Vision-Box: When the sky is just the beginning

Teaching Note

Synopsis

Vision-Box is a technology firm that provides robust and trusted digital identification technologies. Its core business is in the border control industry but it also provides solutions to the identity management and security surveillance markets. The use of biometrics in the border control process was the disruptive innovation that enhanced its exponential global growth. In order to take advantage of increasing demand for its main products, develop the product offer with significant investments in software and big data, and secure the leadership in its niche before stronger competitors make their entry, the company needs to raise outside capital. This case discusses the company's evolution and how it quickly grabbed the opportunities it re recognized, first by entering identity management and later by expanding into border control automated systems. The case raises the challenges arising from financing and managing rapid growth.

Pedagogical Objectives

This case can be used to address the importance of strategic flexibility in startup management, illustrating how flexible entrepreneurs with an eye for opportunity may switch the use of a superior technology from one market to another having greater market potential. It may also be used to illustrate how technological innovation is frequently driven by market opportunities rather than the technology itself. The case also illustrates some of the challenges stemming from fast growth, namely the need to quickly move from an informal entrepreneurial outfit assembling products in a tailor-made approach into a more formalized organization with proper management structures, appropriate HR and cultural management, and professionalized operations and manufacturing.

In a startup strategy course this case may be used to discuss how technology may be used to develop a market niche, how defensible that may be, the buildup of a competitive advantage and its sustainability in the face of powerful potential entrants.

This case may also be used in an entrepreneurial finance context to illustrate a dilemma typically faced by cash flow positive startups being able to bootstrap on early stages when it becomes evident that profitability is not enough to finance future growth. The case raises the dilemma on how to raise that extra cash, and the advantages and disadvantages of debt versus private equity funds or an IPO.

This case study was prepared by Frederico Dhanis de Andrade.

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Finally, Vision-Box is a good example of how a company from a small country can succeed in the global technological arena by identifying an untapped niche and quickly growing to exploit first-mover advantage and also to illustrate the challenges in keeping such a position.

Keywords: Entrepreneurship, Financing, Innovation, Growth, Growth Fund, Private equity, Biometrics, Border Control, Bootstrapping, Identity management

Suggested student questions:

- What is unique about Vision-Box?
- What did the founders do especially well?
- Is Vision-Box a good opportunity? Analyze it.
- What is Vision-Box's value proposition to clients?
- How sustainable is its competitive advantage?
- How did Vision-Box attain this growth?
- What are the specificities of financing innovation?
- Why not consider an IPO at this stage?
- What are the different financing options management should consider to finance this growth? Determine the specificities of each type of financing. What are the pros and cons of each alternative? (Debt, VC, and Growth Fund)

What is unique about Vision-Box?

Vision-Box is far from being the only company in the world working on facial recognition biometrics. However, the uniqueness of Vision-Box comes from the application of facial biometrics in the border control industry, being the developer of the first Automated Border Control (ABC) based on facial recognition. This disruptive innovation allowed it to enter a market with high barriers to entry and make the difference with their solutions while creating a defensible niche. Additionally, none of its competitors offer a completely integrated solution in that field while Vision-Box, by controlling the entire value-chain, may provide highly customizable solutions to clients in a very short period, allowing it to quickly gain new clients and grow. The products are built in a modular way, meaning that the final product is a combination of the different modules as per the client's demands, thus allowing it to adjust the value proposition to each client's needs.

The solutions and differentiation characteristics are also extended into the more competitive Identity Management business, in which the company provides solutions involving all the processes required for digital identity management, mainly to governments. They developed innovative and more efficient solutions that enjoy an increased quality in the capture of information, making the new identification documents more secure and reliable.

Finally, the powerful software that they designed, containing specific coding that is company property, in combination with their hardware, enables the processing of an incredible amount of data within seconds. This seamless synchrony of the information captured by the hardware and then treated by the software, gives a highly significant value added to Vision-Box's product.

What did the founders do especially well?

As it happens with many technology entrepreneurs, Bento Correia and Miguel Leitmann founded a startup to commercialize a superior technology, in their case the application of image processing of facial recognition biometrics. The target use for their technology was in the security field, for which they developed a few products targeting shopping malls as their main market. However, instead on being totally focused on that particular application of the technology, the founders were open to any other opportunities that could provide a better market. Their response to the Portuguese Government's tender for a new Identification Management System based on biometrics was a bold move considering that they had no experience in the field and would certainly face competition by giants such as Safran. However, that did not deter them from heavily studying that opportunity and developing a prototype that ended up exceeding the Government's expectations.

