



The serious game industry

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INTRODUCTION

Nowadays, more and more markets fall in decreasing, more and more companies show negatives results, and more and more people loose money. Serious game does not belong. The serious game market is at the leading edge of learning methods, by a high degree of interactivity in the way of communication that we never seen before. That's why, today, more and more companies, public education sector and even military sector show an increasing interest for serious games.

But what are Serious games ? those are games which have another objective than only entertainment, as education, sensitization or training. Although its origin dates back to the fifteenth century with the humanist movement which advocated to address serious issues in a funny way, the current approach that we know today date from 2002 with « America's army », the first serious game that advocates for :

- Broadcast a message
- Provide a training
- Allow the exchange of knowledges

However, it identifies older games that gather similar functions as « The Oregon trails » (1973) created and developed by The Minnesota Educational Computing Consortium. Since this date, the interest about serious games has never crease to grow, as its market and its potential incomes. That's why I offer you the opportunity thanks to this report to participate in the growing sector boom, earn money, by investing in a robust promising company, mine : « BAR Games : Defense & Security ».

In order to simplify and present the best sector to invest, I will introduce you the military market of serious games in France . In order to convince you, I will present you the diagnosis of the market, the decision and the implementation by exposing you the using of your money, and the potential return on investment.

DIAGNOSIS

GENERAL VIEW

Let's begin with a general view of the serious games industry in France. There are about 190 companies on the serious games market spread over a dozen sectors (cf page. 10). The market has increased exponentially since arriving in the 2000s in France, for example, it grows of 47 % from 2010 to 2014. In France, the turnover on the market is around 70 millions of euros, while the global worldwide turnover is around 2 billions of euros (IDATE – Market & Data Report, Juillet 2014).

Concerning demographic data of the market, 89 % of the population has a smartphone, whereas 99 % of 16-24 years old are possessing one. The forecasts for 2015 show one billion smartphones and 250 millions tablet computers use. Despite the economic crisis, people still want to be entertained, to communicate, share informations and consume. That's why companies are still investing in communication, particularly in digital communication as serious games. More generally, there are 600 millions to 1 billion potential serious gamers all over the world.

STEEP

In order to really understand the serious games market in France, the best tool to analyze is the steep, that regroups the analysis of Political and Legal, Economic, Social, Technological and Environmental. In order to well understand the reality of the french defense market of the serious game, I will add after each part the details about it.

	Description
Political and Legal	<ul style="list-style-type: none">• Calls for proposals initiated by the National Agency for Research (ANR) & supported by regional and national financial aids• The IFCIC (Institut pour le Financement du Cinéma et des Industries Culturelles) created a banking warantee for the Video Game Industry• The CNC (Centre National du Cinéma et de l'image animée): financial help to companies in the video game industry to support them in 2 stages : pre production and creation• Tax credit (CIR)• Stimulus package: in 2009, Nathalie Kosciusko-Morizet - 30M€ will be dedicated to serious games projects• CIJV (Video Games Tax Credit): Cost development financed for 20% [sustain AAA Video Games]• European support to sustain projects for serious games

We can add that the Ministry of Defense initiates measures to promote the image of the army in order to sustain their needs (Air Force, Army, Navy). The military planning law that implement the guidelines for the French defense policy for a decade defines a higher budget than expected for armies in France, that involve a revision of the number of job cuts in the military field and therefor an adaptation to the actual context. The maintain of the “Sentinelle” operation: protection of 682 French sites is also a good opportunity. To conclude, the law on the system of military preparations about obligation of physical, psychological and tactical training will be a good springboard for my company.

	Description
Social	<ul style="list-style-type: none">• Democratization of digital supports everywhere• Digital native generations• Consumers are more and more versatile• Proven benefit of gamification method but issues associated with video gaming• 83% of french people have already played a video game• France is the first country to train people in artistic and technological domains

Especially concerning french defense market, we can notice the huge success of war games such as Call of duty and others Battlefield among teenagers, a good way to interest and inform them. This digital generation used to play video games should be more interested by serious game that prove the army modernization, we can cite the success of the serious game « America's army » that had a good impact on young people enrollment. To conclude the social part, we can say that, in addition of the valorization of the army by using serious games, it increases the operational formation of soldiers, that the military planning law has planned.

	Description
Technological	<ul style="list-style-type: none">• Age of digital development and E-commerce• France ranks 8 in countries for the rate of internet connection in households: 82% in 2013• Development of NITC: fast moving market with advanced technologies• Increasing dematerialization of video games - Expected growth from 2013 to 2017 : 19,4%• Development of connected TV

The technological dimension of french army is one of the most important advantage that it has (specially Air force). For example flight simulators (which are a kind of serious games) exist since decades, and are today essentials for pilot trainings. We can notice the

growing integration of the NICT in the initial and secondary training of militaries (ex: For the digitalization of the battlefield). In addition, intelligence services, cyber defense and other high technological equipments are a priority for french ministry shown by the big investments in defense industry that includes serious games.

	Description
Economic	<ul style="list-style-type: none">• Turnover 2011 in France for the Serious Game industry : 47 millions € (+15,6% compared to 2010) - should reach 84 millions € by the end of 2015.• Communication budgets are decreasing due to the economic crisis• Video Game has just become the 1st industry worldwide after Cinema and Music with a turnover of 52 billions €. (2,7 billions € in France - 2nd in Europe, 7th in the World.)• Impact of the crises on the overall video games market (-9% since 2009 but less in Europe by 3,5%)• Companies who have already bought a serious games is also a starting point: 75% of those companies foresee to buy another one between 6 month and 2 years with a budget from 50 000 to 100 000 euros.• Expected turnover' growth of 47% to reach 10 billion euros by 2015 for the Serious Game market (Source IDATE)

We can notice that the defense budget in France, which represent 2.26 % of GDP, is the fifth of the world (behind USA, Russia, UK...). The average is 2.42 %. With the current geopolitic context, the expected decay of defense budget was avoided, and the opposite happened. This fact is a good opportunity for defense serious games companies as mine. To conclude we can notice the 3 fundamental missions that army provide, territory protection, nuclear dissuasion, abroad interventions. 3 main serious games subjects to develop.

