# Firefly
DRONE SHOW

# Business Plan


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GRUPO I

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SEPI AIRBUS EOI Escuela de organización industrial

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# Module 1. Introduction

Entertainment has been since origin of humankind one of the most important needs, after having fulfilled physiological and security ones, as this usually means socialising. Therefore, there has been different kind of public events with big affluence that would lead the public discussion.

On the other side, humanity could get bored from repetition and monotony, which is why innovation and creativity play a crucial role in spectacles, having the chance to surprise and make it unique.

Market evolution is leading to a new trend, in which customer do not demand goods or services any more, but experiences. This must be seen as an opportunity to lead the direction that spectacles are going to follow, by hearing the voice of customer, and making it unique and unforgettable.

This is our starting point, where we want to challenge the status quo of spectacles, wondering ourselves what the current potential of technology is and how to join it to shows to generate something unique.

## 1.1. Idea

Drone technology is evolving extraordinary fast during last years. For that reason, new ideas are being tested and implemented and one of these, is the capability to coordinate a bunch of drones flying altogether in the air.

Whereas spectacles are trying to evolve from a service to an experience, being able to introduce these drones can be crucial to reach this evolution, as each show can be easily customized to the type of activity and the available space.

Our idea is to create new kind of spectacles, introducing drones that can play a special and unique choreography inside of the whole show, converting the show into an experience that will have an added value, which will become a competitive advantage due to the difficulty to be copied.

**Figure 1.1: Design your own sky**
**Source: https://dronedj.com/2018/09/14/mesmerizing-franchise-freedom-drone-light-show-at-burning-man-2018-video/**

## 1.2. Customer

There is a double perception on customer side, the main one are spectators, which will be the ones that will experience the service, they will be criticising what they are seeing and will request more (or less) shows like these. They must be completely satisfied, with the perception that this is made for each of them.

However, the company will deal and negotiate with companies of different sectors, like concert organisers, dancing companies, restaurant owners or sports organizations. This will be a coordinated work of delivering a services and creating the show together, having always the vision of satisfying the spectators.

Both of the customers must be satisfied, creating different channels and indicators that can provide information of the success of the project and the company, based on what they are specifically seeking to get.

## 1.3. Team

We are going to constitute a Start-up, with five founders. We are going to develop different roles, with related responsibilities, but with the flexibility of implying each of the member to each other tasks, in order to define the alignment and direction.

This is compounded by people with different backgrounds, which have played mainly the role of the spectators, and can perceive how to improve spectacles. With the common background of an MBA, we are also confident to face the economical part of the project, being able to deal with finance, market research and negotiation related to the success of the company.

To do so, Start-up is the best structure, due to the flexibility that it can provide. In further sections, there will be an analysis of the competence that will confirm this statement, letting the company survive to an elite compounded by a few companies that have a very nice product and the prestige of big brands.

The founders of the team are the following:

- Antolín Alejandre de Oña:

**COO**

| | | |
|---|---|---|
| Name: | Antolín Alejandre de Oña | |
| Education: | Industrial Engineer | |
| Experience: | 02/2018 – 02/2019 | Manufacturing Flight Line (Airbus) |
| | 03/2016 – 06/2017 | Maintenance (Nature Choice) |
| | 06/2012 – 09/2016 | Head trainer for regattas (CMA) |

**Figure 1.2: Background of Antolín.**
**Source: Self elaboration.**

- Roberto Alzaga Gimeno:

**CTO**

| | | |
|---|---|---|
| Name: | Roberto Alzaga Gimeno | |
| Education: | Industrial Management Engineer | |
| Experience: | 02/2018 – 02/2019 | Industrial Management (Airbus) |
| | 06/2017 – 10/2017 | Admissions (Cedar Point) |
| | 03/2016 – 06/2017 | IT Engineer (Timpa S.L) |

**Figure 1.3: Background of Roberto.**
**Source: Self elaboration.**

- Javier Jiménez Campos:

**CEO**

| | | |
|---|---|---|
| Name: | Javier Jiménez Campos | |
| Education: | Industrial Engineer | |
| Experience: | 02/2018 – 02/2019 | Project Manager (Airbus Group) |
| | 06/2015 – 09/2017 | Purchasing (Volkswagen) |
| | 09/2014 – 06/2015 | Lean Manager (SEAT) |

**Figure 1.4: Background of Javier.**
**Source: Self elaboration.**

- Alejandro Pascual Oliver:

**CFO**

| | | |
|---|---|---|
| Name: | Alejandro Pascual Oliver | |
| Education: | Industrial Engineer | |
| Experience: | 02/2018 – 02/2019 | Customer Services (Airbus DS) |
| | 04/2015 – 05/2017 | Logistics Manager (Decathlon) |

**Figure 1.5: Background of Alejandro.**
**Source: Self elaboration.**

- Irene Vázquez Trujillos:

**CMO**

| | | |
|---|---|---|
| Name: | Irene Vázquez Trujillos | |
| Education: | Industrial Engineer | |
| Experience: | 02/2018 – 02/2019 | Lean Manager (Alestis) |
| | 05/2017 – 07/2017 | Civil Aircraft Production (Airbus) |

**Figure 1.6: Background of Irene.**
**Source: Self elaboration.**

# Module 2. Strategic plan

In this module, the strategy that the company is going to follow will be presented. That comprise the business definition, including vision, mission and values, market analysis and strategic roadmap.

## 2.1. Business opportunity

Considering the evolution of technology in drones and its current market, there is a chance to start utilizing them in a different way as usual. They could be part of spectacles to make them special, providing a new identity.

Focusing on that, they could be coordinated to act as a flock, flying autonomously and not crashing among them. Reaching this, there is the possibility of creating a new market, changing current perception on spectacles, with the main advantage of transforming the voice of customer with the flexibility to attend their personalized demand.

Regarding directly to the idea, we want to create customizable drones, which will wear costumes, like additional pieces or lights, which can coordinate through a software and an antenna signal. This could be used as it is, creating forms in the sky, or accompanying traditional spectacles, being a new part of the scenario. The challenge of the idea is the level of customization, as we do not want to deliver a service, but a whole experience. We want to be part of the shows, working together with companies.

We find that there is still a very good chance to enter to this market in our area, as there are no current companies providing this kind of service that are located in Spain, but the idea is starting to be introduced and validated. So we need to work in a flexible and quick organization that can provide the service and adapt easily to the changes needed to survive.

This will be an industrial and service project, as we are both developing an existing product and delivering a new service.

## 2.2. Vision, Mission and Values

The aim of this section is to provide direction for everything that happens in this organization. Vision, mission and values statement is focused on keeping everyone focused on where the organization is going and what it is trying to achieve, defining the core values of the organization and how people are expected to behave.

These are our Vision, Mission and Values:

## 2.2.1. The Vision Statement

***Our Vision Statement is:***

*"To be able to bring your imagination in the sky"*

**Figure 2.1: Representation of our Vision Statement.**
**Source: https://www.youtube.com/watch?v=KhDEEN4gcpI**

To understand the vision, anyone must understand that the current space customization is not enough with current means. Our vision focuses on the most flexible and adaptable technology to create what the customer is willing to see, generating a different and unique experience.

## 2.2.2. The Mission Statement

***Our Mission Statement is:***

*"To create personalized forms in the sky using drones to perform unique shows"*

From the mission statement, our core activity is defined, which is the performance of shows customized with drones, which are able to create forms in the sky.

## 2.2.3. The Values Statement

***Our Values Statement is:***

- Customer oriented: We share in our dedication and commitment to customer and strive to support in reaching our full potential.
- Innovation & teamwork: We believe in the effectiveness of a cohesive and welcoming work environment that recognizes the value of teamwork and inspires innovation and cooperation.

- Understanding uniqueness: We believe that each employee is unique and expects to be respected and treated fairly. We recognize each other's points of view and respond in a balanced, flexible, and open-minded way.
- Integrity: We act with integrity, building lasting relationships on honesty and trust. We seek open communication with our customers, our community and each other.
- Nurture & respect our natural environment: We believe that our quality of life stems from our natural environment. We respect it through our actions and attitude in the workplace.

## 2.3. Market analysis

After having defined the idea and business opportunity, it is necessary to trace a strategy of sales and expansion of the company. With this purpose the market analysis is born. Understanding the environment that surrounds us, we will be able to promote the final product in a more efficient way.

In order to understand the analyses that we will see below, the following scheme must be kept in mind:

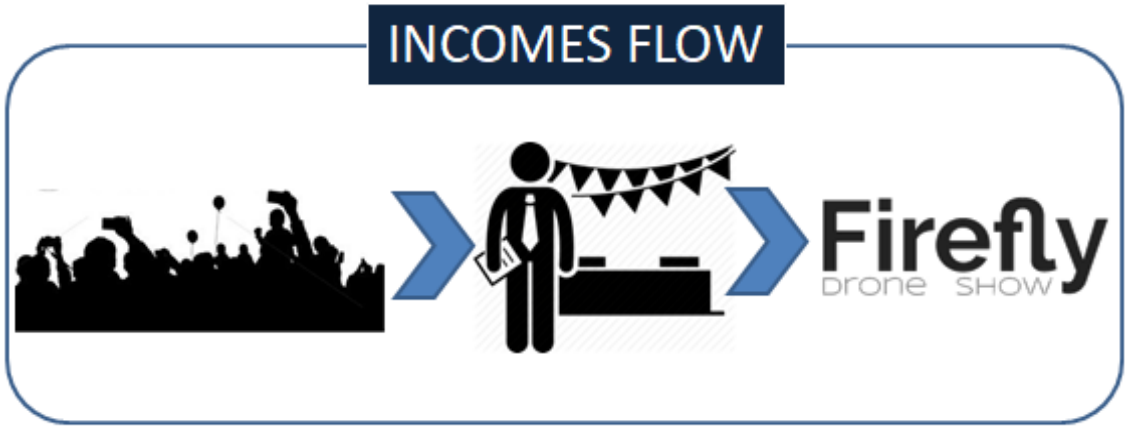


**Figure 2.2: Customer oriented incomes flow.**
**Source: Self elaboration.**

The first step is the spectators of the events to which our fleet of drones will be included. Without spectators there is no business. Once the first step is secured, we move on to the second: event promoters. In the chosen country there must be a fleet of event promoters willing to offer spectators their services.

The analysis will be directed to make a qualitative and quantitative study of both, in order to ensure the success of our company in the market.

## 2.3.1. Qualitative market analysis

Referring to the introduction, qualitative analysis is focused on revealing the main market niches. Due to that, it is defined these indicators:

- Number of enterprises whose main activity is the organization of shows, festivities, festivals, etc. This is our main indicator due to the fact that they are our main customer. They will purchase our service in order to enhance the performance.
- Population density: the higher the population density, the more events will take place each year which ensures the continuity of demand.
- Number of tourists according to autonomous community of main destination: as it is says before, the higher the tourism density, the more events will take place each year which ensures the continuity of demand.

### 2.3.1.1. Number of enterprise dedicated to the events organization

To begin with, a brief summary of how the data collection process has been made. The National Institute of Statistics (INE) offers within its services the CNAE. The National Classification of Economic Activities (CNAE) is a numbering system whose purpose is to group and classify all production units according to the economic activity they carry out. Each unit is assigned a numerical code called the CNAE Code. For each CNAE is estimated a large range of data.

In our case, the number of companies dedicated to the CNAE Code 92 has been consulted. This code includes companies dedicated to artistic activities and shows that include the following subgroups:

- ✓ 92320:Theatre management
- ✓ 91341:Dance halls, discotheques and similar activities
- ✓ 92311: artistic and literary creation; performance of drama, music and similar activities.
- ✓ 92312: creation of shows
- ✓ 92343: other shows
- ✓ 92313: other entertainment activities
- ✓ 92330: fairground and amusement park activities
- ✓ 92342 and 92343: other spectacle (bullfighting, etc.)

The following table shows the estimate of the number of companies by Autonomous Community within CNAE 92 in 2018:

| Autonomous Community (SPAIN) | Amount of Enterprises (CNAE92) |
|---|---|
| 01 Andalucía | 5 000 |
| 02 Aragón | 995 |
| 03 Asturias, Principado de | 814 |
| 04 Balears, Illes | 1 216 |
| 05 Canarias | 1 620 |
| 06 Cantabria | 323 |
| 08 Castilla - La Mancha | 1 205 |
| 07 Castilla y León | 1 838 |
| 09 Cataluña | 7 784 |
| Ceuta y Melilla | 41 |
| 10 Comunitat Valenciana | 3 856 |
| 11 Extremadura | 894 |
| 12 Galicia | 2 114 |
| 13 Madrid, Comunidad de | 8 959 |
| 14 Murcia, Región de | 693 |
| 15 Navarra, Comunidad Foral de | 460 |
| 16 País Vasco | 1 889 |
| 17 Rioja, La | 266 |
| **TOTAL** | **39 967** |

**Figure 2.3: Companies related to spectacles in Spain.**
**Source: CNAE (INE).**

Hereunder it is represented the same information in a regional map:

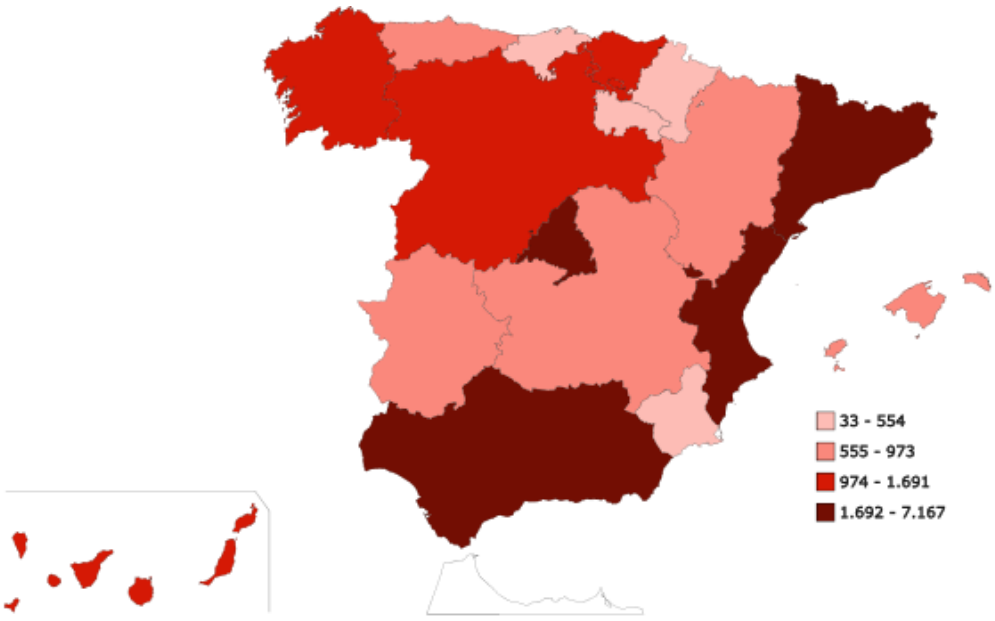


**Figure 2.4: Map of concentration of companies related to spectacles in Spain.**
**Source: CNAE (INE).**

It is shown that the communities which a higher number of customers are Madrid, Andalusia, Barcelona and Valencian community.

### 2.3.1.2. Population density

The INE has obtained the official figures of the population resulting from the revision of the municipal census on January 2018. These figures are shown by autonomous community below.

| Autonomous Community (SPAIN) | POPULATION DENSITY(2018) |
|---|---|
| 01 Andalucía | 8 384 408 |
| 02 Aragón | 1 308 728 |
| 03 Asturias, Principado de | 1 028 244 |
| 04 Balears, Illes | 1 128 908 |
| 05 Canarias | 2 127 685 |
| 06 Cantabria | 580 229 |
| 07 Castilla y León | 2 409 164 |
| 08 Castilla - La Mancha | 2 026 807 |
| 09 Cataluña | 7 600 065 |
| 10 Comunitat Valenciana | 4 963 703 |
| 11 Extremadura | 1 072 863 |
| 12 Galicia | 2 701 743 |
| 13 Madrid, Comunidad de | 6 578 079 |
| 14 Murcia, Región de | 1 478 509 |
| 15 Navarra, Comunidad Foral de | 647 554 |
| 16 País Vasco | 2 199 088 |
| 17 Rioja, La | 315 675 |
| 18 Ceuta | 85 144 |
| 19 Melilla | 86 384 |
| **Total** | **46 722 980** |

**Figure 2.5: Population density 2018.**
**Source: INE.**

Hereunder it is represented the same information in a regional map:

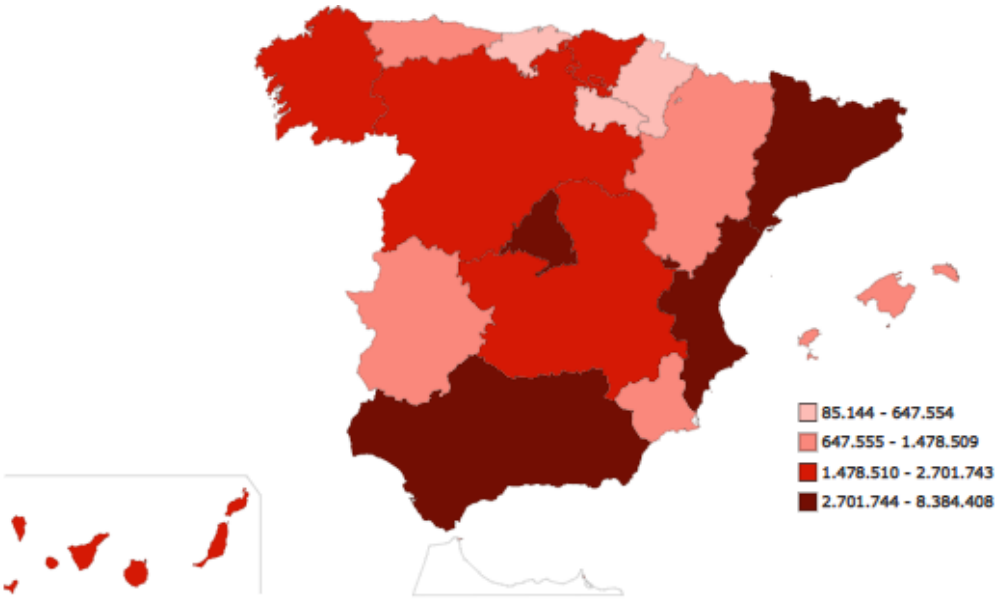


**Figure 2.6: Map of the population density 2018.**
**Source: INE.**

It is shown that the communities with more population are Madrid, Andalusia, Barcelona and Valencian community as same as in the previous section.

#### 2.3.1.3. Tourism density

The INE has stimated tourist movements at borders. The main objective of the Border Tourist Movement Statistics (FRONTUR) is to provide monthly and annual estimations of the number of non-resident visitors to Spain (tourists and excursionists).These figures are shown by autonomous community per month (dec 2017-nov 2018) bellow:

| Autonomous Community (SPAIN) | nov-18 | oct-18 | sep-18 | ago-18 | jul-18 | jun-18 |
|---|---|---|---|---|---|---|
| 01 Andalucía | 4 549 899 | 7 635 569 | 8 924 326 | 10 201 456 | 9 979 779 | 8 541 181 |
| 04 Balears, Illes | 606 835 | 1 141 481 | 1 312 605 | 1 437 617 | 1 325 995 | 1 168 936 |
| 05 Canarias | 188 168 | 1 284 193 | 2 031 642 | 2 304 445 | 2 431 315 | 2 121 369 |
| 09 Cataluña | 1 184 490 | 1 257 741 | 1 039 227 | 1 098 395 | 1 120 219 | 1 001 439 |
| 10 Comunitat Valenciana | 1 040 713 | 1 655 610 | 2 005 260 | 2 438 984 | 2 385 684 | 2 090 369 |
| 13 Madrid, Comunidad de | 499 558 | 855 849 | 1 005 863 | 1 180 982 | 1 133 413 | 901 893 |
| Otras Comunidades Autónomas | 603 967 | 709 365 | 696 911 | 500 149 | 618 582 | 602 037 |
| TOTAL | 426 168 | 731 330 | 832 818 | 1 240 884 | 964 570 | 655 138 |

| Autonomous Community (SPAIN) | may-18 | abr-18 | mar-18 | feb-18 | ene-18 | dic-17 |
|---|---|---|---|---|---|---|
| 01 Andalucía | 8 084 173 | 6 770 845 | 5 383 687 | 4 224 826 | 4 110 137 | 3 982 530 |
| 04 Balears, Illes | 1 197 159 | 1 042 404 | 784 910 | 582 686 | 539 516 | 510 486 |
| 05 Canarias | 1 708 008 | 930 688 | 401 356 | 152 388 | 119 418 | 99 275 |
| 09 Cataluña | 967 162 | 1 102 716 | 1 347 620 | 1 192 844 | 1 183 811 | 1 256 370 |
| 10 Comunitat Valenciana | 1 874 676 | 1 561 979 | 1 213 441 | 1 016 409 | 862 872 | 822 765 |
| 13 Madrid, Comunidad de | 913 713 | 770 745 | 618 406 | 448 928 | 448 606 | 400 590 |
| Otras Comunidades Autónomas | 658 319 | 630 846 | 559 298 | 486 061 | 530 646 | 476 155 |
| TOTAL | 765 135 | 731 467 | 458 656 | 345 509 | 425 268 | 416 889 |

**Figure 2.7: Number of tourists on each Autonomous Community in Spain.**
**Source: FRONTUR (INE).**

Hereunder it is represented the same information in a regional map:

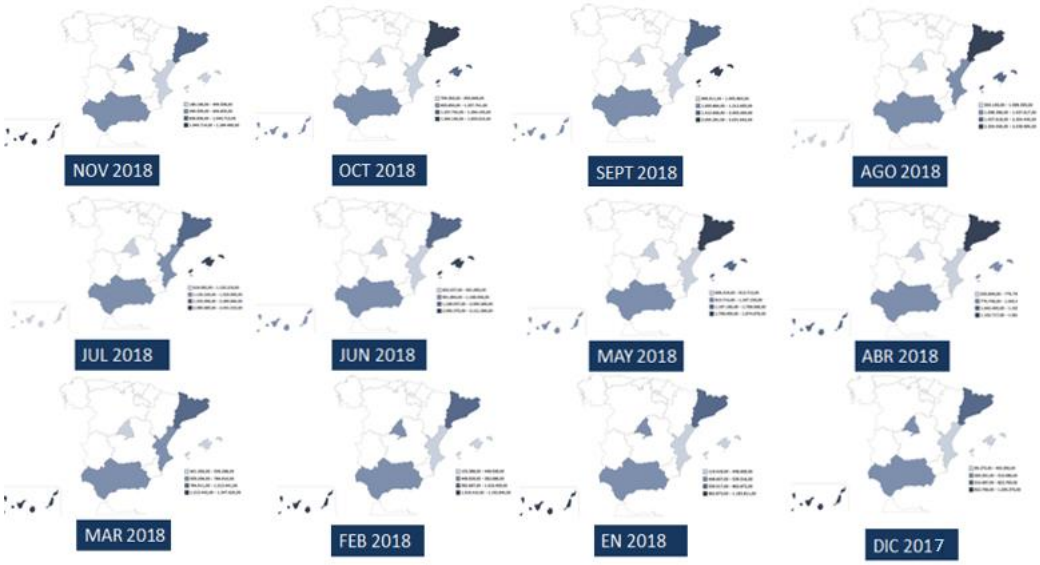


**Figure 2.8: Number of visitors in Spain (per autonomous community).**
**Source: FRONTUR (INE).**

## 2.3.2. Quantitative market analysis

The quantitative analysis complements the qualitative analysis in order to obtain significant market volume figures.

### 2.3.2.1. Average expenditure of Spanish households on events/shows.

The data shown below have been obtained from the INE, specifically from the Household Budget Survey (EPF). Within this survey, we can find the data classified by ECOICOP (European Classification of Individual Consumption by Purpose). So the consumption code that corresponds with the information we are looking for is the:

- ✓ 9.3.1.2. Recreational and sporting services – assistance:
  - Services provided by sports stadiums, racetracks, speed circuits, velodrome, etc., for the assistance to a sporting or recreational event.
  - Subscription to football or other recreational sporting events (basketball...).
  - Entrances to amusement parks and other parks of entertainment, adventure, fair attractions, raffles...
  - Paid tickets to club or social associations as well as for recreational or sporting events.
- ✓ 9.3.2.1. Cinemas, theatres and shows
  - Cinemas, theatres; operas, concerts, ballets, zarzuelas and other musical shows.
  - Circus, light and sound shows, bullfighting...
  - Tickets to discotheques when they include a show.
  - Public dances.

Excludes:

- Tickets to discos when they do not include a show.

However unlike the CNAE, in this case it does include the film sector which at first does not interest us. That is why it will be estimated how much of this expenditure is dedicated to the film sector, suppressing it from the total expenditure.

Then last year's data are shown:

| ECOICOP | TOTAL EXPENDITURE(k€) | PERCENTAGE DISTRIBUTION | AVERAGE HOUSEHOLD EXPENDITURE(€) | AVERAGE EXPENDITURE P.P.(€) |
|---|---|---|---|---|
| 09.3.1.1 | 675 167.24 | 0.12 | 36.47 | 14.65 |
| 09.3.2.1 | 1 678 638.14 | 0.31 | 90.68 | 36.43 |

**Figure 2.9: Expenditure in events/shows.**
**Source: EPF (INE).**

Taking the population density data obtained in the previous section, we can calculate the average expenditure in the interesting autonomous communities.

The following graph (average expenditure per person vs. years) shows the stability of demand over the years:


**Figure 2.10: Average demand in events and shows.**
**Source: EPF (INE).**

It is estimated that a Spaniard goes on average 4 times to the cinema during the year. If the average cinema ticket price is 5 euros, a Spaniard consumes an average of 20 € per year.

| ECOICOP | AVERAGE EXPENDITURE P.P.(€) |
|---|---|
| 09.3.1.1 | 14.65 |
| 09.3.2.1 * | 16.43 |

**Figure 2.11: Average consumption in events and shows (excluded cinema).**
**Source: EPF (INE).**

| | TOTAL EXPENDITURE (k€) | | | |
|---|---|---|---|---|
| ECOICOP | Madrid | Cataluña | Com.Val. | Andalucia |
| 09.3.1.1 | 96 368.86 | 111 340.95 | 72 718.25 | 122 831.58 |
| 09.3.2.1 * | 108 077.84 | 124 869.07 | 81 553.64 | 137 755.82 |

**Figure 2.12: Total consumption in events and shows (excluded cinema).**
**Source: EPF (INE).**

### 2.3.2.2. Average expenditure of tourists on events/shows.

The following data have been obtained from the EGATUR (Tourist Expenditure Survey) from INE. Its main objective is to determine the tourist expenditure of foreign visitors on their departure from Spain.

In the expense section of international tourists classified according to expense items, you will find the expense item of activities. This includes any leisure activity related to the world of spectacle and entertainment. The data for the last year (Nov 2018-Dec 2017) are given below:

| | EXPENDITURE (M€) | NUMBER OF TOURISTS(TOTAL) | AVERAGE EXPENDITURE(€) |
|---|---|---|---|
| nov-18 | 949 | 4 549 899 | 209 |
| oct-18 | 1 507 | 7 635 569 | 197 |
| sep-18 | 1 808 | 8 924 326 | 203 |
| ago-18 | 2 050 | 10 201 456 | 201 |
| jul-18 | 1 955 | 9 979 779 | 196 |
| jun-18 | 1 735 | 8 541 181 | 203 |
| may-18 | 1 495 | 8 084 173 | 185 |
| abr-18 | 1 261 | 6 770 845 | 186 |
| mar-18 | 1 051 | 5 383 687 | 195 |
| feb-18 | 841 | 4 224 826 | 199 |
| ene-18 | 923 | 4 110 137 | 225 |
| dic-17 | 909 | 3 982 530 | 228 |
| AVERAGE | 1 374 | 6 865 701 | **202** |

**Figure 2.13: Tourist expenditure in events and shows.**
**Source: EPF (INE).**

We are going to obtain the expenditure for the autonomous communities that interest us according to the qualitative analysis. For this we multiply the tourists of each month for each community by the average expenditure on activities per tourist per month.

| | TOTAL EXPENDITURE PER MONTH OF INTERNATIONAL TOURISTS ON SHOWS(M€) | | | | | | | | | | | | TOTAL (M€) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | nov-18 | oct-18 | sep-18 | ago-18 | jul-18 | jun-18 | may-18 | abr-18 | mar-18 | feb-18 | ene-18 | dic-17 | |
| Andalucía | 127 | 225 | 266 | 289 | 260 | 237 | 221 | 194 | 153 | 116 | 121 | 117 | 2 326 |
| Cataluña | 217 | 327 | 406 | 490 | 467 | 425 | 347 | 291 | 237 | 202 | 194 | 188 | 3 791 |
| Com. Valenc. | 104 | 169 | 204 | 237 | 222 | 183 | 169 | 144 | 121 | 89 | 101 | 91 | 1 834 |
| Madrid | 126 | 140 | 141 | 101 | 121 | 122 | 122 | 117 | 109 | 97 | 119 | 109 | 1 424 |

**Figure 2.14: Monthly tourist total expenditure in Spain.**
**Source: EPF (INE).**

### 2.3.2.3. Turnover of companies involved in the organization of events/shows.

From INE it can be obtained the turnover and gross operating margin of the enterprises involved in this sector. The first is defined as the income obtained by the company and the second as the incomes less production costs. The data has been obtained taking into account the same CNAE which has been used in the section 2.2.1.1. Unfortunately, the most updated information that INE offers us is from the year 2016. However it serves us as an approach to how much money the companies dedicated to this sector move.

