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WORKING PAPER

A PROCESS STUDY OF ENTREPRENEURIAL TEAM FORMATION: THE CASE OF A RESEARCH BASED SPIN OFF

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EXECUTIVE SUMMARY

This paper analyses how an entrepreneurial team evolves during the early phase of a venture. One of the main research questions addressed is the development of managerial and business capacity. Previous research has shown that early stage venture capital funds use the "business experience" of the entrepreneurial team as a main criterion to consider investment. As a result, many high tech start-ups and especially research based spin-offs do not receive funding because they have no experienced manager within the start-up team. Incubators and interface services have tried to solve this problem by attracting experienced CEOs into the new venture. Although this might have been a solution to this problem at first sight, we observe that many CEOs have left these high tech start-ups again soon after their arrival.

In the paper, we give some explanations for this phenomenon of management turnover: First, in the early phase of a high tech start-up, the main activity is a further development of the technology using customers as a major source of information. Hence, technical business development remains a major task of the CEO. However, this means that a CEO hired from outside the research group should (a) be able to understand the technology very well and (b) have the ability to develop the business himself. Most CEOs hired from larger companies do not show these competencies. Second, the entrepreneurial team has to accept the arrival of an outside CEO. This is not to be taken for granted. In spite of the fact that they often indeed are technical wizards, researchers do not accept that an outsider becomes the chief of their company. The division between shareholder power, which remains in hands of the entrepreneurial team and management authority, which is given by the shareholders to the board of directors and the CEO in particular remains often theoretical. In practice, the entrepreneurs want to run the company or they stay out of it and only are passive shareholders, which keep their main job in academics.

In the paper we show how in practice, the champion of the venture automatically evolves into the CEO position. It would be very difficult to hire an outside CEO at the start of the venture. This would only be possible if the researchers have no interest to commercialize their own technology and explicitly choose to remain shareholders. We also show in the paper how an entrepreneurial team learns. After a year of operations, one of the engineers has gained enough maturity to become a CEO. The paper suggests that instead of hiring a CEO at the start of the company, it might be a more efficient choice to "coach" the start-up team and give the entrepreneurial team the time and freedom to learn. Doing so, the team develops itself the skills and capacities to run its operations. A professional manager might only be needed once the revenues are coming and breakeven is realized. The necessity of experiential team learning is seldom included in business plans. Instead, investors expect and entrepreneurs write ambitious business plans, which imply international business activities and a professional management team at the start. It seems as if the entrepreneurial spirit is almost immediately substituted by the false idea of professionalism. The case described in the paper shows a totally different approach, which turns out to be successful. Entrepreneurial teams, which have no experience at start, are able to acquire the necessary skills in a relatively short period of time. But this team learning does not happen automatically. The provision of a minimum amount of coaching seems to be necessary. Once the learning has taken place, external shocks such as a capital increase are needed to formally restructure the organization.

The paper extensively refers to the role of the coach as an intermediary person between the financial investor and the entrepreneurial team itself. The coach translates the business expectations of the investor into strategic choices, which can be understood by the technical entrepreneurs. The major pitfall shown in the case happens when this coach is considered to be the CEO. When this happens, the entrepreneurs get rid of their responsibilities and view the coach as a deus ex machina, who can solve all their problems. In fact, he gets into the role of an external business manager. It is exactly this, which should be avoided.

Finally, the paper shows the difficulties of a large start-up team. Each entrepreneurial team member wants to solve every problem, which the company encounters. Being a shareholder and managing a company are two different things. Shareholder power and management authority should not be confused, but in fact they often are. Entrepreneurial start-up teams that are larger than four persons might be interesting to convince an investor, but are in practice very difficult to run.

These conclusions have major implications on how high tech start-ups are evaluated by investors. The paper shows that (a) an experienced start-up team at start might be the most attractive, but if this can only be accomplished by hiring external business people, it can become a disadvantage. In fact, an investor might be better off to involve a coaching organization or organize the coaching itself than to install a costly professional management team. Entrepreneurial teams that receive the necessary guidance learn quite rapid and co-evolve into more mature management with the business development (b) the champion of a business idea is seldom the best manager but often the most straightforward solution to manage the team at start. This observation implies that investors should be very attentive when evaluating a start-up team and not dismiss the investment if the champion does not establish the right personality; (c) exponential growth from the start is an illusion in the high tech start-up studied here. The case clearly shows how entrepreneurs that come out of a research environment only gradually learn to adapt their ideas to the business needs. No external professional manager could change this; (d) in relation to the previous point, the insights drawn from the case suggest that a gradual investment through different capital increases might be better than a large investment at start. The involvement of new external parties provides the company the opportunity to restructure itself. These external shocks are necessary to change the team hierarchy in a formal way and (e) start-up teams with seven persons or more are extremely difficult to work with. They necessity too much overhead and create too much tension between management authority and shareholder power. Probably the optimal size lies much lower. Three to four persons seem to be a far better deal for the investor.

A PROCESS STUDY OF ENTREPRENEURIAL TEAM FORMATION: THE CASE OF A RESEARCH BASED SPIN OFF

ABSTRACT

This paper describes how a team of entrepreneurs is formed in a high tech start-up, how the team copes with crisis situations during the start-up phase and how both the team as a whole and the team members individually learn from these crises. The progress of a high tech university spin off has been followed up from the idea phase until the post-start up phase. Adopting a prospective, qualitative approach, the basic argument of this paper is that shocks in the founding team and the position of its champion co-evolve with shocks in the development of the business.

INTRODUCTION

The process of spinning of a venture from a parent organization, and from a university in particular, has received increasing attention during the past few years both in the academic literature (Roberts and Malone, 1996; Mustar, 1997; Carayannis et al., 1998; Smilor et al., 1998; Steffenson et al., 1999) and in practice (Clarysse et al, 2001). Governments and universities do increasingly consider the creation of spin-offs as a way of commercializing their internal research results. In addition, the financial investors' community, licking its wounds after the dot-com debacle, has shown a renewed interest in academic spin-offs as investment opportunity (International Herald Tribune, 2001). However, academic spin-offs show some peculiarities, which make them distinct from other high tech start-ups. Usually, most of the founding team members know each other from university work and often there is a lead entrepreneur who was the technical project manager before start-up. Moreover, the founding members have little contacts with non-technical people when they start-up the venture and show limited industry experience (Cooper en Daily, 1996). As a response, investors were traditionally very skeptic about these start-ups and only participated when they themselves could recruit a functionally balanced professional team that almost replaced the original founding team at the managerial level (e.g. Roure and Keeley, 1990; Cyr et al., 2000).

Till recently, this was a possible strategy since competition for good spin-off deals was nearly non-existent among investors, nor were universities themselves interested to invest. Equally, there was little interest among the researchers to get actively involved in the spin-off. Thus, few growth oriented spin-offs were created and if they were created, the lead technical entrepreneur before start-up either played a role as member of the board or as a Chief Technical Officer, at most. Today, an intense competition has developed among universities to maximize the number of growth oriented spin-offs. Investors jump on the bandwagon to provide start capital through university funds, university related business angel networks or semi public seed capital funds. This change in environmental conditions has resulted in the fact that growth oriented spin-offs are increasingly started with the technical intrapreneurs in charge of the start-up. They receive managerial support from the financial investors, specialized service providers, incubators or venture accelerators with whom they collaborate or by whom they are nurtured (Smilor et al., 1990, p. 65; Feeser and Willard, 1998).

