

# ORBIT RACING

## Five Page Plan



Regionals Proposal "Mk - III"

3d Render - Blender



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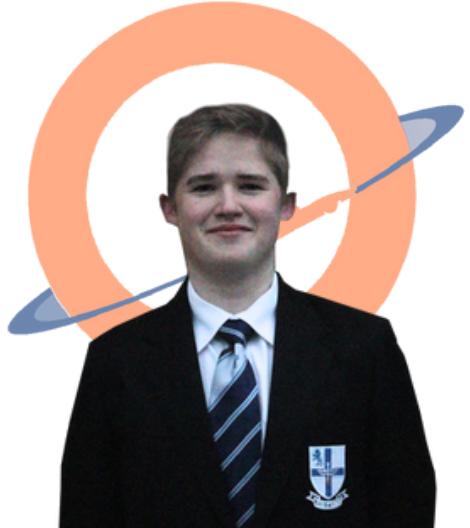
1. Our Team
2. Research
3. Development & Design
4. Identity & Outreach
5. Finance and Project Management

We each have our  
own strengths



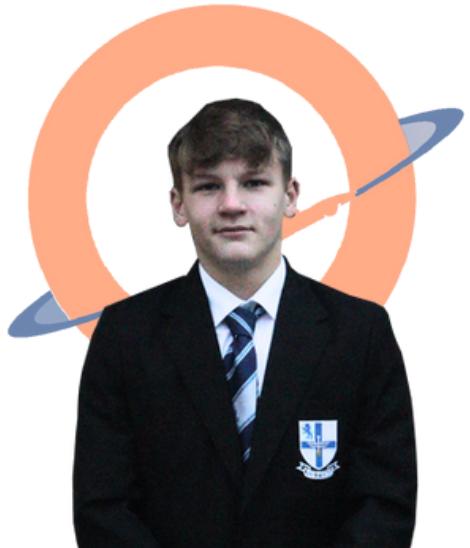
# Introduction

We are a group of 6 individuals but together create an unstoppable force. Our team was founded on the key principle "**We each have our own strengths**". This idea that where one of us falls the other makes up in. This is our first year competing and are ready to grow.



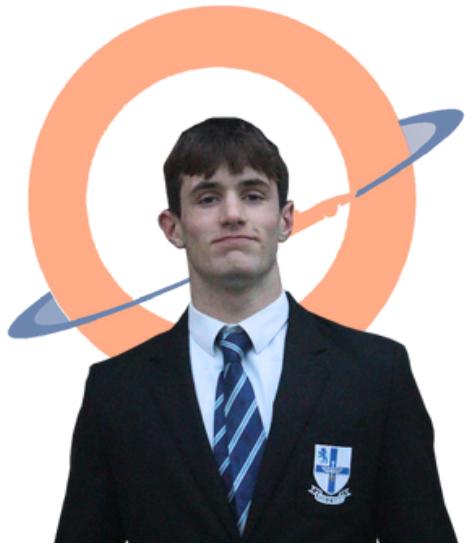
## Darragh O'Neill

Darragh oversees the overall **Management** of our Team. During our team meetings, he works through what we have achieved and what we are yet to. Darragh keeps track and delegates all of the tasks that need to be completed, this ensures that we meet deadlines. He offers support to all aspects of the team. Darragh has a background in leadership positions and is drawn to team management. He aims to get the best out of every single member of our team which in turn creates the unstoppable force that we are today.



## Conor Blackburn

Conor's role is the **Manufacturing Engineer**. He both helps the car meet its technical regulations and keeps the designer on track in terms of the car aerodynamics and weight limit. He is also responsible for the assembly of the car and is therefore familiarizing himself and keeping himself up to date with the design engineer. He is capable of operating CAD and assists the Design engineer whenever needed. He runs simulations, makes renders and researches in order to find the optimal components for the car in order for not only succeed, but thrive. It is key he stays in close communication with all of his team and keeps them updated on his progress.

