Innovation and startups
in cybersecurity in France:
The upturn?

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Abstract:
Cybersecurity menaces are evolving fast, the labor market for skills in cybersecurity is now tense, and manual interventions must gradually be replaced with automation. This need for innovations is stimulating the formation of startups in cybersecurity on the international scale. We now observe an ever growing ecosystem and positive signs of its transformation: clients are now willing to take more risks; the market is increasingly investment-friendly; and startups are ever more innovative. However startups face problems: difficulties with recruiting, the lack of risk-taking, or their not very efficient marketing strategies with repercussions on their sales. If all parties become active, this transformation can be realized: startups must learn to sell; clients, to take risks; and the market, to stimulate the growth of startups.

As everyone knows, threats to cybersecurity are evolving fast. Cybercriminals have a boundless imagination and constantly improve their hacking methods in the effort to work around protective barriers. Protection procedures must, therefore, be adapted to be on par with attacks, whence an even greater need for innovation in cybersecurity. This holds especially in the financial sector, a recurrent target of cybercriminals with highly sophisticated skills. Anti-scam systems, transaction systems and mobile applications are repeatedly targeted by successful attacks that turn a profit for cybercriminals.[1]

Given the current tensions in the labor market for skilled professionals in cybersecurity, manual interventions have to be gradually automated. The solutions for doing so are market leaders, notably in surveillance and detection. They are intended to reduce the number of false positives, which are often very time-consuming. We might also mention the new uses of artificial intelligence (or rather machine learning), in particular for the fight against scams. AI helps to reduce the number of false positives and thus improve efficiency.

The imperative of innovation is favorable to the creation of startups in cybersecurity on the international scale. In 2019, the pump was primed for changing the business environment of French startups in the cyberrealm. The dynamic force of these startups needs no proof, and French entrepreneurs shine owing to their capacity for innovations in various fields of cybersecurity. Which concrete actions will help spur the growth of these startups so as to enlarge the scope of their activities and thus confirm the change of scale under way?

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[1] This article has been translated from French by Noal Mellott (Omaha Beach, France). The translation into English has, with the editor's approval, completed a few bibliographical references. All websites were consulted in March 2020.

An ever more dynamic business environment

The number of startups has grown by 18% since January 2018

Wavestone's "radar" of French cybersecurity startups now lists 134 — 25 more than in January 2018.[2] It is noteworthy that their size is also evolving positively. Although most of them are still "very small companies", the number of "small companies" has risen nearly 56%. In all, these 134 startups account for more than 1200 jobs, nearly 9% more than in 2018 (and for the third year in a row).

Figure 1: The 134 startups in cybersecurity: Number of employees in these very small, small and medium-sized companies
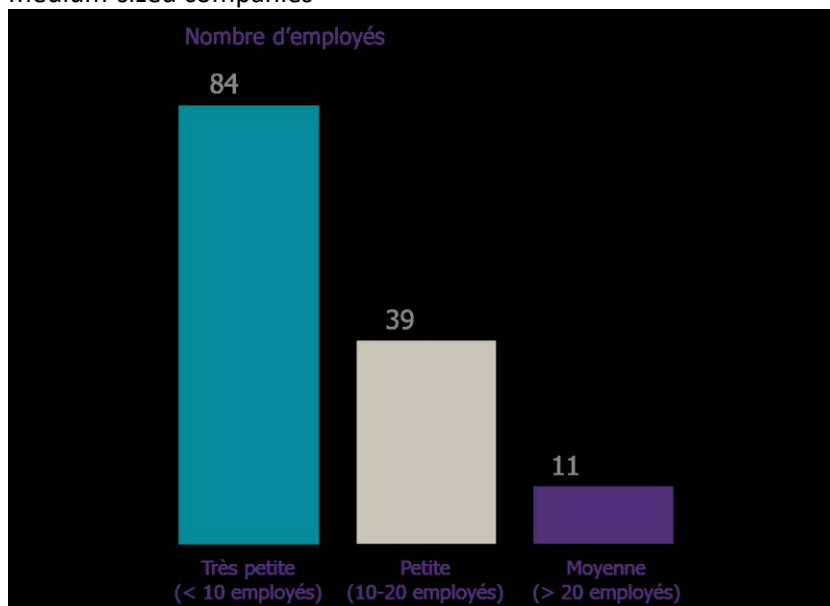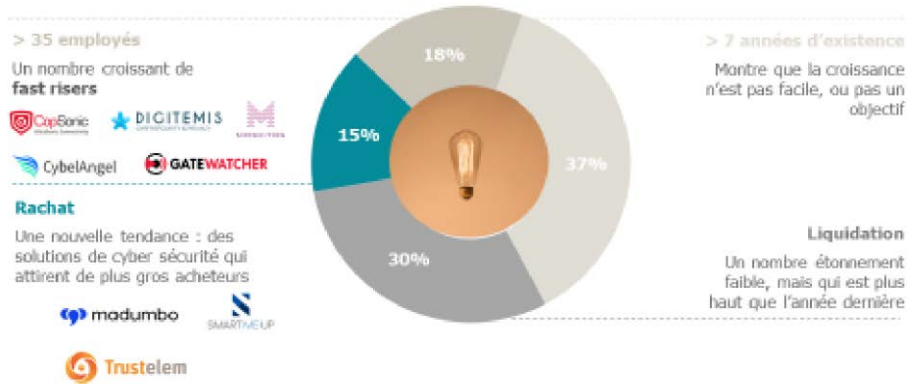

