

The ABC of Internationalization and Growth in High-Tech Venture Capital Backed Firms

Vækstfonden

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1. Introduction

In the past few decades, technology start-ups have been a focal point in much of the empirical research on the origins of economic growth. By making their entry into the marketplace and expanding employment as well as the utilization of resources as they grow, start-ups can have a powerful impact on the rate of growth of national economies.

The notion of technology start-ups as a growth driver is, of course, not new. Notable scholars such as Schumpeter were keen to point out the virtues of “creative destruction” in the beginning of the 20th century. But the creation of new businesses and the ability to grow these have emerged in recent years as prime targets for government initiatives intended to stimulate growth and employment.

A particularly large impact may result from those start-ups that are founded on what appears to be groundbreaking technology. Where the business model consists of rolling out new technology to redefine standards in entire industries and satisfy demand that businesses and consumers had not even realized was vital to them. But the challenge lies in striking a chord in the marketplace. History is littered with companies with superior technologies, who were never able to embody these technologies in marketable products that customers wanted to buy. Such cases of technical superiority but deplorable business are mostly of academic interest. What is far more interesting is the study of those companies that succeed in marrying technological progress and business success.

That is the subject of this report. We have interviewed members of management in 11 Danish technology start-ups, who show signs of being on the right track toward commercializing new technology. The purpose of surveying these 11 companies is to identify the critical success factors behind a successful commercialization strategy. This is done by analyzing what the main ingredients have been in these companies’ go-to-market strategies, who their main partners are, and what their roles have been in moving the business forward. An underlying assumption is that most of the company founders are technically brilliant, but need guidance on commercial issues.

A good place to look for such guidance might be in the venture capital community, where investors tout their ability to bring both money and industry experience to the table. In order to investigate the link with venture capital in particular, all 11 start-ups were selected as having been backed initially by venture capitalists. This makes it possible to identify to what extent venture capital investors are in fact able to create value in their portfolio companies, and how they do so by providing capital, business skills and a network of people in the industry.

Based on the survey of how successful individual business strategies have been for the 11 start-ups, and how interactions with venture capital investors have fared, it is possible to distil two sets of guidelines – one for start-ups on how to best prepare for and execute an

international commercialization strategy, and another one for venture capital investors on how to help build a global business in each of their portfolio companies.

1.1. Internationalization of “Born Globals”

Historically, the archetypal multinational enterprise, MNE, has been a large, mature domestic corporation that, over time, has expanded its operations to include an increasing number of international markets. The expansion path of MNEs typically has consisted of acquiring production plants, establishing distribution networks, and setting up outlets in new markets that the company wanted to expand into.

Companies with an international focus from inception have existed for centuries – e.g. East India Company. Organizational research has been concentrated on the conduct and performance of such large, mature MNEs. However, with the arrival of “Born Globals”, a concept widely attributed to McKinsey & Co. (1993), a different approach to conducting business internationally has emerged. Since the late 1980s, the popular business press has been reporting on the business trends behind the emergence of “Born Globals” (Brokaw, 1990,¹ The Economist, 1992²).

Moreover, “Born Globals” have in recent years been the focal point of a growing body of academic literature as well. In their seminal article, Oviatt and McDougall (1994) argue that “Born Globals” diverge from the MNE archetype in that their operations are based on strategic partnerships and contractual relationships rather than on the accumulation and control of productive assets in markets around the World.

As indicated by the term Born Globals, these companies have a congenital ability to spring up in technology hot-spots, source from anywhere in the World and disregard national borders in the pursuit of marketing and selling their products. This is very different from the incremental approach to internationalization, which has been the token of traditional MNEs.

The onslaught of technological innovations in recent decades combined with a rapidly growing global community of people, who have honed their business skills working in different places around the World, have further spurred the awareness of “Born Globals”. In the words of Oviatt and McDougall (1994), an “internationally experienced person who can attract a moderate amount of capital can conduct business anywhere in the time it takes to press the buttons of a telephone, and, when required, he or she can travel virtually anywhere on the globe in no more than a day. Such facile use of low-cost communication technology and transportation means that the ability to discover and take advantage of business opportunities in multiple countries is not the preserve of large, mature corporations. New ventures with limited resources may also compete successfully in the international arena.”

¹ “Foreign Affairs”, Inc., pp. 92-104.

² Go west, young firm, May 9, pp. 88-89.

A specific breed of Born Globals are the ones backed by venture capital. The scaling of viable business models across profitable markets, which lies at the core of venture capital investment, means that those companies receiving venture capital almost by definition are Born Global. To the extent that there are some common building blocks in the way venture capital works in "Born Globals", it may be particularly revealing to investigate how venture capital backed companies devise and execute on their strategies for developing new products and taking them global.

Evidently, the pace at which a venture capital backed firm grows, depends on a whole range of factors beside the anatomy of the investor putting up the money. One such factor is the nature and dynamics of the industry the company belongs to. Drug development firms notoriously face development periods of up to 10-12 years before a new product is released. Compared to a software development company, ready to release its product after a few months or years of programming, the dynamics of drug discovery thus seem slower, when viewed from a distance. But despite the obvious differences between drug development and software companies, the idea in this report is that they may still fit in the same strategic model on international commercialization. To allow for a systematic approach to understanding the various steps involved in taking a technology-based, venture capital backed company global, a model of the internationalization process has been designed. This model breaks the process into three critical stages.

1.2. The ABC of Internationalization

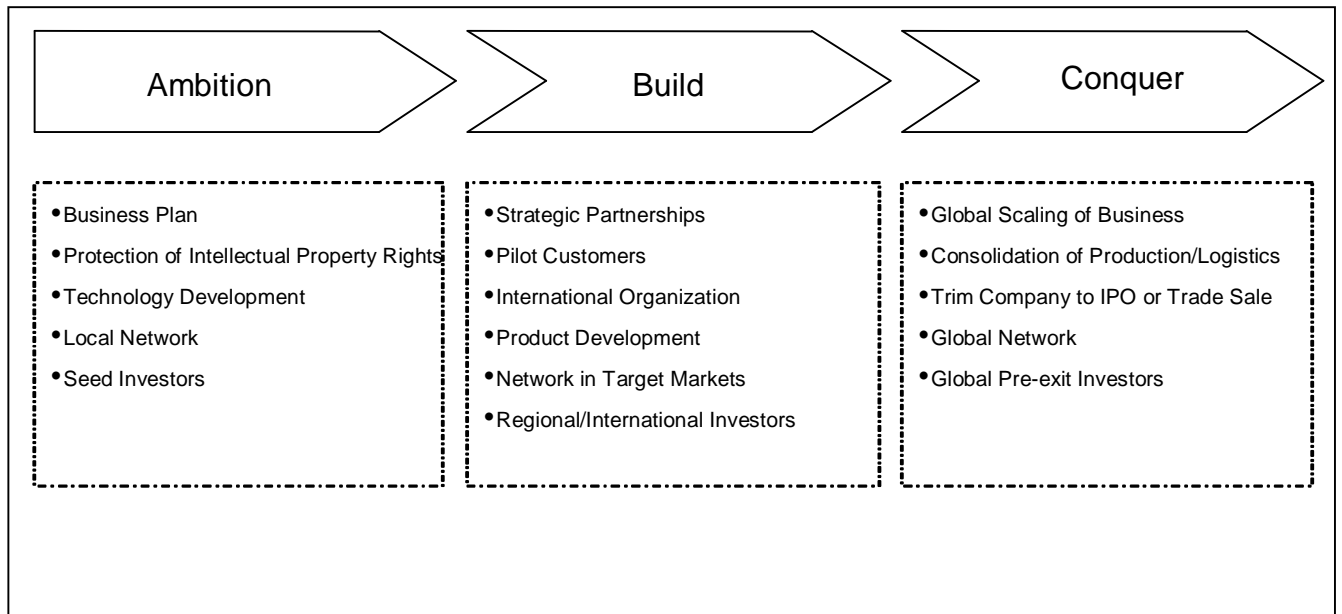
It is possible to view the passage from inception to exit for a venture capital backed company as one that takes it through three distinct stages, which we call:

- Ambition
- Build
- Conquer

For each stage, the goal in the report is to zone in on those key focus areas that are needed in order to optimize the use of development resources and increase the probability of success. The Ambition-Build-Conquer model, ABC for short, thus provides a convenient framework for assessing what are the most important factors to drive a company forward along three crucial dimensions – business development, network partners and investors.

Figure 1: The ABC of Internationalization

-Strategic success factors in the internationalization of high-tech venture backed firms.



Source: Vaekstfonden

In the Ambition stage, the high-tech venture backed firm is based on an idea of a product which is not already in the marketplace, or which represents a new and radically improved version of an existing product. Developing and validating the technology is at the center of attention as there can be no business unless the technology works. The founding team often consists of people with technical backgrounds and the initial funding for the company is spent mostly on R&D. Additional staff is limited as resources are scarce, but the provision of seed capital typically allows the company to attract key personnel in R&D. Although, much emphasis is on R&D and technology development in the Ambition stage, it is absolutely essential that management, in conjunction with seed investors, determine what is required to move the company to the next stage. The business plan is pivotal in this regard. In particular, it should explicitly lay out how the company will attract the commercial competencies needed to move the product, once fully developed, into the marketplace.

Once in the Build stage, the main focus is changed from inward development to outward performance. The technology is generally transformed into a real product, which can be tested and refined by interfacing with pilot customers. The company starts focussing on developing strategic partnerships with suppliers, manufacturers, and, especially, with reference customers. When engaging in these partnerships, the company is able to gather feedback about the feasibility and attractiveness of the final product. Doing this minimizes the risk of missing what customers want when the product is ready for large-scale launch. As a corollary, the most significant value-creating impact typically occurs in the Build stage, where the final product is defined. For venture capitalists (VCs), both original seed investors and the regional/international VCs that typically join at this point, the objective therefore is to push the company through the Build-stage as fast as possible, spending as little funding as possible.

However, as alluded to above, the Build stage may be rather protracted for drug development companies, which have to take their products through expensive clinical trials across multiple years.

By the Conquer stage, the foundation of the company should be firmly established, thus it becomes a question of rolling out the company's products globally. Scalability is at the core of the business operations in the Conquer stage, which is typically reflected in the continual recruitment of internationally experienced management and staff, who can execute the "go-to-market" strategy. VC involvement at this stage centers on bringing in investors with substantial exit experience from having done multiple IPOs and trade sales in the past. Fine-tuning the exit strategy thus becomes a central subject of business development. The network should further expand globally to include more suppliers, distribution partners, and key customers.

It is important to point out that the three stages – Ambition, Build, Conquer – are not equivalent to the "seed, start-up and expansion"-nomenclature, which is commonly used to categorize venture capital investment stages. Although the progression across stages has many similarities, the ABC-model better captures the internationalization aspect of the commercialization process, which takes the company from R&D to exit. Whenever relevant, the seed, start-up, expansion-definition will however be used throughout the report.

1.3. Objectives and main research questions

As mentioned above one of the objectives of the survey is to narrow down what the strategic moves are in each stage of the Ambition-Build-Conquer paradigm that best support the transition to the next stage. Based on these findings, the intention is to put forward a set of strategic guidelines for management as well as investors in venture backed technology start-ups.

Five areas, in particular, call for attention. They lie at the root of the transformation process a start-up undertakes from the moment the business idea is conceived to when the VCs exit on their investments:

- R&D and product development
- Management and human resources
- Business development, marketing and sales
- Network
- Investors

Throughout the report, all of these five dimensions of company-building are explored for each of the three stages in the ABC-model.

R&D and product development

Unique R&D capability is generally at the core of the high-tech venture backed start-up as it generates the business opportunity around which the company is founded. The opportunity lies in introducing innovative problem-solving or value-enhancing products in the market, and then scaling the business across international markets. The flip-side is, of course, that long development processes often mean time to market can take several years and consequently raise technological and commercial risks associated with funding the company. As the company progresses through the three ABC-stages, both the character and the extent of R&D and product development change. This transition further means that the skills and attention needed to succeed in the R&D dimension change in parallel.

Management and human resources

The prerequisites in terms of management skills and human resources similarly change over time as the challenges change. Different competencies are thus needed at different junctures in the process. Start-ups must be agile in order to adapt to new business situations as they occur. Because many technology start-ups are founded by people, who are very knowledgeable about the technology, but less experienced commercially, parts of management and overall human resources typically have to be replaced as the commercial aspects of building the company change.

Business development, marketing and sales

Business development in high-tech venture backed firms may be characterized as understanding the structure and dynamics of the markets for new technologies, and then designing a strategy to create opportunities in the markets the company wishes to operate in. Moreover, the business development strategy should facilitate exploitation of these opportunities. Marketing and sales efforts play a pivotal role in this process, as the company ultimately must be able to generate revenue from shipping its products. Thus, throughout the different stages of the ABC-model, the business development strategy must carefully consider what is the adequate makeup of the company's products, target customers, and target markets, as well as take into account its current and potential competitors.

Network

All companies, regardless of size, age, and market position, across all lines of businesses have at least one thing in common – they all depend on outside resources for various parts of their business processes. Being able to build a network of strategic partners around a high-tech start-up is therefore a critical component in its development process. While the composition of the network should be tailored to the individual business, it typically consists of partners who control resources that the start-up needs and applies in the technology development, production, and distribution of its products. Like with the other dimensions, the importance of

different strategic partners varies across the three stages in the ABC-model, which means that the company has to develop a dynamic approach to working with its strategic partner network.

Investors

The final dimension is the company's investors. Apart from funding the company, investors are supposed to provide access to key management resources and strategic partners by drawing on their personal networks. The investor group may include both business angels and venture capital firms as the requirements on investment amounts and value-add from investors vary across time. In the early stages, funding needs are often comparatively modest, while investors typically help recruit key people to strengthen management and also build relations to strategic partners and customers. As the company grows, larger financing rounds are needed to secure enough funding for the expansion strategy. And when the company approaches an exit situation, investors may contribute based on their IPO and/or transaction experience.

1.4. Survey methodology

Interviews with management in 11 technology-based Danish start-ups form the basis of the empirical research conducted for this survey. This range of business cases is then used to identify "best practices" across the various sets of experiences.

The start-ups chosen for the interviews have all been drawn from Vaekstfonden's portfolio of Life Sciences and Technology companies. The Life Sciences portfolio comprises Biopharmaceuticals, Biotechnology, Medical Devices, Diagnostics, Nutraceuticals, and Agrobiotechnology, while the Technology portfolio primarily focuses on Software, Communications and Components.

Beside having Vaekstfonden on board as an investor, each of the 11 start-ups has at least one other venture capital investor, and several of them have raised funding from non-Danish VCs as well.

Moreover, the companies were selected in order to make up four from each of the three stages in the ABC of Internationalization – Ambition, Build and Conquer. Two of the companies in each stage are Life Sciences companies, while the other two are in the Technology domain.

Although the company sample is too small to allow for a thorough statistical analysis, examining each business case in detail still provides key insights into the dynamics of the internationalization and growth process of technology start-ups. Excerpts of the case studies are used throughout the main part of the report to exemplify and underscore findings about strategic moves, while more detailed descriptions of all the companies may be found in the Appendix.

Each part of section 3 in the report can be studied separately, whereof most figures are depicted in each stage of the ABC-model.

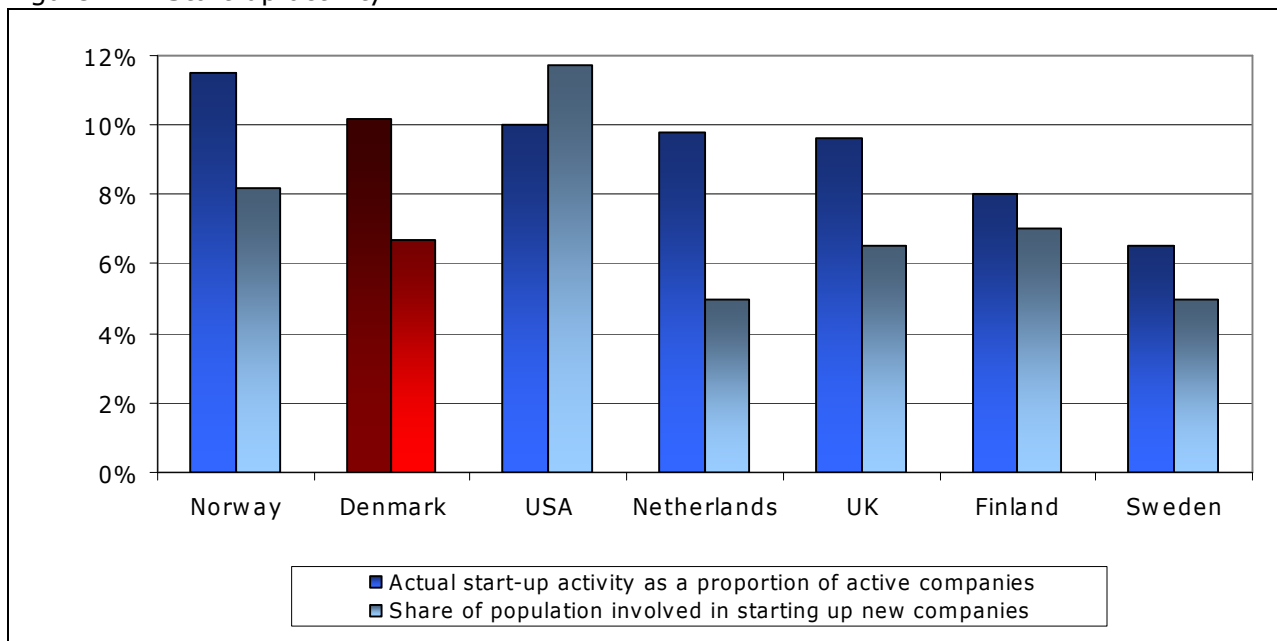
Before delving into the do's and don'ts of global roll-out strategies for high-tech start-ups, it is relevant, however, to review Denmark's track record on entrepreneurship and, in particular, the interaction with venture capital. This review is intended to show where some of the main challenges and opportunities lie for Danish technology start-ups, and thus provide an elucidating backdrop against which to survey the strategies pursued by the 11 companies.

2. Entrepreneurship and growth in Denmark

The ability to create new companies can enhance the growth of an economy and the creation of new jobs. Entrepreneurs create innovation by developing new products, production methods and technology. In Denmark, a substantial share of the growth in productivity can be attributed to entrepreneurs – and more than 20,000 new jobs are created annually by new companies. However not only the number of new companies created is of high importance – the total value-creation of start-ups is naturally linked to the growth of these companies.

When it comes to pure start-up activity – the number of firms established each year as a proportion of the total population of companies – Denmark ranks among the best performing countries in the world. Based on figures from 2001-2003 Denmark is surpassed only by Norway. See figure 2.1.

Figure 2.1: Start-up activity



Source: Global Entrepreneurship Monitor (GEM) and Eurostat

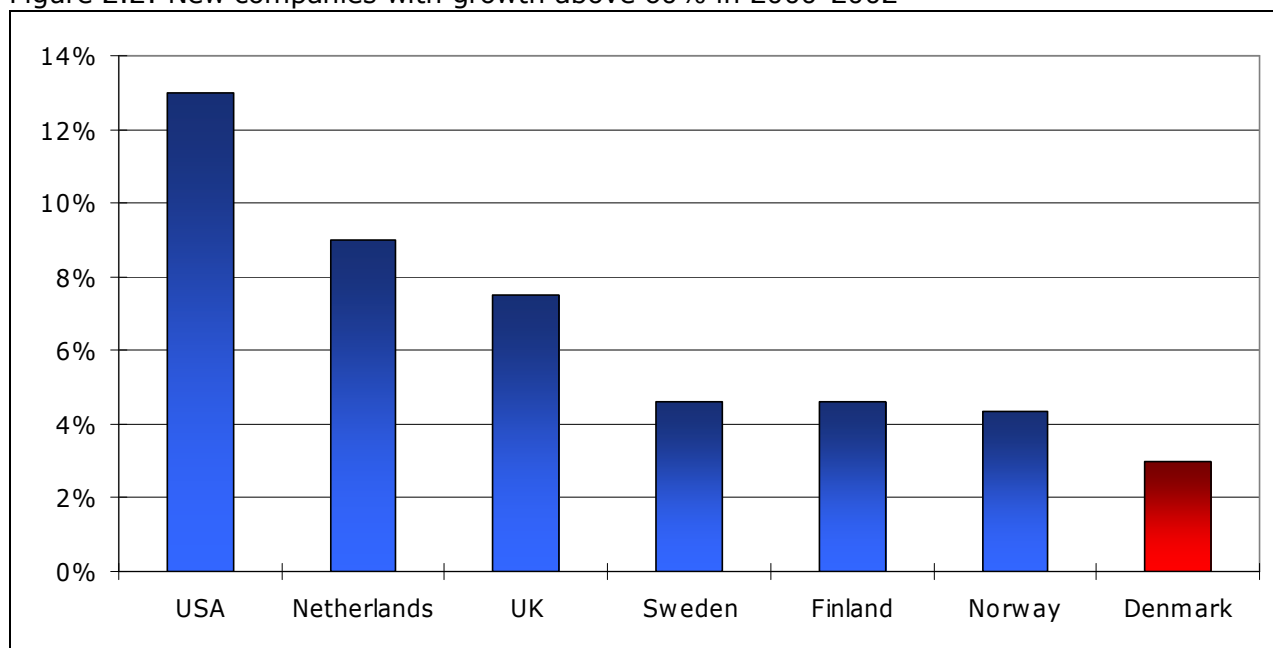
Denmark is thus better at creating new companies than the United States, the Netherlands, UK, Finland, and Sweden.

The entrepreneurial activity can also be measured by the proportion of people involved in start-up activities. According to this figure – which is measured by Global Entrepreneurial Monitor – Denmark is ranked in the middle – surpassed by countries like USA, Norway, and Finland. In Denmark, only 6.5% of the population is thus involved in start-up activities – while the corresponding share for the US, Norway and Finland are 12%, 8%, and 7% respectively.

Denmark is doing reasonably well, though, when it comes to creating new companies. But in terms of the ability to create growth in these companies it is a very different matter.

The proportion of high-growth start-ups in Denmark is substantially lower than in the best performing countries. Only 3% of Danish start-ups achieve growth rates above 60% over a three-year period compared to 13% in the US, 9% in the Netherlands and close to 8% in the UK. Moreover, in the Nordic region, Sweden, Finland and Norway outdistance Denmark by almost 2%-points. See figure 2.2.

Figure 2.2: New companies with growth above 60% in 2000-2002



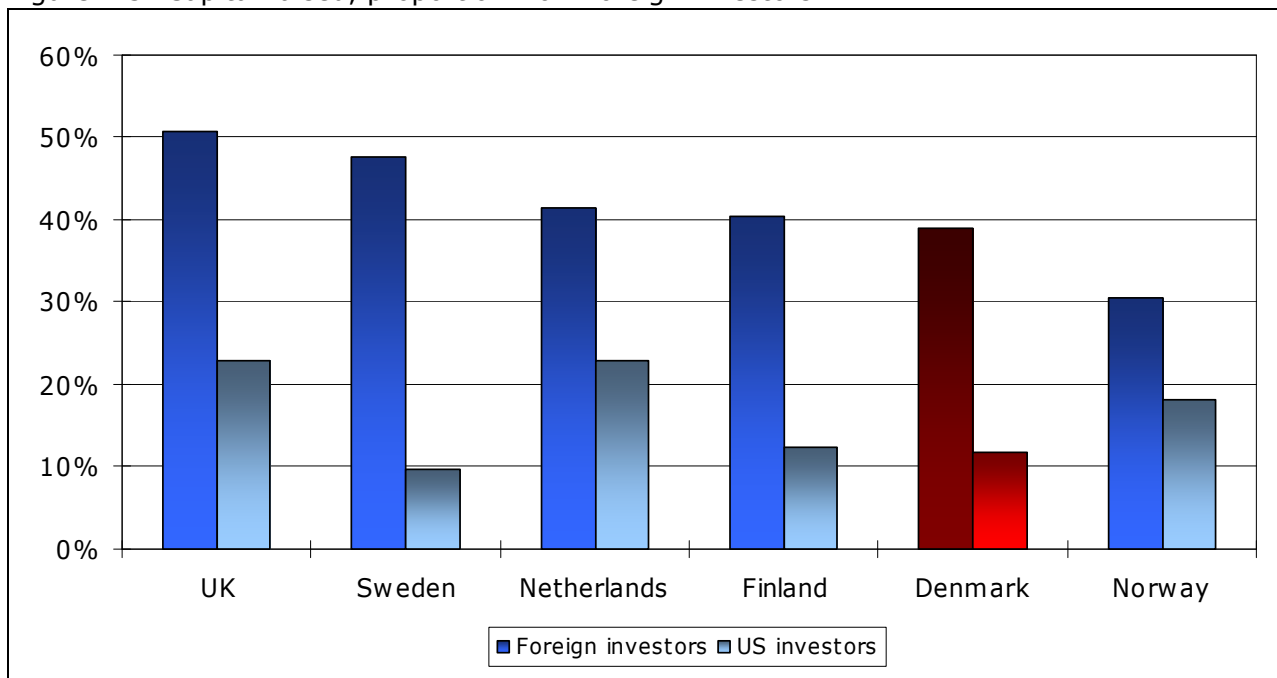
Source: Vaekstredgoerelse (The National Agency for Enterprise and Construction, 2004)

These results reflect in part the national framework conditions that start-ups have to operate within in each country. In particular, access to capital matters for company growth.

Capital is required in order to hire management and key personnel and thus accelerate the development process. But the source of capital, and particularly the experience and background of the investor, are crucial companies that are able to attract capital from investors with a broad set of competencies and an international network, which they can give access to, stand a better chance of success. In particular, bringing in foreign investors may make it easier to penetrate those markets, where they are domiciled.

Companies in the UK are the best – among the European countries - at attracting capital from international investors. Of the UK companies raising venture capital in 2002-2004, more than 50% were able to raise capital from foreign investors. Equally important, the UK companies stand out in terms of their ability to attract capital from US investors. These results are the product of a more mature market for venture capital in the UK that is well-integrated with the rest of the world. See figure 2.3.

Figure 2.3: Capital raised, proportion from foreign investors



Source: VentureSource (VentureOne)

Swedish companies are also good at raising capital from foreign investors. Nearly 50% of the Swedish venture backed companies received funding from international investors, which is the highest rate among all the Nordic countries. However, only 10% of the Swedish companies managed to raise capital from US investors.

