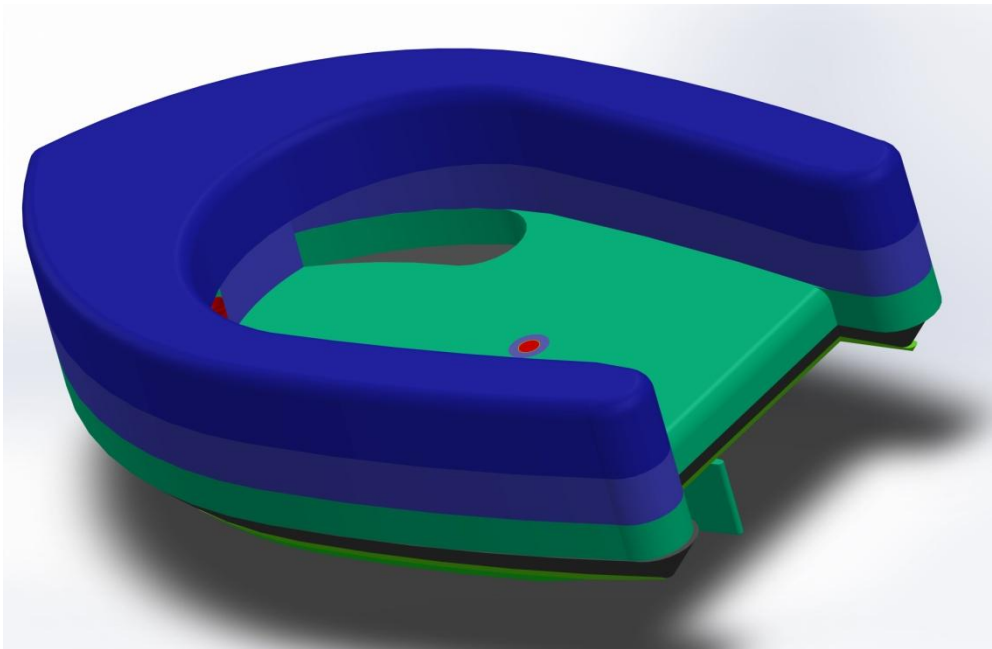


REDESIGNING THE HYDROSPEED

Development of a product



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2014/2015

The conformist man adapts himself to the world while the nonconformist one tries to adapt the world to himself. So then, progress depends on the nonconformist man.

- George Bernard Shaw -

I want to express my gratitude to my tutor, Juan Carlos Grau, for his help and advice all along the project, to Susanna Vigo for her special collaboration as language corrector, to Carlos and Teresa for lending me a hand when I needed help, to Rafting Llavorsí for their helpful disposition and to wonderful tools like the online dictionary Word Reference that helped incredibly with the writing of the following lines.

And last but not least, I'd like to thank my family who has always been there supporting me.

This is dedicated to you.

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1 Introduction

Everything started when the fact of the Research Project came to my mind. I thought: *If I have to spend my time doing a research, better if this is interesting and worthwhile for me.* So I started thinking about what my work could deal with and I got with the area that I like most and which I would like my future job be related to: technologies, design and business.

Now you are thinking that the hardest part of the process was beaten but that was only the top of the iceberg.

Anybody who read these lines and has passed their personal RP, would remember it like a sometimes confusing and awful task that can drive you mad. But if you find your topic, the one that fits you perfectly and that you are very keen on knowing more and more, this is a recommended experience.

Therefore I had fixed my objective area but I had to be more accurate and I thought about what I could design. That may sound stupid but, you reader, imagine you were an *ideas man*. Now, what would you create? Promptly this is not a nonsense, is it? Just now you can step into my shoes.

But focusing on the point, I decided to create something but, the extension, difficulty and cost of such an ambition made me give up this idea while setting out on a similar one: improve something.

I have always been interested in sports and I found out that this area could be the one to experiment with. Exploring a little more I hit the nail on the head finding my topic: the hydrospeed. It's normal if you don't know what I am talking about but along these pages you will find out the answer.

Going straight to the point, once in the past I did this sport and liked it but had some disappointments and finally I found the excuse to solve them.

My aim in this project was to show my learning as well as show what a creative process is, how it is done and what possibilities does it has while proving what the result of my hypothesis would be.

Let's see the result!

2 Objectives

Humans just can't get enough. We always want more until sometimes our obsession turns into something insane, nearly a psychopathy.

From time to time this characteristic is ideal. Think about the inventors, if they hadn't had this facet, maybe the world today would be so different because only with dissatisfaction regards lifestyle great goals can be reached.

My intention is to put myself in the shoes of an inventor and try to do his work as well as possible. From my point of view this is the most difficult job ever because you have to create something from nothing. To make the task fairly easier, I will upgrade something already created.

My hypothesis is that, with some specific changes and an appropriate approaching, the hydrospeed could be upgraded and gain in popularity and doers.

The objectives of this project consist of the creation, the design and the correct development of the key ideas and this will involve redesigning the sledge to improve the steering and making it funnier and safer for a less brave public. I'll have to study areas like hydrodynamic, mechanic, graphic and 3D design, materials, fabrication techniques, economy, publicity and planning among others, in order to bring the project to a successful satisfactory conclusion.

3 Prologue

3.1 The development of a new product: What are we talking about?

Let's do this interactive, I'll make you work a little. Make a list of all the activities that you do during a normal day, since you wake up until you go to bed. Now revise them and try to find out more than one that you can do without any kind of object, tool or, generalizing, a product. It is difficult, isn't it? That's because since the ancient times, human beings have needed to manufacture objects in order to make their lives easier and evolve.

From those times up to now the concept, the techniques and the complexity level of the process had been raising little by little, even though nowadays the products are more complicated.

However, currently this procedure has nothing to do with its first version; during centuries it has been improved by adapting it to the new circumstances that the evolution provided until the one we know today.

3.2 The process

The contemporary process is quite complex because it comprises several stages, a lot of steps and areas to study. That's because these days, the producer works entirely for the most demanding public ever. Now it is formed by 8 stages:

3.2.1 *Brainstorming: generating ideas*

Every company, independently of which is its business or its working area might be, has to move, to look forward on the market, just in order not to slow down its success.

Nowadays, in this competitive world with a highly demanding public, corporations must pay attention to the evolution of their products and

services, the opinions of their clients and the expectations about the future. Then they have to conclude with what they need and move on with it.

Usually some surveys of satisfaction and opinion are answered by costumers as well as doing research on new technologies to include modern and better features in a product, in order to improve it making it more attractive and being able to interest more people.

It is not common that a new fresh brand sparkling idea comes suddenly to the mind of someone. Behind this kind of achievements there is always a lot of research and work.

The **SWOT analysis**¹ is a structured planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a project or in a business venture. It can be carried out for an industry, a place, a person (about its performance) or for a product. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective.

Setting the objective should be done after the SWOT analysis has been performed. This would allow achievable goals or objectives to be set for the organization.

This method comprehends four areas to be studied:

- **The strengths:** characteristics of the business or project that give it an advantage over others.
- **Weaknesses:** characteristics that place the business or project at a disadvantage relative to others.
- **Opportunities:** elements that the project could exploit to its advantage.
- **Threats:** elements in the environment that could cause trouble for the business or project.

¹ Technique created by *Albert Humphrey*, who was an American businessman and management consultant who specialized in organizational management and cultural change, during the 60's. The technique is a strategic planning method used to evaluate the characteristics and variables involved in a project or in a business venture, which is still used at the present day.

SWOT ANALYSIS



Image 1: The SWOT analysis

There are also more different ways of finding out the answer to the creative question; among them, we can find:

- An I+D department
- The clients or employees suggestions
- Commercial fairs with innovating ideas and renovated concepts
- The study of the rivals work
- The focus on an specific commercial objective group with particular attractions, expectations and requests

The most noticeable new objects are the completely new ones because they are brand new things that generate expectation, however the most common projects related to new products are involved with changing its former design adapting it to a new function or just improving its performance.

3.2.2 *Scrutiny of the ideas*

Even though the ideas are generated, not all of them will finally succeed in turning into real commercial projects. Once we are at this point, we have

to examine the minute details of all the aspects, characteristics and potentials keeping in mind the final objective of creating a product, competitive and helpful for the objective public, considering the size of the market, the economical gross, the rivals' ideas and the general profitability.

Taking all these facts into account, we will delete all the bad ideas and realize that the ones we thought that were perfect actually weren't that good. It's better to fall now than when the project is on an advanced stage.

3.2.3 *Development of the concepts*

Once the ideas have been filtered, we have to encourage the good ones. The next step is to start describing and developing the details of the creation, construction and commercialization process. It is necessary to collect all the information referring to the material costs, the general costs of the production, the potential profits, the objective clients and the initial market among others.

An essential tool in this process is the marketing. The **marketing** is the activity, amount of institutions and processes to create, communicate, hang out and exchange offers valuable for the clients, partners and public in general.

According to *Philip Kotler*², the main objective of the marketing is to lead the costumer until the limit of the buying decision. However, this also has the aim of favouring the exchanges among the seller and the buyer in order to benefit both of them.

There are two essential concepts that we can't forget about when we plan the commercial strategy. Making that a new product turn into a success is a big deal, that's why we have to think about the needs and wishes of the

² Philip Kotler is considered as the father of the modern marketing having established the objectives and parts of every step in the marketing process. He is known worldwide for his publications related to economics, marketing and business; awarded economist and teacher and distinguished intellectual in the areas of economics, marketing, mathematics and social behavior.

public as well as its value and its satisfaction. Let's see:

- The **necessity** is a state of mind caused by an imbalance of what is indispensable and what we own. When we have a necessity and we find something that can satisfy this uncomfortable situation, our brain generates a **wish**, that is a strong feeling of needing something focused on a special product that we have discovered and would fit perfectly in the particular necessity that we have.
- Nevertheless, sometimes the wished product fits with our necessity but not with our pocket. The **value** is the relation established by the client, between the benefits (status, functional ones ...) that provides the purchase and the costs (economical, effort and time) that imply acquiring it. If there is a good balance between these concepts, it is certain that it will be a **satisfaction** (a mood of welfare or disappointment) that generates the use of the product.

If we obtain satisfaction, that will mean that the product is worthy and that we'll have a happy customer that will pay attention to our new services as well as telling his friends about our products. This way we will grow as a company.

"Today you have to run faster to stay in the same place"

– Philip Kotler–

At this point we must also pay attention to the **marketing mix**. These are the tools on our hands and we have to use them to build up our commercial strategy in order to reach our previous settled objectives.

As Dr. Kotler said, nowadays the world and the markets are more competitive than ever and the only way to succeed is doing things better, faster, cheaper and with a bigger smile. That's why we have to focus on the **5 P's** of marketing:

- The **Product**: Any property, service, idea, person, place, organization or institution that is offered in a market for being purchased or used so as to satisfy a necessity.

When we have to set the commercial strategy for our product we have to think about so many things. First of all, if we are a company that had launched to the market other products before, it is necessary to revise our product portfolio. We have to assure about the similarities and differences of our product in order to choose one way or another. Equally if our earlier products were successful, the firm's image will have recognition and the presentation of our product will change. Also it's possible that we won't need to spend a big amount of money on publishing due to our previously satisfied clients willing to buy more products from us.

The firm, the presentation and the public image makes the majority of this part and they are so important in order to decide the next part.

- The **Price**: This is the economic value for exchanging the product, fixed by the utility and the satisfaction that cause the purchase and use of the product.

This is the only element of the mix that generates benefits considering that the others only generate costs. However, we have to fix a competitive price depending on the rival's activity and other elements of the surroundings, the value of our product, the crafting, distribution and advertising costs, the benefits that we want to obtain, the settled objectives and the marketing strategies assumed. The price is variable and we can change it depending on the evolution of the product and on a wide list of external facts.

- The **Place**: The area where we work. This is the element used to get in touch with the public and provide them our product in a satisfactory way.

We must consider our distribution channels, which are the

elements that get involved in the processes of moving the product delivering it to the consumer. We have also to design an efficient distribution plan hiring trucking services and asking regularly to our public about their opinion about it. We have to care about our stock levels and the demand of our product as well as the merchandising.

- The **Promotion**: The communication pursues the aim of spreading a specific message so that this has an answer given by the public. We want to disseminate the characteristics and benefits of our product to convince people that they need it and they have to buy it, as well as spread the firm making people remember it and talk about it to their friends, family and partners (that is always the best and most sincerely advertising).

When we think about promotion we usually aim for publicising, but even being a key part of the process this is not the only one. We must consider the public relations, taking part in social events, the personal selling, the sales promotion, the promotion of cultural and “well seen” activities and the direct marketing³ among others.

- The **People**: A company has employees that work for them. Those employees are part of the public image of the firm because they deal with the customers and their performance before them will mean more future purchases and benefits for the corporation as well as good and free advertising or the loss of a client and bad advertising.

That’s why the company needs to keep their employees happy in order to be productive and thriving.

³ Direct marketing is an interactive system that uses one or more media to get a measurable response in a target audience. The most common form of direct marketing is the e-mailing where marketers send their messages to consumers in a particular area, usually extracted from a database. Its advantages are the speed, the customization possibilities, the versatility, the wide range... whereas its disadvantages are the intrusion on your privacy, the high costs in massive communications and the reduction of the word communication.

Summing up this part, once I have described and explained the previous parts, it's good to show the marketing process in a brief way.

