



OPTRONIC

Sweden, www.optronic.se

An SME with an established history entered into a number of publicly funded projects with local universities in order to access state-of-the-art knowledge and skills in their specialist area and ended up with a new technology platform and a spin-off company to commercialize it

Executive Summary

This is the case of a mature, well-established SME which started as a corporate spin-off over 40 years ago. After going through several rounds of reorganization and change of ownership, the firm was taken over by three entrepreneurial brothers in 1987. They helped to transform the company from a consultancy selling hours to the customer into a research-based company with a portfolio of advanced products. A publicly funded innovation project, including collaboration with two universities, was a first step in this transformation. The company has since participated in many follow-up projects, and today it is natural to have strong and long-lasting collaboration links to different universities. The company has twice spun-off new firms to further develop and sell the products resulting from their projects.

CASE N°: SC30

SECTOR: OPTOELECTRONICS

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: RENEWAL

INNOVATION VECTORS: PRODUCT,
ORGANISATIONAL

01 PARTNERS: PSR, INDIVIDUAL EXPERTS

KEYWORDS: Public grant, research-based
project, university links, spin-off

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- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
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BACKGROUND

Optronic began life in 1974 when AGA Geotronics (a large Swedish manufacturing company) was divided into two divisions and allocated a unit for production in Skelleftea, in northern Sweden. Skelleftea was a region of entrepreneurs, and had a history of working with optics. At this point in time, the region was helped by government support for company re-localization. This, and the fact that the managing director of AGA at the time, a man named Rudolf Wiklund, had his roots in northern Sweden, were all reasons for choosing Skelleftea as a new base.

Initially six young engineers joined the company, manufacturing long-range measurement instruments for AGA. The technology used was similar to the time-of-flight-technology* in which Optronic has now developed high level skills today. In the following years, a major shift in technology radically changed the marketplace: the United States military launched GPS satellites into space to orbit the earth, marking the birth of today's GPS technology.

Another few years down the line, AGA took the decision that they should discontinue the manufacturing of the soon-to-be outdated instruments, and the employees in Skelleftea had to choose whether to pack up and join AGA in Stockholm, or buy the inventories and become a subcontractor. They chose the latter and the company changed name to Elopcon.

The first owners invested heavily in development, but by their own admission lacked marketing skills and funding. Eventually, they decided to sell the company to Saab Combitech, who owned the company for only three years before selling it to the current owners, brothers Pahr, Mats and Anders Lovgren in 1987. They saw great potential in the developing market for optical sensors and applications for several types of industries. The Lovgren brothers, owners of several successful and growing business-to-business ventures, knew the power of a strong customer focus.

The company started developing specialist skills in the field of optoelectronics, serving businesses on an international market. Optronic soon discovered that they had set off on a complex journey. The challenge of developing top-level skills, while at the same time reaching the goals set for production was tough, but the company remained secure in its niche of both developing and manufacturing subsystems based on optoelectronics.

*Time-of-Flight (ToF) is a highly accurate distance mapping and 3D imaging technology.

Despite facing challenges, such as the Swedish economic downturn in the early 1990's, Optronic held its course and reached a turnover of SEK 100 million by the year 2000. The company found new ways to guarantee funding for their development work – both through collaborating with customers and through closer co-operation with universities in northern Sweden. The universities also proved to be good sources for attracting new talent to the company, which further spurred development.

After major investments in an increased production area and significant investments in the development of knowledge in new technological areas, Optronic today is a strong organization led by the (previous) managing director Peter Fredriksson and sales director Ulrik Stenbacka, who are both part of the current ownership group, along with the Lovgren brothers and the previous managing director Astrom.

This puts Optronic in a good position for the future. In 2015, the company employed 53 people and had sales of around €17 million. Optronic has been profitable for many years. Optronic considers that there is a huge potential in the optical measurement field, but also that advanced product development takes time. Innovation is becoming increasingly important, especially for business diversification.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Before starting the OI project Optronic was mainly a consulting company in the development and manufacturing of optical sensors. The CEO thought that the company should change its focus from just selling consulting hours to spending more on internal development and the re-use of components. They would not only sell time externally, but also increase their development work in-house by linking up to the research world. This change in direction began around 2004, but the OI project (started in 2006) was the first major project with this precise focus.

The aim was to develop a technology platform that could then be reused in whole or in part in the development of complete products for different customers, thereby making subsequent development work faster and cheaper.

OPEN INNOVATION TRAJECTORY

Concept development

The concept began as an internal idea, but it was built on research undertaken by the participating researchers (from Chalmers and Lulea Universities). Both universities carried out research in the area, and acted as a sounding board in the project. The collaboration with the two universities helped Optronic to obtain access to state-of-the-art research. One key actor was Emil Hallstig, who works for Optronic, but is located at the Lulea campus. He was the person who put the pieces together and linked the actors in the project.

The project aimed to develop a new optical measurement technique (to be implemented in a technology platform) to be positioned between conventional 2D and 3D techniques for determining position, size and shape, and therefore securing an optimal balance between price and performance.