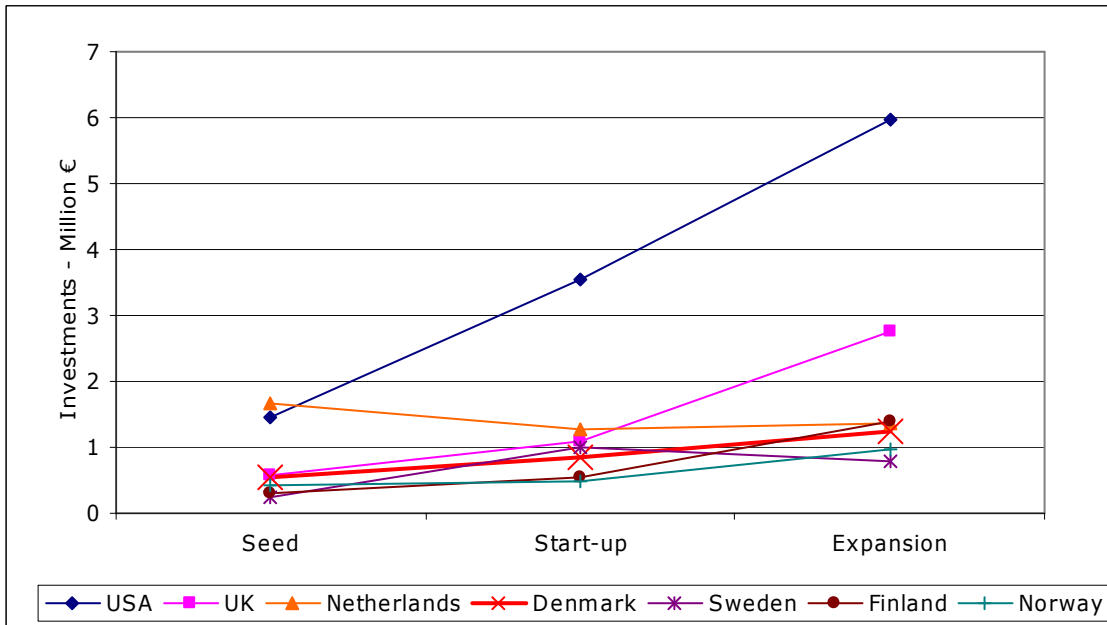
In Denmark, less than 40% of the venture backed companies raised capital from foreign investors – while 12% were able to raise capital from US investors. Compared to the Swedish companies, Danish start-ups seem marginally better at raising capital from US investors. But in terms of overall capacity to raise venture capital abroad, Danish start-ups are outpaced.

Of the seven countries, in fact, only Norway is worse off than Denmark in raising capital from foreign investors. The results therefore suggest that Danish start-ups and venture capitalists have to improve their ability to attract capital from abroad if they want to improve on growth performance. This can to some extent be done by strengthening their international network.

International investors are important – not only because of their competencies, their strong international network and their knowledge and presence with respect to key markets. Many international funds – especially UK and US venture capital funds - are also substantially larger than the Nordic funds – and are thus more capable of providing portfolio companies with sufficient capital to carry the company through to exit. As the company develops, it requires more and more capital in order to complete product development, initiate production and build up global marketing and sales operations.

Remarkably, investors in Denmark – and the other Nordic countries – invest on average € 0.5 M annually in their portfolio companies in the seed stage. Annual investments per company closely resemble the size of individual funding rounds. The corresponding figure for US investors is € 1.5 M. See figure 2.4.

Figure 2.4: Average annual investment from VCs per company



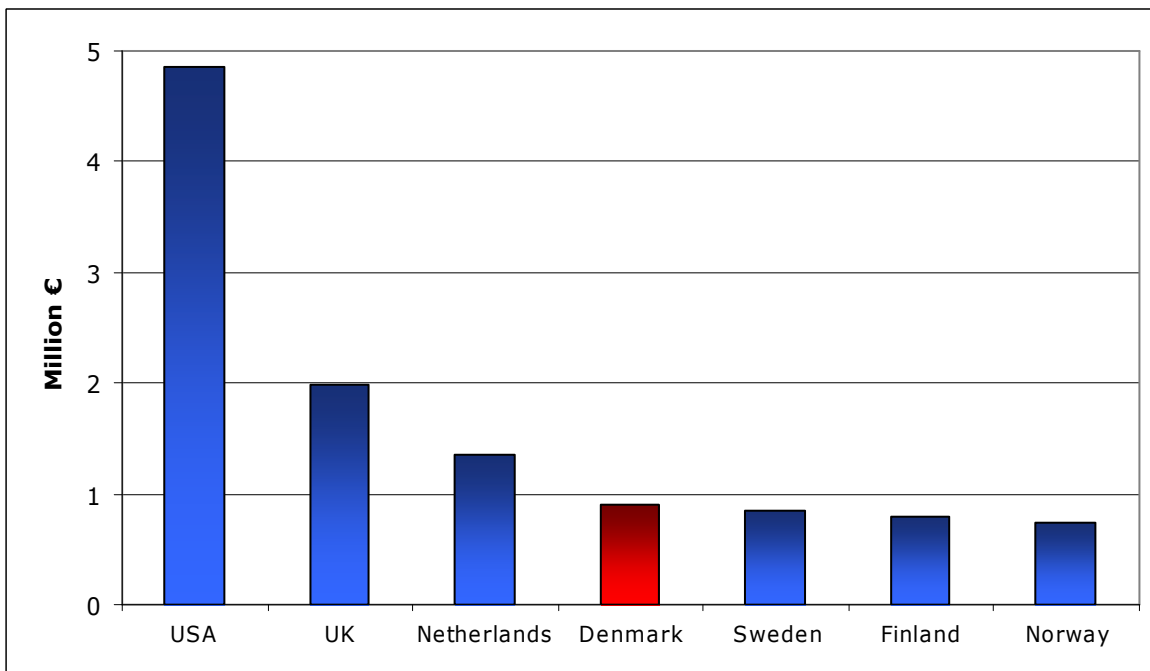
Source: EVCA and VentureEconomics

In the start-up stage, significant capital is needed to complete the prototype, start production and upscale marketing efforts. In this stage, Nordic investors invest on average € 1 M in each portfolio company – twice the amount they invest in the seed stage. US investors more than double their investments – from € 1.5 M in the seed stage to € 3.5 M in the start-up stage.

When portfolio companies enter the expansion stage - where large-scale production and marketing efforts are undertaken - they require an even larger infusion of capital. However, the Nordic investors only increase their investments slightly. In the expansion stage they invest on an average only € 1.3 M – an increase of about 30% compared to the start-up stage. US investors, however, are more attuned to increasing funding as the company enters the expansion stage. They invest € 6 M on average in this stage – nearly twice the amount invested in the start-up stage.

Looking across all stages of development, the average investments size in the Nordic countries is around € 1 M. The Netherlands are doing slightly better at € 1.5 M on average – while VCs in the UK invest about € 2 M annually. See figure 2.5.

Figure 2.5: Average investment volumes (seed, start-up and expansion) per company



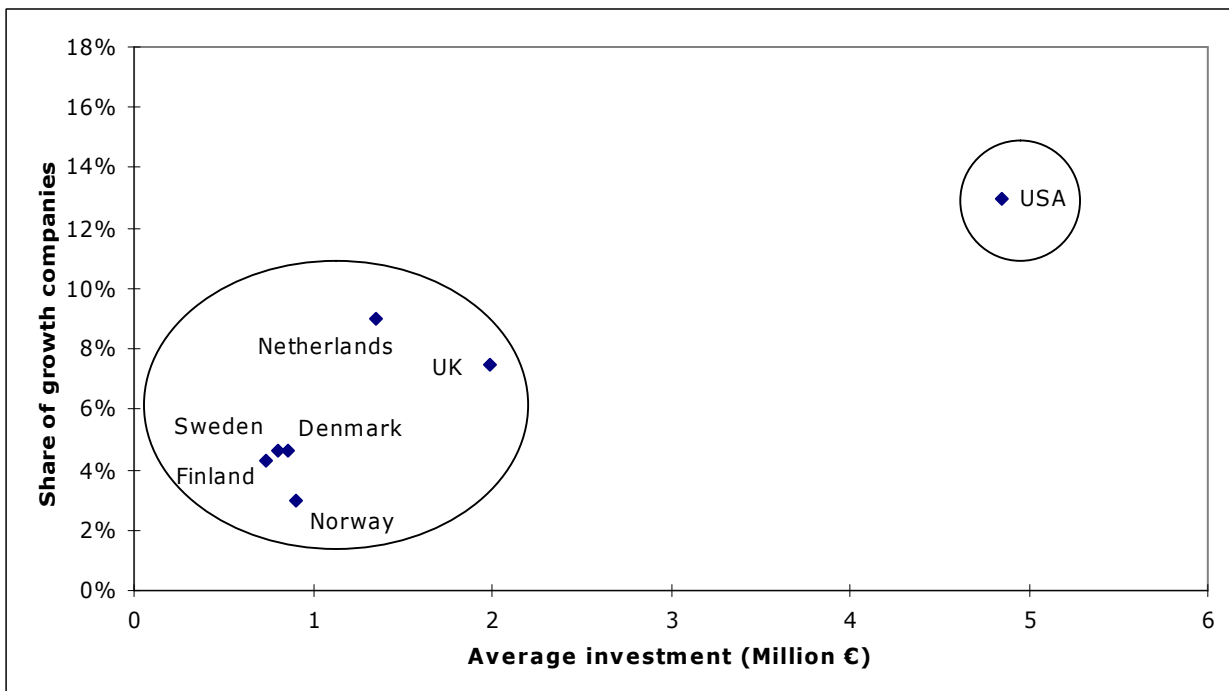
Source: EVCA and VentureEconomics

US investors, however, invest substantially larger amounts in their portfolio companies. They invest on average € 5 M per company annually- five times the amount of Nordic investors.

With their strong financial backing, venture backed companies in the US therefore seem better equipped to seize opportunities in the global marketplace and achieve high growth in the process. But how strong is the correlation actually between investment sizes and the proportion of high growth start-ups?

The leading country when it comes to creating companies with extraordinary growth rates is the US, where 13% of the newly founded companies achieve growth rates above 60%. This corresponds to the fact that US venture capital investors on average supply substantially larger amounts to their portfolio companies than investors in any other country. As illustrated in figure 2.6 there seems to be an upward sloping relationship between the average size of investments and the proportion of high growth start-ups in the economy.

Figure 2. Investment size and proportion of high growth start-ups



Source: EVCA and VentureEconomics

Compared to the other European countries, the Netherlands generate slightly more growth companies than their investment level indicates. One possible reason for this may be that Dutch companies attract a substantial amount of venture capital from the US (see figure 2.3). By the same comparison, the proportion of high growth start-ups in the US may appear slightly lower than would be suggested by drawing a straight line through the cluster of European countries to the US outlier observation. This may, however, indicate decreasing marginal returns on venture capital investments, once a certain level of investment is reached.

If we assume that there is in fact a positive relationship between investment sizes and firm growth, it is relevant to compare the funding power of VCs in the US and Denmark. From seed to exit, US VCs invest at least € 11 M on average per company. In order to diversify risk in the portfolio, a VC fund has to invest in at least 10-15 companies. A typical US VC fund will thus need to raise € 100-150 M in order to have adequate capital under management to take each portfolio company all the way to exit. This number squares well with the average size of VC funds observed in the US market, which is around € 130 M according to VentureOne.

By contrast, the data from the Danish market show Danish VCs investing only € 2.6 M on average per company. A plausible explanation for the modest funding volumes in Denmark is that Danish VCs are generally too small to match the US investment levels. In fact, the average size of a Danish VC fund is only € 35 M according to Vaekstfonden (2004)³. Thus, if Danish VCs, across the board, wanted to increase funding for individual portfolio companies to

³ The Danish Market for Venture Capital and Buy-Out, September 13.

the levels observed in the US, this would require that each of them raise at least € 100-130 M in capital under management.

To create funding conditions for high-tech start-ups in Denmark that are comparable to those found in the US thus requires that Danish VCs attain greater funding power. Even more important is perhaps the way this venture capital should be used in fledgling start-ups to turn them into successful exits. What is the optimal international commercialization strategy for a technology start-up is the topic of the remainder of this report.

3. The ABC-model

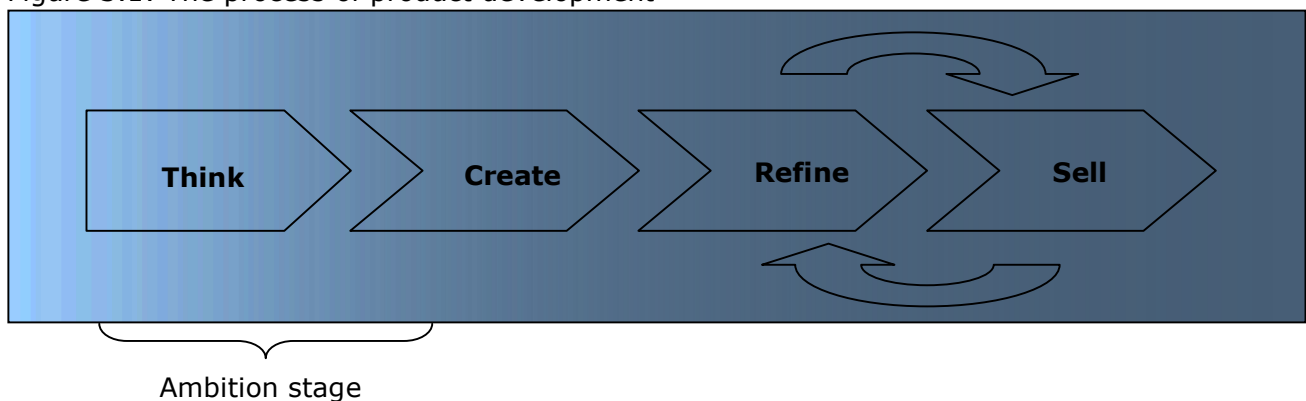
3.1. The Ambition stage

3.1.1. R&D and product development

The foundation of any high-tech firm is a unique idea, a unique technology or a combination of both - which may be transformed into a commercially interesting product through research and development.

First of all, the firm has to demonstrate that the technology is feasible by accomplishing "proof-of-concept" - i.e. the evidence that a product, technology or an information system is viable and capable of solving what it had promised to solve. Proof-of-concept is generally carried out for new products that have not yet been introduced in the market. In the product development process, the product generally goes through four phases: Think, Create, Refine, and Sell, where proof-of-concept is performed in the "Think" phase, prior to production. See figure 3.1.

Figure 3.1: The process of product development



Source: Vaekstfonden

In the "Create" phase, the product is designed, and the first product sample will work as a prototype to test with pilot customers, or in the case of drug development this stage represents the early preclinical development, whereas "Refine" more represents late preclinical development and the first dose in human. The prototype may often contain several defects and shortcomings.

In "Refine", the product is optimized prior to market introduction, which involves correcting irregularities discovered through feedback received from pilot customers or production partners. The "Sell" phase implies the point in time, where the product is in the market or licensed out to a large pharmaceutical company. Even after the product has entered the market, the product will be refined continuously to meet customer demands and requirements. The process of product development in the Ambition stage is centered on the "Think" phase, where proof-of-concept receives a substantial amount of attention in the day-today business.

The R&D team should have in mind ideas on how to create the product once feasibility has been demonstrated.

Box 1: Case study, DentoFit A/S

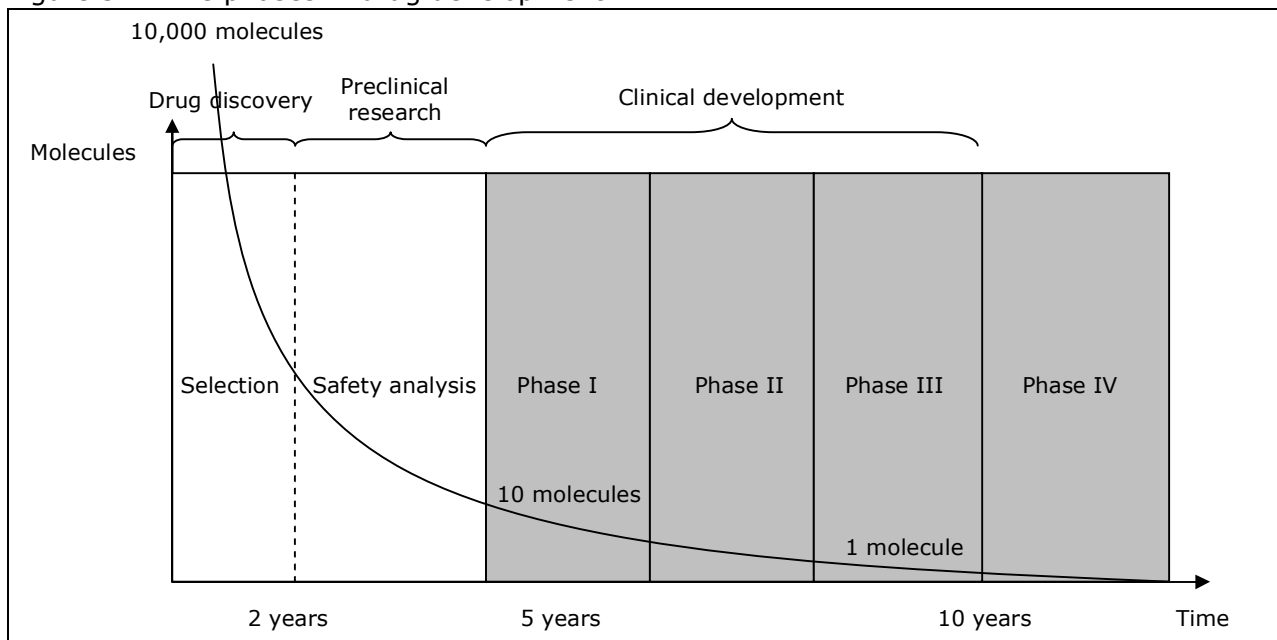
DentoFit develops a volume stable dental composite, which does not compromise other physical characteristics of the material – a new, improved product to fill cavities in teeth. No clinical trials are needed before introducing the products to the market, which means that product development will be shorter compared to drug discovery companies. In their business strategy, DentoFit states the importance of validating the idea and that it is possible to manufacture the product. This part should lead to an approval to initiate sales without having to go through clinical trials.

The proof-of-concept needs to be completed to get started on the production. However, it is also a requirement for collaboration with future investors and strategic production partners. To prove a concept is expensive for the entrepreneurs in the start-up process. Many high-tech firms raise their first funds in this stage. Typically, seed investors require that proof-of-concept has been established before investing, thus it significantly boosts the company, when it is able to secure funding from seed investors in this stage. The high-tech start-up DentoFit acknowledges the importance of proof-of-concept, and has made it a top priority in their business strategy in its current position, at the Ambition stage of the ABC-model. See box 1.

After completing a fund raising, the most important task of a high-tech firm in the Ambition stage is to continue developing its unique technology through R&D efforts. It is important to underline that the technology - in addition to being unique – must be linked to future market needs and demands. The reason is, that customers demand innovative solutions to either known or unknown problems – not just innovative technology.

The process of product development in biopharmaceutical companies differs from other high-tech companies with respect to time and expenses. From the initial discovery of a target, though screening of hundreds of thousands compounds and preclinical testing of between 5-10 chosen candidates to the final launching of one new drug approximately 12-15 years has passed and \$ 1.5 B been used. The majority of the money is used in the phase I-III clinical trials where the drug is being tested in humans – a process that takes about 6-8 years after which a two year period of regulatory approval follows before the product is ready for market entry. According to the statistics only one out of 10 compounds that makes it to phase I clinical trials will succeed all the way through to market introduction. See figure 3.2.

Figure 3.2: The phases in drug development

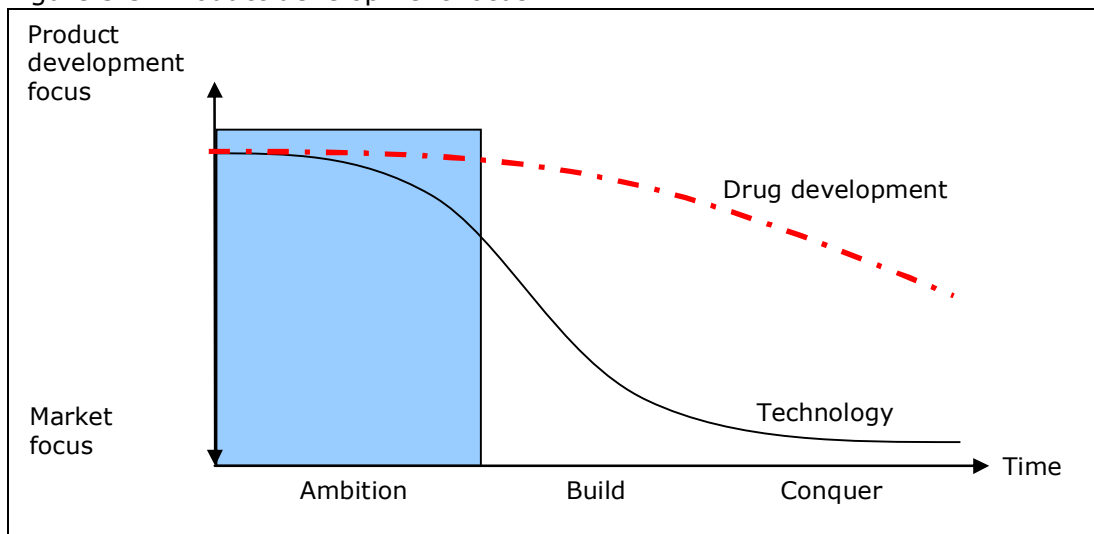


Source: Roche

The Ambition stage in terms of the ABC-model for drug development companies spans the drug discovery and early preclinical research phases. In the Build stage, the drug candidates enter the late preclinical research and continue into phase I of the clinical trials. In the final Conquer stage of the ABC-model, the drug candidate enters phase II after which it typically will be out-licensed (sold) to a large pharmaceutical company as it takes considerable time and money to move the compound through phase III and the approval process in phase IV. (For more details on the drug development see page 30).

Throughout the evolution of the venture backed firm, the focus at the end of the Ambition stage changes from product development toward the commercialization or consolidation of the product. Figure 3.3 shows the focus of a high-tech start-up with a single product, which implies that in the Ambition stage the focus generally remains on product development. In the next stages, the business development changes toward focusing on the market and sales. The dotted line indicates the change in the product development focus in relation to the market focus for drug development companies. Typically, these companies will seek to increase the pipeline of drug candidates through own R&D or through acquisitions, in order to survive.

Figure 3.3: Product development focus



Source: Vaekstfonden

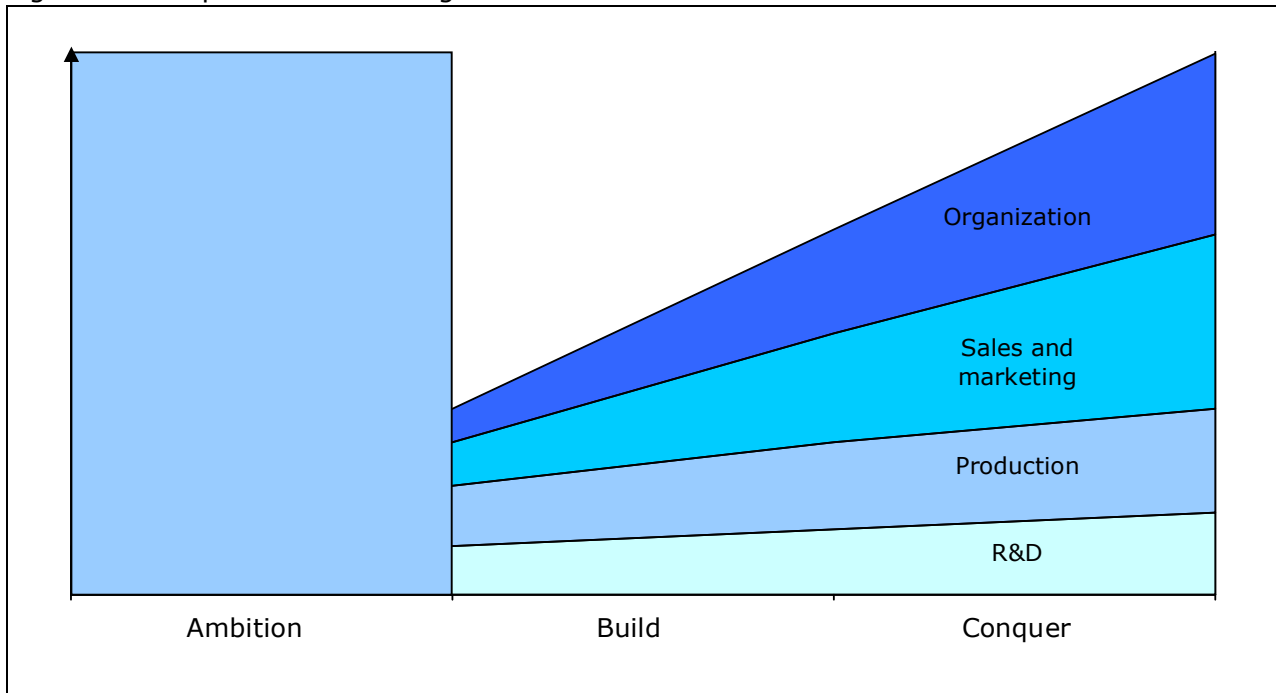
In the Ambition stage, the start-up usually is a small organization, which consists mostly of researchers. The company will not yet have built up a full-scale sales department, and sales efforts – if any - will be undertaken by a few individuals. In drug development companies the focus on R&D and product development will continue to be relatively important over time compared to more traditional technology based high-tech companies, see figure 3.3. In the Conquer stage of drug development companies, the product will generally be sold or licensed out to large pharmaceutical companies in phase II of the clinical trials – prior to market entry, as the clinical trials needed to secure regulatory approval from this point in time are usually very expensive and complicated.

3.1.2. Management and human resources

The management team of a high-tech start-up should generally possess different skills than management in established companies. Management in high-tech start-ups is typically driven by a strong belief that the business idea will satisfy an unmet need in the market. Moreover, there is hardly any track record or experience for the start-up to build on, which sets the management situation apart from that in an established company, where there is a product line as well as a customer base in place.

Four crucial management skills need to be present in all stages of the high-tech firm – R&D, production, sales and marketing, and organizational skills. However, their relative importance differs from one stage to the next, following figure 3.4. Initially, in the Ambition stage, the management generally consists of the team of entrepreneurs, who have initiated the business idea. Often these entrepreneurs have a technical background while their management skills are limited. The main focus of the company in this stage is to develop the technology to show future investors that the product idea is feasible and meets customer demand and thus is worth investing in.