What about the companies no longer on the list? There were 27, only four more than the previous year. However 37% of them were omitted owing to their age (in existence for more than seven years) even though they still had fewer than 35 employees. This might be evidence of their growing problems; or more simply, it might mean that their founders do not want to grow and take risks — the low rate of liquidations (30%) argues in favor of a lack of risk-taking. In 2019 however, the cases of fast growth (*i.e.*, startups with more than 35 employees before reaching the age limit of seven years) are more numerous (18%); and we even observe the first buyouts (15%), evidence that these startups are highly attractive.

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[2] https://www.riskinsight-wavestone.com/2019/10/radar-startups-2019-13/
&
https://www.riskinsight-wavestone.com/2019/10/radar-startups-2019-23/

Figure 2: 27 startups no longer on the list

27 startups ont quitté le radar

Geographically, there were few surprises compared with the preceding years. Though centered in the greater Paris area, this ecosystem is well distributed owing to the business incubators in regions outside Île-de-France. The importance of Rennes as a technology cluster in this field has grown thanks to the investments made by the Ministry of the Armed Forces, which wants to create a second technological cluster on cybersecurity. The DGA's cybersecurity activities are being concentrated on the campus at Bruz, near Rennes.

## Very positive signs of a changing business environment

Identified as an essential axis for the development of this business environment, corporations are more frequently financing proof-of-concept projects. This now concerns 67% of the startups in our survey. This "democratization" is a very positive sign for this business environment. Besides relieving startups from the burden of this initial investment, this funding is evidence that the position of big firms is changing as they come to place trust in our French gems.

● POSITIVE SIGNS FROM THE MARKET

Congratulations are merited given the results of fund-raising for cybersecurity startups in 2019. Our radar detected that the total amount was four times higher than in 2017. No fewer than seven startups raised around €10 million. Also noteworthy is that Vade Secure, a French firm, raised €70 million via General Catalyst, an American fund; and Dashlane, a Franco-American startup, raised $110 million. Furthermore, Vade Secure will take part in Next40, a program recently announced by the government for accelerating the growth of the 40 gems of French high tech. This can be set down to the start of a demystification of this business environment so that investors feel less skittish. Further evidence of this growth of confidence is the creation of a cybersecurity investment fund, Brienne III. This fund, with a first closing of €80 million, will reassure investors even more and help spread the "good word" about this business environment.

