



INSPIRE
OPEN INNOVATION FOR SMES



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SPRANA

Lithuania, www.sprana.eu

Two brothers –one with a scientific background, the other with management expertise –founded a technology company and set up OI collaborations with an investor, small and large lead customers as well as a local university to develop market-ready applications

Executive Summary

Sprana is an early-stage company which develops process monitoring technology based on university research. As a tech start-up, it had multiple challenges, starting with funding, selecting a technology application and developing it, and entering the market. There were several important partnerships on their path: they found an investor company which also helped with their expertise and resources; after visiting a number of companies, they selected several lead customers with whom they started developing applications. These partnerships were important as they allowed the SME to understand better their industry's requirements and needs and the value of their offering; they also provided technical and business knowledge. Another important partnership was in marketing & sales with value-added distributors who are helping the company to adapt to the requirements of different industries.

CASE N° : EE03

SECTOR: APPLIED SPECTROSCOPY

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: START-UP

INNOVATION VECTORS: PRODUCT

01 PARTNERS: PSR, LARGE CORPORATION, OTHER SME, LEAD USERS & CUSTOMERS

KEYWORDS: Lead customer, value-added distribution, marketing & sales alliance, Invest

- BACKGROUND FRAMEWORK
- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
- OI TRAJECTORY
- BUSINESS IMPACT
- LESSONS LEARNED



BACKGROUND

Sprana is a high-tech company in applied spectroscopy providing Process Analytical Technology (PAT) solutions for on-line/in-line/at-line monitoring and analysis of industrial processes (streams). The main focus is the quantitative analysis and characterization of light scattering media applying advanced spectroscopic methods and techniques. The research and development of new analytical instrumentation/solutions (process analysers) along with multivariate calibration models is one of their key areas of work.

The company was established in 2013 by two brothers Raimundas and Mindaugas. They decided to combine Raimundas' expertise in spectroscopy and Mindaugas' knowledge of management. Raimundas obtained his PhD in spectroscopy from a UK university where he worked on the characterization of light scattering media, the quantitative analysis of various chemical species, and also on estimating the size of the particles in the dispersions.

Mindaugas had experience in the banking sector and had his own consulting company advising on process optimization (lean, six-sigma, quality management). In a few years, they have developed a number of applications –analyzers for fertilizer, paraffin and polymers. In 2016 they finished the project with a lead customer –an on/in line colour analyzer. In 2017, together with a big fertilizer factory they finished the deployment of the spectroscopic process analyzer for real-time quantitative analysis and monitoring of liquid nitrogen fertilizers product stream in the production. In 2017 they signed a distribution agreement with a Finnish company, Sintrol, which serves the process industry in Russia, China, and India.

They have set a target to develop one new analyzer every year. They are also building up their sales channels.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

While working on his PhD and a real industrial project in UK, Raimundas got a good understanding of spectroscopic technology and analytical methods. However, turning this

expertise into industrial products had a lot of challenges. First, he had to find applications that could compete with other solutions and existing practice. Second, he had to acquire industrial design skills; industrial products have very different requirements compared to research equipment. Third, he had to build sales channels – not an easy task for a start-up whose target market is populated by mainly big companies. And fourth, finance was a huge issue, since it was clear that the development cycle might be quite long.

When the brothers established the company, they were looking for an investor. Funding was a challenge, given the long development cycle of the product. They were not looking for venture capital, rather they were looking for a company which could also contribute with their expertise. They visited a number of companies from the photonics cluster and found one (Altechna). It was a very important decision because the new investor provided them with many contacts which proved valuable when searching for applications, and later, in the development phase.

While still working in the UK, Raimundas spotted niches in the industrial measuring equipment market. In some cases, the measurements were made in the laboratory, off line, resulting in the batch quality being estimated when it was too late to take measurements. In other cases, the measurements were indirect and inaccurate. With the advent of Industry 4.0, there was clearly a need for a new generation of industrial process measurement equipment. He could therefore use his knowledge of new spectroscopic measurement techniques and analysis methods to address this opportunity.

OPEN INNOVATION TRAJECTORY

Concept development

Potentially, there were many applications Sprana could develop. To start, there was one idea for measuring polymer chemical and physical composition which Raimundas could transfer directly from his PhD work. But Sprana took another approach. Mindaugas and his brother started visiting potential end-users of their equipment: nitrogen and phosphorous fertilizers plants, polymer pellet producers, oil refineries and many others. Everywhere they had one question: where were the process bottlenecks related to inaccurate (or unavailable) measurement. As a result, they drew up a list of potential customer

problems. Then they deliberately chose several applications. They took this diversification approach because they did not know which application might eventually be successful.

The development process, IPR and competition strategy

Initially, Sprana developed three applications: an analyzer for characterization polymers; a spectroscopic process analyzer for the real-time quantitative analysis and monitoring of liquid nitrogen fertilizers, and an analyzer for phosphorus fertilizers. The latter two applications had lead customers. The development work was not easy: it turned out that the initial specifications were not enough. There were process anomalies, such as the occasional increase of the stream temperature, impurities in the stream that would foul the window and vibration. The development work therefore involved multiple loops; for example they had to develop a window cleaning solution which changed the equipment design. The role of the lead customer was to find a place for the monitoring, undertaking necessary engineering work and discussing results and participating in the problem solving.

