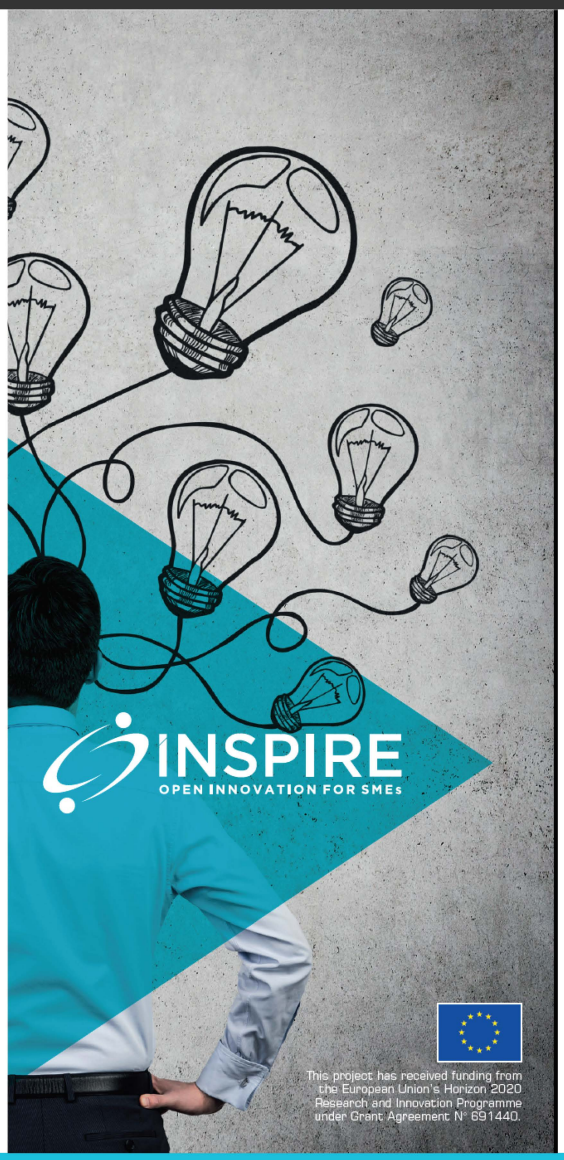

SEWIO NETWORKS

Czech Republic, www.sewio.net

An academic start-up with a revolutionary technology tapped into the local innovation ecosystem to attract an investor and identified international partners to help develop applications and find customers

Executive Summary

Sewio is a Czech company based in Brno delivering a market-proven Real-time Location Platform as a fundamental technology for the digitization of movement in Industry 4.0 Retail and Sport. Established by two former researchers, the company had clear stages in its evolution. The seed stage when they developed a prototype and looked for and found a smart investor; the project-to-project stage when the focus was on application development and the business model (many lead customers, end users and integrators were involved); and finally the scale-up phase when they had to standardize and limit their offering and focus on developing the company itself (preferred development and value chain partners).

CASE N°: EE42

SECTOR: INDUSTRY 4.0

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: SCALE UP

INNOVATION VECTORS: PRODUCT, CUSTOMERS & MARKETING

01 PARTNERS: LARGE CORPORATION, OTHER SME, LEAD USERS/ CUSTOMERS, INNOVATION CENTRE

KEYWORDS: Industry 4.0, real time location sensing, logistics, retail, sports

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

BACKGROUND

Sewio solutions use precise location data and wireless sensors to help find, protect, optimize or control the things that matter the most – people, equipment and assets. Using ultra-wide band radio technology, real-time location and modern web-based technologies for monitoring and control, Sewio's solutions are used to protect the safety of employees and machinery, find efficiencies in production and warehousing, and improve processes. Sewio products are used in a wide range of industries including automotive, warehousing and logistics, entertainment, retail, mining and healthcare.

