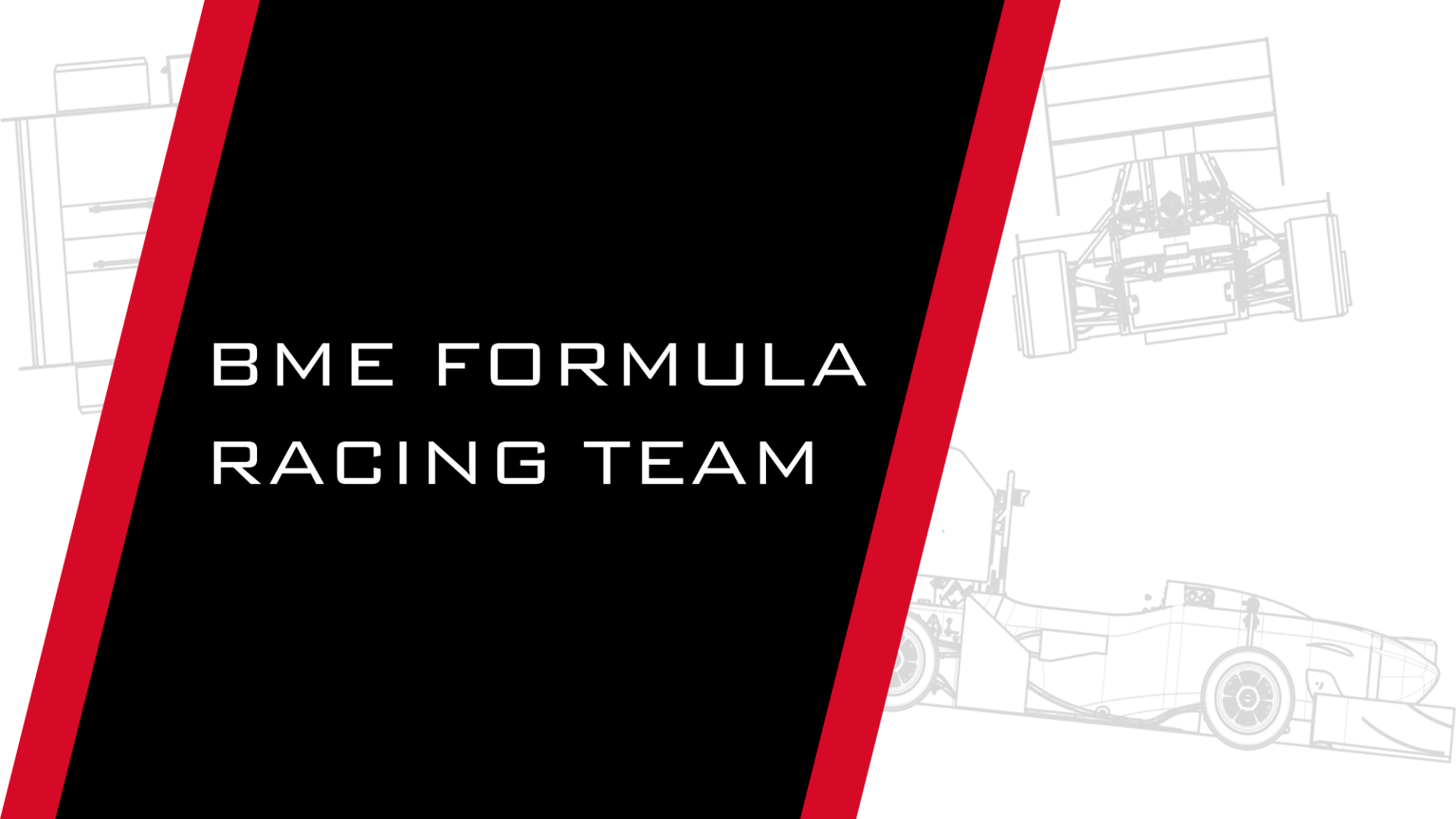


BME FORMULA
RACING TEAM



TEAM HISTORY

COMBUSTION

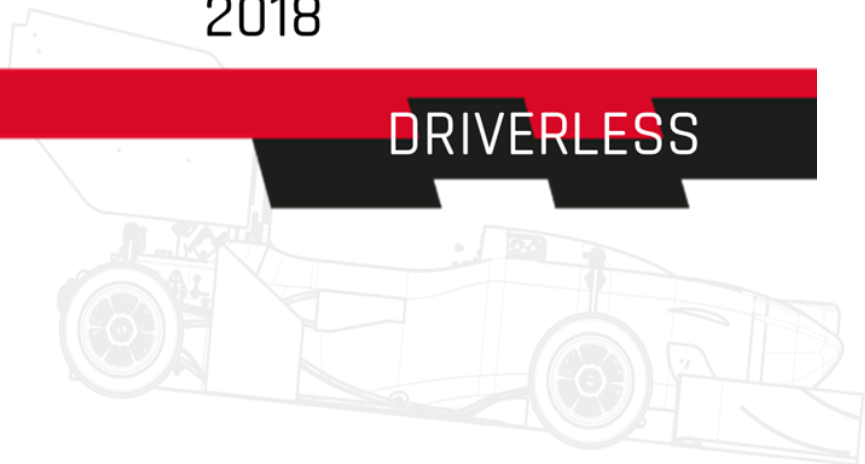
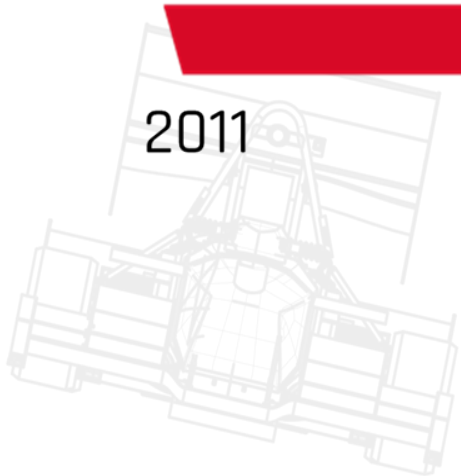
