



ENTERPRISE

FUSION



2 | Meet the team

INTRODUCTION

Power, passion, high-tech and teamwork – that is what characterizes our team. We are six students from five different schools in the southern part of Germany.

We first met in the summer of 2018 in the renowned **Science Academy Adelsheim**, where 72 highly motivated young students had the opportunity to work together on science projects for two weeks. After the academy, we kept in touch and the idea to create a “Formula 1 in schools” team was born. While some of us are participating in the competition for the first time, others have already gained experience in the past years. After having won the National Finals and having become the **German Runners Up**, we are now looking forward to the next step on our journey: The World Finals or Since the start of this adventure we have not only learned much more than expected in many areas but are also proud to have developed our technical and team working skills.











Right now, we are proud to be in Abu Dhabi and have the opportunity to put theory into practice in our biggest challenge yet.

Enjoy reading our Enterprise Portfolio!



“THE THINGS THAT MAKE US DIFFERENT ARE THE THINGS THAT MAKE US”

- A. A. Milne

 Introduction	02
 Team Management	03
 Project Management	04
 Quality and Time Management	05
 Risk Management	06
 Evaluation	07
 Corporate Identity	08
 Resource Management	09
 Marketing	10
 Industry collaborations	11


INFO BOXES


In the whole portfolio, you can find info boxes with this particular design which show essential information at first glance.



 **Jonathan Notter - Team manager**
Schickhardt-Gymnasium Herrenberg

To facilitate working together as a team, one person must be the appointed team leader who leads and coordinates everything. Jonathan linked all group members and took responsibility for the end results. This included time, risk and quality management.



 **Magnus Hornstein - Marketing Manager**
Lichtenstern-Gymnasium Sachsenheim

To be able to master the project, we need financial resources and material sponsorships. Magnus built and maintained contact with suitable sponsors and coordinated all related activities. He was also responsible for the build-up of our social media presence.




 **Henry Wacker - Graphic Design/PR**
Schiller-Gymnasium Offenburg


Henry was responsible for our graphic design. This did not only include creating a consistent, professional corporate identity and an interesting website but also the pit display. Together with Jonathan and Magnus, he also helped acquiring our sponsors.



 **Jascha Fricker - Manufacturing Engineer**
Gymnasium Unterrieden Sindelfingen

What has been developed needs to go into production to become reality. Jascha chose the appropriate high-tech materials and picked the right manufacturing process for each of the many car parts. Moreover, he took care of our renderings and the technology of our pit display.



 **Niklas Abraham - Design Engineer**
Schoenbuch-Gymnasium Holzgerlingen

Creating sketches, working with software packages to design and digitally test the car, that's the role of the design engineer. Niklas mastered ANSYS and Siemens CAD software, and took a lot of pride in optimizing physics and aerodynamics.



 **Markus Vetter - Research Engineer**
Gymnasium Unterrieden Sindelfingen

To find many new ideas and concepts in the development process, Markus executes many different tests. He also tested the car, digitally and physically, to make it faster and faster. In addition, he supported Jascha and Niklas in all engineering processes.



TEAM MANAGEMENT

TEAMWORK

Nothing is more important than teamwork to achieve the best possible results and goals. A team of six individuals has no chance of success without working together – **it's the fusion of all team members - the combination of different ideas, abilities, and opinions.** Therefore, it is essential for us that all members work together flawlessly and that everyone fulfills his tasks. Despite the long distances, sometimes more than 150 kilometers between our places of residence, we have to compete as a team, stay in contact constantly and work together. Besides, everyone must feel comfortable in the group, which leads to working colleagues becoming friends.



TEAMMEETINGS

Daily contact, also face to face, is fundamental in our team, because you can solve problems better at personal meetings. Moreover, we can communicate more effectively and things can be shown visually. Our team manager Jonathan organizes the team meetings. He also takes care of the agenda and the distribution of work. Besides our meetings outside school hours, a part of the team meets every Friday in the **Formula-1 school club of the Gymnasium Unterrieden.** It is particularly advantageous that our supervisors and other participants in the competition are also present during the school club and we can receive even more input.

TASK TABLE

To see all the different tasks which needed to be done during the competition, we made a table with all of them. In it, we listed all the jobs. Furthermore, **you find the person doing this task, the person helping and the program you need.** With this table, we make sure to finish all the exercises and have good cooperation between all team members.

