Velocity Vortex

Enterprise Folio
State Finals 2025

STEM RACING AUSTRALIA | BUNNINGS warehouse | North East Motor Repairs | BocaBearings | Adelaide University | John Gardner MP MEMBER FOR MORIALTA | ROWELL & SEARLE AUTOMOTIVE SERVICE | TROJAN ALUMINIUM

Initiation Processes

Reference - Canva

- **Forming Team**
  The team was formed when we chose to take our dedication for F1 from class level to competition level.
- **Establishing Team Roles & objectives**
  Team roles were assigned based on individual experience and expertise.
- **Kick Off-Meeting**
  After establishing team members and assigning roles, the team met to initiate the project and our journey.

Kick Off Meeting

Our team conducted the official Kick-Off meeting on the 6th FEB, during which we finalised individual roles, team objectives, and our overall approach to the competition. The meeting focussed on four key discussion points:

1. Purpose and Motivation

We chose to participate in the STEM Racing competition to develop valuable long term skills, including engineering principles such as aerodynamics, as well as team work, project management, and sponsor communication. This competition provides an ideal platform to apply STEM concepts in a practical, high-performance environment.

2. Path to Success

To ensure steady progress and accountability, the team committed to holding weekly meetings to track milestones, monitor progress, address challenges, and steadily move closer to achieving our competition goals.

3. Roles and Responsibilities

Roles were assigned based on individual strengths and areas of expertise, with clear responsibilities defined for each position. This structure established our team scope, providing each member with a clear understanding of their objectives and deliverables leading up to the competition.

Velocity Vortex Scope Final		
	In scope:	Out of Scope
SCOPE	•Gain sponsorships •Finalise Folios Prior to competition •Create a Car which fits the regulations •Uniforms and Pit Display Finalised •Marketing Materials (Business Card, Beanies etc.)	•Gain access to money for National Finals •Make our name popular •Enter the World Finals
Project Goals	**In Scope:** •Deliver all project deliverables •Gain access to $2000 •Win Adelaide State Finals!	**Out of Scope:** •Enter National STEMRacing Finals! •Enter World STEMRacing Finals!
Assumptions	•We assume that each team member is ready to commit and provide the team with their best efforts. •We assume that each team member is able to arrive to the Adelaide STEM Racing State finals and is able to follow the code of conduct. • We also assume that each team member is able to provide work on deadlines. •We assume that each team member obtains suitable skills for thier given responsibilities.	
Deliverables	We aim to deliver XY Legal Race Cars, an Enterprise, an Engineering and a Compliance Folio, 6 Uniforms which acknowledge our sponsors and stakeholders, simultaneously, we aim to produce excellent marketing materials which will be exhibited through a visually appealing trade display	
Constraints	School Work and Exams are major constraints which restrict each team member from excelling and providing the competition with their best efforts.	

Figure- 1 Scope - Excel - Credit Vivaan.R Velocity Vortex

Scope Statement

The scope statement was formed to give each team member a clear understanding of the project's goals, deliverables and limitations.
It also served as a guide to ensure all members remained aligned with the team's objectives and defined project boundaries, enabling effective focus, resource allocation, and progress tracking throughout each phase.

Velocity Vortex Project Charter 2025

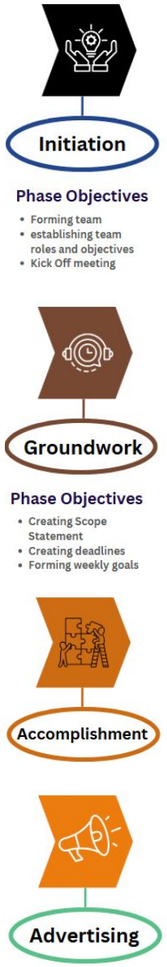
Project Title	Velocity Vortex Adelaide Stem Racing State Finals		
Project Manager	Vivaan Rajpal	Due Dates	**Competition:** 28-30/11/25
Project Teacher	Karl Read		**Folio Submissions:** 20/11/25
Project Descriptions	The STEM Racing Competition is an innovative program which challenges students to design, manufacture, and race a miniature F1 car using computer-aided design (CAD) software. The competition provides participants with hands-on experience in key project areas including engineering, manufacturing, testing, finance and marketing. Through this process, students develop a comprehensive understanding of real-world project management and gain valuable technical and professional skills for their future careers.		
Team Members	**Team Leader:** Vivaan Rajpal **Lead Engineer:** Liam Bairstow **Graphics Designer:** Sebastian Richards **Trade Display Manager:** Riley Hutchinson		
Project Objectives	**In Scope:** • Win South Australian State Final.	**Out of Scope:** • Enter National Final • Enter World Final	
Project Risks	Each project obtains risks which influence several aspects of the project and its success, hence identifying these was a crucial step for us as a team.		

Project Milestones	• Starting Date • First sponsor acquired • First car design finalised and machined • MHS Open Night (Marketing) • Trade Display design finalised and materials ordered • Uniforms finalised and ordered • All cars fully manufactured and assembled • South Australian State Finals
Project Deliverables	• Race Cars • Uniforms • Trade Display • Marketing Materials • All Folios • Website
Project Justification	As a team of four Year 10 students, we chose to participate in STEM Racing Competition not only for the excitement of racing, but also for the valuable learning opportunities it provides. The competition enables participants to enhance their technical and professional skills, develop teamwork and problem-solving abilities, and gain hands -on experience that supports future academic and career pathways.
Project Constraints	• Exams • Assignments and Homeworks • Tests • Purchases and Transactions during holidays
Acceptance Criteria	The acceptance criteria was formed to ensure that each piece of work was the best quality, this included a process where the work was checked by several people to ensure that the work met the given regulations and criteria.
Project Stakeholders	**Internal Stakeholders:** • **Team Members** • **School Staff** **External Stakeholders:** • **Sponsors** • **Collaborators**
Project Budget	Cars $500 / Marketing $150 Uniforms $450 / Folios $150 Pit Display $750 / Total $2000
Project Approval	**Project Manager Sign:** **Project Teacher Sign:**

Project Schedule

Figure 2 & 2A - Canva - Credit - Vivaan.R Velocity Vortex

The project timeline was developed at the commencement of the project to provide all team members with a clear understanding of its major phases. Each phase included specific objectives and milestones that were essential for the successful progression into subsequent stages.



➢ **Forming Team**
- formed when we chose to elevate our project from a classroom activity to a competitive, more challenging and professional level.

➢ **Establishing Team Roles & objectives**
- assigned based on individual experience and expertise in certain areas.

➢ **Kick Off-Meeting**
-upon establishing team members and assigning roles we met to discuss and establish our goals for the competition.

➢ **Creating Scope statement**
- created at the start of the project to clearly define its objectives, deliverables, and boundaries. served as

➢ **Forming Deadlines**
- established to ensure steady progress and maintain momentum throughout the project.

➢ **Forming weekly checkpoints**
- implemented to document completed tasks and track the team's progress and growth throughout the project.
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➢ **Creating Deliverables**
Finalising all types of deliverables (Car and Folios)

➢ **Creating & Achieving Goals**
- established for all team members to ensure consistent progress and maintain accountability throughout the project.

➢ **Promoting Team & Competition**
- promoted within the school community to inspire other students to engage with the subject and participate in the competition.

➢ **Gaining Followers**
- aim to increase our following by sharing posts on social media that highlight our team, progress and promote the competition.