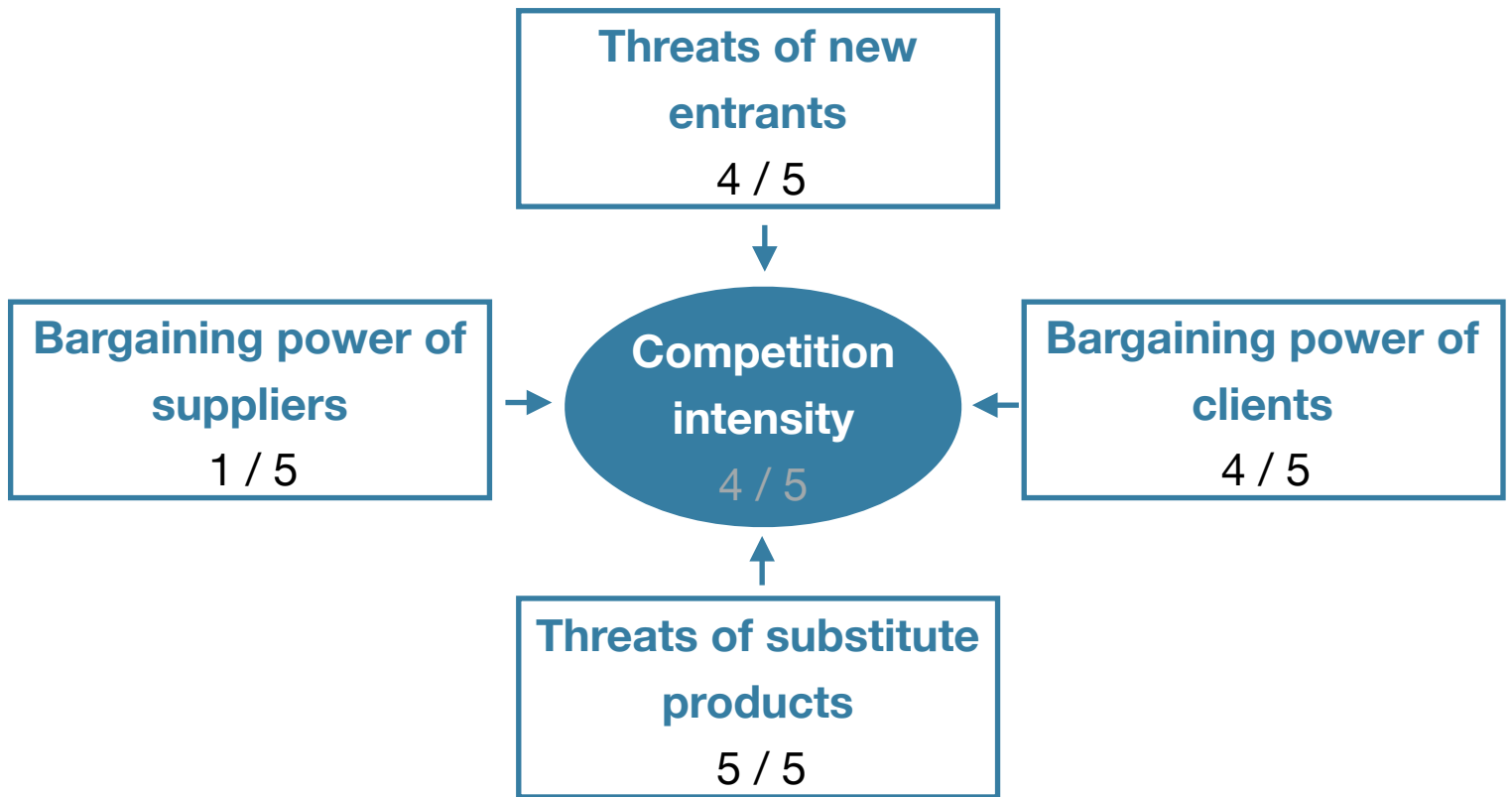
	Description
Environmental	<ul style="list-style-type: none">• Over consumption• Supports dematerialization• Smartphones, Wifi and Internet Waves

There are not many arguments that we can add concerning the environmental defense, except the current geopolitical tensions that there are all over the world. Specially concerning ISIS (Islamic states) which use more and more modern communication channels (as twitter) to recruit jihadists, the risks of attempts (Charlie Hebdo) that reinforce people's need of protection, that only army can provide. Defense serious game increase army's image, in the modern warfare.

Thanks to the help of the STEEP, we now understand the environment dimension of serious games, in general and in defense sector. It will help us to define an effective strategy by identifying the different opportunities available to us, concerning the 3 main subjects about defense that we found before for example. It also help us to identify potential future problems and difficulties. To conclude this part about the steep, we can say that the serious game market is obviously in line with the current technological evolutions and educational, advertising and formation needs. The figures show that serious game market is one of the uncommon market that are incredibly increasing, more over, involvement of governments, specially in defense sector allow us to think that serious games are not a transient fashion. Will seize your chance ?

PORTER 5'S FORCES

In order to determine the attractiveness of the market, and evaluate correctly the risks, the five forces of Michael Porter are maybe the best tool. By looking on the key stakeholders.