Figure 3.4: Importance of management skills



Source: Vaekstfonden

Due to the limited amount of employees in venture backed firms in the Ambition stage, the management structure is simple. The hierarchy needs to be flat, and the entrepreneurial management emphasizes that it is important to make sure employees are satisfied intellectually because of the uncertainty about the future in a start-up company. Most importantly, all human resources should support the R&D and understand its evolution. The focus on sales and marketing, though, needs to be increasing to keep the market and the unmet customer needs in mind while developing the technology. In some cases, increasing focus on sales and marketing may require hiring a professional Chief Executive Officer (CEO). But because funds are often limited, a new CEO will not be hired until the late Ambition stage or early Build stage. In Nordic Vaccine Technology, the management is aware of the change in management required to move the firm forward in the development process. Currently, NVT is in the Ambition stage, and the CEO insists that his time as the top manager is limited. See box 2.

Box 2: Case study, Nordic Vaccine Technology A/S

Key human resources in NVT are in the field of R&D at the current Ambition stage. However, the skills needed for later stage business operations are becoming increasingly important. Within 3-5 years NVT expects a new CEO to enter as different competences become critical – e.g. sales and marketing, organization and business development. In the Conquer stage, NVT will need a person with experience from a large pharmaceutical company.

The entrepreneurs and the small team of researchers need to concentrate their efforts on R&D in the Ambition stage to keep focus on the technology development. Ultimately, time and energy need to be dedicated to raising additional funding from investors. The two areas of focus – R&D and fund raising – are diverging but inter-dependent at the same time. Without funds, the company will have to close, and without research, no funds will be raised. Both

require extensive time and energy. Therefore, it is important for the CEO to have a network of financial partners as well as experience in building up a new high-tech firm.

The financial focus in the Ambition stage needs to be concentrated on keeping expenses at a minimum. The cash burn rate is typically high because the company is not generating revenue. It is important to identify possible sources of finance – in particular business angels, and venture capital funds. Bank loans are not appropriate at this stage because of the long development process prior to market entry.

Technology start-ups generally differ in management style from drug discovery start-ups in the way that sales and marketing skills become important even in the Ambition stage. The Build stage is generally much shorter for the technology start-ups, because a product like software can be launched almost immediately after it is developed. For that reason, the Ambition stage is occasionally difficult to distinguish from the Build stage for this type of venture backed firms. For drug discovery start-ups, the management generally needs to keep focus on product development longer due to the expensive and time consuming clinical trials.

In general, human resources required in the Ambition stage are the founding team and a hand-picked team of researchers to assist in technology development. In order to leave the Ambition stage and enter the Build stage the venture backed firm needs to keep key factors in future stages in mind – in particular sales and marketing – and they need to be incorporated in the business development process as early as possible. For this reason, it is recommended that a professional CEO is hired as early as possible with a broad network and industry experience. In line with this, DentoFit has a clear plan for how and when to adapt management at various stages in the passage from Ambition to Conquer. See box 3.

Box 3: Case study, DentoFit A/S

In the future, the challenge for DentoFit is to enter the market, which may need more personnel to assist in “thinking outside the box”. Therefore, DentoFit is planning an increase in management. Three scenarios have been set by the current management in DentoFit in regard to its future role in the company:

1. In the Conquer stage, a new CEO will be hired – Managerial experience from a larger company in a related industry will be essential.
2. The current CEO continues in a larger management team where he will focus primarily on communication.
3. The current CEO will leave the management team in the Build stage to take a board seat.

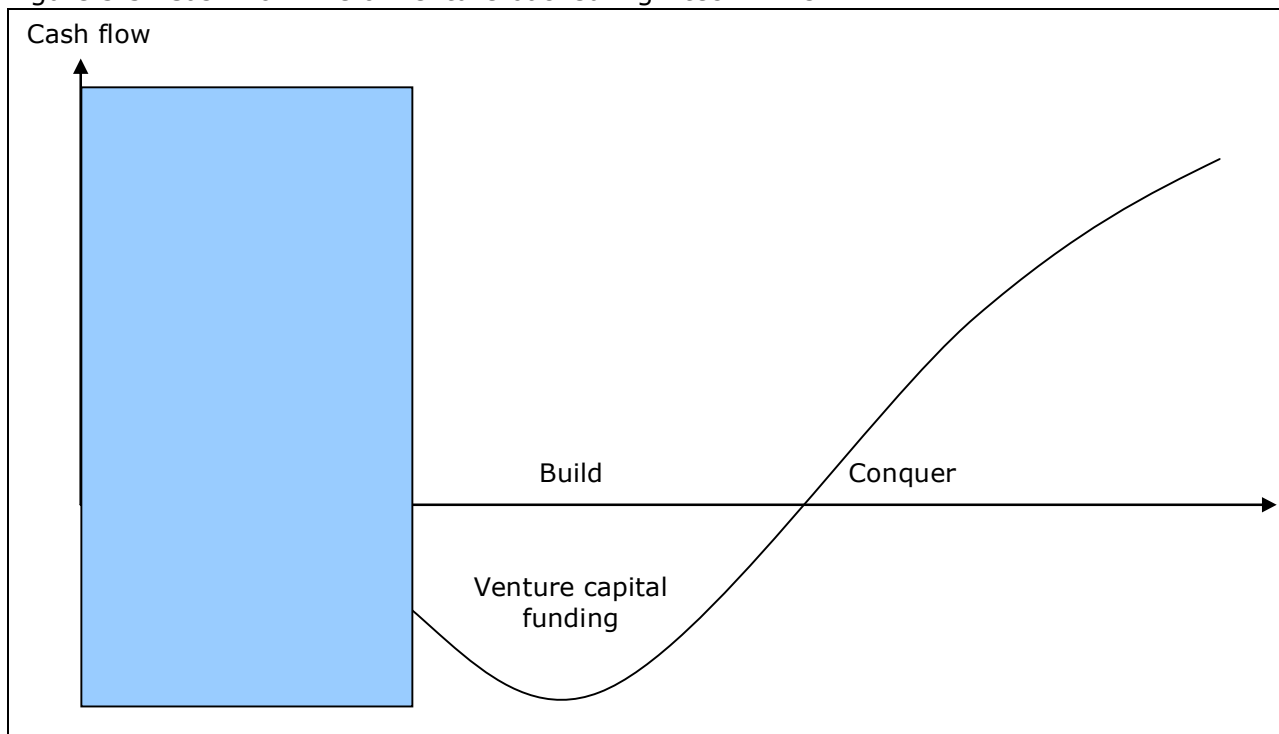
3.1.3. Business development, marketing and sales

Every good business begins with a good idea, but not every great idea makes a good business. Business development in the Ambition stage is primarily focused on turning the business idea into a real firm. Business development focus in this stage is generally simple due to the early stage of product development. The limited capital resources available also reduce the company’s room for maneuver. However, for a small start-up, the opportunities of business development can seem infinitely large.

Nevertheless, the technical idea upon which the company is funded, may be unrealistic or lack uniqueness. Therefore, it is crucial to attract competences to the firm with an extensive knowledge of commercialization. The commercialization process needs to be kept in mind in order to steer technology development toward a market demand. Equally important is it to decide what type of protection of Intellectual Property Rights (IPR) is needed to safeguard the uniqueness of the product. Either a company can seek legal protection through patents or trademarks, or it can choose to keep the technology or product as a trade secret.

The cash flow of high-tech companies is negative from inception, due to the expenses needed for the development of the technology and the product before any revenue may be generated. The expenses explode in the Build stage, when the product is introduced to the market. The marketing expenses and market establishment costs escalate in this stage funded primarily by VCs. Not until the product will be introduced, revenue will be generated, and the cash flow will turn positive in the Conquer stage. See figure 3.5.

Figure 3.5: Cash flow line of venture backed high-tech firms



Source: Vaekstfonden

In the Ambition stage no cash flow is generated and the VCs finance all business activities. The cash burn rate is usually moderate in comparison to the Build stage.

Initially, when developing the business idea or technology many related ideas and opportunities might appear. It is important to stay focused, however, and keep the technology development on track. To accommodate this, many venture backed firms prepare a milestone plan - in collaboration with the investors - to show investors and the board that critical stages in product development are met in the agreed time.

There is generally some level of competition for high-tech venture backed firms in the Ambition stage, but the uniqueness of their products should set them apart from rival technologies. They typically target a new emerging market niche – as first or early movers – or an existing market with a new type of product. In that respect, it is critical to identify the competition in the Ambition stage and learn from competitors’ mistakes in order to help build a competitive edge and maintain uniqueness. The Danish high-tech start-up O-Pen A/S states that their field of touch screen technologies is exposed to great competition, but because of their unique technology it does not affect them materially. See box 4.

Box 4: Case study, O-Pen A/S

Competition on the market for touch screens in general is immense. The number of competitors is high although only a few technologies exist. O-Pen delivers a new technology that is supposed to change the touch screen market. Thus, O-Pen assesses their competition to be moderate, as long as they are able to develop a unique technology by continuing R&D.

Due to the early stage of product development in the Ambition stage, the marketing focus is generally limited. At this stage, the management should prepare a market entry strategy for the Build stage.

For a successful venture backed firm in the Ambition stage it is thus important to identify which markets to target. Moreover, it is essential to point out the core customers in each market segment as it is advantageous to partner up with these customers in advance so that they can assist in developing the technology. This way the product is more likely to meet customer needs.

Box 5: Case study – Nordic Vaccine Technology A/S

The importance of the Danish market is limited with respect to revenues. However, it is important from a regulatory point of view. An approval might be easier to obtain in Denmark, and the process of obtaining a license may be shorter.

The high-tech venture backed companies are Born Global in the sense that the domestic market generally has only a modest impact on the marketing efforts. These firms need to prepare a global marketing strategy from inception to succeed. The domestic market will have a significant role in some companies, though, as a test market or because of regulatory advantages. Obtaining an approval – primarily for drug development companies – can be a very difficult task. However, when an approval is obtained in one EU country, it is automatically approved across the whole of EU and may

ease the approval process in the US. Nordic Vaccine Technology is one of the early stage portfolio companies which expects the domestic market to become important due to regulatory advantages. See box 5.

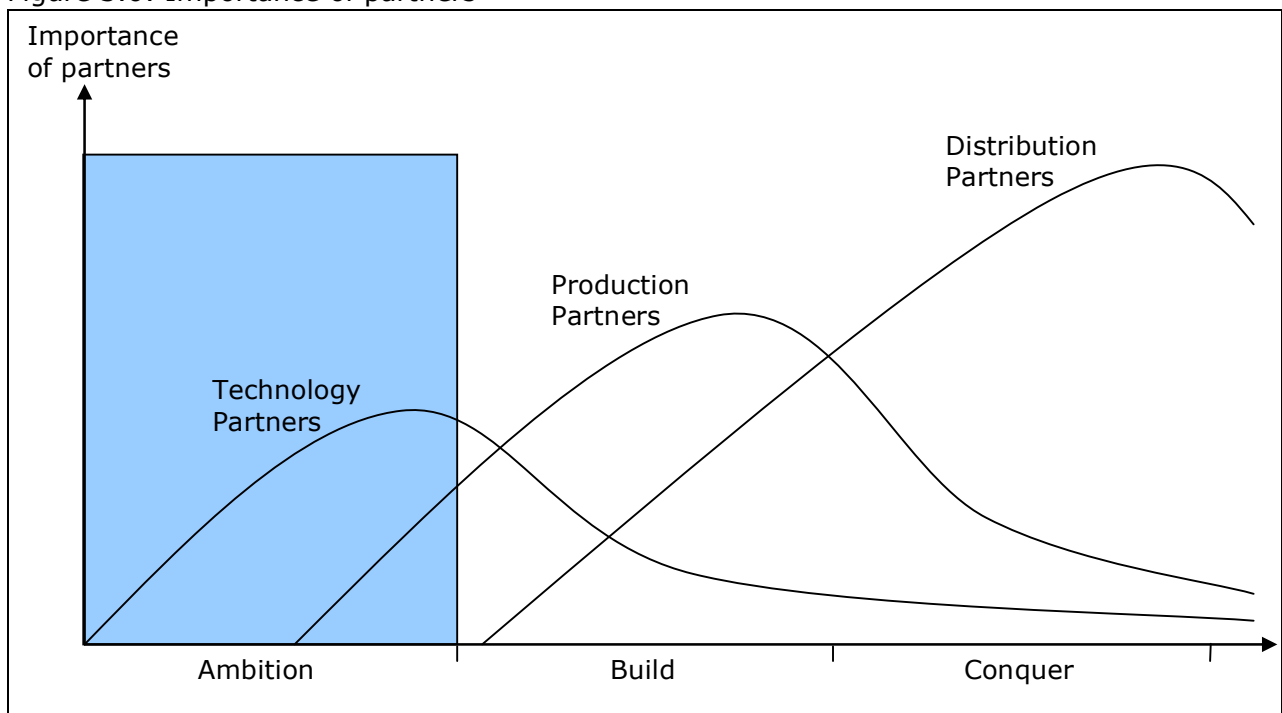
3.1.4. Network

For a newly established high-tech firm – trying to bring its first product to the market - a strong network can often be the deciding factor in surviving and becoming a success. In order to illustrate the importance of the network it is useful to make a distinction between partners

in technology-, production-, and distribution - as the importance of these partners changes over time.

The importance of technology partners is most significant in the Ambition stage where the technology development is a top priority. In this process the production partners emerge as key partners, assisting in designing the product to become most cost efficient and also with respect to feasibility. In the Build stage the production partners as well as sales partners become critical in the manufacturing and sale of the first product versions. The company needs to keep focus on the market entry, and the distribution partners will be essential in accessing the market. The relative importance of the different types of partners differs due the impact on business development. See figure 3.6. For software companies with no production and companies that license out production, the production partners will be of limited importance, however, while distribution partners will be relevant early on. In the Build stage, these companies typically will have direct sales, whereas in the Conquer stage, indirect sales generally are the preferred way to reach customers.

Figure 3.6: Importance of partners



Source: Vaekstfonden

With technology- and product development as top priorities in the Ambition stage, the most important partners in this stage are the technology partners who can support and evaluate the R&D findings. As the product begins to take form, the production partners such as suppliers and contract manufacturers should enter along with the technology partners. They support the firm in the process of designing a prototype based on customer specifications.

In the Ambition stage, the involvement of distribution partners is relatively, because the company is not yet ready to introduce a product in the market. Often, they do, for example,

neither know exactly when the technology will be fully developed nor which special advantages the final product will possess. Though, it is vital to consider potential distribution partners in order to prepare the commercialization of the product.

The advanced software provider, IMT Labs identifies the importance of the three different partner types, and emphasizes figure 3.6 in the Ambition stage. However, they have outsourced the production, and do not consider its importance to increase remarkably. As a software provider, the significance of production partners is naturally low. See box 6.

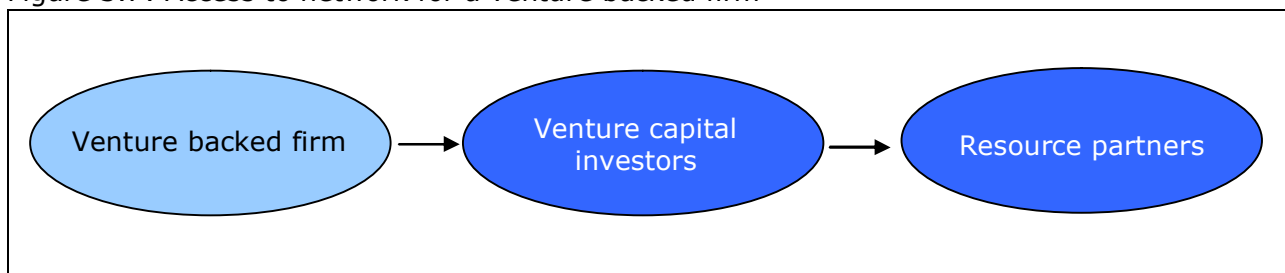
Box 6: Case study, IMT Labs ApS

All partners are vital in the early Ambition stage until sufficient funding is raised from investors. Technology partners are currently of major importance, but their importance is expected to decrease as IMT enters the Build-stage. IMT chose initially to outsource production to a Danish supplier which in the Ambition stage supplies a core element of the technology. However, the importance of the production partners is low at the current stage, and IMT does not expect their influence to increase over time. The sales partners are of minor importance in the current Ambition stage, however, much effort is put in negotiating contracts on the distribution of IMT Lab's services.

Many of the important network relations are established in the Ambition stage. Therefore, it is advisable to focus on a broad geographical scope from the beginning to ease the internationalization process in the following stages. Thus, the geography of the network should preferably match both the location of the customers and the location of resource partners such as suppliers, investors and contractual manufacturers.

In the Ambition stage, the relations to external resource partners - including new potential venture capital investors - are typically established through the first syndicate of venture capital investors. The venture investors - in contrast to first time entrepreneurs - often possess a large global network within a number of different industries. Therefore, a simplified model of the network emanating from a technology start-up in the Ambition stage can be illustrated as in figure 3.7.

Figure 3.7: Access to network for a venture backed firm



Source: Vaekstfonden

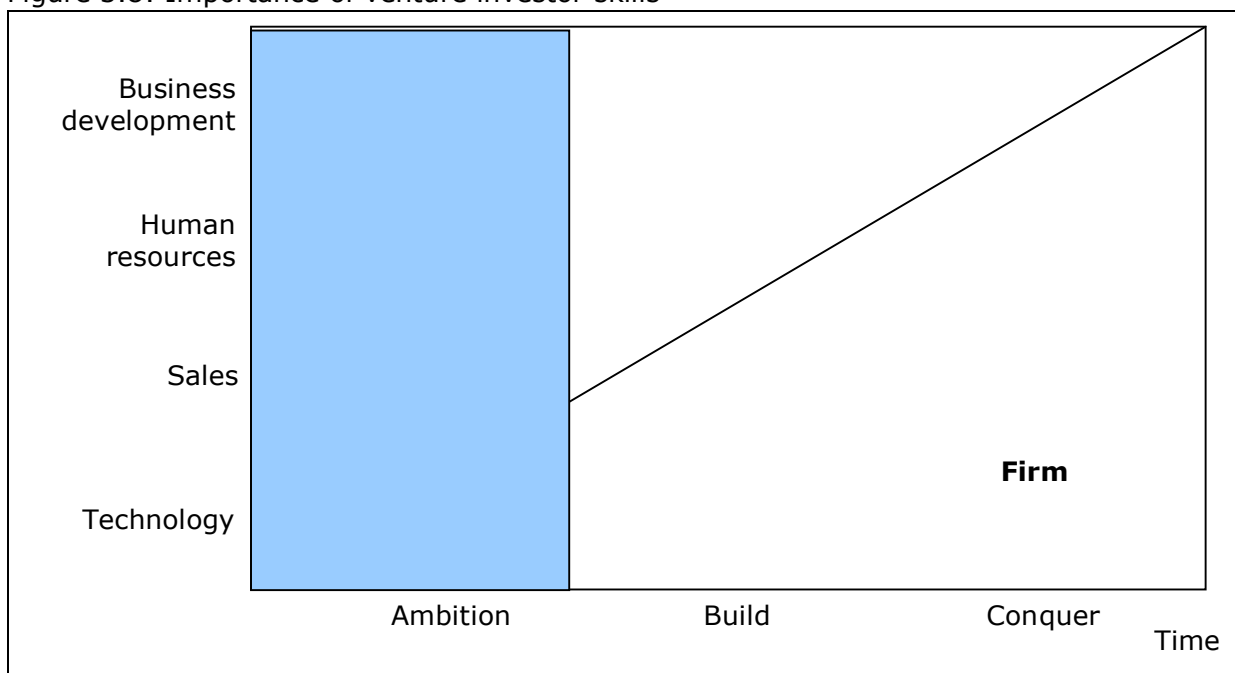
Venture capital investors ideally act as gatekeepers between the venture backed firm and its resource partners - helping to attract partners across all three partner categories in figure 3.6.

3.1.5 Investors

In the Ambition stage – where the company very often consists of a small team of founders – the investors should play an important role in providing the firm with assistance such as building up the organization and recruiting key personnel. In the very early stage of development the investors will be able to add value within most key business areas because they have typically been through the process of starting up firms numerous times – whereas many company founders have limited experience in building up a new company. As time progresses and the company builds up a more experienced management team and a stronger organizational structure, the value add of the investors will become more specialized.

Figure 3.8 shows four skills which must be present in the high-tech start-up: technology, sales, human resources and business development. Investors typically provide assistance in all four areas in the beginning. However, technology development is typically an area where VCs leave most of the work to the company. It is important, though, that investors understand the technology to know which way to take business development and sales efforts. When investing in a firm still in the Ambition stage, the VCs should thus have detailed knowledge of the technology in order to validate that the technology is commercially interesting. The investors can then help steer the firm in the right business direction, although they are rarely involved directly in product development.

Figure 3.8: Importance of venture investor skills



Source: Vaekstfonden

Furthermore, the investor should possess a high degree of skills within areas such as business development and human resources to aid the development of the company. When it comes to attracting and recruiting key personnel and management, investors have a crucial say in the Ambition stage. The investors can be important in the process of moving the firm from

Ambition to Build – by making the founders realize their own strengths and weaknesses, and hire outside skills where needed in order to speed up the growth of the firm.

In figure 3.8, business development skills include several elements such as production and product development skills, the ability to attract finance, and the level of customer service. The investors can aid by adjusting, most often, the technology focus of the firm, optimizing sales strategies – and helping to pinpoint target customers and markets.

Typically, investors in the Ambition stage are involved in most business development aspects concerning the firm, whereas in the later stages, they are usually engaged in more specialized support on specific issues related to the business. In that respect, VCs generally should assign those general partners who are most qualified to support the company at any given stage. In many cases, it will not be the same venture capital partner who is involved throughout as different skills are needed at different times.

At O-Pen, which is a venture backed technology company, they indicate the significance of their investors in handling business development and attracting a new CEO, see box 7.

Box 7: Case study, O-Pen A/S

In the Ambition stage, O-Pen has raised capital from three national investors: CAT-Symbion, Symbion Capital and Vaekstfonden.

The investors have had great influence in business development as part of their significant involvement on the board. They have also made it possible for O-Pen to increase its team of skilled employees – including the hiring of a new CEO. Furthermore the VCs possess an extensive network, which O-Pen expects will benefit them in future business development.

Not all Danish venture capital funds have the funding capacity to take a firm all the way from seed to exit. This is a cause for concern, as investors play a crucial role in preparing the firm for the next financing round. Therefore, it is reassuring, when a company is able to receive backing from seed investors with sufficient funds. By contrast, if an investor decides to stop investing in a portfolio company, it can have a strong negative effect on the portfolio company's ability to raise additional capital.

It is important that the VCs make it clear how far they can go as regards future rounds of finance. A financially strong seed-investor can help by providing access to additional capital. This will help minimize the time and cost of raising additional capital – and thus make it possible for the company to concentrate on business development.

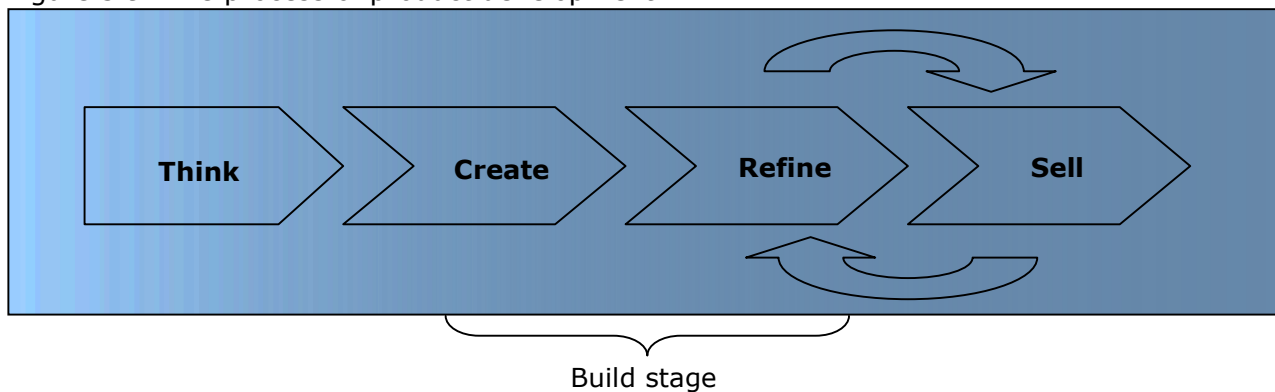
Finally, the Ambition stage is the most risky period of the firm due to the early stage of development. Thus, the entrepreneurial experience of venture investors and their ability to work hands-on with the venture backed firm can be decisive. The interactions between the firm and the investors will be typically be frequent and informal, which means that it is particularly useful to have local investors on board who can provide hands-on support on a short notice. An entrepreneurially experienced venture investor will better understand the difficult challenges which may appear in the beginning, acting as a knowledgeable team player for the company.

3.2. The Build stage

3.2.1. R&D and product development

In the Build stage, the product development reaches a new challenge of producing a prototype for a test customer. The technology is transformed into a working prototype, while the focus of the firm changes towards manufacturing of the product. To "Create" the product, collaboration with strategic production partners is important to optimize the product design. Pilot customers are important when the first prototype is created in order to "Refine" the product. Their feedback will help improve the product. High-tech firms may not have more than one shot at entering the market, which means that the final product needs to be optimal at this point in order to "Sell". See figure 3.9.

Figure 3.9: The process of product development



Source: Vaekstfonden

In drug development companies, the product development deviates from the figure above. In the Build stage the composites are in the late preclinical stage and on the verge of entering phase I clinical trial. Therefore, the main focus in product development remains on creating and refining throughout the ABC-model.

For high-tech start-ups in in the Build stage, a downside risk arises as the entrepreneurs may remain more focused on refining the technology and less on commercialization, thus leading to delays in product launching. The reason is that some entrepreneurs may be preoccupied with technical details that are interesting from a theoretical point of view, but have limited impact on the customer's perception of the product.

For a technology-oriented company, the process from idea – over prototyping, to a finished product typically takes 2-5 years. Enigma Semiconductor is an example of a company which has teamed up with a strategic partner in order to focus development efforts on reaching the market. See box 8.

Box 8: Case study, Enigma Semiconductor A/S

Enigma is in the Build stage, which involves testing and completing its first chip developed with the support of a listed American chip producer. The first prototype of a second chip – to which Enigma has exclusive rights – is in the creation stage.

By comparison, drug development companies have, as mentioned earlier, a longer, more expensive phase of product development of which the testing of a drug candidate in humans is the most costly part.