- Turnover (2016) = 5.039.606 k€
- Gross operating margin (2016) = 1.004.449 k€

A research from 2007 has been found on the behavior patterns of companies that organize events. The research is titled the Spanish market of events, carried out by the group Eventoplus and presented that same year at the Palacio de Deportes in Madrid.

According to the study, Spanish companies allocate 18% of their marketing budgets to the organization of events: 2.600 million euros. To this figure should be added the events of associations (more than 1.540 million euros) and internal events of companies (1.200 million euros).

The research also states that the events have been consolidated as a very valid marketing tool for companies, foreseeing an increase in the sector for those years and the following ones. This assertion has been verified by consulting the growth in the number of companies in Spain (data obtained from the INE using the same procedure as in section 2.2.1.1).

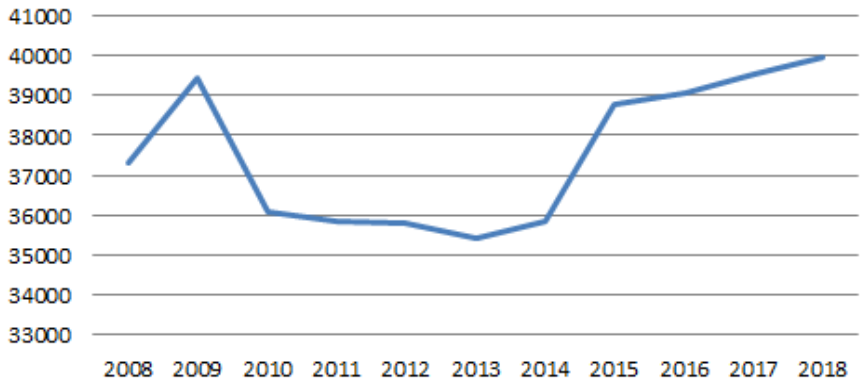


**Figure 2.15: Companies dedicated to events organization in Spain. Source: EPF (INE).**

It can be seen that it grew for the consecutive year (2008 and 2009) but due to the upturn in the crisis, the number of companies active in the sector fell. However, there has been a notable growth up to the current year, reaching higher values that in 2009.

On the other hand it can be said that the most used event are fairs (65% of participation), followed by conventions (55%) and product presentations (47%). In fourth position are technical conferences with customers (47%) and company celebrations and parties (46%).

The research also concludes that 60% of companies confirm the subcontracting of the most important events to qualified companies. And finally the cherry on the top: creativity, as a way of surprising and impacting, is the most booming element for professionals, followed by technical elements such as communication supports or decorative elements.

With the data obtained, a study has been carried out with the aim of obtaining figures on the volume of the market that Firefly can opt for in the first year. For this purpose, the turnover which the companies dedicated to this sector move (5000 M€) has been reduced considering the following hypotheses shown in the funnel below:


**Figure 2.16: Funnel in market size.**
**Source: Various inputs.**

According to the market size funnel, we have the following assumptions:

- Around 30% of spectacles allows to use drones. This is mainly cause due to the cinema and the surroundings of the show (reduced place or not outside).
- 20% are feasible for us, as we cannot reach all of them due to complexity or size. This number will vary along time and grow of the company (both in size and knowhow).
- Only 20% are willing to add drone show to their shows. It would change while we win popularity.
- As the number represent the whole revenues for spectacles, we only get part of them, as we accompany the show and not usually perform it; that is why we get 15% of the total revenues of a show.
- We are able to reach to 12% of potential customers. If we want to reach a bigger amount, we would have to invest much money that we still do not have.
- The final amount is 1m € per year (if we do not act to modify current percentages).

## 2.3.3. Market analysis conclusions

Thanks to qualitative analysis, we can define a geographical cluster made up of the following autonomous communities: Madrid, Catalonia, Andalusia and the Valencian community. Once the most propitious places to begin the development of these companies have been determined, the quantitative analysis reconfirms what has been said in the qualitative: the autonomous communities in which Spaniards/foreigners invest more money are the same as in the qualitative.

As a significant data, it is presented the turnover generated by the active companies in Spain, giving us an idea of the size of the market. The conclusions obtained will be fundamental for the strategic analysis for Firefly's expansion.

## 2.3.4. Competitors analysis

### 2.3.4.1. Introduction

As an introduction to this section Firefly's competition will focus primarily on companies that engage in drone entertainment. The main reason is that we consider that we are at a higher level than traditional means of entertainment such as fireworks. Some of the main reasons are that fireworks do not reach the level of customization that can be achieved with a fleet of drones and the price of hiring our service is much more affordable. The main advantage compared to fireworks is the reduction of noise level and pollution to a minimum.

### 2.3.4.2. Competitors Research

The main companies dedicated to the spectacle with drones are: Collmot, Verity, Ehang, Pixiel and Skymagic. The first three ones (Collmot, Verity and Ehang) are the great sharks of the sector. Before comparing them, a brief introduction will be made to each of them:

- Collmot: their success is partly due to the fact that Collmot was founded and supported by the Robotic Lab at the Department of Biological Physics, Eötvös University and Budapest University. This Lab provided them the world's first fleet of ten quad-copters that could fly autonomously outdoors back in 2014. CollMot Robotics was founded after this success as one of the first companies dealing with multi-drone cooperation, with the intention to use the accumulated knowledge in artistic and R&D focused commercial services. The collective intelligence system makes them the best in the sector at the technological level. This system implies that the drone fleet operates autonomously without the need of continuous central control. Each drone makes decisions on its own to coordinate its behavior within the swarm, just like birds in a flock.

  On the other hand the summit of customization is reached with the Drone-painting with drone swarms. It means that they can paint 3D images on the sky in short time with dozens of colorful drones simultaneously. These spectacular light-paintings are made visible on long exposure photos.

**Figure 2.17: Collmot logo.**
**Source: Company's site.**

- Verity: the Swiss company Verity Studios, assembled in 2014 by Professor Raffaello D'Andrea from ETH Zurich's Flying Machine Arena team, brings together 15 years of experience in the creation of live event drones.

  In 2017 they launched their Synthetic SwarmTM drone system which allows a large number of LuciesTM micro-drones to perform precisely choreographed

drone light shows. In their four years performing drone light shows, they have pushed the edge of creative drone technology, and thrilled audiences in over 20 countries. As well as performing with Cirque du Soleil, Verity's autonomous drone swarms have also appeared at Madison Square Garden, on Princess Cruises, and even with renowned rock band, Metallica.

**Figure 2.18: Verity logo.**
**Source: Company's site.**

- EHANG: Founded in 2014 in Guangzhou, China, EHANG is an intelligent aerial vehicles technology & service company. EHANG has become a pioneer and leading advocate of the global civilian drone industry in practicing multiple innovative ideas including smart software-based control, integrated experience of smartphone-tilting remote control and VR goggles, fully-automated drone swarm formation flight, autonomous self-driving passenger drones and 3D aerial transport, etc., and has thus been awarded as one of "The Most Innovative Companies 2016" by Fast Company. Their main highlight is their hardware and software design. Just one computer as the ground station, supports fully autonomous formation flight performance of over 1000 drones with their flight data being monitored in real time. They have demonstrated 3 different formation patterns in 15 minutes.

**Figure 2.19: eHang logo.**
**Source: Company's site.**

- PIXIEL: since its creation in 2011, the French company Pixiel has positioned innovation at the heart of its activity. Pixiel controls both the physical components of the drone (chassis, electronic cards, payloads, ground bases...) but also its software packages. To maintain its capacity for innovation, Pixiel has decided to develop all its technological bricks in-house. Its software is so advanced that allows to fly without a pilot a swarm of drones independently. It is enough for an operator to press a button to trigger the entire choreographed sequence.

**Figure 2.20: Pixiel logo.**
**Source: Company's site.**

- SKYMAGIC: a Singaporean company which customizes fleet of performance drones. They are each mounted with a super bright RGB pixel and operated via single ground control station. This flee can execute stunning 3D displays and mesmerizing choreographic sequences to dazzling effect.

After this brief presentation, we will make comparative tables in order to see the highlights of each of them and the position of each one with respect to the rest of competitors.

**Figure 2.21: Skymagic logo.**
**Source: Company's site.**

## Comparative analysis of the main characteristics

Below is a comparative table of the characteristics that we consider most important to compete in this sector. Mention that the comparison is made so that the best company receives the highest score in that feature and the rest is scored less depending on it.

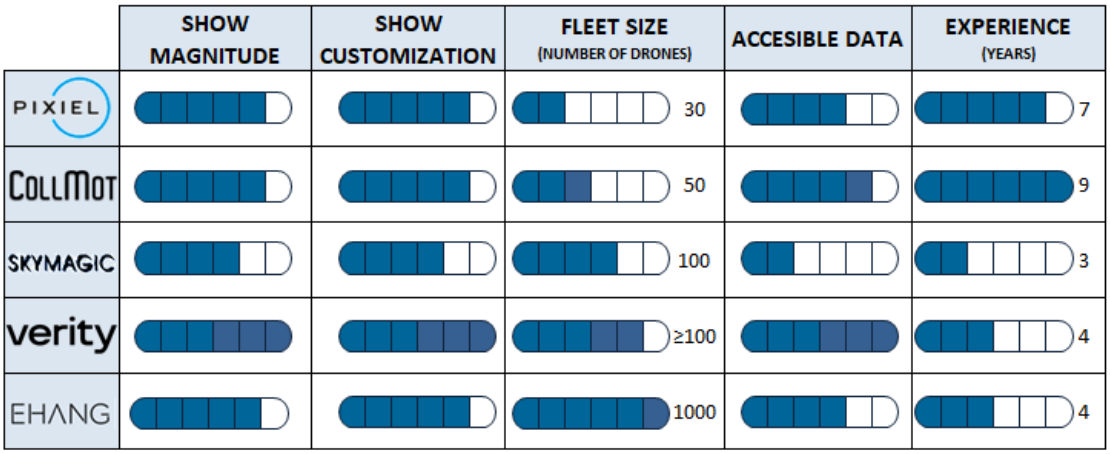


**Figure 2.22: Main characteristics analysis of competitors.**
**Source: Self elaboration.**

- **Experience:** refers to years of experience in the sector, taking as a reference the year of foundation of the company. Collmot is the company with the most expertise. It should be noted that although Ehang and Verity have fewer years of experience, the conditions of their foundation were very favourable as they are born from companies / founders related to this world. For this reason, in spite of being less years in drone shows, the progress has been very fast compared to the rest.
- **Shows magnitude:** refers to the size of shows the companies dedicate their best efforts. The data found show that most of them focus their services in big shows:
    - Collmot´s shows:
        - World's largest 3D animation presented by 38 autonomous drones, as part of our National Day's emblematic firework show. (On August 20th, 2018).

- At the opening ceremony of the 17th FINA World Championships in Budapest, the CollMot drone fleet formed a bird.
- Other shows: Murmuration ( Shangai, China 2016), Sunshine, Freedon and a Little Flower (Odense, Denmark, 2017), Dancing with Drones in Sziget Festival (Budapest, Hungary 2015) , St. Stephen´s Day (Budapest, Hungary 2018), Happy New Year, (Budapest, Hungary, 2018) , Agnes Elod: drone sculpture studies (Budapest, Hungary, 2017).

- Verity´s shows:
  - Starlight express: Won the Guinness World Record for most visited musical.
  - Metallica World Tour: The world's first autonomous indoor drone show for a touring act.
  - Madison Square Garden (2017/18): First permanent indoor drone show in a full-scale arena.
  - Ice rink in Royal Caribbean´s symphony: The world's first autonomous indoor drone show on an ice rink.
  - Other shows: Cirque du Soleil, On board entertainment for princess cruises: (Year: 2017 – ongoing). Drake show(2018), Swish National Circus Knie, Opening 2018 RSA Conference, 2047 Apologue(China, 2018).
- Ehang´s shows:
  - The world's leading drone company EHang performed a 1000 UAV formation light show named "Meteor Sky" at the Guangzhou city centre on the sky of the famous Canton Tower at the night of February 11 (2017), celebrating the Chinese traditional Lantern Festival through the art of innovative technology and refreshed the world record of UAV formation.
- Skymagic´s shows:
  - Great Exhibition of the North in UK: which featured 100 SKYMAGIC performance drones – each equipped with colour-changing LEDs – was developed around a track written and produced by electronic duo Darkstar.
  - Tokyo Olympics in 2020: the world's first drone show inside a stadium.
  - Other shows: Yokohama Dena Baystars Opening Ceremony (2018), Qatar National Day Opening Ceremony (2017), BMW5 Series Launch Event (China 2017), Dubai World Cup Closing Ceremony

(2017), Dubai Parks Opening Ceremony (2016), Dubai world Cup Gala Dinner (2017). World Economic Forum´s Gala Dinner (2015).

- Pixiel´s shows:
  - Pixiel created in 2015 a fleet of unprecedented autonomous drones for the Puy du Fou. For several years, the Puy du Fou, second theme park in France with 2 millions of visitors per year, sought a technological solution to fulfil a dream: that of using the skies of the Cinéscénie show as a stage. This system allows to create decorations in the sky, day and night (an spectacle with 14000 viewers). This project is called ATMOS:
  - In 2016, the solution was used to create a sequence representing a giant chandelier in the sky. 12 luminescent elements served as candles formed the chandelier above the castle and reflected off the water.
  - In 2017, the solution was used to reproduce the first achievement by once again pushing back the technological frontiers: the drones were programmed to carry out 3 different choreographed sequences per night and to lift 3 new sceneries.
  - In 2018, the Puy du Fou Park order 10 additional drones for a total fleet of 30 drones. The technological prowess of this new version allows to create new scenic elements and add magic to new artistic scenes.

- **Customizable shows:** the previous section shows that all companies adapt themselves to the requests of the clients, both in the choreographies and in the matter. However, Verity is remarkable above the others for its adaptability: a considerable number of shows with very different themed areas in just 4 years. What is more Verity is the only one that specifies and highlights its website that it owns a group of designers who are in charge of designing different customs for each drone shows. Below is an image of verity's design elements:

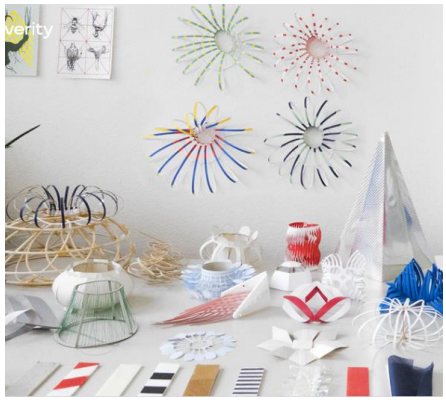

**Figure 2.23: Customization elements.**
**Source: Verity's site.**

- **Fleet´s size:** To have a good show in general, companies with fewer drones demonstrate that you can do great shows without a large fleet. However, it is a good way to observe the development capacity of the software and hardware of the different companies. It is concluded that the greater the number of drones, the more complex must be the software and hardware. This makes the number of drones an indicator of the level of technological advancement of the company.
- **Information accessible:** at this point the website is valued, what amount of information is accessible by the customer from home, using a computer. Since the main way to know these companies is through the Internet, is a point enough to take into account. Verity is the queen of this point with a website quite intuitive and visually appealing. Also is the one that provides more information about the drone used in their shows.

**Conclusions:**

It is shown that the best companies are not those that have more years in the market, but those that have a good technological base as a laboratory, companies specializing in technologies with drones, highly qualified technical team, etc. From here we learn that it is important to bet on good professionals and keep in touch with universities where you can develop the R & D department of our company. Numerous studies show that the basis of the survival of the market is in the adaptation to change and as we have observed there is a competition when it comes to having a better fleet of drones perfectly coordinated, ensuring the safety of your audience.

On the other hand it can be observed that most of the companies are dedicated to big shows. This leaves us an open market niche: shows not known worldwide that can bring us periodic incomes such as music festivals, concerts, patron saint festivals, amusement parks in areas far away from these companies (such as Spain).

It is also important for us to reach the level of customization that Verity offers in its shows. We will have a small and affordable fleet size for our beginnings, as we have discovered thanks to this study that the key to success is not in the number of drones used, but in the customization and design of shows, and the ability to adapt to different proposals of customers. Finally the information accessible to the customer. This item has been put due to the difficulty of finding precise data for each company. In general they all have visually attractive websites. However, few show us the type of drone they use, how long they need on average to prepare a show, the show´s duration or the example rates of some of the shows performed.

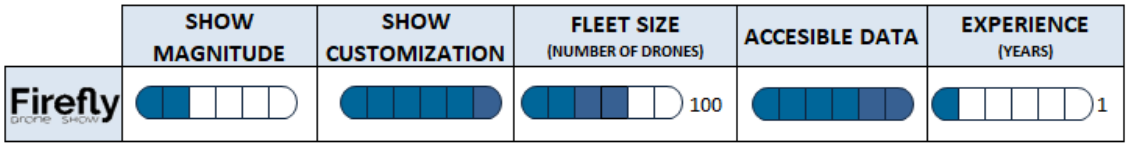


**Figure 2.24: Main characteristics analysis of Firefly.**
**Source: Self elaboration.**

## Comparative analysis: who are the customers?

In this section focuses on what customers our competitors specialize in, classified into three groups:

- Marketing agencies: event organizing agencies as well as festivals, concerts, etc.
- Themes parks: where shows are held periodically several times a week.
- Technical providers: focused on engineering activities such as (film, thermography, photogrammetry, photography, inspection of works, security/monitoring of sites...).

| | MARKETING AGENCIES | THEMES PARK | TECHNICAL PROVIDERS |
|---|---|---|---|
| PIXIEL | X | X | X |
| COLLMOT | | X | X |
| SKYMAGIC | X | X | |
| verity | X | | |
| EHANG | X | X | X |

**Figure 2.25: Customers portfolio of competitors.**
**Source: Self elaboration.**

**Conclusions.**

As planned, Firefly will focus on marketing agencies and amusement park shows.

For a moment we thought about being technical suppliers. However, our technology team has concluded that drones are more expensive because they must bear more weight (for auxiliary tools such as cameras). Given that in Spain there are already companies experienced in the use of drones specific to that sector, it does not compensate us for the moment to extend the use of our drones to that sector.

| | MARKETING AGENCIES | THEMES PARK | TECHNICAL PROVIDERS |
|---|---|---|---|
| Firefly drone SHOW | X | X | |

**Figure 2.26: Customers portfolio of competitors.**
**Source: Self elaboration.**

## Comparative analysis: Highlights of our competitors

Finally, it is convenient to review the competitive advantages of our competitors, that is to say, it is what makes the difference of each one with the rest of the competitors. Considering an important competitive advantage the sponsors, a column will be dedicated to them.

| | DIFFERENTIATORS | SUPORTERS/SPONSORS |
|---|---|---|
| PIXIEL | -Formation in six cities of France<br>-Specific authorization from the DGAC to realize what is usually forbidden! (Fly drones at night). | CONSTRUCTYS, AEROCAMPUS AQUITAINE, OPCALIA, AIRBUS HELICOPTERS |
| COLLMOT | -Collective intelligence:each drone makes decisions on his own.<br>-Specified preparation time: 3 or 4 months from now | COLLMOT robotics |
| SKYMAGIC | -The world's first drone show inside a stadium: Tokyo Olympics in 2020 | Darkstar |
| verity | -The world's first autonomous indoor drone show for a touring act: Metallica World Tour.<br>-The world's first autonomous indoor drone show on an ice rink: Ice rink in Royal Caribbean´s symphony.<br>-The world's first autonomous indoor drone show in a touring circus: Swish National Circus Knie.<br>-A lot of information of the shows and drones used which includes fly time and charging time.<br>- On board entertainment for princess cruises:14 micro drones coordinated with music, lighting, projections... | Kittyhawk, FONTINALIS PARTNERS, AIRBUS VENTURES, Sony Innovation Fund |
| EHANG | -Awared as The Most Innovative Company in 2016<br>-Great Customer attendance<br>-World´s record of UAV formation fleet: 1000 (last record:500) | Microsoft, KONDOR |

**Figure 2.27: Key differentiators of competitors.**
**Source: Various inputs.**

**Conclusions:**

Below you can see which can be our highlights that we expect to reach for the first year.

| | DIFFERENTIATORS | SUPORTERS/SPONSORS |
|---|---|---|
| Firefly | -Pioneers in Spain<br>-Special permission from AESA for flying drones at night | -Physics and Robotic Lab (University of Barcelona EUSS), euss enginyeria |

**Figure 2.28: Key differentiators of Firefly.**
**Source: Various inputs.**

## 2.4. Market validation

After the market analysis, we wanted to ensure our activity and the survival of the business.

To validate our service and product, we conducted a survey through emails with numerous companies from those sectors that fit with our business model, to see if our value proposition meets the objectives we set ourselves.

Through a short message where we made a small presentation and without giving many details of how we are going to do it, we presented our idea clearly with a portfolio, and we asked if they would include our product to their service line, if it seems interesting, and we offered to have a meeting or provide more information.

The companies we contacted are similar since they all promote and manage different public events. We send the message to promoters of events and shows, organizers of musicals, festivals and concerts, and even theatres and weddings.

We seek diversity when it comes to sizes of companies, regional and local nationals. To see which would have more interest.

The answers of the emails we must say that they have been very satisfactory, of a total of 50 companies surveyed, we have received a response of 37%.

Of all the answers we can be accountable for those who have simply commented that they thank us for the information and if they are interested, they will contact us. In general terms and grouping this type of responses have been 66%, which is 24% of the total amount.

Many others ask us for more information, and would be delighted if we show the, a sample of the show. These are the rest of answers 34%, a 13% of the total amount.

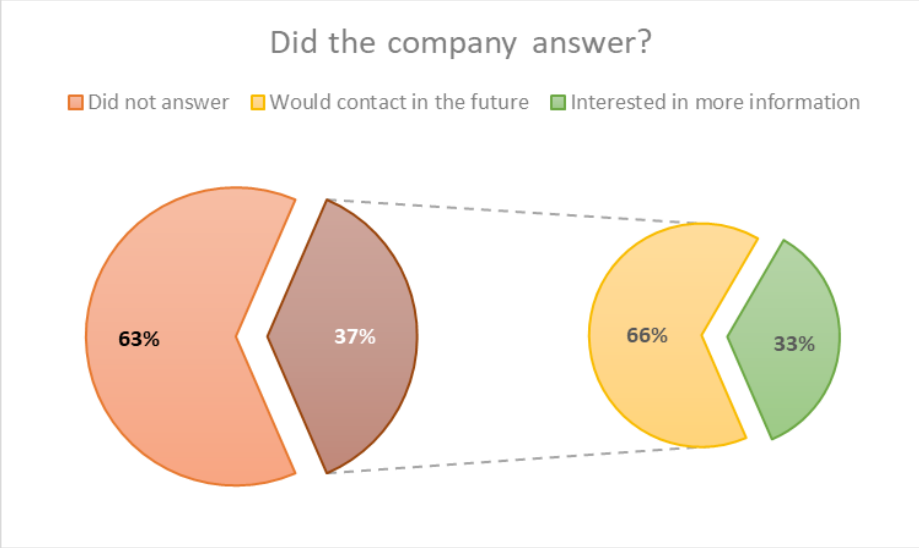


**Figure 2.29: Results of market emailing.**
**Source: Self elaboration.**

Some examples below:

*Buenos días,*

*Gracias por vuestro mail. Yo soy el responsable de nuevos proveedores para Bacus Eventos y estoy interesado en saber más sobre vuestros servicios, no sé si tenéis un dossier, pagina web, fotos, videos para poder hacerme una idea y/o agendar una reunión.*

*Muchas gracias*

**Ari Jiménez**
Event Assistant
Sardenya, 83
08018 Barcelona
Tel: (+34) 93 412 00 66
www.bacuseventos.com
ari@bacuseventos.com

**Figure 2.30: Email answer#1.**
**Source: Google Mail.**

*Buenos días,*

*nos parece muy interesante lo que nos cuentas y estaremos encantados en vernos y nos expliquéis de manera más formal vuestro trabajo.*

*Un saludo*

*Pep Espada*
*pep@pepitosbrothers.com*

**Figure 2.31: Email answer#2.**
**Source: Google Mail.**

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*Muchas gracias! Lo tendremos en cuenta para nuestros próximos espectáculos.*

*Un saludo,*

***María Negro y Alba Frechilla***
*valquiriateatro@gmail.com*

**Figure 2.32: Email answer#3.**
**Source: Google Mail.**

## 2.4.1. Early Adopter

After these many contacts, many of them very positive, we went a step further and arranged a meeting to see if it really showed enough interest and we could count on your help to enter the market actively.

At this meeting our contact was delighted to listen to us and showed such interest in our business idea, that he took the action of having us as soon as we had the software developed for some of his shows.

They wanted to collaborate actively in the project to help us focus the idea and penetrate the market, as long as we gave priority to his events and through an economic agreement for certain discounts for the help given.

So the company pepitosbrothers with the help of Pep Espada we have found the first Early Adopter so that in case we develop Firefly we have the support and help of someone recognized in the sector to launch our service.

### 2.4.1.1. Crowdfunding strategy

This early adopter will help us to develop the whole product and the service that we are going to provide. With this, we are following a crowdfunding strategy, so the company is supporting us economically to start the business and customize it for them.

This way, we ensure first sales and first public appearances in spectacles, where we must develop a very good performance to generate a good image and start to spread the word through social media.

The benefit of the customer is that it will benefit from this investment and they will get the service cheaper this time and following times to thank their collaboration and helping willingness.

#### 2.4.1.2. University collaboration strategy

Additionally, we have contacted with universities in Spain, in order to get their support and grow R&D capital in the country, with the benefit for students.

After doing a similar round as we did with companies, several universities were contacted, catching the interest of the Escola Universitària Salesiana de Sarrià, where they are interested on hearing more from us.

*Buenas tardes,*

*Soy Sílvia Nacenta, Responsable del Servicio de Orientación e Inserción Profesional de la Escola Universitària Salesiana de Sarrià (EUSS). Hemos recibido su e-mail donde nos comentaban que estarían interesados en la búsqueda de ingenieros.*

*Si nos envían la descripción del puesto de trabajo a cubrir, haríamos difusión de su oferta y les envaríamos los C.V. de aquellos candidatos que estén interesados para que puedan contactar directamente con ellos y citarlos para una entrevista de selección.*

*Quedo a la espera de recibir la información para empezar con todas las gestiones.*

*Cualquier consulta estamos a su disposición,*

*Un saludo,*

*Sílvia Nacenta*

*Servei d'Orientació i Inserció Professional EUSS*

euss enginyeria

Escola Universitària Salesiana de Sarrià
Passeig Sant Joan Bosco, 74
08017 - Barcelona
http://www.euss.cat
Phone: +34 932805244 Fax: +34 932806642

**Figure 2.33: Email answer EUSS.**
**Source: Google Mail.**

## 2.5. SWOT analysis

In order to start defining the risk strategy, the SWOT methodology will be very helpful to start analysing the company from an interior and an exterior perspective. This matrix shows each of the stronger and weakest points of this company:

| STRENGTHS | OPPORTUNITIES |
|---|---|
| - Current knowhow of market and technique<br>- Self-created software<br>- Eco-friendly, less noise and no smoke<br>- Interior and exterior performance<br>- Huge current growth of the market<br>- Nice base location<br>- Easy escalation of the activity | - Unique in the location and small concurrency<br>- Public financing help<br>- Technological growth in drones and software<br>- Alternative and trendy, new option in the sector |
| **WEAKNESSES** | **THREATS** |
| - Low financing capacity<br>- Big initial investment<br>- Product not very well known<br>- Need of qualified and committed team<br>- Few suppliers for the specific product<br>- Stationary and irregular workload | - Low current penetration<br>- Big competitors act globally with more development<br>- Weather conditions<br>- Technology not reachable for us |

**Figure 2.34: SWOT analysis.**
**Source: Self elaboration**

Now, all these items will be analysed and converted to impact the least on the company development during the whole period of time.

## 2.5.1. External analysis

To develop this analysis, SWOT external factors will be analysed, followed by PEST analysis.

### 2.5.1.1. Opportunities

Elements in the environment that the business could exploit to its advantage. These are:

- Unique in the location and small concurrency: regarding to geographic location, there are no other companies focused on this idea in Spain. That provide us the advantage to reach more customers in the initial phase. However, competitors are used to moving to different countries to perform their activity.
- Public financing help: in order to start with the company, there are different options to look for financing that can help us the very first years.
- Technological growth in drones and software: drones are trendy nowadays, that gives us the opportunity to boost that popularity and take profit from it.
- Alternative and trendy, new option in the sector: sector has been very similar for decades, and our solution can fill a gap that is not being currently covered.

### 2.5.1.2. Threats

Elements in the environment that could cause trouble for the business. These are:

- Low current penetration: as this activity is not very popular, the current demand is not so big. Performing market validation will provide answers to the potential penetration that we are able to reach.