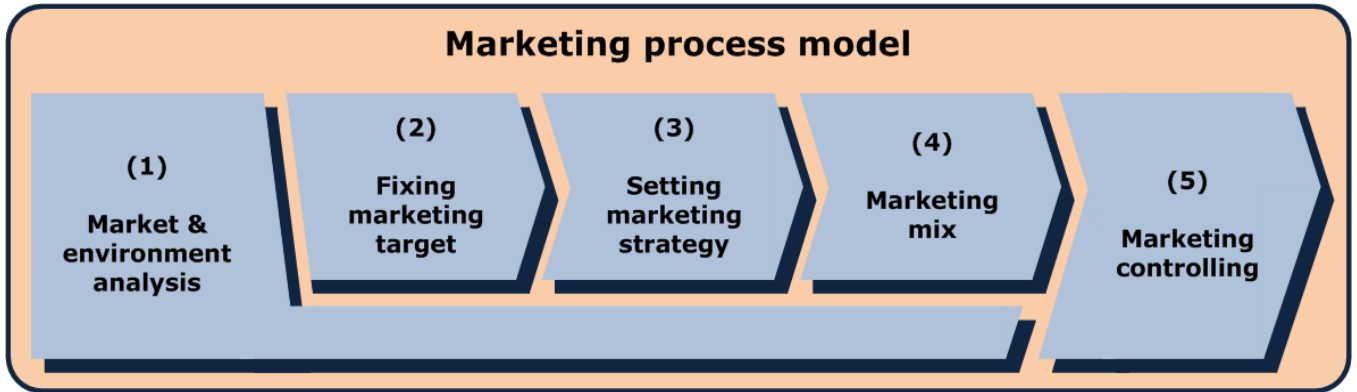


Diagram 1: Essential parts of the marketing process

This is the skeleton of the process, the basic path that you have to follow when you want to launch a product. It is based on three areas:

1. The first one is based on the observation of the market studying the situation and the possibilities (1) and then defining the objectives of your project (2).
2. The second one, (3 & 4), is characterized by the action. There is the time to set the strategy that will be followed during all the process depending on the conditions of the marketing mix.
3. The last one (5), is the stage where the only task is to control the performance of the product and its evolution inside the market (the sales, the favourite public, the opinion of the consumers, etc).

3.2.4 Analysis of the business

This stage is the midway and the point of no return for the product. Now we have to assess the characteristics of the product as well as all the conditions discussed during the previous stages in order to measure its hypothetic success, the acceptance and if the project will be worthwhile or not. All of these tryouts are made inside an imaginary testing ground based on statistics, opinion enquires and real markets references.

It is compulsory to set a price founded on the rivalry's movements, the feedback obtained by the clients of earlier products and its performance while the approximated turnover is grounded on the market size alike all the marketing points explained in the previous stage.

At the end of the stage we must be sure about the good future performance of our product because, once we will have gone through this barrier there will be no way back.

3.2.5 Market test

Having crossed the midway of the process, we come to a stage of vital importance. Now it is crucial to develop a test environment so as to assess the product performance in a hypothetic market. We need to fix the characteristics of the testing ground, paying attention to the actual market. We can also introduce unreal characteristics just to know how our product would perform in another market (perhaps the market of other countries). This is the tool used by the marketing professionals to advise the firms about expanding to other markets or changing their range of products.

Once we have set the environment, it is time to choose the objective public.

Following the research done in the third stage, we will have to decide who would like to buy our product. We will set it differentiating the people by some attributes as:

- The age
- The sex
- The *trending topic*
- The social status
- The urban tribes

As soon as we agree about the environment and the public, we'll be able to start the simulation. It will be made up of the reveal of the product to the testing clients expecting their impressions and asking if they would buy it. Then, looking carefully at the reviews, it will be the turn to change the product until it accomplishes all the features required by the testers.

If the results denote that the product will fail in a real market or that the corrections will increase the price too much and this will imply a sales problem, the idea must be rejected better than launching it, failing and losing all the investments.

3.2.6 Technical organisation

When the market test overcomes successfully, it's the time to start the technical organisation in order to create a building plan. There's a lot to do.

We have to design a production programme keeping in mind all the operations, stages and steps that the product needs for being set up. This process comprehends a huge number of activities and, as it is popularly known, there is strength in numbers, so the process is divided into different departments with distinct tasks.

At the beginning we must define the path that our product will follow until it is finished. With all the cards on the table, the engineering operations have to be planned and positioned in a logical way. It is vital to design this plan looking at the logistic needs and anticipating to every possible eventuality.

Of course following all the time the quality requirements and the worker's rights at the same time that we try to economise as much as possible the process (sometimes this involves subcontracting cheaper workforce of poor countries, without respecting the worker's rights, distribution services, specific machines,...).

When the plan is approved, the technical politics and procedures that manage the production must be clearly identified.

As the process starts and keeps going, it's necessary to revise and supervise all the procedures so as to find imperfections and areas which can be improved.

3.2.7 Commercialisation and merchandising

This is the most important date crossed out on the calendar. The reveal day, when the product is officially launched, or with other words, it is commercialised, being presented to the whole market.

The new product needs an intense publicity rush in order to gain expectation, popularity and potential owners. This requires aggressive and viral advertisings. This way people start talking about the product, sharing with friends the advertisement, discussing about buying it... What comes down to a raising *hype*.

The hype is a vital aspect at this stage. If we start revealing a teaser of our product one or two months before the launching, people will start having hype. If later we present an advertisement showing the strengths people will go crazy for it, and with this strategy, revealing slowly in a progressive way information and images about our product, we will create an incredible hype that will increase our sales.

Obviously, if we are a company with an important background of successful products and a gross of sales, our publicity will be more effective

and the hype will rise faster and more easily. One clear example is the Apple Incorporated. Taking advantage of their previous hits and success they always have the biggest hype with every single product that they launch. Without omitting a very good marketing strategy and a cared image.

Also it is necessary to say that nowadays there are more communication channels than in the past and it's important to cover every one. Radio, written press and TV are so important because they get a lot of attention and capture so many clients.

Nevertheless, at the present day, the channel with the biggest affluence of users and capacity of communication is the internet.

Web ads, emails, videos, blogs, websites and especially social networks are just a sample of the power that the internet has.



Image 2: The different communication channels

That's why a good publicity strategy with its meticulous performance is almost as important as having a good product to sell. Both parts must fit perfectly.

What happens to the product after the launch and the massive publicity season depends on various things:

- The quality and the performance of the product.
- The trends and orientations of the market.
- The rivals' actions.

3.2.8 Review of the product

Immediately after the launching, it is necessary to control how our strategy is working in order to upgrade it if it's possible, change the public standpoint or learn the strengths and weaknesses so as to do it better in future projects.

Depending on the performance of our product we should change our merchandising, modify our sale price or whatever we consider that will improve the sales and the image of the product and the company.

4 Descriptive memory

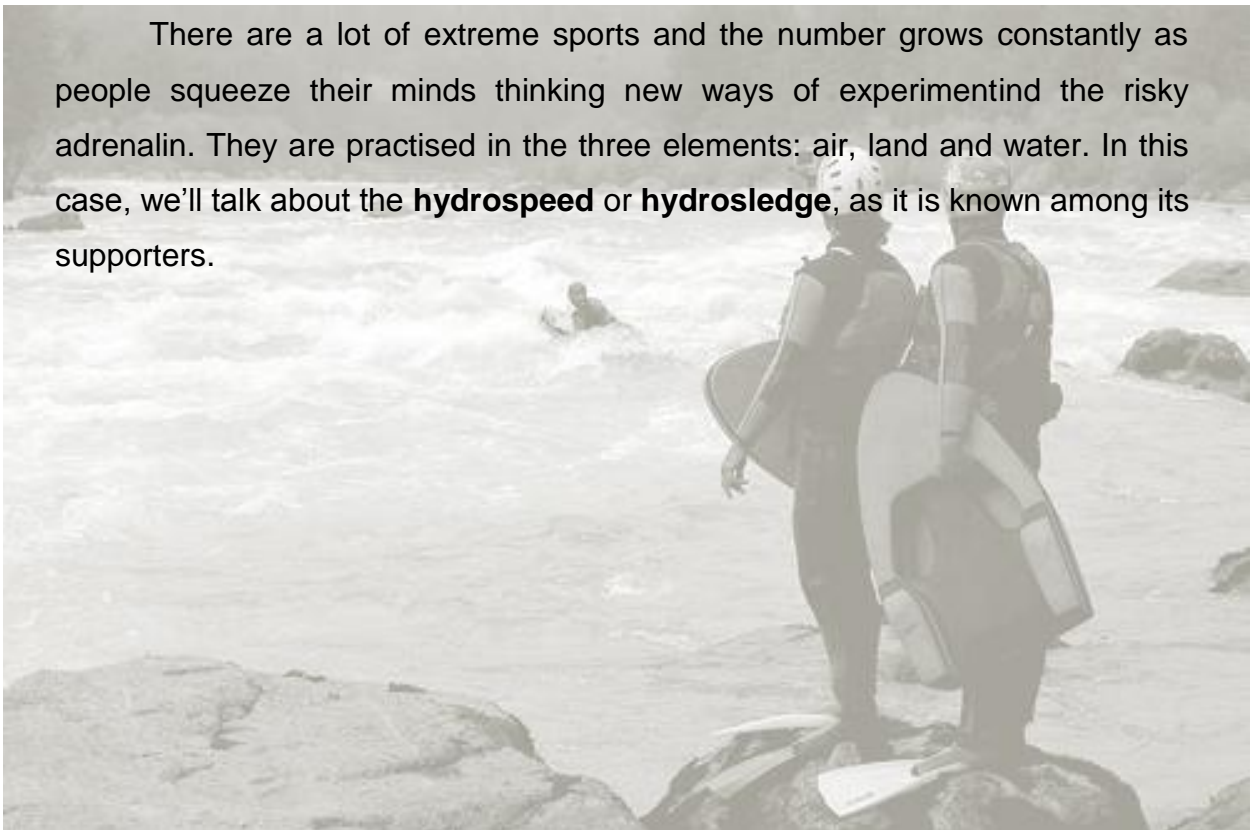
4.1 Presentation and description of the product

– *Mens sana in corpore sano* –

There are Latin mottos like this one with a lot of truth. If we want a healthy mind we need a body as healthy. In order to keep our body healthy, sport is vital because keeps us fit and makes us grow, improving our social facets and making us face the quotidian problems with different ways and moods.

Sport is an activity with and incredibly vast sort of appearances. One of them are the adventure sports, a kind of sports where the goal is to experiment the fear, the adrenaline rush and the emotion of risking your life. Explained this way, it sounds stupid to practise them but once you have tried; you change your mind and understand why this kind of activity generates tons of followers being more famous every day.

There are a lot of extreme sports and the number grows constantly as people squeeze their minds thinking new ways of experimentind the risky adrenalin. They are practised in the three elements: air, land and water. In this case, we'll talk about the **hydrospeed** or **hydrosledge**, as it is known among its supporters.



A little of history

The hydrospeed is one of the most up-to-date categories inside the known as adventure sports. It was born halfway through the 70's in the United States of America and during its short period of life it has experienced an amazing evolution. Now practised on rough water, the hydrospeed actually appeared when a group of enthusiastic surfers went down a river crossing the dangerous rapids with their surfboards but laying on them instead of standing up. Then the gear evolved becoming a small rudimentary sledge made of cork.

Several years after it spread to Europe, where some brave French mountaineers who wanted to try an easier and faster way of going down the mountain, decided to descend by the thawing canals of the alpine glaciers using those sledges. Finally they realised the great fun and its potential to convert it into a sport, so people started practising it as a hobby.

Obviously since its beginnings, the technique and the equipment as the concept have changed significantly. Earlier founded on going down a mountain safer than climbing down the rocks using the rivers even if facing the danger, until nowadays based on going down the high course of a river, preferentially during the spring when the river takes more water than during any other moment of the year, behind a basic structure made of plastic or polyurethane being led by the current reaching high speeds for a person, up to 30 km/h. This is just what will drive us crazy during this project.

In order to do this activity we need a list of equipment as a thermal wetsuit, a helmet, a pair of gloves and socks, thermal too, two flippers and a life vest; but the most important point of the list is the sledge.

The sledge is a hydrodynamic plate that will allow us to float along the river by being our vehicle. It is about one meter long per 80 centimetres width, this object presents an ergonomic form and a pair of handles to hold. The measures are approximated because in contrast to the majority of sports where

the equipment is regulated and standardized by the corresponding authority, in this case the technical specifications are neither defined nor controlled.

That's why when you practise it in any river with companies making use of them, you could find a great variety of sledges made of different materials, with diverse forms and distinct measures.

Obviously every single one of them is firmly tested and has to pass a rigorous quality control before being used because they will be playing with people's life. This lack of regularisation causes an absence of seriousness and professionalism to the clients as well as experiences far from their ideal performance.



Different kinds of hydrosledges being used.

On the photo above you can see two types of sledges. This is because of the user. Both of the people using the blue and black sledge are novices while the man using the yellow one is the instructor, who is an experienced professional on the sport. The different properties and styles of the sledges are due to the skills of the doers. In order to make the practice easier to an inexperienced public, the beginning sled has some good qualities related to safety and the regularization of the speed.

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I declare myself a solid supporter of this kind of sports and, added to the previous reasons, these are the motives to study this object as well as the sport in order to improve it developing a standard sledge better than the current ones.

4.2 Brainstorming: generating ideas

Now it's time to stop talking and get down to work. The first step in the improvement process will be the creative one. I'll have to squeeze my mind seeking for ideas with potential so as to improve the product in terms of usage, design, fabrication and economy.

