SATTs At The Service Of Research And Industrial Innovation

By Xavier Apolinarski and Hervé Ansanay

1. Mission

France's 14 SATTs (Technology Transfer Accelerator Offices) were created as part of the government-funded "Investing in the Future" program (*https://www.gouvernement.fr/secretariat-general-pour-l-investissement-sgpi*) to contribute to the exploitation of research. Their mission is twofold. First, they invest in innovation projects led by higher education and research institutions (ESRs) and national research organizations (ONRs) to transfer their results to the industry (start-ups, SMEs, large groups). In addition, they provide consulting services relative to research and innovation exploitation to ESRs and ONRs in priority, but also to public and private companies. These actions allow them to strengthen their research exploitation activity (detecting, raising awareness, promoting the technological offer among industries).

Since their creation between 2012 and 2014, the means given to SATTs through the FNV (National Valuation Fund) have lived up to the stated objectives. The state-funded FNV's mission is to contribute to the exploitation of public research. It dedicated EUR 9 million to SATTs, to be spent over 10 years for their activity and to invest in the maturation of the technologies stemming from the 230 institutions' research labs (70 percent of French public research) in the 14 SATTs' fields of activity; this represents nearly 95,000 researchers and 43,000 PhD students!

The French state set up 14 SATTs to cover all the national territory. These private companies were set up following a call for projects launched by the State. Each scientific research cluster therefore decided on the research labs that would be involved in each SATT project, thus bringing a solution adapted to each major research and innovation site, based on the stakeholders' needs. Toulouse Tech SATT involves more than 4,500 researchers whereas IDF Innov SATT has more than 20,000. Each site is therefore provided with coherent action by the SATT, based on specific requirements. However, at the time of the call for projects, some regions did not submit any SATT file, like Normandy. See Figure 1.

2. The Various Professions Found in SATTs

Each SATT offers companies a portfolio of technological opportunities and brings in the expertise of the labs in its area to remove certain technological barriers and forward their development.

Six hundred experts work in the SATTs, among which the following professions can be found:

- **Innovation project evaluator:** has an extensive understanding of the technologies and skills developed in the various labs, as well as of the potential value they can generate on the markets in the medium and long terms.
- **R&D project manager:** defines the projects' deliverables together with the research institutions (researchers and value enhancement structures) and the operating industries, drives the maturation project, and implements the transfer project with the company or the business creation project.
- **Patent engineer:** assesses the patents protecting the research results to be developed, especially regarding freedom to operate, manages the patent application process according to the intellectual property strategy defined with the user or future user, and finally sees to the maintenance and extensions of the acquired patents.
- **Intellectual property/business lawyer:** assesses the copyrights and brands that protect the results presented to the SATT and sets the transfer project's legal framework together with the project manager; this involves defining a contractual operating scheme, requiring the negotiation and drawing up an operating license contract with the company to which the technology or skill would be transferred. In some cases, this can go as far as providing legal support for the creation of a company.
- **Innovation marketing:** identifies the innovative technology's main technical and commercial advantages in order to define the value proposition and arguments that will allow the valorization of a technology as well as its promotion among industrial companies.
- **Operating contract negotiator:** identifies industries, service companies, start-ups, analyzes their needs in terms of innovative technology, assesses the value-generating needs and uses, and presents them to the labs that have corresponding research offers.
- **Business financial officer:** manages the investments in the maturation projects from a budgetary and financial point of

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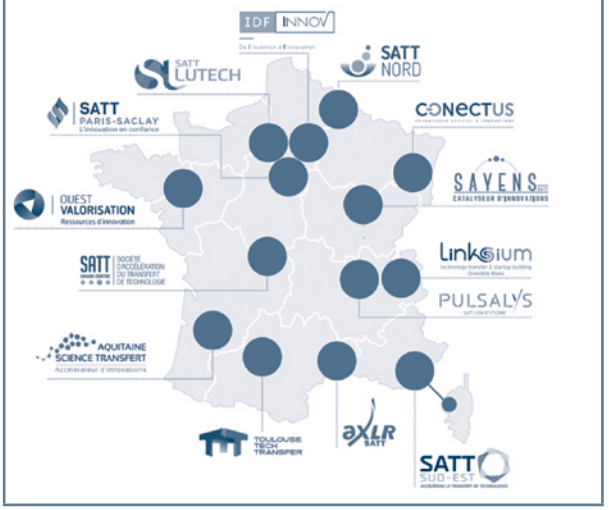
Figure 1: Location Of The 14 SATTs



view, as well as SATTs' possible shares in start-ups' equities.

- **Business creation:** defining, together with the startup's owners, a market strategy, product positioning, and an economic model, and building a business plan consistent with the development of the company's workforce.

