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Søberg, Peder Veng; Høgh, Casper

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Business Models in Networks

ICI Case Book

Peder Veng Søberg (PhD) and Casper Høgh (MSc)

The purpose of this case book

... is to provide a more detailed and multifaceted view of the individual cases¹, the partners, and the business model development processes than can be found in the main text of “Business Models in Networks: ICI Project Report.” This case book will capture more of the iterations related to business model development. The information outlined in the ICI Case Book has been collected from interviews with relevant people from the networks. These interviews took place during the year 2012. Further inquiries concerning the ICI project should be directed to professor John Johansen.²

¹ Nine of a total of 10 network cases have been included in this case book. It has not been possible within the available time frame to obtain authorization to print the last network case.

² Professor John Johansen, E-mail: jj@business.aau.dk , Phone: +4599408995, Center for Industrial Production, Department of Business and Management, Aalborg University, Fibigerstræde 10, 9220 Aalborg Ø, Denmark.



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Cspot

Summary

Whereas competitors such as AFA JCDecaux and Clear Channel have to plan ahead, produce, distribute, and put up posters, the Cspot network created a completely new medium, consisting of advertising monitors placed in shop windows using a different cost structure.

Through an Internet connection, the content presented on the monitors could quickly be changed, thereby providing instant advertising. The central idea was to enable cheap, dynamic outdoor advertising targeted at small- and medium-sized businesses.



The purpose of the Cspot network was to establish a new, instant advertising media, consisting of advertisement monitors in show windows. In that respect, the network wanted to create a revolutionary new media that could offer low-cost advertising in the townscape at a price that was attractive even to small firms. Additionally, through a web interface, it should be possible for the individual firms to place advertisements on the media without having to go through a media agency.

Despite some very attractive characteristics, especially in relation to the

price, the case will illustrate how the development of the business model has been the cornerstone of making the basic idea a profitable business. Furthermore, the case will demonstrate how the network actors were forced to reconsider many of their initial assumptions and concepts. At the same time, the case is a textbook example of the importance of operationalizing the business model down to the organizational processes and routines supporting the chosen model.

Introduction

Three entrepreneurs **created the Cspot firm in the summer of 2009** as a limited company. Subsequently, the software supplier, JCD, and a host of other small-sized companies also invested in the firm. Toward the end of 2009, the firm, and its network was accepted as an ICI network.

The basic idea was conceived among the three entrepreneurs, who all thought that the then-current advertising media were too expensive, especially for SMEs. The thought was that it ought to be possible to create a cheaper media. The original concept was to place advertisement monitors in empty shop windows, thereby offering the landlords extra income while the facilities were not occupied. The monitors were to be connected to the Internet through 3G, thus making it possible to distribute spots to the monitors without having to visit them physically.

The notion of using vacant shop windows was quickly abolished, in part due to problems related to the cleaning of the windows, along with the realization that the concept would be far more valuable if the monitors were placed in windows where there was more activity in general. Additionally, it was estimated that there were not enough vacant locations for the prerequisite number of monitors needed in order to achieve critical mass.

The core of the concept was, however, that companies should be able to upload material and choose the monitors they wished to advertise on, thereby making the concept self-sustainable by minimizing the cost of operation. The notion of a self-sustainable system was highly motivated by an ambition to create a firm with practically no employees. The case, in particular, contains interesting aspects on how a closely integrated partnership model with a high degree of trust and close relations can be essential to the creation of new, innovative products and services. Furthermore, the case highlights the necessity of continuously reconsidering the business model and its profitability as new knowledge and insights are gained. Consequently, the case underlines the need for continuously evaluating and developing the business model with new partnerships, suppliers, and sales channels as the value proposition develops in new, unforeseen directions.

The partners

The partners were initially found by analyzing which components were necessary to create the desired solution.

Cspot was the core firm of the network and the central driver, and in that respect, the manifestation of the collaboration between the three initial entrepreneurs and JCD. Even though Cspot was originally thought of as an “empty” corporation, it later became evident that a range of activities was needed in order to realize the business idea.

JCD acted as software supplier and closely integrated partner. This was in part due to JCD being made co-owner and chairman of the board for Cspot early on in the process, but was also due to the business model between JCD and Cspot in which JCD essentially created the software without immediate pay, only to sell the software to Cspot at a later stage.

Smeden v. Allan Ravn was originally responsible for creating stands and installations for the monitors and was, in that respect, an essential piece in the development of the original prototypes. At a later stage, this partner was made superfluous

when the network found a cheaper and more effective method of installing the monitors through another party.

Fiels og Ko was responsible for the graphical development of the web portal facing the companies utilizing the system. As such, the company contributed with competences relating to graphical layout and usability.

Blissart is specialized in delivering text communication and dissemination and was thereby supposed to help promote the Cspot solution and aid Cspot’s customers in setting up their ads.

ShowOffMedia possessed competences within dynamic and visual advertisement, for instance, aimed at TV and webpages. As such, the company contributed important knowledge on how advertising was disseminated through a TV-based media.

Additionally, **ATEA** acted as a conventional supplier of IT equipment,

while the 3G data connections were purchased through different service providers.

The business model development

The firm **Cspot initiated its ICI process** toward the end of 2009. Yet, the period preceding this is equally interesting, as it provides insight into how the business model started based on a network, the development of which is relatively unique.

Network initiation

As described earlier, the idea was formed among three entrepreneurs situated in the same building. Through a dialogue amongst themselves, they were able to discern which competences were presumed to be necessary to create the system. Specifically, it was deduced that there was a need for a stand for the monitors. Therefore, Smeden v. Allan Ravn from the same building was included. For the electronic equipment, ATEA was found as a traditional supplier.

The above-mentioned components were largely delivered on direct payment. However, it is interesting to consider the development of the software platform for distributing advertising spots. Instead of acting as a conventional supplier, JCD chose to participate actively in the project and make the initial investment in the development of the software at no charge. In essence, this was only made possible by the close ties between JCD and the three entrepreneurs, of which one of them soon after exited the collaboration.

As such, a model was created in which JCD carried a part of the risk associated with the project, probably eyeing a subsequent sale of a license payment for the platform. Concurrently, Fiels og Ko, Blissart, and ShowOffMedia were included in relation to the creation of various parts of the front-end of the system, whereby the network was essentially created, which enabled the showcasing of the technical feasibility of the system.

At this point, it is important to highlight that at this stage, the concept was largely built around a presumption of a highly automated process in which small companies visited a website in order to upload their advertising, which, after a quick screening, was automatically forwarded to the correct monitors. As such, the core of the business model was heavily dependent on the software that was to handle the automated process to keep the underlying organization as small as possible. The sales channel was thereby limited to the web portal. Consequently, the model was highly dependent on a large number of small transactions from small companies—a form of micro transaction.

Cspot started to work on the pricing structure to uncover the structure of the economic potential in the concept. This, in turn, also served as the reason for creating the firm. The starting point was price bracketing, depending on the attractiveness of different time periods. This pricing

and the subsequent calculations showed that the advertisement could be produced very cheaply, and that each monitor displaying ads throughout the day could generate revenues of up to DKK 1 million per year. Additionally, each monitor would only cost around DKK 40,000 to install and had very limited operational costs—consisting only of the Internet connection and remuneration to the shop—which, in turn, paid for powering the monitors.

On this premise, the Cspot began deploying monitors, initially in Aalborg, as this was the natural base of the Cspot. As such, the Cspot had already deployed 15–20 monitors when it became involved in the ICI project as an ICI network, and the IT infrastructure for submitting and distributing spots was already in place. As such, the challenge was to create the necessary revenue needed to carry the firm Cspot forward.

Sales

As mentioned, the premise was that Cspot's customers were to utilize the website for uploading their advertising spots. However, from inception, there was an understanding that some sales effort would be necessary to attain a critical mass of customers, which was also needed to attain a critical mass of installed monitors (addressed later). As a consequence, a CEO was employed in 2010. The CEO was made responsible for driving the monitor deployment and sales.

Originally, the Cspot network had assumed that the customers would rapidly accept the concept; thus, the critical mass of customers would be achieved relatively quickly. This presumption turned out to be flawed, which made the Cspot network realize the need for additional sales activities. At this point, the Cspot network was strongly engaged in investing in additional monitors in all larger cities because they did not wish to invest too heavily in internal sales competences. The conclusion was to use a sales company that would be paid based on sales only. Thereby, Cspot avoided investing further in personnel, and in that manner, transferred some of the risk to the sales company, for which they would receive 50% of all sales they made. However, this entailed a series of consequences, as the type of organization involved typically had a large turnover rate of sales personnel, and severe issues in creating common and consistent messages for customers.

As a consequence, Cspot hired a marketing manager. The task was to create the correct messages for

the customers, thereby ensuring consistency for customers. Concurrently, the firm initiated a process aimed at optimizing the entire sales process. This initially emphasized retaining the sales personnel in the sales company to ensure more experienced sellers were in place who knew the concept thoroughly. In addition, an analysis of the post-sales processes was undertaken to ensure that the transition from the sales company to Cspot went as smoothly as possible. A structured after-sales process had been missing.

The entire sales effort remained quite heavy when balanced against the comparatively small business customers with equivalently small advertising budgets, and the firm was aware of this from the start. However, the firm expected the concept to have the profitability necessary to carry it forward, and counted on the sales effort tailing off as a critical mass was attained. This led to an explicit ambition to secure larger clients in which the sales effort was better aligned with the customers' budgets.

The customers

Simultaneous to the sales effort, research revealed that the customers were mainly relatively small business customers. The basic problem was that customers did not possess the necessary competences needed to create advertising spots.

The immediate assumption made by Cspot was that the problem lay in the software available to the customers, which led to the development of a website module for designing and producing advertising spots. The other issue was that, in general, the customers did not possess the necessary understanding of how to build a spot and communicate specific messages. This meant that the spots created by the customers were often of poor quality, which, in essence, served to reduce the overall attractiveness and value of Cspot to other advertisers, which was especially critical in relation to the larger companies.

In the same vein, the customers did not have the necessary insight into which monitors were most relevant for their advertisements. This should be seen in relation to Cspot's lack of consideration regarding this issue, which was further demonstrated by the sometimes-random placement of monitors.

Therefore, Cspot ought to have reconsidered its business model as the basic idea of direct sales to small companies gradually lost its attractiveness. The conclusion was that Cspot, to a greater extent, needed to consider itself as being in line with other media, such as newspapers and TV advertisements. In this respect, most advertisement budgets went through media agencies who handled their customer's marketing budgets aimed at different media. Cspot therefore began seeking out the media agencies. The large advertisers did not want to talk with Cspot before they could offer something countrywide. Hence, Cspot invested heavily in order to become able to deliver commercials countrywide. The large advertisers also wanted documentation of the effect and the number of people who view the screens. Thus, a greater understanding of the media itself was needed.

Media understanding

The need for a better understanding of the media was already apparent in the middle of 2011, and at the time, this was focused mainly on the so-called opportunity to see (OTS) numbers. At this point, however, the firm did not manage to realign its vision. Consequently, the internal emphasis remained on direct sales to small customers.

A part of the collaboration with ICI specifically pertained to analyzing the media's visibility and effect, which eventually became the OTS numbers. Yet, the firm did not wish to make the necessary investment early on in the process. In part, this was due to how the analysis was to be carried out methodically, but it was also related to the presumed need to have the analysis undertaken by a recognized analytic agency, for example, Gallup. This meant that the analysis would become relatively expensive, which was beyond the firm's investment scope. Additionally, the original vision was still too deeply anchored in the firm for it to take a strategic gamble in another direction, as the firm still focused on maintaining the existing business model. ICI also facilitated contact with BLIP Systems (described later in relation to the Mobile Tracking network). BLIP was willing to use its technology to provide Cspot with the effect validation needed. However, Cspot did not want BLIP to do it.

As mentioned earlier, there was also a lack of understanding of the

influence the location of the monitors had on the value of the concept. Consequently, in collaboration with ICI, it was found to be necessary to define good screen locations and plan to remove the worst placements, as these only served to diminish the concept's value. These poor placements can mainly be attributed to the strong emphasis that was placed early on in the project on creating a large install base. Additionally, it was also necessary to create a clearer segmentation of the individual monitors for the customer to create a sound understanding about which locations had the most value for specific customers and even for specific messages.

In that respect, a thorough understanding of the Cspot media was also missing. This relates to the graphical instruments utilized in the Cspot media, similar to how different instruments are utilized in TV and radio commercials. As such, the emphasis should have been on uncovering the graphical and communicative profile most suited to the concept. Yet, the firm never created

this understanding, which should also be seen as the background for why it did not specify the types of messages best suited for the concept. This did, however, lead to the decision to attract a media partner, who was to specialize in delivering spots for the Cspot solution as a means of providing an extra service to the customers.

However, this still did not create legitimacy in the media agencies' eyes, as they also needed to know how the concept would fit into a general marketing strategy. To a greater extent, this issue also applied to small companies, as they had an even more explicit need for advice regarding which monitor location would convey their messages in the most feasible manner.

The resources

The above factors collectively led to Cspot running out of financial resources in the middle of 2012 due to a lack of revenue from the operations, in addition to the owner not wanting to invest further in the endeavor, as it had still not proved to be profitable.

Subsequently, the firm was forced to search for a potential buyer. The search was largely targeted toward finding a buyer with existing expertise within the area, which directed the focus to advertising agencies and existing media. This made it apparent that the value of the concept was largely within the installed monitors. Thus, the focus was renewed on documenting how many people would typically go by each monitor,

and how many of these would essentially notice the messages being broadcast. These efforts aimed at making the concept attractive to potential buyers.

The search for a buyer was ultimately unsuccessful, which led JCD to take ownership of the operational monitors, while Cspot went into bankruptcy toward the end of 2012.

In retrospect

The central issue for the firm was that the proposed business model did not turn out to be feasible, as the customers who were originally envisioned did not have the prerequisites for creating and buying advertising on the system.

This realization should have influenced the firm far earlier to create a business model more reminiscent of other media firms. As such, a partnership with a media agency should have been pursued more vigorously to understand the Cspot media better and create the necessary data for the use thereof.

Accordingly, the investment in monitors across the entire country could have been limited to initially encompassing Aalborg, thereby creating a test bed to build experiences in using the media. The customers were interested in the concept, but unable to deliver their own needed content. The large advertisers were also interested in the concept, however the price was too low, and since they get paid in terms of a percentage of their customers advertising engagements, they had little interest in the making Cspot a success.

Part of the explanation for the development is probably nested in the founders' desire to create a quick return on investment, or at least to create a business that would be sustainable without further investment, which courting the advertising agencies would have implied. Perhaps things would have gone better had more resources been invested in proving the concept and its effect. Another question concerns what influence the close integration with JCD had on the development, as JCD had a vested interest in keeping the software system at the core of the firm, as JCD later created a revenue stream out of supporting and servicing the software.

Partner development

With the exception of the collaboration with JCD, Cspot represents a classic company startup in a network where a central firm took control and subsequently gathered the necessary competences around the firm. The original partners mainly thought in terms of the competences needed to create the technical solution, which they did accomplish.

Subsequently, these were made mostly irrelevant. This was evidenced with Smeden v. Allan Ravn, where Cspot found a significantly cheaper supplier that also had a product that was significantly easier to scale up into larger numbers, whereas the original solution was custom made. Alternative partners had been turned into suppliers, as in the case of JCD, which created a business area by participating in the network.

It is, however, interesting to note how the network approach continued after the technical challenges were overcome. For example, collaboration with TV2 News was initiated, whereby Cspot attained

important content for the monitors, thus creating greater relevance for the concept, in which TV2 News was ensured further exposure in settings in which they did not normally operate. Similarly, Cspot found a company to handle the sales, which removed some pressure from the Cspot organization.

EBB

Summary

The network Energirigtigt og Bæredygtigt Byggeri (EBB) was created to develop a business model in relation to an ongoing innovation effort. This effort focused on development of energy-efficient and sustainable insulation encapsulated in concrete for use in building construction.

EBB is a Danish abbreviation for environmentally friendly and sustainable construction. The companies involved turned to ICI for help on how to develop the related business model.

Hence, ICI was not involved in the product development, but focused on the development of the business model. The idea was to develop the business model in parallel with the final steps of the product development. Hence, this case description includes aspects of the ongoing product development process, even though the role of ICI was to focus on the development of the business model, whereas the companies

involved carried out the product development. The case highlights challenges of carrying out product development and business model creation in parallel. The industrial potential of the underlying concept seems strong. For instance, support has been secured from the Advanced Technology Foundation (Højteknologifonden).

Introduction

The foundation for the **network was laid when Gabriel, one of the core firms, won the Innovation Cup in 2007**. Subsequently, a rich dialogue was initiated with Hi-con concerning innovation, business models, and general idea exchange. Yet, the dialogue remained quite vague, as it did not contain any actual product ideas.

A small breakthrough happened when Gabriel developed a product concept that utilized recycled materials to provide soundproofing for buildings. This led to the forming the basic idea of combining textiles and concrete in order to create new, innovative products.

The concept developed even further as an idea emerged concerning

creating a heat-insulating solution made of recycled textiles that could be integrated into Hi-con's building elements, thereby creating exciting alternatives to the existing solutions on the market by offering a product with a greener profile and potentially better characteristics. This formed the basis for creating the EBB network with the purpose to develop a business model this product.

The partners

Gabriel is specialized within development, production, and sales of upholstery fabric and related textiles. As such, the company possesses competences within textile behavior, and was therefore an obvious collaboration partner for the development of an insulation concept based on recycled textiles.