In order to look for improvement ideas, I will have to study fully the basic product.

4.2.1 Study of its characteristics: SWOT analysis

As you have just read above, there aren't standardized sledges so that I will work with the one that I used when I practised this sport.

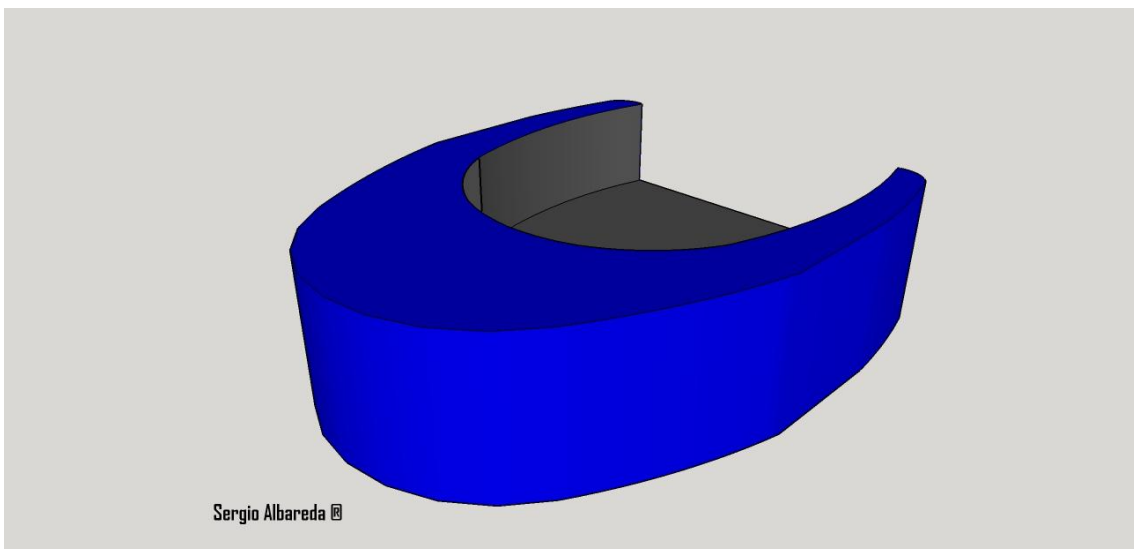


Illustration 1: Isometric perspective of the basic sledge

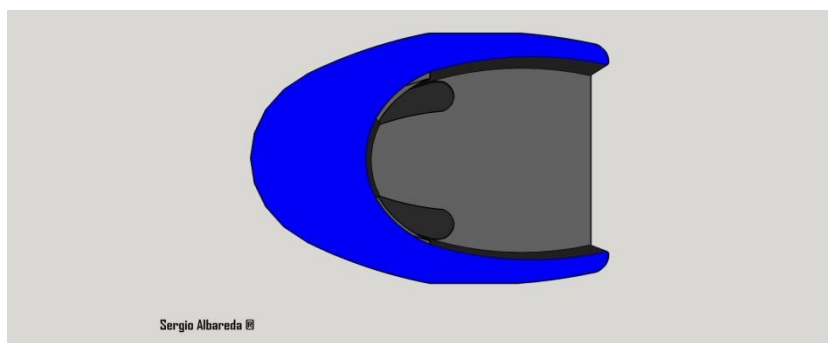


Illustration 2 : Floor view of the basic sledge

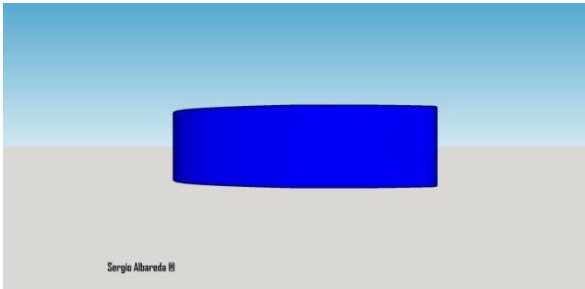


Illustration 3 : Profile view of the basic sledge

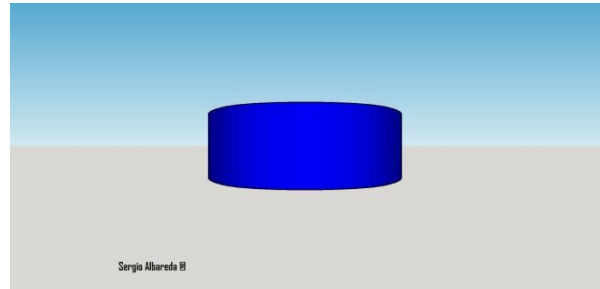


Illustration 4 : Elevation view of the basic sledge

This is a 3D model, and its views, made by myself with SketchUp of the sledge that I used when I practised this sport with *Rafting Llavorsí* enterprise on the river Noguera Pallaresa, designed with the same dimensions. It measures 1.1 meters long per 90 centimetres width and 30 centimetres high.



These are photos of the sledge that I used when I did hydrospeed, from where I drawn up the 3D model.

I don't have I+D department nor clients suggestions and I can't visit commercial fairs with innovating ideas, so to reach the goal of analysing the product studying its characteristics I will use the **SWOT analysis**. As I explained beforehand, this structured method is perfect to make a detailed study about anything.

We should do an inquiry similar to this:

Strengths:

- What advantages does our product have?
- What does it do better than any other?
- What unique or lowest cost resources can we draw upon that others can't?
- What do people in our market see as our strengths?
- What factors mean that we "get the sale"⁴?
- What is our organization's unique selling proposition?

Tip

It's recommendable to consider your strengths from both an internal perspective and from the point of view of your customers and people in your market (rivals included).

Also, if we're having any difficulty identifying strengths, we should try writing down a list of our organization's characteristics because some of these features will hopefully be strengths.

It is also important that when looking at the strengths, think about them in relation to your competitors. For example, if all of your competitors provide high quality products, then a high quality production process is not a strength in your organization's market, it's just a necessity without that you wouldn't be competitive.

⁴ What is making you success in front of the competence? The spark that makes you bright is what makes you different and better than the others allowing you to get the sale.

Weaknesses:

- What could we improve?
- What should we avoid?
- What are people in our market likely to see as weaknesses?
- What factors make us lose sales?

Tip

Again, consider this from an internal and external basis: Do other people seem to perceive weaknesses that you don't see? Are your competitors doing any better than you?

It's better to be realistic now, and face any unpleasant truths as soon as possible.

Opportunities:

- What good opportunities can we spot?
- What interesting trends are we aware of?
- What would we be able to offer that our rivals wouldn't?

When we spot the opportunities, useful ones can come from such things as:

- ✓ Changes in technology and markets on both a broad and narrow scale.
- ✓ Changes in government policy related to our field.
- ✓ Changes in social patterns, population profiles, lifestyle changes and so on.
- ✓ Local events, traditions and trends.

Tip

A useful approach when looking at opportunities is to look at your strengths and ask yourself whether these open up any opportunities. Alternatively, look at your weaknesses and ask yourself if you could open up opportunities by eliminating them.

Threats:

- What obstacles do we face?
- What are our competitors doing?
- Are quality standards or specifications for our job, products or services changing?
- Is changing technology threatening our position?
- Do we have bad debt or cash-flow problems?
- Could any of our weaknesses seriously threaten our business?

Tip

When looking at opportunities and threats, PEST Analysis can help to ensure that you don't overlook external factors, such as new government regulations, or technological changes in your industry.

This is the SWOT analysis of the sledge that I used considering that I own a company that produces these sleds and I want to improve them.

During the project I will be the represented manager of a business that produces sportive material and wants to upgrade its products.

STRENGTHS

- It's economic
- Rivals know that we provide a cheap and durable product
- My lower prices get a part of the sale
- A small and young business with competitive prices

WEAKNESSES

- In order to improve the product I couldn't increase drastically the costs
- Improvable areas: the design, the performance, its composition (make it eco-friendly)
- Rivals think that an upgrade would increase costs too much and clients wouldn't be able to afford them.
- I'm not the most famous company and being alike the others don't allow me to get the sales.
- Not optimal gear.

OPPORTUNITIES

- 3D printing technology is a good opportunity still in disuse applied on this area
- Lately people have an eco-friendly conscience and making our product eco-responsible is a good option while controlling the costs
- Utilisation of 3D printing tech and apply changes to the gear could be a great opportunity that would provide us unique products
- Sport conscience plus a good marketing campaign could be a great opportunity and a boost for the business

THREATS

- Improve the object can't carry expensive extra costs
- Competitors don't show improving attempts but they keep being more famous and generating more benefits.
- Standards of quality keep as in the past but the demand of clients grows everyday
- I'm not a big, rich or powerful company and money could be a problem

4.2.2 Exposition of the improvement ideas

Once I have analysed the sledge is the time to expose the improvable points that have appeared.

There are different suggestions such as:

- Upgrade the sledge improving its performance with changes as:
 - ✓ Redesign its aspect to improve its hydrodynamic and its driving.
 - ✓ Add a steering system.
- Rethink its design to make it cooler and in accordance with the newest trends.
- Investigate other materials suitable for constructing it or design the production process in order to make this product eco-friendly.
- Also focus on the gear that is not optimal.
 - ✓ Upgrade the thermal suite.
 - Add protections or reinforce them.
 - Add complements to it to steer better.
 - ✓ Investigate the performance of different types of flippers.
- Review and improve the technique and the tutorials for the beginners.
- Prepare a campaign of consciousness-raising and promotion about this kind of sports, specially the hydrospeed and announce my business to create hype.
- Launch a drastically different product in order to impress the market and get the sales winning popularity and clients.

With these potential upgrades on the table now it's time to move forward to the next stage.

4.3 Scrutiny of the ideas

Now studying one per one all the proposals I'll have to decide which ones are realistic and accomplishable and which others are unrealistic and have to

be discarded. I have to consider economic and technological terms and correspondence with the topic of the project in order to do a sensible job. Let's see:

APPROVED

- ✓ Redesign the aspect of the sledge in order to improve its hydrodynamic and its driving is an appropriate proposal.
- ✓ Add a steering system like a helm could be a great option to increase its driving.
- ✓ Reconsider the external design and appearance making it cooler and accord with the last trends is vital.
- ✓ Upgrade the wetsuit reinforcing it with wider protections so as to guard the legs, especially the knees.
- ✓ Investigate the performance of different types of flippers is a good idea because the impulse that we gain when we flap is the second biggest force that acts during the practise behind the river push.
- ✓ Review and improve the technique and the tutorials for the beginners, is a good and cheap option that could have a great positive result.
- ✓ Prepare a campaign of consciousness-raising and promotion about this kind of sports while announcing my business and create hype is a crucial part that will have place on the marketing stage.
- ✓ Launch a drastically different product in order to impress the market and get the sales winning popularity and clients is the main goal of the project, so it couldn't be rejected.

REJECTED

- ❖ Investigate new materials is an inadequate idea because this involves a lot of work on areas unrelated to my project, but I have to find a suitable material to make it eco-responsible.
- ❖ Adding complements to the wetsuit to gain steering is not a good idea because it's an extra cost that is suppressible with the new steering system.

The results of the scrutiny aren't always so dissimilar but, in this case during the brainstorming the ideas that appeared were mainly sensible and appropriate, so the result has been like this.

4.3.1 Required conditions

The required conditions for this project are all the approved conditions but in different scale of priority.

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- Redesign the aspect of the sledge in order to improve its hydrodynamic and its driving is one of the most important upgrades.
- Reconsider the external design and appearance making it cooler and accord with the last trends is very important because products come in through the eyes and this is almost as important as the quality of the product.
- Investigate the performance of different types of flippers is a good idea because the impulse that we gain when we flap is the second biggest force that acts during the practise behind the river push. This idea won't be so expensive and its result can be very useful.
- Review and improve the technique and the tutorials for the beginners, is a good and cheap option that could have a great positive result. This is an important aspect for the fun and the safety of the experience for the beginners.
- Prepare a campaign of consciousness-raising and promotion about this kind of sports while announcing my business and create hype is a crucial part that will have place on the marketing stage. This can't be undervalued.
- Launch a drastically different product in order to impress the market and get the sales winning popularity and clients is the main goal of the project, so it couldn't be rejected nor underrated.

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- Add a steering system like a helm could be a great option to increase its driving. However with the redesign of the sled and the improvement of its hydrodynamic, this won't be a main objective.
- Upgrade the wetsuit reinforcing it with wider protections so as to guard the legs, especially the knees, is important but if I increase the driving of the sled and upgrade the tutorials and the safety, this could be a negligible expense.

To these required conditions I have to add the economic requirements. I am a small, novice and poor enterprise, so I won't be able to spend a big amount of money investigating, constructing or publishing my project.

The time fact is also important. This job has to be done before the first of November, which is the delivery date.

4.4 Development of the concepts

Once that the objectives have been set, we have to develop all the concepts related to the marketing process. We will explain them now but we will develop them later in coming parts of the project.

We have just redesigned the sledge including all the features that we considered appropriate and the next step is to focus on the market and the way we face the presentation and launching of the product.

First of all we have to analyse the market and our environment. We will investigate about the characteristics of our potential public, who interact with the market and the trends and possible eventualities that could affect our plans.

Then we will have to fix an objective to our marketing action plan. Following what our analysis reveals, we will design our strategy adapting it to the characteristics and preferences.

After this we will set the marketing strategy. We will have to design a campaign (publicity, advertisements, propagation by the media, support by the social networks, offers, agreements with other companies to make irresistible supplies,...) whatever that will help us in the task of making us famous and popular.