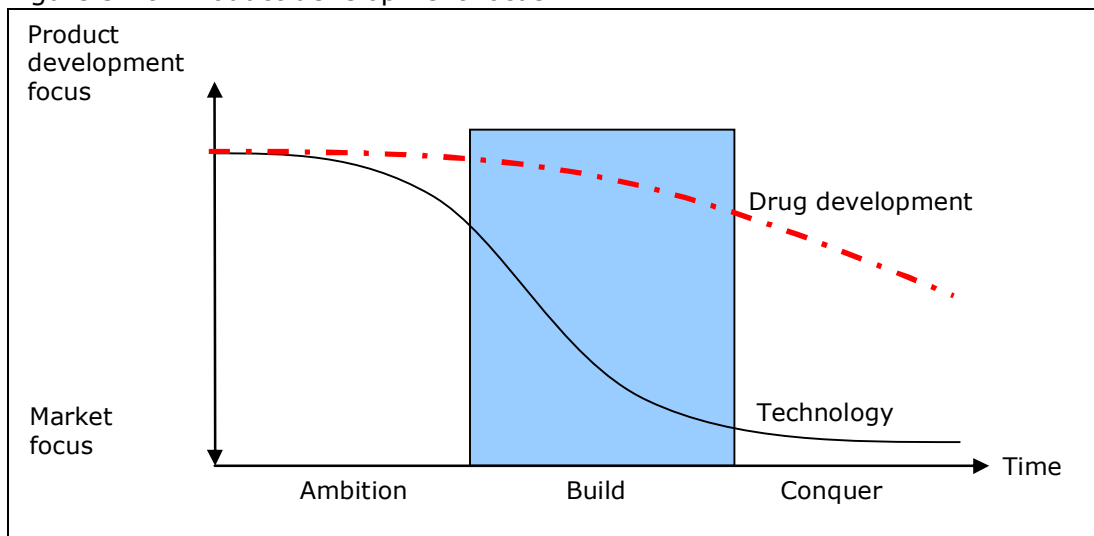
Prior to first dose in humans, a small group (5-10 compounds) of drug candidates will be tested in cell cultures and laboratory animals to demonstrate biological activity against the disease of interest. In addition, the compounds are tested with respect to safety before 1 lead candidate and very often 1-2 back-up candidates are chosen for continuation into phase I clinical trial. In the US, the drug development company is required to file and get an approval for an Investigational New Drug Application (IND) with the Federal Drug Administration (FDA) before phase I clinical trials can start. The time frame for preclinical testing is approximately 1.5-3 years and only 5 in 5000 compounds that enter preclinical development will make it to first dose in human.

In phase I clinical trials, the drug candidate is tested with respect to safety and dosage. The trials should also include analysis of how the compound is absorbed, distributed, metabolized and excreted (ADME) and the duration of its action in the body. The phase I trials will most often involve about 20 to 80 normal, healthy volunteers, however, in some cases, i.e. potential anti-cancer drugs, real patients are included already at this point. Moving on to phase II, the drug candidate's effectiveness is tested in about 100 to 300 volunteer patients. These trials normally take around two years after which phase III clinical trials can begin. At this point 1,000 to 3,000 patients will be enrolled at different locations (clinics and hospitals) in order to establish efficacy and possible adverse reactions. Phase III clinical trials take approximately 3 years, and after completion of these the company can file for approval with the relevant authorities such as FDA or the European Medicines Agency (EMA). The process of approval takes about 2 years, during which the company must continue to submit data to FDA or EMA that describes any adverse reactions.

Due to the large sums required to bring a new drug to the market, the venture backed companies usually sell or license out their drug candidates to large pharmaceutical companies during the clinical phases of drug development.

To summarize, the business focus in the Build stage changes from product development towards building a market for the company's products, although the transition is more protracted for drug development companies. Figure 3.10 shows the difference in "time to market" for the two types of high-tech venture backed firms.

Figure 3.10: Product development focus



Source: Vaekstfonden

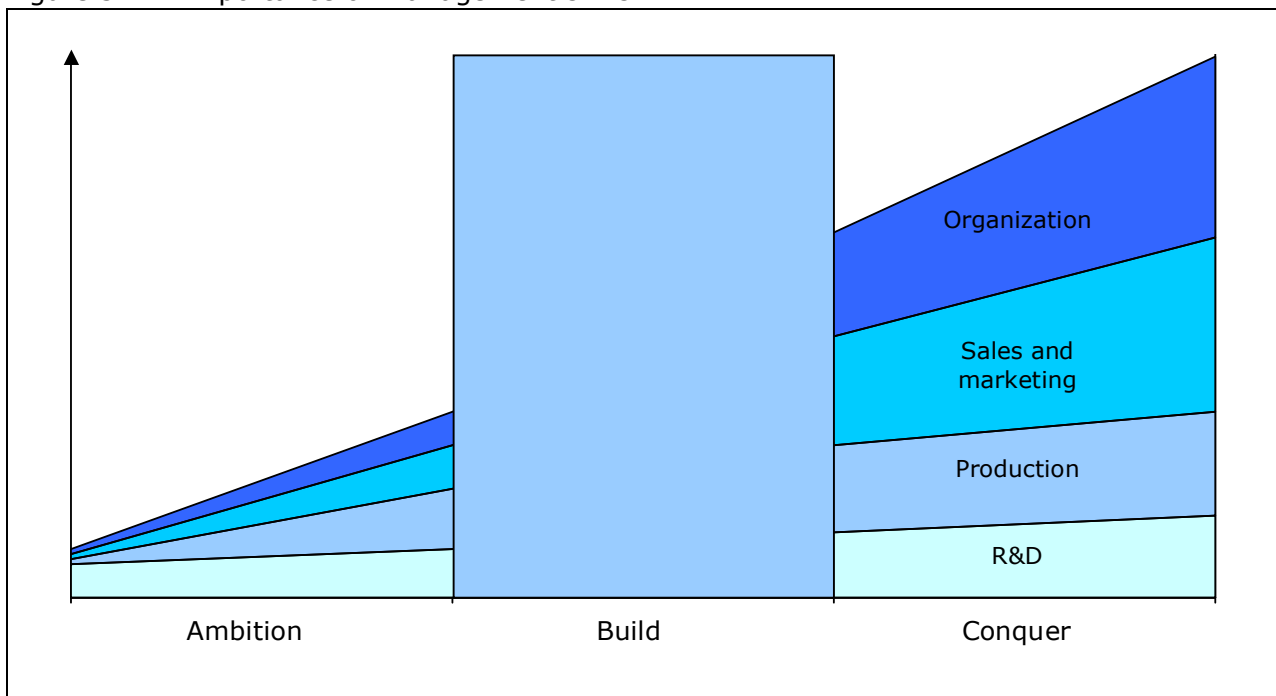
For drug development companies, significant focus still remains on product development, while technology companies set market focus as top priority.

3.2.2. Management and human resources

The management faces new challenges in the Build stage. The products of high-tech venture backed firms will have passed proof-of-concept, and production as well as sales and marketing efforts of management are now required.

The management in the Build stage should therefore consist of a team of professional executives with extensive managerial skills and broad-based networks within the industry, in particular to distribution channels and costumers. Apart from a CEO, the company should also hire a person to be in charge of financial issues as the amount of funding increases. In addition, someone to take care of the day-to-day business operations in connection with suppliers and collaboration partners in production and technology development is required. Finally, a sales manager might be appropriate, who has extensive knowledge and a large network within the business segment as well as relations to important Original Equipment Manufacturers (OEMs) and costumers. It is important that the management can open doors in the target market of operations as production and commercial skills take over as key management skills in the Build stage, following figure 3.11.

Figure 3.11: Importance of management skills



Source: Vaekstfonden

In addition to the skills mentioned in figure 3.11, The Build stage calls for managers with fundraising skills. The cash burn rate is generally high, which means that additional funding becomes essential. This further means that the return on total investment in the company can be substantially improved to the extent it is possible to shorten the Build stage and preserve cash.

Shortening the Build stage depends, in part, on management's ability to bring the product to market quickly, either directly or indirectly. The optimal distribution channels depend on the complexity of the product and the potential customer base. It is a significant challenge for management of a new company to persuade channel distributors to include a new product in their portfolio without a well-established international brand. Often, the management has to lead the firm in building a new market based on customer needs that must first be recognized by the customers themselves. Launching a new product in a new market therefore requires that the channel distributors believe in the business idea.

For many high-tech firms, the advantage of being first to market is large. "First to market" implies the opportunity to cash in on what is hot at the moment, and maybe obtain a position comfortably ahead of future competitors. On the other hand, "first to market" also entails the risk of failing and being the one who pays all the learning costs in a new market, while late-entry competitors snatch the market.

Despite the time consuming clinical phases of drug developing venture backed firms, the focus remains the same as in technology venture backed firms – to shorten the Build stage. This enables the company to exploit the discovery longer and thus increase the number of years,

where it receives revenue from the drug while it is protected by patents. However, it is delicate balance, as drug developing risk compromising final results if they rush a compound through development.

Typically, the staff in the venture backed firms grows substantially in the Build stage, and management begins to focus on organizational skills. Operations become a key issue for the management, which involves getting all employees, R&D and strategic partners to collaborate. Basically, the company is becoming an established entity with well-defined, specialized areas of responsibility for each member of management and staff.

In a small country like Denmark, the management in local high-tech firms needs to focus on international markets from the beginning. Nonetheless, for some technology companies, the Danish market can be an important pilot market before entering international target markets – in many cases the US with its 270 million consumers. For Danish high-tech software companies the target market is often the European market.

The management style in the Build stage is still characterized by strong faith due to the high risk profile. However, the base of the company has been established, and it is easier to be benchmarked in the market.

In the Build stage, management may still often rely on investors for some parts of business and for attracting key personnel. Often an advisory board of experienced professionals also supports management. These advisors generally have no financial interests in the company. An example of a company taking advantage of a skilled group of investors is Chempaq, where the Board of Directors is frequently engaged in day-to-day operations and is consulted on make-or-break decisions. See box 9. However, as the management competences inside the firm increase, the involvement of investors generally becomes more formalized and less frequent.

Box 9: Case study, Chempaq A/S

As Chempaq is on the verge of entering the market place, the Board of Directors is facing a series of make-or-break decisions on business development strategy. As a matter of fact, some members of the board are involved in day-to-day operations because they possess specific skills that are still lacking inside the company such as distribution skills.

3.2.3. Business development, marketing and sales

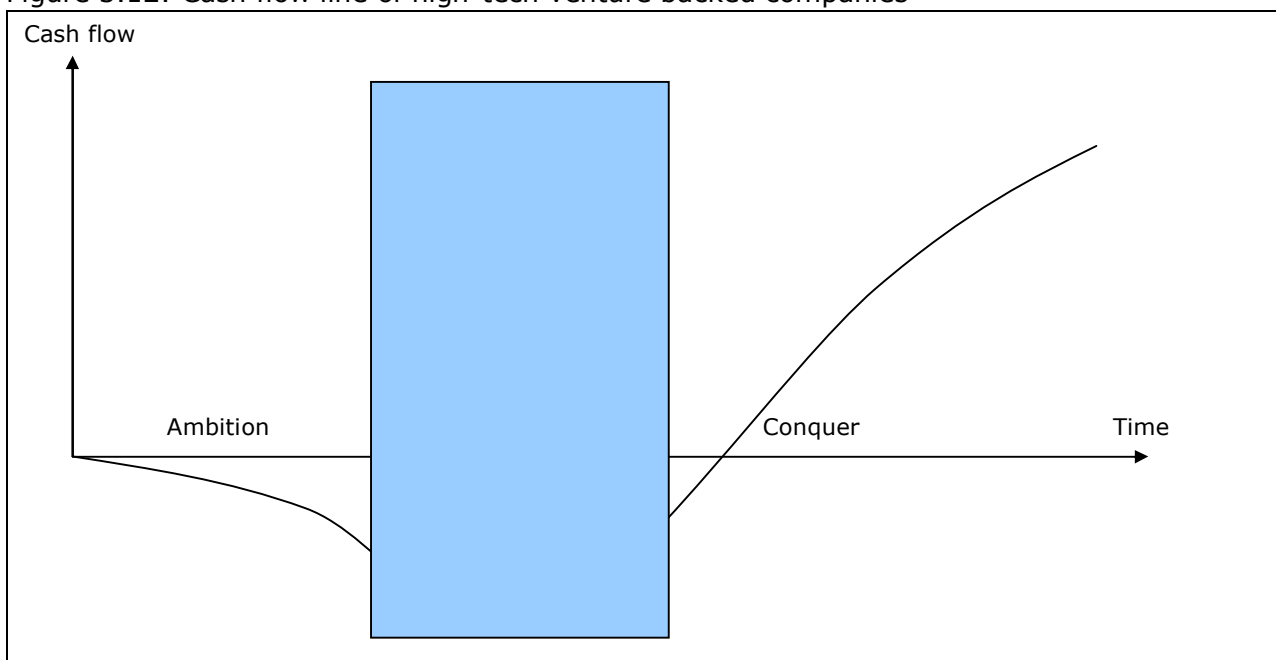
In the Build stage, business development is extremely important. It should focus on observing trends and customers as well as trying to predict the future market. Today's customers want exactly the right combination of products and services that will help them get exactly the solution they have in mind. Now, more than ever, customers hunger for superior results from the products or services they use because of the rapid technological progress.

The product development part is an essential element of business development in the Build stage. To assist in product development, it is important to incorporate strategic partners to develop products that are both functional and high quality. The team of strategic partners

ideally includes key partners from the most important stakeholder groups – suppliers, OEMs, distribution channels, and customers. The company may also decide to add an Advisory Board of experts from academia, research and industry to provide guidance on technology issues in particular. These should therefore have a deep knowledge of technology and science sectors relevant to the company.

Because of high cash burn rates, the cash flow line reaches a low in the Build stage. In particular, marketing and other expenses to prepare market entry are turned up. Venture capital investors cover the negative cash flow throughout the Build stage until revenues from sales are large enough to cover expenses, which typically does not occur before the company is well into the Conquer stage. See figure 3.12.

Figure 3.12: Cash flow line of high-tech venture backed companies



Source: Vaekstfonden

As mentioned above, the Build stage takes longer and requires more funding for drug development companies. This is due to the expensive preclinical and clinical trials.

Business development in the Build stage should start revealing strengths and weaknesses in the company. This is key, since the 80/20 principle generally applies, whereby there is a built in imbalance between inputs and outputs, causes and consequences, and efforts and result. A minority of causes, inputs or effort usually lead to a majority of the results, outputs or rewards. Therefore it is important at this stage to isolate the firm's strengths, to focus only on those areas where it is making progress – and to maximize output from these. A

Box 10: Case study, Alight Technologies A/S

Alight has established its R&D activities in Denmark and is planning to keep this location as the company evolves. Production, on the other hand, will be outsourced to a specialized manufacturer. In the current Build stage outsourcing is a core strategic business development focus area.

typical example of this is when the technology company decides to outsource production to a manufacturer for cost-efficiency reasons. The laser technology company, Alight Technologies, has decided to keep its specialized R&D activities in Denmark, while production is supposed to be outsourced to a specialized manufacturer. See box 10.

When deciding on the business development strategy it is important also to keep the objective of the Conquer stage in mind and work back from there in order to ensure continuity in the development of the product.

For instance, the marketing strategy must consider how to reach the entire customer universe identified in the Ambition stage – including both distribution channels and end customers. For some high-tech venture backed companies, the business model involves the sale of niche products business-to-business to a small group of key customers. Direct sale to these customers is advisable due to their individual high significance. If the sales are targeted on a broader group of customers, using external distributions channels might be more effective.

Box 11: Case study, Evolva Biotech A/S

The market identified for Evolva's technology is global and consists of approximately 160 large pharmaceutical companies across the world. Measured in size, the majority of these companies are located in USA (40%), Germany, France, Switzerland and UK (32%) and Japan (20%). Only a very small share of the companies is located in Denmark. Following this, one R&D facility has been moved to Switzerland. Evolva is also planning the establishment of a department in India.

In any case, the customer universe is generally distributed across the World. However, the target markets are typically the US, Japan, and Europe market – all markets with high technology standards and high purchasing power. The effort in reaching them typically involves extensive traveling and establishing an office in the most promising markets. Some companies may even decide to move the headquarters or key R&D operations abroad to get closer to key customers and

strategic partners. The biotech company Evolva is such an example as they have decided to move an R&D facility to Switzerland in order to be closer to a large group of its customers and investors. See box 11.

As the firm moves closer toward market entry, competition typically increases. The business idea – which in the Ambition stage was kept secret – generally becomes visible for the competitors in the Build stage as the product is launched or taken through clinical trials. Competition may, however, be beneficial, if management knows how to exploit the potential synergies associated with more than one company trying to spur demand for a new type of product.

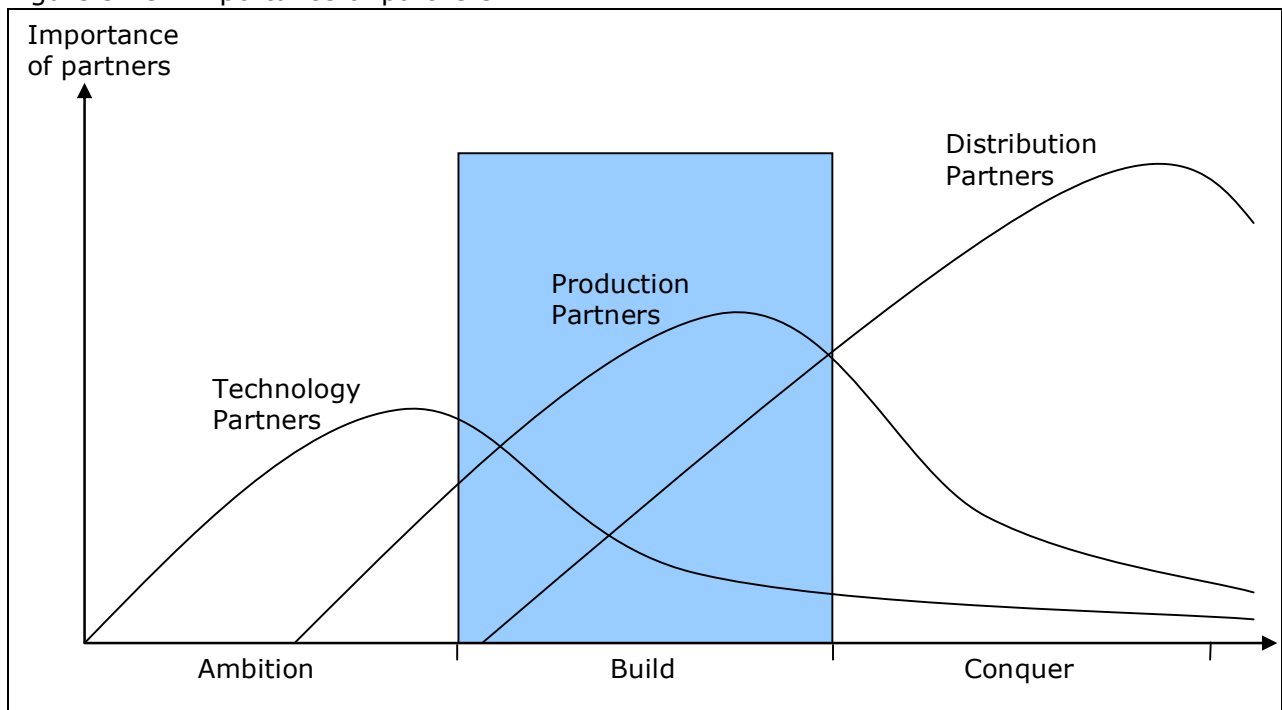
3.2.4. Network

The network of the venture backed company increases as the company grows and more support is needed to continue the internationalization process. In the Build-stage, where the launching of a product draws closer, the role of the technology partners decreases because the technology is more or less fully developed. However, it is important to emphasize that the

technology partners continue to play an important role as they help ensure continuous improvement of the product.

The importance of the production partners generally increases to become the most important partners in the Build stage as the business development focus changes from the technology development toward the production of a "real product". See figure 3.13. However, in software companies and companies out-licensing their products or technologies, production partners are largely irrelevant as distribution partners take over in this stage. Generally, in the Build stage, the product is launched, which means that the commercialization of the product – and through that distribution partners – are getting increasingly important. Therefore, the venture backed firm must prepare the full-scale product launch in the Conquer stage by beginning to establish partnerships with distribution partners.

Figure 3.13: Importance of partners



Source: Vaekstfonden

The production partners, who support the product development, can evolve into close collaborators also within technology and in some cases even sales. Therefore, it is a good idea to have further collaboration in mind when building relations to production partners in the Build stage. In many cases, a contractual engagement is established between the entrepreneurial company and the production partner with the aim of both alleviating capital constraints and securing access to production.

In some companies – such as Med-tech and hardware companies – after-sale service is a central element in the sales platform. Thus, both production- and technology partners may be important in this respect as they are typically much bigger and can provide service at a lower cost than the start-up.

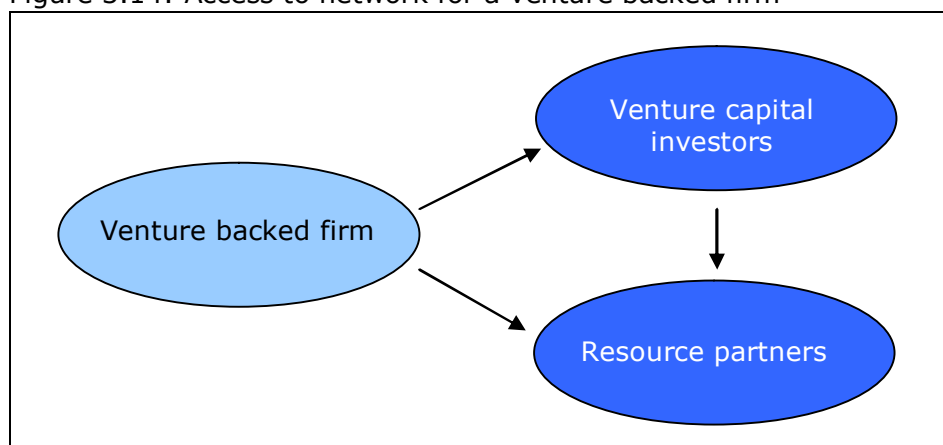
Some venture backed high-tech firms choose to outsource production completely, which is a clear demonstration of the key significance that production partners may have in the Build stage. Chempaq is an example of a company in the Build stage, which has a partnership profile as in figure 3.13, and where sales partners are becoming the most important partners as the company is on the verge of entering the Conquer stage. See box 12.

Box 12: Case study, Chempaq A/S

The technology partners were of major importance in the Ambition-stage but their weight has decreased as Chempaq entered the Build stage. However, Chempaq has hired consultants. Currently, the sales partners are the most crucial partners for Chempaq, while the production partners play a minor but still important role. During the Spring and Summer of 2005, Chempaq intends to enlarge its network in the US remarkably in order to take the next step in business development.

In the Ambition stage, the venture capital investors were the crucial link between the venture backed firm and its resource partners. In the Build stage, however, the management of the firm has established its own partner base as illustrated in figure 3.14.

Figure 3.14: Access to network for a venture backed firm



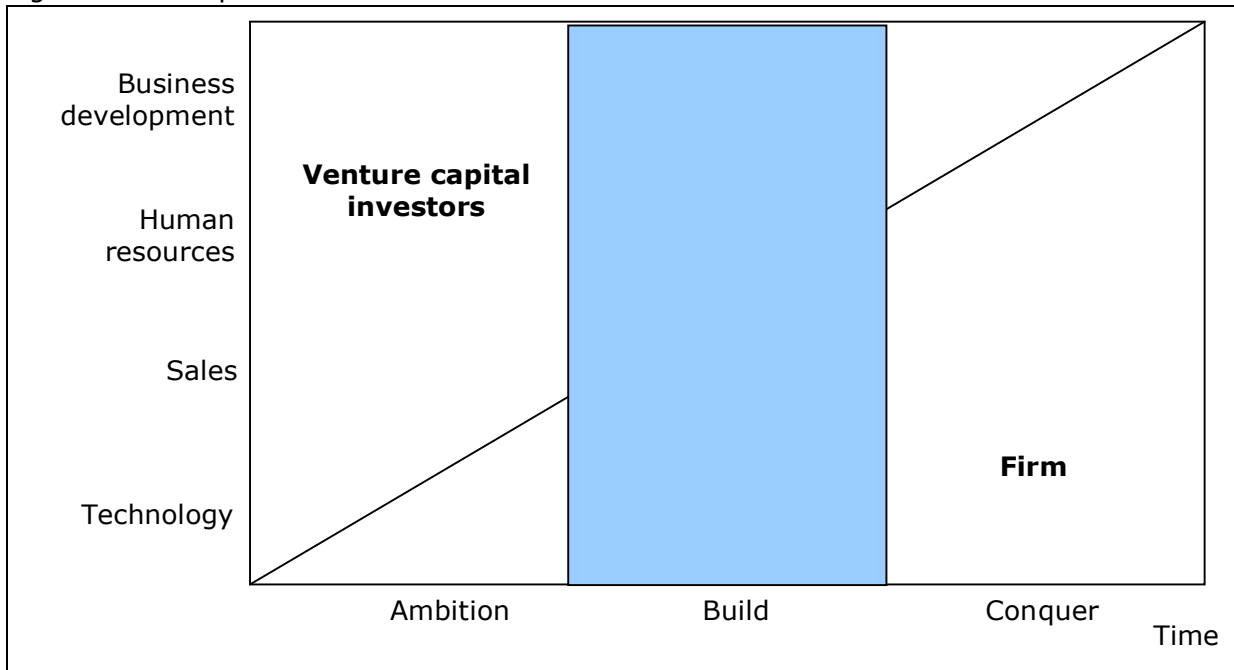
Source: Vaekstfonden

In the Build stage, the management in the venture backed firm has established relations to external resource partners, including technology-, production-, and distribution partners. However, these bilateral relations are part of a wider pattern of cooperation between the company and its investors as well as its external resource partners.

3.2.5. Investors

At the beginning of the Build stage, the investors still play a significant role in business development, human resources, and sales. However, as the company grows through the Build stage, the range of issues that investors are involved in decrease as more skills and competencies are built up within the company. See figure 3.15.

Figure 3.15: Importance of venture investor skills



Source: Vaekstfonden

The investors still are engaged in business development through their seat on the Board. In this respect, a key focus area involves deciding on the optimal launch strategy – whether directly to customers or through distribution channels – while trying to keep the Build stage as short as possible. In addition, VCs are involved with fundraising which is critical in the expensive Build stage.