Hi-con is specialized in the manufacturing of elements in high-performance concrete, with a special focus on stairs and balconies. Thereby, Hi-con represented competences which could aid in transforming the insulation concept into actual finished products. Additionally, Hi-con was thought of as the sales channel and face of the finished products.

Densit produces high-performance concrete mortar and collaborated with Hi-con, as Hi-con utilized Densit as one of their main suppli-

ers. Densit was therefore an obvious partner, as it could provide further competences within concrete casting and create additional revenue through Hi-con.

Formfiber possessed technology and knowledge relating to the production of non-woven textiles, along with a range of patents associated with production methods thereof. As such, the company was a central supplier of technology for the original idea. The company discontinued its involvement in the ICI network after the initial workshops, but continued to take part in the product development until the initial tests showed that the technology could not contribute as expected.

Arkitektfirmaet C.F. Møller has extensive competences within the design of buildings and building components, with great knowledge of end-customer needs, which was

important in relation to the final design of the concept. Additionally, the company had previously worked specifically on energy-efficient construction and could thereby contribute with that knowledge. Yet, it withdrew from the network at an early stage, as the business model was not aligned with its own.

Adapa Adapa possesses competences within development and manufacturing of curved concrete elements. Adapa was not added to the network until later in the process, as the focus shifted to being able to deliver visually exciting concrete products; namely, in collaboration with Hi-con. As such, the company could contribute with its unique knowledge of creating components in special shapes. This did, however, not change the concept as such.

The development of the business model

With the starting point as creating insulation with recycled materials, **the network began a range of activities in different directions** with the same overall purpose. In addition, it was part of the value proposition that extra insulation could be added to buildings without adding much extra wall thickness.

One of the early realizations was that there were already others working on similar technologies, through which contact was made to another actor in possession of a patent on an interesting technology, which, according to early testing, was more effective than existing solutions.

Accordingly, the starting point of the collaboration was an assumption that the technologies were already available and that the challenges were mainly related to creating the right business models and areas of responsibility, along with creating the necessary interfaces between the partners.

The market

The starting point for the initiation of the network was a presumption that the material it could produce would be able to insulate up to 40% better than material with the same insulation thickness. This presumption was later challenged significantly, but was still essential in initiating the process.

One of the first tasks for the network consisted of defining and delineating the market to uncover the market potential. For this, it was largely Hi-con's existing knowledge that was brought into play. Through the process, a range of potentials within different applications was identified, which ended with the network focusing on energy renovation. This was chosen because the network considered this as the largest and most accessible application area, as well as a good fit for Hi-con. This was due to energy renovations often consisting of placing a shell outside an existing building, which weighed heavily on the existing foundation. As such, Hi-con's solutions were particularly interesting, as they could produce a lighter shell through their high-performance concrete. Additionally, the network carefully estimated that the market potential for energy renovation in single-family housing and store buildings was around DKK 8 billion for the finished installation. This was naturally the total figure, which also included the costs associated with installation and the like.

The calculations were not particularly advanced, but still proved that there was a large potential. Additionally, the network was aware that a new building regulation was being drawn up for 2020, which would place even greater demands on the energy effectiveness and sustainability of buildings.

As part of the considerations regarding the market, the network also paid special attention to the possibility of entering the market for new constructions, but this was abandoned as a possible short-term strategy because the market for new constructions is very small, and this market more or less disappeared during the financial crisis. Therefore it is more interesting to target the market for renovation.

The goal of the project in terms of product has always been a building element. The insulating material is only a partial component. It is far more interesting in terms of business model that Hi-con constitutes the way to the market. They have during the project evolved significantly.

The delay in the development of the insulation material did not hinder that Hi-con developed its business model. They are already supplying to the market for insulation of existing buildings. Even without insulation material from Gabriel. This development is one of the driving forces of cooperation between Gabriel and Hi-con today.

Competence areas

The network established a basic distribution of responsibilities in which Hi-con focused on its competences within the casting of concrete elements in close collaboration with Densit.

Hi-con was also to work as the sales channel for the concept. Gabriel was to build competence and understanding of insulation in general, aimed at later building competences within the production of the insulation product in collaboration with Formfiber, potentially through an

acquisition. In that respect, a test production process was quickly established. Last, C.F. Møller was to contribute knowledge regarding how the final product should be configurable based on its existing knowledge of architecture, design, and energy renovation.

Interfaces

Based on the competence areas uncovered by the network, it became evident that the product had to fulfill a range of regulatory demands in the form of different conformities and demands, for example, demands on its flame-retardant effect.

In that respect, it became clear that many of these factors could not only be prescribed to single components of the product, but would depend on the finished product, in which insulation and concrete was combined and installed in a building. Through this revelation, it became clear that the network did not yet understand how this interrelation would function. In other words, it was necessary to create the necessary architectures to facilitate communication between the partners.

Thus, there was a need to create a common understanding of how the finished product would behave, aimed at uncovering how to fasten the finished elements onto the buildings, and what the elements—comprised of concrete and insulation—should be composed of, and how this would relate to them fastening onto the building, along with which

different product shapes would be required. The network initiated a prototyping process where energy renovation was carried out on one of Gabriel's buildings. Also, a small-scale house was constructed using the concept.

Primarily, this led the network to investigate whether it was possible to actually produce an element consisting of insulation encapsulated in concrete. Originally, this task was intended for Hi-con, but it could not complete the task due to it being heavily occupied with operational tasks, which led Densit to take on the task, as it viewed this as a potential method of expanding Hi-con's business area, and thus, its own. Accordingly, a simple prototype was created, acting as proof-of-concept, and showing that it was possible to encapsulate the insulation in concrete.

However, problems arose during the collaboration with C.F. Møller, which chose to exit the network relatively early on in the process. The project deviated too much from the company's existing business model. Consequently, the network was faced with the issue that it lacked the competences for the utilization of the elements, which made it difficult to define which characteristics the product should have.

The real potential of the product

Through Gabriel's work on building competences within insulation, it became increasingly clear what constituted good insulation; i.e., an emphasis was placed on insulation value (lambda value) but also on a range of other factors.

Through a series of tests, it became evident that the insulation concept at hand did not have the potential that the network had originally thought that it would have; namely, its potential in terms of the insulation value. This meant that the product went from having been potentially superior to existing solutions, to, in reality, being inferior from an insulation perspective. This meant that it would require a thicker layer of the new insulation material to achieve the same insulation effect as existing solutions.

The key sales parameter was therefore abolished, yet there were still other potential parameters, as the concept maintained its green profile through the use of recycled materials, and a manufacturing process that did not require nearly as much energy as traditional solutions.

However, a range of other issues arose, which also aided in the

dismissal of the concept. Namely, fire safety would be an issue due to the use of recycled textiles, which are generally quite flammable. To achieve the required flame-retardant effect, it would be necessary to utilize a series of chemicals, which was not possible due to the European legislation within the area. Additionally, the market for alternative insulations was already relatively crowded, consisting of a series of actors with different concepts but with similar sales parameters.

These factors led to discarding the entire concept. Nevertheless, Gabriel and Hi-con they continued to work together.

The 2020 building regulative

Concurrent with the testing of the original idea, the building regulation for 2020 was finished in August 2010. This placed increasing demands on building, especially on the insulation ability of new buildings.

Consequently, the existing solutions on the market would most likely not be able to fulfill the new demands, combined with the demands for aesthetics, as the new regulation would require significantly thicker

walls in order to house more insulation material. This also meant that an even greater market for insulation renovation revealed itself, as existing buildings would have to be insulated to remain up-to-date.

New insulation concept

Following the discarding of the original concept, and combined with the knowledge of the 2020 building regulation, Gabriel began an intensive search for alternative technologies that could fulfill the demands of the regulation while conserving the aesthetic qualities.

Accordingly, the demands involved finding an insulation material that could provide a high insulation value with a thin layer of insulation at a reasonable price.

In that respect, Gabriel believes it has found such a material, which, in a unique combination with other technologies, can fulfill the criteria. Accordingly, Gabriel has applied for a patent for the insulation concept. The details of the concept are still strictly classified due to the huge commercial potential, which is why the details of the product and the associated technical challenges have been withheld. However, it is still interesting to observe how the network has since evolved in its configuration and in the logic behind the configuration.

Formfiber withdrew from the network, as its technology was not relevant for the new technology. Yet the four remaining partners still participate in the network.

While previously the emphasis was on ensuring coherence amongst the architectures, the network realized that it needed to separate the architectures to build competences within the respective fields to assemble the architectures into a finished product at a later stage. As such, a far-sighted business model for the development of the concept has emerged, which entails an ongoing dialogue and the development of collaboration. The following describes how the distribution of labor is structured.

Gabriel

Gabriel is responsible for developing the insulation material by utilizing the technical knowledge accumulated along with the knowledge it received from Hi-con on the demands placed on the insulation. In that respect, Gabriel has identified a range of partners around the development of the new insulation concept, of which one was quickly displaced due to a lack of trust.

Gabriel also collaborates with the Institute of Nano-technology at Aalborg University. As such, Gabriel has assumed the role of coordinating a network that does not directly engage with the Hi-con collaboration. Accordingly, Gabriel ties the concept together.

In that respect, Gabriel will not necessarily become the producer of the material, but rather, it will create value, in part through the patenting

of the product, combined with the company's intricate knowledge of the properties of the product, and how this product can be combined with other elements should it become ready for production. Gabriel thus emphasizes not merely becoming a component supplier, but also its participation as a development partner, initially with Hi-con, but probably with a host of actors in the long run.

Hi-con/Densit

Hi-con is carrying out the concurrent development of encapsulated insulation units, through which the company is building its experience of combining insulation and concrete in general, and of how these elements must be configurable for installation in buildings.

The development of manufacturing knowledge for concrete is carried out in close collaboration with Densit. Additionally, a dialogue is maintained with Gabriel, through which Hi-con feeds knowledge back to Gabriel on its requirements for the finished product. As such, Hi-con has come up with a method through which, even if the insulation concept fails, the company will still have built a new business area involving elements for the insulation of existing buildings with other partners. Additionally, the close ties with Gabriel

means that if the insulation concept materializes, Hi-con will have great pre-knowledge and early access to a potentially revolutionary product.

The lack of an architect in the network has meant that Hi-con has chosen to emphasize building the necessary knowledge on insulation-element fastening, but the company is still working on finding a partner who can provide knowledge within this area.

Adapa

Adapa is continually working with Hi-con to create new knowledge regarding the possibilities of utilizing concrete to make use of this knowledge in the long term in combination with the insulation concept. This is probably far into the future, but the collaboration between Adapa and Hi-con is still ongoing.

Summing up

In the EBB network, there were initially aspects of a network-based business model. However, Hi-con was chosen as the core company, because they already have market access.

Eye In the Sky

Summary

The Eye In the Sky network was created with the purpose of developing an unmanned aerial vehicle (UAV) for non-governmental organizations (NGOs) to use in crisis areas.

The case contains interesting insights into how the original cooperative-network concept was abandoned in favor of a more central control over the product and business, thereby demonstrating a host of issues arising when attempting to assemble competences around a particular product idea.

The network is especially interesting due to the specific development it has undergone, as it started as a single product for a handful of specific applications, but later

developed a far greater potential, which could only be realized by extending the network-based business model even further.

Introduction

The Eye in the Sky **network was initiated as part of Access2Innovation (A2I)**, run by Ph.D. Jacob Ravn. The platform's purpose was to bring together NGOs, universities, and private companies in a triple-helix construction to come up with new, innovative solutions for the work done by relief organizations in third world countries.

The A2I project, for what would become the Eye In the Sky network, was initiated in spring 2008, taking its point of departure in a close collaboration with DanChurchAid's humanitarian mine action (HMA) group. The HMA had become the area of focus for the project, as it was one of the groups within DanChurchAid that carried out tasks themselves, which could thereby provide a better understanding of the work being done.

The starting point of the dialogue was a project conceived at Aalborg University (AAU) concerning an autonomous mine-seeking helicop-

ter, which was, however, quickly rejected by the HMA, as the areas they operated in were often heavily overgrown. Yet, they had good experiences using over-flight images for identifying potential mine areas based on different characteristics. The issue was that these images were rarely available. Coupling this with the idea of a flying mine-seeker spawned the idea of creating a small, robust unmanned helicopter with an inbuilt camera, which could create the necessary picture material in the field. The network around A2I was thereby essential in the creation of the original idea.

The partners

Throughout the process, some partners have left, and **new ones have joined as the network transitioned from A2I to the ICI project**, when Sky-Watch was created as an independent firm toward the end of 2009. The network's composition was to a large extent influenced by a desire to gather the competences necessary for manufacturing the helicopter solution, consisting of a frame, wireless communication for control and data-communication, user interface, and competences pertaining to the handling of images.

Sky-Watch was founded in 2009 as a direct descendant of the A2I project and became the core firm of the network project.

Enviclean created the first prototype and subsequently became the primary investor in the newly founded Sky-Watch and Enviclean's CEO (the investor) assumed the role of chairman of the board at Sky-Watch.

Mekan contributed with mechanical competences, essential to the manufacturing of the first prototype in collaboration with Enviclean. They were later made superfluous as other production methods came to be utilized. Mekan is also part-owner of Sky-Watch.

DanChurchAid was, as mentioned, representative of the potential customers and the user of the original product. Through that, they had a large influence on the development and the demand specifications associated with the product.

Danish Aerotech worked with the manufacturing of mechanical, structural, and electrical components for airplanes and the design of these. Additionally, they worked with airplane and helicopter maintenance, where especially the mechanical knowledge and the maintenance of flying units had relevance to the project.

GomSpace worked on components for satellites and the control thereof, through which collaboration on power supplies emerged.

NetImage worked with delivering web-based solutions within e-trade, e-services, and digital billing, and therefore had competences within data control and structure, along with competences within the construction of user interfaces to be utilized in the control of the helicopter.

SpaceCom worked with products within satellite communication and radio connections, which was paramount for the communication

between the control unit and the helicopter, controlling the geo-referencing of the picture material. However, the company did not remain a network partner once Sky-Watch was created.

InnovationHub was founded by Jacob Ravn in relation to the A2I project to drive the early network development by uncovering the needs and wants of the target market and the market potential. When Sky-Watch was founded, InnovationHub was no longer needed as the driver.

Furthermore, the Department for Automation and Control at AAU was involved, as they possessed internationally leading knowledge on the control of autonomous helicopters and airplanes, thus acting as a central piece to the start-up of the network. They did not, however, continue as a partner after Sky-Watch was founded.

The business model's development

The following depicts the entire network development spanning both the **A2I and ICI projects**. This is because A2I preceded the ICI project, but still contains important insights on how network-based business models are developed.

Additionally, ICI was partially involved in the A2I project. Furthermore, part of the motivation of the firms in participating came from the funding presented by ICI. The development of the network

demonstrates how different partners are involved at different stages in the process and how the development of the product was enabled by the use of a network-based approach.

The Access2Innovation process

The project was initially conceived as a network project in which the partners would provide their unique knowledge and competences in relation to the creation of the desired solution.

For the time being, the network set up a rudimentary business model, largely based on acquiring public funds through the ICI, which at the time had presented the network with the possibility of significant funding. At the time, the structure of the organization, distribution, revenue, and costs were not laid out, as the emphasis was on uncovering the need that the network sought to fulfill.

The consequence of the lack of clarity in the business model within the network was eventually that none of the partners wanted to take responsibility for uncovering whether the project had real potential. Thus, the A2I leader, Jacob Ravn, chose to set up InnovationHub to take over the project leader role temporarily. Through Jacob Ravn's work, exact demand specifications (listed below) were developed, which could be processed further. Furthermore, a conducted analysis showed a market potential within humanitarian

mine clearing estimated at roughly US\$ 20 million.

- The system's primary focus was to create over-flight images of the landscape at a quality that would enable planning the work on-site
- The system was to be easy to operate for a person after a short introduction to the system
- The system was to deliver a high degree of stability and robustness

In that respect, the challenge of uncovering the market had been cleared, yet a technical challenge remained in ensuring that a prototype was made to prove whether it was technically possible to bring in the competences of the network in a product that could fulfill market demands. The plan was to exploit the competences in the network and buy components from other manufacturers when necessary.

The first prototype

The five network companies all had a natural interest in the project because their individual contributions were similar to what they were doing in their existing businesses, and at the same time, the project did not compete with their existing markets.

Furthermore, another motivation was that the financial crisis had started kicking in, and all of the involved companies were experiencing tougher times due to a downturn in the business cycle. This added to the interest for the project and the expectation of getting development activities fully funded by ICI was welcomed. This led to the start of the development of a prototype of the UAV, and during this work, it became clear that to lift the project, each and every party would have to commit funding too. The project was left in a critical state because the partners started losing interest in it, due to the capital requirements. None of the partners wanted to take responsibility for this part, as it represented a risk factor to invest the necessary hours in developing a product. This was, in part, due to the technical uncertainty along with uncertainties on how the potential

future economic gains were to be distributed.

After a standstill, an employee from SpaceCom started raising money for the project individually. As the project was in a seed phase, only a few funding opportunities were available. However, the SpaceCom employee managed to convince his father to invest and, at the same time, involved a local business incubator (NOVI) as a source of syndicated funding. This led to the registration of a separate company, Sky-Watch A/S. The partners were still relevant to the project of developing a drone helicopter, but only one of them was willing to invest money in the project. Therefore, the network making up the business model changed from the pure network model to a situation where Sky-Watch would be the driving force.

