Fibonacci

PROJECT MANAGEMENT PORTFOLIO

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2	Project Schedule
3	Budget and Resource Management
4	Roles and Responsibilities
5	Team and Stakeholder Communications
6	Risk Management
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Fibonacci

KICK-OFF MEETING

Welcome to Fibonacci! 'Here's our plan for the World Finals:' this was the essential message in our **kick-off meetings**. As a team across two schools, we had two kick-off meetings. First we arranged for all team members to meet. Our main goal was to **outline expectations** and objectives for achieving our main target of **World Champions**. We also organised a kick-off meeting with the Headmasters of both schools, our Supporting Teachers and the team. This was to get **everyone on board** and make clear our expectations and plans for our journey to the world finals.

We want to have ongoing monitoring and controlling so in the portfolio where you see a blue box this where we have our monitoring and controlling.

Monitoring + Controlling

Figure 1: Team Kick-Off Meeting Agenda

Mon 10th Jan 2022

TEAM KICK OFF MEETING AGENDA

Agenda Item	Discussion Points	Time	Next steps
Look over score cards	What went well, which of our submissions need lots of improvement?	~15 mins	Start folios right away.Plan presentation video + Pit. Review everything as we go.
Distribute final submissions	Who should take lead on which final submissions. Who should support + help.	~10 mins	Avinash needs support with enterprise. Outreach to gain marketing advice. Share work on discord to easily help eachother.
Create project schedule draft	What's important to have hard deadlines + when? Succession of activities.	~20 mins	Contact companies about rough time estimates for deliveries and printing. Amius revisit Gantt + add breakdown of
Identify first steps for car	Any ideas for development for Nationals? Create plan for progressing car to improve.	~10 mins	CFD Nat car to see where aero improve + research materials. Strength test all.
Team Communication	Which platforms to use? How often to meet? Any role changes people would like?	~5 mins	Instagram for fast notifications. Create discord server for everything. Happy roles.

Figure 2: School Kick-Off Meeting Agenda

Wed 12th Jan 2022

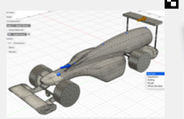
SCHOOL KICK OFF MEETING AGENDA

Agenda Item	Discussion Points	Time	Next steps
Who's who introductions	Who the two schools are, introducing everyone and their role.	~5 mins	Share email addresses of teachers to the headmasters and share contacts of Ed Uni people mentioned.
About F1 in Schools	Entry, Dev, Pro. Submission elements. Reg, Nat, now Worlds. What's involved.	~15 mins	Write a summary of journey so far, send to teachers. Similarities with Fomula Student, contact Ed Uni team.
Our roadmap for Worlds	Estimated costs, final deadline, frequency of team meetings, help with events	~20 mins	Contact Heriots Alumni for sponsorship contacts. Mon, Wed, Thurs team meetings. Contact year heads for event notices.
Back up plans (for any risks)	What to do in case of; Covid closures, Not being able to use classrooms, lack of funds	~10 mins	Notes from plans go to risk management, ask other teachers about rooms.
Thank you and summary	Thank everyone for their time. Ask when to next be in touch with updates of progress	~2 mins	Monthly email to update staff on the team. Anytime we need can meet again.

PROJECT CHARTER

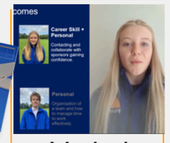
Figure 3: Detailed Project Charter

Milestones:

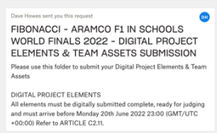


Car Design Complete

Portfolio's complete



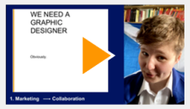
Verbals Filmed



Sent + Uploaded submissions

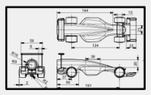
Deliverables:

Project Management, Enterprise, Design Folios



Verbal Presentation

3 x Cars



Car's + Drawings

Pit Display

Acceptance Criteria for each Deliverable:

- Meets scorecards to the letter and correct number of pages
- Submitted digitally by the 20th June under size limit
- Submitted Physically, posted on the 10th June
- Made to be built in-person July 10th or brought to competition
- Printed High Quality with appropriate binding
- Filmed and edited under the size limit

Defining stakeholders and project risks:

Stakeholders see page 5. Project risks see page 6

Project Description:

2022 World Finals preperation and development.

Project Justification:

We **learn** so much from competing- everything from marketing research to rear wing strength testing open up **opportunites** for making connections for life. For Worlds we're leaving nothing to regret as we **give everything** we've got.

Project Goals:

1- Improve, learn and collaborate as a team.
2- Build and create relationships with sponsors.
3- Create a fast, brilliantly engineered car.
4- Implement and execute enterprise strategies.
5- Become the 2022 World Champions.

Fibonacci CHARTER

Project: F1 in Schools World Finals
Team Name: Fibonacci
Dates: January 1st to July 15th 2022
Event: 9th-15th July Silverstone Circuit

Project Manager:
Mattie Ball Torokoff

Team Members:
Jess Taylor- PR Manager
Kenneth MacIver- Manufacturing Engineer
Amius Marshall De'Ath- Graphic Deisner

Supporting Adults:
Dr Esme Anderson
Ms Sarah Rolland

SCOPE STATEMENT

Here is a small version of our larger **highly detailed project scope.** We numbered each scope item from **1 to 10 identifying an acceptance criteria**. Anything rated lower than 7 we revisited and improved.

MANUFACTURING

IN SCOPE
- 6 Pit Display Items + Stands
- 9 Tether Line Guides
- 9 Assembly of Car Parts
- 9 Vinyl Finishing + Varnishing

OUTSOURCED
- 9 CNC Car Main Body
- ☐ CNC Lathe Maching of Wheels
- 8 All 3D Printing
- ☐ Decals for Car

ORGANISATION

IN SCOPE
- 9 Schedule + Meetings within team
- 9 Communication with Partners

OUTSOURCED
- 10 F1 in Schools event details

MARKETING

IN SCOPE
- 7 Digital Media Content
- 9 Go Fund Me Page
- 9 Survey Research + Analysis

OUTSOURCED
- 8 Banners + Printing
- 7 Lasercut Key Rings+ Display Items

SOFTWARE PROFICIENCY

IN SCOPE
- 10 Fusion 360 CAD + CAA Analysis
- 10 Simscale CFD
- 9 Blender Animations + Renders
- 10 iMovie Video Editing

OUTSOURCED
- 8 Quick Cam Pro- CNC
- 8 AutoCad + RDworks- Laser Cutting

PROJECT OUTCOMES

- 10 Build our team's knowledge and skills in all area's
- 10 Effectively organise ourselves so we can succeed
- 10 Create + Maintain beneficial partner relations
- 10 Overcome all challenges by planning and flexibility

MAIN AIM

- Team Improvement
- Teamwork
- Beneficial Relations
- Quality Control

Figure 4: Scope Statement Developed

ONGOING STATUS REPORTS

Monitoring + Controlling

Team Improvement 1 Evaluation

Effective solutions

- **Kick-off meeting's** went well and were a productive start to the project.
- **Detailed project charter** gives a strong foundation for the team to begin.
- **Clearly defined deliverables** give a clear target.
- Stakeholders thoroughly defined on page 5.
- The **developed scope** statement clearly identifies acceptance criteria and allows for quality control checks.

Problems

- Success criteria could be added for each deliverable to guide rating process.