When initiating the Build stage, sales gradually take up more attention. For the VCs, it is imperative that the company is fronted by an experienced CEO – who has tried launching new technology products before and has also built international organizations from the bottom up. If such a CEO is not already in place, the VCs will find someone to fill the spot.

This stage of development is quite costly because of the need to expand the organization quickly – while revenue is still insufficient to cover the expenses. The company will most often expand from a small group of researchers - at the beginning of the Build stage – to a large organization consisting of research and development, sales and marketing, product support and in some cases production facilities - at the end of the Build stage. A large infusion of venture capital is thus needed in order to complete the Build stage quickly and efficiently.

While the capital base of the investors is an important criterion when deciding on which investors to approach, another essential requirement of the investors in this stage of business development is a strong international network. As the potential market for the company is global, access to a strong global network is beneficial in order to penetrate key markets.

When choosing investors in the Build stage, the firm should thus try to bring in investors who can help gain access to key partners and key markets. This is where it becomes important that

the seed investors have strong international networks – as this will help the company gain access to the right investors later on.

In the Build stage, the right syndicate of investors - with a broad international network – should be able to help the company find the best partners within technology, production, and sales anywhere in the World. Moreover the investors should be able to support the firm in business development, building up an organization in the right markets and providing the firm with sufficient capital to advance to the Conquer stage. Evolva is an example of a biotech company that has assembled a syndicate of international investors with a strong international network to bring Evolva to the Conquer stage. See box 13.

Box 13: Case study, Evolva Biotech A/S

Initially, Evolva had only national investors – but entering the Build stage Evolva raised venture capital from Novartis Venture, Yamanouchi Venture and Aravis because they wanted foreign investors with strong international network and heavy industry experience.

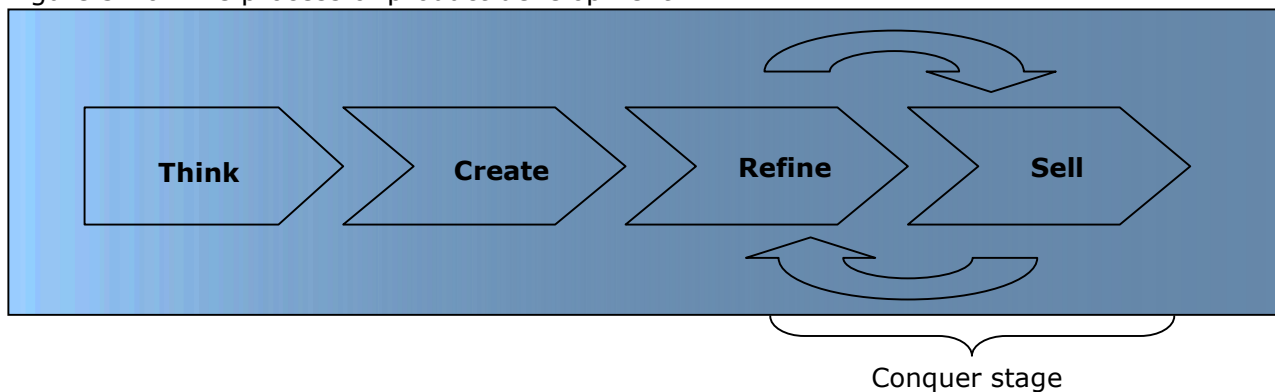
The investors also serve as key network partners. Especially, the two pharmaceutical companies - Novartis and Yamanouchi - already provide support on technology development and are expected to help open doors to the global market.

3.3. The Conquer stage

3.3.1. R&D and product development

The product development in the Conquer stage reaches product launch and sales. However, to survive in the marketplace, the technical R&D team faces an important task of continuously refining the product in order to maintain a competitive advantage. The product is in the "Sell" stage, where it is important to establish an effective customer feedback loop, which allows the company to continuously improve and adapt the product, as shown in figure 3.16.

Figure 3.16: The process of product development



Source: Vaekstfonden

In connection with the customer feedback loop, it is worth mentioning that key customers probably change over time. This is a result of target markets changing or expanding as the company grows. Therefore, the firms must constantly consider how to integrate new markets and new customers with the customer feedback loop.

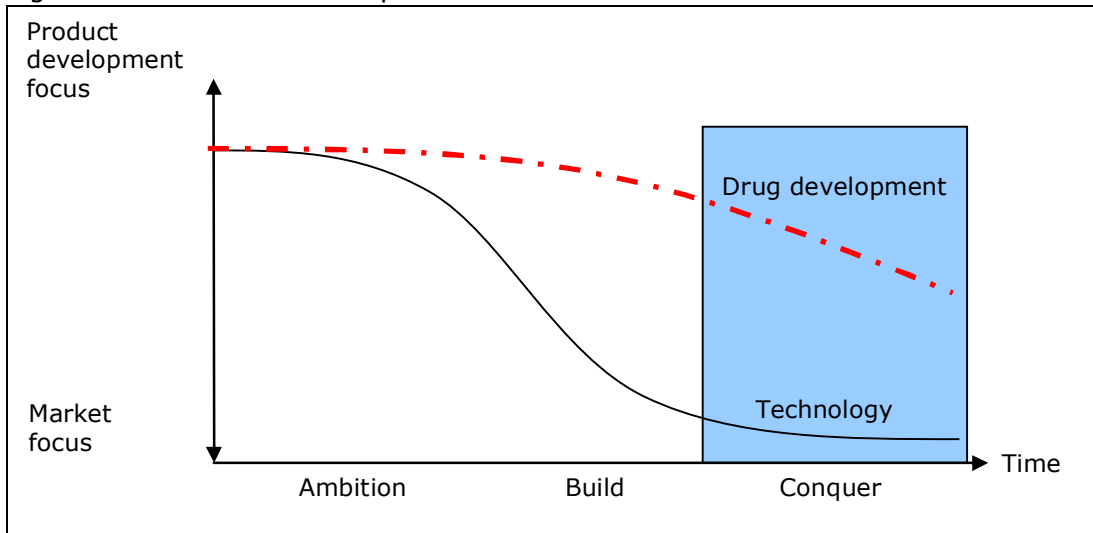
As the technology and the products are more or less fully developed, the management of the venture backed firms increase focus on improvements and sales. To keep sales increasing, it is often necessary to improve the product quality and utility by introducing new generations of the product. Moreover, the profitability of the company ultimately depends on its ability to commercialize products, including increasing market shares and expanding sales to new markets. Ascio Technologies is an example of a venture backed firm in the Conquer stage, which is keenly focused on refining their product to improve applications, see box 14.

Box 14: Case study, Ascio Technologies Holding A/S

With operations throughout most of Europe, Ascio has advanced to the Conquer-stage. The business strategy in this stage is to provide high quality services and systems for managing Internet domain portfolios. Since Ascio already offers a wide product portfolio, product development today focuses mainly on refining existing products. However, getting customer feedback is somewhat of a challenge given that Ascio is operating in a fragmented market.

In the Conquer stage, focus on product development will remain low compared to market development, which follows the marked shift in focus in the Build stage. Thus, the Conquer stage almost exclusively focuses on market development as illustrated in figure 3.17.

Figure 3.17: Product development focus



Source: Vaekstfonden

By comparison, the dotted line for drug development companies indicates that these companies stay in the product development realm far into the Conquer stage. Some drug development companies may, in fact, never bring a drug candidate through all clinical phases, but sell it during clinical development and then start preclinical research on a new drug from a drug discovery platform (see figure 3.2). The R&D unit will thus continue to be a major part of the drug development company all the way from the Ambition to the Conquer stage.

3.3.2. Management and human resources

In the Conquer stage, management typically has been expanded to make up a highly skilled team of international executives. In many cases, founders have even been replaced in the top management positions, while they may still occupy seats on the Board of Directors. In other cases, founders may still serve as Chief Technical Officer (CTO) or Chief Scientific Officer (CSO). An example of a portfolio company in the Conquer stage, where the founders have willingly left the management team is Ascio Technologies. See box 15. The founders realized early on, that they needed to bring in a different set of management

Box 15: Case study, Ascio Technologies Holding A/S

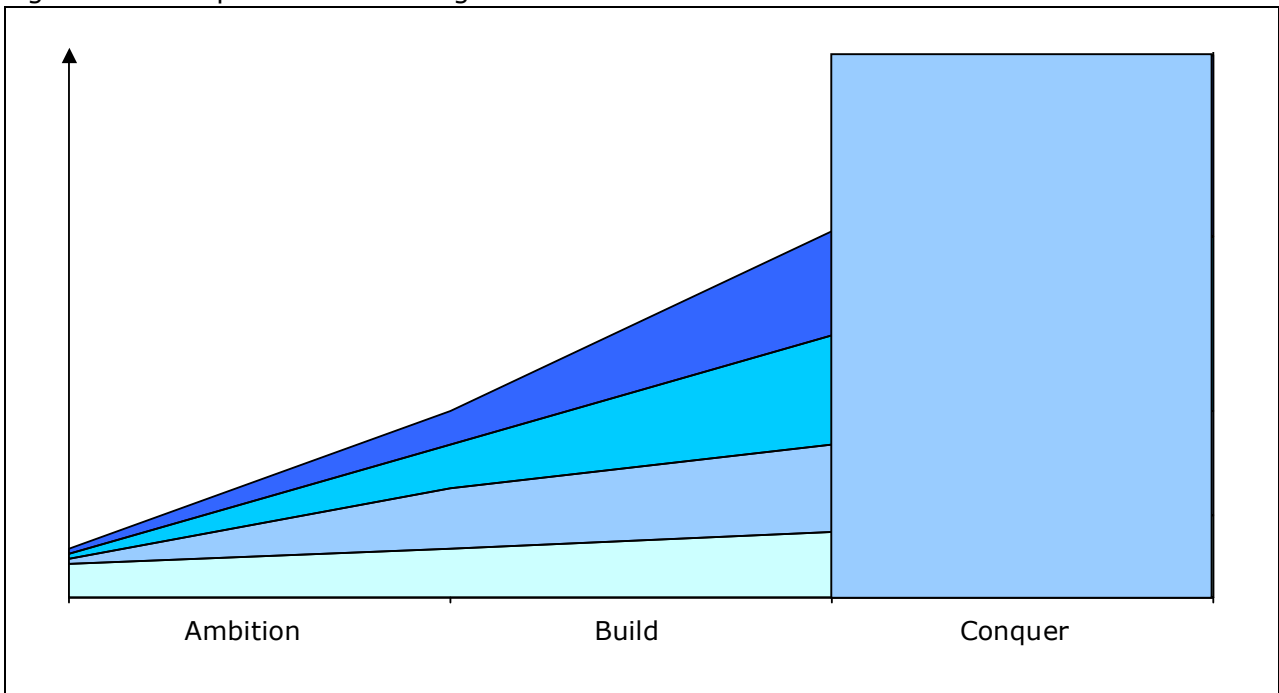
At this point of time, none of the founders is active in the company's day-to-day operations. The founders accepted at an early stage that Ascio needed to bring in new competencies in order to optimize business development. As a result, Mogens Nielsen joined as CEO in 2000.

The key management competences have changed from development and production towards sales and marketing. Individual members of the executive committee have substantial sales and marketing responsibilities, which in future they need to delegate. Thus, management focus will have to change toward more organizational and operational issues.

competences. Therefore, they hired a new CEO with a strong background in sales and marketing.

Sales and marketing skills generally are in high demand for business development in the Conquer stage. Also, organizational skills are more important in the Conquer stage than in any of the two previous stages, as the company has grown to become an international operation with activities, and often employees, in several countries. The relative importance of the management skills – R&D, production, sales and marketing, and organization – is depicted in figure 3.18.

Figure 3.18: Importance of management skills



Source: Vaekstfonden

Because of the importance of being close to customers and strategic partners, many high-tech companies grow to have departments in different countries in the Conquer stage. Especially, locating in a target market is crucial to building market visibility and improving communications with key partners and costumers. The location of an office in a target market can mean more than being closer to the costumers, as it demonstrates that the company values this market as a key market, and that it is an international player worth trading with.

The management hierarchy in the company also becomes clearer as areas of responsibility are defined for each manager. The CEO in this stage concentrates increasingly on overall operations and business development, and has only limited involvement in R&D, which is handled by a CSO or CTO. In this respect, it is of great importance that management is properly incentivised in order to attract and retain high-quality individuals.

The venture backed firms generally increase revenues in the Conquer stage, where achieving profitability also may be an important objective for management in order to prepare for a successful exit. If the R&D facility still is in the country of origin, it is relevant to assess whether core research competences could be more readily obtained elsewhere. Similarly, expenses may be reduced by moving production to cheaper manufacturing locations.

Management, furthermore, needs to decide whether to sell products through external distribution channels or if sales should be in-sourced. In-sourcing the sales function requires a sales force, which is a heavy expenditure item. Ascio Technologies is an example of a company that chose to in-source sales and marketing, and today that department makes up more than half of total staff. See box 16.

Box 16: Case study, Ascio Technologies Holding A/S

Today Ascio employs about 130 staff of which 50-60% work in sales and marketing and 20% in product and project management. In the earlier stages, the sales and marketing branch was a fraction of what it is today. In fact, the subsidiary, Speednames, was built almost entirely by "word of mouth".

Consolidation in the industry is another management challenge in the Conquer stage. In order to grow at the desired pace and in order to position the company before an IPO or trade sale, acquisitions of related companies are a possibility. Through acquisitions, the high-tech venture

Box 17: Case study, MilliMed A/S

Millimed acquired the Dutch company Blue Medical in February 2005 to provide a platform of related technologies and enable the company to accelerate R&D in its proprietary research programme. The facility in the Netherlands will serve as MilliMed's cardiology manufacturing arm. MilliMed thus plan to move several elements of their present cardiovascular business to the Netherlands, which will permit the Danish facility in Roskilde to focus on core technologies and product development.

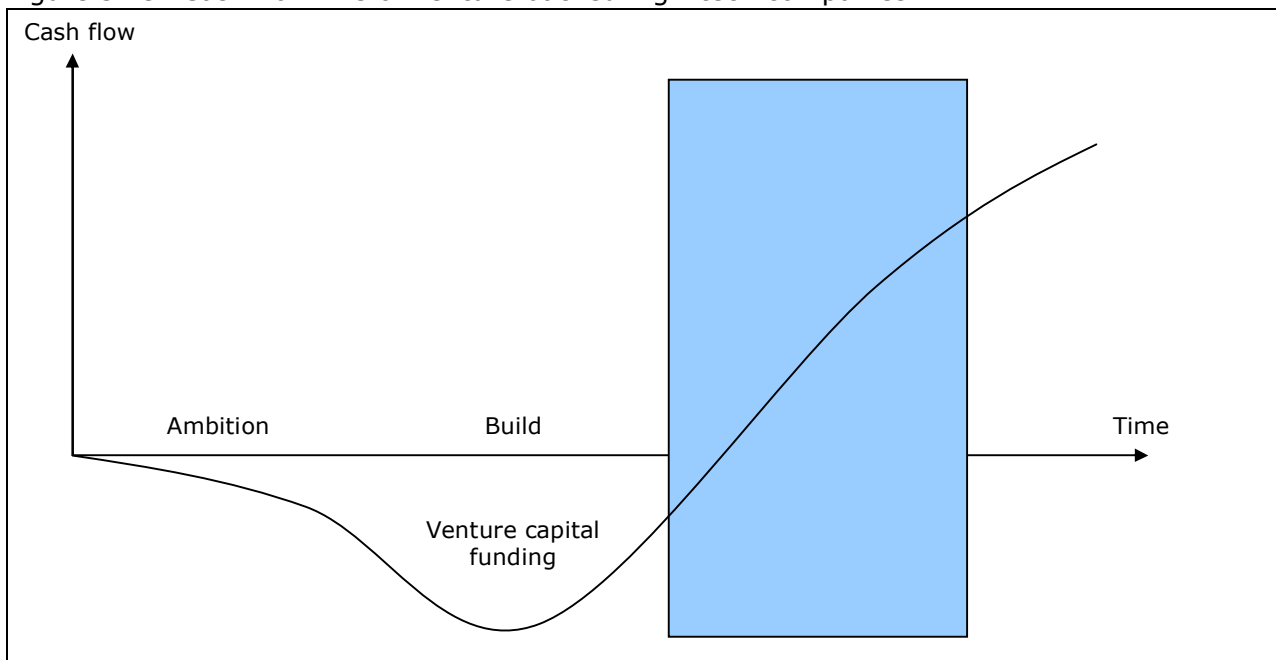
backed company might obtain synergies within R&D and business development. Moreover, it offers an easy access to new costumers, in particular in foreign markets, where it may be expensive to get traction through greenfield investments. An example of a portfolio company that has expanded its operations, by acquiring a foreign company is MilliMed, which in 2005 acquired the Dutch manufacturer Blue Medical. See box 17.

3.3.3. Business development, marketing and sales

In the Conquer stage, business development is focused more on developing a flexible and responsive company structure, which can adapt easily to changing internal and external conditions. An exit strategy also needs to be finalized in order to lead the firm to a successful exit. In some cases, it necessary to reinvent the business model or experiment with new approaches to generate business.

The cash flow line in the Conquer stage is rising, following figure 3.19, but it may be some time into the Conquer stage before the company is cash flow positive because of the investments needed to scale the business model. Additional venture capital funding may thus be required, perhaps in combination with bank financing.

Figure 3.19: Cash flow line of venture backed high-tech companies



Source: Vaekstfonden

The competition in the Conquer stage is often severe, and it is therefore important for the companies to focus on exploiting their competitive advantages. An example of this is the wireless networking technology company Zensys, which is the only company in its industry with a business model that involves scale production, see box 18.

In the Conquer stage, the high-tech venture backed firms have generally obtained a large portfolio of customers – or potential customers for drug development companies, as they only license out once. Customers for these types of firms are often large pharmaceutical companies or OEMs, which incorporate a chip or technology into their own products or portfolio. Generally, the cash flow from OEMs does not start until they introduce their products to the market. Therefore, a great challenge in business development in the Conquer stage is to shorten the time to market for themselves and their OEM costumers - to help these strategic partners to a quick market entry.

Box 18: Case study, Zensys A/S

The competition is severe and the business strategy is focused on scaling the production to obtain a competitive advantage in relation to competitors in the market, where Zensys today is the only company aiming for volume production. Zensys has lined up OEMs, and the marketing strategy is to participate in industrial exhibitions – together with these strategic partners and collectively bring products to market. The ultimate objective is to create a de facto standard in the industry.

Significant funding is generally required for marketing expenses in the Conquer stage, and it is necessary to develop a marketing strategy to defend against rival companies while exploring new markets. For some high-tech firms direct sales are preferred, because the amount of customers is limited, though it requires more personnel close to the customers. For that reason, firms generally launch their sales strategy based on direct sales in the target markets

and indirect sales in other markets - to follow up with direct sales globally as the company grows. In rapidly developing markets it is an advantage to in-source sales due to the direct contact to the customers.

Showcasing at international industrial exhibitions or conferences may be an important element in a technology company's marketing strategy as it tries to build a global brand and position itself as a provider of quality products.

Although the domestic market for a Danish high-tech start-up is commercially negligible in the Conquer stage, it may still be that Denmark is the optimal location for R&D, for instance.

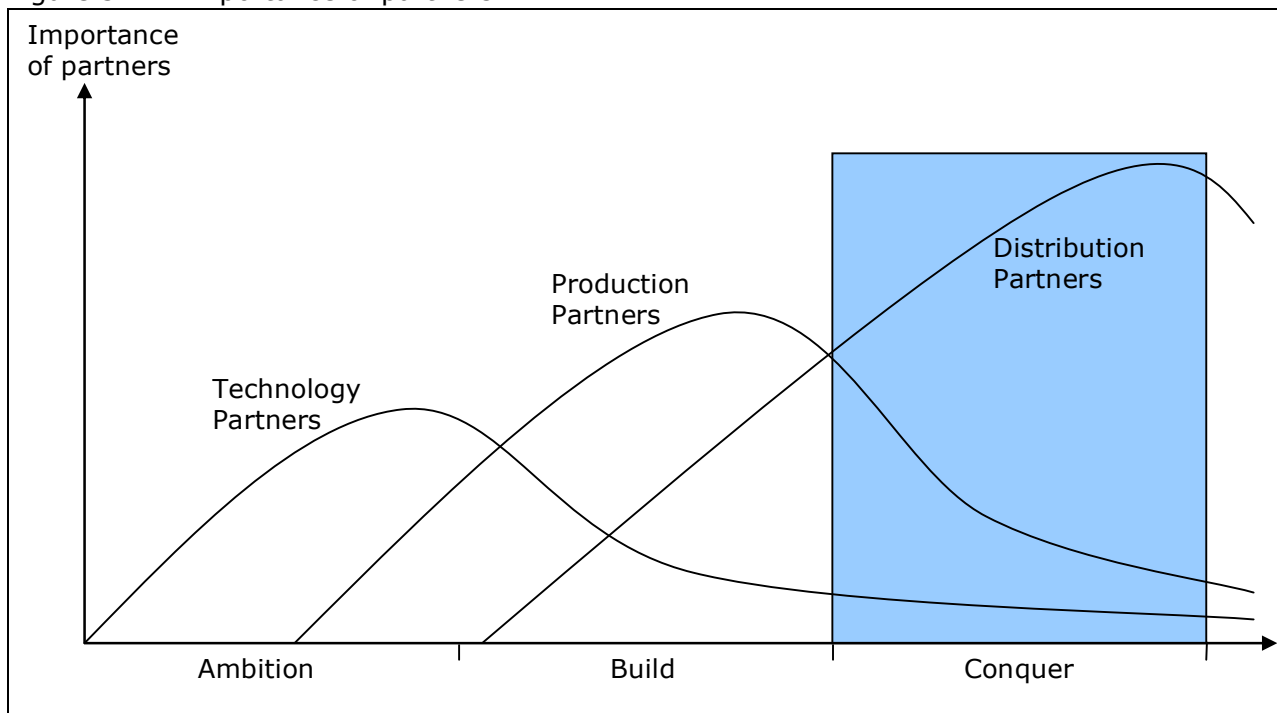
As the venture backed firm needs to scale the business model in the Conquer stage in order to deliver an attractive return on investment to its investors, it may be worthwhile to consider acquisitions as a tool for accomplishing this.

3.3.4. Network

In the Conquer stage, the characteristics of the company's network changes as the products are launched and sales start to pick up. The relationships with strategic technology and production partners have been established before entering the Conquer stage. The contracts have been negotiated, and the production is up and running. Therefore, management can devote most of its attention to nurturing distribution partners, who can accelerate commercialization of the company's technology and products.

In the Conquer stage, the roles of both the development team and the technology partners are of less significance, compared to their combined roles in the Ambition stage. They must of course continue to work with the product to adapt to the customer feedback received. But as highlighted in figure 3.21, distribution partners in sales are the most important partners in this last stage before exit.

Figure 3.21: Importance of partners



Source: Vaekstfonden

The production partners are of course still important as they are responsible for producing the right quality product at the right time – in addition to being flexible about incorporating improvements on the technology and products.

Distribution partners were brought in during the Build stage, but in the Conquer stage they are the key to success. Even if the technology is in fact revolutionizing, this is of little relevance if the market does not know it. Finding distribution channels that can push through large volumes of the company’s products is therefore of great importance.

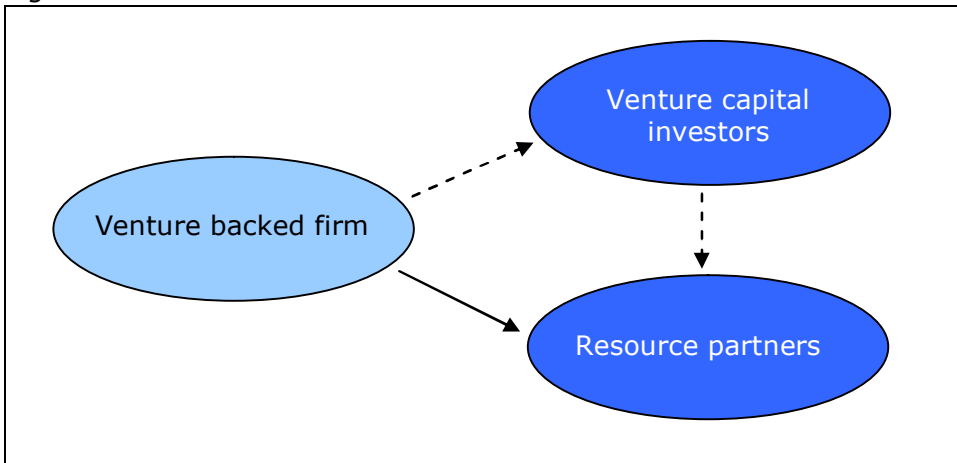
The ideal distribution partner may be one, who is also able to provide support in other areas such as technology and production. Zensys, in fact, has found a partner who provides support in all three areas. See box 19.

When a venture backed firm has reached the Conquer stage it generally has expanded to become a small-scale Multinational Enterprise (MNE). This means that it is less dependent on venture capital investors to provide access to international resource partners as illustrated in figure 3.22.

Box 19: Case study, Zensys A/S

The OEMs incorporating the Zensys chip or technology all support the development of technology one way or another – and by this they are important technology partners. These partners are generally all large industrial companies, which also operate as production- and sales partners. The most important partner focus in the current Conquer stage is within sales.