The project proved hard to sell to potential suppliers due to the way publicly funded projects operate. This entails a relatively long time-span from invoice to final payment, which hampered the procurement of parts and other services. As such, the project was close to grinding to a halt, despite NOVI, in the spring of 2009, providing a letter of intent stating that they were prepared to inject a loan into the project if another investor were to provide a similar amount.

This was when the project manager from Spacecom, Jonas Johansen, realized that the project would never develop unless a firm took ownership and controlled the development. Furthermore, he also saw great possibilities within other segments beyond the NGOs, which further increased the commercial potential of the project significantly.

At this time, the project was referred to as the IKT (information and communications technology) project, which also contained aspects that would later become the ICI network ViewWorld. Yet, the condition for initiating the project as a company was to focus solely on the helicopter solution.

Partially aided by the letter of intent from NOVI, the instigator, Jonas Johansen, tried to borrow the necessary funds from a bank to start up the company but was, ultimately, rejected. Subsequently, Jonas Johansen contacted his father, the owner of Enviclean, inquiring about a personal loan for funding the creation of the company. Up until this point, Enviclean had not been officially involved in the project, but was informed about the project and its contents.

In the summer of 2009, Enviclean participated in one of the meetings to assess the potential of the project. By the end of the meeting, Enviclean offered, in collaboration with Mekan, to create a prototype of proof-of-concept to demonstrate that the concept was viable. This was demonstrated later the same year. This only demonstrated a helicopter with a camera mounted on it that was manually controlled, but it was enough to demonstrate that the concept could work.

Sky-Watch is formed

Following the demonstration, Enviclean founded the company Sky-Watch with NOVI as co-owner. Jonas Johansen was made CEO of the company.

The other partners from the A2I project were offered to become shareholders in the endeavor, yet only Mekan chose to invest, buying a 4% ownership of the company. The remaining 96% of shares were evenly distributed between Enviclean and NOVI. DanChurchAid were also interested, but made demands that were not acceptable to the other owners. Additionally, there were a series of ethical considerations concerning an NGO owning a commercial company, whose product also had potential military uses.

The business model at the time was to buy the necessary components and software from different suppliers to assemble a finished unit, which could carry a certain margin. Namely, this entailed utilizing the already established network. NetImage was to uncover user needs and design the user interface. Mekan was to be responsible for the milling and pro-

duction of prototypes. Gomspace was to create electronic components and the autopilot. Danish Aerotech was to assemble the units. DanChurchAid was to be a sparring partner in terms of the design. The company Sky-Watch was thereby to consist of the necessary distribution channels, while the necessary knowledge largely resided with the partners.

In that respect, the network became organized more like a traditional value chain, with a series of suppliers for the different components. At the time, the ambition was for Sky-Watch to only design the frame of the helicopter, onto which all the other components were to be attached. In that respect, the network almost exclusively focused on the development of the mechanical solution, as it was assumed that the components available would be adequate.

Insourcing

During the summer of 2010, Sky-Watch realized that the chosen model was not viable. On the one hand, they had significant problems concerning their suppliers' ability to deliver, which made it difficult to control development and production. What was most important was that the software/hardware solution previously employed was very difficult to configure to other purposes than originally intended. This was, in part, due to a poorly managed codebase, along with inflexible hardware.

Sky-Watch realized that to build a profitable business, they needed to be able to access several different segments. This, in turn, required them to take control of the central hard- and software competences to produce a solution that was flexible enough to be quickly adapted to new applications. This would also increase the value of the firm, as they would come to possess a range of product competences within their field.

Many of the electrical components were bought off the shelf, while central circuit boards were designed in-house and subsequently made to order from suppliers. The manufacturing of the shell was to be handled by suppliers based on the blueprints from Sky-Watch. Yet, the demand for rapid prototypes and the unreasonable costs associated with small batch productions later led the company to acquire a 3D printer. This was, in part, used to manufacture prototypes, but also to produce small special parts for limited batch productions.

This made it relevant to reevalu-

ate the included partners. With the control system in-house, Gomspace largely became superfluous, yet collaboration continued on different shared components. NetImage proved not to possess the necessary competences for designing a user interface for a helicopter, as it required significant knowledge regarding how a helicopter operated. Furthermore, Mekan proved less relevant, as a larger part of the new design was to be in plastic. Danish Aerotech continued as a sparring partner, as they worked within a non-competing common area. In that respect, Danish Aerotech had significant insights into the legislation within the area, while Sky-Watch could provide them with insights into a new, interesting market segment. DanChurchAid also continued, as they maintained an interest in the products and could help introduce Sky-Watch to the NGO segment. In that respect, DanChurchAid proved to be a valuable partner as it actively pushed the story of the collaboration on the press. This generated some attention toward the project, which, in turn, provided some legitimacy,

which could be used for the military and commercial segments.

Thus, the network around Sky-Watch was structured in such a manner that it was consistent with the changed structure and purpose of the firm. In that respect, a new network was configured based on a more value-chain-based approach, in which Sky-Watch would carefully choose which activities were essential to the company, and which were best served through outsourcing. Additionally, Sky-Watch began looking thoroughly into the sales possibilities in the NGO market. This proved significantly difficult to penetrate, as NGOs typically do not contain the means to make investments, as these are brought in from

the outside through sponsorships of specific projects. This meant uncertainty and long lead times. Furthermore, sales to the UN system required suppliers to have an established sales record, along with a stock inventory and other resources, which Sky-Watch, at the time, did not possess.

Consequently, the firm began uncovering the possibilities in serving other segments, especially focusing on industrial inspection and military uses. In that respect, the company continued to emphasize a network approach by searching for potential partnerships with actors with existing distribution and sales channels in those segments.

The platform approach

Subsequently, Sky-Watch began uncovering more application possibilities, which made it evident that the product had great potential. Through talks with different actors in widely differing businesses, many alternative possibilities were discovered. Yet all of these would require specialized equipment beyond a camera.

This made the firm realize that fulfilling this potential would be extremely difficult. They would have to develop or purchase specific components and integrate the necessary data-treatment processes associated with areas in which they were not competent. The solution was developed in collaboration with ICI. The helicopter was to be considered as a basic unit (a platform), which contained different possibilities for attaching other components. Thereby, the functionality could be extended significantly.

On the product level, this meant that the helicopter was to contain new functionalities, which would enable the unit to send data back to the control station, along with the ability to control the attached equipment.

In that respect, Sky-Watch changed character. From having been a firm focused on visual documentation through a camera, the visual became a part-component in the guidance of the helicopter, onto which other components could be attached. Thus, the firm created

a platform where the possibilities would be highly dependent on the application possibilities developed by other partners. This enabled the firm to overcome the limitations they previously operated under regarding spreading the product to new segments. This would just mean that they would have to find the right partners to develop the application possibilities.

The context for this is also that Sky-Watch began reconsidering what constituted its core competencies. Rather than only considering itself as a development company specialized within UAV helicopter solutions, the company realized that its competences were not necessarily helicopter specific. Rather, it was the actual control of autonomous units. This hinted at the control and guidance competences of the firm being applied to other units, for example, small submarines. Yet, the helicopter solution remained the core product that was to drive the firm. This necessitated that the product was finished, manufactured, and distributed. As such, the firm

had laid out the groundwork for a two-sided business model, in which one aspect targeted selling control and guidance competences, while the other targeted the helicopter solution. To build profitability, the firm chose to focus specifically on the helicopter solution by building a production and distribution network specifically for the helicopter.

Global production and sales

In order to sum up the case the latest developments are outlined here. During the summer of 2012, the helicopter solution was specifically developed.

This consisted of a number of initiatives. On the production side, the firm realized the need to be able to scale quickly and efficiently, and began establishing contact with Chinese and East-European manufacturing companies. This was done to enable a fast ramp up of the production to be able to follow up on the anticipated sales. This meant that all fabrication was placed outside the firm to ensure delivery and quality. Furthermore, the firm implemented an enterprise resource planning

(ERP) system to support the new configuration.

Simultaneously, the firm began further expanding its dealer network. This was done by establishing contacts to different partners within the respective segments. The aim was to reduce the costs associated with sales and marketing by utilizing the existing sales channels of the partners.

Mobile Tracking

Summary

The Mobile Tracking network focused on building business models in relation to data concerning the location of pedestrians and the flow of road traffic. As such, the purpose was to create knowledge-based business models with great value for buyers with wildly different needs for data and knowledge.

Despite an enormous presumed value creation for the buyers, the case illustrates the issues that arise when the customers are not aligned with the business model of an incumbent firm.

Furthermore, the case presents the issues related to presenting, quantifying, and specifying the value proposition for a host of potential buyers. In that respect, the case illustrates the importance of developing and designing business models that are aligned with the targeted customer segments. This also highlights the resistance that such an endeavor can produce in established organizations in which the existing business model becomes the biggest obstacle to innovation. Lastly, the case is a good example of the importance of building business models internally in the network in

such a manner that the relation between the partners is clearly and well defined early on in the process. Thus, the case demonstrates the need to be explicit about the expectations placed on potential partners early on in the process to avoid conflicting interests. For instance, BLIP Systems was initially unwilling to sign an exclusive contract in the Nordic countries with COWI. In another context, such a set-up had cost them millions of DKK. However, BLIP changed its opinion concerning this point later in the project.

Introduction

COWI was the initiator of the project. COWI is one of Denmark's largest **engineering firms**, with an international presence. The basic idea was to utilize the broad use of cellphones to create anonymous data on movement patterns for both pedestrians and cars.

Subsequently, the purpose of the network was to build a network that possessed the necessary technology for gathering data, while also creating viable business models for the data collected. The primary, initial focus was to create business models based on knowledge concerning urban movement patterns.

The project stemmed from COWI being used to working with different types of data on urban and traffic movements in relation to their engineering services. These data were often procured using simple means, for example, manual counts on pedestrians. The ambition of the network was thereby to create innovative methods of creating the data while ensuring that the data was transformed into value for relevant

actors. This was to give COWI the ability to build a business based on the collected data. Additionally, the network was equally concerned with how the data suppliers could create business models that were aligned with COWI's business concept. In that respect, the goal from the start was to find a partner who already had the necessary data available.

The network project was highly unusual for COWI, as it did not usually venture into innovation projects as such. Traditionally, the company sought projects that were much further developed. Yet, the economic funding from ICI helped ensure that the project could be initiated within COWI, with the prerequisite support from management.

The partners

During the initial dialogue with ICI, no actual partners were involved. At the time, the network was simply an idea created within COWI. In the dialogue with ICI, it became evident that the partners of the project were to come from two categories. These were the data suppliers and the data users, respectively.

These were the data suppliers and the data users, respectively. The goal was for COWI to act as the part that refined and communicated the data. This would make COWI the link between the actors producing the data and those who were to use the data in a processed or refined form.

To find relevant partners for the data collection, ICI and COWI's network at Aalborg University was used to uncover, which technologies were relevant and economically feasible. In that respect, this served as the foundation for finding partners who utilized these technologies.

On the user side, the early assumption was that the primary focus would be on working with data concerning pedestrian movements. Therefore, the network sought partners who could potentially take advantage of data on pedestrian movements, and the aim was to receive their inputs, thereby using them as lead-users.

BLIP Systems (BLIP) specialized in systems for tracking cellphones by tracking the Bluetooth connection. This is possible as each Bluetooth unit has a unique ID. Prior to the creation of the network, BLIP had mainly focused on selling tracking units to airports. Thus, the collaboration with COWI served as a way of opening up new business areas. While originally thought of as an additional technology for indoor tracking, BLIP later became a key partner in the network. This development will be explained later.

TDC is one of the largest cellphone operators in Denmark and was originally thought of as the primary supplier of raw data. This was technically possible through the triangulation of cellphone signals that could generate the location data. Yet, TDC chose to exit the network early in the process. This was due to legal concerns, combined with the business model foundation for the collaboration. Additionally, the return-on-investment period for such a project

would be quite elongated, which did not fit the current strategy of TDC.

On the buyer side, the network attempted to engage different partners in the form of **Aalborg City Association, Aalborg municipality, Visit Nordjylland, Nordjyllands Kystmuseum, TK Development,** and **Nybolig Erhverv**. Thus, the network engaged a wide assortment of actors who might have had an interest in urban pedestrian movements. These actors could participate in the dialogue regarding which data could be used by different actors, while also providing arguments on different aspects of the project. This could concern economic aspects as well as, for instance, how the ownership should be structured.

Furthermore, the network collaborated with **Friis Citycenter** in Aalborg outside of ICI. This was used as a test center for validating the precision of the collected data from BLIP's systems.

The business model's development

As mentioned above, the network chose to target the pedestrian segment early on in the process. Yet, throughout the process, it was always evident that there was also an inherent **potential in tracking traffic in relation to controlling traffic**. However, this was not addressed until later in the process.

As mentioned earlier, TDC withdrew from the network early on, which left BLIP as the only possible data supplier. Subsequently, much of the business model development came to center on whether BLIP could

align with COWI's existing business model. This entailed considerations on how the business model between BLIP and COWI was to be structured in relation to revenues, resources, and activities.

The BLIP data-gathering system and its development

In order to grasp the challenges associated with the development of the business model, it is first necessary to understand the components that make up the BLIP data-gathering system.

The system contains a series of Bluetooth sensors, which are installed in the area from which data is sought. Subsequently, the sensors pick up all active Bluetooth units within a certain range. This is coupled with an approximation of the Bluetooth unit's location along with its speed and direction. Each Bluetooth unit carries a unique media access control (MAC) address, which enables the system to not only track a unit passing by a sensor, but to track the actual movements of the unit through multiple sensors. The logged MAC addresses are anonymous, in that they cannot be directly tied to certain individuals. In this respect, the system is not in conflict with legislation on personal data.

The MAC address, time, and placement are logged and transmitted through wireless Internet to a cloud-based data-system hosted by BLIP. Subsequently, it is possible to present the data using BLIP's own front-end software or through other front ends using different application

programming interfaces (APIs). In this way partners can attach themselves to the data.

During the ICI project, it was found that the number of active Bluetooth units was declining. This prompted BLIP to extend its system in such a way that it could also track Wi-Fi signals. In relation to data collection, Wi-Fi signals are nearly identical to Bluetooth signals.

Additionally, during the network project, it became evident that to create collaboration between BLIP and COWI, BLIP's sensors would have to be suited to outdoor installation. Previously, they had only worked on indoor installations. This prompted BLIP to develop a weatherproof encapsulation for its system, combined with battery backup. This is to be seen as a natural extension of BLIP's business, as it provided the means for entering new markets. Yet, it was still a prerequisite for the setting up of the partnership.

Data validation

Early on in the process, the two core partners, COWI and BLIP, emphasized the validation of the collected data. It was important for both parties to ensure that the data collected was so statistically sound that it was possible to estimate the total traffic and the movement patterns.

At this point, no clearly defined, long-term business model was defined between the two parties. Yet, the model for the data validation was for BLIP to provide the necessary equipment for free, and thereby give COWI the possibility of being able to test the equipment. For COWI, the aim was to establish whether the available technology could provide the data needed for further processing. BLIP, on the other hand, saw an opportunity for having its technology sanctioned relatively cheaply. Additionally, the collaboration with COWI provided BLIP with access to a range of customers that it had not previously had access to.

The abovementioned translated into an arrangement with Friis Citycenter, which had the equipment installed. Friis had already installed people counters at all entrances, which made it possible to compare this

data with that from BLIP's data-gathering system. Concurrently, COWI carried out a series of tests at its own office, along with a series of closed tests aimed at assessing the system's viability for monitoring traffic.

Taken together, the tests evidenced that the system was technically mature enough to handle the data gathering. Though far from all individuals had an active Bluetooth unit on them that could then be registered, it was possible to extrapolate the data in a manner that provided a quite precise picture of the movement patterns. However, the data validation took a disproportionate amount of time. During this time, the work on the business model and structure of the partnership was postponed. Much of this is largely attributable to COWI's traditional method of doing business.

Ownership structure

The work on business models began in the spring of 2011. This was aimed at uncovering how the ownership structure among the partners should be built. At the time, the premise was for BLIP to supply the system, which the customers paid for. Additionally, an installer was to set up the system, while COWI would focus on building value on top of the collected data through their engineering competences.

The entire premise of this business model thereby rested on a single actor who had the necessary means to make the necessary investments. Yet, this was in stark contrast to the customer segments that had been identified, as these were most often small local businesses that did not possess the necessary funds or the will to bear the risk. It was evident in the network that the concept contained potential. Yet, neither COWI nor BLIP wanted to make the investments. BLIP was essentially only concerned with selling equipment, while COWI was only interested in purchasing the data and processing it. This proved to be a serious conflict amongst the partners regarding how the mutual business was to be structured. Subsequently, this became the key theme of the network's continued development. The central issue was that none of the partners had the desire to make the necessary investments.

BLIP offered to install the sensors for free, given that COWI would commit to long-term agreements for purchasing the data from the

system. This was rejected by COWI, as it meant that it would have to commit to costs that could not necessarily be paid by a single customer. COWI's approach was thus that it sought to gain on-demand access to data, which the company could subsequently process and bill directly to its customers. This could potentially be in the form of ongoing subscriptions. In that respect, COWI wanted the network to be an extension of its existing business model. This entailed customers paying for specific services, which meant that COWI would incur no expenses until the company was guaranteed payment.