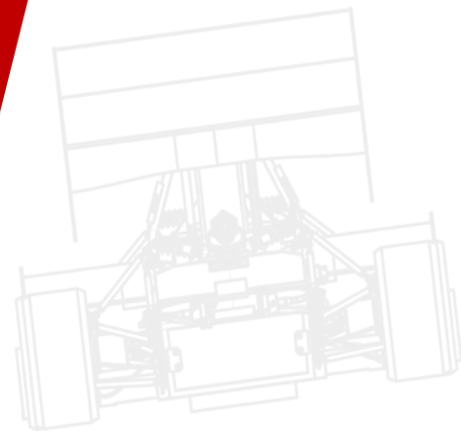
2007

2011

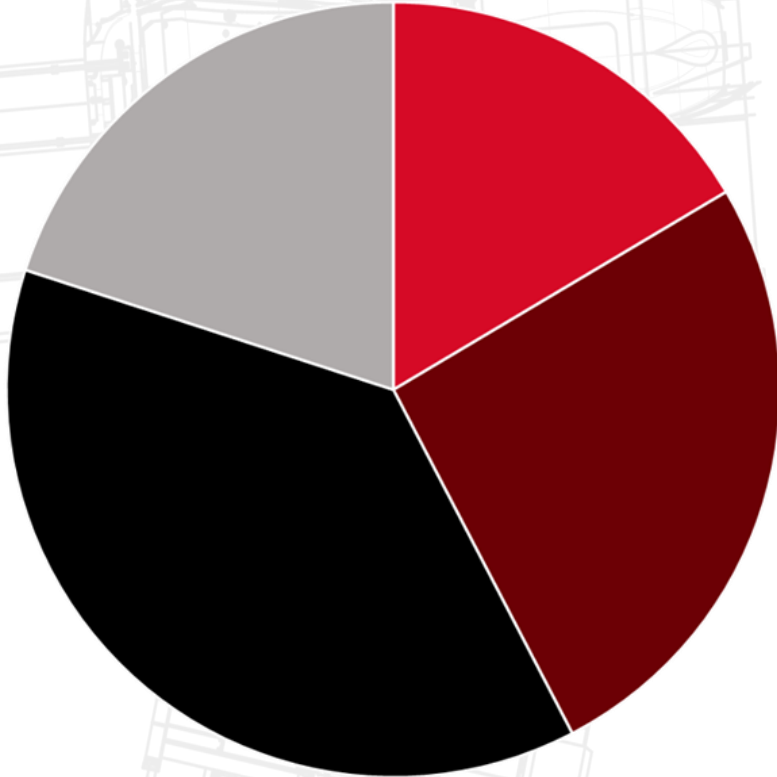
ELECTRIC

2018

DRIVERLESS



TEAM COMPOSITION



■ FACULTY OF ECONOMIC AND SOCIAL SCIENCES (14)