Task	Person	Help	Programm
Bannerdesign	Henry	Jascha	Illustrator

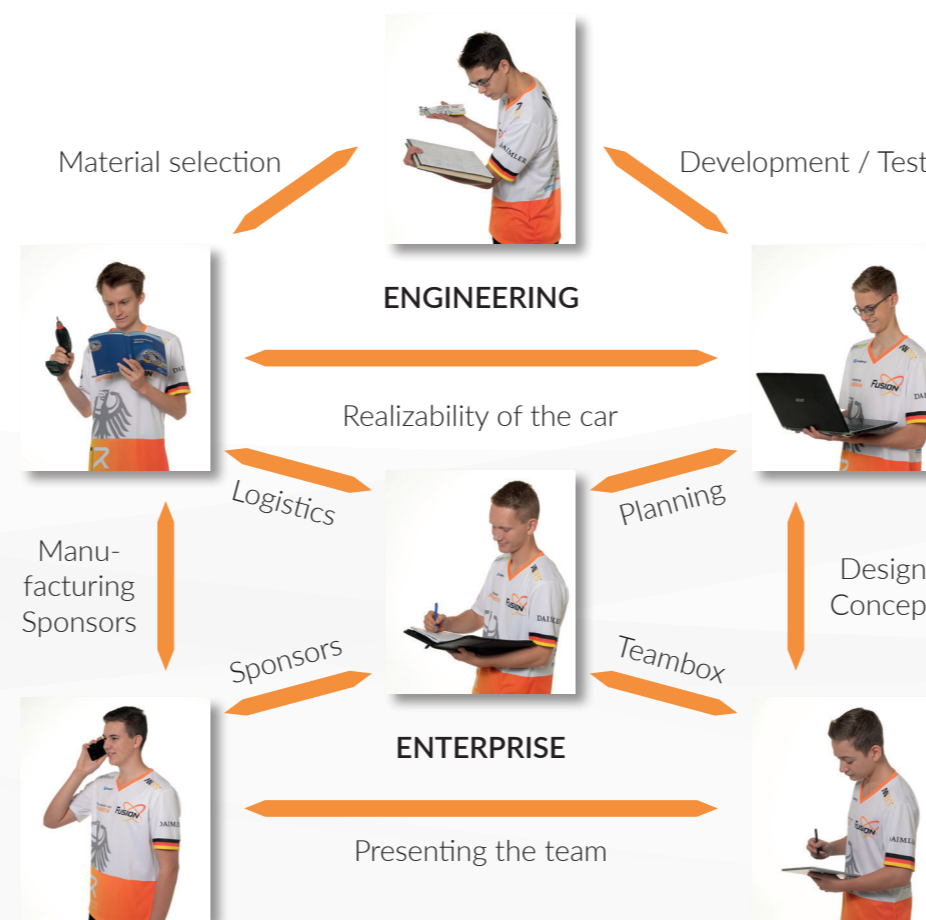
TEAM ROLES

To make sure that every team member knows what to do for the team, everybody has a clear role in the organization. This role is connected to different tasks. All tasks for a job are shown up in tables. Manufacturing Engineer example:

Task	Deadline
Finding Manufacturing partners	15.08
Develop Manufacturing tools	01.09
...	...

ROLE INTERACTIONS

Besides the tasks every member has to do on his own, there are many exercises which we need to do in **cooperation between various persons.** To work effectively together, we made a graphic at the beginning of the season to see all overlappings.



COMMUNICATION

Communication, both internal and external, is one of the keys to success in any project or team, but especially for us, **communication through geographical separation** plays a fundamental role. Only with **dialogues that are both comprehensive and precise,** we can prevent problems and make decisions. Throughout the preparation phase, we are in constant contact, writing messages, and making telephone calls. We use various media for this exchange:

We use WhatsApp to exchange information through short text or voice messages quickly.

With the help of „GoNeo,“ each team member received a personalized e-mail address under our domain „Racingteamfusion.de“ We use this address mainly for contacting sponsors.

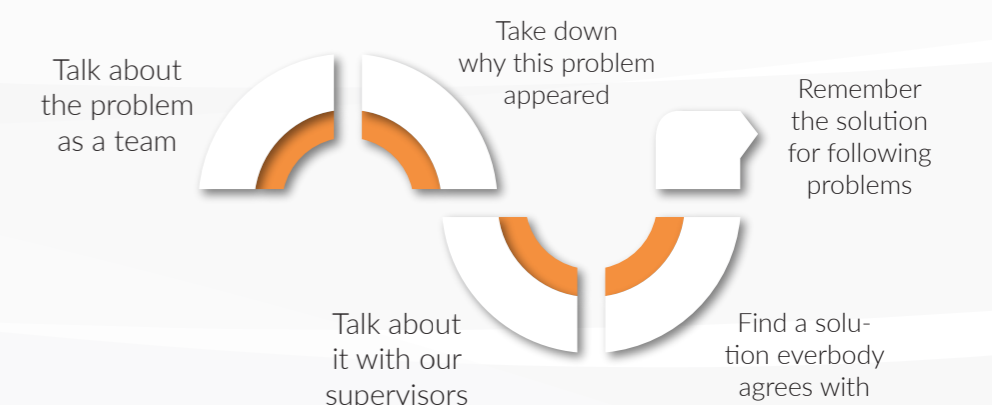
To clarify more complex problems, we make short telephone calls.

If topics concern the whole team, we make an online team meeting via Discord. „Discord“ is a kind of a telephone conference. We usually meet there twice a week.

We use Drive as shared data storage for larger files that each team member has access to at all times.

TEAM PROBLEMS

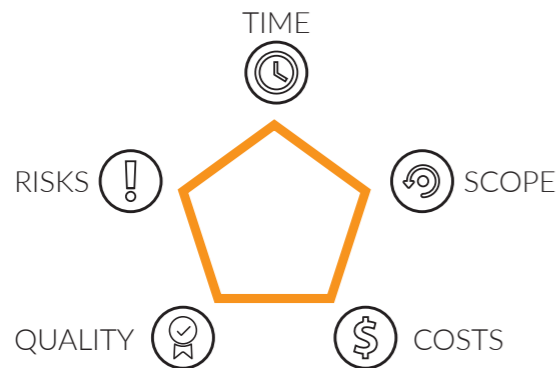
During all of our intensive work and time together it has been impossible to prevent all problems in our team. Possible issues are, for example, missing work ethic or conflicts in the group. Both sorts can be easily managed with the help of the following tactic.



PROJECT MANAGEMENT

INTRODUCTION

Without project management, the achievement of goals and self-imposed requirements is impossible. To complete our project with as few complications as possible, it is essential to plan accurately. For that, we met for a **kick-off meeting** at the beginning of the season. At this meeting, we developed a concept for the exact organization and implementation. We also considered the initial situation and defined our goals. Furthermore, we distributed the tasks, and the schedule was drawn up. Only planning leads to success - all aspects of project management have to be taken into account. For us, **quality** means the incentive to become even better and to stand out from the crowd. **Time** means to hold on to our deadlines and terminus. Short calculated frists help us to encourage us to perform at our best and demand our effectiveness. Last but not least, we have to look at our **costs**. Therefore we make a financial statement and divide our resources. These points in combination with the ends of **risk assessment and the scope result in a Pentagon**.



During our project, it is essential to hold this **pentagon in equilibrium**, which means to take equal care for each point. How we realize all aspects are shown up on the following pages.

TEAM CONTRIBUTIONS

To make sure that every team member has **useful and critical contributions**, we use two methods while finding ideas.

5-finger-method

Once a team member completes a task, the others give him a 5-point-feedback using the 5-finger-method, each finger stands for one typ of evaluation.