Sewio Networks s. r. o. was established on 10 January 2014 by Milan Sivek and Lubomfr Mraz, two graduates of the University of Technology in Brno. Milan, a PhD student at the faculty of electrical engineering, led the younger Lubomir to a diploma thesis on a new communication technology for smart homes. Together, they worked on a research project for the European Space Agency to create a system that would test satellite sensors while not disturbing other systems. While working on this project, they have found that broadband wireless technology can accurately measure distance and that this feature is suitable for industrial use where it could replace existing systems.

From the very start, Sewio focused on bringing to the global market a Real-time Location Platform with three essential features: it had to be easy to integrate, fully scalable and highly precise. As early as 2014, Sewio's team received a Top 10 start-up in the Czech Republic award. In 2015 Sewio received a USD 1 million investment from Y Soft Ventures which significantly accelerated their development. In the summer of 2016, two-and-a-half years after its launch, the company earned its first operating profit. In the same year Sewio was named third best start-up at the Electronica Fast Forward Forum in Munich.

Sewio continues to expand and update its real time location system. They also intend to establish subsidiaries in the US and Germany.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Sewio's strategic challenges can be seen as follows:

1. Moving fast. The founders saw the opportunity, quite unexpectedly, of using a communication chip for tracking an object's position. Others could also find this opportunity.
2. To move fast, they needed investment. They started only with the founder's money.
3. Skills gaps –the company needed qualified personnel.
4. Finding customers – the technology is relatively new and in many cases unknown for the customer. Before getting customers, they had to build a prototype (with their own money) and they had to create awareness because of the novelty of the technology.

While working on his PhD thesis (on indoor location technologies}, Milan understood the market potential of the technology. He saw a great opportunity in driving the Industry 4.0 revolution, i.e. location in real-time, internet of things (IoT), communication and cooperation. Companies need to know where and when their individual machines and workers are located in the factory. The founders were mastering a relatively new technology called UWB (Ultra Wide Band).

Although it was mostly being used in radar systems at that time, it could also have applications in industry to accurately locate people, machines and things in real time. While some companies have already put their faith in iBeacon (iBeacon is based on Bluetooth low energy proximity sensing) or WiFi, UWB real-time location systems (UWB RTLS) bring more accurate distance and location measurement. As most of the potential competitors were/are using the old technology, the start-up anticipated a first-mover advantage. The founders' expertise fitted perfectly with this opportunity.

OPEN INNOVATION TRAJECTORY

Concept development

The concept emerged while the co-founders were working on the European Space Agency project for a large company. They noticed that the same chip that was used for communication on satellites could also be used for measuring distance between the chips. Milan Simek was quite sure that UWB technology would drive the RTLS market because of precise and reliable indoor positioning and robustness in fully metallic environments. The

concept evolved with time from a location sensor to a platform and system. The changes were prompted by customers and end users and eventually they decided to focus on three 'verticals' – logistics, retail and sports.

The development process, IPR and competition strategy

In developing their product, Sewio Networks cooperated with DecaWave. DecaWave is an Irish SME (www.decawave.com), a fabless semiconductor company specializing in ultra-wideband (UWB) technology. Sewio joined its Partnership Program which is designed to create an ecosystem of partners, such as Sewio, with expertise in DecaWave's location technology to provide technical and application knowledge, with a view to helping companies design tailored and off-the-shelf solutions to reduce development costs and time to market. During the first nine months Sewio was developing prototypes that could be demonstrated for potential customers. They had no lead customers at that stage.

In parallel, Milan was looking for investors. Three months after launching the company, they contacted another Czech company, Y Soft Corporation (a company from the Brno region with about 300 employees, providing printing solutions and manufacturing card readers and other hardware}, which had just established their venture arm, Y Soft Ventures. Although Sewio contacted multiple firms in 2014, the team was in fact pinning their biggest hopes on Y Soft. They appreciated the fact that the company was based in Brno, that they had their own manufacturing process, and had experience of developing both software and hardware.