- Big competitors act globally with more development: acting against competitors is crucial, as they are one step ahead from us. The main chance is acting locally in Spain, being able to work together with Spanish companies, signing different agreements. To create barriers or compete with them, we perform a study on each of them, which will help us in case we have to face each other's.
- Weather conditions: this is one of the most impacting issues of our company. Safety is our topmost value, and we cannot endanger the spectators. For this reason, weather conditions are very controlled in case the show must be postponed or cancelled. The only options to reduce this threat are interior shows and an insurance agreement to minimize the economic impact.
- Technology not reachable for us: this is not a very big threat, as drone technology is decreasing in price and state of the art is growing. We have to be up to date every time in order to have the latest innovation and technology.

#### 2.5.1.3. Pest analysis

To being able to understand better the current environment, we are performing the PEST analysis, which will allow us to have a better view of the current situation. Taking this into consideration, this is the current environmental situation:

| **P** POLITICAL | **E** ECONOMIC | **S** SOCIAL | **T** TECHNOLOGICAL |
|---|---|---|---|
| - Flying legislation.<br>- Political stability in Europe.<br>- Environmental legislation.<br>- Start-up help and promotion.<br>- Safety regulations. | - Current economic growth in Europe.<br>- Low interest rate in Euribor.<br>- Public funds.<br>- Reduction in price of the technology.<br>- Unique currency.<br>- Electricity price. | - Popularity increase in drones.<br>- Increasing amount of spectacles.<br>- Increment of people specialized in drones.<br>- Specialization in programming.<br>- Time available for leisure. | - Drone flying technology improvement.<br>- Better batteries.<br>- Better communication protocol. |

**Figure 2.35: PEST Analysis.**
**Source: Self elaboration**

From PEST analysis, we can conclude that the current situation is enough good to be safe. Political situation is stable, known and understandable, as it is mainly based in Spanish and European legislation. Regarding to economic factors, there is a current growth in Europe, which generates optimism to invest and to spend money in leisure, with the only issue of the increment of price in electricity. Finally, social and

technological factors are improving the amount of innovation and people willing to work in this sector.

In conclusion, environmental factors are in a positive tendency which allow us to succeed in our first years and to commit the investment with not an extraordinary risk.

## 2.5.2. Internal analysis

### 2.5.2.1. Strengths

Characteristics of the business that give it an advantage over others. These are:

- Current knowhow of market and technique: the whole analysis performed due to the market study and current estate of the art give us the chance to have a better view and knowhow of this sector, providing the advantage.
- Self-created software: due to the age of this kind of service, there is no commercial possibility to purchase the software. Creating our own software provide us the advantage against newcomers and help us differentiate from current competitors.
- Eco-friendly, less noise and no smoke: this is a better environmental solution compared to other current services in the market.
- Interior and exterior performance: this possibility is very helpful for the company, as it allows us to introduce to different services that can compensate profit in different seasons of the year and make the workflow more on it.
- Huge current growth of the market: drone sector is growing and the idea of using them in spectacles is being accepted by customers and spectators.
- Nice base location: Spain is a very nice place due to the amount of outdoor and indoor activities during the whole year. That give us a higher chance to succeed and keep growing.
- Easy escalation of the activity: once the first shows are performed, following ones will be similar. That means it takes not a very big difficulty to make the company grow in terms of technical viability.

### 2.5.2.2. Weaknesses

Characteristics of the business that place the business at a disadvantage relative to others. These are:

- Low financing capacity: being a Start-up of five young people, the total amount of money and goods to get financing are low. That is why the whole team must perform a very detailed case study to minimize this risk and convince people to invest.
- Big initial investment: the main issue is the initial purchasing of goods and the long period of development time. As mentioned before, this could only be solved by planning the whole strategy perfectly well.

- Product not very well known: drones are growing in popularity, but they are perceived more as a game than as an entertainment tool. This is a task that the community manager in the marketing team must challenge in order to increase the popularity and the demand.
- Need of qualified and committed team: as the technique is not easy and the current development is not enough mature, this may make us fail in the whole project, as the technical viability could be compromised. In order to solve this, team work and commitment is crucial to make this a reality.
- Few suppliers for the specific product: there are no suppliers that are providing the ideal product for us. Nice market analysis and customization can solve the problem.
- Seasonality and irregular workload: seasonality is a big issue, as the amount of work could decrease drastically. For that reason, being part of interior spectacles can balance the yearly workload, taking special attention to summers, where it may increase so much, making us unavailable to cover the whole demand.

## 2.5.3. Risk Analysis

After having completed the environmental analysis, main risk can be extracted, analysed and planned to be mitigated. Regarding to this, these are the main risks identified and classified.

| NAME | DESCRIPTION | SEVER. | PROB. | PRIO. | MITIGATION |
|---|---|---|---|---|---|
| Climate conditions | Impossible to control / Seasonally business / Possible cancellations | 8 | 2 | 4 | Solid contracts in case of cancellation / 2nd line of business of interior Shows |
| Customer dissatisfaction | As a new and technological event some people can be critical with us. | 6 | 2 | 3 | Create and develop our business with the customer to understand better the necessities of the market. |
| Lack of Capital | Don't have enough capital to cover the initial inversion | 4 | 2 | 2 | Robust & safe financial plan followed by a good marketing plan. |
| Lack of capacity | Don't have enough drones and workers to cover all the demand | 4 | 2 | 2 | Good market research to buy enough drones and hire people easily, with precontracts. Good scheduling the events. |
| Unavailable technology | Impossible to coordinates the drones in the air | 2 | 1 | 2 | Create our own software, easy to modified in case of use more drones at the same time |
| Unsecure | The safety of the customers and spectators | 1 | 1 | 1 | Protect the propellers / in case of fail of software, return to safe position |

**Figure 2.36: Risk Analysis.**
**Source: Self elaboration**

Taking the table into consideration, if any of these situations appear during the whole life of the project, they will be tackled as planned in order to avoid the impact of the risk.

With this, we conclude the environment analysis, making us more prepared for inconveniences that could appear during our journey.

# 2.6. Company strategic approach

## 2.6.1. Location of the company.

The headquarters of the company would be Seville. This place is a strategic area of Spain, well connected and with the possibility of carrying out a multitude of events in exterior or interior places. It should be noted that we can move to any area of Spain at the time of performing the shows by car, train or even plane.

In addition, the costs associated with the rental of premises of warehouses are lower compared to other large cities such as Madrid or Barcelona, making Seville even more attractive. However, in our strategic plan we are considering to open another location in Barcelona if we achieve the objectives established. This would make us have better connections to improve our market.

The development will take place in the facilities of the headquarters and at the time of performing the show in question, the corresponding assigned staff will move to the place where the show takes place.

The location is an industrial estate on the surrounding of the city with a nave and an esplanade, well connected to the S-30 road and with interior and exterior spaces to carry out our tests.

The offices will also take place, where the management of the company will be carried out as the technical development of the shows. Reducing cost using just one place for all the areas of the company.

**Location:** Industrial Warehouse located on Avenida Fernández Murube of 850 square meters. Polígono Amarillo, Sevilla. For rent for 2.200 €/month.


**Figure 2.37: Workspace location.**
**Source: Google maps.**


**Figure 2.38: Insights of the Workspace.**
**Source: milanuncios.com**

# 2.7. Strategic growth

We can consider two different scenarios for the expansion of the business, taking into account the strategic plan, determining the amount of investment in function of the environment reaction.

## 2.7.1. No expansion scenario

During the first years there is no expansion of the business in terms of new location or buying new fleet of aircraft. In order to maximize the operational performance as soon as possible, if after 3 year we don't have profit benefits, we will redefine our marketing strategy using the now-know learned.

In this scenario the company will promote our service through the Iberian peninsula of Spain with headquarters of the company in Seville. We will provide service with a fleet of 150 drones to all the agreement Shows/events confirmed by the company.

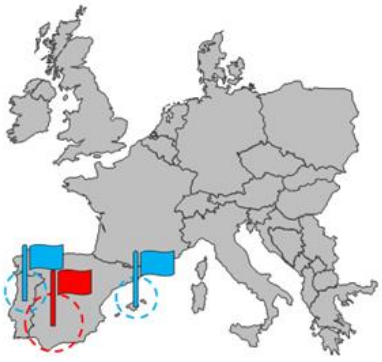


**Figure 2.39: Non expansion scenario.**
**Source: Self elaboration.**

After 3 years, we will try to get into the island (canary and balear) and Portugal area. We pretend to provide our services in more locations, increasing our market. For doing that, once we control the reaction of the market during the initial years if we get profit benefits, during the third year we will expand our service, restructuring the scope

with a new location in Barcelona. In this new location we will increase the fleet in 150 drones (100 for indoor and 50 for exterior). Also, we will design, produce and deliver new projects directly from this headquarter, increasing our capacity.

## 2.7.2. Expansion scenario

This scenario would be the same that the previous one with one important difference. During the second step of the scenario, instead of delimitate the increase just to Spain and Portugal, we will develop and give service in other countries with the same characteristic and no saturate market like Italy, Greece and Germany.

To achieve this target, we will replay the same strategy that we develop during the first period of time, opening new locations in the countries mentioned before. This scenario would be possible if the profit benefits are better than expected by our financial department.

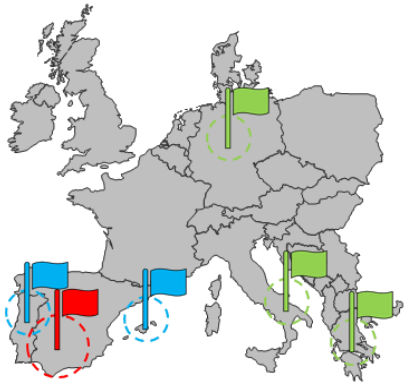


**Figure 2.40: Expansion scenario.**
**Source: Self elaboration.**

# Module 3. Marketing plan

## 3.1. Product

As it has been mentioned in the introduction, our product will be fully customized by our customer. The advantage of our starting business situation is the flexibility which has allowed us to build an enterprise based on customer behaviour and needs.

The next step is defining the customer value. In this section the focus is on what are the benefits that the customer obtains when purchasing the product

Finally a competitor's analysis has been made with the intention of covering those parts of the market where our competitors have not entered yet.

All of this has led us to define a product loyal to the ideas of the customer without losing the objective of making it profitable.

### 3.1.1. Customer segmentation

In order to define our customer we have taken into account which are the events that can benefit more from our service, the usefulness that the customer can give to our product as well as their reaction within consuming it. In order to develop a realistic analysis we have considered the market situation and how Firefly would fit into it.

| Who | Behaviour/Uses | Attitude&Needs |
|---|---|---|
| Event promoters | Yearly | Impacting |
| Weddings | Once in a life | Remarkable |
| Parties | Weekly | Air catching |
| Concerts/Festivals | Monthly | Affordable |
| Inagurations | Customizable | Environment<br>Responsability |
| Publicity/Public Events | Hobby | Adaptable |
| Dance companies | Professional | Success Guaranteed |
| Theatre | Be different | Quality |
| Music Groups | Be special | Safety |
| Sport Events | Location | Amazing |
| Culture Festivals | Affluence | Beautiful |
| Teme Parks | | High Technology involved |
| | | Innovative |

**Figure 3.1: Segmentation criteria.**
**Source: Self elaboration.**

Attending to the characteristics that defines each event and with the aim of seeking the factors that which allow us to establish a price, we decided to categorize our customers in these two segments:

- Affluence: number of people per show/event.
- Frequency: event´s repetition or how many days per week/year.

Having regard to events with similar characteristics, affluence and frequency we can group them in:

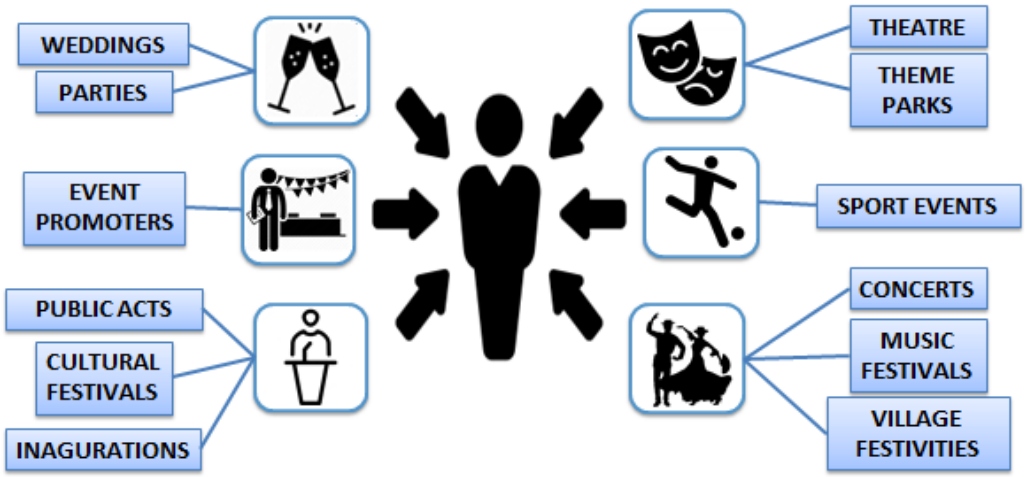



**Figure 3.2: Segments for the whole business.**
**Source: Self elaboration.**

### 3.1.1.1. Segmentation hypothesis

Once that the segment categorization has been made, it is time to represent them in the segmentation matrix:

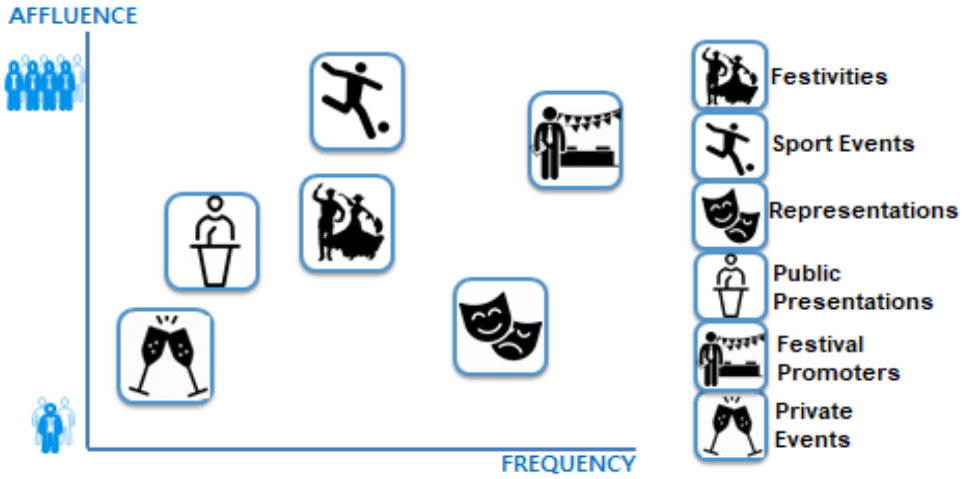



**Figure 3.3: Segmentation of whole market.**
**Source: Self elaboration.**

However this matrix seems be lack of the financial issues and the number of competitors present in each segment. For that reason, we have decided to give more relevance to the prioritization matrix which will be shown at the end of product definition.

### 3.1.1.2. Customer Value

As it had been mentioned before our shows have the aim of being part of the event, not to be protagonist on them. For a deep understanding of this, we must to catch on that in the event the protagonist is the talent of the customer; our service provides the magical touch and brightness you need to make it unforgettable.


**Figure 3.4: Customer Value proposition.**
**Source: Self elaboration.**

The ilustration showed before could resume with great accuracy our cover letter. For showing the value that can obtain our customer versus what the customer have to supply, we have made this outline:

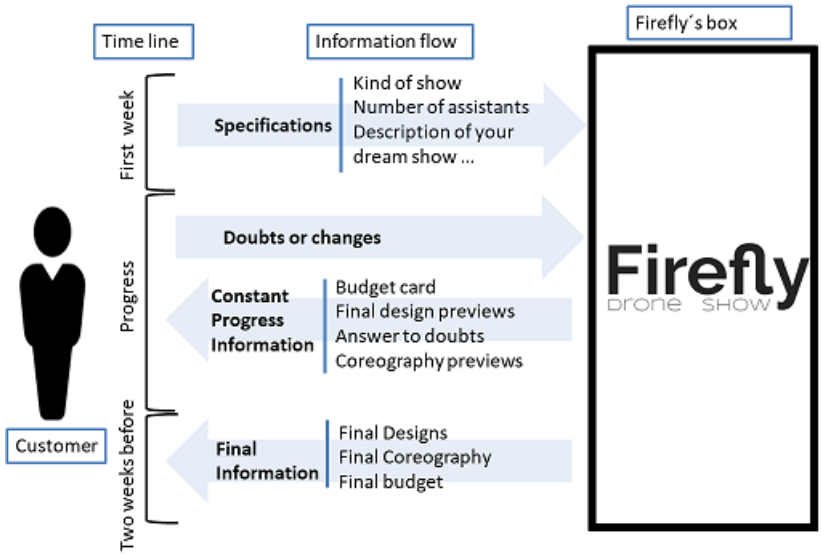



**Figure 3.5: Customer Value process.**
**Source: Self elaboration.**

As we can appreciate in this picture, the customer's concern is minimal due to the customer is kept constantly informed of the project´s progress. It can also be seen that we have reduced to a minimum the effort of the client: the only thing he/she should do is to assess if the preliminary designs / choreographies are to their liking. In case they are not, our company redoes the work and sends it back to him/her. Finally the cherry on the top: we are compromise to the success, so we assure to the customer that the final project will be ready two weeks before the project takes place.

### 3.1.1.3. Competitive fit (Porter Analysis)

A porter analysis will then be carried out in order to determine the level of competence in our sector. This will help us to decide for which of the subgroups mentioned above our service should be enhanced. Apart from helping to define the competitive fit, it will help us in the development of the business strategy.

The 5 forces from 1 to 5 will be scored, with 1 being understood as the one with the least power and 5 as the one with the most power. In the analysis it will be taken into account that our service is pioneer in Spain.

*Customer bargain*

It is related to market size and purchasing power of market customers. The main risk is that if there are few users, more power they have. It is because they can agree on a base price cheaper than the one offered by Firefly, forcing the company to lower the selling price of its service.

| | | | | | | |
|---|---|---|---|---|---|---|
| CUSTOMER | 2 | 1 | 4 | 3 | 1 | 5 |

**Figure 3.6: Customer bargain values per segment.**
**Source: Self elaboration.**

*Supplier bargain*

As in the previous case, if there are few suppliers, they have more power to establish a single selling price.

In our case, however, there are quite a number of providers because drones are in fashion. Besides that the materials we receive are drones and pieces with the intention of customizing the drones. Hence to grant a low and equal power to all fields.

Then the only risk would be the supply of the pieces for customization (as the lights) although this risk would be present only the first months, since later we will standardize the shows using practically the same adornments/complements. What is more in our case it is not a fast delivery, but a quality delivery for which we have enough time from the time the client calls us until the show is made.

| | | | | | | |
|---|---|---|---|---|---|---|
| SUPPLIER | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 3.7: Supplier bargain values per segment.**
**Source: Self elaboration.**

*Competitors/substitutes*

It can be distinguish two types of competitors/substitutes:

- Direct competitors: companies dedicated to the drone shows. The main advantage is that they are located outside of Spain and are dedicated to great

shows. So they would not suppose an imminent risk since they would compete with us just in those festivals / sport events / public presentations known at the international level. With these we refer to events of such calibre as Olympic Games or concerts of bands / singers of world renown. Concluding the power of direct competitors in these segments is high but very limited. That's why the score given is low.

- Indirect competitors:
  - ✓ **Fireworks Show**: Firefly is a green alternative that has less impact on the environment, as well as being safer for people and with more coveted optical effects, so power over these segments is low.
  - ✓ **Show with light bulbs/screens**: the new technologies of lights and sounds accompany many events as an accompaniment to the show. We propose a show of lights in movement with dynamism that can be compatible with these same ones.

  The only problem in indirect competitors is the money to invest. We can compete in price, but we run the risk that our competitor will lower their prices in order to compete. A good solution is to put long term strategies to lower costs such as maintenance in order to be competitive in the market. In conclusion, in shows where people search savings such as private parties/ public presentations/theatrical performances will have more power our competitors.

| COMPETITORS/ SUSTITUTES |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Drone Show Companies | 1 | 2 | 1 | 2 | 2 | 1 |
| Firework Shows | 1 | 1 | 1 | 1 | 1 | 1 |
| Visual Shows | 1 | 1 | 2 | 2 | 1 | 3 |

**Figure 3.8: Competitors and substitutes values per segment.**
**Source: Self elaboration.**

*Entry barriers*

The following entry barriers are defined:

- Fleet size: there is not much difference in size between one event and another, and drones are not an expensive product. For now the law does not distinguish fleet size to allow or prohibit the drone show. It is considered an easy barrier to overcome.
- Investment in advertisements: our main bet is the salesman. In principle we will focus on insisting more on large national events that can make us known. That's why it will be easier for us to access promoters of events/sport events/public presentation.
- Technological investment in software: the software will be designed by us and is adapted for each show. Due to that, it should not be consider a high barrier to entry.

| ENTRY BARRIERS | | | | | | |
|---|---|---|---|---|---|---|
| Fleet Investment(hardware) | 1.5 | 1.5 | 1 | 1.5 | 1.5 | 1 |
| Advertisement Investment | 2 | 1 | 3 | 1 | 1 | 3 |
| Technological Investment (software) | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 3.9: Entry barriers values per segment.**
**Source: Self elaboration.**

### 3.1.1.4. Conclusions

So the main forces are competitors/substitutes and entry barriers.

| SUMMARY | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| CUSTOMER BARGAIN | 2 | 1 | 4 | 3 | 1 | 5 | 16 |
| SUPPLIER BARGAIN | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
| COMPETITORS/ SUSTITUTES | 3 | 4 | 4 | 5 | 4 | 5 | 25 |
| ENTRY BARRIERS | 4,5 | 3,5 | 5 | 3,5 | 3,5 | 5 | 25 |
| TOTAL | 10,5 | 10,5 | 14 | 12,5 | 9,5 | 16 | |

**Figure 3.10: Porter analysis conclusions.**
**Source: Self elaboration.**

The segment with the greatest competitive fit will be event promoters. With this information, the prioritization matrix is represented below.


**Figure 3.11: Segmentation conclusion.**
**Source: Self elaboration.**

The most interesting segments for the service offered by Firefly are: sports events, public representations and event promoters. Event promoters is undoubtedly the best

of all, in addition to the fact that in most cases (as will be seen in the market analysis) companies tend to leave in the hands of other companies the activities of organizing events, especially when it comes to marketing issues. Due to this, in many cases the companies that organize events tend to get involved in the other segments.This is why there are more and more companies in Spain that organise events.

In the market analysis we will pay special attention to analyze the activity of these companies.

## 3.1.2. Value Proposition

Based on previous analysis, our Value Proposition statement is:

*"Fly coordinated drones using an aero-positioning system in order to perform special and original shows based on the client's needs."*

### 3.1.2.1. Competitive advantage

This is the list of factors that compounds a competitive advantage for our company:

- Development of new software and tools for flying drones at the same time.

  The company have developed a software that supports multiple drones control, allowing synchronization between more than just one drone, in order to perform different tasks in group. This software utilizes high-performance mathematical algorithms, allowing advanced sensor fusion and control.

- Competitive prices comparing the market and our services.

  The development of our own tool for flying drones, permit us to reduce tariffs when we offer budgets to our customers, reducing prices in comparison with our competitors.

- Concurrence engineering with new versions and retrofits, using el know-how of the company.

  The software that we developed will help us to reutilise the code for the movements of the drones made in other projects, reducing time of implementation.

- Flexibility of installation, start up, and industrialization.

  One point that we have improved in our strategic plan is the flexibility and time deliver. The industrialization process would be less than one month and once we have developed our product, the installation would take place in a maximum of 3 days. If we compare with our competitors, most of them needs more than 2 months for develop all the process.

# 3.2. Pricing

For doing our pricing strategy we have follow some key drivers for pricing management as represented in the following scheme:

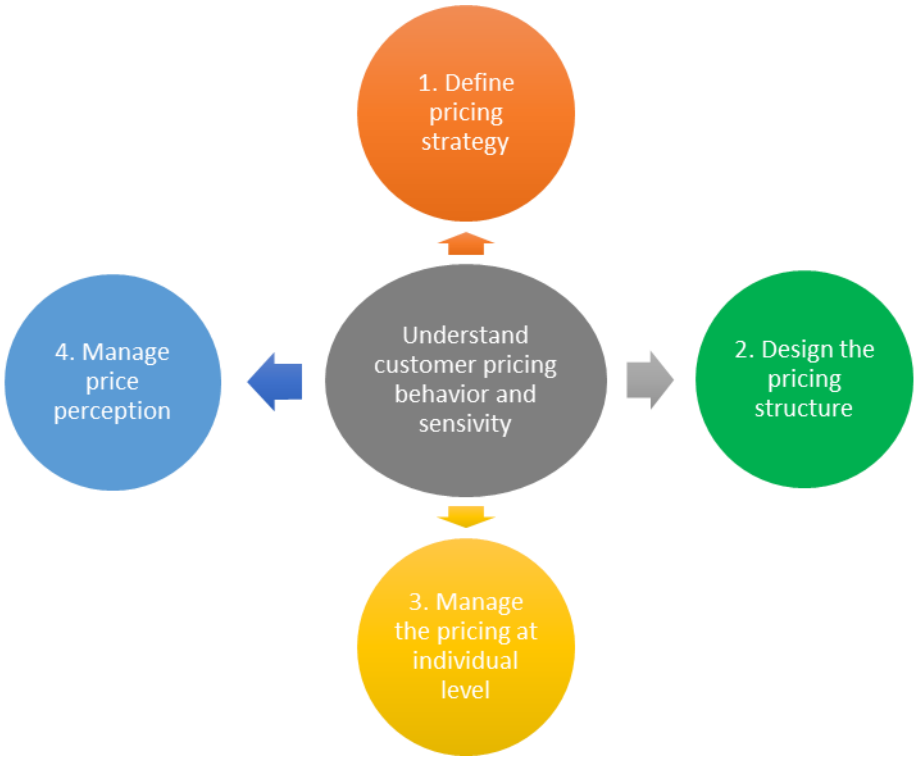



**Figure 3.12: Main pricing key drivers.**
**Source: Self elaboration.**

## 3.2.1. Pricing strategy

The pricing strategy is one of the most important factors in a company as it is directly linked to the revenues. A Good or bad pricing policy allows your company to success or not respectively and that is why is vital in our strategy that we need to cover costs and to have the expected profitability in our company. It is also important that our customers have a good perception of the price they are paying for the product/experience they have in exchange. In this step we need to concrete the optimal pricing positioning.

The individual pricing strategy must maximize our profitability, always taking into account than a very high price can affect our demand. We need also to take into account the possible existing competitors' reaction and the new competitors.

With all those factors, we're going to set our price with a strategy based on the margin optimization on the estimated customer demand. This option, even if is more complex to estimate, it includes market reality and optimizes the economical result.

Taking into account prices in the market and those of the supplementary services competing with us that we will review later, we are having a margin of a 15% after taking out all costs related to each service sold.

## 3.2.2. Design the pricing structure

As the most important part of our sales are going to be through a specialized company in shows creation that are going to include our drones shows in their events, we need to offer that company a certain percentage of the final price of the show. This percentage will be fixed in 10% of the revenues of each show.

For both products (exterior and interior) price will be determinate by different variables:

- Time of execution.
- Amount of drones.
- Type of drone.
- Complexity of the project.

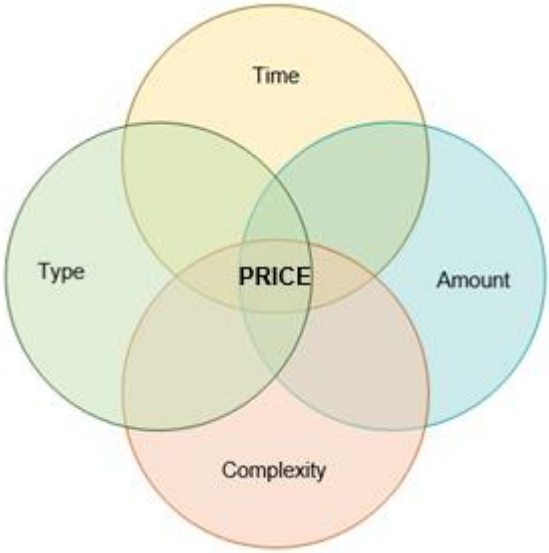



**Figure 3.13: Pricing structure.**
**Source: Self elaboration.**

For setting this price we take also into account our existing competitor's prices. In this case, the most important one that can offer an exciting experience as Firefly is fireworks shows. Fireworks shows offers an exciting experience with lights and sound (the explosion sound and sometimes also music) by an average price between 18.000 € and 24.000 €. Starting with the price, that is higher than the price for an external Firefly show, we have already an advantage. But there are others factors that makes Firefly the best option:

- **Pollution**: Fireworks are more pollutant than Firefly shows
- **Not reusable:** Fireworks cannot be reusable. A Firefly show, once it is programmed, for re-use it the only thing to do is to charge batteries. This permits us also to make offers in the repetition of the shows due to our lower costs.
- **Risk:** With firefly we need only to secure a zone (to prevent accidents) but we don't have any fire risk as Fireworks.

