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Vision-Box:
When the sky is just the beginning

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The 21st century has been characterized by a new wave of Portuguese discoveries, this time by the air. Bento Correia and Miguel Leitmann, founders of Vision-Box, challenged the *status quo* and revolutionized the aviation industry. Seven centuries after the beginning of the Portuguese discoveries fostered by Henry "The Navigator", two Portuguese men wrote a new page in history. Creating a disruptive solution in the border control market, they found themselves conquering the world of aviation with their innovation. After the invention of Via Verde by Brisa, which accelerated the process of charging for motorways and parking tolls, another team of Portuguese experts brought a faster and more efficient solution to the global transportation environment. The border control experience has never been so simple and secure at the same time.

Vision-Box is a technological company seeking to give a remarkable contribution to the world by developing new and more reliable means to guarantee the security and safety of people worldwide. Through the usage of more robust and trusted digital identification technologies, the company attained a leading position in the security market by constantly backing up the needs of governments, border control authorities, airports or any other institutions looking for their sector expertise. The company differentiates itself from its peers by providing superior and tailor-made solutions to its clients in three major areas: border control, identity management and security surveillance. The application of facial biometrics in the border control business area was the disruptive event that enhanced the success of the company.

The exponential growth registered throughout the years spread Vision-Box across the globe. Since 2012, the company attained average growth levels of more than 40%. This trend can no

Frederico Andrade (MSc Finance class of 2017) developed this case under the supervision of Prof Paulo Soares de Pinho. It was written solely as a basis for class discussion rather than to use a source of primary data or to illustrate either effective or ineffective management handling.

longer be backed up only through organic growth and decisions should be taken. The existing cash is not sufficient to fulfill all the good investment opportunities. Thus, by late 2015, it is time to decide which is the best alternative to raise capital. In an accelerated growth environment in which the company dropped the startup tag, there are many sources of cash available. Knowing that the alternative to not raising cash is decelerating growth, management must intervene. The decision is crucial and delicate as it may enhance even more the success of the firm, or destroy the momentum with a bad financial strategy.

Foundation

In 2001, a Portuguese technological R&D team from INETI[1], Instituto Nacional de Engenharia Tecnologia e Inovação, developed an innovative product that brought a new solution to the digital video surveillance ecosystem. With this product, they won a prize in a national software competition sponsored by Microsoft Portugal. Concluding that it was a product with strong market potential, the researchers decided to spin-off and incorporate it in a new venture. A deep technology expertise combined with an entrepreneurial spirit were the drivers that made Bento Correia lead this project with Miguel Leitmann, and found Vision-Box.

Bento Correia has a Master Degree in Physics and a PhD in Computer Vision. Correia possesses a long career as a researcher and counts with over forty scientific articles published. Having received several awards in various research and development projects, Correia acquired a deep knowledge in technology and biometry throughout the years. Miguel Leitmann studied aerospace engineering and finance in Germany and holds an MBA from Nova SBE[2]. Prior to Vision-Box, Leitmann was President and CEO of a US-based business, Logicad3d, a Logitech company. Earlier in his career, in 1993, Leitmann pursued a scientific career in the field of aerospace technologies, which led him to be one of the leaders on the team responsible for the development, construction and successful launch of the first Portuguese satellite.

Early in the life of the company, they entered in the Identity Management business, without knowing that this was the beginning of the track towards their discovery. By that time, the Portuguese Government was developing and implementing a deep modernization in the identification documents of its citizens and requested some proposals to implement them. Accepting the challenge, Vision-Box used its own technology to develop innovative

[1] INETI – Portuguese National Institute for Engineering, Technology and Innovation
[2] Nova SBE – Nova School of Business and Economics

biometric enrollment solutions. These were so impressive that they were selected by the government to be implemented. By 2005, the company deployed this system, giving rise to new identification documents, the Portuguese Electronic Passport[3] and the Portuguese Electronic Citizen Card. Once again, the government approached the corporate world looking for different applications to these innovative ID documents. By that time, the implemented processes were old and incapable of taking advantage from the powerful information stored in these cards. Reacting to the challenge, Vision-Box's founders perceived a new opportunity for action. Their breakthrough consisted in the usage of facial recognition in the border control industry. They revolutionized the market with their disruptive idea, creating a new application to the biometric information present in these cards. Becoming the worldwide pioneers in the usage of facial biometrics in this market, they developed the first Automated Border Control (ABC) e-Gate based on facial recognition. In spite of the critics and doubts about the possibility of developing such product, Miguel Leitmann was very clear:

"Everyone told us: 'You'll not manage it, it'll never work'; But we knew that there's always a technological solution to be found. From one day to the next, we opened the door to a vast market which no-one had noticed."

Taken from an interview in UP Magazine on February 1st 2014

In April 2007, the company launched the first ABC system that recognized travelers using face biometrics, becoming a worldwide pioneer in this technology. It all started with a trial of the RAPID Automatic Passport Verification at the Faro International Airport. This technology was swiftly rolled out to all Portuguese International Airports and was proven to be one of the major inventions on the border control industry, brought to the market by a 100% Portuguese company. By that time, no other company in the world used facial recognition as a tool to automate border control.

"This is what I want in Britain"

The internationalization of the company in the border control industry started in 2007, right after the launch of the trial in Faro. An influent member of the British parliament arrived at Faro's International Airport for what he thought to be just a casual trip to play golf in Algarve. However, his arrival in Portugal was done through these innovative e-gates, something he had never seen before. Faced with this new system, he refused to leave the country without talking with the team responsible for this invention. This meeting gave birth

[3] Portugal was the 5th country in the world to adopt an Electronic Passport

to Vision-Box's e-gates first international contract win. By August 2008, the company was already carrying its e-gates to new markets, installing them at Manchester Airport to begin a first phase of trials of this new technology. In the following year, these smart gates were also being implemented in Vantaa Airport in Helsinki.