Figure 3.22: Access to network for a venture backed firm



Source: Vaekstfonden

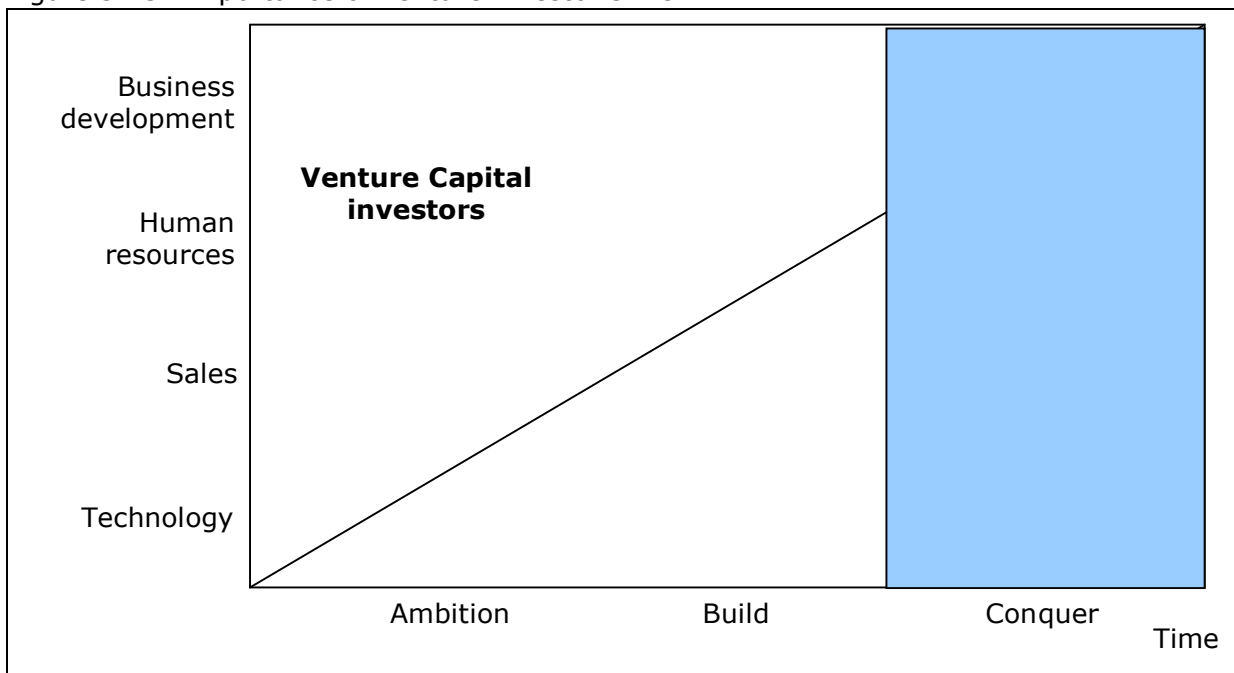
Instead, the company has established multiple direct links with resource partners, or is capable of doing so. To some extent, the company has become almost self-sufficient in terms of attracting resource partners for technology, production and distribution.

3.3.5. Investors

In the final stage – before the investors exit the company through a trade sale or an IPO – further investments may be needed, as mentioned above, in order to expand sales operations.

Companies in the Conquer stage will generally have built up an experienced management team with adequate competencies to handle R&D, sales, and business development. The four skills dimensions that need to be present at all times in the venture backed companies should therefore be amply provided by the management team. See figure 3.23.

Figure 3.23: Importance of venture investor skills



Source: Vaekstfonden

Investors still are involved in attracting new key executives if this is deemed necessary. Another area, where venture capital investors still may contribute is in business development. But also, investors' potential value add shifts toward other disciplines such as negotiating terms for a trade sale or preparing an IPO..

The international networks of investors are essential for all of these activities, especially because they can help the firm expand its customer base to be truly global. In choosing investors at this stage, the company should thus look for investors with global networks. The Med-Tech start-up MilliMed is one example of a company, which has successfully attracted a syndicate of international investors. See box 20.

Box 20: Case study, MilliMed A/S

In its latest financing round, MilliMed raised \$ 22 M in venture capital from a number of regional and global investors – including Advent International, BioFund, SLS, Longbow and Vaekstfonden. Part of this money was used to gain access to new production facilities by acquiring the Dutch company Blue Medical. The investors are also important, when it comes to attracting human resources as they have knowledge, network and experience within the life sciences industry that helps open doors and facilitate decision processes.

As the exit draws nearer in the Conquer stage it is important to have investors on board who can contribute to this process. The ideal investor syndicate thus comprises dedicated pre-exit/pre-IPO investors with significant exit experience. As a final prerequisite, the group of investors must be willing and able to put up the last rounds of funding, in particular for the pre-exit round which provides the final boost to the company before an exit is supposed to occur.

4. Conclusion

This report has integrated a new model - The ABC of taking venture capital backed firms global - with the traditional entrepreneur challenges in the process of commercialization. It has identified and described the internationalization process of a sample of Danish high-tech start-ups from the initial business idea toward a successful exit - from the Ambition to the Conquer stage. The role of the venture capital investor in facilitating this process has been an important angle in the report. Based on the various start-ups' experiences with taking their businesses global it is possible to summarize our findings by constructing two sets of guidelines - one for the start-up firms and another one for the venture capital investors.

4.1. Guidelines on internationalization and growth for the venture capital backed firm

The report has been split up in five key areas. The most substantial results as to what the start-up should focus on each of the three stages of the ABC-model are shown in table 1.

Table 1: Key focus areas for the venture capital backed firm

Area \ Stage	Ambition	Build	Conquer
R&D and product development	I Proof of concept	II Prototyping and adoption of initial products	III Expand product portfolio
Key management skills and human resources	IV R&D and technology	V Business development	VI Operational
Business development focus	VII Commercialization	VIII Key customers	IX Scale business
Network	X Technology partners	XI Production partners	XII Distribution partners
Investors	XIII Locally operating seed investors	XIV Investors with access to the company's target markets	XV Global investors

Source: Vaekstfonden

R&D and product development

In the R&D and product development in the Ambition stage (I), the main focus area ought to be attaining "proof of concept". The reason is that it may be difficult to get venture capital investors to invest in a business idea, where feasibility has not yet been demonstrated. Additionally, the firm needs to focus on technology development and initial testing of market demand. The product development in the Build stage (II) should be focused on developing a

prototype. It is essential prior to initial market introduction that the prototype is finished and that the company has identified pilot costumers willing to test initial product versions. The quality of the product must subsequently be improved through feedback from these customers. The key focus of R&D and product development in the Conquer stage (III), should be to increase the portfolio of products and improve the quality of existing products, to counter increasing competition.

Management and human resources

In the Ambition stage, management and human resources (IV) spend considerable time on R&D and technology development in order to ensure transition to the Build stage. It is important, however, that management always keep potential customers in mind in order to make sure that the product development efforts end up with something that customers want. Management and human resources in the Build stage (V), must be focused ultimately on business development. It is crucial to gather a team of globally experienced managers, who can put together a compelling strategy on how to enter the target markets. In the Conquer stage, management (VI) should focus on establishing a global organization, and concentrate on getting departments in several countries to work together effectively.

Business development focus

The business development focus in the Ambition stage (VII) is commercialization. While most human resources, at this stage, typically work on technology development. It is crucial for the firm to identify target markets and customer segments within these, in order to decide on how to best reach customers. In the process, it must be identified which customer needs, the firm is aiming to meet. When the prototype has been made in the Build stage, business development (VIII) changes toward identifying key customers to test it. This process should establish a network of customers and strategic distribution partners. When the product has been launched, and the firm has reached the Conquer stage, the business development focus (IX) changes to scaling the business.

Network

The key network members in the Ambition stage (X) are those partners, who provide support in the technology development. Technology is pivotal in the Ambition stage, and technology partners can help develop the technology most likely to succeed globally when turned into a product. In the Build stage (XI), the key network members change to become the production partners, as the work efforts mainly are on manufacturing the product. In particular, they should provide support on the design of the product which will determine the diversity of applications. In the Conquer stage (XII), after market entry, distribution partners make up the most essential network. These should provide access to target markets and to costumers.

Investors

In the Ambition stage the most important investors are financially strong, locally operating seed investors (XIII). It is crucial that the venture capital investors in this stage possess large networks, sufficient capital under management, as well as entrepreneurial and industry experience. They need to be locally operating to be able to frequently support the start-up

hands-on. In the Build stage, investors need to have a regional reach, as the company begins to set up departments in target markets, where they can be closer to costumers and resource partners. Thus, the ideal investors at this stage (XIV) are able to provide direct access to strategic partners in the company's target markets – in particular, production and sales partners and access to larger venture capital investors. When the venture backed firm enters the Conquer stage (XV) it should make sure to have on board investors with a global network as well as substantial exit experience.

Summing up, a technology-based venture capital backed firm should focus on five key elements in the internationalization process. The guidelines for Danish high-tech firms are:

Guidelines for taking Danish high-tech firms global

Management

Be prepared to adapt the management team as the company grows

- Key management competences change over time. The company founders thus need to be aware of their own strengths as well as limitations, and make sure they bring in new management resources with international commercial experience if this is required.

Business development

Focus on the customer – not the technology – when developing the business

- Management should always keep a clear focus on who the customer is, and direct business development efforts toward delivering solutions that meet customer demands

Marketing and sales

Be present in target markets early

- It is important to attack target markets early on, and with adequate force, as penetration here determines the ultimate success of the business model

Network

Team up with strategic partners early in the process

- Key strategic partners, who can add value in technology development, production, and sales should be identified and brought in early

Investors

Search for seed investors with broad complementary competences

- Raise money from seed investors with skills, international network, and sufficient capital under management to take the company all the way from Ambition to exit.

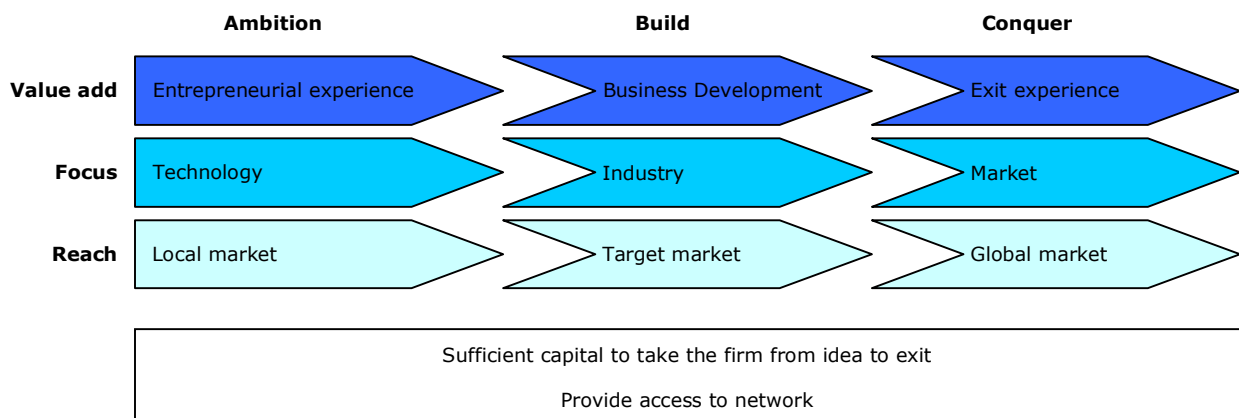
Source: Vaekstfonden

4.2. Guidelines for venture capital investors

To maximize the probability of success, high-tech start-ups should be supported by venture capital investors who can supply the right skills and resources at critical points in the transition from the Ambition stage to the Conquer stage. But because challenges encountered in the commercialization process change over time, the investor-syndicate has to adapt to these changes. The ideal venture capital syndicate to back a high-tech start-up thus is able to locate and apply the appropriate skills and efforts to surmount every new challenge as it arises.

In terms of the dynamic ABC-model, the investor-syndicate should continuously comprise investors who possess the exact strategic capacities and characteristics that define each stage in the internationalization process for the portfolio company. In all stages, the investors must have sufficient capital to take the firm from idea to exit. Otherwise, the firm's management will spend too much time on fund raising, which diverts valuable resources from developing the business. Moreover, the venture capital investors should provide a broad network. See figure 4.1.

Figure 4.1: The role of Venture capitalists



Source: Vaekstfonden

The key value adding skill of the investors in the Ambition stage is the entrepreneurial experience. A high-tech start-up faces many challenges and barriers at this stage, thus it is important that investors have tried building companies from the ground before, especially if the company founders are first-time entrepreneurs. In the Build stage, the key value add from investors is the ability to think of innovative ways to conduct business development. To beat competition, it is important that the company enter the market with a differentiating approach and a different product solution. In the Conquer stage, the investors should have exit experience to most effectively support the firm in the process toward an IPO or trade sale.

The focus of the investors in the three stages needs to change from technology in the Ambition stage to the industry in the Build stage ending up with a broad market focus in the Conquer stage. In the Ambition stage the investors should focus in particular on how to commercialize the technology provided by the start-up in order to optimally approach the market.

Investors in the Ambition stage should have a local reach as to be able to step in to provide hands-on support to the company's management when needed. In the Build stage, investors need to command sufficient reach in the company's target markets that they can facilitate market penetration. They do not have to be domiciled in these markets, but they must have previous experience from there as well as an extensive network. In the Conquer stage, the investors should have a global reach, in order to provide network and support across the range of markets where the venture backed firm is present. Although investor syndicates typically expand as more financing rounds are added, it is perfectly conceivable for the same group of VCs to take the company through all three stages. What matters is that the group of investors in the company is able to supply the appropriate value add as it changes over the course of the investment horizon.

The requirement for venture capital investors may be summarized in a set of guidelines for the way they should interact with portfolio companies:

Guidelines for venture capital investors on taking high-tech start-ups global

Network

Establish a global network

- VCs should command a broad global network that gives portfolio companies access to key customers, strategic partners and investors in target markets. The network also should be used for recruiting management resources and key staff to portfolio companies.

Capital

Increase funding power

- Danish VCs should endeavor to raise at least € 100 - 130 M in their funds if they want to match the total investment capability of US VCs vis-à-vis individual portfolio companies.

Extend funding horizons for portfolio companies

- VCs should commit more funding per financing round to allow portfolio companies greater flexibility and more time to focus on developing and executing their business models.

Skills

Refine business development capacity

- VCs should focus on building and refining their business development skills to help unlock the market potential of innovations made by portfolio companies.

Supply entrepreneurial experience

- Danish VCs should ensure they have adequate entrepreneurial experience to help portfolio companies navigate through the challenging process of setting up the business.

Source: Vaekstfonden

5. References

Brokaw (1990), *Foreign Affairs, Inc.*, pp. 92-104: Council of Foreign Relations.

McDougall et al (1991), *Global Start-ups: New ventures without geographic limits*, The Entrepreneurship forum.

McKinsey & Co. (1993), *Emerging Exporters. Australia's High Value-Added Manufacturing Exporters*, Melbourne: McKinsey & Company and the Australian Manufacturing Council.

Oviatt and McDougall (1994), *Toward a theory of international new ventures*, *Journal of International Business Studies*.

The Economist (1992), *Go west, young firm*. May 9: Economist Intelligence Unit.

The National Agency for Enterprise and Construction (2004), *Vækstredigoerelse*.

Vækstfonden (2004), *The Danish Market for Venture Capital and Buy-Out*. September 13,

Global Entrepreneurship Monitor (2004)

Homepages:

Eurostat: www.eurostat.org

VentureOne (VentureSource): www.venturesource.com

Appendix – Case studies

Nordic Vaccine Technology A/S

Interviewee: Founder and Chief Executive Officer Dr. Sten Verland.

Introduction

Nordic Vaccine Technology, NVT uses a novel nanotechnology to develop new and more efficient vaccines. The idea behind NVT was created in May 2001, after a discovery made by two scientists in the field of nanotechnology and immunology, Kristian Dalsgaard and Nikolai Kirkby. They founded the company soon after along with business angels – Sten Verland and Erik Kromann, who provided the commercial experience, that should bring the discovery to market.

The timing was unfortunate, however, because of the collapse in the global bio-tech industry in the beginning of the millennium. This caused the first round of venture funding of DKK 40 M to fail. Development activities were subsequently reduced to a minimum, while the patents were maintained, when in March 2004 a group of VCs finally decided to invest.

R&D and product development

Nordic Vaccine Technology, NVT, has put all resources into R&D of a new vaccine delivery system. The technology, Posintro™, is based on a unique nano-particle that enables both the delivery of the immunogen and simultaneous stimulation of the immune systems. An important characteristic of the nano-particle is that it also allows the use of other administration routes than the traditional injection. For example, NVT has in collaboration with heavyweight medical device company, Coloplast, combined their Posintro™ technology with Coloplast's adhesive and patch technology to develop the unique vaccine patch, TransVac™.

The value proposition of vaccines based on TransVac™ can be summarized in a significant reduction in the total costs per vaccinated person and a possibility to vaccinate entire populations within a few weeks. Moreover, infrastructure and administration issues are less critical, because NVT's technology is needle free and does not need highly trained medical personnel to be administered.

Management and HR

Key human resources in NVT are in the field of R&D at the current stage, however, the competences of later stage business operations are becoming increasingly important. All four founders still take part in the firm, where Sten Verland and Nikolay Kirkby make up the management as part time CEO and part time CSO, respectively. Kristian Dalsgaard is chairman of the Science Advisory Board, SAB, while Erik Kromann represent the founders in the Board of Directors. In the future stages, the management will most certainly go through some changes. The CEO will start working fulltime in company as the second fund raising approaches. After new capital has been secured also the CSO will start working full time in NVT. In the future, an additional COO will be hired to form the management trinity to carry the firm towards an exit. In 3-5 years, NVT plans to adjust the executive as well as non-executive management by bringing in profiles with extensive experience from large vaccine companies.

A particular strength of the company is the technology. Combined with the right business skills, the scientific discoveries behind NVT have the potential to build an attractive market position.

Business development and marketing

The vaccine market is large and growing 15% annually – driven by new vaccine campaigns (e.g. influenza), by programs in developing countries, and by new vaccines and administration forms. Strong competition among traditional vaccines exists. The major challenge for NVT is to convince the international vaccine industry that the product advantages are sufficiently high to change from traditional injectable vaccines. The customers are primarily large pharmaceutical companies, which may license the technology and advance the product development into the late clinical phases and ultimately market the products.

The target markets are initially USA and EU. However, the geographical scope will increase in later development stages. The Danish market is of little commercial significance, but is important from a regulatory point of view, as an approval might be easier and faster to obtain in Denmark. NVT can then take advantage of EU regulations, which stipulate that when a product is approved in one country, it is automatically approved across the whole of EU.

The marketing strategy for NVT is to be broadly exposed in the national general media and in international biotechnology media, and become well known among the potential customers and venture capital companies. A PR-agency is employed by NVT to achieve this objective, and PR will be a major focus in the next year or two.

The business development focus is currently to explore the synergies attached to combining existing vaccines and immunogens with the Posintro™ technology. The capital invested so far allows for development of the patented technology to preclinical Proof of Concept, i.e. to show that the combination of Posintro™ and the patch technology works in animal models.

Network

NVT has a broad network through management, investors, and other partners, yet the key network in the current stage is their strategic partner Coloplast. Coloplast has become a crucial corporate partner in R&D by collaborating with NVT on developing the technology. In the later stages, large pharmaceutical companies are expected to become crucial partners in the development with a significant financial involvement as well.

The network is globally dispersed to EU, USA, Chile and India. To produce TransVac™ NVT purchases active ingredients in USA, Chile and India, while Coloplast apart from being a crucial technology partner is responsible for the pilot scale GMP production. The production partners are currently becoming increasingly important, while distribution channels and sales are non-existing.

Investors

The two business angels funded NVT in two rounds before the first VC financing round in March 2004, when NVT successfully gathered a syndicate of VCs to raise € 1.00 M. The syndicate consisted of Vaekstfonden in collaboration with Coloplast, DTU Invest and Syddansk Innovation.

NVT is very much aware of the type of investors chosen for the venture. Most importantly, the investors need to have technological competencies to understand the various stages of development. Furthermore, NVT would like international investors in the next financing round to bring the venture closer to their target markets in the US and the large EU countries. The first stages of product development may be completed by NVT on Danish grounds, however, in the next stages more and larger funds are needed, and international partners are necessary.

The current investors contribute in several ways including business development. Most strategic decisions are made collectively between management and investors, while management retains sufficient autonomy in the day-to-day management. The investors' involvement in technology development is less significant.

For NVT to build a fully integrated biotechnology company three factors are of major importance

1. Product development skills – Need to be present in order to show the customers that the company has the ability to bring the technology from idea to a product.
2. Business development skills – to establish commercial partnerships with pharmaceutical companies
3. Financial resources – Essential to employ the right personnel and fund R&D efforts.

More information on Nordic Vaccine Technology on: www.vf.dk

DentoFit A/S

Interviewee: Founder and Chief Executive Officer Per Bækgaard.

Introduction

DentoFit develops the first volume stable dental composite without compromising the other physical characteristics of the material – a breaking product to fill holes in the teeth. In 2002, Risø National Laboratory was approached by the Dental School of Copenhagen with a desire of a new composite to cover unmet needs of the dental industry. Subsequently the management of Risø decided to commercialize the idea through DentoFit.

DentoFit was established in 2004 by the former dentist and entrepreneur, Per Bækgaard, who was selected by Risø. Per Bækgaard operates as CEO and has obtained management skills through a 14 year career with hands-on experience of management in IT companies – of which 7 years in executive committees. Moreover, Per Bækgaard has an MBA and several years of experience in Dental clinics.

R&D and product development

DentoFit is currently in the Ambition stage with a keen focus on technology. The competitive edge of DentoFit is their patented idea, which aims to become a “quantum leap” within a lucrative area of life sciences. Furthermore, it is a big advantage – in relations to investors and future channel partners – that the idea is relatively easy to communicate to persons without wide technologically knowledge. DentoFit is surrounded by skilled people, including researchers from Risø with technologically knowledge and investors with financial knowledge.

In connection to the ABC of Internationalization, DentoFit has a speedier course than most other life science ventures, as no clinical trials are needed before introducing the products in the market. Thus, DentoFit will be able to sell the product as soon as the technology and product is fully developed.

At the moment, the R&D is placed at Risø, Denmark, which is an ideal location because of the technically qualified people. For this reason and due to the advanced dental sector in Denmark, the R&D will continue to stay in Denmark. However, production is planned to be outsourced to a foreign producer due to the lack of essential production skills in Denmark.

Management and human resources

At the moment, the company consists of the founder and CEO, Per Bækgaard, and the R&D manager Alexander Lelieveld from Risø. In the future, the challenge will be to move away from the current stage of product development toward entering of the market, which might need more personnel to assist in “thinking outside the box”. Therefore, DentoFit is planning an increase – and maybe a change – in management in the future stages.

Three scenarios have been set by the current management of DentoFit in regard to its future role in the company:

1. In the Conquer stage, at the latest, a new professional CEO will be hired – Managerial experience from a larger company in the similar industry will be essential.
2. The current CEO continues in an expanded management team where he will focus only on communication.
3. The current CEO will leave the management team in the Build stage to take a board seat instead.

At the current stage management naturally put a lot of focus on getting to the next stage. Four crucial challenges are worth highlighting in respect to managing DentoFit through the Build stage:

1. Control the building of the organization
2. Communicate with the end-users
3. Push the product through the value chain
4. Position the firm for the future evolution

At this stage, DentoFit identifies the key management competence as the communication of the business idea to investors and future sales partners. In the next two stages core competences will move to the ability to put the product to market and generation of cash flow. The strategic management focus is currently divided in two parts. First, communicating the idea to investors and future stakeholders is the task of the CEO. Second, co-operating with Risø, is the task of the R&D manager. DentoFit finds this division of tasks very effective because this allows the CEO to focus fully on business development.

Business development and marketing:

Their present business strategy can be divided into the following two parts:

1. Proof of concept – DentoFit needs to prove that the idea holds and that it is possible to manufacture the product. This part of the business strategy will hopefully result in a certificate allowing sales without going through the clinical trials.

2. Building up the business – Includes building a network, creating a customer base, conducting business development, and fund raising.

In the next stage, Build stage, the business development focus will concentrate on:

1. Initiate strategic co-operation with large industrial players - DentoFit is seeking out potential strategic partners already, like sales partners and customers.
2. Analyze how to build green field operations in Northern Europe.
3. Attract capital in order to develop/produce a prototype – As part of the R&D, DentoFit has received feedback from dentists, scientists and end-users.

DentoFit will sell the product to Dental clinics through indirect sale. In the beginning, DentoFit will focus on the northern European market due to the fairly homogenous cultural background and lower psychological barriers. The Danish market is important because it is well defined and well explored by substitute product manufacturers, and DentoFit estimates 15% of the Nordic market is enough to generate positive cash-flow. The strategy is to build up knowledge of strengths and weaknesses before launching the product globally – probably refined several times. Furthermore, the strategy is to brand the product, which subsequent will be distributed through sales channels – of which several already are in place.

The competition on the market for dental composite is immense, which is why DentoFit needs to demonstrate that they have a superior product. A few large dental companies control the market and have strong exclusive brands. Therefore, DentoFit is not interesting in launching a “me-too” product. Due to the well-established market, the exit can very likely end up in a trade sale to one of the large players.

Network

The key partners of DentoFit are the large industrial companies in Europe, the research community in Scandinavia, especially Risø, and the two VCs in Denmark, Vaekstfonden and CAT Science Park. DentoFit approached several Danish VCs prior to the fund raising, and they were all interested in funding DentoFit from the very beginning. Thus, DentoFit had the positive experience of being able to hand-pick the right investor syndicate.

The importance of their technology partner, Risø, is superior. Actually, DentoFit has their office at the Risø National Laboratory, Roskilde, which they will continue to have until the first costumers emerge and they start to generate cash flow i.e. in the Build- or Conquer-stage. Then DentoFit would like to get a more independent location. The production partners, on the other hand, are of less importance due to the early development stage. When the product is fully developed in the Build stage the production will be outsourced, and because of production should be simple, several producers can do the job. The sales partners – large distribution channels serving all dental clinics - are not that important either because the market is well-established, whereof they can sell the products through the existing distribution channels.

Investors

Vaekstfonden and Cat Science Park signed on as lead investors in the first financing round in November 2004, raising a total of € 0.4 M. Owners of DentoFit are divided in four legal parties - Risø, Vaekstfonden, CAT Science Park, and Per Bækgaard. Large business related decisions are made by the board of directors, to which the CEO has a very tight and good relationship.

DentoFit intentionally chose investors, which specialize in ventures from “mature idea” to “proof of concept”. The investors are deeply involved in the business development. There is great collaboration between management and investors, who collectively possess a broad range of complementary skills. Despite the small crew of DentoFit, no single person dominates the company, and the CEO constantly communicates with the investor syndicate and the board of directors with ideas.

The investors’ ability to take the venture backed firm from seed to exit is very important in all three stages of DentoFit. In the Ambition stage one large VC eases the fund raising process due to signal it shows to other investors. If the same seed investor joins the second, third and coming financing rounds it will save DentoFit extensive time and resources. The international network of the VCs becomes especially important in the Build- and Conquer stages. The VCs experience from the dental industry is less important, but general experience from life sciences is essential. DentoFit points to the fact that if the VCs have entrepreneurial experience it is important that they do not take over management, but leave the day-to-day businesses to the management. Moreover, it is important that the venture backed firm does not become dependent of a single individual inside the VC. Most essential for DentoFit is it that the VCs have knowledge of economics, finance, and business development.

More information on DentoFit on: www.risoe.dk

IMT Labs ApS

Interviewee: Founder and Chief Financial Officer Nicolaj Reffstrup.

Introduction

In October 2004 IMT Labs (IMT) launched Spleak, which is a humanlike female interactive chat partner, on the MSN messenger network to provide easy, humanlike access to content, online services and social networking, in the form of entertaining chats. This "Chat Bot" or instant messaging interactive agent, can serve as a powerful advertising vehicle for instant messaging and wireless networks.