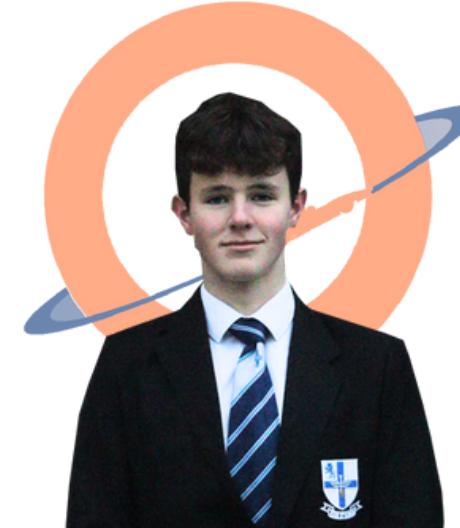


## Oliver Lee

Oliver Lee is the **Design Engineer** of Orbit Racing. The car is modelled and rendered, on 3D modelling software, Autodesk Fusion 360 and Aero-Tested on SimScale. Oliver works with Conor to create the final product which is raced on the track. He must create a car that will cross the twenty meter track in the shortest time possible, within F1 in Schools Irelands technical regulations. This includes calculating for weight, track resistance and aerodynamic resistance while being sturdy as ell. He aims with the rest of the team to represent Ireland and compete at the world stage in the F1 in Schools World Finals.

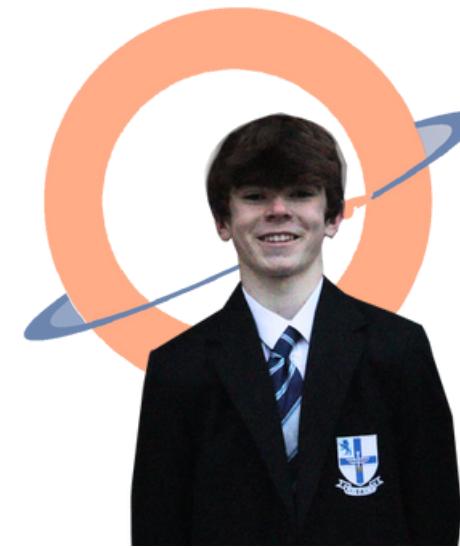
# Team Structure

The structure of the team is built on our individual strengths. Each member of our team brings their own qualities to the table. Our roles within the team was based on each of these strengths.



## Fiachra Coakley

Fiachra manages the **Marketing and Social Media** side of Orbit Racing team. He controls what goes out on social media throughout our wide range of platforms. This could be from an Instagram post to a Facebook story even to a TikTok. He also works with our brand in the way he is the kit designer and came up with the logo. He creates the posters for the team and will play a huge part with the pit stand in the future. He is succeeding in getting our team out there and creating the Orbit Racing Brand. He is also the Secretary of the team. This involves overlooking the team when necessary and keeping team mates up to date.



## Jack Drumm

Jack is the **Resource and Logistics Director** of Orbit Racing. He is responsible for making contact with any potential sponsors and maintaining contact with current sponsors about what they need or want in regards to benefits. He is in charge of organising sponsorship events and ensuring that the team has everything they need for the events. He places the orders and contacts the distributors about collecting the resources. He works closely with all members of the team and very closely with finance. Any logistical issues that arise while a project is being completed can be brought to him and be solved as a team. He enjoys interacting with people and excels in problem solving so this role suited his skill set perfectly.



# INITIAL RESEARCH

## Design & Objectives

Orbit Racing's goals for the engineering side of the competition are to create a car that pushes the limits of the regulations given, in order to cover the distance of the twenty meter track as fast as possible. This means making a car that is lightweight and creates minimal resistance (friction and drag) against the track and air. Making the car is lightweight, means there is less mass to be moved, giving the best acceleration.

The car is being modelled on AutoDesk's 3D modelling software, Fusion 360, which allows you to view the cars weight before it has been made in real life. This helps with finding the centre of mass, of the car. Ideally the centre of mass, should be directly in ahead of the force that is pushing it, leading to maximum efficiency of the power provided.

The goal aerodynamically is to minimise the drag coefficient, to make sure there is the least amount of air resistance pulling the car back. Factors that help this can be, reducing surface area that air coming from ahead of the car will touch. Downforce and lift are unnecessary to incorporate in the design of the car as cornering is not a part of the task we are trying to complete. The software that we are using to test these metrics is a fluid-dynamics simulation software, called SimScale, and developed by SimScale GmbH.