Now we will have to discuss the marketing mix depending on the previous analysis and the strategy that we deal to follow. We will have to discuss about the 5 P's.

From now on almost everything is planned, but it will be necessary to keep controlling the market and our environment as well as our process in order to be able to adapt our strategy to possible changes. Also we could apply changes to our product or every part of the process with the necessary advance, better than following a potentially awful plan.

4.5 Analysis of the business: market study

Doing a market study is indispensable in order to reach the objective of launching a successful product. To do a satisfactory and revealing way is necessary to follow these steps:

1. **Compile information:** Get all the possible information is important because as many data we know about our business, a better strategy we could set or reorient it. To do it we could search on the internet, look at specialised magazines, go to sector fairs or if our company has already had commercial experience, we could check all the information about previous products and commercial adventures.
2. **Direct observation:** This step is where we have to observe the behaviour of our target clients. We should go to see our rivals activity, their strengths and weaknesses, the characteristics of their customers (that could be ours one day) or be a client of our rivals to know how they present their products or services.
3. **Interviews and inquiries:** In this third step we have to go in depth with the knowledge of our commercial target and its behaviour (demographic and socioeconomic characteristics, knowledge and opinion about our products and services, intention of purchase and consume conduct).

To investigate this we could do an interview to an expert of the sector, an inquiry to a big number of potential clients or a debate between a small number of potential customers.

4. **Investigate and analyse rivals:** Now it's time to analyse our rivals. Why? Because if they are doing things good and having success, we will find out success keys, business opportunities and market trends. Also when we set our business, we could provoke bad reactions of our rivals and it would be necessary to know how to anticipate to that and act.

To do it we could visit our rivals, look at our rivals web pages and social networks profiles, plan about their location and action zone, companies profiles and comparison between strengths and weaknesses.

5. **Define the commercial target:** If we have done a good market study, we could set the type of clients that will buy our products and orient our resources and efforts to capture their attention, modifying or not our standpoint.

In this case, having in mind my limited resources and time, to carry out this task I will do an inquiry after compiling the necessary information to define my commercial target.

The inquiry will be in the part 7. *Interviews and Inquiries*.

4.5.1 Marketing plan

When we have all the data about market's characteristics and we have set a target to our commercial activities, we will have to assure that our product adjusts to our public demand. To do this we will look at the inquiry results and compare them with our plans.

Then we will have to define which strategy we will use to publicize, commercialize and distribute our business, taking the marketing mix as a reference point.

Of course we can't forget setting up a control system in order to offer technical service to our clients and know their opinion over time. This improvement will bring us benefits if we use it correctly but sell it to other companies will make us recover from the investment faster. In this case we will use a webpage

5 Building memory

“In theory, theory and practise are the same. In practise, they are not.”

–Albert Einstein–

5.1 Building process

From now on I will start doing all the tasks related to the construction of the renovated sledge.

5.1.1 First sketches

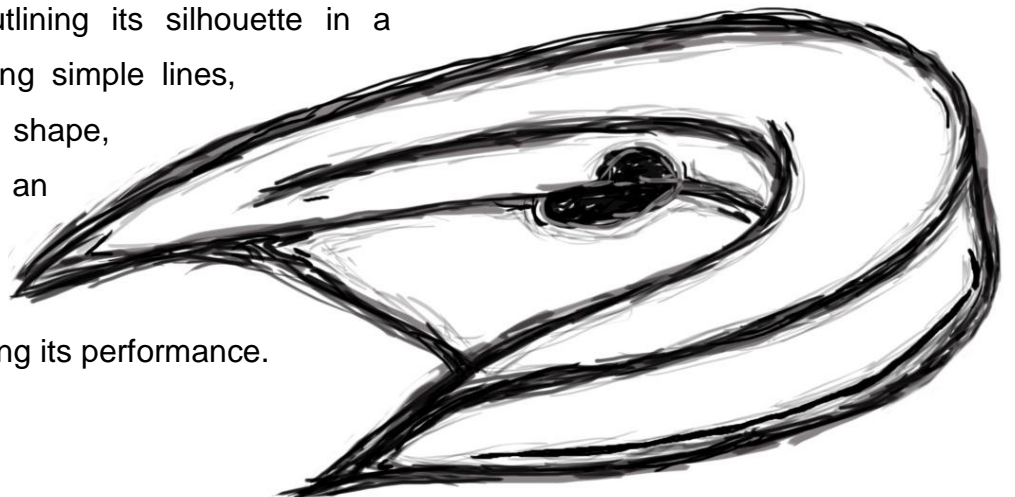
Thinking about the improvement ideas I have drawn some views of my idea for the project.



It was indispensable to change the shape and the aspect of the sledge in order to update it.

Everything is about the presentation. What comes through the eye is preferred and it's more addictive, so gets the sale more easily.

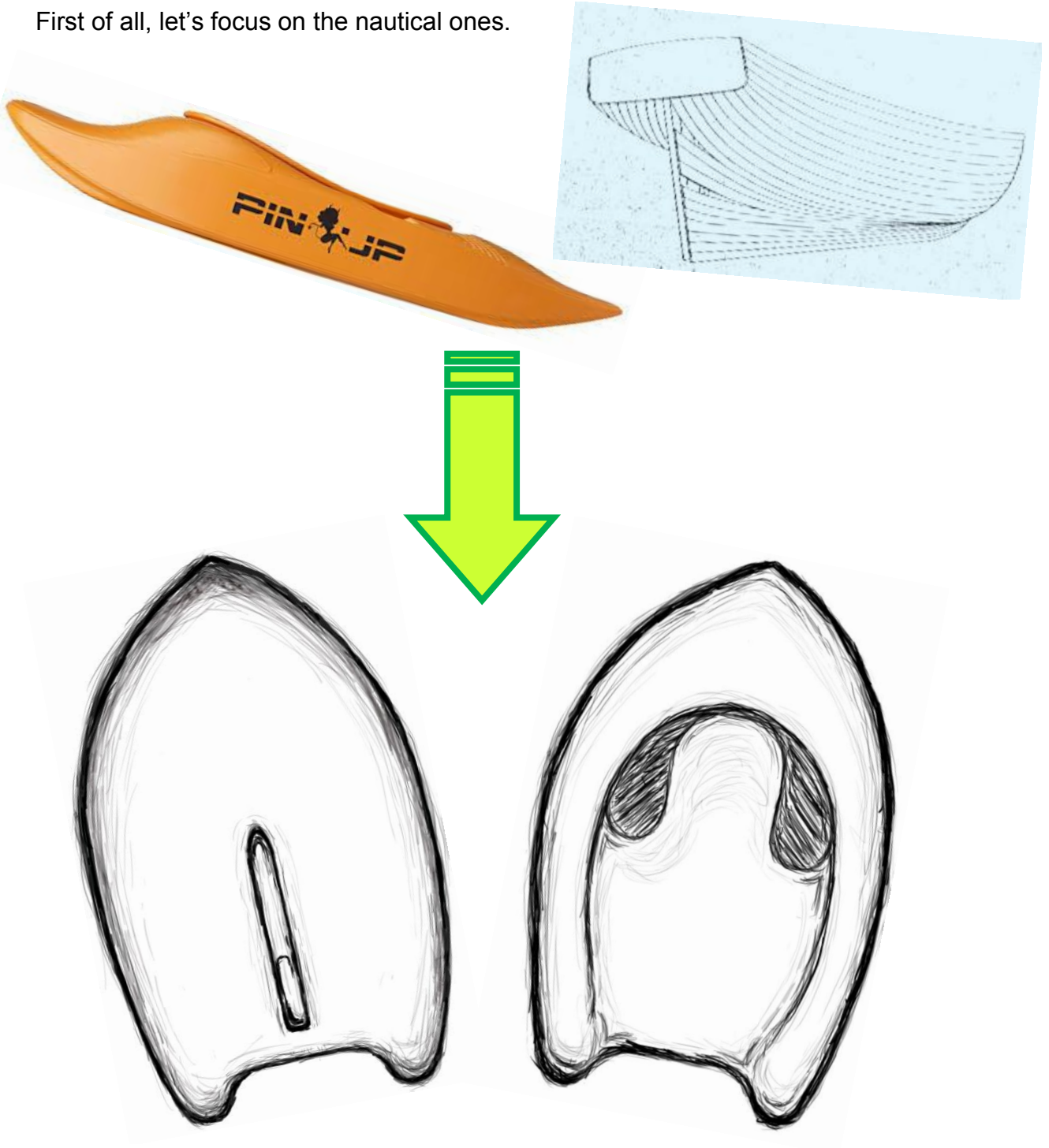
A simple design could work but it won't take all the possible advantages. Nevertheless, outlining its silhouette in a merely way tracing simple lines, getting a svelte shape, we can get an attractive design at the same time than improving its performance.



Another fundamental requirement that I had in mind while I was sketching these drawings was to improve the hydrodynamic in order to increase the steering and the maximum speed reachable as well as the comfort when navigating.

I tried to combine the strengths of the hull of a boat, the silhouette of a river kayak and the profile of a wing. Let's go little by little.

First of all, let's focus on the nautical ones.



The aim is to design the lower part of the watercraft imitating the shape of a boat mixed with the silhouette of a kayak because if my objective is to improve the hydrodynamic, what does a better hydrodynamic have than a boat? And there is nothing that performs better descending a river than a river kayak.

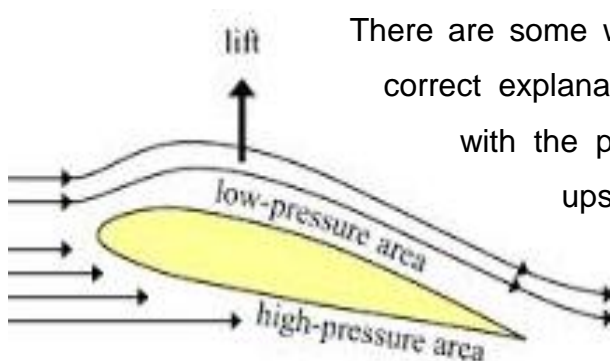
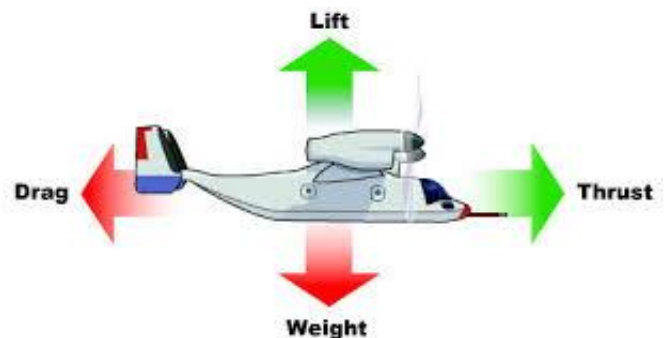
I sharpened the prow of the sledge as well as shrank softly its figure and maintained a considerably broad poop to ease the movement of your legs and the flow of the water overcoming the sled.

I also had in mind the fact that if I round off too much the hull of the sledge, I also increase potentially the possibilities of capsizing. This is not an option when you are going down a river with violent rapids and big rocks on the riverbed that could cause you severe injuries.

It is necessary to round the hull of the sledge without putting lives at risk, finding the perfect balance between stability, floatability and hydrodynamic to reach higher speeds.

Another objective links with aerodynamic. In the aeronautical field, the most important aspect when designing a plane is the aerodynamic performance of the components of the fuselage. The vital part is the wings. These need a perfectly defined silhouette because depending on their shape, the plane will fly or be a perfect disaster.

A plane experiments 4 forces: the weight (caused by the gravity action), the lift, the thrust (caused by the force exerted by the turbines) and the drag (caused by the air opposed to the advance of the object).



There are some wrong but extended as correct explanations of why the planes can fly related with the profile of the wing with different shapes upside and downside that provokes differences of velocity up and down of the air that flows when the plane

advances and generating differences of pressure that generates the lift force.

Actually, the correct explanation of how the planes fly involves Newton's third law: the action and reaction law, and the angle of attack which is the angle that the wing has respect the horizontal plain which with the wing hits the incoming air. Depending on this angle, the mass of air that flows up or down the wing will change and both the direction of the plane and the forces acting on the object as well as the velocity will be modified.

When an object goes through a fluid (and the air is a fluid), the molecules of that fluid tend to keep in contact with the surface of the object due to a phenomenon called the Coandă effect. This applied to the wing causes the movement of a big quantity of air flowing upside the wing exerting a big force downwards.

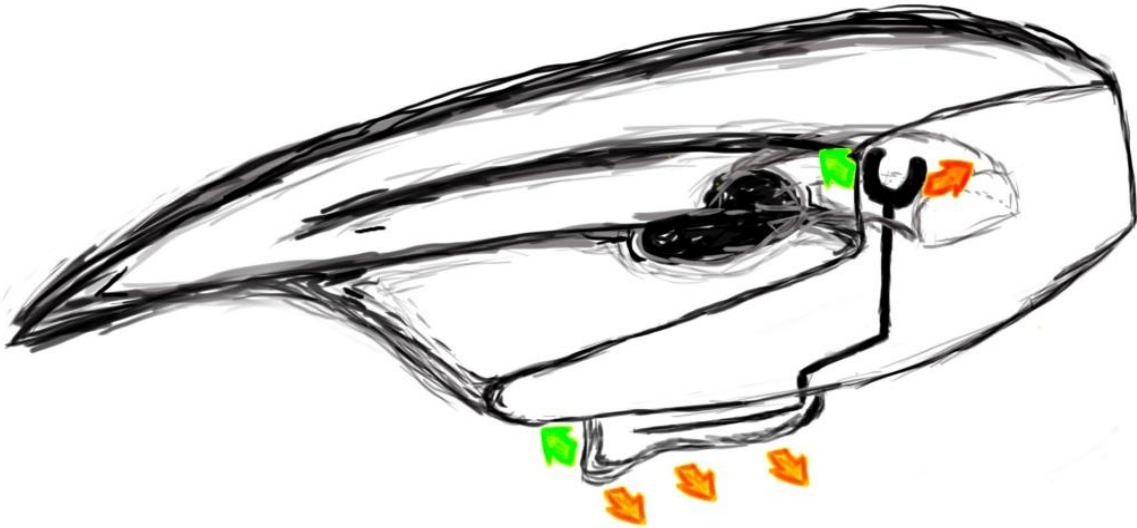
Now is when Newton's third law appears applying another force upwards that counteracts the other force and generates the lift.

