**TEKNOFEST**

**AEROSPACE AND TECHNOLOGY FESTIVAL**

**DIGITAL TECHNOLOGIES IN INDUSTRY COMPETITION**

**PRE-DESIGN REPORT**

**TEAM NAME**

**PROJECT NAME**

**APPLICATION ID**

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# Abstract

In this part of report, general introductory information about the vehicle and system should be given. Design process, acquired skills, electronic components and unique aspects of the design should be provided. The task to be performed by the robot should be briefly explained and general information about the performance of the robot that will perform this task should be given.

# Team Organization

This section should provide general introductory information about team organization and capabilities. An organizational chart showing the work sharing in the guided robot design process and who is working should be shown. {In this section, information is given about the team members and the consultant, if any. (Do not include your name, surname, school and class information. Write only the section you have read.)}

The work packages to be used in the guided robot design process should be shown with a "work time graph". In addition, the main work packages should be briefly described with their requirements and objectives.

# Analysis of Competition Rules and Design Study Objectives

In this section, the results of the study on what kind of features the vehicle to be used for the competition should have will be given by using the competition rules and scoring equations.

Targets will be determined to be used in the design work. When determining the targets, it should be stated at what level to participate in the competition.

# Vehicle Preliminary Design

In this section, information including the pre-design of the vehicle should be given as a block diagram. Technical information about the robot used or designed should also be given in this section. The robot must be demonstrated to be compatible with the task. Necessary engine calculations should be made under this heading.

* 1. **System** **Preliminary Design**

In this section, the block diagram containing the pre-design of the vehicle should be given.

* 1. **Mechanical Design of the Vehicle**
     1. **Mechanical Design Process**

In this section, the mechanical design processes of the vehicle should be explained step by step. Images of a 3D example of the vehicle (render, prototype photo, etc.) should be included and information about the design should be provided. All mechanical design of the vehicle, whether moving or stationary, should be explained in this section.

* + 1. **Materials**

The materials planned to be used in the production of the vehicle (engines, the vehicle's skeleton, floaters, etc.), the properties of the materials should be explained, and a list of possible materials should be provided in this section. Sub-components to be purchased and/or developed/designed should be specified.

* + 1. **Production methods**

The methods planned to be used during the production of the vehicle should be explained.

* + 1. **Physical Properties**

The vehicle's possible dimensions, weight, volume, and buoyancy should be included.

* 1. **Electronic Design**

In this section, the electronic design processes of the vehicle should be explained. Visuals of the pre-design of the vehicle (Block diagram, technical drawing, prototype photos, etc.) should be included. Information should be given about the sub-components (Sensors, cameras, cables, motherboard, motor drivers, power cards, etc.) that are planned to be used. The electronic components used in the designed robot, their placement design, and their interrelationships should be explained here. The electrical distribution system should also be explained in this section.

* 1. **External Interfaces**

The external interfaces of the vehicle, the sub-components that are planned to be used in these interfaces and the message interfaces should be explained. Information should be provided about the software and software languages that are planned to be used in places such as the control interface, image and data transfer, which are planned to be used in the control of the vehicle.

# Software and Data Flow Architecture

All software developed to use a function on the vehicle used for data acquisition, processing, evaluation or other purposes, data flow between these software should be described in this section. The working algorithm of the system should be explained with a diagram.

* + 1. **Algorithm Preliminary Process**

In this section, the control/guidance algorithm processes of the vehicle should be explained. Algorithm flow diagrams for preliminary design should be given.

* + 1. **Software Preliminary Process**

In this section, the software processes of the vehicle's control/guidance algorithms should be explained. It should be specified in which programming languages the algorithms will be programmed.

# Safety Precautions

During the test phase and during the competition, the precautions to be taken for possible dangerous situations will be determined and information will be given about the systems planned for this.

# Originality

In this section unique aspects of the project/vehicle should be described.

1. **The Side of Locality and Originality**

What are the innovative and original aspects of your solution that you developed based on the problem/need in your project?

What are the elements that reveal the national and local characteristics of your project?

# References

**Additional Notes:**

* Each report should begin with a cover page and include a "Contents" page.
* The group members who prepared the chapters should be specified.
* Font should be selected as “Times New Roman”, “Point: 12”.
* It should be written in accordance with academic report standards.

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| **NOTE ON REPORT DRAFTS:** |
| * **The 9 items above will be explained on a maximum of 12 (twelve) pages.** * **There will be a maximum of 15 pages including cover, description and visuals.** * **All reports must be written in accordance with academic reporting standards.** * **Each report must contain a cover page.** * **Font: Times New Roman, Point: 12, Line Spacing: 1.15. It should be 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.** |