**TEKNOFEST**

**AVIATION, SPACE AND TECHNOLOGY FESTIVAL**

**AGRICULTURAL UNMANNED LAND VEHICLES COMPETITION**

**CRITICAL DESIGN REPORT TEMPLATE**

**TEAM NAME**

**……………………………….**

**PROJECT NAME**

**………………………………**

**APPLICATION ID**

**………………………………**

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# Team Organization

This section should provide general introductory information about team organization and capabilities. Team member names and personal information should not be in this section.

# Preliminary Design Report Evaluation

In this section, a preliminary design report evaluation is made. If any, the changes after the preliminary design report and the reasons for the changes are explained. In the preliminary design, a comparison is made between the planned budget and the final budget.

# Vehicle Features

Within the scope of the competition, a vehicle with autonomous driving interfaces will be used. The software, electronic and mechanical features of the vehicle will be explained separately.

# Sensors

In this section, information about the final sensors (lidar, radar, camera, etc.) to be used in the vehicle should be given, and why they were chosen should be emphasized. Information should be provided about the number of sensors, their location on the vehicle, and the sensor-fission algorithms used.

# Vehicle Control Unit

Information about the final control unit used in the vehicle should be conveyed. The wireless communication system should be explained. Control software features must be transferred.

# Autonomous Driving Algorithms

This section should give information about autonomous driving algorithms and software processes used in the vehicle, such as weed recognition and road tracks.

* 1. **Agricultural Control Methods Against Weeds**

In this section, how the vehicles are used in "weed control" and the technical features (warehouse volume, pump, etc.) that make the vehicles stand out in these aspects should be explained.

# Unique Components

In this section, the original aspects of the vehicle specified in the preliminary design report should be evaluated in terms of design and/or software. In these aspects, it should be explained why the ones that are not included in the final design, if any, are not realized.

# Safety Precautions

In this section, the precautions and solution methods taken to meet the security needs specified in the competition specifications are explained. The materials used for safety precautions are indicated.

* 1. **Simulation and Testing**

In this section, the competing teams will introduce the simulation environment related to autonomous driving, the general architecture of the competition simulation development environment, software, and hardware (Operating System, prepared and developed programs) information. Information about the algorithm used in the simulation will be given.

Competitors will share their simulation results. For example, real images and detection results will be detailed in this title. For an example competition scenario, simulation results will be given in detail.

In addition, this section will share the results of engineering analyses performed during the hardware, software, and vehicle design process (structural, aerodynamic, thermal, etc.).

Also, in this section, the development tests that have been made or will be made will be mentioned, and their details will be given. It will be discussed how compatible the design made with the test result applied to the vehicle.

* 1. **Refer****ences**

In this section, the references used as a source in the study will be specified.

**Critical Design Report scoring will be done according to the following template;**

|  |  |
| --- | --- |
| **Bölüm** | **Puanlama** |
| 1 | Team Organization | 5 |
| 2 | Preliminary Design Report Evaluation |  5 |
| 3 | Vehicle Features | 15 |
| 4 | Sensors | 10 |
| 5 | Vehicle Control Unit | 10 |
| 6 | Autonomous Driving Algorithms | 15 |
| 7 | Weed Agricultural Control Methods | 10 |
| 8 | Unique Components | 10 |
| 9 | Safety Precautions |  5 |
| 10 | Simulation and Testing | 10 |
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| **NOTES ON REPORT DRAFTS:** |
| * **The 11 items above will be explained on a maximum of 30 (thirty) pages. There will be a maximum of 33 pages, including the cover, description, and visuals.**
* **All reports should be written under academic reporting standards. All reports must include "Table of Contents" and "References."**
* **Each report should contain a cover page.**
* **Font: Times New Roman, Point: 12, Line Spacing: 1.15, Justified on both sides. Page margins should be top-bottom-right-left 2.5 cm.**
* **The sentences in the report should not be the same or repetitive.**
* **Reports pages should be numbered consecutively.**
* **In their report, our teams that have benefited from the previous year's reports on our website should indicate on the reference page that they are quoting. In addition, a short reference should be given after the quoted sentence/s.**

**QUOTE FORMAT: "Cited Sentence(s)" (Year, Competition Name, Category, Team Name)** **SAMPLE QUOTE: "The most important problem that slows down the debris removal and search for earthquake victims is that the location of the earthquake victim cannot be determined in the wreckage." (2020, Technology Contest for the Benefit of Humanity, Disaster Management, Team X)** |