Company Overview

Vision-Box has a leading position in the industry of end-to-end Passenger Experience and Electronic Identity Management solutions, operating under ICAO[4] and NIST[5] compliant standards. Being the world pioneer in the usage of facial recognition in the border control industry, allowed the company to conquer the market but also to have a say in the definition of the rules. While being one of the biggest suppliers of products in the industry of border control, the company enjoys a respected influence over the authorities that set the security aviation rules, benchmarks and standards. Over the years they have been invited to sit at the table and discuss the future of security and regulation with several entities, namely IATA[6], FRONTEX[7] or SITA[8].

Headquartered in Lisbon, Portugal, the company considers that this is the right place to be. In spite of being one of the founding member nation states of NATO, Portugal is widely seen as a neutral country. This neutrality made countries comfortable to discuss and negotiate with Vision-Box the most critical and sensitive issues regarding homeland security. Vision-Box has more than 15 patents registered over its hardware pieces, and possesses also some algorithms and coding features that are property of the company and extremely hard to copy. Technology is viewed, and used, as a mean to meet their client's wills by building the best technological experiences founded on values of excellence, innovation, responsibility, people and passion. As of late 2015, the company's technology is used in more than 60 international airports and has seen its machines processing about 80 million passengers per year. In the Identity Management segment they deployed about 3000 solutions across 30 countries.

The company also enjoys a very important competitive advantage over its peers driven by integrating the entire global value chain of the product, from its conception to its commercialization. This distinguishing characteristic gives them the flexibility to develop their products according to the client's will and need. The approach to clients is done with

[4] ICAO – International Civil Aviation Organization
[5] NIST – U.S. National Institute of Standards and Technology
[6] IATA - International Air Transport Association
[7] FRONTEX – European Border and Coast Guard Agency, responsible for the European border management according to the EU rights
[8] SITA – firm leader in air transport communications and information technology.

what they call the "Blank Sheet Strategy". They arrive to a meeting with nothing designed and leave it with a tailor-made solution. They are able to involve the client in identifying the solution and, after that, design a customized product matching the client's demands.

All this translated to a positive growth, which doubled that of the market. Vision-Box showed revenues of €9.6 million in 2012 and it has grown exponentially ever since. In 2016, revenues are expected to reach €48 million and the team is expected to increase to 300 employees. In four years, the company is expecting to register a 400% growth in revenues, while tripling its staff. **Exhibits 1 and 2** show the evolution of revenues and total number of employees, respectively. By 2015, the revenue breakdown is 80% from the border control business and 20% from the identity management segment[9]. The security surveillance business area is marginal and has only sporadic projects.

Products and Solutions

Being an innovative and technology-driven company, Vision-Box targeted three main areas to intervene, where it would put all the efforts in generating new products and new systems. Never forgetting its mission, the improvements and effectiveness of its processes aimed both institutions and customers, following their slogan:

"Your way of living, Our way of thinking"

Border Control & Aviation has been the area they have devoted more attention to and where they managed to add more value. Being pioneers in the development and delivery of ABC eGates based on facial recognition, they are an important player fighting border control security problems. In the first years of the 21st century, questions regarding people mobility around the world were in the spotlight and the safety of a country was seen as being directly linked to its entry/exit points. Vision-Box saw an opportunity there and developed a system focused on an integrated approach to border protection, combining an increase in efficiency with a positive traveler experience. The system is characterized by the presence of ABC devices (**Exhibit 3**) at every entry/exit points of a country, which invites travelers to use them in a self-service way, using biometrics (face, fingerprints and/or iris) as the main identification token. In addition, the system provides the authorities with the travelers' profiles, making it possible to individually authenticate and check against criminal databases in real-time, increasing the effectiveness of the border control. Thus, it allows for a substantial improvement in the control of suspicious activities and detection of threats, a reduction in the

[9] Financial statements of the company not available due to confidentiality reasons.

number of illegal travelers or even an easier detection of travelers' overstays. For travelers, this represents a significant decrease in the time spent at security controls and at the same time less intrusive processes to check their profiles. The benefits are also extended to airlines, as they face faster and more efficient processes, while knowing the behavior of its customers better. This allows them to provide a more pleasant experience not only on-board but also on the ground. For the border control authorities, it is also more efficient, as it will decrease the average cost per passenger in all the logistics work by reducing staff requirements. Finally, the time reduction in the control checkpoints increases the time that travelers spend at the airports' retail centers, which may help boost sales. Since the airport operators typically receive a share of these revenues, the ABC system positively impacts their profits. The management of these areas has been intensified and more complex. Strategies like delaying the disclosure of the boarding gate of a certain flight in order to allow passengers to spend more time in the shopping area have been in practice and show the importance of the business.

Although several firms tried to copy Vision-Box's solutions, in the end no one successfully replicated it. The interaction between hardware and software is unique and it is extremely difficulty to match all the different pieces in order to achieve a similar outcome. Note that all the data is not stored in Vision-Box's databases. The company is solely responsible for crosschecking the data.

The second area in which the company is involved is **Identity Management** in which it offers a solution to governments that includes everything needed for digital identity management. From biometric enrollment stations to document verifications kiosks and digital document dispensers (**Exhibit 4**), the company has been successfully capable of creating an avant-garde end-to-end approach to the life-cycle management of eID documents. The possibility of controlling the enrollment and delivery processes of eID Cards, ePassports or other identity documents enabled the government's control over the first process of building a strong identity chain. Governments are now equipped with an integrated knowledge of their citizen's identity, making it as easy as a click to assess the information needed about a person's identity. The "Vision-Box end-to-end Chain of Identity" increased the efficiency in the Identity Management segment as it brought several improvements such as the elimination of problems associated with having different documents provided by different entities or the reduction of errors triggered by manual procedures.