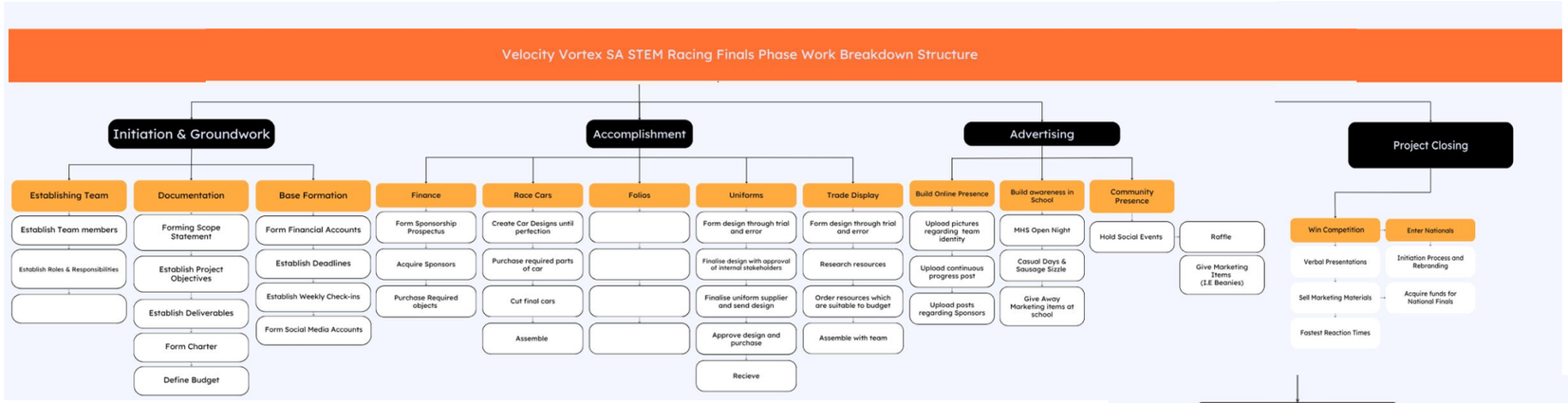


Figure 3 & 3A - WBS - Canva - Credit, Vivaan.R Velocity Vortex

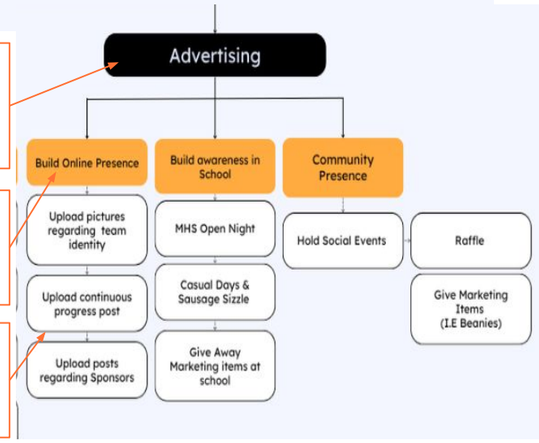
Work Breakdown Structure

The Work Breakdown Structure (WBS) was developed to provide team members with a clear understanding of each phase's deliverables and the tasks required to complete them. Deliverables were finalised during collaborative meetings, where responsibilities were assigned and each team member gained clarity on their role in achieving the objectives. This process ensured that all deliverables were completed with precision and a thorough understanding of the project's goals.

Phase Title
This project was broken down into 5 Segments/Phases which obtained distinct deliverables which contributed to the project's success,

Deliverable
This part of the structure displayed the phase deliverables and major tasks for the phase.

Tasks
This part of the structure shows the tasks required for each deliverable to be fully finalised.



Time Management Techniques

Time management is a crucial skill that not only aids in achieving our goals but also contributes positively to one's daily life, enhancing both mental and physical well-being. Below are some of the strategies we used to manage our time effectively.

1. Setting Deadlines and Excel Usage

Within Velocity Vortex, we established clear deadlines for each task to help us work efficiently and maintain steady progress. To support this, we developed Excel documents that outlined due dates and draft submission timelines, particularly for our portfolios. This system kept the team organised,ensured accountability, and allowed all work to be completed and reviewed on schedule.

2. Group Chats

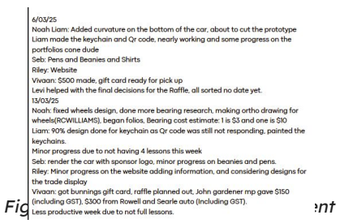
Group chats were a vital communication tool that kept our team connected beyond school hours. They enabled us to coordinate deadlines, share files, and ensure everyone had easy access to the documents needed for tasks such as portfolio development. By centralising communication in one accessible platform, we streamlined collaboration and maintained productivity regardless of where each team member was working.

3. Weekly updates/Weekly checks

As we approached the competition, weekly updates and check-ins became essential to maintaining momentum and ensuring no team member fell behind, We implemented this strategy in two ways. First, our Thursday after-school meetings provided dedicated time to review progress, identify challenges, and resolve issues collaboratively on the spot. These sessions ensured the entire team remained aligned and proactive. Second, at the end of each week, the Team Manager recorded each member's progress, giving us a clear snapshot of where the team stood and where support was needed. This also kept our teacher informed and ensured accountability across the team.

4. Personal Meetings

If a team member fell behind, the Team Manager conducted a one-on-one discussion to identify any challenges and explore how the team could provide support. This approach created a comfortable environment for open communication, ensuring both the team member and the manager had clarity on the issues and the path forward. As we progressed, we strengthened our documentation to better reflect these time management strategies and track our improvement throughout the year.


6/03/25
Noah Liam: Added curvature on the bottom of the car, about to cut the prototype
Liam made the keychain and Qr code, nearly working and some progress on the portfolios cone dude
Seb: Pens and Beanies and Shirts
Riley: Website
Vivaan: $500 made, gift card ready for pick up
Levi helped with the final decisions for the Raffle, all sorted no date yet.
13/03/25
Noah: fixed wheels design, done more bearing research, making ortho drawing for wheels(RCWILLIAMS), began folios. Bearing cost estimate: 1 is $3 and one is $10
Liam: 90% design done for keychain as Qr code was still not responding, painted the keychains.
Minor progress due to not having 4 lessons this week
Seb: render the car with sponsor logo, minor progress on beanies and pens.
Riley: Minor progress on the website adding information, and considering designs for the trade display
Vivaan: got bunnings gift card, raffle planned out, John gardener mp gave $150 (including GST), $300 from Rowell and Searle auto (including GST).
Less productive week due to not full lessons.

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Weekly Check-Ins in Practice
This image represents our weekly check-in process, which enabled us to monitor our progress and maintain accountability. These documents also served as a reminder of outstanding tasks - such as securing invoices, or machining a prototype car - ensuring no critical actions were overlooked..

Budget and Resource Management

Resource Management

Resource management played a critical role in ensuring the project's success. To optimise the use of purchased materials and equipment, the team implemented a step-by-step testing and evaluation process. This approach allowed us to identify and select the most effective resources for each stage of the project. The steps are listed below:

Identification

We began by identifying the resources required for each project task, considering their purpose, quality and suitability. The team member responsible for the resource would create a list of alternative options that served the same function but varied in cost. This approach provided flexibility in selecting the most suitable resource for both project needs and budget constraints. Once this list was finalised, the team member consulted with the team leader to confirm the selection before purchasing.

Selection, Purchase, Delivery

A collaborative evaluation of resources by the team leader and responsible team member determined the most suitable choice for the project, considering performance, compatibility, and budget. They then determined the appropriate quantity to order as a sample for testing. The team leader then liaised with the business manager to authorise the purchase and process payment, ensuring a streamlined, accountable process.

Receive and Test

Upon arrival, all resources, underwent practical testing to verify their compatibility and effectiveness, leading to two possible outcomes: success or failure. If the resource met requirements, it was implemented, if it failed the team member repeated steps 1-3 to identify and finalise an alternative.

Example

This approach was applied during the selection of bearings for the car. We initially purchased a sample set of four bearings. Testing revealed that they failed to fit in the wheels, leading the team to select a better alternative.
This demonstrated the effectiveness of the structured process and careful budget management.

Income Flow

Income for the project was generated through sponsorships and donations. The income flow was established to track and visualise the funds received in comparison to expenditures, providing clear oversight of financial resources.

The system also documented each sponsor and the corresponding contributions, allowing us to manage relationships effectively and assess return on investment (ROI). For example, each sponsorship package offered varying benefits, such as logo placement on the car, which was aligned with the value of each contribution.

The income flow was also compared to the budget to determine whether spending remained within the allocated minimum, maximum, or forecasted budget, ensuring all was carefully monitored.

