

# Tohoku University Formula Team

2021-2022 Student Formula Japan  
Boeing Report Meeting 2023/2/16

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# Outline

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- What is “Student Formula”?
- What is “Tohoku University Formula Team”?
- About us
- Result of 20<sup>th</sup> Formula Student Japan
- Future plan
- Request for support

# What is “Student Formula”?

- To challenge design, fabricate, develop and compete with formula style vehicle by college students
- Dynamic events and Static events
  - Static event = document review
  - Dynamic event = inspection & driving

**Static event**



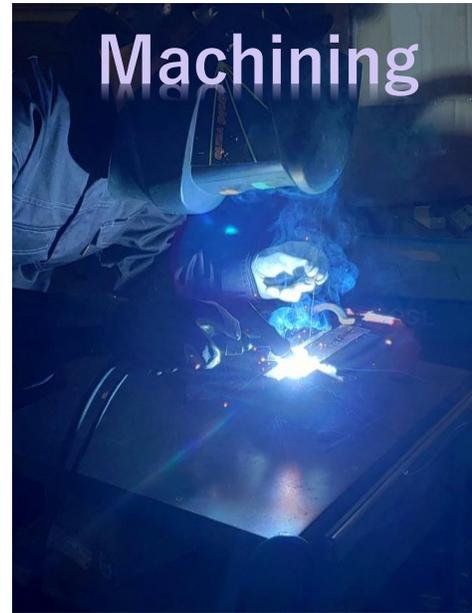
**EV vehicle inspection**

Pass

**Driving test**

Don't Pass

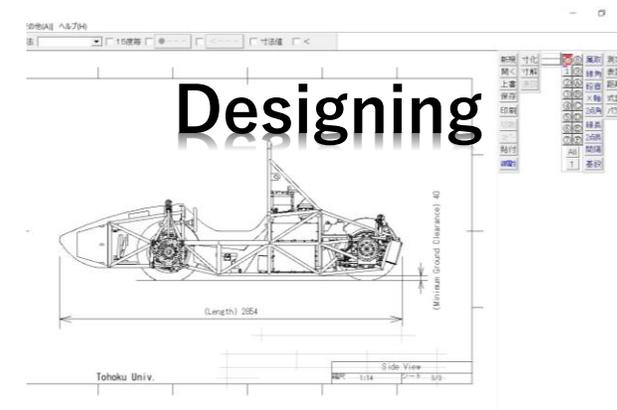
# What is "Tohoku University Formula Team"?



We develop Electric Racing Cars.

Whole processes are coordinated by students.

We don't just design and manufacture;  
we also do public relations and budget management.



# About us

## About Team

- 7 students majoring in engineering
- 29 sponsors

They provide financial support as well as parts supplies and safety training.

## Pit

Tohoku Univ.  
Aobayama Cyampas

We held meeting, PR events,  
machine assembly & maintenance,  
test run.



# History

## ■ Activity history

- It was established in 2011 and has participated in nine tournaments since 2013.



# Activities during the COVID-19 disaster

- On 10/24/2021, due to the influence of the COVID-19, the official record meeting was held instead of the dynamic event.
- Our vehicle was the only vehicle that set records among all EV vehicles.

## *Record Meeting Results*

Acceleration	Skidpad	AutoCross	Endurance
Could not start	Could not start	Time:74.382s	Time:788.606



# Our machine TF-22 Concept

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- **To improve safety and reliability**  
Completion of all dynamic events
- **To improve vehicle maneuverability (turning performance)**



# TF-22 Specification

TF-22	
full length	2700mm
Height	1178mm
Width	1560mm
Wheelbase	1650mm
tread	Fr : 1300mm, Rr: 1280mm
gross weight	280kg <b>-10kg</b>
center of gravity	250mm <b>-30mm</b>
Front/rear weight distribution	40:60
motor	Permanent magnet synchronous motor
Maximum output	27kW x 2 units
Maximum torque	73Nm x 2 units
battery	lithium ion battery
Nominal capacity	7.3kWh