Figure 3: Fund-raising

Levées de fonds (en Millions d'euros)
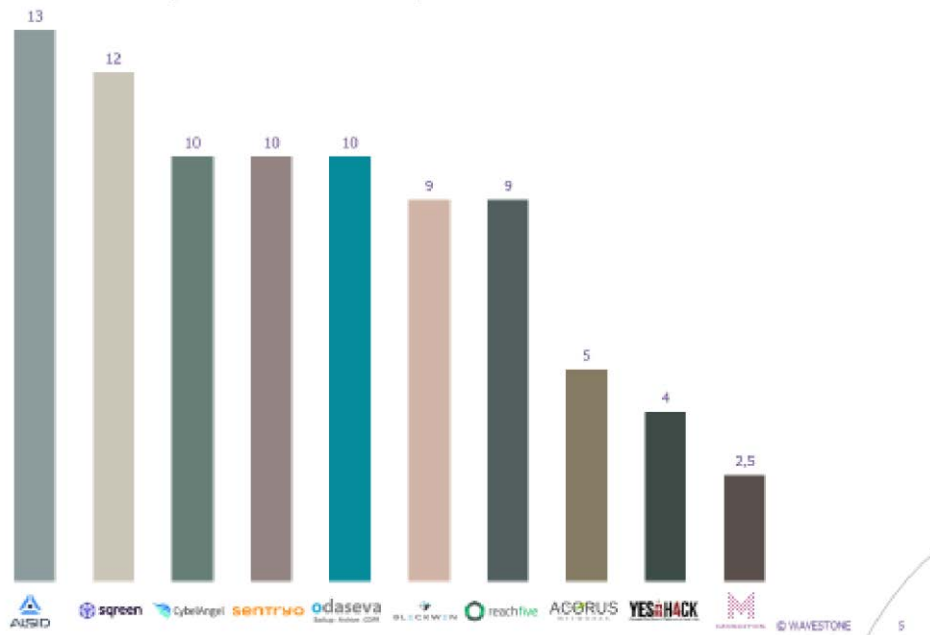
Let us also point to the first exits from this list of French startups. In 2019, four companies left the list, among them: Trustelem acquired in July by Wallix;[3] Sentryo, which has advanced in negotiations with Cisco for an integration during the first quarter of 2020;[4] and Madumbo bought by Datadog, a Franco-American editor.[5] This is proof that the French startups are increasingly differentiated, whence their attractiveness. On the other hand, these exits are very often linked to foreign firms; an most of them result in an off-shoring of the centers of decision-making and R&D. This is deleterious to the survival of a lively business environment in France and to the country's sovereignty in high tech.

Another positive sign of market trends is the opening (in the business district of La Défense, just west of Paris) of the foundation Innovation Defense Lab (which will be part of Starbust Accelerator) for fostering collaboration between startups and the DGA.[6] In parallel, the government has plans for a "cybersecurity campus" for fostering synergy in this environment by bringing together industrialists, startups, academics and certain ministries and agencies.[7]

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[3] See the press release from Wallix, "Wallix signs the first acquisition under its Ambition21 Plan with Trustelem, a French startup in cloud access management" at
https://www.wallix.com/en/2019/07/03/wallix-signs-first-acquisition-ambition21-plan-trustelem-french-startup-cloud-access-management/.

[4] CERTES N. (2019) "Cisco prêt à mettre la main sur Sentryo", *Le Monde informatique*, 30 June, at
https://www.lemondeinformatique.fr/actualites/lire-cisco-pret-a-mettre-la-main-sur-sentryo-75547.html.

[5] CROCHET-DAMAIS A. (2019) "Datadog rachète la start-up parisienne Madumbo et se renforce dans l'IA", *Journal du Net*, 12 February, at
https://www.journaldunet.com/solutions/cloud-computing/1421526-datadog-rachete-la-start-up-parisienne-madumbo-pour-booster-son-ia/.

[6] MINISTÈRE DES ARMÉES (2018) "Le ministère des Armées lance l'Innovation Défense Lab", 1 Ocober, at
https://www.defense.gouv.fr/dga/actualite/le-ministere-des-armees-lance-l-innovation-defense-lab.

[7] PRIME MINISTER'S OFFICE (2019) "Un campus cybersécurité pour renforcer l'écosystème français", press release of 23 July at
https://www.gouvernement.fr/partage/11104-un-campus-cybersecurite-pour-renforcer-l-ecosysteme-francais.

The internationalization of startups provides them with major leverage for growth, as French cybersecurity startups have realized. Half of those surveyed already had foreign customers. Furthermore, 15% were looking for international opportunities: they were equipping themselves to gain access to bigger, more strategic, potentially more mature markets. For this purpose, they were looking for the leverage necessary for their growth.