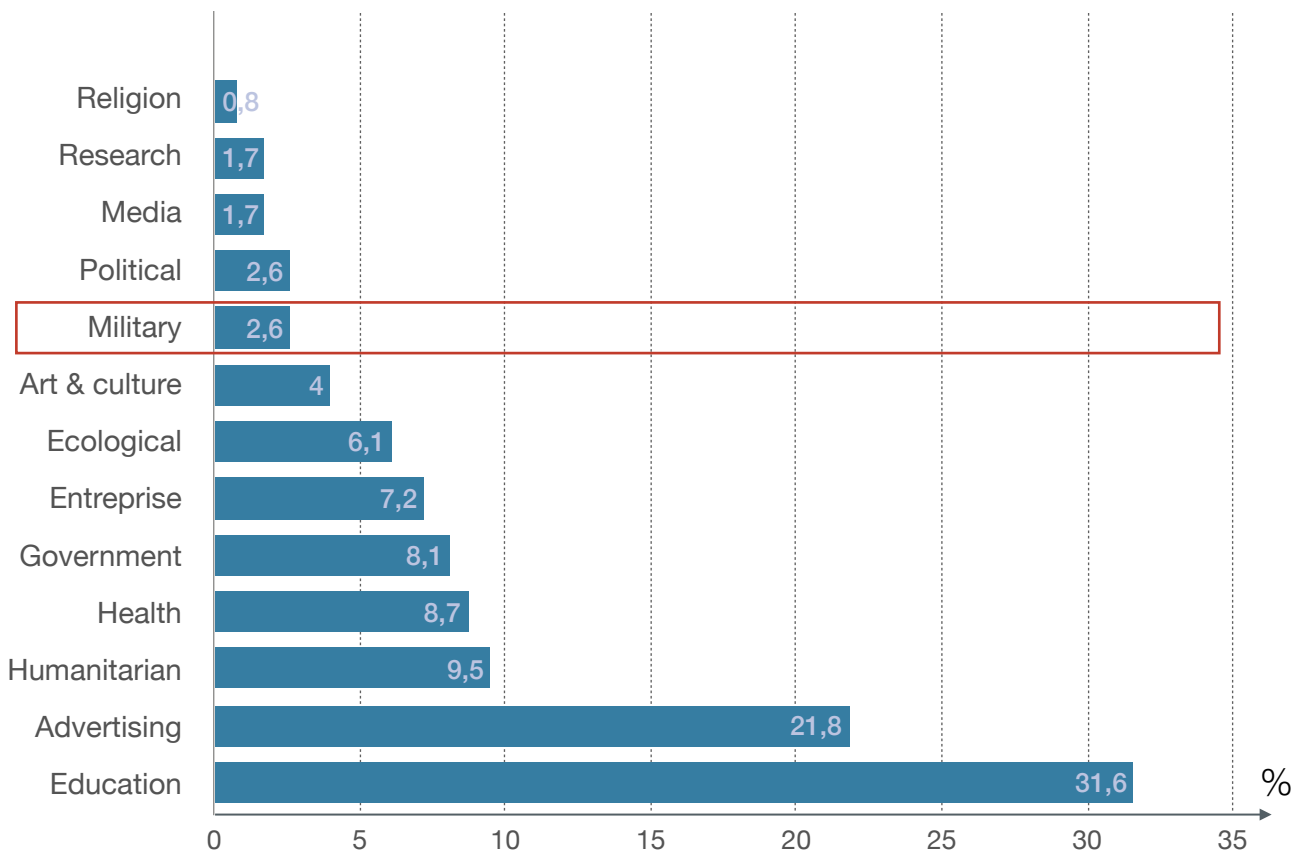


Threats of new entrance	Bargaining power of clients
<ul style="list-style-type: none"> • Big video games editor entrance • Easy market access for company with technical knowledges • Market not concentrated (IHH : 1496) • Low entry costs / barriers • Stay and be profitable on the market is really hard <p style="text-align: right;">4/5</p>	<ul style="list-style-type: none"> • Contract negotiation easy because of number of serious games companies • Serious games are not very democratized on french market. • Big companies may be tempted to develop serious games in their own (internal) <p style="text-align: right;">4/5</p>
Threats of substitute products	Bargaining power of suppliers
<ul style="list-style-type: none"> • Common learning methods as books, courses... • Trainings <p style="text-align: right;">4/5</p>	<ul style="list-style-type: none"> • Internal ressources are used to produce serious games <p style="text-align: right;">1/5</p>

Marketing attractiveness : 4/5

We can deduce from this rate that the competition intensity score implies a high threat rating which means that competition is fierce on the serious game market. We also found an IHH index of 1496 (2013), which means that the market is not concentrated, in fact there are 193 competitors on the serious game market. The low entry barriers (only technical skills) make the market difficult to stay on and be profitable. Despite these conveniences, the market is attractive owing to its low concentration and because the games require only internal resources that eliminate suppliers problems and costs. To conclude, the 5 forces reveals the importance to find a more specialized market, a niche market to take the maximum of marketshare and become the most important actor on, that bring us to the next part about the segmentation of the serious game market in France.

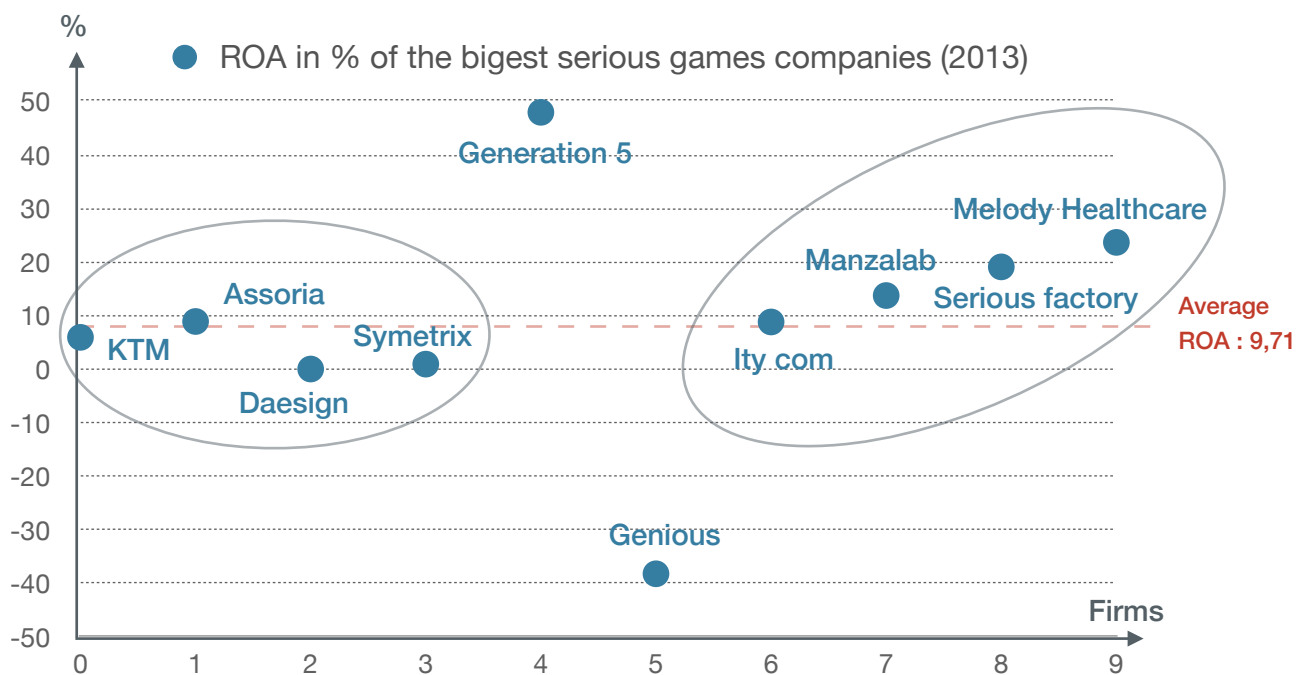
SEGMENTATION OF THE SERIOUS GAME MARKET (FR)