Lastly, the company delivers **Security Surveillance** solutions (**Exhibit 5**), which was their initial product, for both the public and the private sectors. Vision-Box possesses mechanisms

of integrated surveillance and flow management ensuring an accurate people identification system available for several types of environments. These high technology products allow for facial recognition and compare the information against several databases, leading to a match in instants. The intelligent solutions offered are extensive and always focused on preventing major threats in many areas by being capable of identifying and matching individuals, vehicles, objects or also detecting suspicious movements.

Happy Flow and Orchestra

By May 2015, Vision-Box was in the spotlight of the airport industry by unveiling a revolutionary airport platform that was first installed in Aruba's Queen Beatrix International Airport (Caribbean). This was a project involving also other entities, as the Aruba Airport Authority, the Aruba Government, Schiphol Group and KLM Royal Dutch Airlines composed the consortium.

Happy Flow, the name of this new system, is a platform that provides a 100% self-service passenger experience, allowing passengers to cross the airport from check-in until boarding the aircraft without any help from third parties. After checking in, facial biometric technology allows the passenger to go through all the airport's controls without using any documents, only needing to stand in front of the cameras. The traveller's face becomes his identification document throughout his journey at the airport, providing an unmatched experience that puts an end to long hours waiting in lines for uncomfortable ID checks. The process is represented in **Exhibit 6**.

In the first quarter of 2016, Vision-Box is expecting to maintain its position on the vanguard of technology, as it will present a new software, which will be a huge leap forward in the industry. Orchestra is a platform that transforms passenger information and people's flow into intelligence[10] that can be used to trigger actions based on multiple sources of information (touch-point controls). Combining the information stored in the software with its effective management gives rise to a wide set of opportunities to enhance efficiency, improve risk anticipation, increase security and generate revenue growth. For example, the airport authorities by knowing that there are many people checking in or crossing security at a given time might want to open more security lines. A single biometric token to pass in each of the airport's controls enables the creation of a passenger data envelope (PDE), where each

[10] Information is treated according to the Privacy by Design methodology, which is grounded on a set of intelligent layers that ensure a secure treatment and processing of information in order to follow all legal requirements and personal data protection.

individual's key information is stored. Thus, Orchestra would take its place in the market by being the most valuable platform for traveler's information management during their stay at the airport, allowing to know where the passengers would spend more time, analyze the time they spent in the retail area or even know how delayed a specific passenger might be to the flight. The process and some features are present in **Exhibit 7**.

Discovering New Worlds

By 2010, after the success of the trial in Manchester, the UK Border Agency expanded Vision-Box's ABC systems at 9 major airports in the country (Gatwick, Manchester, Luton, Birmingham among others). The performance of this innovation was achieving results and the countries could not afford to be left aside on this technological race. Thus, in 2010 and 2011, Venezuela, Finland and The Netherlands opened their airports to receive these innovative ABC machines.

The years that followed were characterized by an astonishing demand for the product. By 2013, Vision-Box made the largest deployment ever of its machines in the United Kingdom, reaching new airports, like Heathrow and London City, or increasing its presence in others, such as Gatwick and Manchester. In September, the company took an important first move towards the Middle East market by being awarded a contract to deploy 64 multimodal e-Gates at Hamad International Airport, in Qatar. The Qatari entities demanded to see the "Made in Portugal" trademark visible and casted on the e-Gates, a gesture that promotes and recognizes the credibility of Portuguese manufacturing. By the end of 2013, Vision-Box conquered its establishment in the market worldwide, being present across the entire globe, and deeply implemented in Europe. On January 6th, 2014, Vision-Box signed a national framework agreement with the UK Border Force becoming the official supplier of ABC e-Gates in the country for the following four years. In the beginning of 2014, Bento Correia was confident that the growth would continue and ensured they had a close look to the possible market moves.

"We have very interesting and immediate growth prospects for this and the coming years, which are guaranteed by contracts. (…) When it stops being a niche market and grows significantly, there's more interest from competitors. We're preparing ourselves for at least one order of magnitude higher than what we have today"

Taken from an interview in UP Magazine on February 1st 2014

By April 2015, the company was already present throughout the US market, having Automated Passport Controls operating in the airports of Orlando, Miami, Los Angeles, Las

Vegas, and San Diego among others. The entry in the US market was conducted through a partnership with SITA[11], which already had a deep distribution channel in the country. This year was also characterized by the achievement of another important milestone. The Portuguese company won a contract to supply 8 major Australian airports worth about US$18 million. Between June 2015 and July 2016, airports like Sydney, Melbourne and Brisbane are expecting to receive these revolutionary ABC eGates. Jean-François Lennon, Vision-Box's Vice-President, guaranteed that this was a huge step forward in the border control experience:

"This not only enhances national security but creates more effective and efficient processes. Of course, not to mention the users: travellers will certainly notice the difference, taking advantage of a happy flow when leaving Australia."

Taken from an interview to planetbiometrics.com on April 27th 2015

In 2016 it is forecasted that the technology will arrive to JFK International Airport, after successfully being tested at Washington's Dulles International Airport. For the years of 2015 and 2016, the company is planning to consolidate the brand's worldwide presence by further deploying systems all over the world. The products are starting to be used in the world's busiest airports, which are also the ones demanding the highest control and security standards. **Exhibit 8** shows Vision-Box's footprint around the globe.