The car will be made out of an F1 in Schools model block, ceramic bearings, wheel axles, a CO<sub>2</sub> cartridge and various 3D printed components, including the nose cone front wing, wheels and more. It is important to create a car that is durable, as the only thing to stop the car at the end of the twenty meter track, is a wall and a small amount of cushion. It is vital to have good structural support around the front area if the car.

The F1 in Schools model block and other components of the car will be bought on Denford Web Shop. The model block will be milled by a CNC (computer numerical control) machine, to directly transfer models from CAD to a real physical object.

This service can be very expensive, so we are lucky to have such great workers on the finance and marketing side of our team. As the car is separated into pieces that must be put together, it is important to have the real life manufacturing as accurate as possible, to eliminate anything that will slow the car.



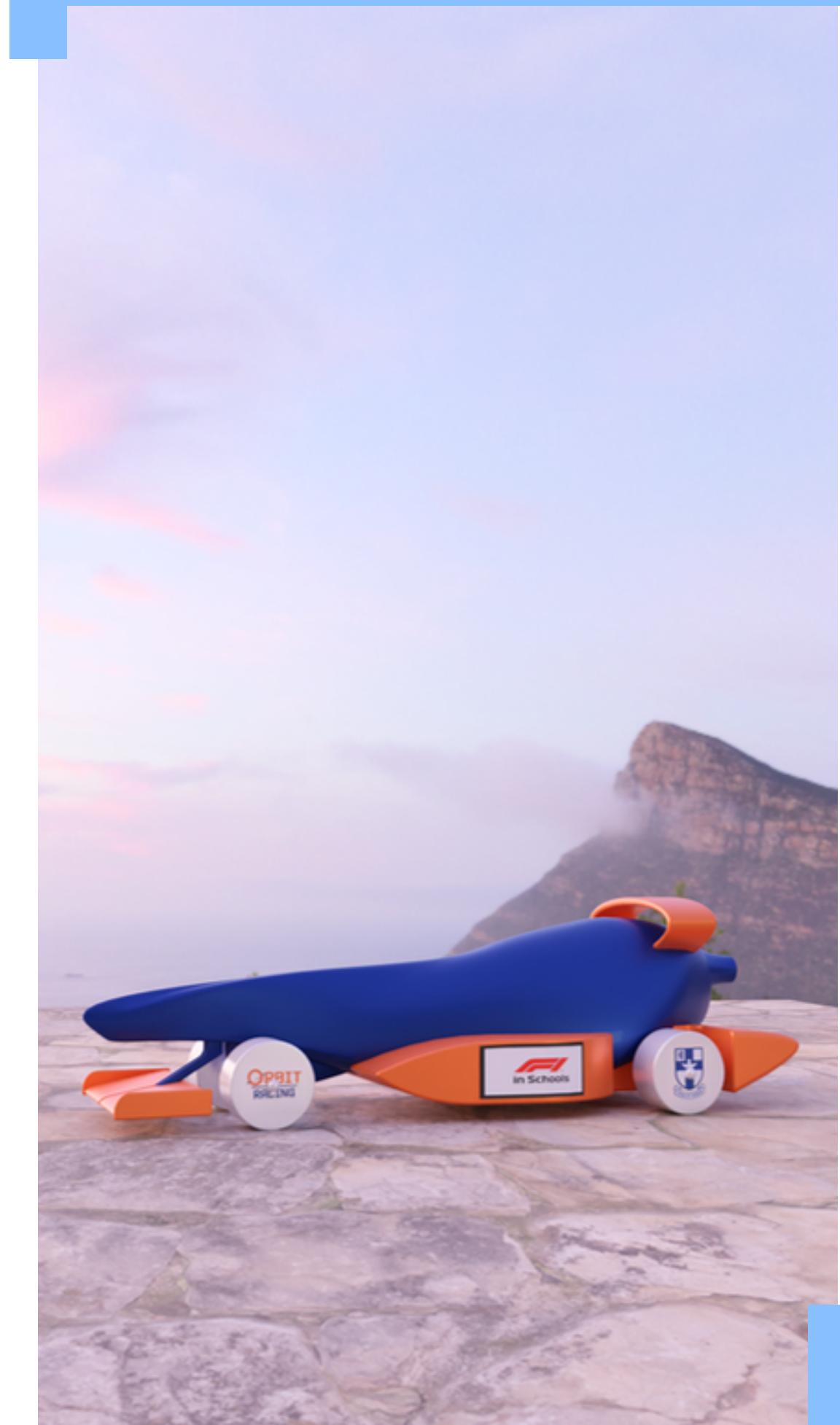
**Oliver Lee**

Design Engineer



**Conor Blackburn**

Manufacturing Engineer



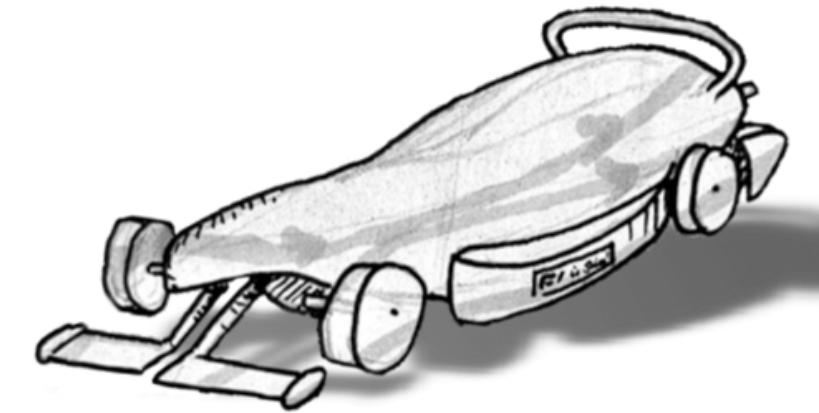
# DEVELOPMENT & DESIGN



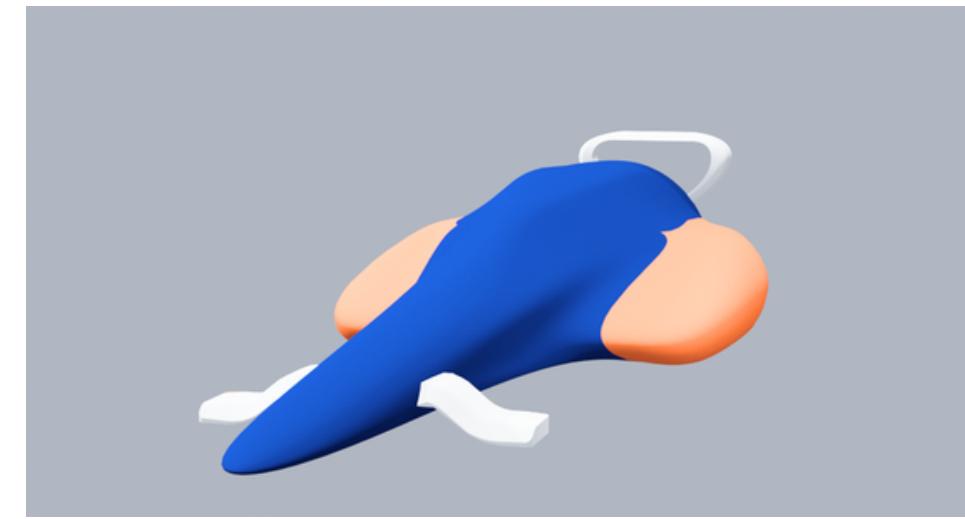
Mk - III- Front Three-Quarter



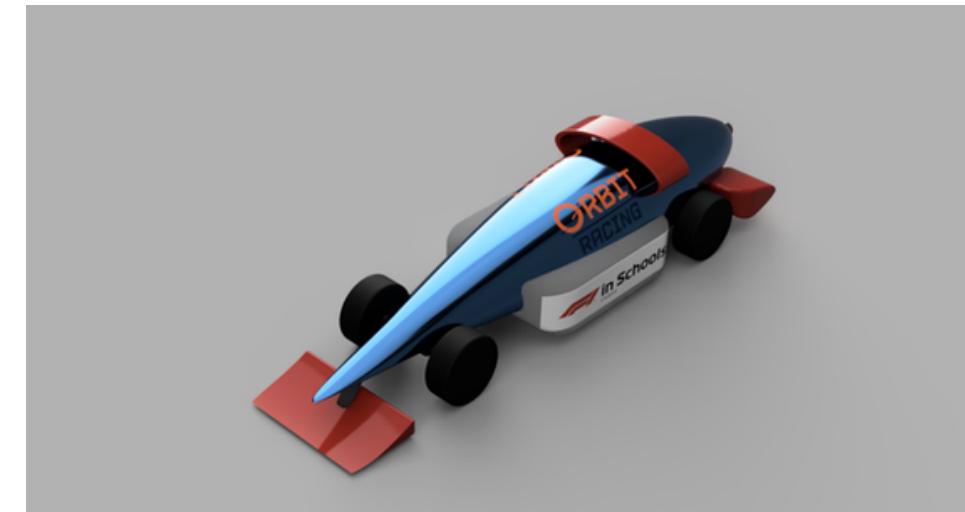
Mk - III - Low Angle



Initial Sketch



Mk - I



Mk - II

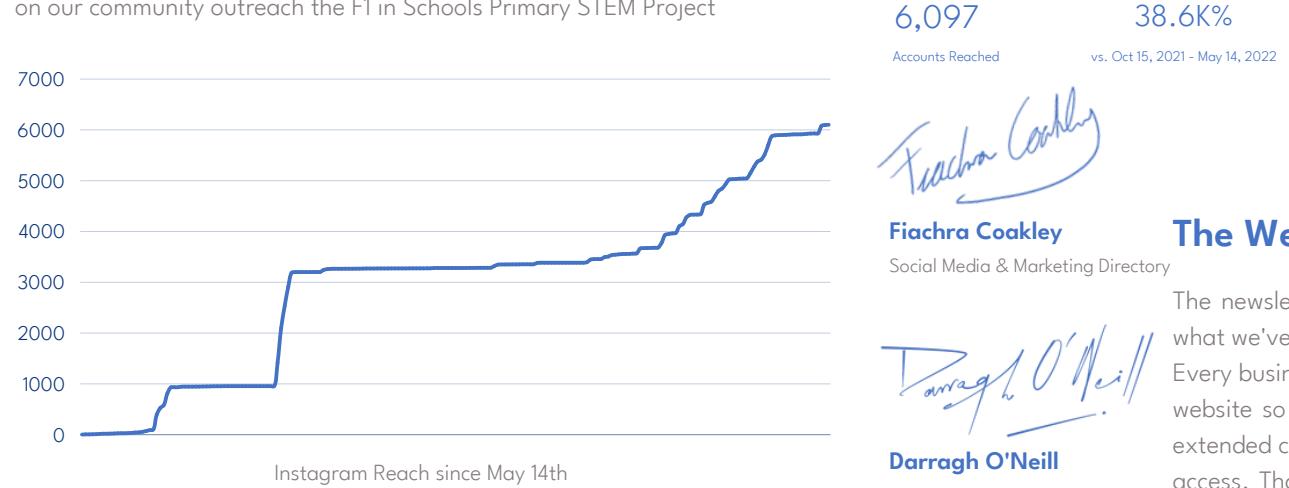
# TEAM IDENTITY & COMMUNITY OUTREACH



## Social Media

So far Orbit Racing has explored many Social Media platforms deciding to focus most of our work on Instagram. We do this by posting regularly, gaining traction for our team and promoting F1 in Schools. Since the start of this academic year, we have gained a noticeable following across our platforms totaling over 1,000 followers. Using the Meta Business Suite we are able to see many aspects of our Social Media, we know that out of our 930+ followers 66% are men and 33% are women with over 50% of our followers under the age of 35. We can also see that our Instagram Reach is growing rapidly, (The number of unique users that saw an Instagram post or story.) Not all of the people reached are following our account, the ratio of followed to not followed is approximately 1:5 This is just the start and as we progress on our journey our social media will continue to grow.