WEEKLY MEETING AGENDA

- ☐ -Are tasks on Schedule?
- ☐ -Are any critical Tasks delayed?
- ☐ -Evaluate any Risk development
- ☐ -Are stakeholders receiving regular updates?
- ☐ -Has everyone been recording their daily times?

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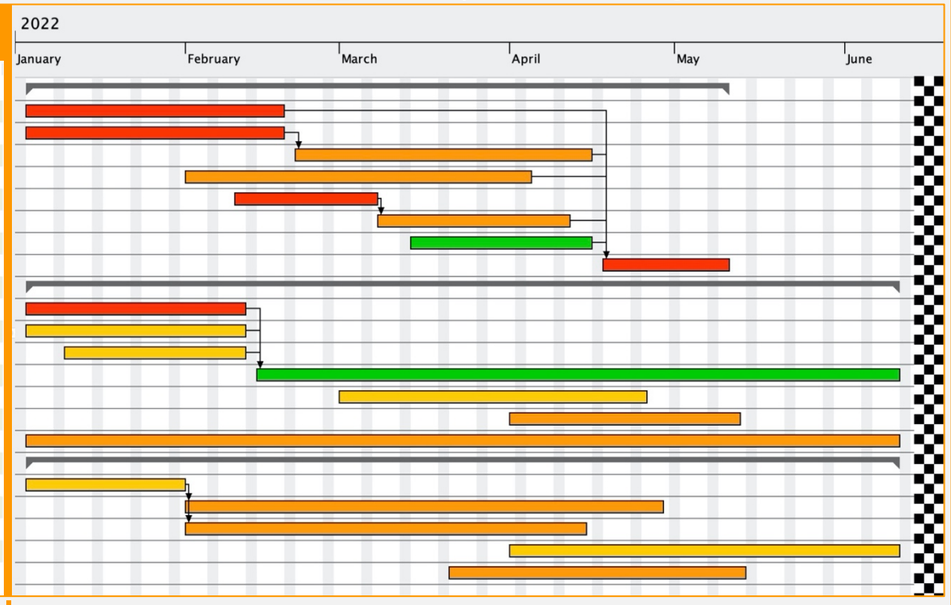
CLEAR PROJECT SCHEDULE

TASKS, DEPENDANCIES + TIME ESTIMATES

	Name	Begin date	End date
ENGINEERING	Car Design and Engineering	03/01/2022	10/05/2022
	CFD Design and Development	03/01/2022	18/02/2022
	Wind Tunnel Design and Development	03/01/2022	18/02/2022
	Wind Tunnel and Track Testing	21/02/2022	15/04/2022
	Clutch System Development	01/02/2022	04/04/2022
	Source Wheels and Bearings	10/02/2022	07/03/2022
	Wheels/Bearings Testing and Development	08/03/2022	11/04/2022
	Design and Source Decals	14/03/2022	15/04/2022
	Final Assembly and Finishing	18/04/2022	10/05/2022
ENTERPRISE	Enterprise	03/01/2022	10/06/2022
	Develop/Finalise Team Branding	03/01/2022	11/02/2022
	Research/Plan Digital Marketing	03/01/2022	11/02/2022
	Design and Build Website	10/01/2022	11/02/2022
	Social Media and Promotions	14/02/2022	10/06/2022
	Design and Manufacture Pit Display	01/03/2022	25/04/2022
	Teamwear Design and Manufacture	01/04/2022	12/05/2022
	Sponsorships and Fund Raising	03/01/2022	10/06/2022
DELIVERABLES	Deliverables	03/01/2022	10/06/2022
	Review Past Folios	03/01/2022	31/01/2022
	Enterprise and Project Management Folio	01/02/2022	28/04/2022
	Design and Engineering Folio	01/02/2022	14/04/2022
	Practice and Plan for Interviews	01/04/2022	10/06/2022
	Plan and Film Verbal Presentation	21/03/2022	13/05/2022

Immediate Priority · High Priority · Regular Priority · Low Priority

Figure 5: Detailed Gantt Chart



We created a **detailed Gantt chart** (Fig chart) to identify all tasks, dependencies and time estimations. Using ongoing **weekly 'Status Reports'** we documented the status of these tasks to highlight areas of concern and keep the project to our schedule.

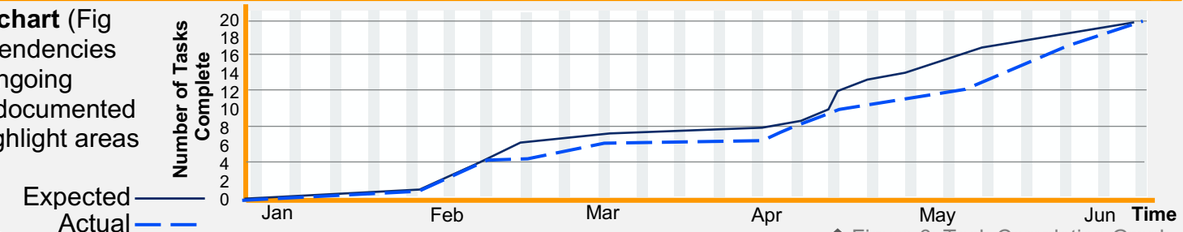


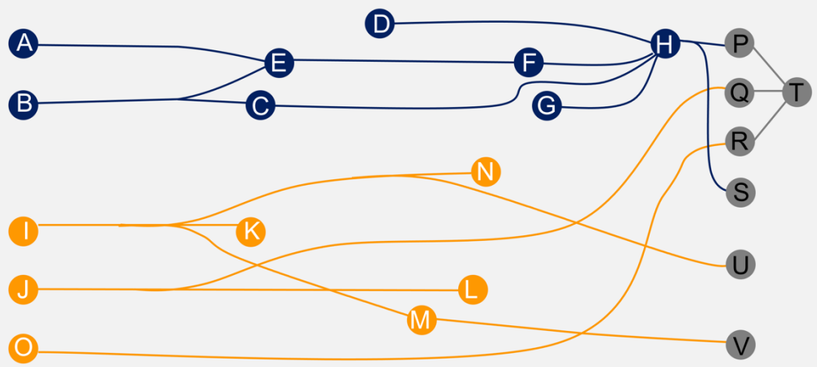
Figure 6: Task Completion Graph

Figure 7: Identification of all tasks

	TASK	ACTIVITY	DURATION (WEEKS)	PRECEDES	EARLIEST START	LATEST FINISH	FLOAT
CAR ENGINEERING	A	CFD Design + Development	6		0		
	B	Wind Tunnel Design + Development	6		0	7	1
	C	Physical Testing (Wind tunnel + track)	7	B	6		
	D	Clutch System Development	8		4	12	0
	E	Source Wheels and Bearings	3		5	9	1
	F	Wheels + Bearings Testing	4	E	8	14	2
	G	Develop Surface Finish + Decals	4		9	14	1
	H	Final Assembly + Finishing	3	A C D F G	13	17	1
ENTERPRISE	I	Develop + Finalise Team Branding	5		0	6	1
	J	Research + Plan Digital Marketing	5		0	6	1
	K	Design + Build Website	4		1	6	1
	L	Social Media + Promotions	16	I J K	5	22	NA
	M	Design + Source Pit Display	7		8	15	0
	N	Teamwear Design + Production	5		12	18	1
	O	Shareholder Relations + Funds	25		0	25	NA
SUBMISSIONS	P	Review Past Folios + Submissions	4		0	4	0
	Q	Enterprise Portfolio	11	P	4	25	10
	R	Project Management Portfolio	9	P	4	25	10
	S	Design + Engineering Folio	10	P	4	25	11
	T	Plan + Practice for Interviews	10	Q R S	15	25	0
	U	Plan + Film Verbal Presentation	7		10	25	0
	V	Build + Film Pit Display	10	M	15	25	0