Despite the fact that the venture capital literature consistently points to the entrepreneurial team as "the" most important factor which makes professional investors decide to enter a company (e.g. Cyr et al., 2000), very little insights exist about how entrepreneurial teams are formed in these research environments, how these teams evolve in the pre-start or incubation phase and how they eventually gain, both through influx of new members and through learning by experience, enough maturity to attract a professional financial investor. To tackle these issues, we followed up a research-based spin-off from its idea phase through the start-up up to its first capital increase using participant observation as a main data collection technique. The total period of observation lasted over a period of 20 months. In this period both authors followed closely the intra-preneur and the founding team, and took part in different founding team activities.

This paper unfolds along the following lines. First, we point to the relevance of studying the start-up process of research-based spin offs, taking the perspective of entrepreneurial team formation and development. Second, we explain the research method that guided our data collection and analysis, in order to gain insight into the as yet incomplete documented phenomenon. Third, we provide a discussion of the main findings and how these contribute to theory building in the field of new venture creation in general, and more specifically, in the area of championing and entrepreneurial team development. We conclude with some managerial implications and suggestions for further research.

RESEARCH BASED SPIN-OFFS AND TEAMS

'High tech start-ups' or 'new technology based firms' play a prominent role in the current economy (e.g. Mandel, 1998; Hendry, 1999; Storey and Tether, 1998 for a review of the literature). They are a very heterogeneous category of firms including different types ranging from technology developers to technology adopters (Hellman and Puri, 2000). Technology adopters use new technologies to enter new markets or to launch new ways of doing business, but do not develop technologies themselves. The entrepreneurs launching technology adopting companies normally tend to fulfill or serve a short term market opportunity. The so-called dot-com companies are a recent example of this kind of firms. At the other end of the continuum, we find the technology developers, which act as R&D boutiques (Pisano, 1990). Expected product revenues seem to be much further away in these companies, where the technical people play a leading role. The literature on high tech start-ups is very inconclusive both about the growth paths of these companies, the starting configuration and the internal dynamics. Much of the confusion seems to be related to the heterogeneity of the population of high tech firms. To tackle this heterogeneity problem, we follow previous research focusing on a particular sub-population of high tech start-ups: *research-based spin-offs* (Mustar, 1995 & 1997; Smilor et al., 1990; Steffenson et al., 1999).

Research based spin-offs have become increasingly popular as a way of commercializing the research results of a public / private laboratory or a university (Chiese and Piccaluga, 2000; Mustar, 1997; Clarysse et al, 2001). A common two-dimensional definition of a research based spin off (RBSO hereafter) is: a new company that is formed (1) by a faculty member, staff member or student who left university to found the company or started the company while still affiliated with the university, *and/or* (2) a core technology (or idea) that is transferred from the parent organization (e.g. Roberts and Malone, 1996; Smilor et al., 1990; Steffenson et al., 1999). According to this definition, a spin off can be seen as a technology transfer mechanism for the commercialization of a technology developed at an R&D institution or university. However, the actual relationship between the spin off and the parent company seems to be much more complex than this definition assumes. Carayannis et al. (1998), for example, suggested to extend this definition to include the transfer of other services of the company (e.g. capital, management advice, premises, …) or to restrict the spin off concept to specific transfer, so that we can refer to "technology spin offs", "founder spin offs", "venture capital spin offs", … Given the unique circumstances in which spin offs can be set up, it is not surprising that there is no uniform definition of the phenomenon. In our research, we posit a transfer of technology from a research organization as a *conditio sine qua non* for defining a company as a research-based spin off.

It is important to note that research-based spin offs may have very different organizations as parent institutes. Universities, publicly or privately funded research institutes (excluding corporate R&D departments) and technical schools are examples of parents. A common feature of these organizations is that they have commercializable ideas in their research portfolio but they differ significantly in the extent to which they actively search for these business opportunities as well as in the extent to which the trajectory of business development is guided and supported. Ideally, the endpoint of that trajectory consists of a defined market opportunity around which a well-balanced start-up team is composed. Depending upon the intensity of the management of the potential spin off's trajectory, three different modes seem to emerge: a protected mode, a free market mode and a "keynesian" mode. In the protected mode, the engineers / researchers that are interested and found eligible to get together in the potential spin off are protected from the external environment until formal venture capital can be invested. This type of starter typically gets a small amount of finance to overcome a certain incubation period and remain on the premises of the research institute. During that time, venture capital is negotiated and a professional start-up team is built. In the free market mode,

the researchers start with no money or at most a small amount of financing (usually a subsidy) without real due diligence. Hence, not being embedded in the parent organization during the early stages, the venture has to find its own way in the market. Finally, the keynesian mode is in fact a variation on the free market mode in which the research team receives some start capital (often from the university seed capital fund), spins off and gets coaching from the network during its first phase.

There is a general consensus that high tech start-ups are more often created by a team than by one lone entrepreneur (Roberts, 1991). Moreover, team started business account for a disproportionately greater number of high-growth firms (Kamm et al. 1990). It is not surprising then that investors often emphasize the quality of the management team more than any other single factor as they make investment decisions (e.g. Kamm et al. 1990; Cyr et al., 2000). Having identified the initial venture opportunity, they make up the intangible assets of the firm (Cooper and Daily, 1996). Although mainstream entrepreneurship journals have not handled extensively the impact of teams on company growth, very elaborated bodies of research in such fields as organizational behavior, strategic management and social psychology have examined team issues in some detail (Birley and Stockley, 2001). We would basically distinguish between two main currents. The social psychology stream has focused primarily on processes and outcomes within the boundaries of the group, for example, consensus, conflict, problem solving and decision making (Ancona, 1987). The basic argument of the second current -- the demographic approach -- is that, instead of looking at processes, which cannot be measured reliably, we should look for proxies that can be measured (e.g. age and tenure as indicators for experience and maturity). The demographic stream reached a high in the "upper echelons perspective", where demographics are applied to top management teams. Although the demographic approaches implicitly acknowledge that (behavioral) processes form the link between demographic characteristics and performance, they largely treat these processes as a black box. The need to open this box and study the underlying processes has been stressed by many researchers (see Birley and Stockley, 2001) but to date relatively few studies have attempted to do this (e.g. Smith et al., 1994). It is clear that very little research has focused on how founding teams form and evolve during the first critical stages of a venture. This research is one of the first attempts we know of to fill this gap in the literature, following up longitudinally a research based spin off over a period of 20 months, taking an entrepreneurial team perspective.

