

**Campus Incubation**  
**A study of how incubators assist firms**

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## DECLARATION

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I declare that this thesis has not been submitted as an exercise for degree in any other Higher Education Institute.

I declare that this is entirely my own work.

I agree that the HETAC library may lend or copy this thesis upon request.

A handwritten signature in cursive script, reading "Orla Byrne", written over a horizontal line.

Orla Byrne

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## **Campus Incubation**

### **A study of how incubators assist firms**

**Orla Byrne**

Incubators are considered a cost-effective way to stimulate and support knowledge-intensive entrepreneurial activity. Incubators seek to support the entrepreneur during the new venture creation process. They do this, typically, by providing a range of advisory and support services, business assistance, training and coaching to entrepreneurs. For the entrepreneur starting a knowledge intensive business, the challenge is to form a judgement about the market; a judgement that is based on what Boisot (1999) refers to as 'fuzzy' information. As this information becomes more concrete and defined, the enterprise progresses through a series of new venture creation activities.

The direct impact incubation has on the development of individual start-up companies has received little attention from researchers. This study examines how incubators facilitate the new venture creation process. By exploring incubation from both the incubator manager and the start-up enterprise perspectives, it maps the development processes of companies in business incubators; it identifies the impact incubation services and support have on company development; and it identifies the role of incubation in the start-up process.

The study is based on in-depth longitudinal case research of nine companies and three incubator managers, located in three separate campus incubators in Ireland. Case histories of each incubator are presented. The specific challenges that each firm faced are identified and Boisot's 'I-space' is used to plot the emergence of each business idea. The supports and services provided by the incubator are considered in light of the challenges the entrepreneurs experienced during the start-up process.

The study found that incubation has a positive impact on company development. Its role and the intensity of involvement varied according to the start up activities being pursued, the background of the entrepreneur, the progress of the company and the style in which the incubator was managed. This study has implications for policy makers and incubation practitioners. By identifying the services most valued by companies, incubation resources and services can be adapted to better suit the needs of incubating companies.

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## **INTRODUCTION**

Small high technology businesses are an important source of employment and innovation in the Irish economy (Forfás, 2000). They contribute to dynamic competition; ensure a wide range of products, close gaps in the market and offer a broad spectrum of innovative services. On the other hand they encounter specific barriers such as access to capital and information, high R&D costs, deficits in management and marketing experience, and poor understanding of the market place (Lewis, 2001).

Policy makers have identified business incubation as a cost-effective way to help companies overcome these issues. Incubation requires modest investment and, when successful, can provide an excellent return on investment to the regional economy (Lalkaka, 2002). Business incubators help emerging businesses by providing various support services such as shared office space, (Mian, 1995), encouragement and counselling (Albert *et al*, 2002) and the opportunity to network with companies both internally and externally (Lendner, 2003). Companies also receive assistance in developing business and marketing plans, building management teams, obtaining capital, and access to a range of other more specialised professional services. Incubators also provide flexible space, shared equipment, and administrative services (Lewis, 2001; Albert *et al*, 2002; EU Benchmarking Report, 2002).

### **INCUBATION IN IRELAND**

This study concentrates on campus incubation in Ireland. In 2000 the Internationally Traded Services Report 2000-2007 by Enterprise Ireland identified knowledge-based sectors as showing the most potential for creating extra wealth, exports, and high-quality employment. These industries are therefore expected to create substantial sales, exports and jobs in Ireland (Enterprise Ireland, 2000). Furthermore, the need for balanced regional development was also identified as a key objective for national growth (National Development Plan 2000-2006).

One key initiative Enterprise Ireland (EI) have used to strengthen the regional innovation infrastructure, and to encourage the growth of high value-added knowledge intensive industries, are business incubation centres. These are designed to provide commercial R&D space for the development of high potential start up companies (HPSUs) in association with all Irish Higher Education Institutions (EI, 2000).

Campus-based incubation has existed in Ireland since the early 1980s at the University of Limerick, Trinity College Dublin and University College Dublin. However, the new wave of campus incubation funding began in 1997 when Enterprise Ireland launched the Third Level Business Incubator Initiative. This supported incubators at the University College Dublin, Dublin City University and National University of Ireland Galway campuses.

In 2000, as part of the Borders Midlands and West (BMW) and Southern and Eastern Regional Operational Programmes, under the National Development Plan (2000-2006), a programme of support was launched for the development of fourteen incubators in the Institutes of Technology (IoTs). One year later Enterprise Ireland approved the funding for this initiative. The establishment of business incubators at the IoTs was 'central' to the strategy for developing and maintaining employment and wealth generation in the Regions by helping to establish high success rates for start-up companies. Due to their regional location and focus, the IoTs are seen as strategic hubs for regional growth and innovation. In response to an identified lack of specialised facilities (wetspace) for biotech start-ups, EI have also funded the refurbishment of existing incubators and research space.

Against this background of activity and significant EI funding, the key objective of this study is to contribute to the knowledge of campus-based incubation in Ireland. This can be achieved through understanding the status of current incubation management practices and their impact on company development, from the perspective of the tenant companies. The objectives of the study are to investigate the range of services offered by business incubation centres to high potential start-ups (HPSUs) and to analyse the incubator manager/tenant company relationship; examining if gaps exist between how managers assess the incubation process and how incubating companies value the service.

This study is based on two main questions:

- (i) What are the main supports required by high technology companies from business incubators
- (ii) Do incubator operators have an accurate understanding of tenant enterprise requirements?

## **STRUCTURE OF THESIS**

The first chapter reviews literature on incubation. It explores the concept of incubation, covering the evolution of the industry, factors relating to success in incubators, objectives and types of incubators. The chapter concludes with a discussion of the shortcomings of existing research on incubation.

The second chapter focuses on literature surrounding new venture development. In this chapter I introduce different theories that explain the evolution of a new venture. I argue that theories of Knowledge can help explain the emergence and development of knowledge-based firms. These theories explain the evolution of an idea. When used with other literature it is possible to identify the market-making activities required of new ventures.

In the Methodology Chapter (Chapter 3), I set out two research questions that address identified gaps in the literature. I then outline my comprehensive research design. The research design consisted of investigating secondary sources of information on incubators in Ireland; researching the incubation environment in Ireland; carrying out a longitudinal study of three business incubation centres in Ireland; and visiting an incubator in Sweden recognised as an exemplar of best practice.

In the next three chapters (Chapters 4, 5, 6) I present the case studies of three campus incubators in Ireland. The three centres were chosen because of their different approaches to managing incubation and also because of their geographic dispersion. These case studies show that while incubation always addresses basic start-up needs,

the concept can differ greatly depending on what management style is employed. In each case I interview the incubator manager and three tenant firms.

In Chapter 7 I introduce Mjardevi Science Park, the Swedish case study. This case study is based on meetings with incubator managers and tenant companies in two incubators associated with the University of Linköping. Comparisons are drawn between incubation practice in Ireland and abroad.

In Chapter 8, findings from the case studies are presented. Firstly I revisit the Research Propositions. By using information from the case studies, I discuss each case company in terms of how they overcame the market making activities outlined in Chapter 2. This process highlights the incubation services used by incubating companies and identifies how incubatees overcome difficulties. The chapter also addresses the questions whether or not a gap exists between how incubator managers feel incubation impacts on the start up process and how companies rate its impact.

Chapter 9 highlights some of the key findings of this research. It identifies the characteristics of incubating companies which are important when designing any incubation support package; specific recommendations for incubator managers; and, observations on the incubation process; I also highlight some shortcomings of this research, how this study has contributed to the body of incubation research and literature, and how future research can be pursued to further explore the incubator manager/incubating company relationship.

# ***CHAPTER 1***

## ***BUSINESS INCUBATION LITERATURE REVIEW***

In this chapter I investigate incubation in the context of an increase in the level of business incubation activity in Ireland. I outline the types and history of incubation research. I address the benefits of incubation that include shared office space, access to expertise and extensive networks and a supportive entrepreneurial environment. I introduce one of the more popular forms of incubation, that is, campus incubation. I show how universities are developing policies to support greater commercial identity and pursue commercial activities. I suggest that difficulties such as differing cultures between academics and industry, and issues surrounding IP for example can complicate this form of incubation.

I then discuss recommendations for overcoming these issues and for achieving successful incubation. These include greater integration to a wider incubation network, tenant performance reviews and an improvement in the type and quality of support systems. I also review the issue of how business incubators are managed. I discuss the different approaches to the management of incubation. I explore how different levels of intensive involvement can influence the impact of incubation. I also suggest that if incubator managers can better understand the nature of client companies they can establish better working relationships. This can maximise the development of 'superstar' companies. Business incubation literature became popular in the 1980s as the concept itself increased in popularity. The literature can be categorised as descriptive, prescriptive, or evaluative (Albert and Gaynor, 2001).

### **1.1 THE STUDY OF INCUBATION**

Most of the research from the 1980s was US based, following the high level of incubation activity there. This literature was also descriptive in nature. Descriptive literature focused on the concept of incubation, the basic tasks involved and assessed the emerging incubation industry (Allen 1985; Campbell *et al*, 1988).

The work mainly involved research into common features of incubation and suggestions of ways to replicate these ideas. The descriptive research typically lacked conceptual or methodological grounding (Mian, 1994).

In the 1990s, prescriptive research became more popular when researchers such as Duff (1994), Rice (1995) and Bearse (1998) sought to develop theories of best practice. Theories of best practice set out guidelines of how best to optimise the impact of incubation (Tornatazky *et al*, 1996). Prescriptive authors typically highlighted issues surrounding the facility, the services provided and management of the incubation facility (Lewis, 2001). Research was usually based on single cases or on a sample of incubators that were generally considered successful. Prescriptive research also illustrated the positive effect incubation had on local economies (Albert and Gaynor, 2001).

However, evaluative research later questioned the true impact incubation played on incubating firms and questioned the economic benefits it claimed. In particular evaluative research questioned the role incubation played in employment and in encouraging regional growth (Marley and McNamara, 1995). Researchers also explored incubation performance, not only in terms of the incubating firm, but also other stakeholders such as the incubator board, the incubator sponsors and their know-how networks (Allen and McCluskey 1990; Rice and Matthews, 1995). Evaluative research also established different metrics that could be used in evaluating incubation programmes, focusing on establishing methods by which incubation could be evaluated. However, due to the complexity of incubation, this process proved difficult. Mian (1994) criticises this body of incubation literature for its lack of sound theoretical base and for being mostly anecdotal in nature. He has argued that consequently there is little agreement or understanding of successful policies, management practices and ways to improve performance with regard to general incubation and also with university campus based incubation. Albert and Gaynor (2001) and Rice (2002) also criticise the research for failing to address further the nature and impact of business assistance provided to tenant companies

## Campus Incubation Literature

In the early 1980s US institutions of higher education began to broaden their traditional undertaking of teaching and carrying out research. This resulted in the development of campus based incubators. Consequently, the role of universities in incubation became a topic of research interest in the late 1980s (Mian, 1999). Literature however tended to include campus incubation with other incubator models. Despite the growth in university incubators in the 1980s, there was little research assessing their effectiveness. There was a lack of empirical research on specific issues of best practice concerning the management of campus-based incubation (Mian, 1999).

Research on university incubators increased in the 1990s with work by Lichenstein (1992), Rice (1993), NBIA (1993b) and Mian (1994). This work tended to focus on internal processes and day-to-day management of centres. It also involved evaluative research on managerial intervention mechanisms. A change began in 1996 when Mian carried out one of the first incubation studies to include contributions by tenant firms. In this study Mian (1996) assessed the value-adding contributions of US University incubators to high technology based start-up companies. He assessed the services incubators offer and also how start-up companies benefit from the incubator/university relationship. This can include access to cutting edge technology, collaborative R&D relationships, access to laboratories and workshops and to a highly educated workforce.

There were further developments in 1999 when Mian identified a need to measure the impact of campus incubation. He explored a number of university incubators in the US and investigated performance outcomes such as programme growth and sustainability, tenant firm's survival and growth, contributions to sponsoring university's mission, community related impacts. The research assessed the effectiveness of management policies and practices, operational policies and target markets. It also measured campus incubator services and their perceived value-addedness. From this work Mian (1999) argued that improvements could be made to the incubation function by responding to the needs of incubating companies. He also suggested that future research should better integrate business incubation and entrepreneurship in order to draw more conclusive findings.

Lendner (2003) argues that most of the campus incubation research is US-based and has focused on technology transfer, generating income for universities through spin-off companies and general issues concerning research commercialisation. He also argues that there is still little academic work associated with the area of campus incubation. Therefore, he used a network theory to examine the main goals, organisational structure and business strategies of campus incubators. He develops a framework to examine success factors for start up companies in a business incubator environment. These include issues concerning the level of professional and technical services, the strength of the relationship between the incubator and its network of external partners, and the relationship between the incubator and its financing partners.

Lendner (2003) found that the stronger the relationship between a university campus incubator and its external network partners the higher the sales growth for incubating companies. He also argues that the level of professional and technical services provided by campus incubators to tenant companies does not affect the probability of survival for the tenant companies. However, the higher the number of services provided might influence the rate of financing for incubator companies.

#### **WHAT IS INCUBATION?**

Typically entrepreneurs are well informed about their product or service, but are less informed about aspects of business development such as sales, marketing and distribution, acquiring and managing finance, developing and managing the entrepreneurial team and company workforce (Rice, 2002). Many also lack information surrounding technology transfer and many experience difficulties in accessing information (Campbell *et al*, 1988).

In seeking to help start-ups and young companies, different policies have been implemented to 'tilt' the competitive environment in their favour and to facilitate access to the resources start up companies need (Albert, Bernasconi and Gaynor, 2002). One cost effective tool policy makers have identified for supporting companies at an early

stage of development, by helping them overcome lack of capital, poor managerial skills and poor understanding of the marketing place is incubation (Lewis, 2001).

The phenomenon of incubation began in New York in the 1950's when start-up companies were charged low rental rates for offices space. The model became popular and the concept expanded to provide a myriad of business services and facilities for start-up companies.

There is no formal or legal definition of incubation (Lendner, 2003). The many existing explanations of business incubation are wide and varied in their descriptions. Essentially, business incubators accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed or orchestrated by an incubator manager and offered both in the incubator and through a network of contacts (NBIA, 1998). Other definitions state that incubation: stimulates the innovation process; increases the rate at which ideas can be commercialised; assists entrepreneurs in the development of new technology firms; and accelerates the commercialisation of research (Smilor and Gill, 1986; Tornatzky *et al*, 1996, Sherman, 1998).

Regardless of how incubation is defined, research on the effectiveness of incubation suggests that incubation is associated with lower rates of failure (Molnar *et al* 1997). Smilor and Gill (1986) reported that 87% of incubated companies survive their first five years in comparison to over 50% of non-incubating companies who fail to survive after five years.

Different types of incubators exist. They can be classified according to an industry they are specifically helping; the nature and requests of the sponsoring bodies involved; or the particular strategic aims of the centre (Albert and Gaynor, 2001). The primary reason why incubators differ is because principal funding partners differ in their priorities for the incubator (Kumar and Kumar, 1997). Incubator promoters, also referred to as stakeholders or sponsors, can be: state and ministerial departments; local or regional authorities; chambers of commerce and industry; local economic development associations; universities/third level colleges; research centres; private associations; foundations/trusts and philanthropic organisations; large corporations;

consulting firms; law firms; real estate agents; independent entrepreneurs; venture capitalists; and business angels (Albert, Bernasconi and Gaynor, 2002).

As a consequence of this diversity in sponsoring organisations, incubators are established for a wide variety of reasons. According to (Albert, Bernasconi and Gaynor, 2002) these include:

- Employment creation
- Stimulation of economic activity through company creation
- Profit
- Technology transfer and commercialisation
- Revitalisation of disadvantaged or rejuvenated zones
- Diversification of the industrial profile
- Promotion of certain types of activity
- Promotion of certain population groups

### **The University Campus Incubator**

The importance of developing knowledge-based economies through scientific research has been highlighted internationally. Consequently policy makers have supported many programmes to encourage technology transfer from universities (Hisrich and Smilor, 1988). Therefore it is not surprising that universities and third level institutes are some of the more common promoters of business incubation throughout the world, with 19% of US incubators run by universities (NBIA 1998).

Universities develop business incubators for a number of reasons. Some of these include responding to pressure from regulating bodies or local government; to intensify technology transfer and relationships with industry; to establish an entrepreneurial dimension throughout the university campus; to contribute to the local economic development; and to strengthen the university image to attract students, professors and companies (Albert, Bernasconi and Gaynor, 2002). Table 1 introduces campus incubation, its goals, objectives, targets and trends.

**Table 1. Campus Incubation**

<b>Elements of Incubation</b>	<b>Campus Incubation</b>
Goal	Non-Profit
Main Activity	High Technology
Objectives	Commercialisation of technologies, development of entrepreneurial spirit, civic responsibility, image, new sources of finance
Targets	Projects internal to institutions prior to company creation, external projects
Offering	Concept testing, technical advice and support, seed capital, basic management advice. Eventually: Access to business angels and venture capitalists, access to industrial networks, strategic advice, coaching, hosting
Key Problems	Legitimacy inside the institution, legal status, governance, independence and operational flexibility, income sources, management quality, access to external resources and network
Trends	Rapid development under the aegis of public programmes

(Source: Albert, Bernasconi and Gaynor, 2002)

Despite the emphasis on how incubation can assist in commercialising research and developing knowledge-based economies, it is typically not a priority in the day-to-day functioning of many campus incubators. Research by Lendner (2003) with university incubator managers showed that their main objectives for campus incubation were job creation, regional economic development and a desire to improve the university image. This research showed the objective of carrying out technology transfer was only rated a 'mid range important objective' for research participants (Lendner, 2003:13). This may partly explain why only 42% of internationally incubating firms in campus incubators are directly associated with the college, and only 12% are associated alumni (Lendner 2003).

There are a number of difficulties that arise with campus incubation that do not arise with general incubation. For the most part these evolve around conflict between academic and industrial cultures, and difficulties arising from intellectual property. In addition to this, research by Albert, Bernasconi and Gaynor (2002) argued that 80% of university incubators are considered 'unspectacular'. This conclusion represents views of the research respondents, where one incubator consultant portrayed disappointment

with a number of aspects of university incubation including ‘they are mixed use, do not focus on the selection of companies, are quite bureaucratic and do not have a sense of urgency or business’ (Albert, Bernasconi and Gaynor, 2002: 37). However, Tornatsky, Sherman and Adkins (2003) argue that the reputation of affiliation with an educational institution brings credibility and reputation to incubation programmes and incubating companies that are critical to their success.

### **1.3 THE BENEFITS OF INCUBATION TO TENANT COMPANIES**

The evolution of and the changes to the definition of business incubation have mirrored the change in services offered by business incubators. In the 1980s incubation adopted a real-estate focus, where the trend was towards providing physical space below market rents, logistical support and to less of a degree, business consulting (Gatewood *et al*, 1985; Allen, 1985). It is still recognised that incubation space is important in terms of opportunities for networking, inter-firm collaborations and alliances and cross fertilisation of ideas (EU Benchmarking Report, 2002). However with the emergence of new high technology, the emphasis of business incubation is now less towards site development and more towards business development procedures and providing value adding services (Albert & Gaynor, 2001).

Incubation provides various benefits to tenant companies. They provides services and facilities and valuable encouragement, counselling and introductions to other young companies (Lewis, 2001; Albert Bernasconi and Gaynor, 2002; EU Benchmarking Report, 2002).

While the nature and range of support services provided at business incubators are evolving, it is still possible to identify the primary services provided by business incubators internationally. These are outlined in Table 2 below.

**Table 2. Range of Support Services**

<b>Types of Services</b>	<b>Details</b>
Basic Services	Receptionist, conference and meeting rooms, canteen, network and internet access
Advisory & Support Services	Relating to daily operational issues or strategic aspects of the business
Training & Coaching	In different aspects of business management
Contact building	In terms of finance, legal, technological, commercial and personal

(Source: Albert, Bernasconi and Gaynor, 2002)

Despite the type or objectives of each specific incubator, all incubating companies can potentially benefit from shared office services and affordable rent. They also have the potential to develop professional relationships with firms inside the incubator and in the local economy (Mian, 1995). This is important considering the survival and growth of entrepreneurial firms is dependent on a company's ability to maintain and extend its network of inter-firm relationships (Venkataraman and Van de Ven 1998). Incubation can provide different networking opportunities for tenant companies, both internally and externally with institutions and consultants. These relationships then have the propensity to increase the companies' chances of survival (Hisrich and Smilor 1988; Lechner and Doweling 2003) and help them overcome issues of 'liability of newness' and 'liability of smallness' (Stinchombe 1965; Birley 1986; Baum 1996).

Lichenstein (1992) referred to networking as being the most important contribution incubators can provide to tenant companies. Networking opportunities involve inter-firm, firm-management and firm-external incubator contact relationships (Albert and Gaynor, 2001). Mian (1995) suggests that companies are reported to frequently use and value inter-firm connections and external contacts for developing their businesses. Lendner (2003) explored further the strength of these networks and the impact they had on tenant companies. He identified elements of networking which are important for helping this process happen. These include the structure of a network (Burt, 1992) and the strength and weakness of ties with other network actors (Granovetter 1982). Lendner (2003) argued that the quality of the network can be measured according to the strength of the relationship between the network actors (Lendner, 2003). He argued that

the strength of network ties to financial and other network partners have a significant impact on the financing rates and sales growth of incubating companies. Therefore, incubators should actively pursue stronger relationships between the incubator and its external network partners, to help achieve higher sales growth for incubating firms.

Companies can benefit financially from locating in business incubators. While some companies benefit from their incubators who provide capital for start up companies, all incubatees can potentially save money by using business services and managerial expertise (acquired through entrepreneurial training programmes and networking opportunities within the incubator). These reduce the cost of searching for services on the open market and also guarantee a service to start up companies that may not otherwise be provided to non-incubating companies (Lewis, 2001, Lichtenstein, 1992).

There is much debate surrounding the issue of rent. The original benefit of incubation focused around lower rental rates than market rates. However the incubation concept has expanded to include more 'added-value' services and facilities. Consequently there is less emphasis nowadays on cheap rent. This reflects other research suggesting that companies themselves differ in opinion as to whether or not rent breaks add value to their companies. However, despite the change in trends Lendner's (2003) research showed that 57% of the participation centres still charged below market rental rates, while 38% of incubators charged the market rental rate. The research also showed that 5% of the participants charged above the market rate. The research also showed that rent is still the main source of income for campus incubators.

Lendner (2003) identified that internationally, the most frequently offered professional services by university incubators are business plan development and strategic planning (88% of participating managers). Other popular services provided included assistance with starting business operations and with raising external finance. The least commonly provided professional services were the assistance with human resources and organisation and providing seed financing (41% of participants) (see Table 3).

**Table 3. Types and Level of Professional Services Provided**

<b>Professional Services Provided</b>	<b>Percentage</b>
Business plan/development and strategy planning	88%
Assistance with starting business operations	86%
Assistance with raising external financing	83%
Entrepreneurship education	76%
Market research, marketing and sales assistance	72%
Research and development	63%
Accounting, tax and legal assistance	63%
Human resource consulting	55%
Human resources and organisation	42%
Providing seed financing	41%

(Source: Lendner, 2003)

University campus incubators can offer a range of other benefits. They can be a source of additional personnel for the start-up; can help with the acquisition of external financing, recruitment of R&D students and employees; can provide access to professors offering consultancy and can provide introductions to important government or external institutions (Lendner 2003). Also the contribution of university related inputs such as the university image, faculty consultants, employee education and training and the institutional support from the R & D community in the university may offer benefits to a start-up that locates in a university incubator (Mian 1995). Some incubators have seed funds that they invest in tenant companies (Lendner 2003).

Incubatees may also benefit through the use of university facilities such as laboratory space, facilities, IT network, library, conference rooms and catering (Lendner 2003). Research by Mian (1995) showed that tenant companies in university incubators use all of the shared office services provided (these include mail sorting, photocopier, receptionist, fax, custodial maintenance, canteen, security, telephone, conference room, word processing, personal computing services, shipping and receiving).

The majority of participants (67%) found the services that were provided had some value added contribution to their companies. But there is conflicting evidence as to the value of some services. The EU Benchmarking Report (2002) argues that the most valuable information some companies receive from their incubators is on access to grants and access to advice on seed and venture funding. Mian (1999) argues that there

is little involvement in terms of business assistance services provided for tenant companies. He reported that 45% of participants admitted to never using the majority of the services (these include government grants and loans, legal/government regulations, tax assistance, accessing outside capital, marketing, accounting, personnel recruiting). The one service that most companies have benefited from is business plan assistance at the inception stage (Mian, 1995). However, each company did assign some value for the rest of the services. This implies that although they did not use the services, they did not consider them valueless. Meanwhile those that did use the services valued them highly.

While the services offered by incubators have established over time, the benefit of locating in an incubator is dependant on the *quality* of support services and advice offered (EU Benchmarking Report, 2002). However, while companies value the support provided to them by the incubators, many do not rate it as critical (EU Benchmarking Report, 2002).

Other research has argued that tenant companies tend to undervalue the business services, as they are not a very 'appreciative' group (Mian, 1995) Their level of autonomy and self-esteem can sometimes overshadow their perceptions of how much they really are being helped (Allen and Bazan, 1990).

#### **1.4 CHARACTERISTICS OF SUCCESSFUL INCUBATION**

The quality of support services and advice at hand for the companies is critical for creating a successful incubating environment (EU Benchmarking Report, 2002). Also critical to success is the ability to consistently attract and create new firms to and within the vicinity (Koh, Koh and Tschang, 2004). Because of the nature of prescriptive research, researchers have proposed a number of recommendations to improve incubation practice.

Kumar and Kumar (1997) identified six dimensions of incubation that can have a direct impact on its success. They include facilities and location, shared services, tenant entry and exit criteria, mentoring and networking, funding and support and incubator governance. The level of financial stability, the incubation programme design and goal,

the managers time and dedication for working with companies and networking and relationships provided by the incubator to that list can also influence its success (Lewis, 2001).

Albert, Bernasconi and Gaynor (2002) suggest incubators should improve on their training, quality and range of advice and how they provide access to financial and technological support. Lendner (2003) argued that network ties to financial institutions and other external organisations can influence the level of sales growth for incubating firms and can be a key to successful incubation. He therefore recommends young firms considering incubation to choose a centre that has strong relationships with these organisations.

The EU Benchmarking Report (2002) makes a list of recommendations for incubators. They highlighted that incubators should be part of a greater strategic network and not remain as stand-alone entities. They also recommend that:

- Value-addedness of incubation lies in the type and quality of support services
- Incubators need to continue generating revenue but also maintain a level of quality regarding the companies and not lower entrance criteria in order to recruit more companies. Many centres administer strict criteria in deciding what companies to accept (Lumpkin and Ireland, 1988) but the EU Benchmarking Report (2002) found that these criteria are sometimes relaxed if there is a need to increase rental income.
- Post-incubation assistance is important and can perhaps be provided through concept of 'virtual incubation'
- The quality of the management team running centre and monitoring clients is important
- Incubators make regular impact assessments
- Incubators should reduce their reliance on public funding
- The role of incubator manager should be more 'professionalised'

This need for incubators and science parks to integrate, innovate and maintain a high research profile is important for their growth. Koh, Koh and Tschang (2004) reported greater participation with the private sector and strengthening of links with other similar places of activity as the reasons for continued growth and success at three of the best

examples of world class incubators, Silicon Valley, St. John's Cambridge and Hsinchu in Beijing.

Mian (1994) developed a 'checklist' of issues that should be used when comparing business incubators. These include objectives of incubators, organisational design, governance and policy guidance, tenant performance review, institutional support, staffing, funding sources, technologies targeted, strategic operational policies, services and their value added and the survival and growth of tenant firms.

Tenant performance review is an important part of incubation, and reviews are held at different intervals at most university incubators (Mian, 1994). Periodic reviews help in obtaining evaluations of in-house services and facilities. They help management keep a sense of purpose and map the progress of tenant firms. Performance reviews give managers feedback to help the incubators improve performance. Incubator managers perform both formal and informal reviews in the incubators but (Mian 1994) noticed that the informal reviews created less of an emphasis for the companies to achieve short-term financial gains as there was less emphasis on delivering formal progress reports that can focus on short term achievements.

Taking equity in incubating companies is common practice. Lewis (2001) argued that 22% of incubators take either royalties or equity in tenant companies. It is said that in the long term, universities gain more from taking equity stakes in companies rather than average revenues generated from licensing university developed technology (Bray and Lee, 2000). Lendner, 2003 found that 26% of campus incubators take equity for service charges. The level of equity incubators charge varies from 1% to 20%, with the mean at 6.7%.

### **The Provision of Advice**

The incubator manager plays a critical role in advising tenant companies (Rice and Matthews, 1995; NBIA, 1996; EU Benchmarking Report, 2002). Rice (2002: 165) considered the tenant company's right to access the 'greater knowledge and experience' of their centre manager, a main function of incubation. He explored the factors affecting

the success of incubation through investigating the types and modes of assistance within incubators.

Rice (2002) suggests there is a gap between the manager's stock of knowledge and the companies stock of knowledge. This implies there is great potential and every need for improving the flow of information from the manager to the tenant company. The level of impact managerial assistance can bring to tenant companies depends on the entrepreneur's awareness of the gaps in their knowledge, competencies and resources. It involves the incubator manager recognising these gaps and helping fill them. It also involves the willingness of the entrepreneur to engage in that assistance.

Rice (2002) uses the concept of 'co-production' to understand the manager/tenant relationship and the impact incubation has on company development. Co-production is usually used to explain a producer and consumer relationship, explaining the collaborated efforts by both to improve the outcome of their work. Applied to incubation, Rice (2002) explores the concept of the incubator manager's involvement in co-production with incubating companies. He argues that the impact of co-production is driven primarily by the nature of the relationship between the incubator manager and the entrepreneur. He characterises this relationship as a co-production dyad. In this relationship the incubator manager is the regular producer; the incubator company is the consumer producer; and the relevant output is business assistance (Rice 2002). This is influenced by the managers time dedicated to co-production; the entrepreneur's willingness to engage in co-production; the extent of co-production tools they use; and the intensity of the managers interaction with the client company.

In a study of eight incubators and four entrepreneurs in each incubator Rice (2002) found that incubator managers who have the greatest impact invest more hours and time in 'co-production' and involve a greater range of 'co-production modalities'. Therefore the greatest impacting managers, in terms of co-production, are those seeking out problems or issues that they can respond to. These managers are actively involved in frequent engagement and on-going work with their tenant firms; and provide a full range of services in a proactive way. This tends to happen in incubators where managers are more eager to engage in co-production. Despite this, the majority of companies

report that managerial assistance is delivered on a reactive basis. This means that managers usually assist companies with short-term difficulties - which are identified by the tenant companies themselves. This implies that managers who only become involved in co-production when they are responding to an enquiry are less effective. Unfortunately the EU Benchmarking Report (2002) argues that the number and diversity of tasks facing managers implies that 70% of managers spend less than 50% of their time working directly with tenant companies.

The Rice (2002) study suggests that a significant variance also exists between entrepreneurs and their willingness and readiness for involvement in co-production and incubation assistance. He suggests there are two main groups for whom the incubation and co-production process is successful, and there are two main groups for whom it is not. Research showed, that those in the first group value counselling and the services as being helpful. The second group indicate they do not find it as helpful, and do not look for the assistance as often as entrepreneurs in the first group. One reason for this difference might be that entrepreneurs in the second group may not have as much need for counselling as those in the first.

To explain this finding further, Rice (2002) argues that there are different types of companies and that they vary in terms of their maturity and readiness to engage in co-production. These four companies are called: Superstars, Up-and-Comers, Anchor Tenants and Long Shots (Table 4).

**Table 4. 'A typology of incubator companies'**

		MATURITY	
READINESS	Superstars	Up-and-Comers	
	Anchor Tenants	Long Shots	

(Source: Rice, 2002: 184)

Anchor tenants are companies who have a reason to be in the incubator. They are reliable in paying their bills and support the incubator financially. However they do not engage in co-production with the incubator manager. Examples of anchor tenants include university technology transfer offices and economic development agencies.

Long shot companies are companies who have considerable need for co-production, but are not yet ready to engage. Their main benefits of being in the incubator are the supportive environment offered by the incubator and the space to allow them mature.

Up-and-comers are companies who have significant resource gaps that can be addressed through co-production. These companies are run by entrepreneurs who have identified these gaps and recognise there is potential for engaging in co-production .

Superstar companies have matured past the up-and-coming stage. They now rely less on co-production input from the incubator manager, although their willingness to engage is still high. These companies are now capable of overcoming crises and sustaining development without interaction with the centre manager. They act as role models for up-and-coming companies but are likely to graduate from the centre shortly.

Rice (2002) suggests that the incubator manager should adopt a passive, reactive approach to helping entrepreneurs who do not find the counselling and incubation services as being helpful. The manager however should focus attention and continued co-production on entrepreneurs who do find that assistance helpful. This would better focus the attention of the incubator manager and make better use of their time. This approach would also facilitate the need to move up-and-comer companies quickly into the superstar category. Rice (2002) also suggested that concentrating the managers' attention would provide an environment of peer-networking, training and also reactive co-production, which would still involve interaction with the less interactive companies.

Managers who find it difficult engaging in co-production and assisting tenant firms because of the amount of time it demands, should delegate some non co-production activities to other staff. They should also dedicate more time to companies willing to participate in co-production and could develop a 'multi-tiered' approach to business

incubation (Rice, 2002). He suggests that managers who rate poorly in co-production are heavily involved in other issues of the incubation process such as economic development and fundraising activities to sustain the incubation programmes. This diverts their attention from the key incubation tasks.

However business assistance provided by an incubator is not always provided by the incubator manager. Mian (1995) found that while each centre provides business assistance services, the ways in which they can be delivered can differ. Some centres offer business and management consultancy to companies that is provided by in-house consultants. Others incubators provide the services through resident private firms, and others still have no formal arrangements but the incubator manager and staff themselves help tenant companies with business and managerial issues.

## 1.5 CONCLUSIONS

In this chapter I reviewed the importance of incubation as a tool for economic development. I highlighted how campus based incubators in particular have grown in popularity since the 1980s. Campus incubation contributes to economic development through providing commercialised research, which helps the growth of knowledge-based economies. I showed however that a number of issues arise with campus-based incubation. These can include legitimacy within the institution, independence and operational flexibility, and divergence between academic and commercial behaviours. I also showed how literature identified shortcomings in the existing body of literature, with implications for future research.

In this chapter I showed how the concept of incubation has expanded since its inception. Incubation now means more than the provision of cheap rental office space. Incubation now includes a broad variety of services supports and facilities provided for client companies. Popular services include basic administration assistance; advisory and support services; training and coaching; and contact building. For campus-based incubators these benefits are broadened again to include access to R&D, additional personnel and introductions to government or external institutions.

However, I argued that the success of incubation is not a result of the range of services and supports they provide. Instead an incubator's success is the result of the quality of their delivery. The effectiveness of incubation is therefore considered a result of the incubator manager and their approach to incubating tenant companies. I introduce research on the manager/entrepreneur relationship and address reasons as to why difficulties can arise. I show that not all firms have the same needs. Therefore, the manager's time should be spent with those needing the most support. I also illustrate that the capability of the manager and the entrepreneur to engage in 'co-production' of services may be critical in determining whether firms benefit from incubation.

## ***CHAPTER 2***

### ***COMPANY DEVELOPMENT LITERATURE REVIEW***

In this chapter I establish a framework for appraising the business development process of new high technology ventures. I start this chapter by arguing that every business begins with an idea or opportunity. I explore the start-up process by discussing how opportunities are recognised and how they evolve. Specifically I explore the development process in terms of information flows, and explain how the evolution of information describes the development of a business idea. I continue with an explanation of the entrepreneurial process in terms of new venture creation activities and resource accumulation. Some theorists suggest that this process is one of planned sequential steps while others suggest it is one of improvisation where planning and execution of activities occur simultaneously. It is also argued that more important is the entrepreneur's strategic flexibility in adapting to environmental changes and challenges to maintain competitive advantage.

#### **2.1 THE ORIGINS OF NEW BUSINESS OPPORTUNITIES**

Much of entrepreneurship research has been concerned with explaining why some individuals and not others recognise entrepreneurial opportunities (Romanelli and Schoonhoven, 2000; Shane and Venkataraman, 2000; Ardichvili, Cordozo and Ray, 2003; Dimov, 2003). There are three main schools of thought regarding the discovery of entrepreneurial opportunities (Shane, 2000). The first is the neo-classical equilibrium theorists (e.g., Khilstrom and Laffont, 1979) who argue that everyone can identify all entrepreneurial opportunities, that it is people's fundamental attributes such as their varying tolerances of uncertainty rather than information that exists about an opportunity, which determines whether or not they will choose to become an entrepreneur (Shane, 2000).

The second are the Psychological Theorists who focus more on the entrepreneur's decision to exploit an opportunity rather than its process of discovery.

They agree with neo-classicists that opportunity recognition is reliant on personal attributes. They argue that opportunity recognition is dependent on people's ability and willingness to take action (Shane, 2000) emphasising characteristics such as need for achievement (McClelland, 1961), internal locus of control (Begley and Boyd, 1987) and self-efficacy (Chen *et al*, 1998).

The third school is the Austrian economists (e.g. Hayek, 1945; Kirzner, 1997). They do not identify people who are more likely than others to become entrepreneurs or analyse their personal attributes. They suggest not everyone can recognise all entrepreneurial opportunities, but rather that it is a person's idiosyncratic information that allows them see different value in a good or service and identify specific opportunities others cannot (Shane, 2000). Therefore, they argue that it is the possession of information that is important for leading to entrepreneurial discovery and determines who becomes an entrepreneur.

Similarly Casson (2003) considers opportunities as representing judgements based on a system of information about markets and technologies, resource arbitrage and misallocation of resources. This information is 'a public good in common ownership' (Casson, 2003:55). He sees the opportunity recognition process starting when the entrepreneur recognises a misallocation of resources, makes guesses regarding the misallocation, and passes 'superior judgement' on the situation (Casson, 2003). This leads to the entrepreneur developing an improved allocation approach.

Ardichvili, Cordozo and Ray (2003) agree that under-utilised or underemployed resources, from technology or other types of proprietary knowledge can progress from an elemental form to a business concept when market needs and resources become more precisely defined. Dimov (2003) argues that different contexts for opportunity recognition exist in demand, supply and replication driven contexts. Casson (2003) argues that entrepreneurs believe they have greater knowledge and ability to carry out a task in a better-organised and more efficient manner than what was previously the case.

Other theorists following the Austrian economic understanding of opportunity discovery agree that it is the entrepreneur's unique interpretation and configuration of information that leads to starting a company (Venkataraman, 1997; Yencken and Hindle, 2003).

They argue that an entrepreneur's prior knowledge creates a 'knowledge corridor' that leads to the discovery of a potential commercial opportunity.

Shane (2000) suggested there are three dimensions of prior knowledge that are important to the process of entrepreneurial discovery: prior knowledge of markets, ways to serve markets and customer problems. Shane (2003) compared entrepreneurial opportunities for the same invention and explored the differences in business opportunities discovered by different entrepreneurs in response to the same new technology. This research supported previous findings that not all people are likely to recognise the same entrepreneurial opportunities that result from technological change.

Romanelli and Schoonhoven (2001) address existing 'anecdotal' theories that entrepreneurial opportunities and prior knowledge are mainly discovered in 'local information'. They research the concept further and argue that this local information is primarily found within existing organisations, from the entrepreneurs pre-founding work and educational organisations. They also find that in addition to the entrepreneurial opportunities, entrepreneurs also obtain the expertise and experience and resources necessary for developing the company from their local environments. For example they obtain finance from local banks or venture capitalists and staff and contact networks from previous workplaces.

Ardichvili, Cordozo and Ray (2003) argue that opportunity identification and recognition is a 'multistage process' (Ardichvili, Cordozo and Ray, 2003: 121). The three stages involved in the process are opportunity recognition, opportunity development and evaluation. They argued that the developmental process is cyclical and that entrepreneurs are likely to conduct several evaluations at different stages of development. This leads to recognition of additional opportunities or adjustments to the initial idea. However, this process will not occur if the entrepreneur does not show signs of 'entrepreneurial alertness'. Entrepreneurial alertness is the result of the entrepreneur's personality traits, social networks and prior knowledge. However, also important are sensitivity to market needs, organisation of resources and the entrepreneur's creative ability (Ardichvili, Cordozo and Ray, 2003).

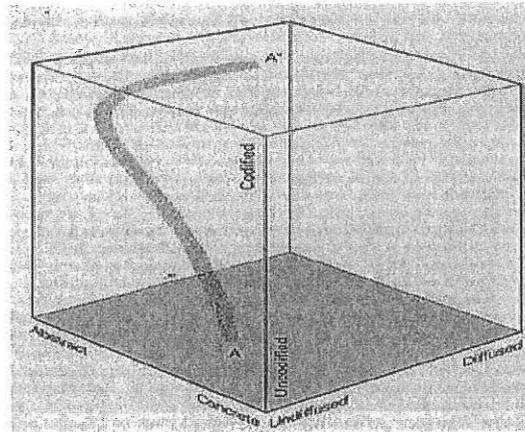
## **Evolution of the Business Idea**

For business ideas to become commercial entities, they must progress through a series of changes. This evolutionary process and the process of business development can be explained using knowledge-based theories. Knowledge-based theories describe the evolution of the business idea by explaining how information changes overtime. Specifically these theories suggest entrepreneurs must manage the evolution of knowledge, that is, the evolution of the business opportunity if they are to develop competitiveness.

In his knowledge based framework, Boisot (1999) argues that knowledge is an erratic and unpredictable variable; that creates opportunity for change. His theory encourages entrepreneurs to continually experiment in order to learn about environmental circumstances, and in doing so change their ideas to suit market needs.

Boisot (1999) explains the behaviour of knowledge by using a three-dimensional conceptual tool of analysis that can assess the production and distribution of information in a social system. This tool is called the Information Space (I-Space), and it facilitates the mapping out of knowledge flows. Boisot (1999) uses three constructs to define information, represented as the three axes of the I-Space. These are Abstraction, Codification, and Diffusion (Figure 1).

**Figure 1. The I-Space**



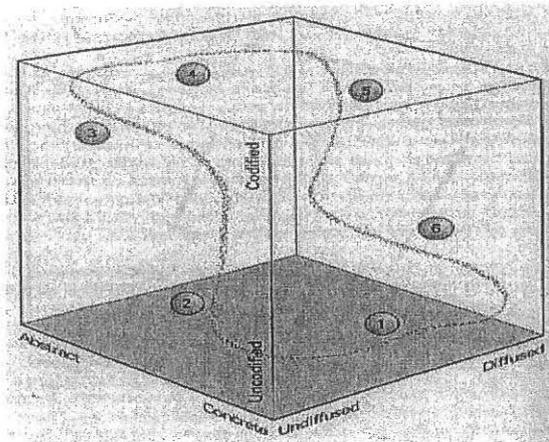
(Source: Boisot, 1999:56)

According to Boisot (1999) codification and abstraction are tools to economise on information processing and transmission. They arrange information in a systematic order and can be seen as a procedure for shedding surplus data. Diffusion refers to the proportion of a population who can be reached by this information. There is a difference between diffusing information and the pick up rate of information, and information can be widely diffused yet remain unused. In order for diffusion to be effective, the population the information is to be dispersed to must be carefully selected. Practically, the diffusion dimension involves choosing the target audience for information.

### **The Social Learning Cycle**

According to Boisot (1999) data is continuously moving within the I-Space. He argues that information is part of a cycle, where it emerges from bare data to knowledge and applied knowledge the more it is engaged with. By using an information flow cycle, this progression can be mapped and six distinct stages through which information progresses can be identified. Boisot refers to this as The Social Learning Cycle (Figure 2).

**Figure 2. The Social Learning Cycle**



*Stages of the Social Learning Cycle*

- (1) Scanning
- (2) Problem Solving
- (3) Abstraction
- (4) Diffusion
- (5) Absorption
- (6) Impact

(Source: Boisot, 1999: 60)

The first stage is when information is unstructured. It involves scanning and identifying threats and opportunities in generally available but often 'fuzzy' data. The length of time spent scanning is dependent on how abstract and codified the data is. In a start-up enterprise, the pre-start up stage is a reflection of the scanning process. The work involved at this stage is mainly related to extracting possible opportunities from numerous sources of information.

The next stage is Problem-Solving. This is the process of giving structure and coherence to insights that were developed during the scanning stage. It involves eliminating much of the uncertainty that previously surrounded the ideas. Concepts are given shape and much of the uncertainty that may have surrounded them in the past is eliminated.

The third phase is Abstraction. This requires applying these new insights to a wider range of situations. It is a form of reductionism. It involves conceptualizing them, breaking them down to their most basic features, and experimenting to see how different attributes are correlated with each other and how they can be applied to wider settings. Discarding certain options because they are irrelevant is a form of abstraction.

Following Problem-Solving and Abstraction, information is then Diffused. Diffusion is easier when information is well codified and abstract. The opposite of this is data that is uncoded and context specific. When data is uncoded and concrete, diffusion will only be successful if the sender and receiver share understanding of the context. Then the scope of shared context is very limited. This usually only applies to family and close work colleagues. However, for effective diffusion, the target population *should* exhibit similar capacities for receiving, processing and transmitting data. Then information that is well codified and abstract is more likely to reach a wider population. However, costs can occur if communicating information that must be understood and that must lead to effective responses from potentially large audiences.

The fifth stage is Absorption where the products or services begin to be recognised and accepted by society who learn more about the company or product by doing or by using. It involves the potential recipients of new knowledge internalising the developed insights and familiarising themselves with the new technology and ideas.