WORK BREAKDOWN STRUCTURE

Figure 8: Work Breakdown Structure



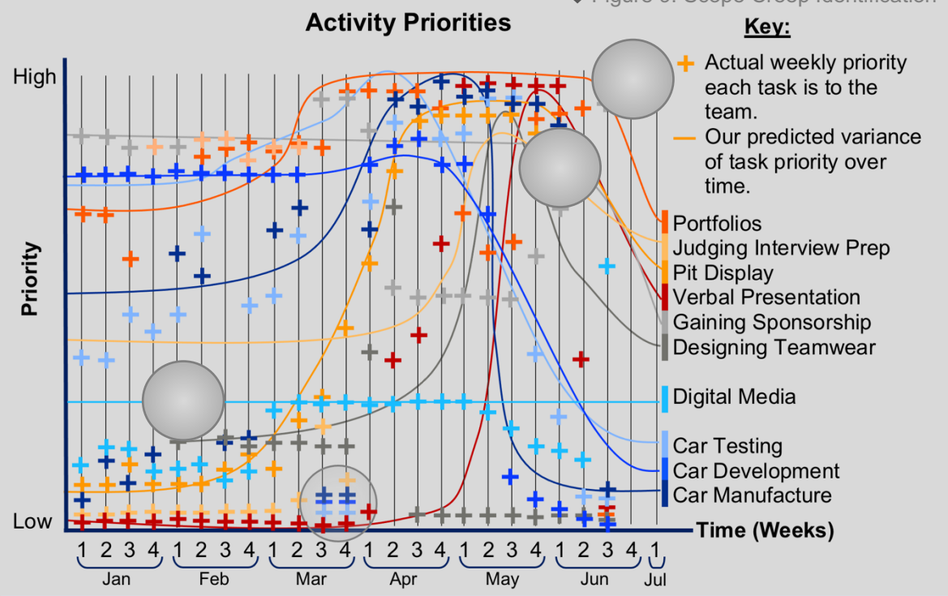
By creating an **activity breakdown** with a network diagram to illustrate task **dependencies** we could clearly identify the **critical path.** The critical path is the sequence of tasks that have 0 float time. If those tasks overrun we have a critical delay in the project chain. To keep the critical path on track we applied a clear variety of measures:

- Transfer team members and resources from non critical tasks to ensure critical tasks are not delayed
- Hire/ Buy additional equipment to expedite the completion of critical tasks
- Carefully **monitor and control** each stage of critical tasks, contacting suppliers if necessary to ensure there are no delays.

SCOPE CREEP IDENTIFICATION

Monitoring + Controlling

Figure 9: Scope Creep Identification



Area for Concern	Cause	Action Plan
Portfolios	School Holiday- Lack of motivation	Set targets for after the break, distribute work based on availability
Car Testing Car Development Car Manufacture	COVID- Teachers at home, no access to equipment + resources	Contact other teachers requesting workshop time. Take materials home to test. Outsource final wheels.
Designing Teamwear	Longer production time- arriving after deadline	Order jackets + caps to wear before Silverstone, monitor production of competition shirts.
Fundraising	Failure to gain substantial financial sponsorship	Create minimum cost estimate, Utilise all contacts to gain funds.

DELIVERABLES EVALUATION

Team Improvement 2 Evaluation

Monitoring + Controlling

Our portfolios were a major example of **scope creep.** While we had our content in, evaluations such as this used time we had not accounted for. As well as this, with time before the official submission deadline we continued fixing spelling mistaks right up until we needed to complete and print our folios.
We would encourage teams to stick to their schedule and have work completed and **signed off** the moment they can, however our submissions wouldn't be what they are without the hours put in fixing every detail.

TASK	DATE	SIGN OFF
Enterprise + Project Management Portfolio	10.6.22	
Engineering Portfolio	16.6.22	
Drawings + Renders	16.6.22	
Verbal Presentation	17.6.22	
Pit Display	14.6.22	
Final Car	10.6.22	

BUDGETING

During our project initiation process we **estimated expected costs** so we could begin developing an outline of what the overall expense would be.
Some items were covered by sponsors from Nationals and we discounted these in-kind items from our budget and cost estimate.

We classified costs into three categories which our expenses as an F1 in Schools team fall under: **Capital Costs**, one time fixed costs; **Indirect Costs**, expenses not tied to a specific department and applies to the whole team; **Direct costs**, costs for resources that apply specifically to either our teams engineering or marketing.

Budget Summary

Our main source of income was sponsorships and we frequently reviewed our finances using accounting methods to stay on top of our budgets.

Income Sources		Amount
12.3.2022	Tunnock's	£100
1.4.2022	Arden Property	£200
12.5.2022	Guerrilla Software	£500
29.5.2022	George Brown	£3000

Department Area	Amount
Engineering- Car + Testing	£400
Marketing + Enterprise	£400
Travel + Accommodation	£3300
Entrance Fee	£4100
TOTAL:	**£8200**

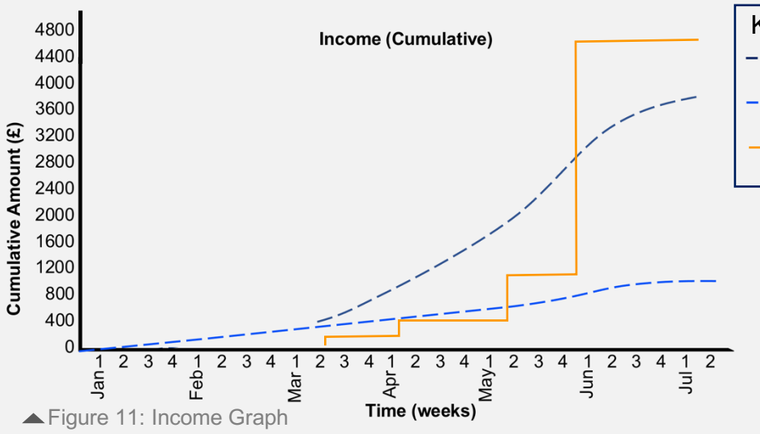


Figure 11: Income Graph

TRACKING EXPENDITURE

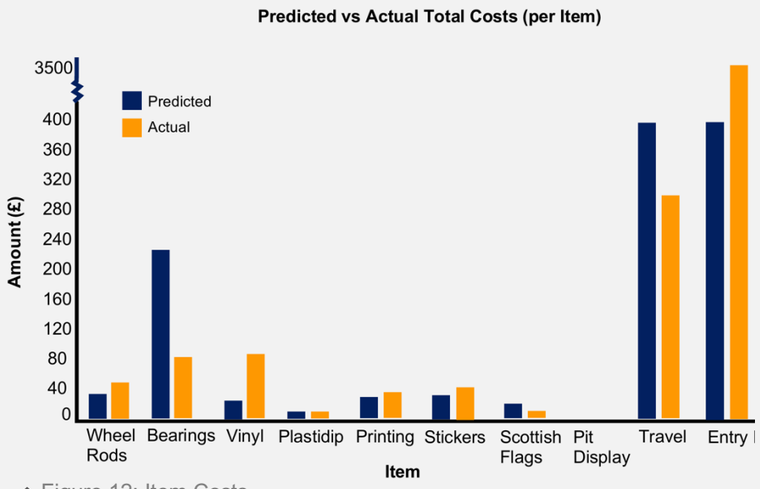


Figure 12: Item Costs

We kept a record of all our purchases, using spreadsheets as an **accounting method** to keep our finances in check. Some costs were above our estimates often due to shipping and VAT while many items were covered by sponsors.