After winning the bid, the founders could simply focus on developing their new Identity Management (IM), but instead they also started exploring for opportunities in the world that ID cards with biometrics could open. They were correct to identify the opportunities opened by the change in the way the United States handled foreign citizens entering the country under a visa waiver scheme. Demanding them to carry electronic passports or be subject to formal visa requirements, this prompted a large number of Europeans and others to replace their traditional passports by e-passports with biometric data. With Portugal being the 5th European country to implement an e-passport an important market was still open for their IM services, surely. But this also meant that a growing number of air passengers would be travelling with such documents, thus opening an opportunity to develop a totally new industry: secure automated border control solutions. Until then, such systems were rare and relied on fingerprints only, being mere adaptations of solutions developed for corporations to control admissions. Vision-Box's approach was unique in its use of the full use of the biometric data stored on passports.

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Having convinced the Portuguese Government to test the system at Faro Airport, the country's second largest, the founders were quick to learn from the tests and develop a product that met their requirements. Luck seems to have played a positive role when an important British MP was so impressed by the system that he wanted to introduce it to his Government. Although their ABC system was still undergoing tests, the founders were not afraid to present it to the highly demanding UK Border Control. They knew that this was a lifetime opportunity: if they could convince such a demanding client, then many others would follow.

Flexibility brought Vision-Box from Security Solutions into a more interesting Identity Management, and later to an even more appealing Border Control market, where they established themselves in a niche. The founders looked at each opportunity as a real option and exercised the ones in which they saw significant value, and abandoned all those for which little value was found, such as their initial shopping mall security solutions.

When the United States introduced the ESTA system for admission of visa waiver travelers the workload of the US Customs and Border Protection officer increased substantially. After 9/11 such officers had to record facial and fingerprint biometric data for each traveler, which required considerably more work. Later, to ease the process of visa waiver travelers, the introduction of ESTA meant that an additional control had to be performed on such passengers. Lines for immigration at US airports were getting longer, and more officials had to be moved to the passenger-attendance booths. Armed with their UK credentials and seeking an opportunity, the founders approached the US authorities with the idea of the ESTA Kiosk that would reduce the workload on the immigration officers by automatically processing the American and ESTA cleared visa waiver travelers entering the country. After many tests the system was approved and deployed in many US airports, including some of the busiest.

Throughout this period of new product development and fast growth the company kept the quality of its products at a very high level. The founders developed a strong culture emphasizing not just innovation but also excellence, responsibility to customers, and high ethical standards, to be shared by high quality people. They were quick to understand the importance of a formalized and structured recruitment process, of having proper systems to retain, develop, and incentivize talent, and to redevelop manufacturing in a way that guarantees efficient costs without sacrificing customization and quality.

Additionally, the founders understood the difficulties in keeping their niche secure form the entry of powerful competitors. As a result, they kept launching new, more integrated comprehensive products and solutions such as Happy Flow and Orchestra, while planning future ones based on big data analysis of airport passengers, with the goal of strengthening their technological leadership and creating some barriers to entry to newcomers that could develop some version of the e-gates or self-check-in kiosks.

Is Vision-Box a good opportunity? Analyze it.

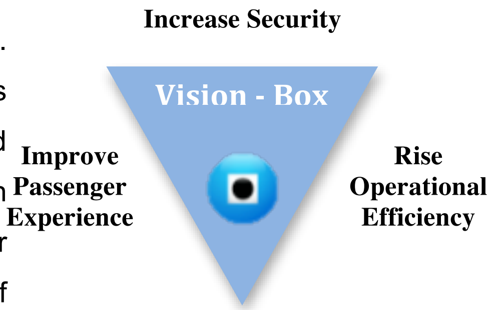
Vision-Box is operating in a huge market that has been experiencing consistent growth rates over the years, which are forecast to continue in the future. By 2014 the total number of passengers was 3.3 billion, and this number is expected to increase to 7.3 billion by 2034, representing an expected average annual growth rate of 4.1%. This trend may be seen in **Case Exhibit 9**. The aviation ecosystem has also been affected by several critical security questions. Since the 9/11 event, the level of security, control, and monitoring of travelers has increased exponentially. People mobility around the world has become a critical and sensitive issue, due not only to strict controls by immigration authorities but also to some abnormal events such as the persistence of terrorist threats or the challenges posed by recent refugee crises.