Income Flow						
Income	Package	Tax (GST) optional	Gross Amount	Business Name	Invoice sent	Status
$550.00	Innovator	$50.00	$500.00	North east Motor repairs	Confirmed	Income Received
	Supporter	$0.00	$0.00			
$300.00	Visionary	$27.27	$272.73	Rowell & Searle Auto	Confirmed	Pending
$150.00	Supporter	$13.64	$136.36	Hon. John Gardner	Confirmed	Income Received
Net Income		Total Tax (11%)	Gross Income			
$1,000.00		$91	$909			

Budget

The team budget provided a clear framework for managing financial resources, enabling each team member to understand allocated funds and potential expenditures throughout the project.

The budget also facilitated planning across three key scenarios: forecasted, minimum, and maximum expenditures. The forecast allowed the team to estimate the average funds required, while the minimum and maximum allocations provided insight into the financial limits needed to participate effectively in the competition.

Additionally, the budget served as a tool to track actual spending against projected amounts, ensuring accountability, informed decision-making, and efficient resource management throughout the project.

Gantt Chart

Gantt Charts played a vital role in managing our time and ensuring every deliverable remained on schedule. The chart shown above was created in March and mapped out our major deliverables, each broken down into the key tasks required for completion.

By visually outlining our workload and progress, the Gantt chart enabled us to clearly see upcoming deadlines, allocate responsibilities effectively, and adjust our workflow when needed. This tool was essential in keeping the team organised, focussed, and consistently moving forward throughout the project..

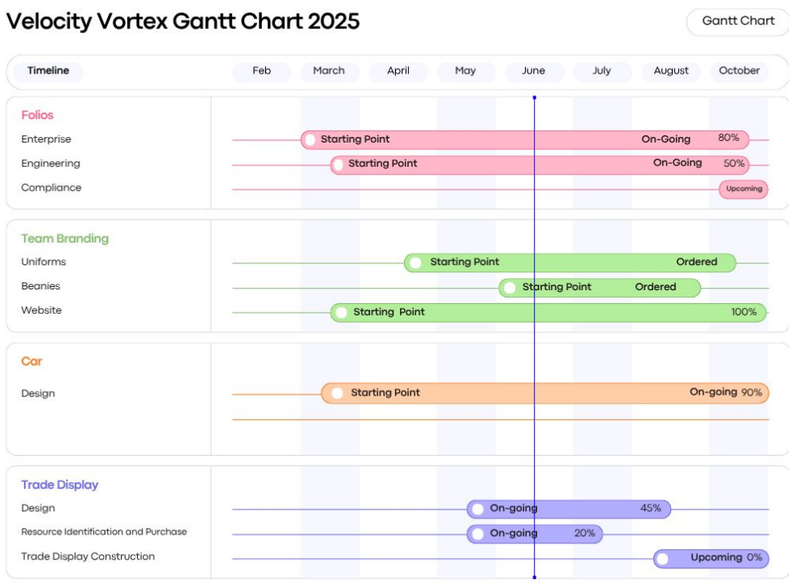


Figure - 5 - Gantt Chart - Canva - Credit Vivaan.R

Velocity Vortex Budget 2025						
Category and Item	Forecast/Budget	Allocated Maximum Budget	Allocated Minimum Budget	Actual Expenditure	Variance (Favourable/Unfavourable)	Comments
Car						
Bearings	$200.00	$500.00	$200.00	206.07 (Sample Bearings bought, $43.67)	Unfavourable	First Buy small quantity to check sample, then order comple, allow for delivery days
Stickers	$10.00	$20.00	$10.00		Favourable	
Paint	$50.00	$80.00	$30.00		Favourable	
					Favourable	
Uniforms & Clothing Accessories					Favourable	
Sublimated Polo Shirts (6)	$250.00	$300.00	$240.00	$247.50	Favourable	Call& Email Several Clothing businesses to locate best price within market
Beanies (50)	$250.00	$500.00	$200.00	$0.00	Favourable	Sponsorship (Trojan Aluminium)
Pit Display					Favourable	
SEG Fabric	$400.00	$550.00			Favourable	
Metal Frame					Favourable	
Acrylic Frame	$100.00	$150.00	$80.00		Favourable	
Competition Payments					Favourable	
Fees	$600.00	$600.00	$600.00	$400.00	Favourable	
Total	$1,860.00	$2,700.00	$1,360.00	$691.17	Favourable	

Figure - 6 - Budget - Excel - Credit Vivaan.R Velocity Vortex

Roles, Responsibilities, & Team Communication

Team Information & Roles

Outlined below are the assigned roles, job functions and responsibilities within our team, Velocity Vortex, comprised of four Year 10 students from Modbury High School.

Vivaan Rajpal - Role: Team Manager

Job Function: Oversee team dynamics, support members across individual roles, and manage the team's financial operations.
Responsibilities: Time management, financial oversight, sponsor relations, and development of the Enterprise and Compliance Folios.
Experience: Vivaan was selected as Team Manager due to his strong leadership and teamwork skills, demonstrated through his experience in sports and previous leadership in an entrepreneurship program.

Liam Bairstow - Role: Lead Engineer

Job Function: Design, manufacture, refine and test a fully compliant and fast car.
Responsibilities: Develop and manage the Engineering Portfolio, design and manufacture the car, conduct physical and digital car testing, and design and produce accessories.
Experience: Liam was chosen as Lead Engineer for his proficiency in Fusion 360 and CFD analysis, which enable him to effectively design and test the car. His ability was recognised through receiving the "Best Designed Car" award in class.

Sebastian Richards - Role: Graphic Designer & Social Media Manager

Job Function: Manage all team graphics and social media content to maintain a consistent and professional brand image.
Responsibilities: Design the team logo, uniforms, and social media visuals, and create graphic content for portfolios and promotional materials.
Experience: Sebastian brings experience in Photoshop, digital and aviation photography, and logo design, strengthening the team's visual identity and online presence.

Riley Hutchinson - Role: Website & Trade Display Manager

Job Function: Design and manage the Trade Display, oversee sponsorship engagement, and design and maintain the team website.
Responsibilities: Develop the Trade Display and its electronic components, such as power systems, while assisting in sponsor management and communication.
Experience: Riley was chosen for his strong technical background in Fusion 360 and coding experience in HTML and CSS - the primary languages used in web development. His combined design and programming skills ensure the Trade Display and website effectively represent the team.

Team Interactions

Each team member was assigned a specific role to ensure clear communication channels and promote effective collaboration across all tasks. This structure ensures that every team member understands their responsibilities and how their contributions support the overall project goals. A communication diagram was developed to illustrate how seamless interaction supports efficient problem-solving. Additionally, a responsibilities table was created to maintain accountability, clarify roles, and strengthen teamwork, and internal communication.

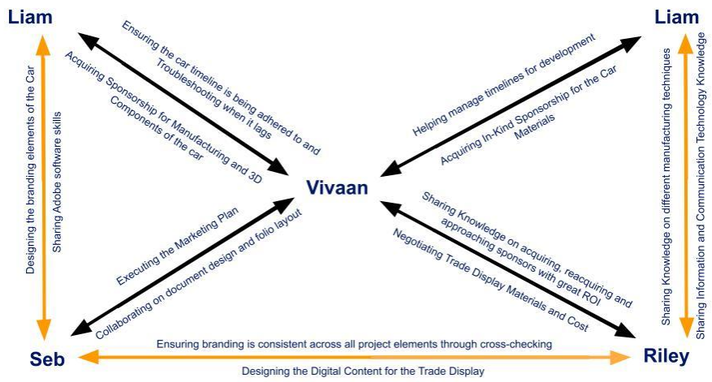


Figure 8 - Team Interactions - Google Slides - Credit Vivaan.R Velocity Vortex

Team Tasks & RACI Matrix

As shown in Figure 8, each team member's role was clearly defined, streamlining communication and clarifying who to consult for specific tasks or problems. This chart ensured seamless collaboration between team members and provided a clear point of contact for all project matters.