This last point also addresses the sixth stage, Impact. This is the stage where knowledge becomes embedded into practices – artefacts, technical or organizational rules or in daily life for the targeted audience. It is the process of internalising the new products or services. Through repetition and practice, new products become more readily available and knowledge of their benefits become more natural.

Boisot's (1999) theory advances the concept that when codification and abstraction work together, they greatly facilitate the diffusion of information. As information passes through these different stages, it changes form from personal knowledge, to proprietary knowledge, to text-book knowledge to common sense, implying that the creation and diffusion of *new* knowledge tends to follow a particular sequence.

This cycle demonstrates that knowledge is not a static resource and that information goods evolve dynamically over time. It suggests that knowledge structures and expectations adapt with the arrival of new information. This implies that knowledge and information require frequent checking and updating which is an important source of new ideas and opportunities. This results in a continuous generation of competitive advantage through a series of redefinition of products and services the firm produces,

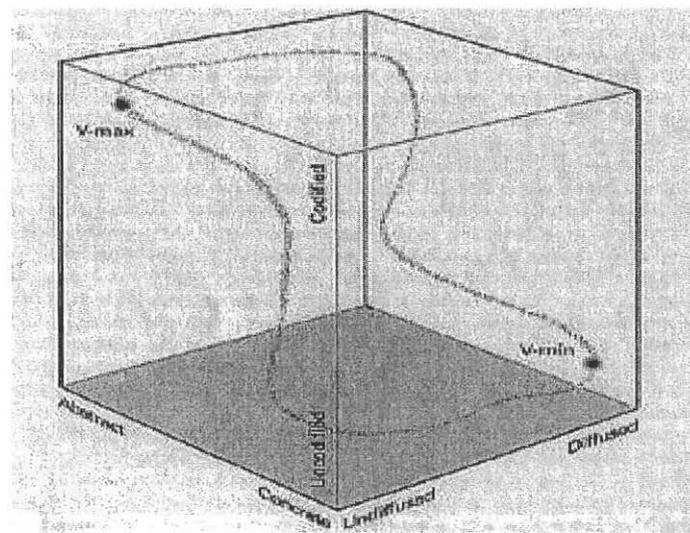
changes in resources and capabilities deployed, and a mode of organising that facilitates creating and using new resources and capabilities.

### Application of Theories

How entrepreneurs read and interpret information will determine what they do with it. Obstacles to trade are due in most part to ignorance and so the market making activities required to overcome them involve the acquisition and processing of information (Casson, 2003). The problem for entrepreneurs however, is that by their very nature their business ideas are formed from information and experiences that are local, fuzzy and tacit. Ideas are unformed at start-up and plans and strategies emerge over time (Bhide, 2000; Garud and Van de Ven, 2000; Casson, 2003).

Knowledge-based theory can best be used to explain how an entrepreneur can develop the entrepreneurial opportunity and cope with obstacles and barriers to the market and entrepreneurship. Boisot (1999) argues that an entrepreneur can maximise profit by prolonging the products' existence in a Social Learning Cycle position where its value is being optimised. Boisot (1999) refers to this as the Maximum Value position (Figure 3).

**Figure 3. V-Max and V-Min**



(Source: Boisot, 1999:80)

Practically speaking, a company progresses towards the V-Max while it is transforming 'emerging technologies' into 'key technologies'. Emerging technologies are not yet codified, and have only a few concrete applications. They remain specific to only a small number of companies, as the information has not yet been completely diffused. However, the technology has the potential to become a competitive advantage for firms that develop it. Alternatively, key technologies are usually well codified, and if properly leveraged can become generic. They are not yet diffused however, and still remain specific to a small number of firms. They are also a source of competitive advantage to firms that have them (Boisot, 1999).

Another important reason for protecting key technologies is to maintain a position of monopoly power. Essentially this is the reward for the entrepreneur's superior judgement and his monopoly of information achieved by discovering information before his competitors.

Boisot (1999) and Casson (2003) suggest different strategies to prolong existence in V-Max:

- Although they only offer partial protection of new technologies, creating barriers to entry such as property rights can prolong a company's position in V-Max.
- The more widely available the new key technologies are, the more at risk they are of competitors acquiring knowledge opportunities second hand from the entrepreneur. Outsiders rely on the entrepreneur to provide information and then 'back the entrepreneur's judgement' rather than their own by seeking to replicate what the entrepreneur does (Casson, 2003).
- By integrating key technologies with the firms other knowledge assets, key technologies will remain inactive within the I-Space in terms of diffusion, and will therefore remain in V-Max for longer. Embedding key technologies in internal processes also means companies extract 'tacit experiential knowledge' from employees which is then embedded in the minds of those involved in decision making and in firm specific processes (Casson, 2003).
- A rapidly changing knowledge base will continually erode key technology utility as more attractive alternatives quickly become available.

Ultimately an entrepreneur is in business, has created a good or service and wants to extract value in order to make a profit (Casson, 2003). In economics, all other things being equal, an increase in sales is equal to an increase in revenue that should also result in a profit increase. Increasing sales however, means making the good more attractive to a wider audience, in other terms, increasing its utility. Unfortunately this has a negative effect on the value aspect of information goods where the more usable and diffused an information good is, the more difficult it is to achieve scarcity. This is referred to as the Value Paradox.

When the opportunity for co-ordination is over a long period of time, the entrepreneur must acknowledge the fact that eventually this successful exploitation will attract others. Even those entrepreneurs that did not have the ability to discover the information themselves have the opportunity to 'discover' the idea by studying the successful entrepreneur's methods of operation. Casson (2003) argues that maintaining a monopoly of information can be managed through secrecy and other factors including hoarding the new knowledge and pretending not to have discovered anything, or to have discovered something else. However, Boisot explains that in order for a company to progress it needs to be part of a continuous learning cycle that involves moving through the Social Learning Cycle from the V-Max to V-Min quickly in order to increase learning in the company and in turn improving competitiveness.

Because both V-Max and V-Min lie along the Social Learning Cycle, both the regions in which the points are located need to be activated for there to be an effective learning process. This means that effective learning takes one through different phases of the I-Space, not all of which are directly value adding.

## **2.2 THE ENTREPRENEURIAL PROCESS**

Most businesses start with limited funds, limited management ability, few professional contacts, and little planning or research (Bhide, 2000). The new venture creation process therefore is typically described by researchers in terms of resource accumulation and in terms of the steps required in seeing the gestation and start-up period through.

These steps to growth are identified as key events, stages or tasks in the entrepreneurial process (Reynolds and Miller, 1992; Carter, Gartner and Reynolds, 1996; Delmar and Shane, 2003). Reynolds and Miller (1992) carried out one of the first studies of new firm gestation in the 1980s. They used four markers to gauge the progress of their research sample: personal commitment, gathering financial support, making the first sale and hiring staff. They identified a firm as being fully established when all four of these resources had been accumulated and when certain events had happened. Most companies' first event was personal commitment to the project, the second most common event between achieving their first sale and employing staff. Their results show that four out of five firms progress through gestation within two years.

Carter, Gartner and Reynolds (1996) carried out similar research. They identify fourteen activities entrepreneurs tend to complete during the first three to four years of company formation. These events include: organising a team, preparing a plan, buying facilities and equipment, renting facilities and equipment, looking for facilities, investing own money, asking for funding, getting financial support, developing models, devoting full time to company, applying a licence or patent, forming a legal entity, hiring employees and saving money to invest. They argue that some of these activities will define the critical point at which certain entrepreneurs will succeed or fail in creating new organisations. Others will represent intermediary steps of 'limited consequence', depending upon the exact nature of the business emerging. At the end of their research they suggest that nascent entrepreneurs can be divided into three groups, those that succeed in developing a company, those that do not succeed, and those that continue to try. They conclude that nascent entrepreneurs should aggressively pursue opportunities in the short-term, because whether these opportunities will prove worthy of start-up or prove to be poor choices that should be abandoned will become clearer more quickly.

In more recent research, Delmar and Shane (2003) suggest that costs can be reduced by carrying out the series of start up activities in a particular sequence. The new firm may also experience superior performance in the new venture creation process. Delmar & Shane (2003) surveyed new ventures at multiple points in time from when they were first established. They witnessed and recorded the actual timing of activities. From their

research they found more successful companies tend to pursue company development performing tasks in the following order: writing a business plan, gathering information on customers, talking to customers, projecting financial statements, establishing a legal entity, obtaining premises and licences, securing intellectual property, seeking finance, initiating marketing and acquiring inputs. They suggest entrepreneurs who follow this entrepreneurial process are more likely to achieve a 'rapid' first sale and in the long term experience an increase in the level of new venture sales.

These activities are achieved in most part through the entrepreneur's use of 'local' resources and knowledge (Romanelli and Schoonhoven, 2001). This includes access to information about markets, competitors and local sources of human and financial capital. These are all typically sourced locally in the entrepreneurs' community or in previous places of employment. Baker, Miner and Eesley (2003) also agree that entrepreneurs rely on 'bricolage networks' during the start-up process. The term 'bricolage' refers to 'making do' with and creating new forms from resources that are currently available to the entrepreneur. Baker, Miner and Eesley (2003) argued that entrepreneurs rely largely on their 'pre-existing' networks as a means to acquire the wider resources needed during and after founding. 'Network-bricolage' is the most common kind of bricolage activity during the start up process but bricolage was also used to acquire other resources such as raising finance and hiring staff. It is used both during and after start-up.

Baker, Miner and Eesley (2003) also suggest that entrepreneurs who engage in bricolage do not employ a 'Design Precedes Execution' approach to setting up a company. A Design Precedes Execution approach (DPE) implies the entrepreneurial process follows a certain linearity, where start-up gestation usually leads to the creation of a plan that is then executed by the entrepreneur. An alternative approach to the start up process is one less planned, more informal and more emergent. 'Improvisation Design' suggests that design and execution of the business idea occur simultaneously (Venkataraman and Van de Ven, 1998; Bhide, 2000; Baker, Miner and Eesley, 2003). These researchers suggest that improvisation in accumulating resources and carrying out actions surrounds and drives many entrepreneurial start-ups.

Casson (2003) argues that information which represents an opportunity for a new venture changes as the entrepreneur engages in the new venture creation process. External forces influence the process through environmental jolts that force relationships between entrepreneurs and their suppliers and customers to change (Venkataraman and Van de Ven, 1998). Venkataraman and Van de Ven (1998) see the entrepreneurial process as being the result of an entrepreneurs' ability to maintain and develop new relationships during these periods of environmental turbulence.

Environmental jolts are of two kinds – beneficial and hostile. Beneficial jolts generally expand the economic opportunities for a population of firms within an economic niche. Hostile jolts, by contrast, have the general effect of shrinking the economic opportunities for the population of ventures. Venkataraman and Van de Ven (1998) argue that good management can save a company suffering damage from environmental jolts but that repeated jolts have the potential to affect even top companies. They present a negative change in competitive, technological, business, legal, customer, supplier, investment and labour environments (Venkataraman and Van de Ven, 1998). They argue that new companies may find it difficult to retain existing relationships during start-up but do not find it difficult to establish new relationships. They also suggest that nascent entrepreneurs react well to jolts and tend to implement effective strategic changes. Adolescent companies on the other hand show more difficulty in reacting as effectively and tend to suffer greatly from hostile jolts. However, whether or not an enterprise recovers from jolts is a result of what adaptive strategies they employ to overcome the particular jolt.

These setbacks and opportunities cause companies to consequently adapt their business ideas (Bhide, 2000). Garud and Kotha (1994) and Thomas (1996) argue that strategic flexibility is what enables firms to survive in competitive environments and that the ability to take action and manage change is a primary determinant of performance. Taking this into account, Rindova and Kotha (2001) investigate how firms organise to achieve 'dynamic fit' with their 'rapidly changing' environments.

Through research into the evolution of two internet companies, they find that entrepreneurial firms in environments characterised by rapid change 'continuously morph' in order to emerge and grow. Firms lose their competitive advantage to re-

establish new sources of competitive advantage. Therefore, companies migrate into new strategic and competitive domains through a continuous process of change and development. Continuous morphing is the process of regenerating competitive advantage through redefining and changing a firm's products and services, resources and capabilities, as well as incorporating an approach to organising facilities, creating and using new resources and capabilities (Rindova and Kotha, 2001).

For an entrepreneur to engage in the market, they must convince clients and stakeholders that their judgement of the market is superior to other judgements (Casson, 2003). Having superior market judgement is not enough; it is necessary for the entrepreneur to extract value from that judgement. Obtaining endorsement from clients and stakeholders can assist in overcoming the legitimacy issues that characterise new ventures (Aldrich and Fiol, 1994). Crucial to this is the entrepreneur's ability to 'bargain' (Casson, 2003). Therefore, Barron and Markman (2003) argue, the entrepreneurs 'social competence', that is his ability to persuade clients of the superiority of his judgement, will determine his success.

Other market barriers include monopolies of information. These arise when those who 'get' the source of information before anyone else and protect it to prolong their monopolistic position. Any approach taken to protect this information is considered a barrier to entrepreneurship. Operational obstacles to entrepreneurship include a lack of personal wealth and difficulties in obtaining external finance. Lack of access to non-profit organisations can also act as a market barrier. In these cases due to expensive subscription fees and social class prejudices, entrepreneurs are prevented from acquiring and disseminating information with a whole host of people. Cassen (2003) also argues that educational qualifications can 'regulate' an entrepreneur's access to external finance. He reminds that gaining qualifications is not always an option and draws attention to a bias that can sometimes exist against those who do not conform.

Despite the fact that entrepreneurs face difficulties in securing customers and resources (Bhide, 2000), there are a number of reasons why they can become reputed dealers. These include limited or poor alternatives, psychical utilities, personal agendas, the flexibility because of their newness, and the ability to align interests (Bhide, 2000). In order to access resources entrepreneurs utilise a number of strategies (Bhide, 2000).

These include special deals and benefits, mimicry, framing, carrying out a broad search of potential consumers, getting resource providers to commit incrementally, through initially providing second-tier resources (Bhide, 2000). Other ways of overcoming barriers to the market include (Casson, 2003):

- Locating parties of inferior judgement with which to do business.
- Protecting the superior judgement, which enabled the entrepreneur to identify the opportunity in the first place.
- Developing a reputation to establish himself as a legitimate market competitor. From the trading partner's point of view, the important characteristics of a transactor are ease of contact, negotiating skill, screening ability and dependability. A reputation in any of these qualities reduces the cost that other transactors see in trading with the entrepreneur. Therefore, a good reputation can reduce transaction costs whereas a bad reputation may actually increase them.

### 2.3 CONCLUSIONS

The entrepreneurial process begins with the identification of an opportunity. Different theories surround how these opportunities are recognised and why some people, but not all, can identify them. In this chapter I have argued however that underlying each opportunity for idea recognition, is 'information'. This is based on Casson's (2003) argument that each recognised opportunity is really an entrepreneur casting judgement on a situation or market. This judgement is based on their information of the particular situation.

Typically information is undeveloped at the judgement stage. It moves through a process where it becomes better understood and more applicable. Boisot (1999) argues that information moves through a cycle, the Social Learning Cycle (SLC). In the (SLC) information moves through six stages while it is being developed for a specific purpose. The six stages are Scanning, Problem Solving, Abstraction, Diffusion, Absorption and Impact. Each of these stages explains the new form which information becomes. The stages can be used as a guide for identifying the state of information at a particular point in time. Once this has been identified, the cycle can then be used as a map for showing

what the next stage of development should be. The SLC does this through explaining how information must change to drive the process forward.

In addition to developing their idea, entrepreneurs must acquire resources and engage in market making activities. Key tasks include writing a business plan, raising finance, hiring staff, locating office premises, establishing a legal entity and researching the market. Typically these tasks and resources are achieved and located locally, through the entrepreneurs own personal contacts, local communities or previous work environments. While some see this process as being linear and sequential, others see it as one of improvisation. This means the entrepreneur simultaneously pursues the specific activity at the same time it is being planned.

Regardless of their approach, entrepreneurs face changing environments and obstacles to trade. Their ability to survive these turbulences is reflective of their strategic flexibility and their capacity to achieve dynamic fit with the changing environments. This should result in regenerating competitive advantage through a redefinition of products or services.

# **CHAPTER 3**

## **METHODOLOGY**

In this chapter I outline the two research questions that are addressed in this thesis. I argue that there are a number of limitations to existing research on incubation. Using some of the key findings from the literature chapters I introduce two research propositions. I suggest that incubators should support entrepreneurs in testing their judgements in the market place and in accessing resources. I also suggest that differences exist in how incubator managers and entrepreneurs view the impact incubation has on the start-up process.

In the second part of this chapter I outline my research design. I explain why I chose case study research and address the benefits and difficulties associated with this approach. I outline the three-step procedure I implemented in this research. The three stages firstly involved carrying out an exploratory study. This was important to develop an overview of the incubation climate in Ireland and to understand the practical implications of incubation literature. The second stage was to carry out a longitudinal study of campus incubation with both incubator managers and client companies. This was necessary in order to capture details of the tenant/entrepreneur relationship and details of the impact incubation had on the start-up process. The third part of the research design was to carry out a visit to an international incubation centre of world-class. I did this to provide a more diverse understanding of incubation and to supply further examples of incubation management and practices. I close the chapter by identifying that there are a number of limitations to this research approach.

### **3.1 RESEARCH QUESTIONS**

This study explores the incubator/client relationship and the impact incubation has on the development of the client company. The work is based on two main research questions:

- (iii) What are the main supports required by high technology companies from business incubators?
- (iv) Do incubator operators have an accurate understanding of tenant enterprise requirements?

Extant literature on incubation is characterised by a number of problems and limitations. These include a strong reliance on information from incubator managers as opposed to tenant companies (EU Benchmarking Report, 2002), and an 'anecdotal' approach to incubation literature that can lack sound theoretical knowledge (Mian, 1994). Research also tends to be country specific and fail to include contributions from other countries (EU Benchmarking Report, 2002). Many of the studies provide insights of incubation at a specific point in time and fail to investigate day-to-day life within the centre (Kumar and Kumar, 2001). There is also a lack of cross-fertilisation of ideas with entrepreneurship research (Lendner, 2003).

There is also much debate in the evaluative literature as to the true value of incubation. Some argue whether incubators are an effective use of public money. Albert and Gaynor (2001) question how significant a difference incubation really makes to a firm's performance in comparison to similar companies established outside of an incubator. Other resources question the long term social and economic benefits of incubation and raise the issue of difficulties associated with this type of enterprise assistance (Lewis, 2001).

Proponents of incubation argue that knowledge-based high-technology entrepreneurship can play a critical role in regional and national economic development (Lichtenstein and Lyons, 1996). Incubator advocates include government bodies, local or regional authorities, local economic development associations and universities/higher education authorities (Albert, Bernasconi and Gaynor, 2002). They endorse and encourage the development of incubation because it is considered a cost-effective tool for creating employment, stimulating economic activity through company creation, assisting the technology transfer and commercialisation processes and promoting certain types of activity (Tornatzky, Sherman and Adkins, 2003).

More specifically they suggest that incubators provide a number of discrete benefits to entrepreneurs. These include shared office space (Mian, 1995); encouragement and counselling (Albert, Bernasconi and Gaynor, 2002); and the opportunity to network with companies both internally and externally (Lendner, 2003). Typically incubators provide these benefits through the provision of a range of advisory and support services, business assistance, training and coaching (Albert, Bernasconi and Gaynor, 2002).

The effectiveness of incubation is heavily dependent on the strength of the relationship between the entrepreneur and the incubator manager. Rice (2002) argues that a gap exists between the manager's knowledge and the company's knowledge. Consequently, the manager co-produces business advice with the entrepreneur. He suggests that incubators with the greatest impact are those where the manager invests more hours and time on 'co-production' and involves a greater range of 'co-production' modalities. However, factors affecting co-production include the company's willingness to engage in co-production and the intensity of interaction between managers and companies. This in turn can be influenced by the other requirements on the incubator managers time and a need for the manager to prioritise tasks.

For the start-up enterprise, once the business opportunity has been identified, it moves through a series of changes. Casson (2002) considers the idea recognition process as the entrepreneur casting judgement on what he sees as a misallocation of resources or misused information in the market place. Once the idea has been identified, the entrepreneur moves through a cyclical process of opportunity development and evaluation (Ardichvili, Cordozo, and Ray, 2003). The entrepreneur is likely to carry out several evaluations that lead to recognition of further opportunities.

The process of commercialising a business opportunity can be explained in terms of the evolution of information. Boisot (1999) suggests that because knowledge is an erratic variable it can create an opportunity for change. Therefore it is part of a cycle where it evolves from bare data to more applied knowledge. Boisot (1999) identifies six distinct stages to this cycle (The Social Learning Cycle). They are Scanning, Problem Solving, Abstraction, Diffusion, Absorption and Impact. The cycle suggests that a knowledge structure adapts when new information arrives. Therefore the business process is a series of redefining products and services to maintain competitive advantage. Casson

(2003) identifies obstacles to this practice as being the result of 'ignorance'. Consequently, the market-making activities required to overcome these difficulties involve acquiring and processing information.

The process of resource accumulation and pursuing business activities are also necessary for overcoming obstacles to trade. Some of the most necessary of these include developing a business plan, researching the market, recruiting financial support, obtaining business premises and hiring staff (Carter, Gartner and Reynolds, 1996; Delmar and Shane, 2003). Many companies however start with little access to these resources (Bhide, 2000). For these entrepreneurs, the start-up process is one of 'bricolage' or 'making do' with the resources and information that are available. This is mostly through their use of local or personal resources, contacts and knowledge (Baker, Miner and Eesley, 2003).

Reflecting this literature, the critical tasks for entrepreneurs in starting a business relate to accessing resources and in developing the business idea by interacting in the market. This leads to proposition 1:

**Proposition 1:**

The services required by entrepreneurs from incubators should support the entrepreneur in the following two tasks:

- a. Testing the entrepreneurial judgement in the market and in the subsequent process of modifying and redeveloping the business idea
- b. Accessing resources

Incubation literature advocates many benefits of incubation. Specifically it highlights the benefit of business support and advice (Rice and Matthews, 1995). It also promotes how companies can access networks, specialised knowledge and know-how. However, company development literature highlights the importance of personal contacts for any start-up company. Romanelli and Schoonhoven (2001) suggest that companies rely on their own local resources and network contacts (usually from their community or previous employment) to progress through stages of the start-up process. Therefore Proposition 2 suggests the following:

**Proposition 2:**

Entrepreneurs and incubator managers differ in their views of how incubation impacts on the start-up process

These research propositions, and the limitations outlined in the incubation research literature, suggest a research design that should focus on information from tenant companies as well as incubator managers by being longitudinal in design it could also capture the true impact of incubation. I also argue that an international comparison of incubation would provide a useful context for understanding the incubator situation in Ireland.

**3.1 JUSTIFICATION OF RESEARCH APPROACH**

This study was developed to explore how companies develop in business incubation environments. It evaluates the business incubation process and identifies key areas of influence incubation plays in company development. A case study research approach was considered the most appropriate style of research to investigate these issues.

The main objective of field research is to describe organisational life as it unfolds in its natural surroundings (Ven de Ven, Marshall and Scott Poole, 2002). Eisenhardt (1989) recommends case studies as the preferred research approach for new areas of research, or existing areas of research where existing theories are lacking. Case studies provide the opportunity to explore issues in depth and allow theory be developed by piecing together detailed evidence. They involve examining a phenomenon in its natural setting, through direct observation or systematic reviewing (Eisenhardt, 1989; Yin, 1994). They are also suitable when presenting information on 'how' or 'why' type questions. They can be explanatory, exploratory or descriptive in style and are particularly useful in identifying detailed knowledge about an organisation and the processes underlying its behaviour (Hartley, 1994). Case studies are therefore particularly important for this research where a holistic, in-depth investigation is required to understand the business incubation environment (Feagin, Orum and Sjoberg, 1991).

Cases can be presented in single or multiple forms. There can also be multiple levels of analysis within a single case (Eisenhardt, 1989). Case studies can be represented as in the following matrix (Figure 4).

**Figure 4. Basic Types of Designs for Case Studies**

	Single-Case Designs	Multiple-Case Designs
Holistic (single unit of analysis)	TYPE 1	TYPE 3
Embedded (multiple units of analysis)	TYPE 2	TYPE 4

(Source: COSMOS Corporation from Yin, 1994:39)

Single cases are appropriate when challenging, confirming or adding to existing theory or when portraying information in ‘an extreme or unique case’ (Yin, 1994). Although a single case may be about a certain topic or issue in particular it can also involve more than one unit of analysis (Yin, 1994). Those that deal with one topic in particular are considered holistic. Those dealing with many units of analysis are referred to as being more complex or embedded case studies. The embedded design is most appropriate when different subunits must be addressed during the one study (Yin, 1994). Care must be taken with carrying out embedded case studies as common mistakes include focusing on the sub units of analysis and failing to return to the main unit. According to Yin this can result in the original point of interest becoming the ‘context’ instead of the ‘target’ of the study (Yin, 1994).

Another type of case study is the multiple case study (Yin, 1994). Here each subject is the centre of a case individually, but as a whole they adopt a multiple case design. Evidence from multiple cases is considered ‘more compelling’ and ‘more robust’ (Yin, 1994). However, for specific incidents of interest, a multiple case design may not be appropriate. Also carrying out a multiple case design requires more resources and time (Yin, 1994). Multiple case designs are considered more forceful as they provide the observation and analysis of a phenomenon in several settings (Rice, 2002). Yin (1994)

recommends undertaking the multiple case design in such a way that there is a 'replication logic' whereby results will be compared easily and similarities and differences easily identified. The 'replication logic' differs from the 'sampling logic', which is more common with surveys and where the findings are presumed to represent a wider pool of subjects (Yin, 1994). While this information can consist of pure descriptions, these descriptions are 'central' to the generation of insight (Eisenhardt, 1989).

The quality of case study research is challenged in regard to its research trustworthiness, credibility, conformability, and data dependability (U.S. General Accounting Office, 1990). Other concerns of empirical social research surround issues of validity and reliability. Concerns of validity encompass construct validity (establishing correct measures for the concepts being studied), internal validity (establishing causal relationship where conditions lead to other conditions instead of unauthentic relationships) and external validity (establishing the domain to which a study's findings can be generalised).

Case studies have been criticised in the past for providing little basis for scientific generalisation (Eisenhardt, 1989). However, Yin (1994) argues that findings from case studies can be generalised to theoretical propositions but just not to populations or universes. The observation from one case and replication in another case can lead to a refinement in the emerging theory. Replication logic is typically practiced when preparing case study material as the research sample is taken to represent a larger pool of representatives more so than sampling logic which is often used during survey based research (Yin, 1994). Crosschecking results in this manner is important to the establishment of internal validity. It can be progressed to the probing of the underlying reasons for why a pattern reoccurs. Yin (1994) recommends these exercises should be practiced throughout the entire research work, and not just at the beginning which he finds has traditionally happened.

Reliability concerns relate to the ability to repeat the same research process and achieve the same results (Kidder and Judd, 1986; Yin, 1994). Traditionally case study research has lacked reliability often due to poor documentation (Yin, 1994). However, techniques exist to improve reliability concerns. By including within-case analysis and

cross-case analysis the researcher becomes more familiar with information from different sources. These exercises probe the researcher to move beyond initial impressions of findings. They encourage the researcher see the data 'through multiple lenses' and to capture novel findings that may appear in the data (Eisenhardt, 1989). Therefore the result is more detailed case studies write-ups.

Another argument against case study research is that it can take too long to carry out, and can result in lengthy reports or documents. Eisenhardt (1983) agreed and suggested that the volume of data obtained during case study research can lead to theory that tries to capture everything. This can lead to a lack of focus on the most important aspects of the research. Another related factor concerning qualitative research, and case studies in particular, is how best the research output can be evaluated and how quality research can be assured. However, if case studies are carried out following a set of recommended procedures, a higher quality of work and a more efficient use of time are more likely if case studies are carried out following recommended procedures.

Despite recommended procedures, there is a recognised risk of bias with case study research (Eisenhardt, 1989). Yin (1994) argues that biasness can influence the direction of the findings and conclusions with case study research. Bias of the researchers include jumping to conclusions based on limited data, they can ignore statistical properties or drop discomfoting evidence (Kahneman and Tversky, 1973; Nisbett and Ross, 1980). A solution to this can include selecting specific categories and carrying out a cross-group assessment per category. Another approach involves pairing cases and identifying similarities and differences between the cases. Another approach is to divide the data by data sources and to identify patterns from one source of data first and then from another. These approaches force the researcher beyond their initial impressions and improve the likelihood of accurate and reliable research.

### **3.1 DESCRIPTION OF RESEARCH**

Albert and Gaynor's (2001) review of incubation literature showed that questionnaire based and case study research are the incubation research methods most commonly

used. Questionnaire based research tend to focus mostly on comparing the size of the incubator, range of services and facilities offered and the number of jobs created as a result of incubation. Case studies focus on investigating operational issues and elements of best practice. Case studies are also the recommended research approach for investigating the softer issues associated with incubation, investigating the 'intangible' issues dealing with issues such as management processes and improved innovation (Albert and Gaynor, 2001).

The focus of this study was to explore the use and effectiveness of incubation services by the tenant companies and to explore the value addedness of the client company/incubator manager relationship. Data was gathered to show patterns with respect to variances between incubator managers. Ardichvili *et al* (2003:121) recommended that 'approaches such as cognitive mapping and techniques for analyzing thinking aloud' offer the most effective insights into the process through which opportunities mature. Therefore this research involved a longitudinal study of incubators and tenant organizations where the companies' development was mapped on a bi-monthly basis. This gave insight into the value creation and capability of each firm to transfer combinations of resources into products of superior value. The aim of this research was to collect information 'systematically' on the incubation process. Specifically this research was designed to: help understand the *real* benefits of incubation; to see first hand the level of interaction between tenant companies and their centre managers; to assess the role of incubation in company development and to identify the services most used by incubating companies.

Following a study of the literature I designed three distinct stages to the fieldwork methodology. Firstly I carried out an exploratory study of incubators in Ireland. Secondly I carried out an empirical and longitudinal study of three incubation centres in Ireland. Thirdly I visited a well-recognised example of world-class incubation abroad. Following the fieldwork, the cases studies were prepared using the guidelines outlined above.

## Exploratory Study

The first stage of the research was a review of campus incubators in Ireland. The purpose of this review was to: achieve an understanding of the campus incubation environment in Ireland; identify differences in the approach to incubation; identify what might be considered 'best practice' in incubation management in Ireland; understand how Irish university incubators compare with international models from incubation literature; provide information for a comparative study of different campus incubation centres in Ireland; and act as a precursor for the ensuing empirical work.

I visited eight campus incubators in Ireland and Northern Ireland. These centres were chosen from the selection of all campus incubators in Ireland at the time. There were three criteria for choosing the centres. Each centre had to be associated with a university or a third level institution, they had to offer a range of support services to tenant companies on a full time basis and they had to incubate companies for up to three years and exercise time constraining exit policies. I visited centres at Dublin, Northern Ireland, Limerick and Co. Louth. The centres at Dublin were Nova at UCD, Invent at DCU, The Incubation Centre at TCD, the Project Development Centre at DIT. The Northern Irish centres were Technology, Engineering and Innovation Centres at University of Ulster, Magee Regional Development Centre (in Derry) and University of Ulster Jordanstown (Belfast). I also visited Innovation Works in Limerick and the Regional Development Centre in Co. Louth.

For each of the eight centres I reviewed secondary material on the incubator and arranged a visit to the centre. I had a semi-structured interview with the centre managers. The interview style was informal and the interview schedule was driven by the direction of each conversation. The interview schedule explored issues surrounding each incubation model, the services they provided, funding received, level of managerial involvement, entry and exit strategies, relationship with the college and the value-addedness of incubation. Typically these meetings lasted one hour, were recorded and were later transcribed. This stage of the research was completed in the summer of 2003. The exploratory research acted as a precursor for the more detailed longitudinal incubation research.

Open-ended structured interviews meant the interview schedule was designed to explore past, current and future interactions with the incubator. This style of questioning allowed opportunities for probing further the relationship between the incubator managers and the incubating companies. Each interview lasted for approximately one hour and data from the interviews was then analysed using Goulding's (2001) approach for interpreting data by clustering the data into categories, identifying the interrelationships between the data and in re-evaluating the findings in preparation for the next round of interviews.

### **Longitudinal Research**

I used a multiple case design when planning this part of the research (Mian, 1995). The empirical study was organised to reflect issues that had arisen from the initial literature reviews and from the exploratory research. More specifically it was designed to study further the range of services offered by incubators to HPSUs. In designing this research I sought to address some of the shortcomings and recommendations from the literature such as a need for greater emphasis on client companies (EU Benchmarking Report, 2002) and a need for more longitudinal studies in incubator research (Mian, 1995). I addressed this by presenting a balanced view of incubation, incorporating input from both incubation managers and tenant companies, and also conducting the research over a period of eight months.

This approach facilitated mapping company development. In doing this I depicted day-to-day life within the centre, the opportunities and difficulties entrepreneurs face, how entrepreneurs difficulties them and what role the incubator played in supporting the new venture. The approach was designed to reveal the level of involvement between the incubator manager and the entrepreneur and to identify the typical reasons for which they engage. It aimed to explore the strengths and weaknesses of different incubation processes. Specifically the research design sought to:

- Map how each company emerges
- Understand the relationship between manager and firm

- Witness the impact of business assistance provided by the incubator on company development

### Selecting the Incubators

The criteria for choosing centres was based on four main objectives:

- The incubators had to be associated with a university or a third level institution.
- They had to have a purpose built facility, a physical premises on campus for housing the start up companies.
- They had to offer a range of support services to tenant companies on a full time basis.
- They had to be able to house a start –up company for up to three years.

These criteria were informed by the stage of development of incubation in Ireland; the investment by Enterprise Ireland to develop incubators in the Institute of Technology (IoT) sector; and by requirements of the sponsors of this research.

As Eisenhardt (1989) argued, time constraints and the availability of resources influence the number and type of case studies that can be carried out. To save on both time and resources, many researchers develop cases in parallel. This also happened with this research where resources influenced the choice of incubators, and time constraints meant that investigations at each incubator happened simultaneously.

Influencing the choice of research participants were the findings from the exploratory study of incubators in Ireland. This exploratory research suggested that incubators differed in variables such as policy of equity investments, selection criteria, level of assistance and support, provision of training programmes and graduation procedures. This study aimed to focus on assessing the value incubators contribute to clients, therefore case incubators were chosen to reflect differences in 'management style'. This was because many of the informal benefits of incubation suggested in the literature are considered dependent on the individual incubator manager. I chose three incubators from the Exploratory Study with three different approaches and management styles for variety and greater insight into incubation management. The exploratory investigation identified three incubation centres that varied greatly in their approach to incubation

management. These were renamed for reasons of confidentiality and throughout the rest of the study are referred to as The IncuInnovate Incubation Centre, Ignite Incubation Centre and The Technology Innovation Centre. The first offered 'Hands-On' assistance; the second provided assistance on a 'Contract-In' basis; and the third operated a 'Hands-Off' approach.

**Table 5. Corresponding Incubators with Types of Management**

<b>Type of Assistance</b>	<b>Incubation Centre</b>
'Hands-On' Assistance	IncuInnovate Incubation Centre
'Contract-In' Assistance	Ignite Incubation Centre
'Hands-Off' Assistance	Technology Innovation Centre

### Selecting the Companies

After identifying these incubators, I approached the managers to see if they would participate in the research. They were also asked if they would approach three of their clients to seek their participation in the research. Each manager was requested to provide three incubating companies. In each client company, it was requested that the founding entrepreneur would be the principal respondent, or at the minimum, attend some of the interviews. There were no strict guidelines for choosing the companies, as by being located in the centre they were already suitable for the purpose of this research.

The nine ventures were on average founded two to three years. They had two to three employees with one company employing fourteen and one entrepreneur operating as a sole trader. The majority of companies were trading, and only three had still to make their first sale. Six had received external investment with the local enterprise development agency, the universities and the County Enterprise Boards being the most common contributors. Eight out of the nine companies were developing technology. Companies in the Technology Innovation Centre and Ignite Incubation Centre had been on enterprise training programmes, and had received basic business assistance, skills and training during this year. This was important because the services that were then provided in the incubator were add-on to the training programme.

The research was carried out over the course of eight months, from October 2003 to May 2004. For each company there were four interviews during that time. Additionally I had four interviews with the centre managers over the same period. Interviews provide an effective way to explore and form an understanding of an individual's knowledge, views, interpretation, experiences and interactions with the start-up companies. They also respect how participants frame and structure responses (Cassell and Symon, 1995). By using multiple interviewees in each centre the risk of bias that may arise with a single research participant was reduced (Eisenhard, 1989; Yin, 1994; Rice, 2002).

The interviews were conducted using a semi-structured interview schedule, and were carried out as much as possible on site at the incubators on the one day. Preventing this sometimes were people's busy schedules, which meant other arrangements for telephone interviews had to be organised. Each interview lasted between forty minutes and an hour, and all field notes were recorded and later transcribed. While separate interview schedules were prepared for each participant, in general similar research questions were asked of each company and each incubator manager from round to round. The interviews covered topics that focused on the company development process, the elements of incubation most used by the entrepreneurs, and the level of interaction between incubator managers and tenant companies.

Specifically, interviews with centre managers covered issues such as their understanding of the companies' business ideas, their awareness of company progress, what help the companies needed, what supports were available and what their perceptions were of how tenant companies interpreted and valued their service and the incubation process. Interviews with the tenant companies covered issues concerning their initial business ideas, how they have evolved and defined themselves since the company began and since the companies joined the incubators. They investigated what incubator services were offered to the companies and which were most valuable, how easily approached the centre managers were and what role they played in helping companies through the start-up process.

This information was then analysed by clustering together categories and key themes, identifying interrelationships and re-evaluating the information. This process of analysis is recommended by Goulding and Goulding (1997). Because the research was

longitudinal, 'sequence analysis' (Eisenhardt, 1989) was used as a way of organising the information. Following the second interview all the material was written into extensive tables that reflected 'events' in the emergence of the companies. This allowed 'gaps' to be identified in the information and acted as a catalyst for the third and fourth interviews and what questions and topics should be covered. From this organisation of the data, case studies were then prepared which presented the three incubators and also provided the opportunity of cross-case analysis (Eisenhardt, 1989). From this analysis of the data, differences in relationships and between variables begin to emerge. Systematic steps to carrying out the research and analysis were recommended to improve reliability (Eisenhardt, 1989).

The three case studies are presented in similar structure allowing ease of reading and continuity between the cases. The cases follow the following pattern:

- Introduction to the Incubation Centre based on interviews with the centre managers
- Introduction to, and description of, each of the three companies within each centre. For each company I outlined the business ideas, progress in gathering resources and issues regarding incubation.
- Each case study finished by returning to the interviews with the centre managers for information regarding the case companies and their development throughout the research.

### **The International Case Study**

It has been noted there is a lack of global incubation studies which results in incubation research tending to be country specific and lack international comparison (Albert & Gaynor, 2001; EU Benchmarking Report. 2002). There are a number of logistical and cultural reasons why this is the case (Weinberg, 1987; Lalkaka, 1997; Autio and Klofsten 1998) but for valuable comparisons and evaluations it was considered important to include an international case study in this research. Such research could identify differences in the emerging process of start-up companies in Ireland and abroad and also identify differences in the enterprise support assistance and approaches to incubation.

Sweden was chosen to be the focus of this international study. I visited Mjardevi Incubator and Science Park in Linköping and ProNova Incubator in Norköping, Sweden. The choice of these incubators was influenced by the same criteria I used for choosing the Irish incubators. The Swedish examples are university associated, in purpose built buildings, housing start-up companies for up to three years. They also are recognised worldwide in terms of good incubation and enterprise development practice.

Resource constraints prevented carrying out the same longitudinal research style in Sweden as was used in Ireland. Therefore a single visit to Sweden was organised. The case study is built on information from all interview participants. They include incubator management, training staff, science park staff and management, support agency staff, enterprise training developers, incubating and graduate companies. The case study design is similar to the previous three Irish cases in order to maintain continuity. This case was carried out in April of 2004.

### **3.3 LIMITATIONS OF RESEARCH APPROACH**

- Despite the different approaches to case study research, case studies have been criticised for 'lacking rigour' and for being biased especially towards end findings and conclusions. They are also felt to provide a basis for scientific generalisation, to provide 'narrow' and 'idiosyncratic' information that can fail to address the wider situation or audience. (Yin, 1994).
- One difficulty associated with carrying out case studies, is dealing with the quantity of data that is accumulated. Without a clear focus, it can be easy to become 'overwhelmed' by the sheer volume of information (Eisenhardt, 1989). This amount of information can also cause problems when trying to build theories, as the researcher may try to 'capture everything' (Eisenhardt, 1989).
- The insights and implications presented in this type of research are also reliant on the interpretative skill and knowledge and experience of the researcher. This can create a bias in the way questions are posed and responses interpreted (Rice,

2002). This implies, that in preparing case studies care must be taken to report all findings fairly (Yin, 1994).

- Further, a difficulty that arises in doing cross incubation research and analysis is that incubators with similar make-ups and profiles can have different objectives and cannot always be evaluated using the same criteria (Albert & Gaynor 2001).
- Studies have highlighted a need for comparing incubating companies against non-incubating companies to judge the overall benefit of incubation (Mian, 1999). However, there are many reasons why this proves difficult for all incubation researchers including issues of cost, lack of reliable data to identify a control group of similar non-incubating companies and time constraints (Lewis, 2001). Analysing whether or not incubation creates faster and stronger growing companies is not an objective of this study. Instead it was designed to evaluate the services provided by business incubators to tenant companies, to investigate how these services can be optimised and to portray this by studying the development of tenant companies in incubators over a length of time.
- Lacking alternative tools and established frameworks to analyse the incubator manager relationship and the development of a company within an incubator, this research relied completely on the memories of the participants and also on their subjective judgements. Relying on the subjective memory of research participants is an issue commonly noted in literature (Rice, 2002). However, using multiple interviewees is considered an appropriate method to reduce the risk of a biased perspective that can arise if only a single individual is involved in the research. By including a number of participants a more 'complete picture' of the phenomena being studied is created (Eisenhardt, 1989, Yin, 1994).

### 3.1 CONCLUSIONS

In this chapter I introduced the research questions, upon which the funding for this research was granted. These questions reflected the need for incubation research to focus more on the incubating company. Consequently, from a review of company

development literature, in the context of incubation literature, I developed two research propositions. These propositions focused on identifying specific needs of start-up companies in incubators and on identifying how those needs are met.

I chose a case study research approach to research these propositions. This research plan had three stages of investigation: An exploratory study of campus incubation in Ireland; a longitudinal study of nine incubating companies, three incubator managers, in three campus-based incubators; a visit to an internationally recognised incubator of best practice. This design would produce a balanced view of incubation by presenting how companies develop in campus incubators.

However, there are a number of issues surrounding case study research, which can hinder the quality of the work. These include difficulties in handling the amount of information that would be accumulated; a risk of biasness and subjectivity that is associated with any qualitative research; and a difficulty in generalising the findings to the wider environment. Therefore, there were a number of procedures that had to be implemented to ensure the research produced quality case studies. These included recording and later transcribing interviews; carrying out within-case and cross-case analysis; and carefully documenting information and preparing company development tables to ensure no gaps were left.

# **CHAPTER 4**

## ***CASE 1: THE INCUINNOVATE CENTRE***

In this chapter I introduce the first of the three case studies and the first of the three incubators, The IncuInnovate Centre. I introduce the incubator, its management structure, its history and background. I also introduce the case companies. This section is based on information from interviews with the incubator manager, Peter Noble. Further information from interviews with Peter Noble is used to describe the relationship between him as incubator manager and the three companies. Following this, I present each of the three case companies located in IncuInnovate. The companies are called Sensory Innovations, Aero Tech and Mobile Entertainment. Information from the companies' proprietors is used to illustrate how the companies developed through the start-up process, how the business ideas evolved and what resources were required and gathered to see the process through. Each of these studies address the impact incubation had on the development of each company.

### **4.1 THE INCUINNOVATE CENTRE**

The university technology transfer department manages the IncuInnovate centre. They identify research ideas within the university, invest in those they consider have the greatest potential, arrange the licensing and patenting of the technologies and help form start up companies. Once established, these new companies are recognised as Science Research Park companies and are offered space in the University IncuInnovate Centre. Here the companies receive full incubation support that facilitates their growth and development to become mature, sustainable companies. Table 6 presents a background profile of IncuInnovate, based on information from interviews with the manager Peter Noble.

**Table 6. The IncuInnovate Incubator**

<b>History</b>	Purpose built centre in 2002
<b>Practical</b>	Office area includes individual offices around outskirts and open plan desk space in the middle
<b>Occupancy</b>	87% full in May 2004
<b>Facilities</b>	Receptionist, ICT facilities, meeting and conference rooms, canteen, photocopiers
<b>Canteen</b>	Small kitchen with kettle, fridge and microwave
<b>Staff</b>	‘There are 4.5 currently. Me, IT, administration’ <sup>1</sup> ‘So it’s basically me doing this all on my own’
<b>Types of Companies</b>	‘We pick Foreign Direct Investment kinds of ideas’ ‘The quantity of ideas is not important but the quality’
<b>Marketing Centre</b>	No need Number of university research projects already in pipeline

*Source:* Interviews with Peter Noble, October 2003-May 2004

**Approach to managing the incubator:**

Peter Noble: The Hands-On Manager

Peter Noble, manager of IncuInnovate, and the Board of Directors invest in early stage start-ups and support and help them grow in Ireland. He compares his approach and the approach of the incubator board of directors (who are responsible for technology transfer and commercialisation of projects within the university) to that of a Venture Capital company. At IncuInnovate, Peter works towards equipping companies with their own management and advisory teams. This assistance in accumulating resources accelerates the early stage start-up process. The start up process is not achieved through training, as Peter Noble is ‘100% against training programmes’. Peter believes that the inventors and innovators whose idea the project is are not the people to take the idea forward. He suggests they may become members of the team but he does not believe they have the management skills or ability, nor should they be trained to see the commercialisation process through. While the innovators are encouraged to take an interest in the company, the management role is appointed to business people whose task it is to commercialise the project.