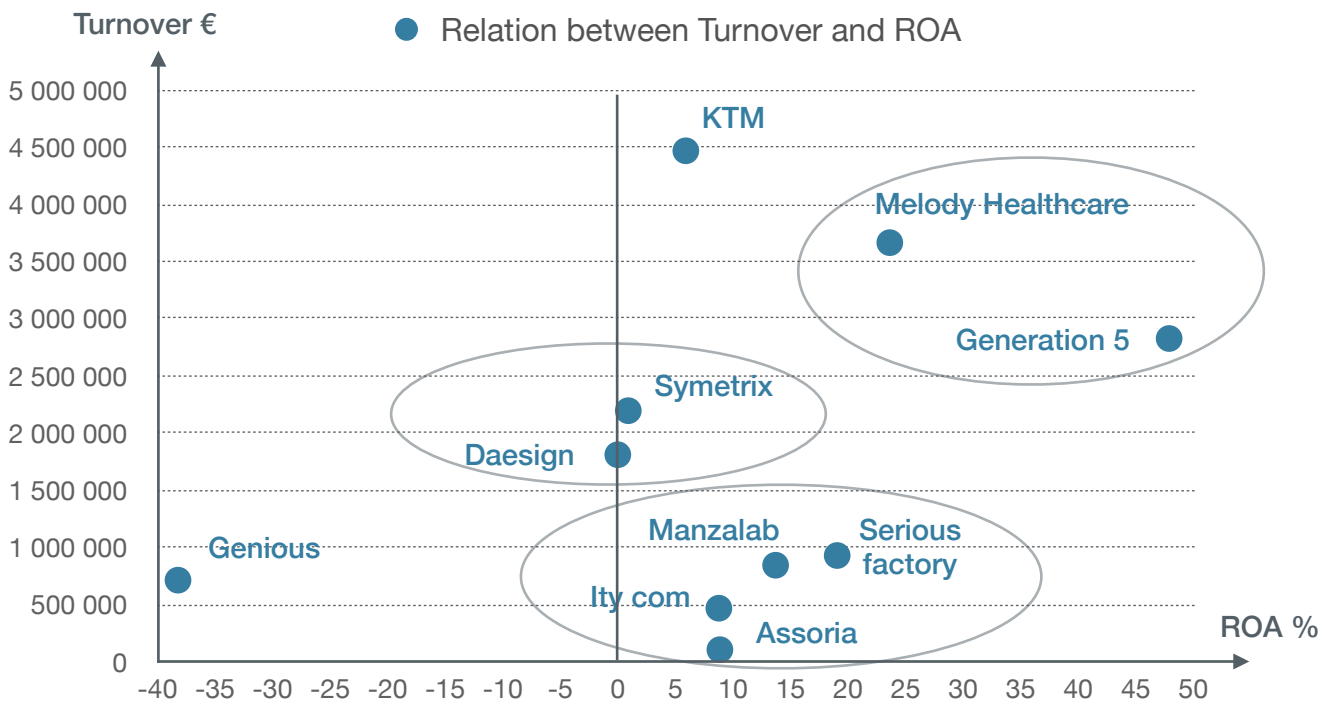
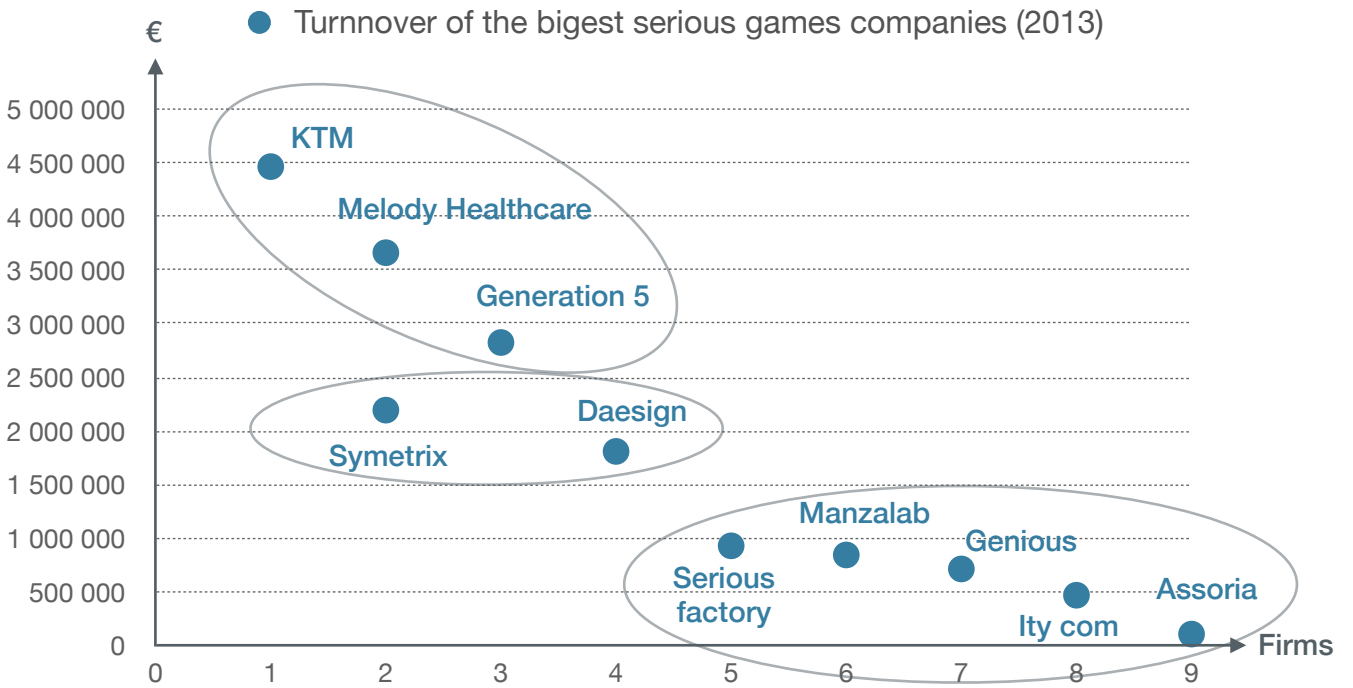
According to this graph (source SNJV), we can observe that the military sector in France is a niche market (2.6 %), in contrast with the US one which represent more than 25 % of the serious games market. It will help us to get inspiration and example from US military serious games companies. In addition, the niche market will help us to get a larger marketshare in average, concentrate the market to increase entry barriers and then be profitable. Concerning the competitors on the market, they are certainly the best one, because in this type of fierce competition market which have low entry barriers, stay on it is very complex and difficult. It doesn't mean bad news, because these competitors stimulate the market and help the global market growth. In this aim, let's take a look on average profits on serious games market.