	Team Leader Vivaan Rajpal	Lead Engineer Liam Bairstow	Graphics Designer Sebastian Richards	Trade Display Manager Riley Hutchinson
Car: Physical appearance	Consulted	Assist	Responsible	Consulted
Car: Engineering	Consulted	Responsible	Assist	Consulted
Car: Manufacturing	Consulted	Responsible	Informed about	Informed about
Car: Testing (on track)	Assist	Responsible	Assist	Assist
Car: Testing (CFD/VWT)	Assist	Responsible	Informed about	Informed about
Sponsor management	Responsible	Informed about	Informed about	Consulted
Engineering Folio	Consulted	Responsible	Informed about	Informed about
Enterprise Folio	Responsible	Informed about	Responsible	Responsible
Compliance Folio	Consulted	Responsible	Informed about	Consulted
Uniform	Assist	Assist	Responsible	Assist
Trade display/Trade Display Content	Responsible	Assist	Assist	Responsible
Verbal Script	Responsible	Responsible	Responsible	Responsible
Social Media	Responsible	Assist	Responsible	Assist
Branding	Responsible	Assist	Responsible	Assist
Upcoming Deadlines/milestones	Responsible	Responsible	Responsible	Responsible

Figure - 9 - RACI Matrix - Excel - Credit Vivaan.R Velocity Vortex

Team Responsibilities

As shown in Figure 1.2, we began by assigning specific responsibilities to each team member and defining their level of involvement. This process helped us gain a clear understanding of individual roles within the team. It also enabled us to establish deadlines and monitor progress to ensure we remained on track. Additionally, defining these roles clarified who to approach for guidance or support - whether it be a team member or one of our mentors, such as our teacher, Mr. Read, who has extensive experience with the STEM Racing program and competition.

Plan Changes and Obstacles

Balancing daily and academic commitments, with the demands of the STEM Racing Competition presented challenges in time management and deadlines. Key plan changes included extending the engineering timeline for additional car testing and redesigning the Trade Display to better showcase our team and engage visitors. Despite these obstacles, we prioritised steady development, focussing on producing high-quality portfolios, securing sponsorships, and refining our car's performance. Through effective time management and teamwork, we continued to progress toward our goals while maintaining enthusiasm and commitment.

Methods of Communication Between Team

Group Chat: Whatsapp

WhatsApp allowed the team to stay connected during holidays and weekends, enabling deadline setting, progress updates, and discussions of ongoing tasks. It also provided a channel for our teacher to offer support and guidance, fostering trust and support within the group. Additionally, the chat was used for practical coordination, such as confirming uniform sizes and logo preferences (Figure 1.5).

Emails

Emails were primarily used to share files and communicate with our sponsors. This ensured they remained informed about our progress and fostered a professional, trusting relationship, reflecting our transparency and organisational approach throughout.

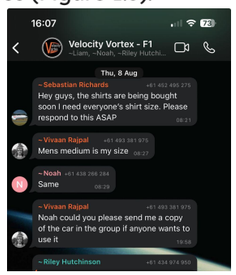


Figure -10 - Usage of Whatsapp

Face-to-Face communications

Daily meetings at school provided the most direct and effective way for our group to communicate. This allowed us to discuss current issues and collaborate on solutions in real time.

Phone Calls

Phone calls were used to communicate within the team and with sponsors, providing real-time discussions and updates similar to face-to-face meetings.

Evaluation of Communication Methods

By using a combination of communication methods, we built a cohesive and effective working environment where each member understood their responsibilities and felt confident sharing ideas. WhatsApp enabled quick updates and informal chat, emails facilitated formal communication with sponsors, face-to-face meetings allowed real-time problem solving, and phone calls provided immediate discussions when needed.

Sponsorship & Stakeholder Communications

Aims for Sponsorship

Our sponsorship strategy began with drafting a professional sponsorship letter, targeting both established contacts and potential businesses identified online. This structured approach aimed to maximise outreach efficiency and highlight areas for improvement. The process was divided into four key steps, representing the most practical method to secure sponsorship, while also leveraging support from relatives and friends.

(Left) This is an image of the plan which we followed to gain sponsorships. This figure also displays our aim in each step.

(Below) Is the cover of our sponsorship package that we gave out in steps 1 & 2 of our sponsorship strategy Credit - Vivaan.R, Velocity Vortex

Figure - 11 - Sponsorship Plan - Canva - Credit Vivaan.R Velocity Vortex

1. Email

We initiated contact with potential sponsors via email, presenting our sponsorship package, detailing our team, the benefits to their business, and the available ROI opportunities.

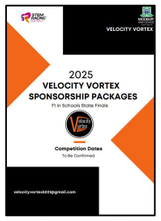


Figure - 12 - Sponsorship Prospectus title page

2. In-Person Meetings

We arranged face-to-face meetings with local businesses to present our team and discuss sponsorship opportunities in greater detail, using this opportunity to learn more about their business.

Sponsorship Packages

Elite	$1001+	• Large logo on front of team uniform • Special Acknowledgement on Instagram/social media (picture at business/in depth description of business) • Special customized pens or products with your brand name, given to you as soon as pens have been delivered • Large logo on car (or two regular logos depending on how logo fits on car) +ALL INNOVATOR, VISIONARY & SUPPORTER BENEFITS
Innovator	$501 - $1000	• Large logo on trade display • Acknowledgement in interview alongside speeches +ALL VISIONARY & SUPPORTER BENEFITS
Visionary	$251 - $500	• Logo on back of uniform (larger than supporter package logo) • Logo on trade display +ALL SUPPORTER BENEFITS
Supporter	$50 – $250	• Announcement across social media with a description of business • Logo on front cover on portfolios • Small logo on car and small logo on Uniform

Figure - 13 -ROI Tier list - Vivaan.R Velocity Vortex

3. Phone Calls

Unresponsive contacts were followed up with phone calls to provide additional information, gauge interest, and prioritise other leads as needed.

4. Final Step

Finally, for sponsors who agreed to support us, we confirmed contribution amounts and GST details, then arranged for funds to be transferred to the school's invoice account.

ROIs

Return on investment was essential to the success of our project, as it strengthened sponsor visibility and recognition. We delivered ROI through three key avenues: social media presence, branded uniforms and cars, and our Trade Display. These initiatives also acknowledged the contributions of our internal supporters who contributed to our journey.

Uniforms

Our team uniforms represented our identity while acknowledging the support of our internal and external stakeholders. Sponsor logos and supporter recognition were integrated into the design, showcasing their contributions and reinforcing the strong partnership behind our team.

School Logo Placement
The school logo was placed on both shoulders to acknowledge the ongoing support we received from staff, teachers and other past STEM Racing Teams.

Team Polo Uniforms
Sponsor logos such as North East Motor Repairs, John Gardner, Trojan Aluminium and Rowell and Searle Auto were placed on the back of the polos to symbolically recognise that their support is a key driver of our team's success.

Figure - 14 - Uniform Design - Credit Sebastian.R

Team Car

The car is a central element of the STEM Racing Competition, and displaying sponsor logos highlighted the vital role our supporters played in our success. Featuring their branding on the car served as a strong return on investment, increasing their visibility and recognising the time and support they contributed to our project.

Sponsor Logo Placement
Placing the sponsor logos on the side wings was ideal as it allowed us to provide direct exposure to their brand, hence raising their name within the community.

Figure - 15 - Render - Credit Sebastian.R

Sponsor Logo placement
Placing logos at the front of the car symbolically highlighted our sponsors' role in helping us accelerate forward and progress on our journey to success.

Social Media Posts

Social media served as a key form of ROI by providing consistent visibility for our sponsors. We began with individual **Thank You** posts to acknowledge each business's support, followed by a **collaborative post** featuring all sponsor logos. These posts strengthened our relationships with sponsors while elevating their presence within the community, effectively promoting their brands throughout our journey.

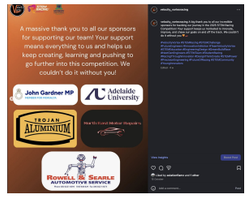
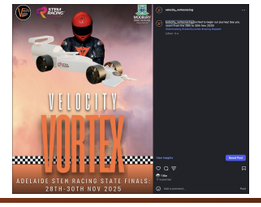


Figure - 16&17 - Instagram - Credit Sebastian.R



Sponsor Beanies

Initially, the beanies were not registered as an ROI, however the Beanies transformed into an official ROI as a token of appreciation for our sponsors' support and commitment. Each beanie was sent with a sponsorship certificate, recognising their contribution and time in supporting our journey.