We constantly post updates on what we are doing through stories or regular posts. We consistently post promotions about new sponsors/projects to keep followers curious. We plan on expanding our digital presence. We documented our progress on our community outreach the F1 in Schools Primary STEM Project



## Primary Headings font

"Kensmark.03" is a font that gives us a distinct tone, it's eye-catching and instantly relatable. When you see this font you instantly think "Orbit Racing"

## Primary Body font

While using the "League Spartan" family. We decided to use the "Light" variant for our regular text, this is used in our website, documents and social media.

## F1 in Schools Primary STEM Project

While researching how we could promote the learning of STEM through fun and exciting methods, we discovered the "F1 in Schools Primary STEM Project". The next step was trying to pitch the idea to our local primary school. We decided to create a "White Paper" that outlined all of the benefits that the project would have to students, After having several meetings with the school's management our program was given the green light. We ordered the supplies needed from Denford's Irish Distributor "Central Technology Supplies". For two months, we would go down to the primary school every Monday, Thursday and Friday. To assist us during the sessions we created a workbook for the students to use.

Students developed their "Soft Skills" during the course of the project. Some of these skills were: Communication, Critical Thinking, Leadership and Teamwork. They also expanded their Presentation Skills, at the end of the project each team had to create a presentation to our Enterprise team. This gave students a chance to show off what they had learnt, enjoyed and challenges that they overcame during the project, the workbook as very helpful as the students could look back on all of the work that they had done during the project.



Race Day Track



Workbook



Class in Session



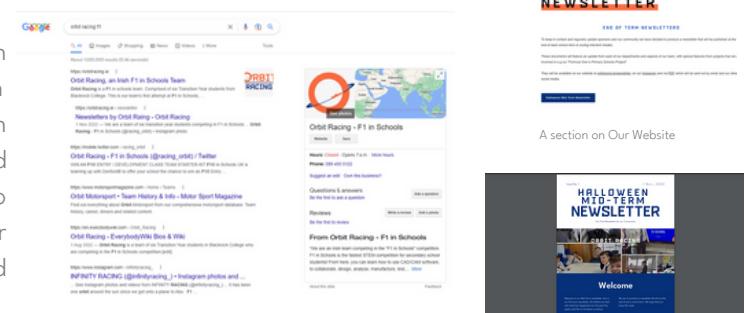
Our MCs during Race Day

The Project was broken down into a series of sessions, each containing specific learning objectives, to ensure each team was in a position to race their finished car at the end of the course. We were invited to work with 108 students in 3rd Class spread over 4 classes, The students worked in groups of 4, each taking on a different responsibility within the team, exploring activities such as design, testing, manufacturing, marketing and promotion, all the essential roles in a real F1 team.

After more than 55 classes over the space of 2 months, on Friday the 9th of December we finally had our "Race Day". During this day the students got the chance to present their final presentations to our Enterprise team while our Engineering Team was up in the school gym sending their cars down the 20m track. We are extremely proud that we introduced a younger generation to the F1 in Schools challenge and maybe even ignited a love for STEM

## The Website & Newsletter

The newsletter is a seasonal update that each "department" uses to explain to our community on what we've been up to. We will be using this as a key way to communicate with important information Every business has a website, every F1 team has a website, so why shouldn't we. We created our own website so that we had our own individual platform to connect with our supporters, sponsors and extended community as a whole. We put created effort into making sure that our website was easy to access. That's why if you search on Google within Ireland and most EU countries "Orbit Racing" or "Orbit Racing F1 in Schools" we are the first link to show up, along with our bio, social media and newsletter.



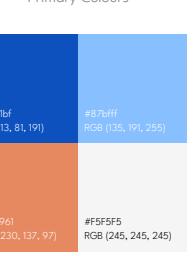
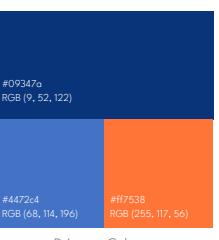
Our presence on Google



The cover of Our Halloween Newsletter

## Our Wordmark

While using our primary Headings Font we designed our primary logo, "The Wordmark", this logo displays our primary colours. The "O" of the mark is very significant, It has a miniature race car "Orbiting" the "O". This "O" is then used as our logo on our social media accounts, favicon on our website, watermark on documents and any image needed in a 1:1 ratio.