With those arguments we can set an average price as follows:

- Interior show: Average price will be between 3.000 € and 6.000 €
- Exterior show: Average price will be between 8.000€ and 13.000 €

### 3.2.3. Managing the pricing at individual level - Promotions

As mentioned before, our product costs are most elevated in the first time that we're representing a show because of the creation costs. Once a Show is programmed, costs have an important reduction, which allows us to have some promotions to make us more attractive and cheaper for the companies that are contracting several numbers of shows:

- 10x9: For the purchase of 9 representations for the same show, we can offer a supplementary show for free.
- Yearly contract: We can also offer a yearly contract for the same representation that will be represented several times in the year. For example, for theaters, dance shows, etc. This kind of offer will depend in the number of shows contracted, but we can ensure that the benefits for a yearly contract are going to be better than no other promotion.

### 3.2.4. Manage price perception.

As there is a new product, there is no expectations about the price, so the only thing to compare is our existing competitors as Fireworks, Mapping or similar events with us.

There is also 5 other companies doing this kind of shows in the rest of the world but they are concentrated in another market, so the price are not comparable.

Regarding our existing competence, as mentioned before we can compare with Fireworks and Video Mapping.

- A Firework show costs between 18.000 € and 24.000 € depending on the complexity.
- A video Mapping Show can cost an average price of 14.000 €.

So, both potential substitutes of Firefly are more expensive, doing firefly price advantageous fate to our competitors.

## 3.3. Commercial plan (placement & promotion)

This part of the commercial plan focuses on the main issues related to the delivery of show, regarding customers' and Firefly's points of view and is also focusing into the promotion part, which is mainly focused on the sales force in order to reach the yearly revenues goal previously defined.

## 3.3.1. Placement

As mentioned before, based on the delivery of the show.

### 3.3.1.1. Deliver process

The customer journey involves every interaction with your company, product, or service with any moment that a customer comes into contact with your brand. This includes before, during, and after the purchase.

For that reason we have developed the steps that we are going to accomplish for achieve the satisfaction of the client:

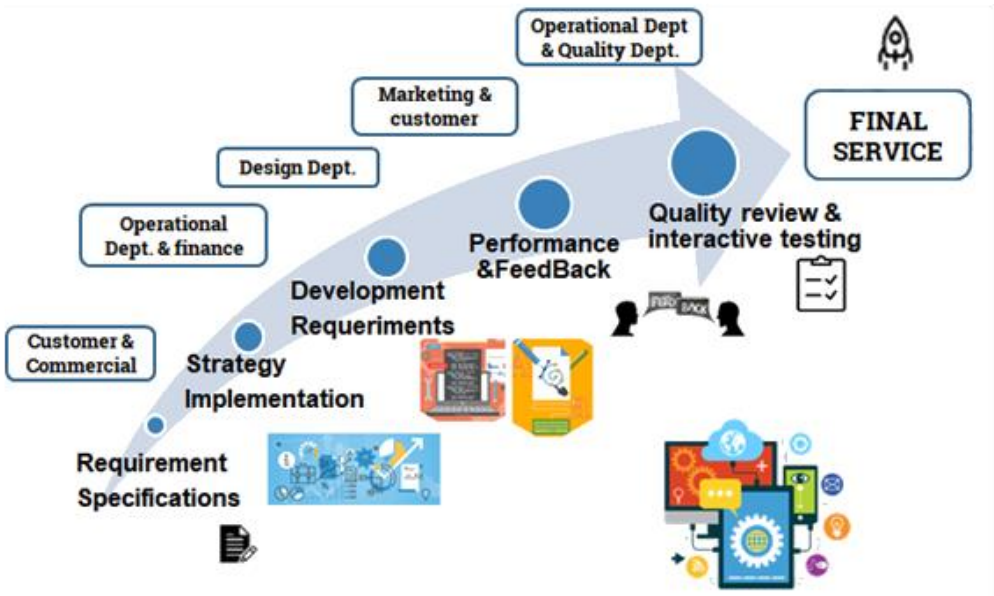



**Figure 3.14: Deliver process roadmap.**
**Source: Self elaboration.**

**First Stage:**

The commercial department will get in touch with the promoters of the shows market, providing visibility, in order to share and include our services in their services.

During this period of time, the customer will specify all the requirements for the show that promotes.

**Second Stage:**

The operational and finance department would analyse if the strategy implementation for a new project is viable technical and economically for the company satisfying the customer needs.

If the customer decide to include our services (for example during dance choreographies), we will offer a solution that could fit.

**Third Stage:**

Once we know that the project is attractive for the company, the design department would start to develop the movements that the drone would take place in the show by programing it in our software.

**Fourth Stage:**

In order to know the opinion of the customer, a trial performance would be available in a virtual environment that the marketing department would show directly to the customer. This feedback would permit us to know if everything is correct or the customer would like to change something before deliver it.

**Fifth Stage:**

The operational and quality department would do an interactive testing and review to check the service before the final show.

**Sixth Stage:**

Finally, we will provide our final service to the show. The complete installation would take place in 3 days maximum, in wherever location of Spain.

## 3.3.2. Customer journey

The customer journey involves every interaction with your company, product, or service with any moment that a customer comes in contact with your brand. That includes before, during, and after the purchase. What the final customer see, it is an amazing show, but this is the final result of hard work that is behind of their eyes:

For that reason we have implement the time line that our real customer (event promoters) has to accomplish for achieve the satisfaction of the client:

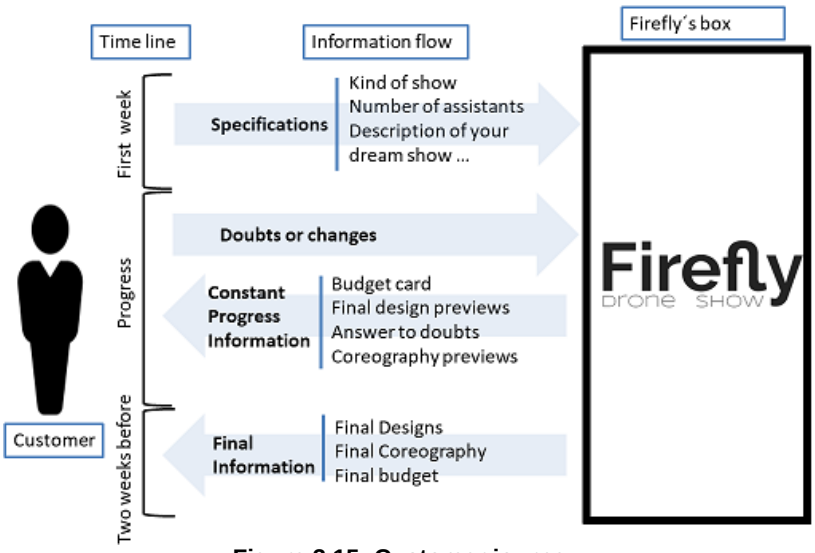



**Figure 3.15: Customer journey.**
**Source: Self elaboration.**

1. First contact: customer contacts with Firefly, delivering the data of his company and describing the requirements of the show that wants to create: place, music, synchronization with dancers / singer, duration, theme, stage lights synchronization, etc.
2. Feasibility study: While the customer is just waiting for an answer, Firefly develops a first study where, depending on the client's requirements and the complexity of the show, it defines a preliminary budget.

3. Presentation of the study and customer acceptance: Customer visits again Firefly team, where sales staff presents the preliminary proposal. Here the price and predetermining aspects of the final show are defined. Without any commitment so far, the client decides whether or not he is interested in the offer. This period of time could take around 1 week.
4. Acceptance of the offer: after accepting the proposal, a period of constant communication between with Firefly takes place. The client is receiving relevant information in different channels as the project performance is being progressing in Firefly's headquarters, such as the design of the choreography or the design of the drone costumes. The client is continually being contacted to see if the deliverables are nice or needs to modify. Finally, two weeks before the show, a computer simulation of the final result is sent, including the changes introduced throughout the progress of the project.
5. Concretion: once the final simulation is approved, the final budget is detailed according to the changes introduced. In these two weeks the client can consult remaining doubts about how the show is developed but it is not possible to modify the relevant details of the show.
6. Final presentation: after the final agreement, client lets Firefly work in the assembly and presentation of the show, providing a wonderful experience that it will not forget. Working with this time progress the company expect to complete the entire process in less than 6 weeks in total, as maximum timing.

## 3.3.3. Promotion (being known and considered)

### 3.3.3.1. Customer fidelity

Under this kind of business model, it is mandatory to create a high level of fidelity because with the right customer we could achieve multiple agreements. For doing that we could offer:

- Special discounts to recurrent customer that offer to our company different shows.
- Capability of improve assistance due to innovative shows.
- Renovate choreographies without costs.

## 3.3.4. Promotion strategy

In relation to the Product advertising, it is really mandatory to implement just a "Unique Selling Proposition" determining the potential customers, the number of sales and fidelity created. Placement makes reference to the channels in which the product reaches the customer for being bought. The channels are every point of interaction with the customer

In order to maximize sales effectiveness we need to understand deeply the client and know their demand:

- Impressive choreographies.
- Efficiency and quality
- Availability and reliability

These demands should take into consideration the particularities of our service:

- Customize **services** that we have to develop for each project taking into account the specific requirements and the demands mentioned before.

#### 3.3.4.1. Channels

We have considered a number of possible channels:

- Direct sales: Selling through our Sales department that we have in our offices to attract new customers.

  Corporate sales through commercial sale agents are especially important when targeting mid-long term contracts with sustainable revenues such as in our case. This approach totally matches the personal care and high standard service our clients will be expecting. Therefore, corporate sales through our commercial department are a key strategic channel.

  A specialized sale man with experience can target up to 20 promoter clients per month and manage a proportional board of individual clients. For that reason we believe that this would be our main channel, because we need a special threat directly with the customer to get confidence and achieve more than just a contract.

- Event stands: Selling in congresses, airline events, target segment

  Direct sales use our customer relation standpoints, CRM phone centre it will be a good opportunity to capture new businessmen through word of mouth and “fan customers”.

  The idea is to engage business executives related to one of our customers and grow interest in their companies. This maximizes our investment in the ferias stand using it not only as a customer relation point but also as a sale and promotional channel.

- Web: Selling through our webpage allowing profile visibility even to Other industries

  A web is a mandatory tool in today’s business world. Using it for branding and promotion, we believe it should have a significant role on Customer Visibility make it a new channel for contact with us directly.

  The effective of this channel will be very low if we don’t develop an impressive web page with colourful and striking marketing

Moreover, not having it would close easy access to us from general public which means closing a potential future business line.

- Call centre: provided by 6 telephone operators and equipment for their work, it would be an alternative for develop our business faster due to the Constance call to get new customers.

  The cost associate to this channel would be the salary of the workers (12 thousands euros per year) and 3 thousand euros for the equipment.

- Emailing (SPAM). Although we considered maybe as junk marketing we take it in consideration due to the potential customer that we could reach by this channel.

  For the automatic emailing directly to the clients, it would cost 600 hundred euros per year and it would be taken by an external company.

- Flyers. Paper publicity to achieve directly the attention of the final client during shows or events. The budget suggested to this channel would be 3 thousand dollars per year.

- Show demonstration. We have always thought that the best way to know a product is tasting it. For that reason we have considered this cannel as one of the most important to take in consideration. We have estimated a cost of 3 thousand dollars per demonstration.

#### 3.3.4.2. Qualitative fit and quantitative prioritization.

Each distribution channel will be evaluated regarding how well it would match qualitatively and quantitative in our client and business characteristics. The idea is to prioritize the channels to fit out financial plan.

If we analyse each channel with a qualitative evaluation take in consideration the viability and attractiveness of the client, we can consider the following result:

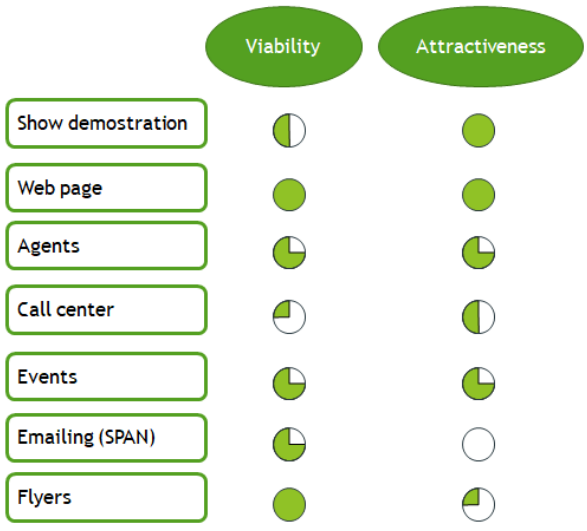



**Figure 3.16: Attractiveness and viability comparison of channels.**
**Source: Self elaboration.**

We can see that events, show demonstrations, agents and web pages are the most attractiveness for the final clients. With this qualitative weighing data we will characterize how profitable each channel is and the volume that it might be able to reach customers, doing a quantitative weighing:

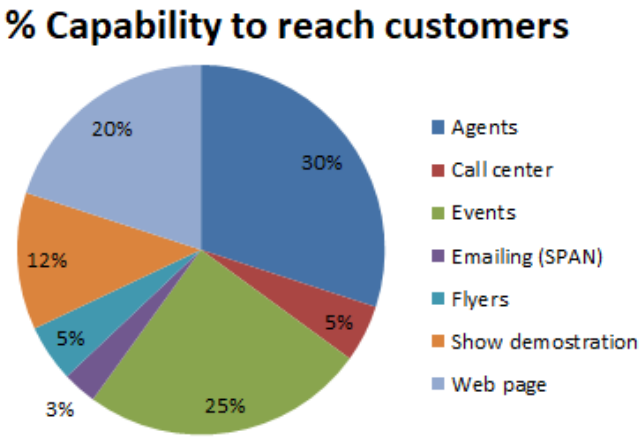



**Figure 3.17: Profitability of channels.**
**Source: Self elaboration.**

This quantitative analyse determinate basically how profitable the channel is by reaching more number of customers per channel. For that reason, we will consider the profitability and the channel attractiveness in order to determinate the channels that we should invest.

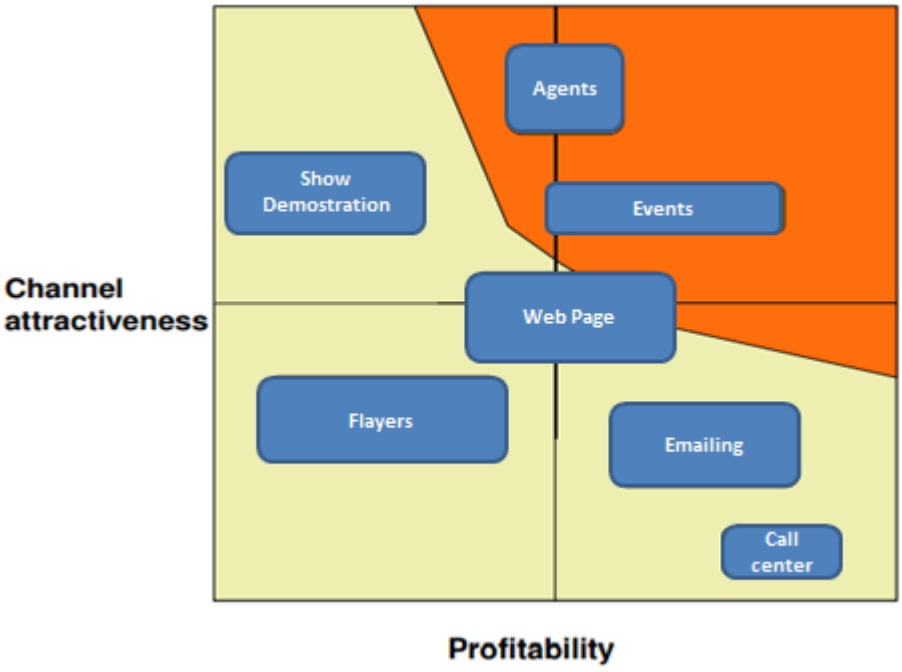



**Figure 3.18: Profitability of channels.**
**Source: Self elaboration.**

In this graphical we contemplate that the most profitable channels are the ones that get inside the orange area, that means that even there are channels more profitable in costs, we can reach more customer and get more benefits with other ones that are more attractiveness for the final client.

For that reason we, we should finally consider 3 channels:

**Agents:** It is the best option to get new contracts.

**Events:** It involves the rest of the channels during the performance of the fairs.

**Web pages:** It is the marketing reference when we don't have agents

#### 3.3.4.3. Trade fairs & Congress & Conferences Planning

This way of capturing customers is based on experience. A sales man can provide corporate videos and physical information to a client in an office/meeting room. The web in that sense provides the same only in a more impersonal way. That's why we decided to invest money and time in this channel: we want to capture the client through the visual experience, which is what Firefly offers. Therefore, the main advantage of fairs is that they allow us to promote the rest of the channels:

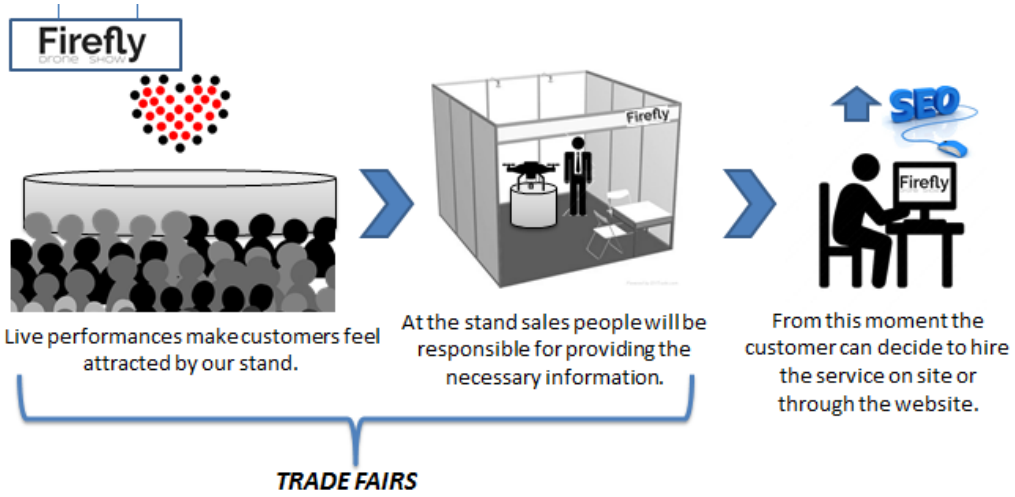



**Figure 3.19: Fairs strategy.**
**Source: Self elaboration.**

Research has been carried out on the trade fairs, congresses and conferences that take place in Spain every year. A certain number of fairs have been selected for their thematic/facility to make contacts:

| | LOCATION | NAME | COMMENTS |
|---|---|---|---|
| MARKETING/FINANCES | | | |
| 1 | Madrid | SPAIN LEGAL EXPO | Marketing Consultants |
| 2 | Málaga | Andalucía Management | Executive Meeting |
| 3 | Madrid | Salón Internacional del Regalo Promocional y Maquinaria para Personalización | |
| 4 | Barcelona | Retail & Brand Experience World Congress | |
| LEISURE | | | |
| 5 | Malaga | CELEBRA MÁLAGA. 13ª Feria de Bodas y Celebraciones | Offer of services and products related to the planning and preparation of a social event: wedding, baptism, communion, party or anniversary. |
| 6 | Bilbao | EXPOBODAS. Exposición para Ferias y Comuniones | |
| 7 | Madrid | 1001 BODAS. Salón de Productos y Servicios para Celebraciones | |

| | | | |
|---|---|---|---|
| 8 | Bilbao | BIME PRO. Congreso de la Industria Musical | Open to the public, the largest exhibition of Products & Services for celebrations in Spain, organized by IFEMA. |
| 9 | Tenerife | FEBODA. XV Feria de la Boda, Ceremonia, Regalos y Complementos | |
| 10 | Zaragoza | NUPZIAL. Salón de Servicios para Congresos, Bodas y Acontecimientos | |
| 11 | Madrid | GamerGy. E-sports & Gaming Festival | |
| 12 | Pontevedra | FESTUR. 6ª Feria de Fiestas de Interés Turístico | |
| INDUSTRY | | | |
| 13 | Málaga | TRANSFIERE. 8º Foro Europeo para la Ciencia, Tecnología e Innovación | Establish B2B contacts through an online networking tool, which allows you to close up to 32 meetings prior to the event & Establish alliances. |
| AEROSPACE | | | |
| 14 | Madrid | WATM Congress The largest Air Traffic Management exhibition and industry forum in the world | |
| AUDIOVISUAL | | | |
| 15 | Barcelona | eShow / eFintech / Droneshow. Feria y Congr. Profesional de E-commerce y Digital Marketing | Key congress not only for the European e-commerce sector but also for those professionals seeking to increase the visibility of their brands and increase their competitiveness through digital marketing. |
| 16 | Madrid | DES 2019. Digital Business World Congress. The Digital Transformation Global Leading Event | If you want to play a major role in the Digital Transformation of European large corporations and SMEs, Digital Enterprise Show is your perfect sales platform. |
| 17 | Tenerife | TLP. TENERIFE LAN PARTY 2019 | Gather lovers of new technologies, video games, etc. |
| 18 | Málaga | GAMEPOLIS. 7º Festival de Videojuegos | Gamepolis is an annual event dedicated to the video game industry and culture. |
| 19 | Barcelona | 4YFN. Four Years From Now, Evento de Emprendimiento en Tecnologías Móviles | 4 Years From Now [4YFN] is the startup business platform that enables startups, investors and companies to connect and launch new business ventures together. |
| 20 | Barcelona | MOBILE WORLD CONGRESS. Evento Mundial de la Industria de las Tecnologías Móviles | The theme of this year's event is 'Intelligent Connectivity': the term we use to describe the powerful combination of flexible, high-speed 5G networks, the Internet of Things (IoT), artificial intelligence (AI) and big data. |
| AUTOMOTIVE/FASHION | | | |
| 21 | Madrid | MERCEDES-BENZ FASHION WEEK MADRID (ENERO Y JULIO) | |
| 22 | Madrid | MOTORTEC AUTOMECHANIKA MADRID. Feria Internacional para la Industria de Automoción | |

| TRANSPORT | | | |
|---|---|---|---|
| 23 | Málaga | S-Moving. 2º Foro del Vehículo Inteligente, Autónomo y No Tripulado | European reference meeting on intelligent, autonomous, connected and unmanned mobility by land, sea and aerospace. The objective of the event is to share the technologies applied to this type of mobility and its infrastructures, as well as the opportunities and challenges of their implementation in the strategic sectors of the economy. |
| GENERAL | | | |
| 24 | Zaragoza | FERIA GENERAL | The ZARAGOZA GENERAL TRADE FAIR is a great opportunity to promote your products and services among a very familiar public. Around 200.000 visitors, not only from Zaragoza and Aragon, but also from other cities and closed regions, come to this indispensable event. |

Trade fairs | Congress | Conferences & Others

**Figure 3.20: Main fairs in Spain.**
**Source: Self elaboration.**

In yellow have been highlighted those that are of very special interest to Firefly. Below it is shown the dates and web pages of the fairs described above. This information together with geographical location will be useful to estimate the deployment of means.

| | START DATE | FINAL DATE | PAGE WEB |
|---|---|---|---|
| 1 | 19/06/2019 | 20/06/2019 | http://grupometalia.com/ |
| 2 | 21/11/2019 | 22/11/2019 | http://www.fycma.com |
| 3 | 15/01/2019 | 16/01/2019 | http://www.ifema.es/promogift_01/ |
| 4 | 27/05/2019 | 29/05/2019 | http://www.retailandbrandexperience.com/en/home |
| 5 | 18/10/2019 | 20/10/2019 | http://celebra.malaga.eu/ |
| 6 | 04/10/2019 | 06/10/2019 | http://www.bilbaoexhibitioncentre.com |
| 7 | 18/10/2019 | 20/10/2019 | http://www.ifema.es/milyunabodas_01 |
| 8 | 23/10/2019 | 25/10/2019 | bime.net/bime_pro/ |
| 9 | 27/10/2019 | 26/10/2019 | http://www.recintoferialdetenerife.com/ |
| 10 | 08/11/2019 | 10/11/2019 | http://www.feriazaragoza.com/microsite-plantilla |
| 11 | 13/12/2019 | 15/12/2019 | http://www.festur.es/ |
| 12 | 06/06/2019 | 09/06/2019 | http://www.festur.es/ |
| 13 | 13/02/2019 | 14/02/2019 | http://transfiere.malaga.eu/ |
| 14 | 12/03/2019 | 14/03/2019 | https://www.worldatmcongress.org/ |
| 15 | 12/03/2019 | 13/03/2019 | https://www.the-eshow.com/barcelona/ |
| 16 | 21/05/2019 | 23/05/2019 | https://www.des-madrid.com/ |
| 17 | 16/07/2019 | 21/07/2019 | https://tlp-tenerife.com |
| 18 | 19/07/2019 | 22/07/2019 | https://www.gamepolis.org/ |
| 19 | 25/02/2019 | 27/02/2019 | http://www.4yfn.com/ |
| 20 | 25/02/2019 | 28/02/2019 | https://www.mwcbarcelona.com/ |
| 21 | 06/07/2019 | 10/07/2019 | http://www.ifema.es/mercedesbenzfwm_01 |
| 22 | 13/03/2019 | 16/03/2019 | http://www.ifema.es/motortec_01 |
| 23 | 09/10/2019 | 10/10/2019 | http://smovingforum.com/ |
| 24 | 08/10/2019 | 13/10/2019 | http://www.afe.es/es/Ferias/Listado-de-Ferias/FERIA-GENERAL-1912 |

**Figure 3.21: Firefly main calendar fairs.**
**Source: Self elaboration.**

The cost of these events is high, however it is one of our main ways to attract customers. To give us an idea, we give the costs that presuppose to put a stand in an average fair in Spain. These costs include rental price, taxes and payments for ancillary services provided by the trade fair itself. To this should be added travel costs, auxiliary means (merchandising, posters, salaries of sales people, etc.) and travel and accommodation costs.

| TRADE FAIR TARIFS(€) | |
|---|---|
| Registration Fee(<50m² ) | 495 |
| Room Rental(12m² ) | 3014 |
| Multiferia Insurance | 55,803 |
| Civil Liability | 58,795 |
| Presence in promotional elements | 236,5 |
| Minimum energy consumption | 50,8068 |
| TOTAL | 3910,9048 |

**Figure 3.22: Cost of a fair visit for Firefly.**
**Source: Self elaboration.**

Despite the high cost involved, it is worth making this investment at least during the first year to break the first barrier (no one knows us).

# Module 4. Operational plan

## 4.1. Introduction

Firefly is a company focused on spectacles and shows, using the most developed technology to bring unexpected features to every performance. To do so, a coordinated and autonomous squad of drones will be used to create a wide variety of forms, figures and choreographies.

The company offers predefined shows or customized ones, and also they could be accompanying other performance, creating forms in the air according to the theme and the music used, to transmit a message and to create a unique atmosphere never seen before on the spectacle world.

To do this, there are two main business lines, where the main difference is the location, being one inside and the other one outside, with different kind of drones, time of performance and features.

Business model is defined as follows: customer provides a performance date and the theme of it, and then the team is in charge of creating an aerial choreography that matches customer's needs, satisfying the expectations of the spectators, and therefore customer's ones too.

To create the choreography that the drones are following, it is necessary a properly developed software, that will establish aerial trajectories for each of the drones of the fleet, avoiding collisions among them.

The team will also customize the drones, creating different accessories based on the different amount of topics. Those can be manufactured with different technologies and materials, like fabric, plastic or electric components.

## 4.2. Drone definition

To define the drones, it is necessary to categorize them into the two locations of these performances:

- Outside shows: For these shows, they will generally be at night, as they are usually performed by drones flying with lights, so they will be much more visual after dawn.

  However, there is also the possibility to perform shows during daylight, by adding accessories that will make the drone visible and customized following customer's needs.

- Inside shows: Shows in interior have a potential bigger variety of possible shows, as daylight is not a problem and weather conditions do not affect to the performance.

The two locations will define the adequate hardware to develop the service.

## 4.2.1. Hardware

Regarding to the previous description, the material and technology used for the hardware would be the following.

### 4.2.1.1. Description of the service

The service itself would depend on the magnitude of the event, utilizing a certain amount of drones regarding the forum, time of performance and the place, specifically the available space to do the show.

Therefore, to cover long shows, the amount of drones used must be duplicated, to switch the initial ones for a second squad, while the team provides new batteries to the unloaded first one. This will allow fulfilling timing as the current battery market could not provide enough time range to perform shows with the additional height on each drone.

### 4.2.1.2. Type of drones

On one hand, the product must cover very concrete specifications; then it is not possible to rent the drones, due to the necessary modifications to be performed. On the other hand, the company is not specialized on making drones, so they will be bought and then modified to cover the requested needs.

After further market analysis, two different kinds of drones will be acquired to perform inside or outside, depending on the size of the scenario and the available space to fly. This is the final selection of the drones:

Interior: The most suitable one is the *codrone*.


**Figure 4.1: Picture of the Codrone**
**Source: https://www.robolink.com/codrone/**

This small drone is prepared to be programmed for autonomous flights, having ideal specifications for the services, as it is extremely light, can be fully assembled in less than ten minutes (with a very easy access to the battery) and with the possibility to be customizable.

