

BA SYSTEMES

France, www.basystemes.com

A mature SME implemented a technology gatekeeper function to build an OI network and initiate collaborations with academic labs, end users, industrial companies, universities and research enablers at national and international level and thereby generated new projects and revenues

Executive Summary

BA Systemes was established in 1975 with the aim of providing intra-logistics solutions using Automated Guided Vehicles (AGV) for various industries. Today the company develops special mobile robots to meet the emerging needs of industry. In 2007, the company changed its innovation policy to become more open to the outside world and set about establishing partnerships with academic institutes, end users and industrial companies to generate increased revenues. Over time the collaborations resulted in the development of a number of innovative robots for various industries, shared patents and increased revenues.



CASE N° : FG29

SECTOR: ROBOTICS

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: RENEWAL

INNOVATION VECTORS: PRODUCT, PROCESS, ORGANIZATIONAL INNOVATION

01 PARTNERS: PSR, LARGE CORPORATION, OTHER SMEs, OTHER HEIs, LEAD USERS/ CUSTOMERS, INDIVIDUAL EXPERTS, CLUSTERS

KEYWORDS: Inside-out open innovation, outside-in open innovation, robots, high-tech, dynamic

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



BACKGROUND

BA Systemes is a high-tech French SME working in the robotics sector which was established in 1975. In 2007, the company was inspired to start a new open innovation programme to strengthen and expand its portfolio of intralogistics solutions and Automated Guided Vehicles (AGV) and to start a new line in robotics. This resulted in the setting up of three additional companies as part of BA Robotics Systems Group. The company caters to the needs of various industries such as pharmaceutical, bottling and agri-food, while also developing special mobile robots to cater for the emerging needs of other industries, such as construction, automotive and healthcare. BA Systemes presently has around 220 employees, of which half are engineers or PhDs.

In 2007, BA Systemes opted for a strategic reorientation to generate new revenues by opening up its innovation process. The plan was to implement a technological gatekeeper mechanism adapted to the needs of the SME and to initiate collaborations with academic laboratories, end users, industrial companies, universities and research enablers at national and international level. During the period from 2007 to 2014, BA Systemes carried out 15 projects with the involvement of various partners.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Starting in 2007, the company launched its first RID projects (Research, Innovation and Development) believing in the strength of sharing skills and expertise with universities, research centres and large industrial groups. The collaborative R&D projects brought various benefits to BA Systemes. They helped the SME to improve on a continuous basis and to adapt to new needs. The development of prototypes led to the manufacturing of new robots and thereby helped to increase the company's turnover. In the long term, as a result of a snowball effect, BA Systemes increased the number of business opportunities, expanded its network ecosystem and earned a good reputation and credibility in the market.

OPEN INNOVATION TRAJECTORY

Concept development

BA Systemes put in place ways of fostering open innovation both within the SME and externally. Internally they created a gatekeeper figure to manage the QI projects (from detection through to exploitation), whilst externally they worked to establish a network of partners at EU and international level which currently numbers nearly 300 contacts. Thanks to this concept they carried out over a dozen projects in collaboration with other companies and end users, thus expanding into new fields of application, addressing new markets and involving end-users to develop new robots and create joint IPR and file jointly for patents.

The development process, IPR and competition strategy

BA Systemes has carried out a variety of development projects with end users, ranging from healthcare to aeronautics and agriculture. One of the most significant projects has been the !RIMI project ("Imageur Robotise pour les Interventions Minimalement Invasives", i.e. robotic imager for minimally invasive surgeries). The SME collaborated with GE Healthcare, CEA-LIST, C&K Components, IRCCyN, and CR2i (AP-HP, INRA) during the development and testing phases of a robotic imaging system that meets the needs of surgical interventional imaging. Equipped with a 3D imaging system on a C-shaped arm, itself supported by an automated guided vehicle developed by BA Systemes, the robot can acquire patient images during minimally invasive interventions, in cardiovascular surgery and oncology. By partnering with GE Healthcare, the SME was able to deploy its expertise in AGV in a new field (medical robotics) and develop new working methods.

The technology gatekeeper's activity in inbound open innovation benefited BA Systemes in reinforcing a network of alliances with international robotics partners, diversifying the company's activities (a new family of products), and establishing a new, dedicated resource centre to file patents and thus generate intellectual property rights.

In the case of the !RIMI project, BA Systemes and GE Healthcare hold a joint patent. The SME's strategy is to be as open and collaborative as

possible for sharing IPR for development and commercialization. the objects in his/her environment, ensures compatibility with more than 7 billion mobile terminals in the world of which more than 67 million are in France.

Prior to initiating their Open Innovation approach (pre-2007), the SME did not own any patents. For inbound open innovation, BA Systemes follows a three step approach: sensing opportunity, seizing opportunity and transforming the opportunity, i.e. promoting the innovation in the market.

The general strategy of BA Systemes is to develop unique and high-quality robots in line with a market-pull strategy. It considers its market knowledge and leading edge customers as an advantage for its market strategy. It uses almost-ready technology to address emerging gaps in the market and stay ahead of the competition.