Market Overview[12]

The long-lasting growth trend that has been characterizing the aviation industry seems to continue for many years. By 2014, airline companies registered a total number of passengers of 3.3 billion. Not surprisingly, this number is expected to more than duplicate to 7.3 billion by 2034. This evolution represents an average annual growth rate of 4.1%, which is in line with recent figures[13]. This increase in the air traffic demand has also been followed by some increases in the security procedures. For example, the average hourly throughput at passenger security checkpoints suffered a huge loss in efficiency comparing data prior and posterior to the 9/11 horrific events (**Exhibit 10**). Before the 9/11 tragedy, the average number of people checked per hour was nearly 350, while after it, this number decreased to 149. The increase in security was implemented at the expense of the passenger experience. Reports confirm that passengers consider the time spent in security procedures and in long lines the most annoying moment when traveling. Adding to this there is also a general demand for more digital

[11] In this partnership, SITA worked only as an intermediary, being the product 100% from Vision-Box.
[12] Information collected from IATA's Annual Reviews and ICAO's "The World of Air Transport in 2014" report
[13] **Exhibit 9** shows the evolution of the number of passengers and its yearly growth rate

solutions to facilitate the travel experience. By 2015, the Automated Border Control market is valued in €700 million, with forecasts of tremendous growth, reaching €2 billion by 2020.

Competition

The border control industry is characterized by the presence of a highly diversified number of players. This is mainly driven by the fact that each company is responsible for delivering a specific component of the process. For example, one company develops the fingerprints readers, another develops the software, but none of them build an integrated solution like Vision-Box does. This is an important competitive advantage as the firm offers a solution that is produced wholly in-house and ready to use after delivery. Safran Identity & Security, formerly Morpho, is considered to be Vision-Box's main competitor. This company works with a vast portfolio in very different segments; from offering similar solutions to the ones provided by Vision-Box, but it is also present in other markets such as public security or commercial identity, with services like secure payments and transactions. With revenues of more than €1.5 billion and employing more than 8,700 people this company has a deep experience in biometrics.

In spite of facing a significant competitor in the same field, Vision-Box has been capable of succeeding in this industry and conquered an important market share. The differentiation driven by being pioneers in the usage of facial biometrics in the border control industry gave Vision-Box an important competitive advantage to enter a market with high barriers to entry. Moreover, the integrated solution combining software and hardware strengthened their value proposition. By 2015, Vision-Box has about 80% and 30% market shares in the European and global markets of Automated Border Control, respectively. In addition, they are responsible for 60% of this market if we account only for border control based on facial biometrics.

Challenges

Growth

Vision-Box is a pioneer in the application of facial biometrics and with it came a leading position within the sector. The execution of the idea walked side by side with the brilliance of its generation in driving the company towards success. In a growing entrepreneurial environment that has been impacting the world, the common challenges faced by founders and fast-growing start-ups are innumerous and have been widely listed. Although they believed in their idea and in its success, Bento and Miguel were facing problems that they never imagined. The road has been long and the speed of the firm's growth brought many

challenges in the fields of industrial manufacturing, international expansion, culture and human resources.

In the manufacturing division, it was no longer possible to maintain the project-by-project approach that had been used. It may have been feasible to use this approach during the early stages of the company. However, the growth and scalability of the business imposed some adjustments in the manufacturing processes. The founders were capable of creating a product that was just like a "Lego". This allowed the manufacture process to have an important component that was standardized. Different modules were added to this standard product according to each client's will, which can incorporate different solutions, be it using fingerprints readers, face recognition or digital signature. Production became much easier and more efficient, consisting in gathering all the different pieces to build this real giant "Lego". By the time of the deployment of the solutions in Qatar, this customization feature was very important, as the Qatari entities demanded that eGates needed to be more luxurious to match their airport environment. From a pure project-by-project approach, the company's manufacturing evolved to a production in line with an important component left for customization. This change allowed also to achieve a faster delivery, making Vision-Box proud to say that the time spent from the beginning of the negotiations of a product to its implementation may take two months, while their competitors would need about two years.

Having operations across five continents, the complexity and scalability of the business generated a new challenge. Vision-Box was already a truly global business and needed to manage its operation wisely. Dealing daily with the most critical questions of homeland security in cooperation with the national governments worldwide brought the need to open some subsidiaries. These were created not only with a commercial purpose, improving the brand recognition and selling more products, but also, to have people with Security Clearances[14]. In addition, these subsidiaries are in charge of managing the maintenance component of Vision-Box's products that accounts for 20% of total revenues. Only after receiving specific training given by the company's engineers, either the staff or some outsourcing companies were ready to operate the machines. By 2015, the company counts with 7 subsidiaries from Australia to the United States, also including Hong Kong, Dubai, The Netherlands, the United Kingdom and Brazil. Some of the offices were strategically placed to manage the operations in Latin America (Brazil office) or the Middle East (Dubai office). The geographical footprint of the company's facilities may be seen in **Exhibit 8**.

[14] These Security Clearances are issued by local governments usually to nationals, and are mandatory requirements to work in such delicate fields.

Lastly, the changes in human resources implemented over the years made the company's organizational structure more complex and interdependent. Hiring the right people at the right time became one of the main domains. From an inexistent HR department to the creation of one that was responsible to recruit and duplicate the staff in less than two years, the change was dramatic. The appearance of new problems was inevitable and Vision-Box started to build a strategic approach to its team. This involved not only a strong recruitment process, but also the creation of programs aiming the retention, personal development and career management of its employees. Incentives and stimulating actions have been taken in this direction. It is crucial for the company not only to retain its talented employees but also to enable their performance to the fullest and to guarantee that everyone is aligned towards a common goal. All these HR management challenges needed to be dealt with while maintaining the company's culture.

