

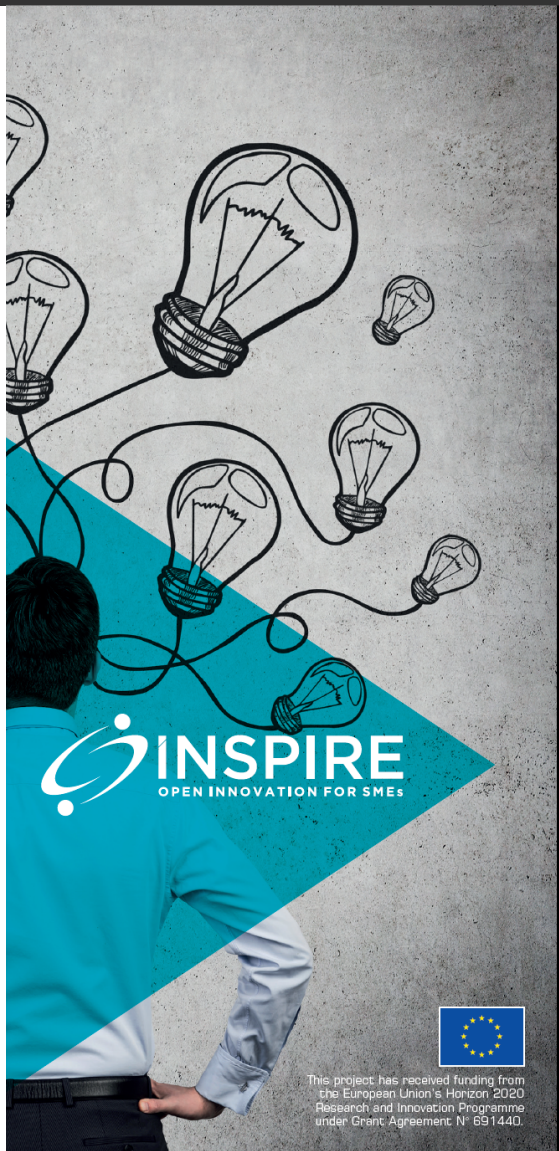
ANONYMOUS

Switzerland

A research-based spin-off works with an airport authority to design a new crowd security device and creates a newco to manage the new business activity

Executive Summary

This is the case of a company founded by a research team in 2009 as a spin-off from a Swiss technology institute in the fields of advanced electromagnetic solutions for non-destructive testing (NDT) and quality control. In recent years the company has been acting as a small-scale incubator, by carrying out innovation projects which produce promising technologies with the potential to be spun out. Until now two start-up companies have been created to exploit new proprietary technologies/know how and to access new markets.



CASE N°: SD28

SECTOR: ELECTROMAGNETIC SOLUTIONS FOR INDUSTRIAL INSPECTION

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: START-UP

INNOVATION VECTORS: PRODUCT

OI PARTNERS: LEAD USERS/CUSTOMERS

KEYWORDS: Security device, spin-off company, small-scale incubator, non-exclusive agreement

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

BACKGROUND

This is the story of a research team from a Swiss technology institute. After 5 years of R&D collaboration with a leading player developing high-end solutions for non-destructive testing (NDT) in the field of power generation/large scale applications, the team was encouraged by the latter in 2008 to create a spin-off company. At first, the spin-off was fully engaged in providing high-end services (maintenance of turbines) to a leading power generation company; following the acquisition of this main client by a large multinational player, they started to diversify their offer. This diversification allowed them to find new customers, thereby making them more sustainable, and to raise capital from two venture capital investors.

Thanks to the high quality of its technology (high-volume, low-price semi-conductor solutions), this first spin-off was acquired by a big player in 2014 for a value close to \$20 million. A second company (our case study) was created by the same research team in 2009 since, although the expertise was the same, the products and the customers were different. Thanks to their recognized expertise in non-destructive testing, the SME designs and produces low-volume, high-price HW (sensors, electronics) and SW systems, up to their integration into full systems, and provides high added-value services (turnover 50:50).

In recent years, the company has been operating as a small-scale incubator, developing new concepts based on clear market needs (market pull logic) with a view to exploiting mature and promising technologies via the creation of spin-out companies. Until now the company has created two spin-out companies responsible for the development and commercialization of new technologies (one of them has been created thanks to a convertible loan provided by a major global player). The team is investing a lot of effort in moving from a technology-push approach, typical of research teams, to a market-pull approach, refusing projects where there is a good technology but no real promising product behind them.

In the future, the company will streamline the concept lab model (a new project on quality control for machine tools is already in the concept phase) and within the next year it will launch a technology fund to be provisioned with income coming from its own company exits. In this way it will be able to finance the development of more innovative ideas. In fact, given its previous experience with external investors and the problems it faced mainly in the exit phase, the

team does not intend to involve investors in future projects.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Based on the experience matured from its collaboration with a leading market player and the first spin off, the team raised its awareness about the need to move from a technology-push logic to a market-pull approach by developing technologies with clear business potential. The team also realized the importance of becoming sustainable by acquiring multiple clients, limiting manufacturing to small production runs and strengthening its strategic alliances.

The team is interested in developing new high-quality solutions for niche markets inspired by real user needs with a preference for "public-semi-public" customers who are generally not concerned about having exclusivity. This type of organization is generally more interested in acting as a first adopter and gaining in reputation/image/visibility, while securing some financial return on its initial investment, and last but not least, has the financial resources. Additional priority is given to those organizations which have a strong network capable of triggering word of mouth recommendations for the new product and thereby helping to speed up the sales process.