The development process, IPR and competition strategy

Optronic successfully applied for a development grant from Vinnova (government agency for innovation). They received around €0.25 million from Vinnova's SME programme "Research and Grow". The project was implemented in collaboration with Lulea Technical University and Chalmers University of Technology.

It was important for Optronic to learn more about optical measurement technology to be competitive. To do so they were dependent on external knowledge. They saw that there were technology areas with exciting new developments going on, areas in which they themselves wanted to acquire skills. In the project a 2D+ measuring system was developed consisting of five main parts: sensor module, camera control module, lighting module, calculation module and I/O module. The technology platform therefore consists of these five general modules.

The biggest challenge for Optronic was to learn how to run internal R&D projects. Previously, the company worked with paying customers in this type of project. The challenge was to free time for the staff to work and focus on the project, while, at the same time, the company carried out work for its external customers. The company realized that they did not have the culture to work on internal projects, so it was a learning process.

To some extent, on a technical level, the project did not go as far as had been hoped; nevertheless, the targets were adjusted during the project. The project led to the building blocks of the technology platform, which is included in the company's sales to customers. The progress made also contributed to the creation of a spin-off company which was founded as a sister company to Optronic.

This is a niche application in a niche industry (automation). There is a broad market, but no mass market. The USP is the access to people with a broad background and experience. It is also important to be able to match the market with the technology.

Commercialization and follow-up

The main challenge has been the long time-frame that was needed to develop new technologies for industrial applications. This is a slow process. The customer prefers first to have the results validated before wanting to take the risk of moving the product into production.

Some organizational restructuring was required to deal with the challenges and opportunities created by the project's outcome. The project laid the foundation for the new spin-off company Fotonic. Optronic transferred staff and other resources to Fotonic, and both Optronic and Fotonic are now part of the same holding company, Optical Metrology (of which Peter Fredriksson is now the CEO). A second spin-off company, Farmic, is partly linked to the project, even though this is not based on exactly the same technology.

Fotonic "owns" the product, and sells it with the help of digital marketing and a web-shop. The 3D camera is Fotonic's most important product. The project did not result directly in any patents or IPR, even if this has been the result in follow-up projects. Optronic now holds 4 patents.

There have been several follow-up projects, which saw Optronic being granted five additional research and development grants from Vinnova. Optronic also continues to fund its own development work. Today they are collaborating with others in a "research forum" in Orebro. The company itself has had an impact on the universities it has worked with, for example in Lulea where they are now represented on the Board of a research institute. Optronic is thus involved in shaping different new research projects, which in turn will benefit Swedish competitiveness. The greatest influence can be found in Lulea and Orebro.

BUSINESS IMPACT

The project was valuable in several respects: first, it helped to develop Optronic's practices and increased their knowledge of how to run R&D projects; second, it was important to increase their skills in the specific technology, and third, it was important for the company to learn more about working with technology platforms (compared to building customer-specific products). The technology platform is also valuable as a marketing tool for customers. Optronic can show that they are highly skilled and that they have already developed components of what the customer wants. It thus strengthens their competitiveness in procurement.

Optronic learned to focus on and allocate dedicated resources to innovation projects. It is important not only to use public grants, but to also dedicate your own resources to the development. In addition, there must be a focus on customer needs. This must not be forgotten even when research projects take much longer than expected.

It is not always the case that SMEs keep up with progress in research. It is therefore important to receive information and be informed on a regular basis about innovations and what is going in the industry. For SMEs it can be difficult to find the resources to keep this up so public support and grants are of great help. Optronic's advice is that more SMEs should try to use them.)

Today Optronic has a product portfolio based on the project. One cannot, however, see any direct economic impact as it is difficult to draw the line between different projects, and to say exactly which effect is caused by which project. However, the project did result in the hiring of some qualified staff. In this example with the 3D camera, Optronic is still working on trying to convince customers to invest in this new technology. In this area it can take over 10 years before seeing the commercial benefits.

LESSONS LEARNED

Optronic was mainly a consulting company before embarking on this project. The project helped them to change their focus and take one step closer to becoming a product-based company with strong links to the research world. With the help of a public grant, the company started collaborating with two Swedish universities in an open innovation project. The progress made also contributed to the creation of a spin-off company

founded as a sister company to Optronic.

Even ten years after the project, it is still too early to see the direct economic benefits of the project. It takes a long time to change the behaviour of industrial customers. Today, Optronic has a product portfolio based on the project.

Main lessons learned:

1. The case demonstrates how an established SME facing changes in its external environment managed to renew its position in the market.
2. The case also demonstrates the ongoing challenge of becoming a research-intensive company, and how the SME balances its inward and outward-facing skills and strengths.
3. It is not always possible for SMEs to keep up with progress in research, but it is important that they receive information on innovations and what is new in their industry on a regular basis. SMEs often need to develop their own absorptive capacity to be able to balance its inward and outward-facing skills.
4. For SMEs it can be difficult to find the resources to do so, and therefore public support and grants can be of great help. Optronic's advice is that more SMEs should try to make use of them.