Future and Risks

It is not very common to see a startup company creating and defining a totally new market in the aviation industry. But Vision-Box did it. Leaving behind the "startup" tag, Vision-Box registered a quick and explosive growth. Just like the old caravels used by the Portuguese ancestors, the company was conquering a sea of opportunities. However, the wind is not always by your side and you need to handle storms. Both Bento and Miguel are aware of the upcoming challenges. From the decision of continuing growing to the development of new products and solutions to give continuity to the firm's business, it is time to define a strategy.

The primary goal of Vision-Box is to continue its growth and, if possible, enhance it even further. In a period of establishment in the market, the company has a dimension that made it reasonable and attractive to start acquiring smaller ones. Possible acquisitions in different markets within its current core business are open possibilities. The firm is actively monitoring its closer competitors, while also looking for targets that may add value to its business. Targeting technological companies but also ones with important and specific accesses to markets is part of the strategy.

The growth attained after their disruptive idea was conducted through their physical devices, namely their e-Gates or Kiosks. These physical devices were the first things to be seen by people. Thus, all the intervenients have been linking Vision-Box to a hardware company, forgetting all the process that occurs in the background. Although it may have been a good penetration strategy to conquer reputation and build a deep contact network, it is time to change the way the company is seen. Reinforcing that its core activity is not only associated

with its hardware but also to a seamless orchestration and treatment of data is one of the priorities. By contemplating the development of software and also its execution and integration with governmental management systems (such as watch lists, Interpol or FBI databases) their proposition has been much more solid and attractive. The limited capacity of the hardware business makes it crucial to diversify the product portfolio and make this important shift towards software.

Finally, there is also a goal always present in the founder's minds that would certainly involve an enormous effort. A possible IPO on the NASDAQ is not only a true desire of the founders but could also be something historic. It could be the first Portuguese company to be listed on this market. This event would not only provide an important access to liquidity, but also an increase in brand recognition. The maintenance of these high levels of growth makes this a serious hypothesis to consider in the recent future. **Exhibit 11** shows the Global Technology IPO environment.

Growth is good, but it needs to be well managed in order to thrive. Here there are several decisions to be taken that can be critical. From entering new markets, continuing the software shift or consider an IPO on the NASDAQ, there are several different paths to pursue. On top of that, investing in Big Data is also an important concern, as Data has been showing to be one of the most powerful resources a company could have in this digital era that the world is presently living.

Financing

By 2001, when Bento and Miguel decided to found the company they did not incur in any bank debt. They decided to invest their own funds on a project in which they believed. Throughout the life of the company, debt was only used in the acquisition of new facilities, as the founders wanted to keep it almost inexistent from the balance sheet of the firm. Under close monitoring, operations were only financed through cash flow from operations and some European Union and national grants. Even by the time of the international expansion, the management pursued the same vision, investing abroad with own capital.

Vision-Box's positioning in the innovation and technological industries gave access to several European funds. The main source of funding came from the European Regional Development Fund (ERDF), which was constituted to increase the economic and social cohesion amongst the European Union. The investment priorities for 2014-2020, present in the Regional Policy built by the European institutions, were mainly focused on four areas of intervention. From these, it is worth to highlight three of them as they matched the company's business: "1.

Strengthening research, technological development and innovation; 2. Enhancing access to, and use and quality of, information and communication technologies; 3. Enhancing the competitiveness of SMEs"[15]. The company was able to raise investment from all three areas. For the period between 2008 and 2015, Vision-Box raised more than €3 million through six different projects focused on R&TD, Internationalization and Innovation as showed in **Exhibit 12**. The company has been one of the most successful cases in the usage of these funds, being one of the top performers between the Portuguese beneficiaries.

Outside funding hypothesis

Throughout the years, the company received several proposals targeting its acquisition. Offers to take over control of the firm came from all over the world. However, the duo was not receptive to them, as they wanted to develop their own creation and take it to the next level. A lot of work has already been done, but they feel that much more can and will be done under their supervision.

After performing a deep analysis in the financial industry and evaluating several different mechanisms and players to cope with, some interesting offers appeared. By October 2015, an imminent deal with a growth private equity fund is on the table. The deal counts with the entrance of Keensight Capital (KC), a spin-off of Rothschild's PE unit, into the equity structure of the company with a minority stake. This movement is seen as a great step to expand the business, mainly through organic growth and product portfolio enhancement. This equity investment would enable the possibilities of raising bank debt and providing a partial cash out to the founders.

KC is an independent European growth private equity[16] firm providing capital to profitable companies with high-growth potential who seek help to accelerate situations of organic growth, strategic acquisitions or to buy out existing shareholders. The company had already done investments in Portugal, namely in a technological company named *Chipidea*, from which it exited already. Its past performance counts with more than 15 years of proven investment successes that allowed them to gather expertise and knowledge mainly in the sectors of Information Technology, Healthcare and Energy. Investing in companies with

[15] Information taken from the Regional Policy Priorities for 2014-2020, built by the European Commission (http://ec.europa.eu/regional_policy/en/policy/how/priorities

[16] Growth Private Equity – stay between venture capitalists and leveraged buyouts firms, representing a type of private equity firms that target profitable companies with high potential to grow. Typically, these firms enter the equity structure of a company with a minority stake and represent a considerable alternative to an IPO or company sale as they give liquidity to shareholders while maintaining the company private under the same management team.

revenues ranging from €15 million to €150 million, the company places itself side by side with the management teams, ensuring an alignment of ideas and representing more than just a regular investor but also a trusted advisor. The KC team's track record counts with 43 concluded transactions since 1998, returning more than 40% IRR from a total of 31 exited deals.