RESEARCH SETTING

Our research site is a spin-off from the Université Catholique de Louvain la Neuve (UCL): "CINE" (pseudonym). UCL is the largest French-speaking university in Belgium and the number of students has increased with 7% between 1997-1998 and 2000-2001. The university has ten faculties, comprising 50 departments and 200 research groups. The annual research budget is 85.10^6 EURO, of which 12.10^6 EURO is provided by companies. In 1985, a technology transfer office was created: SOPARTEC SA. This is a limited liability company, which is majority owned by the UCL. Its main corporate purpose is to promote the transfer of technology from UCL by several intertwined means: (1) provision of seed capital for innovative developments based on UCL research (2) the provision of equity financing to start-up companies using university technology (3) filing, prosecution and maintenance of patents and (4) licensing patents and related technology. The technology transfer and seed capital company has 12 companies in its portfolio, of which 2 are public. The size of the fund today (2001) is €12.5 m and the value of their portfolio amounts to €35 m. SOPARTEC actively plans to build an incubator in the Science Park of Louvain-la-Neuve (planned operation: 2003). From 1998 onwards the university has spun off 6 ventures.

CINE was initiated in the telecommunications and microelectronics department of the UCL. Different European projects[1] are at the basis of the development the venture, starting as of 1994. In 1997 the CINE project started, focusing on datacasting and protection of authors' rights. The emphasis of the project was clearly on valorization of the research, more specifically by means of creating a spin off company. "CINE" was formally legislated in June 1999, with 200K EURO start-capital and 150K EURO deferred loan. The main characteristics of the technology transfer office and the spin off are presented in table 1.

INSERT TABLE 1 ABOUT HERE

The spin off reflects the aforementioned "keynesian mode" of trajectory coaching intensity, in which the university exerts control to a certain extent via representation in the Board of Directors and via the appointment of a Company Coach, which was officially delegated with the responsibilities of a CEO. This function included the structuring of the team in which everybody gets a role and the attraction of competencies into the team if they were not yet available (e.g. Business developer or CEO). In fact, the fund did not have enough manpower at the time to invest in different young start-ups, which need a lot more coaching than companies further along the line. So, having a person in whom they had confidence was a prerequisite for them before they wanted to invest. Another consideration that informed the decision for having an external coach was related to the fact that the investor did not believe in the management capabilities of the project leader.
In the next section we will discuss the method we employed for studying this venture in depth.

METHOD

The aim of this research is to inductively describe and explain the nature of new venture team formation and development in a research based spin off. Since processes are involved a longitudinal approach is required. To track and analyze changes over time, some researchers have adopted well-accepted business history approaches (see e.g. Cusumano et al., 1992; Cusumano and Selby, 1995). Herein, the tracing of historic company documents and project data is central, often complemented with extensive interviews about the company's history and current operations. Studying the early phases of a research-based spin off we could not adopt this methodology for at least two reasons. First, there is a clear absence of track records and archives that document on these particular companies' very early stages. Second, since we are interested in team formation and development, it is important to get information from the original founding team and from relevant stakeholders in the parent organization and environment. It is very difficult to identify these individuals or to get the relevant information *post facto*.

As a result, we decided to adopt a prospective qualitative approach (see e.g. Perlow, 1998, 1999), in order to discover more about "*how*" and "*why*" teams affect performance and growth (Birley and Stockley, 2001. We collected real time longitudinal, qualitative data and attempted to extract theory from the ground up (Eisenhardt, 1989; Yin, 1994; Langley, 1999). The total time we closely followed up the venture amounted to a period of 20 months (0ctober 1999–May 2001).

Data sources

The development of the venture has been followed up closely by the two authors. The progress was observed and recorded from the idea phase through start-up until the second

[1] European funded projects are a common feature in the Belgian University research landscape. Since universities have suffered from budgetary cuts, research has increasingly become financed by external sources on a contract research basis.

round of financing (October 1999 - May 2001). Our aim was to develop a better understanding of how a new venture team gets together and organizes itself in the very beginning. As described below, multiple methods of data collection procedures were used to address these issues, enabling to cross check results obtained from observations and recorded field notes.

Participant observation During the idea phase and the time during which capital was attracted, the process of new venture creation was followed up by having different contacts with the researchers of university. We visited the researchers several times at university, until formal legislation of the company. The researchers got to know us and we agreed that we would come over “on site” of the venture to engage in participant observation. The actual time of participant observation ranged from August 2000 to June 2001, about 3 days per week, observing the engineers at work, during meetings and informal conversations. As time permitted, we typed out field notes throughout the day. Where possible, we engaged in social activities with the team members: every now and then we had lunch with them and traveled with them for a socializing weekend in the Ardennes. Early in the research process, it was very important to make ourselves useful for the team, in order to gain confidence and a "*raison d' être*" at the site. Helping out with proofreading documents enabled more personal contacts with the team members. Although the team was rather small, the degree of our involvement with the different team members varied still, adopting alternately an "active-member-researcher" and a "peripheral-member-researcher" profile (Schultze, 2000). We attended most of the company’s internal meetings. In CINE, two formal meetings per week were held: a week planning for discussing the objectives to be reached and a technical meeting to discuss particular technical problems and developments. The meetings were prepared and led by the business manager. These meetings were crucial to provide us a clear insight in what is perceived as relevant by the team.

Interviews We interviewed each of the 7 team members (including the “champion”), the CEO, and the RA that helped with the coaching of the business plan. Some broad questions guided us throughout the interviews ensuring that we would get comparative data. Each interview took us about two hours. The interviews with the team members and the RA provided us with background information about the group (who initiated the business, how they got together, why they wanted to start a spin off, …). Additionally, we questioned the team about how they perceived the role of a business manager, a Coach (officially CEO) and a Board of Directors, and probed in such a way that they would prevail the most prevalent difficulties -- if any -- they were experiencing. There was a weekly discussion with the Coach-CEO, communicating his perceptions about how the venture and its team evolved.

DATA ANALYSES

Following the guidelines of Miles and Huberman (1984) and Glaser and Strauss (1969) we performed data analysis throughout data collection. In order to arrive at a processual view and empirically grounded themes, the data were analyzed sequentially. First, field notes were typed out consequently and after a period of participant observation, all issues and reflections were condensed in an interim site summary. This draft provided a general picture of what was going on in the venture and helped to focus the interviews. The interview notes were used in order to abstract issues raised by the different team members. Second, analyzing the field notes and interviews notes, we dotted down the most important issues as perceived by the different team members. The first order issues and events that emerged from this exercise (table 2), were then grouped in second order issues (see table 3 for some important themes). Finally, at the conclusion of the field work, we integrated the analysis of the interview transcripts, field notes and the interim site summary in order to address the following question: *How does the entrepreneurial team get formed and evolve in a research based spin off?*

INSERT TABLE 2 and 3 HERE

The basic argument of this paper is that shocks in the founding team and the position of its champion coexist with shocks in the development of the business, along the life cycle of the new venture. Our analysis shows four distinct phases of development of the venture and its entrepreneurial team (see figure 1). A first phase is related to the *idea phase*. Herein, the CINE project team consists of three technical researchers, with one clearly delineated project leader. The latter is in charge of planning, follow up and proposal writing. The *pre-start up* phase is introduced by the actual decision to spin off from university. The project leader proved to be the "champion", driving the idea, looking for business plan coaching and putting a team together: "managing the idea all the way through completion". After formal legislation, introducing the *start-up* phase, our observations and interviews supported the well-accepted view that champions often do not make good managers. This paradox can be explained by the fact that the team needed time to accept that the initial champion is actually not the appropriate person for being the business manager. Triggered by speedy technological evolutions, the *post-start up* phase is characterized by gaining strategic focus and professionalizing the organization of the team. In the next section, we discuss these processes in more depth.