Figure - 18 -Beanies - Credit Sebastian. R | Certificate - Credit Vivaan.R

Trade Display

Our Trade Display prominently **registered** our major sponsors as seen below. Logos were all positioned within the dedicated 'Sponsors' tab. As our largest deliverable, this display provided a high-visibility platform, making the inclusion of sponsor logos a key priority.

Figure - 19 - Trade Display Render - Credit Vivaan.R and Riley .H

See page 12 for sponsor reference

Sponsor Logo Placement
Sponsor logos were positioned on the side panels to prominently showcase our supporters,providing direct visibility to the public during the competition.

Sponsor Communication

We maintained regular communication with sponsors through emails and phone calls, complemented by newsletters and progress reports. These updates provided insight into our journey, allowed sponsors to stay involved in key decisions, and reinforced their integral role in the success of our project.

Newsletters & Progress Reports

Our newsletters and progress reports kept sponsors informed with key updates on accomplishments, deliverables and upcoming deadlines. After each major milestone, we adapted our progress reports into concise newsletters, which were emailed directly to sponsors. This approach ensured stakeholders stayed up to date on our journey, fostering ongoing engagement and transparency throughout the competition.

Figure - 20 - Newsletters - Credit Vivaan.R

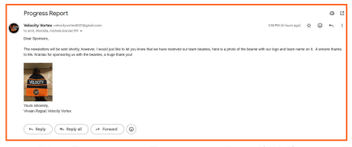


Figure - 21 - Progress Report - Credit Vivaan.R

Team Identity (Branding)

Team Branding

1. Team Name

We came up with the name **Velocity Vortex** by combining two powerful words that reflect our team's identity and goals. **Velocity** represents speed, precision, and the drive to push boundaries - key qualities for a high-performing STEM racing team. **Vortex** conveys energy, movement (like the swirl around a fast car), and focus, symbolising the team's dynamic approach to problem-solving and collaboration. Together, the name embodies a team that is fast, innovative, and unstoppable.

2. Team Logo Development

Velocity Vortex was originally formed with five team members, including Noah, who designed a logo for his class car, inspiring the team's innovative name. Over time, the team evolved to four members, and the logo was refined into the professional and clean design it is today. Below is pictured our logo's evolution:

Credit - Noah Cook (Ex-teammate)

Prot. 1
Our first logo which was developed by ex-teammate, Noah Cook

Credit - Noah Cook (Ex-teammate)

Prot. 2
Our second attempt to create a bold and complicated logo.

Credit - Riley.H, Velocity Vortex

Prot. 3
Our third attempt to form a more colourful and interesting logo.

Credit - Sebastian.R & Riley.H, Velocity Vortex

Final Design
Our final design presents a bold and stylish logo that embodies the identity and spirit of our team.!

3. Final logo design and rationale

Through prototypes. 1-3, we experimented with colours to create a striking logo. Ultimately, we chose to rebrand, and redesign the logo to better reflect our team's enthusiasm for the competition. Bright orange was chosen to represent energy, our excitement and creativity. Simultaneously, we chose the colours black and white to symbolically reference our aspiration for the stars. Together, these colours form a visually appealing logo that embodies our team's identity and passion.

Logo Circular Shape:
The logo's circular shape ensures versatility, allowing l seamless use across various sizes and formats, from hats to shirts, without compromising clarity or impact.

Large Slanted V:
The prominent slanted V forms the core of the logo, with its straight lines symbolising strength and stability, and the curved top conveying the speed and zooming motion of an F1 car.

Sharp Font:
A clean and sharp font was applied to represent our momentum and speed

Three Curved Lines:
The three curved lines below our name represent a 2D racing track, symbolising speed and fast momentum or Velocity.

Beanie Design

Our beanie embodies a bold, clean, and distinctive style. The team name stretches across the top in white, highlighted by orange stripes for contrast. The bright orange cuff features our logo front and centre, while the pompom blends orange, black, and white, uniting all our primary colours into a cohesive, eye-catching design.

Figure - 22 Credit - Seb.R, Velocity Vortex

Beanie Design

The virtual beanie design was created by Sebastian with input from the entire team, ensuring it represents our unity and collaborative spirit.

Figure - 23 Credit - Trojan Aluminum

Beanie Final

Due to original assumptions that the competition would be held in September (Winter) we thought that beanies would be a great promotional product.

Colour Schemes

Below is the colour scheme we adopted for our team, applied consistently across all designs, including uniforms, portfolios, and promotional materials, to create a cohesive and professional visual identity.

Team Colours

Orange

- We selected Bright Orange to reflect our vibrant personality, conveying the team's enthusiasm, energy , and passion for the competition.

Black

- We chose Eerie Black to represent the night sky, symbolising our ambition to reach for the stars through our work in STEM Racing.

White

- The colour White was chosen for two key reasons: it enhances the visual appeal of our logo, and symbolises our clear, focussed approach towards achieving success.

Primary Colours

Bright Orange #ff7003ff

Eerie Black #1f1f1fff

White #ffffffff

Secondary Colours

Amber #ffab40ff

Medium Grey #666666ff

Silver Grey #d9d9d9ff

Banner

Our banner, as displayed above, features an innovative fade design incorporating two of our team colours, creating a visually striking effect. It was used across our portfolios, online posts, and on invitations or correspondence for stakeholder meetings, ensuring consistent and professional branding.

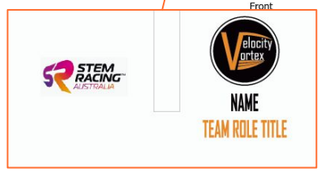
Uniform Design

Our uniforms were designed to reflect a professional, sharp, and bold team identity. Starting with a clean white polo shirt base, we incorporated thoughtful design elements to create a shirt that visually represents our team's character and values.

White background
We started by choosing a white polo shirt base to keep it clean and professional.

Two V shaped arrows
Two orange V shaped arrows were added to the front and back of the shirt to reflect the "V" in our logo, giving the uniform a simple yet striking and distinctive appearance.

Velocity Vortex uniform and logo - Credit Velocity Vortex



Stem Racing Logo
The Stem Racing logo was placed prominently on the front of our shirts to acknowledge the organisation behind the competition.

Sponsor Logo Placement
Sponsor logos were placed on the back of our shirts to showcase their ongoing support that drives our journey forward. This also served as a meaningful ROI, providing sponsors with recognition and increased brand visibility throughout the competition and community events .

Team Website

Our team website is designed to engage with F1 enthusiasts and potential sponsors by clearly communicating who we are, what we do, and why supporting us is valuable. Key features include sections such as "Who Are We," "What We Do," and "Why Sponsor Us," providing a concise overview of our team and objectives. A "Learn More" button directs visitors to detailed information about our team's origin, progress, and future plans. A dedicated contact page allows easy communication for inquiries, sponsorship, or general engagement, strengthening our team's presence and outreach.

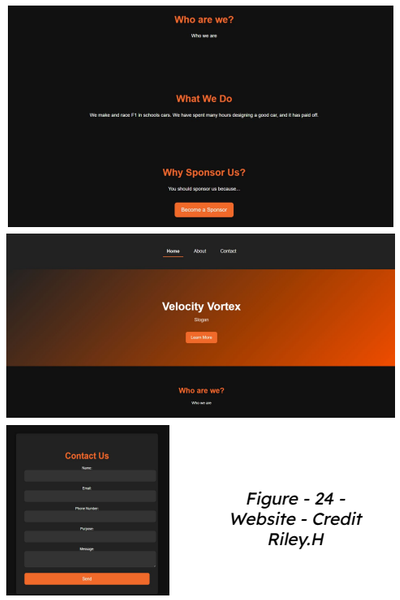


Figure - 24 - Website - Credit Riley.H

Media Exposure

Social Media

Our social media strategy focussed on consistent, engaging content to showcase our journey. By posting updates, progress highlights, and promotional content regularly, we strengthened our presence in the community and raised awareness of the competition. Social media became a key platform for sharing our story and connecting with supporters.

Promotional Posts

Promotional content was published periodically to build awareness of both the competition and our team. These posts highlighted key information about our team members and contributed to strengthening our online presence. Once the competition date was confirmed, we commenced releasing pre-designed promotional posters to ensure consistent and timely communication across our platforms.