It is also affordable, with a price of 180$ per unit and a discount for a lot of ten (5% discount). The accessories can be bought separately, and also components for maintenance, not like other similar products on the market.

The key specification of this drone is that it is oriented to a very wide variety of users, having different tutorials that may help the Company to reach the maximum potential of the usage.

Exterior: The one that fits best the need is the *Phantom 4*.


**Figure 4.2: Picture of the Phantom 4**
**Source: https://www.dji.com/es/phantom-4**

The specifications of this drone are more focussed on weather, flying in windy or slightly rainy conditions. That is why it must be a stronger and bigger drone that can face these difficulties.

Depending on the nature of the show, some of these drones, mixed or not, will appear during the performance.

#### 4.2.1.3. Customization

To being able to perform any kind of show, drones must add elements like a hardware related to the air coordination software, lights and other accessories. To do this, the company must own the drones, as they will be unique after the workshop tasks, and a leasing is then not a possible option.

This is a big advantage as it could solve the question of “what if these drones are meant to perform something different?” This is what the whole team is willing to reach, giving the chance of coordinating these customized drones to perform something different, and unique.

The most important part of our activity is the customization of the drones. To do this, some fastening system is going to be added to the drones, making them standard with the different kind of elements that are going to be added to give us the flexibility of using them in many different ways.

To do this, 3D printing is a very nice asset, as it will allow us to design each element and standardize as desired. Any of this fastening system and elements can be complemented with cloth, lights or other element.

After this, a very big variety can be created and reutilized for any show, depending on the customer desire.

#### 4.2.1.4. Workshop

This is the place where the whole customization and maintenance will take place. To be able to do this, the workshop will be divided into these areas:

- Assembly area:

  This area is where drones are created. In this area, drones are coming raw and it is where hardware is added.

  The first step is to add the hardware that will allow us to coordinate movement in the air. To do this, a motherboard is added to each drone, having to configure it on each of them to make it work. The advantage of having just two different drone models, is that this task is very standard and can be easily done once the first is working.

  Having done this, drones can autonomously fly, but they need to wear costumes to be used during the show. This is the second task of this area, where the fastening system is added and the elements too. Here the worker can prove that everything is fixing properly and it will work while flying. In any case it does not fit or does not work properly, worker will perform the necessary activity to adapt it, always regarding to customer's needs.

- Maintenance area:

  This is the area where everything is checked and fixed after the shows.

  Having perform any activity could suppose any damage for the drones, due to any accident or to the life of the product. Taking this into consideration, an exhaustive check is performed. This is where this part are redone and place where they must be.

  One of the main parts of this area, is the battery control. Here is where every battery is tested to check their duration and status. If it is not useful, it will be replaced and recycled.

- Design area:

  This is the creativity area, where everything is designed and simulated to be added in a drone.

  This area is compounded not only by tools, but also with computer with design software, connected to the 3D printers. This is the main area, where everything must fit perfectly and for this, simulation in the computer is essential.

  Here is also where the coordination of the drones is going to be tested. With the specific software, all the drones are placed in a simulated area of work. Here all the designers will meet customer's specifications to coordinate the whole show with the appearance of drones.

## 4.2.2. Software

### 4.2.2.1. Description of the software

The software supports multiple drone control modes to fulfil all your needs for different tasks.

You can fly between waypoints, circulate around a point or steer by controlling heading, altitude and speed. Also, allows synchronization between more than just one drone in order to perform your task in group.

The on-board software utilizes high-performance mathematical algorithms, allowing advanced sensor fusion and control.

#### 4.2.2.2. Connectivity solution

*Ways of connection/technology*

There are two ways to pilot Drones:

- The pilot controls, with the help of the command, all the movements that the drone makes from the air.
- The pilot can also establish a flight plan that the drone follows with an autonomous route or even change the fly if an unexpected situation appears. With automatic mode, the vehicle can choose between varieties of flight plans or even change the route for the most appropriate options thanks to the information sent by its sensors.

But such decisions are made by the person who is watching the flight from a computer. Controlling everything with a ground station (GSC in its acronym in English), using a program that serves as a communication channel between the drone and the pilot.

Thanks to this, the pilot is able to send to the drone the coordinates on which he must fly and provides a real-time tracking of the drone, both by video and signal GPS.

The drone and the GSC must speak the same language, so the conversation that both engage is based on a communication protocol. One of the most used protocols is the MAVLINK. (It is a very lightweight messaging protocol for communicating with drones and between on-board drone components).

It has a series of software subsystems that allow it to interact with the ground station. There are simple computer programs and GSC suitable to be used from a 'smartphone' or tablet, which are perfect for those users unfamiliar with the technology. And open source programs, such as Mission Planner or APM Planner 2, for more professional uses.

*Communication protocol.*

MAVLink or Micro Air Vehicle Link is a protocol for communicating with small unmanned vehicle. It is designed as a header-only message marshalling library.

It is used mostly for communication between a Ground Control Station (GCS) and unmanned vehicles, and in the inter-communication of the subsystem of the vehicle. It

can be used to transmit the orientation of the vehicle, its GPS location and speed. It uses XML for communication.

MAVLink is a communication protocol specially developed for the exchange of information between a ground control station and micro UAVs (and drones also).

It has been designed as a very lightweight library that has the necessary information for the exchange of messages carried out in communication with micro UAVs. This information is contained in files with an .xml extension, which allows it to be structured and packaged using different programming languages.

It is easy to integrate both in the stations and in the vehicle, since the definition of the messages is done by headers in C language.

The MAVLink package consists of a coded sequence of bytes.

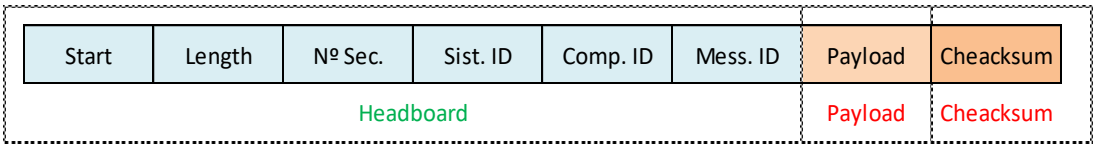



**Figure 4.3: Coding for MAVLink.**
**Source: MAVLink.**

The message of each header byte is the following:

**Start-of-frame 0:** Denotes the beginning of the transmission.

**Pay-load-length 1:** length of the payload. Payload is the information or data contained in each package

**Packet sequence 2:** Sequence of the packet, in this way we can see if messages are missing or not

**System ID 3:** Identification of the sending system

**Component ID 4:** Identification of the sending component. It allows to differentiate several components. In principle, the simplest systems have the same system ID and component.

**Message ID 5:** Identification of the message. That is, with it, we can know how to decode the information contained.

**Payload** is where the information you want to transmit is located and can carry from 0 to 255 bytes of data. The error control is done thanks to the **checksum** information.

Autopilots and software packages that support MAVLink between the control station and drones are the following:

| Autopilotos | Principal / Opcional |
|---|---|
| ArduPilotMega | Protocolo Principal |
| pxIMU Autopilot | Protocolo Principal |
| SLUGS Autopilot | Protocolo Principal |
| FLEXIPILOT | Protocolo Opcional |
| UAVDevBoard/Gentlenav/MatrixPilot | Protocolo Opcional |
| SenseSoar Autopilot | Protocolo Principal |
| SmartAP Autopilot | Protocolo Principal |
| AutoQuad 6 AutoPilot | Protocolo Principal |

| Software | Sistema Operativo |
|---|---|
| iDroneCtrl | iOS |
| QGroundControl | Windows/Mac/Linux |
| HK Ground Control Station | Windows |
| APM Planner | Windows/Mac |
| QGroundControl w/ AutoQuad MainWidget | Windows/Mac/Linux |
| Mission Planner | Windows |
| MAVProxy | Windows/Mac/Linux |

**Figure 4.4: Autopilot configuration.**
**Source: MAVLink.**

The advantages for using this protocol:

- Very efficient. MAVLink 1 has just 8 bytes overhead per packet, including start sign and packet drop detection. MAVLink 2 has just 14 bytes of overhead (but is a much more secure and extensible protocol). Because MAVLink doesn't require any additional framing it is very well suited for applications with very limited communication bandwidth.
- Very reliable. MAVLink has been used since 2009 to communicate between many different vehicles, ground stations (and other nodes) over varied and challenging communication channels (high latency/noise). It provides methods for detecting packet drops, corruption, and for packet authentication.
- Supports many programming languages, running on numerous microcontrollers/operating systems (including ARM7, ATMega, dsPic, STM32 and Windows, Linux, MacOS, Android and iOS).

- Allows up to 255 concurrent systems on the network (vehicles, ground stations, etc.)
- Enables both offboard and onboard communications (e.g. between a GCS and drone, and between drone autopilot and MAVLink enabled drone camera).

The MAVLink tools can be used in different libraries for a number of programming languages:

| Language | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C | C++11 | Python (2.7+, 3.3+) | C# | Objective C | Java | Java | JavaScript | Lua | Swift | Clojure |

**Figure 4.5: Languages needed to program coordination software.**
**Source: MAVLink.**

*Different Languages.*

It uses files with an .xml extension, which allows it to be structured and packaged using different programming languages. Headers are normally used in C language.

The Selection language use for develop our projects is Python. It is a multi-paradigm programming language, since it supports object orientation, imperative programming and, to a lesser extent, functional programming.

Kind of programmable plates.

Apart from the systems supported by the communication protocols, there are many possibilities for remote monitoring. Other option that we consider was Arduino: Hardware boards to build digital and interactive devices that can sense and control real-world objects. It is based on hardware and free software, and can be oriented to drone monitoring.

Finally we decided to use MAVlink protocol for the communication between our own software development and the programmable plates installed in the drones due to all the advantages mentioned before.

#### 4.2.2.3. Ideal solution

Smart Sky is an easy to use miniature autopilot for drones. The hardware consists of a single circuit board with all the necessary sensors integrated, including 3-axis gyros and accelerometers, low-latency GPS, airspeed and altitude sensors, servo and payload ports as well as an integrated data link modem. The on-board software utilizes high-performance mathematical algorithms, allowing advanced sensor fusion and control.

Operating drones is safety for the operator as well as the surroundings. Smart Sky has therefore been equipped with only high quality components and sophisticated fail safe functionality has been implemented. Everything in order to make feel safe and comfortable when you operate your drones.

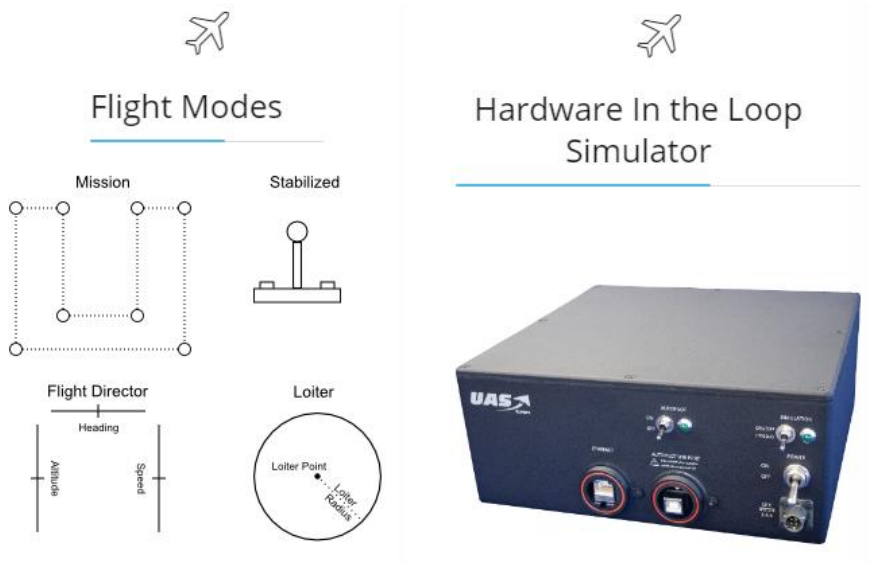



**Figure 4.6: Drone flight simulator.**
**Source: Smart sky.**

This software supports multiple drone control modes to fulfil all the needs for different tasks. You can fly between waypoints in Mission mode, circulate around a point of interest in *Loiter* mode or steer by controlling heading, altitude and speed in Flight Director Mode. A semi-autonomous mode using a joystick can be used if manual control is desired.

The Hardware in the Loop Simulator is a perfect tool for training new operators. It also allows you to plan and fly missions in a simulated environment before performing the same flight with your drone.

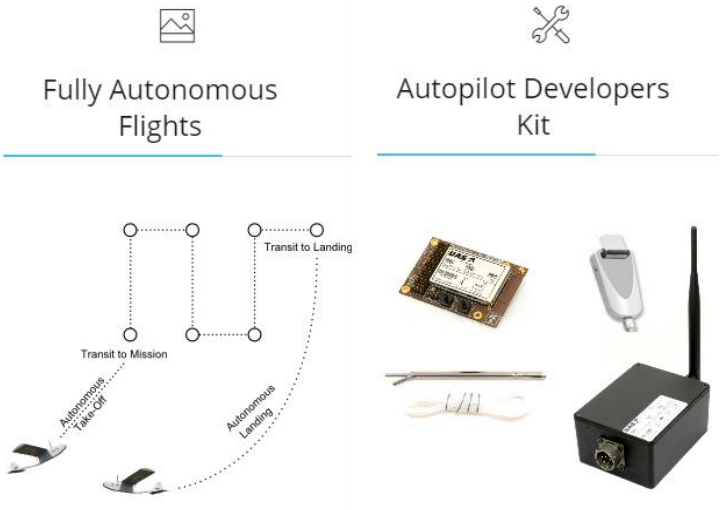



**Figure 4.7: Drone autopilot.**
**Source: Smart sky.**

The operator can plan a mission with automatic transit to mission after launch and then transit to auto land after mission completion. This feature gives the operator possibility to focus on other important tasks such as payload control and monitoring.

The Autopilot allows you to fully customize the functionality of the Smart Sky. You can for example implement customer specific payload control, expand the communication protocol and develop your own control and navigation algorithms.

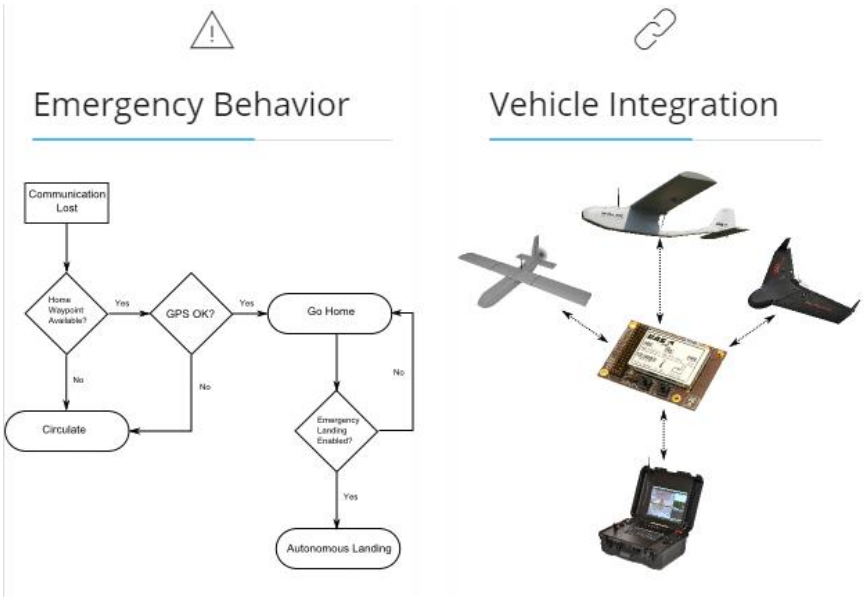



**Figure 4.8: Autopilot algorithm.**
**Source: Smart sky.**

Several emergency features are available in Smart Sky. Go Home, Circulate and Emergency Landing are a few examples, where Go Home takes your vehicle back to your home waypoint, Circulate make it fly in a circular pattern at the current position and Emergency Landing performs an autonomous landing. The emergency behavior can be configured by the operator in order to fit your environment and mission.

The generous number of settings makes integration into your own drone an easy task. Uploading new settings during flight makes it possible to trim the control loops and navigation during real flight tests.

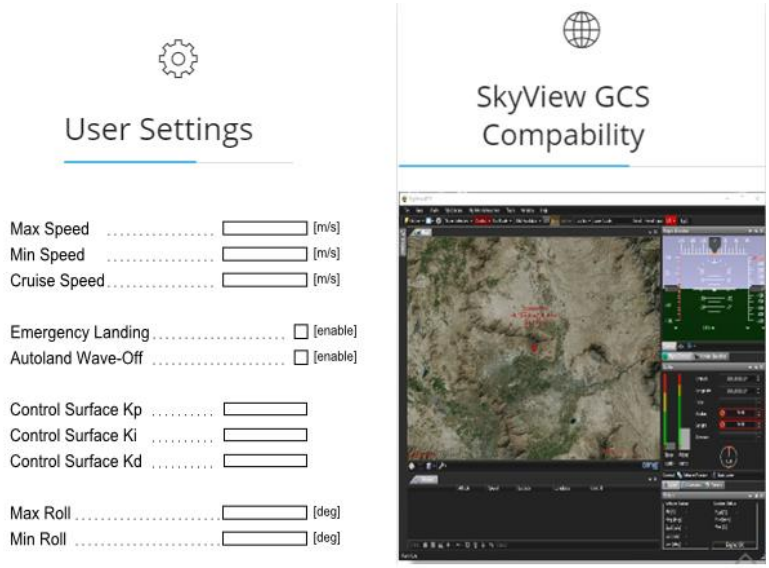



**Figure 4.9: Autopilot settings.**
**Source: Smart sky.**

A lot of settings are available for the operator in order to create a tailored flight behavior based on your preferences. Control and Navigation parameters, operational limits and emergency behavior are examples of available settings. Uploading new settings during flight makes it possible to trim the control loops and navigation during real flight tests.

This software is specially designed to work with SkyView GCS ground control station software, which gives you, enough ability to utilize the full potential of Smart Sky.

#### 4.2.2.4. Software solution summary

Components needed to fly the drones:

- **Simulator:** Plan and fly “missions” in a simulated environment before performing the same flight with your drone.

  **Price:** 400€.

- **Developer kit**: Equipment of the drones with a motherboard (**programmable plates)** integrated for autopilot flights. Also we need amplifiers and repeaters for the signal.

  In this motherboard you can develop new algorithms or movements in order to create new missions for the drone.

  **Price:** 300-450€.

- **Ground control Station**: Monitor with a Sky View using GPS signal that communicate the control station with the drone. The control station gives the order to the drone for flying according the simulation given and studied before.

  **Price:** 4000€-8000€.

## 4.3. Maintenance plan

To ensure the good condition and availability of the drone fleet we must create a solid maintenance plan. Where we have to divide it in two different categories, scheduled, after show and software maintenance in case of defects or breakage.

### 4.3.1. Scheduled maintenance

This maintenance is performed periodically, independently of the amount of shows performed inside the period of time to do this maintenance. These are the main tasks inside the scheduled maintenance and periodicity:

- Battery: it consists on proving the charging time and electrical continuity, also cleaning the connections. The amount of time spent will be approximately two hours, since it includes the time of charging the battery to check that it charges at a level above 90% and otherwise it will be discarded and replaced.

**Periodicity:** every month all batteries must be proven, to check that there is no loss of capacities on the battery.

**Replacement:** after 800 charging cycles, general status will be checked in order to confirm the battery is OK and checked every week to avoid any fail. If the battery is no longer in good status, a replacement is needed.

- Drone status: visual analysis of the general state of the drone, checking the generators, the structure, and the hardware so be sure that there are no blows or damages caused by falls or logistic problems. Approximately 5 minutes per drone.

  **Periodicity:** monthly while performing battery check.

  **Replacement:** every damaged piece will be immediately replaced. If there is no replacement, the drone will not fly.

- Motor maintenance: it consists on the lubrication of the rotors of the propellers, the cleaning of the drone and a visual inspection of all the elements to make sure that the mechanical part of the drone is correctly. Estimated time of 10 minutes per drone.

  **Periodicity:** every two weeks to prevail the life of these components.

  **Replacement:** every damaged piece will be immediately replaced. If there is no replacement, the drone will not fly.

- Customization check: to ensure that pieces stored in the warehouse are still useful, when they are not used in a certain period of time.

  **Periodicity:** every three months if they have not been inspected before.

  **Replacement:** every damaged piece will be redone.

Finally, check the electrical components, the battery, the charging time and electrical continuity, the connections will be cleaned and lastly the software updates will be installed. This time will be approximately two hours, since it includes the time of charging the battery to check that it charges at a level above 90% and otherwise it will be discarded and replaced.

All this will be carried out in a specific area for maintenance that will be detailed later. Some resources will be allocated to carry out all these tasks at least once a month. And matching the days when the demand for shows is usually less, such as Monday or Tuesday.

### 4.3.2. After show maintenance

After every show, the fleet must be visually controlled to ensure that no piece is damaged. To do so, all drones and complements used in a show will perform this check.

The actions to be done consists on a full visual inspection of the drone, to find if something is wrong. It will take 10 minutes per drone to make sure nothing is about to break or it is overheating.

**Periodicity:** after every show performed.

**Replacement:** if there is something wrong, it will go to the custom checks defined on scheduled maintenance.

### 4.3.3. Software maintenance

Drones will be checked to see there is no software problem, memory will be checked periodically to not saturate the software and updates will be loaded here.

**Periodicity:** every two weeks to prevent software errors.

**Replacement:** if there is something wrong, memory must be formatted and new installed. After this drone must be tested again to see that it works again as it is defined in the software.

# Module 5. Legal plan

## 5.1. Normative

The unmanned aircraft are regulated by AESA (Agencia Estatal de Seguridad Aérea) and as an aircraft, the only responsible for a drone is the owner and therefore it will be he who answers legally. The most important rules to know for flying a drone in Spain are the following:

- Regional authorities have the ability to issue their own drone regulation, so it's a good idea to do local research before flying.
- Currently only drones under 150 kg can be piloted. For this it will be necessary to have the "Drone Pilot Card", where you can obtain a license from AESA or ATO. Liability insurance is required for commercial drone pilots.
- Drone pilots must maintain a distance of 150 meters (492 feet) from buildings, and a distance of 50 meters (164 feet) or more from people not involved in the flight.
- Drones may only be flown during the day. For drones with a take-off weight of less than 2 kilograms (4.4 pounds), flights may also be carried out at night as long as a flight altitude of 50 meters (164 feet) above the ground is not exceeded.
- During the pilot it should be noted that the driver may not exceed 120 meters in height or more than 500 meters away.
- The flight in private enclosures such as industrial or sports pavilions, homes, stadiums, etc. is not subject to the jurisdiction of AESA and is not part of the airspace.
- It is forbidden to fly around populated areas or where airspace is restricted, such as airports. It is necessary to make a series of permits in the area of responsible government.
- Drones must always be flown within the visual line of sight. During flights a second visual observer must monitor the drone with the eye and be in direct contact with the pilot.
- For flights in national parks, you need permission from the AESA. The use of drones in no-fly zones must be approved by the Spanish Ministry of Defence (processing time is approximately one week).

## 5.2. Permission procedure

The Municipal District or the Government Area according to the decrees of delegation of powers in charge is responsible for authorizing the following acts or affectations to the public road derived from them:

- Private acts that have an impact on public roads or spaces, or where more than 5,000 people are expected to attend.
- Public acts that take place on public roads and spaces and their possible affections in the municipal public domain (temporary street occupations, noise, public furniture, use of public services, etc.)
- Acts of a public-private nature understood as those of a private nature in which the City Council participates as a collaborator.

***How to complete the procedure***

- **Online:** making the request through the link "Electronic Registration" available in "Proceed online" (requires identification and electronic signature) in the online offices.
- **In person:** in the municipal registry offices, as well as in the registries of other Public Administrations. They may also be remitted through the other forms provided for in article 16.4 of Law 39/2015, of October 1, on the Common Administrative Procedure of Public Administrations.
- **Time limit to make the request:** 40 days before the start of the act.

***Payment***

Price: It will be subject to those deriving from the private use of the public (use of advertising in public spaces, occupation of public roads and use of public services for their own benefit ...) depending on the characteristics of the act. Reporting the monetary valuation of the same the public prices in force of the corresponding ordinance.

***Documentation***

Application in standardized form, accompanied by the following documentation:

- Authorization of the owner of the land if it is not municipal.
- Proof of payment and civil liability insurance policy covering the damages to people and things during the assembly, realization and disassembly of the event (for example, if it is an advertising event, the minimum amount will be € 600,000 according to article 46 of the Regulatory Ordinance of Outdoor Advertising).
- Name of the act and its description, with the anticipation of affluence.
- Start and end dates of the assembly, of the action and of the disassembly of the facilities.
- Schedule of action during the days of the event.
- Location of the celebration or planned tour.
- Plan or sketch at scale 1/500, or more detail, of the location of the occupation, specifying the area where the act is intended, with the existing urban elements (sidewalks, road, street furniture, grids, manholes, mouths of irrigation, etc.) the

occupied area bounded in square meters, elements or necessary facilities, free space for pedestrians (following the indications of the Regulatory Ordinance of the Signalling and Beaconing of Public Roads Occupations for Realization of Works).

- Characteristics and dimensions of the facilities, if any, (stages, stands, lighting, etc.) with plans and photographs that identify them.
- Fact sheet from the optional management of the assembly and dismantling of all event facilities, if any, signed by a competent qualified technician.
- Plans of the underground facilities (service galleries, sewage system, water or gas pipes, etc.) that could be affected by the installations to be assembled, if they exist.

## 5.3. Insurance requirements

For this section we must distinguish two types of different insurance, one for shows and another for drones. Each one carries a type of associated legislation and depends on how we approach the activity of our company we will need one or other.

### 5.3.1. Drones Insurance

In order to comply all the requirements of the “Real Decreto Ley 8/2014 de 4 Julio 2014”, which regulates the air flights of unmanned aircraft we must have a mandatory civil liability insurance.

This type of liability insurance offers coverage for material damages and personal injuries to third parties arising from the use and professional use of these aerial devices.

According to the law, in the case of remotely piloted aircraft under 25kg, a minimum coverage of 300,000 € is necessary.

There are other optional coverage, such as:

- Coverage to the own drone, in case of loss or damages.
- Radio-electric spectrum.
- Data Protection.
- Cyber-attacks.

Because none of these options are going to be needed, only we need the mandatory civil liability insurance to carry out our service.

Due to the high growth of the drone sector, the big corporate insurance companies have taken out a special division of drones, whose average price fluctuates around 180 €. And they offer to cover the amount required by the law of 300,000 €.

## 5.3.2. Event insurance

The necessary requirements for compulsory insurance contracts for events and shows are the responsibility of each autonomous community and it is regulated by the article 1902 of the Código Civil. As our activity is going to develop mainly in Andalusia we study the regulation that rules, but we compare it with the rest and we observe that the maximum limits of the compensations to pay in case of accident to third parties are very similar.

Regarding the expansion that we have to future years we must take into account a previous study of the sites where we are going to establish but with the previous comparison and since the insurance coverage is national, it will not be a problem.

The insurances of the companies of events and spectacles are forced to fulfil the cover of civil responsibility of exploitation. That will cover the damages caused to third parties by developing the professional activity of your company.

It is also necessary to add liability coverage for work accidents. In the situation that there are employees hired in the workforce if the employees are self-employed or through other companies, this coverage is not necessary.

Another point is the subsidiary civil liability of contractors. So that in the event that in the event other subcontracted companies intervene and their civil liability insurance is not able to cope with the possible damages they cause, this clause would cover the compensation.

Finally, the coverage of the location liability, covering the possible damages caused to enclosure where the event is held.

## 5.3.3. Conclusions

After analysing all the legislative part about civil liability insurance on drones and shows, we can conclude that we will need our own insurance for each drone, as a requirement established by EASA for us to be hired as a company and to obtain permits for fly in the air space.

And on the other hand the civil liability insurance for event organizer that includes the labour insurance of our workers and the damages to third parties.

In the end, the insurances to be hired are:

- For the drones: insurance of Civil Liability of € 300,000 for € 181 per drone with Allianz.
- For the company: with a turnover of less than € 500,000 and Civil Liability of € 1,200,000 for € 1345.43 with Urquía & Bass.

# Module 6. Human Resources plan

Human Resources are the most important value of the company, and a good management plan will lead to the success of this Start-up. This plan will allow coordinating activities and establishing roles and responsibilities during the following years.

Doing this the company will ensure that the appropriate human resources are acquired with the necessary skills, coordinating training if any gaps are identified. Team building strategies are clearly defined, and their activities effectively managed.

## 6.1.1. Company's values

It is relevant, that companies that have the right values in order to maximize the employees engagement, being aligned with the company mission and vision. Regarding to the specialization and skills needed to develop this activity all the staff should follow and understand the company's values.