The conclusion was that COWI sought for BLIP to install the necessary equipment, after which COWI could purchase the available data for their customers. Simultaneously, COWI sought to achieve exclusive rights to the data collected, yet at a price that was not acceptable to BLIP.

The network concluded that it would be necessary to find actors who

would be interested in paying for the installation of the equipment, as this was the missing piece of the business model. Thus, the focus shifted to uncovering a partner with the necessary funds and interest in installing the required equipment. Yet, this also presented a series of challenges for COWI, as it meant that the data gathered would belong to the investor in the equipment, which would mean that COWI could not ensure any advantages.

This ended in a model under which COWI acted as engineering counselor within urban planning, as the company had traditionally done with construction projects. BLIP's data-gathering system was added to COWI's portfolio of products available to customers under the COWI City-Sense brand. This was combined with an ongoing subscription for the data collected, delivered

through COWI. As such, both COWI and BLIP were ensured a viable business model, as BLIP would also receive ongoing payments for the data delivered.

Accordingly, the challenge turned toward uncovering actors who were willing to pay for the installation of the system and commit to the subscriptions. Yet, this required a much sharper focus on the value that the collected data could provide for the customers. This had not been addressed previously. This lack was highly attributed to the network's detailed attention on the technical validation of the data collected. Subsequently, in the autumn of 2011, the network began trying to describe the value offered by its data service for different actors.

The value proposition

The work on the value proposition of the concept was largely influenced by COWI's existing business model. In this, the company would sell engineering services at cost plus a margin. This basic approach to pricing made it difficult for the network to establish a value model on the actual worth of the collected data for potential buyers.

As mentioned earlier, the emphasis was on tracking pedestrians. This became the guide for the work on clarifying the value proposition. This emphasis is also evident in the makeup of the partners in the network on the buyer side. In close collaboration with ICI, the network began trying to uncover how the value could be quantified for different potential buyers. The first step was to specify which buyers were relevant, which was implicitly done through the partnership process. This placed the emphasis on how shops, city associations, shopping centers, and real estate brokers could utilize the data to optimize their own processes.

The notion was that shops, based on the correct presentation of the data, would be able to optimize their staffing and potential promotion events depending on the number of

pedestrians in the city. City associations could use the data to specify the effect of various initiatives, which was successfully tested during the event Aalborg In Red. Shopping centers could create a better overview of the customer flow within their premises, which would enable them to optimize the shop layout. Lastly, real estate brokers could use data to create better pricings for commercial buildings, based on the knowledge of how many potential customers would pass by.

This approach exposed two characteristic, yet interrelated issues, which were very closely related to COWI's existing business model.

On the one hand, COWI struggled with creating and absorbing the prerequisite understanding on the value created for the customer. This was closely related to COWI's traditional

cost plus margin approach for all its engineering services. This did not take into consideration the value actually created for customers, and, accordingly, the price they would be willing to pay for the services. There was a widespread recognition that the system potentially had great value, yet the network was unsuccessful in quantifying this.

On the other hand, the work on clarifying the value proposition showed that the concept had value-creation potential for a series of small actors, yet none of them had the necessary funds to invest in equipment. This was in stark contrast to COWI's traditional business, which primarily dealt with advising larger companies and public entities. This also entailed a distinct single actor with the necessary resources to invest in the necessary equipment.

Emphasizing traffic and configuration

Thus, working with many small actors posed a series of challenges and placed certain demands on the business model. This understanding was essential in moving the project forward, as COWI and BLIP chose to focus on tracking traffic instead.

This shift is to be viewed in relation to an internal reorganization within COWI. This placed the traffic department alongside the urban-planning department, which had previously handled the collaboration with BLIP. These had previously been separate entities within COWI. This created closer ties between the people assigned to City-Sense and the traffic department. This made it apparent that COWI could ensure that the City-Sense solution was added to tenders for the construction and renovation of roads.

This change toward traffic tracking made municipals and similar entities the primary customers. The work with these bodies proved early on that they were most interested in purchasing data subscriptions. Additionally, they often sought to install the equipment themselves, as they already had the necessary personnel and equipment needed. In that respect, the need for a partner to install the equipment was abolished. Accordingly, the tasks that were originally to be placed with an installer were distributed amongst

COWI, BLIP, and the buyers. BLIP became responsible for the technology and the operations of the systems. COWI became responsible for defining installation diagrams, the proactive sales work, and acting at the front end for customers by having the solution branded as COWI City-Sense.

Consequently, the customers bought a data subscription for a given period to which BLIP would supply the equipment. For BLIP, this was essentially a payment in installments. BLIP would receive 70% of the subscription revenue, while COWI would receive 30%. Furthermore, COWI had the opportunity of using the collected data as a means of selling extra engineering services. Lastly, COWI would receive 50% of any extra revenue generated from selling data to other parties. This was possible, as BLIP would continue to own all the data.

Thereby, COWI was ensured an extra value proposition for its customers using its own name and brand. Furthermore, it provided COWI with

the opportunity to build further business over a longer term. For BLIP, the agreement opened up a completely new business area through utilizing COWI as a sales channel. This was made possible through the configuration of a business model between the partners. The collaboration with COWI and the extensive data validation had approved the system. This could potentially open up new partnerships within other areas.

Pedestrians continued

ICI and COWI continued collaborating on creating a business model for tracking pedestrians. Namely, this process emphasized moving from essentially trying to sell units to selling data. This was materialized through a series of workshops and a meeting with the ICI Senior Advisory Board.

Initially, COWI was presented with a range of potential buyers of pedestrian movement data to try to substantiate the value of the concept. Furthermore, ICI worked diligently on explaining and describing the value in being able to sell data

directly, rather than having to wait for an actor to install and pay for the equipment. Thus, ICI heavily encouraged COWI to consider investing in the equipment. Yet, this did not come to fruition.

On BLIP's engagement

It is interesting to note that despite the severe issues faced early on in the partnership, **BLIP chose to maintain the collaboration with COWI** to develop a new and mutually beneficial business model. In that respect, it is relevant to look into BLIP's antecedents.

Preceding the Mobile Tracking network, BLIP had a core business in tracking facilities for airports. The main share of its revenue was generated from sales, along with some from service and maintenance. As such, the company possessed great experience in servicing airports. Yet, the BLIP management had recently decided that the company was to pursue new markets for its tracking technology.

Accordingly, BLIP had already established its interest in opening new markets. In that respect, the partnership with COWI was ideal. Additionally, the partnership provided BLIP with the opportunity to have their system validated by COWI, which could further increase the value of BLIP's products.

The challenges of the business model

The initial focus on tracking pedestrians was largely attributable to the way the network defined its subsequent challenges. The consequence of focusing on a customer segment that did not have the necessary budgets was that the **partners were forced to consider unattractive business models**. The lack of a clear business was highly instrumental in creating conflicts between the two parties, which almost killed the network.

Based on a particular customer segment, the challenge was to design a business model that was aligned with the customers' economic characteristics. This proved impossible, in part due to the lack of a clear value proposition and means of delivering it. Only when the network shifted its focus toward tracking traffic was a clearer business model able to be devised. Namely, the value proposition for customers was clear and the revenue streams were compatible with both core companies. Yet, this required a rigidly defined structure amongst the partners to ensure a fair distribution of revenue in relation to the value that each partner provided.

In retrospect, the network should have taken the consequences of the business model issues more seriously. This should have prompted the network to change its focus ear-

lier. The lack of refocus is, however, also tied to COWI's previous segregation between urban and traffic departments. It was the combination of the two departments that created clarity on the value potential inherent within tracking traffic, along with how the business model was to be structured.

Subsequently, BLIP has successfully copied the business model outside the Nordic countries (for example, in New Zealand: <http://nordjyske.dk/mobil-artikel/nordjysk-firma-maalertrafik-i-new-zealand/b9af4229-b62f-4ad5-b9ad-9de9d5b3ee87/1567>).

For COWI, it seems that a huge international potential is not being tapped, perhaps due to it lacking the ability to support intrapreneurship; that is, developing new business areas within the organization.

Provital Solutions

Summary

The Provital network was the first network to be established during the ICI project. Thus, the network became the testing area for how the ICI project was to function when going forward. In that respect, the network was often used as the prototype for how ICI projects should function. Accordingly, the process has not always been completely streamlined into the business model concept as the guiding premise.

The Pro vital network was aimed at developing a business model for commercializing a series of newly developed applications of a groundbreaking filtration technology. This technology was built around membranes made of silicon carbide (SiC).

This filtration technology had a series of advantages compared to, for example, sand filtration. This made the product more energy efficient and environmentally friendly, while also taking up less physical space for the customer. Furthermore, when utilized for cleaning spas and pools, the system could provide a series of health

benefits, as it reduced the need for chlorine and other chemicals. Despite the obvious advantages, the case will illustrate how a superior product does not always equal a successful business in terms of market share and strong revenue. A solid and well-functioning business model is equally important.

Introduction

The company **Provital Solutions (Provital)** was founded in 2008 as a joint venture between **CoMeTas and Kaj Larsen VVS**. Initially, the company mainly acted as a shelf company. In this period, Kaj Larsen paid the salary of the single employee, Paw Juul, who was situated in Kaj Larsen's premises. In 2009, Paw Juul was transferred to Provital, injecting actual activities into the firm.

From the beginning, the mission of Provital was to create water-filtration solutions better than those currently on the market. Furthermore, the firm was to extend membrane technology to markets that had not previously used filtration solutions. Though the case appears to take its depar-

ture in a customer-driven approach to value creation, the case contains insights into how the alternation between upstream and downstream activities of the business on the one hand created possibilities, yet on the other, created a series of conflicts.

The business model's development

Provital's story is an example of an **unstructured innovation process**, which has its starting point in special knowledge on a product or a technology, which is vested in an entrepreneur. As such, the process is characterized by a large degree of focus on the development of the product and the product solution.

This is in contrast to focusing on the business-related aspects concerning the identification of end users and user needs, along with how to market the product. As a consequence thereof, the process has generally not focused directly on business models and the invention of new business models. Rather, the emphasis has been on developing a business model around a product idea and bringing this to market.

Kaj Larsen possessed a strong set of competences within plumbing. Through this experience, the company also possessed a great network within the industry. This was coupled with the SiC membrane technology, which provided special technology knowledge between the knowledge areas. Accordingly, the network worked diligently on identifying potential product applications for this combination. The collaboration was initiated in 2006. During the first 12–18 months, Provital created a series of ideas within spas and pools, water treatment, smoke scrubbers, car washes, slurry separation, fish farms, potato water, and

dry docks. In that respect, prototypes were made for pool filtration, car washes, and slurry separation, which were tested internally and at external partners. Characteristic for this period was that Provital did not consider which product applications had the greatest and most readily available potential. Furthermore, they did not consider how the sales were to be handled and through which distribution channels. There was a strong presumption that the technology had great potential. Yet, the emphasis was solely on proving the potential through prototypes and tests within different areas.

Having participated in a Blue Ocean course at Aalborg University, Provital was brought in to the newly established ICI project in the middle of 2008. At this stage, the company was introduced to the business model concept and the notion of creating business models in networks. At the time, ICI had no broadly accepted comprehension of what constituted a network-based business model or how to develop and design such models. As such,

partners for the ICI network (the Provital network) were brought in based on their previous engagement in the development of the application possibilities for the membranes.

The partners

CoMeTas (currently LiqTech) is active within the development, manufacture and supply of silicon carbide ceramics for the purification of liquids and gasses.

Kaj Larsen VVS is a plumbing and along CoMeTas a core part from the outset of the network.

GPA Flowsystems supplied standard components used in the system. Yet, the company later exited as official partners, as it merely sought to act as a supplier. Additionally, it did not want to sell goods at cost price, as it had other business with Kaj Larsen VVS. Still, GPA Flowsystems was a valuable partner, as Provital could draw on its experiences regarding which components to use for the new system.

Netlon, provided specialized control systems for the filtration units. Netlon had previously worked with automated control systems. The contact between Provital and Netlon was made through Provital's earlier work with Dansk Olie Måler Service (DOMS) on a filtration system for

car washes. In that respect, Netlon was the default supplier for DOMS, which made Netlon a natural partner. Later in the process, it became evident that Netlon did not possess the necessary competences for controlling such a system, as their competences mainly related to purely electrical systems.

Technodan Industrial Controls (TIC) later in the process took over the role of Netlon.

Kemic Vandrens was brought into the network based on its experience with water-treatment plants and other industrial water treatments. Yet, due to the direction later chosen by the network, the company was essentially made superfluous.

Skallerup Klit was brought in, as they had a Provital solution installed at their pool facilities. Thus, they acted as a test center and as a base for the pilot project for the application possibilities within spas and pools.

Business models

When the involvement with ICI began toward the end of 2008, it became evident that the current situation was not feasible. It was clear that Provital did not have the necessary resources needed to pursue too many different application possibilities.

Thus, the current situation was not appropriate for creating a viable business. Through a series of workshops arranged by ICI, the network realized that it had to focus its sales and marketing efforts on a clearly defined market to achieve commercial success. Following a careful analysis aided by ICI, the spa and pool market was selected. This was based on:

- Existing competencies within the field
- Pre-existing knowledge and network in the market
- The relative simplicity of the technical solution
- It was the only solution that was being tested with a potential customer

In collaboration with ICI, a subsequent risk analysis was drawn up, resulting in an action plan aimed at bringing the spa and pool solution to market. Thus, the work on the spa and pool solution was intensified to complete the technical solution. Yet, the network did not

manage to maintain its focus, and spent time installing test facilities for other applications. This was partly due to the spa and pool market not developing as expected, combined with Kaj Larsen, which financed the endeavor, having economic difficulties, in part due to the bankruptcy of its local bank during the period. Subsequently, it appeared that Provital sought quick gains by pursuing other applications within slurry separation: the filtration of car water and water from potato cleaning, all of which brought no commercial success. During this period, the firm was almost forced to close down. Provital and ICI discussed what to do about it. Without the investment, the firm would most likely have filed for bankruptcy. Additionally, the investment from NOVI, combined with the argumentation from ICI provided renewed faith in the commercial potential of the concept.

Identifying decision makers

At this stage, it was evident that the product was not attractive to the segment of small, often private swimming pools. This was primarily due to the cost of purchase, combined with negligible savings on operations, as the load on smaller pools was typically very small.

Thus, the focus had been on larger facilities. The reason for the lack of market penetration can be attributed to Provital making a direct sales effort toward large swimming facilities. These were mostly publicly owned institutions, without funds or the mandate for making investments. All of their investments would have to go through a public tender. Accordingly, the network and ICI worked on mapping the decision process and the decision makers associated with public tenders. This was to uncover which actors had influence on customer relations. Subsequently, the following actors were identified:

- Installers
- Contractors
- Advisory engineers
- Pool attendants
- Public officials

Having identified these actors, Provital began an intensive sales effort. This was directed toward all of the above actors simultaneously to create the necessary relationship with the customers. The reason for this was that it had been found that each of the multiple actors could single-handedly veto an alternative filtration system. As Provital initiated its heavy sales effort, it experienced a great deal of resistance. Typically, one party would resist or deny working with a new, alternative, and in their eyes, unproven filtration solution. Alternatively, the rejection of the Provital solution was based on the higher initial costs of the Provital system. In that respect, public tenders do not take any potential operations savings into consideration, unless it is written into the tender from the start. This became very clear for Provital in relation to the tender around the swimming

pool in Gigantium in Aalborg. ICI also supported tests being carried out in Gladsaxe Swimming Pool.

These two combined factors hindered Provital from winning tenders. Even though in the period from April 2009 to the end of 2011 the company had two different sales directors employed, it did not live up to the task. As such, Provital did not possess the necessary resources needed to influence the decision makers. Furthermore, it did not have the access needed to influence the contents of the tender in a manner that would make the Provital solution preferable.

Internationalizing

Concurrently, during 2010, the firm began considering making its product and business model available internationally. Namely, they focused on the American, German, Norwegian, and Swedish markets. In that respect, they collaborated with ICI on the market analyses of the German and Californian markets.

The Californian market appeared attractive at the time, due to the increasing pressure on its water supply. In that respect, ICI also provided apparent access, as the academic manager of the network was working from the United States at the time. Despite attempts to establish contact with American firms, no collaboration emerged from the attempts.

Yet, contact was established to a single-person business in Germany. This was to drive the sales in the German market. The idea was to install a test facility in Hamburg. However, Provital lacked the necessary funds and the German partner was not interested in bearing the risk. As a consequence, the idea was scrapped.

Furthermore, Provital realized that there were some practical issues that had to be overcome. Concisely,

the installation, start-up, and maintenance of the facility could only be done by the employees of Provital and Kaj Larsen. Thus, Provital was faced with the challenge of creating and designing a business model that could alleviate the sales issues, while also addressing the practical problems associated with installation, start-up, and maintenance.

The first foundation for a subsequent breakthrough for Provital was made during a conference in Holland, which it attended with CoMeTas. At the conference, Provital established contact with Enwa, a large installer in the Norwegian market. Enwa also had departments in Sweden and was interested in Provital's solution. Later an arrangement was made under which Enwa would primarily take care of the entire sales effort. Thus, Provital would become a supplier who also delivered knowledge on the implementation and opera-

tions of the system along with sales training for Enwa's sales personnel. Subsequently, Enwa would primarily be in charge of the installation, maintenance, and operations. Furthermore, Enwa was large enough to influence the entire tender process and to have the necessary resources to influence all decision makers.

