

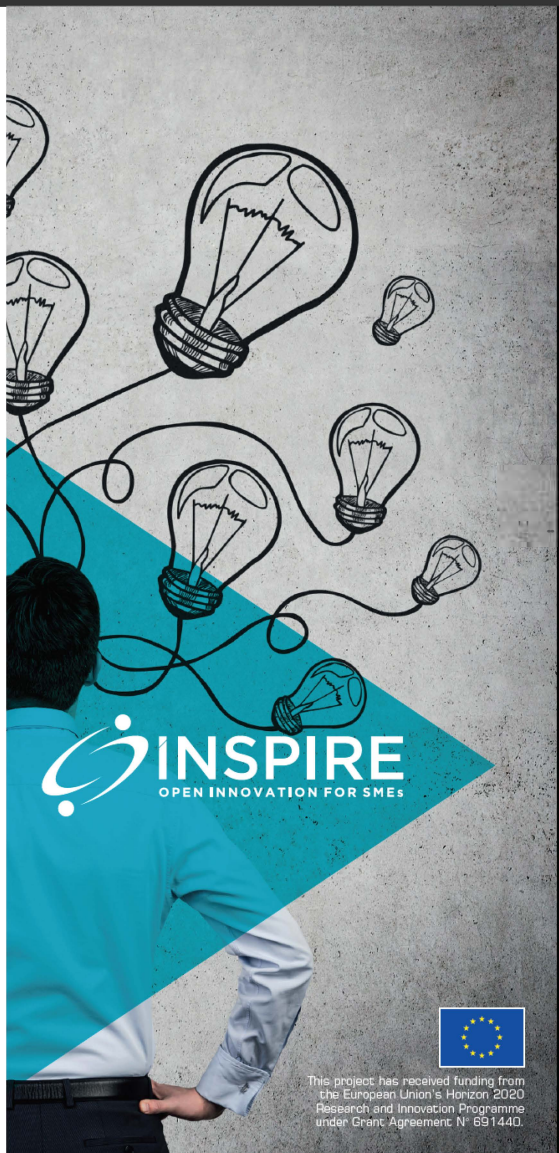
# WE ARE ENGINEERING

France, [www.weare-aerospace.com](http://www.weare-aerospace.com)

Set up as part of a trio of SMEs serving the 3D printing market, this SME provides training and assistance to educate potential customers about the advantages and limitations of the technology

## Executive Summary

We Are Engineering has used open innovation in order to establish market presence and control, firstly through its relationship and collaborations with other SMEs in the additive manufacturing value chain, secondly with a key international industrial group within the aerospace sector (We Are Group), and thirdly through its collaborations and agreements with additive manufacturing machine producers.



CASE N° : FG46

SECTOR: AEROSPACE, AUTOMOTIVE, DEFENSE, MEDICAL, ENERGY

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: SCALE-UP

INNOVATION VECTORS: PRODUCT, PROCESS

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

KEYWORDS: Additive manufacturing, 3D printing

- BACKGROUND FRAMEWORK
- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
- OI TRAJECTORY
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## BACKGROUND

The SME We are Engineering was founded in 2015 as part of an expansion initiative of Philippe Riviere, CEO of the company Prismadd, that was founded a year earlier. Prismadd, an SME working on additive manufacturing (3D printing for parts production and industrialization), had observed that many of their customers did not know very much about additive manufacturing in terms of the skills required and also the limitations of the technology, and therefore the market potential and customer base were being held back by a lack of knowledge and training. We Are Engineering was therefore set up with the idea to support customers by providing training and assistance with the development of parts.

The main track for the near future is serial production, and the SME's main focus is working with customers to achieve greater market presence. They are currently expanding internationally. They already have operations in France, Spain, North Africa, the Gulf, the Pacific and China, and plan to expand to India, Germany and the UK in the short-term and to North America in the long run.