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<sup>1</sup> All quotes from Peter Noble; October 2003 – May 2004

Instead of offering training, the IncuInnovator helps companies develop their own management competency by providing 'demand driven, tailor made assistance' that is hands-on and '100% appropriate' to each company's needs. This includes interventions and introductions to investors, developing financial plans, offering advice and networking, supporting them via the government sponsored development agency and also organising their payroll. Peter Noble does not try to predict or plan what assistance the companies will need 'we listen and see what they will need; and then provide the service after that'. One problem for Peter Noble however is that the centre is short staffed and he must provide this assistance on his own. This along with an incubator policy that focuses on the highest priority companies means that Peter only provides intense assistance to a small number of companies at any time. Out of the fifteen companies only three receive intense attention at any one time.

Peter feels that the level of assistance and interaction that companies need evolves. He sees the involvement between the centre and the companies as being 'very fluid and changes...their time here differs in terms of work and involvement'. He acknowledges that the incubation process reaches a stage where companies outgrow the help that Peter can provide them and he is unable to add any further value.

Table 7 outlines further information on the IncuInnovate centre. It is based on information from interviews with Peter Noble surrounding topics such as what he sees his role as being, how he manages the incubator and future plans for the centre.

**Table 7. Key Elements to Incubation in IncuInnovate**

<p><b>Role of Manager</b></p>	<p>‘Ultimately my job is taking an idea or a technology and build it into a company          ‘I apply the 80/20 rule and spend 80% of my time with 20% of the projects’          ‘I am Director of the University technology transfer committee and take direct responsibility for priority projects.’          ‘I sit on the board of companies where the University has made investment to protect their interest and help it grow’          ‘I attend important meetings with high-priority companies to show university support for the project’          ‘I do not make recommendations to companies but state options and consequences instead’          ‘I am against formal reviews but informally meets companies regularly and discusses issues over a cup of coffee’</p>
<p><b>Recruiting &amp; Selecting Companies</b></p>	<p>Companies meet Peter Noble, the Incubator Manager          Early stage concept is assessed, sometimes with assistance of marketing company          Report is prepared on each technology and space in incubator is considered based on strength of technology and promoter .          Manager does not need to understand concept ‘we can identify individuals’          ‘The quantity of idea is not important, but the quality. All we need is a few big ideas a year’</p>
<p><b>Management Approach</b></p>	<p>‘When we get new proposals they are evaluated and the ones with best potential are chosen to work with more’          Milestones are set for companies          ‘They either progress on or progress out’</p>
<p><b>Funding of Companies</b></p>	<p>‘We have an 80/20 rule in terms of investment; we will invest in those we will get something out of’          ‘We are here to make money’, it has to be that way. Otherwise, without that, it can’t go anywhere. The University Technology Transfer Committee won’t have any money and won’t be able to invest in any companies in the future’          ‘If the project is good enough, there is an abundance of money out there. But if the project is poor, the company will struggle’          ‘There is an abundance of private sector/early stage venture capital money in Ireland. What’s missing is the lack of good ideas’</p>
<p><b>Networking Between Companies</b></p>	<p>Happens naturally          See companies interacting and socialising on campus together          ‘It should not be laboured too much’          ‘No need to organise cheese and wine receptions to do that’</p>
<p><b>Policy on Intellectual Property</b></p>	<p>‘We own 100% of the IP...license it out, develop a company to take it forward and then establish an equity arrangement’          ‘It’s ours automatically because it is born from research that was done on college property, in college time’</p>

Continued on next page

**Table 7. Key Elements to Incubation in IncuInnovate (continued)**

<b>Policy on Taking Equity</b>	'We only take equity in companies where there is something for us at the end of the day' 'We are interested in earning money' 'The recommended amount is 15-20%'
<b>Future Development of Incubator</b>	'Improve the centre and services' 'We want greater business development services' Currently strengthening Board of Directors, lessening academic involvement and including more people from commercial community Doubling size of centre Taking on more staff Developing more structured progress reviews for priority companies

(Source: Interviews with Peter Noble, Incubator Manager)

### **Benefits of Incubation**

Peter Noble and the Board of Directors have secured investment with the University, the government sponsored development agency, private investors and early stage VCs for a number of companies in the centre. This also has a positive knock on effect on other companies in the incubator who are now questioning how they too can raise large amounts of finance.

Companies benefit from locating in the incubator even when Peter Noble is not working with them directly. They benefit in terms of the facilities and access to other companies in similar situations. Companies can also access the assistance of a sales and marketing company who are based in the incubator. Peter hires them on a sub-contract basis for assessments and advice for the companies in areas such as FDI possibilities, preparing marketing plans, product launches and investment proposals. Therefore, when Peter is unavailable, there is still 'a little bit of value added coming from them'.

The IncuInnovate Incubator also provides access for the companies to expert academic staff and other college staff in the University. There are also events run by the university's 'Innovation Club' which Peter does not fully support, as they organise presentations and talks on 'generic issues...that only cover very broad issues' and do not fulfil what the companies need. He feels that relevance of content is crucial to the

companies and he feels this is not provided by the Innovation Club whose themes are 'very traditional and old school'. However, he is not opposed to the idea of seminars but would rather see a single topic of relevance to one or two companies chosen. Those for whom this topic is also relevant can also be invited. This he feels would result in more focused and value-added meetings.

Peter Noble also assists IncuInnovate companies through making direct contact with professional experts in specialized fields on their behalf. These are areas with which the companies need assistance and with which the incubator staff are unfamiliar and cannot provide the assistance in-house. The consultation costs are covered by the centre. The IncuInnovate Incubator did this for the company 'Sensory Innovations' in particular, where Peter helped identify market industry specialists to work with the company for a number of topics.

### **Involvement with Case Companies**

Peter feels the level of assistance companies need evolves. He sees the incubation process as needing to provide support for companies at certain stages of development rather than when they are at a certain age. Therefore, he argues that the benefit of locating in this incubator and the types of support the centre has offered to each company is different.

Peter Noble and the centre have helped the three case companies by preparing their business plans, financial models and projections. He has helped them with market research, administration, management of accounts, payroll, capital and finance raising. He has liaised with the government sponsored enterprise development agency on their behalf and would act as middleman between the companies and other organisations such as financial institutions.

Of these case companies, Peter Noble says he was most involved with Sensory Innovations during their start-up process. In addition to assisting them with business and financial plans he identified key players in their industry and organised valuable

collaboration and consultation between them and Sensory Innovations. He also organised a photonics event for the company, where he invited the relevant university staff. This he feels 'changed the profile of the company within the university'. Sensory Innovations was one of the first companies to be helped in a 'hands-on' manner. The idea being if Sensory Innovations proved successful, it would market the incubator well.

Peter Noble admits that he did not meet up with the companies as often as they may sometimes have liked. Through his informal style of management, he did not find it necessary to meet companies at a specific time and reviews took place on an ad hoc basis. He feels the companies do not approach him very often because they work on their own. However he does feel that he could be more involved in their development. Lack of available time is the main reason for this.

Table 8 below summarises Peter Noble's opinion and the incubator's status regarding the case companies. It shows why the incubator accepted these companies, what level of involvement the incubator played in their development and what his expectations were for their futures.

**Table 8. The Focus Companies**

<b>Topic</b>	<b>Sensory Innovations</b>	<b>Aero Tech</b>	<b>Mobile Entertainment</b>
<b>Reasons for Accepting Companies</b>	Globally focused High potential technology Strong founding team Very focused Niche opportunity in technology we also want to concentrate on	Aerospace is an area incubator wants to concentrate on Aerospace company lay offs so may be more in future Good founder, working internationally on large projects	Had worked with them in the past in another incubator That failed and they wanted to go to this incubator Unique innovative type of project
<b>Level of Involvement by Incubator Manager</b>	Oct: 'Totally' Mar: 'Worked night and day with them at start-up stage. Now interaction down to nod and wink in corridor' May: 'We are not prioritising them'	Oct: 'Constantly' Oct: 'Two to three full days per week sometimes' Mar: 'I haven't been working with Paul a whole pile recently' May: 'They have become a priority company'	Oct: 'Little involvement' Oct: Very little time with founder. Hoping to spend more Jan: 'It's not that I am ignoring him, it's time. I am absolutely snowed under' May: 'John is not one of our four star companies'
<b>How Centre Assisted Firms</b>	Raised finance Identified and invited key expert researchers to meet Sensory Innovations Built team Built the board Organised photonics event at university Identified, located and engaged support of investable CEO	Worked on advising and developing contractual agreements, Developed financial models Put together financial arrangements for €110K from bank, €100K from EDA and almost €110K in university preference shares	Organised marketing company to help May: 'We will assist John to complete a good investment proposal and a document that will encourage others in investing too and that is about all we can do for him'

Continued from previous page

Topic	Sensory Innovations	Aero Tech	Mobile Entertainment
<b>Expectations for Future Development of Firms</b>	<p>Revenues not projected until Summer 2004</p> <p>Finances will start burning so sales are crucial</p> <p>As part of university investment in company, Peter found contact which should help with growth</p> <p>Will grow out of centre naturally</p>	<p>Continue working with existing customer</p> <p>Will identify other projects to pursue</p>	<p>Needs to refocus on big BT contract, amend what went wrong or identify new partner</p>
<b>Current Status</b>	<p>No longer investing in Sensory Innovations</p> <p>Unwilling to commit for less than 15-18% equity</p> <p>'The technology transfer committee only invest resources and money into a company where we have a meaningful interest or stake in the company'</p>	<p>The Board of Directors now want to prioritise Aero Tech and work more closely with Paul 'he's a brilliant guy'</p> <p>That does not necessarily mean further investment, but maintaining close contact</p>	<p>John is not a priority company - there is a limit to the support he can offer</p> <p>He will assist John to complete a good investment proposal but that is all he can do.</p> <p>John will benefit from the new staff at the incubator who can assist him to a certain degree</p> <p>John would not benefit from a training programme</p>

Source: Interviews with Peter Noble October 2003-May 2004

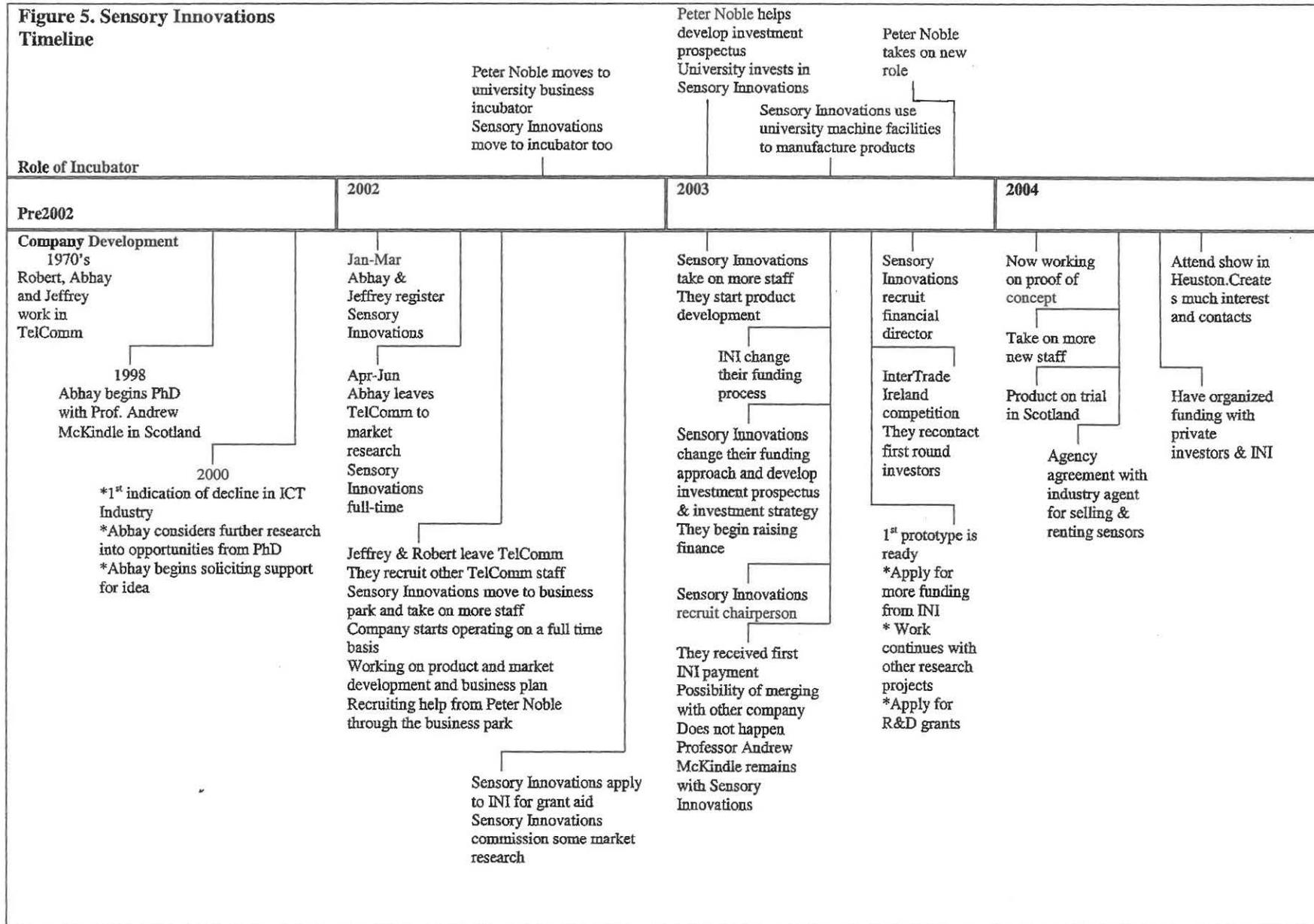
#### 4.2 CLIENT COMPANY A – SENSORY INNOVATIONS

Sensory Innovations research and manufacture optical sensors and communication tools. These are used for the collection and presentation of information throughout the oil and gas industry. The company was formed in March 2000, by three former senior employees of TelComm, an Irish telecommunications provider. Abhay Jaafar, Jeffrey Smyth and Robert Aiken left TelComm when the telecommunications industry began to decline. The three founders applied knowledge from this industry to the oil and gas industry, where the standard of ICT was less developed. The founders consequently developed products to address shortcomings in existing sensory and communication tools and technologies used in oil and gas industry. Sensory Innovations was funded through public/private partnership including the Enterprise Development Agency, the University and a number of private investors. This funding helped finance Sensory Innovations to employ staff in order to propel product development. In May 2004 Sensory Innovation employed twenty-five staff. Most of these staff were located in Sensory Innovation's laboratory space in IncuInnovate.

Over the duration of this study, this company had progressed from developing first time processes and technologies to developing second and third versions of products, to making their first sales and rentals of the products. They also had diversified their product range and had researched the application of their sensory and communicative technologies to other industries. The Dateline in Figure 5 illustrates chronologically the development of Sensory Innovations.

**Figure 5. Timeline Sensory Innovations**

**Figure 5. Sensory Innovations Timeline**



## **Evolution of the Business Idea**

The genesis of the idea came about in 1998 when Abhay Jaafar, while still working at TelComm, undertook a PhD with Professor Andrew McKindle at a university in Edinburgh. Together they discovered the shortcomings of the oil and gas industry. From a number of weaknesses, Abhay identified two of particular importance. They were difficulties with the initial process of locating sources of oil and gas; and also difficulties in carrying out investigative or drilling work due to poor communication tools. He also identified a potential to apply advancements from the ICT industry to these identified gaps.

In 1999 Professor McKindle left the university to set up an applied technology company in Scotland. He spoke with Abhay McKindle and Jeffrey Smyth regarding the possibility of Irish input into the company. However, the timing was never right, and neither Jeffrey nor Abhay pursued the opportunity. Professor Andrew McKindle proceeded with the venture but later left that project and joined Sensory Innovations as Chief Scientific Officer.

In 2000 the first indications of a decline in the ICT industry became apparent and TelComm introduced cutbacks within the company. Abhay and Jeffrey felt the timing to set up their own company was better than before. They also felt that it was better to leave TelComm before cutbacks grew deeper and affected their senior management positions. They decided to start a company addressing the findings of Abhay's PhD. This included applying the ICT knowledge they had established accumulated over their years in TelComm to the issues of traceability and communication tools in the oil and gas industry. In the spring of 2002 they registered the company, began market research, took on staff and left their jobs to focus solely on Sensory Innovations. Robert Aiken was one member of TelComm staff to join Sensory Innovations, Robert also held a senior management position in the company and was also concerned over the recent cut backs. Robert joined Sensory Innovations as operations manager.

Once Abhay and Jeffrey decided to take the idea forward Abhay began soliciting support from the greater political community to raise awareness. They received political

confirmation of the quality of the idea. This endorsed the business and helped gain credibility from investors.

Abhay and Jeffrey carried out research on the area before fully pursuing the company. This involved contacting companies in the industry, enquiring of their problems and what products they were using and returning to the Sensory Innovations design staff to build solutions. Abhay and Jeffrey found the industry very open and willing to participate. However, they also realised that their competitors could access information as easily about their products by carrying out the same research. Sensory Innovations made their first sales, ahead of targets in Spring 2004. They sold their first sensory device to an oil exploration company. They also entered a lease agreement with an industry-leasing agency that will hold the rental contract for Sensory Innovation's devices.

Sensory Innovations employed staff who were involved in competitive intelligence when working with TelComm. These staff applied competitive intelligence to researching the oil and gas industry and further learned about Sensory Innovations' competitors, their companies, products and pricing. Sensory Innovations also commissioned an industry specific market research company, King and Redmond, to investigate the market and the need and likelihood of Sensory Innovations' technology succeeding in the oil and gas industry. They used King and Redmond because their reputation in the industry would bring credibility to Sensory Innovations if they endorsed their sensors and communication systems. This indeed was the case, and King and Redmond supported Sensory Innovations estimation of the need for technological improvements in the industry.

Sensory Innovation received their first contract when Professor Andrew McKindle joined the company as Chief Scientific Officer. This work involved honouring a contract Andrew had arranged through his previous company in Scotland and was not completely related to Sensory Innovations core work.

Abhay, Jeffrey and Robert found perfecting the sensory technology far easier than they had anticipated as their staff were already highly skilled. During 2003, Sensory Innovations expanded their original products by identifying and addressing

shortcomings with their original products. The Chief Scientific Officer and their own university contacts also identified alternative industries in which the technology could be applied, such as the biotechnology industry. Sensory Innovations also negotiated an agency agreement with a well-reputed services company who provides offshore support to the oil and gas industry. This company had been working on similar sensory technology but recognised that Sensory Innovation's products were better quality. They therefore decided to cease their own product development and instead concentrate on marketing the Sensory Innovation products.

Sensory Innovations have been active in promoting their company and product within the oil and gas industry. Their staff created a website from day one. In 2004, Sensory Innovations participated in the InterTrade Ireland (the cross-border Trade and Business Development Body) competition in which they reached the final. The competition was beneficial for their publicity and as a direct result they were placed in the top 50 UK and Ireland companies 'to watch'. They also find being located in the incubator helps the PR of the company as any media exposure the incubator gets, also benefits Sensory Innovations. The success of Sensory Innovations' technology has also begun to market itself and the company now find customers approach them to carry out work.

### **Gathering Resources**

When Sensory Innovations first began, the company based themselves in a local business park where ElectroVoid (another company Abhay was associated with) was already based. As the company continued to grow and employ staff, they outgrew their space in the business park and needed somewhere else to locate. They looked at many premises in the area and chose to move into the incubator at the University in 2002.

Sensory Innovations applied for grant funding to the government sponsored Enterprise Development Agency (EDA) in autumn 2002, with the hope of receiving the funding in January 2003. Although they were already experienced in preparing proposals, they were given additional assistance with the application process. This help was provided by Peter Noble who was then a financial advisor working for a company on behalf of EDA. At the end of 2002, EDA changed their policy for start-up funding. Under this

new policy, before receiving any funding, Sensory Innovations had to first raise matching funding and secondly agree to give an equity stake to EDA.

Their funding process was consequently prolonged. The Enterprise Development Agency and the need to raise private funding were now intertwined; 'You can't get one out of the way and then focus on the other bit. They are all constrained and are interactive. And that's all quite time consuming'<sup>2</sup>. The process was further delayed because EDA lacked competent procedures to see the new process through efficiently. Dealing with EDA during this time was most difficult 'there were only a certain amount of things you could do that were within your own control and the rest of it was process and the process was extremely frustrating'.

EDA appointed marketing, financial and technical people to test the Sensory Innovation concept. The results of these investigations showed that EDA were not convinced Sensory Innovations could develop the products within the designated timeframe. Sensory Innovations were working towards a three year plan, but EDA suggested they break their fund raising down into two periods. Sensory Innovations needed €6.7 million to complete the project. They decided to divide that requirement into two phases of funding and raise €3.15 million in 2002 and the remaining money in 2004. Sensory Innovations solicited much support from the private sector and the endorsement of political and influential figures helped achieve this. Their new chairman and Peter Noble, who had since become manager of the university incubator in which Sensory Innovations had relocated to, played a critical role in this process.

Raising first time funding was difficult because they 'were a new company (who) had no track record, no history for people to gauge things'. It was the most difficult step for Sensory Innovations and they feared they may not complete the process 'ask any start up, funding, that's their biggest single problem at the start. It just doesn't happen fast enough and is very demanding on time. And expensive'. Raising finance took up almost 50% of their time.

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<sup>2</sup> All quotes from Robert Aiken, founding member of Sensory Innovations, from December 2003 – May 2004

Peter Noble negotiated funding on their behalf with the University. The terms of that agreement were that the University granted funding in exchange for a small percentage of equity in the company. Sensory Innovations agreed to this but were reluctant to share any more equity. They have retained in the region of 80% of their equity with EDA, the University, some private investors with Sensory Innovations staff owning the remaining 20%. The rest of the finance was raised by the promoters during 2002-2003.

By summer 2004 Sensory Innovations had begun to discuss bridging finances and second round financing. This was to see the next stage of development through; to employ staff, enter the market and develop newer versions of their technologies. To raise this finance they re-contacted all first time investors and petitioned their support. They found the second round of funding easier to raise and the response was positive. Surprising for Sensory Innovations, that the University failed to show repeated support. Despite this Robert Aiken was optimistic they could still raise the finance without the support of the University.

Sensory Innovations took on staff in summer 2002, winter 2002, spring 2003, and spring 2004 and expected to take on more staff in autumn/winter 2004. Approximately twenty three out of twenty five Sensory Innovations staff are ex-TelComm employees. With TelComm making layoffs while Abhay and Jeffrey were setting up Sensory Innovations. This meant they could recruit staff far easier than had they started the project earlier when TelComm staff jobs were more secure. Sensory Innovations could employ people who had worked together before and so the staff began developing products as soon as they joined the company.

Having a large team of people meant Sensory Innovations was more productive. There were however difficulties in paying this number of people however. Fortunately many had received redundancy packages from TelComm and could afford to work without a salary for a period of time. Others were offered equity in the company. This freed up other resources for Sensory Innovations who otherwise would have found it difficult 'Had we had to pay salaries from day one, we couldn't probably have done it'.

Sensory Innovations found employing staff to be a big responsibility in terms of processing applications, interviewing participants and adhering to legal requirements. They were also cautious about recruiting candidates unless they believed they could continue to pay them in the future. Although they would have liked to employ more staff to relieve some of the bottlenecks within the company, they were cautious about employing more than they could afford. They found that 'the danger with taking on staff is that it raises people's expectations'. In order to manage this dilemma Sensory Innovations monitor carefully the number of staff they employ. Through setting sales plans for the year and by reaching targets they assess how many more staff they can employ. This helps planning ahead in terms of job security.

Sensory Innovations built the enterprise during 2002 and 2003. The main positions included a Chief Scientific Officer, Andrew McKindle. Contact was made with Andrew through Abhay during his PhD in the 1990s. After remaining in contact, Andrew joined Sensory Innovation and became the CSO. He was influential in developing technologies, identifying funding and research opportunities in the same and in other industries. Sensory Innovation also has a chairman with whom contact was made with him through personal connection. The chairman is a very influential and successful businessman who is interested in helping quality start-ups for prosperity in Ireland. He has great contacts for funding and advice and has been a motivational character for the rest of the team. Contact was made with the Financial Director through the Chairperson. The Financial Director joined Sensory Innovations in October 2003. He too has a very experienced background. He provides financial advice to the company and reduced Sensory Innovation's reliance on the incubator manager at a crucial time.

### **Impact of Incubation on Sensory Innovations**

Sensory Innovations located in the incubator because:

- They had outgrown their office space in the business park.
- They had already worked with Peter Noble when in the business park and wanted to continue that relationship when he moved to the incubator.
- They wanted to establish and develop relationships with the University.
- The incubator offered cheap rent and a high status address.

When Sensory Innovations first moved into the incubator, they work closely with Peter Noble on the financial part of their business plan. This assistance continued until Sensory Innovations took their own financial director on board. At that stage they were much less reliant on Peter, and over the duration of their tenancy that involvement continued to lessen.

Sensory Innovations used the mechanical facilities at the university to make their products. The Sensory Innovations staff designed them, and the products were manufactured in the university laboratories by the laboratory technicians. This was organised through Peter Noble who on behalf of the university was promoting the use of these facilities at a low cost. The university was also benefiting because of extra income, the interesting challenges it created for staff and the longer working hours the machinery was in use. However, Sensory Innovations emphasised from the start they would not continue to use the facility should it be more expensive than local competitors. In the end, the university overheads were too high and the charge to Sensory Innovations was not competitive enough to justify their continued use of the university laboratories.

Another benefit for Sensory Innovations when they moved into the incubator were 'rent free periods which for any start-up is invaluable because cash flow at the start is always a big problem'.

For Sensory Innovations the infrastructure within the incubator 'has been more advantageous to us than consultancy and support'. However, they did suggest that a company who did not have had the diversity of people they had working might probably use the centre and services, support and advice that was available there more.

The relationship between Sensory Innovations' and Peter Noble changed somewhat over the duration of the research. The following are some quotations portraying how this happened:

- Oct '03        'Peter has been fundamental in the company's development...but  
                   ...Peter has less influence now'
- Dec '03        'We are pretty much independent...we recruited people to fill  
                   those gaps'
- Mar '03        'We have not had much dealings with Peter now for six/seven  
                   months easily'

However, this also reflects their opinion that incubation can only be of real worthwhile assistance for a limited length of time. 'If you are going to build a company that will stand on its own two feet you need to be weaned off all the other support'. Sensory Innovations feel that 'the relationship with the centre must be organic and grow', and that 'as a company starts to mature it doesn't need that same level of support'.

Being associated with the university has been useful for Sensory Innovations in applying for R&D funding to branch into different industries. Many of these schemes require company/university collaborative applications which have been much easier for Sensory Innovations to organise by being located on campus close to these resources.

For Sensory Innovations, the status of being a university company has changed as they have proven their success. 'Someone else looking at (us) from the outside would think that it was a university company. And that is fine and there is a time and place for it, but as maturity comes that may no longer be appropriate'.

Sensory Innovations have not been very proactive in networking with other companies within the centre. There were some occasions where they met other promoters in the canteen and conversed about their companies, but there are others they do not know at all. This is mainly because of lack of time and also the fact that Sensory Innovations have not identified a need for inter-firm collaboration with any of the companies in the incubator.

The incubator facilitated the development of Sensory Innovations by furnishing an office space in the centre as a laboratory. This work came out of their investment by the university which presents a dilemma regarding ownership of the space when the company moves out of the centre.

Sensory Innovations appreciated everything the centre offered. They did however comment on the lack of privacy because of temporary dividing walls between the offices. They also found the noise to be quite distracting at times but considered themselves lucky because they had a meeting room in their laboratory downstairs where they would invite people when holding meetings.

They also commented on the lack of car parking space around the incubator as a real frustration. They have found it difficult to find spaces when clients come to visit or should they themselves have to leave the premises and return.

Overall, they feel that the incubation facilities provided are important throughout the incubation process, even if the hands-on support lessens in significance. 'Companies going through their second year don't need this level of support, but having an infrastructure is still key in terms of what counts and how companies burn money'. What is a concern for Sensory Innovations is what happens to companies after incubation and what assistance, if any, is offered or available for graduates of the centre.

#### **4.3 CLIENT COMPANY B - AERO TECH**

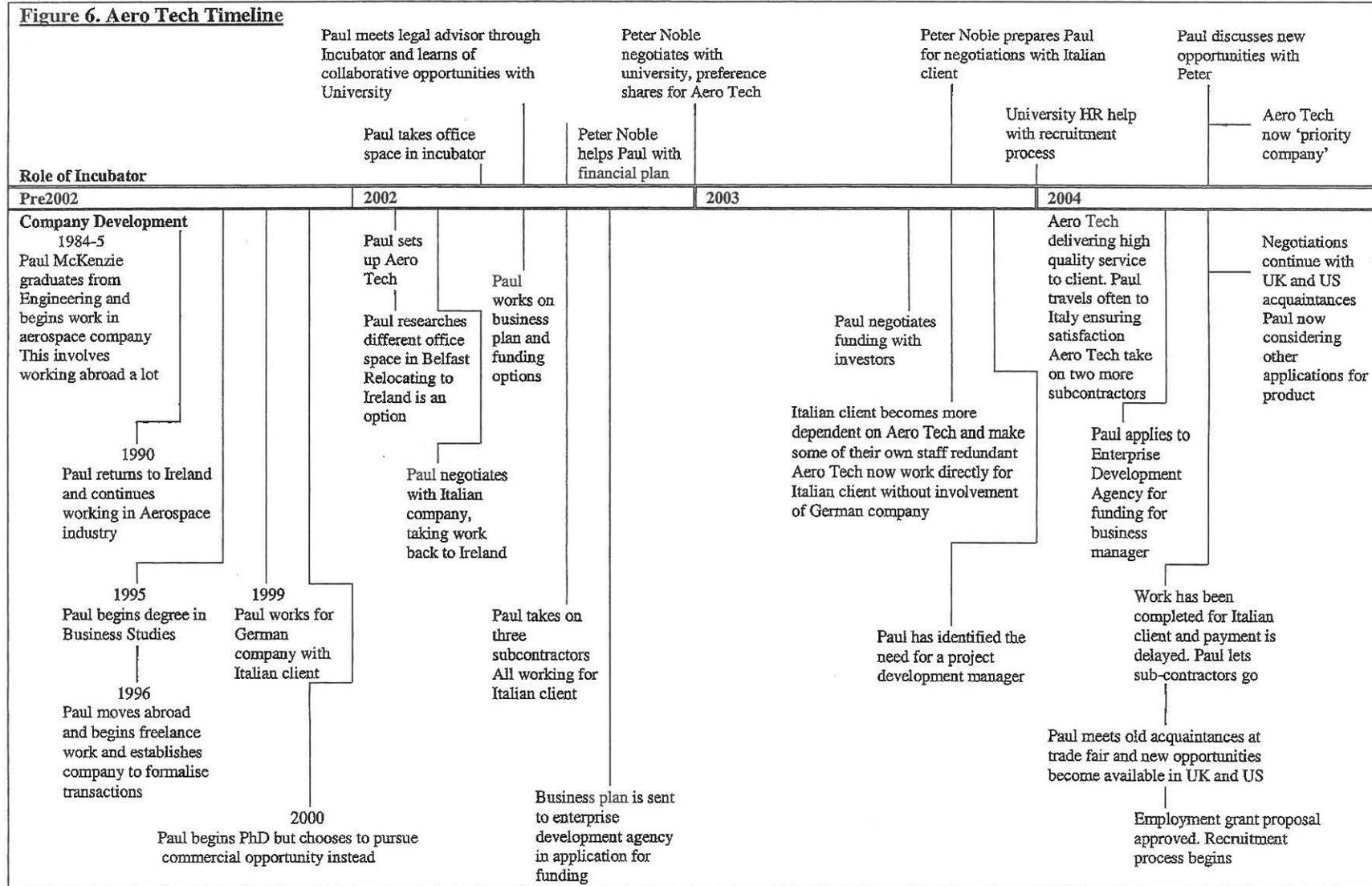
Aero Tech is an engineering design services company established by Paul McKenzie in 2002. Paul had been working in the aerospace industry at an international level and living abroad since the 1980s. During this time Paul recognised an emerging trend towards sub-contracting design work. Paul had always hoped home and to set up his own business. He made tentative approaches towards this in 1996, when he formed a company to formalise his freelance work. As a result of this work, Paul established a long term contract with a German company. In 2002 Paul reorganised his company as 'Aero Tech'. He planned two parts to Aero Tech. The first part carries out design services work on a contractual basis which Paul has already been doing for years on a sub contract basis. The other part of the company involves product development. Specifically designing software that helps aerospace companies establish logistical procedures for the outsourcing and procurement of their contract work. This technology

helps the company place orders and monitor the progress of subcontract work. This technology is the result of research Paul carried out in 1995 while undertaking a business thesis. Aero Tech is funded through Paul's own investment, the contract work and also the university who invested €110, 000 in the company in the form of preference shares.

Through the German company, Aero Tech focused specifically on one client in particular, an Italian aerospace company. Paul moved back to Ireland where he took space in IncuInnovate to set-up 'Aero Tech'. Towards the end of 2003, Paul made some strategic moves in relation to the Italian client where they agreed to work together directly without the German company mediating. This progress is outlined in Table 6 below.

### **Figure 6. Aero Tech Timeline**

**Figure 6. Aero Tech Timeline**



## Evolution of the Business Idea

Paul McKenzie had always been involved in design services consultancy. Therefore the first and most natural step the company pursued was in consultancy. Paul planned to develop the logistical products at a later date. Paul had been working in the aerospace industry for seventeen years and consequently the Aero Tech services and products developed by Aero Tech were designed to service the aerospace industry. However, Paul always saw potential for the software to be applied to different industries.

In identifying the opportunity and developing the business plan Paul McKenzie drew on his seventeen years of industry experience. Paul said that when financial institutes or state agencies would query him about industry predictions or movements he would say: 'I just know'<sup>3</sup>. Aero Tech developed a professional corporate image through developing a website, brochures in a number of different languages, business headed paper and business cards.

For Aero Tech, the customer and work existed before Paul formed the company. When Paul made the transition to work directly for the Italian company he worked extremely hard to satisfy them. He knew they were suspicious of his return to Ireland so he wanted to provide a quality service to combat these doubts. Paul was concerned that Italian companies are considered to have a bad reputation in terms of loyalty. Being based in Ireland and being further removed from the client meant he had to remain in constant contact to prevent any problems forming with the relationship.

However, following this difficulties arose with the Italian client during 2004. These difficulties concerned cash flow in particular; Paul was committed to diversifying the company to prevent being totally reliant on one customer again. By summer 2004 Paul had succeeded in locating a company in the UK who was interested in collaboration with product development software and its application to different engineering sectors. There were now a number of strategic options facing Paul. Aero Tech now had the option to launch their logistics product under their own brand or with another company.

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<sup>3</sup> All quotes by Paul McKenzie in research interviews October 2003 – May 2004

Another option included collaboration with a London based engineering recruitment company who were interested in taking over Aero Space.

### **Gathering Resources**

When Paul McKenzie set up the company, he first considered locating in Italy but returning to Ireland was a preferable option. However, he was unwilling to work from home consequently researched the local enterprise development agency website for appropriate office space. There he saw that the university incubator was being developed. He made some provisional enquiries and was posted a rental agreement. There was very little vetting of his business idea Paul feels that was because the centre had just opened and the management were keen to fill it.

Aero Tech was self-financed by Paul McKenzie. It began generating revenue from day one. However, Aero Tech expressed financial difficulty once they severed links with the German company and began to work directly with the Italian client. Due to a six week delay in payment from the Italian client, Aero Tech experienced cash flow problems. This was heightened when the Italian client faced difficulties themselves, and postponed payment to Aero Tech for another six weeks. This created a real cash flow problem for Paul who realised there were difficulties associated when dealing with one main customer.

The IncuInnovate incubator usually takes an equity stake in tenant companies. However, Aero Tech was instead offered a preference share agreement by the university. They were the only investors in the company, Aero Tech own 100% of their IP and have maintained all their equity. Paul McKenzie found establishing the funding structure for Aero Tech difficult. He feels he received poor advice on early stage funding. One expert encouraged him to negotiate funding with VCs and private investors in return for equity. However, another expert advised him to maintain equity and to avoid external financial assistance until it was really needed. As a result Paul now feels that 'one of the biggest hurdles for any company starting off is this equity/debt decision and how to finance your company'.

Paul then faced the challenge of funding product development. For this he will require further funding which raises the same difficulties he had when starting-up. Paul applied to the government Enterprise Development Agency (EDA) for employment grants to help cover the cost of employing a product development manager.

Paul feels the process with the EDA could have been sped up greatly had he known from the start exactly what the process required him to do. Instead he found himself submitting information and after later asked for further details. He would have liked some assistance with the application process. He feels the only person in the incubator he could ask was Peter Noble who he found difficult to organise a meeting with.

Paul McKenzie is the only employee of Aero Tech. Paul hires four subcontractors to work with him. These are people Paul has known and has worked with on previous jobs. The region where Aero Tech is located is rich in human resources in the aerospace industry. This is because of well-reputed engineering courses in local universities and because a major aerospace company is based in the area. However, over recent years there has been little work in the industry locally and many of the skilled workers are now working abroad. Therefore, when Paul approached these subcontractors to return to Ireland and work for Aero Tech they agreed and were happy to return to Ireland.

Aero Tech has decided they will not take on the subcontractors on a full time basis as the flexibility associated with it has proved valuable for the subcontractors as well as for the company. For the subcontractors there are many tax implications in changing from subcontractor to employee, which would have direct consequences on their wages.

One difficulty Paul McKenzie experienced in taking on subcontractors was continuing to pay their wages while Aero Tech were not receiving payment from the Italian client. This created real cash flow problems for Aero Tech. Aero Tech completed the Italian job early, in order to make a greater profit on the deal. However, this meant there was a period of no work for the subcontractors and Paul had to cancel their contract. From one point of view hiring subcontractors is good for Aero Tech as they do not have to pay staff when there is no work for them. However, Paul does not want cancel the subcontractors contract too often as they may become frustrated and to return to mainland Europe where they are guaranteed more consistent employment.

Over the duration of this research, Paul gave more responsibility to the subcontractors, and even once sent one to meet with the Italian customer when he was unavailable. While this was convenient for Paul, he was aware that potentially the subcontractor could take some of this business away from Aero Tech. However Paul feels after the subcontractors had seen his difficulties, they would be unwilling to go through the same process.

Aero Tech made measures towards taking on their first fulltime employee in the position of product development manager. This person would work in developing the new software and establishing a product development process within the company. This would allow Paul spend more time on business and strategic issues. Paul McKenzie advertised the position and interviewed a number of applicants. This position was part funded by the government sponsored enterprise development agency, it was therefore important to strictly adhere with recruitment and employment recommendations.

In addition to his engineering degree, Paul McKenzie undertook a business degree in Belfast in 1995 in order to differentiate himself from the many well-qualified engineers in the locality. Doing this degree prepared Paul for running and managing his own business. However, during summer 2004, Paul would have appreciated some further assistance or training in general business administration and financial planning.

Paul undertook Aero Tech on his own, and found the first year was difficult without having someone else to discuss the business with. During that time he did not have any external advisors. Paul had felt there was a lack of expertise locally who knew enough about the industry to make a worthwhile contribution to his company or could introduce him to some useful contacts. He differed from an IT company in that he felt there were more people in experienced positions to advise IT companies than with his business and the aerospace industry. Paul attended some of the workshops and clinics run by the incubator but felt he would have to pay for private consultancy with those delivering the sessions in order to receive some concrete business advice. However, he did feel that meetings with members of the incubator board of management would have been beneficial as they were all well respected and successful businessmen. There was a change of policy within the Board of Directors in summer 2004 and Aero Tech was

promoted to a High Priority Company within the centre. This meant Paul would start meeting a member of the board from time to time. This pleased Paul as he felt the board member could be a source of strategic advice and consultation.

### **Impact of Incubation on Aero Tech**

Paul McKenzie located in the business incubator because:

- He wanted to return to NI to set up his company but did not want to work from home.
- He liked being close to the university he had attended and which had a good engineering reputation.
- It was close to where he and his wife wanted to live.

Paul McKenzie was unaware when he took space at the incubator what incubation actually entailed. The fact that there would be business development support and help with financial plans and investment strategies was a 'pleasant surprise'. By being in the incubator he also received multiple assistance in financing. He received very good advice from a legal advisor which was beneficial because of its impartiality and suggestions. These are business supports Peter Noble helped to arrange in addition to arranging the university preference shares for Aero Tech.

In addition to the Payroll, which Peter Noble does for the companies, Paul feels the centre could do more to reduce a start-up company's workload. He feels that much time could be saved if the centre helped with, tax and vat returns and some of the more operational and administrative tasks that are time consuming and take entrepreneurs away from their core business development focus.

The up-to-date technological facilities available within the incubator were of a great advantage to Aero Tech and helped them gain extra credibility from the Italian client who were somewhat sceptical of the long distance business relationship. Paul regularly used the video link-up technology to communicate with them.

Paul was put in touch with marketing executives based in the centre to help with the marketing of Aero Tech. However for his situation it was no real benefit. He feels he is 'too advanced for general information' and required more specialised assistance than they could provide.

He sees the role of incubation as an evolving process. When he joined the centre first, the emphasis was on helping start-up companies with an idea. He sees the concept changing more to a Venture Capital outlook, which is entirely different. He thinks they need to decide which they are going to be and align their services to whichever they decide. He also questioned the state Enterprise Development Agency, and asked are they focusing on being a governmental body to help start-up companies or are they adopting a more Venture Capital approach to enterprise development.

Paul McKenzie had a good opinion of the centre and put its success down to 'Peter's individual ability'. He was impressed at Peter Noble's willingness to help so much and also at his level of expert knowledge. However, the level of involvement did drop off after Peter had developed Paul's financial plans and secured the funding from the university.

Paul's opinion of Peter often changed depending on what had been happening with the company. At the start he was satisfied with the work Peter had done with Aero Tech in terms of the financial plan and university funding 'Peter more or less single handed put all the financial plans together', however Peter McKenzie also spoke about attending client meetings with Paul which never took place. Throughout all this he still emphasised that 'I don't rely heavily on Peter to run my business'.

Although Paul often found the period of time allocated by Peter for assistance as frustratingly 'too short', he often also reasoned that sometimes it was all that was needed. Paul did not see any need for formal review meetings and felt that if people are not satisfied with the amount of time they get to spend with Peter, they should reconsider their situation. He sees it, 'it's your company in the first place so it shouldn't be Peter's role to be there to help you out all the time anyway'.

Paul has found being associated with the university useful because of the funding they have granted Aero Tech. The reputation of being associated with the university has also been valuable. The fact that the university is backing Aero Tech seems to impress the Italian client. According to Paul McKenzie the Italians feel that if the university is willing to make an investment and get behind the company, then they too can take them seriously.

According to Paul McKenzie some of the other benefits from the relationship may be developed in the future when the new product development manager starts. Aero Tech will then become involved in the university/incubator teaching/training scheme. Under this scheme Aero Tech can take on students to work on research projects. Paul was interested in this from the start, but there were certain stipulations a company had to achieve before they could take part (such as committing time to R&D), and Aero Tech is moving closer to fulfilling those now.

Paul McKenzie identified a difficulty with the university's involvement in companies. He sees there may be some conflict of interest whereby the incubator and college take investment in companies to develop and earn return on their investment. Unfortunately his experience shows they are not necessarily allocating the resources to help the entrepreneur focus their time as much on the core tasks of starting the business.

According to Paul 'there is very little networking – everyone is too busy'. However, Paul was involved with another company who produced the Aero Tech website and promotional material. Paul highlighted many of the disadvantages of pursuing too much of this type of collaboration and insinuated that it can be awkward if the work produced is not what the other company is expecting. There is also the problem of distracting the other company from their main targets and goals as set by their investors, in which case the work is of no real benefit to them. Furthermore Paul believed that entering a commercial agreement with another company can lead to a stale-mate situation. This can happen where both companies focus primarily on their own work and devote less time to the collaborative project. Or alternatively the project can fail to move forward because companies disagree on what the next step should be.

According to Paul the facilities have been 'great' for Aero Tech. They have used the meeting rooms, office facilities and video conference facilities. Paul did comment however on the lack of privacy within the centre as the offices are only partially divided and sound travels between units. He comments that even the meeting rooms are only partitioned by draw back doors and sometimes do not provide the level of privacy Aero Tech would require. However, he feels companies 'shouldn't have any complaints about the facilities and services in the centre because you should not be over relying on the centre to support your company'.