■ FACULTY OF MECHANICAL ENGINEERING (32)

■ FACULTY OF ELECTRICAL ENGINEERING AND INFORMATICS (22)

■ FACULTY OF TRANSPORTATION ENGINEERING AND VEHICLE (17)



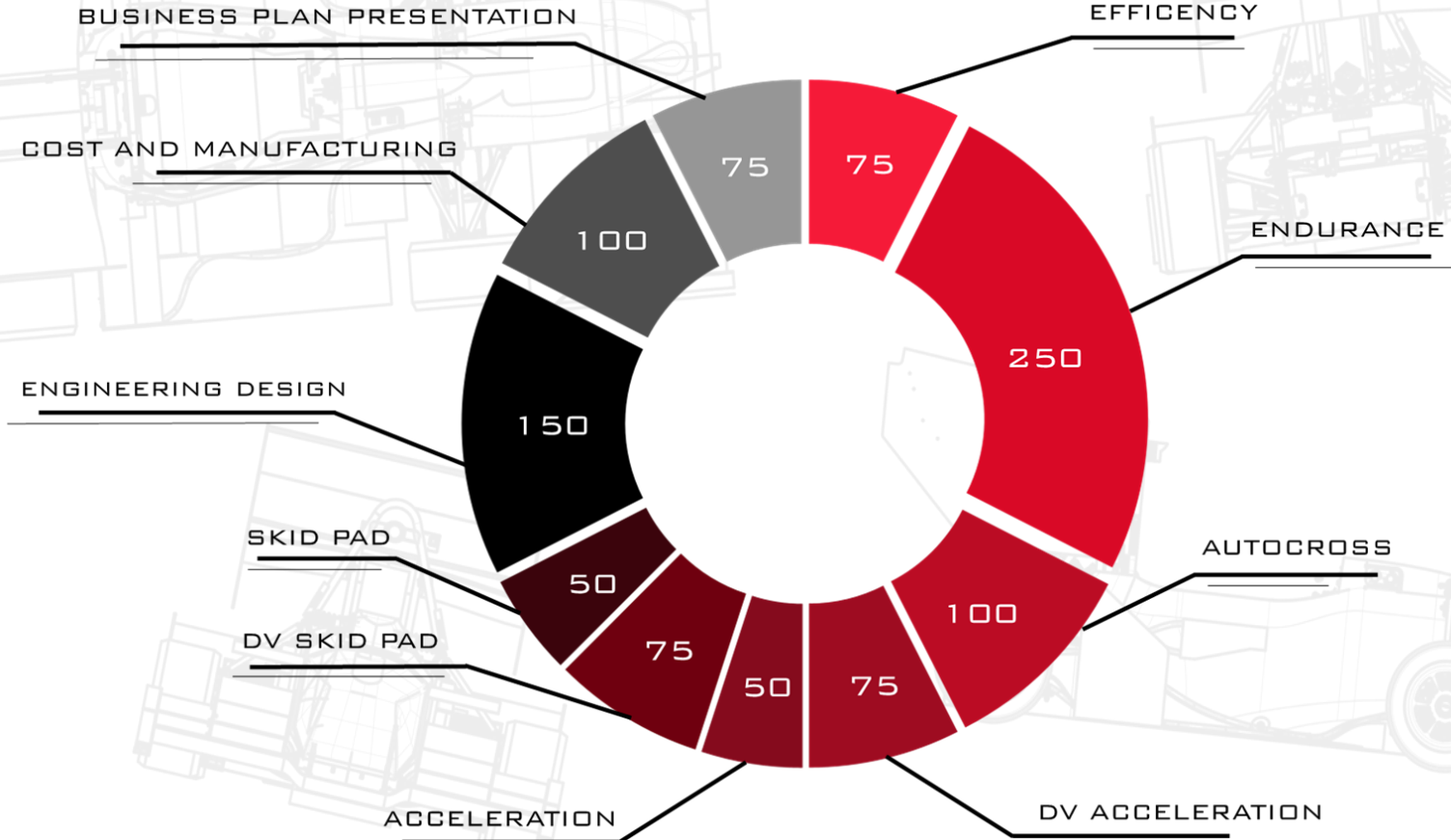
FORMULA STUDENT

STUDENT CONSTRUCTION
COMPETITION SERIES

MORE THAN 800 TEAMS FROM 60
COUNTRIES EVERY YEAR

DESIGNING AND BUILDING A RACECAR

SCORING



RESULTS OF 2022

FS AUSTRIA
OVERALL
P9/30



FS EAST
DV
OVERALL
P6/22