635-Method

In this method, every team member writes down three ideas to a specific topic on a blanc piece of paper in 5 minutes. Then the part is turned to the neighbour who can add/comment the idea. Then the sheet goes to the next person and so on. After one round everybody has given his opinion on a problem and all team members could provide critical and practical contributions. **Example: Q: What do you want in our Pit Display?**

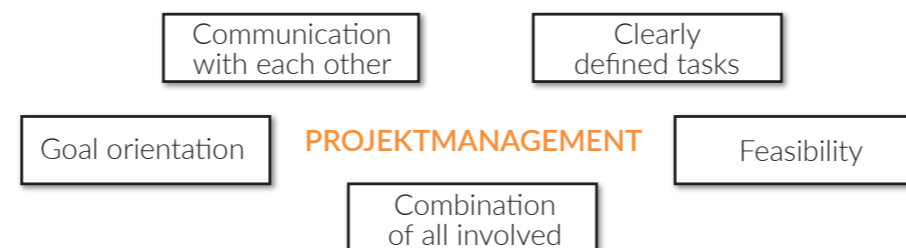
Jascha	Jonathan	Henry	Magnus	Markus	Niklas
Touchscreens with interactive systems	At least two touchscreens	Probably one on every side	One marketing one engineering	Same modell	A third one in the middle
Huge Rendering	Good Idea	In the middle of the box	As many sponsors as possible	Explosion rendering	Iso-Meric view
Different pedests	Difficult to ship	Need to fit in each other	More for enterprise	One main pedest with TV	...

PLANNING CONCEPTS

First of all, successful planning requires concepts according to which the planning is carried out. However, why plan at all? Quite simple: **It reduces complexity, defines decision points, visualizes all tasks and creates a starting point for detailed planning.** All these points are indispensable and essential for a project. As a team manager, Jonathan always tries to adhere to these concepts and ensure that the project runs smoothly.

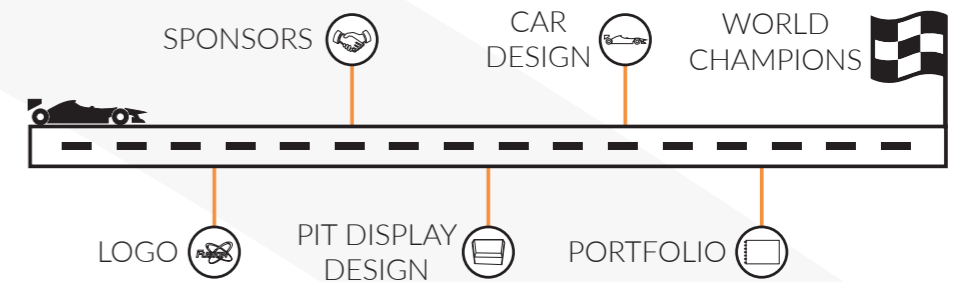
Concepts

- clearly defining tasks: avoidance of ambiguities and mistakes, everyone knows precisely what to do
- Communication among each other: every deadline, milestone and idea/decision must be discussed
- Goal orientation: every task must aim at contributing to the success
- Realisability: realistic goals Avoidance of resignation
- Combination of all participants: consideration of all team members, Involvement of sponsors



GOAL DEFINITION

To be successful in a competition or a project, you must always have a goal in mind and never lose focus. Everyone in the team must be aware of what we are working on right now. A clear objective motivates each team member and allows us to work more closely together as a team. Our goal is to become the World Champion in „F1 in Schools“! Also, we want to inspire and above all, achieve personally valuable learning effects. Until then, however, it is a long and rocky road, which is why we divided the main goal into **smaller sub-goals**. Examples of this are the construction of the car or the completion of the portfolio texts. The subgoals we again divided into „can- and must-goals.“ „**Must-targets**“ are competitive requirements that we must make under all circumstances. „**Can-targets**“ are those which are added as a bonus to the common goals, for example, the creation of a Blender animation for our team box. To always keep track of our goals, we use the app **Wunderlist**, in which you can enter goals, assign them to people, set deadlines, and also allocate finances.



DECISION MAKING PROCESS



During our team meetings, we define the tasks which we need to do in the next period. Then the relevant team member makes a plan which we again discuss in our team meeting. During this discussion, new ideas appear, and we may have to change our strategy. Having discussed this plan with some experts (e.g., Supervisors, former students, ...) and getting their agreement, we start to execute the plan.



QUALITY & TIME MANAGEMENT

SCOPE

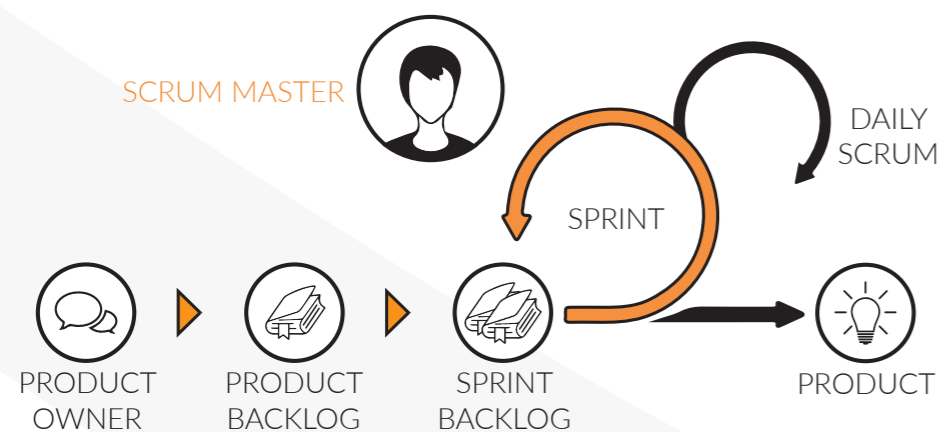
The first point of the pentagon is the scope of our project. To find all the tasks that we need to do until our arrival in Abu Dhabi, we look through the competition rules and talk with former participants to make sure that we don't miss anything. Furthermore, we try to reach the maximum possible assessment regarding F1 in School's scorecard. To show up the whole project, we make a graph showing all the exercises for the five main subjects of the competition: Engineering, Print Media, Pit Display, Enterprise, Journey.