Commercialization and follow-up

In the case of the IRIMI project, the Discovery IGS 730 robot was marketed by GE Healthcare. In addition to the joint patent held with GE Healthcare, BA Systemes also created a sister company, BA Healthcare, in 2012 which currently employs 20 people. This sister SME now designs and produces the non-invasive robotic devices in a dedicated production plant for the medical and paramedical sectors and the omnidirectional self-guided mobile base of the Discovery IGS 730 is now being mass-produced, together with GE Healthcare.

In a continuous scale-up of new expertise, through BA Healthcare and later BA Robotics (a third small company set up by BA Systemes and part of the Group), the OI project team now comprises 12 people who have initiated other joint projects in the fields of rehabilitation robotics and personal autonomy. For example:

- A walking rehabilitation robot which is a therapeutic device that helps patients who have suffered a stroke or other neurological patients learning to walk again.
- A new device that will help elderly and/or disabled people to stay at home longer by giving them more autonomy to move.

The SME also continues to work on robotics projects for AGVs in which it has collaborated with end users, such as Airbus and Toyota. Today BA Systemes has agreements and regular exchanges with more than 30 partners in industry, R&D laboratories, higher education institutions, clusters and public bodies.

The collaborative projects with various partners have resulted in 12 patents for BA Systemes. The SME is also involved in licensing out technologies and ideas to reap the economic benefits. The company is actively involved in outbound open innovation as well and has developed a comprehensive process to implement it mainly using Lichtenthaler's six step approach (2011).

The decision to open BA Systemes more widely to its environment entailed significant organizational changes. Within the SME, they created a gatekeeper figure to manage the OI projects entrusted with 3 key activities: (i) sensing trends and market needs, (ii) developing projects and potential products, (iii) valuation and exploitation tasks for ensuring added-value for the company.

The creation of this technology gatekeeper function had a pivotal effect in leveraging the company's network since identifying appropriate partners is a major difficulty for SMEs. The establishment of an independent innovation unit to manage innovation projects, on top of the R&D department, was a strong signal that the status quo had changed, but without interfering with existing processes and routines.

In fact, the core activities in new AGV development were still performed internally. This allowed the company to concentrate on a limited number of technologies (mechatronics, supervision) and to retain a high level of internal skills. This expertise facilitated its absorptive capacity and made it attractive for partners.

Once the inbound innovation processes had been successfully implemented, the SME could not ignore the benefits of reinforcing initial outbound activities. Commercialization is the logical continuation of invention. The recruitment of a manager to promote innovation project results for external technology exploitation was an explicit way to find new profitable applications and to earn additional revenue through new sales channels.

BA Systemes considers its market knowledge and leading edge customers as an advantage for its marketing strategy. In order to commercialize and sell its technology, BA Systemes aims to gain a technological monopoly while protecting its industrial property, generating revenues, improving competitiveness, extending their range of products and increasing their market on an international base. In doing so, it is involved in the following activities:

- Undertaking patenting and licensing
- Implementing technological components in its own products

- Selling technological components to partners
- Selling prototypes
- Marketing semi-finished products
- Selling new products
- Making business proposals as a follow-up to innovation projects

From a single SME started in 1975, the company now has two 2 sister companies and a highly effective open innovation strategy.

BUSINESS IMPACT

The company has learned a number of skills over time. For example, technology scouting and selecting the right partners are considered as top skills for BA Systemes in the case of inbound open innovation. The company initially hired a manager (gatekeeper) whose job was to focus exclusively on exploration and exploitation activities. This was essential for creating and managing an appropriate network of suitable partners, and for facilitating the valuation and exploitation of results for the SME. The company realized that internal R&D knowledge, IP protection and licensing are the most important skills to get the maximum from open innovation practices and become crucial when it comes to finding sales opportunities.

BA Systemes organized a cross-industry exploratory partnership with some of its partners in order to find other applications and markets for its OI projects as well as to design business models for its promising applications. By establishing a specific process for identifying exploitation opportunities, the company has attempted to reduce the risks and transaction costs associated with selling technology in the market.

Open innovation has had an immense and positive impact on the business performance of BA Systemes. After opening up the business process in 2007, the company filed 7 patents in the subsequent 3 years, and by 2014 had filed 12 patents. The company has been involved in more than 15 OI projects to date, some of which have attracted co-funding nationally or from the EU. The company has created around 50 jobs thanks to its innovation activities and also significantly increased its sales revenues.

LESSONS LEARNED

The case is a very interesting example of an SME which moved from closed to open innovation practices. They led to a significant increase in business operations and revenues. It shows how a change in organizational structure becomes necessary over time as the benefits of open innovation start to unfold. The case illustrates the change in networks, organizational structure, evaluation process and knowledge management systems which become necessary with open innovation and how they differ when it comes to inbound or outbound open innovation.

Main lessons learned:

1. Technology exploitation and exploration are crucial and specific human resources are required to follow up on all the developments in the field.
2. Employees with social skills are as important as those with technical expertise.
3. While opting for open innovation, some results have to be disclosed without remuneration, thereby helping to promote the company's profile.
4. The OI practices allowed the development of complex products by integrating tried and tested technologies.
5. The technology gatekeeper and innovation project promoter are crucial for inbound, outbound and bi-directional open innovation.