This became the archetype for the sales in Provital's business model. Thus, it would target its sales efforts toward actors with the necessary size and will to drive the sales of Provital's solutions. Accordingly, Provital would become a supplier. In that respect, Provital began learning how it could create value for other actors in the value network. This was in the form of how the channel partners could build value on top of the Provital solution by combining it with their existing business.

Operations and financing

This sales model proved to be the right one for Provital, which, during 2012, ensured sound revenue. Yet, a new issue arose, as the firm had not previously considered production at the necessary scale. Essentially, the product was not optimized for batch production.

This meant that each product was essentially a copy of the prototype, without optimized components or processes. Though the manufacturing process was relatively simple, the component costs for each unit were high.

Furthermore, the installers demanded that Provital provided security till the solution was operational. This meant that the payment was

not received until the solution was running. This placed a large financial burden on the firm's business model as the cash flow was postponed. Provital was thus forced to commit a relatively large amount of capital for extended periods for each sale. This strained the firm's capital significantly. Consequently, the firm was forced to seek another round of investments to maintain the business.

New investor

During 2012, the firm managed to attract a new investor. During this, Kaj Larsen was bought out of the company, as it sought to end its engagement to release capital for its core business. Subsequently, the new investor assumed the role of CEO and emphasized driving the international business model. The added capital, combined with the renewed focus meant that Provital could focus on building lasting relations with installers.

By becoming economically independent from Kaj Larsen, Provital was able to negotiate significantly better prices for the manufacturing of filters. This provided significant savings. Furthermore, the increased sales and the presumed future growth meant that Provital stood in a much stronger position compared to their suppliers. This meant that they were able to exert significant pressure on the price.

Summation: The short version

In summary the case followed this pattern



Technology exploration/prototypes (exploration of possibilities)

Focusing on markets (spa/pool) based on competence/market knowledge

Business model v. 1 (direct sales)

Characterizing the market and its decision makers

Business model v. 2 (influencing decision makers)

Focus on lack of resources for downstream activities

Business model v. 3 (utilizing sales partners)

Focus on lack of resources for upstream activities, including production

Business model v. 4 (How to configure production/capital needs)

The final value proposition

The above-mentioned case illustrates how a seemingly **clear product innovation can change character**. The unfolding of a seemingly good product idea can thus be very difficult. The value proposition of Provital to its end users was made precise during the process.

Through the entire process, there was a focus on the operations savings and the space saving enabled by the Provital solution. This reduces the costs associated with the technical room, which is often significant for new facilities.

Provital has also sought to work with their value proposition within water quality and the associated health aspects. Yet, this proved difficult, as it is best described as a latent need for the end users. Thus, it was difficult to activate, as ordinary

swimming patrons are not aware of this. Accordingly, swimming facilities do not have any explicit interest in improved water quality, as existing solutions can fulfill the demands placed on them.

The larger development for Provital is more related to how their product can create value for its partners, in the form of the sales channels utilized.

The challenges for Provital's business model

The case clearly illustrates how even a product with **significantly better properties** than those of its competitors **does not guarantee its success**.

Provital has a product, which is, in many ways, superior to competing products on the market. From a purely product perspective, the only negative was previously the higher initial costs.

But the price has been reduced subsequently. The primary challenge for the value proposition has been how to convince customers, buyers, and decision makers to purchase a Provital solution instead of a traditional solution. In that respect, the uncertainties associated with a new product became a central theme for Provital's value proposition. This is most likely typical for most product innovations, which are radically different from the existing market offerings.

Accordingly, the challenge has been a question of how to market a breakthrough product in a business that has long been quite conservative. Namely, this is probably due to the large costs associated with such facilities. A breakdown in the filtration system could mean large costs through lost revenue and potentially

a bad reputation for the facility. In retrospect, earlier on in the process, the network should have focused on finding a channel or partner. This partner should have had the necessary will and resources to promote the Provital solution and vouch for the functionality of the product. Similarly, this partner should be responsible for the operations and maintenance. Preferably this would be a partner that is already known in the business. This was partially attempted in Denmark, yet the network should probably have searched more intensely in international markets. Thus, the emphasis should have been on how such a partner could derive or build value on top of the Provital solution to ensure the partner's value appropriation.

SAFE

Summary

The purpose of the SAFE network was to revolutionize the transportation business. This was to be done by moving freight back on the railway track, thereby creating a much more efficient distribution of freight. In order to fulfill this goal, it was necessary to rethink the entire freight-handling process. This was aimed at removing any excess processes through a complete centralization of freight sorting.

In that respect, the aim was to build a completely new system for freight transportation. The advantages of the system were thus clear; these included cheaper freight rates through less sorting and lower costs per mile, reduced load on the road infrastructure, combined with a significant reduction in CO2 emissions.

The challenge was for the network to create and design a business model that would support the idea, while building a business plan for the rollout of the system.

Despite a strong, clear concept, through the sheer scale of the concept, the case illustrates the importance of creating business models in networks. This is to share the burden amongst the different actors. Thus, the case not only illustrates the difficulties in creating a network-based business model, but also the issues

related to creating a business plan for implementing the business model. Thus, the case highlights the need to prioritize scarce resources.

Despite the obvious advantages of the idea, the case illustrates the issues related to implementing broad-sweeping, structural changes to traditional businesses. Additionally, the case demonstrates the need to couple the technical development with the development and design process of a business model.

Introduction

The underlying concept was conceived in 2003. Heine Blach contemplated whether it would be possible to **handle the freight distribution more efficiently** than was possible at the time.

This often involved multiple sortings and manual handling of the freight. Simultaneously, he saw the opportunity for moving the freight to the railway, as this could provide significantly lower prices per mile driven. In that respect, the two concepts were well aligned, as freighting on the railway required fewer sorting stations, as the railway's advantage was on the longer hauls. Lastly, the idea was to use trucks for the final stretches to the recipient and to the senders.

The central challenge was that transferring freight from truck to train was very time consuming. Thus, he realized a need to develop a technique to quickly transfer containers from trucks to trains. It would later become evident that this technology, though not technically advanced, would become one of the

most central pieces in implementing the business model. Thus, the case illustrates the importance of creating early prototypes, not just to visualize the concept internally, but also to convince potential customers and partners.

At the same time, it was evident that to make the central sorting work, it would be necessary to create an IT infrastructure that could interact with the systems of the truck operators. This entailed establishing a robust system for handling and sorting shipments, which placed demands on both hardware and software. Thus, the case is best presented as two parallel developments. This concerns, on the one hand, the technical development, and, on the other hand, the business model development process and its connection with the technical development. The

development of the business model will prove to be a central component, due to the size and aims of the concept. This required the activation and coordination of a series of actors.

Despite a strong concept and a well thought-through system mostly comprised of surmountable technical challenges, the cases will illustrate the inertia often existing in established businesses. At the same time, the case demonstrates the importance of creating a coherent business model early on in the process. This is to uncover the interest and incentives of the other actors. This emphasizes the necessity of demonstrating the value proposition to customers, but equally important is how the value proposition can influence the customers' existing business models.

The system and its advantages

The following describes how the inventor of the concept, Heine Blach, imagined the system to be configured and the advantages it would bring. The system was to function by **changing the traditional service chain** on several levels.

This was to create an end-to-end system that was significantly more efficient than the existing processes. Specifically, this was to be configured with railway transportation as the central part of the concept.

In the long term, the system was to handle all conventional types of shipments; namely, parcels, pallets, and containers. Later, it would be possible to extend the system to handle more specialized types of freight, for example, oil tanks. Each shipment was to be registered and scanned at the time of shipment. This was to include the recipient address, along with the size of the shipment for parcels. Thus, the system could attach the barcode to a specific recipient address at the beginning of the process.

The registration of the recipient address on shipping was essential to the system. This would enable a better coordination of the sorting, which could subsequently be handled by a central freight hub. By knowing the recipient addresses from the beginning, it would be possible for an IT system to precisely coordinate the sorting to achieve maximum utilization of the system capacity. This also meant that the shipment would only be sorted once, as opposed to the traditional scenario where the shipments were often sorted 3–4 times during transit.

After being picked up, the shipments would be transported via truck containers to a freight station. Here, the container would be transferred to a train set by the newly developed container transfer system (CTS). This transfer would only take a cou-

ple of minutes. Subsequently, the goods would be transported by train to a central sorting depot. Here, all the shipments would be sorted according to recipient address. Thus, all containers would be packaged and ready for the last leg of distribution before being transported to the destination. All transport of containers at the central depot would be handled through an automated conveyor system. Lastly, the containers were to be loaded onto train sets for the respective freight stations. At the freight station, trucks would each pick up a container. This was to be locked using an electronic key to ensure that each driver only collected their respective container. Subsequently, the shipments were to be distributed by truck to the final recipients.

In the long term, the system was to handle all conventional types of shipments; namely, parcels, pallets, and containers. Later, it would be possible to extend the system to handle more specialized types of freight, for example, oil tanks.

Thus, the system was to be a completely integrated solution. All processes were to be designed so as to minimize the number of processes, while moving the shipments to the railway instead of to trucks.

The advantage was that the system would reduce the price of shipping significantly. This was done through the utilization of the relatively cheap railway, combined with a reduction in the number of handlings, so that shipments were only sorted once. Previously, this had not been feasible, due to the need to use trucks for the last leg of the transport. Moving shipments between transportation forms was still quite expensive and time consuming. Using the SAFE concept, the transportation time would still remain the same as when using truck-based transport, yet the big advantage would be the price.

The system was to reduce the strain on the infrastructure by removing a significant percentage of trucks from the roads. The use of trains on the longer stretches rather than trucks would also reduce the CO2 emissions significantly. This reduction

was further enhanced by a better utilization of the available capacity. Lastly, the concept also presented a series of health and safety aspects from the significant reduction in handlings and lifts during the entire process.

The partners

Preceding the **ICI process**, there had already been some developments in the system: a **sorting machine** for parcels and an **IT system** had already been created. Yet, a series of components were still missing. To find partners, SAFE Green Logistic (SAFE) divided their transportation system into different components.

This provided them with an overview of the components needed for the system, which was translated into the resources and activities that were necessary to implement the concept. This made it evident which competencies were needed in order to realize the system.

Blach Holding was Heine Blach's holding company for his businesses. Blach Holding acted as the economic sponsor for the rest of the project. Thus, Blach Holding represents the core firm and the driving force behind the network. Additionally, it also represents a range of competences and knowledge within logistics and transportation.

SAFE Green Logistic A/S was created in October 2011 under Blach Holding. This transferred all SAFE-related activities to the newly founded company. SAFE Green Logistic was owned by Blach Holding, and run in collaboration with Andreas Hove Holding. Yet Blach Holding was the sole investor in the company.

Andreas Hove Holding had previously worked closely with Blach

Holding and had previously been on the board of directors at Blach Holding. Andreas Hove had extensive previous experience within the shipping industry, having had several leading positions in larger companies. Andreas Hove was hired as project manager and coordinator for the project.

Fasttrack software supplied the software solution to control the system, along with the front-end APIs for the users of the system to utilize. This was to be developed in close collaboration with Lyngsø Systems, who would handle the hardware solutions.

Lyngsø Systems had great competencies within conveyor systems and the general handling of shipments from airports and postal facilities. These competencies were to be used in the handling of containers at the system's central hub. Additionally, Lyngsø Systems had competencies with RFID chips, which were to be used in tracking the individual containers. The contact with Lyngsø Systems was largely established through SAFE's participation in the ICI project, as SAFE Green Logistic

had previously attempted to engage Lyngsø Systems, yet without success.

Alu-Part had the mechanical competence needed to manufacture the CTS between trains and trucks. Furthermore, an engineering firm was hired outside of ICI to handle the calculations and fulfillment of the demand specifications.

LIVA consult acted as a consultant in the creation of applications for different types of funding.

The partnership model can generally be characterized as a supplier network, centered on SAFE Green Logistic (SAFE). The economic means came from Blach Holding, for which SAFE purchased the necessary competences, both from the ICI partners and other suppliers. As such, none of the partners carried any economic risk in the project. Instead, they would bill all the work done on the project. This also meant that SAFE maintained the complete ownership of all components of the system.

The business model's development

SAFE Green Logistic had not been established as an independent firm at the beginning of the ICI network. Yet, this name will still be used to pertain to the work done by Heine Blach and Andreas Hove in place of what would later become SAFE Green Logistic (SAFE).

The development process for SAFE was highly influenced by a strong entrepreneurial spirit and desire to see the system operational. This meant that much of the development of different aspects of the business model was done in parallel, which caused the individual factors to influence one another throughout the entire process.

SAFE became an official ICI network in the middle of 2010. At the time, the idea was still very much at the conceptual level, as nothing concrete had been demonstrated, and the software and CTS was under development. Additionally, SAFE had acquired patents for the CTS and the general process of handling cargo. In that respect, much of the challenge was to create a business plan for the progression of the concept, along with creating and designing a sustainable business model.

Initially, SAFE envisioned an aggressive rollout of the system, which was to span all of Europe and later other

parts of the world. Yet, in the early dialogue with ICI and the partners, it became clear that this would be unrealistic due to the sheer size and complexity of the system. Even so, it also appeared unattainable for Blach Holding to rollout the system in Denmark alone, which was the background for the network perspective. Subsequently, the network agreed on primarily targeting the Danish market. This was to be aimed at creating a working demonstration of the system to subsequently demonstrate the system to potential investors and customers.

Simultaneously, the network began considering which types of cargo the system was to handle. Originally, the emphasis had been on parcels, pallets, and entire containers. Yet, it quickly became clear that especially parcels would pose significant challenges due to the sheer number of units. Accordingly, the network chose to refocus primarily on pallets and containers.

Overall, the challenges in the net-

work can be described on three levels. Firstly, there was the technological challenge in developing the competences needed in the system in the form of the CTS and the IT system. Secondly, the challenge was to create a network model, which could define and describe the interplay amongst many actors. Lastly, highly related to the previous point, SAFE needed to define its own role in the network.

Technical development

Central to the development of the business model was primarily the development of the different components needed for the system. These are described separately. Characteristic for the development of these was that SAFE carried the entire financial risk by exclusively using suppliers.

Container transfer system

Central to the system was the development of the CTS. This was to enable the transfer of a container from the train set to truck within a matter of minutes. This was to be done without the use of cranes or the like.

The first step was to draw up the required specification for the system. This laid the foundation for the work to be done. Subsequently, the development was handled between SAFE, Alu-Part, and an engineering firm. The agreement was for SAFE to pay for all development done by both Alu-Part and the engineering firm. In turn, this also meant that SAFE would receive complete own-

ership on everything developed. However, the development of the CTS turned out to be more comprehensive than originally presumed. This, combined with a lack of financial resources at SAFE, led to multiple delays. Consequently, the system was not developed before the beginning of 2013, and a prototype was still to be made.

IT system

Preceding SAFE's entry into ICI, an IT system had been developed in collaboration with Fastrack software. This was to control the entire SAFE system

Yet, due to other technical challenges, the network chose to suspend the development of the software system. Namely, it would require a larger involvement from the freight operators as the software would have to be adapted to fit their exist-

ing systems.

The development of the software was very cost heavy, and represented a large share of the total investment.

The business model of the network

Though SAFE had chosen to invest in the development of single components, it was evident that it would not be able to handle the operations of the entire concept. In that respect, it needed other actors to carry out different activities.

The following describes the dialogue that took place with different actors and the business model they were each presented with. Additionally, the contributions of each of the actors to the conceptual development of the concept are highlighted.

In relation to the development of the business model of the network, it is important to present the pervading assumption behind the model. The core notion was that existing freight operators were to use the system, and would thereby become the primary customers. The development

of the presentation of the business models for individual operations components will illustrate the challenges this notion would present in terms of creating a business model for the system.

Train operations

Early on, it was evident that it was necessary to find an actor that could handle the train operations. Consequently, SAFE started a dialogue with a series of actors within the business.

This dialogue brought an improved understanding on how trains were operated. This proved that each train set was able to cover twice the number of miles than had originally been assumed.

The business model aspect was highly similar to the revenue stream that the train operators traditionally operated under. These operators would receive payment for operating certain routes. Additionally, SAFE did consider a model under which the freight operators would pay each of the train operators for each container transferred on the train set.

This was very much like the existing model of the freight industry, under which the freight operators would pay a haulage contractor. Yet, a dialogue on this model was never initiated. Thus, it never became clear whether such a model was actually possible.

Concurrently, SAFE also procured offers on the leasing of train carts and containers for the system. This was to be done by having a leasing company make the necessary investments. Subsequently, another actor in the system was to take over the leasing. Yet, it did not become

clear which party should pay the lease of the carts and containers. However, SAFE had intentions that this could be included in the train operator's role.

In relation to the infrastructure, SAFE initiated a dialogue with Banedanmark and DB Schenker. This dialogue showed that the existing infrastructure was adequate, given that the number of train carts was reduced. This would allow the freight transport to travel at higher speeds, thereby following personnel transportation.

Main terminal

Central to the realization of the concept was the establishment of a main terminal at which the goods could be aggregated and sorted. A possible location was found in Fredericia.

This was chosen due to the city's central placement in relation to the railway grid. SAFE estimated that the investments in the main terminal would amount to approximately DKK 750 million. As such, the figures were not validated further.