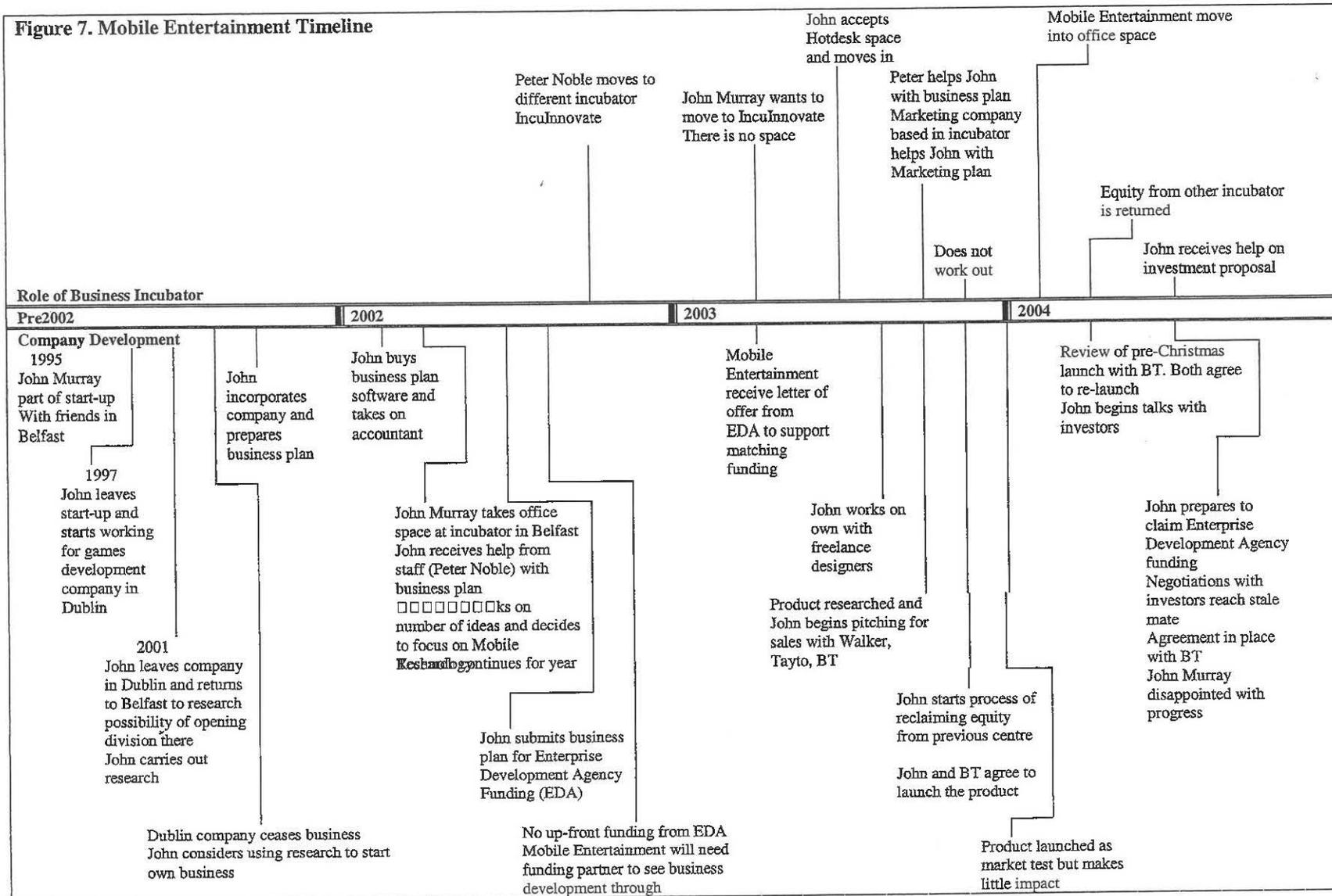
#### 4.4 CLIENT COMPANY C – MOBILE ENTERTAINMENT

Mobile Entertainment is a digital media company that develops technology for mobile phones. The company was established by John Murray in December 2001 and was formed when John returned to Belfast to set up a games development company. Unfortunately the games market and industry resources were much weaker in Belfast than in Dublin where he had been working previously. Because of this, John decided to develop the company in stages and began developing mobile technology as a first step. He focused on selling mobile accessories such as ring tones and invested much time in researching the market, developing the technology and establishing a partnership with British Telecom to promote the ring tone product. John took space in a local incubation centre as he needed business assistance. John moved from that incubator to IncuInnovate in 2003. The company has been entirely self-funded. John was approved matching funding from the Enterprise Development Agency, but had been unable to raise the necessary private funding. At the end of this study, the partnership was almost in place and John hopes to start selling the product by the end of 2004. John himself has carried out the work, as he could not afford to take on any staff.

The following section addresses how John Murray identified the opportunity to start a business. It shows how this idea evolved, what resources Mobile Entertainment needed to see the emergence of the idea through and how John has set about accumulating these resources. The Dateline in Figure 7, illustrates chronologically when these different activities occurred.

**Figure 7. Mobile Entertainment Timeline**

**Figure 7. Mobile Entertainment Timeline**



## **Evolution of the Business Idea**

John has had a long interest in games development and in 1995 started a games company with a group of friends in Belfast. However, the digital media industry at the time led them more into web development. Unsatisfied with this, John left the company and went to work for a games company in Dublin in 1997. In 2001 he decided to leave that office and return home to be nearer his family and possibly start a new division of the company in Belfast. While researching this proposal John learned the Dublin company went into liquidation leaving no money to fund the research in Belfast or set up a new division.

John Murray continued to investigate the games industry but concluded that getting into games development would be difficult in Belfast because there was little interest in the industry and a lack of trained digital media workers. He had looked at other applications for games such as digital TV and mobile phones, and decided to focus on mobile technology first. From here he saw an opening in selling ring tones and decided to pursue this as an introductory avenue to mobile technology, with the potential to develop Java games and eventually aim towards developing Tripple A Consol Games for X-Box and Play Station. He incorporated Mobile Entertainment in 2001.

John carried out the initial research on the idea when he returned home. As he had been working in the industry, he was very familiar with the market and product. He was however unprepared for the lack of potential to develop games in Belfast. His research involved reading many reports on the industry with also a lot of web research. He feels the external reports were informative and provided all the information he required. Following this he prepared a business plan in 2002 with the assistance of his accountant, who was involved in John's first company. However, he received most of the help from Peter Noble, when he was working as a financial advisor in the first business centre where Mobile Entertainment was located. Peter helped John with the financial part of the plan and also with his application for funding from the government sponsored enterprise development agency.

After researching the mobile industry, Mobile Entertainment decided to compete on price, customer service offering and point of sales presentation. They found that while

there were many competitors in the market, they were selling the product at a much higher price than Mobile Entertainment making Mobile Entertainment's product more attractive to the target group who are usually teenagers with little disposable income.

His research revealed that consumers had no loyalty to the different companies selling ring tones. People moved between companies depending on the ring tones on offer and the price they were being charged. Mobile Entertainment decided to tackle these issues by:

- Providing a website for people to download their favourite tones
- Offering quality customer service assistance
- Changing the style of the product from promoting through papers and magazines to becoming a product available in stores in scratch card form
- Offering a more complete service than some of the other companies in terms of replacing lost or deleted ring tones

Mobile Entertainment's product will be sold as a ring tone scratch card, and the major decision Mobile Entertainment had to face was whether or not they should find private investors to fund launching the product under their own brand, or launch it with another company under their brand. British Telecom (BT) showed interest in the product, and were willing to fund the co-ordination and launch of the product under the BT brand and promote it through their retail channels. Attempts were made in December 2003 to launch the product. The sales tools and procedures were not in place properly, the launch was rushed and consequently failed to make a powerful impact. Following this, John Murray had to review the situation. He decided to work further with BT and began a long process of negotiating and establishing the terms of a formal partnership agreement. This agreement was being formalised in summer 2004. Mobile Entertainment had also changed direction somewhat and decided to focus specifically on mobile technology and the different types of entertainment that can be developed within the mobile technology domain. This was as opposed to aiming towards the general games market. John Murray has found his progress and the process to reach this conclusion to be much slower than he had expected.

## Gathering Resources

When starting the company, John Murray took office space in a business centre in January 2002. John located there because he was more technically than commercially skilled and the centre promised to provide enterprise support and business assistance. The centre failed to deliver on its promises however, except for one representative, Peter Noble, who assisted John with his financial plan and in applying to for funding from the government enterprise development agency. That aside, John was very disappointed with the lack of support Mobile Entertainment received from the centre.

Peter Noble became centre manager for IncuInnovate and John Murray decided to relocate there. He decided to move because he still needed business assistance, and the new incubator promised to deliver more assistance than he was receiving in the other centre. John applied for space in IncuInnovate in April 2003 and was granted hot-desk space in August 2003 when one became available. John then moved to an office space in the incubator in February 2004.

With the assistance of Peter Noble (who was working in the first business centre John was based) Mobile Entertainment applied to the government Enterprise Development Agency (EDA) for funding in the summer of 2002. EDA agreed to provide matching funding for Mobile Entertainment in the summer of 2003. In the mean time John Murray had been financing company development personally, with credit cards and a bank loan.

There have been negotiations with two investors showing interest in Mobile Technology who heard of Mobile Entertainment through BT. One of these investors introduced John Murray to two different business angels. There were disagreements between John and the business angels as John was unwilling to take the company in the direction they suggested. Also relations were strained between John and the other investor as he too wanted to see the company move in a different direction. He wanted Mobile Entertainment to develop the ring tone industry only. John however still wanted to progress from ring tones. He wanted to remain with mobile technology, but wanted to move more into the greater arena of mobile entertainment.

In the summer of 2004 it looked like neither investment would actually happen. John was disappointed but said he would rather know these problems existed at that stage rather than when 'the money would be on the table'. One of the investors suggested getting Peter Noble more involved in the company as his influence would be beneficial and would also bring more credibility to the company.

Mobile Entertainment had given 15% equity to the business centre where he was first located. However, he was in the process of retrieving that equity because the centre failed to deliver the service it said it would. In giving the new IncuInnovate that equity stake John Murray hoped he would receive advice and assistance in sales, marketing, strategy and finance from them instead.

John Murray is the only employee of Mobile Entertainment. He has used subcontractors to carry out work such as graphic design. These subcontractors were only involved early in the process. They may be needed more in the future depending on what steps John decides to take after launching the ring tone product.

Customer service proved to be more time consuming during the initial launch than John had expected. Although during the research John considered employing his brother to help with customer service once the deal with BT goes through. He felt uncomfortable with the thought of delegating work and responsibility. While developing the company on his own has meant that John Murray could keep his costs down and stretch his resources further, he has found the process difficult and lonely. The lack of staffing resources means he has had to develop all the technology and systems, carry out all the book keeping, act as customer service support and make some very difficult strategic decisions on his own. John Murray feels isolated. He was facing some difficult decisions in the summer of 2004 and missed not having someone to discuss things with. He thinks people going through the start-up process as part of a team are at an advantage.

## **Impact of Incubation on Mobile Entertainment**

John Murray had enquired about moving into the business incubator a number of months before there was space available. When space did become available, he moved in straight away because:

- He wanted to move out of the other incubator who were failing to provide any assistance.
- He wanted to maintain a relationship with Peter Noble.
- He realised that his area of expertise is in technology and product development, and needed assistance and advice in business development.

John Murray identified a number of benefits from locating in the business incubator. These included:

- Receiving periods of free rent which were advantageous for a company that was being self funded.
- Receiving help from Peter Noble on the financial side of the business plan.
- Availing of a sales and marketing company who were located in the incubator to work and who were appointed with Mobile Entertainment on their marketing plan and product launch
- Receiving assistance from that company and Peter Noble to develop an investment proposal and sales pitch presentation.

However, much of the help they received from Peter Noble, was received while he and Peter were in the previous incubator. Since John Murray moved into IncuInnovate, the level of support he thought he would receive was not been met. John Murray was also disappointed with the work carried out by the incubator marketing company, and he decided to abandon the plan. The work on the marketing plan with Peter Noble and the marketing representative was slow as there was no structure to the schedule of work.

Most of the work Peter Noble did for Mobile Entertainment was when he and John Murray were located in the first business centre. John expected this assistance to continue when he moved into the university incubator. He was disappointed however with the level of help he received from Peter Noble. His main complaint was the ad hoc

nature in which Peter Noble, the only support service available to the companies, appoints his time. John would like to see more structure to this support in place. John Murray suggests that if Peter Noble does not have enough time to spend with the companies himself, IncuInnovate should organise training programmes to train him and others like him in the basics of business management. John said he would like to see more formal networking events in areas such as law, marketing and finance. He does not feel he is getting the support and time from Peter he requires. He feels companies at a further stage of development and with higher potential ideas are paid more attention.

John Murray has found there to be very little integration between the companies. Because he is undertaking Mobile Entertainment on his own, this is something he would like to see more of. He feels that regular organized events for all the tenants would be a useful way to get to know everyone. Although, he appreciates that due to busy schedules, people may not always be able to attend.

Over the duration of the research John Murray established a relationship with a founder of another company who was at a similar stage of progress. The other promoter was more experienced in terms of business development, sales and marketing and John had asked him for advice in these areas. Likewise, John was more experienced technically, and the other founder had sought his assistance in this area.

John has also found the incubator useful for moral support and found that whatever stage of development he was at, there was another tenant who has been there before and could offer advice. For example when applying for grants or funding, there was always someone who could provide assistance based on their own experiences.

John Murray was located at a hot desk space before being moved to an office space. While he was happy with many aspects of the incubator, he found the hot desk space too small for his equipment; it lacked privacy, was noisy and was very distracting.

Since moving to the office space, John is much more satisfied with the incubator facilities. He has noticed an improvement in the level of privacy and in his ability to focus on each specific task.

# **CHAPTER 5**

## ***CASE 2: THE IGNITE INCUBATION CENTRE***

In this chapter I introduce the Ignite Incubation Centre. The chapter consists of information from the centre manager, James Fagan, and three of the incubating companies; Health and Safety Technology, Medi Recruit and Geovera. The chapter begins with an overview of the Ignite centre and John Fagan's views of the business assistance that was offered to the companies over the year. Specifically it focuses on James Fagan's relationship with the three companies and issues concerning their tenancy. Following this are case studies of the three case companies. Each case is presented showing an overview of the company, the evolution of their business idea, their process of gathering resources and also their experiences in Ignite.

### **5.1 IGNITE INCUBATION CENTRE**

The Ignite incubator is located in the grounds of an Irish university. It is operated as part of the University Industry Centre that takes responsibility for the university technology transfer process and for establishing links between the university and industry. The incubator was developed to build industry/university links and help promote the spirit of enterprise on the university campus. In addition to running the incubator, the University Industry Centre promotes a yearlong enterprise-training programme, which skills participants in areas such as marketing, law and finance. Companies located in the incubator have usually participated in the enterprise-training programme. They then move to the incubator for continued business assistance and access to resources and contacts. These are designed to help accelerate and successfully overcome the start-up process. Table 9 describes the Ignite incubator from the perspective of the centre manager, Mr James Fagan.

**Table 9. The Incubator**

<b>History</b>	Old building operating as innovation centre for number of years New purpose built innovation centre is built in 2002
<b>Practical</b>	Mixture of small and large offices, with hotdesk facilities Offices are completely enclosed and offer full confidentiality to companies
<b>Occupancy</b>	50-55% of units occupied and 40-42% of space taken in 2003.
<b>Facilities</b>	Purpose built facilities, receptionist, internet & network access, meeting and conference rooms Wooden benches along corridors facilitating further interaction
<b>Canteen</b>	'The coffee shop is the hub' <sup>4</sup> 'It's where the networking and informal interaction takes place' Only open for lunch, but 'Hope to change opening hours once there's the critical mass for the building' No own food preparation area because 'it creates too much of a mess. People don't clean up after themselves'
<b>Staff</b>	The ILO office is based in the incubator 13-14 staff supporting campus innovation activity: - 9 Full time - 3-4 People in area of technology transfer and IP Protection - James in enterprise development space/campus companies - Marketing and communications officer - Director 'who brought this whole thing about from scratch' - Director's PA - Consultant for the training programme - Facilities manager on the technical and infrastructure side - 2 EI staff, research commercialisation experts in ICT and Lifesciences and Biotechnology 'So there's a nice mix with people from humanities to science backgrounds'
<b>Types of Companies</b>	Start up Knowledge intensive Associated with or willing to become associated with university
<b>Marketing Centre</b>	The marketing and communications officer does 'all our press releases, promotional brochure and literature, any launches, and publicity

(Source: Interviews with James Fagan, October 2003-May, 2004)

<sup>44</sup> All quotes from James Finnegan; October 2003 – May 2004

## **Approach to managing the incubator:**

### James Fagan: The 'Contact-In' Manager

James Fagan is the Ignite Incubation Centre manager. He is one of a large team of staff working in Ignite to deliver the incubation package. They are employed by The University Industry Centre, which supports the enterprise process primarily through an enterprise training programme and also the support of the business incubation centre.

### The Enterprise Training Programme

The training programme is developed for industry and university personnel who have an idea and need assistance and training in the commercialisation process. James Fagan is a co-director of the training programme. He explains that participants are brought through the process of developing a professional business plan and completing different modules and workshops on topics such as sales and marketing, Intellectual Property (IP), finance and law.

This programme also includes time with a mentor sponsored by the state Enterprise Development Agency who works "hands on" with participants whilst they prepare their business plans and begin establishing their companies. Sometimes the mentor can become more involved in the company than the programme co-ordinators. However, James feels that the quality of mentor is difficult to monitor and can vary greatly. A less focused mentor can offer poor advice to companies. Mentors may also lack full understanding of university policies and procedures in particular with regard to equity and intellectual property. Sometimes their advice can be contrary to university understanding, which would be a concern of the programme co-ordinators.

### The Incubator

Companies are helped by a mixture of generic assistance; in terms of meeting rooms, equipment, workshops and seminars; and also individualised services through assistance from the incubator team and professional clinics. Clinics provide individual advice on a

one-to-one basis on specific topics, usually law, finance, management consultancy and banking. The centre also runs workshops and seminars. These are group events that deal with topics relevant to as many tenant companies as possible. Clinics, workshops and seminars are usually delivered by the various private sponsors of the incubator and are provided free of charge to the companies.

James Fagan is one member of a large team that works at the incubation centre. The incubation staff are experienced in areas such as enterprise support, business development, technology transfer, state support and funding. The centre can also offer a relationship with the University, access to important contacts, networking opportunities and events with invited guests from outside business, investment, and financial companies. Also based in the centre are two representatives from the state Enterprise Development Agency. They are research commercialisation specialists in ICT, the Lifesciences and Biotechnology. Their function is to establish contacts within the agency and act as the initial point of contact for participants. They are an important part of the support that the university incubator can offer to their tenant companies.

Tenants are encouraged to seek assistance from incubator staff on an 'open door' informal basis. James Fagan feels this places an obligation on tenants to gain as much benefit as possible from the assistance available. As the manager says, the companies 'cannot be baby-sat. If they have a problem they have to tell us, we cannot always be looking to see what their problems are'. Once a problem is identified, the staff will help the company themselves or will out source the necessary assistance.

The incubator has private and public, national and international contacts that participants are informed of, usually when they first move into the centre. Participants can also access overseas contacts through the state Enterprise Development Agency who have offices in over 30 countries. However, the extent that this happens depends a lot on the companies themselves. As James sees it 'you get out what you want from these relationships'. He finds that companies, who seek resources and expertise will find it, but if they do not will not be helped. He insists that companies need to take on that responsibility themselves - 'It is not a school exercise, it's their business that they have to run'.

There are times when companies do not use the support provided. Sometimes James has found companies that are simply more advanced or have their own professional advisors and do not need much assistance. Taking advantage of the incubator's facilities is enough assistance for them without attending clinics, workshops and seminars. These companies may already have expertise and knowledge and James feels they should not be penalised because they know the content already or are too busy to attend events. However, to address this issue and to cater for the needs of each client companies James feels that care must be taken to assure topics are relevant. 'You are trying to deliver a topic or presentation or seminar which is of relevance to as many people as possible, so you are not going to have it on something very specific'.

James was active in evaluating the companies' opinions of the centre and in gathering feedback as to why people are not attending events or utilising the services. He then made the companies aware of what is available and encouraged them to make better use of the services. Also important to James was identifying companies' needs and understanding what stage of development they were at. Unfortunately time constraints prevented him from doing much of this, but he planned to be more active in the future. James discovered that there is more likelihood of increased interaction between campus companies and incubator staff than with external companies and incubator staff. He feels this is because campus companies are generally from academic backgrounds and are therefore more reliant on staff for help. Campus companies also tend to have been on the training programme and have been engaging with the innovation staff over a longer period of time because of it.

While the incubator reserves the right to appoint a director to the board of each company, as it is stated in their shareholders agreement, Ignite is moving increasingly away from this policy. This is an issue of resources and lack of time, as well as the requirements, responsibilities and corporate governance issues surrounding direct involvement in a large number of companies. The incubator is not like an investment company trying to gain a return from the companies within a time limit, but has a vested interest in them because the long-term success of the centre depends on it.

Table 10 below, highlights some of the key issues concerning how James sees his role as manager of Ignite Incubation centre. The table also covers what the Ignite approach

is towards recruiting and selecting companies and providing funding and what the future plans for the incubator involve.

**Table 10. Key Elements to Incubation**

<b>Role of Manager</b>	<p>'My main goal is to attract companies'</p> <p>Also 'offering a support service and letting them know what is available'</p> <p>Director of training programme 'there's a lot of work involved in that'</p> <p>'General stuff, attending events we are invited to'</p> <p>'In an ideal world I would like to be devoting 50-60% of my time to sales and marketing support'</p>
<b>Recruiting &amp; Selecting Companies</b>	<p>Companies fill out application form which is reviewed by an evaluation committee which consists of three people acting on behalf of the incubator sponsors</p>
<b>Approach</b>	<p>'We don't run these companies, we don't drive them...if the promoter isn't fully committed you are fighting a losing battle'</p> <p>'It is very much an open door policy; they have to make use of us'</p> <p>'We are not going to spoon feed them, they have to want to avail of the support'</p> <p>'It is a two way process'</p>
<b>Funding</b>	<p>Can make introductions to the investment community</p>
<b>Networking</b>	<p>'You want as much interaction as possible'</p> <p>Through weekly seminars 'promoters will become more au fait with what one another is doing'</p> <p>'We're always looking for new ways'</p> <p>But they are busy and won't go to everything</p> <p>'You need to gauge their availability with what you have planned'</p> <p>'We've had some coffee mornings...and use them as a forum to communicate any updates or information'</p> <p>'They're on average every two to three months'</p> <p>'I proposed we set up a social club for all the companies, and that the companies take ownership'</p> <p>Enterprise seminars are also run for the wider community</p>
<b>IP</b>	<p>The university owns IP. Each case negotiated individually</p>

Continued on next page

**Table 10. Key Elements to Incubation Continued**

<b>Equity</b>	6% in external companies 15% in campus companies 'It's a reasonable percentage, given that you're not getting finance but what the companies can gain and achieve from going on the programme is immeasurable' Different shares for some older companies 'but since we've moved here we've increased how much we can offer'
<b>Future</b>	'To become the premier technology transfer centre in the country' Renovate rest of buildings Converting part of facilities into wet labs
	'We will continue to have more continued professional development' Run Thursday lunchtime presentations on topics 'that would be relevant for companies', followed by a brief clinic on the lecture that has just taken place. Have the other sponsoring companies deliver clinics Establish frequent review meetings with the companies

(Source: Interviews with James Fagan, October 2003-May, 2004)

### **Benefits of Incubation**

There are different facilities available to people using the incubator including free parking, access to university facilities, the library and the sports centre. The incubator staff always forward information on upcoming industry and university networking events and can organise cheaper membership for some organisations such as the Small Firms Association.

Locating in the incubator is beneficial for companies because there is access to objective independent advice. The incubator is particularly beneficial for technical companies who James feels suffer the most with commercial challenges. By locating in the incubator they can receive help with the commercial elements of their proposals and plans and receive training in business planning.

James has noticed the success rate of university companies receiving funding from the state Enterprise Development Agency has increased. While it is difficult to say it is because of the advice the incubator staff are giving them, he feels their approach is

certainly a constructive one and something academics value. Either way, the end result is that more people are interested in taking space in the incubator.

### **Involvement with Case Companies**

James has not been working as closely as he would have liked with the companies over the year. He often mentioned the intention to meet with each company for a progress review meeting. As he did not fully understand some of the industries, it was also his intention to include university staff to help ensure how their products were progressing. However this never happened and he admits it was a failure on the incubator's side. James is determined 'to get them up and running soon because it is part and parcel of the service they offered to companies at the start'. He is hoping for a formal structured review meeting that would be before a panel of incubator staff and representatives from the sponsoring companies. These provide an update opportunity on the progress they are making and see if there is something extra the incubator can help with. However, he knows the companies have used the incubation unit facilities, the meeting rooms, coffee dock, attended awards evenings, networking events and continued to work with the college. He feels none of them have utilised the professional service clinics to the extent they could have. He feels that in the future the companies will be using the various parts of the incubation package more. James feels he has a good relationship, both business and personal with the companies. While he has not been involved individually with these case companies, he presumes they take on board any changes recommended by the incubator staff and make appropriate changes to their proposals.

Although the incubator has a relationship with the state Enterprise Development Agency (EDA), James still said their bureaucracies slowed the companies progress down because it can be difficult for them to receive funding. For example he knows Geovera have been waiting on EDA financing. They were approved funding during the year but still have not received the cheque. James feels that 'for a small company that strangles them', he feels it affects their cash flow directly and 'really puts them in a very awkward position. There's no simple solution, just to keep working at it'.

Table 11 summarises the relationship James Fagan had with the three companies H&S Tech, Medi Recruit and Geovera. It shows how the James Fagan views their progress and identifies areas where the incubator impacted on their development. It also addresses the incubators reasons for accepting the companies and what his expectations are for each company's future.

**Table 11. The Focus Companies**

<b>Topic</b>	<b>H&amp;S Tech</b>	<b>Medi Recruit</b>	<b>Geovera</b>
<b>Reason for Accepting Company</b>	They are both academics Involved in computer science research 'The type of company we are looking for' Participated on training programme Sustainable college activity	'They are our anchor tenant' Had been based in the old incubator for almost 3 years They were to allocate the university a share in the company Promoter had very strong links with the Medical Faculty Link with university was very important 'We still felt that they could develop with the technology' Participated on training programme	Stereotypical campus company Knowledge based Promoter from computer science department Participated on training programme Had been located in old incubator
<b>Level of Involvement</b>	Occasional telephone conversations 'H&S Tech have kept a very low profile' 'I have seen very little of them' Been trying to get in contact but promoters have been unavailable 'It is so long since I met with them to discuss the project I wouldn't even know where it is at'	Regular informal contact Facilitating through organising equipment or contacts	Regular informal contact Assistance with proposal writing

Continued

**Table 11. The Focus Companies continued**

<b>How Centre Assisted Firms</b>	Provided office facilities, meeting rooms Organised awards evenings and networking events	Locating equipment Getting advice on consultants they want	Worked in terms of research proposals, IP issues and technology transfer
<b>Expectations</b>	Make their first sales Raise finance Gain foothold in market place	Continue to grow and generate revenues	Grow and start generating revenues Make first sale Sustain themselves Long term get return on shareholding investment
<b>Current Status</b>	Too busy with other work to focus on company Will have more time during the summer	See the busy summer period through	Start working more on sales and marketing

(Source: Interviews with James Fagan, October 2003-May 2004)

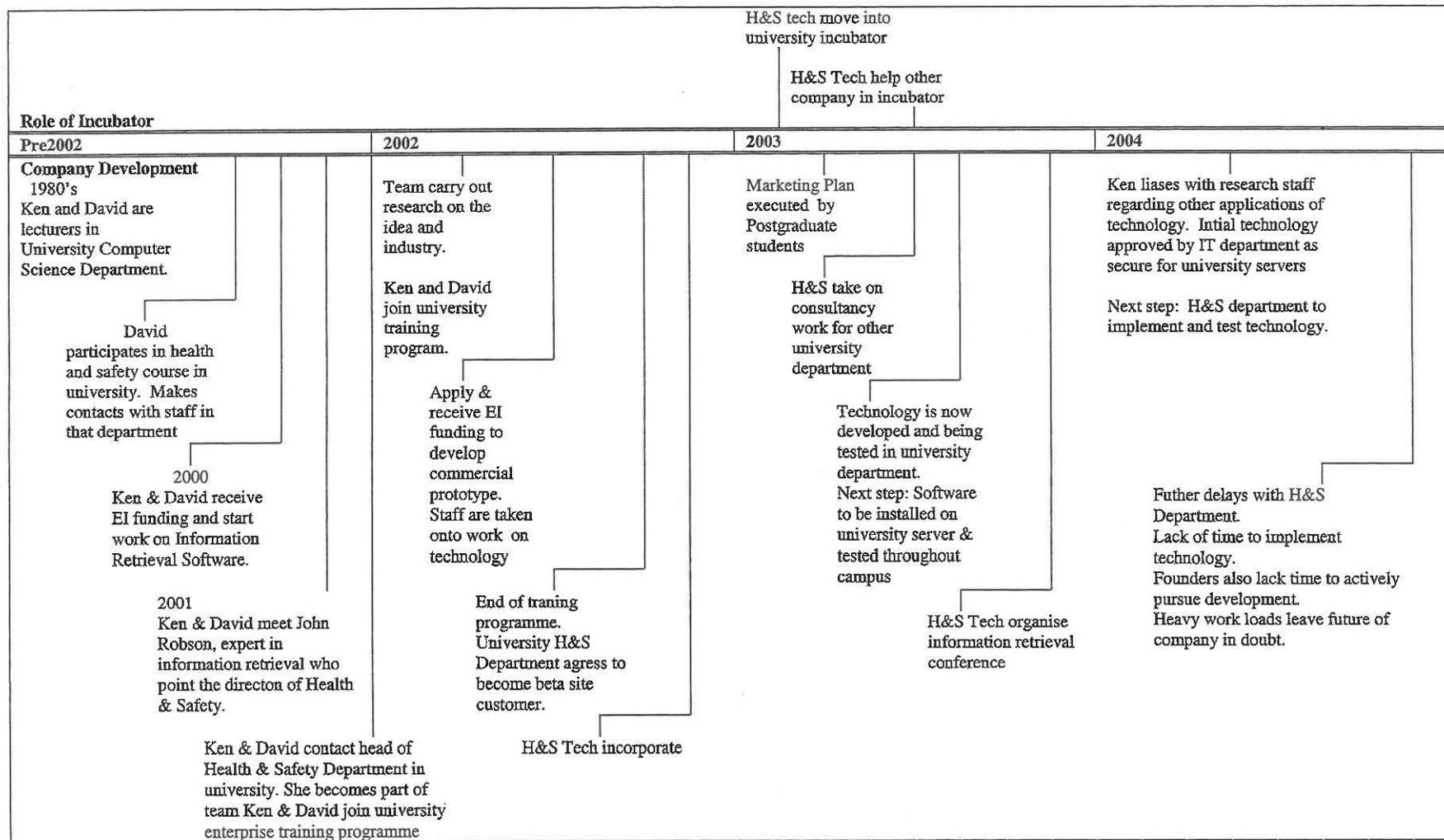
## 5.2 CLIENT COMPANY A – HEALTH & SAFETY TECHNOLOGY

Health & Safety Technology (H&S Tech) is a software development company creating specialised information systems and information management tools for the health and safety industry. Two lecturers in the university computer science department, Ken Browne and David O'Reilly, founded the company in 2002. Prior to this Ken and David had been working with a research group in the university on a project funded by the state Enterprise Development Agency and the state research council. The research was in the area of information intelligence and retrieval. Following a suggestion by an information retrieval expert to apply their technology to the health and safety industry, Ken and David decided to pursue the opportunity. They approached the manager of the university Health and Safety department, Mary Gordon, for further insight as to how their technology could best be used in the industry. Impressed with the idea, Mary Gordon agreed to become a partner in the company and to assist Ken and David in commercialising the technology.

Ken, David and Mary undertook the university enterprise-training programme but maintained their full time jobs. Finding time for H&S Tech was difficult. H&S Tech took space in the Ignite incubator once the training programme had finished. One full-time and one part-time employee carried out the research work there. They were funded by research grants and by the promoter's own personal investments in the company. Their product was involved in much in-house testing but did not go live on the university campus. This was due to various circumstances and delays and in summer 2004, the founders were unsure as to whether or not they would continue the project. Details of company development are illustrated in Figure 8 below.

**Figure 8. H&S Timeline**

**Figure 8: H&S Tech Timeline**



## **Evolution of the Business Idea**

Ken and David have twenty years combined experience in the university Computer Science Department. In 2000 their research led them towards information retrieval systems. Also in 2000, they met John Robson (the husband of one of their post graduate's and also an expert in the area of information retrieval) at a conference in Scotland. John was interested in the work they were carrying out and suggested they apply their technology to the health and safety industry. He felt there were industry openings for that type of work and also many opportunities for funding research.

Ken and David decided to take the information retrieval software and apply it to recording accidents and incidents that happened on a campus or in an organisation (incidents differed to accidents in so far as an incident is something that could have led to an accident). Ken and David's technology recorded both accidents and incidents that happened and then identified patterns and trends. With this information an organisation could then identify where there were frequent incidents and where accidents could occur in the future and therefore reduce the possibility of an accident happening.

After Mary Gordon joined the team, it was agreed that the university Department of health and safety would become H&S Tech's beta site customer, with plans to have the technology implemented throughout the whole campus. Before this could happen, Ken and David had more work to do on the prototype. The university IT department had to approve the technology before it could 'go live' on the university servers and the health and safety department had to make arrangements to change their systems and test the new technology.

H&S Tech faced a number of difficulties during this process of development. The root of most problems was the lack of time Ken, David and Mary had to spend on the development process. They were also unwilling to pressurise those involved from the IT and health and safety departments at each of these stages because there was the possibility of them not being able to meet deadlines themselves in the future.

Commitment to their teaching and department jobs in the university meant Ken, David and Mary remained working full time. The result was the company developed slowly.

The options available to them in summer 2004 were to hand the project over to a manager who would work full time in the company. Lack of finance and time to arrange recruiting a manager left a question as to whether or not this would actually happen. Another option was to leave the project as it was and not pursue it any further.

Ken and David had been working in the area of intelligent information for a number of years and knew the technology very well. With Mary Gordon on board they had industry expertise and insight into how the product could best be applied to the industry. Through her industry contacts, Mary carried out the initial market research for the technology, contacting colleagues in different industries and arranging site visits for them.

H&S Tech also commissioned a market analysis from the marketing class at the university post-graduate school of business. These students are trained to carry out and prepare professional market research, presentations and reports. H&S Tech heard of this service during the university training programme and thought it would be a time efficient and low cost way of researching the market and obtaining the information they required. The post graduate report suggested that the H&S Tech product would be a hard sell to universities and companies. The research said it is not a 'must have' product and would work out too expensive for small companies while larger companies who might be interested tended to be American and already have in place advanced health and safety procedures.

In addition to their disappointment with the findings, H&S Tech was also disappointed with the quality of work carried out by the students. The research cost €4000 and failed to produce a final report worthy of that amount of money 'I certainly wouldn't spend the money on the thing again'<sup>5</sup>. From their perspective what they received instead was closer to an academic exercise than the professional analysis of the market that they were led to believe they would receive.

While on the company training programme Mary Gordon began negotiations with the university Department of Health and Safety with regard to the department becoming their beta site customer. The university agreed and they planned to launch the

technology in the H&S Department first, they planned to then go live throughout the rest of the campus after a period of testing in that department. Following this, they planned to remain within the university and third level domain and sell the product to other academic institutions. They also believed that there would be an opportunity to apply the technology to different industries.

Following the agreement between the Health and Safety Department, Mary Gordon put H&S Tech in touch with colleagues of hers in the Centre for Continued Professional Education who needed a new system designed. This work was not in relation to Health and Safety but required information retrieval technology to help with a particular problem. Ken and David agreed to assist them and assigned a postgraduate student to develop the system. The main benefit from this relationship was the advantage of generating a reference customer. Unfortunately for H&S Tech the system took far longer to develop than they had expected and instead of having a satisfied reference customer, they had an angry and disappointed client who could have damaged H&S Tech's reputation on campus.

H&S Tech did not develop a full promotional strategy for their product as they were only launching it with their beta site customer. They did however have a basic website which was developed by one of their postgraduate students. In addition to this they organised an Incident Management Conference on the university campus to promote the work of the company among their academic peers. The conference was in December 2004 and had a smaller attendance than Ken and David had been expecting. They were satisfied however with the contacts they had made and how they had presented the work H&S Tech were doing.

### **Gathering Resources**

In 2003, almost a year after finishing the university training programme, H&S Tech took office space in the university incubator. In the interim they worked on developing their technology. They did not look for other office premises in the area prior to taking

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<sup>5</sup> All quotes from Ken Browne in interviews from October 2003 – May 2004

the incubation space, and were eager to locate in the incubator because of its proximity to their university jobs.

The company has been funded through different schemes under the state Enterprise Development Agency. Initially Ken and David applied for basic research funding. Following this they submitted a second proposal to the Research Innovation Programme, which funded the development of a commercial prototype. This was ongoing for two years. Funding meant, H&S Tech could take on programmers to work on product development full time. In addition to this they received some funding from the Irish Research Council for Science, Engineering and Technology and the university bursary fund. Since 2002 and lasting until 2006 Ken and David received over €500,000 to see the commercialisation process through and to sponsor their large pool of postgraduate students who work on related and unrelated research. H&S Tech were also using a bank overdraft. For most of the year they were almost €10,000 overdrawn, €4,000 of which went towards the commissioned research study and the rest towards the prototype expenditure and funding the part time programmer. They planned to use their CORD funding to cover these expenses and any other balance that was not covered by the founders own finances. They received the CORD finance while on the training programme in summer 2002 but had still not drawn down that money in summer 2004 because of a misunderstanding regarding the requirements to do so. H&S Tech understood from a colleague that their accounts needed to be audited. Reluctant to spend a lot of money over something they felt was 'money down the drain' and further 'red tape' they postponed the funding. They then realised that accounts approved by an accountant were enough guarantee for the state Enterprise Development Agency. H&S Tech were then in the procedure of seeing that stage through.

The consultancy work with the Centre for Continued Professional Education (CCPE) was to create revenue. However, the project far exceeded its expected duration and took much more time than they anticipated. This, as well as the fact their original pricing structure was incorrect, meant this job actually cost H&S Tech a lot of money.

H&S Tech had one full time and one part time employee. The full time employee worked on the main H&S Tech technology and was sponsored by the state Enterprise Development Agency. The part time employee worked on the product for the Centre for

Continued Professional Education and was paid by the revenue generated from that contract. Both were identified from their post-graduate pool of resources, which widened further over the course of the research.

David used the same approach working with the H&S Tech staff as he used with his students and realised it is not an approach suited to the business world. This became apparent with the CCPE project where H&S Tech fell far behind with its development because the person working on it had not been closely supervised. The student was unable to complete the system but the problem was not identified until it was already too late. Another student was then hired to finish the job but the client was already disappointed and H&S Tech had to face some difficult explanations as to why they had failed to deliver the product on time.

For H&S Tech, taking part on the enterprise-training programme was the first major step in pursuing the commercialisation of their research. Ken, David and Mary undertook the university enterprise-training programme in 2002. This involved lectures and workshops on law, management, preparing financial plans and developing a business plan.

Aside from the training programme there was no other external influence on the company. In summer 2004 David recognised that this was a problem. He felt that had there been someone involved in the company full time, with managerial ability and kudos, the company could have advanced far further than it actually did. Also it could have helped prevent the situation with the consultancy work, as had the student been supervised with a more commercial approach problems would have been identified sooner and the project would have met its deadlines.

### **Impact of Incubation on H&S Tech**

H&S Tech were optimistic the company could progress by basing themselves in the incubator. During the year however, the company failed to progress as well as they had expected and they were questioning whether or not they would renew their lease. H&S Tech did not consider any alternative to taking space in the university incubator because

locating at the university was so convenient for them. They also located in the incubator because:

- Ken felt 'I don't think we would have gone ahead with the project had it not been for the centre'
- 'It gives you time and space to focus'
- They had access to the college network, which they said was very important for a technology company. They know of other technology companies in facilities locally and are suffering from poor network facilities
- Despite the uncertainties associated with the mandatory equity stake (15% because H&S Tech is a university based company), the arrangement clarifies all the IP (Intellectual Property) for H&S Tech which could have been a problem had they located in different office spaces or been in negotiations with venture capitalists. Taking space in the incubator was 'more clear cut'

For H&S Tech, the centre has been of most value 'as a focus'. They find that when they are working in the incubator 'you are there on company business' as opposed to when they are working in their department offices, where there are frequent distractions. Having incubation space 'strengthens your focus'.

The management assistance is offered on an 'open door' basis. Another value adding aspect of the centre for H&S Tech is that it was comforting to know 'that they are there if you needed advice or anything – you know there is backup available'. They are also confident if they had a problem with a client, legal issue or accounting issue 'there is someone (at the centre) you can go and ask and they would help sort you out'.

Being located in the incubator gives H&S Tech 'a nice prestigious address'. The fact that the incubator has a receptionist has also been beneficial over the year as Ken, David and Mary are located in their department offices most of the time, and the receptionist contacts them when there is post for them at the centre. They have access to good network facilities and to the university expertise and IT staff are there for computer breakdowns or viruses.

The centre has facilitated the founders best in that it is convenient for them to continue with their university careers. They did not have to give up their jobs to pursue H&S Tech. They can almost 'bilocate' in the incubator. It also offers space to the people working on product development.

The staff have not used the frequently run professional service clinics as they felt their company had not reached a stage that they would be of benefit. It was however their intention to use this service much more in the future.

H&S Tech knew the manager and the incubator staff prior to moving in to Ignite. This was because of their participation with participants in the university training programme where they received a lot of help with developing their business plan over that year. Since then there has been less formal interaction between them. They have been in contact however over random matters like helping another company with an IT problem or recommending some post graduate students for another research job. In addition to this they were in contact with:

- The Enterprise Development Agency (EDA) specialist working in the incubator 'We've had a very positive experience working with EDA and have really found them to be most professional, most helpful...with advice and funding'.
- The in-house expert on patent advice when they were still pre-incubation and on the training programme.
- The operations manager regarding the license agreement, the rental agreement and elements of the shareholders agreement. There was a big delay in finalising this document and in summer 2004, it still had not been signed.
- The other training programme co-ordinator regarding the recommendation of a competitive auditor to endorse their accounts for drawing down EDA funding.

Over the duration of the research their feelings towards the lack of interaction changed. In October 2003 they were happier to work on their own rather than having compulsory meetings with the manager 'we are on our own...and I think I am happier with that. It is our own company and it's up to us'. He saw it as the company standing on their 'own two feet but the back up is there if you want it'. However, in June 2004 they realised the value of regular meetings and how perhaps meeting with management throughout the

year could have been beneficial for encouraging them to better use the facility, to spend more time working on company issues and to speed up the new company development process.

Ken, David and Mary worked in the university and so already had access to their own network of contacts. However, in general being associated with the university brought prestige, convenience and access to resources for H&S Tech.

For H&S Tech networking was not very important and was even less so when they moved into the incubator first. 'There are not many companies here so it is not really an issue'. There was a consultancy relationship once with another tenant company who were having some systems information problems. The incubator manager asked H&S Tech if they would offer some advice. They did so 'on a neighbourly basis...where we helped them thrash out the solution, which might have cost them more had we not been there'.

They are also familiar with another company in the incubator whose founder is a colleague of David and Ken's in the computer science department. They meet up regularly and discuss the companies.

H&S Tech were well informed over the year of different networking events that were held in the incubator and around the city, but did not attend because their company was not at a stage where they were of relevance. H&S Tech were still at pre-beta site test but were enthusiastic about taking greater interest in these events once the company developed further.

H&S Tech were very satisfied with the incubation facilities and liked being located in what they felt was a very well finished innovative environment. Despite the benefits of locating in the centre, they do feel the high rental is a discouragement for people taking space. They are paying a small percentage below the market rate, but they felt it is not very much lower. Also they pay full telephone, computing and insurance costs. They feel if the centre should be 'getting people up and going, you would think they could offer it substantially less than the going rate'. However, if opting for a cheaper office

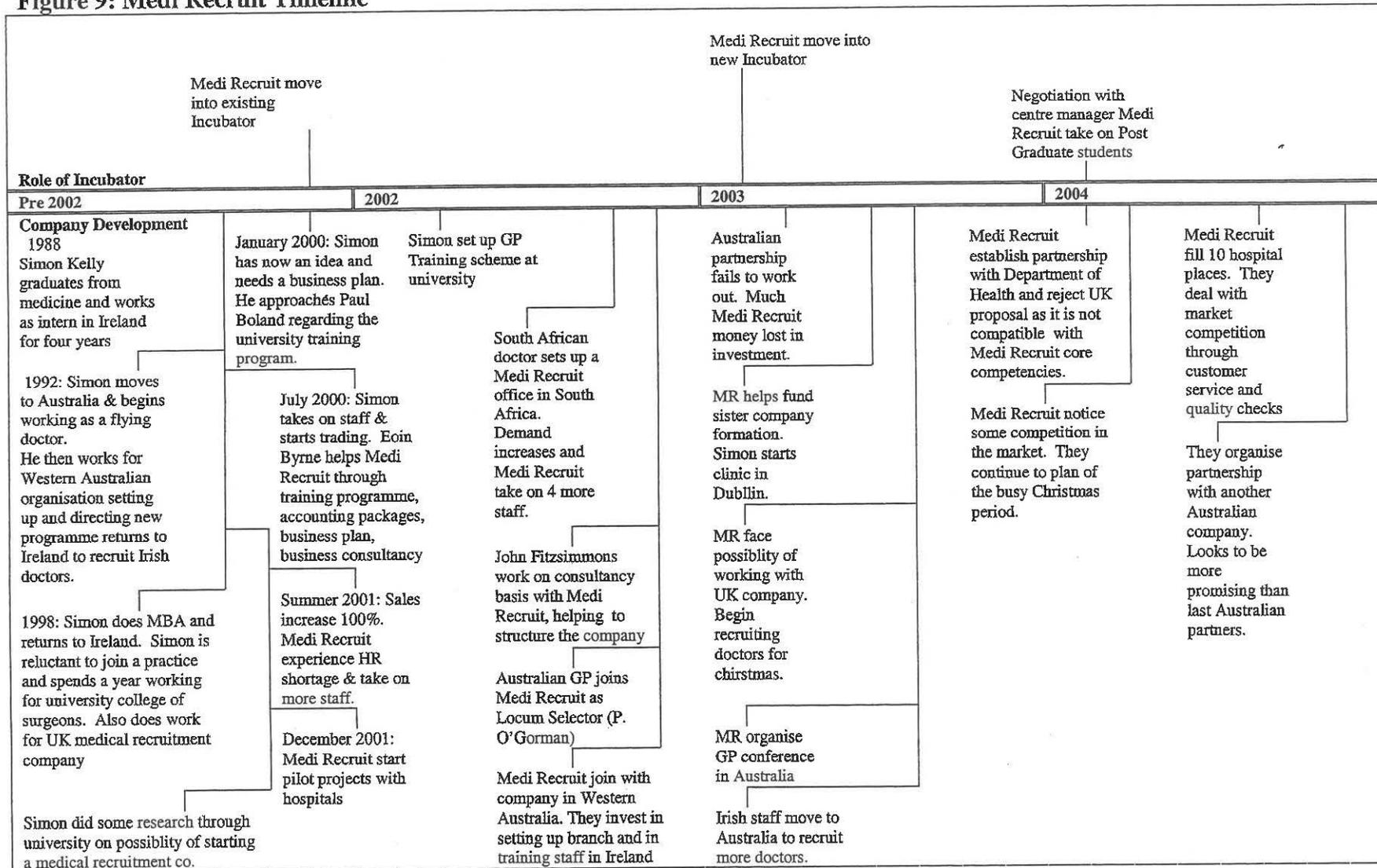
would mean taking a less attractive space, they would prefer to pay the high rent and locate in the Ignite incubator.