TIME

Despite the resources, the time is the second tough part to manage. Everyone of us has different hobbies, schoolwork, and other duties, but still, we need to focus on F1 and reach all our deadlines in time. Also, time management must always be **checked with our sponsors** to make sure everyone of them can reach our deadlines planned at the beginning of our journey. To develop effective and proper time management, we compared our project to projects real companies run. Most of them use **agile project management**, which means to have a high focus on our product, but don't focus strict on deadlines. The advantages of this are:

- Fewer rules, easy to understand
- Short ways of communication
- High Agility
- High transparencs through many meetings

The most known method is the **scrum**. In scrum, the main aim is divided in **smaller goals (milestones)**. Before the start of every product, you develop a list with requirements (Product-Backlog). After that you choose how many of them you can realize in one sprint (term of work). Having finished the sprint you look back and think about improving your workflow.



DEFINITION OF TASKS

Every team meeting, we check all the things we have on our „to-do-list“ on the app „Wunderlist“ and then pass them to a person who is in charge of this task. For this, we keep an eye on the **SMART-Methode**:

SMART

- Specific** - Exact phrasing of goals
- Measureable** - When is the goal achieved?
- Assignable** - Distribution of tasks according to interests
- Realistic** - Goals must be realizable
- Time-bound** - Set and adhere deadlines

Digital assistance

Because we can not meet each other in school to check which tasks are finished or what lies ahead of us, we need digital assistance. With the help of certain programs we always know the current status quo. In addition they help us structuring our work. The first assistance is „Wunderlist“, it is a online-to-do-list all team members have access all the time and can check their tasks and their deadlines.

+-

- Clear structure
- Easy to handle
- Add additional information
- Useable everywhere

- Must always be updated
- Can not show interactions

The second program we use is „Gantt project“ With this tool, we make our **timetable**. Usually, a strict schedule is not that important in agile time management, but in our case, we need the timeframe because of different facts. First, there are **deadlines given by F1-in Schools** which need to have an impact on our work process. Second, we collaborate with various sponsors who give us deadlines, and last, we also need a small regulation of fixpoints. The whole timetable is created with our partners manufacturing car components for us so that we can adapt our work on their schedule. All these deadlines lead to milestones we need to pass. Those **milestones are always transparent and realizable**.

+-

- Interactions clear
- Resource Diagramm
- Connections between tasks clear

- Not well structured

QUALITY

Third, we look at the quality of our work. Therefore we use various methods for quality management to reach the maximum possible score in every single category. These methods are separated into two types. The first type are methods used **by an individual person** on his subject. The second type is **control of other team members**, sponsors, experts, or our supervising teachers.

Quality function deployment

The first method we use allows us to self-control our work. Therefore, we decided at the beginning of the season to use a tool through all competition elements. Because of the easy handling and its effectiveness, we had chosen the „**House of Quality**“ for our project. In this house, the final product is developed very **close to the customer requirements** (for us: evaluation forms). The requirements, their weighting, the implementation (how/characteristics), the relationship between implementation and requirement (= **relationship matrix**), and the difficulty of the implementations are presented. To understand the „House of quality,“ here is an example for our pit display.

		Technical Requirements								
				Points	Team colours	Touchscreens	Light materials	Drawers	Banners	Merch
Score Card	Design	team identity	10	9				5	5	
		budget	10			5				
	Content	impact	10		9		9	9		
		technology	10		9					
	Marketing	material	10				5		9	
		ROI	10					9		
		set-up	10			9	5			
	Assesment	safety	10			5				
Total impact			90	180	190	190	230	140		
		Percentage		9	18	19	19	22	13	



6 | Management

RISK MANAGEMENT

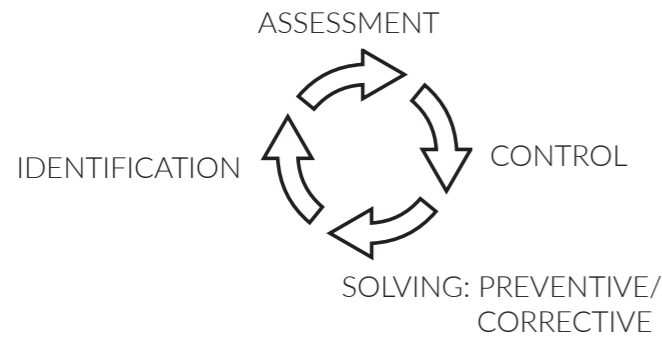
RISKS

Risks are events that harm our work or our goal. In a project as complicated and extensive as „formula 1 in schools“, proper risk management is essential as unforeseen difficulties can occur at any time. We always try to act as **intrapreneurs**. They operate with foresight and try to prepare for every risk. To treat risks, the best possible way we always follow an explicit plan, which helps us to manage all risks.

Target-Oriented risk management consists of four phases:

- Identification
- Assessment
- Control
- Solving; preventive/corrective

We identify and evaluate risks as described in the second chapter. True to the motto „danger recognized - danger averted“, these are the most critical points in risk management. If risks ultimately do occur, they must be controlled and resolved in a targeted manner. For this purpose, we use **preventive measures** on the one hand and **corrective measures** on the other. Preventive measures reduce the probability of risks occurring. Corrective actions eliminate problems after they have occurred.



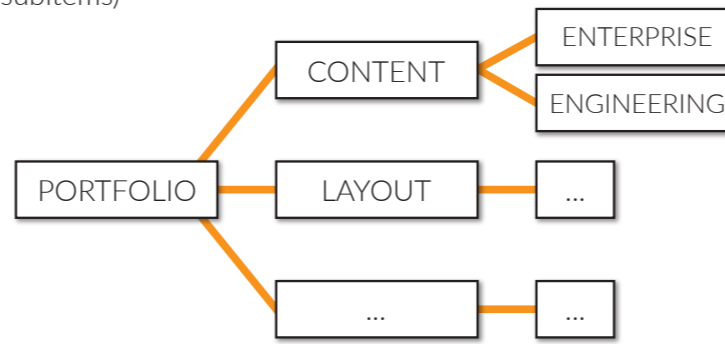
UNCALCULATED RISKS

One type of risks are those we could not expect although we planned and managed everything perfectly. For those risks, we always try to have someone with long-year experience in our background. These can be experts from our sponsors who have sufficient F1 experience, former attendees, or our supervisor.

To prepare for all disruptions, we looked at our areas of responsibility and were able to identify possible problems after consultation with various former participants. Here, we worked with the **FMEA** (Failure Mode and Effects Analysis) **method**.