INSERT FIGURE 1 ABOUT HERE

THE PROJECT PHASE: a project team at university

The spin off that we followed up was built on a project that started in 1997 for the planned duration of 3 years. Within the project requirements, there was a clear objective of valorization of research and the creation of a spin off. At the same time, there was a policy shift at university, urging researchers to commercialize their research results. This change in policy was informed by recent success stories in the Walloon region (IPO of IBA in 1997).

The project manager from the department since 1996, became the project leader of the CINE project. He was not only responsible for planning and follow up, but also for establishing and maintaining contacts with industry. Two other technical engineers were working on this particular project. When the project was half way (spring 1999), two situations stimulated the actual development of the spin off. Firstly, there was the availability of a FIRST SPIN OFF scholarship. "First spin off" was created in 1998 as a part of the 'FIRST' PROGRAMME, established by the Walloon government in 1989. It provides 20 scholarships per year, offering researchers the possibility to work during 2 years on the completion of a product, a procedure or an innovative service concept, to carry out an economical and technical feasibility study, and to write a business plan for the creation of a spin-off. It is a government initiated way for providing pre-seed capital to academic entrepreneurs. Secondly, the creation of another spin off from the premises of the university (April 1999) also led to the final decision and preparations to start up CINE. Thus, a new phase in the spin off process is introduced: the pre-start up phase, in which the business opportunity needs to be further validated. Moreover, the business plan is developed, start capital is negotiated and the entrepreneurial team is formed.

THE PRE-START UP PHASE: Championing the business idea into a new venture

Early 1999 the three technical researchers working on the CINE project started looking for business plan coaching, as none of them had any business experience. After having established different contacts they got coaching from a Flemish University professor, who would eventually become the company coach with CEO responsibilities (see Research Setting). Between September 1999 and April 2000 also recruiting started on the premises of

university. From October 1999 onwards we started to follow up the venture, gaining insight in recruiting decisions. The technology platform of the future spin off would be datacasting (CINE project) and during the project, contacts had been established with two local companies (NEWTEC en EVS), that had made explicit their interest to co-operate. Since EVS had communicated that a security module was necessary in datacasting, John3 was involved in the start-up effort. Jésus, sharing the office with the three original project researchers and John3, joined the team as well. Next to the skills that were developed in the CINE project by the three technical project-researchers, there was a need for a hardware specialist for enabling the co-operation with NEWTEC. Daniel was attracted to serve this purpose and a concrete project was started with NEWTEC. Although the team members communicated that "matching personalities" are important for getting together in the business, the composition of the team was mainly technologically driven. Ater a while an engineer with some industry experience was attracted.

During the pre-start, the project leader (John1) was the driving force behind the spin off process. Without him, start-up would probably not have taken place. This supports the well-accepted notion that an "idea either has a champion or dies". Identifying John1 as the champion of the venture resulted from different accounts. First, we came to this conclusion observing his position as a project leader and looking at how he profiled himself in the team along the development of the business idea. He put himself automatically into the role of the one who steered the idea and motivated others to join. Second, the other team members clearly pointed to John1 as the one who "started it all". He inspired the idea, motivated people to join and put in a lot of energy in order to arrive at start-up of CINE. Third, although we did not specifically test John1 for the champion related characteristics described by Howell and Higgins (1990), his personality, charisma and early and ongoing informal leadership role in the spin off process was obvious. Finally, the RA of the Flemish university that helped in coaching the business plan as well as the Company Coach also identified John1 as the "champion" of the business venture.

In April 2000, the first draft of the business plan was provided at the university's seed capital fund. Because of personal (family) issues, one of the project researchers decided not to engage in the kick off of the business, and left the department late 1999. The spin off was formally legislated in June 2000, with six founders. Peer nomination and the distribution of the founders' shares reflect that the six engineers are all considered as founders. However, two of them only got on the pay roll of CINE September, 1st. Support from university consisted of the use of PC material and the fact that two other engineers remained on the pay roll of the university. At the time of writing (summer 2001) CINE employs seven individuals, of which one part time function is still paid by university and two full time engineers are financed by the FIRST Program. The operations manager was attracted externally (via the Company Coach) and started working for the company in July 2000. At start-up, the team members are not organized hierarchically and each had a high degree of control over his work. In table 4, we provide an overview of the following founder's / employees' characteristics: age, education, nationality, founder status and industry experience.

INSERT TABLE 4 HERE

The formal legislation of the company introduces a new era: the champion automatically becomes the business manager and the team members need to find their place in the newly formed company. Although the investor put in place a company coach formally delegated with CEO responsibilities, the business manager / champion clearly affected negatively the speed at which the strategic technological focus was adapted to the actual needs of the venture. In the following paragraphs we discuss these issues in more depth.

THE START-UP PHASE: The champion as business manager and inducer of strategic inertia

During the start-up phase the business manager keeps "championing" the new venture, arranges the physical infrastructure and related operational matters, makes sure internal agreements are made and held by all team members, and manages -- in co-operation with others -- the development of a certain communication structure. Although the investment fund did not want the "project leader" / "champion" to be the formal CEO (see earlier), they did not question his role as business manager, nor did the team members. Every team member clearly agreed about the fact that the one who once was the project leader and inspirer of the research lab at university would become the business manager of the spin off. All team members clearly accepted the champion as the *informal* leader of the venture. However, the *formal* leader was the Company Coach, who received from the investor decision-making authority comparable to that of a CEO.

The automatic evolution of the champion role into that of the business manager is in line with Burgelman's (1983) longitudinal study of internal corporate venturing projects, where it is noted that the transformation process from product champion to the venture manager occurred almost naturally and automatically. Although normative theory might question this practice, there seem to be very strong pressures to let the technically oriented product champion become the venture manager. In this study, the pressures were in part motivational, because the champion was attracted by the opportunity to become a general manager, but it also resulted from the fact that there was nobody else around who could do the job.