### **5.3 CLIENT COMPANY B – MEDI RECRUIT**

Medi Recruit is a medical recruitment company that combines a recruitment service with continued professional development. The company was formed in 1999 by Simon Kelly. Simon is an Irish doctor who returned to Ireland from Australia and wanted to promote a healthier lifestyle amongst Irish General Practitioners (GPs). The company provides Australian and South African GPs to Irish practices and hospitals, allowing Irish GPs take more time off. Simon participated in the university enterprise-training programme in 2000. Medi Recruit began trading and employed their first staff that summer. While on the training programme Simon was introduced to financiers who lent him IR£150,000 to start the company. Following the training programme, Simon took space in the university incubator where he is still located. Since starting in 1999, the company has grown to twenty employees and has overseas offices in three countries. Medi Recruit has proven very popular with currently 600 of the 1200 Irish GPs availing of their service. Medi Recruit is also starting to provide a recruitment service to hospitals. Details of company development are outlined in Figure 9 below.

**Figure 9. Medi Recruit Timeline**

**Figure 9: Medi Recruit Timeline**



## Evolution of the Business Idea

Medi Recruit was a solution to what Simon Kelly had seen and disliked about the traditional GP lifestyle in Ireland<sup>6</sup>, where GPs worked long and exhausting hours and took little time off. When he had finished his internship in Ireland, he did not want to work in a traditional Irish GP practice, and moved to Australia. He worked at first as a flying doctor in Western Australia and then as a coordinator for a GP programme that encouraged continued professional development and healthier lifestyle with more free time for GPs. As part of this job Simon returned to Ireland twice a year to recruit Irish doctors to work in Australian practices and to allow the GPs there work more normal office hours.

In 1998 Simon returned to Ireland full time for personal reasons and was again faced with the decision of joining a practice. Again he rejected going down this route and instead worked for the university medical department. He also pursued some work for a UK company in the area of medical recruitment. There was no company doing this in Ireland at the time and Simon decided to look into it further. After some basic research he decided to start up his own recruitment company. His idea was to have a medical recruitment agency, which would be part of a university and also promote continued professional development.

Simon approached the university company training programme coordinator and joined the course in March 2000. The company has continued since then and has branched into providing locums (agency doctors) for hospitals, which is an area they hope to develop further.

Medi Recruit now has a base staff of sixteen employees in Ireland and four employees in international offices in South Africa and Australia. Aside from the personal relationships that developed with people in these countries, doctors from South Africa, Australia and New Zealand are easier to coordinate. They are eligible for full registration with the Irish medical council, which implies they do not have to sit exams prior to working in Ireland. Medi Recruit is currently in negotiation with an Australian

company regarding partnership and the possibility of servicing the Australian market too. Simon made tentative steps to this in the past, where he invested in someone to set up the operation. That person failed to deliver and Medi Recruit lost a lot of money. This time round they are backing another company and hoping for a more successful outcome.

In addition to Medi Recruit, Simon has been involved in developing another company, a private clinic that carries out medicals and health tests but which presents clients with their results in the same day. This business opened in 2003 and has been very successful in terms of customer interest and meeting financial targets. In the pipeline is Simon's involvement in researching, setting up and managing the accident and emergency wing of a new private hospital.

Simon worked for a government-funded organisation in Australia which coordinated a medical recruitment system to recruit and retain doctors in Western Australia. Simon gathered experience of how the concept worked, how to get it up and running and how to grow it to success. When he returned to Ireland, he worked with a UK company for a while and saw how the model worked in Europe.

When he was then working for the university Department of General Practice he suggested to a senior official the idea of a locum service in Ireland and the possibility of doing a market research exercise with some GPs on the idea. The university gave a small funding allowance through access to some research assistants who helped him analyse the data. Although this was only a small investigation of the market, it showed there was a very keen interest in a locum service in Ireland.

Medi Recruit have marketed themselves as being both a company offering a change in lifestyle to GPs and one offering potential for further training and education. They sell this idea to a number of different clients, GPs, locums and hospitals.

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<sup>6</sup> Information and quotes are from interviews with Simon Kelly, February 2004 and General Manager Áine Byrne October 2003-May, 2004

◆ GPs

In spring 2004 Medi Recruit noticed an increase in competition in the market, where a South African set up a business recruiting doctors from South Africa to work as locums in Ireland. This has made Medi Recruit focus more specifically on continuous improvements in customer service which they identified as a key competitive strategy as opposed to competing on price. They do this by sending a questionnaire to each GP after they have taken on a locum and asking how they found their work and if they have any recommendations for the process. They have also started promotional trips around Ireland visiting practices and coops to promote the brand, recruit more GP's and also deal with any queries.

◆ Locums

Locums are usually from Australia, New Zealand and South Africa because Medi Recruit has offices there and because doctors from these countries are eligible for full registration in Ireland. The connection with Australia was through Simon initially and the connection with South Africa was through a doctor who visited Ireland as a locum. This doctor wanted to become involved and set up an office in South Africa that follows the same processes and procedures as the Medi Recruit office in Dublin.

With the new competitor also targeting locums, Medi Recruit has had to focus more attention on maintaining successful relations with their locums. They are doing this by:

- Contacting each locum at the end of a week to see how their experience has been;
- Another member of Medi Recruit contacts locums on a random basis in case there is anything they do not feel comfortable saying to the member who deals with them;
- Medi Recruit sent an Irish staff member to the Australian office to recruit more locums.

◆ Hospitals

Medi Recruit have an agreement with the Department of Health and Children until December 2005, to provide junior doctors to hospitals. They receive a grant from the department and in return Medi Recruit charge a reduced rate to the hospitals for finding someone to fill these positions. Medi Recruit therefore are the locum agency

recommended by the department to hospitals to fill these positions. The department are satisfied with this agreement in place because they are usually difficult positions to fill. Medi Recruit are happy to have established a relationship and a guaranteed regular income. Unfortunately for Medi Recruit it has proven difficult to convince hospitals to change from their traditional form of recruiting staff to paying the agency fee for their assistance. However they still wish to expand this side of their business and see more potential for the future

It is a time consuming process for Medi Recruit because they must face overly bureaucratic hospital HR systems. In order to combat these issues, Medi Recruit used to meet with the Medical Manpower Forum group<sup>7</sup> (MMF) regarding promoting services of Medi Recruit as recommended locum provider and working on coordinating more hospital places. However, the MMF group is a busy organisation with many different commitments and Medi Recruit is not top of their priority. Therefore it is proving to be a very long process.

From the beginning Medi Recruit had a comprehensive website. This was paramount to their success as people located all over the world could easily access information on the company. Simon invited a colleague from Australia to come to Ireland and set up the website, their database and also carry out operational work within the company.

Medi Recruit position themselves as a recruitment/educating company, they hold a conference annually that has proven to be very successful amongst Irish GP's. In 2003 the conference was held in Australia. With Medi Recruit heavily sponsoring the trip they were able to combine the conference, the rugby world cup and a nice holiday for their clients. The plan for 2004 was to have it in South Africa, again to coincide with the rugby. Take up however was not as good and so plans were cancelled in favour of a lower key event in Dublin later that year.

This emphasis on customer care and different promotional strategies has worked well for Medi Recruit as they experienced an increase in sales from year one to year two of

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<sup>7</sup> The Medical Manpower Forum was formed by the Department of Health and Children to work in partnership with the hospitals and develop policies that will evenly direct the distribution of resources within the sector

100%. Demand has since continued to grow. Medi Recruit put much of their growth down to positive word of mouth between GPs. The fact that Simon himself is a doctor also brings an extra credibility and this and locating near a university has all contributed to their success.

### **Gathering Resources**

Medi Recruit joined the university training programme and took space in the campus innovation centre in May 2000. This was an old building on the campus, separate from the rest of the innovation office. Simon took space there for proximity to the university and a supportive environment of like-minded people who would take the isolation factor out of setting up. He also found that rent was cheap. However, in summer 2004 Medi Recruit had yet to sign their shareholders agreement that was agreed in 2000.

Although this building was old, there was a good atmosphere and Simon liked the feeling of community there. Medi Recruit were located there for two and a half years at the end of which office conditions had become too small.

Through Medi Recruits involvement with Paul Boland on the campus-training programme, Paul introduced Simon to the Dublin Business Innovation Centre and the Dublin Seed Capital Fund. Simon applied for IR£120,000 in 2000. The maximum the seed capital fund could invest was £100,000. They agreed to do it for a 10% equity stake in the company. They also agreed to a £20,000 loan which Medi Recruit agreed to pay back in three years. The company was generating revenues from year one and has continued to grow at a steady pace and fund its own development. The university incubator also has a 10% stake in the company and has agreed to dilute at the same time as the company.

Since Simon has moved on to work on other projects, Medi Recruit is now managed by Áine Byrne. She heard of Medi Recruit through a friend and joined the company after the first summer, in October 2000. Áine was involved in medical recruitment in the US and has played an important role in the company during the last three years.

The company grew from two employees in 2000 to seventeen in 2004. The increase in staff followed a huge increase in demand for the service after the first years of operating. They found themselves in a 'chicken and egg' situation where they needed more resources to deal with the amount of work, but were cautious about investing the money. In the end they were faced with no other choice but to take the risk and take on more staff. Having the extra staff on board meant they could deal with the demand and offer a quality service to their clients.

The increase in demand for the Medi Recruit service has led to a situation where their systems were not adequate to see the process through efficiently. With this amount of staff, Medi Recruit have had to employ some strict HR procedures, which Aine has had to develop, monitor and implement.

Simon already had a good business and managerial background before he returned to Ireland. He completed an MBA in 1998 when he was still living in Australia. Prior to this he had started and directed a medical programme in Western Australia, he had no experience of starting his own company, and knew he needed assistance with that process. He got this help from participating on the university company-training programme, which he felt provided the 'commercial drive' he needed. It involved various modules on marketing, law and finance, which he found useful.

For Simon the most valuable part of the programme was the mentorship he received during the year on business management and on financial management and modelling. All participants on the programme received time with mentors, who were sponsored by the state Enterprise Development Agency (EDA) and the university enterprise centre. The help Simon received from these two mentors was excellent, and he certainly feels that getting funding for Medi Recruit would not have been as straightforward had he not been on that course.

In addition to this help, Simon received help on a consultative basis from a friend of his who helped Medi Recruit with improving the business systems and getting policies and procedures in place to get it past a state of 'controlled chaos'. He also led them towards outsourcing their monthly management accounts and introduced Simon to a company who now carries that out.

Medi Recruit use a large accountancy firm for corporate finance issues. They have always used them because they wanted someone with an international outlook. This relationship was established while they were in the previous incubator and before a different accountancy firm became involved with the new centre.

Medi Recruit are also members of the Small Firms Association, and received a reduced fee because of their involvement in the university incubator. Being a member of this association has been very useful. Áine received help on issues of HR, employment law, employee entitlements, sample contracts, sample leave requests etc. This has meant Medi Recruit now have satisfactory policies and systems in place, as well as formal documents, procedures manuals and staff handbooks.

### **Impact of Incubation on Medi Recruit**

Simon did not look at other office spaces. His reasons for locating in the new incubator were similar to those for taking space in the first one. He wanted to be close to the university and to be in a supportive environment of like-minded people. In addition he wanted to move into the new incubator because:

- Medi Recruit were still a start up company and could still benefit from being located in an incubator
- 'It was a nice environment, with lovely offices and it seemed the natural thing to do' even though 'we're not getting it cheap anymore'.

Medi Recruit experienced many of the benefits of incubation when located in the first incubator. Firstly being part of the university 'added kudos' to Medi Recruit. While in the incubator they were introduced to organisations that are still important to Medi Recruit such as their corporate finance firm and the Small Firms Association. They participated on the enterprise training programme and received assistance with their business plan and company development. They were introduced to their business and financial mentors who helped Medi Recruit with raising finance. 'We were fast tracked through seed capital, and I would hazard a guess that it would have been a much more arduous journey had I not got that label of a campus company'.

The new university incubator opened in March 2003 and Medi Recruit were eager to renew their incubation lease and take space in the new incubator. The incubator has a 10% stake in Medi Recruit which Simon negotiated because he felt 15% was too high and because Medi Recruit was not a technical company. This agreement was maintained, and Medi Recruit were granted another three year term in the centre and were the first company to move in April 2003. Simon feels Medi Recruit were granted another lease as the director 'was keen to fill the place, he wants some cash...we're bringing rent to him so he's a happy camper'. However, in summer 2004, Medi Recruit had yet to sign their shareholders agreement from 2000.

Locating in the new incubator has been a different experience than the time in the first centre. Simon sees Medi Recruit as being at a different stage of development where they do not need to avail of some of the supports that are provided because they already have a mature support structure in place. Because there were different companies in the new incubator offering support, Simon felt there was more to be gained from maintaining relationships with the same organisations rather than chopping and changing, and having to reintroduce Medi Recruit to different group of consultants.

They are still however benefiting from the status of the address and the 'nice' offices. Áine said it is nice being around other start-up companies and enjoys hearing the different start up experiences.

Simon is now involved in the sister company to Medi Recruit. It is Áine who is based at the new incubator and has most dealings with the centre manager. She has a good relationship with James Fagan and said there was constant interaction between them on an informal basis. The interaction was usually regarding operational issues and never regarding business advice as Simon usually addressed those issues with his own panel of advisors as outlined above.

Being close to the university has remained a constant benefit to incubation for Medi Recruit. It has brought extra credibility to their business and also facilitated the running of training, courses and conferences. However, there has been less of this activity

recently, and Medi Recruit are mainly benefiting from the prestige of being located on a university campus.

Áine is based in the new incubator more than Simon. She has noted that less networking takes place in the new incubator than the old one, where there was less space and everyone got to know each other more easily. There were also more networking functions organised in the old centre, and companies were encouraged to meet informally each Friday. Some of the companies who were located in the old centre also moved to the new centre, and Medi Recruit were most familiar with them.

Áine has attended some of the seminars that are organised in the incubator, does not attend as much as she used to. Instead she now passes the information on to other staff for whom the subject matter may be of greater relevance, for example the marketing manager would attend marketing events.

Medi Recruit are very satisfied with the services provided at the new incubator. In comparison to the 'old cold and cramped' conditions of the last building, the new one is far more comfortable new and modern. However, they miss the common room from the older building, which had self-service food preparation facilities and comfortable seating. According to Áine it was the 'hub of the centre' where companies regularly gathered both informally during breaks and formally for networking events.

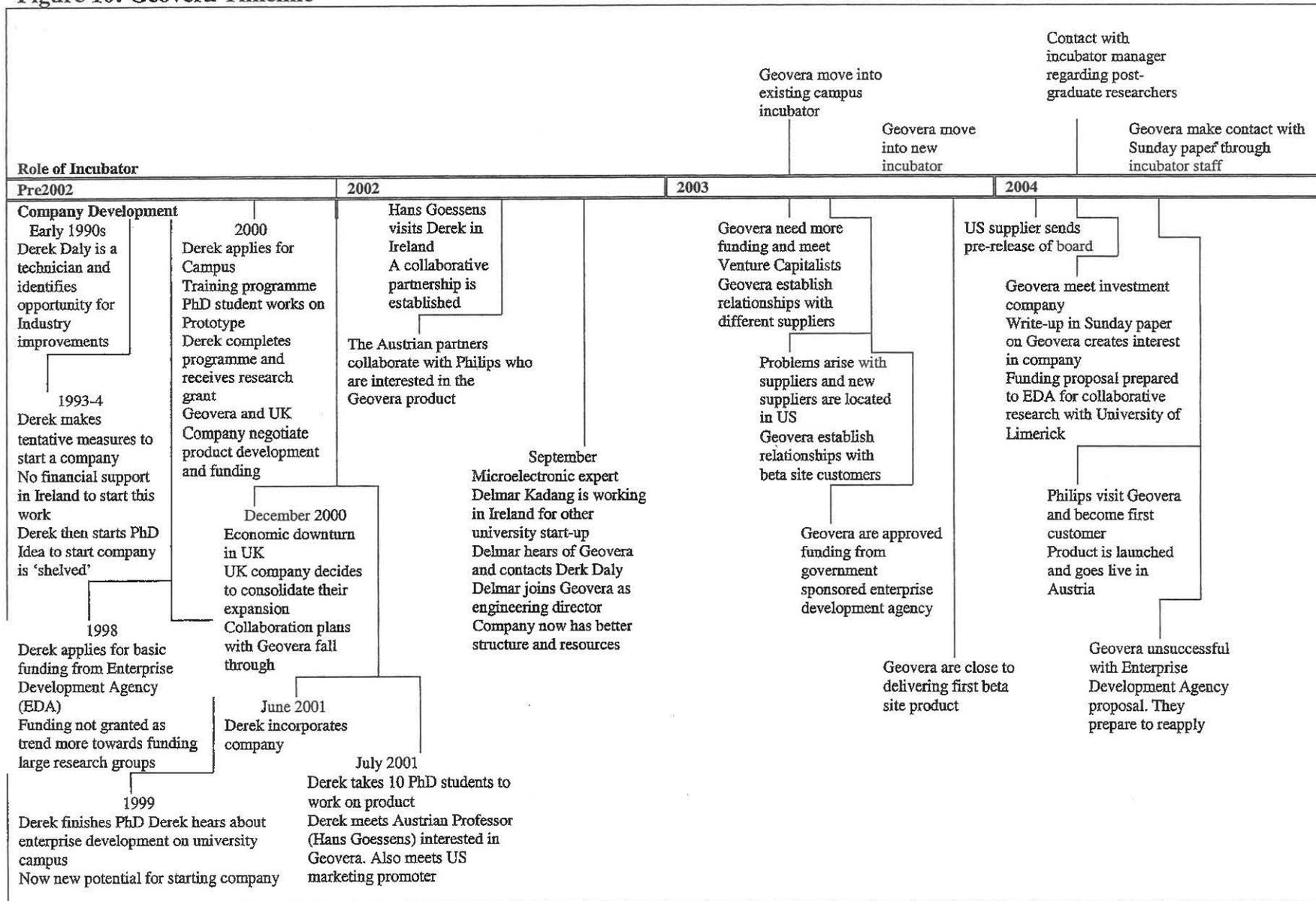
### **5.3 CLIENT COMPANY B - GEOVERA**

Geovera is a research and development company that focuses on specialised processors to accelerate simulation tools used by the microelectronics design market. Dr Declan Daly, a senior lecturer in the university computer science department, founded Geovera in June 2001. The repeated lack of funding for basic research forced Declan to join the university training programme to investigate the research commercially. Since joining this, the company has grown in terms of staff and PhD researchers. Geovera took office space in Ignite after the training programme, where there is now a team of ten students and staff working on the research. Geovera has established successful relationships with other universities in Ireland and abroad and has raised its first round of finance from the

state Enterprise Development Agency and venture capitalist. In 2004 through their partnership with a university in Austria, Geovera made their first sale to the microelectronics firm Philips. Details of company development are outlined in Figure 10.

**Figure 10. Geovera Timeline**

**Figure 10: Geovera Timeline**



## **Evolution of the Business Idea**

The initial idea came to Declan Daly as he was working as a technician in the 1990s. Tentative approaches towards setting up a company in 1993 failed as there was little financial interest in backing the commercialisation of a lone researcher at the time. This and the lack of supportive infrastructure forced Declan to shelve the idea for a number of years. Instead he pursued his PhD in the area, published a number of papers and in 1998 applied for some basic research funding from the state Enterprise Development Agency (EDA). Again Declan was unsuccessful, as EDA preferred to invest in research groups with recognised research partners.<sup>8</sup>

Although Declan had no initial intention of starting a company, the lack of research funding forced him to consider it. With that in mind he was introduced to the university innovation team and joined the university training programme. In that same year he met Delmar Shah, an industry expert who later joined the company and Sean Molloy who introduced him to the financial community.

Through an unrelated event, Declan met with an Austrian professor at a conference in France in 2001 and exchanged contact details. A year later the professor contacted Declan regarding a possible trip to Ireland and further information on the research of Geovera. This trip resulted in long-term collaboration and a partnership between the two research groups in Ireland and Austria. This relationship has led to greater product development and in turn Geovera's first sale.

Declan Daly carried much of the market research out in the 1990s when he identified a need and a way of improving microelectronic devices, when he was working as a technician in the university computer science department. Much of this research involved reading published papers and keeping up to date with technological advancements.

In summer 2004 Geovera had three beta site customers and one customer. Their customer was the Austrian division of Philips and Geovera established this relationship

through their partner university and research team in Austria. They made initial contact with Philips through the Austrian University's industry contacts and Philips agreed to participate in the research and invest in Geovera's technology. The relationship was formalised in Spring 2004. While they expected various issues with their first sale and first time going live, they looked forward to the challenge of establishing the additional customer service systems and supervising the technology's development as it was being used in the market place.

In Ireland, Geovera are working closely with a company located in an industrial centre close to the university. They established the relationship with this company and their other test sites by simply contacting them and asking them to try their new technology. This company in particular, however, has been most accommodating in allowing Geovera access to their systems and in investing time and resources into testing Geovera's product correctly. In return they have visited the Geovera labs. These collaborations have not caused Geovera to change their initial product, it has instead strengthened their belief in it and created ideas for other products and research in the future.

Geovera succeeded in their first challenge of developing the product, and then faced the task of selling and marketing the product. They had a number of different channels to do this:

- They had a contact in North America who was willing to become involved in promoting the product in the US but particularly to companies in Silicon Valley. Declan knew this person for a number of years and made contact with him through another person he approached regarding promoting the research.
- In addition to this Delmar Kadang expected to start promoting the product in Ireland. Whilst Delmar and the rest of the Irish team, were not heavily experienced in doing this, the company was unwilling to subcontract the work and were interested in seeing the process through themselves as much as possible.

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<sup>8</sup> Information and quotations are from interviews with Delmar Shah October 2003-May 2004, and Declan Daly, February 2004

Helping them promote the business and the product Geovera have engaged in a number of different media interactions such as a feature in the Sunday Business Post promoting the company, the technology and their financial drive to raise €3m. They also did an interview on national radio promoting their first sale and the progress of the company. In addition to this they had a basic website which they had made measures to improve and refer to more often. However, very little time and resources were invested in the website so far, as they were concentrating specifically on product development.

### **Gathering Resources**

Following their participation in the university training programme, Geovera took space in the old university incubator. They spent about six months in that centre before they moved to the new incubator. Since September 2003 they were located in the new centre and there was a possibility that they may outgrow the space. However, they hoped they are hoping to remain in the space until at least the end of 2004.

Following that, Geovera may maintain a key core research group in the incubator. In the future, Geovera expect a number of Geovera spin outs, based on new applications of their product discovered during beta site tests, who will also be based there.

When Declan Daly started pursuing basic research funding in the early 1990s he found it very difficult as there were many barriers in his way. He found that while there was a lot of money in Ireland at the time, there was still quite a reserved opinion towards backing a lone researcher's idea. The trend was and still is more towards team-based research groups and internationally coordinated projects. While at the time it was frustrating and Declan may have considered building international relationships for this reason, in the long run it worked out well as he developed all of the Intellectual Property himself in the university. Had he been part of a larger research group the IP would have to have been shared which would have been a difficult process to see through. However Geovera own 100% of the IP and have started patenting the processes.

Mary Dolan was working for the state Enterprise Development Agency in the 1990s and dealt with Geovera's application for finance. Unfortunately getting financial backing

was difficult, but Mary became interested and invested in the company and has remained an influential part of Geovera. While Declan was unsuccessful in the 1990s in receiving funding, Geovera has since been quite successful with raising finance. The state Enterprise Development Agency (EDA) has been one of the strongest supporters as they provide both academic and commercial funding. The problem with this funding for Geovera is that EDA's support is mostly through matching funding which has created some real cash flow problems. In general they have found EDA to be very helpful, but the bureaucracy they have faced and the procedures and delays in receiving money has been problematic. They are reluctant to criticise the organisation as without them they could not have achieved what they have. However, the EDA processes have frustrated them.

In addition to EDA funding, Geovera have engaged much angel finance from their CEO Sean Molloy. Sean also introduced them to the Business Expansion Scheme (BES) when they first made contact through the university training programme. 'It was an area where you were interacting with people who have funds of various shapes and sizes and eventually you find someone who is interested in what you are doing'<sup>9</sup>.

Overall Geosera expect to raise a further €3m to see the process through to completion. They hoped to start selling more products, which would help earn revenues and reduce the pressure on raising finance. They also considered carrying out consultancy work to earn extra revenue, but would not pursue this as the sole way of financing growth as it would take too long to earn what they needed.

There was ten staff involved in Geovera full time. A number of these are full time PhD students who are supervised by Declan Daly and his colleague in Austria. Delmar Shah was introduced to Declan Daly in 2002, when he was working in Ireland for another electronics company. Delmar liked what Declan was developing and agreed to join the company. Contact was made with Sean Molloy through the university training programme and he has since become Geovera's CEO. He has been instrumental in helping Geovera raise their finance.

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<sup>9</sup> Interview with Declan Daly, February 2004

When Declan decided to see the commercial potential through he joined the university training programme. This was one of the most important steps because from it the company started to make real progress. While on the training programme, Geovera participated in workshops on law, finance and marketing, which were beneficial for Declan as he was more technically minded. The course was most useful however for the valuable contact Declan made with Sean Molloy.

Declan met Sean Molloy through Arthur Cox Solicitors who were involved in the university training programme. Sean Molloy introduced Declan to the Business Expansion Scheme and helped Geovera raise their initial funding. Before meeting Sean, Declan had to have a business plan prepared. This was a draft however, and with the assistance of Sean and then Delmar, they worked on producing a much more professional document to bring to the financial community.

The start-up process was difficult for Declan as the department of computer science refused to grant him a sabbatical. Declan wanted to spend more time on the company but teaching commitments prevented this from happening. He feels frustrated with a system that does not reward commercialised research that employs staff, creates money and competes with companies in Silicon Valley and across the world, but instead would merit the publication of a number of papers.

### **Impact of Incubation on Geovera**

Geosera moved into the first business incubator because:

- It spawned out from the university training programme
- They would have a working infrastructure
- They would have access to people who could fund them in terms of being accessible to the government and the programmes that the government have like the EDA programmes
- It was good for building relationships with other universities which are core to their R&D
- To avail of the college IT network

- Of the convenience to the university and Declan's other teaching job

Geovera wanted to remain on the campus after their time in the first incubator, but found that moving to the new incubator was costing a lot of money. Geovera were in their lead in time and cash flow was very sensitive. They discussed this with the incubator director and allowances were made. Declan found that 'outside you probably wouldn't get as much latitude as you would here. But rent has to be low for a company because it can be a big drain on resources'. Geovera wanted to remain within 'the fold' of incubation but were sensitive to the fact that 'the costs must not prohibit that' choice. Geovera were also pleased that there were continuous activities in the incubator such as clinics, enterprise seminars and networking events although they had not used these much, they were hoping to do so once they had developed the product and had entered the market place.

Geovera had a good relationship with the manager and staff at the incubator. They had used the assistance of the EDA representative and contacts of the incubator marketing manager to get publicity in the press and on the radio. They were in constant contact with the manager on an informal basis. Review meetings had been arranged during the year between the company and the incubator manager, but were postponed each time by both parties.

Being located on the university campus has been hugely important to Geovera. It has allowed them build up relationships with other universities which would not have been possible had they been located elsewhere. It has also meant that Declan could co-locate between his ongoing lecturing in the computer science building. They also like the status of its association and would see themselves maintaining a research presence in the incubator once they graduate. Declan did feel however that a university should have a model 'which is less restrictive in terms of the business costs, in terms of equity and in terms of...a better licensing and cost structure deal.'

There were also issues with the university over their IP: 'We had a big battle with the university because they wanted to own the IP'. Declan recommends the university should try and attract more people to work within an incubating environment, but it is important to have a structure in place, which allows them to use the company's value

properly. He pointed out there are a number of issues start up companies have problems with in terms of costs of securing IP and starting up the business plan. If the university could offer more support as opposed to restrictions it would be more beneficial, he feels.

Geovera have not been involved in much networking with the other companies. They are familiar with the companies who were located in the previous incubator but are not very familiar with new tenants. Delmar welcomes any type of inter-tenant event and is willing to interact more should the opportunity arise.

Geovera were very satisfied with the incubator, in particular the infrastructure, access to the university network and access to the university. There were a number of issues they pointed out about their building however that could have been improved. These included:

- Showering facilities for staff, yet none for tenant companies
- Ongoing problems with the IT network causing difficulties accessing email etc
- Poor road access to the facility
- No common room with facilities for food preparation as was in other building

# **CHAPTER 6**

## ***CASE 3: THE TECHNOLOGY INCUBATOR***

This chapter presents the third case study, the Technology Incubator. In this chapter I introduce the Technology Incubator, based on information from interviews with the centre manager, Jane O'Brien. In this section I describe the general approach to incubation and enterprise support in the centre. I also show how Jane O'Brien felt the companies had developed over the duration of the research. I then introduce the three case companies Elysium, Digi Tech and Aero Logix. This section explains how the companies developed and progressed through the start-up process. It shows how their business ideas evolved and how they accumulated resources such as staff, finance, and office premises.

### **6.1 THE TECHNOLOGY INCUBATOR**

This incubator is operated by the college's Development Office. The Development Office works towards establishing institute/industry networks. There were two forms of enterprise support provided for start up companies at this Institute. Companies are helped firstly through the provision of a yearlong enterprise-training programme. This programme is designed to help entrepreneurs with business issues from conducting their research to pitching for sales. Following the programme, companies can take space in the campus incubator where the assistance continues in a less intense manner and where they can stay for up to three years. Table 12 shows some of the practical issues associated with this incubator. These are topics which were covered in interviews with the incubator manager, Jane O'Brien.

**Table 12. The Technology Incubator**

<b>History</b>	Originally built for light manufacturing Currently being modified and renovated to facilitate the HPSU industries better
<b>Practical</b>	Individual offices, both large and small Also has open plan office spacing, specifically for training programme participants
<b>Occupancy</b>	Approximately 20 companies
<b>Facilities</b>	Office space, receptionist, meeting and conference rooms, photocopiers
<b>Canteen</b>	Small kitchen with kettle, fridge and microwave where staff and companies have mentioned meeting up, sharing cups of coffee and catching up
<b>Staff</b>	5
<b>Types of Companies</b>	High Tech companies Willing to establish relationships with the IT
<b>Marketing Centre</b>	Changing logo and image of centre to reinvent themselves and co-ordinate with new buildings and developments

(Source: Information from Jane O'Brien, Interviews October 2003-May 2004)

### **Approach to managing the incubator**

#### Jane O'Brien: the 'Hands Off' Manager

Jane O'Brien is the Technology Incubation centre manager. She works on overseeing the enterprise training programme and on running the Technology Incubation centre. Companies tend to take space in the incubation centre following their participation in the training programme.

#### Enterprise Training Programme

Participants of the training programme are usually information technology companies, 'which means they all need some sort of business assistance training on sales and marketing and general business management'.<sup>10</sup> The training programme deals with the very early stage problems. Mostly it involves working with people who are only considering setting up a company and are working out the viability of an idea. Instead of offering specific industry advice, as companies are usually already experts in their industry, they offer a lot of generic help and signposting by putting them in contact with

<sup>10</sup> Grace O'Toole, training programme Manager

the right people 'you have to aim the course at the general needs of the group'. There is a main structure that exists and is then tweaked according to the different needs of each group, but it aims to provide support in the first six months, what Grace O'Toole, the training programme manager, feels to be the most important time for start up companies. The programme accelerates their development and gives them a supportive environment. It removes the factor of being an entrepreneur for the first time through the networking with other companies plus aspects such as access to a panel of mentors, training and workshops.

Grace is a programme coordinator and rarely gets immediately involved in the companies 'I don't have the time in the first place or the expertise to get involved in advising them'. The relationship with each of the companies varies, according to each company 'some of them would let us know what is happening at each step, and others not at all'.

#### The Incubator

The incubator is designed to help companies 'get over' the initial stage of development. The aim is to 'steady them up, help them to become more confident and learn to problem solve for themselves'<sup>11</sup>.

The incubator manager, Jane O'Brien, is a step removed from the enterprise training programme participants. More than helping with operational assistance, the incubation staff work at business development and helping companies to reach the stage of becoming larger venture capital projects.

During their training programme, they learn where help is available but the manager feels there must be a boundary, 'you have got to leave it up to them. It is their company at the end of the day'. A 'hands off' approach is preferred to continued training because Jane feels companies reach a stage when they actually have to 'do the work' rather than continue to talk about it.

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<sup>11</sup> All quotes from Jane O'Brien: October 2003 – May 2004

Jane is also the Industrial Liaison Manager for the college and has many commitments regarding that position. Therefore she sees very little of the incubating companies on a professional basis. Much of the immediate work with the companies is generally carried out by other staff. However, she is always available to meet them when they need her assistance. Jane sees intensive hands-on assistance as being important for the first 12 months of setting up and that companies have usually received that already before they join the incubator. After that however the emphasis changes. The main issues she provides help with are strategic issues such as product development, partner searches, long term R&D and funding. 'We don't help so much with operational issues. Sometimes regarding staff, or cash flow, but not predominantly. We are cautious of jumping in. These companies have got to survive on their own'. This is reflective of the incubator's philosophy, which is primarily concerned with R&D and strategic growth.

This approach also reflects the types of companies, which the incubator accepts. What Jane has found is that companies' needs vary greatly depending on the entrepreneur's background. Most of the clients at this centre are from multinationals or small businesses and need help with bigger scale problems. These are often issues such as capitalising projects, managing cash flow (long lead in times means companies need help with 'the bread and butter' of CF), contract negotiations, IP protection (the Institute work to protect their IP interests), securing finance and marketing to larger companies.

Table 13 introduces the centre's policies and procedures regarding some of the key management issues surrounding incubation. These include what Jane sees the role of the incubator manager involving, what approach she takes to recruiting and selecting companies, incubating companies and supporting them through funding and networking.

**Table 13. Elements to Incubation**

<b>Role of Manager</b>	Manager of incubator Industrial Liaison Officer too
<b>Recruiting &amp; Selecting Companies</b>	Based on idea, strength of projects, level of innovation, priority sectors or involvement in software development Must be early stage start up
<b>Approach</b>	Intensive hands on assistance is important for the first 12 months, and companies get this on the training programme After that the emphasis changes Incubator assistance is more concerned with strategic as opposed to operational issues 'We are cautious about jumping in' 'It is about who you are, and we are about R and D, and strategic growth' It is up to them to drive the company. You have to know your role in their business. It is your job to support'
<b>Funding</b>	Do not make direct investment Make introductions to finance community
<b>Networking</b>	Coffee mornings run regularly to introduce companies to investors, bankers and outside business community
<b>IP</b>	The Institute would work on protecting their IP interests
<b>Equity</b>	There is no equity stake in the companies
<b>Future</b>	Want to constantly innovate themselves Want to add value in different ways Appointing dedicated centre manager to work on incubation side alone Current manager can the concentrate on ILO duties Expanding services to companies Developing 15 business clinics once a month/every 6 weeks ILO officer involved in developing Digital Media industry in area Have funding for training programme for next 3 years Renovating and expanding the centre Establishment of sister incubator in neighbouring town Reinvention of corporate logo and image

(Source: Information from Jane O'Brien during interviews October 2003-May 2004)

### **Benefits of Incubation**

While there is much value addedness when companies are on the training programme, the manager feels there is also value addedness in being located in the incubator. That initial assistance is on going, still value added and the staff still work with the companies regularly. They add value through their assistance, contacts, information, and

funding advice but much assistance is provided on a request basis. Company's progress from 'fire fighting' to strategic thinking.

Although some of the companies located in the centre are now self-contained, Jane still feels they are continuing to benefit from being in the incubator. They are in close proximity to other people on campus, networks in the college and the region as a whole. During their tenancies incubation brings credibility, a professional address, support and basic things such as photocopiers and the facilities, which help professionalise businesses and give them access to computer networks. Also for information the incubation staff cannot provide they put them in touch with someone who can help them.

The manager also recognises that companies have evolving needs and after three years should be very much networked. They stay in the incubator as long as they are still benefiting from being there. When the company's progress is independent of the incubator, the company is asked to move out. When tenant companies move out of the centre, the manager helps them locate new office premises. Jane worked closely with a number of companies when their tenancies were up and made arrangements for them to continue using the incubation services until they had re-established themselves.

### **Involvement with the Case Companies**

Jane O'Brien operates on a hands-off basis. Although she did not work intensely with each of the companies, Jane maintained an interest in how they were all developing. She said she does this by keeping in touch with the other incubator staff and also by talking to the companies when she meets them on an ad hoc basis. However, with regard to company support and development, Jane felt she was in touch with the companies regarding the most important areas of development. As Industrial Liaison Officer, she was proactive in establishing their Innovation Partnerships with the college. She also felt that each of the companies developed a lot quicker than if they were on their own with no support. They received training and access to the college and R&D possibilities that might not have been as easily or as quickly created without being in the incubator. The companies also benefited from the status of the incubator, the well-fitted office

spaces and access to other facilities such as the incubator receptionist, meeting rooms and conference facilities. Jane also identified the access companies had to other start-up companies as being hugely beneficial to all incubating companies and also the three case companies.

Jane operated on an open-door basis mainly because of time constraints and the workload of other multiple tasks. However, she was weary about incubator managers becoming too involved with their tenant companies, and would question how well a more hands-on approach would prepare them for survival post-incubation.

Jane was very positive towards the Enterprise Development Agency (EDA) and their involvement in the companies. Jane and the Technology incubator staff work very closely with their EDA regional office and she felt they are of huge strategic importance to the incubator. However, she feels they were very focused on one type of high technology based companies. She felt that early stage feasibility funding from EDA could sometimes be difficult for the companies to receive. She felt that the reason some people may have been frustrated with EDA procedures was because it was public funding and EDA had to be careful in administering it. She highlighted that could sometimes be more of an issue for applicants than the release of funding by EDA.

Table 14 summarises the relationship Jane and the Technology Incubator had with the three case studies Elysium, Digi Tech and Aero Logix. The table addresses issues from why the Technology Incubator accepted the companies in the first place to her expectations for them in the future.

**Table 14. The Focus Companies**

<b>Topic</b>	<b>Elysium (In Incubator)</b>	<b>Digi Tech (In Incubator)</b>	<b>Aero Logix (On Training Prog.)</b>
<b>Reason for Accepting Company</b>	<p>Their sector was fine They people were motivated The company was already growing and developing There were two people involved in the project They had a strong software background They did a feasibility study with the College Research Centre early on</p>	<p>Involved in the interactive games industry, developing middle ware. It is a priority sector of industry, cutting edge in terms of future potential Through working with the incubator, can tap into the benefits of working closely with the college where the research centre is looking at wireless communications The individual was serious, had skills set and good knowledge of industry</p>	<p>Involved in cutting edge software system Attractive aerospace industry Great product and concept Strong management 'All perfect for us!'</p>
<b>Level of Involvement</b>	<p>'I haven't been in very much contact with Elysium recently' Elysium are managing on their own more</p>	<p>We met up for their annual review 'We have done what we could with the resources we have'</p>	<p>On the training programme and deals more with training programme manager</p>
<b>How Centre Assisted Firms</b>	<p>Helped in completing Innovation Partnership Access to knowledge Facilitated with bigger office unit</p>	<p>Been involved in institute research group Been involved in developing course material in the IT Applied for IP Facilitated with bigger office unit</p>	<p>Getting IP in place Help with budgets and intelligence</p>
<b>Expectations</b>	<p>To raise additional funding for next stage of development</p>	<p>Working on securing income lines and increasing staff</p>	<p>To raise additional funding for next stage of development</p>
<b>Current Status</b>	<p>Still waiting for Innovation Partnership approval</p>	<p>Working on marketing drive</p>	<p>Still developing technology</p>

(Source: Based on interviews with Technology Incubator manager, Jane O'Brien October 2003-May 2004)

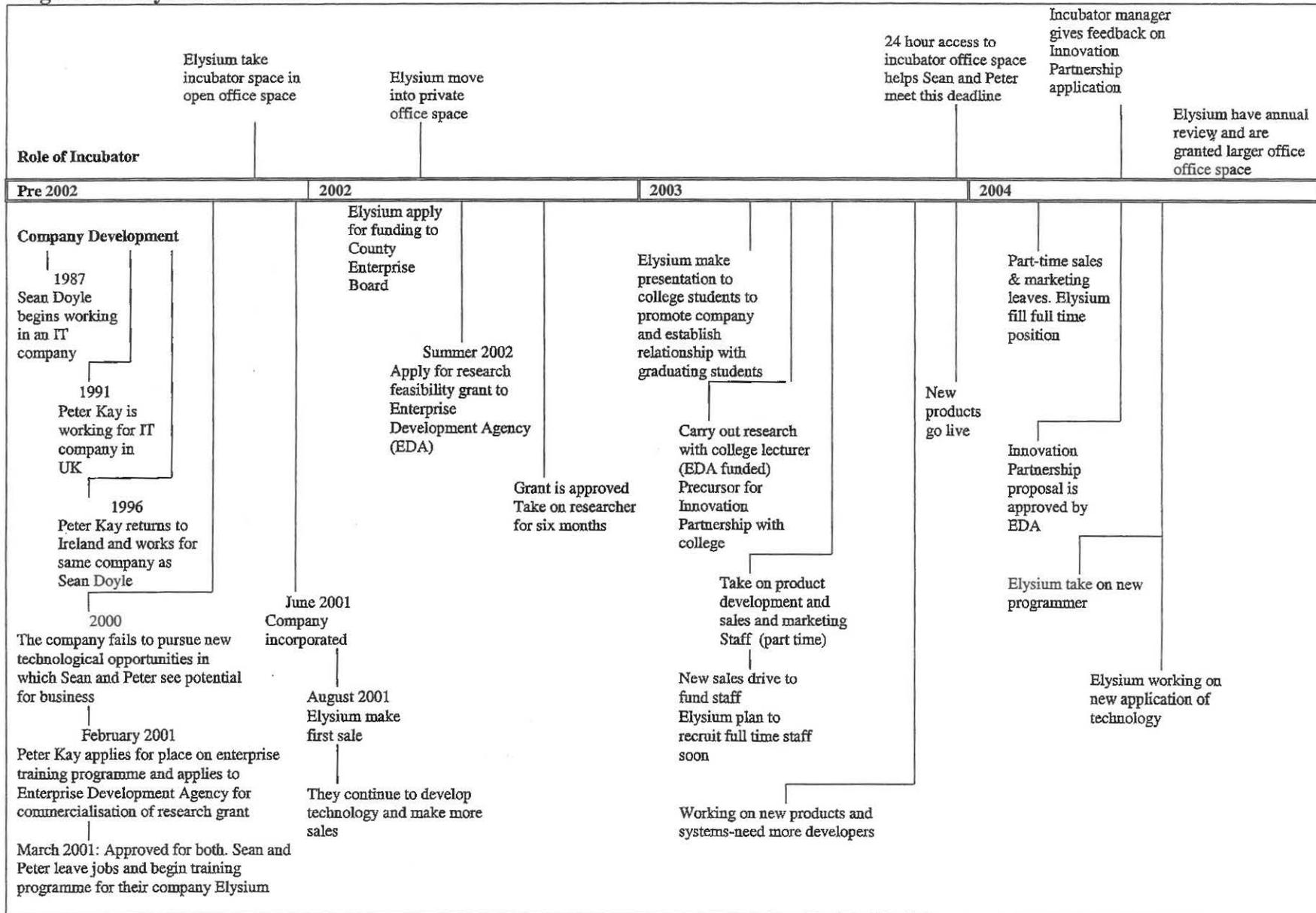
## 6.2 CLIENT COMPANY A - ELYSIUM

Elysium specialise in the development of business applications on Tablet PC, Pocket PC and Smart Phone devices, to integrate fully with existing client IT systems. Sean Doyle and Peter Kay founded the company in 2001. They did so as a result of a technological downturn and failure by their employer to move in the direction in which they were most interested. Their progress since has involved taking part in the Institute of Technology Enterprise Platform Programme, taking incubation space, building information systems and recruiting customers. In summer 2004 they had four employees. They have funded the company through their own private investment, through research grants from the Enterprise Development Agency and the County Enterprise Board.