FMEA

1. Determine product / process (call main area or subject area, subitems of subitems)



2. Name the function of all sub-items (points from the evaluation forms/ or: use for us; e.g., the adhesive has the purpose of fastening during car assembly).
3. Analyze errors (for each subitem):
 - Which errors can occur?
 - What are the consequences of these errors?
 - When/ Why do these errors occur?
4. We then prepare a risk matrix for these problems, in which the risks are assessed with regard to their probability of occurrence and their effects and dealt with if the risk is too high.

		Impact				
		Negligible	Minor	Moderate	Significant	Severe
Likelihood	Very Likely					
	Likely		D			
	Possible				B	
	Unlikely			C		
	Very Unlikely					A
	(A)	(B)	(C)	(D)		
	Teammember quits	Not enough money	Miss deadlines	Teammember can not come to a meeting		

5. Find preventive/corrective measures

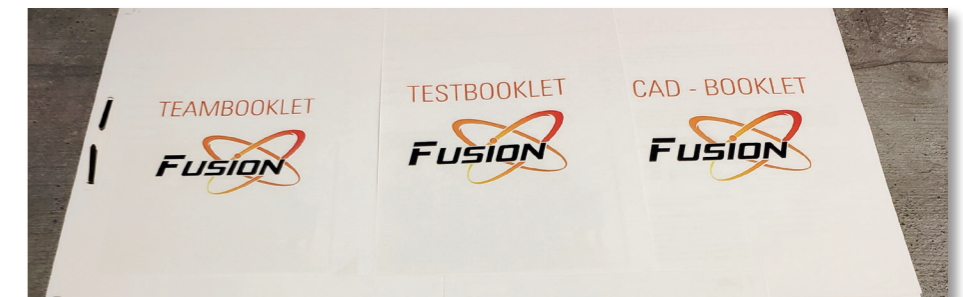
SOLUTIONS

When solving possible risks, we must always determine whether a chance affects only one person / emanates from a single person or whether the entire team and possibly also sponsors are affected. If a risk only affects one person, we do not have to make such an effort as if it affected the entire team. The most dangerous are those who affect sponsors, so we need to plan them as pleasant as possible. That is why we talk about them first within our team, then with former competitors and finally with our sponsors. All of our **solutions have been listed up in a chart at the begin of the season**. Some of them you can find in the table below.

Risk	Preventive	Corrective	Worst-case
Teammember quits	Good team-atmosphere	Find a new Teammember	Compete with five members
Not enough money	Contact many companies	Use low-budget material	No participation
Miss deadlines	time buffer	Focus on this specific task	Correction of timetable
Miss meetings	Detailed organisation	At least two persons go to each meeting	short notice cancellation

BOOKLETS

In addition to our chart with solutions, we made „booklets“ for each topic after the national finals. In these, every team member wrote down what is essential for his role and which experiences he has already made. Those booklets help us in the case of person becoming sick or not being able to appear to a meeting. In a booklet you have all the **crucial information**, so another person can jump in and help. Furthermore, we can use them to see all the things we achieved.



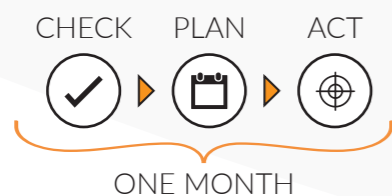
EVALUATION

PROCESS OPTIMIZATION

Throughout the whole project, we always tried to become even better. There is no perfect result because you can always improve yourself.

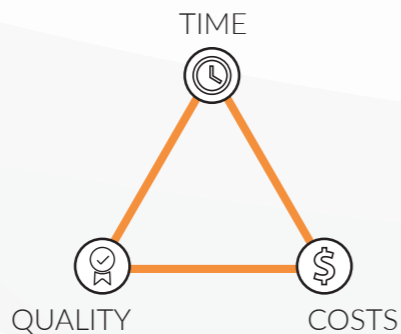
To optimize our processes, we follow an easy way to improve our current status quo. First, we checked our work until the nationals and made a **pro/con - list for all parts of our project**.

Second, we evaluated this list and looked for improvements until the World Finals. **After one month** of working, we hold a long meeting with all team members and our supervisors and still make a pro-/con- on our current work atmosphere. We repeated these meetings each month, so all in all, we held five conferences for improvements. During each session, we perfected our management strategy.



PRODUCT OPTIMIZATION

The second aspect we always need to improve are our products and results, like our portfolio or a manufacturing step. Some of them can still be improved because there is enough time, but sometimes it is impossible to fix them. To assess our products, we rate them according to our triangle. For each point, we make pros and cons.



TEAM WORK

During our time until the National finals, we noticed that communication and role interaction are the hardest part of teamwork. To improve those aspects, we tried to make more team meetings with personal contact. Furthermore, we made a graph (as shown on Page 3) showing all interactions.

Evolution until World Finals: Because it was still tough for us to give good feedback and make precise arrangements, we had a meeting with a professional team coach who gave us tips to improve communication and teamwork.

TIME & QUALITY MANAGEMENT

Evaluation after Nationals: The two hardest parts of the management are time and quality. Before the Nationals, it was difficult for us to complete our deadlines. So we decided to make shorter deadlines to make them more logical. Because we were already really proud of our quality as we became Runners Up, we tried to continue our methods to reach such excellent results again.

Evaluation until World Finals: Our time management worked very well, and we were able to reach almost every deadline because we set short periods and always controlled them. Furthermore, we were able to improve our quality by more effective methods (as shown on page 4).

PERSONAL EVALUATION

JONATHAN NOTTER



„Through my participation in F1 in Schools, I learned more than ever expected. Working together with top managers and experts from all types of topics, managing a team and teamwork has taught me so much. But in addition to that, it was so much fun, and I made experiences school would have never offered me. For my evaluation, I can say that I should try to give better feedback and probably accept other opinions even though they are not perfect in my eyes.“

MAGNUS HORNSTEIN



„By working together with many sponsors, I learned a lot about proper communication and the fact that companies need time to fulfill their tasks. I'm very proud of what we achieved. I never expected myself to be able to handle those high money sums and many business contacts. But most important is my improvement. I elaborated on my ability to work well structured and highly efficient on one big project. Altogether this season was unlike anything I encountered before.“

HENRY WACKER



„Participating in the competition was one of the best experiences of my life. Not only did I get to learn much about graphic design, but I also recognized how crucial your work ethic is. Only if you're focused and passionate, you can achieve something outstanding. Otherwise, it is only a waste of time. What really excited me was when a sponsor of ours asked me to design their website. Graphic Design is going to be necessary for every branch I will be working at eventually.“

RISK MANAGEMENT

Evaluation after Nationals: The FMEA was a highly effective method to prepare our risks. We did not face any uncalculated risk until the Nationals and were ready for everything. The only problem with FMEA is that it is costly.