Although the company was formed on one core technology platform (datacasting), the work of the engineers was organized around three "projects", resulting in three work groups: one for the broadcasting project (three persons), one for security (one person) and a hardware project (one person). The business manager (although intrinsically connected to the Broadcasting project) is not included in these work groups, neither is the operations manager. The goal was to commercialize the datacasting system, in which first the International Broadcasting Conference (IBC) (September 2000) and then the demo planned in March 2001 were expected to play a crucial role in the commercialization of the system. Next to this, a security module would be developed and introduced in the system "on the way". However, shortly after start-up EVS requested a security module, which was technologically not linked to the datacasting activity. This market opportunity was based on the Ph.D. of John3 and, . accepting it would possibly allow CINE to enter the security market. Moreover, developing a prototype for a third party would generate revenues. This was an unexpected evolution for the team. Changing -- or broadening -- the focus was very difficult for the group. First, because a priori, changing an initial business idea "does not seem to fit with human nature" (quote from Jésus). Second, because of the "security" opportunity, the available manpower for the broadcasting project diminished[2], which had implications for the throughput time needed for the development of the broadcasting project. Third, not having a very clear idea about the market for security made things even more complicated. Concurrently, the insight grew that the market segments for which the broadcasting prototype was developed are actually not ready to adopt the technology. The expectation that after the IBC the venture would be able to sell the datacasting technology, was not met. Conversely, people seemed to be interested in the technology but stated that it would be something to acquire, say, in a few years time. Moreover, with regard to their ONLY potential client, decision making is too slow and bureaucratic, adopting the technology would require a substantial mentality change,…

It was not before the champion visited the main potential customer group (December!) that he finally came up with the conclusion that "our broadcasting technology cannot be

[2] One engineer was re-allocated to the security team and an additional developer was hired.

commercialized before three years time…". However, the team was convinced that it would be possible to commercialise parts of the system (e.g. router, IP/TCP gateway, …) after a successful demonstration of the fully integrated system In March 2001. Hence, the venture remained active in datacasting .

As a result, a time lag occurred before the technological focus of the venture was adapted to the actual needs and realities of the market. One of the engineers stated that one of the most difficult things in CINE relates to the fact that they are not specializing in one single technology. Ideally, he goes on, we should have two independent structures, but still belonging to the same company. The broadcasting market will not generate huge revenues, but is a secure market. Conversely, as for security, the market is much more uncertain but when revenues are generated, they will be high. So, it is good to have both in one company, to spread the risk. We checked this view with other team members, and the opinions seem to converge in this respect. Because of this, the "feeling of being one team" remains very important. During this period, the work groups are divided in such a way that three persons are working on the security project and two persons are developing for the broadcasting project. The hardware specialist (Daniel) is involved in hardware projects that are rather distinct from the others, but which are generating cash flow.

The business manager also seemed to be far too much occupied with operational matters and did not communicate efficiently with the operational manager (May). Since she is a non-technical person, it was very important that she and John1 would team up, to follow up on commercial contacts. This seemed to be impossible. Moreover, when the Coach asked him to make a planning, or to get in touch with potential customers (i.e.: basically asking him to take on real management responsibilities), other practical things always came first. Next to these practical worries, the business manager adapted the technical requirements continuously without consulting his fellow workers involved in the Broadcasting project. Consequently, the other engineers developed certain aspects “because John1 told them to”. Often this need for “sudden and urgent” adaptations was initiated by a phone call of a contact in the Broadcasting industry. What is clear from these examples, is that John1 definitely monopolized the information that came into the venture, thus trying to put himself into the position of CEO.

Thus, the venture champion did not function adequately as business manager and slowed down strategic decision-making, by monopolizing essential information and by sticking far too long to the original, commercially non-viable business idea. At first, the lack of managerial -- and more specifically, strategic and commercial -- competencies of the venture champion were only observed by the Coach. As a result, the Coach got so fed up with the situation that he decided to put Daniel in charge as a project manager and to help with establishing commercial contacts (mid September 2000). Moreover, the Coach wanted him in the Board of Directors. John1 did not agree and was clearly hurt by this decision, resulting in a conflict with the Coach. Eventually the team decided democratically that every Friday, each individual would present his project in a technical meeting, without one person being "in control". The underlying assumption was that the "social control" mechanism would work to follow up project planning as strictly as possible. In an informal conversation with Daniel, he stated that human aspects should not be neglected in issues like this:

> "In totally *new* teams -- where members were unfamiliar with each other before start-up -- you can move responsibilities easily. However, when team members know each other for a longer time, personal aspects matter too much. Although I still believe that John1 is not the most appropriate person to be in the Board, it is the only option at this time. John1 is too important a person regarding team spirit and motivation. If this conflict would not have been solved like this[3], John1 would definitely become de-

[3] John1 in the Board and using the social control mechanism for ensuring project follow up.

motivated, with clear negative consequences for the team and on the company in general."

In the meanwhile the preparation and developments for the demo in March continued and the security project was on scheme. From December 2000 onwards, Daniel helped out with the Broadcasting project, especially from a strategic perspective. For example, Daniel took up the initiative to construct a general overview of the stages of development of the broadcasting project. Because of the complexity of the project, everybody seemed to interpret things differently and -- he argued -- a roadmap was necessary to ensure that "we all speak the same language". Daniel, the only engineer in the team who had according to the Coach the capacity to become a future CEO, had become increasingly accepted as a business developer. His lack of industry and management experience however, does not make him the most suitable CEO candidate. As for John1, although he had lost most of his champion and business manager appeal, the coach believes him to be valuable in the company as a technological gatekeeper. Among the engineers, he is the only one who professionally scans the “technological popular literature”, he is very aware of all movements in the Walloon IT sector. In addition, he likes to go for lunches and dinners with technical people of different associations, universities and administrations…

In conclusion, although the investor and the Company Coach did not believe in the managerial competencies of John1 from the onset, the team needed time to realize this. A dual tension emerged. On one hand, he is their friend … On the other hand, team members realized that he is not capable for leading the company. Since his role became increasingly unaccepted by the fellow team members, it was only during that time that the team members were ready to accept the necessity for a full time CEO. The Coach himself had no interest to fulfill this function. His objective is to leave the venture after a full time CEO can be put in place …

As we mentioned earlier, the company remained active in datacasting and got prepared for the March 2001 demo. This datacasting demo turned out to be a flop: the system was not stable and too slow. From a business point of view, the system seemed to be of little value. In the entrepreneurial team, the feeling arose that John2 was consuming the capital of the company while security booked successes both financially (pre-royalty revenues from a co-development partner and a subsidy of 500 000 EURO) and in terms of business opportunities.

As a result of the increased and successful security activity, the Company Coach suggested that Daniel would be involved in the business development part, which included time-consuming interviews in the US. Therefore, Daniel needed to scale down his hardware activities and his supporting activities for datacasting. Since John1 was still spending a large amount of time on datacasting relations, he could not do this. Hence, Daniel built a network in security, which decreased the power of John1. Also Pedro was reallocated to the security activities. Next to this, mid May the Board of directors decided to stop the datacasting developments and requested that John2 would look for opportunities to commericalize existing components of the system. As a result of this, John1 had become in practice the business manager of a terminated activity.

Successful demonstration of the security system in digital cinema in June, July and September resulted into letters of intent of potential clients and co-development parties. Although no revenues were generated yet, the business risk had decreased significantly. CINE had become a “name” in the world of digital cinema and potential clients in related businesses were asking CINE to make a proposition for their security problems; However, since real revenues were not to be expected in the first year and since the business development efforts, including different contracts with lead users, had to be intensified, the board of CINE decided in September that a major capital increase was needed. The search for new capital could be accompanied by a major restructuring of the company’s internal organization. Since the team

considered Daniel as the successful business developer of security, he was accepted by them as the CEO of the only business which remained in life: security. Also the financial investor was convinced this was the best choice since Daniel had established all contacts with the potential clients. Once revenues were generated, he could be assisted by an experienced COO to manage the internal operations of the company.