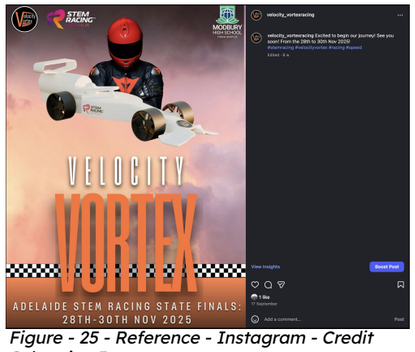
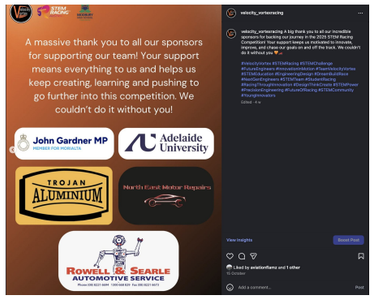


Figure - 25 - Reference - Instagram - Credit Sebastian.R

Sponsor Posts

Sponsor posts were shared to acknowledge our supporters and enhance their visibility within the community. We initially published a general appreciation post to thank all sponsors. This was followed by individual feature posts highlighting our major sponsors, specifically those contributing through the Elite or Innovator packages. Upon publication, sponsors and external stakeholders were informed via emails or newsletters to ensure they were aware of their recognition.



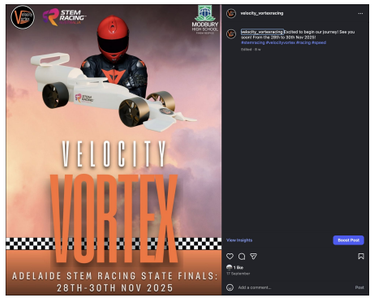


Figure - 26 & 27 - Reference - Instagram - Credit Sebastian. R

Progress Posts

Progress posts were shared periodically to provide our audience with insight into the team's ongoing development. These updates also served as an accessible alternative to our newsletter, enabling sponsors to monitor our progress in rel time. The posts showcased key stages of our deliverables, including car development, uniform design, trade display construction, and portfolio production.

School Community Events

School events, such as Modbury High School's Open Night, held in February, provided valuable opportunities to promote our team and increase awareness of the STEM Racing competition. Throughout the evening, we engaged with numerous attendees who expressed strong interest in both the competition and the STEM Racing program offered at the school.
Our Team Leader, delivered detailed explanations of each component of the competition, helping visitors understand the scope of the program. The race track display was a key attraction, drawing parents and prospective students who were eager to experience the thrill of racing.

Promotion at Open Night
During Open Night, we actively promoted our team by directing attendees to our website. The site included a dedicated contact page, enabling visitors to submit enquiries or send emails regarding the competition or the STEM Racing subject. This facilitated effective communication and strengthened engagement with our school community.

Target Audience

Our social media strategy was developed to engage a broad yet relevant audience who support our team's visibility and growth. Key target groups include:

- **Sponsors and Potential Sponsors:**

Industry partners who follow our updates to assess our progress, professionalism, and value as a team they may support.

- **School Community:**

Current students, parents, and staff who engage with our posts to stay updated on our achievements and activities in STEM Racing.

- **Prospective Students and Families:**

Our content aims to inspire future interest in the subject and competition.

- **Competition Network:**

Judges, mentors, and other STEM Racing teams fostering collaboration,

Open Night

Our Team Manager, Vivaan, captivated audiences as he demonstrated how the car launches down the track, showcasing the precision, speed, and engineering behind our design. With the car in hand and the race track ready, he guided intrigued onlookers through the launch process, turning a simple demonstration into an exciting glimpse into the world of STEM racing. His energy and expertise drew crowds, highlighting both our team's innovation and the thrill of the competition.

Figure - 29 - Vivaan showcasing the track at Open Night - Credit Sebastian. R

Suitable Platforms

In selecting our social platforms, we evaluated options that would maximise visibility and effectively reach our target audience. Instagram was identified as the most suitable due to its strong presence of F1 related content, including official teams, engineering communities, and student competitors.
We employed targeted strategies such as industry-related hashtags to enhance content discoverability and ensure our posts appeared to audiences with aligned interests. This enabled us to engage with F1 enthusiasts, aspiring engineers, younger audiences, and key stakeholders.
Instagram also serves asa central hub for many STEM Racing teams and sponsors, allowing us to build connections, strengthen professional relationships, and maintain consistent communication across the competition network.
As a result, Instagram proved to be an ideal platform for promoting ourteam, increasing exposure, and expanding our digital engagement.

Media Exposure Alternative Techniques

Trade Display

Our Trade Display included a dedicated section highlighting our digital presence, featuring a Linktree QR code. This allowed visitors, including judges, other teams, and general audience, to easily access our website and social media platforms. By integrating this interactive element, we increased engagement and provided greater exposure for our team across multiple digital channels. Pictured opposite is our Linktree QR code.

Figure - 30 - QR Code - Credit Riley.H

Logo Applications

Velocity Vortex Logo Credit: Velocity Vortex

Effective promotion of any brand relies on consistent use of its logo across all communications and deliverables. Following this principle, our logo was prominently applied across major posts, newsletters, sponsorship prospectuses, portfolios and key team deliverables. This consistent application enhanced brand visibility and recognition among our audience. Examples of our logo usage are shown below and to the right.

Velocity Vortex Media Releases - Credit: Velocity Vortex

Trade Display Design Development & Integration

The Velocity Vortex Trade Display was developed through a collaborative and iterative process, driven by a commitment to efficiency, cost-effectiveness, compliance, and sustainability. Our goal was to create a display that not only meets competition requirements but also exceeds expectations in terms of functionality, aesthetics, and environmental responsibility.

Design Inspiration and Iterative Development:

Our design process began with a thorough review of past competition displays, both from our school and other teams. This research helped us identify proven strategies and areas for improvement, ensuring our design was both innovative and practical. We used Fusion 360 and FreeCAD for 3D modeling, despite encountering technical issues with Fusion 360. The final design emerged after multiple iterations, each informed by team discussions about aesthetics, functionality, and feasibility.

Car Display: Showcasing Innovation:

The car display is the centerpiece of our trade display, designed to highlight the car and its key components in a visually engaging manner. We placed the physical model of the car behind an acrylic panel, a decision driven by both practicality and aesthetics. Since acrylic was already available, it made sense to use it, reducing costs while providing a clear, protective barrier.

To enhance visual impact, we incorporated RGB LED lights in our team colors—black, white, and orange. This choice was both stylistic and practical: RGB LEDs are energy-efficient and can be powered by batteries or power banks, which is essential since competition rules prohibit plugging into external power sources. The vibrant lighting not only draws attention to the car but also aligns with our team's branding.

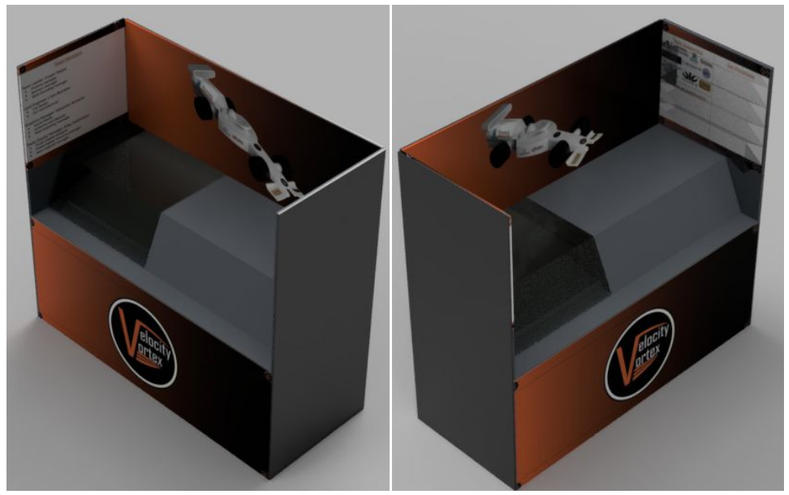


Figure - 31 - Trade Display Digital Design & Render - Credit Riley. H, Vivaan. R

Modularity and Adaptability

The trade display was designed with modularity and expandability in mind. The aluminum frame, repurposed from previous teams, is adjustable, allowing us to modify the layout as needed. The panels sit on top of the frame, making it easy to reconfigure or expand the display for different events. We conducted multiple setup tests to ensure the display could be assembled efficiently and that all components, including lighting, functioned as intended.