FS EAST
OVERALL
P4/33



FS GERMANY
OVERALL
P3/64



FORMULA STUDENT ELECTRIC WORLD RANKING LIST 2022

16TH

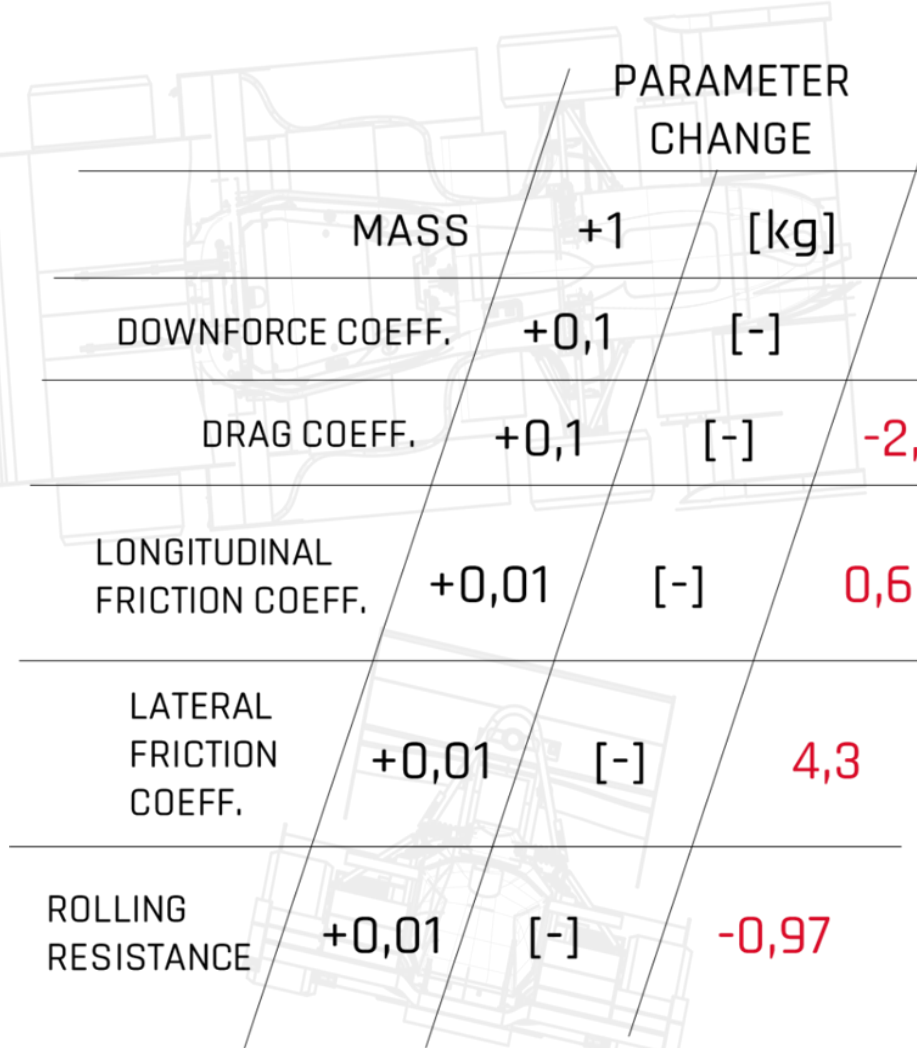
BEST IN THE WORLD
OUT OF 279 TEAMS



8TH

BEST IN EUROPE





	PARAMETER CHANGE		POINTS
MASS	+1	[kg]	-1,33
DOWNFORCE COEFF.	+0,1	[-]	2,4
DRAG COEFF.	+0,1	[-]	-2,8
LONGITUDINAL FRICTION COEFF.	+0,01	[-]	0,6
LATERAL FRICTION COEFF.	+0,01	[-]	4,3
ROLLING RESISTANCE	+0,01	[-]	-0,97