However, the investment came a little later in 2015. Generally speaking, they ticked all the boxes on Sewio's wish list. Even though co-operation with a large company was the goal, the founders were worried that they could lose control over the decision-making process. They considered things very carefully before finally signing the contract. The million-dollar investment from Y Soft Ventures has enabled Sewio to implement production faster and more effectively. The investment of $1 million for a 20% stake boosted the company. Y Soft Ventures brought more than investment. Sewio (which then employed 5 persons) was given access to Y Soft's purchasing power as well as their expertise in negotiating contracts and technology certifications. Sewio Networks was able to focus on development.

Another challenge was developing first applications. Sewio came through the project-to-project stage very quickly, engaging in a number of projects with different customers. The first customer was a mining company from Italy which was looking for a safety solution. The machines had to stop when people moved too close to them. It appeared at the beginning that Sewio was unsure what it was looking for. First, they intended to provide a platform to system integrators rather than providing a solution to the end customer; they did not have much expertise in the client's industry, nor of its needs. Second, they intended to focus on object tracking, and here they had to engage with many other aspects to provide the end-to-end solution.

Later they had CISCO, Skoda automotive, PwC, Le Bande Passante, a French music group, among others as lead customers. Their original project in the form of a music labyrinth was realized in the theatre Forum WHARF in Angers, France. Soon they noticed that they had to focus because the different needs and working environments required additional development work (and ate into their margins). Eventually they chose to focus on three 'verticals' – retail, sports and logistics – and to work with system integrators. The process is still not fully completed yet.

Sewio's target clients are system integrators serving the retail, sports and logistics sectors. Sewio Networks provides them with the hardware and software for the localization platform which ensures high localization accuracy, no interference with other radio communication systems, resistant to noise, low power, versatile and inexpensive in comparison to the competition.

Sewio brings together a complete system: it supplies hardware, sensors, as well as web visualization so that the customer can see the movement of things and people in real time (this also facilitates installation). Speed and flexibility adds to their competitive edge. In retail, the platform is most commonly used for monitoring customer behaviour.

For example, one unnamed supermarket operator in Germany integrated Sewio, s chips inside shopping carts, to analyze which shelves are the most attractive for the customer. A sports application of the platform has the ability to help coaches to make a more complex overview of the players' movement and activity. Retail and sports orders can be implemented within a month whereas logistics and industry projects may take longer.

Commercialization and follow-up

Sewio is using its strategic partnership with Y Soft to scale up. In addition to providing funding, Y Soft, provides Sewio resources including manufacturing, global distribution and logistics, marketing and HR. These resources are often lacking in early-stage companies. Since January 2016 Sewio Networks agreed to use Y Soft's production line to manufacture the latest version of their UWB Anchors and UWB Tags for RTLS systems. Sewio also subcontracts manufacturing (printed circuit boards to Pragoboard, assembly PTH and SMT printed boards to SMT plus.CZ and others). Sewio Networks currently has no production facilities.

No significant organizational changes have occurred so far (they are still a team of 13). Sewio concentrated on development, while many other functions were outsourced (via Y Soft). However recently they started developing their own marketing and they opened offices in Lyon (France) and Munich (Germany).

The Brno start-up does not sell their product directly, but cooperates with partners (system integrators) who integrate it into their offering to their customers. They have an increasing number of partners in different countries: Kodys Slovensko (logistics, Slovakia), Grottini (specialist in retail marketing, Italy), GetVu (logistics, India), Qualigon (quality management, Germany), etc.

Great effort is made to create awareness about this relatively new technology and is benefits. Sewio established a **showroom** at the South Moravian Innovation Centre and in Lyon at their French office. They also have a strategic partnership with Price Waterhouse Cooper. PwC Czech Republic has established a PwC Innovation Studio in Prague, where it presents the newest technologies creating Industry 4.0. Sewio installed its locating system there to use during client events. PwC allows Sewio to use its Innovation Studio as an RTLS showroom for customers interested in the company's applications and recommends it to their clients. This cooperation has been very successful and Sewio considers PwC to be one of their strategic partners.