OPEN INNOVATION TRAJECTORY

Concept development

The initial project deployed within the incubator was conducted in collaboration with a potential customer (airport management company) who expressed the need for an effective passenger control detection device for improving their operational activity and further gaining in reputation as an early adopter of an innovative system. The customer assigned the R&D contract to the team which is known for its high level of technical expertise and provided them with all the inputs for developing the concept.

The main challenges faced at this stage were related to the definition of the product

specifications (the capability of translating the customer's needs into the product's technical features is sometimes a hard task) and the control of the whole development process, which is critical especially in the case of solutions where different skills are involved.

The development process, IPR and competition strategy

As said, the reference project aimed at developing an airport security device to be adopted by the customer (contracting organization). Given that the team was able to manage the deployment process from the concept up to prototyping/small-scale production, the engagement of external suppliers was limited to specific technical tasks, e.g. testing/certification/quality control. The engagement of a potential customer ensured that there was a close fit between the solution and real market needs which involved a continuous feedback process on the releases and the testing.

Once the prototype was complete, it was transferred to the new company (spin-out from the SME) which is in charge of its exploitation. The main issue for the future is the industrialization phase. Since the company is only equipped for small-scale production, the manufacture of higher volumes must be outsourced to a third party.

Based on the contract signed with the contracting organization, the company is the sole owner of the final technology, while the client retains some benefits in terms of price reduction, share of sales and rights of use of the technology in the event of company failure. The spin-out company which was founded to commercialize the new solution filed an application for a national patent, which was recently granted and is now in the PCT phase.

The strategy is to develop new high-quality products for niche markets in order to exploit the team's skills and experience. Many large companies (private/public) are looking for SME R&D performers with highly qualified skills, i.e. potentially a good market niche for the team. The incubator concept, which was recently adopted by the parent company, will give it the possibility to become a player in the technology transfer field, thereby distinguishing it further from the competition. As far as the spin-off company in charge of commercializing the new system is concerned, it is planned to consolidate its market position by developing new solutions for the same target customer group.

Commercialization and follow-up

After the product launch, a spin-out company was founded in 2016 to pursue the development and the commercialization of innovative metal detectors for security applications.

The Newco will have to face two main issues relating to a lack of skills/capacity in:

- manufacturing: the production will be outsourced to third party partners who are able to manufacture the product at a competitive price (possibly through a licensing agreement);
- sales: a sales manager has been recruited to develop the marketing strategy (direct sales vs third party dealers vs commercial partnerships).

The new spin-out company was founded in late 2016. The technical team has been strengthened with key account managers, while skills in pure marketing and channelling sales requests are still missing.

Setting up a sales force to enter a new market requires the right skills. A sales manager was recruited to develop the commercial strategy and to plan the operational promotional activities (agent vs direct sales vs distributors). The sales targets will be achieved through a number of key channels, including an alliance with professional/sectoral organizations and distributors, attending conferences and exploiting existing and new connections. As far as the airport security device is concerned, our SME has an agreement with a company which is already serving this market with other solutions.

After the first pilot was ready and adopted by the client, the spin-out company started to work on moving to the industrialization phase and testing the market with the following activities:

- e engagement with first users to test the product (at least 2 in 2017), also with a view to improving the product in the run-up to market release;
- acquiring the necessary certification/conformity with the standard/legal requirements.

BUSINESS IMPACT

Thanks to this open innovation project, a new technical solution was developed (involving new skills), a new patent application was filed and one spin-out company was created.

The team improved their own awareness of the importance of managing effectively their relations with large companies which require R&D skills to develop new high-tech solutions.

It is fundamental for the development process to be able to analyze/interpret correctly the customer's needs in order to define clearly the product specifications. They also learned that it is critical to manage the whole development process effectively, especially where different skills are involved. A project manager has subsequently been assigned to each project.

Having experienced a one-customer business, the team understood that there was a larger market for their skills and that they are an attractive partner to large companies, especially semi-public entities, which can make use of their services. The team is also aware of the importance of being supported by professionals and receiving dedicated training.

LESSONS LEARNED

This is an interesting case since it traces the experience of a research team which moved from the lab to the market. It confirms the typical main stages for a university spin-off:

- From a technology-push to a market-driven approach (in this case partly because no market experts are involved in the selection of ideas);
- From a one-client business (often spin-out generation is pushed by a private business partner with a specific interest in purchasing high-tech development services) to a diversification strategy with the aim of enlarging the customer base (no longer being dependent on a single client) and increasing the company's reputation;
- From R&D contracts to the spin-out of mature technology.

This story also shows that:

- Even when R&D teams are aware of the importance of adopting a market-pull logic, they rarely engage people with marketing skills (including external support);
- Research teams are very keen to strengthen open innovation collaborations either for the concept and development/ industrialization phases as well as for selling the solutions (depending on the market).

Main lessons learned:

1. For R&D performing SMEs it is essential to move from a technology-push to a market-pull approach (invest in innovation projects which lead to promising technologies).
2. Outsource non-core activities to third party strategic partners by exploiting their network.
3. Understanding customer needs is crucial for developing new high-tech products.
4. It is necessary to approach large players in a professional way (have the right interface).
5. The engagement of potential customers ensures the development of a solution which fits real needs and offers continuous feedback on each iteration of the product and carries out testing.
6. A balance between technical and managerial/marketing skills is essential for a successful market uptake of promising new solutions.