CAPITAL COSTS

Race Track £5000
F1 in Schools entrance fee £500
Website Domain £20

INDIRECT COSTS

Accomodation £3000
Travel: Plane £1600
or Train: £300
or Minivan+Driver £1800

DIRECT COSTS

ENGINEERING

Sheet Acrylic
Wheel Plastic Rods
Rod Wing supports £20
Bearings
CO2 Canisters £108
F1 Model Block £100
Vinyl for surface finishing
Plastidip for surface finish
Spray Paints
Varnish
Carbon Fibre Tube
Carbon Fibre Cloth
Decals for car logos £14
PVC tube wind tunnel
Fan for wind tunnel. £10
Incense wind tunnel £4

MARKETING

Business Cards
Team Uniform
Baseball Caps
Banners
Posters
Printing £30
Key Rings
Stickers
Pens
Table Cloths
Scottish Flags £20
Display Stands
Water Bottles
Facemasks
Pit Display £200
Badges

KEY:
Covered by a Sponsor
Essential Item

All costs are the sum total for that item over the course of the competition and for all members. Eg 'Accomodation' covers 4 pupils and 2 staff.

Figure 10: Initial Cost Prediction

Engineering				Marketing			
Item	Date	Where	Cost	Item	Date	Where	Cost
PVC Tube	27.2.22	Amazon	£15.49	Surveys	2.04	DOXZOO	£21.41
Incense	27.2.22	Dmrls	£5.15	Stickers	3.05	Vistaprint	£26.79
Fan	27.2.22	Amazon	£7.99	Team Bag	3.05	Vistaprint	£15.99
HDPE Plastic Rod	3.3.22	Amazon	£9.95	Vinyl-Mix	12.05	Amazon	£39.94
Acrylic Plastic Rod	3.3.22	Theplasticshop	£10.80	Vinyl- Blue	3.05	eBay	£8.47
Acetal Plastic Rod	3.3.22	Makeitthere	£11.99	Acetone	2.05	APC Pure	£4.30
Bearings- steel	3.3.22	123Roulement	£14.82	Scot Flags	9.05	The Works	£13
Bearings- steel	3.3.22	Amazon	£5.49				
Brass rod 0.28mm	27.4.22	Train shop	£9.60				
Tungsten Carbide rods	9.05.22	Eternal tools	£10.30				
Stainless steel rod	9.05.22	eBay	£3.49				
Rear wing Carbon Fibre rod	2.05.22	Train Shop	£8.47				
1mm steel rod	9.5.22	eBay	£8.80				
Nylon rod tether guide	27.4.22	Metals4u	£13.70				
Sample Rods	27.4.22	Train Shop	£5				
Varnish	9.05.22	Graff-city	£11.40				
Plastidip	9.05.22	Amazon	£11.52				
Magnets	9.05.22	First4magnets	£20.23				

Capital Costs			
Item	Date	Where	Cost
Website	1.3.2022	WordPress	£20
Model Block	1.3.2022	Denford	£50

Indirect Costs			
Item	Date	Where	Cost
Entry Fee	3.6.22	F1 in Schools	£3500
Printing	15.6.22	Heriots	£10.45

Total Expenditures			
Sector	Total Spent	Source of money	Account used
Capital costs	£70	Sponsors	School
Indirect costs	£3510.45	Sponsors + Go Fund Me	Personal + School
Engineering	£180.79	Sponsors	School
Marketing	£129.90	Sponsors	Personal

ACCOUNTING

To keep track of our finances it was important that we **identified which accounts** were being used to hold and spend team funds.
We used **spreadsheets** to keep all purchases up to date to ensure we didn't **overspend** resulting in financial losses for team members.

Figure 13: Resource Timeline

RESOURCE MANAGEMENT

To clearly **identify the resources required** we used our activity breakdown and detailed Gantt chart.
For each resource we allocated **where** it would be used, **when** we will need it and **how** we are to acquire it.

WHEN

In figure 13 you can see our timeline for when resources would need to be acquired.

WHERE

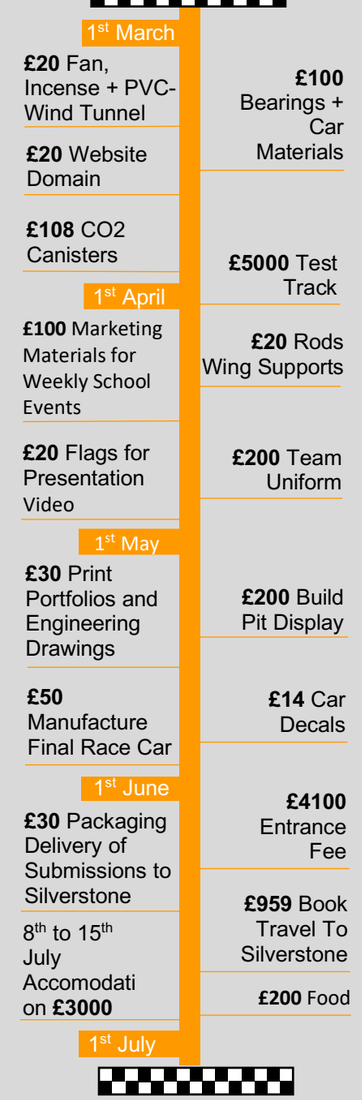
Resources were grouped into three places where they were used:

- **School-** Fan, Incense, PVC, Bearings, CO2 Canisters, Marketing Materials, Pit Display materials, Car Decals, Rods for Wing Supports, Flags, Team Uniform
- **Digital-** Website Domain, Advertisements
- **Silverstone**- Final Car, Portfolios, Pit Display, Competition Uniform, Packaging for Delivery, Travel, Accomodation.

HOW

The resources required were purposefully used to enable the success of the team in each of these areas:

- Engineering: Fan, Incense, PVC, Bearings, Car materials, CO2 Canisters, Rods, Decals
- Marketing: Website Domain, Advertisement, Stickers, Keyrings, Surveys, Flags, Uniform, Pit Display



EVALUATION

Monitoring + Controlling

Effective solutions

- Use of **budgeting** was done effectively to ensure funds were spent appropriately with no overspending.
- **Clear identification of where, when and how resources** were acquired and used meant efficient management of all items the team needed.
-Our accounting methods were utilised throughout the competition ensuring we had clear records of all purchases and income.

Problems

- Our cost estimate allowing for the entry fee was wildly wrong, this we combatted by revising our fundraising target and starting a 'go fund me' to raise **additional funds.**
- This could have been prevented with previous World Finals experience or by following a similair system to our other estimates- research first.
- We could have reduced cost of resources by booking the hotel further in **advance**.
- In the future we should set our fundraising target well in advance of when we need the funds to ensure time to pay and book without price increases.

RESPONSIBILITIES

By having **clear roles** within the team we totally **avoided overlap** and efficiently created and completed portfolios.