SATTs are research exploitation operators for ESRs and ONRs; their assets are the titles to intellectual property: patents, software, know-how, and secrets. Therefore, the various occupations in SATTs either increase the intellectual property assets' value, or market them. See Figure 2.

IP management is at the heart of SATTs' activity. SATTs have operating licenses for technologies coming from the academic world in which they invest. They then grant sub-licenses to the companies or start-ups using these technologies. See Figure 3.

3. Governance and Organization of the SATT Network

SATTs are managed on the national level by a SATT Management Committee comprising all the concerned French administrations. The ANR (National Research Agency) is SATTs' managing operator on behalf of the State.

Each of the 14 SATTs has two types of stockholders, who share the EUR 1 million social capital as follows:

- Research institutions have 67 percent of the capital;
- The Banque Publique d'Investissement (BPIFrance)[1] has 33 percent of the capital, operating on behalf of the National Research Agency (ANR). See Figure 4.

The SATTs have organized themselves into a national network in order to deal with their activities and work together on some subjects, allowing them to share good practice and to pool visibility and cross-country marketing actions. Several workgroups have been initiated in the SATT network, among which are the following:

- The Start-up workgroup: its goal is to share the creation process of "Deep Tech" start-ups, as well as the good practice, and the tools to analyze these companies' created value;
- The Business Development workgroup: its goal is to find efficient answers for companies wishing to innovate from intellectual propriety assets known, managed, or developed by SATTs. See Figure 5.

4. SATTs' Investment Model and Results

SATTs' economic model relies on investments in maturation projects in order to increase the technologies' level of maturity and enhance their value. The results are then exploited through a transfer of technology to an existing company or a newly-created start-up. The revenue from these technology transfers is then shared between the SATT that invested in it and the institutions that co-own the invention. See Figure 6.

4.1. Detection of Innovative Technologies

SATTs have identified more than 10,000 innovative technologies in the 230 higher education and research institutions. Thanks to the detected technologies, SATTs are able to meet the industrial innovation needs. These innovative technologies are assessed according to their level of maturity (Technology Readiness Level, TRL) and can generate titles of intellectual property. More than 4,000 titles and 2,500 patents have so far been identified. See Figure 7.

4.2. Maturation Projects

SATTs make investments in technologies with strong value enhancement potential. A global amount of EUR 380 million has been invested in more than 1,700 maturation projects since their creation. This dynamic of investment has been applied to many fields, with a strong emphasis on healthcare, which represents 50 percent of the projects nationwide. See Figure 8.

4.3. Creation of "Deep Tech" Start-Ups

Figure 2: Organization Of Occupations Towards Technology Transfer

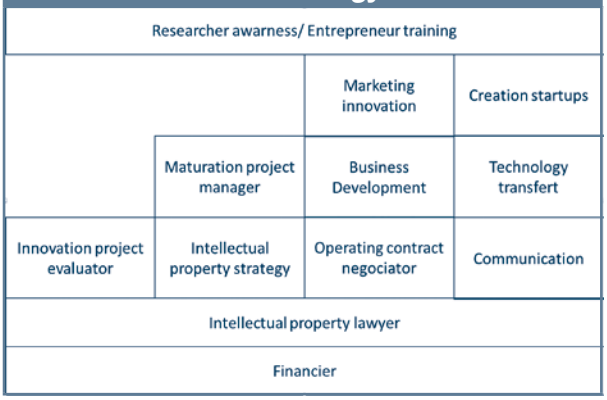
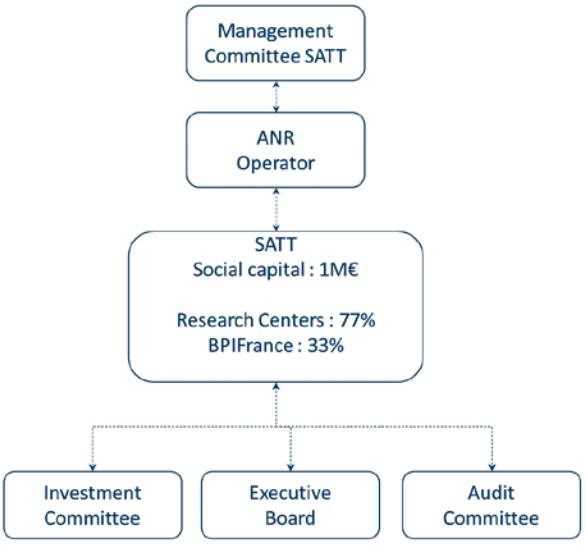


Figure 3: IP Management Organization

Figure 4: Governance And Organization Of The SATTs



1. bpifrance is a public French organization for financing and business development. It is responsible for supporting small and medium-sized enterprises, medium-sized enterprises and innovative enterprises in support of state and regional public policies.