Evaluation until World Finals: The preparation for the World Finals is much more complicated than for the Nationals. According to this, there are many more risks, so we recognized in our first meeting, that we need to focus more on risk management. For this, we asked former teams about solutions and spent almost a whole week to find answers and identify all risks.

JASCHA FRICKER



„F1 in schools is one of the most fabulous experiences of my life. Especially working together in one team and striving for one goal. Improving the car to the maximum encouraged me. I love rethinking every material and manufacturing technique to achieve the best race time. I had a lot of fun preparing all the cars and gaining manual skills. The competition enables me to build up a network with many great manufacturing companies, which will help tremendously in my future life.“

MARKUS VETTER



„Competing improved my knowledge of engineering but also my skills on a personal level. Communication helped me to specify my formulations to be able to avoid misunderstandings. In addition to that, I gained lots of experience in preparing, running, and analyzing tests. Therefore it was important to acquire knowledge in physics. While working in car development, I realized how much I am interested in engineering, the challenge of making the car faster and faster drives me.“

NIKLAS ABRAHAM



„Competing in F1 in schools helped me to realize how to work as a good team while wanting to achieve one big project with one united goal. To achieve this goal and to make the best out of our opportunities, I learned how to communicate precisely. This was crucial for minimizing time efforts. As an design engineer I also improved my skills regarding CAD and CAE softwares. Also I know now how to setup CFD simulations and evaluate them.“



8 | Design concept

CORPORATE IDENTITY

Before we could develop a perfectly fitting corporate identity, it was essential to classify what our team wants to stand for:

OUR PRINCIPLES

Individuality - We want to stand out. Once somebody sees one of our presenting platforms, it should be clear immediately that we are Fusion.

Perfection - It is crucial for us to show that we never take the first, most comfortable solution which comes to mind.

Team spirit - We are one team, so we want to express that although we all live in different cities and have different interests, we work together perfectly.

NAME

The team name, Fusion, addresses our team spirit directly. Not only because we participate with as much power as arising during nuclear fusion. Also, because **the members merged** (German: fusionierten) **to one team over time, despite different interests, responsibilities, or even schools.**

COLOR SCHEME

Continuous coloring is key to a high recognition value. Orange, our primary color, immediately catches the eye of an observer. Due to that, each introduction to a new topic on a page is colored in orange. Also, our infoboxes got orange accents. Headings and can be either yellow or red. It depends whether you're reading the enterprise or engineering portfolio. This is what makes our appearance so special. **On all presenting platforms, the enterprise part is colored in our team-yellow and the engineering part in our team-red.** So our primary color has another meaning; it is the product from red and yellow. Hence, it emerges from the colors which represent the different parts of the team and represents our unity.

Teamcolor: Orange
RGB(241,143,52) ; CMYK(0,41,78,5)

Enterprise-yellow
RGB(253,200,0)
CMYK(0,21,100,1)

Engineering-red
RGB(227,49,45)
CMYK(0,78,80,11)

LOGO

Being the essential element of the CI, the logo must attract attention immediately and represent the team as accurate as possible. The **bright but dominant colors**, as well as the **unique design** of the logo, ensure this. The orbits around the name are colored differently. The first in our Teamcolor, the other in our team-typical color gradient. Above all, the logo, with its atomic orbits and the dot on the i as an atom, should show the competition's technical aspect.



DESIGN ELEMENTS

Stand out! That's what is important to us. Our primary design element can be found on every presenting platform, a Corporate Identity can only be convincing if it is displayed consistently. The design element consists of our **team-particular color gradient** and a peppy design which refers to our logo. It can be presented horizontally or vertically, the exceptional look will ensure, that it is connected to Fusion. So all in all, the design element helps us being recognized, you don't have to read our name to recognize a part of our team.



Portfolio-cover



F1 in schools world finalist 2019

business card



TEAMWEAR

Team clothing is supposed to fulfill two tasks. On the one hand, since the teamwear is one of the most essential presenting platforms, the sponsors should be shown as prominent as possible. On the other hand, the clothes should ensure that people recognize us as Fusion. This is guaranteed by our special color scheme. We combine our team shirt with a professional pair of black jeans and uniform shoes with orange shoelaces.

PICTURES

Pictures should give an accurate insight into what happened at a specific moment. To ensure that, we don't edit our pictures. Thus, they fit our colorful CI perfectly and create an appropriate overall impression. To guarantee that our pictures fit their environment, they are always provided with a shadow.

TYPOGRAPHIE

Logofont
Hemi Head

Fonts
Univers LT 47 Condensed Light
Lato Light/Semibold

HEAD

Subheadline

INTRODUCTION

INFOBOX-HEAD

subheadline2

Text - accents

Clear structures show the importance of specific text sections. Overall, Fonts have to deliver a good impression which pleases the reader's eye. That's why we decided to use thin, clear ones. They appear modern and professional.



RESOURCE MANAGEMENT

INTRODUCTION

As we started to work on our World Finals project, we realized that the amount of money we are going to deal with would increase significantly and thus we agreed to set more focus on finances. Therefore we set up a **financial plan**, where we gathered our estimated expenses meticulously. We also applied a buffer to reduce the risk of ending up in debt. We assigned an explicit amount of money to every team member, which he could spend for his section. We ensured everyone got the money he needed with the help of a meeting at the beginning of our project, where we discussed our estimated expenses and which section they belonged to. Our goal to pay only the least, worked out as we were able to gain multiple **in-kind sponsorships**. Many companies are more likely to provide us in-kind sponsorships than financial support, as it is less costly, for the businesses. Thus we were able to manufacture our race car without spending lots of money.

