



Dear teams, partners and friends of FSG,

today, we would like to present our concept for Formula Student Germany 2022. During the FSG Workshop last autumn we presented our ideas for FSG 2021, which set the milestone for the future of FSG. Over the year, we received vital feedback which helped us to refine and develop our overall target.

In 2022, all teams will compete in a single class at Formula Student Germany. All participating cars are first-year cars with an electric drivetrain and autonomous features.

As a result, the current competition setup is going to be modified over the next years:

1. Merging of all FSG classes
2. Introduction of the Driverless Cup
3. Phase-out of CV slots

Our discussions were long and emotional. In the end, we agreed that we want to push the technological advance in alternative powertrains and autonomous driving technology and help the students with their challenges ahead. To manage the transition, we also commit to actively support the teams in their development path. In the following chapters our decision will be explained in greater detail.

1. MERGING OF ALL FORMULA STUDENT GERMANY CLASSES

By introducing FSE and FSD, we wanted to offer students a platform to experiment with emerging technologies which we believe to be important in the future. Consequentially, over the years, numerous teams split to compete in multiple classes at once. Even though we encouraged this development, we also noticed several issues which we want to address with a merge of classes.

In Formula Student Driverless we deliberately allowed second year cars to lower the burden of entry. However, we noticed a gap between the excellent knowledge of the autonomous system and the understanding of the overall vehicle concept of the previous year's car. It caused many FSD teams a loss of points in the static and dynamic disciplines. As the idea of the competition is to work in interdisciplinary teams, we believe the decision to integrate autonomous system engineering into the overall vehicle development to be the right one.

Both younger teams from smaller universities as well as established teams from renown institutions reported that they are finding it more and more difficult to attract new team members and sponsors. The knowledge required to develop a Formula Student car today is certainly different compared to some years back. A solution to target different profiles is needed. Therefore, we are going to merge FSC, FSD and FSE to a single Formula Student Germany class. With that solution, experts in different fields will work on one car, ensuring the performance in all aspects. Table 1 shows the registration slots for FSG until 2022.

Table 1: Registration slots for FSC, FSD and FSE

| Year | FSC | FSE | FSD | Total |
|------|-----|-----|--|-------|
| 2020 | 45 | 45 | 25 | 115 |
| 2021 | 30 | 70 | Driverless Cup (30 out of 100 FSC/FSE) | 100 |
| 2022 | 0 | 100 | Driverless Cup (30 out of 100 FSE) | 100 |

With the allocation of points, we want to manage the fine balance between motivating teams to work on autonomous systems and providing a chance to teams with less experience in this field. We are aware that the development of an autonomous system poses a huge challenge. However, we believe that functionalities at an entry level can be managed by all. Therefore, we decided that Skid Pad and Acceleration can be run autonomously and with a driver from 2021 onwards. All runs (two with driver and two autonomous) will count towards the overall score (see *Table 2*). With the presented solution teams with



working autonomous features will be awarded for their extra efforts. Teams who run only with a driver will still score points in all standard disciplines.

Table 2: Allocation of points (2020-2021)

| Event | until 2020 | 2021 onwards |
|----------------------------|--------------|----------------------------------|
| Business Plan Presentation | 75 | 50 |
| Cost and Manufacturing | 100 | 100 |
| Engineering Design | 150 | 150 |
| Acceleration | 75 | 50 with driver 75 driverless |
| Skid Pad | 75 | 50 with driver 100 driverless |
| Autocross | 100 | 100 |
| Endurance | 325 | 250 |
| Efficiency | 100 | 75 |
| Total | 1.000 | 1.000 |

2. INTRODUCTION OF THE DRIVERLESS CUP

To manage the fine line between pushing back the development of existing driverless Formula Student cars and overburden current FSC and FSE teams the Driverless Cup will be introduced with 30 slots in 2021. A team participating in FSG2021 can optionally also register for the Driverless Cup. The Driverless Cup targets teams with a car which already is capable of running driverless autocross and trackdrive. It acknowledges the current technological advance of the FSD teams and incentivizes the further development of the systems. As presented in Table 3, the Driverless Cup consists of the following disciplines.

Table 3: Allocation of points – Driverless Cup

| Event | 2021 onwards |
|-------------------|--------------|
| Autonomous Design | 150 |
| Acceleration | 75 |
| Skid Pad | 75 |
| Autocross | 100 |
| Trackdrive | 200 |
| Total | 600 |

3. PHASE-OUT OF COMBUSTION SLOTS

The final puzzle piece in the presented target picture is the continuous reduction of CV registration slots until 2022, when no CV slots will be offered anymore. This decision was and is a very fundamental, delicate and above all emotional one. However, after long and very intense discussions we decided to make this move.

We want to clarify that we do not doubt the future potential of conventional powertrains. Nobody can anticipate how markets and technologies will evolve. Still, we believe that electrification and autonomous driving will play a large part in the future scenario. Given the fact that today's automotive industry is well-staffed with conventional powertrain experts, we focus on preparing students for their future jobs in more emerging technologies.



The underlying idea of Formula Student remains the same, regardless what powertrain technology. Teams with combustion cars can still show their performance during other Formula Student competition across the globe. For teams who still want to take part in FSG, the environment for experimenting with electric powertrains is more favorable than ever. Both FSG and the large network of experienced electric teams will provide the needed support.

In the following weeks we will work on the 2021 rules in greater detail. We appreciate your feedback on the presented strategy during the FSG Workshop in few weeks, where we will have a dedicated time slot to discuss this exclusively. Just like anyone else, we do not know what the future holds, but we believe this strategy to be the right one for FSG. We thank you already for going this way together with us.

Best regards,

Formula Student Germany
Board & Executive Committee