Yet, SAFE did manage to find a Dutch investor who was prepared to make the investment. This also served to validate the estimates. However, this letter of intent was

laced with strict terms. These included that a significant freight operator was to be contractually bound to the system. This also demanded that the operator would commit to a 10-year leasing agreement on the terminal. In that respect, the operator was to handle all operations for the terminal. Accordingly, the investment company was only interested in the project given that they were guaranteed a return on their investment over a given time period. This

then required a significant freight operator to commit to the deal. Additionally, it was not clear whether other operators would be allowed to purchase access to the terminal. And given that they were, it was not clear how the agreement was to be structured. Thus, there was a significant risk that the concept would become exclusive to a single operator. This would mean that a significant number of the concept's aims would not be fulfilled.

Freight stations

In relation to the construction of freight stations, SAFE initiated a dialogue with Banedanmark. The dialogue centered on using existing freight stations that were not currently in use.

These were available in all the relevant cities. In that respect, SAFE and Banedanmark estimated that the necessary renovation and adaption would amount to roughly DKK 90 million for all the required stations. In that regard, Banedanmark was positive, but did not have the final mandate to single-handedly make these investments. This would require political approval, which, in turn, would require that the system was ready to be implemented. There

was, however, a strong presumption that such a project would be approved.

CO₂

At the same time, the network began investigating the possibilities for documenting the environmental savings enabled by the system. This eventuated in collaboration with another part of Aalborg University on the creation of a report.

The report dealt with the system's effect on CO₂ emissions by transporting on SAFE rather than trucks. The report showed that there were significant potential savings. This was both due to a much better use of capacity, along with the better fuel efficiency associated with using trains instead of trucks. In reality, this report had little value to the actors that were to actually use the system; namely, the freight operators. These actors were more inter-

ested in the costs of transportation enabled by the system, while potential CO₂ savings were a secondary factor. However, the calculations could be valuable in relation to work with the political system in trying to ensure political support.

The customers

As described earlier, SAFE was largely focused on getting large, existing truck-based freight operators to use the system as customers. In that respect, SAFE tried establishing a dialogue with these operators. Yet, the initial dialogue revealed that a more tangible presentation was necessary to make any of them interested in the concept.

Thus, at the time, the current interpretation was that it was mainly the lack of a CTS that made the dialogue difficult. Accordingly, the presumption was that given the CTS was finished, it would be possible to launch the system.

However, it became increasingly clear that the existing freight operators were not necessarily interested in the system at all, even though it promised cheaper transportation costs. On the one hand, operators would be forced to make a series of investments to realign their businesses with the SAFE concept. Initially, the network believed this was only related to direct, one-time expenses for adapting trucks and so on. Yet, in the dialogue with ICI, it became evident that there was also a series of indirect investments in the form of closing down existing terminals and terminating employees. Thus, it became evident that these factors represented a significant risk to the existing operations, as these all had operational core businesses.

Besides the risk associated with the system, it became increasingly clear that the operators also considered SAFE a potential competitor. This was far more problematic for the concept. This was despite SAFE considering itself a future service supplier to the operators. Most likely, this was due to the way in which the operators' revenue was structured. They would generate large parts of their revenue on the longer routes. Under the SAFE system, a large part of these routes would be handled by train, which would cause the operators to channel revenue to SAFE. This would cause the operators' to lose a large part of their influence on the value chain from sender to recipient, which would further weaken their position. Additionally, the system would change the entire competitive grounds for the business. This was defined by the ability to keep trucks full in both directions combined with ensuring well-placed terminals. With SAFE, the terminals would be closed, while the utilization of capacity would be handled automatically through SAFE's IT system and the transportation by train. Accordingly, the issue

at hand was that SAFE attempted to make the operators customers of its partners. Yet, they saw SAFE as a direct assault on their existing core business, which they naturally sought to avoid supporting.

Concurrently, SAFE also entered into a dialogue with other potential partners. Namely, partners who did not have freight transportation as their core business, but still as a significant part of their business. Accordingly, SAFE attempted to establish a dialogue with the postal service and various supermarket chains, as these operated their own distribution networks. As such, they stood to reap significant savings from using the SAFE system. In that regard, the issue for SAFE was the lack of a finished technology. Furthermore, the decision processes in these companies were very drawn out and difficult to influence. This effect was further strengthened as SAFE was essentially outside of the companies' usual strategic fields. Even though the postal service showed continued interest, no final decision was made.

SAFE's business model

The challenge for SAFE was that they had invested significantly in the development of different parts of the system. Thus, they needed to find a revenue model that could be aligned with the firm's own visions for its future roles in the network.

A range of possibilities was reviewed together with ICI, based on the resources available at SAFE. A large number of these were quickly rejected. The conclusion was that SAFE had no apparent ambition to be part of the service chain from sender to recipient. This was because the company did not have the means to make the necessary investments, combined with an aversion for having to use an outside investor.

The proposed solution was for SAFE to generate revenue through their IT system and patents. Thus, SAFE would be paid for each unit moved through the system. In that respect,

the notion was for the operators to pay this fee, either directly to SAFE or as part of the payment for using the main terminal. Thereby, the revenue was to be implemented in the IT system. Yet this could most likely easily be copied by others. Consequently, the business model would largely be based on the patents for the CTS and the general operation of the system. Whether this would be feasible was not clarified. Yet, there were considerations regarding whether SAFE would be able to defend the patent, due to its weak economic status and the large costs associated with defending patents.

Pilot project

Toward the end of 2012, Kasper Lyhne was hired as project manager, replacing Andreas Hove. This brought along a great shift in the approach for rolling out the concept. Primarily, this led to significantly more focus on rolling out the concept on a smaller scale, as a proof-of-concept.

The challenge going forward was to finish the CTS, as it was a central piece of the system, and the leverage for customers and users. This is expected to be finished during 2013. Secondly, the firm has decided to initially establish a smaller pilot project, which is to focus exclusively on moving pallets and containers between Aalborg and Copenhagen. Initially, this will only be one train set in each direction each day. The sorting will subsequently only be handled in Aalborg, while the final distribution will most likely be handled by local operators. However, SAFE will become the visible party for the end customers. SAFE expects to be able

to lower the freight rates by approximately 20%, while also generating significantly higher margins than the rest of the industry.

Subsequently, the further development of SAFE will largely depend on the development within the business. SAFE is initially prepared to enter into different models of collaboration with operators. Yet, this will largely depend on whether these operators are willing to engage.

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Central challenges

The central task throughout the process has been to **engage the first operators for the system** to initiate the concept. In that respect, SAFE was faced with a significant challenge, as the established industry largely viewed SAFE as a competitor.

Thus, SAFE should have turned their attention earlier on in the process to alternative business and network models in the search for lead-users for the system. Rather than attempting to collaborate with the potential competitors, it would have been better to include customers more in the development process, rather than continuing to develop the CTS, software, etc., which may need to be changed later anyway.

In terms of the strategic development, it has been challenging that SAFE took responsibility for so many of the investments. This was done without a clear plan concerning which components were essentially most urgent. Thus, the process has been influenced by a lack of a clear, thorough business plan. This has made SAFE invest significantly in different components. However, the value of these components for the final system is not yet clear. This should have led to more focus on finishing the CTS prototype and cre-

ating a business model for the system. In that respect, the significant investments in IT should have been postponed. The reason is that these probably do not represent significant newness and value for the system.

Concurrently, SAFE should have sought to involve the right partners with a vested interest in the concept. Large parts of the process have been influenced by SAFE attempting to negotiate on everybody's behalf, without knowing its own role and interest in the system. This is very evident in the narrow focus on engaging existing freight operators to make the system operational. SAFE was essentially counting on the freight operators to lead the deployment. Lastly, SAFE should have focused more on how to structure and design its own business model before engaging in the development of different components.

Seafood

Summary

The Seafood network was founded with the aim to create new, innovative business models in an otherwise tradition-bound fish business. The case illustrates how the business model concept can be used. This is not just as an analytical tool for analyzing a firm or industry.

It can also be used as a point of departure to develop new ideas for new business models. This also enables the firm to test the new models before committing to organizational choices with consequences for the individual company.

The Seafood case is particularly interesting as it is the only network which was explicitly focused on building business models on top of the existing business. The other ICI networks mainly dealt with realizing particular ideas. In that respect, the case will illustrate how the business model concept can be used as a tool to create

and analyze new business ideas. Additionally, the case places a particular focus on the use of the business model concept as a guide to match the internal resources and competences with the demands placed by particular customer types.

Introduction

Copenhagen Seafood was established in 2006. The firm was created as a fish wholesaler, with purchase operations in Hanstholm and sales from Copenhagen

The main customers were restaurants and canteens. The founding of the firm was carried out by purchasing an existing company in Copenhagen Fisketorv to gain access to locales and facilities.

Through a previous company, the owners were aware of the risks associated with being a wholesaler and the rate at which success could turn into failure in the business. In collaboration with ICI, the network

became aware that it was probably a business model challenge, which became the starting point for the network. The Seafood network was established as an ICI project in the middle of 2009 to create innovative and sustainable business models for easily perishable foods. This was set against the backdrop of a very conservative and tradition-bound industry. Specifically, the basic idea was to create a business area outside of the wholesale business.

The partners

Copenhagen Seafood was the instigator and driving force of the network. The purpose was for all business models to be built around Copenhagen Seafood's existing business.

Clips was owned by one of the previous owners and founders of Copenhagen Seafood. Yet, later Clips was bought out of Copenhagen Seafood, which made it passive in the network.

Poul Kærgaard including the ship T300 represented knowledge on the fishing and processing of fish, combined with knowledge on the rules and regulations which governed the fishing industry.

Maskinfabrikken Hillerslev was specialized in constructing machinery for the food industry. In that respect, it was an available partner should there be a need to work with new production methods for new types of products. However, the company became increasingly passive in the network, which prompt-

ed the involvement of Boatech (a firm with similar competences) instead. Though the original ideas for new methods of production were scrapped, the collaboration continued outside of ICI. Part of this concerned a machine for the better exploitation of the total amount of meat available on the fish.

Vilsund Muslingefabrik (Vilsund Blue) was involved based on an idea that Copenhagen Seafood was to use its production facilities. Additionally, Vilsund had a series of competences within production on a larger scale. Furthermore, the two companies shared a common interest, as both sought to become more involved with the actual consumers. In that respect, Vilsund Muslingefabrik and Copenhagen Seafood worked with similar but not directly competing products in the form of the oysters and mussels of Vilsund.

Centralrøgeriet was known as one of the best smokehouses in Denmark. Smoking fish is a method of prolonging the shelf life of fish,

which could open up new business models. Later in the process, Copenhagen Seafood collaborated with Centralrøgeriet in creating the company **FishFish** as a joint venture, a collaboration that eventually failed.

Santrans was thought of as the distributor, initially for the idea concerning fish mince, but also for other business models that were to be developed. Copenhagen Seafood had through an extended period used Santrans as their distributor. During the process, the company went bankrupt, and in that respect had no effect on the network's development.

From the economic perspective, Copenhagen Seafood's accountant Revisor **Erik Harbo Larsen** along with **Deloitte Financial Advisory Services** was engaged in the ICI project. Both of these actors sought to extend their competences within working financially with business models, which could be done through the Seafood network.

Business model development

To initiate the process, Copenhagen Seafood carried out an **analysis of its existing business model in collaboration with ICI**. This made it evident that the firm was faced with a series of challenges in relation to ensuring a sustainable business model.

The challenges

Characteristic for the fish industry was that it provided very few options for product differentiation, as all parties relied on the same types of fish that the sea could provide.

This meant that the network was largely concerned with how differentiation was possible in terms of other meaningful aspects. This is probably typical for all fish wholesalers and, to a large extent, wholesale businesses as such. This makes the case interesting in relation to the possibilities that are available to wholesale business in general.

The issue of product differentiation was, according to Copenhagen Seafood, further emphasized due to the lack of quality awareness, from customers, as well as consumers, merchants, and chefs in restaurants and canteens. This led to a heavy emphasis on the price rather than the quality. This formed a clear idea in the firm in which it wanted to use its expertise in procuring the best goods, which was to become a central part of the concept going forward.

Within wholesale, the low degree of differentiation meant that it was difficult to retain customers. This was due to customers not being loyal toward suppliers or wholesalers, but

rather to the individual sales people. If a salesperson switched to another supplier, the majority of the customers would most likely follow.

Lastly, it was paramount that the business model was to be designed in a manner that could handle the easily perishable fish. This placed special demands on the value chain from catch to the plates of the consumers. This was further emphasized, as the core firm did not want to work with frozen goods. Rather, they wanted to deliver fresh fish, as it was a significantly better product, which would also appeal more to the consumer. The above-mentioned factors were not new to the firm, but the process helped formulate the issues that it was facing.

Accordingly, the challenge was to rethink the firm's business model, in a manner which would not compromise the existing values. Concurrently, any potential initiatives would have to avoid negatively impacting the existing business. Yet, early on in the process, the network realized that it should not make any special

considerations regarding traditional fishmongers, as this was believed to be a declining market. Accordingly, any new potential business models would not take them into consideration, even though they were, at the time, one of Copenhagen Seafood's customer segments.

The development process

The development took as its starting point the weaknesses that had previously been uncovered. From there, the network worked with a specific business model building block at a time during the design process, aimed at creating new ideas that could be matured into viable business models.

For each new idea, a rudimentary business model was constructed, which built on the knowledge already present. This enabled the network to test whether the single idea could actually provide the basis for a coherent business model.

This proved to be an effective approach, in that it generated a wide range of ideas. Many of these were discarded due to the implications on the business model as a whole, which is also considered a success, as the core firm avoided making investments which were not thought through. Concurrently, there was a focus on ensuring that the new business models would not negatively impact the existing business models. Instead, the aim was to find models that could augment the

existing business by providing some synergy with the existing business. The core of the development remained centered on how the new business models should pertain to the sales and distribution on fish products of high quality. This was to maintain an emphasis on the existing core competences of Copenhagen Seafood.

In that respect, the starting point was specifically for Copenhagen Seafood to move close to the consumer. Namely, this was aimed at making fish more readily available at much more attainable price points. This entailed the early process being largely influenced by attempts to reach the supermarkets, as they were responsible for a significant share of the sales of foods.

The ideas in brief

The network developed many ideas, of which several were subsequently rejected. Yet, it is interesting to present the most prominent ideas, their basis, along with their basis and the reasoning for why they did not succeed or why attempts were not made to implement them.

Fish mince

One idea originated from Copenhagen Seafood believing that they had a fish mince that the customer preferred compared to that of its competitors. This was further backed up by experience with customers. Additionally, fish mince is a relatively high-margin product, as it is not exclusively made of fish.

The process started with a brainstorm with ICI. This resulted in an idea to create a vending machine for fish mince, for example, to be installed in supermarkets. From this, the customers could tap into their desired amount of fish mince. The advantage for Copenhagen Seafood was that they would maintain ownership of the machines, which would ensure their positioning for the

consumers. Yet, the dialogue with the other network partners proved the idea to be dead on arrival. This was due to sanitary demands, which could not easily be fulfilled.

Gas packaging

One of the central challenges for the fishing industry is the short shelf life of the products. This often leads to large amounts of waste; namely, in supermarkets. For this, Copenhagen Seafood found inspiration within other parts of the food industry, where, for example, beef is gas packaged, which prolongs the shelf life.

This led Copenhagen Seafood to invest in a gas-packaging facility, which was to be installed at Vilsund Muslingefabrik, as they had the required space. The purpose was to deliver products with a longer shelf life to canteens, but also to supermarkets. Subsequently though, it turned out that a series of other actors had begun doing

the same thing, which closed the market opportunity. Consequently, Copenhagen Seafood chose to shut down the project, with a significant loss. This was largely attributable to the lack of preceding analysis of the competitive situation.

Smoked goods

Copenhagen Seafood also considered different means of refining the fish. This was to open more markets by prolonging the shelf life of the products. Specifically, this eventuated in an idea of smoking its fish, which is a well-known method of preserving fish.

Additionally, the firm could create extra value for the consumers, while also overcoming the issues of shelf life. This led the firm to start a joint venture with Centralrøgeriet in the form of FishFish. This also led to the purchase of a smokehouse. Yet, the ideas floundered, as the two partners could not agree on how the collaboration was to be structured

practically. This meant that the joint venture was shut down and the assets shared among the two previous partners.

Tex-mex

In the network, the partners concluded – based on a conducted survey in the market – that the lack of demand for fish was largely attributable to the notion that the average consumer did not have the necessary knowledge on how to cook fish.

This spurred the idea of partnering with, for example, Santa-Maria, to make a spice mix that was to be packaged with the fish. This would provide the consumer with all the things needed to prepare the fish, which would make the cooking easy for the consumer. This was also well suited for consumers

who were usually busy. Yet, the idea was later scrapped. This was due to the size of the concept, as it would have meant that Copenhagen Seafood would have to have supplied an entire chain of stores, which would have entailed a significantly larger organization and production process.

Online shopping

The breakthrough in the development of the new business model came while describing the firm's sales and marketing processes.

This made it evident that the firm spent significant time and resources on servicing existing customers. This was especially within the restaurant segment, as all sales were handled through the phone. Thus, the basic idea was to create a web shop where customers could order fish for the next upcoming days. This would make it easy for Copenhagen Seafood to ensure that the site always contained relevant products. This could be done by adapting the selection based on the

season and the catch of the day. At the same time, the firm could incur significant savings, as most of the order processing would be handled automatically.