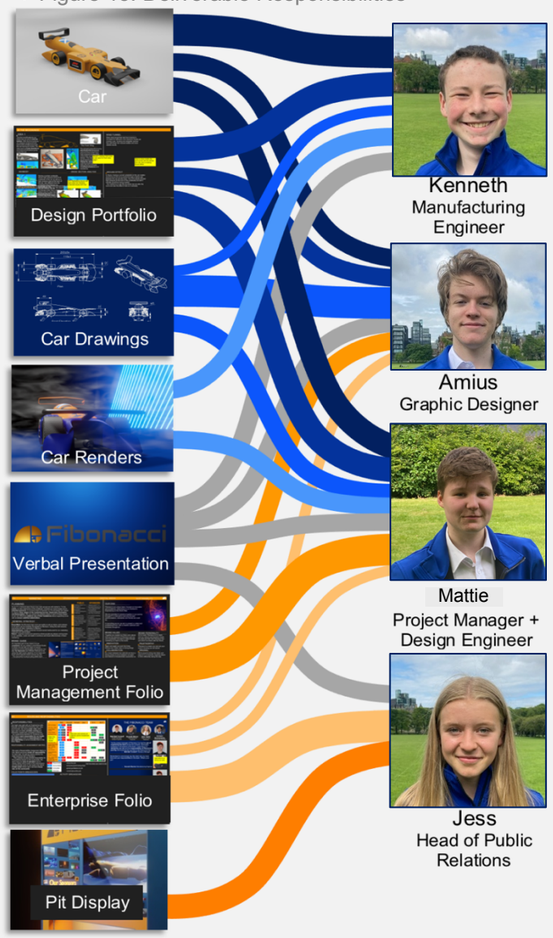
Our supervising teachers Dr Anderson and Ms Rolland **were responsible for our health and safety** and were an **essential part of our organising** so we've included them in the RACI Matrix.

RESPONSIBILITY ASSIGNMENT MATRIX

We used a Responsibility Assignment Matrix to fully detail everyone's **level of responsibility** for each task. As well as clearly identify the roles everyone had in Fibonacci.

Then (below) we also divided resposibility for the portfolios based on the scorecards. We each have our **area of operation** and to clearly define which areas of the submissions we individually work on we made a diagram which **breaks down** where each members **focus was on the scorecards**.

Figure 15: Deliverable Responsibilities



THE FIBONACCI TEAM

Mattie Ball
Project Manager
Design Engineer

Kenneth McIver
Manufacturing Engineer

Jess Taylor
Head of Public Relations

Amius Marshal-De'Ath
Graphic Designer

	Matt	Kenneth	Jess	Amius	Supervising Teachers: Dr A	Ms R
CAD Car Design	A R	C		C		
CFD Car + Parts	A	R		C	I C	
Design Wheel Systems	A C	R		C	C	C
Design Wheels	A C	R		C	C	
Manufacture Car Parts	A C	R		C	I	I
Design Wind Tunnel	A R	C		C		C
Manufacture Wind Tunnel	A R	R			I C	I C
Assemble Cars	A	R		C		C
Physical Testing + Analysis	A	R		R		
Create + Share Digital Media	A			C		
Gain + Manage Sponsors	A		R		I	
Finance Management	A C	C	C	R		
Order Items	A C	C	C	C	R	
Build + Maintain Website	A		C	R		I C
Design Marketing Materials	A		C			I C
Design Pit Display	A		I	C		
Design + Engineering Folio	A R	R		R	I C	I C
Project Management Folio	A R	I	I	R	I C	I C
Enterprise Folio	A R			R	I C	I C
Renders + Engineering Drawings	A C	C		R	I C	I C
Verbal Presentation	A R	R	R	R	I C	I C
Reaction Time Training	A		R			
Team Organisation + Management	A R	C	C	C		
Check Final Car to Regulations	A R	R	R	R		
Packaging + Posting Car	A					

R Responsible — does the job
A Accountable — ensures good doing of job
C Consulted — gives guidance
I Informed — is told about the

Figure 14: RACI Matrix

DELIVERABLE RESPONSIBILITIES

To **further define team member's responsibilities** we divided each submission element and identified the role everyone has. The lines link the submission to the team member and the **thicker the line the greater responsibility** they have. Initially everyone was involved with all the submissions however we crossed paths and redid work due to not clearly separating work between members.

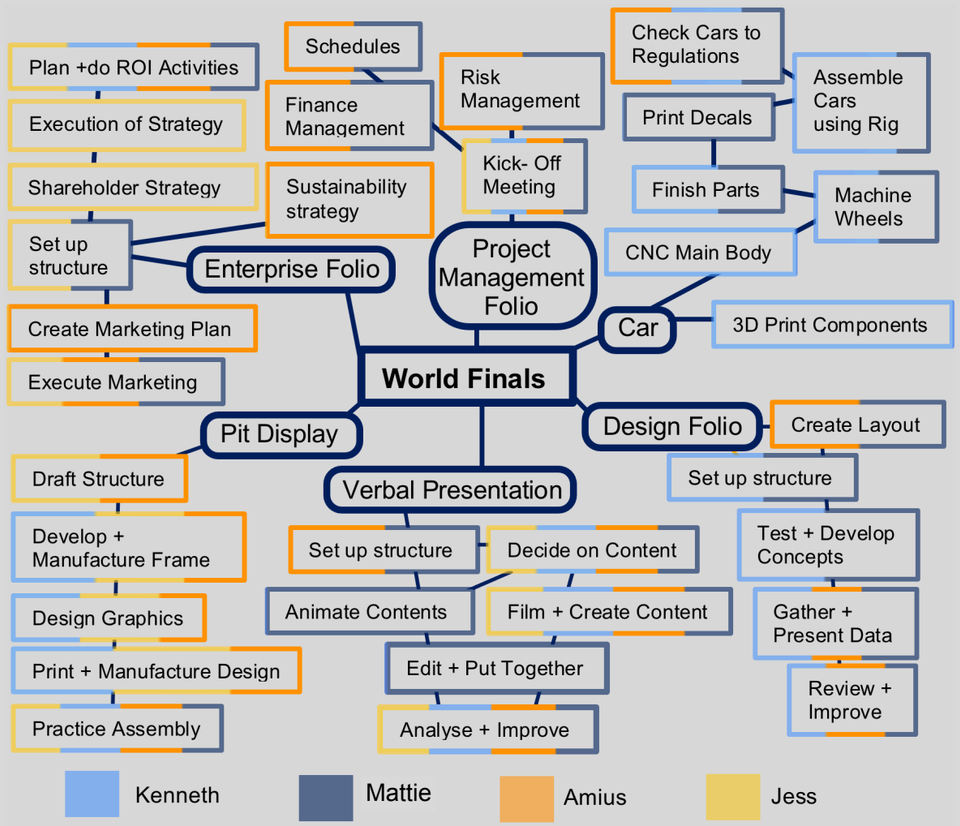
While we helped each other out, diagram 14 defined who took main responsibility and lead in keeping that submission element to schedule and to the standard we were aiming for.

The only element we were all responsible for was the Verbal Presentation where we all **contributed equally**. This helped make us all aware of each others progress and developments throughout our journey to the World Finals.

Jess contributed less to our final submission elements however this is **appropriate to their roles** as they are responsible for managing digital media and public relations respectively which isn't measured in the submissions.

