



JENETRIC

Germany, www.jenetric.de

When exploring the next step in biometric fingerprint detection, a German start-up did not hesitate to work together with an Asian company to integrate their sensor technology in a new joint product

Executive Summary

The case describes how a small company specializing in biometrics was founded and how they have used open innovation to acquire missing expertise which was vital for succeeding their reinvention of fingerprint imaging technologies, as well as for keeping their R&D at the cutting edge and enabling them to build potential for future diversification. From an initial team of 8 R&D biometrics specialists and within a period of 3 years they have successfully converted Jenetric into a manufacturing and service company with a subsidiary which was very recently opened in the USA to promote sales of their market-leading technology.

CASE N° : FG45

SECTOR: IMAGING

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: START-UP

INNOVATION VECTORS: PRODUCT

01 PARTNERS: PSR, LARGE CORPORATION, OTHERSME

KEYWORDS: Imaging, biometrics, Asia

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- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
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BACKGROUND

The company was founded in 2014 in the region of Jena in eastern Germany, which is an area with an optical technology cluster hotspot.

After German reunification, Jena underwent a transformation in terms of several very large companies breaking up into smaller spin-out or spin-off businesses. One of these newly formed companies was initiated by a group of workers with expertise in imaging technologies and who became specialized in biometrics. This company, Crosspatch GmbH, was bought out in 2006 by a US firm, which later decided to close down the research and development part of the company. Faced with the prospect of losing their jobs, the R&D team at Crosspatch decided at this moment in 2014 to start their own company, which they named Jenetric.

Jenetric is launching a subsidiary in the USA, the US market being the largest and most important for biometrics, with other markets tending to follow suit. At a later stage they may do some manufacturing there too. The Chinese biometrics market is also growing fast, so the company is considering its strategy for tackling that market too.

Over the next 5 years Jenetric intends to focus on developing products for the government, police, border control, etc. However, they also have other ideas and may create a spin-off to deal with everything that is not Jenetric's core business.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

The biometrics technology that the Jenetric team brought with them when they started the company was already near the end of its optimization process. The key question for them was therefore what the next step in biometric fingerprint detection could be.

The market opportunity for Jenetric was their breakthrough technology in biometrics to replace existing highly optimized imaging optics technology.

OPEN INNOVATION TRAJECTORY

Concept development

Traditionally, fingerprints could only be imaged using lenses and imaging optics. The R&D team at Jenetric decided to break with this and create a completely new product using the latest sensor technology to detect fingerprint images. They started by looking for a technology partner who was specialized in Transmission Fluid Temperature (TFT) sensors in order to help them build the new device.

While Jenetric had vast know-how of imaging, processing and the analysis of biometrics and could bring ground-breaking R&D to develop the new technology they envisaged, they needed a highly specialized partner with world-leading skills in sensors to complement them.

The development process, IPR and competition strategy

Although the Jena region is a recognized optics cluster in Europe, the management team at Jenetric turned to Asia in order to find a company with expertise in sensor technologies. Asia is where the most specialized companies in sensor imaging technologies are to be found with manufacturing facilities which cannot be found in Europe.

Jenetric and their partner in Asia agreed to start a development project together. Jenetric had the know-how to obtain good fingerprint images, and the partner company had know-how to build a layered stack of sensor systems. The development of the new device for capturing fingerprints was done jointly, with the sensor component developed and manufactured by the Asian partner and the rest of the device, including the electronics reading, the housing and software, developed and produced by Jenetric.

This development process was challenging for the teams involved because they were not experienced with working with an Asian company. They found that they did not progress as fast as they might with a German or another European partner where there are more cultural similarities in the style of doing business and entering collaborations. A good relationship takes a long time to develop, especially in Asia where there is a strong emphasis on building personal relationships, meaning that the process of doing business should not be

rushed and the facts and figures of corporate life take second place. The Jenetric staff dedicated a lot of time to travelling to Asia to talk with their partner, not only to advance the project itself but also to enhance their relationship. The partner also visited Jenetric several times in Germany. All members of the Jenetric staff who had to travel to Asia received some coaching on cultural issues and how to manage relations in Asia.

The cost of the development phase was funded by Jenetric itself (from sales of current technology) and by its investors.

Jenetric began by doing a patent search to see if their idea was new and if they had freedom to operate. When they found that their idea was completely novel, they started to file their own patents. Both companies have their own patents. The Asian partner has a patent covering the manufacture of the technology and the components, while Jenetric has protected the functionality of the device. The patents cover the European, US and Asian markets. They do not share any direct IP, nor do they share any patents. They have established an exclusivity contract for the technology parts that they can only use together. They do not file together, but they use the technology together. This means that Jenetric and their partner now have several projects under development. At the start of each new project they negotiate an agreement including how to manage exclusivity.

The technology can be considered breakthrough. For many years optical fingerprint scanners have used the physical principle of total internal reflection generating high quality fingerprint images. Although very reliable and robust, this approach has limitations in terms of size, weight and the objects to be captured, namely fingerprints only. Jenetric and their Asian partner were able to fuse the graphical display with the TFT sensor, thus making the optical components used in traditional fingerprint scanners obsolete. The Unique Selling Proposition of their new LIVETOUCH® technology is that it reduces significantly the size and weight of the scanners. It also enables huge improvements in usability and user-experience: for example, it is possible to show graphical elements, animations or movies on the display underneath the fingers to be captured. Typical image capture errors can be reduced and thereby speed up the capture process.