These values are based on the following points to achieve a successful relation with the customers and an effective way of work within the company:

- Customer orientation: it is strongly important for us to keep the loyalty of customers, as the cost of making one is relatively high. For that reason, all effort will be focused on them, both spectators and promoters. This company is eager to create experiences, that is why the whole crew must foresee needs in market in advance, anticipating any possible change. Customer is studied from their behavior, environment and situation. For that reasons the company model is based on a very close study of the demand and customer.
- Self-Improvement: the philosophy of the company will follow a continuous improvement direction. This is possible if employees are highly motivated and active, creating an environment based on the desire of the customer. To increase collaboration and ideas generation, the company will have a rewarding policy. These rewards can be purely economic or consist benefits to the worker or the whole team.
- Integrity and communication: this business requires that all the staff of the company should follow a strict standard of professionalism. The company will have a clear communication flow in both directions from high levels to lower ones and viceversa. Different meetings will be set in order to explain what the company’s direction is, what the yearly objectives, the strategic plan and next steps are.
- Team work and unselfishness: this will lead to a better coordinated team, with better performance and effectiveness. It consists on the capacity of helping and supporting other areas in order to success together. Promoting this spirit will improve relations and generate a less stressful environment.

- Equality: every person will have the same opportunities without regarding to sex, age, religion or any other condition.
- Courage: the nature of the activity request courage in order to success. Only taking the risk, while controlling it, will make us grow satisfying the company's necessities.
- Self-Discipline: reaching the previous values can only be possible if there is a strict self-discipline, related to compromise and motivation of the whole company.
- Self-satisfaction and visibility: current times are pointing to happiness of employees; this is the superlative goal in any HHRR. This will lead to proud people that can spread the image and the service of the company, focusing on the maximum profit for all.

Fulfilling these values is our formula to create the Start-up we drafted as a small team, in order to grow and evolve in the market, maximizing surviving rates for the following years.

## 6.1.2. Organizational plan & jobs description

The company will follow a matrix organizational structure. A matrix organizational structure is a company structure in which the reporting relationships are set up as a grid, or matrix, rather than in the traditional hierarchy.

Regarding to this, the organization looks as follows:

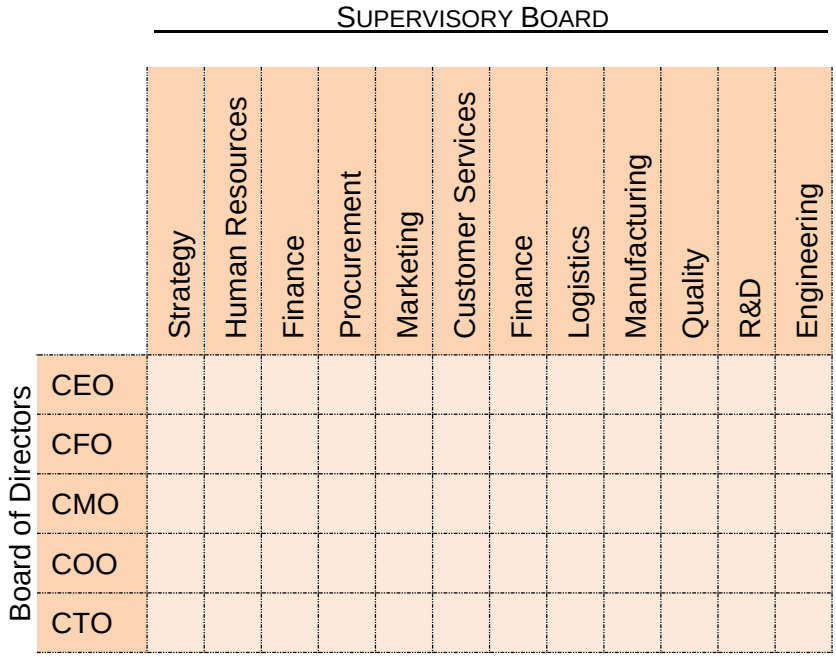



**Figure 6.1: Organizational matrix.**
**Source: Self elaboration.**

The main advantages of using this structure are that:

- Resources can be used efficiently, since experts and equipment can be shared.
- Products and projects are formally coordinated across functional departments.
- Information flows both across and up through the organization.
- Employees are in contact with many colleagues, helping sharing of information and resources.
- There is a sharing self-management, enhancing motivation and decision making

The company is composed by several areas coordinated by the Board of directors. Each of the members of the Board is focused in some specific areas, not missing the others. This will provide transversal positions and collaborative work.

#### 6.1.2.1. Roles and responsibilities

The company is managed by the CEO according with the strategy established with the Board of Directors. Supervisory Board is composed by the main investors in the project, and the board of directors. The power in the decision will be determined by the number of shares owned by contract for each part.

These are the responsibilities of the Board of Directors:

- CEO: Responsible for Strategy and HR
- CFO: Responsible for Finance and Procurement
- CMO: Responsible for Marketing and Customer Services
- COO: Responsible for Logistics, Manufacturing and Quality
- CTO: Responsible for R&D and Engineering

Chief Executive Officer (CEO):

Is the one leading the company according to the strategy and values with the Board of directors and the investors, coordinating all areas to achieve results. Is responsible for the strategy and HR.

The main objectives are:

- Lead the company with the Board of directors.
- Coordinate all the areas and control performance.
- Fulfill investors' requirements and deal with issues.
- Maintain relations with customers.
- Control human resources and hiring process.
- Solve and participate in conflicts.

Accountabilities:

- Report to the Board of Directors and to the investors.
- Ensure that the strategy is clear in all areas.
- Coordinate and control milestones, quality and budget.
- Control and update the objectives, mission and vision in the company.
- Support the strategy plan.
- Prepare and present financial documents with other areas.
- Balance human resources need in all areas.

Profile and competencies:

- Proficient knowledge in Business Administration (MBA is desired)
- 5 to 10 years of experience in different areas.
- International experience.
- Well organized and able to analyze the market.
- Good judgment to make a decision.
- Global vision of the company.
- Negotiation skills.
- Legislation knowledge.
- High communication skills.
- Strong leadership qualities.
- Languages are mandatory.

Chief Marketing Officer (CMO):

Create, keep and improve the relation with the customers, generating a strong client network, at the same time that new potential markets are studied and the marketing plan of the company is defined and performed.

The main objectives are:

- Perform analysis of the market and evolution of it.
- Estimate and ensure sales, pricing and revenues.
- Market research to find the largest customer and negotiation.
- Coordinate with operational plan.
- Supervise the obtaining of the largest amount of contracts and clients
- Determinate customer’s needs and provide the information to operation department
- Keep demand stable

Accountabilities:

- Coordinate areas with the CEO and report to him during monthly meetings.
- Align actions and departments with the whole company.
- Develop market analysis, market validation and demand prediction. Establish the market size and determine price to satisfy customer needs.
- Establish relations with clients and be in charge of the after sales.
- Coordinate sales team and marketing plan to succeed in the market.

Profile and competencies:

- Proficient knowledge in Business Administration (MBA is desired).
- 3-5 years of experience in marketing, sales and customer services.
- Ability to identify and develop business opportunities.
- International experience.
- Well organized and able to analyze the market.
- Customer oriented.
- Negotiation skills.
- High communication skills.
- Languages are mandatory.

Chief Operations Officer (COO):

Coordinates the operative performance of the company and its service regarding to the information and clients that the CMO is generating. Is in charge of optimizing costs and procedures, reaching quality standards and fulfilling customer's expectations.

The main objectives are:

- Coordinate operations and manufacturing areas.
- Align technical strategy with customer needs and strategic goals.
- Supervise performance of time, cost and quality.
- Manage demand variability and human resources needs.
- Generate material needs and create processes and instructions.

Accountabilities:

- Coordinate areas with the CEO and CTO and report them during monthly meetings.
- Align department's goals according to main objectives of the company.
- Continuously control of operational and manufacturing activities.

- Full alignment with the CMO to fulfill customer's needs.
- Optimize costs, quality and time management.
- Estimate material needs and tools.
- Define operational and manufacturing processes and instructions.

Profile and competencies:

- 3-5 years of experience in manufacturing and operations.
- Ability to follow voice of customer to develop the service.
- Proactive and informed of innovation in the sector.
- Well organized and able to analyze technology and processes.
- Team builder.
- Languages are mandatory.

Chief Technology Officer (CTO):

Will manage technical solution to make feasible the idea into reality. Is in charge of coordinating the development of shows with the COO, focusing in the programming of timing and movements on the stage or performing place. Is also in charge of the maintenance and improvement of software.

The main objectives are:

- Create the necessary software to control and perform any show.
- Coordinate the team to customize new shows.
- Find and innovate in technology, controlling and optimizing costs.
- Plan personnel needs to develop each task.
- Coordinate with the COO to perform activities together.

Accountabilities:

- Coordinate areas with the CEO and COO and report them during monthly meetings.
- Align department's goals according to main objectives of the company.
- Continuously control of software and development activities.
- Full alignment with the CMO to fulfill customer's needs.
- Optimize costs, quality and time management.
- Estimate software needs and tools.
- Define software processes and instructions.

Profile and competencies:

- 3-5 years of experience in programming and software development.

- Ability to follow voice of customer to develop the service.
- Proactive and informed of innovation in the sector.
- Well organized and able to analyze technology and processes.
- Team builder.
- Languages are mandatory.

Chief Finance Officer (CFO):

Manages financial issues and coordinates all areas in order to manage budgets needed on all of them. Is in charge of generating financial goals and aligns the actions to reach them. Is also the person who will coordinate actions to find investment.

The main objectives are:

- Secure financial wealthy in the company.
- Coordinate actions to follow financial indicators.
- Find investors, coordinate dividends and communicate with them.
- Compromise liquidity to every area.
- Financial Plan for future investment and expenses.

Accountabilities:

- Coordinate areas with the CEO and report to him during monthly meetings.
- Fix the department’s budgets according to strategic plan of the company.
- Managing cost control and tax payment.
- Perform the closure of the economic year.
- Negotiate the debt and dividends.

Profile and competencies:

- Proficient knowledge in Business Administration (MBA is desired).
- 3-5 years of experience in finance and controlling.
- Legal knowledge to perform closure of the year and taxes payment.
- Global knowledge of all areas and their need.
- Well organized and able to analyze technology and processes.
- Excellent financial and administration skills.

## 6.1.3. Staff planning

Despite the different accountabilities inherent to each of the member of the Direction Board, there are two main areas regarding to the dynamic of the company. The first main area is marketing, focused mainly on sales men that will reach to the customer and will bring contracts and ideas to perform the show. The other area is focused on the operations, referred to the first creation of the software, prototypes and first operating drones and then the working dynamic to perform every customized show for which the customer is asking.

Regarding to that, members will share actions and will coordinate hiring and staff needs. There are two possible scenarios, regarding to the success rate of the first years of the company.

The first scenario, which is the most probable one, is the one where the company is able to grow for the first three years, reaching the Iberian Peninsula and Balearic Islands. In this scenario, personnel needs are the following:

| Sales and marketing | | | | | |
|---|---|---|---|---|---|
| | 1stY | 2ndY | 3rdY | 4thY | 5thY |
| CEO | 1 | 1 | 1 | 1 | 1 |
| CMO | 1 | 1 | 1 | 1 | 1 |
| CFO | 1 | 1 | 1 | 1 | 1 |
| Salesman | | | 2 | 3 | 3 |
| Software development | | | | | |
| CTO | 1 | 1 | 1 | 1 | 1 |
| Programmer | 4 | 2 | 3 | 3 | 3 |
| Drones and hardware | | | | | |
| COO | 1 | 1 | 1 | 1 | 1 |
| Mechanic | 1 | 2 | 3 | 5 | 7 |

**Figure 6.2: Human resources plan on first scenario.**
**Source: Self elaboration.**

The second scenario is the more optimistic one, where the company is able to grow bigger than in the other one for the first three years, reaching the Iberian Peninsula, Balearic Islands, Italy and part of Germany. In this case, personnel needs are the following:

| Sales and marketing | | | | | |
|---|---|---|---|---|---|
| | 1stY | 2ndY | 3rdY | 4thY | 5thY |
| CEO | 1 | 1 | 1 | 1 | 1 |
| CMO | 1 | 1 | 1 | 1 | 1 |
| CFO | 1 | 1 | 1 | 1 | 1 |
| Salesman | | | 2 | 3 | 3 |
| Software development | | | | | |
| CTO | 1 | 1 | 1 | 1 | 1 |
| Programmer 1 | 4 | 2 | 4 | 4 | 4 |
| Drones and hardware | | | | | |
| COO | 1 | 1 | 1 | 1 | 1 |
| Mechanic 1 | 1 | 2 | 4 | 8 | 8 |

**Figure 6.3: Human resources plan on second scenario.**
**Source: Self elaboration.**

Any other scenario worse than the first one will be solved with the same planning and in case it is more successful than the second one, it will be planned again to fit the reality.

#### 6.1.3.1. Contracts and wage policy

As the company is based in Spain, all contracts will follow Spanish legislation, trying to respond to the different temporary needs of the company taking into account the different roles played by each member of the staff and scenarios.

One of the key factors in the company is that customer must be fully understood to fulfil the needs. For that reason, personnel must have a low rotation rate, so the experience in sales will remain and improve over the years. On the other hand development area will have bigger need of resources at the beginning, which could not be necessary in following years and, for that reason, would be readjusted in further time.

The company has the philosophy of generating a feel of belonging to the workers and it will encourage the crew to remain part of the company, due to the environment and wage policy established.

Wage policy is composed by the base salary and, maybe in last years, an annual bonus. This policy of a base salary allows the company to control and understand better the budget that Human Resources will take. In addition to the salary, there will be benefits like flexi-time and medical insurance, as well as lunch and some budget to be used in leisure activities.

| Category | Salary | Pluses | Extra | Type of contract | Working time | IRPF | Conting. |
|---|---|---|---|---|---|---|---|
| Director | 25,000 | 100 | 285 | Permanent | Full-time | 12.00% | 0.50% |
| Software | 22,000 | 100 | 251 | Permanent | Full-time | 12.00% | 0.50% |
| Mechanic | 22,000 | 100 | 251 | Permanent | Full-time | 12.00% | 0.50% |
| Sales | 22,000 | 100 | 251 | Permanent | Full-time | 12.00% | 0.50% |

**Figure 6.4: Wage structure.**
**Source: Self elaboration.**

Base salary: it is calculated based on the sector and the level of region, paid in 14 times along the year, one per month plus extra payment in June and December. It is paid within the first three days of the following month and is a yearly fix quantity, established at the signature of the contract and revised every other year.

Benefits: this part of the wage is divided into different concepts.

- Flexi time and home office: where workers can come from 7 to 9 to the office and can also work from outside of the office.
- Medical benefits: each employee will have insurance in Mapfre, where the employee and children can take profit from the service provided by the company. It includes a complete medical service with all the benefits including dental coverage.
- Other benefits: Those are mainly focused on lunch expenses and outdoor activities such as renting a house or a car, gym or education for the employee or the family.

## 6.1.4. Other human resources policies

Additionally, there are another actions that are mandatory for the correct development of the job position.

### 6.1.4.1. Training

This will vary depending on the main area of working for each of the staff:

Sales crew: there are mainly three courses based on negotiation, compliance and drone spectacles. Negotiation course is focused on strategy and communication skills in order to succeed during meetings with customer. Compliance is necessary to work in an ethical environment, as these people could be more in contact with wrong practices. Finally the drone course is focused on explaining what is the exact idea and service that the company is providing, in order to make more effective presentations and adapt better the customer needs with our service.

Technical development crew: this could vary depending on the technology used in further development. Mainly there are programming courses, one about code and compiling of the software and the other one to simulate routes and movements to

design the show in the workshop. Additionally, there will be a course to show the basic knowledge of flying drones.

Operational crew: they will be educated in modeling, 3D printing and drone control. First they will get education in modeling software and how to print and finish these models. In addition, as they must take part on the show performance, so they will have knowledge on safety and control of drones in standard and emergency cases.

#### 6.1.4.2. Recruitment

This company is based in the integrity instructions that are described in the Universal Declaration of Human Rights, where everyone is candidate to join our team.

These are the profiles requested:


## Description

Firefly is looking for sales crew to lead its sales efforts. The ideal candidate will be an experienced professional with a track record of developing and growing high performing teams. S/he will oversee Firefly's commercial strategy, including sales and key account management. With a deep appreciation of the customer's perspective, this individual will identify appropriate strategies, tactics, and KPI's to ensure organizational revenue goals and objectives are achieved, with a willingness to travel.

## Responsibilities

- Develop and implement Firefly's overall sales strategy.
- Establish partnership strategies and lead their execution.
- Have an in-depth understanding of current and future business drivers and barriers.
- Represent the company externally and lead sales negotiations.
- Represents the voice of the customer internally to facilitate internal prioritization of product development.
- Establish and improve processes between sales and internal stakeholders including marketing, product development, and finance.
- Build effective customer relationships and drive development of new sales approaches for prospective customers for all geographies.
- Forecast overall sales revenue and manage the sales team pipeline.

## Qualifications

- At least 3 years of experience in international business-to-business sales.
- Data-driven decision maker with established analytical skills.
- Strong ability to think strategically, ability to pivot mindset as company expands.
- Excellent oral and written communication skills.
- Excellent presentation and persuasion / negotiation skills – high emotional intelligence required.
- Experience in Firefly's target markets in the live events industry is a plus.
- Experience growing revenue in a fast-moving startup is a plus.

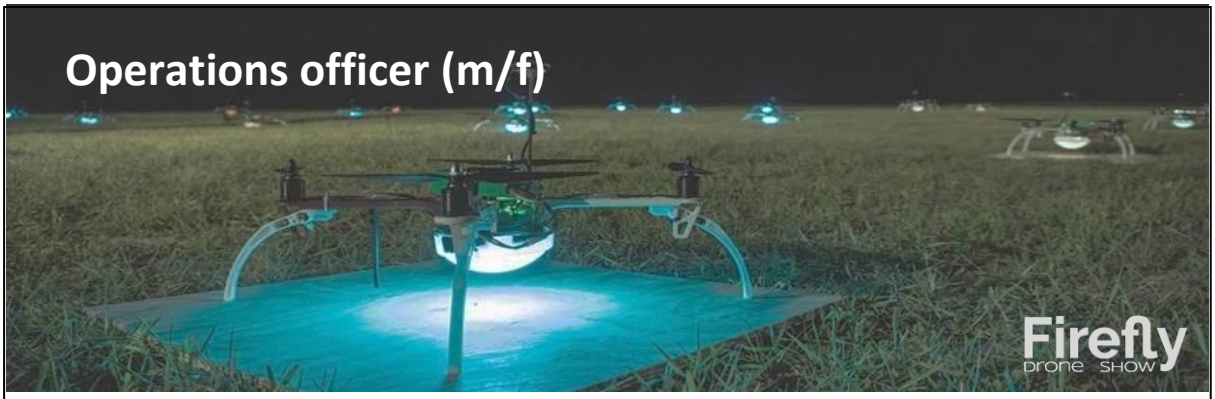
## Benefits

- Leadership position.
- Stimulating environment, work cross-functionally on challenging problems with a highly skilled team.
- Opportunity to create and shape the environment as the company grows.
- Competitive compensation.

## How to apply

Please apply below including
- Cover letter.
- Resume/CV.
- Recommendation letters.

**Figure 6.5: Sales officer job offer.**
**Source: Self elaboration.**




## Description

Firefly is seeking to complement our team with a highly skilled Mechanical Engineer, who will help design and develop the mechanical components and systems of our exciting flying machines seen in drone shows by millions. You will work closely with our customer-facing teams to develop and refine requirements, and then drive your designs through the full product development cycle to manufacturing release.

## Responsibilities

- Design of parts and assemblies for flying machines and support equipment.
- Evaluate design concepts in simulation, experiments, and prototypes.
- Interface with suppliers for prototypes, new processes, and manufacturing quality.
- Lead product development through all phases of the development lifecycle and production.
- Establish quality control and testing procedures for prototypes and parts.
- Work with manufacturing engineering for new product introductions and process improvements.
- Collaborate closely on designs with electrical, controls, and manufacturing engineers.
- Failure analysis and root cause investigation of production and field failures.

## Qualifications

- Degree in Mechanical Engineering.
- Minimum 3 years work experience in product development.
- Strong CAD skills (preferably SolidWorks).
- Experience in component design and FEM analysis.
- Strong knowledge of fabrication methods, including plastic molding, sheet metal, milling, SLS, and FDM.
- Experience sourcing parts for prototypes and working with suppliers required.

## Benefits

- Work in an interdisciplinary, international team of highly skilled people.
- Create ground-breaking systems, used by some of the world's most prominent stage productions.
- Shape the culture and have a significant impact in a rapidly growing young company.

## How to apply

Please apply below including
- Cover letter.
- Resume/CV.
- Recommendation letters.

**Figure 6.6: Operations officer job offer.**
**Source: Self elaboration.**


### Description

To complement its growing team, Firefly is looking for a talented graduate software developer capable of developing and maintaining modern software for Firefly. The successful candidate will have a proven track record in designing and developing applications.

Our software team works on a multitude of challenging and interesting tasks, such as implementing drivers for proprietary embedded platform, defining robust and efficient communication protocols, designing algorithms to retrieve, process, and analyze significant amount of data, and implementing graphical user interfaces for control stations.

### Responsibilities

- Develop modern software; create highly robust and efficient solutions for advanced robotic systems.
- Participate in the full software life cycle, including design, implementation and deployment.
- Co-operate with embedded engineers to develop efficient embedded applications.
- Assure high quality and efficiency of your code with unit testing and code reviews.

### Qualifications

- University degree in a relevant field.
- Excellent knowledge of C++ and STL.
- Solid knowledge of software engineering.
- In-depth understanding of algorithms and data structures.
- Experience in Python and C++11/14 is a plus.
- Creative approach to problem solving.
- Excellent team player and self-driven.
- Good written and spoken English language skills.

### Benefits

- Work in an interdisciplinary, international team of highly skilled people.
- Create ground-breaking technology for some of the world's most prominent stage productions.
- Shape the culture and have a significant impact in a rapidly growing young company.

### How to apply

Please apply below including
- Cover letter.
- Resume/CV.
- Recommendation letters.

**Figure 6.7: Software developer job offer.**
**Source: Self elaboration.**

#### 6.1.4.3. Functional subcontracting plan

In case there is an extraordinary need of personnel, this option could be feasible. In any other case, the company would like to retain talent and not vary the team very often.

# Module 7. Financial plan

## 7.1. Introduction

The financial plan includes all the information about the economic viability of the company, the financial objectives and the sales provision for the first 5 years of the forecast.

In Spain and in most developed countries in the world, cultural events as concerts, theatres representations or festivals have a high importance in the public expenditure. This quantity is even more elevated in big cities as Seville, Madrid or Barcelona.

In the technological change that the world is undergoing nowadays, an innovative company as Firefly will be very well accepted in the spectacles world. More and more, people are demanding different and innovative experiences, and Firefly can introduce a high innovative component in theatres, festivals, dance spectacles and shows in general.

In this part we also analyse different scenarios that will be explained later where the non-expansion one could be also attractive for investors.

### 7.1.1. Revenues streams

The only source of revenues will be the sales of our products. From the beginning of the activity of the company we are offering two types of product: shows in the inside and on the outside.

The main differences between these two products is the drone used for its representation and, noticeably, the costs and the final price are going to be different. To have two different products will allow us to eliminate the seasonality that could have our outside show.

## 7.2. Financial goals and hypothesis

Financial Goals and hypothesis:

- To have more than 50% of the shares of the company in order to have the control of the important decisions.
- To demonstrate the project viability for different scenarios with optimistic and pessimistic predictions.
- A business model with two types of products that allows our company to have different sources of revenues

In order to secure the financial health of our company and to attract investors we've fixed some objectives related to our financial ratios:

- Minimum IRR of 20% at the end of the 5 years.
- A Payback around 2,5-3,5 years to reduce risk.

# 7.3. Financial sources – Equity

The initial investment will determinate the shares distribution of the company. As explained in the previous part, one of our objectives is to have more than 39% of the company shares and in this financial plan we will have 61%.

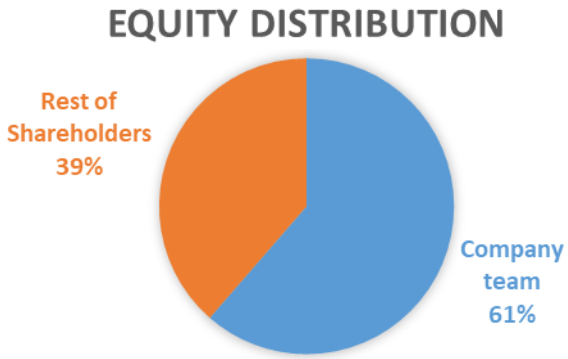



**Figure 7.1: Shareholders distribution.**
**Source: Self elaboration.**

To achieve this objective, we will have the distribution explained below.

## 7.3.1. Self-financing

The first source of founding is the team members. Each one will put 32K€ in the project, so the total quantity will be 160 K€ and this is the 61% of the Equity. This is an important thing to have others investors because we're showing that we believe in our project.

## 7.3.2. External financing

### 7.3.2.1. Family investment

This one is going to be a little part of the shares. We expected to have 36K€ from that source that represents only 10% of the shares of the company, but will be also an important part of our financing project. As it is complicated to have investors from outside of the company, we can start with the founding that team members and his Family are investing in the company. As well as this source allows us to start with the project even before to have others investments, it will be interesting to attract others investors as we've achieved at least to have other source of investment than the founder's firs investment. In exchange of that investment, we're offering our family investors the proportional part of the shares of the company.

### 7.3.2.2. Crowdfunding

We've decided to have a part of the financial sources coming from other companies that will be our first customers. This part is very attractive to investors because with it we've validated our market and we have an early adopter. The quantity that we predict to have from this part is 60K€, representing 17% of the equity. In exchange of this founding we're offering representations for free to that early adopter company.

### 7.3.2.3. Business Angels

Finally, we are going to look for a BA founding. BA are persons (normally business persons) that invest part of his capital to the entrepreneurs that wants to set up a company. Its main objective is to have an important return of this investment and to have a short payback period. For this source of financing that is the most complicated, we have some key conditions:

- An IRR between 30 and 50% in the non-expansion and the expansion scenario respectively.
- A PayBack period between 2,6 and 2,9 years in the non-expansion and the expansion scenario respectively.

The quantity that we expect to have from the Business Angels is 102K€ and it represents 28% of the equity.

To achieve this objective, we need to go toward the Business Angels associations in order to present them our project. We expect that those business Angels associations will allows us to create our network and to, finally, have the investment that we need from this source to start with our development activities. Some examples of this associations are:

- **AABAN or "Asociación de Busines Angels Networks de Andalucía":** AABAN is an association of Business Angels from Andalucía that dynamize the company creation through the private investors (the Business Angels).
- **AEBAN:** The AEBAN association has the same principal activity as AABAN that is to promote the Business Angels activities in our country. AEBAN associates an amount of 35 Business Angels network that, at the same time, associates 2000 investors who the last year invest 40M€ in new companies.
- **InnoBAN:** Is another association that has more than 150 business Angels and had already mobilize more than 3M€. This one is a member of the EBAN (European Trade Association for Business Angels).

To sum up, after those different investment phases, the equity distribution will be as follows:

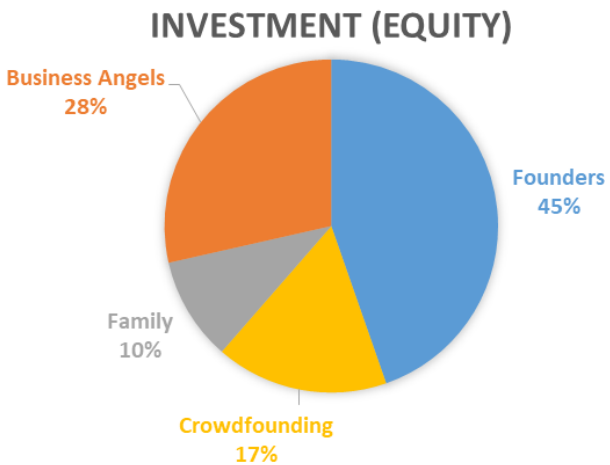



**Figure 7.2: Investment structure for equity part.**
**Source: Self elaboration.**

# 7.4. Financial sources – Debt

The last part of the initial investment will be a bank loan. This one will be much important the first year and allows us to decrease the initial investment needed from equity.

The loan for the first year will be 110K€ and it represents the 23% of the initial investment. With this last part of the financing of the project, the total financing will be composed as shows the following picture:

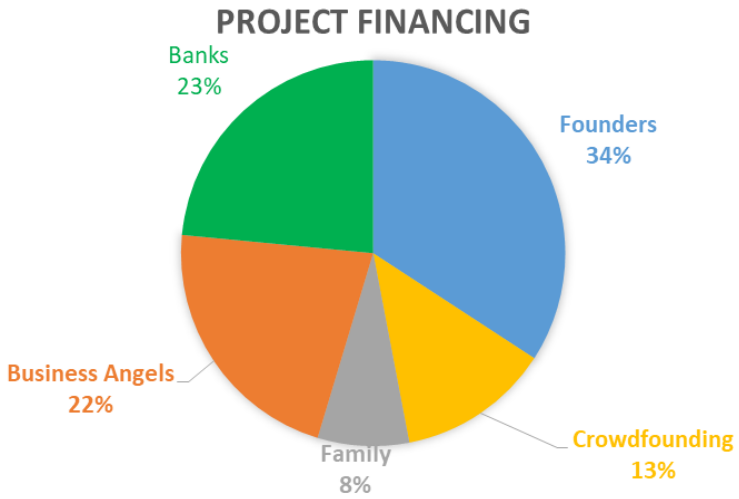



**Figure 7.3: Financing structure for the project.**
**Source: Self elaboration.**

This will be signed with Banco de Santander at a rate of 6,5%

# 7.5. Financial assumptions

## 7.5.1. Scenario definition

After doing an analysis in the available market in Spain (our first place) we can define two possible scenarios based in the sales growth. In both scenarios we assume that there is a minimum of sales that we're going to achieve. These two scenarios will be differentiated principally in the expansion or not expansion of the company in the third year:

- **Expansion Scenario:** In the Expansion scenario we assume that sales are enough to invest in another location (Barcelona) and to duplicate the numbers of drones that we're operating. In consequence of that, fixed costs are going to be increased due to the location fees and the extra personnel that we're hiring.
- **No expansion scenario:** In the no expansion scenario, we assume that sales in the second and the third year don't allow us to go to another emplacement. In consequence, we're reducing fixed costs in the following years but we keep investing in the company in order to can expand it in the future.