ACTIVITY BREAKDOWN

Figure 16: Activity Breakdown Diagram



By having a **highly structured team** we maximised **efficiency** for completing our project scope. We clearly defined who works on each submission and who they work together with in the team.

Breaking down each submission made it easier to get started and work towards the final product without being overwhelmed.

For evaluating and improving our work we all **contributed and constructively** assisted with all areas of the project.

TIME DISTRIBUTION

Team Work Evaluation

For effective team work we would ideally have all members **contributing equally** as well as overall having **reasonable work loads** throughout the project.

We graphed how much time we were spending **each day** doing F1 in Schools.

If we were to redo this we would use past data when creating our schedule.

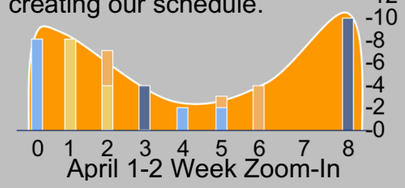
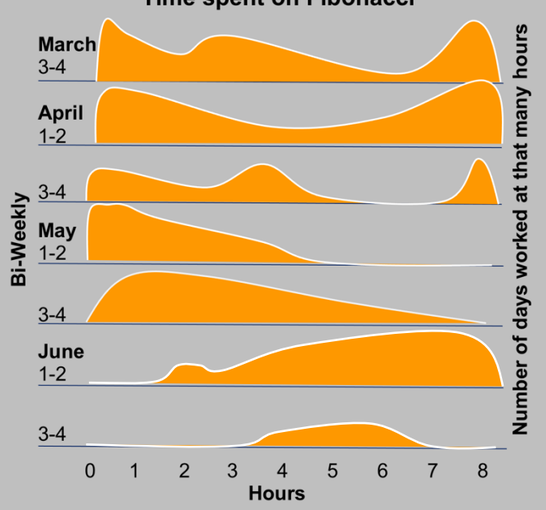


Figure 17

Monitoring + Controlling



COMMUNICATION PLAN

"They're called stakeholders because if you don't look after them, they'll come after you with seven foot stakes!"
-Rob Thomsett

When creating our stakeholders plan, we focused on clearly establishing stakeholder expectations for the team and how we can best fulfil them. The central aim of this plan is to ensure **effective and meaningful relations** between team Fibonacci and our stakeholders. This also includes creating value for our stakeholders in every interaction we have with them.

PLAN:

1. Share partnership proposal to give details of the team and competition.
2. Offer to have an online or in person meeting to discuss partnership.
3. Send a clear outline of ROI to be expected and request their logo as a scalable vector graphic.
4. Follow up with updates and deliverables of ROI.

OUR KEY STAKEHOLDERS

George Brown & Sons Engineers (Leith) Ltd

Our **main financial contributors,** George Brown is a local engineering firm who are heavily involved in the teams progress towards the world finals. We have worked with them to market their firm and our school as George Brown was a former pupil.

U-MASK

Our first partner, U-Mask have supported us through social media and professional "U-Masks" just like the professional F1 teams.

HACKLAB

Our main manufacturing partner, we owe them much of our understanding of machinery and engineering principles our car is based off.

REGISTERING KEY STAKEHOLDERS

To create our Stakeholders plan we began by constructing this diagram which **defines our stakeholders** and **ROI** for each. This was an important way to give an overview of the support we have to help us take full advantage of the opportunities available to us through F1 in Schools.

ALERTING STAKEHOLDERS

Before we apply our communication plan, our stakeholders must know they *are stakeholders.* This fundemental means us **communicating to all stakeholders** who do not receive a sponsorship package detailing what they can expect.

We focused on social media and in-person get togethers to share what the competition is and who we are as a team. This was an essential step in effectively building **strong relationships between the team and our stakeholders.**

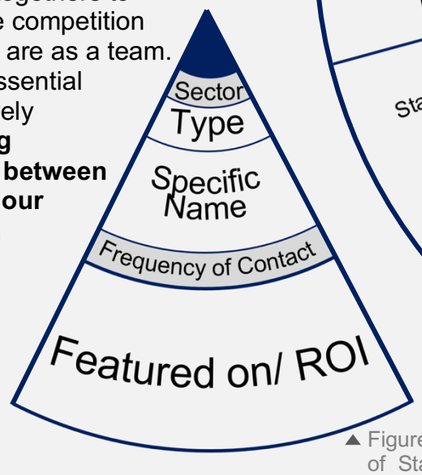


Figure 19: Registration of Stakeholders Key

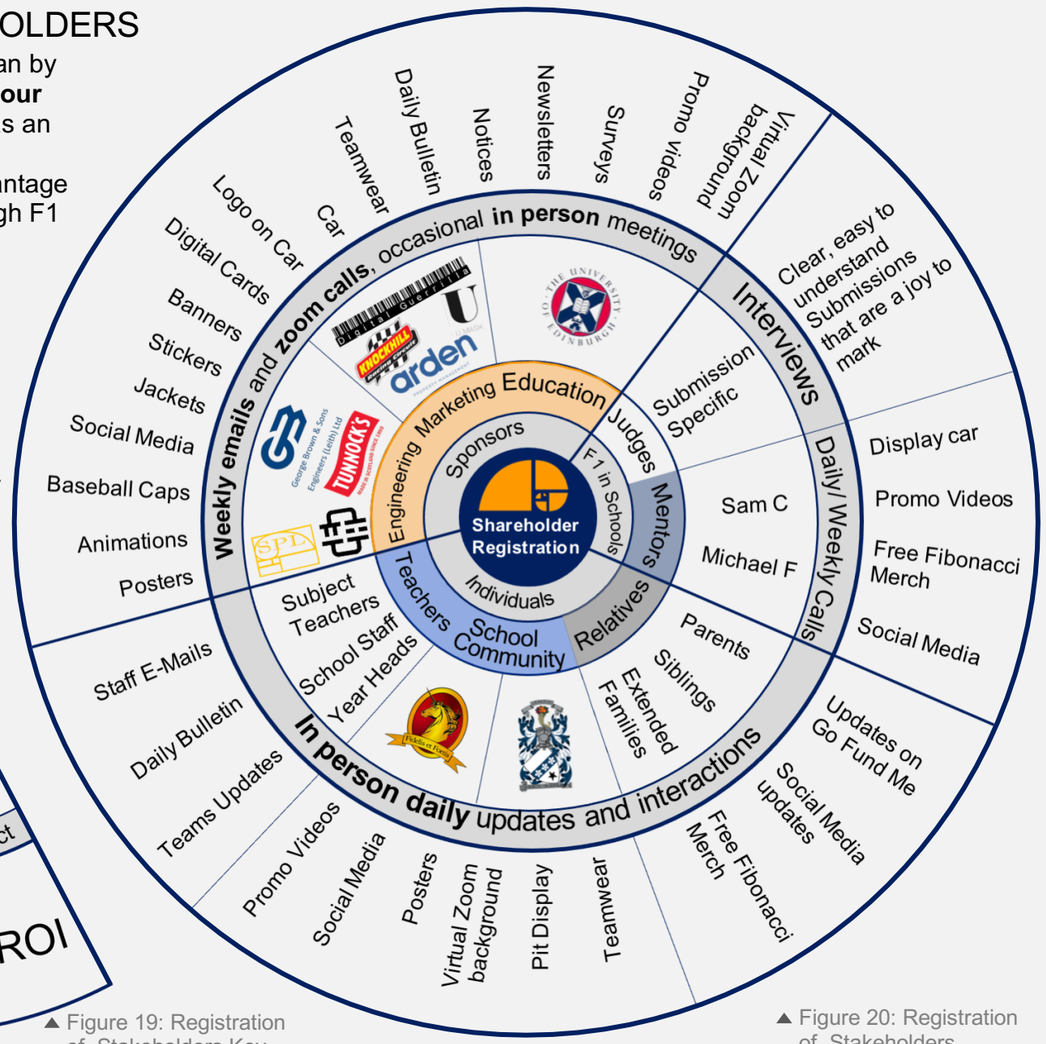
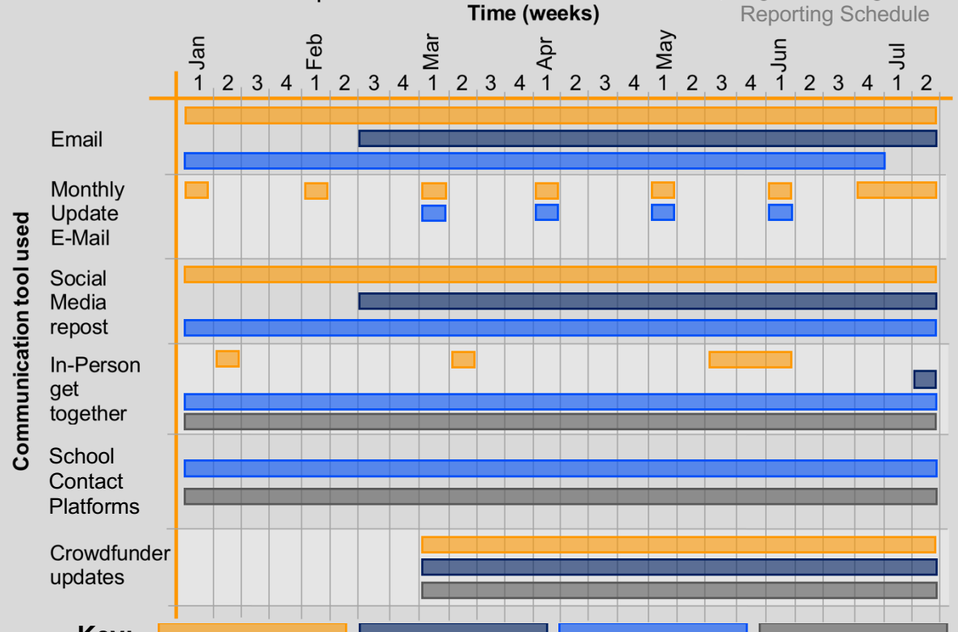