Sewio launched a **partnership programme** to facilitate communication, personal contacts and cooperation with their business partners. They intend to build a strong network of highly experienced professionals who utilize Sewio's RTLS platform to enhance their products, services and business activities. To facilitate cooperation with scientists, Sewio launched a **university programme.** It offers the RTLS platform at a favourable price and conditions and close cooperation with Sewio's team to support their location-driven research. The INTEMAC research centre, which was established to support Industry 4.0, integrated Sewio's Real Time Location Platform for position tracking, presence detection and movement digitization in their laboratories and testing halls.

Sewio organizes **workshops for potential customers** from industry where they demonstrate their system used in factories or warehouses.

To experience the performance of their system, Sewio offers a **kit** made of five anchors and three tags. The kit is a perfect starting point as it offers all the features of the RTLS Studio platform and allows customers to test those features for their application in a real environment.

Sewio teams up with their partners to show their offering at conferences and exhibitions; for example, Sewio and DecaWave presented a fully scalable RTLS-TDoA Platform with open API for the first time together at the Indoor Positioning and Indoor Navigation conference, IPIN 2016.

Recently Sewio added a new component to their real-time location system - location analytics. Analytics brings an exact evaluation of the efficiency of processes and movement in any facility.

BUSINESS IMPACT

Sewio gained substantial knowledge, both technical (co-operation with DecaWave) and market (through integrator partners). Most importantly, the company learned about the value of selecting 'verticals'. 2-3 years ago, for example, they had no clue how they could bring a good product to retailers.

By 2016 the SME had reached break-even point and had engaged with clients in 40 countries. They have around 20 integrator partners who generate projects, and usually Sewio's contribution is approximately 20%.

LESSONS LEARNED

This seems to be a successful case and some ingredients of their success can be identified. First, the market is growing and Sewio rode the wave at the right moment. Second, given the background of the founders, Sewio is incredibly good at reaching out to clients; they did this through partnerships, including the investor Y Soft. They cooperated with

DecaWave in its partnership programme. They seemed to have liked the model since they created their own programme for their downstream partners. The motto of these partnerships is "grow together". They knew very little about applications and the end users' needs, but they quickly learned through their partners, i.e. the system integrators. The case also shows the importance of the project-to-project stage. Sewio was engaged in many application projects and found that some environments were more difficult than others (e.g. industrial, with metal surfaces reflecting the waves). They concluded that it is not worthwhile engaging in too many applications, as it may be too costly.

Sewio learned that they do not want to be a solution company (they do not know much about application markets), rather they would like to be a platform provider. Milan also said that they would rather be a software company, but they had to produce hardware because currently nobody is producing it. For now it constitutes around 50-50 of turnover, and it could be that they should master small case manufacturing.

They are developing their own marketing efforts, which is essential. (Y Soft, the investor in their value proposition is offering their marketing and sales channels, but it can make them too dependent). It may be that their understanding of business, at least partly, was influenced by the advice they received from the South Moravian Innovation Centre, where they moved after they received the investment, and, of course, Y Soft.

The case has other interesting features: Y Soft has a venture arm, but if offers not only money but also other resources and support; the creation of partnership programmes (following the model of the larger company); and being aware of their 'ecosystem'.

Main lessons learned:

1. "The most valuable gift from a technology partner isn't money, it's mentoring, and especially the fact that they share what they've learned from their mistakes." (Milan Simek, Co-founder, Sewio Networks).
2. Focusing on several applications, instead on going in every direction: Sewio found that even using the same platform for different applications may involve significant additional work.
3. Focusing on development in the early years allowed fast development and fast transition through the project-to-project stage (which is a search for a viable application and business model). This was made possible thanks to their investor Y Soft who provided money and other resources, including manufacturing and HR.