FINANCIAL ANALYSIS

One of the best tool to analyze correctly the potential benefits that you can make on a market, is the return on assets. It will show us if companies that are still presents on the interesting market are making profit, by calculating the rate between the net result and the assets invested in the activity. The ROA will show us the real performance of competitors on the market, and define an average revenue. You could find all the statistics about competitors on the appendix excel sheet.



BAR GAMES : DEFENSE & SECURITY

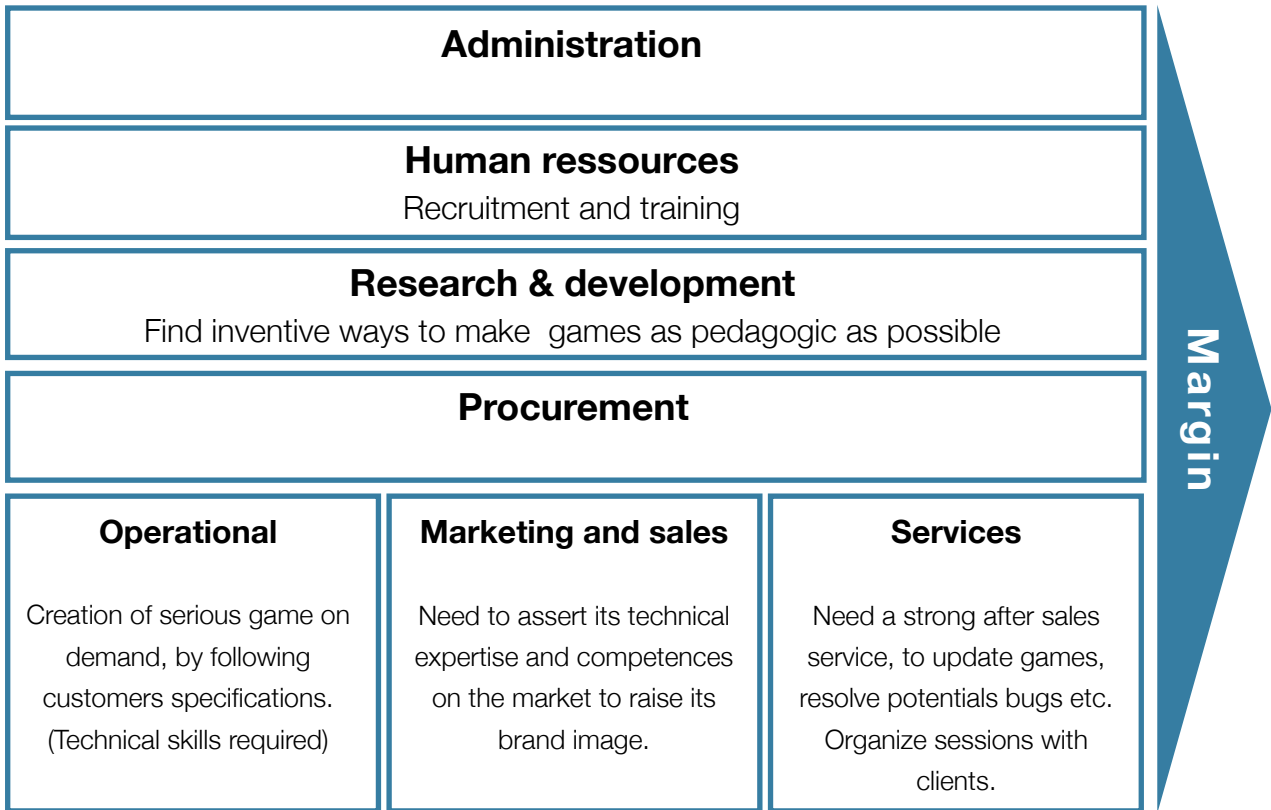


These graphs allow us to locate the ROA average (9,71 %) of most important companies on the serious game market, the turnover of these companies, and the relation between these 2 parameters. It also permit us to classify the companies per groups that will permit us to locate ourselves on the market. It is quite interesting to notice that companies

that are most successful, with an high ROA pourcentage, are those that are presents on niche segment and concentrate the market their respective sectors. For example, the company Melody Healthcare alone accounted for 21% of health serious game market in France, in term of turnover. That's why, Generation 5, Melody Healthcare and even KTM advance are examples to follow, because these companies succeeded to create profits. It will be our objective on military serious games market.

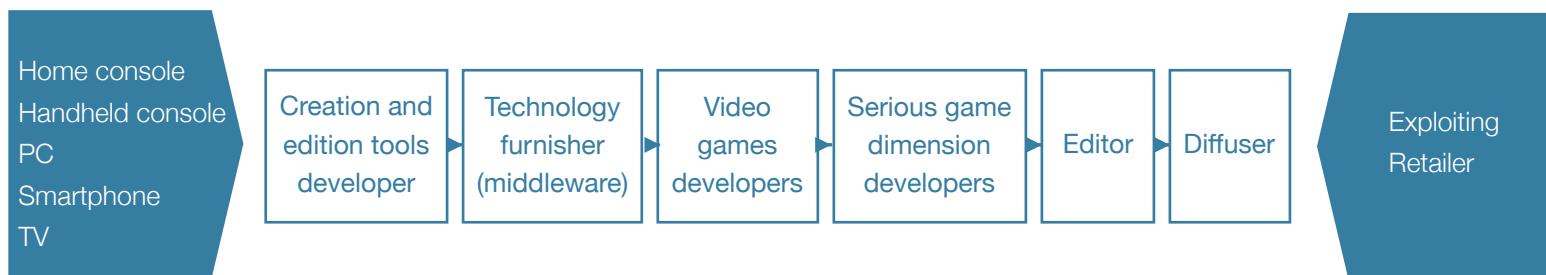
PORTER’S VALUE CHAIN

The Porter’s value chain allow us to determine the capacity of a strategic business unit to create value and how. We will first look at value chain of conventional serious games companies, a general one that we could find in most of serious games companies. The value chain deals with several criteria, administration (the management in the company), human ressources (high skilled devs), operational (game quality), marketing and services.