## INNOVATION CHALLENGE & MARKET OPPORTUNITIES

The strategic challenge originated in the market need for specific training or knowledge on the application uses of additive manufacturing, as well as the creation of an integrated value chain with other SMEs working in the sector.

As far as the market was concerned, the SME saw an opportunity to

1. Integrate 3D production with complimentary support services for customers, both pre and post production;
2. Gain market share by creating a group of independent SMEs with a shared goal to cover several parts of the value chain: Prismadd on manufacturing, We Are Engineering on training and parts production, and 3D Materials on powders development and adaptation for use in the machines in parts production.

Competitors are to be found largely on the

production side, but very few on the development side, therefore the market opportunity was open for the taking if the SMEs could provide high-quality inter-connected services.

## OPEN INNOVATION TRAJECTORY

### Concept development

The idea of Philippe Riviere was to create a global network of parts production and development to be able to offer customers a complete and integrated solution so that the SMEs could control costs and lead times.

### The development process, IPR and competition strategy

We Are Engineering provides training to give their customers knowledge about additive manufacturing in order to spread the technology to the rest of the customers' group and make the product grow faster. They perform parts development in two ways – either for the customer (doing it internally for them), or with the customer (co-producing the design, calculations, etc.). The idea is that by the end of the joint project, the customer has the know-how to develop the parts themselves in the future and they also have the products that can be produced directly.

The SME has an NDA with all their customers, which is standard practice for all actors in the additive manufacturing industry.

We Are Engineering forms part of the We Are Additive cluster of SMEs specialized in additive manufacturing (We Are Engineering, Prismadd and 3D Materials) which is further complemented by their collaboration with the We Are Group. This means that they cover and control the complete production process from powder development to final parts (including post production treatment) for key aerospace customers who come to the We Are Group. It gives them a competitive advantage and is obviously beneficial for customers to have a "one-stop shop" of connected innovative SMEs.

The We Are Group was founded by three SME family-owned companies – CHATAL, ESPACE, FARELLA – in 2015. They were all within the ACE Aeronautique, and decided to launch the joint international industrial group to build on their

success of being highly customer-focused, developing both technical skills and passion for technology and aviation. A little over one year later, We Are Additive joined the group. The group is organized into autonomous specialist business units (BUs) whose directors provide commercial, industrial and financial management.

## Commercialization and follow-up

We Are Engineering used OI in various ways and with various actors to scale up their business.

**01 with SME group:** We Are Engineering was created by Philippe Riviere, CEO of Prismadd, which is specialized in parts production and industrialization using additive manufacturing. It also has a close working relationship with the SME 3D Materials which is specialized in the production of powders used in the machines for parts production. The two SMEs together are able to test the new materials that 3D Materials produces. By linking up as a cluster on additive manufacturing and mutually supporting each other, the SMEs provide a global offer to their customers: materials, training and specifications on additive manufacturing of parts, as well as the parts production and post treatment.

Working as a cluster with other small companies in the additive manufacturing sector enables them to share investment, with some investing in production and development, while others focus on the post-production side. Although the SMEs are autonomous, they have the same president (Philippe Riviere), and were set up within a short time of one another.

**01 with We Are Group:** The group of 3 SMEs (Prismadd, We Are Engineering and 3D Materials) was brought under the umbrella of the We Are Group. They were able to provide specialized services in additive manufacturing for We Are customers. The association secured them contracts with Airbus with long lead times and the funding which they can use to progress in other sectors; We Are benefited by obtaining new production solutions for their customers. The specific interest for We Are Engineering is that the training they give to customers provides them with knowledge so that they can spread the technology faster and to the rest of their group.

**01 with machine producers:** We Are Engineering is integrating within the company some R&D solutions to improve the capability of the machines they use and the associated software tools. They follow software producers closely to identify novelties and see how they can solve

particular issues. This is a fast moving and developing sector. For this reason, We Are Engineering works with the machine suppliers to improve the machines they use and to test their new machines.