As a result of the increase in security requirements and the growth in the number of passengers, airports are becoming crowded and the time spent on security controls is increasing dramatically. The existing facilities are difficult or even impossible to adjust to the growing pressures, turning a chaotic situation into one of imminent danger. There was an obvious need in the market to increase the efficiency of the traveler management process. As stated in the case, the ABC market is valued at €700 million and is expected to reach €2 billion by 2020. There are many upcoming opportunities and the company is very well positioned to take them. Vision-Box's technology has been offering solutions to make these processes more efficient, improving the passenger flow while increasing the reliability and security of the controls. Their innovations and credibility allowed them to sit at the table with top-tier institutions and regulators, thereby influencing the standards and rules of the market. On top of this, their broad patent portfolio for hardware products creates important barriers to entry to new potential competitors.

The Identity Management business is also an interesting opportunity, as it is very important for governments to manage their citizens and fight the problems regarding fraudulent behaviors and forgery of ID documents. It was commonly accepted that new means of identification were needed in order for it to be more difficult to forge these documents and at the same time, make it easier to detect possible counterfeit papers. In addition, there was also the concern of offering citizens the possibility of a paperless solution, decreasing the number of cards that they need in order to identify themselves. There is still a large market to reach in this business segment. **TN Exhibit 1** shows a SWOT analysis of the firm's business.

What is Vision-Box's value proposition to clients?

The value added by the company may be segmented across the different customer targets. The solutions offered satisfy the needs of governments[i], border control authorities, airlines, and citizens.



Governments benefit doubly from Vision-Box's products. On one hand, in the identity management business governmental institutions are now able to offer modern and more reliable identification documents that contain much more information, namely biometric data. On the other hand, in the border control business the number of improvements brought by their innovations is more extensive. Starting with the obvious increase in security and reliability of the new control processes, governments now have access to a powerful tool to manage the flow of people across countries. Several illegal activities are now much easier to detect, namely the control of possible terrorist threats, the reduction of illegal travelers, and even the important identification of travelers' overstays, which may represent a huge cost for countries. All the crosschecking of information with databases, such as the ones of Interpol or the FBI, is now much quicker and less likely to fail. Lastly, the perception of the country visited may also improve as it is directly linked to the way tourists are received and treated. If by the time a tourist arrives at an airport, he is easily monitored by a fast process, this will cause a good first impression of the country, improving the overall experience and feedback.

Border control authorities have seen their operations increase efficiency by dealing with a much greater number of passengers in less time. In addition, authorities are also able to reduce their costs by decreasing the staff needed to perform the control. Their control has also become more accurate through the use of more reliable means to scan and verify the authenticity of the documents. Vision-Box's solution is more reliable than the human eye.

Airlines also benefit mainly with the logistics involving passenger experience on the ground. Due to the decrease in long lines and the ease of the airport logistics processes, such as the bag drop, this new facial recognition technology improves the people flow, avoiding delays.

Citizens are also benefiting in two ways, even without being directly a client in the border control market. First, in the identity management sector they have paperless solutions, meaning that one new ID card incorporates the information embedded in three or four earlier ones (e.g. personal identification, tax-payer identification). This new document allows for a digital interface, facilitating some bureaucratic processes that can now be done through the Internet. Second, when evaluating the benefits for travelers, the new border control system has brought a solution that is much faster and less intrusive for individuals.

Last, the reduction in the time spent in lines and with security procedures has enhanced the retail experience offered in airports. Passengers are now able to spend more time in shopping areas, and consequently boosting sales. This is a very important concern, as these areas have been facing several changes to become more attractive and provide a better customer experience.

Concluding, the company focuses its operation on supplying innovative and enriching solutions to institutions while thinking about the best ways to improve citizen and passenger experiences.

How sustainable is its competitive advantage?

Vision-Box has a dominant position in a niche. The market for automated border controls has many players but only Vision-Box offers an integrated "turn-key" product for automated border control based upon facial recognition using biometric data stored in electronic passports and a few other identification documents. In that niche competitors do not offer a fully integrated solution, as they have to integrate solutions provided by different parties. They are therefore slower to respond and less able to customize their solutions.

Vision-Box´s superiority relies less on the technology itself, and more on the way it was developed to serve a very specific purpose in which the company attained undisputed leadership. So far, such leadership has not been challenged, perhaps due to the small size of the niche. However, in situations like this, Vision-Box's success may attract the interest of players such as Safran, whose experience in biometrics and identification management, combined with strong experience in dealing with airports, may allow it to quickly enter the niche with better solutions.