LEGAL SITUATION

Germany is a country with many laws and restrictions affecting businesses and their bankings. To avoid formal mistakes, our supervisor, who is well educated in finances, helped with the legal situation. We are not allowed to get a **power of attorney** for our bank account, because we are not 18 yet. Therefore one of our parents had to be the owner of the savings account. If we wanted to make a transaction, e.g., paying for our accommodation, we sent the invoice to the parent, who executed the assignment. This procedure cost us much time and made our finances process inert. Furthermore, we had to create a **sponsorship contract** with our supporters, which obliged both sides to follow their promise. This reduced the risk of getting pulled over the barrel by the companies. Nevertheless, we also had present the company accurately how it is described in the contract to avoid litigation.

WAYS OF INCOME

Our primary source of income is gaining money through **sponsorships**. Therefore we started collaborations with companies. The way, how it is working, is pretty simple: they give us money, and we present their brand at the competition, e.g., on our car. However, in real life, it is way more complicated (see sponsoring). Because of the deteriorating economy, many businesses were not able to support us financially. Therefore we were looking for other sources of income. Foremost we contacted various **STEM foundations**, but realized quickly, that they only support prominent educational organizations. Furthermore, we tried to acquire private donors through crowd-funding platforms like „startnext“.

TRACKING

The high money sum forced us to track our incomes and expenses more precisely. Therefore we used a unique program called **"Wiso Unternehmer 365"**. This application helped us to get an overview of our costs and the financial supporters. Furthermore, we could organize us as professional as a **real company**, by creating an organization chart, where each team member is implemented as one business unit. We connected the program to our bank account to ensure we would not spend money we had not earned yet.

To make sure everything is going all right, we created a **unique policy**. If one needed to spend money, it first had to be approved by our CFO. He decided if the expense fits into our financial plan and if the fee was needed. This process required time, but we managed to reduce unnecessary spending significantly and the risk of ending up in debt. Every month we sat together with our supervisor to look at our finances. We checked if every transaction was correct. This process is required when dealing with high sums of public funds.

RESOURCE SUPPORT

Material	Sponsor	Value
Manufacturing		
Miling of final cars	Reisinger	15,200€
Prototype miling	MillCraft 3D	5,400€
Wheelcaps	Schäffer	1,400€
3D-Printing	4D Concepts	2,642€
Painting	Tielesch & Weber	160€
Wheels	Fischer	4,100€
Ball bearings	myonic	2,200€
Development		
CFD Software / coaching	Ansys	76,947€
Space Mouse	3D Connexion	2,562€
High speed camera	Jugend Forscht	1,000€
Pit Display		
Manufacturing	seeeye	11,800€
Shipping boxes	Koch Kisten GmbH	650€
TV & Touchscreens	Media Markt	1,517€
Others		
Communication coaching	Frank Rebmann	2,100€
Team pictures	Foto Schuster	750€
Tasty lemonade	Südkola	54€
Total		132,482€

FINANCIAL SUPPORT

SAP SE	3,000€	
Bosch	2,500€	
Fischer	2,000€	
WF Fonttner	2,000€	
Daimler	2,000€	
Sindelfingen	1,600€	
Noll Werkzeugmaschinen	1,000€	
Löser	1,000€	
FHW	1,000€	
Others	10,380€	
		Total 26,480€

EXPENSES

Journey	9,061€	
Participation	5,247€	
Shipping		4,921€
GP Weekend	1,430€	
Team clothing	1,272€	
Pit display	890€	
Merchandising	748€	
Others	1,489€	
		Total 25,058€

EVALUATION FINANCES

In the beginning, it was quite challenging to get an overview of the high sums of money and a significant number of sponsors. However, later on, using "Wiso Unternehmer 365," everything got more comfortable, due to the high structuring degree. We had some problems concerning bank transactions because we are not of age yet, and our supervisor had to manage our bank account. For the next time, it would be much easier to found a GBR (constituted under civil law), because we could look after our bank account ourselves, and the financial actions would get much faster.



MARKETING

GOAL

The primary purpose of our marketing campaign is to raise enough funds to participate in the World Finals. Therefore we developed five criteria.

-  **ATTENTION** - attract attention to Team Fusion and create interest
-  **BRAND IMAGE** - create a sustainable brand image
-  **SIMPLICITY** - facilitate decision-making for sponsors
-  **INTERACTION** - engage with the target audience
-  **KNOWLEDGE** - prove technical expertise

STRATEGY

To find the most effective marketing mix, we use a method established by **McKinsey**. We calculate the costs of each marketing aspect and its usage index. For our final marketing strategy, we have chosen a mixture of low cost and highly effective means.

We categorize our marketing means into two sections:

1. **big reach**
2. **highly effective**

With a big range, many people get attracted to our team, and our brand gets established in society. However, it's unlikely that anyone is willing to sponsor us, just by seeing a flyer of our team.

To convince companies to support us, we use a specific marketing strategy. Through direct marketing, we manage to talk to people who can decide whether the company wants to support us. Therefore we use our already established business contacts or networking platforms such as XING or LinkedIn.

	Social media	Website	Direct marketing	Merchandise
Reach	★★★★☆	★★★★☆	★☆☆☆☆	★☆☆☆☆
Effectiveness	★★★★☆	★★★★☆	★★★★★	★★★★☆
Example	1264 Followers (15.11.2019)	~500 Website visits per week	71 LinkedIn connections	pens, candy, notepads

SOCIAL MEDIA

In the beginning, we checked the **number of users** of some social media platforms, but soon it was clear that we were going to focus on three leading platforms: Instagram, Facebook, and Twitter. Each platform had its purpose and specific content.



On Twitter, we posted **short updates** of our current work, such as accomplishments of milestones or acquisitions in our car development.



Because of our big follower base on Instagram, we used this platform as our **primary stage**. On Instagram, we posted a new picture every second day to show consistency but still having a high quality. Every post had an excellent caption explaining the image and giving further information. Furthermore, we used the story tool to describe various situations out of our "Fusion life."



On Facebook, we showed pictures presenting our **work and connections**. Moreover, the post should easily be understandable and readable. Therefore we wrote a short and funny caption.