In the following section I introduce the issues that arose for Elysium during set up and company development. These are outlined chronologically on the accompanying dateline (Figure11).

**Figure 11. Elysium Timeline**

**Figure 11: Elysium Timeline**



## Evolution of the Business Idea

Sean and Peter had always thought about starting a company together, but because their jobs were secure and both had family commitments, it never happened. The motivation to start Elysium came when they were working on technology for their previous employer. Both Sean and Peter saw potential and wanted to develop it further. However, a downturn in the economy and technological developments meant that their employer did not move into the area as fast as Sean and Peter wanted<sup>12</sup>.

They were then in the situation where there was potential to develop software for mobile devices. This software would not be developed if they remained working for their employer and so they applied for a Commercialisation of Research and Development (CORD) grant from the state Enterprise Development Agency (EDA) and for a position on the local training programme. Being accepted for both of these was when they decided to definitely leave their jobs and pursue the opportunity.

Their work involved developing software solutions to run on mobile devices that replace paperwork and create simpler, more accurate procedures. When they started they foresaw many applications for their technology but their first products focused on creating solutions for warehouses and companies with sales representatives working out of the office, as their first customers were in those industries. Since that they have been developing technology for restaurants and transportation companies. Their main aim was to remain ahead of competitors and to be first to the market, regardless of the market, with their products. Another driving force of the company was the speed at which new technologies were developing and the different opportunities they presented. However, the fixed costs of purchasing the hardware influenced the price they could charge to clients, and were therefore also influential to the company.

Sean and Peter did some initial market research. Their collective experience in the industry meant they already had a good understanding of what they wanted to do. When they joined the training programme first, they spent a number of months working on their technology, following this they began marketing the product. Getting their first

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<sup>12</sup> All information and quotes from interviews with Peter Kay, October 2003-May 2004

customer early in the process meant they were developing a solution to a real problem. Following this, market research involved working with a student from the college who wanted involvement with Elysium as part of his course project work. As part of his project he researched how well the Elysium technology could be applied to different industries. Peter and Sean were already aware of most of these findings, but were still happy with the work and positive feedback their technology was receiving.

They then applied to Enterprise Development Agency (EDA) for a Research Feasibility Grant, which was a precursor to applying for an Innovation Partnership with the college. They did the research feasibility with a computer lecturer from the college who approached them and asked if they were interested in becoming involved. Because it related well to what their business did, they agreed to work together. After successfully completing the feasibility study, they applied for a full Innovation Partnership. That process was a longer more complicated procedure as it involved more money. By the summer 2004 they were awaiting feedback from Enterprise Development Agency (EDA) as to whether their grant was approved.

For Elysium, building relations with customers was a difficult process involving much 'cold calling' and persuading companies to attend demonstrations. They made contact with their initial customer cold calling a different company. When that company heard what Elysium did they advised Sean and Peter contact a company with which they are acquainted. On making contact and carrying out some investigative work Elysium saw the company was suffering from staff errors and the over issuing of credit notes. Elysium identified the source of the problems and developed software solutions to eliminate paperwork and reduce potential for mistakes. Following that they had a satisfied reference client. They prepared case studies on each of their customers, showing problems they were suffering, solutions Elysium provided and savings that were consequently achieved. These were then used as a reference when approaching new clients. Sean and Peter promote the company and kept their customers satisfied by maintaining a comprehensive website, providing a good product at a competitive price, and providing excellent customer service and assistance.

## Gathering Resources

Peter and Sean were participants on the Enterprise Platform Programme when they started the company, and were located in the open plan office provided at the incubator for training programme participants. They were based in that space for a number of months but then decided to apply for incubation space instead. They applied for an incubator unit through an application form and a summary of the business, why they wanted to locate there, their expected benefits and how they intended to avail of the college. Elysium were granted space and moved into their office in 2002. They remained there until their lease was being reviewed in 2004, when the company needed a bigger office were granted a larger office which was more comfortable for the larger company Elysium had since become.

Elysium was financed for the most part through self-funding. They received a Commercialisation of Research and Development (CORD) grant while they were on the training programme, which lasted for one year. In addition to this they received a loan from the local County Enterprise Board, in which the Enterprise Board took a 3% equity stake in the company. They had applied for the Innovation Partnership funding from Enterprise Development Agency (EDA). Under this scheme they would receive a researcher appointed by the college. This researcher would work between the college and Elysium, but be based in Elysium's office. Elysium would only pay 25% of their salary the rest paid for through the programme. Elysium also applied for some additional inter governmentally funded schemes.

Elysium had four full time staff, and also took on students during the summer months. Apart from the two founders, they had a full time product developer who joined in summer 2003 and a full time marketing and sales developer who was employed in January 2004. They were concerned about taking any more staff on until they were guaranteed of more business and the ability to pay wages. However, if the Innovation Partnership went through, Elysium would get a full time employee from that initiative and will only have to pay 25% of their salary. Another advantage of the system was that the appointed researcher could lecture, which made the position very attractive and easy to fill.

For the most part, Elysium knew the staff they took on and had worked with them before. They took on students through their relationship with the college. They recruited externally for the marketing and sales candidate and that involved using a recruitment agency and placing an advert in the news paper. They received a number of replies. The process of interviewing and deciding on a suitable candidate was difficult and one Peter would not like to have to go through too often. Peter felt he was trying to sell the company to the candidates during interviews rather than the other way around. They did employ someone however, and were satisfied with his progress. Taking on staff was difficult for Peter and Sean as Peter found it difficult delegating responsibility and that doing something himself could sometimes be quicker than explaining it to someone else. However, he realised it was something he needed to get used to and Peter feels it is better that the employee is interested in learning.

Another difficulty was dealing with one staff member who needed to take time off due to an illness in his family. Peter found dealing with the situation difficult. He was caught between moral and commercial decisions, and while he knew the employee deserved the time off, he was still concerned about the good of the company; the arrangements the employee had made with clients and how to ensure the customers were being delivered what he had promised them. According to Peter this period was a difficult learning process.

The founders felt that the biggest help they received was from the enterprise training programme. Peter and Sean found it great for information and knowledge on marketing, sales, law, finances, presentations and preparing applications. The business training they received was important because 'a lot of us in that group came from technical backgrounds'. The network of support from the other participants was also important 'it was good to meet every so often with the rest of the group, and know other people are going through the same pain, experiencing the same difficulties and problems'. However, Peter felt that while the training was very hands on and great for learning about the business, the level of contact with the staff and the level of their interest in the companies dropped off once the year was over. They did feel that some more of that assistance could continue after the training programme. They found certain elements of running a business, such as strategic decision-making, time management and human resource management difficult to handle. Elysium felt they were lucky however in that

they had excellent relationships with their client companies. These were usually SME types of companies too and Peter and Sean sometimes approached them for advice in certain aspects of the business.

Time management has been the biggest difficulty for Elysium so far 'in terms of you having to do a little bit of everything, it's very easy for a crises to happen, you're always being pulled in different directions'. This he feels was probably the result of not having enough personnel and staff. In the start both Sean and Peter were trying to cover every angle of the business themselves, including product development, sales and customer service. Over time however and with the addition of extra staff, they reorganised Elysium so Sean worked on finances and product development. Peter worked a small amount on this too, but mainly worked with the new marketing manager recruiting sales and maintaining customers satisfaction. This change has made it easier for Sean and Peter to organise their time.

While on the training programme they also received assistance from an EDA sponsored mentor with whom they worked closely with developing a business plan. During the year on the training programme, they used their sessions sparingly so as to have assistance after the course had finished. However, as time progressed Sean and Peter realised they still had sessions left with the mentor, but the help they needed had changed from what the mentor typically offered. Therefore, Sean and Peter negotiated with the training programme manager in summer 2004 and they arranged that the remaining time left with the EDA mentor could in fact be spent with the sales and marketing expert who presents the marketing module during the training programme instead. Elysium were much happier with this as they felt that marketing was an area they really needed more help with and with this change both Peter and the marketing manager could receive assistance together.

### **Impact of Incubation**

Elysium moved into the incubator in 2002. Taking the incubation space was the deciding factor to seriously pursue the business. They also needed office space and moving into the incubator was:

- Cheaper than other office premises in the town
- Convenient for both founders
- Allowed potential for collaboration with the college
- Was an obvious next step to participating on the training programme.

In general the centre has been great for Elysium in terms of its cost effectiveness, suitable location, the centre's reputation, receptionist, facilities, meeting rooms and the on-going information they receive on various events. In particular they have found the following to be especially beneficial:

◆ *Rent*

'The cost would be the main one, but it's got a lot more going for it than just cheap rent'  
 'If we didn't have this it would be a lot harder, we probably would have sacrificed taking on another body just to pay the rent'.

'It's very affordable. If you were to get something else with the same kind of facilities, the same modernity, you would be paying a hell of a lot more money'.

'The one thing that you need is staff...so it has to be a commercial rate that it's not crippling you to prevent your growth'.

◆ *Environment*

'With everyone in here in the same kind of mode, it's a nice environment, there's always someone around. You're not stuck in some office on your own'

'We could write software at home...but I enjoy working here, it's a nice and creative atmosphere'

◆ *Image and Address*

'We are a very small struggling business at the minute, but this place doesn't look like that'. The address has proven useful in terms of:

- everyone has heard of the centre and knows where it is which is easy for deliveries etc
- the good reputations of other companies who were and are located in the incubator, people associate Elysium with their success
- greater status than being located in some random office building in the town

Elysium have been somewhat disappointed with the drop off in assistance once the training programme had finished. While they were happy to be located in the centre, they did feel that further interaction and regular company reviews and meetings with the people involved in the beginning would have been both 'nice' and useful. As it was they had one formal review annually at the time of their lease renewal interview. However when Peter was interviewing for a renewal of his tenancy he wanted to portray Elysium as successful and growing in order for the lease to be renewed. He believed that a lease renewal meeting is not the time to highlight key issues and difficulties and ask for assistance.

The following are how Peter's opinions on the system changed over time:

◆ October 2003:

'The staff here have been very supportive of us'

'They're still always interested even though we're out of the early start-up stage'

◆ 2004:

'We don't really have any major contact with the staff. We had when we were on the start up course, in the business development phase'

'There is no formal contact once you come off the training programme'

'We don't see them in terms of conjunction with our business which I think is a shame really'

'I don't think there's any role for them'

Sometimes they have met and discussed the business, 'but really as more of a friend who is chatting to us'

'We would like quarterly meetings, if there are any problems we can identify them then'

Being located close to the college has been very useful for Elysium. This relationship was already established prior to Elysium's participation in the training programme and incubator because Peter taught part time in the college while he was still working for the previous company.

They have since benefited from the relationship through taking on summer students from the college, acting as a focus company for different student projects and applying for an Innovation Partnership with the college. Sean and Peter also visit the college and present before the students. They have built a good relationship with the academic and non academic staff in the college. Most of this was coordinated through the incubator manager, who was also the Industrial Liaison Manager for the college.

There is very little networking in the incubator. Peter noticed far more interaction and camaraderie between companies when they were on the training programme, where they were meeting regularly, working together intensively and helping each other through difficult periods. Elysium have maintained contact with some of those companies. Within the incubator, it was these companies Peter and Sean were most likely to meet up with.

Elysium were very happy with the facilities at the incubator. Everything from the office facilities, the receptionist, the meeting and conference rooms, the photocopiers were useful. In particular the conference rooms, where Elysium hosted training sessions for clients were of major benefit. They could deliver their training more professionally and at a lower cost than if they had been located elsewhere.

### **6.3 CLIENT COMPANY B- DIGI TECH - THE COMPANY**

Digi Tech is a multi media games development company. It was incorporated in October 2000 by Mr Paul Ryan, as an approach to formalise his freelance work. After an extended consultancy contract with a company for two years, Paul returned his attention to Digi Tech. He participated in the Enterprise Training Programme at the Technology Incubator and has since worked full time on the company.

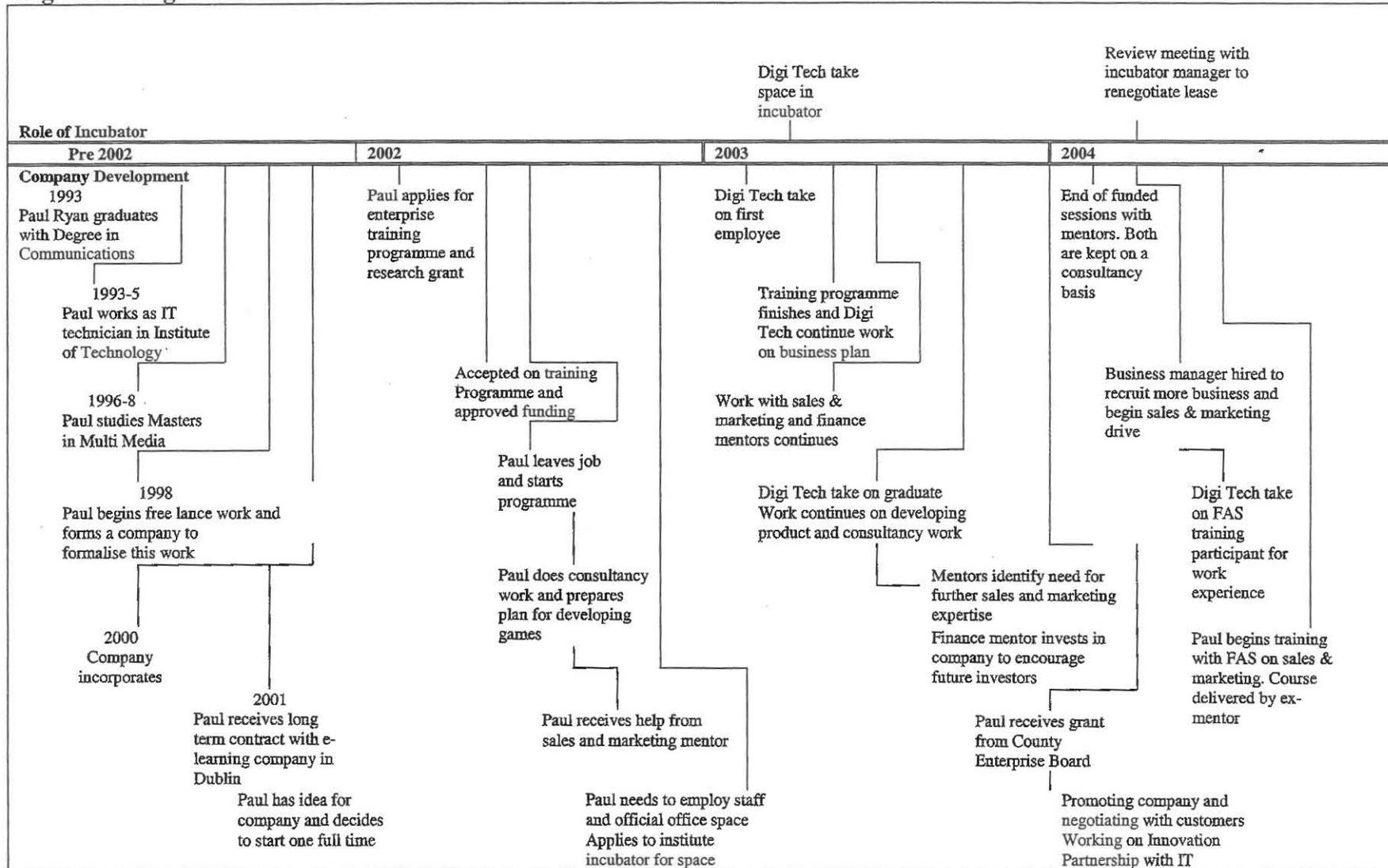
When Paul first joined the training programme he was mainly carrying out consultative work with the intention of establishing layers of different product development. He wanted to establish Digi Tech as a competitor in the international games industry. The

exact detail of that product development changed somewhat in 2004 from working towards contracts with games studios to working more towards developing technology for mobile phones. Digi Tech took incubation space in the Technology Incubator when Paul employed the first member of staff in 2003. In May 2004, Digi Tech has now four employees. The company was funded primarily by Paul Ryan's private investment and through Digi Tech consultative work. Digi Tech also received funding from an external investor and the local County Enterprise Board.

In the following section I outline how Digi Tech developed over the last four year. In particular I show how the idea evolved and how Paul gathered the necessary resources such as office premises, staff and finance to see the project through. These outlined chronologically on the accompanying dateline (Figure 12).

**Figure 12. Digi Tech Timeline**

**Figure 12: DigiTech Timeline**



## **Evolution of the Business Idea**

Paul had always intended to become self-employed. He made tentative approaches to starting a company in the late 1990s. This led him to long-term contract work for a company in Dublin. While working for this company, Paul considered returning to self-employment full-time. The contract work Paul was doing was in the e-learning industry, but he decided to get into games development. Digi Tech's end goal was to develop Tripple A Consol Games for Playstation and X Box. This would have required much more resources than what was available to Digi Tech. Paul Ryan therefore decided to develop the business by establishing it in stages starting with consultancy work and interactive CD-ROMs. Paul funded development as much as possible through consultative work.

The idea changed somewhat by summer 2004. Paul started to consider the potential of developing games and entertainment content for mobile technology instead of consols. There were many issues surrounding this. First, entering the mobile industry involved high up-front investment risk. For instance with mobile technology games the developer and not the publisher (as is the case with traditional PC games) funds development. Paul also knew that it could take up to six months to establish a portfolio of games.. Covering the cost through consultancy work was one option for funding. However it would have taken too long to accumulate the finance. This left Digi Tech with an other option of raising external finance to fund new product development.

Another concern for Digi Tech was how easy it is to enter the market and to start-up mobile games development company. This implies there could be over supply to the market. Digi Tech would therefore need to differentiate themselves from low cost players in the industry. This could best be achieved through original and impressive graphic design. However, Digi Tech did not have this skill in-house but would have needed to employ a graphic designer if they pursued the idea. Another risk for Digi Tech was how the mobile games development industry was a completely new platform for Digi Tech. They had only developed PC technology before and were not as familiar with the difficulties of developing mobile technology.

The decision of whether or not to pursue the change in industry would be based on their ability to pay another employee, a graphic designer. It is also based on whether after constructing a business plan and analysing the figures it still looked like a good strategic move. However, Paul was 75% certain it would go ahead.

Research for the company initially involved researching the games development industry. This involved much report reading. Paul found there to be several valuable reports from UK organisations and also found the EDA library to be very useful. There was much research already carried out on the area, nationally and internationally. The research process involved more collating than carrying out original research. Much of this work was done while on the training programme, and done in conjunction with developing the business plan. This opportunity to analyse the market forced Paul to focus the idea to something more specific where initially he had been thinking quite broadly.

Making sales and building customer relations for Digi Tech involved a lot of cold calling. Paul would then meet different games studios and multi media companies to introduce Digi Tech and to persuade them to use Digi Tech for sub contract work. Paul did this work himself until a new business development manager took over the responsibility. When Paul was initially considering employing a business development manager, he was advised it would take six months before he would see feedback from the investment in terms of sales. While Paul did not initially believe it would take that long, time proved to him that was the case.

Ireland is a good local market to enter new mobile technology products. However, as would have been the case with games development, Digi Tech would not enjoy long-term security in the Irish market. The company therefore needed to work with an industry aggregator who was at least Euro centric.

Much of Digi Tech's work has been the result of repeat consultancy business. Their sales and marketing mentor highlighted this as a potential problem; that they relied too much on a small number of clients. They have since become more proactive in expanding their client base instead of the previous arrangement where they waited for work through existing contacts or word of mouth. They promoted the business through

attending relevant conferences, networking events and also involvement with various national and international games committees.

### **Gathering Resources**

When Paul started the company first in 2000 he worked from home. Two years later when he started Digi Tech again he was a participant on the training programme. During the programme he could avail of a desk space in an open-plan office in the incubator, but he preferred to work from home. He choose this because he enjoyed the luxury of working from home, the ability to save time in commuting it also saved him having to move his equipment to a space in which it might not even have fitted. While Paul was happy with this arrangement, taking on his first employee forced him to formalise his workplace so he could no longer work from home. Paul then took an office space in the incubator while he was still on the training programme and did not consider any other location. Paul has been there since January 2003. Further HR growth has meant Paul needed more space again, and Digi Tech moved location to a larger office in the incubator when its lease was renewed in January 2004.

According to Paul, funding is the most difficult aspect of company development and Digi Tech was entering the most challenging time in terms of the cash flow they needed to pursue the strategic change to mobile technology games development.

Digi Tech was mostly funded through consultancy work. In addition to this they had a low interest loan from the County Enterprise Board and some investment by their EDA mentor. However, the industry is 'notoriously difficult' for receiving payment. That is something Paul kept closely monitored because wages and expenses have to be met. 'The danger with CF is it can be an obstruction to growth and taking on more staff'<sup>13</sup>. To help with this Digi Tech applied to the Enterprise Development Agency for employment grants. They were not eligible for County Enterprise Board grants because they would have needed to apply for them at the time they applied for their low interest loan. Also in the pipeline was an Innovation Partnership with the college. That was still at feasibility stage and Digi Tech was in negotiation with the college to decide on a

project that would be useful and worthwhile to both. The process involved both parties waiting for a project that would interest them.

Paul feels that the single most important step for Digi Tech was taking on the first employee. It was difficult from a personal psychological point of view, but also from a commercial point of view. Taking on that extra person freed Paul up to do more business development work. Digi Tech since employed two developers and one business and sales manager. Paul made contact with the first developer and the sales manager through personal contacts. The other developer was a graduate of Commercial Computing from the college. They took on someone short term under a FÁS programme (Ireland's national training and employment authority). This graphic designer approached Paul regarding work experience as part of her course. She had her own laptop and worked with Digi Tech for four months. During this time they tested the idea of having an in-house designer and got through far more work. This proved to Paul that he need a full time designer because, Digi Tech had become more of an engineering studio. Paul felt the aesthetics and design of their work needed attention and would hold them back in the future. From then on they knew that, in order to pitch for certain types of work they needed to provide the full service to their client. Without the in-house design service, the marketing manager stifled because he could not offer certain services to clients. While subcontracting design work was expensive, Digi Tech still had a number of issues they needed to solve before employing someone to design. The main decision they had to make was whether or not they would make the move to Mobile Technology.

Digi Tech had also to be sure of their ability to pay another set of wages. The Digi Tech wage bill was approaching €10,000 per month, which was 'scary' for Paul who used to 'get by with not paying myself and living off the credit card for a month'. With regard to taking on a designer he said, 'looking at the cash flow, it's just too dangerous because it could mean that we take someone on and then in three months time we let them go because we can't pay. That's a difficulty of growth'.

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<sup>13</sup> Quotes from interviews with Paul Ryan October 2003 – May 2004

Since leaving the training programme, Digi Tech have received most of their assistance from two mentors who they made contact with during the training programme. The first is a sales and marketing mentor who delivered the sales and marketing module of the training programme. As part of the training programme a certain amount of money is granted to each company every year to help cover consultancy expenses. Paul was particularly poor in the area of sales and marketing and he decided to spend that money on further time with the course presenter. They agreed not to start these sessions until the training programme was over as Digi Tech already had access to him during the programme. Since finishing the programme, this mentor has been very helpful in the development of Digi Tech in terms of their business plan, the growth of the company and in establishing a role for the new business development manager.

Since those sponsored sessions have finished, Digi Tech joined another programme this mentor was involved in, this time co-funded by FÁS. Both Paul and the new business manager attended this programme. It was more advanced than the training programme, and covered details such as holistic approaches to business management where each session was followed by a visit from the course coordinators to see what new practice Digi Tech has implemented. One area in particular Digi Tech was improving is customer feedback and evaluations. It was not something they did much of previously.

In addition to this, Digi Tech has a business and finance mentor who was sponsored by the Enterprise Development Agency while they were on the training programme, but remained with Digi Tech on a consultancy basis once the programme was over. This mentor was involved in the financial management and accounting side of the company – a topic that makes Paul ‘go to sleep...stuff I don’t have any interest in at all’ although he accepts that it is ‘completely necessary’. This mentor had no background in the multi media industry, which Paul found good as it forced him to justify each move. This mentor also invested in the company to bring extra credibility and help their approval for a County Enterprise Board loan. This mentor gets 3% from his investment each year and will probably at some stage get his capital back.

## **Impact of Incubation on Digi Tech**

Paul needed to take office space because he had employed his first employee and needed a more formal workplace than his home. He did not look at other office space, but wanted to move into the incubator because:

- It was cheap rent;
- It was familiar to him and was a natural progression from the training programme;
- It was located on campus and Digi Tech were hoping to build relations with the college in terms of access to the institute academic staff and qualified graduates.

When Paul Ryan applied for space at Technology Incubator he was unaware that incubation involved business assistance or three-year leases. He felt that two years in an incubator should be enough for any company and that after that expected Digi Tech to take office space locally.

Paul felt that incubation was 'a very positive experience'. Since taking the incubation space, Digi Tech found many things available to them that would not be the case if they were an isolated small company. They found that for a very low cost, they got a very high level of service. The low rent meant they could afford to employ extra staff, which they would not have been in a position to do otherwise. Paul believes 'this has probably been the most critical factor in locating' at the incubator.

Digi Tech had no faults with the process; Paul 'can't imagine a better way of getting a company up and running because there is so much that you don't have to worry about'. The only thing concerning Paul was what could happen post incubation and the 'extra headache' that would be. He would liked to have known what involvement or assistance the centre offered to companies when their leases were up, and what level of relocation support they would receive. This was of particular relevance to Paul as he was not from the area and would appreciate help locating an appropriate office.

The 'hands-off' management approach suited Paul Ryan 'You are very much left to yourself which is good'. The incubator plays a 'hands-off', facilitative role in the

companies, which Paul likes; however, he does acknowledge that some people may see this as being unsatisfactory. Paul feels they received all their training when they were on the training programme, and that if they needed assistance it was available at any time. He still received information from the training programme manager, and appreciated being informed of any new presentations or events that were not part of the training course he was participating. Also he met regularly with the business mentors he made contact with during the training programme. Therefore, he accredited the course for the assistance he gets from them.

The contact he did have with the centre manager was on an informal basis in terms of 'bumping' into her in the corridors or the e-mail interaction regarding events or certain issues such as telephone and network systems, structural changes to the centre. It was not more advanced than this because he felt 'they can't really assist me with plans for the future'. Therefore, for more specific issues regarding the company's development Paul would always consult his business mentors.

Paul was delighted to be located so close to the college and has benefited in a number of ways:

- It was very convenient for recruiting staff where it was only a matter of sending an e-mail to course staff who could announce it in a class or organise someone;
- Paul was also acting as an advisor to course coordinators developing new multi media courses;
- Digi Tech had gone through feasibility studies with institute lecturers to pursue an Innovation Partnership.

Paul Ryan established contacts amongst the academic staff, mostly through the incubator manager who was also the institute Industrial Liaison Officer.

Paul found that 'there is very little networking between the companies'. Paul believes there was more networking between the companies while they were on the training programme because everyone was participating in organised events and there was a lot of support there. As a result of that year, he maintained contact with some of those participants, and would meet them regularly to discuss progress. However, he did not

make the same contacts through locating in the incubator but was not particularly disappointed with this either.

Paul was very pleased with the standard of facilities in the incubator. He had access to 'fantastic' resources such as the receptionist, photocopying, recycling facilities, telephone services, Internet and well recognised address that would otherwise be very expensive for them. The cost of services was so low, Digi Tech could afford to keep running costs down. Paul has found that all of the mechanics of running an office were really taken away from the company itself.

Structurally, there were some logistical issues that could have been better such as better car parking facilities and air-conditioning in the summer.

#### **6.4 CLIENT COMPANY C - AERO LOGIX - THE COMPANY**

Aero Logix develop products for the aerospace industry. Specifically they provide ICT solutions to reduce the cost of the airline maintenance. Matthew O'Connell and Mark Murphy formed Aero Logix in 2002. It followed their involvement in a funded university research project into ICT improvements in the aerospace industry. This research provided a reason for Matthew and Mark to visit aerospace companies. This allowed them complete the research project and also identify other areas in which their technology and abilities could be applied. Matthew and Mark maintained a relationship with one company they researched, KPR. They agreed to work in collaboration with KPR after the project. They developed a Memorandum of Understanding and KPR agreed to house Aero Logix in their airport offices. While Aero Logix were based there they also used the open-plan office space in the Technology Incubator. KPR also allowed Aero Logix complete access to KPR information and they agreed to sponsor any staff that Aero Logix would employ to work on the product<sup>14</sup>.

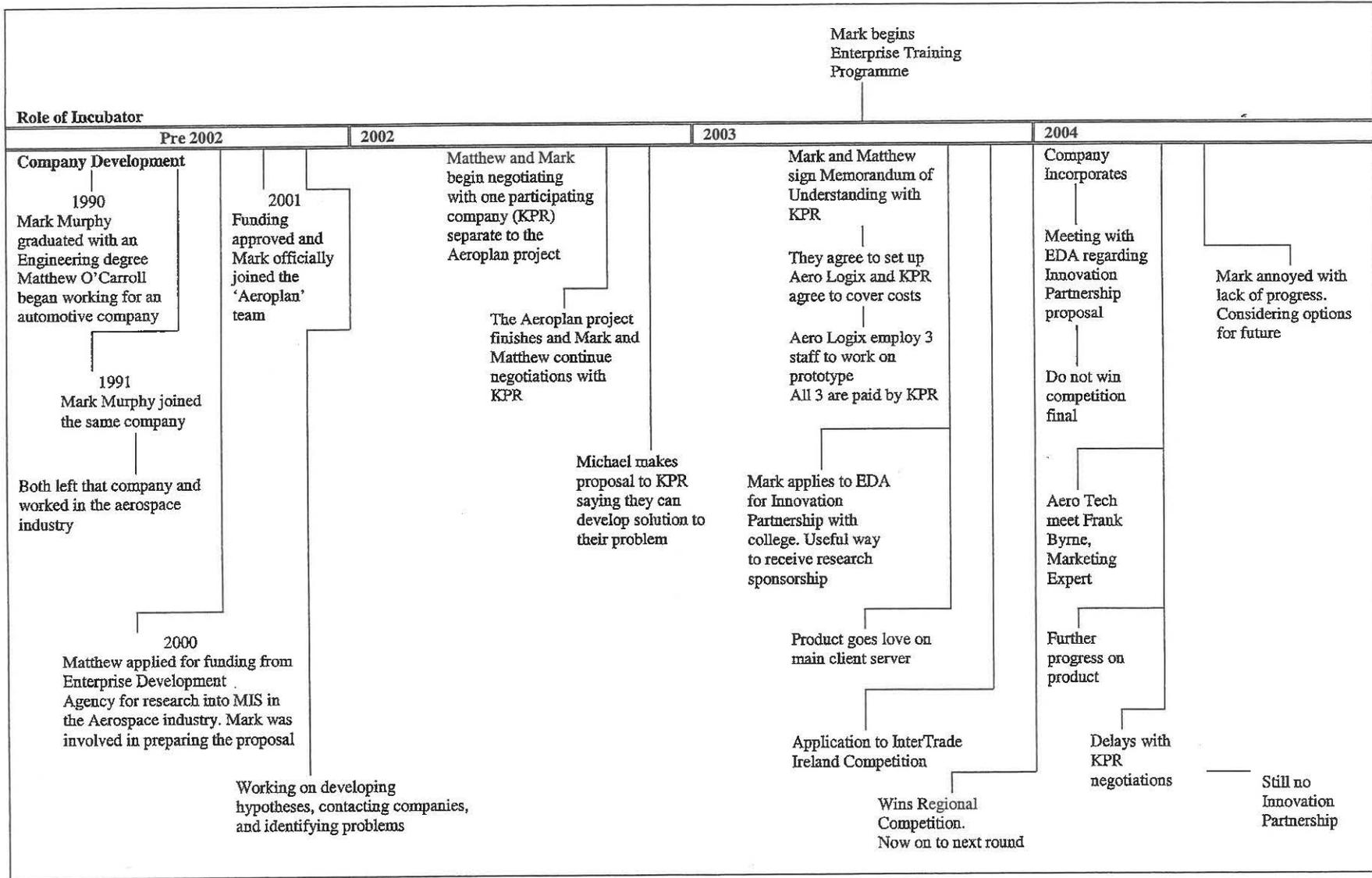
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<sup>14</sup> All quotes and information from interviews with Mark Murphy, October 2003-May 2004

This relationship was established in mid 2003 and coincided with their participation on the incubator enterprise-training programme. Matthew and Mark participated in the programme to establish the necessary commercial skills to develop the company. Many issues arose from the relationship between Aero Logix and KPR. Some of these have negatively influenced the progress of Aero Logix. Consequently Aero Logix had no finance of their own. They became overly reliant on KPR and were implementing a number of practices to change the situation. In summer 2004 Mark was unsure as to the future of the relationship. He was also unsure as to the future of the company in general and how the company would progress independent of KPR. The attached timeline outlines these events in chronological order (Figure 13).

**Figure 13. Aero Logix Timeline**

Figure 13: Aero Logix Timeline



## **Evolution of the Business Idea**

Mark and Matthew were working on a funded research project at an Irish university during 2000-2002. They were aware that the original purpose of the project had no real industry application. They also knew (from their industry experience) that the existing ICT systems in the aerospace industry were not strong enough to support many of the processes. Therefore, they used the research project as an invite into large aerospace companies to carry out preliminary research. It also acted as an opportunity to find out more about other problems the companies were suffering and how they could develop systems to create changes in the industry. With this in mind they negotiated with a research participant, KPR, the possibility of developing engineering and technical solutions that would reduce manufacturing costs. One area KPR were particularly interested in reducing cost was Repairs and Maintenance. KPR had already started an in-house project to address this issue. Aero Logix investigated the problem and a Memorandum of Understanding was established and Aero Logix subsequently took over the work. As Mark says 'the idea came from KPR but we applied our brains to it'.

During 2004 Aero Logix were pleased with the progress they were making with the product. They had developed the original product and had also developed other improved versions. However they were less happy with their commercial success. They were suffering because of difficulties in the relationship with KPR. These issues arose primarily from the fact that KPR agreed to fund the Aero Logix work. Consequently Aero Logix had no resources of their own to drive commercial growth. KPR were involved in other negotiations separate to Aero Logix and failed to formalise the relationship with Aero Logix. Aero Logix failed to become a stand-alone entity.

In summer 2004 Aero Logix had still only a Memorandum of Understanding with KPR. They were still in the process of negotiating a formal agreement with KPR, which had been ongoing for almost ten months. Mark was unhappy it had taken so long and was considering the options available to him. In addition Aero Logix were working on making the company more diverse, and the product more generic. The concept was originally for 'rotatable inventory repair systems' for airlines but they since discovered it can also be used for consumable goods. Terms and motions specific to the aerospace industry could be tweaked to work for any industry. Mark was initially researching the

semiconductor, electronics and healthcare sectors. He has made contact with a semiconductor company in the UK using the Aero Logix product and becoming resellers. Contact was made with the semiconductor company through a friend of Mark's. Mark also made contact with the health board through a personal contact and were interested in inventory improvements. Another option for Aero Logix was to develop a strategic alliance with one of these companies, and for Aero Logix to grant them an equity stake. These options were not included in the original Aero Logix business plan. Mark was always aware that their technology could have other applications, but always thought they would be much harder to access. If they decided to pursue the industry changes, the transition would have been technically easy to implement. There could have been implications however for the marketing of the company. For example, the company name was focused towards the aerospace industry.

### **Gathering Resources**

Mark and Matthew both worked in the aerospace industry for many years, and knew where certain shortcomings and difficulties lay. However accessing the specifics of real industry problems through carrying out research provided additional valuable market knowledge. More importantly it allowed them establish a customer early in the start-up process. However Mark felt that one of their biggest difficulties has been dealing with their customer KPR. This relationship was never formalised completely. Since the Memorandum of Understanding was signed in May 2003 there were a number of difficulties:

- Aero Logix had no resources of their own
- Their own staff were not tied directly to Aero Logix, but instead were formally employed by KPR
- In the start, Aero Logix thought they had a very good relationship with the company. However, when they started to approach VCs it became apparent that they had agreed too much equity with KPR and had to change and renegotiate the terms and conditions.
- KPR were happy to renegotiate. However, KPR focused less and less on Aero Logix as major changes were happening within their own operation. KPR was

taken over by another aerospace company and the people involved in negotiating with Aero Logix, were also involved in the takeover. This has been frustrating for Aero Logix. They were responding to KPR within 24 hours, but had to wait two weeks to get a reply from KPR.

- Finalising their agreement dragged on for over a year. Mark felt they should have addressed the issue much earlier. However at that time they were trying to accommodate their client as best they could
- VC companies were uninterested in Aero Logix because they only have one customer. However, Aero Logix lacked the finance for promotion or recruitment of other companies
- Aero Logix had no finance of their own to pay their staff. Therefore, Mark was seen as an employee of KPR. Venture capitalists wanted to see that changed and Mark more tied to the company before they would invest in the company.

Aero Logix promoted the company through a basic website which was developed partially by one of the staff and partially by a friend. The site did not cost very much and Mark felt they got exactly what they paid for. During 2004, they intended on developing their front door image and developing their website, business cards, letter headed paper. Again this work was postponed and was still on hold until the future of the company was more definite. Also helping the promotion of the company was their reaching the All-Ireland round of the InterTrade Ireland Seed Corn Competition in 2003. They received €20,000 and much publicity as a consequence.

In January 2004, Aero Logix began a sales and promotion drive. This led them towards Frank Byrne, an industry expert with airline contacts, who Aero Logix wanted to take on as a marketing consultant. Aero Logix intended using money they won in a competition to pay for the assistance. The plan failed as Aero Logix had no money of their own to sponsor Frank nor did they have any money to cover travel and promotion expenses. It was another exercise that Mark felt failed because they needed to finalise their relationship with KPR first.

Aero Logix began the training programme in May 2003. As part of Aero Logix' agreement with their client company KPR, they took office space with KPR at their premises at the airport. This was a good situation for Aero Logix as they were starting

the company; they had complete access to their beta site customer KPR, they worked along side KPR employees and were immediately provided with desks, PCs and office furnishings.

Mark also spent time in the open office space provided for training programme participants at the IT incubator. He periodically spent time there, when attending training sessions and when he needed to focus. Mark was considering taking space in a satellite incubator being developed in a neighbouring town when he was finished on the training programme. This would have been suitable for him because it was more convenient to his home but he could still maintain contact with the college which would be important for future product development. However when the time arose it was less clear if that would happen or not. Mark suggested that incubation was not necessarily the automatic transgression for a company finishing a training programme, 'there is a myriad of other things you can do'. In the end, Mark felt that the decision as to where Aero Logix would locate in the future depended on how the relationship with their customer worked out.

KPR were covering Aero Logix costs since the work began. While the company was incorporated in December 2004 they did not have any transactions of their own. Aero Tech paid Mark and their staff. They needed to finalise the relationship with KPR and change their status from being funded by KPR to KPR investing money in Aero Logix. Therefore Matthew and Mark could run Aero Logix completely separate to KPR.

Mark felt that finance was one of the biggest issues for Aero Logix. They received €20,000 for winning the regional final of the Seed Corn Competition. This was the only money Aero Logix had. They were hoping to use this money as matching funding in an application to the Enterprise Development Agency (EDA) for an employment grant. Mark had hoped that would cover the expenses of Frank Byrne, a marketing expert in the industry who had left his former marketing firm and established his own consultancy practice. However this did not happen because Aero Logix were unable to pursue a selling and promotional strategy until their status with KPR was finalised.

They also applied to EDA, the state Enterprise Development Agency, for funding for an Innovation Partnership with the institute. This was a long procedure with which Mark

was also very frustrated. However, when Aero Logix were approved funding they could pursue the Innovation Partnership. The lack of formal arrangement with KPR, and the lack of their own funding to see it through meant Aero Logix did not have the funds to implement the programme. This was also a problem when Aero Logix approached VCs regarding investment. They had hoped to have funding in place before the end of 2003, but that process was also postponed because the VCs did not want to invest in a company where the founders themselves were not clearly locked in somehow. Nor did they want part of a company where another large organisation had more than 10% equity.

Matthew and Mark knew, or knew of, all their staff before employing them. The market for software developers was weak when they were recruiting, so they found it easy to employ people. The staff was paid by KPR. Although they were developing software for Aero Logix they were actually employees of KPR. This was useful at the start when Aero Logix had no finances to pay them, and it saved them having to organise payroll etc. However, Mark since that it was no longer satisfactory.

Their product was very advanced but commercially the company was suffering and did not make the progress Mark had hoped they would. Most of the managerial assistance Mark and Matthew received was during the training programme. Mark wanted to participate in the programme because he said he was familiar with engineering, but not business. While on the training programme he learned how to develop a business plan, how to promote the product, execute his business idea in an elevator pitch, found out about the seed corn competition. It was excellent for 'pulling the whole package together'. Further, Aero Logix were inexperienced in their dealings with a company like KPR. They were consulting with their solicitors a lot more about that situation than they did previously and they regretted not having done so earlier. While they found this assistance expensive it was an expense Mark says they could not afford to avoid it any longer.

## **Impact of Incubation on Aero Logix**

Mark knew that he needed to improve his business skills. He joined the training programme because:

- He did not want to participate in the university training programme, at the university they had carried out the initial research. Firstly, he and Matthew preferred the staff and surroundings at the Technology Incubator. He found everything was more relaxed and a better environment for working in. It was also close to his home which was more convenient for attending the various workshops and presentations.
- There was also the element that setting the company up separate to the university would eliminate any fear of the university claiming IP. However in summer 2004 Mark indicated that had become an issue. The university were now hoping to claim a stake in the company as it was born out of research carried out in the college. Mark pointed out that Aero Logix was actually born from consequent work and that the project they received funding for at the university was regarding an unrelated topic. The negotiations continued.

If Aero Logix take incubation space in 2004/2005 it will be because:

- They want to locate close to a third level institute, with low rental facilities and various other start up services such as access to legal and accounting people on a 'business clinic' basis. Although Mark suspected that if clinics were free, the quality of assistance is likely to match this. Therefore, should they require more assistance they would have to pay for it.

Mark benefited from being on the training programme because of the valuable training he received, the mentorship from the course coordinator and the assistance from the various presenters. Their input during reviews and presentations were important for helping him win the regional final of the seed corn competition.

There was a lot of interaction with the manager of the training programme over the year, both formally and informally and Mark was always in contact with her regarding business issues. He did not however expect her to help him with problems such as the

relationship as KPR, as he did not see that as being her role. Mark was in contact with the Industrial Liaison Officer, who was also the incubator manager. It was mainly regarding the Innovation Partnership, but also regarding taking space in the satellite incubator. Should he take the space he did not expect much interaction with the manager, but expected that the concept of incubation should cover basic levels of assistance and not necessarily hands on support.

Mark was satisfied at being associated with the institute and wanted to become involved in the Innovation Partnership. He also saw the incubator as being a good introduction to lecturers there. He did remain however in very good contact with the Management Information Systems (MIS) staff at the university department where the initial research took place and he consulted them very often regarding more technical and operational problems.

Mark found there was a lot of networking interaction during the enterprise-training course. Everyone was in the same 'desperate situation' so there was a lot of support. This was helped by the fact that they went for lunch after the workshops and presentations. Mark noticed too that all the participants were all pre-funding and early stage start up. This meant that there was no company ahead of the others that they were 'looking at begrudgingly'. However, in terms of moral support Mark would discuss the business mostly with his wife and business partner, aswell as other MIS department staff at the university 'who have been very useful for bouncing ideas off'.

Aero Logix were very satisfied with the facilities at the incubator. Should they have taken space in the future it would be in a newly refurbished building which he expects will also be suitable.

# **CHAPTER 7**

## ***INTERNATIONAL INCUBATION CASE STUDY***

In this chapter I introduce the international case study that was carried out to provide an alternative view of incubation management. This was compiled from visits to two Swedish Incubation Centres - Mjardevi Business Incubator and ProNova Business Incubator. These centres were located in the Ostergotland region of Sweden, south of Stockholm. In this chapter I introduce both incubators, their histories, management practices and facilities based on information from the incubator managers. I then include a section based on interviews with tenant companies in Mjardevi Business Incubator. This addresses the companies' opinions regarding incubation procedures such as compulsory business assistance, review processes and rental increases. The final section of the chapter returns to information from the centre managers. It covers the strategic aims of the centres and how the managers are working towards achieving these.

### **7.1 MJARDEVI BUSINESS INCUBATOR**

Mjardevi Business Incubator opened in 2001. There was always some incubation presence between the University of Linkoping and the science park. It originally involved affordable space for start-up companies and gradually included the provision of basic services including networking, contacts and seminars that were run by the science park staff. Table 15 highlights some of the key characteristics of the incubator.