Secondary Colours



The Wordmark Full Colour



The Orbit Full Colour



The Wordmark Standard Negative



The Orbit Standard Negative

# FINANCE & PROJECT MANAGEMENT

## Unincorporated Entity Account

We had several goals at the start of this competition, Our bank account was something that we wanted to get set up early on. This would allow us to start receiving money from sponsors. We wanted this account to show that we had official backing, unlike other teams who may just use a PayPal or personal bank account. We aim to use AIB's monthly statements to help us keep a record of all of our finances, this would then help us easily communicate with our sponsors regarding their return on their investments.

The first obstacle that we had to deal with setting up our business account as an unincorporated entity. We did not anticipate the extra steps involved in this process. We got to a point where we were under the impression that we had all of the forms and other paperwork completed but our account could not be registered because the people whose names we wanted to register on the account were not over sixteen.

We have since addressed this issue with AIB and we are now awaiting a response from their legal team, once we have received confirmation we should be available to accept funds from our sponsors. Our sponsors have all been understanding of this delay and we should have overcome this obstacle in the coming weeks.



Jack Drumm

Resource & Logistics Director

We quickly discovered the importance of planning for the year, we needed to know how much funding we would need from sponsors. So, we decided to draft a budget of all our expenses including materials for the car, website expenses, registration costs and others. We used Microsoft Excel to create our budget, we decided to work off of a set of headers each with its own subsections. These headers were: Registration, Marketing, Website, Engineering and Miscellaneous.

## Preparation for Regionals

For the regionals, we plan to improve our car design to its best aerodynamic standard while keeping the weight low. While sticking to the regulations our design engineer and our manufacturing engineer will work together to find a way to do so. They create a car that has both the strength to withstand and last the whole length of the competition whilst also being sleek and aerodynamic. For this to work, the engineers need to communicate to find the materials necessary for a light and durable car. They have run simulations to find the weaker parts of the car that will undergo the most stress when racing and found ways around it. They will do many more of these simulations before the regionals and lots of aerodynamics simulations so that by the time it comes to racing, they will have a masterpiece.

## Sponsorships

Once we had generated a rough budget we decided to come up with a plan on how we intended to source the sponsors to fund this project. During this planning we made a number of crucial decisions that have worked well for us so far. The first of these decisions was to avoid a titular sponsor, we did some research into how other teams have operated in the past and we saw that some named their team after one of their sponsors, our team agreed that it would not be worth it to allow a company to take our name because we were very happy with how our brand and image were developing. The second decision we made was that when we approach a potential sponsor we wanted to be able to have a good business relationship that we would be able to maintain, we would do this by figuring out what they were looking for from us and then adjust one of our packages or create a package based on what they were looking for. The final decision we made before we started creating draft emails and packages was that we would aim to work with companies that are aligned with our values and mission, Companies that promote Science, Technology and Engineering and Companies that promote STEM education in primary schools. Once we had made these decisions we were able to start writing up some draft emails and graphics that we had prepared to show potential sponsors once we thought they were interested. In order to connect with a large number of business we created a list of companies that we would want as sponsors and contacted them through whichever mode of communication that we thought was best suited. If we got an interested response we would follow up with information detailing what we can offer them and trying to find out what package would be best suited to their interests. Following with our early decisions we have always been flexible with what the package offers and the prices of the packages so once they confirmed interest we would aim to find out how much funding they could provide and what benefits their company wanted.

## Timeline

To ensure that we as a team perform to the best of our ability we must set ourselves goals and deadlines. We have agreed where we would like to be over the next few months. It is imperative that we hold ourselves to these deadlines and the challenges that may come with them. We will need to work together and collaborate in order to guarantee a high standard.

