quite far from their planned end deadline, and for now it seems that they do not show much concern or proactive action to ensure perpetuation. Nevertheless, our purpose during the following months is to focus on such indications in particular, in order to identify potential good practices in this matter.

4.7 SUMMARY TABLE OF THE CRITICAL STAGES, ISSUES AND GOOD PRACTICES

ISSUE	GOOD INTER-ORGANIZATIONAL LEARNING PRACTICE	CONTEXTUAL FACTORS
CRITICAL STAGE: Definition of the project		
<ul style="list-style-type: none"> Combining the two types of learning (exploration/exploitation) Developing trust 	<p><i>How to form the partnership</i></p> <p><i>If making use of existing networks:</i></p> <ul style="list-style-type: none"> - put in place actions aimed at permitting the network to remain open to the outside, to introduce new blood in order to maintain a certain degree of exploration - allow the possible recomposition of the partnership <p><i>If making use of non-pre-existing networks:</i></p> <ul style="list-style-type: none"> - put in place actions aimed at stimulating inter-organizational cooperation in order to strengthen the collective identity, the project culture 	<p>Degree of control of inter-organizational cooperation</p> <p>Type of cooperation in place</p> <p>Inherent limitations of the Marshall Plan (obligation of presence of 3 different categories of contributors)</p> <p>Category of personnel lacking or not</p>

	<p><i>How to structure the project</i></p> <p>Encourage the simultaneous presence of certain contributors (playing a linking agent role) in several project locations</p> <p>Put in place systems (regulatory authorities) exceeding the scope of the sub-project, permitting the settling of any friction between interpersonal and institutional levels</p> <p>Structure the project by output and not by input</p> <p>Put in place network HRM (especially when making it permanent)</p>	<p>Degree of interdependence of activities between components of the project (sub-projects, Workpackage Blocks, etc.)</p> <p>Type of learning targeted (content or process)</p> <p>Presence of more or less stringent confidentiality agreements between components of the project</p> <p>Degree of interdependence of the activities</p>
CRITICAL STAGE: Focusing		
<p>Encountering of the specific logics and issues of the different categories of partners, among which arbitration and a choice will have to be made > potential moment of crisis or tension</p> <p>Possible impact on the composition of the partnership (integration or removal of partners)</p>	<p>Construct a language, a frame of references shared by all the partners</p> <p>Concentrate the discussion or reflection of the partners around a practical objective, a tangible achievement</p> <p>Keep a record of the options dismissed and their alternatives, document the history of the choices made, the reasons for them</p> <p>Use an expert external to the project (mediation body)</p> <p>Plan a body to regulate the impact in terms of recomposition of the partnership</p>	
CRITICAL STAGE: Opening-up		
<p>To find new ways of doing things, new products, new clients, new staffs → to encourage, put in place, stimulate exploratory learning</p>	<p>Maintain the involvement of a partner removed during the focusing phase in order to retain potential for subsequent opening-up</p> <p>Collaborate with the researchers engaged in a doctorate thesis process</p>	<p>Different sectoral pressures demonstrating the importance of renewal and innovation</p>
CRITICAL STAGE: Extension		
<p>Legitimacy of the partner (trust and ability is challenged)</p> <p>Points of tension between intra-organizational level and project level</p>	<p>Optimise partners' mutual knowledge, encourage dismantling of barriers</p> <p>Ensure that the partners have good teaching skills and are attentive to providing a certain simplification of the content during presentations or plenary meetings</p> <p>Create a consultation space between the project coordinator and the representative of the solo organization (or their superior)</p>	
CRITICAL STAGE: Internalisation		
<p>Moment and conditions of internalisation</p> <p>Intellectual property</p>	<p>Establish the conditions of transparency adjudged acceptable by the consortium</p> <p>Do not allow the internalisation of the project before the</p>	<p>Depends on the aim of the internalisation (exploration or exploitation? of content</p>

	innovation has been evaluated at project level Produce a register of licences Impose an explicit renegotiation of IP agreements during the project	or managerial?)
CRITICAL STAGE: Perpetuation		
Perpetuation or valuation of the collaboration and/or the knowledge, technologies and development process	To be identified (as for now, only several indications of concern found such as the design of a business plan, actions of end- user involvement, market studies, involvement of a third-parties (from authorities, from the cluster...) in the reflexion, design of new projects or definition of new objectives, new subjects, etc.	Depends among others on the type of innovation, the specificities of the partnership (size, composition, etc.) and of the sector (customs of collaboration, acuteness of the competition, etc.).