IMT was founded in Denmark by two entrepreneurs, Nicolaj Reffstrup and Morten Lund, both with several years of experience in new start-ups. Nicolaj Reffstrup has professional experience as founder and partner in the Danish Oryx investment fund, as well as hands-on manager in earlier start-ups, while Morten Lund is a serial entrepreneur whereby he has established a broad network within the industry. His track record includes investor, partner and cofounder of several start-ups successes within peer2peer, IP telephony and internet security along with encryption.

IMT is currently in the Ambition stage, but quickly progressing towards the Build stage. They have created the first beta version, and are currently improving and developing the intelligence of Spleak. They have attained 100.000 users in four months with no marketing effort, and characterize the user base as a test group for new features and services.

R&D and product development

The major focus in product development is currently to improve the programming of Spleak in order to improve her human like chatting capabilities and increase the range of features offered to the users. Software development is primarily done in India where a team of programmers is located. The powerful artificial intelligence engine that makes the chats possible has been developed by a US based company.

At the current stage of the product development, IMT Labs has introduced the first beta version on the market, however it's not fully developed, which in this industry means that the final beta 1,0 version will be launched within six months

Management and human resources

Management in IMT Labs constitutes of a team of three executives. The Chief Executive Officer, Jean Cristophe Combaz has extensive experience in online services as the founder of Adforum.com. Chief Technical Officer, Allan Pichler, is working in Silicon Valley and has a broad network in the target market USA. Chief Financial Officer, Nicolaj Reffstrup, is the founder and former CEO.

The most important management competencies of IMT in the Ambition stage are execution skills to bring ideas to reality. In the Conquer stage and onward the ability to maintain the strong concept becomes increasingly important, implying that the users choose to apply Spleak instead of a future competitor. In Conquer stage, the key management competencies should be split 50/50 between concept and execution. Recently the founders, in collaboration with investors, decided to hire a new professional CEO, Jean Cristophe Combaz, in order to raise the skills inside the firm towards key competences in the Build stage - sales and marketing - thus increasing the management independence of investors.

IMT Labs has accumulated core competences in Denmark, although they have established a production and development unit in India. The founding team wants to have a top-down recruitment strategy, however, it is very complex and time demanding. It is difficult to find a skilled manager in India to hire a crew. Indian workers wish for job security whereof a Danish early-stage high-tech venture firm has low priority to the high skilled Indian labour force compared to a well known MNC.

Business development and marketing

The customers of IMT are reached in two steps. First, distributions channels are crucial to break through to the users of Spleak. Distribution will be through partners like user communities, dating, social networking, toolbars, desktop searches, security & encryption, IP telephony and peer2peer. IMT has access to some of the largest players in these fields, and these distribution channels reduce the importance of a traditional marketing department. This way IMT eases what is normally a very difficult task of reaching customers with a new product. These customers are all web based from around the world - primarily the UK, US and Canada. The first version of Spleak is in English while other languages will be added. During the first 3 months of the first beta version IMT acquired more than 100.000 users primarily by "word-of-mouth"-marketing.

The business strategy is primarily to prove traction in terms of large number of users, high retention rates and revenue per user. Afterwards, the marketing strategy is to bring as many services and features to these customers as possible. The size of the user base will be a central element when selling advertisement and other features in later stages.

The business strategy of IMT is to reach the user base with normal chats by establishing a push engine to target commercialized words in the conversation. This way if a chat includes the word "Cinema", movies that plays in a cinema near you will appear in a link. Strategic management in IMT is focused approximately 80% on technology and 20% on the market. However, management expects the reverse allocation in the next stage.

The level of competition is rather low, because of the early mover situation. But IMT Labs are aware of the competition that will arise if Spleak becomes a success. The strategy is not based on the early mover position, as they are confident in the proof of concept. Even if the market was well-established IMT believes they would have a competitive advantage in the strong concept.

Network

IMT believes that in this industry the only way to obtain success is through network partners who can lend credibility to the start-up. A stringent hierarchy in this industry entails a Lemming-effect as all users move in the direction of the most dominant players.

IMT started up in Denmark, as both founders were living close to Copenhagen. They also have a broad network of partners domestically. The influence and type of partners vary considerably. IMT has enjoyed great advantages by starting out on the domestic market which has provided immediate access to an established network in associated industries such as web-design and funding. Partners of any magnitude are vital in the early Ambition stage. The geographical scope of the strategic partners in form of technological and product development was global from the beginning and several partnerships were established from the start in the target market.

Technology partners are of major importance in the Ambition stage, yet their importance is expected to decrease as IMT enters the Build stage. IMT chose initially to outsource part of production to suppliers which in the Ambition stage supplies a core element of the technology, whereby it has become strategically involved. However, IMT does not consider the production partners' significance of business development to be high at the current stage, and they do not expect their importance to increase over time. But the Indian product developers constitute a crucial element of success. The distribution channels are of minor importance in the current Ambition stage due to the main focus on technology and product development, however their importance will be very high in the Build and Conquer stage and much effort is put in writing the contracts and negotiating their future conditions. IMT aims to shorten the Build stage by preparing aggressive market penetration and product development along the technology development.

Investors

In August 2004, IMT raised the first round of finance of DKK 5 M from Vaekstfonden – the lead investor – and a group of individual investors. Currently, IMT looks for a bridge funding of DKK 5 M – of which half will be covered by Vaekstfonden – expected to be closed in May 2005. Next financing round of \$ 5 M is anticipated to be closed in the autumn of 2005, where IMT aims for a large international investor to join the investor syndicate. The investors are generally supportive, and their networks are crucial.

The special strengths of IMT Labs can be separated into 3 main parts:

1. Concept
2. Network
3. Execution skills

Interactive agents have been around for a few years but, until now, they have been unsophisticated with limited abilities and no real marketing efforts. No one on the market has a product like Spleak, as commercialized complete. The crucial strength of IMT Labs is a broad network. Through the shareholders and executive team, IMT Labs have access to an online audience of more than 100 million users – i.e. subscribers to online services. While developing the interactions, dialogue abilities and knowledge base of the agent, the focus is furthermore to enhance the very best partners for distribution, advertising, content, services and technology to become the leading "Chat Bot" provider on the long run.

IMT points to three factors which are crucial to move the company to the Build stage. First, the international network expects to open doors for the sales and marketing. The domestic market in Denmark is insignificant for a software firm like IMT, whereof the marketing strategy at the outset is global. Second, founders identify the importance of sufficient funding. Fund raising in Denmark is a big hurdle which requires extensive time and money for related expenses such as juridical support relative to the funds available and more importantly the size of average funding. Third, management plays an unambiguously important role in raising the firm from the Ambition to the Build stage. IMT points to the need to hire more professional management competences in the future to speed up business development.

More information on IMT Labs on: www.imtlabs.com

O-Pen ApS

Interviewee: Founder and Chief Executive Officer Jonas Eliasson.

Introduction

O-Pen develops an optical touch screen technology usable from wristwatch communicators to large-scale exhibition windows and especially relevant for mobile terminals, PDAs and Laptops available everywhere at any time. O-Pen was founded in 2003 by a small team of entrepreneurs – an architect, Jonas Eliasson, and an entrepreneur, Jens Stubbe Østergaard. A Swedish business angel, Håkan Frick, financed the early pre-seed stage and became chairman of the board.

The O-Pen technology stemmed from an idea of Jonas Eliasson, whose architectural background had involved extensive use of the optical mouse for interactive drawing. Thus, the idea is to transfer the technology of the optical mouse onto any surface with the touch of a hand.

O-Pen currently is in the Ambition stage; on the edge of entering the Build stage. The company is currently seeking out strategic partners and pilot customers to shorten the Build stage. However, the technological development is still high priority alongside product development. Seed investors – CAT-Symbion Innovation, Symbion Capital, and Vaekstfonden – have provided additional funding, and the Intellectual Property Rights, IPR, have established a strong foundation for the firm.

R&D and product development

A team of researchers is currently developing the technology to work on any surface. However, O-Pen is already changing the focus from R&D toward sales despite the fact that no product is yet created. An important step in product development is to obtain customers to contribute in creating and designing the most efficient and best quality product.

Presently, there is a gap in the performance provided by existing touch technologies and the demand from end users - O-Pen aims to fill this gap. The business strategy of O-Pen is to be a fab-less provider, selling non-exclusive technology licenses in the business-to-business segment.

Three crucial elements are worth highlighting with respect to the special strengths of the O-Pen technology in relation to competitors:

1. Unique platform which is scalable.
2. Possibility to add more function abilities.
3. Development of an all in one man/machine interface.

Management and human resources

O-Pen currently employs five persons, with two of them making up the management team. The founder and CEO, Jonas Eliasson, finally co-founder and Manager of Innovation, Jens Stubbe Østergaard, who has a background as co-founder and CTO of E-medication. Jens Stubbe Østergaard also has held a position as design manager at Kontrapunkt Design – a leading Danish consultancy advising clients on design, brand strategy and innovation issues worldwide. Despite a small crew, the key human resource currently is the technology development team in O-Pen. In addition, more strategic skills are crucial to prepare sales in the Build and Conquer stage.

Management attention is changing away from pitching the idea the idea to investors towards more organizational and marketing efforts. O-Pen is looking to hire a new CEO, with an even stronger background on the skills that are essential in the Build stage – in particular sales, industry experience, extensive network, and team building.

O-Pen was established in Denmark mainly because both founders were living in Denmark. Denmark benefits from having a very skilled work force, although O-Pen might have had easier access to skills in Sweden where people with experience in the touch screen is in even greater supply.

Business development and marketing

To reach the Build stage O-Pen points to the current focus of business development. The business development focus is divided into two parts:

1. Determine the right segments.
2. Address the right customers within the segment.

O-Pen possesses a competitive advantage in being first with a new technology in the touch technology, which have resulted in very early sales focus, long before the product is fully developed. The business development was initially focussed on five markets segments – Intelligent big screens, desktop monitors, Notebooks, PDAs, and Smart phones.

The customers of the O-Pen technology are OEMs – possibly also OMs⁴. The OEMs play a significant role in the technology and product development, as to the high demands of design and usability. They know what they need, and insist on O-Pen to deliver their specifications. To begin with, O-Pen has no other alternatives than to fulfil these demands.

The marketing strategy is kept very straightforward and split in two parts:

1. Acquire customers one at a time – ensuring optimal market timing and satisfaction of the customers.
2. Visibility – presence on leading international exhibitions.

However, O-Pen is contemplating change in the marketing strategy as the firm evolves to the Build and Conquer stage. Designing the future marketing strategy is an important task facing the new CEO.

O-Pen currently focuses on Europe as their target market. As the company enters the Build and Conquer stage, marketing will increasingly become global. The biggest markets for touch technologies are Europe and the US. However, Asia is emerging at a rapid pace. The Danish market is insignificant, as to the lack of OEMs.

Competition on the market for touch screens in general is immense. The number of competitors is high although only a few technologies exist. O-Pen delivers a new technology that is supposed to change the touch market. Thus O-Pen assesses their competition to be moderate, just needing to secure the continuing unique technology.

Network

The key network partners have already changed remarkably since O-Pen was founded. Currently the network is bounded to the European market, however, O-Pen aims to extend it rapidly beyond Europe. The customer network is of major importance, whereas the investors have been essential until very recently, following the figure below.

Fundamental for O-Pen has been the initial network to support the technological development. In the light of the well-defined patented idea and the skilled technology development, a group of investors joined the firm. However, O-Pen spent 12 months to gather a satisfactory first round seed investor syndicate.

The technology partners and the production partners currently play equally important roles in the business development process. In fact, in most cases one partner acts both as technology and production partner. In the Build and Conquer stages, the sales partners are expected to become increasingly important, and will determine the rate of success.

Investors

O-Pen has raised € 0.8 M so far from three funds. First, CAT-Symbion Innovation signed as lead investor in the initial bridge round in February 2004 along with Symbion Capital. In June 2004, Vaekstfonden signed to join in the following financing round. To carry the firm through the Build stage, O-Pen currently aims to raise a third round of funding - with a larger syndicate including international VCs – expected to close in the spring of 2005.

Initially, the ambition was to raise funds from a syndicate of large international investors. However, the objective showed difficult to achieve, and the syndicate consists of a group of Danish VCs.

The investors have had great involvement in business development so far, primarily through the board. Furthermore, the investors accelerated the increase of the skilful team of employees – including the hiring of a new CEO. The investors possess an extensive network of skilful and experienced persons to include in O-Pen at some time in business development. The sales, however, are primarily handled by the management, but the investors have served many leads.

O-Pen highlights the most important requirements of the VCs in the Ambition stage to be industry and entrepreneurial experience. The investors' industry experience has been very helpful in developing the touch screen technology, and the entrepreneurial experience has supported O-Pen through the critical processes of handling the financial accounts. In the Build stage much new funding will be required and the seed investors with the capacity to participate in the coming financing rounds will become crucial as an indicator to new investors, that the venture backed company is worth funding. Finally, in the Conquer stage O-Pen expects the international network of the VCs to become most essential. When the O-Pen technology is established on one market, they will help the company to build a global customer base and grab market share.

More information on O-Pen on: www.vf.dk

⁴ OM: Original Manufacturer (producers without a brand).

Chempaq A/S

Interviewee: Chief Operating Officer Henrik C. Hansen.

Introduction

Chempaq develops a test-kit (an analyzer) that makes it possible to perform quick, easy, and precise blood cell counts (haematology) anywhere, anytime. The product is based on a unique, patented sensor technology, which was spun out from the Microelectronics Center (MIC) at the Technical University of Denmark in 1999 by Ulrik Darling Larsen.

Chempaq has advanced to the Build stage and is in the process of setting up production facilities. The main focus, though, is on establishing sales operations and an efficient production capability, which is why a new COO, Henrik C. Hansen, has been hired. He brings several years of experience from industry to the company.

R&D and product development

Chempaq is currently manufacturing its first 0-series in preparation for regulatory approval and sales launch. The first launch will focus on small General Practise clinics. Within the next 18 month, Chempaq will launch an additional analyzer with more parameters and data logging facilities. The second launch will primarily target chemotherapy management.

Chempaq's test-analyser has almost passed the refining stage and pilot sales are expected to start by Spring 2005. Several other products are in the pipeline in earlier product development stages. Chempaq is introducing a product that will further facilitate testing and the test considers new needs of point-of-care which competitors lack their product development. The market increasingly demands point-of-care convenience, which in the case of Chempaq should allow doctors at general practises to test for blood cell count immediately instead of having it send to central laboratories for analysis. Thus it turns into a more effective, time-efficient process, which benefits the individual as well as the whole of the social health care system.

Management and human resources

Chempaq has since the establishment been strong on R&D resources, but the key human resources in the Build stage are within sales and operations. As the company is on the verge of entering the marketplace, the board of directors is facing a series of make-or-break decisions on business strategy development.

As a matter of fact, some members of the board are involved in day-to-day operations because they possess specific skills that are still lacking inside the company such as distribution skills. Notably, Chempaq has set up a Distribution Committee, which includes two board members. This committee is supposed to come up with the optimal sales strategy.

Chempaq depends heavily on a group of key researchers, which have been hand-picked from elsewhere in the industry. The location of the R&D unit in Denmark is beneficial in the current stage of development due to the immediate access to a highly qualified workforce.

Management has expanded considerably since 1999. The founder and Chief Technical Officer, Ulrik Darling, early on recognized that his main competencies lie within R&D. Thus, he initiated the recruitment of a professional CEO, Peter Halken, prior first financing round in 2001. Chairman of the Board, Bent Holmegaard, currently holds the interim CEO position until a permanent solution is found. COO, Henrik Hansen, was recently hired to increase focus on operations, which shows that the key management competences have changed towards greater focus on business development and operations. Furthermore, management consists of Chief Scientific Officer Björn Ekberg, Head of Finance Ebbe Dalskov, Manager of Quality & Regulatory Affairs Frank Petersen, Business Developer Manager Jakob Møller Jensen, and Production Manager Jan Elert Mørch.

The management faces barriers in the business development as to decide which areas to keep inside the company and which to outsource. The key to success will be to outsource areas of operations where Chempaq is weak. Production has already been outsourced to one German and one Danish supplier which have both been carefully chosen. Furthermore, Chempaq is currently negotiating with some of the big players in the market with the intention of getting access to their distribution channels. This way, Henrik Hansen expects the collaboration to create synergies. *Vis-à-vis* customers, the two main competitive advantages that the company is advertising are "perfect timing" in market introduction and "high product quality".

Business development and marketing

More than 300 million blood cell counts are performed world-wide every year as a general measure of patient health status or situation. Monitoring of chemotherapy patients accounts for more than 40 million tests annually in Europe and the US.

The marketing strategy for Chempaq is separated in two steps. First, sales in the domestic market will be supported by direct sales efforts given the company's presence in the market. Second, the US target market

and the EU market will be approached by getting access to existing distribution channels. The success or failure of the company ultimately depends on the rate of penetration into the US market. In that respect, a successful penetration in the company's home market may serve as a strong reference in negotiations with US partners and customers. Long term, the Danish market, however, is much less significant.

The business strategy is to enter the Scandinavian market in April-May of 2005, Austria in the Summer, and the US in the Fall - all countries with public subsidies on blood analyzers. Across all markets, the volume of sales must be ramped up quickly following introduction if the overall investment in Chempaq is to be profitable for the investors.

The competition Chempaq's market space is fierce, and the company's primary competitors are much larger in size and market power. However, the Chempaq test is differentiated from the competitive substitutes in several ways. Thus, competitors in the market are monitoring Chempaq closely and may ultimately turn out to either acquire the company or beat it in the marketplace.

Network

The most important network partners at the moment are the various doctors' forums in Denmark, where the decisive choices are made as to whether the Chempaq test will be implemented across general medical practises in the country. The channel partners in Scandinavia as well as the two suppliers are very important network partners for Chempaq.

During the Spring and Summer of 2005 Chempaq plans to enlarge its US network substantially in preparation of the next step in the business development strategy.

The technology partners were crucial the Ambition stage, but their importance has decreased in the Build stage. Faced with new challenges in technology, Chempaq has hired some external consultants to help devise new ways of conducting R&D.

Three factors are crucial in order for Chempaq to move forward from the current Build stage to reach the Conquer stage:

1. The American Food and Drug Administration, FDA, has the most decisive impact on success as the US market is the ultimate target.
2. Finding the right channel partners who can reach end users optimally.
3. Fund raising due to the large capital requirements connected with penetrating new markets.

The main reasons for Chempaq to have reached Build stage are:

1. A world-class R&D team.
2. Seed investors who have made it possible to roll out the business plan.
3. Unique IPR.

In the Conquer stage, the path to exit will depend on:

1. Sticking to the business plan to keep the company on the right track.
2. Market development to cope with the decreasing prices.
3. Ensuring widespread customer acceptance in the market.

Investors

The initial pre-seed investor in Chempaq was Novi innovation, which was chosen for its professional and skillful team. Later, Vaekstfonden, Symbion Capital A/S, InnFond, BioFund Management, and Vecata – all with several years of experience in Life Science Ventures – have joined to raise a total of € 9.21 M.

The level of investors' involvement in business development has been significant so far. For instance, investors recommended that management hire a COO to optimize the operations. Moreover, Chempaq has recently added a new member to the Board who brings in strong knowledge of the market knowledge and who can help decide which direction to take the firm. When it comes to the technology, the investors have been much less involved.

More information on Chempaq on: www.chempaq.com

Evolva Biotech A/S

Interviewee: Founder and Chief Executive Officer Neil Goldsmith.

Introduction

Evolva Biotech is a product focused platform company with a technology that can repeatedly generate products across the entire pharmaceutical spectrum. It is in part a spin-out of the American biotech company Phytera. Evolva was founded in 2001 by British national Neil Goldsmith, Alexandra Santana Sørensen from Portugal and Søren Nielsen from Denmark. Each founder has a long history within the biotech industry. Initially, Evolva raised capital from Symbion Capital – but has later raised an additional € 12 M in venture capital from a syndicate of both domestic and international investors.

Evolva has developed a new technology – Watchmaker – to enhance the productivity in the early phases of drug development based on small molecules. Many of the world's most important drugs derive from nature. Yet, in essence, the fact that a willow tree makes a pain-killer (aspirin) or a fungus a cholesterol lowering compound (statins) is pure co-incidence. It is not the purpose for which these compounds evolved in nature. But by making it the sole survival criteria of an organism – e.g. a genetically enhanced yeast – that it can make a compound that inhibits HIV protease or enhances insulin sensitivity it is possible to obtain yeasts that are truly excellent at inhibiting the HIV protease or enhancing insulin sensitivity. The process is then to find out what molecules they are making.

R&D and product development

Evolva differs from most of Vaekstfonden's portfolio companies due to the status as strictly an R&D company. The aim is not to develop products, but to develop a technology platform to sell to large pharmaceutical companies. Even though they have entered the Build stage, Evolva still has approximately 10 years to market. Most life science portfolio firms initiate sales long before creation of the product, but due to the early stages of the preclinical phases of product development, Evolva has not yet put serious resources into sales and marketing, but rather focus on business development.

Having entered the Build stage, focus is still heavily on R&D. Evolva's technology platform replicates the ability of nature to evolve molecules with exquisite "design". The evolution is directly aimed at making functional drugs such as HIV blockers and anti-obesity compounds. Watchmaker® can create, optimise and manufacture molecules that are outside the scope of the traditional synthetic chemistry approaches of the industry.

Management and human resources

The three founders are still in the company. Neil Goldsmith is the CEO, Alexandra Santana Sørensen is the CSO, while Søren Nielsen works in R&D. In addition Michael Næsby has been hired as the Head of Library Creation. Michael Næsby is a molecular biologist with 15 years of research experience. Previously he held a position as a Senior Scientist with PNA Diagnostics and GX BioSystems. Moreover, he has worked as researcher at Copenhagen University Hospital.

The key human resources of Evolva are very much in R&D. Of a total staff of 10 employees, 8 are employed in R&D. Furthermore, Evolva is in the process of increasing the staff to 35 employees within a short horizon, of which 30 will be R&D. The management team is projected to increase to 8 with complementary competences and experience in building up a pharmaceutical company. The R&D facility is now located in both Denmark and Switzerland. There are also plans of establishing a department in India. However, Evolva will continue to have an R&D facility in Denmark.

The special strength of Evolva is the development of compounds, which Evolva believes to be extremely difficult to imitate. The product is described as sophisticated, highly functional and unique.

Business development and marketing

The primary goal of Evolva is not to make drugs themselves, but to make compounds that can accelerate the development of drug candidates. The market identified for Evolva's technology is global consisting of approximately 160 large pharmaceutical companies across the world. Measured in size the majority of these companies are located in USA (40%), Germany, France, Switzerland and UK (32%) and Japan (20%). Only a very small share of the companies is located in Denmark.

The main marketing strategy of Evolva is to contact key people in selected pharmaceutical companies. This process is already underway. However, the level of competition is immense.

Network

Evolva partners with companies and research organizations to discover and develop new products, and advance Watchmaker as a technology. With these large pharmaceutical companies, they base their partnering approach on a value creation principle – through the generation of unique clinical candidates and marketed products.

The founders of Evolva come from three different countries – and thus the network of Evolva is global. Furthermore, Evolva is trying to build up a multinational management in the coming expansion – expanding the network even greater. Investors are also characterized as key network partners. Especially the two large pharmaceutical companies Novartis and Yamanouchi – who have invested in Evolva through their corporate venture funds – are expected to open doors to the global market.

The key network partners are large pharmaceutical companies who support the development in Evolva within technology and R&D. Some of these strategic partners have also invested in Evolva, which have improved collaboration in the technology development. However, the financial investors have had less involvement in the business development process due to uniqueness of the portfolio firm.

Investors

Initially, Evolva raised venture capital from a Danish investor – Symbion Capital. Vaekstfonden joined in the following round to raise € 2.04 M in seed capital. However, from the start Evolva aimed at building a set of investors to cover the world. In 2004, Evolva raised € 12 M from a larger syndicate of international investors – three foreign investors (Novartis (France), Yamanouchi (Japan) and Aravis (Switzerland)) and three Danish investors – Dansk Erhvervsinvestering as the only new VC – adding up to a total of € 14,4 M.

As part of the investment Evolva has moved their headquarters from Denmark to Switzerland. The investors do not play a crucial role concerning technology - but are essential when it comes to additional venture funding and customer network. Furthermore, the investors can help find key personnel – including management.

The required skills of the investors have changed as Evolva has evolved. In the Ambition stage, Evolva points to large seed investors as the crucial element of this company to enter the Build stage. The large VCs with capacity to take the firm to exit, have a signalling affect for Evolva, to show future investors that the existing ones stay along. Moreover, VCs with entrepreneurial experience have had significant influence in assisting Evolva to the current stage. In the Build stage, the international industrial network has become the most crucial requirement of the VCs, as to open doors to strategic partners to support in product development. In the next Conquer stage Evolva expects itself to be sufficiently positioned to be less dependent on investors providing international industry network.

More information on Evolva on: www.evolvabio.com

Enigma Semiconductor Inc.

Interviewee: Founder & Chief Technical Officer Jacob Nielsen.

Introduction

Enigma Semiconductors, Enigma, is a fabless semiconductor company, which plans to develop efficient, advanced solutions for networking and storage markets. Enigma was founded in mid-2001 by Jacob Nielsen and Rob Sturgill. The commercial head office is located in Santa Clara, USA – while the technology centre for research and development is located in Copenhagen, Denmark.

In 2004, Enigma secured \$ 12.5 M in funding from a consortium including Techno Venture Management, Startupfactory, Northzone Ventures, InnovationsKapital and Vaekstfonden. The new investment will permit Enigma to complete initial product development and provide customers with working prototype silicon.

R&D and product development

Currently, Enigma is in the Build stage. They are in the process of testing and completing their first chip, which is being developed in collaboration with a listed American chip producer. The first prototype of their second chip – to which Enigma also has the exclusive rights – is in the creation stage and is expected to be introduced within a year.

The production will be concentrated in a few specifically chosen areas in which manufacturing capabilities are especially good – e.g. Taiwan, Japan, and the US. The production will be managed from the Enigma office in Santa Clara.

Management and human resources

The two founders of Enigma are still in the company – and still part of the management. Rob Sturgill is President and Chief Executive Officer, while Jacob Nielsen is Chief Technology Officer. In addition, Enigma has hired a 20-year industry veteran, Bo Schmidt, to serve as Enigma's Vice President of Engineering. Furthermore, the balance of the Enigma team includes experienced engineering professionals from Cisco, Intel, MIPS and Olicom.