There were no existing patents, so they had freedom to operate. They expect this will change as commercialization is stepped up, and for this reason Jenetric is active in pursuing and developing new ideas and new products, while having a clear vision of how each can be optimized.

Commercialization and follow-up

Jenetric have their new fingerprint scanning technology, LIVETOUCH®, on the market since the end of 2015. Revenue from the sale of the device now goes towards funding new company projects. The roll-out of the product brought some challenges, particularly to produce a big enough quantity to meet the very high demand they received on release. It was not easy to go from the prototype stage to the manufacture of a series. Jenetric does its own manufacturing. They receive the components from their Asian collaborator, and then bring everything together at the plant in Jena to test and do quality control and finalize the manufacturing.

The software is also produced by Jenetric, and they maintain a software support service in-house too. The company needed to expand rapidly during this commercialization and roll-out phase, which led to the need for new organizational requirements. Revenue from sales is shared between the two partners.

Since its creation in 2014, the company has had to manage changes in its internal organization to meet its growing needs. They started with just 8 employees with R&D backgrounds from the previous company. In the meantime, Jenetric has grown to establish itself as a manufacturer and service provider with a team of 30; initially they had just one project and now they have around 10 projects. The organizational requirements have been quite challenging: finding and recruiting new personnel to fill the roles of engineers, supply chain management, production and purchasing, etc.

In order to try to optimize the structure and processes, Jenetric underwent ISO certification. This helped them to restructure and to define or develop streamlined processes. Although the certification process was not so difficult in itself, the team found it difficult to slow down somewhat in order to document everything. Everyone wanted to push forward and it was a challenge to change their way of doing things. For example: project planning was not done procedurally or uniformly, and the ISO certification process made the project managers establish common ways of working and documenting all their projects.

Marketing has been largely done by Jenetric itself through the presentation of their products at major trade fairs and via their website.

In addition to the projects with their Asian partner, Jenetric is collaborating with a number of other companies, universities, and institutes, such as Fraunhofer, in joint R&D projects on completely different and new technologies. Jenetric finds collaboration with the Fraunhofer institutes particularly good because they are in-between the

university and business: Fraunhofer IOS works very closely with the university, from which they receive a lot of scientific input and they can share the technology; they can then bring Jenetric a compatible business case.

The projects are both top-down (topics specified by the German ministry which is funding the R&D work) and also bottom-up (projects proposed directly by Jenetric itself). In the case of joint projects where the topic is proposed by the funding body, Jenetric's aim is to gain know-how from the other companies involved and establish a network. In these projects, the development of a future product is not realistic in less than 5 years. In the cases where Jenetric has been successful in getting their own project ideas funded, the relationships with partners are much clearer and oriented to product development within a shorter time-frame (2-3 years).

For all their collaborative projects (externally funded or not), Jenetric always starts by signing a non-disclosure agreement with its partners. They then develop a project plan together covering the content and goals, costs and time-frame. If it is a larger project which foresees several outcomes, they also negotiate how to handle the IP and make an agreement on that at the start.

Jorg Reinhold, project manager at Jenetric, notes that his background as a university researcher before joining Crosspatch and then moving to Jenetric has helped to bridge the gap between academia and the business. Being able to understand the ideas of researchers and to turn these into a convincing project in terms of goals and time-frame for the business is an important asset.

Jenetric has also established internship agreements with local universities: they accept a number of Masters students each year to work with them. On the one hand, this brings new ideas into the company and, on the other hand, the students learn to work in the context of a business – where you have no more than 2 years to develop a project and the solution is unlikely to be 100% perfect. Research infrastructures have the luxury to perform many iterations and improvements until they obtain a 100% solution, but this is not feasible for companies.

BUSINESS IMPACT

The open innovation collaborations have resulted in new patents, new know-how and new technologies and products for the SME.

Jenetric has gained a lot of know-how from its collaborations with partners. For example, they only had limited knowledge of the application of 3D; via their collaborations in joint projects they have been able to widen their technological know-how and exploit it in their market for the benefit of their customers.

The open innovation projects are 100% related to the success of the company and its growth. Future projects and optimizations with OI partners form the basis of the future aspirations of the company too. The SME has commercially launched 3 products using the LIVETOUCH® technology which are selling worldwide. They have launched a subsidiary (May 2017) in order to meet demand in the US market.

LESSONS LEARNED

This case illustrates a number of benefits of an OI partnership:

- How it can revolutionize an existing product by creating new technologies to overcome the problems of existing solutions that were close to optimization/ had technical and physical limitations.
- Learning how to manage OI relations with an Asian partner.
- Commitment to a long-term partnership beyond the initial R&D project, as the relationship evolves and matures over time.

Main lessons learned:

1. Relationship with partners: you have to build trust and commitment; this is especially important when dealing with partners in Asia, where their culture places a lot of emphasis on taking time to build relationships.
2. The outcomes would not be so successful or work at all with a purely transactional relationship: the Asian system of values is quite different to the European business culture. The more successful collaborations are built on a clear and solid understanding of shared ideas and values and are based on a long term commitment.
3. Collective leadership: maintaining openness and innovation, and a commitment to each other with shared goals creates a win-win solution. In this way, Jenetric became market leaders with a new technology and the Asian partner entered new markets and future joint projects.