In conclusion, the external shocks facilitated the internal reorganisation of the company. Only after the flop and the subsequent abandoning of the datacasting activity and after the successful demonstrations in security, the organization *and* the external parties that control this organisation were ready to appoint a new CEO and re-organise the team.

THE POST START-UP PHASE: Technological evolution as trigger for strategic focus and professionalising the organization of the team

Clearly, the technological evolution in the company -- successful developments in security and flopped datacasting -- take CINE to another level of business functioning. The most important focus is now to further develop and follow up (existing) business opportunities in security, whereas until now the venture had been active in convincing potential customers of the datacasting technology. Different interested customers and partners need to be contacted and related businesses further developed.

Although we have noted that Daniel might not not the best CEO candidate, finding an external, experienced CEO for a high tech start-up like this is extremely difficult. A person like this needs the skills to negotiate at a very high level (middle or senior management of big companies), needs international contacts, needs experience with international VC investors. Thus, it is more likely to look for a professional management / coaching organization of a small team of persons, which unite this experience to back up a CEO like Daniel, who is internally the best option.

In conclusion, during the post start-up phase the emphasis is on business development and CINE's strategy and structure is clearly agreed upon. The core business of CINE is SECURITY with two strategic lines: conditional access systems for business to business and the implementation of cryptographic modules. Consulting activities are only accepted if these are in line with the strategic objectives. Figure 2 shows the organizational structure as of September 2001.

INSERT FIGURE 2 ABOUT HERE

CONTRIBUTIONS TO THEORY

In the remainder of the paper we will point to the relevance of the research for theory.

Unfolding the paradox of the entrepreneurial champion: enabling experiential team learning

As aforementioned, the champion is a crucial person during the pre-start period and a part of the start-up period of the venture. It has been argued -- empirically as well as theoretically -- that the "champion role" is absolutely necessary for organizations to develop successfully new products (Chakrabarti, 1974), new technologies (Howell and Higgins, 1990; Lawless and Price, 1992), and new businesses (Burgelman, 1983; Day, 1994). Without champions, product innovations and corporate venturing are unlikely to occur. It is interesting to note, however, that in this context we are not focusing on the typical engineer in an R&D department that

cannot be promoted vertically given his lack of managerial interest and / or competence[4]. The technical person we are talking about, clearly distinguishes himself by acting as a "*champion*", demonstrating typical personality characteristics, transformational leadership behaviors and influence tactics (Howell and Higgins, 1990). Next to the focus of researchers on (personality - behavioral) characteristics distinguishing champions from non-champions (see also Shane, 1994), other emphases include political processes at stake in the championing process (Frost and Egri, 1991; Markham, 2000) and cultural differences in innovation strategies (Shane et al., 1995). Moreover, Maidique (1980) states that the entrepreneur is important as a champion of the new technology, as vigorous promotion is needed to overcome resistance to the idea and the creation of the new venture.

Although the entrepreneur / champion plays an essential and valuable role in creating the new venture, it is often considered unsuited to providing the stable base needed for long term growth (Burgelman, 1984). Conventional wisdom and small business literature hold that new firms rapidly outgrow the founder's managerial capacity. It is argued that unless the founder is replaced or supplemented by professional management, performance is predicted to stagnate or decline. A similar observation has been made when it comes to technological champions: they as well do not seem to make good managers. Therefore, companies have tried to establish career tracks for those technical people who see themselves or are viewed by others as less interested or less capable of carrying out managerial responsibilities. Thus, dual ladder promotional settings have been implemented.

The literature does provide some insight on how champions / entrepreneurs relate to other individuals part of their team. However, the group contexts in which champions (intrapreneurs) and entrepreneurs are embedded (new product development teams versus entrepreneurial teams), represent separate streams of inquiry with their own particular emphases. In practice, however, these streams and their corresponding managerial relevance go hand in hand. Other innovation roles -- next to the champion -- include a "technical expert", a "sponsor", a "projectleader" and a "gatekeeper" (Brown and Eisenhardt, 1995; Frohman, 1978; Katz and Tushman, 1981; Markham, 1998) -- all considered as important additional roles in managing projects successfully. Each from diverse methodological and theoretical stances, different streams in the New Product Development[5] (NPD) literature have clearly indicated that the project team is at the heart of the product development process. Team factors such as *team composition* (functional heterogeneity, team tenure and size), *team group processes*, including the team's actions and behaviors (Internal and external communication) and psychological dimensions, and finally, *problem solving styles*, have received considerable attention (e.g.: Ancona, 1990, Ancona and Caldwell, 1992; Smith et al., 1994; Jehn, 1997). Recently, attention has shifted from the lone entrepreneur / founder to the whole entrepreneurial team (e.g. Cooper and Daily, 1996).

An apparent paradox thus emerges: Although "founders" of organizations as well as champions of technological innovation are often perceived as being no good managers, in practice these individuals often do function in one of the key management positions. Our data suggest that the champion's paradox can be explained by the fact that the team needed time to

[4] To overcome motivational problems related to this, organizations have been implementing "dual career paths", promising equal rewards to equivalent levels in two parallel hierarchies: one provides managerial progression while the other provides opportunity for professional advancement. By rewarding highly innovative scientists and engineers with prestige, freedom and appropriate job requisites, companies try to trying to maintain productivity (See e.g. Katz and Tushman, 1981; Katz et al., 1995).

[5] Brown and Eisenhardt (1995) distinguish between three particular streams: NPD as rational plan, NPD as disciplined problem solving and NPD as communication web.

come to the insight that the champion is actually not the appropriate business manager. Initially, John1 is accepted as an informal leader. The CEO -- who is functioning as a company coach -- is accepted as well but experiences opposition from the business manager, in order to gain more formal authority. Actions on behalf of the coach could not be undertaken before this "learning" occurred. It is clear that this process can not be forced. Learning by doing seems to be essential in order for the team to understand the need for external formal leadership. Unfortunately, the business manager even seems to need more time to accept his role. His beliefs about becoming the CEO stay very strong. Collective team learning seem to precede individual learning of the champion.

Toward a midrange theory: entrepreneurial team formation as a process of self-organizing punctuated equilibria

Numerous researchers have described life cycle stages ranging from three to ten phases (Kazanjian 1988; Hanks et al. 1993). However, for new ventures the organization's life cycle has traditionally been divided in three stages (Van de Ven et al., 1995; Roberts, 1991, p.126). Roberts for example studied the life cycle of MIT spin-offs and labeled the three stages in their growth path as: (1) start-up, (2) initial growth and (3) sustained growth.