Figure 20: Registration of Stakeholders

COMMUNICATION CALENDER

Regular communication with our four categories of stakeholder is key to healthy stakeholder relationships. We **regularly reported** to all key stakeholders through a variety of platforms to ensure thorough and comprehensive updates on our team and the competition.

Figure 21: Regular Reporting Schedule



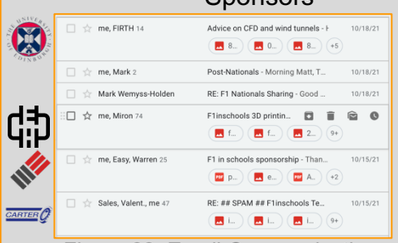


Figure 22: Email Communications

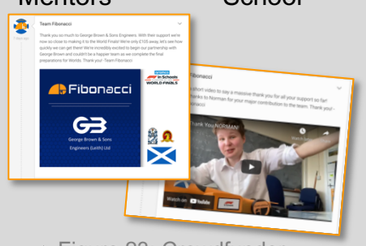


Figure 23: Crowdfunder

Figure 24: Repost

SHAREHOLDER EVALUATION

Monitoring + Controlling

Beneficial Relations Evaluation

Effective solutions

- Our plan enabled **clear communication between team members and stakeholders** as we had a clear sequence to follow to build up the relationship between the team and each stakeholder.
- Our Key Stakeholders: Sponsors (George Brown, U-Mask and Hacklab), Mentors, School and Relatives; were reported to regularly in line with our communications calender that we updated as time went on.
- By using **multiple communication tools** from E-Mail to our School platforms that connect all parents and alumni, we were able to build strong stakeholder relations as they saw the team updates as well as personal messages we shared.

Problems

- Our ROI and visibility for shareholders was comprehensive but not clearly measured. In the future it would be better to have a **measureable** way to show beneficial ROI to **increase shareholder satisfaction**. We began this with surveys to market the team where we measured sponsor awareness.

Fibonacci

RISK MANAGEMENT PLAN

The more likely a risk is to develop (shown as a thicker line on the identification chart) the greater number of **preventative measures** are needed to be implemented. Each measure is a 'layer of cheese'. These precautions may not stop each risk from arising, but the more layers, the less likely this is to occur. If a risk has high impact (shown by a far reach of shapes in the net chart) then the team must create **backup-plans to reduce the implications** of such a development.

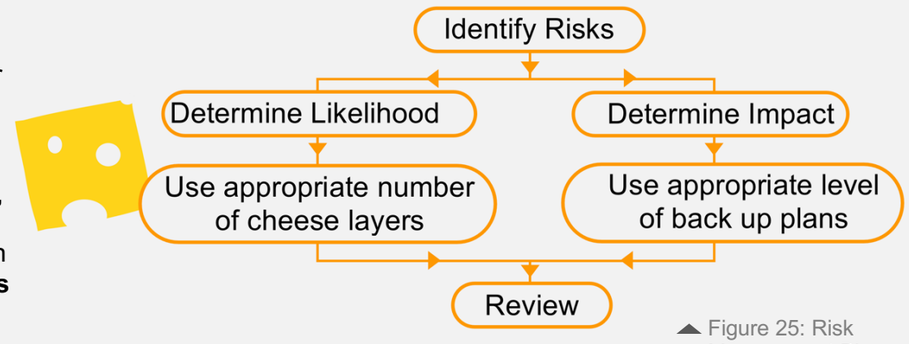


Figure 25: Risk Management Plan

RISK IDENTIFICATION

Initially

Risk	Likelihood	Response Plan: Layers Applied	Response Plan: Who Implements
Ordering wrong item	High	A B F	Teacher + Mattie
Missing Meetings		A D F	Jess
Failure to raise funds		E	Teacher + Jess
Delivery delays		E F	Jess + Mattie
Scope Creep		B D E	Mattie + Mentors
Regulation Infringement		B C	Kenneth + Amius
Centrifugal Clutch		E	Mattie + Kenneth
Car Breakages		B C	Kenneth
Covid	Low	E	All Team

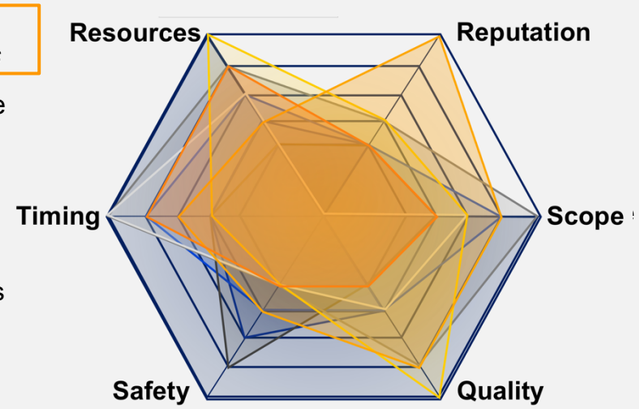


Figure 26: Risk Identification Net Chart

PREVENTATIVE CHEESE LAYERS

The 'Cheese Model' for preventing risks allows for a measure of the chance of a risk developing. Each layer of Cheese represents a measure put in place to **prevent a risk's impact on resources, timing, scope and quality.**

However Swiss Cheese has holes. This represents flaws in any preventative measure that can let a risk develop. If holes happen to align through a stack of 'Cheese Layers' the risk can unfold.