**Table 15. Mjardevi Business Incubator**

<b>History</b>	Opened in 2001. Originally involved affordable space Gradually included the provision of basic services including networking, contacts and seminars
<b>Practical</b>	One floor of a building in Mjardevi Science Park. Includes self contained units with glass partitioning walls
<b>Occupancy</b>	70% full in April, 2004
<b>Facilities</b>	Conference and meeting rooms, 'creative thinking' room, canteen, ICT network
<b>Canteen</b>	Large seating area, own food preparation area, communal tea and coffee, dishwasher
<b>Staff</b>	One centre manager, project co-ordinator, business advisor
<b>Types of Companies</b>	ICT companies, spin-outs from university and local industry
<b>Marketing Centre</b>	Networking events, newsletter, seminars

*(Source: Interviews with manager and staff at Mjardevi Business Incubator, April 2004)*

The new incubator was based on the second floor of the central building in Mjardevi Science Park. This was the Hub within the park, and housed restaurants, hairdressers, gymnasium and conference centre on the lower floors. Close to the incubator was the Technology Bridge Foundation and the Mjardevi Science Park Management. In addition to the centre manager, other staff in the centre included a project co-ordinator who acted as an operational manager for the companies, dealing with their day-to-day enquiries and organising events, and another business advisor who worked hands on with the companies.

### **Services Offered in Incubator**

Regular business clinics, where companies met with members of the professional services were one element of the enterprise support package offered to tenant companies. The other support services changed form a number of times since the centre began. The support structure had since become a series of training programmes.

The first part of the incubation process was called the 'Start' programme. Many of the companies entering the incubator had little or no business background. On this

programme, companies were given six months to write a business plan and develop their business idea. To assist them, companies had to participate in an entrepreneurship-training programme. They were also assigned a business advisor who met with the companies regularly.

The entrepreneurs had also to partake in a creative development programme which took place in the 'creative thinking' room in the incubator. Workshops here assisted people's creativity, and could be applied to practical situations such as alternative ways to solve problems or think of solutions. The managers felt this process was greatly welcomed by the companies. After progressing past the initial applications of creative thinking to their business idea, companies could then use the skills to deal with practical operational issues. After their six-month training, companies were reviewed and they progressed to the Expansion Programme. The Expansion Programme was similar to the Start Programme; companies still had a business advisor, but seminars were held less frequently.

Each year the incubator management invite an external research company to visit the incubation unit to carry out research on the incubation process. The researchers interview the companies and assess how they rate incubation, where improvements and changes can be made. The survey in Januaray 2004 showed the companies would have preferred some more specific help from industry experts who are more familiar with their own company/industry, and who could open doors in terms of contacts. Taking this on board, Mjardevi Business Incubator implemented changes to the Expansion Programme on April 1, and was in the process of getting them up and running. The change meant that instead of inviting speakers to the centre, the companies received an allowance in six-month instalments. This money was to be used to locate and meet up with experts of consultants offering the exact assistance the companies needed.

Rental charges at Mjardevi Business Incubator increased once the companies began to earn profits. The incubator then started to take 10% of the company's gross profit each year, the concept implying that the added expense would be an incentive for the company to leave the incubator.

### Activities within the Science Park

Incubator tenants could also attend activities that were organised within the science park by the science park staff. Activities included different networking events such as seminars and lunchtime presentations where tenants and outside companies, VCs, politicians, banks were all invited to attend. Companies were informed of these via e-mail. The science park staff also produced a newsletter of events and interesting company profiles four times a year. Companies located in the science park could also avail of the Innovation System – a regional network system of enterprise support bodies throughout Sweden.

The real estate operators in charge of renting space at Mjardevi Business Incubator incorporated service companies, to serve the science park community. Such groups included legal and accounting firms and restaurants. In addition, most buildings within the science park had kitchen facilities and other common services include an International Montessori school, tennis courts and hockey fields, a gymnasium and car parking.

### **Mjardevi Business Incubator Companies**

The research included interviews with four incubating companies in Mjardevi Business Incubator: three technological companies and one biotechnology company. Two of these companies were already trading the others were still carrying out research. They each had between three and five employees. One company had graduated from the incubator, as once they began trading the incubator claimed a percentage of their gross profit – a process the company felt is fair and certainly a motivator to graduate from incubation.

When companies began the Start programme, they were granted incubation space they felt is not comparably cheap with commercial rates in the area. However, taking the services and support of the incubator into consideration, companies suggested that it is better value than local commercial properties and that the services and supports were an incentive to locate in the centre. Other reasons for companies deciding to locate in the incubator included:

- Familiarity with the location
- Eagerness to develop business skills and develop training
- Desire to be part of a supportive environment with similar minded people
- Greater social support network from other 'struggling' companies

The companies also commented on the incubators' rigorous evaluation process that involved an external company visiting the centre once a year to investigate how companies evaluate the centre and how they think improvements and changes could be made. The survey in January 2004 showed led to the incubator management allowing a budget for external industry advice for each company. This new training programme for Expansion Companies was very welcomed by tenant and graduate companies, who identified the generality of the existing assistance as a little too basic for the immediate problems they were experiencing and who would instead receive tailor-made assistance.

## 7.2 CAMPUS NORKOPING BUSINESS INCUBATOR

There was another incubator associated with the University of Linköping located in the nearby city of Norköping, at the university's campus facilities there. This incubator was also part of a science park and the university faculties focused on Physics and Electronics, Communication and Transport Systems and Media Technology. The centre was established in 2003, and was hoping to establish a strong relationship with the university and increase the number of digital media type companies in the area. The centre is described in Table 16.

**Table 16. Norköping Business Incubation**

<b>History</b>	Opened in 2003, part of science park
<b>Practical</b>	Open-plan office space, greater interaction between companies. Manager has greater awareness of each company
<b>Occupancy</b>	50% full
<b>Facilities</b>	Open plan office spacing, conference and meeting rooms
<b>Canteen</b>	Part of open plan office, separated by room dividers, has own food preparation area, dishwasher, communal tea, coffee, etc
<b>Staff</b>	One centre manager, two project manager involved in both science park and incubator activities and collaboration with university
<b>Types of Companies</b>	General ICT, aiming towards more Digital Media spinouts from university

Marketing Centre	Website, promotional literature
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(Source: Interviews with manager at Norkoping Business Incubator, April 2004)

The office design is open plan. Networking happens automatically, as companies see, hear and interact with each other all and they frequently socialise together in the evenings. The manager's desk is also part of the open-plan structure and because of the manager's proximity to the companies and awareness of their progress, there are no formal review meetings. In addition to his advice and guidance, companies must complete an entrepreneurship training programme, and attend seminars and presentations. Companies within the incubator can avail of university and science park facilities.

Formal networking was one of the most common benefits and reasons companies mentioned for locating in the business incubator. The companies found that networking was well facilitated by the management who ran networking coffee mornings and seminar lunches. Companies were expected to attend all of these, and all the companies have said they do. Investors, banks, politicians, potential customers, external companies and companies within the science park were regularly invited to attend. Companies also highlighted that should they require introductions to a particular company or industry – that the incubator management arranged it.

Companies in Mjardevi met regularly with their assigned business advisor. The meetings were held at intervals the companies felt most comfortable with, and milestones and tasks were set at each meeting. In addition to these deliverables, companies received advice and contacts. In general, companies did not see this involvement as a negative. They instead accepted the need to meet with the managers regularly. However, it was explained from the start that the incubator management expected to meet with the companies regularly, and their agreeing to that was a condition of been granted space.

While the advisors may not always understand each company's industry or what their product is, companies did not consider this as a disadvantage as it forced the companies to simplify and specify their idea. However, some of the companies suggested that they

had outgrown what the business advisors could tell them. Despite this they still valued the meetings and found that in informing the advisors what was currently happening, they always received objective feedback. They felt because of this interaction their business plans were scrutinised and presented in a very high standard. However, one company did feel that the information he was receiving became a little too generic for what they needed as they developed. This company recognised a need to begin actually 'doing' tasks, more than discussing, learning or being told how they should be done.

One research participant worked with the University Holding Company while they were trying to introduce targets and deadlines for incubating companies. As a tenant, however he believed that it was wrong to become so involved in the start up process and have such high expectations of companies within the centre. He felt the companies should be left to get on with their work, that they usually have tight deadlines to reach already from their own operations, without having to meet additional deadlines set by the incubator's investors.

These Swedish incubators are part of different enterprise support networks, within the greater Ostergotland region. The managers claimed that this region aims to become the fourth busiest region in Sweden. Therefore, the managers feel the success of the incubators is down to the combined effort by all organisations and municipalities who are proactively building stronger links with one another for the success of the region. The managers argued that they are less certain of the success of their business incubators, if the system was working through stand-alone entities. They feel this synergy is evident on an incubator level, between the incubators in Norkoping and Linoping, where there is agreement and compliment in their strategies and approaches.

# **CHAPTER 8**

## **FINDINGS AND DISCUSSION**

In this chapter I combine information from the literature reviews on the start up process and the incubation process. I use this information to establish a backdrop to discuss key findings from this research study. The chapter will highlight that differences exist between how incubators are managed, the impact managers believe incubation had on the start ups and the impact the companies believed incubation had on their new venture creation process. There are three sections to the chapter. In the first I present the three business incubators and their style of assistance. I also introduce the nine participant companies and show how they progressed through a cycle of changes. Following this setting I return to the two research propositions outlined in Chapter 3, the Methodology Chapter. The remainder of this chapter addresses each of these propositions in the context of the three business incubators. It involves a discussion on key incubation concerns which were highlighted during this research study.

### **8.1 THE RESEARCH**

This study was based on two primary research questions. The research questions were identified following a need for greater knowledge of incubation practice in Ireland. This followed policy implementations that lead to significant growth in the number of campus-based incubators in Ireland. The research questions identified a need for country specific, balanced, and wholly representative knowledge on incubation practice. The research questions asked:

- i. What are the main supports required by high technology companies from business incubators?
- ii. Do incubator operators have an accurate understanding of tenant enterprise requirements?

The research was designed to capture feed back from both client companies and incubator managers on company development and the role incubation played in it. It involved a longitudinal study of a series of semi-structured interviews with both incubator centre managers and their client companies at three campus-based incubators in Ireland. The work was carried out bi-monthly over the period October 2003 – May 2004. The incubators were chosen following an exploratory study of eight business incubation facilities in Ireland, both north and south of the border. The exploratory study highlighted that there are different approaches to managing business incubators. Consequently the three case incubators were chosen to explore different managerial approaches. The three centres chosen were managed in Hands-On, Contract-In and Hands-Off styles. The three incubators and the three companies in each are outlined in Table 17 below.

**Table 17. Research incubators and case companies**

<b>Incubator Name</b>	<b>Style of Management</b>	<b>Case Companies</b>
IncuInnovate	Hands-on	Sensory Innovations, Aero Tech, Mobile Entertainment
Ignite	Contract-in	H&S Tech, Medi Recruit, Geovera
Technology Incubator	Hands-off	Elysium, Digi Tech, Aero Logix

## **8.2 INCUBATOR INFORMATION**

The following section summarises the three case incubators that were the focus of this research. It outlines how the three incubators were managed and the manner in which each delivered enterprise support.

The first incubator was the IncuInnovate Incubator. Here business assistance was provided for the most part by the incubator manager, Peter Noble. Peter worked intensely with companies who were identified as ‘high priority’. These were companies that the manager and incubator board of directors considered had exciting ideas and technology and highly skilled personnel to take the idea forward. Peter Noble helped develop the priority companies by assisting them secure finance, prepare business plans and prepare financial plans. Peter also identified weaknesses in the start up team,

technology and process and located solutions to those gaps as much as possible within the university campus. Failing this, he located external consultants to work with the companies. Peter said of his assistance that it was 'demand and need driven', and therefore tailor made to suit the companies. However, because Peter Noble delivered the business assistance personally, he was constrained in the number of companies he could support at any one time. He dealt with this by supporting three to five 'high-priority' companies for a short intensive period of time. Once the company was established he then withdrew his attention and allowed the companies operate on their own.

In the Ignite incubator, companies received hands on assistance during a year-long enterprise-training programme in which companies had participated prior to taking incubation space. The programme provided training for start up companies on topics such as business plan preparation, marketing, law and finance. These modules were presented by guest speakers either from the incubator's sponsoring bodies or from other external organisations. Within the incubator, the business support was delivered through professional monthly service clinics, enterprise seminars and workshops. These were also delivered by external or sponsoring companies. The incubator manager James Fagan delivered assistance to client companies on an open-door 'informal' basis. This approach placed the onus on tenants to be pro-active in seeking assistance.

The Technology Incubator also ran a year-long enterprise development training programme in which companies had participated prior to taking office space in the incubator. This course also assisted the companies in establishing professional business plans, developing marketing plans and sales strategies. Companies also received advice on finance and law. Following the enterprise training programme, Jane O'Brien the Technology Incubator manager, delivered business assistance in a 'hands-off' manner. Jane felt that client companies had already received intense early stage assistance prior to taking incubation space. Her approach as incubator manager was to play a reduced role in the development of the incubating companies by remaining a background support. Jane was reluctant to become more involved in incubating companies as she preferred the companies learned how to solve problems for themselves. Also she did not want to encourage the company to become dependent on the incubator. There were however certain areas in which she became more involved such as in helping companies establish strategic innovation partnerships with the college and in helping with

important strategic decision-making, especially concerning partnerships with other companies in the region.

### 8.3 THE PROPOSITIONS

Business ideas originate when entrepreneurs cast judgement on situations or events and recognise if there is commercial potential (Casson, 2003). To exploit the commercial potential, entrepreneurs test their judgement in the market place. This is a process of modifying and redeveloping the business idea (Bhide, 2000). The start up process is then seen as a cyclical process of opportunity development and evaluation. There are typically several evaluations after each stage of opportunity development where entrepreneurs adapt their ideas to new market opportunities (Boisot, 1999).

Through opportunity development the entrepreneur experiments in the market place and learns about environmental circumstances. Due to environmental jolts, (Venkataraman and Van de Ven, 1998) new market opportunities can force relationships between entrepreneurs, their suppliers and their customers to change. This can cause an enterprise to adapt their business idea in order to survive (Bhide, 2000; Rindova and Kotha, 2001). Even when a firm loses competitive advantage, they can discover new sources of competitive advantage that can lead to adjustments of the initial idea with additional opportunities in changing environments (Ardichvili, Cordozo and Ray, 2003).

Therefore, information representing new venture opportunities changes as the entrepreneur engages in the new venture creation process (Casson, 2003). The success of an enterprise can be dependent on the entrepreneur's ability to adjust successfully to environmental jolts. This implies that critical to the success of the new firm is their ability to manage this market-making process.

The firm must also pursue a number of start up activities to see the gestation process through (Reynolds and Miller, 1992; Carter, Gartner and Reynolds, 1996; Delmar and Shane, 2003). Most of these activities are centred on accumulating resources such as organising a team, preparing a plan, locating premises and equipment, raising finance

and hiring employees. Unfortunately most businesses start with limited funds, limited management ability, few professional contacts and little planning or research (Bhide, 2000). Therefore much time and energy must be focused on accumulating resources in order to see the new venture creation process through.

Business incubation has been developed to assist companies in their start up process. It is associated with low rates of start up failure (Molnar et al 1997) where estimates suggest 87% of incubated companies survive their first five years in comparison to over 50% of non-incubating companies who fail to survive after five years (Smilor and Gill, 1986). Literature suggests incubators accelerate the successful development of entrepreneurial companies through basic office services, advisory and support services, training and coaching, contact building including networking and collaborative opportunities with other incubating firms, with external companies and with the incubator's network of support (Albert, Bernasconi and Gaynor, 2002; EU Benchmarking Report, 2002). Companies can financially benefit from locating in business incubators through either direct investment in the company, or more commonly through the provision of expertise, business services, managerial expertise, entrepreneurial training and networking seminars at a much lower cost than they would pay on the open market. (NBIA, 1998).

The research propositions were established by combining research on business incubation and the new firm start up process. They were established to ascertain a greater insight into how incubation assists and can better assist start up companies through the start up period. The two propositions stated:

*Proposition 1:*

The services required by entrepreneurs from incubators should support the entrepreneur in the following two tasks

- (a) Testing the entrepreneurial judgement in the market and in the subsequent process of modifying and redeveloping the business idea
- (b) Accessing resources

*Proposition 2:*

Entrepreneurs and incubator managers differ in their views of how incubation impacts on the start up process

The next section introduces the nine case companies. It shows the stage of development of each incubating company and highlights how they pursued a cycle of opportunity development and evaluation.

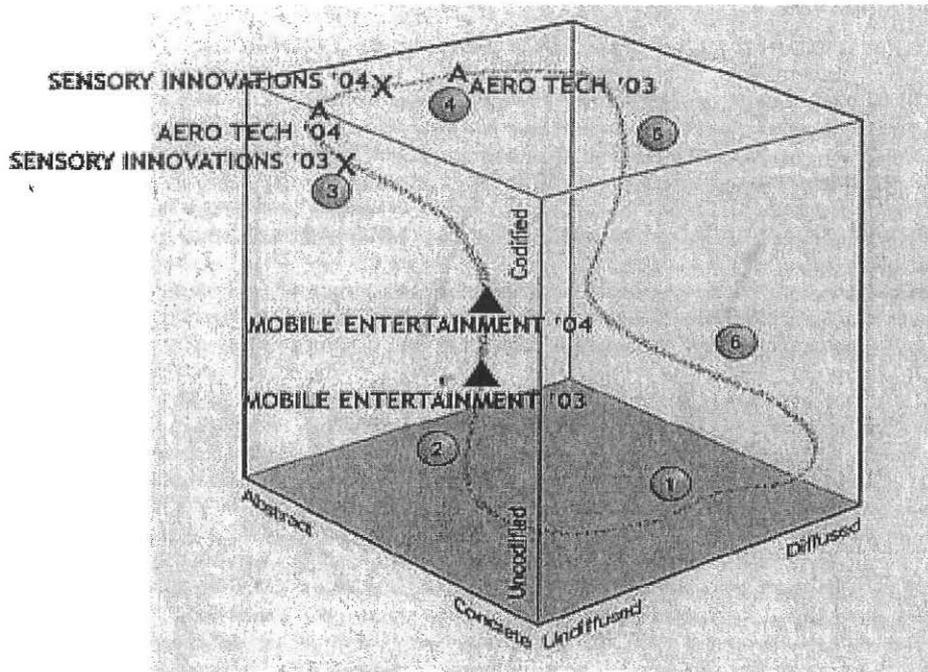
**Proposition 1 (a):**

The services required by entrepreneurs from incubators should support the entrepreneur in testing the entrepreneurial judgement in the market and in the subsequent process of modifying and redeveloping the business idea

*Company Development*

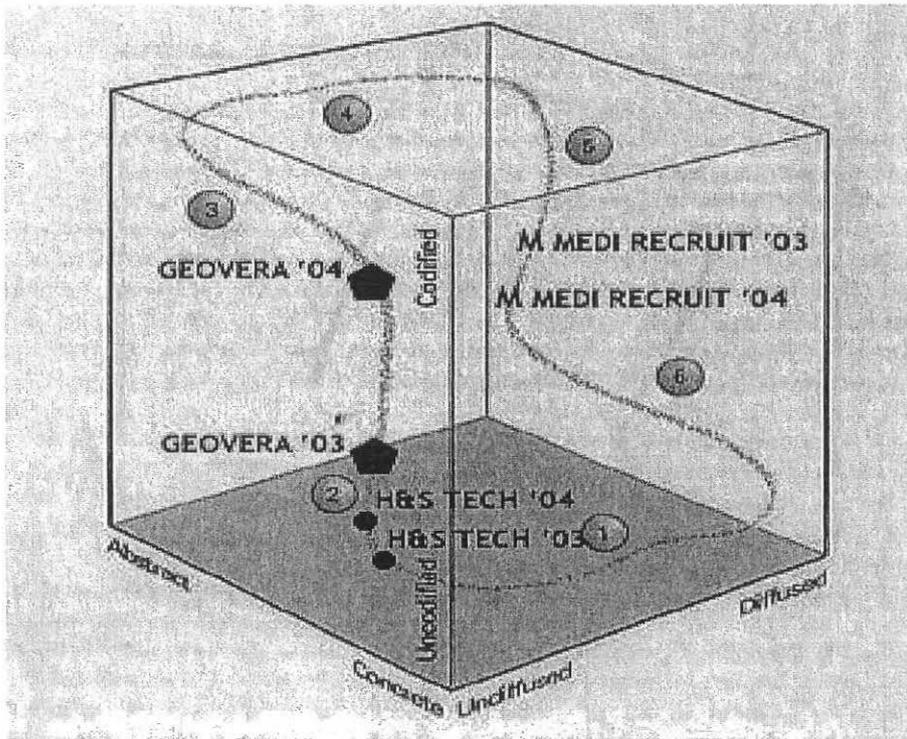
This section shows that companies were involved in a process of modifying and redeveloping their business ideas to maintain competitive advantage. Each of the case companies were at different stages of the start up process. The opportunity development progress can be illustrated by using the Social Learning Cycle. By revisiting the 'Information Evolution' model outlined in Chapter 2 the growth of these companies can be mapped over the duration of this study. The following three figures map the development of the nine companies in the three incubators prior to and at the end of this research.

Figure 14. IncuInnovate Companies in the SLC



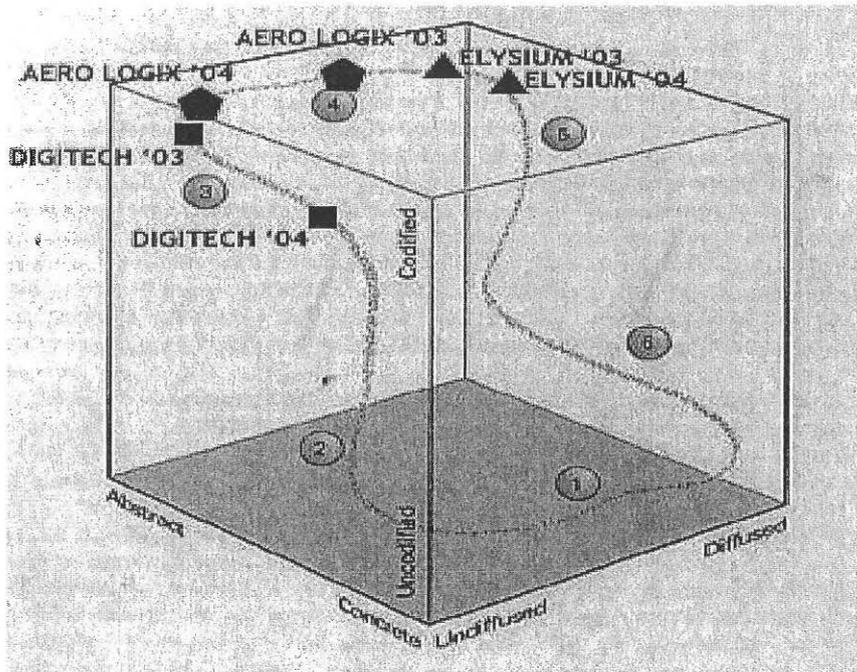
Source: Adapted from Boisot, 1999

Figure 15. Ignite Companies in the SLC



Source: Adapted from Boisot, 1999

Figure 16. Technology Companies in the SLC



Source: Adapted from Boisot, 1999

This research showed that the case companies were competent in pursuing the market-making activities necessary to establish a market presence, that their ideas had evolved, and that companies changed their business idea upon entering the market place. These models highlight that while companies were in the start up process, they were at different stages of development. The case studies showed that the nine case companies had experienced product development redefinitions and resource acquisitions to propel growth. Therefore, although these and most incubating companies were less than three years formed, they were at very different stages of development and consequently had different skills, abilities and needs. These findings will be important in explaining the relationship between incubating companies and the incubators, which will be addressed in the next section.

The majority of companies in campus incubators were between the stages of 'Problem-Solving' and 'Abstraction'. This means companies were focusing their ideas, eliminating uncertainty, narrowing what opportunities to pursue and giving structure to

insights. Once their ideas were defined, they began to apply their insights to alternative applications.

This is exemplified by Geovera in the Ignite incubator and by Sensory Innovations in the IncuInnovate incubator. During the research these companies concentrated on developing models and liaising with industry to focus technologies, eliminate 'noise', and to specify what market opportunities to pursue. During this research these companies achieved their first sales and moved to the next stage of the Social Learning Cycle where they diffused and dispersed their findings to the marketplace.

The companies Elysium and Aero Tech (in the Technology Incubator), and Aero Logix (IncuInnovate incubator) had already reached the Diffusion stage. They had identified the target market, had produced the product, had achieved their first sales, had client lists, and were promoting their products and companies prior to this study.

Before progressing further in the Social Learning Cycle (SLC), some companies maintained their position at Diffusing information while at the same time returned to the previous stage of Abstraction. By returning to the Abstraction phase the companies searched for alternative applications for their products. Both Aero Tech (IncuInnovate) and Aero Logix (Technology Incubator) had returned to an earlier stage of the Social Learning Cycle to identify alternative applications for their technologies and to re-evaluate their product offering. For Elysium, while their primary technology did not change, the company also returned to Abstraction in order to identify alternative industries in which it could be applied.

One company, Medi Recruit, was well progressed in their SLC positioning. They had reached the stages of Absorption and Impact. Since their establishment in 2000, they had progressed to become medical recruitment market leaders in Ireland.

### Start up Activities

By using a list of start up activities identified by Carter, Gartner and Reynolds (1996) and Delmar and Shane (2003) it is possible to identify the key activities necessary for a new firm to test their entrepreneurial judgement in the market and for a new firm to accumulate the resources necessary for successful start up. Collectively these start up activities included: initiating marketing, acquiring inputs, talking to customers, gathering information on customers, developing models, writing a business plan, organising a team, organising facilities and equipment, raising finance, devoting full time to company, applying a licence or patent, forming a legal entity, hiring employees and saving money to invest.

These can be further separated to a degree where the market-making activities can be separated from the tasks associated with acquiring resources. The key start up activities can then be seen in terms of Table 18.

**Table 18. New Venture Creation Process**

<b>New Venture Market Making Activities</b>	<b>New Venture Resources Required</b>
Gathering information on customers	Preparing a plan
Talking to customers	Organising a team
Developing models	Obtaining premises and licenses
Initiating marketing	Hiring employees
	Raising finance
	Devoting fulltime to company
	Applying for a license or patent
	Forming a legal entity
	Securing intellectual property

*Source:* Adapted from Carter, Gartner and Reynolds (1996) and Delmar and Shane (2003). Other less critical activities to this research included devoting full time to the company, applying for a license or patent, forming a legal entity. Details of these activities are addressed in each case study Chapters 4-6

### How Companies Achieved Activities

Using these activities as guidelines, the following tables show how each company overcame the challenges and tasks involved in testing their entrepreneurial judgement in the market place. Below are tables of the three incubators and the three companies in each incubator. They illustrate how each company overcame the four primary tasks

involved in this stage of the start up process. The tables will illustrate that companies pursued many of these tasks independently. Incubation did play a role in this process, however, the degree of this involvement differed from incubator to incubator.

**Table 19. How IncuInnovate Case Companies Tested Entrepreneurial Judgement in the Market**

<b>New Venture Creation Activities</b>	<b>Sensory Innovations</b>	<b>Aero Tech</b>	<b>Mobile Entertainment</b>
<b>Gathering information on customers</b>	Employed competitive intelligence staff; Worked with Chief Scientific Officer; Used university contacts; Hired industry market researcher	Through previous knowledge and experience of industry; Through contacts Paul established knowledge of other potential industries	Had previous knowledge and experience; Reviewed existing reports and papers; Did web research
<b>Talking to customers</b>	Two founders met with customers; Took information back to development team	Relationship with customer already existed	John Murray approached BT
<b>Developing models</b>	Employed skilled exTelComm staff who had worked together previously; Began producing models straight away	Hired subcontractors to help deliver service to customer; Employed product developer when entering 2kd phase of development	John worked with assistance of subcontractors
<b>Marketing</b>	Marketed to political community; Developed website; Won InterTrade Ireland competition	A design company in incubator developed website and marketing material; Liaised with marketing company to develop marketing strategy but was less successful	Launched product with BT; Lack of sales/promotional material; Received assistance on investment proposal from marketing company in incubator on

*Source:* Based on interviews with Robert Aiken, Paul McKenzie and John Murray October 2003-May

2004

**Table 20. How Ignite Case Companies Tested Entrepreneurial Judgement in the Market**

<b>New Venture Creation Process Activities</b>	<b>H&amp;S Tech</b>	<b>Medi Recruit</b>	<b>Geovera</b>
<b>Gathering information on customers</b>	Used industry contacts to make preliminary enquiries; Commissioned market research report to post-graduate students	Founder is GP and had knowledge of industry & its problems; Carried out basic research with GPs to assess their interest in the idea	Through the founders previous PhD research; Keeping up to date with technological advancements and reading published papers; Collaborated with Austrian professor
<b>Talking to customers</b>	Had access to beta site customer on campus	Emphasis on getting feedback and implementing change; Frequently visit GPs; Hold advisory meetings	Approached beta site customers in Dublin; Had a customer in Austria
<b>Developing models</b>	Carried out by students in university laboratories	Founder used prior experience; Hired staff to implement system	Through lab research with Geovera staff and students in Dublin and in Austria
<b>Marketing</b>	Developed website; Organised industry conference	Developed website and data base; Carried out promotional tours; Hired a marketing manager; Opened overseas offices	Identified sales rep for US market; Developed website; Assistance from incubator communications manager; Media promotions through press and radio

*Source:* Based on interviews with founders Ken Browne, Simon Kelly and Declan Daly October 2003-

May 2004

**Table 21. How Technology Incubator Case Companies Tested Entrepreneurial  
Judgement in the Market**

<b>New Venture Creation Process Activities</b>	<b>Elysium</b>	<b>Digi Tech</b>	<b>Aero Logix</b>
<b>Gathering information on customers</b>	Previous industry experience; Knowledge of technological advancements and applications; Focus of student research project; Feedback from clients	Through industry experience; Reading existing reports; Feedback from customers	Had previous experience of industry; Carried out funded university research project and gained more specific information
<b>Talking to customers</b>	Cold calling by the founders; Assistance from training programme; Hired sales and marketing manager to take over	Founder cold calling clients; Assistance from marketing mentor; Hired business development manager	Gained contact through research project
<b>Developing models</b>	Two founders worked together; Hired programmers to help; Innovation Partnership with EDA and institute staff	Through founder and team of programmers; Will develop R&D links with college	Hired team of programmers to develop models
<b>Marketing</b>	Modules during training programme; Assistance from EDA and training programme mentors; Developed website; Hired marketing and sales manager	Assistance during enterprise training programme; Relationship with programme marketing mentor; Marketing manager employed	Developed website; Participated in InterTrade Ireland competition; Assistance from training programme manager and mentors;

*Source:* Based on interviews with founders Peter Kay, Paul Ryan and Mark Murphy October 2003-May

2004

### Discussion

The nine case companies were technically strong and needed little assistance with the product development process. The market making activities of the start up process were centred around the specialised knowledge of the entrepreneurs. Much of this knowledge was based on previous work experiences and industry knowledge. For tasks such as gathering information on customers and talking to customers the case companies worked independently. Their work experience was also hugely important for developing products as they had the expertise and contacts to do this on their own. The companies found product development easier than marketing their business ideas. Communicating their idea to a larger audience, the financial community and their customers did not happen as naturally.

As each business idea, industry and group of customers were different, it would have been difficult for the incubators to provide industry focused assistance for each company. However, the companies identified that the incubators assisted them with marketing their ideas. For other activities they required knowledge that could only be gained 'by doing' and most companies did it by themselves, without the assistance of the incubator managers.

### *The IncuInnovate Incubator*

The founders of the three companies in the IncuInnovate Incubator (Sensory Innovations, Aero Tech and Mobile Entertainment) had worked in industry prior to starting the companies. They spent much time working independently but hired staff (Sensory Innovations) or subcontractors (Aero Tech and Mobile Entertainment) to assist the process. Below are details of how each company overcame the market making activities.

- Sensory Innovations was started by three senior managers in TelComm. They had technical, managerial and strategic experience. They hired a large staff of exTelComm staff who were experienced in working together and began product development and market assessment straight away. The founders were involved in a promotion campaign and marketed the company and the industry and political communities. Their staff developed a website. They found managing growth difficult but identified a strong

advisory team (CEO, CSO, financial controller) who had a significant influence on the development of the company. They found the incubator useful for its infrastructure, for the laboratory facilities that were built as part of their university funding. They also used university workshops and staff to build the prototypes until they became too expensive.

- Aero Tech already had a customer upon starting the company and had many years experience of working in the industry. They found it difficult however, establishing a reputation in industry and gaining the customer's trust. The incubator played facilitative role in this process through the high specification technology and their ability to have regular video conferences with their client. Aero Tech met in-house marketing company in the incubator regarding a marketing strategy. However Paul did not rate their assistance very highly and did not pursue it. He also used the services of another tenant in the incubator, a design company who created a website and promotional material for them. This relationship established by Paul McKenzie and the other promoter meeting informally in the incubator and discussing their businesses.

- John Murray of Mobile Entertainment began researching one industry and was forced to enter another due to poor local market conditions. For both of these ideas however, John conducted the research himself through reading industry reports and conducting web based research. Once the idea was well defined, John carried out product development himself and subcontracted elements such as the design work. He did not hire any staff as he wanted to maintain low costs. He launched the product with BT and was preparing for another stronger launch in summer 2004. To assist with the process Peter Noble referred Mobile Entertainment to the in-house marketing company to develop a marketing strategy and funding proposal. The service was provided in an ad hoc nature which John Murray's would have preferred greater structure. Strategic decision making, marketing

### *The Ignite Incubator*

The second incubator was the Ignite incubator. The companies there were H&S Tech, Medi Recruit and Geovera. These three companies also took responsibility for the market making activities of making contact with customers and developing models.

Once again each of the founders had many years industry experience and the process of gathering information on the customers happened very easily.

- Mary Gordon of H&S Tech was head of the university H&S Tech department and so the Health and Safety Department became their beta site customer
- Simon Kelly of Medi Recruit was positive the GP community would react well to the Medi Recruit concept, but carried out a small research study just to confirm
- Declan Daly of Geovera contacted a number of microchip manufacturers in the location. Once the idea was explained to them they were very receptive to implementing the Geovera product to their systems. Their first sale however came through their partner college in Austria, a contact which Declan made at an unassociated conference some time previously.

Both Medi Recruit and Geovera were involved in a cycle of collating feedback from GPs/beta customers and implementing changes to the existing product or service. For both companies this process had identified potential for new products and services. Both H&S Tech and Geovera were established by university academic staff so the product development was carried out by their research students who were hired by the companies. In Geovera, the students were also pursuing PhDs in the area they were being employed.

The Ignite companies received assistance from the incubator with marketing. Firstly H&S Tech received assistance from the post-graduate marketing practice school in researching their market, a service that was brought to their attention while attending the enterprise training programme. Unfortunately they were disappointed with the quality and content of their report, rating it more as an academic exercise than an industry report. After paying €4,000 for the study they were disappointed with the exercise. However, the companies did find more valuable marketing assistance during their participation on the enterprise training programme. Each of the three companies had participated on the programme. In addition to modules on law and finance, the companies remarked on the provision of assistance in marketing through marketing modules. For H&S Tech and Geovera, neither of whom their founders had business backgrounds, the programme was very useful and provided a good foundation in business management and development. While Simon Kelly of Medi Recruit had already managed a programme similar to Medi Recruit and completed an MBA, he

rated the training programme as being very important for providing the commercial stimulus to see Medi Recruit through.

### *The Technology Incubator*

The three Technology Incubator companies also had industry experience prior to starting up their businesses. As a consequence, their businesses were based in areas in which they were already familiar.

- For Elysium, while they were familiar with the technology, they had some investigative work on identifying an industry to which it could be applied. This involved a lot of cold calling until they established some leads. What industry to enter was decided by the nature of their first customer. However they continued assessing other markets to which the technology could be applied.

- Digi Tech was also engaged in a process of cold calling. Paul Ryan carried out much of the research on the market through report reading, through his own industry experience he identified areas for product development.

- Matthew O'Connell and Mark Murphy had worked in the aerospace industry for years however they identified their product and customer through a research project the founders were involved in prior to joining the Ignite incubator.

In order to develop models the companies were technically competent and once the resources were available, hired programmers to assist them in delivering to customers and developing different versions of the product. The promoters either knew these staff directly or knew of them through another contact (usually family or friend) prior to hiring. Each of these three companies were preparing to enter new industries and were adapting their technologies accordingly.

The Technology Incubator played a role in this market-making process through the assistance they provided in the pre-incubation year, the enterprise training programme. On this programme Technology incubator companies also received assistance in business plan preparation. However, it was assistance in marketing that was of greatest importance to this process. The modules on marketing and sales techniques were of great value to the customers who received assistance in cold calling, preparing an elevator pitch, and developing marketing strategies. Both Elysium and Digi Tech had

completed the programme in 2002 but had still maintained a relationship with the marketing mentor after the course. Both Elysium and Digi Tech hired sales and marketing managers to continue generating sales. Both companies had used the marketing mentor's assistance in preparing plans for their new marketing and sales managers.

The Technology Incubator also played an active role in the process through its assistance in establishing R&D relations with the host institution. This was organised through Innovation Partnerships. These were Enterprise Development Agency (EDA) funded programmes that encouraged collaborative research projects between industry and colleges. Over the course of this research each of the three Technology case companies had entered discussions to establish these relationships. At the end of the research Elysium had been approved funding and were negotiating its implementation with the college. Digi Tech were approved feasibility funding and were planning what the next stage should be. Aero Tech had also been approved funding for an Innovation Partnership but until relations were resolved with their supporting company, they were not in a position to pursue the opportunity at that stage.

Proposition 1(a) suggested that the services required by entrepreneurs from incubators should support the entrepreneur in testing the entrepreneurial judgement in the market and in the subsequent process of modifying and redeveloping the business idea. In addressing this proposition I can say that companies had strong technical and industry background and relied less on the incubator to help with this stage of the start up process. They did not expect the incubator managers to provide assistance as the work required specialised knowledge and expertise. Many companies considered it their own role to develop their products and pursue market opportunities. Therefore, this research would suggest that the services required by entrepreneurs from incubators would not require the incubator to support the entrepreneur in the testing of their entrepreneurial judgements in the market, and in the subsequent process of modifying and redeveloping their business ideas.

However, incubators could have played a greater role in this process through providing assistance to the companies who needed access to experts in their industries, or who were entering new industries or developing new technologies. Although this level of

assistance would require expertise beyond the knowledge of the incubator manager, this approach was handled in an innovative way in the Swedish incubator, Mjardevi Business Incubator. Here, the companies identified that instead of organising general training events, enterprise seminars and workshops, they would prefer specialised assistance from industry experts. They felt that once they reached a level of business acumen, the incubator was contributing less to the business. Based on this feedback, the incubator management had decided to reallocate their budget for guest speakers and organised events. They introduced a system whereby every six months the incubating companies could identify specific assistance they needed on a certain topic. Once the appropriate industry experts had been identified, an application for funding would be made to the incubator to help subsidise this assistance.

**Proposition 1 (b)**

This proposition is based on the premise that incubation assists companies through the start up process. Therefore, if resource accumulation is one of the tasks necessary to see the start up process through, incubation should help companies in their process of resource accumulation. By referring to the activities necessary to get a company up and running, it is possible to identify some of the key resources necessary to make this happen. The tables below use these resources outlined earlier in the chapter to illustrate how companies acquired the resources necessary for successful execution of the start up process outlining the role the three incubators played in assisting the companies achieve each of these activities.

**Table 22. How IncuInnovate Case Companies Acquired Start up Resources**

<b>New Venture Creation Process Activities</b>	<b>Sensory Innovations</b>	<b>Aero Tech</b>	<b>Mobile Entertainment</b>
<b>Writing a business plan</b>	Initially prepared with Peter Noble while he worked for different company; Strengthened by management team	Assistance from Peter Noble	Assistance from Peter Noble while company was based in different incubator
<b>Project financial statements</b>	Prepared by Peter Noble while he worked for different company; Taken over by financial director	Assistance from Peter Noble; Also used accountant	Assistance from Peter Noble while company was based in different incubator; Help from accountant
<b>Seek finance</b>	Applied for EDA funding; Raised matching funding in two rounds; 1 <sup>st</sup> round - €3 million. Maintained 80% equity	Used own finance; Applied for EDA funding; Received €100K in preference shares from university;	Used personal finance, credit cards and bank loan; Applied EDA funding; Negotiations with 2 business angels
<b>Obtain premises/license</b>	Located in local business park first; Moved to incubator for more space	Located in incubator from start	Located in business incubator; moved to desk space in IncuInnovate; Moved to office space
<b>Establishing a team</b>	Three founding members; Chief Scientific Officer; Chairperson; Financial Director	Paul McKenzie worked on his own	John Murray worked on his own
<b>Hiring staff</b>	Hired 25 staff; 23 were exTelComm	Paul McKenzie + four subcontractors he already knew	John Murray + subcontract designers

Source: Based on interviews with Robert Aiken, Paul McKenzie and John Murray October 2003-May

2004

**Table 23. How Ignite Case Companies Acquired Start up Resources**

<b>New Venture Creation Process Activities</b>	<b>H&amp;S Tech</b>	<b>Medi Recruit</b>	<b>Geovera</b>
<b>Writing a business plan</b>	Prepared with assistance while on Enterprise Training Programme	Simon Kelly had MBA; Received assistance while on training programme	Assistance from Enterprise Training Programme, Sean Molloy and Delmar Shah
<b>Project financial statements</b>	With accountant; Help while on training programme	Developed on training programme; Received help from EDA mentor and large accountancy firm associated with the programme	Assistance during training programme; Help from accountancy firm
<b>Seek finance</b>	EDA funded research (€500K); Used bank overdraft (€10K)	EPP director introduced to Dublin Business Innovation Centre and the Dublin Seed Capital Fund; Raised €100K with 10% equity; Borrowed from bank; Received help from EDA mentor	Investment from EDA employee in 1990s; EDA funding from 2000; Angel finance; Business Expansion Scheme
<b>Obtain premises/license</b>	Took office space in incubator	Located in old incubator facilities; Moved to new incubator facilities	Located in old incubator facilities; Moved to new incubator
<b>Establishing a team</b>	Ken Browne and David O'Reilly; Mary Gordon	Simon Kelly; Managing Director Aine Byrne; Accountancy firm are also involved	Declan Daly; Delmar Shah; Sean Molly, CEO (met through training programme director)
<b>Hiring staff</b>	1.5 staff; postgraduate students; funded through EDA grants;	16 staff in three offices; Help from SFA in establishing processes	10 staff; postgraduate students

*Source:* Based on interviews with founders Ken Browne, Simon Kelly and Declan Daly October 2003-

May 2004

**Table 24. How Technology Incubator Case Companies Acquired Start up Resources**

<b>New Venture Creation Process Activities</b>	<b>Elysium</b>	<b>Digi Tech</b>	<b>Aero Logix</b>
<b>Writing a business plan</b>	Written by 2 founders while on Enterprise Training Programme; Received help from EDA mentor	Assistance while on training programme	Developed through Enterprise Training Programme
<b>Project financial statements</b>	Received help while on Enterprise Training Programme	Enterprise training programme modules; Help from EDA mentor	Modular training on programme; KPR do much of this
<b>Seek finance</b>	Self funded; EDA grant; Loan from County Enterprise Board with 3% equity; Innovation Partnership with college	Carried out consultancy work; Used personal finance and credit cards; Loan from County Enterprise Board at 3% equity; EDA mentor invested	KPR sponsoring company; Won InterTrade Ireland Seed Corn Competition
<b>Obtain premises/license</b>	Had desk space in incubator; Moved into office and took on bigger office space after 2kd lease	Worked at home; Moved into office space when employing first staff	Co-located between desk space at incubator and KPR premises
<b>Establishing a team</b>	Two founders	Paul Ryan; Support from 2 Enterprise Training Programme mentors (marketing and business)	Two founders; KPR
<b>Hiring staff</b>	4 full time and summer students; Marketing and Sales manager; Knew most staff; Interviewed marketing manager	2 full time developers; Part time FAS trainee; Sales and marketing manager; Knew most staff previously; Employs graduates of college	Knew staff previous; Hired by KPR

*Source:* Based on interviews with Peter Kay, Paul Ryan and Mark Murphy October 2003-May 2004

### Discussion

The incubators played an active role in helping companies access the necessary resources to see the start up process through. Companies in the three incubators had benefited from assistance in writing business plans, projecting financial statements, raising finance and establishing their company identity through obtaining office space and a work environment. The degree to which this happened, and the manner in which the assistance was delivered varied from incubator to incubator. Below is a discussion of information presented in the tables showing how companies overcame some of the key activities and resources required to see the start up process through.

### IncuInnovate Incubator

The founders of the three IncuInnovate companies had technical backgrounds, however they each differed in their business aptitude, knowledge and interest. This was displayed through their ability in preparing a business plan, financial statements and investment proposals. As they had less business than technical background each of the companies required assistance in preparing these business documents. Where they received assistance and the degree to which the incubator assisted this process differed from company to company.

- Sensory Innovations found raising first round finance, overcoming the Enterprise Development Agency policy and procedures to be the most difficult tasks of their progress. This work was carried out in consultation with the incubator manager Peter Noble. Peter worked with Sensory Innovations to prepare a business plan, financial projections and to raise finance with the university and the wider community. Sensory Innovations were also granted rent free periods which was important for company growth. Their interaction with Peter Noble reduced as Sensory Innovations appointed an advisory team of chief scientific officer, a chairperson and a financial director who took responsibility for taking the company forward. However, Robert Aiken was disappointed when the university failed to contribute to their second round of funding. However Sensory Innovations were unwilling to part with any more equity and Peter Noble and the university were not interested in investing in companies for low equity percentages.