However, looking at entrepreneurial team formation during the spin off process of a research-based spin-off, we empirically elaborated the "start-up" phase discussed in the traditional life cycle models. Although consistent with the models found elsewhere in the literature, our model, grounded in one in depth case study, differs in that it explicitly describes stages as linked to the spin off process. Encompassing an idea phase, a pre start phase, a start-up phase and a post start-up phase, our model adds value by pointing to the process character of "founding" a research based spin off. However, our case data suggest that shocks in the environment precipitate the shift from one stage to another. More specifically, entrepreneurial team formation seems to evolve through the alternation of periods of equilibrium, in which underlying structures permit only incremental change, and periods of revolution, in which these underlying structures are fundamentally altered (Gersick, 1991). Although organizational stage models postulate a set of distinct and historically sequenced stages, we integrate Romanelli and Tushman's (1984) view, stating that organizations may reach their respective strategic orientations through systematically different patterns of convergence and reorientation, with a life cycle perspective of the spin off process.

The first period of equilibrium that emerged form the data, represents the idea and pre start-up phase, in which the different founding team members and the business idea converge steadily towards the formal legislation of the venture. During that time the level playing field and the rules of the game get designed. The formal start-up of the company can be viewed as a first "revolution", implying a whole new context and changing expectations towards the team members. The champion becomes business manager, each engineer is assigned to a particular project with distinct responsibilities, … People try to find their respective places in the company. Although during this equilibrium period team learning is crucial, it comes to an end when a capital increase is decided upon after a reorientation of the company strategy. From then on, the professionalisation of the management structure becomes a key element.

This process however, can not be forced to quicken its pace, since the team needs a sufficient amount of time to understand the team related implications of strategic orientations and vice versa.

CONCLUSIONS AND MANAGERIAL IMPLICATIONS

We have provided a processual, empirically grounded view on how entrepreneurial team members, including the "champion", evolve within a new venture. Although empirical research has focused on entrepreneurial characteristics from different perspectives[6], we did not find that researchers looked at how entrepreneurs or founders of companies outgrew their champion roles and how such teams are formed and develop during the spin off process. Our data support the view that champions / entrepreneurs often do not make good managers, but we extend the theoretical and managerial relevance by pointing to the necessity of managing this individual effectively, in order to keep a motivated entrepreneurial team and to increase the likelihood of survival of the company. The basic argument of this research is that the development of the champion role and the entrepreneurial team as a whole clearly interrelates with life cycle stages of the venture and that it takes time before a founding team finds its role and accepts the need for an experienced CEO. Changes in the team go hand in hand with shocks in the emerging business, to a self-organizing process of punctuated equilibria.

The data show further that the "learning" processes, which take place in the team are very important. In an environment, which is not very well developed in terms of entrepreneurial activity such as the one in which our research site is located, the collective knowledge of the environment is not sufficient to facilitate collective learning processes. Instead, experiential learning seems to take place. Interestingly, the team learns faster than the individual champion himself. However, real changes seem only to be possible when external factors cumulate and cause a shift in the organisation structure.

Gaining understanding in entrepreneurial team formation during the spin off process is particularly relevant for investors as well as technology transfer officers. Research has shown that venture capitalists state that the quality of the founding team is one of the most important criteria when they decide to invest in a start-up. High tech spin offs, especially academic spin offs, tend to be founded mostly by homogenous teams including only engineers. Often, one of these engineers is acting as a champion and perceives himself as a future CEO of the company. CINE's team clearly coalesced around technical competence and interest. "Getting along" was very important. Venture capitalists tend to react against these start-ups in two ways: either they look for a CEO themselves and change the founding team drastically before investing or they do not invest at all. The second solution results in a number of valuable, high potential business proposals that are lost. The first measure often results into harsh tensions between the newcomers and the initial team, and is thus seldom easily accepted by the original founders. Moreover, most CEOs with business experience do not establish the "technical authority" needed to run a team of engineers. The most straightforward solution for venture capitalists seems to be the most exceptional one: someone in the entrepreneurial team *has* management capacities and becomes a CEO of the company. As shown in the paper, this is not necessarily the champion of the business plan. It can even be an engineer added to the team upon suggestion of the financial investor. The major lesson here is that the new individual has a technical role in the start-up configuration and does not act as a CEO since the initial team only accepts the idea of a newcomer as a CEO once they clearly experienced the incapability of their "friend" as a "boss". It seems thus a good idea, from a team efficiency perspective, to start a company – with a small amount of capital – in order to let the team

[6] Empirical research focusing on entrepreneurial characteristics generally falls into one of two generic types. (1) Those that attempt to associate various characteristics with the state of entrepreneurship (individual characteristics separating entrepreneurs from non-entrepreneurs) (Herron and Robinson, 1993). (2) Those that attempt to use characteristics to predict performance among entrepreneurs or the businesses they run (e.g. Roure and Keeley, 1990). Despite the large number of studies of both types, it is notable that neither has had much success in achieving statistical associations that are of practical and replicable significance.

members find their respective roles in the independent company. Once everyone accepts his strengths and weaknesses and agrees with the structure, the company is ready for a real venture capital injection. At this moment, these companies might be offering the best opportunities….