We Are Engineering has not requested any form of exclusivity regarding the improvements on the machine derived from the collaboration, chiefly because there are only two customers likely to purchase that particular machine: one in the USA and the other Prismadd. The machine suppliers gain feedback and insights on improvements or new machines from intensive users, and the advantage for the SMEs is that they obtain fast access to maintenance and machines.

**01 with customers:** We Are Engineering works openly with customers to provide them with know-how and skills in parts development. One such example is a 1-year project they had with Renault Trucks to co-develop a diesel engine. They defined with Renault Trucks which parts they wanted to work on, and then they developed some very specific systems using advanced We Are Engineering know-how and technology and later validated them with Renault Trucks.

This was something that Renault Trucks could not do on their own because they were not familiar with the technology. We Are Engineering worked with Renault Trucks on simple parts so that the vehicle maker was able to acquire knowledge of parts development. By the end of the project, Renault Trucks had the knowledge and some very advanced systems for their new engine. They also worked with Renault Trucks on the potential of some parts which cannot be produced at the moment, but whose production is likely to be possible in the near future because additive manufacturing technology is developing so quickly. This offers Renault Trucks the opportunity to be a step ahead of the game.

Due to the very precise nature of the parts being produced, it is not possible to bring the same solutions to different customers. This allows We Are Engineering to keep things separate between customers and avoids the need for exclusivity. The customers always keep the IP. We Are Engineering aims to keep the IP related to the machines and software developments they do, and they are very successful in this respect.

**01 with R&D centres:** The SME also works with French labs and technical universities to stay abreast of research in this area and how it can be brought into additive manufacturing and be used directly for industry. This usually takes the form of collaborative R&D projects, either funded by the EC (H2020) or by French government grants or

projects, the lab generally keeps the IP and We Are Engineering acquires right of use.

The group of SMEs consisting of Prismadd, We Are Engineering and 3D Materials became an integral part of the We Are Group. Proximity to the aeronautical area in SW France has enabled the SMEs to work very closely with Airbus. We Are Engineering works with them in the qualification and production of parts; they are able to produce serial parts for their planes.

Airbus awards them interesting contracts with long lead times, which gives the SME the necessary funding to support developments in other sectors. Additive manufacturing is pulled strongly by the aeronautical industry, but We Are Engineering is careful not to rely exclusively on them. They work in other sectors, such as automobile, naval and nuclear, to achieve diversity in their production. However, they are only able to work on smaller volumes – such as with Renault Trucks – because they are not able to deal with very large volumes with billions of parts required by core automobile lines.

In terms of managing IP rights with its partners, the SME aims to keep the IP related to machines; IP relating to the parts or solutions is retained by the customer as We Are Engineering has no interest in developing this aspect of the business. With certain suppliers We Are Engineering helps them with patent applications and derives benefit through gaining skills and good publicity. With other QI partners, such as laboratories, the lab keeps the IP and We Are Engineering acquires right of use.

## BUSINESS IMPACT

Through its open innovation collaborations, the company has learnt how to manage multiple QI relations along the value chain. It has also reached new customers through its QI collaborations and networks. Its approach has empowered customers to be able to continue developments on their own in order to advance the technology and its take-up.

The SME has been able to establish itself rapidly within a short space of time and to open other offices (or subsidiaries) in other countries.

## LESSONS LEARNED

This case shows how a small company can establish itself rapidly through QI collaborations along the value chain. The focus and mode of open innovation can change from one phase of the innovation process to another, involving different partners with different partnership strategies at each phase.

### Main lessons learned:

The main lessons learned by the SME are not to work on existing solutions but to focus on innovation; and not to focus on cost as an issue: if your solution is good enough and innovative enough, customers will pay for it.

Key take-away points are that QI can take place highly effectively when done at different levels of proximity to the company. In this case we see QI between 3 SMEs specialized in additive manufacturing and providing services at different points along the value chain. This way they can continue to be extremely agile, innovative and specialized which might be less effective if put into a single entity. They are able to share a customer base. Similarly, their relationship with the We Are Group provides mutually beneficial collaborations.