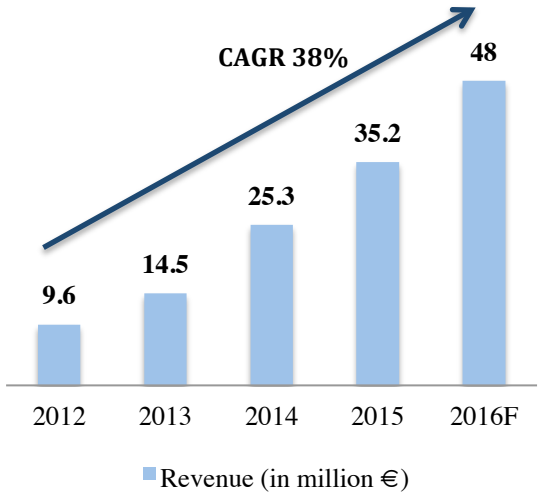
Decision

In a critical period where Vision-Box faces innumerous opportunities to expand its operations and develop its business, important decisions need to be taken. These are determinant to maintain the growth achieved until here. Management holds in its hands the power of deciding the perfect way to finance and increase the capital available for the company. Many opportunities might be missed if capital is not increased. The company's financial health is stable and resilient but internal growth is no longer sufficient to fulfill all the good investment opportunities and maintain growth.

By October 2015, different possibilities are on the table and the questions that must be asked are obvious. What is the best way to finance this growth? Is it too soon to start an IPO process? Should the company raise bank debt and be restricted by its covenants? Is a growth fund a good solution or should a venture capital be chosen instead? Finally, is the answer in one of these options or could it be a combination of all those?

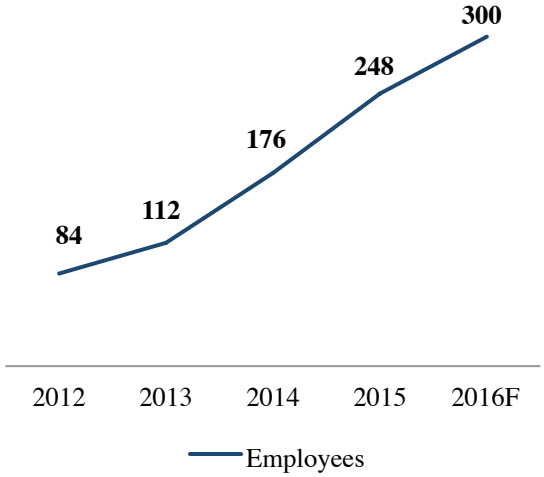
Exhibits

Exhibit 1. Vision-Box's Revenues



Source: Vision-Box

Exhibit 2. Staff Evolution



Source: Vision-Box

Exhibit 3. Traveler Touch Points

vb bag drop bio module | vb i-match self-boarding gate | vb i-match security checkpoint | vb i-match ABC