Distribution

The initial idea centered on delivering fish in small parcels. This was to be done in a way which would not impact the cost side significantly. Yet, this did not seem technically possible. Accordingly, a dedicated distribution system was needed. In turn, this would mean that delivering to single consumers would drive the price up to a level that would make it unattractive.

The solution was to build a concept in which several customer orders were delivered to the same location. This would lower the price of distribution significantly. This also meant that the business model became much akin to the existing wholesale model. The main difference would be that instead of dealing with large clients, the firm would deal with several smaller clients, who would all receive their goods at the same place.

Sales to private consumers also had the advantage that all transactions to consumers would be paid at the time the order was placed. This was contrary to larger wholesale clients, who would typically demand 60 days of credit. Thus, the concept also provided Copenhagen Seafood with a cash-flow benefit.

Sales channels

Subsequently, the challenge was to create a point of entry to the sales and distribution. The obvious approach would be to attempt to collaborate with supermarkets.

Yet, this option was forfeited, as the scale was deemed too large. The firm had at the time realized that it was first necessary to test the concept on a smaller scale before they could attempt to collaborate with an entire chain of stores.

Copenhagen Seafood and ICI considered a wide range of possibilities for distribution. Eventually, the firm settled on working through personnel associations at larger corporations. Accordingly, the concept was designed so that firms gave their

employees access to order and pay for fish through a login on Copenhagen Seafood's website. Subsequently, fish would be delivered once or twice per week to the firm's location.

Synergies

For Copenhagen Seafood, a series of advantages with this model later became evident; namely, those related to the use of existing capacity. By delivering to corporations, the firm would be able to better use locales and machines. This was possible as the wholesale operation usually only worked till around 11 AM, while the deliveries to corporate employees would typically be handled in the afternoon.

In total, the firm expected to be able to sell the products at a 20% discount compared to supermarkets. If the corporations were willing to collect the fish at Copenhagen Seafood, the discount could approach 30%.

The positive outlook for the concept led the firm to hire a new employee in the spring of 2012. This employee was to focus exclusively on cultivating the new market by contacting

personnel associations at large corporations.

However, the largest hindrance has been the development of the underlying software platform to handle the orders. This was meant to integrate in the intranets of the corporations to ease the process for the consumers. Yet, because the firm had chosen to have it developed from scratch, the process was very drawn out. In that respect, the firm later ac-

knowledged that it would have been more prudent to purchase a more standard system.

The business model was largely tied to the low demand for fish. This is evidenced in the notion that the concept would most likely not be sustainable with, for example, beef. This would be due to the supermarkets already achieving significant economies of scale on these products.

The international perspective

As a part of the ICI process, Copenhagen Seafood accompanied ICI to Berlin to explore the possibilities in the German market. It became evident that there was a market opportunity, as the prices for fish in Germany were equal to or higher than those in Denmark.

Additionally, the distance from Hanstholm to Copenhagen was roughly the same as that from Hanstholm to Hamburg. Furthermore, Berlin was also a possibility. Additionally, through ICI, collaboration was established with a German University regarding a test of the business model in the German market. This further strengthened the core firm's belief in the possibilities in the German market.

The network approach

The network around Copenhagen Seafood has been instrumental in relation to the knowledge and competences that have been activated.

These have largely helped shape the firm's approach to working with business models. Additionally, a close collaboration between Copenhagen Seafood and Vildsund Muslingefabrik has been established. This was based on the notion that Copenhagen Seafood could act as a sales channel for Vildsund. This created a beneficial synergy, as Copenhagen Seafood would be able to provide an even wider assortment, which made them more attractive to their customers.

Space Creator

Summary

The Space Creator network was created with the purpose of improving the utilization of space in buildings. The main theme was to alter the common conception of building sizes from square meters to cubic meters. The vision was to create a purely network-based business in which actors with different competences gathered to create new, innovative space-saving solutions.

This was to be done through a combined sales and development platform on which private enthusiasts and inventors would be able to present their space-saving solutions. Accordingly, the vision was to create a platform that provided the companies with a sales channel for their products while also accessing valuable inputs from lead-users.

The purely network-based approach to business creation proved to be particularly interesting. On the one hand, the case illustrates the basic issues with a purely network-based business model approach. On the other hand, and in relation to the previous point, the case

emphasizes the importance of going beyond a purely competence-based approach to network creation, to also consider risk profile, will, and engagement.

Introduction

Previous to the network start, **Dolle**, the core firm, had made a series of **market analyses** on its ceiling staircases used to provide access to attics. This had provided the company with a series of realizations on how its product was really positioned.

While it had previously focused on the stairs themselves as the core product, the market analysis proved that it had to redefine its understanding of the company's purpose. In that respect, it had to focus on the value it created through the space the stairs gave access to. Thereby, the stairs were not the real value drivers, but merely acted as an agent for providing access to something potentially valuable to customers.

The other insight from the market analysis was that attics were generally not very popular. This was especially evident among women. This meant that many people would associate the attic space with a very low value. This spurred an idea to make the attic space valuable by focusing more on how such a room could be equipped. This was

essentially the basis for the central concept of creating solutions for maximizing space utilization for the home.

The product development was to be highly focused on engaging different lead-users within space utilization. This carried a special emphasis on private people who developed their own solutions.

Quickly, Dolle realized that it did not possess the competences necessary to transform the ideas into products, nor did it wish to acquire them. Instead, the company wanted to be part of a network of partners who could create the solutions. Thus, the development could be spread out across a series of actors with different competences within furniture and construction.

The partners

The starting point for the partnership process was to uncover the competences necessary to create new product solutions for maximizing space utilization. The process was guided by the assumption that the solutions were to be transformable for them to change character according to demand. From this, **Dolle and ICI initiated a sourcing and competence-screening process.**

Dolle was the initiator of the network and the main driver of the collaboration. Dolle was primarily concerned with producing folding attic staircases. Yet, later they also began manufacturing more conventional staircases based on customer specifications and based on specific parameters. Previous to the network, Dolle had realized that the market for attic staircases was becoming increasingly competitive, which meant decreasing prices and margins. Therefore, Dolle sought to move the emphasis away from delivering access to attics. Instead, the network project was to help them refocus on utilizing the space that the staircases provided access to. Throughout the project, Dolle was the main coordinator and driving force of the network. Similarly, the other partners were found and engaged through Dolle's already existing network.

Jeld-Wen produced doors for both indoors and outdoors. Thereby, it had great expertise within that area. Like Dolle, it was faced with its product category becoming increasingly competitive on prices and margins. In that respect, the network was a possibility for the company to rethink the way doors were considered in buildings. NJA møbler was a traditional furniture manufacturer. It had competences within the manufacturing of furniture and the associated processing of wood. Like many of the other participating firms, it was aware of the increasing competition in the industry, which, during the time the Space Creator network was launched, led to the firm going bankrupt.

Previous to the network, Dolle had realized that the market for attic staircases was becoming increasingly competitive, which meant decreasing prices and margins.

Seluxit was specialized in the development and production of control units for intelligent homes. Through this, the network sought to be able to offer solutions that could, for instance, be controlled using a smartphone, while interacting with other products. Through the network, Seluxit relished the possibility of bringing their products to new markets.

Karup Partners delivered furniture, especially focused on futon furniture. A part of its portfolio had already got built-in space-saving elements. Yet, through the network, it had the possibility of getting completely new perspectives on its products and also gaining access to a new type of sales channel.

Movetech produced actuators and lifting columns, in particular to adjustable desks. This was a highly mature market with many competitors and a large focus on the price. Its expertise within actuators was to be used to create transformable solutions driven by electrical actuators. In return, the network would provide the company access to entering a new, potentially interesting market.

Inwido was engaged later in the process. The company had competences in producing doors and windows. Its engagement was largely focused on finding new ways of implementing doors and windows into the interior of houses. Tømrerbytømren was a carpenter who was specialized in the installa-

tion of kitchens, particularly emphasizing customer-specific solutions. Like the rest of the construction industry, the firm was influenced by the financial crisis. For this company, the ICI network could provide access to new assignments and customers. The purpose of its participation was for Tømrerbytømren to act as an installer of the Space Creator solutions, in a similar vein to the way kitchen companies operated.

Boligstil was an interior architect firm that became involved in the network later in the process. The purpose of its engagement was for the network to get closer to the end consumers to get a better feel for the kinds of solutions sought by customers.

The business model's development

From the outset of the network, the work was clearly defined in relation to setting the ground rules between the partners within the **Space Creator concept**.

Yet, the actual development of the network will demonstrate some markedly different issues; namely, those concerning the partners'

development competences and general will to engage in the Space Creator concept.

The concept

The Space Creator concept is comparable to the way caravans are furnished. Very few square meters contain a wide range of different functionalities. Product wise, the idea was for Space Creator to gather inspiration from, for example, the kitchen business.

This was due to these being well adapted at delivering complete solutions that were highly integrated into the housing, which provided an optimum utilization of the space available. In that respect, Space Creator is to be considered a cross between furniture and construction, which would include furniture with different application possibilities along with actual modifications to the building's construction.

The Space Creator idea was not new as such, as other furniture producers were already working at making products to utilize housing space. The difference was that Space Creator, to a larger extent, wanted to view the housing in its entirety. This was contrasted to focusing on single solutions, for example, shelves, by working with complete solutions that were more integrated into the housing, and which also took account of lighting and indoor climate. Thus, the purpose was to

break down the barriers between the furniture and the building to create better and more relevant solutions.

The basis for the concept is largely related to the increasing urbanization all over the world. This has led to a decrease in available space coupled with higher prices. This made space more valuable. In that respect, the network sought to harness the megatrend within urbanization by offering products with a very high value to consumers.

Dolle, the core firm, as well as the other partners, were largely manufacturing firms. This led the network to emphasize product inspiration as a central challenge early on in the process, as none of the firms contained these competences. The inspiration for the products was to largely come from lead-users. These were to be engaged through a newly created website, on which users were able to exchange ideas

and issues. Thereby, the associated firms could draw inspiration from the users' postings, aimed at subsequently creating finished products. In that respect, the goal for Space Creator was to create a common innovation project for the partners. In this, the individual partners would provide their specific competences for the relevant product ideas which emerged.

Additionally, the notion was for Space Creator to act as a common front for consumers. This was to create a common identity for the Space Creator concept and its products to strengthen the business models for the engaged partners. In that respect, the notion was that Space Creator was to act as a modern private limited company with a series of shareholders. The shareholders would be the participating partners, with the possibility of extending the concept to more partners.

Ownership

As previously mentioned, Space Creator was initially run as a sub-division of Dolle. Yet, the notion was for it to act as a private limited company in which all the partners would exert some influence on the decisions. Accordingly, Space Creator was not to become an independent company, but was to be the manifestation of the collaboration between the network partners and the implementation of the network's purpose.

This construction was built on the notion that establishing Space Creator as an independent company would bring about unnecessary costly steps in the value chain for the end consumer for Space Creator to be able to maintain a certain margin. By working from the private limited notion, Space Creator was not tasked with generating a profit. Instead, the profits could be distributed back to the network partners.

From the beginning, the network was well segregated, as each partner had an area of expertise that did not overlap with the remaining partners. This ensured that each partner could provide valuable inputs, while also avoiding potential conflicts as to which partners should supply components for any new solutions. Yet, the issue was vested in how the partners should distribute the profits from any new products, as Space Creator was not responsible for any production. In that respect,

the construct lacked clarity in terms of which party was to assemble the components and, in that respect, bear the economic risks associated with producing a prototype. Inspiration was sought in the Danish co-operative movement used for instance within agriculture.

Furthermore, issues arose around which partner should gain ownership of any potential new product in the form of intellectual property rights and so forth. The basic notion was that these were to be jointly owned, but in reality this was not possible. This also brought about a series of issues regarding the process if one of the partners exited the partnership, and regarding who had the actual legal ownership of the products. Additionally, there were potential issues in relation to the defense of legal ownership of designs against actors outside of the network.

The conclusion was that all partners were to participate on an equal footing. All potential ideas and concepts brought to the website were to be considered freely available for all the partners, in that all ideas submitted to the site would be owned by Space Creator. However, it was not clear what influence this would have on potential users' willingness to submit different proposals to the site.

Additionally, unresolved issues remained regarding how the network should act given the emergence of new ideas and products that stood to negatively affect other partners by undermining their existing business. This was brought about by the private limited construction of the network.

Sales channel

At this point, it was evident that the network had a challenge in gaining access to the customers and the market. This was due to the network not having a sales channel in the form of a partner or even an agreement with a sales organization. Additionally, the Space Creator concept was to be built in a manner that offered a sales channel, while also offering a high degree of involvement with the users.

Thus, the network, and mainly Dolle, began uncovering different potential sales channels. In particular, this led to a dialogue with kitchen manufacturers, as they already had a similar organization. Yet, these manufacturers proved not to be ready to enter into a development process.

The conclusion was for Space Creator to create a web shop. This was mainly done to keep the costs

down. Additionally, the web shop was to contain a community for users to encourage customers to provide inputs that could be used in product development. In that respect, Space Creator developed the website from merely being a community, to also becoming a sales channel, which could offer increased value for both users and network partners.

Product development

Thereby, the basic idea of involving lead-users for inspiration for new products was maintained. Yet, the network soon became aware that to engage the lead-users, it would be necessary to populate the site with relevant, interesting content.

The original concept had called for the development of a community that would generate the content itself. Yet, the network became aware that there was a need for it to create some interesting concepts itself to start the community. Subsequently, it was assumed that the site would become self-preserving with new ideas and concepts.

This led the network to invest significant time and resources on hosting workshops between the partners of the network with ICI as the facilitator. These were aimed at creating new products through combining the competences already present in the network. Initially, most of the partners were highly engaged. Yet, after a series of workshops with many ideas and concepts but no actual products, the engagement of the partners quickly declined.

The issue was that the involved partners, found it difficult to advance the prototypes to a level where volume production was feasible. Even

when good ideas and big potential was present, the need to apply and you production set up was difficult to accommodate.

Combined with the lack of contact with end users, it became evident that the network lacked the ability to make product development happen in relation to integrated solutions. This especially emphasized that the network partners were more accustomed to interacting with wholesalers and other producers who had the customer contact. These would then usually provide the partners with the specifications for future products. Thus, designing completely new types of products proved to be a great challenge for the network, in particular because it was difficult to fit into their existing production setups.

Product configurations

In addition to the individual partners' challenges in relation to scaling and controlling a development process, there were also issues concerning how the Space Creator concepts were to be transformed into actual products.

The issue was that the type of products and solutions imagined by the network were to be highly integrated into the housing. One option was, of course, to create custom-made components for each customer, yet this was outside of the network's ambitions. They rather sought to provide solutions based on industrially produced products.

This provided a challenge in defining the parameters from which the products could be configured. A good comparison is within the kitchen industry, where most components are delivered in standard measure-

ments, which makes it possible to adapt the completed solution to the existing building. The issue was that the network did not know which parameters were to be considered, which made it significantly more difficult to develop product configurations.

Additionally, the idea of creating integrated solutions represented a significant challenge on the production side, as it placed demands on creating flexible industrial production that could deliver different configurations or adaptations of the same basic product.

Lowered ambitions/ business plan

The consequence of the above-mentioned was that Dolle reconsidered the construction of Space Creator and the network partners involved. This led to a series of conclusions as to the way the business model was structured and designed.

First, the purely network-based approach to the operations and development of Space Creator was abandoned. This led to Space Creator being created as an independent firm owned by Dolle. In that respect, Space Creator's purpose remained intact, in that going forward it would still function as the sales channel for Space Creator products, while building interaction with users. As such, the intention was for Space Creator to create a more precise profile, with a more clearly defined value proposition for manufacturers of space-saving products.

Furthermore, a more specific business plan for the roll-out of the concept was created. Primarily, the firm was to be established as a web shop for a series of space-saving products, not necessarily aimed at interior decoration. For example, foldable kitchen equipment was emphasized. As a consequence of the wider assortment of products and the potentially vast number of products on the site, the firm realized

that the handling of the products would most likely be very cost inefficient. This spurred a resource-light business model under which orders would pass through Space Creator, only for the individual manufacturers to handle the actual shipment to the customers. This meant that Space Creator would become a showroom for products suitable to the concept, and would—through building a wide range of available products—become a valuable sales channel.

Thus, the entire concept was simplified significantly, in that it would primarily focus on stand-alone solutions, whereas the original concept had called for integrated solutions. This is to be seen as a consequence of the complexity involved in making integrated solutions for housing. In that setting, the interrelation between the components and configuration possibilities and the individual building places great demands on the ability to specify solutions that contain enough built-in flexibility to fit into the individual buildings.

Furthermore, a more specific business plan for the roll-out of the concept was created. Primarily, the firm was to be established as a web shop for a series of space-saving products, not necessarily aimed at interior decoration.

As such, the business plan is also to be considered as an expression of the learning that is required regarding how these configurations are to be structured. In that respect, the integrated-solution goal is still maintained. For example, Dolle is now working on developing a standardized terrace solution with another partner.

On the partner side, the new configuration meant that some of the previous partners became superfluous, given that they did not possess products that fit the concept. Yet, the concept would continue to be dependent on partners and suppliers for the site to deliver products aligned with the concept, but with Space Creator as an actual core firm able to control the concept. This also led Space Creator to realize that in reality the previous partners had lacked the necessary competences to handle product development from concept to large-scale production, while also lacking the will to change their configuration to do so. In particular, the ability to

go from prototyping to production ramp up was in high demand. As such, Space Creator abandoned the idea of working directly with partners to develop concepts, and instead focused on finding partners that already possessed the necessary development capabilities and the will to participate actively in the network.