FIGURE 1: DEVELOPMENT OF THE VENTURE ALONG THE ORGANIZATIONAL LIFE CYCLE

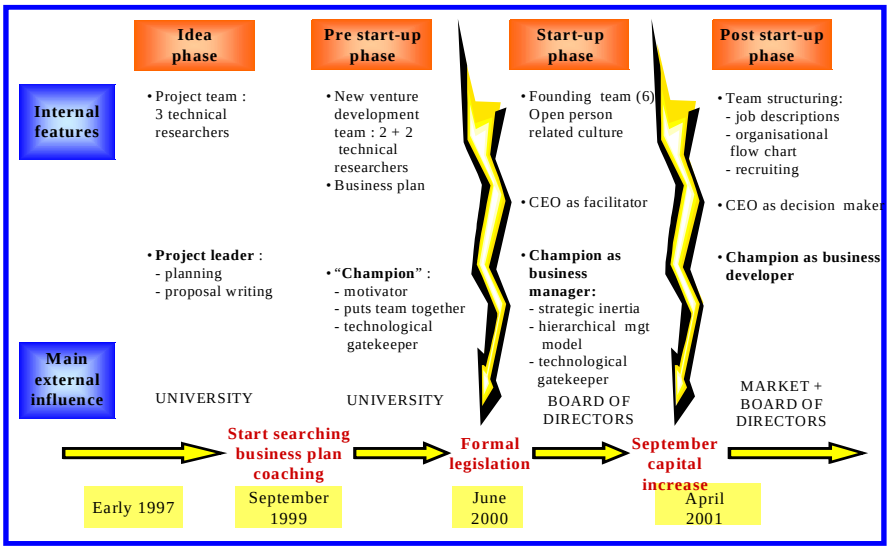

FIGURE 2: STRUCTURE OF THE NEW VENTURE TEAM

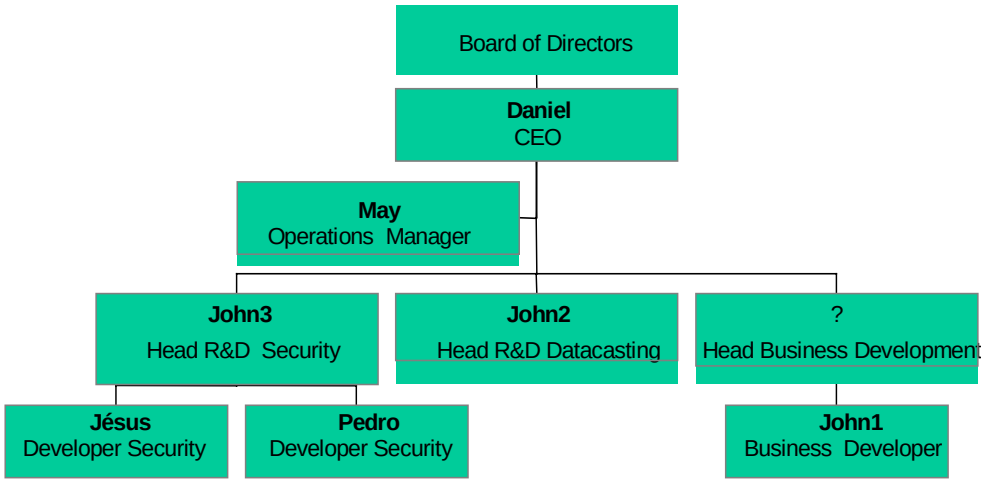

TABLE 1: CHARACTERISTICS OF UCL AND CINE IN 2000

UCL		*CINE*	
Total research budget	85.10^6 EURO	Capital	200K EURO
Research funded by companies	12.10^6 EURO	Deferred loan	150K EURO
FTE* researchers	2151	No. founders	6
FTE technicians	1648	Total employees	7
Spin offs generated since 1998	4	Sector	Telecom
Reported invention disclosures	31		
Filed patent applications	25		
Total license income**	$0.2.10^6$		

* Full time equivalents
** Not including capital gains

TABLE 2: FOUNDER AND EMPLOYEE CHARACTERISTICS AT START UP

Team members	*Founder*	*Nationality*	*Education*	*Age*	*Academic experience*	*Industry experience*
John1	Yes	Belgian	Civil Engineer, telecommunication specialist	31	6 yrs.	No
John2	Yes	Belgian	Licentiate in Sciences	30	3 yrs.	No
Pedro	Yes	Spanish	Civil engineer	27		4 yrs in multinational
John3	Yes	Spanish	Civil engineer	26		No
Jésus	Yes	Spanish	Ph.D. in Civil engineer	28		No
Daniel	No	Belgian	Ph.D. electronical engineering	29	5 yrs.	No
May (F)	No	Belgian	Economist	28	3 yrs.	2 yrs fiscal consulting

TABLE 3: SEQUENCE OF VENTURE DEVELOPMENT – TEAM RELATED FIRST ORDER ISSUES[7]

Date	*Issues*	*Data source*
1997 – Spring 1999	Path dependency: availability of FIRST subsidies and creation of other spin off	Interview John1 and Company Coach
	Three technical researchers, of which one decides not to get involved in kick off of the spin off	
	University department head has not been very supportive	Interviews with team members, RA
	Once the business idea really became concrete, colleagues at university became rather envious	
	Looking for business plan coaching and start capital	
Spring 1999 – June 2000	First draft of business plan	Interviews with team members, RA
	Two technical researchers (John1 and John2, complemented with Daniel, John3 and Jésus)	
	Pedro and May were attracted externally	
June 2000	Formal legislation of the company	Formal company documents
July – August	Installation of office space	Interviews
	Prepare IBC: brochure, technical specifications (International Broadcasting Conference): great expectations!	
	Opportunities in security	
September 2000	Daniel and Pedro become officially "employees" of the company (i.e. on the pay roll of the spin off)	Start participant observation (2 days per week)
	IBC	Participant observation
	No consensus about hierarchical structuring	Interviews
	Everybody needs to find a role in the venture	Interviews and meetings
October 2000	CEO appointed Daniel as responsible for following up the projects	Participant observation
	In deciding for a responsible for project follow up, human factors should not be neglected	Informal talk with Daniel, presence during

[7] The issues are categorized in the period during which they first became prevalent. It does not mean necessarily that their importance vanished later on.

		discussions between team members
	Daniel is convinced that john1 has not the appropriate profile to be the business manager, neither to represent the team in the Board of Directors	Informal talk with Daniel
	John1 is crucial regarding team spirit and team motivation	Informal talks with team members, including Daniel
	Construction of web-site is considered as very urgent, including internal documentation system and shared calendar	Meetings
	Disagreement about whether or not a new employee should be attracted with graphical competence for developing the web-site, proofreading English documents, …	Meetings
	Work hours (disagreement about whether or not everybody should be present in the company between 12am and 5pm)	Meetings, informal talks
	Strategic re-orientation of projects: 1 FTE is re-allocated to security, given market opportunity	Meetings
	Lack of human resources for the Broadcasting project	Meeting John1, John2, May and CEO
	Commercialization /marketing of broadcasting project *should* be first priority	
November 2000	Strategic discussions regarding broadcasting project, within the coming weeks a whole range of questions needs to be clarified: is the market ready? What about partnerships?	Participant observation, Meetings, informal talks
	Putting in place a discussion scheme for the broadcasting project (to speak a “uniform” language)	Observation, informal talks, meetings
	John1 seem to monopolize information: he has to communicate more what is really going on (i.e.: the external discussions)	May, meetings
December 2000	John1 still takes care of most external communication, he has all the relevant contacts	Observation, interview RA, interviews team members
	John1 realizes that the broadcasting project can not be commercialized within the coming two-three years (after meeting with stakeholder from the Broadcasting Industry)	Briefing after trip of John1 to Geneva

	Preparation of a meeting of the Board of Directors Preparation of a demand for capital increase (permission is obtained, capital needs to be attracted externally, the university seed capital fund is not willing to invest)	Strategic team meeting
January 2001	The business manager starts questioning his role and position in the venture. Therefore he wants a talk with the CEO	John1
March 2001	Internal communication problems are reaching a high Demo Datacasting flops	Company Coach May
April 2001	Prototype Digital Cinema to main partner Start discussing internal organization of the venture: job descriptions, organizational flow chart Daniel re-allocated to security	Company Coach, May
May 2001	Decision of Board of Directors to stop all developments in datacasting: firm focuses on security John2 starts looking how parts of developments for datacasting project can be valorized (three months) Pedro re-allocated to security	Company Coach
Summer 2001	Daniel becomes CEO Company Coach exits company	Internal company document with organization structure

TABLE 4: TEAM RELATED SECOND ORDER ISSUES

SECOND ORDER ISSUES	DESCRIPTION
The venture champion	The importance of the role of the business manager, being here the venture champion
Role development	All team members communicated that "finding their roles in the company" was crucial in this start-up phase
Work Time flexibility	Different issues were communicated related to work hours and whether or not they should be controlled: source of conflict
Project management and technological evolutions	Groups the issues related to the projects and the way they evolved. The data are indicative to prone that the way the team developed is inherent to the strategic evolution of the projects

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