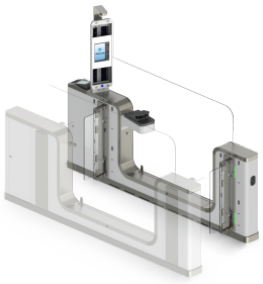
Source: Vision-Box's website

Exhibit 4. Automated Identity Management Solution

vb e-pass dispenser | vb e-pass portable | vb e-pass desktop | vb e-pass kiosk

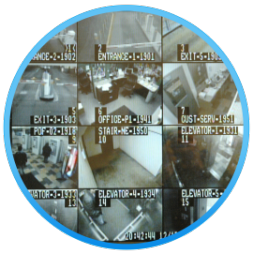
Source: Vision-Box's website

Exhibit 5. Security Mechanisms



vb
i-match ABC

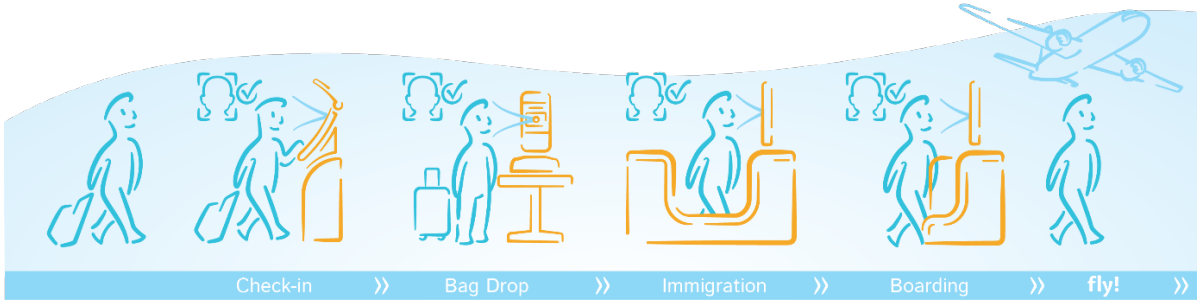
vb
facelink



vb
sentryspyder

Source: Vision-Box's website

Exhibit 6. Happy Flow Process

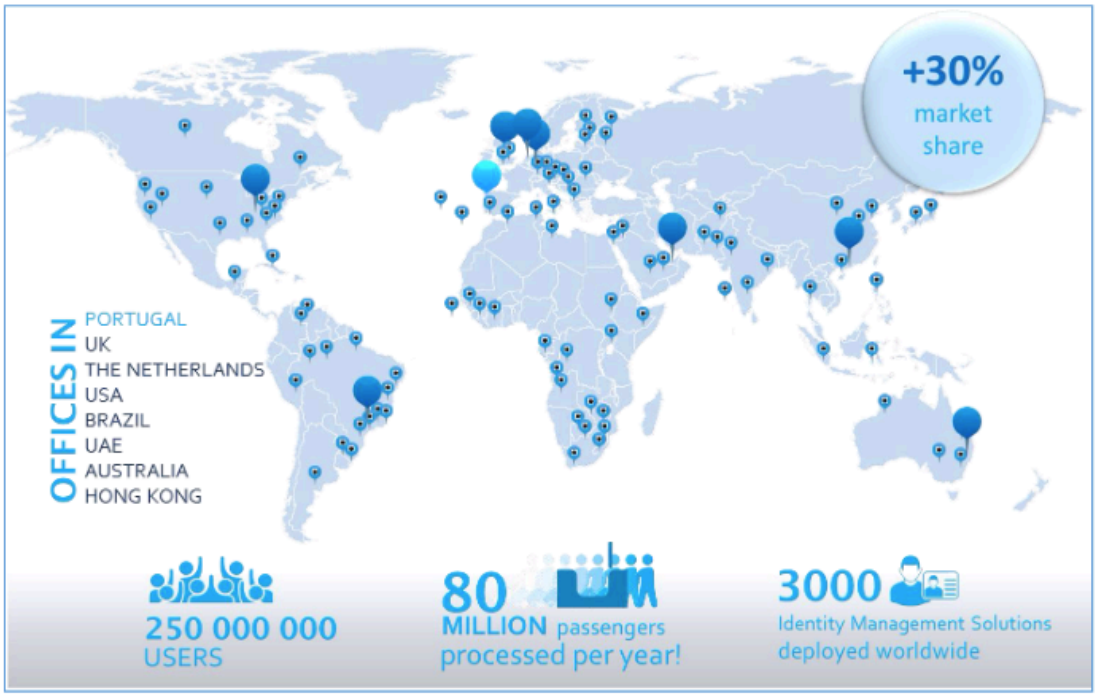


Source: Vision-Box's website

Exhibit 7. Orchestra

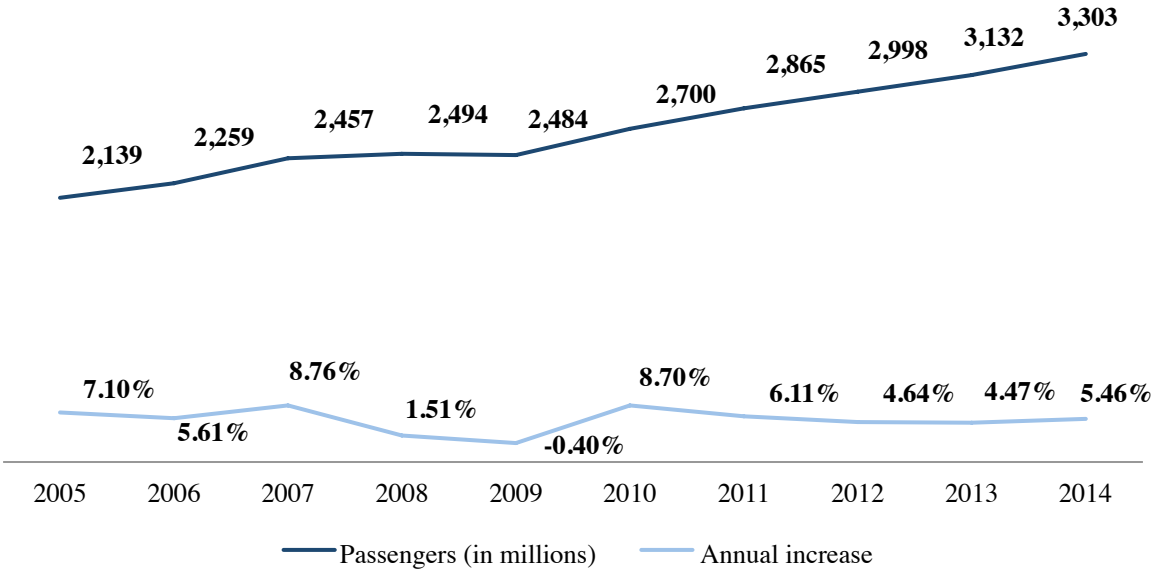
Source: Vision-Box's website

Exhibit 8. Vision-Box's footprint around the globe



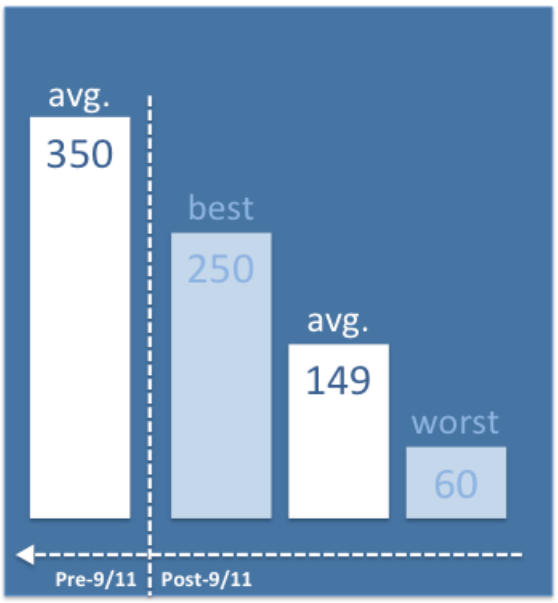
Source: Vision-Box's Press Release

Exhibit 9. World total air traffic data



Source: ICAO's "The World of Air Transport in 2014" report

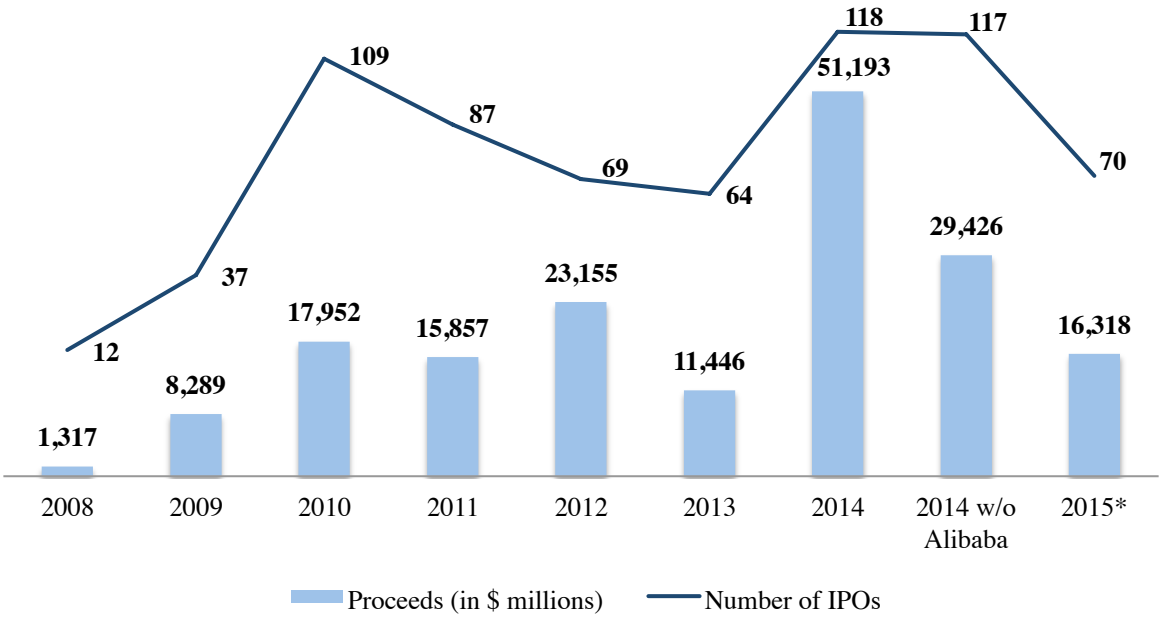
Exhibit 10. Average hourly throughput at airport passenger security checkpoints



Source: Image from IATA's 2012 Annual Review

Exhibit 11. Global Technology IPO Environment

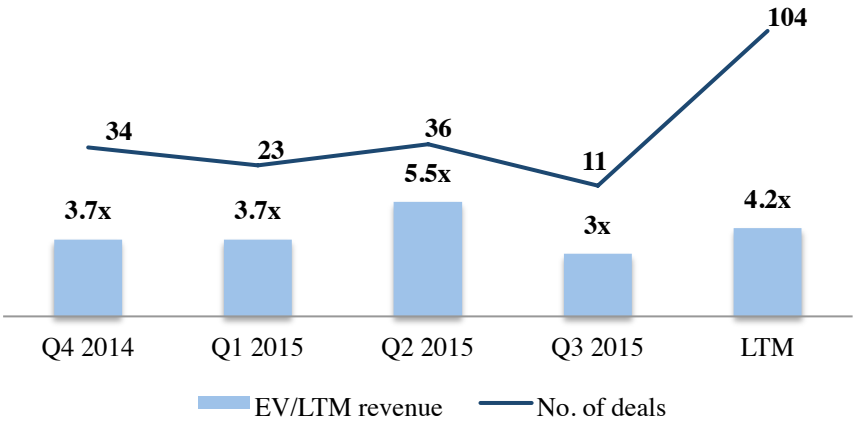
Exhibit 11.1. Technology IPOs during the period between 2008 and 2015



2015* - data from the first three quarters of the year

Source: Pwc's "Global Technology IPO Review" report

Exhibit 11.2. Valuation Metrics (1) between Q4 2014 and Q3 2015



(1) Financial metrics considering all sectors. Includes: Communications Equipment, Semiconductors, Internet Software & Services, IT Consulting & Services, Electronics and Software

Source: Pwc's "Global Technology IPO Review" 2014 and 2015 reports

Exhibit 12. European Funds

Fund	Approval Date	Operation Objective	Operation	Eligible Investment Approved	Approved Fund