Innovation grew in importance in 2019: there was a higher proportion of innovative startups among the newly created ones. In effect, 44% of the startups created in 2019 proposed disruptive solutions not already found on the market. As compared with only 19% in 2018, 31% of the startups in our study fit into the category of "creating new solutions for security".

Figure 4: Ever more innovative startups
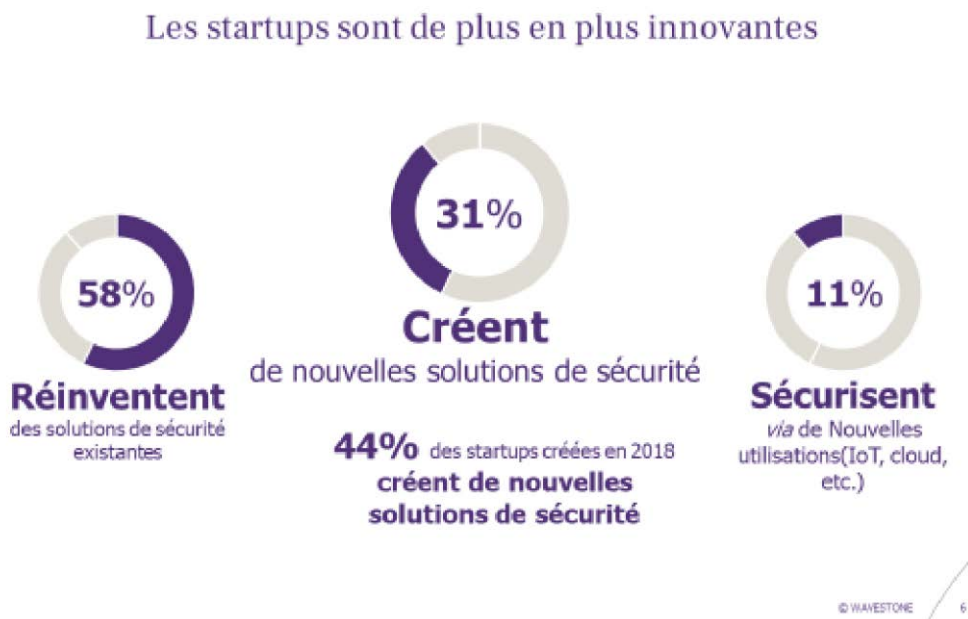
In spite of competition, these entrepreneurs are innovating in mature fields of cybersecurity. To increase their market share, they adopt new approaches. For instance, some startups in identity and access management (IAM) are using AI to speed up decision-making or improve data security. Some are proposing a decentralized storage of data so that firms remain in control of their data.

Figure 5:

The 2019 French CYBER-SECURITY STARTUPS radar by WAVESTONE

Now understanding the market, some startups have staked out positions on topics that are trending, such as the protection of privacy (given the enforcement of the EU's General Data Protection Regulation) or sharing solutions (with the promise of a high level of security with an acceptable user experience). Since the theme of emergency management has cropped up, solutions are being offered for assisting firms in crisis management. In contrast, very few of these French startups have focused on "security by deception" (for deceiving hackers so as to prevent successful attacks).

Obstacles encountered by startups

Exchanges with representatives from startups have shed light on the concrete obstacles that some of these companies are ambitiously trying to lift:

● THE DIFFICULTY FINDING RECRUITS WITH THE RIGHT PROFILES. Like other firms in the labor market, startups in cybertechnology have to come to grips with the shortage of specialized labor. Young graduates are not sufficiently educated in cybersecurity to make up for this shortage of personnel or to want to create their own startups. This situation holds for the whole cybersecurity market and even more for startups, which usually cannot keep up in the wage race.

● RISK AVOIDANCE. Among the founders of startups, 66% had already created a firm; but very few had created several, even though their average age was over 40. Given their profiles, these founders tend to resemble experts more than bold serial entrepreneurs. While commending the tenacity of certain startups, we must point to this fear of failure, a recurrent obstacle in France (but not elsewhere). An entrepreneur from Silicon Valley or Israel will not receive due consideration till after several failed attempts at setting up a company.