For Vision-Box, staying focused on the ABC e-gates is by no means a guarantee of long-term survival. On one hand, selling hardware is not a particularly interesting business in itself. Once a significant number of airports adopt the system, the sales of e-gates will drop significantly, the firm becoming totally dependent on maintenance revenue, which now accounts for merely 20% of the revenue. On the other hand, this is the area where competitors may easily develop their own alternative solutions.

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An important strategic asset that this company has developed is its reputation. Being able to satisfy the difficult requirements of the British and American authorities gave it an enormous reputational boost that placed it in a unique unrivalled position within its niche. Eventually the company became a trusted advisor to the authorities that regulate the sector. The ability to influence the rules and standards of the sector gives it a huge competitive advantage by allowing it to manage its business according to future standards it helped to create, which in turn are difficult to meet by new entrants in the business. This is an effective way to create barriers to entry and to protect one's position in the market.

For Vision-Box, as for many other technology firms, sustainable competitive advantage is not associated with the superior technology employed in its current products, but rather in possessing a technological platform capable of generating a continuous flow of innovation, with every new product being one or more steps ahead of copycat competitors attempts.

It is hard to say, at the date of the case, whether or not Vision-Box's technological platform has such a capability. Indeed, it seems that the management is putting an enormous effort into hiring highly talented and innovative people to work on new more integrated solutions, such as Orchestra and Happy Flow, which certainly have a higher value added than ABC kiosks. However, it is unclear at the date of the case whether such solutions will become a commercial success. The company's entry in Big Data is a major question mark. The company has no previous experience in the field and there is the risk that they are just following the "fashion of the moment" in order to try to ensure long-term survival.

How did Vision-Box attain this growth?

After entering its first business area, Security Surveillance, the company embraced an open strategy to explore new markets. Identity Management and Aviation and Border Control, their two other business areas, arose from reacting effectively to challenges posed by the Portuguese government and even their own initiative. Growth was mainly driven by the uniqueness of its solution and strong value proposition. The internationalization was triggered by the opportunity offered by the British member of parliament, who ended up providing an important stamp of approval. The growth may be seen as a sequence of good opportunities that the company never missed, getting in a success path in a big and growing market.

Bento Correia and Miguel Leitmann were able to anticipate the market´s demands. Their ability to remain one step ahead of the competition gave them the possibility to innovate, challenge the *status quo*, and provide products that were ultimately very well received by the market.

Their value proposition and flexibility of the products were determinant in this growth, and were important drivers in the market receptiveness of their solutions. Establishing positions in difficult markets such as the United Kingdom, Australia, and the United States gave them the reputation and brand recognition needed to sustain growth.

This shows that fast global growth can be achieved even for a company based in a country with a small domestic market. The support of the Portuguese government was critical in the initial stages of development by giving the company the indispensible home market in which to test and develop its solutions. The Portuguese nationality of the firm ended up being an asset due to the country's positive reputation and the abundance of engineering talent. However, the founders' ability to think globally and to anticipate global trends, and their ability to take risks to jump at every interesting international opportunity were critical to make this growth happen. However, the sustainability of such growth depends upon the ability to let the organization grow, become more complex, and expand internationally all without losing its strong cultural identity while keeping the products delivered on time, without sacrificing quality. Ensuring all this is what keeps Vision-Box still growing in 2015.

What are the specificities of financing innovation?

While simple investment theory may seem straightforward when deciding to invest in every positive NPV project, there are some other indicators that may affect the decisions. Across the innovation ecosystem there are several specific industry constraints that may apply. Kerr and Nanda (2014)[ii] listed four main indicators that may influence decisions when investing in innovation: inherent uncertainty, extremely skewed returns, agency costs, and a high percentage of intangible assets held by firms focused on innovation.

First, the uncertainty surrounding the investment in innovation is driven for the most part, by not knowing the probability of a possible outcome, or its form. Basically, the investor does not know what may arise from R&D, making it very hard to evaluate potentially innovative projects.

Second, Scherer and Harhoff (2000)[iii] addressed the problem regarding extremely skewed returns on innovation. This problem may move investors away from certain projects, as they lack information about them. The expected returns from innovation are usually linked to perceptions of value and potential, without being supported by theory or analytics.

Third, there is the agency cost problem, which is linked to the fact that a firm's manager or innovator has much more information about his project than the investor and may act for its personal benefit rather than maximizing the company's value. These problems may arise mainly due to the investor's ignorance of the possible outcomes of a given project.