### 7.5.2. Costs breakdown

The first analysis of each scenario will be a cost breakdown. In this one we will include separately the different costs that we're going to have during the 5 forecasted years as follows:

- **COGS:** Includes the costs that are directly associated to our sales volume.
- **Leasing:** We do not expect at the beginning to invest in buildings, furniture and other assets needed for the activity of the company. This decision force us to have costs from leasing but it eliminates some risks.
- **Fixed Costs:** Those are costs related to the company principal activity and they are no related with the sales volume. It includes salaries, marketing costs and assurance costs.
- **Depreciation:** The depreciation of the drones that we are buying the first year will be a 10 years depreciation according to the law.
- **Interests:** Due to the bank loan that we have for the initial investment we need to pay interests. The interest tax has been established according to an average interest tax for new companies that is 6,5%.
- **Taxes:** Taxes are fixed by the authorities and the amount of taxes to pay must be 25% of the "pre-tax profit".

### 7.5.3. Sales forecast

The sales of Firefly depend on the number of drones and locations that we have. The more we have drones, more capacity to do shows we have. Sales forecast has been calculated from the part of the market share that we will have.

We also have in mind to do our sales forecast the available market that we have and our goal to have a piece of this market.

### 7.5.4. Bank debt

As explained before, we will have an initial bank loan of 110K€. This bank loan will represent a 66% of our liabilities in the first year and a leverage ratio of 73%.

Our objective is to decrease this part of debt until have about 15% of our equity of bank debt, what represents a leverage of 30%.

### 7.5.5. Company ratios

In this part we analyse the main financial ratios that allows us to evaluate the evolution of the company in the following 5 years. The ratios that are going to be analysed are:

- **EBIT**: Is an indicator of a company's profitability. It is referred also as profit before interest and taxes, what is synonymous of operating profit. EBIT focuses only on a company's ability to generate earnings from operations.
- **ROE:** This ratio can tell us the financial performance of the company. In technological companies, ROE can be elevated.

- **Cash:** The total cash at the end of a period can shows if a company have enough resources or not. As we've decided that cash ratio need to be 35% for each year, cash flow will be always according to liabilities.
- **IRR**: It should be around 30% for all the investors together. Due to the fact that Business Angels look for a project that provide a higher IRR, we start giving them dividends before and the final IRR for those investors will be 50% of his investment, which is a very attractive one.
- **Payback:** The length of time required to recover the cost of the investment is an important determinant of whether to invest on the business. Longer payback periods make the investment not desirable, so from this point of view Firefly will try to generate dividends from the second year
- **Dividends**: In our financial plan we expect to give dividends to our investors from the second year. The amount of dividends that we're going to distribute will increase year by year.

# 7.6. Financial scenarios

In this chapter we're going to analyse two possible scenarios as explained before in this report: a non-expansion scenario and an expansion scenario.

## 7.6.1. No expansion scenario

### 7.6.1.1. Profit and loss account

The Profit and Loss account of Firefly's financial forecast summarizes the revenues, costs and expenses for a medium term. The expected results for the non-expansion scenario are:

| Period | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Revenues | 123,56 | 947,76 | 1 305,07 | 1 663,96 | 1 849,99 |
| COGS | 44,97 | 344,94 | 474,98 | 605,60 | 673,30 |
| **Gross Margin** | **78,59** | **602,82** | **830,09** | **1 058,36** | **1 176,69** |
| Fixed Costs | 453,16 | 450,08 | 491,99 | 602,36 | 709,91 |
| **EBITDA** | **(374,57)** | **152,74** | **338,10** | **456,01** | **466,78** |
| Depreciation | 20,00 | 25,49 | 39,15 | 49,53 | 58,50 |
| **EBIT** | **(394,57)** | **127,25** | **298,95** | **406,47** | **408,28** |
| Interests | 7,15 | 6,94 | 6,32 | 5,63 | 5,03 |
| **Pretax Profit** | **(401,72)** | **120,32** | **292,63** | **400,84** | **403,25** |
| Taxes | (100,43) | 30,08 | 73,16 | 100,21 | 100,81 |
| **Earnings** | **(301,29)** | **90,24** | **219,47** | **300,63** | **302,44** |
| Less preferred dividends | | | | | |
| **Retained Earnings** | **(301,29)** | **90,24** | **219,47** | **300,63** | **302,44** |

**Figure 7.4: No expansion - profit and loss account.**
**Source: Self elaboration.**

It is important to highlight that the first year (2019) we expect to start our activity at the end of the year, and that's the reason for why we do not have so much revenues.

#### 7.6.1.2. Balance Sheet

The balance sheet shows Firefly assets, liabilities and shareholder's equity at a specific moment in the time. We can understand the company situation at that moment and the evolution through the 5 forecasted years:

| Period | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Fixed Assets | 200,00 | 254,90 | 391,54 | 495,35 | 584,99 |
| Accumulated Depreciation | 20,00 | 45,49 | 84,64 | 134,18 | 192,68 |
| **Non-current Assets** | **180,00** | **209,41** | **306,90** | **361,17** | **392,31** |
| Inventory | 0,86 | 6,62 | 9,11 | 11,61 | 12,91 |
| Receibables | 10,16 | 77,90 | 107,27 | 136,76 | 152,05 |
| Cash | 16,90 | 25,36 | 30,08 | 36,77 | 41,60 |
| **Current Assets** | **27,91** | **109,87** | **146,46** | **185,15** | **206,56** |
| **Total Assets** | **207,91** | **319,28** | **453,36** | **546,32** | **598,88** |
| Shareholders | 358,26 | 56,97 | 57,21 | 59,73 | 105,35 |
| Retained Earnings | (301,29) | 90,24 | 219,47 | 300,63 | 302,44 |
| **Equity (Net Work)** | **56,97** | **147,21** | **276,68** | **360,35** | **407,79** |
| **Non-current Liabilities** | 102,67 | 99,61 | 90,72 | 80,90 | 72,24 |
| Notes Payables | 7,33 | 7,12 | 6,48 | 5,78 | 5,16 |
| Accounts payables | 3,70 | 28,35 | 39,04 | 49,78 | 55,34 |
| Accrued Account | 37,25 | 36,99 | 40,44 | 49,51 | 58,35 |
| **Current liabilities** | **48,28** | **72,46** | **85,96** | **105,06** | **118,85** |
| **Equity and Liabilities** | **207,91** | **319,28** | **453,36** | **546,32** | **598,88** |

**Figure 7.5: No expansion - balance sheet.**
**Source: Self elaboration.**

### 7.6.1.3. Cost breakdown

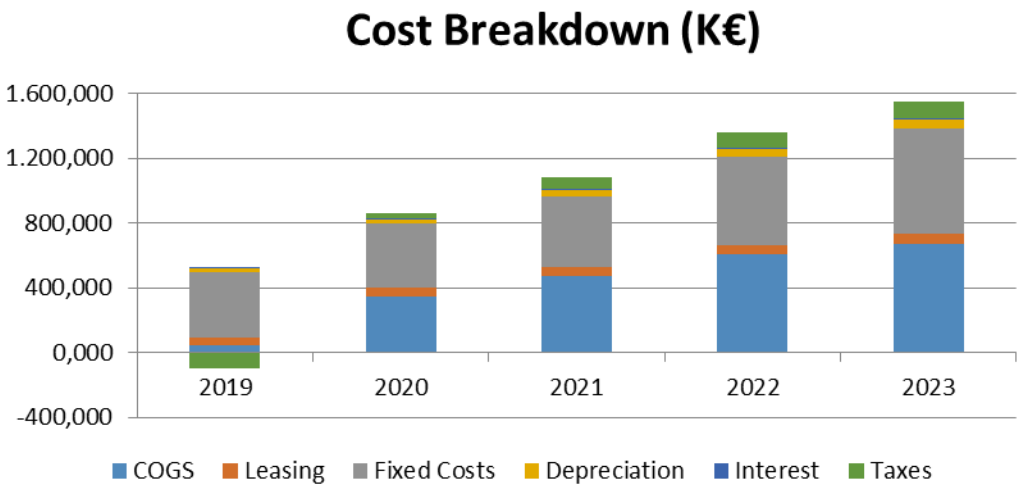



**Figure 7.6: No expansion - cost breakdown per year.**
**Source: Self elaboration.**

### 7.6.1.4. Sales forecast

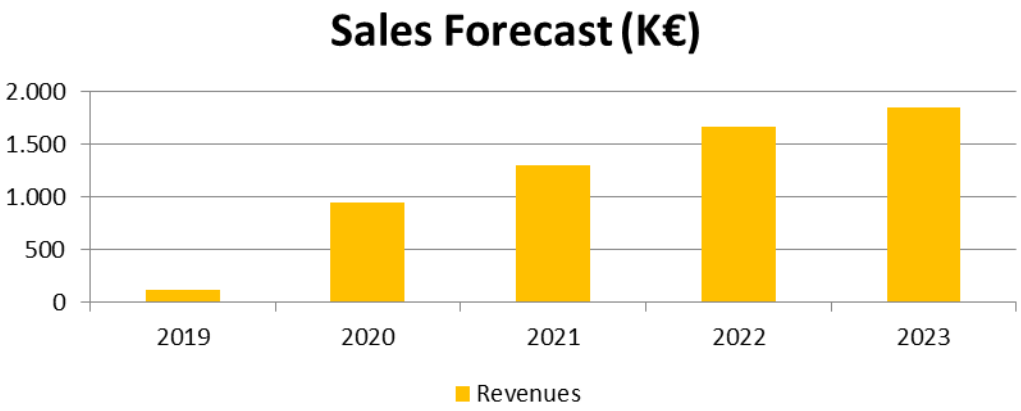



**Figure 7.7: No expansion - sales forecast in thousand Euros per year.**
**Source: Self elaboration.**

### 7.6.1.5. Financing

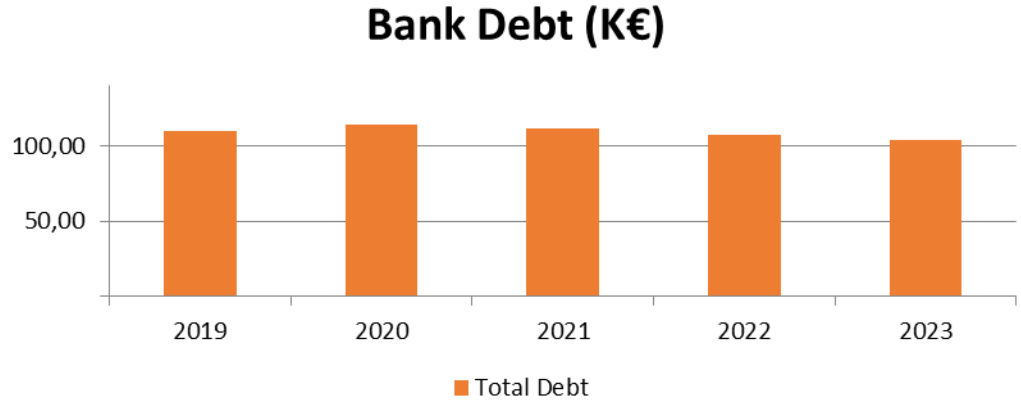



**Figure 7.8: No expansion - bank Debt in thousand Euros per year.**
**Source: Self elaboration.**

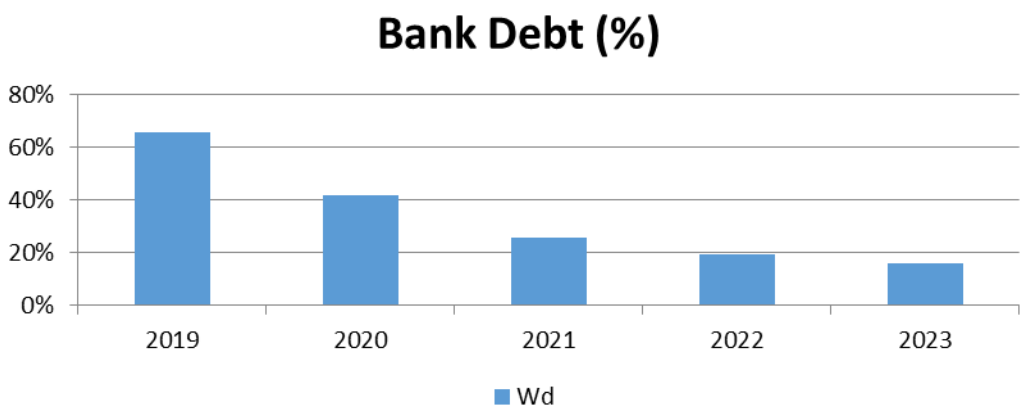



**Figure 7.9: No expansion - percentage of bank debt per year.**
**Source: Self elaboration.**

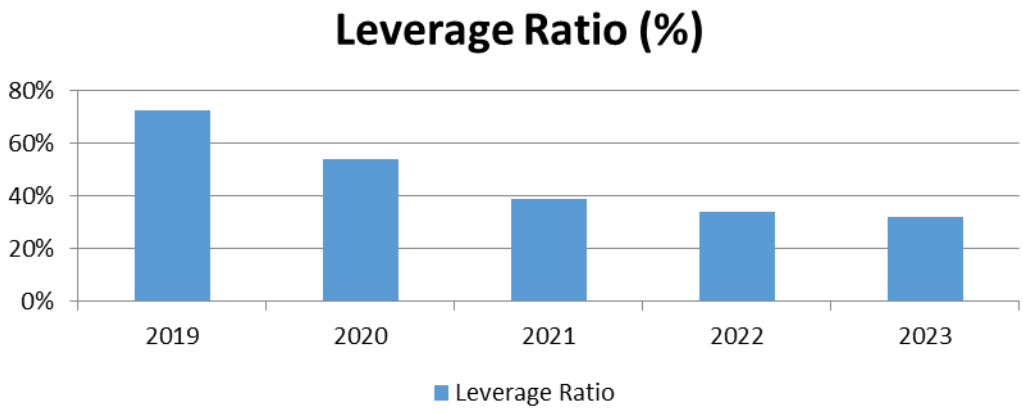



**Figure 7.10: No expansion - percentage of leverage ratio per year.**
**Source: Self elaboration.**

### 7.6.1.6. Company ratios

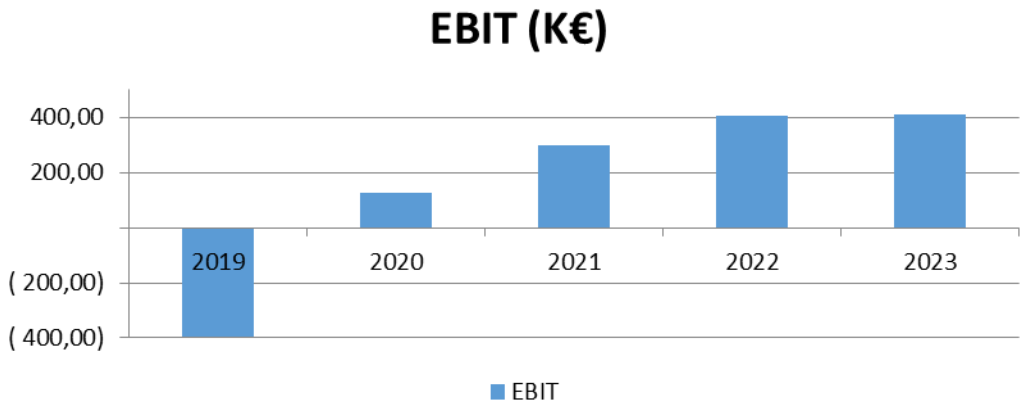



**Figure 7.11: No expansion - EBIT per year.**
**Source: Self elaboration.**

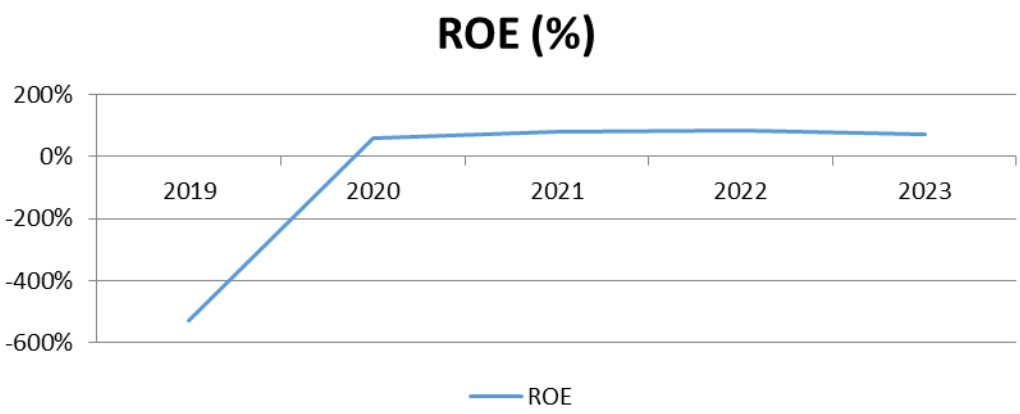



**Figure 7.12: No expansion – ROE in percentage per year.**
**Source: Self elaboration.**

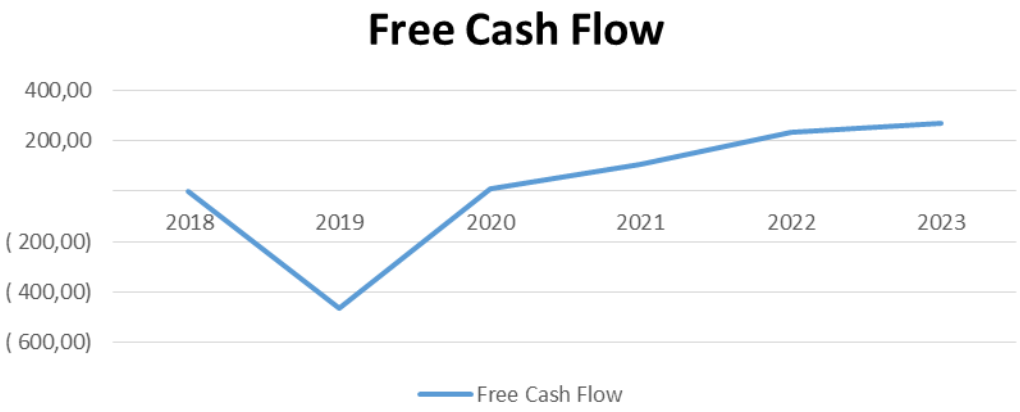



**Figure 7.13: No expansion – free cash flow in thousand Euros per year.**
**Source: Self elaboration.**

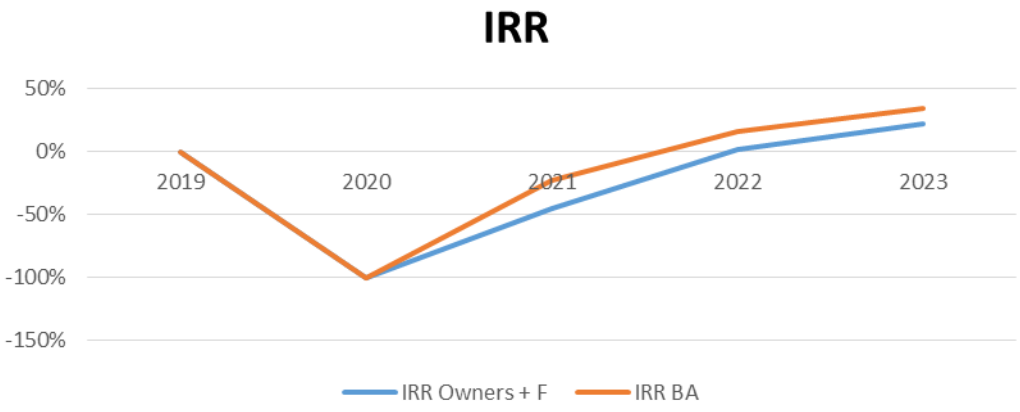



**Figure 7.14: No expansion – IRR per year.**
**Source: Self elaboration.**

#### 7.6.1.7. Investment and dividends

In this scenario we start giving dividends in the second year of sales as explained before, we see that the quantity of dividends are calculated accordingly to the initial investment volume. However, we start giving more dividends to the Business Angels in order to cover the objective to offer a payback period lower than 3 years

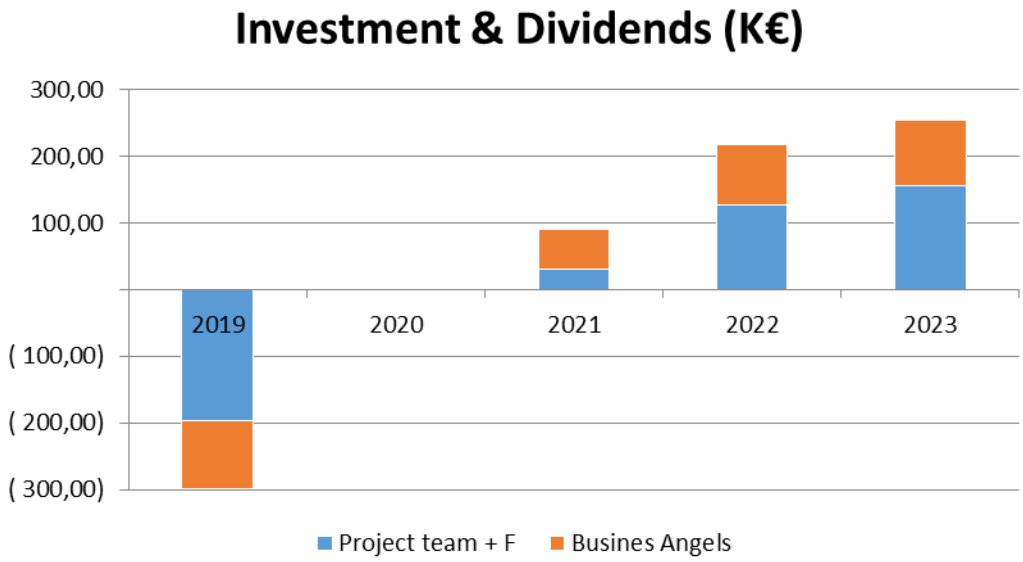



**Figure 7.15: No expansion - Investment and dividends in thousand Euros per year. Source: Self elaboration.**

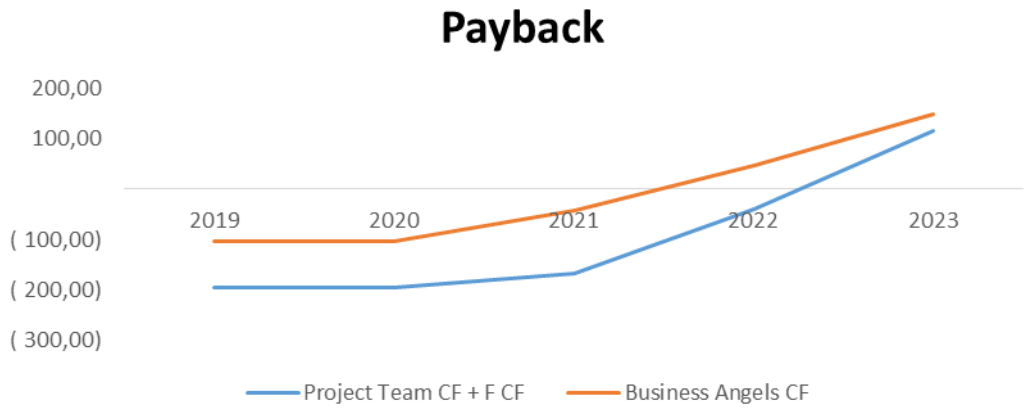



**Figure 7.16: No expansion - Payback in thousand Euros per year. Source: Self elaboration.**

## 7.6.2. Expansion scenario

In this section, as in the non-expansion scenario, we're going to analyse different parts and ratios of our financial forecast in others conditions.

### 7.6.2.1. Profit and Loss account

| Period | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Revenues | 123,56 | 1 109,08 | 1 583,77 | 2 180,85 | 2 446,92 |
| COGS | 44,97 | 403,65 | 576,41 | 793,72 | 890,55 |
| **Gross Margin** | **78,59** | **705,43** | **1 007,36** | **1 387,13** | **1 556,36** |
| Fixed Costs | 453,16 | 450,08 | 674,76 | 847,90 | 857,63 |
| **EBITDA** | **(374,57)** | **255,35** | **332,60** | **539,23** | **698,74** |
| Depreciation | 20,00 | 28,00 | 43,00 | 55,00 | 67,00 |
| **EBIT** | **(394,57)** | **227,35** | **289,60** | **484,23** | **631,74** |
| Interests | 7,15 | 7,20 | 6,62 | 5,98 | 5,46 |
| **Pretax Profit** | **(401,72)** | **220,15** | **282,98** | **478,25** | **626,27** |
| Taxes | (100,43) | 55,04 | 70,75 | 119,56 | 156,57 |
| **Earnings** | **(301,29)** | **165,11** | **212,24** | **358,69** | **469,71** |
| Less preferred dividends | | | | | |
| **Retained Earnings** | **(301,29)** | **165,11** | **212,24** | **358,69** | **469,71** |

**Figure 7.17: Expansion - profit and loss account.**
**Source: Self elaboration.**

### 7.6.2.2. Balance sheet

| Period | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Fixed Assets | 200,00 | 280,00 | 430,00 | 550,00 | 670,00 |
| Accumulated Depreciation | 20,00 | 48,00 | 91,00 | 146,00 | 213,00 |
| **Non-current Assets** | **180,00** | **232,00** | **339,00** | **404,00** | **457,00** |
| Inventory | 0,86 | 7,74 | 11,05 | 15,22 | 17,08 |
| Receibables | 10,16 | 91,16 | 130,17 | 179,25 | 201,12 |
| Cash | 16,90 | 27,15 | 38,37 | 49,37 | 52,25 |
| **Current Assets** | **27,91** | **126,04** | **179,60** | **243,84** | **270,45** |
| **Total Assets** | **207,91** | **358,04** | **518,60** | **647,84** | **727,45** |
| Shareholders | 358,26 | 11,95 | 101,70 | 62,27 | 30,01 |
| Retained Earnings | (301,29) | 165,11 | 212,24 | 358,69 | 469,71 |
| **Equity (Net Work)** | **56,97** | **177,06** | **313,94** | **420,96** | **499,71** |
| **Non-current Liabilities** | 102,67 | 103,43 | 95,03 | 85,82 | 78,44 |
| Notes Payables | 7,33 | 7,39 | 6,79 | 6,13 | 5,60 |
| Accounts payables | 3,70 | 33,18 | 47,38 | 65,24 | 73,20 |
| Accrued Account | 37,25 | 36,99 | 55,46 | 69,69 | 70,49 |
| **Current liabilities** | **48,28** | **77,56** | **109,62** | **141,06** | **149,29** |
| **Equity and Liabilities** | **207,91** | **358,04** | **518,60** | **647,84** | **727,45** |