Before this explanation, I decided to outline the profile of the sledge taking reference of this occurrence but reversing its effect. I mean, if with the wing, the difference between the up and down profile generates a higher velocity of flowing fluid, turning the shape and adapting it to the sledge, this silhouette should cause a higher velocity downwards itself, improving the hydrodynamic and the reachable speed, which was our objective.



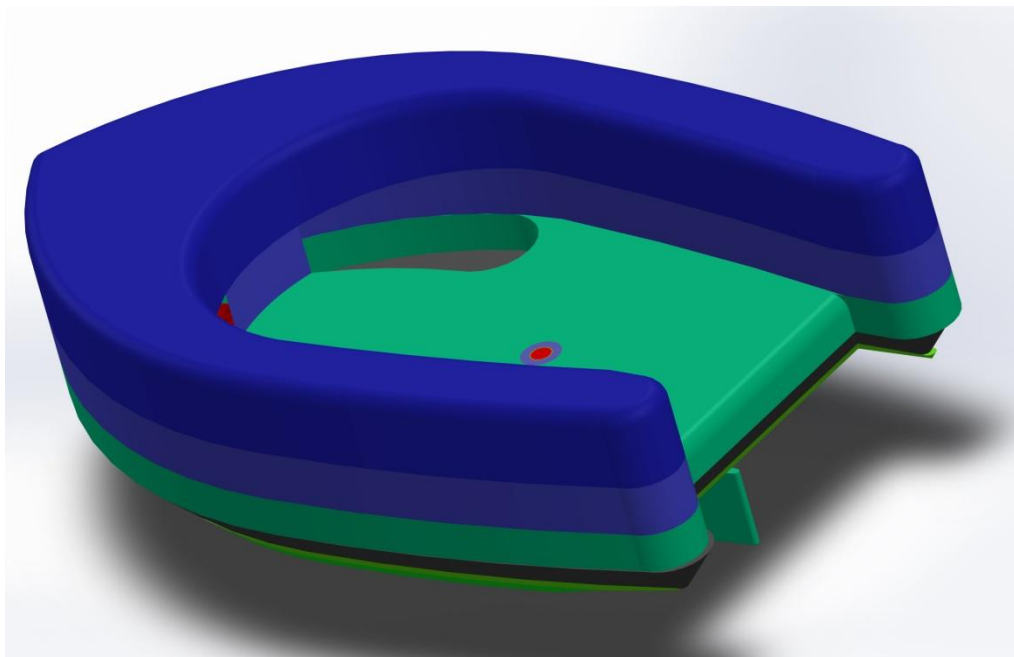
Finally, I also outline how I think the steering system would be. Inside the sledge there are two ergonomic holes united where you can fit your arms to gain grip and maintain the sledge with you.

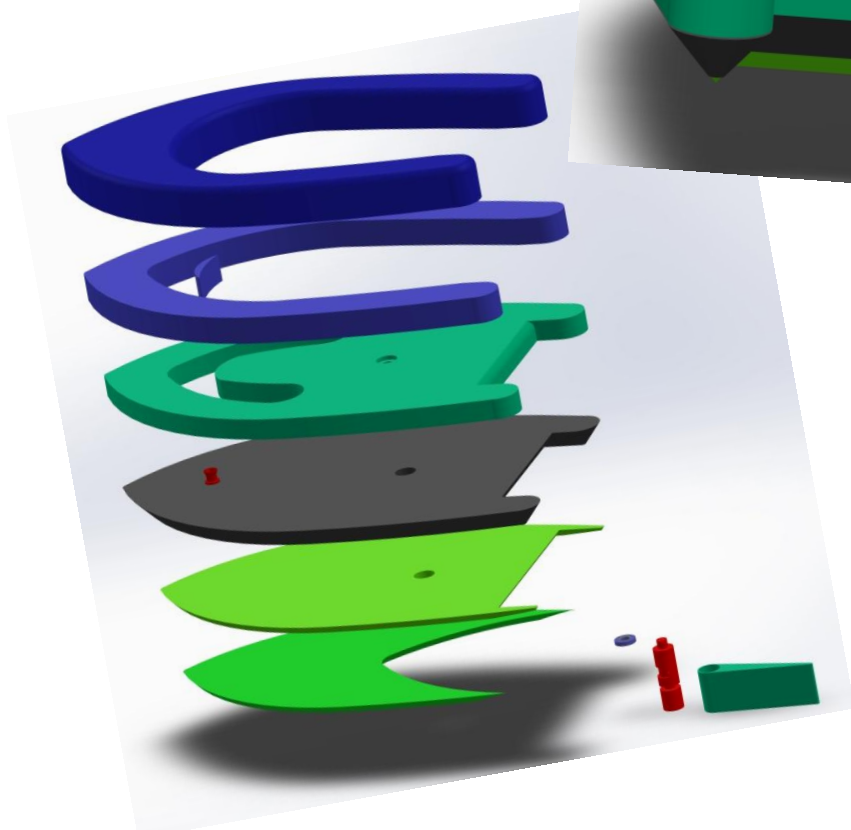
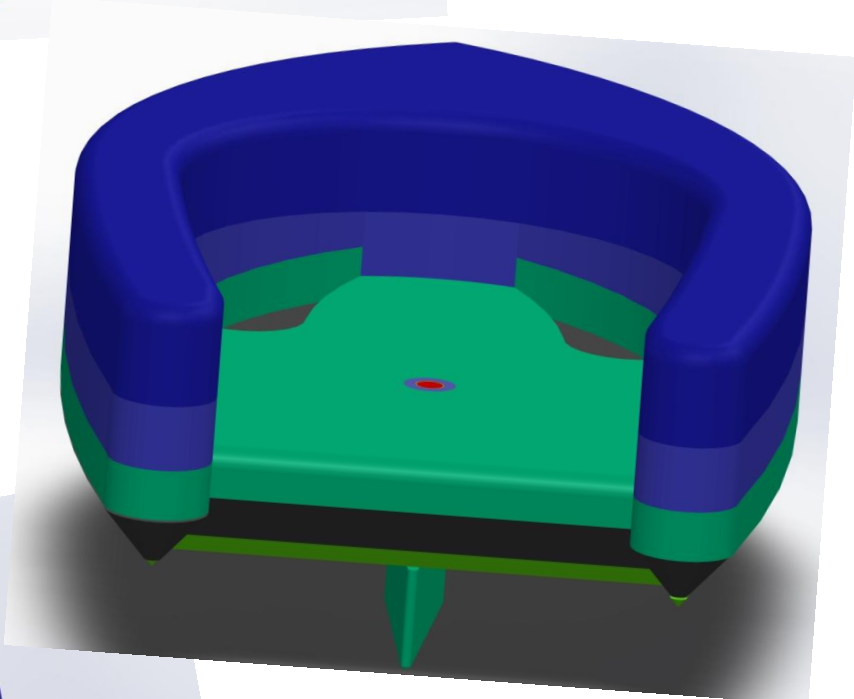
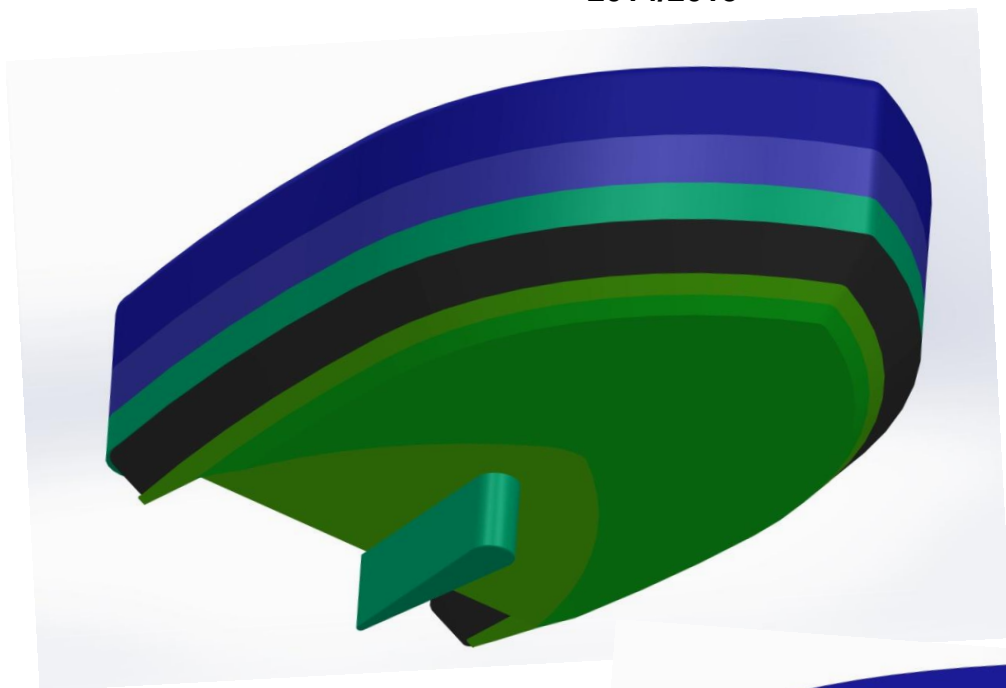
Putting a steering wheel that manages the helm, we can easily solve the problem of lack of control.



5.1.2 Design blueprints

Now it's time to design the hydrosledge applying the upgrades previously commented. To carry out this difficult task I have used SolidWorks, a software used by engineers and architects to do their projects in 3D version. It is very hard to use this programme, nevertheless the results are so satisfactory.





5.1.2.1 Study of the weaknesses, pertinent areas and improve proposals

Now that the renovation of the sledge has been done, we have to talk about the upgrade proposals and the results. Let's focus first on the sledge:

The first goal to reach was redesigning the sledge's aspect and shape in order to increase its hydrodynamic performance. Once you have read the part *5.1.1 First sketches* and you have seen the 3D model you can understand the changes that I have made and I consider that this goal is achieved.

Another objective was to add a mobile helm to increase the steering of the sledge. This was an important upgrade that caused problems related with the design of the transmission system its easy and efficient performance and its extra cost. After a brainstorm about possible ways of doing this task, I concluded by adopting a simple method:

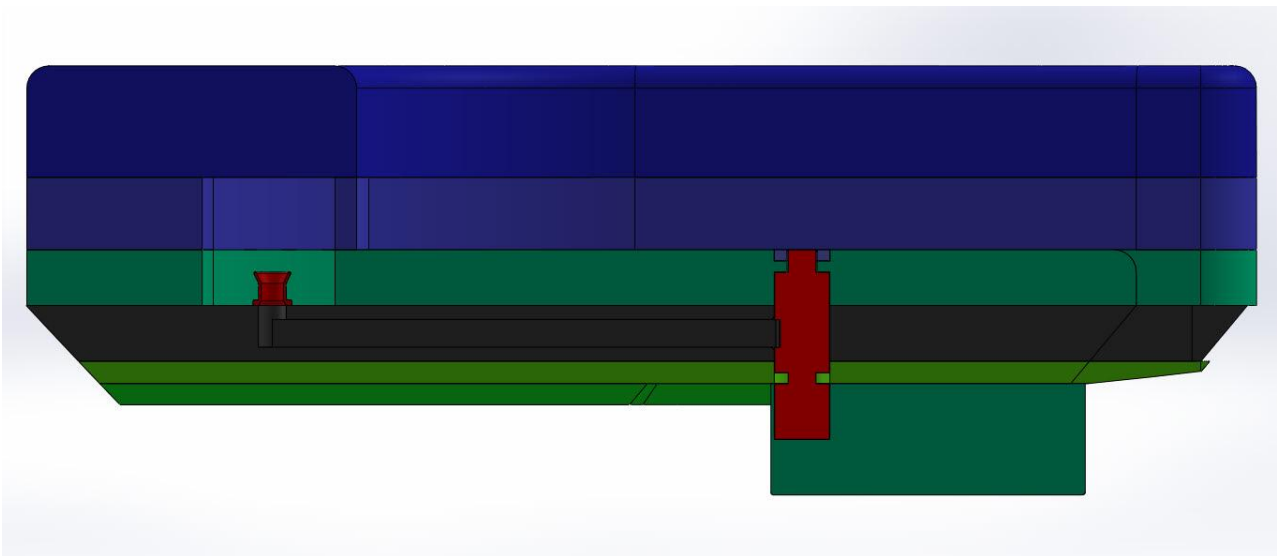


Illustration 5: Section of the sledge with the steering system

This system is based on the utilization of two wires, hooked up on the rotating shaft attached to the helm. When pulling from a wire, the shaft will rotate and reorient the helm, facilitating the steering.