Finally, firms that focus much of their work on innovation have an important component of intangible assets, which are usually based on its human capital. This is a huge risk for investors, as they are very reliant on the firm's employees. Sometimes investment in R&D is restricted, as it embraces high adjustment costs, driven by its dependence on human capital. Linked to this factor, the low level of collateral provided by these companies is also a barrier to financing, as they have a high amount of intangible assets focused on intellectual property that, usually, is not accepted as collateral.

So far Vision-Box has been able to overcome the agency problems by having the founders financing the company together with the free cash flows generated from operations, and this has been done brilliantly. However, faster growth would now require external funds. Having been successful without raising outside money makes it an interesting case and many players could be interested in financing it. However, due to all of the above-mentioned uncertainties and asymmetries of information, it is very likely that potential entrants and or other financing solutions would be neither cheap nor void of stringent governance and value sharing demands.

Why not consider an IPO at this stage?

At the date of the case the company has no professional investors in its capitalization table. Thus, having no investors pressuring for a liquidity event, the only purpose of an IPO would be to raise cash to finance the firm's growth and, possibly, to allow the founders to partially cash in their equity stakes without losing control of the company.

However, at this stage, the company is still growing significantly and with different investment opportunities to enhance its growth even further. This period of high growth is expected to last for several years. A small company, in a non-"hot sector", entrenched in a small niche, facing potential new entrants, and raising cash to develop and launch untested new products, may face the skepticism of many investors. The company has a good track record of growth and profitability but the niche it is in has no ability to sustain a "Facebook-type" growth, with people wondering how the company may grow after having conquered all the top airports in the world. Maybe it is too soon. Certainly, going to the market after having proven the new products and some of the current growth opportunities would secure a much higher valuation.

The technology IPO market environment should also be taken into consideration. In the period between the fourth quarter of 2014 and the third quarter of 2015 (last 12 months), technology companies were valued in their IPOs, on average, with a multiple of sales of 4.2x. This would give Vision-Box a valuation of *circa* $150 million, which could be perceived by the market as a relatively small offering on a small-stock company, which would raise little or no interest by equity analysts, being left orphan, out of any stock indexes and analyst coverage. The stock's likely low liquidity would also become an issue.

Last, but not the least, we have to consider IPO expenses and other costs. The reasons listed above point to low valuation and possible significant underpricing. This would mean leaving too much money at the table. Additionally, for an IPO of this size we would have to consider at least 7% underwriter discount (due to the company's small size) plus €10M or more on other costs. A very small management team would be concentrated on implementing an IPO for several months, which could have a detrimental impact on sales and quality. Additionally, a potential IPO failure could have a serious reputation impact at the wrong time. Therefore, conducting an IPO at that time would not be considered positive, as it would carry several risks[iv]. A bad timing to go public could influence the momentum and the future of the company, jeopardizing its current success.

To move forward with an IPO there is much work to be done in order to prepare the company for such an event. Important governance changes would have to be implemented. Appropriate reporting and control structures must be readied to support a new investor-relations function. Focusing attention on this transaction at this period could impact the operations of Vision-Box and it would be more reasonable to wait until the company reaches a more mature state.

What are the different financing options management should consider to finance this growth? Determine the specificities of each type of financing. What are the pros and cons of each alternative?

Debt

Raising a bank loan at this stage has some obvious advantages. This gives the founders the possibility to maintain their equity stakes in the company while raising cash to fulfill their short-term investment opportunities. At the same time, the interest paid to the bank is accounted as an expense to the firm, giving rise to tax deductions through the tax shield of debt effect. However, we should also consider its drawbacks. When granting a loan, banks usually require some collateral from the company. Generally, the collateral demanded is fixed assets, posing a problem for technology driven companies, as most of their assets are intellectual property and other intangible assets. Having low collateral and being a risky technological firm, Vision-Box would certainly face tough covenants and high interest rates, which combined could significantly affect the management's flexibility. Once the loan is agreed, servicing it becomes the prioritary use of cash-flows, which means that future growth may not be possible without an equity injection. Failure to meet debt service or covenants may put the firm into extreme distress and even bankruptcy, which discourages this form of financing among high risk, growing technology firms. **TN Exhibit 3** shows the pros and cons of raising debt.