5. CONCLUSIONS

Beyond the varied nature of the projects which we have analysed, we have discerned that each of the inter-organizational learning dynamics constitutes a **critical stage** in the life cycle of a project and is accompanied by various crucial **issues**, such as, for example, the composition of the partnership, the legitimacy of the partners, the questions of intellectual property and also the specific strategies of each category of stakeholder in terms of its innovation and ensuring its sustainability. If they are not anticipated, these issues can be potentially highly conflictogenous, can damage the inter-organizational collaboration and, eventually, lead to the failure of the innovation project. Based on these elements, we have been able to detect good practices corresponding to each of these stages, illustrating systems of anticipation or regulation and described as good practices by the parties on the ground, and to formulate various recommendations resulting from observing the actions conducted or lacking.

Examples or counter-examples can be deployed in a very concrete fashion in service of the partners in an inter-organizational innovation project. One of the practical outputs of this article might be to help the stakeholders to be vigilant in order to spot these issues more effectively, to regulate them and to anticipate them. These good practices, we should specify again, are closely linked to their context of introduction and cannot be taken at face value for any inter-organizational project, as numerous contextual factors can strengthen or, conversely, moderate the effect of the practices concerned, or explain its emergence, success or failure...

The different good practices which we have identified come under a certain number of actions which can be structured in three categories:

- different actions concerning the implementation of a degree of **vigilance**, of an awareness consisting of paying attention to certain factors. This includes a concern for maintaining a certain degree of exploration in the network, or regarding the risks related to “perverse” internalisation, in connection with intellectual property issues;
- **translation** operations (Akrich, Callon and Latour, 1988, 2006), characterised by the consideration of the different logics of stakeholders in order to seek to cause them to converge towards a shared goal. This refers, for example, to the construction or use of a shared frame of reference, of intermediaries (circulating aims, tangible achievements), or even the intermediation of an expert external to the project

permitting the facilitation of the focusing stage by lessening the impact of conflicts between partners concerning the choices facing them;

- systems of **regulation**, designed to prevent or smooth any friction between partners, connected with the sharing of certain information, for example, various tension points between intra and inter-organizational levels, and also the recomposition of the partnership or the reallocation of the project resources.

The **role of coordination**, within the framework of the actions to be implemented in response to the issues raised, turns out to be of crucial importance. It clearly exceeds the simple placing in interaction of the members of the network and the accomplishment of the administrative tasks imposed by the project. We should nevertheless indicate that these good practices are not necessarily initiated and implemented at the sole initiative of the coordinator and under his sole responsibility, but are more a part of the managerial-type learning which the network will carry out as a whole.

These conclusions resulting from our various observations and analyses lead us finally to formulate different questions, which all constitute areas of work for a subsequent research initiative.

The implementation of translation operations or ethico-political actions (rules of behaviour aimed at bringing together the parties to create a project) are perceived as good practices by the parties. But what are the **conditions for the emergence** of these good network management practices? What are their obstacles? Their issues? Of particular interest will be distinguishing which contextual, processual or managerial specificities can exert an influence on the output achieved. This work highlights the need to widen the temporal and spatial observation base. Consequently, it seems worthwhile to consider, as part of a subsequent empirical investigation initiative, a greater number of projects at different stages of advancement.

Moreover, what about the relations between the competitiveness clusters and the projects registered with them? How are they likely to evolve? Can the good practices identified at project level be successfully implemented at cluster level? In order to shed light on these questions, it would be worthwhile feeding back the observations and recommendations resulting from the analysis of the projects to cluster level, and detecting **conditions for the transferability** of the good practices from the projects to the clusters.

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