Referencing the external design, I tried to adapt this new product to the actual trends making it more attractive and nice for the clients and the users. Nowadays sportive products are characterized for showing off bright colours full of joy and positive feelings in order to help the users to do sport while enjoying

it. These lively colours will improve the users spirit and their reactions to the practice.

Summing up, the purpose of these new features is to present a drastically new product that improves considerably the quality, fun and doers of this sport, while changing the concept and the image of this sport, "*shooting it to fame*".

Putting the sledge apart, to achieve the last goal exposed it was necessary to improve the user experience during the practise of the sport. This task required to revise and improve other aspects such as the rest of the gear, the publicity and advertisement and the information and the upbringing to the beginners.

Focusing on the rest of the gear, the flippers are nearly as important as the sledge because they are the second biggest source of propulsion, after the water push. Without a correct performance of the flippers we can't easily get the necessary propulsion neither steer nor avoid obstacles as rocks or waterfalls.

There are two kinds of flippers: long and short ones. Obviously they have different features:

- **Long flippers:** this type assures a huge muscular and cardiac effort in change for a more intense sensation of shift. It would be perfect but this is a performance in a pool with calmed water and tested by a professional swimmer. When we change the scenery to a river with rough water their performance doesn't convince. The muscular and cardiac effort can be too much for an unfit doer.
- **Short flippers:** nevertheless, this other kind of flippers have a shorter blade. This fact produces an inferior displacement of water with the other type of flippers while provides the opportunity of reaching a higher ratio of kicking without getting, muscular and cardiac, exhausted like with the long ones. At the same time that the forward move increases.

For these reasons, in our enterprise we should work with short flippers.

Another important task is to reinforce the wetsuit. This element of the gear bears a lot of hits and rubbings and this provokes rips and scratches. To prolong the useful life of the wetsuits and protect better the legs and knees from the hits, this equipment has protections made from foam rubber, not so much resistant. It would be more efficient to add a longer protection that covers all the forward part of the leg but made from gel, which would give the suit more resistance and protection from the strong hits.

One more point to look at is the information that the beginners receive before their first try. It's important to give an accurate, simple and clear speech, warning about all the dangers, the correct technique and the security rules without omitting tricks and ways of evading risks in case of a threaten situation.

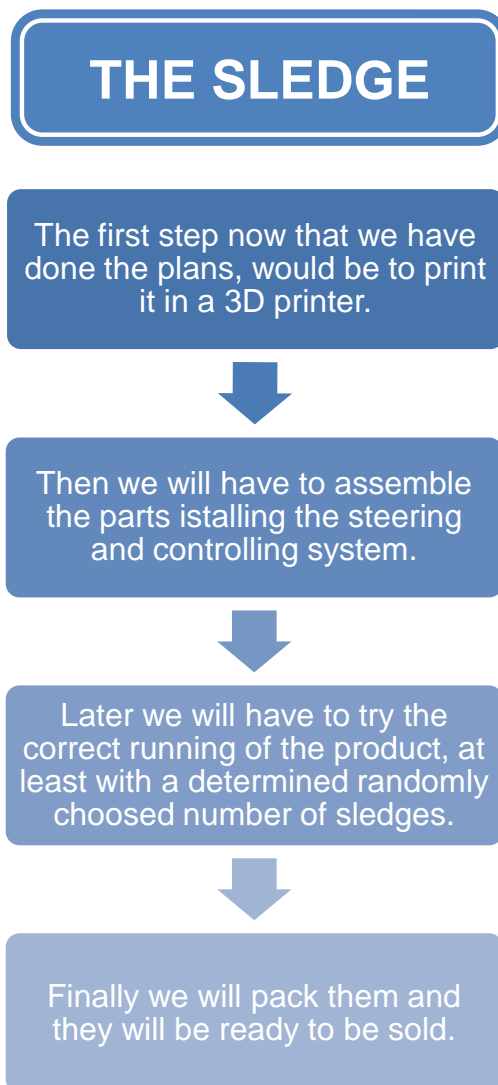
On the Appendixes part of this document you will find a tutorial video with a wide explanation and part of the experience filmed in first person.

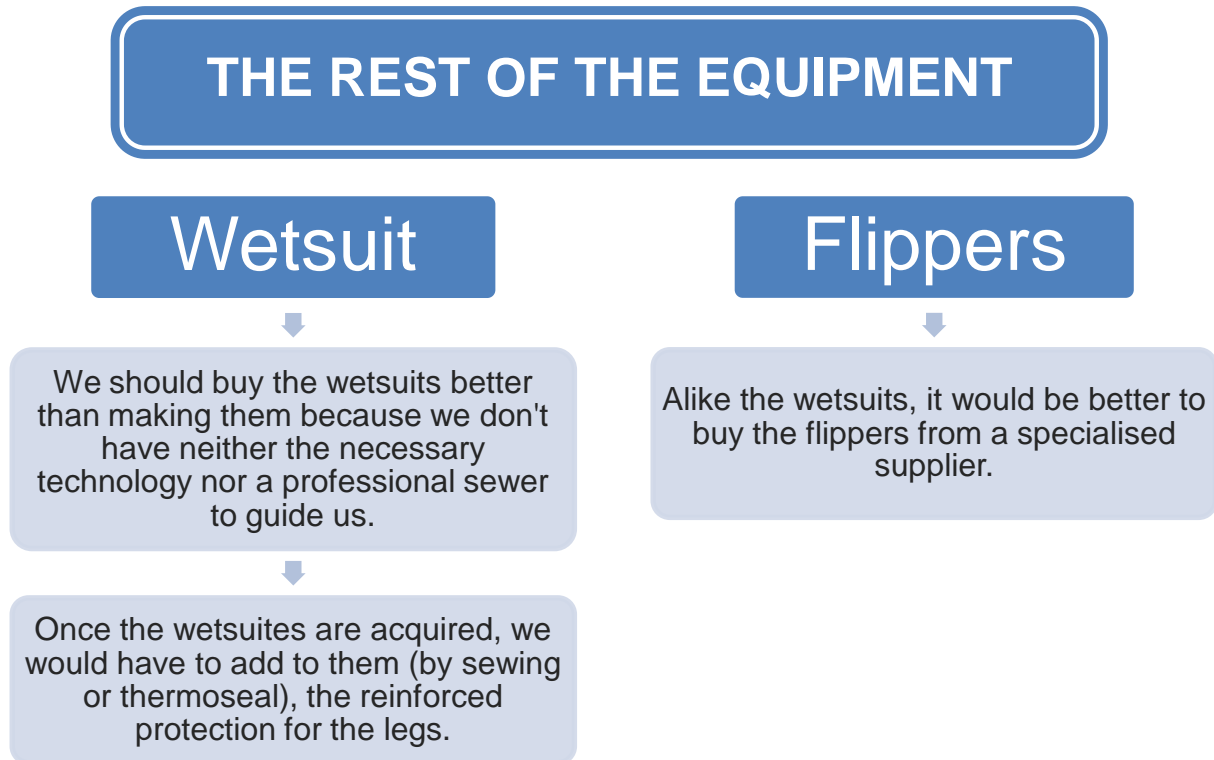
To end with this part, it is necessary to talk about the last essential point: Marketing and publicity. For every enterprise it is vital to make a name for themselves, to gain fame and clients and thrive with their business. Nowadays if a business doesn't announce itself, it won't achieve success at all. That's why, in the part *5.4 Commercialisation*, I will do the exercise of advertising my company and my products.

5.1.3 Building planning

Now, when we have redesigned and improved completely the sledge and exposed and explained all the upgrades of the equipment, we have to set all the operations included on the building process.

We will separate the building process in two parts, distinguishing between the operations related to the sledge and the rest of the equipment.





5.1.3.1 3D printer

3D printing is a breaking new technology with not many years of life that has revolutionized the creative, corporative and technical outlook.

There are two main ways of 3D printing that subdivide into a large list of printing techniques:

- **Compaction:** using different kinds of techniques and activators, a mass of dust is joined in stratus or layers.
- **Addition or injection of polymers:** the material is inserted by layers forming a shape.

There are also three main types of printers (ink printers, laser printers and injection printers). All of them apply different techniques and produce objects with different characteristics, costs and possibilities.

In our project the best option would be to use an injection printer because, even though the cost is higher than ink printing and somewhat higher than laser printing, the range of possibilities is quite wider (print with synthetic

materials, combine more than one material creating a mixed object, decide which physic characteristics we want to strengthen,...) making possible *à la carte* printing; at the same time that the object doesn't need post treatments to be ready to use. Besides we can chose an eco-friendly material, ecological at the same time than durable.

This way we could obtain efficient and durable objects without the necessity of hiring and using diverse machines and a lot of employees to build, assemble and finish our product.

As a prove that this technology works and to have an idea about how the product would result, I have printed a scale model:



5.1.4 Paper materials

For this project we will need a simple list of materials:

Material	Number of units	Individual price	Total price*
<i>Sledge's hulls</i>	14	310 €	3810 €
<i>Sledge's helms</i>	14	32 €	405 €
<i>Stainless wires</i>	24 (pieces)	0.96€/meter	29 € (30 meters)

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<i>Stainless pins</i>	24	0.85 €	20 €
<i>Reinforced wetsuits</i>	14	142.95 €	1845 €
<i>Short flippers</i>	14 (pairs)	18.95 €	260 €
TOTAL COST			6369 €

* In this list appear the total prices with the discount for buying multiple units together (normally it is compressed between the 5 and the 15% of the total price).

5.1.5 Total budget

To the *Paper materials* we have to add the salaries of one or two employees (with the task of assembling parts and finishing all the jobs related with the building of the objects), and the costs related with the fabrication, such as the electrical cost to feed the machines, the rent of the necessary machinery, etcetera.

Service	Number	Individual price	Total price
<i>Salaries</i>	1	645.80 €	645.80 €
<i>Electrical expenses</i>	1 (thermo sealer)	8.8KWh x 0.14€/KWh = 1.20€	1.20 €
<i>Machinery rent</i>	1 (machine)	8€/h x 8h = 64 €	64 €
<i>Materials cost</i>			6369 €
TOTAL BUDGET			7080 €

It could seem that the budget is unreasonably overpriced but, being logical, we are using an innovative technology with endless possibilities that provides us unique products with a really high durability and quality. That isn't

cheap. The equipment that we fabricate will resist seasons and seasons of use and this justifies the cost.

Also we will be able to sell it to other companies recovering the investment faster. If we expend around 330€ to produce one complete sledge we could sell them for a number between 350 and 400€ depending on the market's response and we will earn more money with the sales incomings.

5.1.6 Safety measures

It is always essential when practising a sport, to do it in safe conditions and if we talk about adventure sports, where your life is in a constant potential risk, safety terms are more than proper.

First of all, before trying any new sport it's crucial to know the basics about the technique and the functioning of the sport. It is necessary to investigate or make sure to receive a good complete explanation like the one that you can see in the video attached on the appendixes part.

Talking about the gear we have to be equipped with the following list of things:

- One tested hydrospeed sledge (we'll talk about this later).
- A helmet.
- A wetsuit reinforced with protections on the legs especially on the knees which is the most hit zone.
- A life vest.
- A pair of impermeable shoes.
- A pair of flippers (long or short sized).
- A pair of impermeable gloves (optional).

It is obvious but necessary to say that it's indispensable to know to swim and it's highly recommended to be fit because this activity requires an intense cardio activity.

Pregnant women, people of advanced age or with heart problems must ask the responsible instructor before taking any risk.

5.1.7 Quality test

Having reached this point when we have investigated, planned and designed the new object, we're going into a new period known as *testing task*, where we'll have to try our prototype to find out if we have done things correctly or we have failed in order to solve our weak points or just move forward.

Although this is our object and we have a special affection to it, definitely we have to be objective and critical if we want to persevere.

If we hope to be successful, our creation has to be the subject of diverse tests controlling different areas:

- **Durability (or resistance):** this aspect measures the useful life that the object will have while dealing with blows, nature and climate effects or bad uses among others. Testing it we have to use the object repeatedly or just prepare a simulation that would give us realistic data. This is a fundamental feature because no company would buy a product that will get broken after a small number of uses. It is not worthy at all.
- **Usability:** this aspect controls the quality of the user experience. What is that? Simply this is how the product feels and works when you have it on your hands using it. We have to care about if our object reacts correctly to our commands and if it flows and performs as good as we thought while we were designing it.
- **Design utility:** we have also to take into consideration if we hit the target when we designed the sledge or if in the moment of truth it doesn't work as we pretended. Besides we can look at the external aspect and judge if we got right or if we failed with our election.

At the end of the test we will have to decide if we don't care about the possible problems that will appear or if we will redo the designing process to solve this bugs.



5.2 Market test

Once the quality control has been passed, it's time to face the real challenge: present our product to the public and wait for the reviews and opinions.

From the first instant when we launch our product we have to keep a control of how our product is getting on with the consumers. We will select a significant sample of our potential public (settled on the market plane) and keep observing their opinions and their advice to improve our product. If the market test fails because our product is not satisfactory or the modifications necessary to make it satisfactory increase dramatically the cost of the project we will have to consider about redoing the creative process or just discard the project before losing all our investments.

5.3 Technical organisation

Once we have received all the OK's from the previous stages we have to outline the process that we will follow during the construction, assembling and commercialisation of our product, step by step.

1. With the model, we will print our sledge's parts as we had explained before.
2. Then we'll proceed to the assembling process where an employee will work connecting the pieces and installing the steering system.
3. Finally we will just have to commercialise it.