Venture Capital

Venture capital (VC) is also a possible form of financing for startups and early-stage companies. VCs typically invest in the equity of highly innovative firms and help them grow not just by providing capital but also by providing managerial support, connections, and advice. This "value-added" may be achieved not only through their access to a large pool of available talent, but also through important technological, market, and financial knowledge. Moreover, the wide contact network provided by these investors may be important to open new doors and take new opportunities. Unlike bank loans, the capital provided by VCs is not supposed to be repaid in a fixed schedule, nor are there any interim payments consuming the company's cash-flows. If VCs keep their faith in the company, they are available to fund subsequent rounds of financing, providing the company with the liquidity to grow. These factors, together, make VCs the most suitable form of financing for early-stage high risk technology firms.

However, there are also negatives in taking VC money. Typically, VCs require significant equity stakes in return for the risk incurred by their investors' money. Subsequent financing rounds typically dilute the founders' equity stake, making it, in fact, one of the most expensive forms of finance. Moreover, VCs want considerable power in the company, dominating boards of directors and requiring important veto rights. Additionally, they typically require some downside protection via "liquidation preferences" and other clauses, effectively increasing their percentages of the proceeds from the inevitable "liquidity event" that will lead to them exiting the investment. Such events are frequently traumatic for the founders, who due to the "drag along" rights demanded by VCs, may find themselves selling their company at a time when they wished to continue. **TN Exhibit 4** represents the main advantages and disadvantages of venture capitalist investment.

Vision-Box, however, is not a in a very-early stage and is atypical by VC standards since it was able to self-finance its growth and by generating positive earnings. Although it could try to contact later-stage VCs, these are not used to initiate a "series A" at such a stage and could have difficulties fitting this type of company on their portfolios. Additionally, the valuation approach by VCs, requiring high rates of return to compensate for risk, may lead to deceptively low valuations.

Growth Fund

In the Private Equity world different players specialize on different stages of a company's life-cycle. Growth funds typically invest in companies that are in a later stage of the life-cycle than that of VCs. This may be seen in **TN Exhibit 5**. Growth funds invest in growing companies with established operations, generating consistent revenues, and sometimes already presenting considerable profits. Their approach uses a hybrid strategy between later stage VCs and Buyout Funds, as they typically combine their own capital investment with some bank debt to leverage their returns and avoid excessive founder dilution. Their objective is usually to provide the equity that in turn would allow raising debt under more favorable terms, thus providing the funds to support the company's growth and, sometimes, to buy out the positions of seed investors and allow founders to make a partial cash-in.

For founders the cash-in is very advantageous. Since debt is partially used to finance it, it may be achieved without imposing a significant reduction of their equity position. In order to align interests these funds usually prefer to see founders-managers with an equity stake close to 50%. A bigger dilution could reduce their interest in the future of the firm. For the founders, such cash-in reduces their risk, allowing them to reduce their concentration of wealth in a single asset, thus allowing for some portfolio diversification. This may be an important issue, as it allows them to later adopt more aggressive growth strategies, sometimes riskier.

Just like VCs, growth funds also may provide some "value added" besides their monetary investment. Most partners in the renowned funds have significant expertise in growing firms in the industries they are specialized in, becoming key players when it comes to strategic decisions, talent management, supporting acquisitions, assisting the entry in new markets, etc. **TN Exhibit 6** makes the comparison between a growth fund and a venture capitalist investor.

Epilogue

On November 12th, 2015, Vision-Box reached an understanding with Keensight Capital (KC). The founders took a majority position with the private equity fund taking just below 50%. This was seen as a great step to expand the business quickly, anticipating moves from competitors and allowing for alternative approaches apart from organic growth. KC brought important business expertise to the company, namely in the fields of strategic acquisitions and financing. The track record of this private equity firm, working mainly in the fields of technology and innovation, made them a credible player in the industry, gathering sector expertise and also access to liquidity, not only through their limited partners but also with banks, in the event of raising debt. This increase in liquidity, combined with deep sector knowledge is an important driver to grow through strategic acquisitions.

The equity investment done by KC was also accompanied by raising some debt, which became easier after this equity capitalization. The increase in leverage led the company to invest in the growth opportunities that it was facing and at the same time benefit from the advantages of increasing debt, as described above. It is important to emphasize that the covenants imposed due to this loan did not represent a serious limitation to the firm's activity[v].

Vision-Box's short-term strategic focus is to consolidate its position across the different markets and enhance the internationalization process that has been conducted throughout the years. There is a wide market to explore and, the company needs funding to tackle it with the suitable strength. **TN Exhibit 7** presents the press release published by KC on this deal.