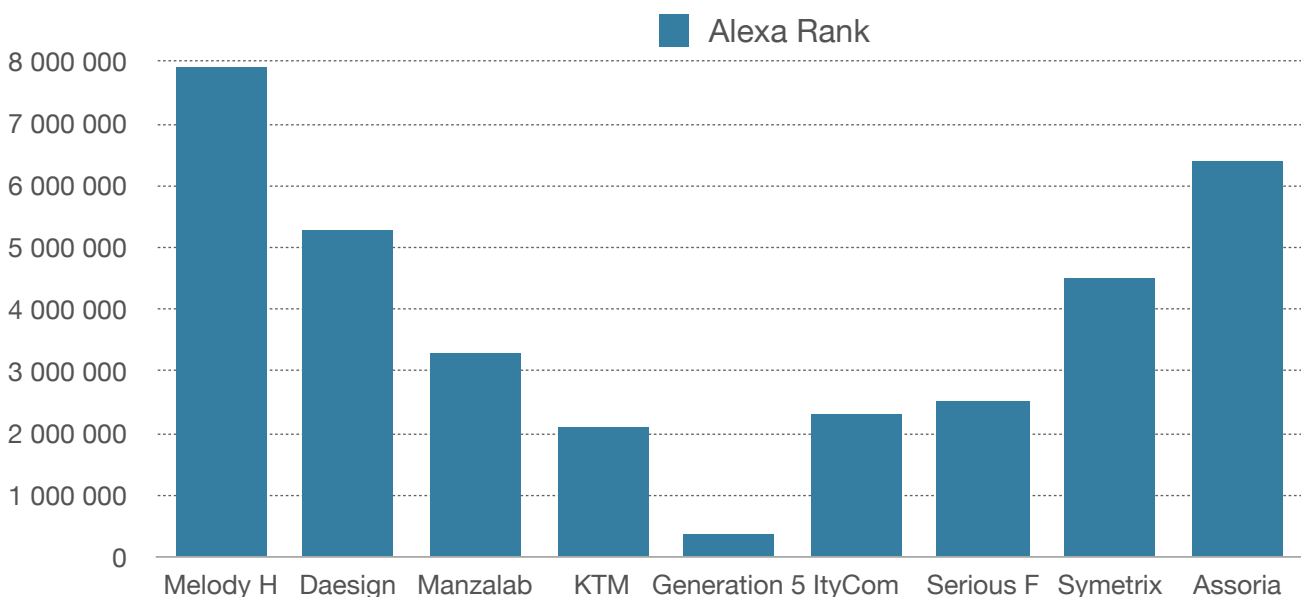
BAR GAMES : DEFENSE & SECURITY

We can also get interested by a different type of value chain, which will represent the value chain of the serious game industry. The value chain of the serious game industry is close to standard video games one's, however, it brings a new link that we called « Developers of the serious game dimension » which integrate people who have high knowledges about the subject the serious game deal with, as health, education, military...



WEBSITES ANALYSIS

To conclude the diagnosis part, we can take a look to the websites rate of visitation, that indicate us the interest shown by visitors. In this way, I chose to use famous Alexa indicators, that establish a worldwide websites ranking by using several parameters to estimate the website popularity. The rank is calculated using a combination of average daily visitors and page views during the past 3 months.



I remind that the lower is the rank, the best is the website. Unsurprisingly, Generation 5, that we see before has the best ROA in % and the third turnover, has the best visibility compared to the others. It is hard to establish a real correlation factor between ROA and visibility, but, in marketing way of thinking, have a good visibility for potentials customers is essential to establish effective communication campaigns. That's why, it is very important to take care of its website visibility, specially in serious games area, because most of the communication is done only by using internet website.

SUMMARY OF DIAGNOSIS PART

Throughout this part, we saw a lot of tools, mapping, chain to guide us on the serious game market. To sum up, we have :

- **The Alexa ranking** : It show us the importance to have a a good visibility to help potential consumers to find you, and also stand out. Around 95 % of serious games communication trough by internet website.
- **The Value chains** : A lot of companies fail on serious games market because they neglect the marketing and sales part, and have a bad marketing strategy while they have very high skilled and competent developers ! It must be one of our priorities.
- **The financial analysis** : the market shows us that many competitors are stimulating the market, and that those who are most successful are present on niche market, with little competitors, and therefor monopolizes the biggest market shares on.
- **Porter's five forces** : The 5 forces help us to determine that the serious games market is attractive, with stimulating companies.
- **The environment** : the most important point is that there is an important political support for serious games in France, specially concerning military serious games. In addition, with the huge success of military games in USA, french defense ministry is increasingly interested by this type of games. The lack of offers present on this market is very encouraging.

To conclude the part, I made a research on principles actors present on military market, and I found that, currently, the application most used by french army is one made by a Czech company called « Bohemia interactive ». They have developed several army games, called « Arma », with many versions with different topics : « Arma helicopter », « Arma Karts », « Arma private military » etc. even an « Arma UFO ». They cover most of the subjects that armies could need. Their games are well made but they also try to diversify themselves in other areas, as their game « Arma : Mars exploration » shows. The technologies used, as motion capture, allow them to propose very performant games. We can also see that their games are greatly inspired by « America's army » :



America's Army



Bohemia « Arma »

Bohemia interactive is a competitor on defense serious games market, but it must be seen as one which stimulate and develop the market that is in our interest. They are not only present on french market, their clients are from USA, Australia and some of south america countries as Venezuela, France is one of their clients. It is also a quite good new that the Bohemia is Czech, because, as french company, it will give us a competitive advantage to sell serious game to french defense ministry. Provided that we make as much quality games or higher than Bohemia interactive.

You can find more information about Bohemia interactive on : « <https://www.bistudio.com> ».