Many "Deep Tech" start-ups are created following maturation projects. These start-ups then have at their disposal assessed technologies with proven proof of concept. More than 320 start-ups have been created until now, 160 of which have successfully raised funds for a total amount of EUR 370 million. It is notable that, according to a BPIFrance study, start-ups coming from SATTs' investments are able to more quickly raise the financial means to ensure their growth and boost their development, both on a national and international level. See Figure 9.

Figure 5: SATT Network's Organization

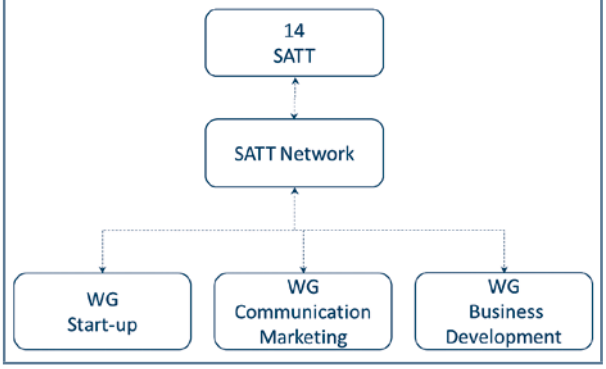


Figure 6: Revenue Sharing Model

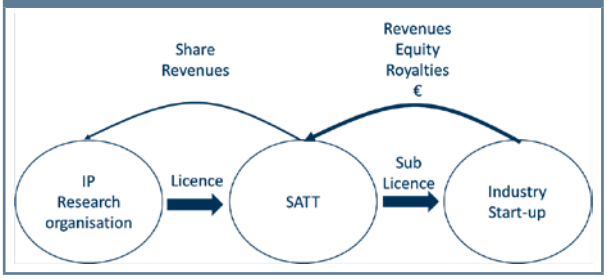
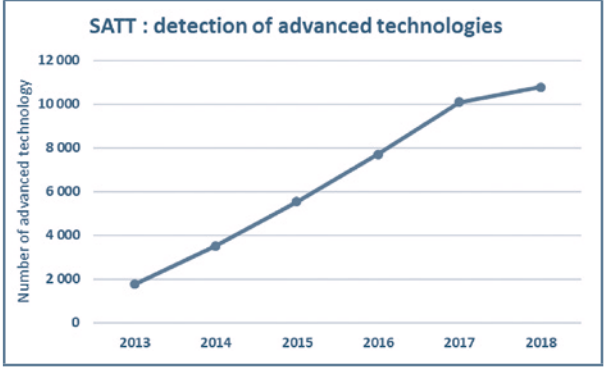


Figure 7: Number Of Innovative Technologies Detected In The Research Institutions



The "Deep Tech" start-ups have a high job creation potential, but they also constitute strategic innovation partners for large industrial groups. The main issue after their creation essentially lies in their ability to raise funds from investors. France now has a strong investment capacity for initiation stages; the investment funds' capacity for development stages, however, is more limited.

5. SATTs, a Fitting Tool for Companies' Innovation

SATTs are now major contributors to industrial innovation, they are connected to many companies—more than 600 large groups and 5,000 SMEs and intermediate-sized enterprises:

- 30 percent of the 5,600 companies are in regular contact with SATTs (180 large groups and 1,500 SMEs/ISEs, *i.e.* 1,680 companies of all sizes). They regularly work with SATTs to identify technologies or scientific skills in order to fuel their dynamic of innovation;
- 95 percent of the first transferred licenses involved SMEs/ISEs; 50 percent of those licenses were transferred to start-ups. See Figure 10.

In order to meet the companies' innovation needs, SATT network's Business Development workgroup coordinates SATTs' response, based on the 230 research institutions' innovation potential, which represent 70 percent of French public research. A specific process has been designed in order to provide companies with an efficient response: one SATT is designated to coordinate the reply to a company. This pivotal SATT leads the search for technologies among all the inventions detected by the 14 SATTs. The objective of this scouting is to take advantage of SATTs' central position with the companies. See Figure 11.

This process gives companies access to technologies with three maturity levels:

- Upstream technologies: 10,778 technologies by the end of 2018 (TRL 2 or TRL 3);
- Mature technologies: 1,700 technologies (TRL 5 or TRL 6) stemming from maturation projects;
- Start-ups: 320 "Deep tech" start-ups;
- Patents: 2,488 priority patents.

This scouting process is now offered to French and international companies within the framework of consulting services. It offers companies an exceptional opportunity to lead an open-innovation process adapted to each scientific or application field while controlling the desired level of maturity.