ViewWorld

Summary

The ViewWorld network was created to ease the documentation processes for NGOs across the globe. This would be accomplished by creating a digital reporting system for smartphones connected by a back end. This would mean significant savings on manual paperwork and double entries by automating the process. Additionally, the system would reduce the error margins through built-in check systems.

The case illustrates how the original concept evolved into a far greater potential than initially assumed and the effect this had on the business model design. In that respect, the case will illustrate how the technical capability only represents a small part of the whole business model configuration.

This also highlights how the perception of core competencies changed, while the understanding of customers and the issues they face was significantly more important. Thus, the case disclose a development in which the original emphasis was on the technical capability, but

how this evolved to be more focused on the ability to quickly and effectively create knowledge on the users and translate it into product features. This also demonstrates how the business model evolved accordingly.

Introduction

The basic idea originated from the **A2I collaboration** between **Aalborg University** and **DanChurchAid's HMA department** during June 2008 (previously mentioned in the Eye In the Sky case). In this, Rune Persson participated from HMA, and would later be involved in the founding of the ViewWorld firm.

The basic idea was to take the experiences derived from digitalizing public government and create similar tools for NGOs. This was to create effective solutions for their tasks by digitalizing the data-gathering process. This would avoid a large number of double entries by moving from paper to digital format. Additionally, built-in limits for the entries could reduce the number of incorrect data points. Additionally, such a system would also alleviate problems of lost paper notes. Lastly, the main offices would receive the data much faster than previously.

The starting point was to use a personal digital assistant (PDA) for the data collection. This would have custom-made software for the specific task. Additionally, the system would be built upon the existing data-collection processes and data flows, which would create the foundation for the software.

This led A2I to host a workshop in June 2008 consisting of relevant companies, the university, and DanChurchAid. The workshop was aimed at uncovering and describing the task at hand and the challenges that

lay ahead. The companies were engaged based on the consideration of which competences they possessed and products they already made that were relevant to solving the issues at hand. Specifically, the discussion concluded the following points:

- What is the PDA solution to do?
- Which hardware platform should the solution be built on?
- What are the required specifications?
- What kind of data is to be handled?

Initially, there were 12 companies involved. Yet, this number was quickly reduced as the purpose of the concept became more clearly defined. Ultimately, the network consisted of three companies in combination with DanChurchAid and the AAU institute for E-learning, who would jointly handle the tasks. However, none of the companies were willing to take responsibility for the project, which led to A2I assuming the project leader role through the company InnovationHub. This meant that InnovationHub, in collaboration with CommunicateIT and DanChurchAid,

Subsequently, the idea was to create a standardized product for reporting, which could be used for a series of purposes with very few modifications.

became responsible for drafting the required specification for the PDA units. This led to more features than first assumed. Simultaneously, the network estimated that the market potential was around DKK 36 million within humanitarian mine clearing, to which DanChurchAid also stated that the solution could also be relevant within other areas, which further expanded the market potential.

Subsequently, the idea was to create a standardized product for reporting, which could be used for a series of purposes with very few modifications. At the time, the intended business model configuration was largely carried by an assumption that ICI could support large parts of the development and thereby reduce the financial risk in the development phase. Yet, it became evident that ICI would not be able to provide the necessary funding to carry the project, which meant that other approaches had to be considered. This led the network to seek a written guarantee from DanChurchAid for the purchase of the finished product, which they were

not able to provide. This is to be seen in relation to the then-current price estimate for each unit, which was around DKK 32,000. Thus, the involved companies started to withdraw from the collaboration. This was largely because they had originally envisioned a network-based collaboration in which they could maintain their existing business models, aimed at customer-specific solutions, and with direct payments for all work carried out. Thus, none of the companies were willing to assume the risks associated with the project's business model, which was built around commercializing a new product.

The breakthrough for the concept was when the partners realized that PDAs were not necessarily the central component. Instead, it was possible to use significantly cheaper and more easily available smartphones for the tasks, as these could also be programmed in a similar manner to a PDA and contained all the necessary hardware functions. This made the solution significantly cheaper and more attractive to NGOs, but also meant that the

previous core partner, ProInfo, was excluded.

Originally, the idea was for DanChurchAid to found the core firm, and through this create supplier arrangements with the other partners; namely, NetImage as the supplier of software. However, DanChurchAid was not prepared to take ownership of a commercial project. As a consequence, Christian Friis Bach, the then-current director of DanChurchAid, chose to engage his personal network to rally the investors needed to start a company for the task. This led to ViewWorld being established in the fall of 2010, with investors largely representing the interests of NGOs with Rune Persson being made project manager in the firm, responsible for driving software development. Concurrently, the project was accepted as an ICI network (named after the new entity, ViewWorld); with the aim that ICI was to support the ongoing development of the business model for the firm and its network.

The product in brief

Through a cloud-based web interface it was to be possible to create different data-collection forms, which would subsequently be sent to the individual employee's unit. Subsequently, the individual users would enter data that would be transmitted back to the cloud. From there, different presentations of the data would be possible.

The partners

As previously described, the partners were largely involved based on the **competence identification** that preceded the ICI participation.

ViewWorld was funded as the core firm and was responsible for coordinating the activities of the other partners, while also translating the demands of the NGOs into technical specifications. Additionally, it was responsible for the commercialization of the product, initially aimed at the NGO segment.

DanChurchAid represented the user side of the product and the needs it had in relation to the capabilities of the system. Through them, **Care Denmark** and the **Danish Red Cross** were also engaged on the same grounds. The idea was for these partners to use the system, both in order to gain knowledge on what functionality the system was to contain while also building awareness of the product.

NetImage had competences within the development of database systems and was to be the primary software supplier for the back-end system.

CommunicateIT was to be in charge of creating training manuals and e-learning courses for educating new personnel in the system. However, CommunicateIT closed down in the spring of 2010 due to the financial crisis.

HugeLawn were to be responsible for developing the smartphone app for the iPhone, which could open up new markets and application possibilities.

ProInfo was originally thought of as the supplier of the PDA units, but was made irrelevant due to the change to smartphones.

InnovationHub was founded under A2I as a temporary core firm that was to uncover the possibilities inherent in the concept. Following the creation of ViewWorld, InnovationHub became superfluous.

The business model's development

The **ViewWorld** case is largely centered on a very specific customer need. Yet, subsequently, the network worked on defining how the company was to be structured to accommodate this need. Thus, the case will illustrate the problem that can emerge when customers become too closely involved in the business' development.

The case is split into two different "versions." This also indicates the versions relating to the software development and the pervading un-

derstanding and implementation of the firm's business model. This shift was largely due to a new CEO, who was hired at the beginning of 2012.

Version 1

This section will lay out the development of the business model in the first stage of the company's lifetime and the considerations behind this.

The network model

Based on the firm's establishment through the A2I network, the original business model for ViewWorld was for it to act as the NGO's firm in the network. This is very evident from the personnel in ViewWorld, in the form of Rune Persson, who had previously worked in NGOs, and Christian Friis Bach, who became CEO and in charge of sales.

Accordingly, ViewWorld's core task was to interpret the needs of the NGOs through close collaboration and by using the personnel's personal experiences within the field. Additionally, NetImage was the supplier while ViewWorld was the project leader for the actual devel-

opment. Furthermore, ViewWorld was responsible for the sale of the finished product. The primary focus was to first sell to Danish NGOs through Christian Friis Bach's network, and through these, also to build contacts to departments in other countries.

The development process

Accordingly, the purpose of the firm was not for it to be a development firm. Rather, it was to supervise and finance the development undertaken by NetImage. At the time, the business plan was built around creating strategic collaborations with NGOs that would pay for a custom product.

In that respect, ViewWorld sought to control the development in such a manner that the work that went into the custom solutions would also be applicable to a broader turn-key solution. As such, the plan was to develop a product through NetImage, which could be sold as a finished package, yet receive some funds through the revenue generated from the NGOs. Thus, the essence was to be able to create a standardized platform that could be sold to other customers with relatively few adaptations.

Initially, this was done in collaboration with CARE DanChurchAid, the Red Cross, and Beredskabsforbundet, who were the primary customers. Accordingly, the work on defining the content of the product was largely aimed at fulfilling their specific needs. In that process, it became evident that mine clearing was no longer relevant due to the technical challenges posed by the legislation within the field. Yet, there remained a significant potential with-

in a series of other application possibilities within the NGO segment.

The issue arose in part as a consequence of the constantly evolving demands of the customers. However, this was intentional, as the purpose was to uncover which functionality was to be integrated into the system. Yet, combined with ViewWorld's own idea generation, the number of features rose significantly, which the firm was essentially not suited to handle. The consequence was that the firm lost its overview. Combined with tight deadlines and lack of capital, this meant that the features requested by the customers were coded as a specific feature to the customer. As such, the individual features were not coded in a manner that would be usable to other customers. In part, this was most likely due to the lack of experience of the project manager, but was also due to the fact that the firm's owner's interests were mainly centered on NGOs.

Insourcing

It became evident that the collaboration with NetImage was very costly, as the pricing was based strictly on commercial terms. Furthermore, and even more importantly, the demands for the software were not very well defined.

This was due to the development taking place in such close collaboration with the customers, whose demands changed as new possibilities became visible to the customers. Consequently, ViewWorld chose to shut down the collaboration with NetImage to hire programming resources internally. This provided the firm with a significantly more flexible development process that could quickly be adapted to

customer needs. This also meant that ViewWorld became a software development firm, who was itself responsible for the development process, whereas it had previously just focused on specification and sales.

Pricing

The revenue stream of the firm was often difficult to pinpoint as there were several conflicting interests involved.

Originally, the firm had envisioned a model similar to that used on ERP systems and on similar systems under which customers pay for individual modules or for specific functionality. Accordingly, the notion was that the customers would pay a fixed amount for, for example, a module for photo documentation. Additionally, it was to be possible for customers to purchase specific adaptations beyond the modules

available, to which they would pay hourly rates for the development. The issue of this model was that ViewWorld had costs associated with hosting, which would scale up and down based on the number of users. This prompted the firm to think more in terms of subscription solutions to ensure that the revenue was more aligned with the firm's cost structure. Additionally, the firm's starting point

was still the NGO segment, who wanted to use the solution as much as possible to simplify their work. Accordingly, the firm settled on a two-part revenue model. This would have a small and a pro edition of the solution, under which the pro edition would provide access to more users, more server space, and more forms of data entry, along with more advanced features.

Market segments

As described previously, at this time, ViewWorld was mainly targeting the NGO segment, due to its experience and contacts within the field. Yet, the work with ICI had built a certain understanding that the product also had potential application possibilities within other segments. This was primarily aimed at CSR reporting and journalists, as these have a certain relation to the NGO segment.

ViewWorld even attempted to target segments other than NGOs, when it sold the solution to Beredskabsforbundet. Yet, this proved highly problematic, as the deal entailed a series of customer-specific adaptations of the solution, which ended up consuming much of the firm's already limited development capacity. Overall, this is a telling description of the firm during the first stage, as a disproportionate amount of time was

spent on creating customer-specific solutions. This consumed much development time and was finally not profitable, as they were essentially development projects. Additionally, the firm lacked the necessary overview needed to control the development of the system toward a more broadly applicable solution. It would have been good to spend more time on the selection of customer segments.

Version 2

At the beginning of 2012, the firm hired a new professional CEO named Uffe Hyldgaard, as Christian Friis Bach, due to his political work, would no longer be able to manage his CEO assignments. The starting point was for Uffe Hyldgaard to open up a series of new markets through his knowledge of sales to industrial actors. Yet, he was to maintain an emphasis on the NGO segment as the primary market. This gave the new CEO the chance to reconsider the entire company and the way the company was to be operated in going forward. This led to a series of changes in the way the firm was operated. However, at this stage, it is important to highlight that version 2.0 of the software was not finished, at the time. As such, it is important to state that the depiction in the following is merely a picture of how the business was planned to be implemented.

Outsourcing

Primarily, the purpose of the firm was redefined from being a development firm to a knowledge firm. Thus, the firm was to sustain itself via its general knowledge on reporting needs, whereas it had previously emphasized its knowledge of a specific segment's needs.

This is to be viewed in relation to the fact that ViewWorld had often functioned as a consultant for its customers by presenting the possibilities inherent in the software. The new model was more focused on a new pricing and marketing structure, aimed at engaging customers to try the product.

Additionally, the firm was to translate its knowledge into specifications, which would be handed to an external developer situated in Poland. This meant that the development work was outsourced. In that respect, the firm reckoned that

it had acquired the needed project management competence through the attempts to develop products internally. The company therefore felt mature enough to outsource the development. The choice of a Polish supplier was largely brought about by the price, but also because ViewWorld, through its network, had had previous interaction with the developer. This provided a certain degree of trust in their abilities. Additionally, the developer had the necessary size and breadth of competences needed to handle the entire solution. Additionally, they were also able to scale the rate of development

significantly, which had not been possible internally.

The difference from the original development model with NetImage as supplier was largely that ViewWorld had acquired a range of project management competences. This enabled ViewWorld to effectively work with such a supplier. This came in part from the experience they had gained, but also, to a large extent, from Uffe Hyldgaards previous experience as an IT project manager.

The development process

The existing core customer, DanChurchAid, CARE, and the Red Cross, remained partners and were frequently used for inputs on which functionality was to be implemented in the software.

However, the difference from the previous scenario was that the firm held a much more stringent attitude regarding which features were to be implemented for the customers. As such, the firm managed to move beyond the role of a developer toward delivering a more standardized product. The previous compromise of implementing customer-specific solutions was therefore abandoned. Yet, the firm would still use the customers' inputs in their assessments of which features would be relevant to implement. Custom functionality was still possible, but would entail that the customers paid the full price

for all development. In that respect, the customers were better separated from the development work, which enabled ViewWorld to create a clear vision of what aims should become priorities.

Pricing

Furthermore, the firm began to work on a more clearly defined pricing structure, which was to be better aligned with the customers' use of the software. The main issue was that customers would often try to negotiate the price, as they would rarely use all the features that were available to them.

Rather than offering standard packages to the customers, the firm would go on to create a scalable solution, for which customers paid according to how much they used the solution. Additionally, the firm created a freemium model, aimed at luring potential customers to try the solution before purchase. This was combined with the firm giving up its previously targeted direct sales

effort toward certain segments. This freemium model was limited to two users and a limited amount of data storage.

Marketing

Lastly, the firm employed a clearer marketing strategy. Previously, it had focused on solicitation based on customers' reporting needs.

The new strategy entailed a purely web-based firm, where customers purchased the product online through a simple sales process. In that respect, the freemium model was an important aspect to ensure that customers would begin to explore the possibilities of the product themselves. Additionally, the firm would employ a different form of Internet-based marketing; namely,

search engine optimization and banner ads on relevant websites.

The original challenge was that the customers were not typically aware of why they should use the software. The freemium model was to give them a free incentive to explore the possibilities for themselves without ViewWorld's involvement. In that respect, the previous software solution

had not been user-friendly enough for the customers to explore the software themselves, as the set-up had been particularly complicated. Thus, the freemium model combined with the updated focus on the software and its usability became the cornerstones of the new business model.

Summing up

The pivotal point for the business model development in this case was in the firm moving away from considering itself as a supplier to NGOs to seeing itself as a supplier of general solutions for data collection. Thus, the firm moved its focus away from the deep knowledge on NGO documentation processes toward focusing on its general competences within data collection.

This also entailed letting customers figure out how they wanted to configure their digital-documentation flow themselves. Thus, the business model design was largely dependent on the development of version 2.0 of the software. This was to make the schema set-up significantly easier for non-IT-proficient users, which was the key to enabling the purely Internet-based sales.

The external developer made it possible to actually develop the software with these characteristics, as the company also had the required competences within usability design and so on. Thus, version 2.0 covers both the software development, with an increased emphasis on a finished solution that can be sold without adaptations from ViewWorld, along with the firm's own change in perception regarding its own role. In that respect, it has been a challenge for the firm to reach the stage where they are actually able to deliver a standardized solution that does not need further adaptations.

Thus, the current business model is very like the one that was originally envisioned. The essential difference is that the firm has the competences needed to control these processes in a manner in which the individual

customers control the development of the software. Furthermore, the key supplier has been exchanged with one that is more relevant with broader competences. Lastly, clear borders have been established for the collaboration with the customers.

This would most likely not have been possible without the new CEO. He managed to create the space needed to gain oversight in terms of the development and to specify the future plans of the firm. The issue was largely related to an explicit wish to have a self-financed firm, which, as we know, did not succeed. By demanding the necessary space from both customers and owners, it became possible to focus on fulfilling the business model and stringently follow the premises on which that model was configured.

Medlemmer af ICIs bestyrelse:

Jørgen Kjær Jacobsen, Formand; Bestyrelsesformand hos Gabriel

Flemming Larsen, Direktør, Væksthus Nordjylland

François Grimal, Direktør, Dolle A/S

Jens Otto Størup, Administrerende Direktør, Nordjyllands Trafikselskab

Tommy Christiansen, Kommunaldirektør, Hjørring Kommune

Udarbejdet af:

Peder Veng Søberg og Casper Høgh

Design

Casper Maul & Christoffer Mørch

På vegne af :



Aalborg Universitet - Center for Industriel Produktion
Fibigerstræde 10 • 9220 Aalborg Ø • Denmark
Att: John Johansen, jj@business.aau.dk

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