FEDER	11/07/08	Qualification and Internationalization Incentives (SME's)	Vision-Box's Qualification & Internationalization	€379 085,38	€171 240,92
FEDER	14/05/09	Research and Technological Development Incentives (R&TD)	Vbe Security 2010 - Biometric Systems Security Project	€1 084 565,41	€694 703,20
FEDER	09/05/11	Technological Innovation Incentives	Innovation & Intensification of Exports and New Markets	€1 047 413,32	€680 818,66
FEDER	27/05/11	Research and Technological Development Incentives (R&TD)	Mobile Gate System Project	€1 544 235,32	€810 638,42
FEDER	12/07/12	Research and Technological Development Incentives (R&TD)	Vision-Box's Intelligent Dispenser	€557 793,73	€393 216,88
FEDER	30/05/13	Qualification and Internationalization Incentives (SME's)	Vision-Box's International Expansion	€640 904,45	€304 472,89

Feder represents the Portuguese Fund using the ERDF

Source: QREN

Exhibit 13. Some Awards

Year	Institution	Award
2010	UK Trade & Investment Agency	Internationalization Business Award
2010	Diário Económico	11 Most Innovative Portuguese Companies of 2010
2010 & 2011	Deloitte	500 Fastest Growing Technology Companies in EMEA
2011	Abu Dhabi	ID People EMEA Awards 2011
2012	BES Awards	Internationalization Revelation Award
2012	Sesames Awards	European Sesames Awards Finalist
2012	Deloitte	50 Fastest Growing Technology Companies in Portugal
2013	Frost & Sullivan	European Border Control & Biometrics vertical market penetration leadership Award
2014	UK Trade & Investment	Expansion Award
2014	Novo Banco and Jornal de Negócios	Export and Internationalization Award
2014	Cotec Portugal and BPI	Innovative SME Award

Source: Vision-Box's Website