DECISION

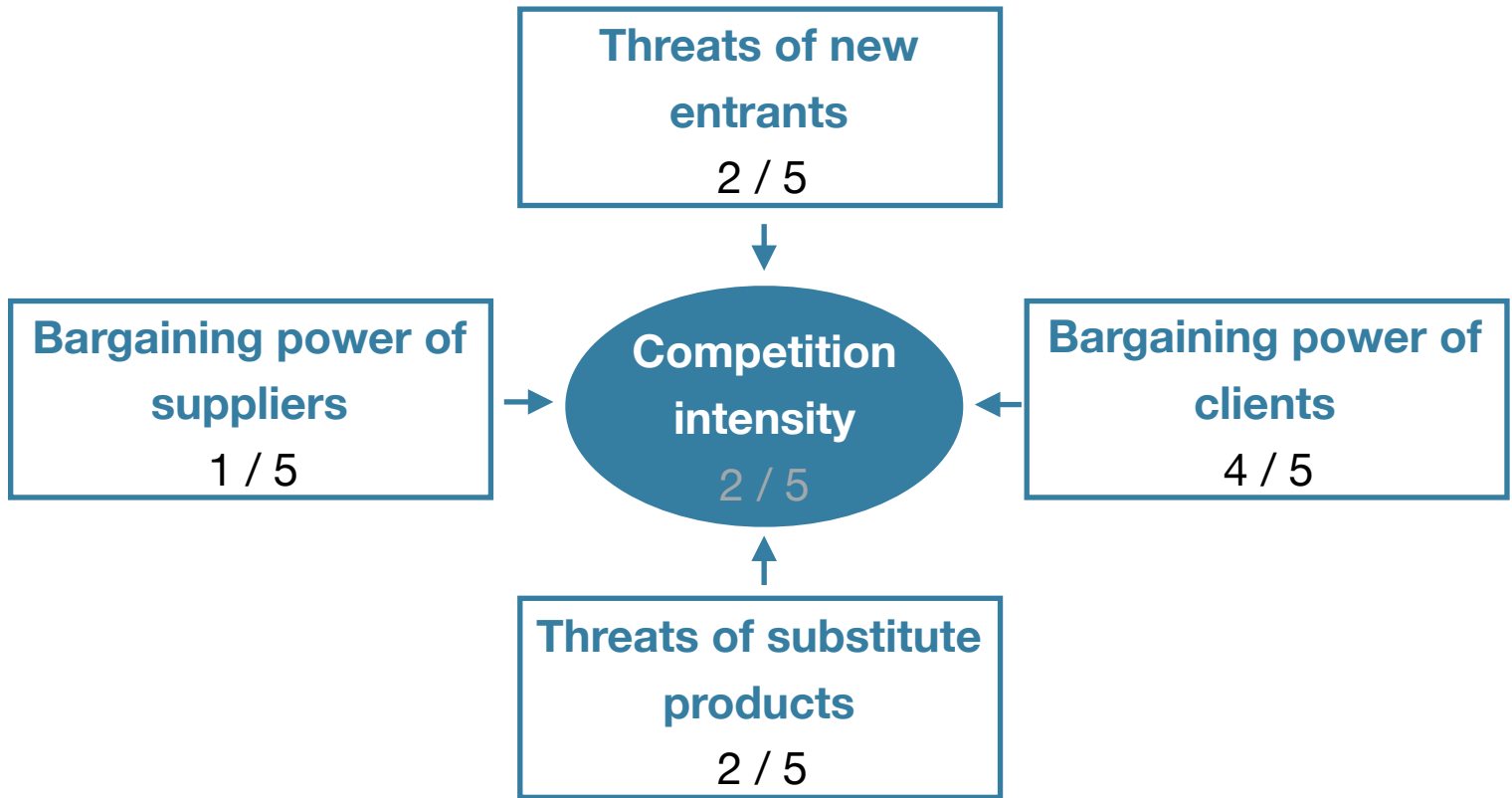
Our objective is to clearly target the niche market of military serious games in France. As we see before, the current marketshare of defense represent only 2,6 % of serious games market. In order to efficiently penetrate the military market, we need strong knowledges about the defense sector that my company provides to minimize risks of failures on. We can also get informations from experienced defense serious games companies, such as America's army, which was the first real war serious game. It even inspires most of famous first person shooter, such as Call of Duty, Battlefield or Medal of Honor.

I mentioned before that the principle actor on the french military market is Bohemia interactive, a Czech company that provide a large variety of military games by covering a number of topics for many countries, a potential source of inspiration. The fact that they are not specialized on french market will help us in our strategy : our strategy would be to develop games especially and only for french army, by forge strong link and cooperation with, and become a privileged actor. We can analyze the needs of the french army, by creating cooperation workgroup with, and ask for help of military instructors to develop games scenario. The good political and legal environment in France concerning serious games as well as the many aids that we can get by working with the government will be a springboard of success. In addition we will use the best technologies of motion capture available to furnish very high quality games, with competent developers to use these. We will also try to propose games with the possibility to play every posts provided by army (soldier, doctor, mechanic...) with all the grades associated (sergeant, commander, general...). The quality of the scenario, thanks to the french instructors mixed to the realisticness of our games, will project us to the top of the military serious games market. The final objective is to become the main provider of military serious games in France.

To support our decision concerning strategy, the military serious game demand is strong, indeed, it is the common and the cheapest way to train soldiers, this demand is increasing according to the often cutting budget. In addition, the absence of specialized french military games companies preclude them to have adapted games to their issues. They are therefor forced most of time to use games adapted to US army.

Let's take a look on the 5 forces applied to military serious game market :

PORTER'S 5 FORCES : MILITARY GAMES MARKET



<p>Threats of new entrance</p> <ul style="list-style-type: none"> The market is very concentrated (few actors). IHH : 788. Government aids could however motivate competitors to enter in Military knowledges required <p>2/5</p>	<p>Bargaining power of clients</p> <ul style="list-style-type: none"> Our main (maybe the own) client is the french army and will represent the main (or only) part of our revenues - risky But they don't have the knowledges to develop themselves games <p>4/5</p>
<p>Threats of substitute products</p> <ul style="list-style-type: none"> Conventional military trainings <p>2/5</p>	<p>Bargaining power of suppliers</p> <ul style="list-style-type: none"> Only internal ressources are used to produce games. <p>1/5</p>

The Porter 5 forces allows us to say that the military market is very attractive, with a low degree of competition on. The IHH calculated of 788 represents a high average profit made by companies on the market.