TN Exhibits

TN Exhibit 1. SWOT analysis

Strengths	Weaknesses
▪ First mover advantage ▪ Technology and patent protection ▪ Strong global market presence ▪ International credibility & reputation ▪ Manufacturing flexibility (customization) ▪ Offer an integrated solution	▪ Size of the company ▪ Liquidity constraints ▪ Too much dependence on the ABC business
Opportunities	**Threats**
▪ Expansion to new geographies in a large and growing market ▪ Expansion to new markets, for instance, use biometrics in other industries (such as secure payments) ▪ Efficiency in production driven from experience and scalability (lower costs) ▪ Investment in Big Data	▪ Increased competition ▪ Technological development and emergence of new solutions (substitutes)

Source: Casewriter

TN Exhibit 2. IPO considerations

Pros	Cons
▪ Available Liquidity ▪ Marketing projection ▪ Credibility ▪ Use own equity for acquisitions	▪ Possibility of losing the equity control ▪ Expensive process ▪ Increased public scrutiny forcing the release of sensitive information

Source: Casewriter

TN Exhibit 3. Debt considerations

Advantages	Disadvantages
▪ Maintaining ownership ▪ Tax deduction	▪ Mandatory repayment ▪ Demand collateral and impose covenants ▪ Influence credit ratings ▪ High interest rates

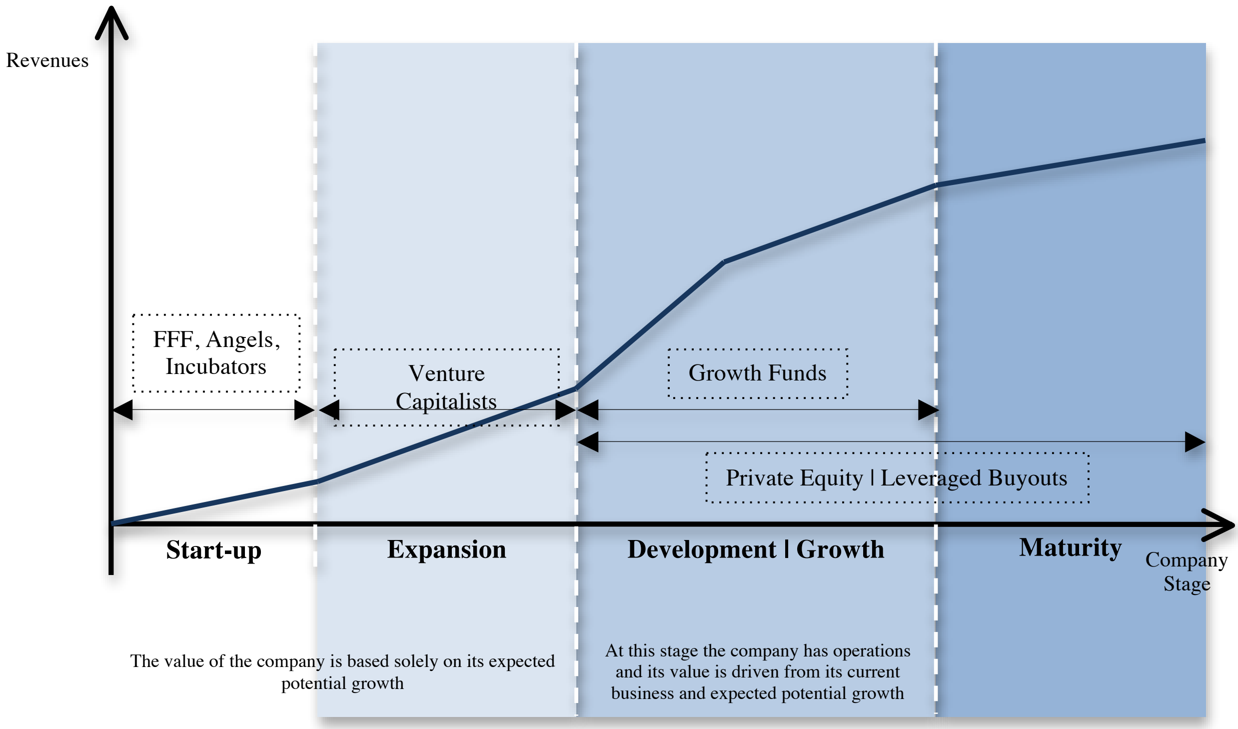
Source: Casewriter

TN Exhibit 4. Venture Capital considerations

Advantages	Disadvantages
▪ High liquidity ▪ Business expertise ▪ Connections ▪ No mandatory repayment ▪ No interim payments	▪ High cost leading to low valuations and high dilution ▪ Long due diligence ▪ Exit pressure (high expected return) ▪ Complex governance ▪ Investors' downside protections