- Paul McKenzie found starting a business on his own to be difficult especially when strategic decisions had to be made. Also difficult was raising finance for product development, managing cash flow, handling customer relations and regulating payment. Although Paul McKenzie had previously completed a business degree he still needed assistance in preparing the business plan and in preparing financial statements. Although when taking office space initially Paul was unaware of how incubation differed to renting regular office space, he was pleased to realise he could receive the business support which he did from Peter Noble. With help from Peter and his accountant Paul developed a professional business plan. Peter also negotiated a preference share agreement with the college on behalf of Aero Tech. Once these were established, there was less contact between Paul and Peter. The incubator became more useful then in terms of the high specification IT infrastructure that allowed him communicate frequently with his customer. He felt that the incubator could have encouraged companies in their developmental process by helping them in terms of their business administration.

- John Murray founded Mobile Entertainment and identified that while he was technically strong, he needed business assistance to successfully set up and run the company. John therefore located his business in a business incubator, hoping to receive assistance in this area. However, while John had spent time with Peter Noble, he felt his business plan was still basic. He also needed assistance in financial planning, strategic decision making, marketing, and general business management. He needed to raise finance too, and was aware of other IncuInnovate companies raising large amounts and would have liked assistance in achieving this aswell. However, the assistance he received from Peter Noble was ad hoc and failed to live up to his expectations. This has been frustrating for John who has faced some big decisions and strategic moves without close consultation with a trusted other.

Other resources essential to growth included hiring staff and establishing teams. Sensory Innovations used their own contacts to locate an advisory team of mentors who have improved the professional outlook of the company. They also hired a team of exTelComm employees who were made redundant at the time Sensory Innovations was founded. The founders of Aero Tech and Mobile Entertainment operated on their own and faced a number of strategic decisions over the duration of the research that they

admitted were difficult to assimilate. To help with product development they hired subcontracts (Aero Tech) or subcontracted out the work (Mobile Entertainment). Aero Tech had decided to employ a product development manager and had made contact with the college HR department to receive assistance with the recruitment and selection process. This contact was made through Peter Noble.

The incubator was useful for providing a significant address and location for each of the companies to locate their businesses. The incubator has brought identity and prestige to the companies through the association with the college. For Sensory Innovations and Aero Tech the college played a key role in their development through their investment in the company. However, for Sensory Innovations the identity of incubation may have a short shelf life as the company continues to grow commercially the association with college play less of a role and possibly even have a negative affect on their reputation.

In this incubator, Peter Noble delivered the support and assistance to the companies himself. While each company had benefited from this assistance and identified his knowledge as being expert, especially in regard to financial management, one problem each company identified with the system was the lack of time Peter had to spend with the companies. This was exemplified through Aero Tech and Mobile Entertainment in particular who were frustrated at how difficult it was to track Peter down and how little time he had to offer consultation when they needed strategic advice. The IncuInnovate university also had different funding relationships with each company in the incubator. This has resulted in suspicion and jealousy and also expectation amongst companies.

### *Ignite Incubator*

As with the IncuInnovate case companies the Ignite case companies ideas were at different stages of development, and their founders had little or no previous business experience. The companies therefore overcame the start up activities through their participation on the enterprise training programme. While on the programme they developed business plans, financial statements and business kudos. Geovera and Medi Recruit later relied on accountancy firms they were introduced to during this year for strategic business and financial advice.

- H&S Tech experienced difficulties in devoting time to the company. None of its three founders committed themselves full time. As a result they found it difficult to manage time, continue momentum and propel growth. The company was funded through the founders' own investment, through research grants from the Enterprise Development Agency (EDA). They hired staff from their postgraduate pool. Once the enterprise training programme had been completed, they only occasionally met with the incubator manager James Fagan. The incubator offered support however in its office infrastructure, access to university network and professional address.

- Medi Recruit experienced difficulties with managing growth, hiring staff, establishing business systems and policies. To address their 'fire fighting' they first of all hired some key staff made contact with through existing contacts. Medi Recruit then approached James Fagan regarding establishing policies and procedures and James put them in touch with the services of the Small Firms Association (SFA). Being part of the Ignite incubator meant that Medi Recruit received this advice at a reduced rate. Although Simon already had an MBA and had managed a programme similar to Medi Recruit in Australia, he participated on the enterprise training programme. While on this programme Simon developed a business plan, marketing plan and financial statements. Simon financed Medi Recruit through personal investment and through a seed capital fund (introduced to it during the training programme by the programme director). Simon was also introduced to two EDA mentors who were excellent in their business advice. Medi Recruit continue to benefit from the incubator in their office space, their association with the university and their professional business address.

- Geovera overcame these tasks with the assistance of the enterprise training programme, where they developed the business plan and financial projections. They were also introduced to a retired business man who helped professionalise these documents and provide strategic advice. Geovera was funded through EDA research and commercialisation grants, through their own investment, through a seed capital fund and through business angels. They raised much R&D funding through the Enterprise Development Agency (EDA) but found dealing with the EDA policies and procedures difficult and slow. As a result they experienced periods of cash flow difficulties. Another difficulty Declan Daly faced was being granted a sabbatical from teaching in order to pursue Geovera. Declan has found the university awards system to be unfairly

biased towards the publication of papers as opposed to the commercialisation of research.

### *The Technology Incubator*

Companies in the Technology Incubator also overcame a lack of business knowledge through their participation in the enterprise training programme. During their time on this programme the companies were helped in their preparation of business plans, financial statements, business growth, law, marketing and finance. The training was organised on a modular basis and was operated in an interactive workshop environment.

- The Elysium founders funded the company through their own finances, through a County Enterprise Board loan and through an EDA grant. However, they have found it difficult to raise external finance. The company employs three staff who either they knew or knew of prior to hiring them. For Elysium, hiring staff was the most difficult and daunting task of the start up process. It forced them to formalise procedures, removed the habit of using credit cards to pay their own salaries and placed pressure on the company to meet sales targets and therefore meet salary payments. However, without employing the staff the company would never have grown the way they had. Both of these companies highlighted that employing their staff when they did would not have been possible had they been charged a higher rental rate. By paying a low rent in the incubator they could employ an extra programmer that would otherwise been impossible. While on the enterprise training programme Elysium were given time to work with an EDA mentor who helped the company's business planning. Elysium also worked closely with the programme marketing presenter and consulted him as they employed a marketing and sales manager when preparing the detailed job description. During the year, Elysium had very little contact with the incubator manager. However, Elysium needed further help with general business management, raising money, time management and overcoming EDA policy and procedures.

- Digi Tech were also appointed an EDA mentor who provided business assistance and who invested in the company. Digi Tech raised additional funding through an EDA grant, a County Enterprise Board loan, personal finance and credit cards. Digi Tech hired staff that Paul Ryan already knew. He also used the college to locate a computer programmer. Paul Ryan also identified hiring staff as the most difficult task he had to

face. It also meant he had to change his working arrangements and move his office from home to the business incubator. Again, the lower rental rate meant that Digi Tech had the finance to employ the staff as the company needed them. Paul still had difficulties with general business management and financial management in particular. He was in the process of changing direction of company and was concerned about the establishing a reputation in the industry. Paul did not expect any greater interaction with the incubator manager with regard to these issues as he felt they were more his responsibility than hers.

- Aero Logix were participating in the enterprise training programme. During this year they developed their marketing plan while on the course. The company experienced difficulties in managing the relationship with their only customer. The main problems surrounded the terms of the contract, percentage of equity, lack of own finance, pricing agreements. These were issues in which Mark Murphy felt they needed legal advice. However, they initially lacked the finance to seek legal assistance and decided towards the end of this research that this was an expense they could no longer avoid. The incubator did play a role in the development through the valuable training and support he received during the programme. He did not however see it as the role of the programme or incubator manager to become more involved in company affairs.

Proposition 1(b) suggests that the services required by entrepreneurs from incubators should support the entrepreneur in accessing resources. This research has found that incubators play an important role in the activities required to accumulate resources such as preparing a business plan, accessing finance, obtaining office premises. This relates to international incubation research that identified the most frequently offered business incubator service to incubating companies is assistance in business plan preparation and strategic planning (Mian, 1995; Lendner, 2003).

The way in which this assistance was administered differed from incubator to incubator (Mian, 1995). In the IncuInnovate incubator, Peter Noble administered this assistance himself. While this approach provided a tailor made service to the companies, when it was not delivered correctly it led to discontent among the incubating companies (Aero Tech, Mobile Entertainment). The assistance in the other incubators was delivered primarily through an enterprise training programme. The programmes were useful for

developing business plans and training in financial management. Some companies were also introduced to influential business people who took an active interest in the companies (Geovera), while others were introduced to sources of funding (Medi Recruit). Once the training programme had been completed, and once Peter Noble's assistance had decreased, the incubating companies tended to work individually. The level of this independence depended on the background and ability of the incubating companies. Sensory Innovations, Aero Tech and Medi Recruit grew well and had a degree of business experience previously. Mobile Entertainment, H&S Tech were less confident commercially and found dealing with business processes more difficult.

The incubators continued to support the companies during periods of little interaction through the provision of office space, a prestigious address and access to the college networks. Incubation also provided back up assistance to the companies which could be accessed on a needs-be basis. The Ignite incubator also organised regular business clinics with professional services sector, enterprise seminars and workshops. These were poorly attended by the case companies. Unless the topics were entirely relevant to their business they did not see a need to attend. On the other hand James Fagan organised the events targeting common business difficulties in order to appeal to as wide an audience as possible. This gap would suggest a system similar to the Swedish model would work well, whereby the training budget is allocated to subsidise specific expertise for each company.

The incubators helped the company progress by providing resources which gave the companies credibility and status, and at a cheaper rate than would be available otherwise. Companies at the IncuInoovate and Technology incubators received either low rental charges or periods of free rental. The companies identified this service as a huge advantage as it better catered for their growing needs and need to employ staff.

Despite the services and supports provided by business incubators, this research showed entrepreneurs still gather many resources from 'local' sources. This supports existing research showing that entrepreneurs rely on 'local' resources, expertise, experience and knowledge to pursue the start up process (Romanelli and Schoonhoven, 2001). These resources are 'local' because they are obtained in immediate surroundings, typically the entrepreneur's pre-founding work and educational organisations (Romaneilli and

Schoonhoven, 2001). This was particularly true for the case companies who hired staff, established advisory teams, and developed models independently through contacts they already had and through existing knowledge and industry experience. For raising money, the companies sought assistance outside the incubator. This was through the EDA, through private investors or through the county enterprise boards. Again, the incubator played a facilitative role in this process

**Proposition 2:**

Entrepreneurs and incubator managers differ in their views of how incubation impacts on the start up process

Incubation researchers suggest that incubation has a positive influence and impact on the start up process. This is based on the services and supports that are provided to start up companies at business incubators. These benefits are said to include services and facilities, encouragement, counselling and introductions to other young companies (Lewis, 2001; Albert Bernasconi and Gaynor, 2002; EU Benchmarking Report, 2002).

However, the majority of incubation studies are based on research with the centre managers primarily. A recommendation by the EU Benchmarking Report (2002) was that future research should involve more fieldwork with the incubating companies to create a more balanced view of incubation. The EU report also emphasised the important contribution incubating companies can make to incubation research. Therefore, this research was designed to gather information from both incubating companies and incubator managers to portray a balanced view of incubation. While Proposition 1 addressed the development of companies from the perspective of the client companies, the following section introduces how the incubator managers felt companies developed over their time in the incubator and how the incubator assisted them in the start up process.

Tables 25-27 have been prepared using information from interviews with the three incubator centre managers. They address the same list of market-making activities and resources necessary for the start up process as were outlined in Propositions 1(a) and 1(b). A discussion will follow these tables and address whether or not a difference exists

between how companies and incubator managers felt incubation impacted on the start up process.

The tables show how the incubator managers facilitated the start up process by helping companies with the activities necessary for testing their judgements in the market place. The managers considered these facilities valuable for tenant companies as they improve the status of the new start up that might otherwise just operate from home. The managers also consider incubation to be a better option than locating in local office space as the extensive range of services, facilities and supports of an incubator surpass what is available from regular rented office space. These activities include writing a business plan, gathering information on customers, talking to customers, developing product models and marketing. The tables show how the three incubators assisted with achieving each of these activities and acquiring these resources.

**Table 25. How Peter Noble feels IncuInnovate Assisted Entrepreneurs in Testing their Judgements in the Market Place**

<b>Testing the Entrepreneurial Judgement</b>	<b>Sensory Innovations</b>	<b>Aero Tech</b>	<b>Mobile Entertainment</b>
<b>Gathering information on customers</b>	Identified key industry researcher to assist company; Introduced SI to academic staff; Organised information day in college	Paul already had knowledge	John already had knowledge
<b>Talking to customers</b>	Would have negotiated with customers Sensory Innovations	Peter Noble would have met with Aero Tech clients if could have helped; Helped Paul with negotiation skills	Peter would meet with clients if it was needed
<b>Developing product models</b>	Encouraged company to use university laboratories	Paul had ability to do this on his own	John did this on his own
<b>Marketing</b>	Located industry market research company to assist with research;	Paul was offered services of in-house marketing company	Helped John Murray with investment proposal;

	Introduced company to in-house marketing company		Introduced John Murray to in-house marketing company
<b>Gathering Resources</b>	<b>Sensory Innovations</b>	<b>Aero Tech</b>	<b>Mobile Entertainment</b>
<b>Writing a business plan</b>	Peter helped SI write business plan; Worked 'day and night' on plans	Peter worked closely with Aero Tech to prepare plan	Peter worked closely with company to write plan
<b>Project financial statements</b>	Peter prepared financial statements	Peter prepared financials with Paul	Peter helped John prepare statements
<b>Seek finance</b>	Peter prepared business plan and financials to help raise finance; Helped company develop funding strategy; Facilitated the university investment process	Peter helped Aero Tech raise university preference shares; Negotiated contract on behalf of Aero Tech	Peter helped John with investment proposal but did not rate Mobile Entertainment as a high funding priority
<b>Obtain premises</b>	Built laboratory facilities for company as part of investment	Provided state-of-the-art IT and office facilities that helped him communicate with his customer	Provided start-of-the-art office facilities
<b>Establishing a team</b>	Introduced SI to key people to take idea forward	Providing board of directors mentor to help with company	Mobile Entertainment was not a high priority company
<b>Hiring staff</b>	SI already had access to a good workforce	Introduced Paul McKenzie to university HR staff who advised Paul on policy and procedures	Mobile Entertainment was not a high priority company

(Source: Based on interviews with Peter Noble October 2003-May 2004)

**Table 26. How James Fagan feels Ignite Assisted Entrepreneurs in Testing their Judgements in the Market Place**

<b>Testing the Entrepreneurial Judgement</b>	<b>H&amp;S Tech</b>	<b>Medi Recruit</b>	<b>Geovera</b>
<b>Gathering information on customers</b>	Promoters are already expert in area	Promoters are already expert in area	Promoters are already expert in area
<b>Talking to customers</b>	Company tends to do this on their own; Ignite will help if possible through its network of contacts	Company tends to do this on their own; Ignite will help if possible through its network of contacts	Company tends to do this on their own; Ignite will help if possible through its network of contacts
<b>Developing product models</b>	Company has expertise and resources to do this on campus; Support through office infrastructure, environment and back up support	Medi Recruit have efficient systems in place; Support through office infrastructure, environment and back up support	Company has expertise and resources to do this on campus; Support through office infrastructure, environment and back up support
<b>Marketing</b>	Was participant of training programme where module on marketing delivered; Run seminars and workshops on key areas during year;	Was participant of training programme where module on marketing delivered; Run seminars and workshops on key areas during year	Was participant of training programme where module on marketing delivered; Run seminars and workshops on key areas during year; Ignite communications officer helped with media PR approach
<b>Gathering Resources</b>	<b>H&amp;S Tech</b>	<b>Medi Recruit</b>	<b>Geovera</b>
<b>Writing a business plan</b>	Received professional advice while participating on enterprise training programme	Received professional advice while participating on enterprise training programme	Received professional advice while participating on enterprise training programme
<b>Project financial statements</b>	Was included as module in enterprise training programme; Frequent clinics with accountancy	Was included as module in enterprise training programme; Frequent clinics with accountancy	Was included as module in enterprise training programme; Frequent clinics with accountancy

	firm but are poorly attended by H&S Tech	firm but are poorly attended by Medi Recruit; They use their own accountancy firm	firm but are poorly attended by Geoveras
<b>Seek finance</b>	EDA staff located in incubator to help with funding applications; Opportunities to attend networking events with VCs	EDA staff located in incubator to help with funding applications; Opportunities to attend networking events with VCs	EDA staff located in incubator to help with funding applications; Opportunities to attend networking events with VCs
<b>Obtain premises</b>	Provision of high spec office, meeting, and seminar rooms at no extra cost	Provision of high spec office, meeting, and seminar rooms at no extra cost	Provision of high spec office, meeting, and seminar rooms at no extra cost
<b>Establishing a team</b>	Was already established prior to participation on programme	Simon Kelly had access to influential contacts	Declan established this himself
<b>Hiring staff</b>	H&S Tech had access to staff	Medi Recruit did this on own	Geovera had access to staff

(Source: Based on interviews with James Fagan October 2003-May 2004)

**Table 27. How Technology Incubator Assists Entrepreneurs in Testing their Judgements in the Market Place**

<b>Testing the Entrepreneurial Judgement</b>	<b>Elysium</b>	<b>Digi Tech</b>	<b>Aero Logix</b>
<b>Gathering information on customers</b>	Companies do this on their own	Companies do this on their own	Companies do this on their own
<b>Talking to customers</b>	Companies do this on their own; Receive practical assistance during Enterprise Training Programme	Companies do this on their own; Assistance during Enterprise Training Programme	Companies do this on their own; Assistance during Enterprise Training Programme
<b>Developing product models</b>	Companies do this on their own; Help with Innovation Partnership process; Support	Companies do this on their own; Help with Innovation Partnership	Companies do this on their own; Help with Innovation Partnership process; Support through

	through office infrastructure, environment and back up support	process; Support through office infrastructure, environment and back up support	office infrastructure, environment and back up support
<b>Marketing</b>	Assistance during Enterprise Training Programme	Assistance during Enterprise Training Programme	Assistance during Enterprise Training Programme

<b>Gathering Resources</b>	<b>Elysium</b>	<b>Digi Tech</b>	<b>Aero Logix</b>
<b>Writing a business plan</b>	Assistance during training programme	Assistance during training programme	Assistance during training programme; extra assistance during seed corn competition
<b>Project financial statements</b>	Assistance during training programme	Assistance during training programme	Assistance during training programme; extra assistance during seed corn competition
<b>Seek finance</b>	Help with Innovation Partnership process; Organise networking events and invite VCs to attend	Help with Innovation Partnership process; Organise networking events and invite VCs to attend	Help with Innovation Partnership process; Organise networking events and invite VCs to attend; Access to VCs through seed corn competition
<b>Obtain premises</b>	Provide office infrastructure, meeting rooms, conference rooms	Provide office infrastructure, meeting rooms, conference rooms	Provide office infrastructure, meeting rooms, conference rooms
<b>Establishing a team</b>	Companies do this on their own	Companies do this on their own	Companies do this on their own
<b>Hiring staff</b>	Companies do this on their own	Companies do this on their own	Companies do this on their own

(Source: Based on interviews with Jane O'Brien October 2003-May 2004)

### Discussion

From these tables it is clear that incubator managers see a number of tasks such as gathering information on customers, talking to customers, developing products,

establishing a team and hiring staff as being the responsibility of each company. The managers feel that incubation played a facilitative role during these activities through the provision of office services and facilities, recognisable and well-reputed addresses and supportive environments with access to other entrepreneurs and specialised knowledge. When compared to how the incubating companies reported to have achieved the same market making activities, the lists are quite similar. This would imply that both incubator managers and incubating companies agree that the role of the incubator is limited in how it supports the start up process through the market-making stage.

However, this research has found that there was disjoint between companies and the incubator managers. This would imply that there were areas where the companies felt the incubators could have been more involved in their development. It could also mean that the incubator managers felt the companies were not contributing enough to the incubation and start up process. These issues are addressed in greater detail below.

#### *The IncuInnovate Incubator*

The assistance provided by Peter Noble was tailor-made to the needs of each of the companies. Table 25 shows how the IncuInnovate manager Peter Noble offered support to the incubating companies. He worked individually with each of the three companies (in varying degrees) to develop their business plans and financial statements and saw a reduction in the assistance as a natural progression once companies were well enough established to work on their own.

- This assistance was very focused for Sensory Innovations and Peter felt it played a large role in the development of the company. It included contact making with an industry market research company, college academics in related areas, and other key industry representatives. He also organised an information event on campus to which they were all invited. Peter also helped raise funding for Sensory Innovations with the college. Once the company had achieved a strong advisory team, raised finance and had identified a market niche Peter saw his role reducing completely.

- Peter's level of contact with Aero Tech was also hands-on and intensive when Aero Tech was first setting up. At this stage he worked closely with Paul McKenzie, assisting him in his business plan and offering financial advice. Again Peter saw this assistance as critical to the success of Aero Tech and their timing in changing the nature of their relationship with their customer. He also offered to attend client and investment meetings with Paul to offer back-up and negotiation support during this process. Once again, when he felt Aero Tech had a strong business plan and direction for the company, Peter's involvement in the company reduced.

- Peter's involvement with Mobile Technology was again related to the preparation of a business plan. However, Peter did not consider Mobile Technology a priority company and therefore reduced the time he spent working with John Murray. He felt that Mobile Entertainment still benefited from locating in the incubator because of the supportive environment and the access he had to an in-house marketing company who would help him develop working documents.

The three incubating companies recognised that Peter played an important role in the development of their companies at a point when they were short of resources yet needed expertise. However their recognition for the support is still less than the degree to which Peter assigns to it. Robert Aiken of Sensory Innovations attached less importance to how Peter helped the company. Robert paid no reference to the academic contacts Peter reported to have created, and little attention to the commissioned research report, claiming that it only confirmed what they already knew. For the other companies, their view of the assistance they received was tainted due to the difficulties they faced each time they needed his assistance. Therefore the main reason for disharmony between the companies and the incubator manager in the IncuInnovate incubator was the lack of time Peter Noble spent with the companies and the difficulties they faced when trying to contact him. The 'tailor-made' assistance Peter referred to was somewhat aspirational and difficult to deliver when he did not have the necessary backup resources in place. This impacted on the companies in that the system was unsatisfactory when the support was not provided. In addition John Murray of Mobile Entertainment was disappointed with the approach to helping companies, which focused primarily on some companies in the incubator rather than others. The policy decision behind this practice had not been explained to John Murray when Mobile Technology first moved in, but became

apparent over time. John found this system frustrating. At the end of this research he had been granted more help through meetings with the in-house marketing company, but this was delivered on an ad-hoc basis, with no structure or planning in the delivery of the support and John remained disillusioned.

### Ignite Incubator

Companies located in the Ignite incubator were delivered a foundation of support during their time on the enterprise training programme and their time in the business incubator. The Ignite Incubator offered less individual assistance to the companies. Support was instead provided through the training programme, professional business clinics, enterprise seminars and workshops. James Fagan's 'contract-in' experts delivered these supports to the incubating companies. Despite the portfolio of assistance James Fagan feels that the companies have failed to utilise the professional service clinics to a sufficient degree. However, he feels this may be because the companies are more advanced or are already using their own professional advisors. He recognises that these companies may not need the same degree of assistance, but that they still benefited from the supportive environment of the incubator. To address this issue, he suggested care must be taken to assure topics at seminars are relevant. 'You are trying to deliver a topic or presentation or seminar which is of relevance to as many people as possible, so you are not going to have it on something very specific'. He remained optimistic that usage would increase.

The following is an outline of how James Fagan considered incubation to impact on the start up companies:

- As H&S Tech were still at early stage start up, the main role incubation has played is through the provision of office space, access to the college network, access to other start up companies and access to professional assistance. H&S Tech participated in the enterprise training programme and developed business skills and a professional business plan over this year. James was hoping H&S Tech would devote more time to the company in the future as it could then begin to benefit from the other supports being offered.

- James felt the Ignite incubator had played a greater role in the development of Medi Recruitment. This company was a tenant in the old incubation unit on campus and moved with the Ignite staff into the new incubator when it opened. James sees Medi Recruit providing valuable support to early stage start up companies through sharing their experiences. He feels Medi Recruit have benefited themselves from locating in the incubator in terms of the business advice and training they received while on the training programme and during their earlier years in the incubator. The incubator was still contributing to the success of the company through its prestigious address, the association with the college medical faculty, through the high specification office and IT facilities and by locating advice and consultants as were required.

- James feels Geovera has benefited from its association with the incubator through the training programme and the development of business skills and kudos. Through their location in the incubator they have received assistance in preparing funding proposals (which have been very successful), in the technology transfer process and in receiving invites to various networking training events,

The case companies in the Ignite centre felt the approach to managing the centre satisfied their needs. All three preferred to work on their own, but appreciated the back-up support that was available upon request. They did not frequently participate in the business clinics and enterprise seminars and workshops but attended those that were of relevance to them. Despite their willingness to work on their own, they felt that more review meetings with the manager would have been useful. There had been discussions to begin the process however the companies felt they should have been more forcefully implemented during the year. What was unusual about this collective wish for greater contact with the incubator manager was how H&S Tech had been opposed to the idea of frequent review meetings with the incubator manager throughout the research. At the end of this research the proprietor Ken Browne realised that the incubator manager could have played an important role in H&S Tech had he been more involved. One way to structure that relationship could have been through more regular review meetings. Ken felt that had this happened James Fagan could have likely helped the promoters identify their problems earlier and perhaps have made some suggestions as to how the process could have been rescued.

### The Technology Incubator

The Technology incubator was managed in a 'hands off' style. This was adapted by Jane O'Brien who felt that companies had already received intensive hands on assistance during their training year. Jane felt that companies should be encouraged to adapt an independent approach to their businesses and use the incubator staff as backup when needed. Jane is proactive in providing support to companies in areas of strategic interest, such as collaborative R&D projects with the college. Jane O'Brien feels that incubation in the Technology Incubator has impacted on the start up process through creating a supportive environment of like-minded people, providing a staff of back up support, and reputable association with the college. Incubating companies are also included on the Technology incubator mailing list and can access information on events, seminars, conferences and trade missions that companies otherwise might not be available.

Each company has benefited in similar ways from locating in the business incubator.

- Elysium has benefited from participation on the enterprise training programme, the contacts he made through that and the business skills which he developed. The company is also engaging in an Innovation Partnership with the college and will receive funding to employ another research developer.

- Digi Tech has benefited in a similar fashion, through the enterprise training programme, the innovation partnership, the association with a steering committee within the college

- Aero Logix are still participants of the enterprise training programme and received much assistance from the training programme manager, the incubator staff and the training programme mentor in preparation for the seed corn competition.

The Technology incubator case companies were varied in their reaction towards this 'hands off' approach to managing the incubator. Elysium felt the transition from hands on assistance and a supportive environment to the less interactive culture of the incubator was difficult and would have preferred more opportunity to meet with the incubator staff and get their feedback on how they thought the company was

progressing. In contrast to this, Digi Tech were pleased with the change and saw less of a need for regular interaction once the training programme was over. Aero Logix were still participating in the programme.

## 8.5 CONCLUSIONS

The case companies and the incubator managers both agreed that incubation had a positive impact on the start up process. Where they differed is the extent to which they credited the centre for the company's progress. Managers accredited themselves and the incubator for the role they played in company development and companies did this far less. This supports previous literature that suggested entrepreneurs tend to undervalue business assistance, as they are not a very 'appreciative' group (Mian, 1995) Their level of autonomy and self-esteem can sometimes overshadow their perceptions of how much they really are being helped (Allen and Bazan, 1990).

This research has shown that companies overcame many of the start-up activities on their own. Most of the companies had technical backgrounds and so relied less on the incubator to assist with activities surrounding product development. They did not use the incubator for testing their entrepreneurial judgement in the market, they used their existing knowledge and they did not see that as the job or responsibility of the incubator manager. Where they did need more assistance was in gathering resources as they lacked the business skills to prepare marketing plans, business plans, and financial plans.

The 'hands on' approach to incubation at the IncuInnovate incubator suggests that focused assistance with each project is more useful as it specifically addresses the needs of each company. However this research found that if there is a failure in the delivery of the service then companies like Aero Tech and Mobile Entertainment, who were both sole traders, have very little other support. Peter Noble tried delivering this system to the client companies, however, he was unable to provide a complete tailor-made service to each company because of the lack of support and resources available. As a consequence, each company had experienced frustration with the manager and experienced times when they needed more help than what he could provide. The

enterprise training programme can prevent this circumstance as it provides general business training to companies and provides opportunities for long term relationships with industry experts.

The incubator managers worked with the companies intensely at some stage, but during this research they were not completely aware of what the companies were currently working on, and therefore, their exact requirements at that time. In general incubator managers are aware of how the companies develop during the company start up period, but were less aware of the day to day difficulties the companies' faced. Interaction during these later stages typically happened through informal conversation in the corridors. However, due to resource shortages and the multifaceted role of the incubator manager, the managers were unable to provide extra support.

Regardless of which managerial approach is implemented, incubator managers should pursue regular review meetings with the companies to maintain a level of service and support to each business. This practice was exemplified in Sweden, where companies regularly met the incubator staff to discuss milestones and progress. The Mjardevi Business Incubator in Sweden also implemented an incubator evaluation process which drew attention to practices which companies felt should have been changed. The frequency of these meetings was one of the practices identified by the companies and as a result the meetings would be held less often. The Mjardevi Business Incubator evaluation also identified how a reallocation of incubator resources could increase the level of specialised assistance the companies could receive. The incubator agreed to reallocate their training budget to subsidise company meetings with industry experts on a bi-monthly basis.

This research found that incubating companies differ in terms of their expectations. Aero Tech and Mobile Entertainment were disappointed with the lack of service they received when Peter Noble turned his attention to different incubatees (Aero Tech) or when he would agree to spend time with them and did not (Mobile Entertainment). In the Technology incubator Elysium were disappointed with the level of service they received and Jane O'Brien thought it better policy to allow the companies operate on their own. In the Ignite incubator H&S Tech and Geovera would have preferred more regular review meetings with the incubator manager and James identified how business

clinics and enterprise seminars had been run in the incubator and had been poorly attended.

Therefore, this research proposes that there would be less difference between the incubator managers and the incubating companies if the incubation message was better communicated between both. This message should accurately describe what both expected from the relationship, what each would invest in the relationship and what the limitations were. Incubator goals, objectives and operations should be better communicated to the incubating companies to prevent disappointment with the system. It could also prevent disappointment by incubator managers in poor attendance and support for incubator events, as incubating companies might better understand what is expected from the relationship.

Research has suggested that the survival and growth of entrepreneurial firms is dependent on a company's ability to maintain and extend its network of inter-firm relationships (Venkataraman and Van de Ven 1998). Therefore, one key contribution incubation can make to tenant companies is to provide different networking opportunities for tenant companies, both internally and externally with institutions and consultants (Albert and Gaynor, 2001). However, this study found that there was little networking between the incubating companies. Companies appreciated incubation for the supportive environment of like-minded people, but out of nine companies studied, I only identified one company who had actually engaged in commercial collaboration (Aero Tech), and one who sought professional advice (Mobile Entertainment). This is contrary to incubator manager reports that suggest networking is actively pursued by all companies.

# **CHAPTER 9**

## **CONCLUSIONS AND RECOMMENDATIONS**

In this chapter I highlight the primary findings from the research. These findings raise awareness of the characteristics of the incubating company and role and responsibilities of the incubator manager. By highlighting these findings future practice and policy can be directed to provide a better incubation package. The findings are presented in order of those related to incubating companies, those related to the incubator manager and those related to the general concept of incubation. I then address some of the shortcomings of this research study, and identify a number of difficulties associated with case study research in general which arose over the duration of this research. In this chapter I also make recommendations for future research and highlight how this research has contributed to future policy and practice.

By including a focus on incubating clients, this research presents a balanced view of the incubation process and highlights some key behavioural and attitudinal characteristics of the incubating companies. Specifically this research showed that the interaction between the incubator manager and the incubating companies evolved from intensive assistance to a point of little professional contact between the incubator managers and the incubating companies. This interaction usually happened on a cyclical basis, and companies tended to rely on their own and external expertise to overcome business development difficulties. This research also found that very little networking took place between the incubating companies, networking happened mostly when companies were on training programmes. The research also found that there was little interaction between the incubators and the host academic institutions. Details of these are outlined below.

### **CHARACTERISTICS OF INCUBATING COMPANIES**

- Companies Needs Evolve

Companies experience periods of needing intensive assistance from the incubator. The longitudinal study showed that companies used the incubator assistance most during

early stage set-up. This involved assistance in preparing business plans, preparing financial plans and obtaining office premises. When enterprise programmes exist, companies receive most of their business support while on the programmes. After that they rely little on the incubators for assistance as their requirements can become more industry specific and can supersede the expertise of the incubator operators.

- **Companies Seek Assistance Outside Incubator**

This research suggests that companies do not seek assistance from the incubator manager alone. Companies relied on their own network to accumulate resources and develop products. They turned to previous industry colleagues, family and friends to assist them.

- **Companies Differ in their Demands and Expectations of Incubation**

Some companies felt that incubator managers and staff should have been more involved in the development of the company. They were disappointed with the level of interaction with the manager and the role that incubation played in their development. Some felt incubation should entail continuous business assistance, others saw less of a need for further involvement with the incubator staff. They considered incubation as being a back up support that they could rely on when needed. Others again saw it specifically as offering office space to concentrate on developing business ideas. Although differences existed, when these expectations were not met the companies were disappointed at the lack of support.

- **Stage of Development and Background of Founder Impacts on Incubation Process**

Companies were at different stages of the start up process, and companies each had different levels of managerial and commercial capability. This research found that some companies had a strong management team, legal or financial advisors while others were much weaker in these areas. This research found that companies who had previous business experience or managerial experience were also less likely to require in-house enterprise assistance. Those who started the firms on their own were more likely to rely on incubation assistance.

## RECOMMENDATIONS FOR INCUBATOR MANAGERS

- Explanation of Services

On entering the incubator, companies should be told exactly the ways in which the incubator can bring added value to their companies and what role the incubator manager will play in this process. This would result in better synergy between the company's expectations and the reality of incubation. This research found that poor communication as to what the incubation manager could deliver was a cause of opposing views between tenant companies and incubating managers. This left companies frustrated with a system that had not been properly explained. Therefore, incubator goals, objectives and operations should be better communicated to the incubating companies to prevent disappointment. Also important is for objectives to be realistic and achievable by the incubator manager. A failure to deliver the assistance is also a reason for discord between the manager and the companies.

- Promotion of Incubator

This research suggests that incubating companies had a poor awareness and understanding of business incubation prior to renting their office space. This implies that companies locate in incubators more so because of affordable rents and a prestigious office infrastructure than because of the value addedness of incubation. Therefore, incubators must be proactive in promoting incubation. In Sweden the cost is not the immediate benefit locating in the incubator. Companies had a clear idea of what incubation entailed and what they hoped to achieve from their time there. Therefore, nationwide promotion of key benefits of incubation is important to ensure companies locate in the incubators for the right reasons. This can also help manage the companies expectations during their tenancy.

- Value of Affordable Rents

Traditionally business incubation was associated with lower rental rates (Lendner, 2003). Today, the concept of incubation has evolved to a more dynamic approach focusing on providing 'value-added' services and facilities to start-up companies. However, through meetings with the incubating companies, this research identified that cheap rent is still an outstanding reason for companies locating in incubators. The benefit of cheap rent should not be underestimated as the companies have been better

enabled to acquire resources as a consequence. The companies argued that lower rent or rental breaks have helped them create more opportunities and establish better resources more quickly than would otherwise have possible:

‘If we didn’t have this it (incubator) would be a lot harder, we probably would have sacrificed taking on another body just to pay the rent’.

‘The one thing that you need is staff...so it (the rent) has to be a commercial rate that it’s not crippling you to prevent your growth’.

‘(The rent is) very affordable. If you were to get something else with the same kind of facilities, the same modernity, you would be paying a hell of a lot more money’.

‘The cost would be the main benefit, but it’s got a lot more going for it than just cheap rent’

- **Manager’s Multitasking Prevented Involvement**

Time restrictions and commitment to other duties makes it difficult for the incubator manager to be actively involved with the companies. In order to improve this, Rice (2002) suggests the manager have a team of staff to whom he can delegate some non ‘co-production’ tasks. However, this study showed that Irish incubator managers were involved in multi-tasking and highlighted a shortage of incubator staff to delegate duties. The extra commitments each manager had implied each manager had a lack of time. It was the lack of time that influenced the level of service each incubator manager offered to companies.

To avoid this the manager should clarify the level and type of support offered to the companies from the start. Managers should consider carefully what they promise to the companies and what they can feasibly deliver. By highlighting this from the start, company expectations can be better managed.

- **Use of ‘Open door’ system**

Each of these three incubators operated under the premise that companies would approach the incubator manager when in need of assistance. However, there were many examples in this research where companies experienced difficulties and did not approach their incubator managers. Therefore, while the incubator managers operate an open door system, the success of this system is questionable in relation to its role. It is quite possible for companies located in incubators to experience difficulties and not to

approach the incubator manager. To ensure its effectiveness, the open-door system should be accompanied by regular review meetings with the client companies to ensure time is spent with the companies.

## GENERAL OBSERVATIONS

- Association with College

Companies in campus incubators can benefit from access to university resources such as additional personnel, access to R&D students and community and the university image. They may also gain access to university facilities such as laboratories, facilities, IT network, conference rooms and catering (Lendner, 2003). Willingness to get involved with the university or institute is a prerequisite for being granted incubation space and each incubator promoted different activities to facilitate this. However, This research found it is the reputation of being located close to a college that companies most value and many fail to partake in much more. The association brought prestige and added value to their companies.

One role of campus-based incubation is to facilitate the commercialisation of research, for third level institutes to contribute to the larger economic community and to create a spirit of enterprise throughout the campus (Objectives of Focus Incubators). However, as this research suggests, only two out of nine focus companies were born from academic research and established by university lecturers. This would imply there is a gap in the commercialisation of third level educational research process.

- Lack of Networking between Companies

Existing incubation research highlights networking as an outstanding benefit of the incubation process (Mian, 1995). Companies located in business incubators have the opportunity to establish collaborative relations with other incubating companies or with external companies. They could access external knowledge networks of the incubators, and the social internal networking opportunities. However, this research suggests that the level of interaction between incubating companies is minimal. While the companies found the environment supportive, they did not interact often with other companies on a strategic of commercial level. However, when asked about the benefits of incubation

they all agreed that incubation was a supportive environment in which to start a company as there were so many other start-up companies in similar positions. This would imply that companies appreciated the back up and support that was available to them if they needed it, however, they did not engage in significant networking.

- Status of Relationship with Incubator

There are two sides to this association. Firstly companies felt that locating in the incubators gave greater identity to their companies through the services and facilities that were available to them. These they felt added prestige, status and professionalism to their companies. They argued that this was more so than if they had been working from home, and more so than if they were located in local business offices or business parks. In particular they valued the receptionist, meeting and conference rooms and ICT facilities. Secondly however, the brand of 'incubation' can evolve to have a negative impact on the companies once they become more established. The association with a third level educational institution may also have a negative impact and could imply association with a large bureaucratic organisation, a reputation colleges can have in the commercial world.

#### **SHORTCOMINGS OF STUDY**

There were a number of limitations to this research approach. These are outlined below.

- Firstly, this fieldwork took place over an eight month period. This time was divided into incubator visits every two months. Over these visits, it took time to establish a rapport with the companies and create an environment that allowed companies to answer comfortably confidential questions regarding growth, development and life within the incubator. It also took time for companies to feel comfortable in speaking honestly about the true benefits, impact and problems of incubation. A longer study could have allowed greater detail be accumulated in the cases and to provide further detail on the true relationship between incubator and client company however the time-scale of this project did not allow for a longer empirical study.
- Secondly, there may have been a bias in how the case companies were identified and chosen. Each incubator manager was asked to forward three companies to

participate in the research. This was the most efficient way of identifying and locating companies in the incubator. However, the companies that were chosen were handpicked by the incubator manager, and could have been chosen based on their merits and success in order to best promote the services of the incubator.

- Thirdly, the research did not include a control with early stage non-incubating companies. This is an ongoing difficulty of incubation research as identifying companies of similar strengths and abilities within and external to an incubator is difficult. However, the objectives of this study were not to evaluate the concept of incubation itself but to explore how incubators are managed, how companies grow within them, what assistance is offered to them and how they interact with the centre managers.
- Included in this research was a visit to Sweden, to visit models of good incubation practice. Financial and time constraints meant this visit involved meeting just two business incubators. This was another shortcoming of this research, in how it lacked the dynamic that a wider international comparison from other international visits could have provided.
- There are a number of difficulties that arise with this form of research which were also encountered over the duration of this study. Because case studies accumulate large amounts of information they can be difficult to assemble. Cross-case analysis can also be difficult to carry out because of differences in practices leaving it difficult to use the same assessment criteria for different cases.
- As with any case study research, there were also issues of reliability, validity and generability. However, measures were taken over the duration of this research to maximise the quality of the findings. This involved carrying out multiple interviews, transcribing each interview, analysing each interview and carrying out a sequence analysis on the information to identify the development process of the companies. The information was inputted into company development tables from which timelines were then designed. This process ensured accuracy and transferability across each of the case studies.

This research is based on a study of three campus-based incubators in Ireland. In summer 2004 the Enterprise Development Agency were overseeing the increase of another 14 incubators in Ireland. Therefore, it is impossible to judge how this study will relate to Irish incubation in the future as the climate changes dramatically. However, the findings can be applied to incubators of similar characteristics in Ireland. Its application to incubation outside Ireland is also questionable as different practices and procedures exist. However, as happened with the international study to Sweden, elements of this research can be applied to international research on incubation practice.

Another issue is how this research has relied on the memories of the research participants. This can present a possibility of bias to the research. However, the strength of this case study design is the detail it provides more so than survey based research would have shown. Unfortunately, interview-based research carries that consequence but by interviewing incubator managers and incubating companies regularly, the possibility of this arising was reduced.

#### **CONTRIBUTIONS TO LITERATURE**

This research makes contributions to literature on many levels.

Traditionally incubation research has failed to consider the views of incubating companies on the incubation process. Therefore, this study adds to the small body of research that uses a more balanced research approach and creates a more balanced view of incubation. This study has also assessed the impact incubation plays in the start up process focusing on the development of companies to understand what role incubation plays. Again, this differs from much incubation research that focuses instead on the facilities and services of incubation. This study has also taken recommendations from (Mian, 1999) and combined literature from two bodies; company evolution information and incubation literature. This has highlighted that to truly assess incubation, its management and processes, it must be done with a better understanding of the start-up process, its difficulties, activities and stages of development.

In addition, this is a longitudinal study of incubation which shows more than a snapshot image of activity within the three incubators at just one time. This allowed investigation of the evolution of the company and the relationship with the incubator. It showed people at different stages of development and portrayed a more indepth story of incubation than survey-based studies.

This study will contribute to the growing body of information on business incubation in Ireland. This will come to the fore as the future sees a large increase in the number of campus based incubators in Ireland.

#### **FUTURE RESEARCH**

This research has challenged traditional approaches to exploring business incubation. However, as with any study it has also created opportunity for further research in the area. Below are outlined additional suggestions as to how this concept can be further explored.

Despite the number of incubators that were visited during the exploratory research (eight), the longitudinal study was limited to three case incubators. Future research could expand the number of incubators and also their geographic dispersion throughout Ireland. This would allow for more reliable and generalisable data and may also assess if regional trends exist.

This research was conducted over a period of eight months. These interviews highlighted that company/incubator relations evolved from intensive assistance to a less hands-on approach in each of the incubators. While this study experienced this change, with this time frame it was not possible to fully monitor the developmental process for each company. Consequently the research relied on the recollections of participants to illustrate the company history, the evolution of the idea and interaction between incubator manager and company. Also, companies expressed their opinions on incubation based on what challenges and problems they were currently experiencing and how involved they felt the incubator was or should have been in that process. Therefore, more interviews conducted with the companies would portray a more accurate view of their incubation experience. Therefore, future research should explore

this relationship on a longer term basis and record first hand the evolutionary process as events and interaction unfolds. A longer research period would also allow a more detailed company history be established.

Future research should also consider the 'graduation' process from incubation and the level of assistance companies receive in relocating. Statistics suggest that incubation has a successful success rate of companies who survive after incubation, however there is little research on the relocation process, how companies manage the change and what level of post incubation support they receive.

This research has benefited from one international visit and research with incubators and companies in Sweden. Although a limited visit it suggested alternative solutions to a number of problems that were experienced within Irish incubators. Therefore, a recommendation for future research is to include a wider international study of business incubation and incubating companies. This could complement the existing international studies of business incubation that tend to focus more on information from incubator managers more than the incubating companies and consequently deal with the management of incubators more than the development of companies.

## *CLOSING*

This study was undertaken at a time when Enterprise Ireland had committed to financing the development of fourteen campus incubators in association with the Institute of Technology sector in Ireland. The aims of this research were to better understand the incubation process in parallel to this increase in incubation activity.

Literature has argued that incubation can accelerate the start-up process through providing a portfolio of services, facilities and supports for the new firm. Through this provision of assistance, incubation can prevent the high failure rate that is associated with start-up companies. However, this research challenges this understanding and assesses further the true impact incubation played on the development of nine companies located in three incubators in Ireland.

This study suggests that while incubation provides assistance with some of the new venture creation process activities and provides access to resources such as business plan assistance, office facilities, marketing assistance, it plays a lesser role in the start-up activities directly related to formalising and nurturing the business idea, which is a critical part of the start-up process. Incubation therefore cannot claim to accelerate the start-up process for a number of companies who rely on external and personal networks to assist this process.

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