● A DEFICIENT MARKETING STRATEGY…. The members of startup teams are more characterized by their technical profiles and specialization in security than by their sales skills. As a result, startuppers have a hard time making their offers attractive to prospective clients. More effort has to be put into marketing (both the products/services and sales pitch). Anglo-American incubators have accelerated business programs. For instance, Cylon, an incubator in London specialized in cybersecurity, offers training in working out the right sales pitch for one's startup so as to attract potential investors, clients and partners. Startups on the other shore of the Channel or of the Atlantic profit from such programs and are known for their sales force.

● …WITH REPERCUSSIONS ON SALES. The deficient marketing strategy has, of course, repercussions on sales. French startups do not encounter problems related to the phase of creation; but thereafter, in the short or medium run, they do have difficulty advertizing their offers and selling. Only 15% of the startups contacted reported sales of more than €500,000. Among them, two thirds had been on the cybersecurity market for between four and seven years.

Where to go from here?

For startups: Learn to sell

To reach more customers and optimize costs, these startups have to design on-the-shelf offers. To do this, the founders have to work out a single sales proposal rather than targeting a market segment as such. A key approach would be to stake out a position around problems not yet addressed on the market. Big industrial groups are more willing to work with startups that solve problems for which no solution exists on the market. A good example is Alsid, which stood at the top of our ranking of startups in terms of fund-raising. It offered a solution that did not previously exist : monitoring the security of Active Directory (AD) for Windows domain networks.

Les axes d'améliorations

A major way to improve their development would be for startups to make a clear, attractive sales pitch that concentrates on what sets their offer apart. This is crucial for convincing investors, partners and clients of the additional value created by the offer.

Another point is important. From the very start of the process of developing a product or service, design and the user experience have to be taken into account. This could offer a genuine advantage in a market where competitors overlook this point. Having realized this, the Israeli startup Cybereason hired a "VP of Creative & Head of Design" to imagine the design of its products in parallel to the building of software features.

From their very creation, startups must not be reluctant about thinking "internationally" (language used on the job, the documentation of source code, instructions for using products, etc.) so as not to make it even harder (hard as it already is in sales) to penetrate mature markets and thus accelerate a change of scale.

For the market

While incubation brings several advantages to startups (an outside view, services at a reduced cost, etc.), there are requisites specific to the field of cybersecurity: confidentiality, scientific expertise, physical protection, etc. For these reasons, few of these startups find an adequate place in a normal incubator, whence the need for an incubator specialized in cybersecurity… which could become a landmark of "French cyberinnovation" and a reception center for investors and major clients. France is planning to establish a cybersecurity hub, a first set of proposals having been submitted to the Prime Minister's Office in late November 2019. This hub will hopefully offer a genuine environment conducive to the development of startups, along with support services beyond the provision of assistance with research.

A good idea would be to encourage former members of ANSSI or of the Armed Forces active in cyberdefense to create startups. Their networks of contacts and expertise, acquired over the course of their careers, would be factors of success (evidence of this being the former employees from ANSSI who founded Alsid and Citalid).

For clients

To foster a business environment, client firms must accept to take risks. They still find it hard to have confidence in young, innovative companies and to sign contracts with them. For a quarter of the startups in the survey, the interval between the proof of concept and the signature of a contract amounted to more than six months. This fact has implications for big groups, which should draw on the example of big Israeli firms. The latter turn quickly toward startups when they detect problems without solutions on the market. They accept to take a risk by negotiating very attractive price scales for the future. The state, we imagine, could also stimulate risk-taking so that big industrial groups work with startups. To remain with the same example, Israel set up an independent agency that selects innovative projects for which the state invests a shekel for each shekel invested by the private sector.[8]

Moving toward realizations

Innovation in cybersecurity in France turned upwards in 2019. For this sector to maintain this momentum and realize a change of scale, the improvements mentioned herein must be made along with a change in the mentality of this much too closed business environment. With the help of various players, this trend will be sustained. Plans for big public projects, in particular the cybercampus, represent a unique opportunity to change the business environment. We can also be pleased with the government's recent announcements about creating a "late-stage" fund, which could lift some of the obstacles to the growth of this sector and, in particular, could help keep our startups in France or at least in Europe. In 2020, the effects of these announcements on the growth of startups and on fund-raising for them will hopefully show up on Wavestone's next radar…

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[8] https://innovationisrael.org.il/en/