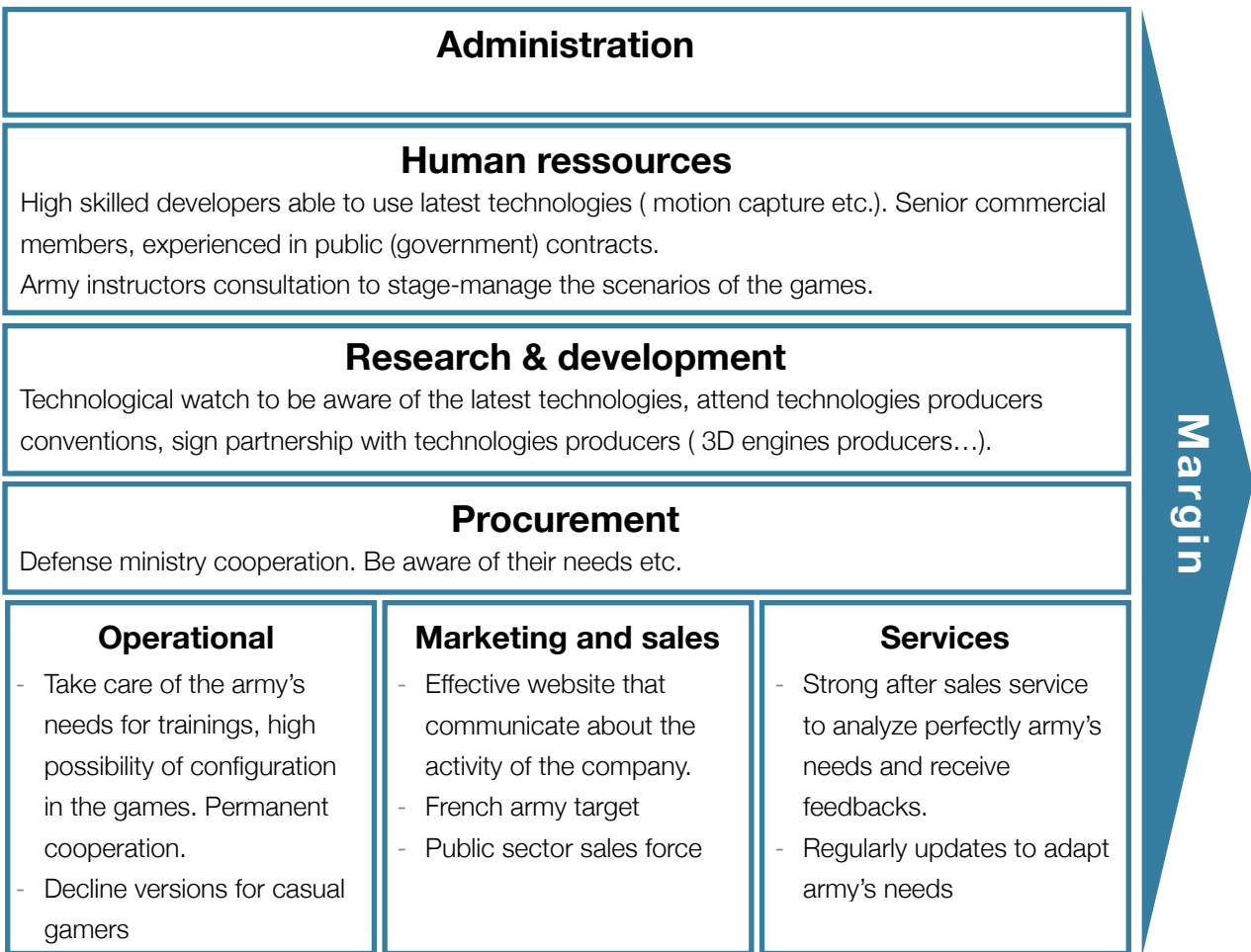
To support our strategy, here is a sum up of our key success factors :

- Develop games only for french army to become a privileged actor
- Use highest technologies and competent devs
- Cooperate with armies instructors to develop very realistic simulations
- Government aid
- Regular budget cuts that force army to find cheaper training methods

Objective : become the main provider of military serious games in France and therefor the first provider of french army.

IMPLEMENTATION

In order to become the most privileged partner of the french army, we have to take care of all the parts of the process, this is the value chain of my company :



All the items that we cited in decision part are took into account in the value chain. We don't want to develop our own technologies (3D engines, motion capture) and use ones that are available because it requires huge investments, time, and current companies that develop these technologies are still very good (Unreal, Frostbite, TrackIR...). That's why the « Research and Development » includes technological watch.

BAR GAMES : DEFENSE & SECURITY

We will detail in the next table the investments required, and how the money will be used, this the implementation plan. I remind that our objective is to become the most important company on military serious game market in France.

Action	Objective	Cost
Company opening	Open a company (SA) according to french legislation	4.2 k€
Hiring : <ul style="list-style-type: none"> - 3 senior developers - 5 developers - 1 senior salesman specialized in public contracts - 1 salesman - 1 accountant - 1 secretary 	Be performant in development with competent developers. Be skilled in public cooperation to enter into a contact with french ministry, and efficient negotiation.	Charges included (per year) <ul style="list-style-type: none"> • 3x90 k€ = 270k€ • 5x60 k€ = 300k€ • 100 k€ • 70 k€ • 60 k€ • 50 k€
Consulting : <ul style="list-style-type: none"> - Military instructors - Lawyer - Ex soldiers 	Develop games scenario as close as possible of the reality. Consult an expert to be aware of public - private relationships. Build the motions captures require experts (soldiers).	<ul style="list-style-type: none"> • 25 k€ (per year) • 20 k€ (punctual) • 15 k€ (per games)
Capital	Start the company	100 k€
Accommodation	In Paris to be close to defense ministry. Open space offices and a room for motion capture	30 k€ (per year)
Material	Performant material, as computers, motion capture system to produce high quality games	Computers : <ul style="list-style-type: none"> • 8x4k€ : 24 k€ (devs) • 4x1k€ : 4k€ (others) Motion capture system : <ul style="list-style-type: none"> • 20 k€ (TrackIR)
Advertising	Communicate about our work (website, e-ads...)	20 k€ (per year)

BAR GAMES : DEFENSE & SECURITY

Action	Objective	Cost
Engine license	Use the best engine for our games	Unreal 3D engine : 99€/year
Extra	10 % of the previous fees to cover unexpected fees	120 k€
TOTAL		1 112 300 €

The total investment required to launch the company is around 1.2 M€. We plan to develop 2 games the first year, that will permit us to sign a contract with the french ministry and start to be profitable the second year. The expected return on equity will be about 8% the second year. We target to get 10 % of market shares the second year.

CONCLUSION

My company offers you the possibility to invest in a sector that is increasing exponentially. The specialization in military serious games market ensure us a bright future, thanks to the government aids, but mainly thanks to french army which demand is very high, because of budget cuts and modernization concerns. In addition, the absence of french competitors on the market forces the french army to use games adapted to others, they are keen to get personalize customized ones. The demand exists and is high, I offer you to answer it and make money, will you grab your chance ?



TM A company founded by Samuel BAR