The two lead customers were large fertilizer companies, Achema and Lifosa, so engaging them was not easy. First, they had to show the working prototype as a proof of concept (this was at the start-up's own expense with the promise to pay if successful), then its inclusion in the company's investment plan which meant a decision at board level. This took a lot of time.

In the meantime, Sprana started another pilot with the SME lead customer Ivltra. Ivltra produces candles and was looking for control equipment to monitor the bleaching of wax. The company felt the process was not optimal as the wax batches were still being bleached even when they were white enough. First, they wanted automated colour measurement of paraffin, and secondly the oil content in the paraffin. This lead customer was completely different – fast at decision making, but unable to provide engineering support. At times Sprana felt like a solution provider for Ivltra – in contract with the co-development approach of the large companies who provided solid engineering support.

At the beginning, their investor company, Altechna, provided significant support for the development work. They are distributors of spectroscopic equipment, and the producers and distributors of certain key optical components that were needed. The start-up received components at discounted prices and they obtained contacts to relevant

people in supplier companies. Some of the electronics was even developed for them at Altechna in the beginning.

The company also had several collaborative projects with researchers at Vilnius University Faculty of Physics and Spectroscopy, Department of Physical Sciences and Technology Center which helped them to solve some scientific questions that they faced in their work.

Sprana intends to tackle niche markets which are not particularly interesting for the large players, refine their analytical methods and product platforms and then enter bigger niches. Their competitive advantage relies on uniqueness, their ability to measure what is currently not measured, as well as their offering.

Commercialization and follow-up

Sprana is still at the project-to-project stage. They are still a small team. In the future, Sprana intends to roll out manufacturing and build its own supply and sales channels, which will certainly require the re-organization of the company.

Ideally, Sprana would like to be an equipment developer and manufacturer. They see direct customers to be integrators and suppliers to the process industry. Currently, their visibility is ensured mainly by their website. Recently, they were contacted by potential end-users – fertilizer plants from Russia and the US – who spotted their offer on the SME's website. Interestingly, they referred to their suppliers/ integrators/solution providers who are application experts in their areas.

One such company – Sintrol – is a Finnish producer of dust monitoring equipment, particulate matter measurement devices and filters for industry. They are solution providers for industry and distributors of gas analyzers. They provided very valuable insights into selling requirements in Russia. They will also support Sprana to certify their products. Sprana is starting discussions with a US company, Nalco, which has energy, water and process services businesses, serving oil & gas, pulp and paper and other industrial markets. Sprana expects to enter their sales channels.

The company is preparing to scale up, notably standardizing platforms and analytical approaches, certification, etc. They are also thinking of releasing new products – at least one every year.

BUSINESS IMPACT

The company acquired skills to capture customer requirements that include a working environment audit; they have developed a check-list and guidance notes. This came from their experience of getting requirements in loops, each time with a surprise element.

From their value-added distributors, they learned about different certifications and their requirements. In Lithuania, they had no access to this expertise. Sprana is now starting to work on obtaining certification.

With their university research partners they developed new methods for multi-parameter flow dispersion characterization and the application of molecular spectroscopy for phosphate analysis which will be used in their next products.

From their lead customers, they learned about industry-specific customer requirements and the real operational environment; they learned to design industrial equipment for industry's operating environment (ability to withstand temperature and hydraulic shocks, address vibration issues, etc.), as well as some mechanical engineering approaches adopted as the industry's standard.

The company also learned how to present their offering in a way which it is understandable and relevant for industry specialists and decision makers (they had to develop the business case, which they did together).

Through their open innovation collaboration they obtained their first paying customers.

LESSONS LEARNED

There are three interesting examples of OI in this case: a partnership with the investor company, which shows the importance of such a relationship. They are more patient than a VC and share their expertise and resources at critical stages of the SME's development. The relationship is similar to one of a spin-out from the investor company.

In the OI partnership with the lead customers, the case allows the reader to compare the company's reflection on relationships with an SME and big company lead customers.

It is very interesting how they established relationships with their marketing & sale partners. First, the end users found them (it is

therefore important to be visible to them and to keep direct contact), and then referred/connected them to their technology partners – integrators and solution providers (which is the target client group for Sprana). That reference from clients was a strong motivator for the big integrator/solution provider companies to contact and talk to the SME.

Main lessons learned:

1. Lead customers are an important source of knowledge which helps to define the functionality and design of the offering and increase the credibility of communication of the offering.
2. Big companies may be a good partner. If they decide to partner, they become a very useful source of technical information, business intelligence and professional contacts. Smaller companies are faster in decision making, but are less able to provide support.
3. Filling critical gaps in technical and market knowledge (in this case it was certification) can be supported by marketing & sales partners who are often experts in their field.