By looking at our insights, we found out that most of our community is from an English speaking country. Thus we wrote all of our posts in English. On Instagram, we have got a few German speaking users, for which reason the Instagram **captions are written bilingually**. (English/German)

DIRECT MARKETING

The advantage of direct marketing is its high effectiveness. Through proper research, we were able to find people who are interested in our project with a high chance. Therefore we used networking platforms such as XING and LinkedIn. There we were looking for **CEOs of technical business with high revenue**. Furthermore, we checked out the **local corporations** and engaged with them via direct contact like a phone call. We had a significant advantage if we already knew the owners before. Thereby the CEOs were much more likely to do us a favor by supporting our team. Unlike many online shops, we did not choose the option "direct mailing." This method is controversial because a big database is needed to find potential customers. As we have not gained access to customer's data, we chose to focus on our online networking program.



WEBSITE

Our website is an essential component of our marketing mix. The primary purpose of our website is to **inform you about the project** and the team. Furthermore, we can present our sponsors on the frequently visited site. To get attended more often, we mainly focused on SEO (Search Engine Optimization). Therefore, we tagged the website with headwords that are commonly searched and about our topic.

Moreover, we invested money into "google ads." Every Wednesday in September, our website was uppermost when you searched for "f1inschools", "fusion," or "Abu Dhabi World Finals." Thereby our reach increased significantly. In between times, we had up to **1000 website** visits a week.

MERCHANDISE & PRINT MEDIA

For events, such as the open-door days at our schools, we prepared merchandise articles and print media. The goal is to connect the people to our team. By distributing candy boxes with our logo on it, a **positive feeling** is created and associated with our team. To ensure that people remember what our project is all about, we gave away flyers, in which the project and our team are described. Through those free giveaways, a high interest was created and many students from our schools wanted to know more about us. In this way, we were even able to acquire new sponsors.

YOUTUBE

After the German Finals, we wanted to get more **creative** regarding marketing. Therefore we chose the platform YouTube. Whenever we found enough time to produce a high-quality video, we started with filming. Because none of us worked with Premiere Pro or similar cutting programs before, it took us a lot of time to publish a video. YouTube is an excellent way to tie the fans **emotionally** to our team and interact with the audience in the comment sections.

EVALUATION OF MARKETING

We are pretty satisfied of our marketing campaign. Primarily our Social Media campaign worked out pretty well. We achieved a pretty big reach and interaction with people. Furthermore, we could increase the effectiveness in comparison to the German Finals. With the usage of marketing analytics, we managed to get more efficient in our direct marketing and the goal of reaching our target audience. Next time we might focus on personal contact with the society more, for example, organizing an event where kids could try out our cars on the track and learn about the competition.



INDUSTRY COLLABORATIONS

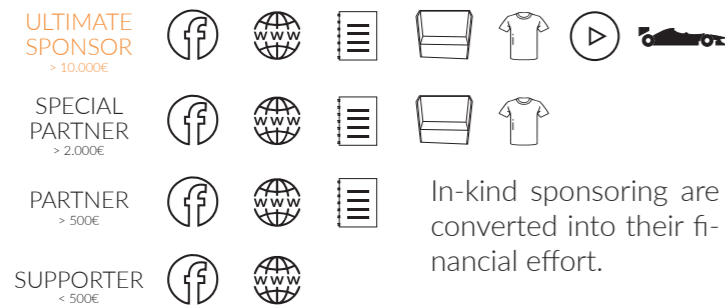
GOAL

The goal of collaborating with companies is to participate in the World Finals together with their help. Therefore we integrated our sponsors into our project, so we **both profit from the collaboration**. We planned to set up sustainable cooperations over the whole preparation and the WF.

RETURN ON INVESTMENT

We tried our best to ensure that sponsoring our team is worthwhile for the businesses. With our experience from the German Finals and a bit of research, we found out that the company's support us mainly because of four reasons:

- Engaging with the **next generation of engineers** and finding new employees by presenting the company in the public
- Improvement of the company's **image** through supporting nonprofit organizations
- The good will of supporting highly motivated students
- We worked hard to give back each company what they expected. Therefore, we classified all sponsors into one of our four sponsorship tiers.



INTERACTION

Throughout the preparation for the World Finals, it was pretty important to stay in contact with our partners. Therefore we used various ways of communication. Our goal is to tie the sponsors to our team and the project, with the regard that the cooperation lasts for a long time.

- Personal contact**
The direct contact is the most crucial part of staying in touch with our sponsors. Therefore we arranged **meetings** with our supporters to get to know each other. We could visit the manufacturing sites of our manufacturing partners, and they could present their company to us.
- Newsletter**
To stay in contact with partners, far away from our home towns, we wrote a newsletter every month. Thus, we could show our helpers what we already achieved and how the further journey would look like.
- Email and phone calls**
To discuss our ongoing collaboration, we had to talk to our supporters nearly every week. Because most of the time we could not visit the companies personally, it was crucial to phone them or write emails. This way is pretty impersonal, but it is fast and gets the job done.

THE SPONSORING CATEGORIES



ANSYS INC.

ANSYS Inc. is a software publisher, mainly for automotive and aviation/aerospatial purposes. Because of being sponsored, we received the CFD package containing CFX and Fluent, to improve the aerodynamics of our race car. For a better understanding of the programs' way of function, our Design Engineer spent a day at ANSYS's headquarters in Germany. There he was coached by two employees, giving him advises when working with that professional software.

REISINGER MODELLBAU

The Reisinger Modellbau GmbH is a company with 40 employees specified on CNC-milling and the manufacturing of small prototype series for automotive companies. By manufacturing our prototypes and the final car, Reisinger Modellbau is one of our major partners in the area of manufacturing and learning. The employees explained us how CNC-manufacturing works and how CAM-models are created. Besides, we could learn about huge machines in general and how big projects are carried out.

BOSCH ENGINEERING

Bosch Engineering GmbH is a subsidiary company of Robert Bosch GmbH. They are the biggest supplier for small series. They are mainly working for luxurious car companies like Lamborghini and Maserati. We, as a team, spent one day at their headquarter in Abstatt. The employees showed us the engine test stands and their way of function, the test laboratory, and the ECU-programming station. The highlight of the day was, that we were able to drive a sports cars on their testing track.