Figure - 32 - Trade Display Digital Design & Render - Credit Riley. H, Vivaan. R

Compliance and Sustainability:

Sustainability and compliance were central to the design and construction of our Trade display. We maximised resource efficiency by repurposing materials from previous teams, including the aluminium frame and wooden panels, reducing both cost and environmental impact. Aluminium's long lifespan allows for repeated use, reclaimed timber minimised the demand for new wood, supporting responsible resource use. Reuse of these materials decreased energy and emissions associated with manufacturing and transport. Our sustainable material choice also reduced expenses, allowing resources to be allocated elsewhere. These strategies demonstrated our commitment to environmentally responsible design while ensuring complying with competition regulations of the display being packed, sealed and transported in standardized boxes, eliminating large, complex structures. This was achieved while maximizing the use of space and ensuring all materials met the competition's safety and environmental standards.

Aesthetic and Branding Choices

The display's color scheme—black, white, and orange—was chosen for its versatility and visual impact. Black and white provide a neutral backdrop that allows for flexibility in design and branding, while orange adds a vibrant contrast, drawing attention to key elements like the car and informational panels. The Velocity Vortex name and logo were designed to reflect our team's identity—speed, precision, and innovation—and are integrated throughout the display for a unified visual language.

Team Collaboration, Budget Management, and Lessons Learned
The development of the Trade Display was a collaborative process:

- Riley led the CAD modeling, ensuring the design was both functional and visually engaging.
- Vivaan oversaw material sourcing, liaising with previous teams to secure repurposed components and coordinating with the school's Tech Studies division for use of equipment.
- Assembly was a team effort, providing valuable lessons time management, adaptability, and problem-solving.
-

We established a comprehensive budget of $672, with a maximum allocation of $915 and a minimum target of $530. Through diligent sourcing, repurposing, and cost-conscious purchasing, we achieved an actual expenditure of $493.78, resulting in a favorable variance of $178.22 (26.52% savings). This financial discipline allowed us to allocate resources effectively and maximize the impact of every dollar spent.

The modular design of the trade display ensures long-term value, reducing the need for costly replacements or extensive modifications in the future. By repurposing materials and selecting recyclable options like aluminum and acrylic, we minimized both environmental impact and expenses.

Final Outcome: A Display That Represents Our Journey

Our Trade Display represents far more than a competition requirement—it reflects our team's hard work, creativity, and commitment. It effectively showcases our car and the journey behind its development, while also promoting our team's identity and achievements. Through the use of cost-effective materials, a modular structure, and cohesive branding, we've produced a display that is compliant, functional, and visually impactful.

This display stands as a testament to our achievements, and we are proud to present it as a reflection of our team's innovation and spirit.

Figure - 33 - Trade Display Base Design - Credit - Riley. H, Vivaan. R

Risks Management, Monitoring and Controlling

Risk Management

Risk identification was a key component of the project, enabling us to prepare for a range of scenarios and address potential obstacles proactively.
During the project initiation, each team member identified risks relevant to their role, which formed the development of our risk table and associated mitigation actions.
This documentation provided a structured analysis of the possible risks, and supported the creation of effective solutions and preventative measures to minimise their impact throughout the project.

Risk Table

The Risk table allowed us to address three key areas of risk management: preventative controls, mitigation strategies, and the potential impact on project resources, timing, scope and quality. Preventative controls outlined the actions required to minimise or eliminate each risk before it occurred, while mitigation strategies detailed the steps to be taken should the risk eventuate. Additionally, the table provided a clear assessment of how each risk could affect project constraints and deliverable quality, ensuring the team was well prepared to respond effectively.

Risk Matrix

The Risk Matrix table below outlines the actions to be taken if a risk materialises, categorised into three levels: Extreme, Moderate and Low. This structure ensured all team members understood the required response for each risk level, providing clear guidance on how to proceed in the event of an issue.

Risk Rating	Associated Action if the risk occurs
EXTREME/HIGH	Contact Team Leader and alert team teacher who will focus on this task and provide highest priority to this task to ensure that the mitigation is undertaken
MODERATE	Contact team manager who will assess the risk and provide priority to the task based on the importance of other tasks leading to the subsequent undergoing of the mitigation
Low	Contact Team leader who will review the threat over the course of the week and undergo the mitigation through that week (Or subsequent week based on threat level)

Figure - 34 - Risk Matrix Table - Excel - Credit, Vivaan.R Velocity Vortex

Risk Management Table

Identified Risk	Probability	Severity	Risk Rating	Preventative Control	Mitigation	Impact on
Printing Issues	Unlikely	MAJOR	EXTREME	Print objects earlier to afford time for another round of printing	Approach other printing places which offer similar services	**Resources**: May require more money to purchase more. **Timing**: No Impact on timing. **Scope**: Will truly impact the Trade Display's visual appeal. **Quality**: Should not impact quality
Financial Issues	Possible	MAJOR	HIGH	do fundraisers in School	Ask School for money and return subsequent to the competition through fundraisers	**Resources:** May impact the quality of deliverables. **Timing:** Will impact our ability to order objects at the right time. **Scope:** ability to deliver the deliverables. **Quality**: Will infuence major physical deliverables
Car Damage: While Racing	Unlikely	MAJOR	MODERATE	Make backup car which allows members to continue to compete	Use Spare parts to fix damage	**Resources**: No infulence. **Scope**: ability to register in nationals or worlds. **Quality**: Ability to deliver best race times
Manifacturing Error	Unlikely	MAJOR	EXTREME	Create cars 1 month earlier to allow for time of new car production and testing	Manifacture more cars prior to the competition as backups.	**Resources:** Influences the number of cars. **Timing:** Will impact the ability to be ready with everything 1 week before competition.
Elements Incomplete while handir	Unlikely	MAJOR	EXTREME	Ensure that major work whih is required to be handed up is finalised at least 1 month prior to the	Utilise the week before comp to finalise the work to a decent quality which covers necessary technicalities	**Resources:** No influence **Timing:** will influence our ability to hand up work at correct time. **Scope & Quality:**Will influence the quality of deliverables as work may be rushed
Car underwieght	Possible	MODERATE	MODERATE	Ensure that higher wieght block is used if the scenario of the car being underwieght is real	Apply screws to the car or differentiate in the block used or the level of infill used for the car's parts	**Resources:** this will impact the car's ability to race. **Timing:** No influence on timing. **Scope:** will impact our deliverables (Cars). **Quality:** This will impact the car
Miscommunicaiton	Unlikely	MODERATE	HIGH	Ensure that all members continuously report their progress to team members and continuously meet.		**Resource:** Will impact the number of deliverables. **Timing:** Will influence the timing for deliverables and infulence deadlines. **Scope:** Willl influence the number of deliverables. **Quality:** Willl influence the quality of deliverables.
Team Members Sick	Unlikely	MAJOR	EXTREME	communication between team members is continuous to provide updates and early reminders	Another member takes over the team member's work	**Resources**: No Influence **Timing and Quality** : may lead to higher workload on others hence infulencing the timing and quality of work. **Scope**: Will infulence the deliverable quality.

Figure - 35 - Risk Management Table - Excel - Credit Vivaan.R Velocity Vortex

Monitoring and Controlling

The project was managed through continuous monitoring of deliverables and their completion status. This approach ensured that all team members had clear visibility of workload, progress, and any emerging issues.
Our main tool for this was the **Monthly Status Reports** which highlighted three key components: completed and outstanding tasks, expenditure to date, and an overall assessment of project progress. These reports were critical in maintaining transparency and guiding informal decision making. Additionally, we delivered a Scope Creed to identify delays and deviations from the plan, allowing us to recognise risks early and implement corrective actions to maintain project momentum.