5.4 Commercialisation

When the product is finished, we have assured that works appropriately and that our commercial adventure won't be a complete failure, we have to focus all our resources and efforts on the last but not least important part: the commercialisation.

It is worthless to create the best product ever if you don't announce it creating expectation and making consumers have a wish for it, a necessity to purchase it, generating a gross of business that is what we are trying to do.

Usually for these tasks, enterprises make advertisements for television, radio, written press or the internet among a very wide range of publicity options. Obviously depending on the economical possibilities of every business.

In our case, we are not a rich and settled down company and for this reason we will use the most economical and useful way: the webpage. It's also important to create a profile on the social networks because nowadays they contain a big amount of people that could find your business and hire your activities, being a very useful and free resource.

I have created a site where our company called **H Xperience** advertises our activities, offers and utilises all our strengths, singularities and strategies to convince the public about hiring our services. You must take a look!



Or capture this with your mobile
phone and a QR code reader!



6 Conclusions and final assessment

After all the process we can draw some conclusions.

6.1 Summary and hypothesis check

The content of this project was based on the conception, reorientation and redesign of the hydrospeed.

After all the process I could say that I know enough things about creative processes and all the parts that are included into them.

Improve whatever is a complex task and at the end the triumph of the result could vary depending on which eyes judge it. Though there are some objective criteria that can bring some clarity to the issue.

The hypothesis was that the hydrospeed, with some specific upgrades must result into a better experience for the doer, getting more people willing to try it and result an economically worthy business. Now that I have finished my investigation, I am able to affirm that the improvement solution that I propose could be done but under some circumstances.

This upgrading is not extremely focused on being very economical, it takes precedence the quality and the result. So my sledge would be 3D printed and this wonderful technology is at the moment quite expensive but in the near future its cost will be reduced as a consequence of its spread. A solution to this problem could be waiting to carry out this project. Also this improvement is a long-term investment because the initial cost will be rewarded with a very long duration of the product as well as the possibility of selling your idea which is unique on the market to other companies recovering the expenses.

But it is a fact that this is a minority sport and to be able to reach the success it is necessary to complement the work done with an excellent performance on the other tasks, specially communication and advertising. It is vital to attend a website, take care of a profile in the main social networks publicising and posting offers and news while carrying out all the commercial activities that can bring fame and recognition to this sport and our business. The objective is to spread the hydrospeed. Also the attraction caused by the renewal

of the hydrospeed would make people choose our agency to do other sports and activities becoming a project that won't only bring incomings by the hydrospeed itself.

6.2 Problems encountered and personal opinion

The main problems that I had encountered during the project are related to the information sources. The hydrospeed and in general adventure sports are topics that haven't been properly documented and finding a reliable source of information has been a struggling task. Also the fact that there aren't proper books about the topic was a handicap and I had to depend mainly on the online pages.

Another issue was that the software and resources necessary to do this project were inaccessible and hard to get causing delays on the process and the elimination of other parts of the project to limit the work due to the lack of time.

Also the computer programs required to do some of the parts related to the building memory were designed for the knowledge of a professional causing serious problems to get used to the procedures and the functioning to create a good piece. Referring to the creation some obstacles appeared too. Carrying out a creative process requires an open mind capable of imagining, developing and expressing new ideas and this is a tough thing sometimes.

All the research that this project required supposed to me a learning and enriching process showing me how difficult and complex a project of these characteristics is and the vital importance of every single step.

Before starting, I knew that if you are conformist you will never progress but now after being some months working on it, I really comprehend the importance of the dissatisfaction and the non-conformism as the way to improve and, that the only way to lead our lives as well as society to a better reality is with the true motto: *Everything is improvable and you can always reach something better*, which everybody must know.

7 Interviews and inquiries

On the 3rd of August of 2014, at an early stage of my project, I interviewed Manel Puig who is the manager of Rafting Llavorsí enterprise, a business that offers a wide range of sportive activities (specialised in adventure sports), in a natural environment such as rafting, equestrian sports, rock climbing, canyoning, canoeing, bungee jumping and hydrospeed among a lot more.



He is the owner of a medium-size company with more than 60 employees on the staff that works all along the year boosting during the holidays seasons and varying their supply depending on the season of the year, playing with aquatic, terrestrial and alpine sports.

Interviewer: Good morning Mr. Puig and first of all, thanks a lot for giving me a little of your time.

Interviewee: You're welcome. And you can address me informally.

Interviewer: Okay, so you are the owner and instructor of a company that works with sportive leisure and doer of adventure sports. How much time have you been involved in this business managing and teaching these activities?

Interviewee: This year will be the 16th anniversary of my business but of course I didn't start my professional career owning this company. When I had to continue my studies, I decided to do a formative course of physical activities on the natural environment, which shows you a wide range of sports such as canoeing, BTT, equestrian sports, hiking,... And when I finished it I started working by seasons on a company that did a business similar to mine. When I earned enough money decided to set up my own business and 16 years after this is the result.

Interviewer: Nice, so during all your long experience in this business you should have seen the evolution of these sports. How would you define their evolution in terms of technique, public, security and equipment?

Interviewee: The biggest change is with the public. Twelve years ago we were working the double of nowadays. During those years we experienced a boom with this kind of leisure and we attracted the interest of a lot of public and earned twice what we are earning today. Another change is on the technique and the people who prepare themselves to work in this business. At the present day the equipment has suffered a big improvement comparing it to 15 years ago, increasing the security as well as the education of the future instructors have been improved in order to prepare them better to face difficult situations. Also now they are required to learn more than three languages including English as an indispensable one.

This is a good change that, frankly, was necessary because between the 30 and 40% of our clients are foreign tourists.

Interviewer: And which kind of public do you normally attract?

Interviewee: It depends on the time of the season and on the type of enterprise. There are companies that are specialised on attracting a more selected public treating them with more privileges and there are other companies like mine, focused on interesting a majority that doesn't care as much as the others about the privileges and they look for a good price as well as a friendly treatment. Also we work a lot by the internet, I mean that a lot of people contact us via web and normally this is a young audience.

Interviewer: As I told you before starting this interview, I am doing my Research Project about the Hydrospeed with the firm objective of upgrading it in order to make it funnier, safer and increase its popularity.

With your knowledge do you think that this is a realistic project? I mean, do you think that this is improvable and if your answer is affirmative, what would you change?

Interviewee: This is a difficult one. Let's see... From my point of view this is complex. The sledge is made of polystyrene, beforehand it was made of plastic, it was heavier and easier to handle but you needed to be fit to control it. This was a problem because not everybody could use it in a safe way so, that changed. You could investigate different types of materials or maybe try with

the shape of the sled in order to change its performance on the water.

You should also work with the rest of the equipment. The flippers are the second most important part of the gear to do this sport. With them you lead the sledge and impulse yourself to avoid the obstacles on the river. You can change the sizes of the flippers and observe how they change the technique of leading the sled, it's all about trying.

Another important point is the publicity. People conceive this sport as a dangerous one and some of them don't dare to try it and prefer to do rafting for example, where you don't have the same contact with the river and it seems safer... People in general don't have the right concept about how funny and safe is this sport which sincerely for me is the funniest activity that we offer.

Interviewer: Currently what would you say is the condition of this sport?

Interviewee: This sport is eclipsed by others like rafting or canyoning. In general the adventure tourism that made its boom 15 years ago has been braking its success progressively during the last seasons, also due to this economic crisis that is messing everything, but nowadays those sports don't have the recognition that they deserve.

Interviewer: Is this a sport for all kind of public?

Interviewee: Of course it is. If you are quite fit, you like very active sports here you have direct contact with nature and, what's more important, you dare, you would love this sport.

The requisites are the same as in other aquatic sports. You need to know how to swim, pregnant women can't do it for their safety and adult people that want to try it need to be sure about their physical condition because unfit ones could have problems during its practice.

We also have specific routes for children that have a lower level of difficulty and risk.

The idea is that sport is for everybody and we try to keep this purpose going.

Interviewer: Focusing on a more economic aspect, what effort has to make a middle enterprise that offers this kind of leisure activities? Is it profitable?

Interviewee: Managing a company that works in the third sector, utilising the tourist and leisure time isn't an easy task. Like every business we are suffering the crisis but considering that we are specialised in adventure sports and the fact that lately the tourist prefer destinations with beaches to lay down on their hammock, we particularly feel this bad economical period.

Interviewer: What strategies do you use to advertise your business and capture more clients?

Interviewee: We use two main methods of publicity. The direct one, I mean, by the internet and in written press. We have a webpage which is our principal booking point and where we solve all kind of doubts or problems via e-mail or by telephone at the same time that we advertise our company on sportive magazines, newspapers and the regional bulletin.

We also cooperate with local hotels proposing offers to the public including hosting on the hotel and activities with us during the day. If we didn't help each other, especially during these times, we couldn't survive.

Also we take advantage of the publicity that our satisfied clients make us for free. They tell their friends about their good experience and our business spreads successfully.

I particularly think that the most important part is to offer a wide variety of activities and packs because variety is the spice of life and there aren't two identical clients.

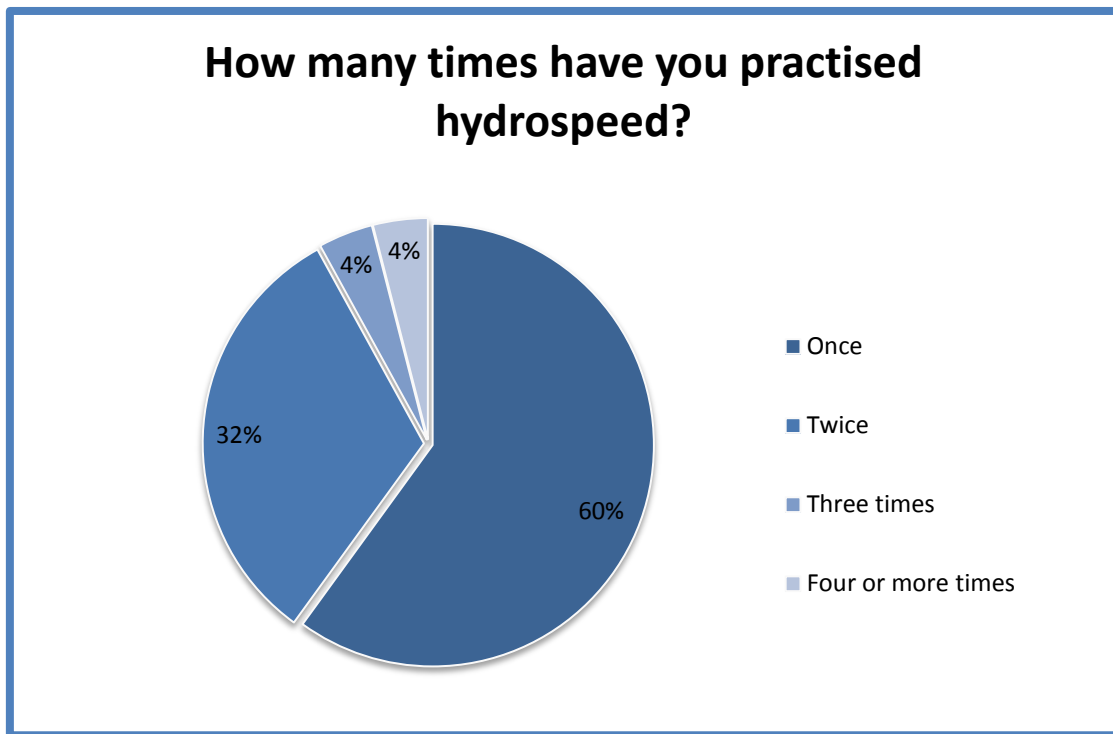
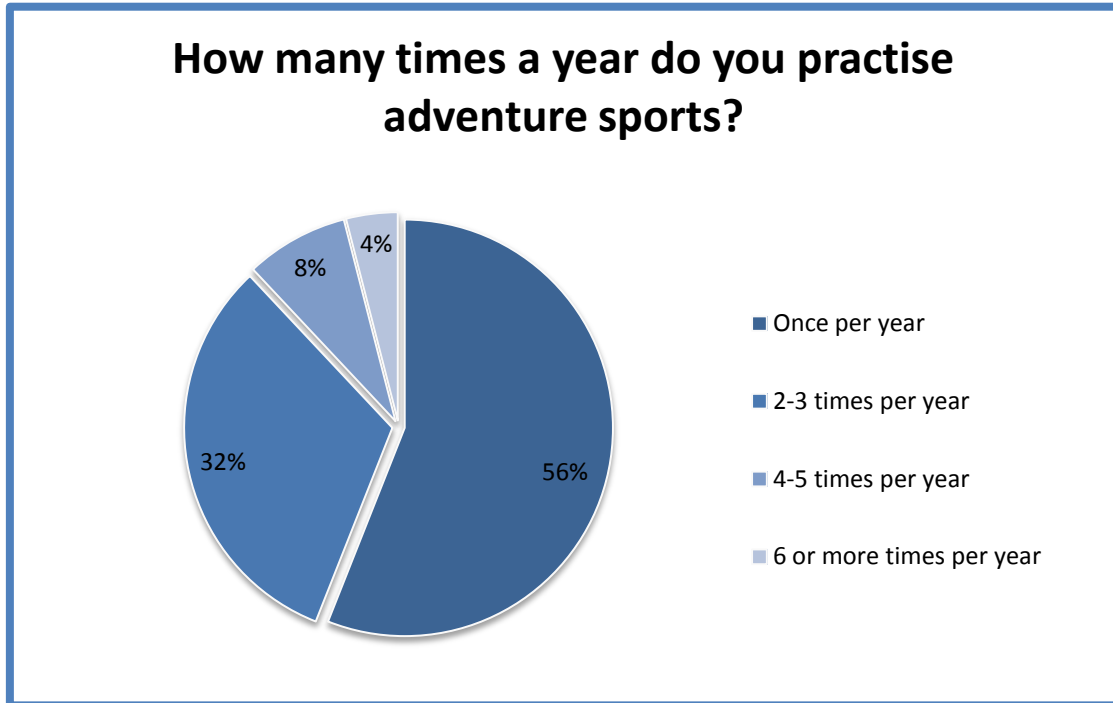
Interviewer: Nice! So lots of thanks for your time and for answering these questions!