Source: Casewriter

TN Exhibit 5. Private Equity investor categories across a company lifecycle



Source: Casewriter

TN Exhibit 6. Differences between Growth Fund and Venture Capital investors

Source: Casewriter

	Growth Fund	Venture Capital
Company Lifecycle	Development/Growth	Early state
Industry	Diversified	Mainly Technology
Business model	Proven	Unproven
Revenues	Already existent	Small/Not relevant
Risk	Medium	High
Financing	Hybrid using equity and debt	Preferred Equity

TN Exhinit 7 Keensight Capital Press Release

KEENSIGHT
CAPITAL

Press release
Paris, 13th November 2015

Keensight Capital invests in Vision-Box, global leader in Automated Border Control systems

Keensight Capital, a leading player in European Growth Private Equity[1], today announces its investment in Vision-Box, global leader in Automated Border Control (ABC) and electronic identity solutions.

Created in 2001, Vision-Box designs, develops and assembles biometric-based systems, which allow for a greater fluidity of border control processes in airports throughout the world. The company's product portfolio includes ABC solutions, such as its flagship automated gates solution, and identity management products, such as its live biometric capture units. These two business lines rely on a unique know-how in both hardware and software design.

The company has grown substantially over the past few years, and has to date deployed its ABC solutions across 60 international airports and sold more than 3,000 identity management solutions worldwide. Headquartered in Lisbon and with offices located in each major continent across the world, Vision-Box has reached a dominant market share within border control.

Thanks to its proven experience in growing innovative companies, Keensight Capital intends to partner with the management of Vision-Box, who will remain shareholders, in order to help the company undertake the next stage of its growth by optimising its structure and operations and enabling commercial rollout on a global level.

For Jean-Michel Beghin, Managing Partner at Keensight Capital:

"We are delighted to be able to support Vision-Box's impressive growth story going forward by leveraging our expertise in helping companies develop internationally. Vision-Box has talented and seasoned managers, and extremely promising fundamentals which will underpin its growth in the coming years. Given the projected rise in airline traffic and in a context of increasingly stringent safety requirements at borders in recent years, demand for solutions such as those offered by Vision-Box, which facilitate the continuous flow of passengers throughout airports while maintaining high security standards, will remain high. Currently the undisputed market leader in border control systems and identity management, Vision-Box today begins a new phase of its development aimed at consolidating its position on a global level and winning further contracts in strategic markets."

Bento Correia, Co-Founder and Group Chairman of Vision-Box, states:

"As a renowned investor specialized in technology sectors, Keensight Capital is the ideal partner to help us pursue our business growth in the coming years. We look forward to working closely with the investment team in order to implement our key business ambitions, focused on deploying our 'Happy Flow' solutions for airport productivity and improved passenger experience on a worldwide basis."

Miguel Leitmann, Co-Founder and Group CEO of Vision-Box, comments:

"As we prepare to embark upon a new stage of our growth, we are delighted to welcome a new strategic investor such as Keensight Capital with the international scope necessary to match our global presence. With our combined expertise applied to a high-quality product and service range, we intend to capitalize on sustained demand for greater security and on the ongoing automation of processes in order to become a global leader in passenger flow management solutions through biometrics."

[1] *Growth Private Equity*: investment in profitable, private companies experiencing strong growth, in minority or majority positions, with or without leverage, using a flexible approach adapted to the needs of individual entrepreneurs, in order to finance organic growth projects, acquisition strategies or provide historic shareholders with liquidity.

Vision-Box: When the sky is just the beginning

Endnotes

[i] Note that in spite of not being directly a client in the border control market, governments are responsible for approving the systems that are used and, simultaneously, take benefits from a more accurate and secure system

[ii] Kerr, William R., & Nanda, Ramana (2014). Financing Innovation. Working Paper
[iii] Scherer, F.M., & Harhoff, D. (2000). Technology policy for a world of skew-distributed outcomes. *Research Policy*
[iv] **TN Exhibit 2** contains the IPO considerations
[v] Covenants were not disclosed due to confidentialy reasons