Monthly Status Reports - 12/11/25 - Velocity Vortex		
Team Member	Completed Work	Incomplete Work
Vivaan	•Trade Display SEG Fabric Corflute Ordered •Sponsor Certificate and Beanies Finalised •Enterprise Folio	•Compliance Folio •Sponsor Beanies not given to each sponsor •Verbals
Sebastian	•Uniforms Ordered •Social Media Posts •Team Photos	•Progress Posts •Final Renders •Verbals
Riley	•Trade Display Design Finalised •Metal Frame Welded with Hinges •LED Lights Installed in Trade Display	•Trade Display Development Brief Not fully done •Verbals
Liam	•Car Design Finalised •Engineering Folio •Wheels Finalised	•Cut Final Car •Get Paint •Verbals
EXPENSES MADE	SEG Fabric - $290.00 CORFLUTE - $176.00	CONCLUSION Trade display is nearly ready, uniforms ordered and the folios are nearly done

Figure - 36 - Monthly Status Reports - Excel - Credit Vivaan.R Velocity Vortex

Scope Creep

Scope creep occurs when changes are made to the scope of a project that make the completion of it in a given time frame impossible, which inherently prevents the project's success. Preventing scope creep was a crucial step for us, as allowing it to occur would be detrimental to our team. Changes to the team members caused our current goals to become practically impossible, so if we had kept the current goals it would become more and more impossible as we would need to distribute the workload amongst less team members. This led to an immense delay in several areas, as this happened when one of our teammates left the team. This directly influenced the project's timeline and the project goals which partially stopped us from being able to produce our best work. Accompanying this, the consistent workload from school was an ongoing influence to the project scope as it prevented students from being able to remain fully devoted to the project, hence influencing the project's scope (deliverables and work required for the project's success).

Skill Development For Future Careers

Mentorship

As a team of Year 10 students with no prior STEM Racing experience, we relied heavily on the support and expertise of our mentors. They not only guided us but actively contributed to the development of our technical, professional, and collaborative skill sets. The list below outlines our mentors, who they supported and highlights the specific skills they helped us strengthen.

Vivaan Rajpal - Team Manager
Mentors:
Don Grant -BHP - Project Management and Risk Assessment
Kate Read: National Enterprise and Verbal Judge, ex Bank Manager
Stephen Read: REA - Engineering & CAD
Kahlan Mashford - UniSA HR management, Acrux Team Manager
Jack May - Dynamic Racing Social Media and Finance Manager
Skills Developed:
Project Management
Leadership and Effective Communication
Sponsor Acquisition, Engagement and Management
Finance Management
Detailed Orthographic Drawing development

Liam Bairstow - Lead Engineer
Mentors:
Stephen Read - REA - Engineering & CAD
Mason Green - Fitter & Turner AusRAMD , Alumni -ACRUX Engineer
Karl Read - STEM Racing teacher
Knowledge Gained
Car manufacture and testing
Aerodynamic principles
Technical skills in Engineering Softwares (Fusion 360, CFD, VWT)
Problem solving and Effective Communication

Sebastian Richards - Graphics Designer
Mentors:
James Coulter - Graphic designer -JC Designs
Jack May - Dynamic Racing Social Media and Finance Manager
Karl Read - STEM Racing teacher
Knowledge Gained:
Brand Application and Design Software proficiency
Uniform Design, Logo creation and Colour Theory
Typography - art and techniques
Social Media Management and customer engagement

Riley Hutchinson - Trade Display Manager
Mentors: Kate Read - National Enterprise and Verbal Judge
Mason Green - Fitter & Turner AusRAMD , Alumni -ACRUX Engineer
Tahnee Read - Uni SA Marketing and Branding
Karl Read - STEM Racing teacher
Scott Moritz - Senturion Steel
Knowledge Gained:
Material Science and Impact of Choices
CAD Proficiency
Creativity and Innovation in Design Processes and Brand Application

Mentorship & Experience Evaluation

Our mentors elevated our project by providing specialised knowledge, industry insight, and practical guidance that strengthened both our technical and enterprise skills. Their support was invaluable in enhancing the quality and professionalism of our work.

Linking Skills with Future Careers

Vivaan Rajpal - Team Leader
Skills Gained
- Leadership, Conflict Resolution, Communication and Teamwork
- Finance Management
- Sponsor Acquisition, Communication and Engagement
- Project Management
- Analysis of Car Sections
- Portfolio Development

As Team Leader, I developed strong communication and negotiation skills through securing sponsorships, learning how to engage stakeholders and align our goals with theirs. In addition, managing the team's finances strengthened my analytical and organisational skills. I gained hands on experience in budget development, finance planning, and tracking expenditure through structured accounting methods. These responsibilities provided a practical foundation for careers involving sales, financial oversight, project coordination, and strategic resource management.
Career Pathways and ADF Careers
The skills I developed through STEM Racing align strongly with career pathways in the ADF. Leadership, communication, budgeting and project management are core competencies across a wide range of ADF roles. Pursuing a **Bachelor of Engineering** at **Flinders University** would equip me with the technical and analytical capabilities suited to engineering and technical officer roles within the ADF, where precision, problem-solving, and structured processes are essential.
Completing a **Bachelor of Project Management** at **Adelaide University** would prepare me for roles such as Logistics Officer, where managing personnel, resources, timelines, and operational requirements is critical.
I have gained a strong foundation of skills that support both civilian career opportunities and specialised pathways within the ADF through my participation in the STEM Racing program

Sebastian Richards - Graphics Manager
Skills Gained
- Uniform Design
- Social Media Management and Customer Engagement
- Merchandise Designing
- Photography
- Team Branding and Application

As Graphic Designer, I explored uniform design using Adobe Photoshop, developing new skills and techniques within the software. This expanded my overall capability in Adobe applications, enabling me to better support the team's design and editing needs. Throughout the competition, I also enhanced my photography skills, applying techniques such as depth of field to improve the quality of our car and team images.

Career Pathways
The graphic design skills I developed provide a solid foundation for pursuing further study, such as a **Diploma of Graphic Design** via **Torrens University.** This qualification would allow me to advance my technical abilities and prepare for professional roles in the creative industry. These skills also align strongly with careers in the ADF, particularly roles such as Graphic Designer and Media Producer. Both positions focus on creating promotional and communication materials for the ADF, making my experience in design, branding, and visual communication highly relevant and transferable.

Riley Hutchinson - Trade Display Manager
Skills Gained
- Programming
- Frontend Web Development
- CAD
- Resource Management
- Portfolio Development

As Trade Display and Website manager, I developed foundational web design skills by creating a basic site structure using HTML, and CSS. This being my first full website, I undertook extensive research, which strengthened my ability to independently learn new technologies. These skills will help me with hosting my personal portfolio later in life. I also advanced my CAD and programming skills, which directly support my interests in robotics, electronics, and coding. Designing the Trade Display with limited resources further strengthened my problem-solving, teamwork, project planning, resource and time manage abilities, all skills valued across many future careers.

Career Pathways and ADF Careers
The newly acquired skills developed throughout the competition are highly relevant in the ADF to roles in technical trades, engineering, ICT, and specialist positions such as Systems Technician, Electronics Technician and Cyber Systems Specialist. These could be achieved by undertaking an **IT degree** at **AIE or Adelaide University.**
Civilian career pathways such as Software Development and Game Development are other possibilities that align with my skills and interests.

Liam Bairstow -Lead Engineer
Skills Gained
- Car Design, Manufacture and Coding
- Principles of Aerodynamics
- Computational Fluid Dynamics Analysis
- Autodesk Fusion
- Portfolio Development

As Lead Engineer, I developed valuable technical skills applicable to a range of careers. I began by learning Autodesk Fusion and the principles of designing high-performance cars, focusing on aerodynamically efficient components such as wings and sidepods. I also gained experience in performance analysis, studying airflow over the car's body and its effect on speed and its ability to perform well through the track, which enhanced my understanding of applied engineering principles.

Career Pathways
These skills provide a strong foundation for civilian careers in engineering, including mechanical, aerospace, and automotive design. For example, pursuing a **Bachelor of Engineering (Mechanical) (Honours)** at the **Adelaide University** would allow me to deepen my knowledge in areas such as fluid dynamics, thermodynamics, and materials science
In the ADF, these skills are relevant to technical and engineering roles such as Aircraft Technician, Mechanical Engineer, or Systems Engineer, where understanding design, performance analysis, and problem solving are essential.
The STEM Racing competition has aided in the development of my skills in the engineering field which will now allow for many career opportunities in the future.

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