Summer Holidays						
May	Sep	Oct	Nov	Dec	Jan	Feb
09/05 - Team Formed 12/05 - First Team Meeting 13/05 - Team Name Finalised	01/09 - Primary STEM Project Proposal 02/09 - Jack joined the Team	17/10 - First Primary STEM Project Class with 3rd Class	Secured 3 Sponsors Primary STEM Project	09/12 Race Day with 3rd Class 16/12 Due Date for 5 Page Plan	06/01 - Release Christmas Newsletter Work on Mk V for Regionals	Start the design of our Pit Display Order all our team uniforms

## Team Meetings

We try to keep our meetings as productive and engaging as possible. At the start of each meeting we quickly go over the minutes from the previous meeting. We then use a method called **Stop – Start – Continue**, this method lets us look over what has gone well since we had our last meeting for example our Engineers, Conor and Oliver working with Fiachra (Marketing and Social Media Director) to promote a recent car design (**Continue**). What we need to start doing, such as reading the minutes to keep up to date on all aspects of the team (**Start**). Finally, discuss what we need to stop doing (**Stop**). these items can be as small as, start having our laptops charged during meetings to stop missing deadlines.

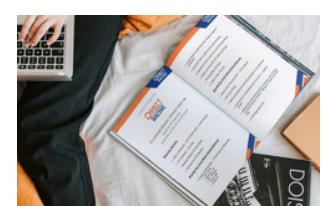
We then have our meetings as normal with Darragh our Team Manager acting as the Chairman to make sure that we discuss all parts of the agenda and not to get wrapped up in a single item. Darragh creates the agendas for our meeting they involve all aspects of the team. Fiachra acts as our Secretary for the meeting, he takes the attendance and the minutes and after the meeting distributes them. We often use the projector in our meeting area to present what we have been working on, updates on the 5 Page Plan, Car Renders, Social Media Posts, Budgets etc.



Example Agenda



Example PowerPoint



Example Minutes



<b>LinkedIn:</b>	racing-orbit
<b>Facebook:</b>	racing.orbit
<b>Twitter:</b>	racing_orbit
<b>TikTok:</b>	racing_orbit
<b>Instagram:</b>	racing_orbit
<b>YouTube:</b>	racing_orbit
<b>Website:</b>	<a href="http://www.orbitracing.ie">www.orbitracing.ie</a>
<b>Email:</b>	<a href="mailto:info@orbitracing.ie">info@orbitracing.ie</a>
<b>Team Member Email:</b>	<a href="mailto:firstname.lastname@orbitracing.ie">firstname.lastname@orbitracing.ie</a>
<b>Branding Guidelines:</b>	<a href="http://orbitracing.ie/branding-guidelines.pdf">orbitracing.ie/branding-guidelines.pdf</a>
<b>Newsletter:</b>	<a href="http://orbitracing.ie/newsletter">orbitracing.ie/newsletter</a>

# SCORE CARD

Team Name: Orbit Racing

	<b>Low band</b>	<b>Middle band</b>	<b>High band</b>	
<b>Research and Design</b>	Limited detail on research undertaken to date.	Basic research concepts outlined. Some evidence of sketching and CAD design development.	Several research concepts outlined with clear understanding and detailed explanations. Clear evidence of numerous design concepts being explored through both sketching and CAD.	12
	1 2 3 4	5 6 7 8 9 10 11	12 13 14 15 16 17 18 19 20	
<b>Team Structure</b>	Limited detail on team structure.	Some evidence of roles and team planning (meeting agendas, charts)	Clearly defined and justified team roles linked to skills/interests. Strong evidence of teamwork and planning. Evidence of collaboration across tasks.	8
	1 2	3 4 5 6	7 8 9 10	
<b>Sponsorship, Budgeting and Project Management</b>	Limited detail on sponsors and finance.	Sponsors and sponsor packages presented. Basic budget and spending plan. Spending not justified appropriately.	Excellent project plan with contingency and risk analysis, documented through Gantt Chart or similar. Sponsorships presented with clear return on investment. Detailed budget and spending plan with justified spending impact.	6
	1 2	3 4 5 6	7 8 9 10	
<b>Marketing and Brand</b>	Some explanation of team name and brand colours. Social media handles.	Basic social media strategy presented. Justified explanation of team name and brand identity.	Clearly defined target audience. Advanced use of social media and online marketing to reach audience. Clear brand identity consistently shown throughout document, website (if applicable) and social media. Justified brand identity with compelling "story".	7
	1 2	3 4 5 6	7 8 9 10	
<b>5 Page Plan Total =</b>				33/50