**Figure 7.18: No expansion - balance sheet.**
**Source: Self elaboration.**

### 7.6.2.3. Cost breakdown

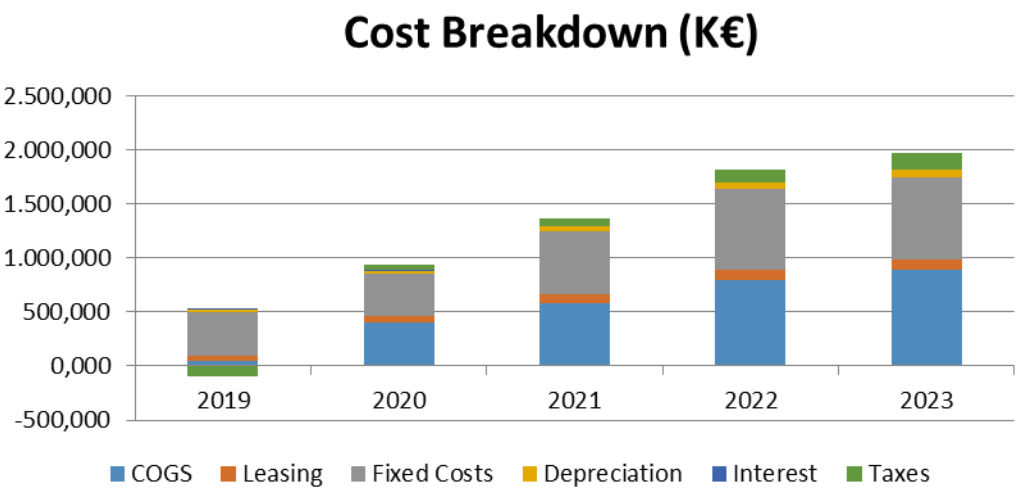



**Figure 7.19: Expansion - cost breakdown per year.**
**Source: Self elaboration.**

### 7.6.2.4. Sales forecast

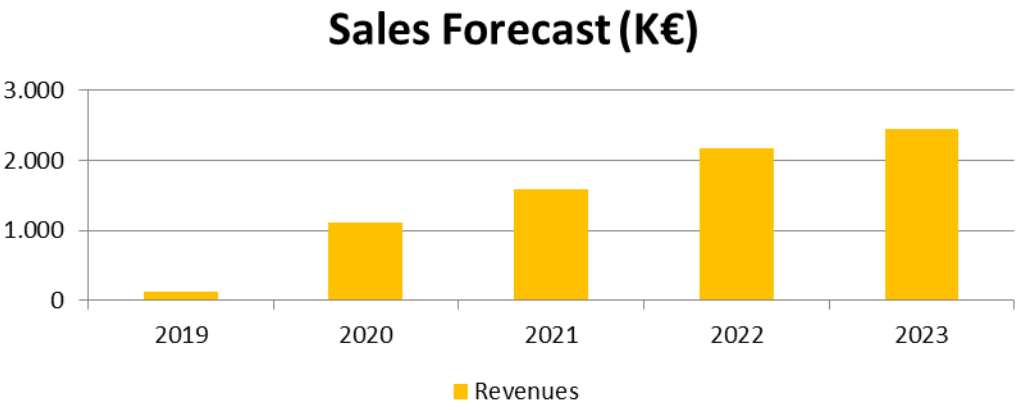



**Figure 7.20: Expansion - sales forecast in thousand Euros per year.**
**Source: Self elaboration.**

### 7.6.2.5. Financing

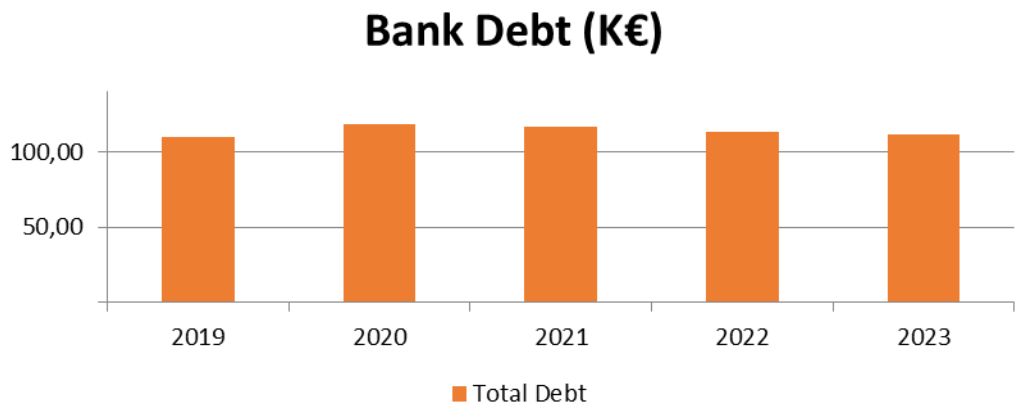



**Figure 7.21: Expansion - bank Debt in thousand Euros per year.**
**Source: Self elaboration.**

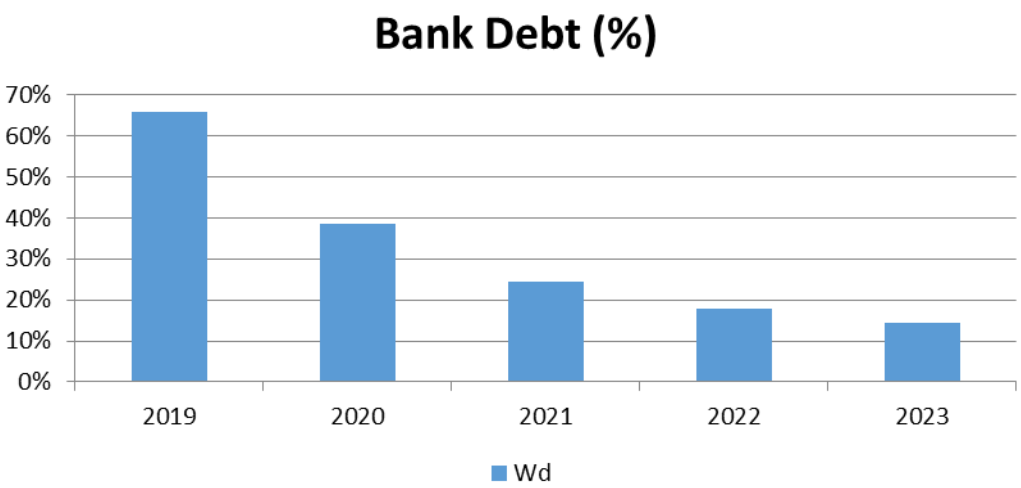



**Figure 7.22: Expansion - percentage of bank debt per year.**
**Source: Self elaboration.**

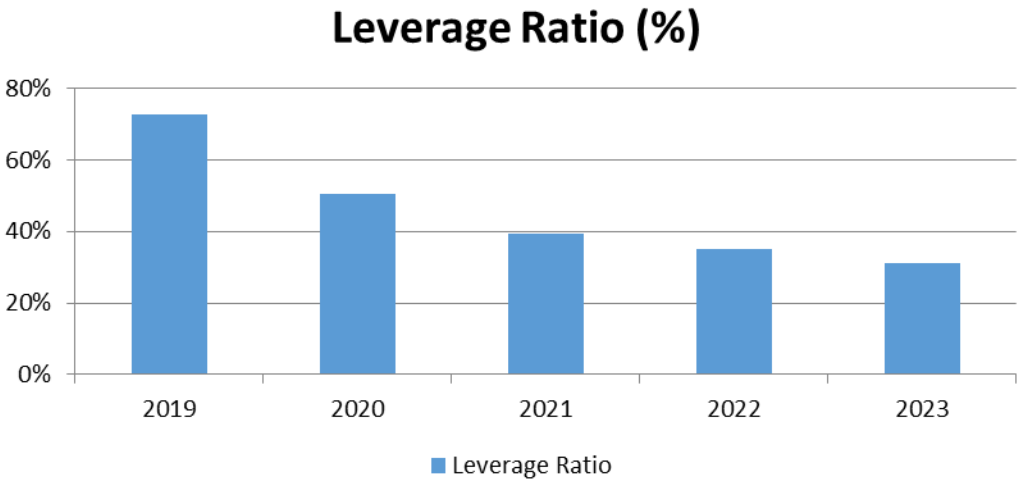



**Figure 7.23: Expansion - percentage of leverage ratio per year.**
**Source: Self elaboration.**

### 7.6.2.6. Company ratios

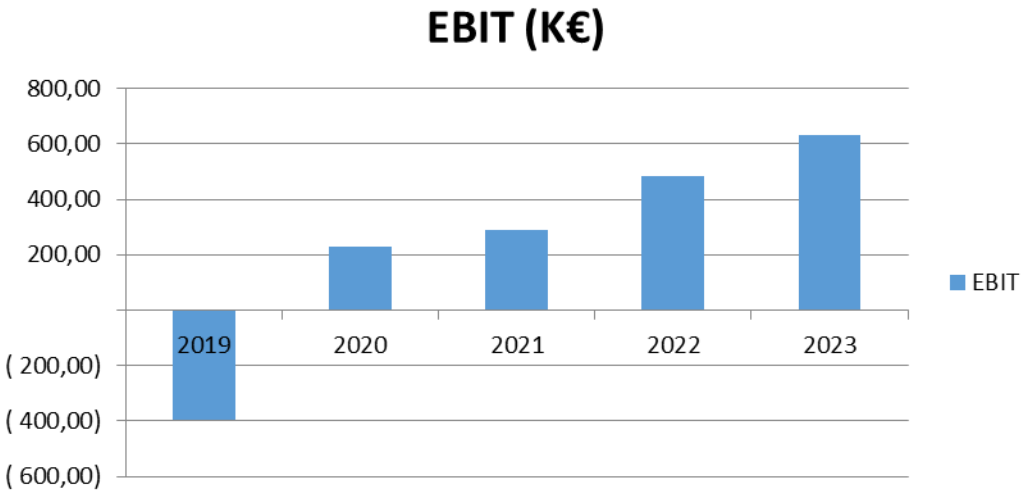



**Figure 7.24: Expansion - EBIT per year.**
**Source: Self elaboration.**

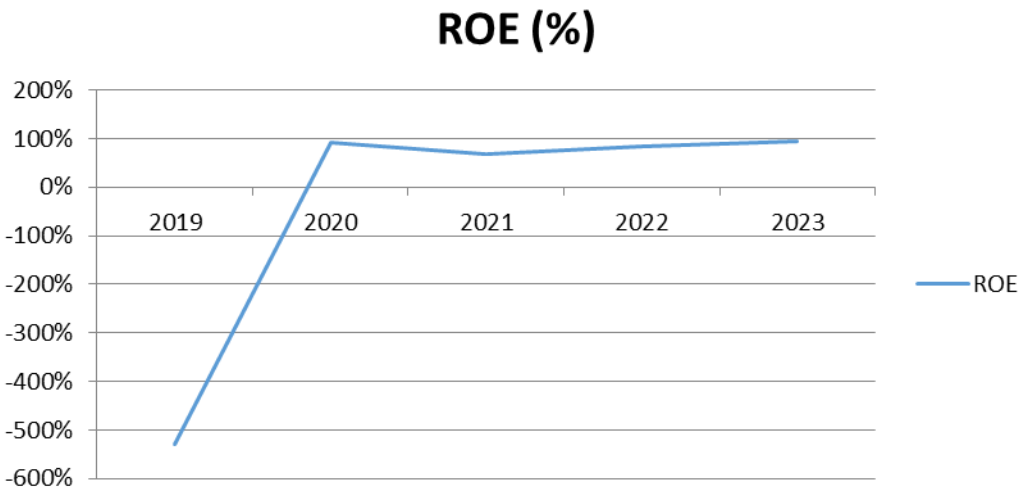



**Figure 7.25: Expansion – ROE in percentage per year.**
**Source: Self elaboration.**

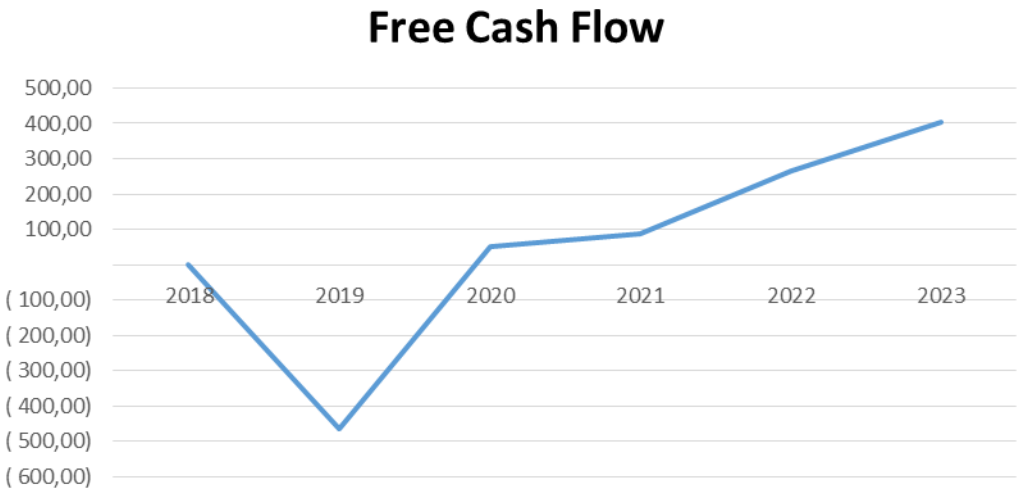



**Figure 7.26: Expansion – free cash flow in thousand Euros per year.**
**Source: Self elaboration.**

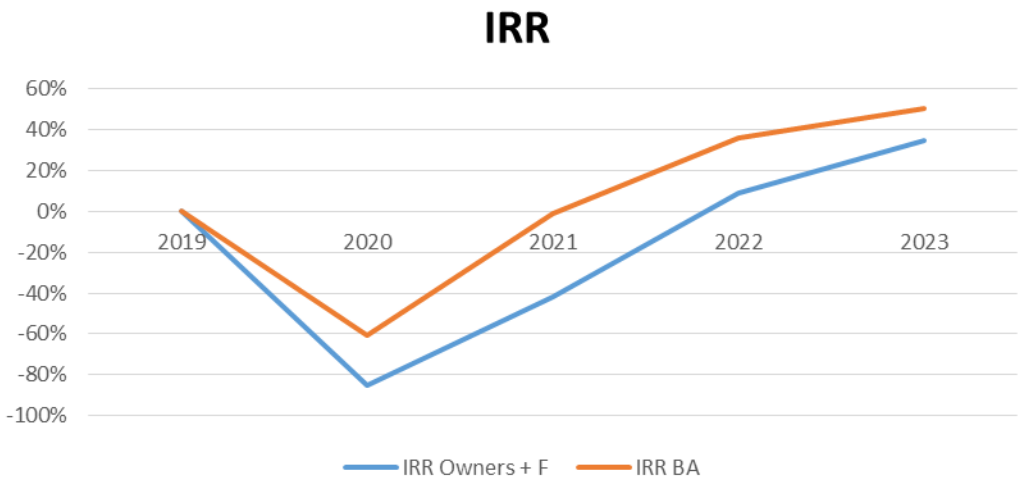



**Figure 7.27: Expansion – IRR per year.**
**Source: Self elaboration.**

### 7.6.2.7. Investment and dividends

In this scenario we start giving dividends in the first year of sales as explained before, we see that the quantity of dividends are calculated accordingly to the initial investment volume. However, we start giving more dividends to the Business Angels in order to cover the objective to offer a payback period lower than 3 years

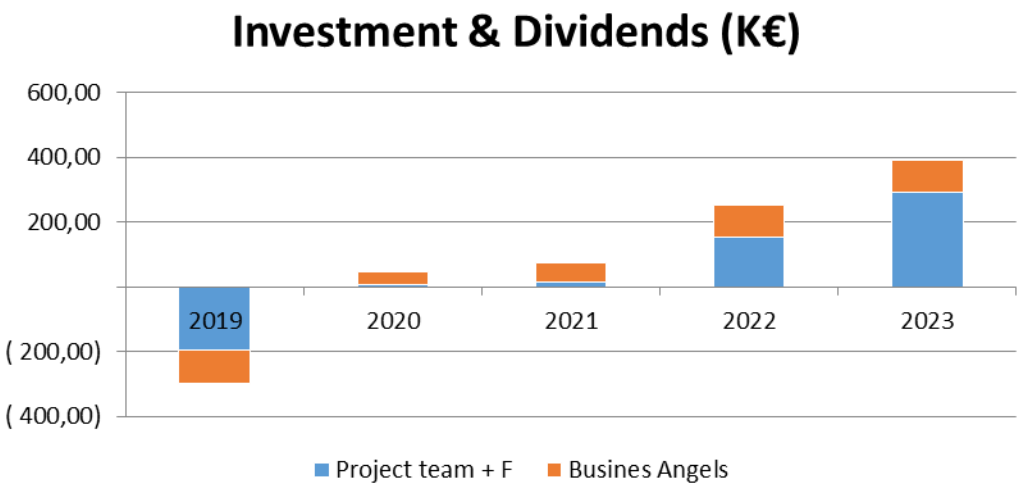



**Figure 7.28: Expansion - Investment and dividends in thousand Euros per year.**
**Source: Self elaboration.**

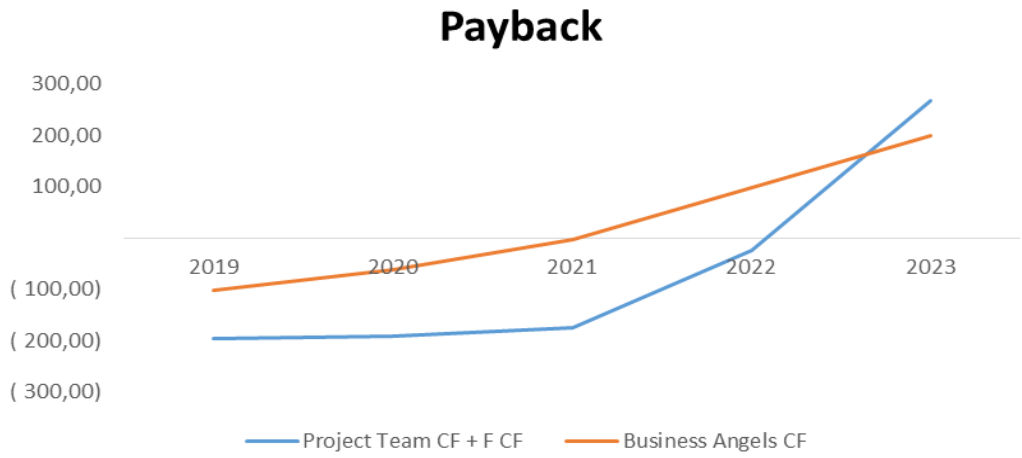



**Figure 7.29: Expansion - Payback in thousand Euros per year.**
**Source: Self elaboration.**

## 7.7. Conclusions

With our financial plan we set up a solid structure of financing from different sources that allows us to reduce risks. Two possible scenarios we secure that in a pessimistic situation we are still capable to attain our objectives in profitability, financial ratios and financial performance.

With the results we expect to have we assure a stable growth in our company thanks to the investments done year by year.

# Module 8. Roadmap

## 8.1. Stage 1. - The big Idea

In this stage, we are going to perform the initial analysis of the market and the technique in order to settle down the company. These are the steps that this stage contain:

- Market analysis: in this step, as shown previously, current market status will be analysed. Once the business idea is selected, we are going to check if the idea would work and if we can compete with current services and companies existing.

  Doing this, we will have a first idea of who the customer is and how big the business is. With this we are going to be able to start planning goals and theoretical profitability.

  To cut a long story short, with this study we are going to check if going to this business is worth it.

- Feasibility study: After having done market analysis, a first technology study will be performed. That means that we are going to check which technology can be used and what should be developed.

  With this, we can plan the team and the needs on this first stage, and after this we can define timing to develop the product and the means to customize these drones.

  The main aim of this step is to know which drones, technology, programming and customisation will be done to develop the core activity of the business. Additionally, financial investment can be planned here.

- 1st Prototype: This is our first goal. Having done the two previous steps, we know how the market is and what is possible to be done with drones.

  With this we can continue to the second stage, as we need a prototype to being able to start validating the market and to find funds to develop the project.

## 8.2. Stage 2. – Getting funds

This second stage is focused into financial issues and found of customers. This would start with the creation of the company and presenting our business model to different people and organizations. After this stage, we would be fully inside of the sector. Steps inside this stage are:

- Partners and friends funds: This is the first part of financial funding. To do this, each member of the Start-up will invest part of their own money.

Additionally, familiars and friends will be part of this step, as they will lend us the money only asking to get it back after a certain period of time.

Doing this, will allow us to have enough money to start the project and to be an important part of the whole shareholder's equity.

- Crowdfunding campaign: Once we have something to show to customers, we are going to try a crowdsourcing campaign. This bring is a double benefit:
    - Financial funds: Following the Crowdfunding principles, customers will provide economical resources to allow us continuing with the development work of the whole project.
    - Early adopter: The other benefit is that the aim of this Crowdfunding campaign is to sell the product in the future, once it is fully serviceable. That means we are ensuring some customers for the early life of the company, allowing us to start knowing how this world works and letting us to spread the word about our activity and our company.

  Investors in this campaign do not get any share of the company.
- Business angel round: After this two steps, next one is going to different business angels rounds to get some more investment. They are getting shares for this investment and will get dividends when they are planned to be given.
- Bank investment: Finally this is the last step of the investment. We will get a loan from the bank in order to commit the purchase of the first devices like computer, drones, printers and tools. This is a conventional loan that will be paid with terms and conditions signed.
- Financial resources: Having done previous steps, we have reached the goal to get the economic resources. This is the second goal of the whole project.

## 8.3. Stage 3. – Beginning of the business

After having investment, we can continue launching the company and the project, which means that we can complete the software, customized drones and use them in a show. The steps of this stage are:

- Software development: After having enough funding, is time to finish developing the software, which is the most difficult part of the project. This is a crucial time, as we cannot perform any show until the software is fully operative.

  This would take few months until we are in the market, so we are planning our first year carefully regarding to this issue.

- 1º Show: Once the software and drones are prepared, we are launching the first performance. This will be the final test, as it will determine the official launch into the sector.

  As mentioned before, this first show would be done together with a croudfounder, so they can work with us for a longer period of time than the available time that we will have while selling the service to any other company.

- Sale strategy distribution and marketing campaign: After having succeed in the first show. We have to spread the word and do an intensive campaign to get as much consumers as possible.

  This step also means to do marketing campaign, like being present in social media or even television. The aim of this is to become popular, so people would start asking for us.

  This begins here, but is something we have to continue doing for the rest of company's life.

- 1º Sale: After this sales campaign, we are marking the day of our first sale as an important date. From this day, we can measure much better the market and we can start learning from it.

  From this day, we can categorized our customers and the kind of show that they are willing to get, so the structure of the company can improve a lot in order to adapt to the real market.

- End of the 1º Year: From this, we develop our activity until the end of the first year, in which we preview negative financial result, and we are not giving dividends yet.

- Increase in sales: During the second year, we are increasing sales and getting used to the business.

- 1st Million in Revenues: During this year, our increment in sales will let us reach a total amount of revenues of one million euros, since the beginning of our company.

- End of the 2º Year: Time goes by until we keep developing the second year. In the end, we will finish this year performing similar tasks and activities as in the first year, in order to increase sales and become stronger as a company. In this year, we will not give dividends.

- Positive result at the end of the year: The goal of this stage is to finish the second year with a positive result. That does not mean that we are going to pay the debt so soon, but we are on the right way to do it.

  In the end, we can start thinking about a strategic expansion to increase the business and get more profit.

## 8.4. Stage 4. – First expansion

Having a positive result is the better indicator to start expanding the business. Once we are comfortable with this first result, we will start to grow. These are the steps in this stage:

- Invest in drones: First thing to do is to increase our sales, and this means to invest in more drones in order to cover the maximum amount of shows. As we are still in a not so good situation, we will not have enough cash to spend, and we will ask for a second loan to a bank.

  We are optimistic that our good results from second year will be enough to increase the debt of the company.

- Team recruitment: As the fleet is bigger, we will need more workers to perform shows. That is why our team will increase, showing the know-how to the newcomers, in order to make them fully operative as soon as possible.

- Penetrate Portugal: The main aim of the two previous steps is to reach the whole country of Spain and also Portugal. Increasing in drones and personnel, allows us to keep growing and, with the good public image that we have, start growing in a foreign country. Portugal is also similar to Spain, so this will not be a big change, so we can feel confident to introduce the new team, with less risk.

- Set up a new base in Barcelona: In order to reach the widest surface in the peninsula and Spanish islands, we are setting a new base in Barcelona. Renting a new place and creating a second team there.

- End of the 3rd Year: We will finish the third year with a growth in revenues, so we are fully settled in the whole peninsula and the islands.

- Dividends: After this year, we are going to provide dividends for the first time, as we are already able to pay the debt and start satisfying investors. Anyway, we will be very careful to keep money for the beginning of the fourth year.

- End of the 4rd Year: Similarly to stage 2, we end the fourth year doing the same activity as in third year, growing in the same placement, but increasing sales and then revenues.

## 8.5. Stage 5. – Second expansion

This is the last stage, where the company is growing to Europe in order to be converted from a Start-up to a formal company, with an international structure and a global market. These are the steps inside the stage:

- End of the 5th Year: We keep acting during this year, preparing ourselves to grow in Europe, going to countries that are similar to Spain, like Italy, Greece and similar. We would also go to countries like Germany or Switzerland, as they have a big GDP and they have a lot of activity during spring and summer.
- Fleet investment: Similarly to third year, company will grow the fleet to increase the activity. We can spend our saving plus any additional money provided by banks.
- Going to Europe: Having done previous activities, we are able to introduce the company in the above mentioned countries.

This stage 5 is not very defined, as we cannot know specifically how the future is going to be for the company. In any case, the whole Start-up is going to work very hard to follow the same steps that we planned here before.

## 8.6. Stage 6. – Firefly as Event Promoter

This is an additional stage, as it show the plan after the fifth year. Due to the expansion through Europe with our drones we will make our company evolve to organizer and promoter of events, instead of just offering the service to other companies in the sector.

This will give us the possibility to be the managers of the events in which we will use all the Firefly technology, combined with all the experience acquired in the previous five years and use all the contacts created in the entertainment world.

The plan consists of an expansion of the business in all aspects, in terms of human resources, new commercial agents, office staff, maintenance, designers, programmers and marketing agents. Also expansion of the facilities and the drone fleet, to cover all the new possible shows.

The headquarters of this new course of Firefly will be established in Seville, although if all the forecasts are met we will have a presence in Barcelona, the decision will be to start this new stage by managing the events in the South of the peninsula and leaving the Barcelona office to the expansion of our business in Europe.

In addition, there are currently more event companies in Barcelona than in Seville, so the competition will be somewhat lower. As an added the prices of the South are lower than those of Barcelona.

This new situation, will take advantage of all the contacts made during the life of Firefly to be able to enter the world of shows and events. We can talk and negotiate the conditions, of dancers, artists, musicians, rents of venues, etc. and thus also be able to offer the marketing service for other companies, and improve their brands with events with the highest technology and innovation and customizable.

To achieve the goal and be a competitive event organizer, we must invest in good designers and marketing agents, to ensure that the events we develop generate the desired impact of our customers. Design experiences that evoke, feelings, forms, and opinions and make things a reality.

All the capital investment will be recovered in following years, because the income and resources will continue to work as in previous years, and the new departments will generate more profit with fewer resources, since intermediaries are saved in the process, besides being us intermediaries from other companies such as dancers or musicians, who will also report benefits.

All the above leads us to affirm that it will have a great success and that we will be able to expand into new markets, with the thought of an international company. That the growth of Firefly can be a fact if we fulfill the forecasts, but everything will always be with great effort and work.

# Module 9. Conclusions

## 9.1. Activity Summary

Through this document, the main tasks performed by the company are described, both what the consumer is about to see and what must be internally done.

Summarizing it, the main tasks are:

- Software creation: we would like to start the business in a good position, which is why we develop our own software, getting this competitive advantage.

  As mentioned, that is a big barrier to avoid new competitors enter in our market easily, with de disadvantage of time and cost. We are mitigating it through a very precise strategy plan, where we can assume a setback during first year, but a high increase in following ones.

- Performance design: having software and drones, we have to work aligned with our customers to create the perfect show. This is a critical task, as it will make grow our image and popularity. Social media are very relevant on this.

- Promotion strategy: it is evident that sales is vital for us, but in this case we are not using standard channels like a store, we have to focus our resources into salesmen, fairs and promotion.

- Maintenance task: regarding to security, there is a strict maintenance plan to be done to the drones and technology, after each show and periodically.

- Expansion scenario: finally, once we are settled in a region, we will try to grow, expanding the business, with a bigger investment and a very good alignment of the whole team to keep growing in the desired direction.

## 9.2. Market Potential

Having done a market research, provides us numbers and figures that encourages us to introduce ourselves in this market.

First of all we have numbers related to the whole amount of spectacles and events in Spain, which have a huge potential in terms of reaching our own market share.

Events are becoming more and more important in public life, as they are something very relevant in daily life of a Spanish citizen. After this, increase in popularity of drones is evident, with a wide variety of uses for them, as the technology is making it possible.

Unluckily, competitors are few, but strong and big, and even they are globally settled, they are not yet very introduced in Spain, giving us the chance to start safer here to prepare a future expansion. We have also noticed that the most successful companies are those investing in social media and that is a reference for us.

For those reasons, there is the chance to develop the product and have a positive growing tendency for several years, followed by our effort, commitment and innovative spirit.

## 9.3. Scalability

As we mentioned before in the road map, the final stage would be to replay the same strategy that we are developing in Spain in other countries. This scalability is totally possible in Greece or Italy for example. These markets are very similar and also they are not saturated, for that reason, it would be possible to implement our business there, using the know-how of the start-up.

However, to implement the patterns for scalability, it is often necessary to identify activities and resources where collaborating with partners are advantageous and can strengthen the offering's value proposition. Revenues in a scalable business rapidly outpace expenses.

Have a potential market to join and identify potential strategic partners are the main keys for success. The strategy targets for the scalability plan would be:

- Avoid markets with a strong leader at the beginning.
- Expand in other countries to cover the increasing market needs.
- Look for partners experienced in the sector that could help us.
- More investments in our brand position, to defend our competitive advantage

## 9.4. Profitability

Regarding to this section, financial statement shows a good profitability, providing a good return of the investment to all stakeholders and a fine profitability. It also allows the company to generate employment to the south of Spain, and provide the founders of the company enough to make for a living.

The company is taking this numbers as a nice reference to embark into this project, with the self-satisfaction of creating something that could grow on time and can compete with global companies, where the Spanish way of working is able to win in the competition.

For all this, the whole project is not only a job, but a dream for us, for Firefly.

**Figure 9.1: Firefly Drone Show.**
**Source: Self elaboration.**