**Compared with TF-20**

# Production Vehicle



**Rebuild team experience, although TF-22 was not completed.**

# Result of 20<sup>th</sup> Student Formula Japan



- Rank **56<sup>th</sup>** of 63 teams,  
**9<sup>th</sup>** of 14 EV teams

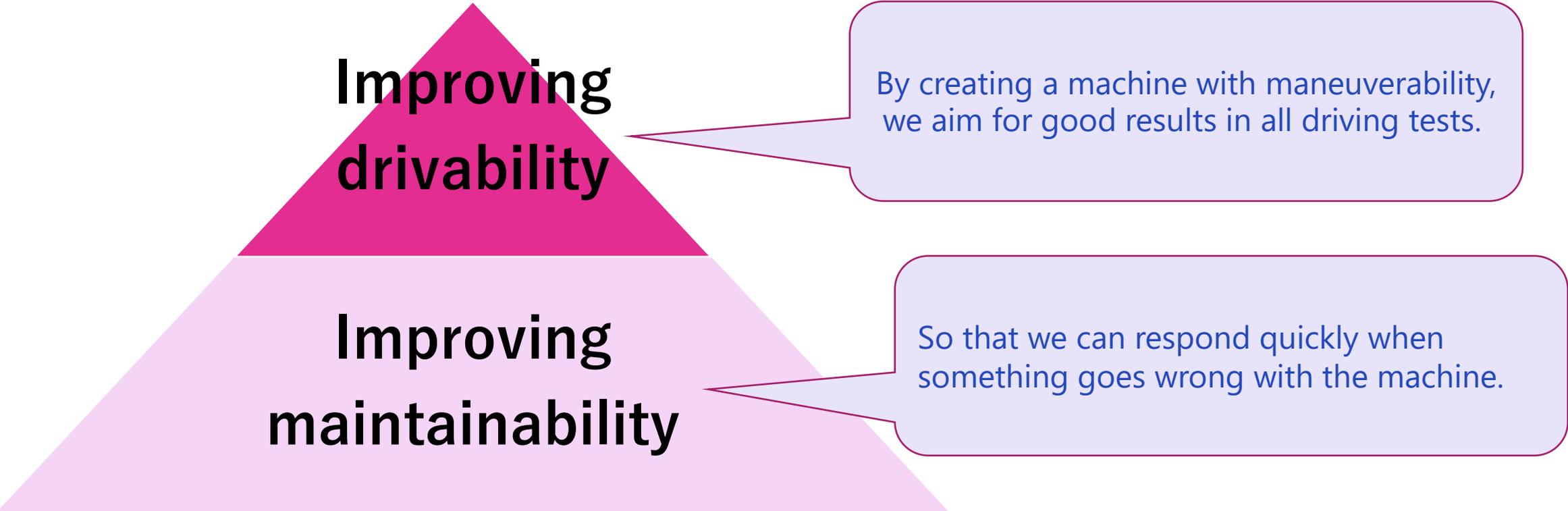
# Tournament result report

item		score	rank
dynamic review	Acceleration	0/100	-
	skid pad	0/75	-
	autocross	0/125	-
	Endurance	0/275	-
	efficiency	0/100	-
Static examination	cost	13.65 /100	<b>40th</b> / 63
	design	40/150	<b>42nd</b> / 63
	presentation	29.52 /75	<b>54th</b> / 63
Total ( Penalty -70) Due to delayed submission		13.17 /1000	<b>56th</b> / 63

# Machine Concept of TF-23

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The concept is  
“Improving drivability & Improving maintainability”



**Improving  
drivability**

By creating a machine with maneuverability, we aim for good results in all driving tests.

**Improving  
maintainability**

So that we can respond quickly when something goes wrong with the machine.

# Activity Plan

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- **March : Completed Machine production , shakedown**

➡ Thorough progress management

- **April~July : Test run, machine setting**

➡ Collect driving data and make the best settings

- **August : Static event, test run, machine setting**

➡ Presentation practice, cost management

- **September : Tournament(dynamic event), Race driving data analysis**

- **October~ : deciding concept of the new machine**

We need many equipment



**Charger** in 2017



**Main Connector** in 2023

**Thanks to you, we can continue our activities.**

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**Thank you for your attention.**