Introducing more preventative measures **reduce the chance** of holes lining.

Figure 27-A

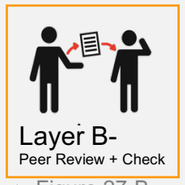


Figure 27-B

Figure 27-C

Figure 27-D

Figure 27-E

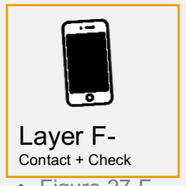
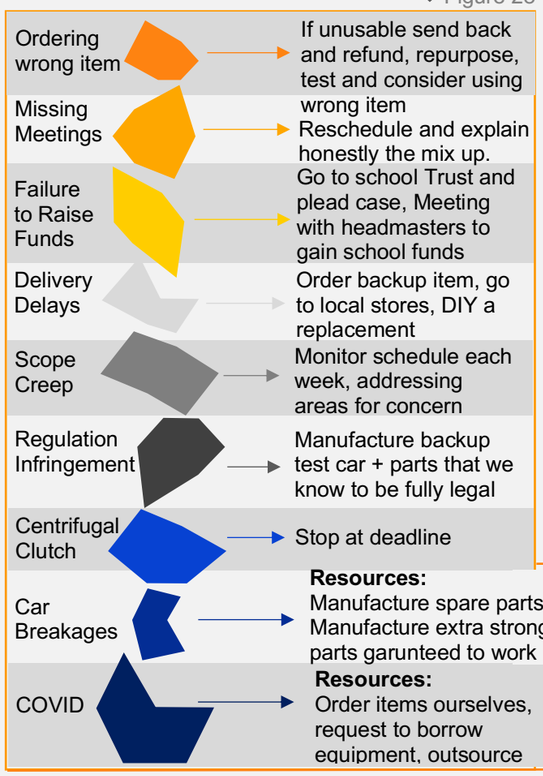


Figure 27-F

BACKUP PLANS

Figure 28



For each risk we used the net areas from our Risk Identification Chart (Fig 26) to appropriately response plan. Each plan gives the outline of what we do if the risk develops to the level of impact predicted on the Net Chart.

The greater area a potential risk has the more extensive our backup plans are as the **impact to the project in Resources, Timing, Scope and Quality will be greater.**

Our Response plans were mostly kept as a just-in-case, however several were used in action, proving invaluable.

EVOLUTION OF RISKS

Monitoring + Controlling

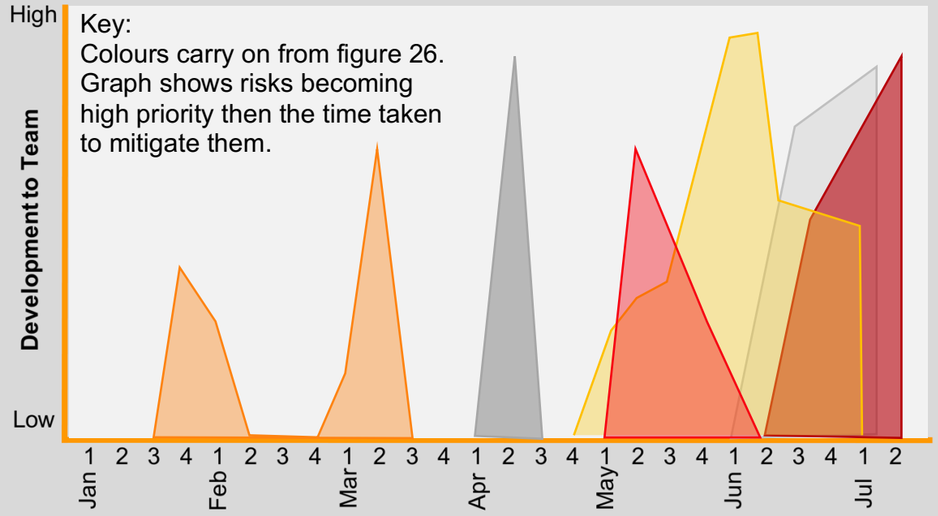


Figure 29: Risk Evolution Graph

HOW RISKS HAVE DEVELOPED

New Risks

- Pit Display
- Manufacturing

Risks **developed** as we progressed through the competition. We added 'Cheese Layers' when we identified new risks (figure 29) reducing their likelihood to develop. As you can see from figure 29 the development of risks often happened quickly from week to week.

We responded to sudden risk developments using our back up plans to handle any possible negative effect. Where you can see greater areas and rising development are where we had no or inadequate back up plans in place and where we hadn't used enough preventative measures- 'cheese layers' to prevent the risk.

These were the team's **greatest challenges** which we've identified as areas to learn from and develop. In the month between handing everything in to the world finals we will further implement these methodologies to reduce the risks you see have developed to date.

THE FINAL EVALUATION

Monitoring + Controlling

Effective solutions

- Our **identification of relevant risks** ended up covering all relevant areas as we brainstormed everything and checked if it came under any identified risks, tailoring our list until it was comprehensive.
- Our **identifiation of areas of impact** (Figure 26) was based of our Regionals and Nationals experience, rating risks depending on how big an impact they had for us in the past. This gave a good representation of the areas of risks and we were quite close with our likelihood ranking.

Problems

- COVID was a risk we didn't believe would develop as lockdown measures were gone and everything was returning to normal. However our lead teacher caught it and it became a **major risk.** In the future it would be good to **relate likelihood to impact** so even if a risk is unlikely, we work to prevent it because of the large impact on resources, timing, scope and quality.
- We should have **accounted for time delays** in the impact assessment of ordering wrong items as the backup plan requires extra time for items to arrive.

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REFERENCES

Figure:	Creator(s):
1	**Mattie** Project Manager
2	**Mattie** Project Manager
3	**Mattie** Project Manager and Amius- Graphic Designer
4	**Mattie** Project Manager
5	Amius- Graphic Designer
6	Amius- Graphic Designer
7	**Mattie** Project Manager
8	**Mattie** Project Manager
9	**Mattie** Project Manager
10	Jess- Public Relations Manager
11	Jess- Public Relations Manager
12	Jess- Public Relations Manager
13	Jess- Public Relations Manager
14	**Mattie** Project Manager
15	**Mattie** Project Manager
16	**Mattie** Project Manager
17	**Mattie** Project Manager
18	Jess- Public Relations Manager
19	Jess- Public Relations Manager
20	Jess- Public Relations Manager
21	Jess- Public Relations Manager
22	Jess- Public Relations Manager
23	Jess- Public Relations Manager
24	Jess- Public Relations Manager
25	**Mattie** Project Manager
26	Amius- Graphic Designer
27	Amius- Graphic Designer
28	Amius- Graphic Designer
29	Amius- Graphic Designer

Fibonacci

Did you notice our folio layout follows the fibonacci sequence?

CCI

aramco

F1 in Schools

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WORLD FINALS