Rob Sturgill has 17 years of industry experience, including ten years in the semiconductor industry in companies like Intel, Motorola, Cadence and NEC. Previously, Rob worked for Vitesse Semiconductors as Director of Marketing. Furthermore, he has worked closely with major OEMs in the networking and communications industry. Jacob Nielsen has a Master's degree in Electrical Engineering from the Technical University of Denmark, and was previously Director of Engineering for Vitesse Semiconductors, Advanced Network Products Division. Bo Schmidt previously held a position at Intel Corporation, where he managed an ASIC⁵ and Architecture team in four locations including Denmark, Poland, Oregon and San Diego.

The organisation has undergone significant changes as the company has moved from the Ambition to the Build stage. After raising additional venture capital in the spring of 2004 the staff was quickly increased. In the Fall 2004, the staff counted 14 in Denmark and 2 in the US. Currently, Enigma has 23 employees, of which 18 are in R&D. The R&D facility is located in Denmark – while sales are executed through the US office. The parent company is located in Santa Clara, California to save time and resources in later stages of business development.

The extensive experience and knowledge of the founders, as well as the entire team, are particular strong points for Enigma. The development team is unique, and the market understanding is good. Furthermore, Enigma possesses an exclusive network of partners in the entire value chain, which includes R&D, production, distribution channels, and customers.

Business development and marketing

Currently, the vast majority of the resources are still directed at R&D. However, Rob Sturgill – along with four employees – is working to establish partnerships with leading companies within the industry. Large companies – like Cisco, Alcatel, Nortel and Extreme Networks – have just recently begun outsourcing the design and manufacture of new chips. Thus, currently there are 10-20 large customers worldwide, who are interesting for Enigma. Many of these companies are based in USA, which makes it an important target market for Enigma.

A major challenge for Enigma will be to convince these large companies to use a chip from a start-up company in their communications systems. Even though the chip might be of excellent quality, large companies are generally hesitant to become dependent on small companies with a limited track-record. The launch plan of Enigma, therefore, is to build up visibility and recognition in the market – by first contacting analysts and then

⁵ **Application-Specific Integrated Circuit** – a chip designed for a particular application.

leading reviewers and magazines. Furthermore, they will promote their products at major events within the industry – and thus meeting key industry contacts in person.

The level of competition within the communication and fabless semiconductor industry has changed significantly during the last four years. When Enigma started out they had about 15 competitors. The downturn in technology markets dramatically reduced this number, so today Enigma only has 2-3 direct rivals.

Network

The key network partners are technology partners, customers and investors. In addition, the founders and key employees of Enigma have worked in companies such as Vitesse, Intel, Motorola, Cadence, NEC, Cisco, MIPS, Olicom etc. – and have thus built a strong network within the industry, in both Europe and the US. This will be important when it comes to generating and sustaining sales.

The strategic partners will have great influence in the final quality of the product, as they continuously deliver feedback on the product development to ensure Enigma's chips are compatible and efficient within their OEM systems.

Investors

Despite starting just as the communications industry went into decline, Enigma managed to raise seed capital from Swedish venture capital fund Startupfactory in 2002. Shortly afterwards, Enigma began raising additional capital. The goal was to get a lead investor outside Scandinavia. In 2004, the plan succeeded. With Techno Venture Management (Munich) and Innovationskapital (Sweden) as lead investors, Enigma raised an additional € 10.19 M. Other investors in the consortium included Startupfactory (Sweden), NorthZone (Norway) and Vaekstfonden (Denmark).

The investors have a strong focus on sales – and they have a strong contribution towards recruiting key personnel. Moreover, they have provided industry network and experience in the Ambition stage, and have continued to do so into the Build stage, where their international network should prove particularly important. In the Conquer stage, the main contribution of the investors will be to provide access to an international network of industry partners and investors.

A qualified technical team, IPR, seed investors, and the quality of the management have been the most important factors in moving from the Ambition to the Build stage. To progress from Build to Conquer, a qualified technical team, IPR, getting one or more US venture capital investors, acquiring the necessary technology and consolidating strategic partnerships will be essential. Finally, in order to be successful in the Conquer stage, it is crucial that Enigma demonstrate staying power as well as the ability to develop and execute partnering agreements with OEMs.

More information on Enigma Semiconductor on: www.enigmasemi.com

Alight Technologies A/S

Interviewee: Chief Executive Officer Steen Gundersen.

Introduction

Alight Technologies, Alight, is a high technology venture, which was founded in 2002 by Ph.D. John Erland Østergaard and Ph.D. Dan Birkedal. Alight's sphere of operation is Vertical Cavity Surface Emitting Lasers (VCSEL) for datacom and telecom applications, which can improve the volume and speed of data transmitting. The company aims to become a supplier of advanced laser technology for applications in the datacom and telecom, market segments as well as to selected consumer segments for the business-to-business markets.

At the moment, Alight is in the Build stage. However, they are making several actions to enter the Conquer stage, including product development, building up strategic partnerships, and collaborating with potential customers. In addition to these actions, they have a distinct global network already. In January 2005, Alight hired a new CEO, Steen Gundersen, to take the venture backed firm to a successful exit.

R&D and product development

Alight's key asset is the founders' invention, which applies to Vertical Cavity Surface Emitting Lasers (VCSEL), and their core competences are design, prototyping, and testing of high quality, cost-effective optical transmitter aimed for the application segments mentioned above. The invention originated at the Technical University of Denmark, DTU.

The organization is entirely Danish, and up to now development has been located in Denmark. The strategy is to retain development activities in Denmark. Production, on the other hand, will be outsourced, which is the current strategic focus.

At the moment, the market focus is on telecom and datacom, but in the future the product portfolio will expand to include also components for automobiles and printers. They will continue to focus on the product design of components. This strategic decision means that Alight will not seek to cover also the production and provision of modules and systems as illustrated in the value chain for Alight's product space. Rather they will serve as providers to manufacturers of modules and systems.



The illustration below shows Alight's penetration strategy, which is to initially develop and sell products in the high end segment. By doing this, they seek to gain access to customers with high demands for quality and performance. Building on this, Alight will work its way leftwards in the spectrum – from high end towards low end products. In other words, Alight will build credibility in the market by selling products which add more value to their customers' end products and then expand its share of the customers purchasing portfolio.



Management and human resources

The key management/board of director competences are:

1. CEO Steen Gundersen – A M.Sc. in Electrical Engineering, who has experience with sales and marketing as well as manufacturing from his previous employment at Giga – a former Danish manufacturer of optical and electronic components, acquired by Intel Corporation. He brings a large global network to the company.

2. Founder and CTO Dan Birkedal – A Ph.D. and M.Sc. in Electrical Engineering. He is the master mind behind the technological platform.
3. VP of business development Dirk Jessen – He has industry experience from sales, marketing, and product management positions at ADC Telecommunications, Ibsen Micro Structures, Leica and Philips.
4. Chairman of the board Peter Vierick – He has experience from previous positions as CEO in the industry.

A technically qualified team is important in all three stages of the ABC-model for Alight as underlined by the fact that the technology is the backbone of the company. As long as Alight is a small firm with a limited budget, the management is aware of limited chances of attracting the best qualified human resources from other countries. The capital incentive needed to leave a good position in a foreign company to work for Alight in Denmark might be more than they can afford. However, it will be easier as Alight expands and become better known in the segment.

At the current stage, the strategic management focus is to move the company from a technology focus toward a commercial focus. This fits well with the business development focus, which is to release at least two new products per year – and at the same time continue upgrading products already on the market. The whole company must be tailored to the organizational challenge that will arise as a consequence of the transition from just designing products towards also releasing and selling products.

Business development and marketing

No products are yet finished, but as soon as they are ready, the products will be sold directly to the manufactures one step above in the food chain, which subsequently will use Alight's products in their own products. There are approximately 10 large potential customers holding more than 80% of the market segment share and a jungle of smaller potential customers. Especially the large customers are crucial in connection with product development feedback. The pilot customers are important in all three stages i.e. Ambition-, Build-, and Conquer stage.

The customers are located in Europe, Korea, Japan, and in the US, which is why the Danish market has close to zero relevance. Therefore, Alight is a true "born global". In the future, Alight might establish local sales units world wide to get local presence with local employees which are essential in the long run, in particular Korea and Japan.

Furthermore, the competition in this line of business is fierce. However, this competition might not be that tough on Alight, due to Alight's IPR. Of course, this requires that Alight gains a strong position on the market before substituting products are invented.

Network

The most important network partners are the customers, who might be collaborators or suppliers in the future – and they are particularly important in this stage because of the product development feedback. The investors are also important. The objective for Alight is to reach breakeven in 2007, which means that Alight presumably does not need further venture funding. However, the current investors will continue to play an important role through to exit by supplying industry network and experience.

The technological partners, who primarily consist of the potential customers, are also important because of the critical feedback loop. The production partners are important in another way, because Alight wants to outsource production. The sales partners are less important because of the direct sales as mentioned earlier.

Investors

Alight raised the first round of finance of € 1,00 M. in December 2002 from a small team of investors – DTU Invest, which acted as lead investor, and Vaekstfonden. The investor syndicate increased the second round which closed in August 2004 with InnFond as new investor. An additional € 2,10 M. was raised. Despite making some effort, Alight has not yet attracted international capital at the current stage. However, the objective initially was to attract a large international investor which could expand the industry network worldwide.

The CEO negotiates business contracts, but both the board of directors and the investors sometimes participate. The investors and board of directors have shown a great understanding in connection with the challenges that Alight faces in the future. Consequently, the investors were instrumental in carrying out the management change in Alight, to hire the new CEO.

More information on Alight Technologies on: www.alight.dk

MilliMed A/S

Interviewee: Chief Executive Officer Joakim Eriksson.

Introduction

MilliMed develops therapeutic devices that act as drug delivery solutions that are minimally invasive in particular in the neuro-vascular system. MilliMed was founded in 2003 by Erik Christian Andersen and Tor Leif Peters who have both left their executive positions.

Currently MilliMed has entered the Conquer stage as the company is already selling three products worldwide: EasyPass™, MI-JAZZ™ and MI-BLUES™. More products are in the development pipeline. The search for pre-IPO investors and the preparation of an IPO are high priority. The company recently expanded operations by acquiring the Dutch company Blue Medical Devices BV.

R&D and product development

MilliMed tries to set new standards in device performance by combining a strong and innovative portfolio of device patents with a drug evolution programme. The objective is to improve the quality of life and recovery of patients.

MilliMed's portfolio will be based on two technology platforms.

1. Unique balloon and stent technology
2. Nano spinning, polymers and nitric oxide

MilliMed works in partnership with world-renowned physicians and experts on integrating Nitric Oxide into vascular therapeutic devices.

During the company's initial stages MilliMed developed close partnerships with many of the leading medical communities which ones, in particular Risø and Chempilots. This has led to new explorations within the areas of device innovation and vascular healing.

Management and human resources

Until October 2004, Erik Andersen, operated as Managing Director of the Danish facility However, with increasing focus on sales and building the organization,- Joakim Eriksson was appointed CEO. He also acted as Vice President Sales, Marketing and Business Development. Both founders now work for the company as consultants.

The commercial head office is located in Helsingborg, Sweden, while the technology centre for R&D, key component manufacturing, supply chain control, clinical and regulatory as well as post-market surveillance is located in Roskilde, Denmark.

The investors have the controlling interest in the company. However, MilliMed operates in a close collaboration between the management team and investors, although the latter have only limited involvement in day-to-day operations. The key competencies of the management are R&D, sales & marketing and teambuilding experience, which has been gained by starting up life science companies before. From day one in the Ambition stage, focus has been on both R&D and sales. In the Build stage, however, MilliMed also began focusing on building the organisation.

Key human resources are R&D, sales and sales support. R&D will continue to be an important part – because of the demand for constantly improved products (every 12-18 months). Three products are already sold worldwide, while upcoming products are in the pipeline.

The special strength of the company is the experience possessed by the founders and the current management. It is unique and helpful in business development and the additional network can open doors at distribution channels and other strategic partners.

The acquisition of Blue Medical will provide MilliMed with a successful platform of related technologies and enable the company to accelerate R&D of its proprietary Nano Spinning Nitric Oxide Programme. The facility in the Netherlands will serve as MilliMed's cardiology manufacturing arm. MilliMed thus plan to move several elements of their present cardiovascular business to the Netherlands, which will permit the Danish facility in Roskilde to focus on core technologies and product development. Denmark is an especially good location in which to be established as to the well-functioning collaboration with among others the Risø National Laboratory and Chempilots,

Business development and marketing

The customers of the products are hospitals and distributors all over the world. Sales through distribution channels are deemed to be an inexpensive way to boost initial sales. Direct sales yield higher earnings but they

also require a sales unit to be present in all markets. Currently, MilliMed aims at having direct sales in 15 countries. The objective is to become large on the home market - Nordic countries and the Benelux - before starting to expand to the rest of the world. The home markets account for 10-15% of total sales.

Millimed's technology can be used across a wide range of applications. Thus, the company licenses products within areas that are non-core.

The med-tech market for devices is controlled by 20 key players. Thus, MilliMed makes a substantial effort at monitoring competitors to pick up trends in the market.

Network

The key network partners for MilliMed are the investors along with the customers. Furthermore, management has many years of experience within the life science industry and therefore provides a very broad and extensive network throughout the world, which is of major importance in business development.

MilliMed has close collaboration with universities in Scandinavia and the Netherlands. The University of Akron in the US is also an important technology partner. Moreover, sales take place through 40 distributors across the world. Finally, MilliMed manages production internally, which reduces the significance of production partners.

Investors

MilliMed initially wanted investors from US and Scandinavia - especially from Denmark and Sweden - where they contacted investors whom they knew as part of their extensive network. In 2004, the company raised a first round of venture capital of \$ 22 M from Advent International, BioFund, SLS and Vaekstfonden. Part of this money was used to acquire Blue Medical Devices BV in February 2005.

Later on MilliMed plans to raise capital from American investors as it will improve their chances of being listed on NASDAQ.

The investors have played important roles in terms of attracting key human resources. Yet, they have been less involved in technology development and sales. Major transactions, however, are carried out only with the involvement of investors.

The most important requirements of the VCs in the earlier Ambition stage were the industry network and experience. The investors' collective capacity to take the firm to exit is another crucial element in taking MilliMed through to the Build stage - as they could concentrate on product development and sales, and not waste valuable resources raising capital all the time. Investors' funding power continued to be important in the Build stage, while the international network which the investors provide have proved to be highly valuable in the Conquer stage.

More information on MilliMed on: www.millimed.com

Zensys A/S

Interviewee: Chief Financial Officer Johnny Stilou.

Introduction

Zensys is a Danish-American company active in the control networks market. Since set-up in 1999, Zensys has completed and extensively tested its Z-Wave™ technology, which enables low-cost, long-range wireless communication between devices such as power outlets, light switches, sensors and alarms, thermostats, door locks and other similar devices on an interoperable platform. This means that the user can control all connected devices by one touch.

Zensys was established by a founding team of three – Carlos Meliá Christensen, Frank Homann, and Torben Hage – with an extensive experience within data communication, electronic development of satellite communications equipment, and management consulting from previous positions in large companies such as TDC, Olicom, Telenor International, Thrane & Thrane, and McKinsey & Co.

Zensys has just entered the Conquer stage of the ABC of Internationalization model, and is currently beginning to grab market share. Furthermore, the marketing efforts are increasing rapidly and the network has expanded to be globally based.

R&D and product development

The development of the Z-Wave has reached a level where it can be implemented either directly on components from strategic partners or on a chip at a low-cost Application Specific Integrated Circuit, ASIC. The product is currently being sold, but is constantly being refined to improve quality. The focus in product development is:

1. Low cost per node – Reducing the costs of future versions of the chip makes it attractive for large volume applications such as light switches.
2. Low power consumption – Reducing power consumption to a minimum will extend battery life and reduce heat generation.
3. Long range – Z-Wave is virtually unlimited in range since every enabled device is also a repeater.
4. High reliability – Routing capability of all nodes in the network avoids obstacles and radio dead spots ensuring control reliability.

The Z-Wave technology enables products from different companies to interoperate using a common platform. Zensys believes that consumers will, in the long term, value home control systems in which different products may interact.

For example, an access control system has additional value when coupled to an alarm system and to a lighting control system. The future of home control systems will open opportunities for many companies to cooperate in bringing attractive solutions to market.

Management and human resources

The key human resources of Zensys in the current Conquer stage are within sales and marketing. However, the R&D staff is of great importance as well. The product is currently on the market, yet Zensys still need to spend large amounts of money to develop the next generation of Z-Wave. R&D also needs to remain high priority to keep the price low enough to make it attractive for more industrial uses. Thus, a critical challenge for the company is to increase the volume of production.

The management team in Zensys consists of five members with different complementary skills and experience – none of them was part of the founding team. Chief Executive Officer, Per Nathanaelson, was a senior officer in C Technologies – a world leader in image processing – before joining Zensys. Vice President of Research & Development, Niels Thybo Johansen, holds an engineering degree in data communication and has several years of managerial experience from Intel and Olicom. Vice President of U.S. Business Development, Raoul Wijgengangs, joined Zensys after 10 years with Phillips in various countries and positions. Vice President of European Business Development, Chris Johnson, is former European Business Manager for Laser Magnetic Storage, and also ran a career for Phillips. Finally, the Chief Financial Officer, Johnny Stilou, joined Zensys from NetTest, where he was VP in Corporate Finance. Formerly he held a management in GN Great Nordic and KPMG.

One of the particular strengths of Zensys is a very skilled development team with several years of experience and knowledge within this and related industries. Furthermore, Zensys brought together industrial customers to work together on developing and implementing the Z-Wave technology.

Business development and marketing

Zensys first launched a wireless remote control in the Danish retail market prior to the entrance of the biggest investor Palamon Equity Partners. Palamon entered with a set of demands as to alterations in business development and management competences:

1. Zensys had to recruit a new CEO with an extensive experience and knowledge within the industry.
2. Zensys needed to change customer focus to OEM⁶ agreements.
3. Zensys needed to develop their technology from a large electronic device into a single chip.

All demands have been implemented, and the business development focus today is to bring their products to market to market through the OEMs. The existing portfolio of OEMs is sufficiently large, whereof an enlargement is less relevant. Not until the OEMs launch their products with the Z-Wave incorporated, will Zensys be able to estimate the level of success.

Over 100 companies developing Z-Wave products will be available in channels ranging from do-it-yourself, PC Retail, and product distribution. Zensys is committed to stimulating the emergence of a community of Z-Wave users which cooperates in marketing and branding activities around the Z-Wave standard.

The competition is intense and the marketing strategy is focused on scaling the production to obtain a competitive advantage in relation to competitors in the market, where Zensys today is the only company established to straightforward scale production – only one in volume production. Furthermore, the business strategy is to sell the product through channel partners, and participate in industrial exhibitions – together with strategic partners. The ultimate objective is to create a de facto standard.

Network

The founders initially had an extensive pipeline of customers lined up through a network from former management positions within the industry. Furthermore, reputation of the founders within the industry opened doors to strategic partners globally.

The OEMs incorporating the Zensys chip or technology all support the ongoing development of the technology in some way – thus they are all important technology partners. These partners are generally all large industrial companies, which also operate as production- and sales partners. The most important partner focus in the current Conquer stage however is within sales.

The key network of Zensys is the alliance of strategic partners – including the Leviton Manufacturing Company, Universal Electronics, Intermatic Home Settings, Wayne-Dalton Corp., and Danfoss – to form the Z-Wave Alliance. The geographical scope of the network has been international throughout the life of the company.

Investors

Zensys was originally established as a spin-out of Intel in 1999. However, Palamon Capital Partners signed to become the lead investor in the second financing round. In the third round Vaekstfonden joined to raise a total amount of € 23.76 M.

Today, Zensys focuses primarily on attracting large investors who can assist in the business development process. Zensys has received positive indications from a broad range of investors.

The investors have exercised great influence in attracting key human resources through all stages of the development. However, investors are not involved in the hiring of other personnel. The investors only have had limited involvement in sales, but they have kept a constant focus on steering the company toward lucrative market segments. The investors' involvement in business development has decreased over the three stages, as the management competences in this area have increased. Nevertheless, investors still have a significant stake in business development. The technological development today is managed by the firm alone. However, the investors are very much aware of the R&D. Notably, when Palamon invested in Zensys in 2001, they completely redirected the technology focus toward developing small chips for OEMs from large retail devices.

More information on Zensys on: www.zen-sys.com

⁶ Original Equipment Manufacturer (OEM)

Ascio Technologies Holding A/S

Interviewee: President and Chief Executive Officer Mogens Nielsen.

Introduction

Ascio was established in 1999 under the name Speednames. Ascio is a technology portfolio company, which since its launch has grown to become one of the most advanced international name technology provider. The Ascio Group consists of three business lines:

1. **Speednames Online** - offers the customers easy registration and management of internet domains. Customers pay and manage their domains online – and typical services in this business line are hosting, mail-, web-forward and interface for technical setting.
2. **Speednames Business** - has specialized in advising and managing the business segment, where they basically remove the need for specialized people in the customer's organization.
3. **Ascio** - provides software technology, -knowledge and -fulfilment solutions, enabling Ascio's customers/partners to meet their customer's requirements within name and digital brand management.

Ascio was founded in the wake of the liberalization of domain registration in the US. Another motivating factor was the complexity of registration of domains outside the US due to the different country code top-level domains - .dk, .se, .de etc. Prior to founding the company, Nikolaj Nyholm and co-founder Mickey Beyer, who knew each other beforehand, had several years of experience from domain registration and e-commerce.

R&D and product development

With operations throughout most of Europe, Ascio has advanced to the Conquer-stage. The business strategy at this stage is to provide high quality services and systems for managing Internet domain portfolios.

Since Ascio already offers a wide product portfolio, product development today focuses mostly on refining existing products as illustrated below. However, getting customer feedback is somewhat of a challenge given that Ascio is operating in a fragmented market space.



As part of their competitive edge, Ascio count their large workflow, which is generated by the multitude of top-level domains. Furthermore, they have a user friendly software system, which is organized more intelligent than the software systems of their competitors.

Management and human resources

At this point in time, none of the founders is active in the company's day-to-day operations. Mickey Beyer has left to start a new company, while Nikolaj Nyholm operates as part-time consultant for the management. Both founders accepted at an early stage that Ascio needed to bring in new competencies in order to optimize business development. As a result, Mogens Nielsen joined as CEO in 2000. The fact that the founders selected the new CEO themselves has subsequently shown to be an excellent basis for their future collaboration.

The management team consists of four executives:

1. President and CEO Mogens Nielsen - holds a M.Sc. & Ph.D in Software Engineering from Technical University of Denmark and a BBA in Strategy and Management from Copenhagen Business School. Furthermore, he has been involved in several other software companies.
2. COO Lars Jensen has, among other things, served as Sales Director in Enterprise Systems, where he had a leading role in several start-up projects within Secure-payment web based application tools and software solutions for the Danish Medical Industry.
3. CTO Henrik Fredericia - holds a M.Sc. in Economics from the University of Copenhagen and has worked as Project Manager for Valtech/Ahead.com.
4. CFO Thomas Zeihlund - holds a MBA and a M.Sc. in Business Economics and Auditing. He has been Business Manager and a member of the management team in Microsoft Business Solutions, formerly Navision.

Ascio, today, employs about 130 of which 50-60% work in sales and marketing and 20% in product and project management. In the earlier stages, the sales and marketing branch was a fraction of what it is today. In fact, Speednames was built almost entirely by "word of mouth"-marketing.

Ascio is headquartered in Denmark and all tasks that do not involve sales to other countries are executed from here. Management of the company believes that by staying in Denmark they have access to sufficient staff as well as business partners.

Day-to-day operations are managed by the executive management, while matters of a more strategic and long-term nature are discussed with the board of directors. The executive management and the chairman meet once a month, while the executive management and the rest of the board of directors meet six times a year. The key management competences have changed from development and production towards sales and marketing. Individual members of the executive management have substantial sales and marketing responsibilities, which they in the future need to delegate. Thus, management focus will have to change toward organizational and operational issues.

The business development focus can be divided into the following two parts:

1. The geographic focus – They focus on the expansion of their activity to more countries
2. The product line focus - They have a long run focus on improving their products and services.

Business development and marketing

Ascio's customers are primarily large-sized private corporations and public entities. The company's revenues are generated – not so much by how large the customer organization is – but by how many of Ascio's products the customer uses combined with the number of countries in which it does business. Ascio gets most of its customer feedback from periodical customer satisfaction surveys as well as qualitative input from interacting with customers. About 90% of the customer base is in Europe.

Ascio is the largest provider of domain registration in Denmark, and the strategy for the next three years involves growing the company to become the largest provider in Europe. The marketing strategy is direct marketing - i.e. direct mails, telemarketing etc.

There is moderate competition in the market due to the fact that Ascio is focusing on the market niche of international name technology, including management of domain portfolios and digital brands.

Network

In order to provide Internet services in connection with all of the more than 500 different top-level domains, Ascio is collaborating with the more than 200 companies that manage top-level domains. Another important strategic partner is The Internet Corporation for Assigned Names and Numbers (ICANN), which is ensuring "universal resolvability" by coordinating the assignments of Internet domain names, IP address numbers, protocol parameters and port numbers. The geographical scope of Ascio's supplier network is worldwide because customers must be able to register all over the world. As regards the closest partners, they are primarily located in Europe.

The importance of technology partners is high although not crucial as Ascio uses standard platforms such as Microsoft. By contrast, Ascio's suppliers are essential production partners because they represent the source of all the different top-level domains.

Investors

The first round of venture capital was raised by Internet Ventures Scandinavia, IVS. The management of Ascio felt that they "clicked" with the staff from Internet Ventures Scandinavia, which was one of the main reasons for choosing them. In the seven subsequent financing rounds, co-operations were made with Vaekstfonden, Nordic Venture Partners, Gudme Raaschou Technology/LB Kiel and individual investors – increasing the total amount of venture capital to € 26,06 M. In the second financing round, Ascio were also seeking a large international VC, but attempts at bringing on an investor from outside Scandinavia never came to fruition.

In the beginning, the investors exercised extensive influence over Ascio's business development, including making critical decisions on the indirect sales model. One of the investors, IVS, has competences within in the area of headhunting – and is therefore capable of supporting Ascio in the process of hiring key members of the staff. As regards technology development, investors have had little involvement. Business contracts are negotiated by management exclusively

In the move from the Ambition stage to the Build stage, Ascio benefited greatly from seed-investors advising on the design of the business model. When it came to rolling out the strategy from Build to Conquer, the critical element was securing sufficient capital to avoid funding shortages. Interestingly, the international roll-out was greatly enhanced by the sizable market share Ascio had achieved in the Danish market.

More information on Ascio on: www.ascio.com

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