Interviewee: You're welcome! It's always good to meet people concerned about these themes.

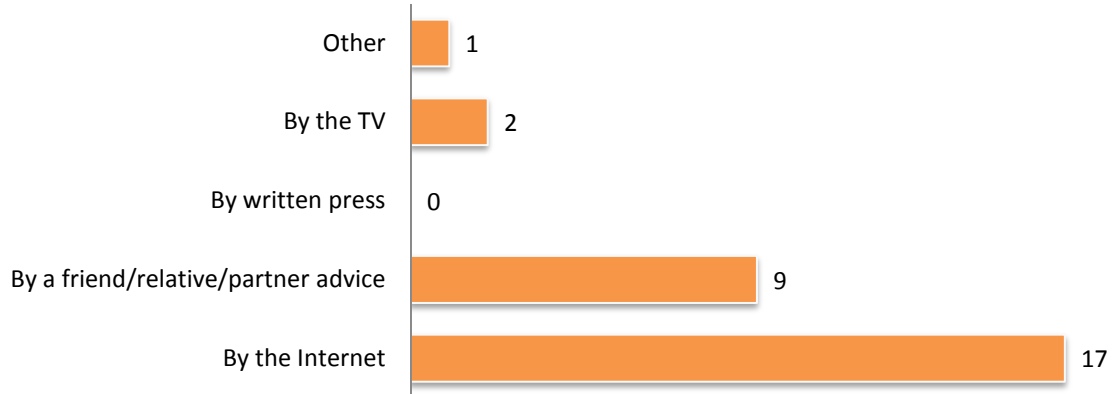
Good luck with your project!

Here you can see the results of the inquiry carried out:

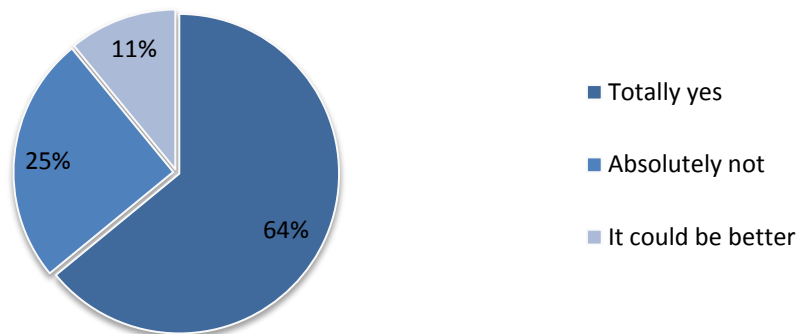
Summary



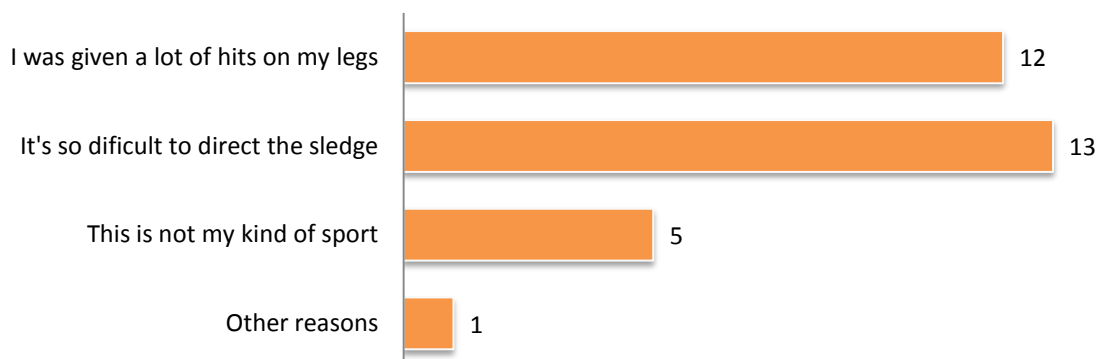
How did you discover this sport?

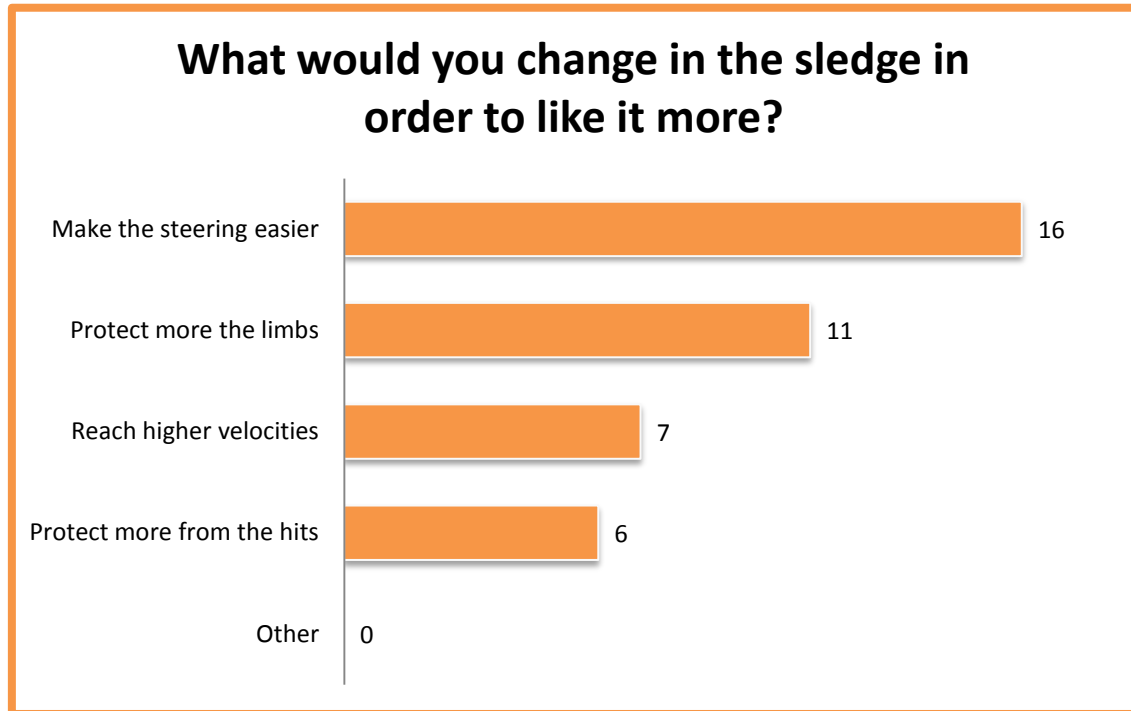


Were you satisfied?



In case that the last answer was not affirmative, why didn't you like it?





You can write here any other aspect related with the sport which you think that would have to be changed in order to improve:

- The protections must have to be upgraded.
- If it had been easier to control and steer the sledge I would have had more fun.
- You must be able to hold the sledge better.
- Improve the protections of the legs. At the end it hurts.
- The wetsuit didn't protect from any hit and the sledge was too small for a big man like me.

8 Glossary

Brainstorm: This is a technique used to generate ideas. It's about providing all the ideas that you have in your mind. Actually a group of people close themselves in a room and write down all their thoughts and at the end they select the ones with potential.

It's called brainstorm because the ideas appear suddenly like the storm.

I+D department: This is the heart of the creative process. Big companies have entire departments with researchers in their labs working out in new technologies, materials and techniques of construction in order to evolve and create new amazing products, that's the reason of the name: Investigation and Development department.

Turnover: The quantity of sales that generates a product.

Trending topic: This is the tendency of the moment, the style followed by most of the people. It is used by the researchers who study the markets and the incoming necessities and styles in order to orient their investigations and resources to satisfy the future necessities.

We can also find trending topics in the social networks, when there is a special event.

Hype: The hype is the level of excitement and expectation that people have for the launch of a new product, a special date, a party or event...

Teaser: This is a little taste of a product in form of short advertisement or simply one image with the intention of creating hype to the public.

Merchandising: It's any practice which contributes to the sale of products to a retail consumer including publicity, accessories...

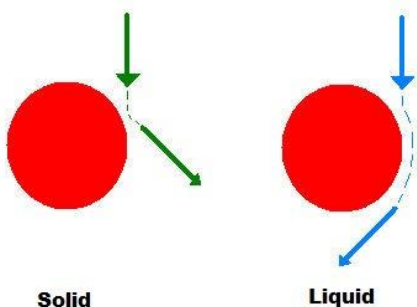
Cash flow: Talking in terms of finances and economy is the movement of money into or out of a business, project, or financial product. It is usually measured during a specified, limited period of time. Measurement of cash flow can be used for calculating other parameters that give information on a

company's value and situation. Cash flow can be used, for example, for calculating parameters: it discloses cash movements over the period.

Eco-friendly: nowadays people concerns a lot about nature, the global warming and the future of our planet. That's why the public cares about the origin and impact of the products that they purchase. It's important to produce the products and services with a responsible methodology that respects the planet in order to be *eco-friendly* and responsible.

Newton's third law: the action and reaction law: With all action takes place always an equal and opposite reaction: means that the mutual actions of two bodies are always equal and aimed in the opposite direction.

Coandă effect: In fluid mechanics, the Coandă effect is the physical phenomenon in which a current of fluid, gas or liquid, tends to be attracted to a neighbouring area to its trajectory. Suppose a curved surface, for example a cylinder, as in the illustration. If upon it we pour something solid (stones, for



example) it will rebound to the right. Cylinder, by the action-reaction principle, will tend to go to the left. This can be seen in the first part of the illustration. If repeated this experience with a liquid, due to its viscosity, it will tend to "stick" to the curved surface. The fluid will come out in the opposite direction. In this case, the fluid will

be attracted to the cylinder. The term is in honour to the Romanian aeronautical engineer Henri Coandă, who discovered the effect in its prototype of a jet aircraft.

Bugs: A bug is, in computers vocabulary, a mistake, an error that produces a bad functioning of a program, game or whatever. Nowadays it's used in other areas of the language as this one.

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11 Appendixes

Article published in the newspaper ABC:

China construye casas con impresoras 3D

La empresa Winsun las comercializa por 4.000 euros

La **impresión 3D tiene bastante tiempo en el mercado**, aunque en el último año ha tenido más presencia con más usos. La empresa china Winsun ha querido demostrar que las impresión por capas a través de máquinas 3D puede llegar al sector de construcción. Winsun construye casas con estas impresoras y las vende por **4.000 euros**.

Se utiliza un material que mezcla cemento con fibra de cristal para ir creando bloques. Aseguran que es un material más ecológico, resistente, y que se usa en menos cantidad, por lo que es más barato, según señala su creador **Ma Yihe**.

Las máquinas utilizadas por Winsun pueden crear diez casas de 200 metros cuadrados en un día. Según explica **Ma Yihe**, los compradores sólo tienen que elegir un modelo de vivienda que se ajuste a su



presupuesto y la estructura estará fabricada al día siguiente. La empresa utiliza **cuatro impresoras de 6.6m x 10m para rociar la mezcla** y construir las paredes, capa por capa, informó la agencia oficial de noticias Xinhua

«Podemos imprimir edificios de cualquier diseño digital que nuestros clientes nos traigan. Es rápido y barato», ha dicho a Xinhua Ma Yihe. Winsun también está probando abaratar los costes utilizando en la mezcla **residuos de las minas y materiales de desecho**

La compañía cuenta con 77 patentes nacionales para sus materiales de construcción. «Los residuos industriales de edificios demolidos están dañando nuestro medio ambiente, pero con impresión 3D, que es capaz de reciclar los

residuos de construcción y convertirlos en nuevos materiales de construcción, se crearía un entorno mucho más seguro para los trabajadores de la construcción y podríamos reducir considerablemente los costos de construcción», ha dicho Yihe.

Article published in the online newspaper Marca Motor:

Strati, el primer coche del mundo obtenido por impresión en 3D

Local Motors ha conseguido crear un coche operativo a partir de técnicas de impresión en tres dimensiones. Utiliza el esquema eléctrico de un Twizy. Se imprime en 44 horas.

En menos de dos días y con un coste infinitamente más reducido que siguiendo los métodos de producción tradicionales **Local Motors**, una compañía con sede en Arizona, ha conseguido hacer realidad el **Strati**, el primer automóvil del mundo **fabricado con una impresora 3D**.



Se necesitan **44 horas de impresión** para la carrocería y **dos horas de ensamblaje** de la parte mecánica para que cada Strati cobre vida. Una **impresora 3D especial** (sólo existen dos similares en Estados Unidos) crea las

formas del vehículo a partir de **material sintético reforzado con fibra de carbono** y, posteriormente, un equipo de montaje se encarga de acoplar los elementos móviles.

En menos de dos días y con un coste infinitamente más reducido que siguiendo los métodos de producción tradicionales **Local Motors**, una compañía con sede en Arizona, ha conseguido hacer realidad el **Strati**, el primer automóvil del mundo **fabricado con una impresora 3D**.