The difficulty in the relation between the 14 SATTs and the companies lies within SATTs' ability to generate, every time a company expresses an innovation need, the list of available technologies according to their maturity level. Indeed, depending on the company and the industrial sector, especially in biology, the maturity level of an innovation can be interpreted differently.

We share the same value proposition: our network is at the heart of French Public Research and we have the financial means to invest in projects to derisk them, and boost the deployment of innovation in companies. ■

Available at Social Science Research Network (SSRN):
https://ssrn.com/abstract=3380550

Figure 8: Number Of Maturation Projects (380 M€) SATTs Invested In And Distribution By Field Of Application

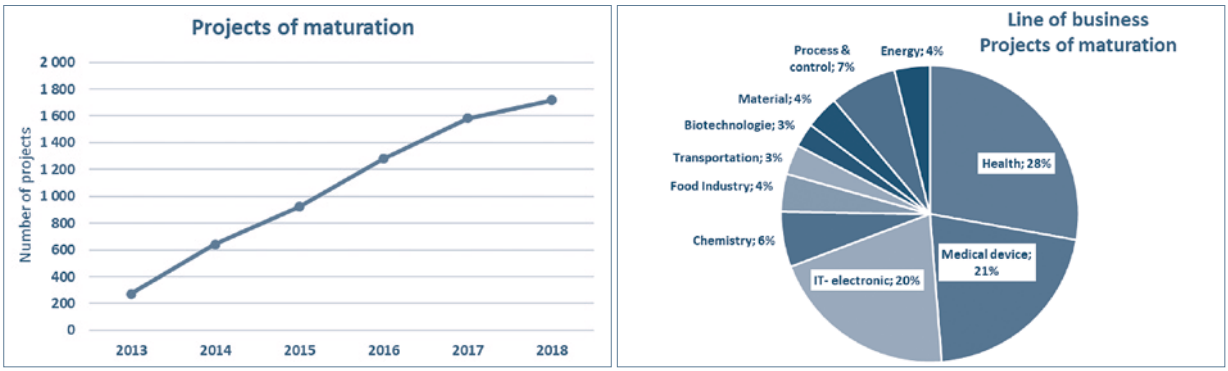


Figure 9: Start-Ups Created From SATTs' Investments In The Technologies Coming From Public Research Labs

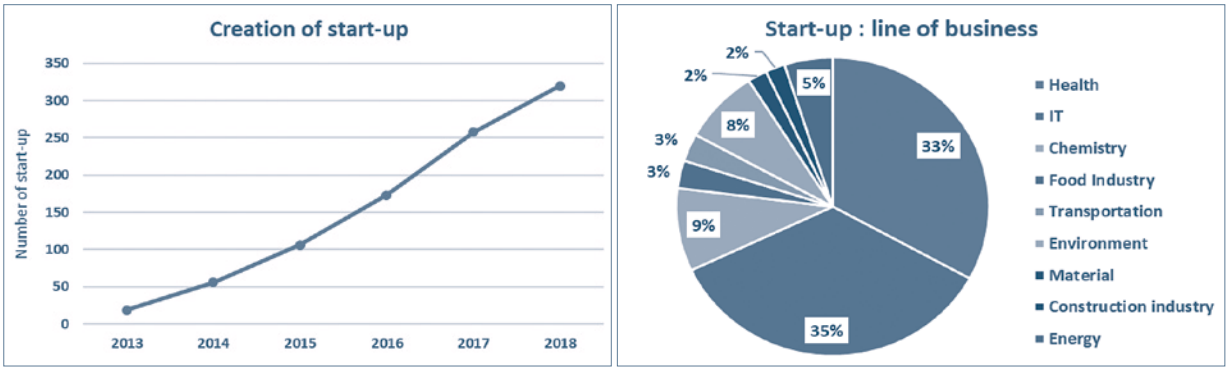


Figure 10: Distribution Of Technology Transfers By Type Of Companies

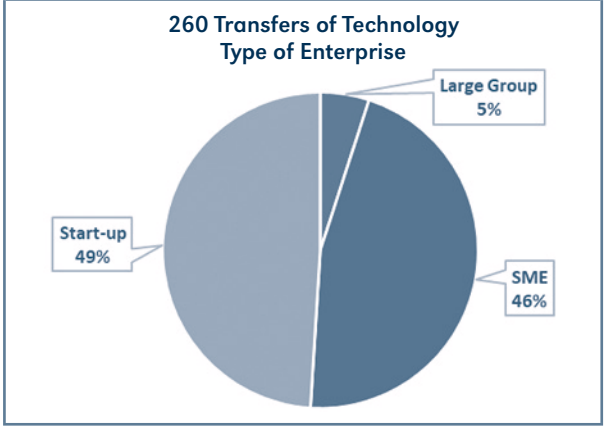


Figure 11: Coordination Of The SATTs