TECHNICAL
DECISIONS

AUTONOMOUS SYSTEM

RELIABILITY

ERGONOMICS

AUTONOMOUS SYSTEM

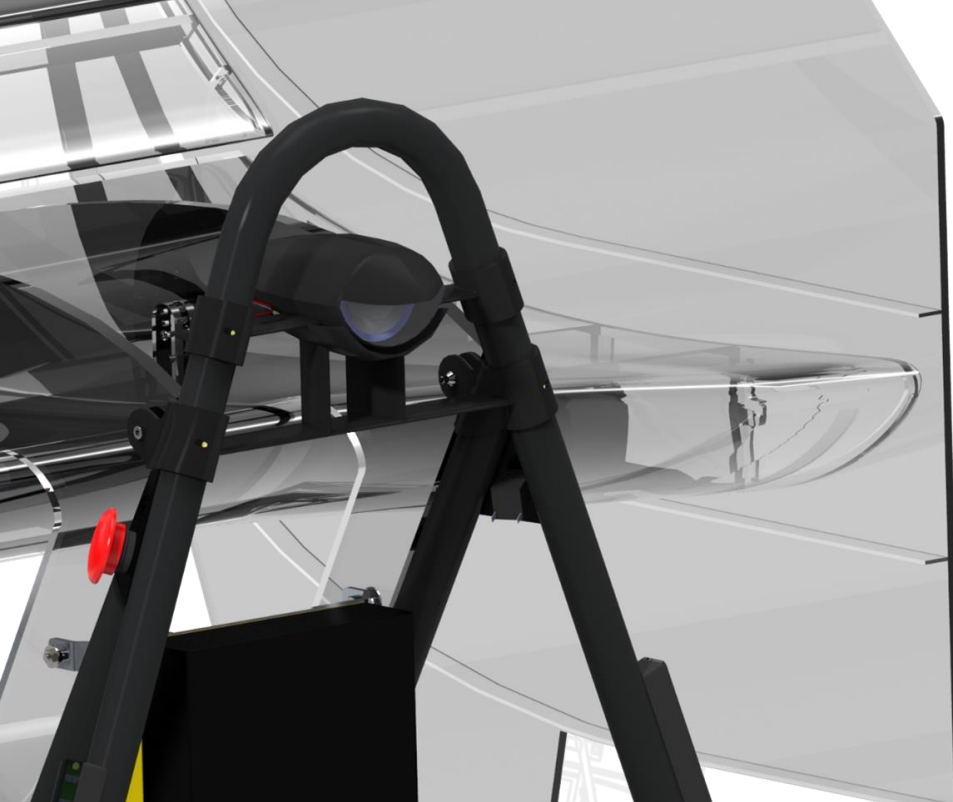
ACCELERATION

AUTOCROSS

SKIDPAD

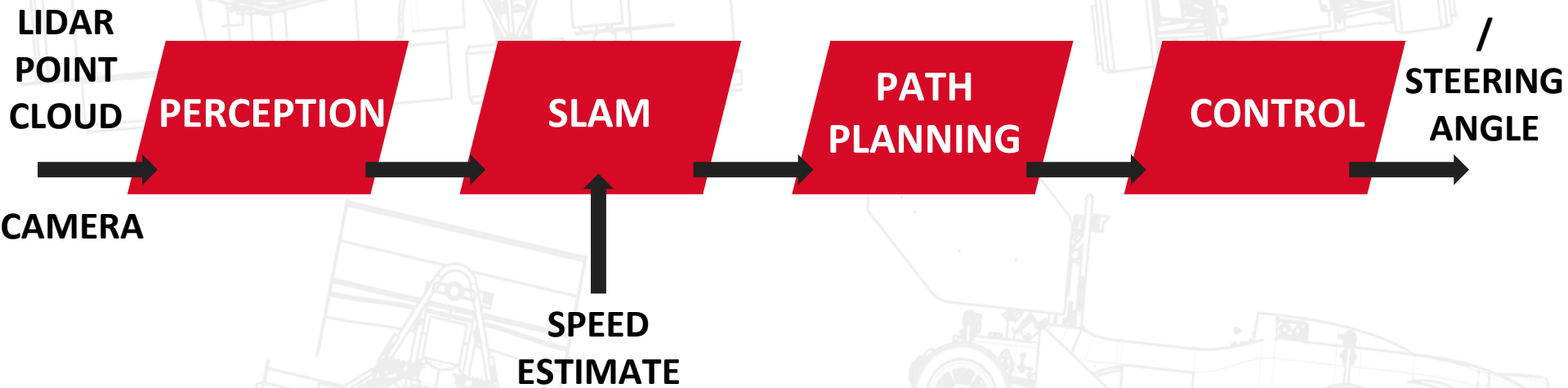
TRACKDRIVE

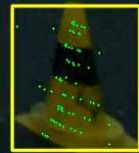
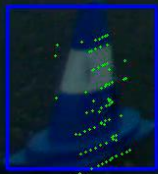
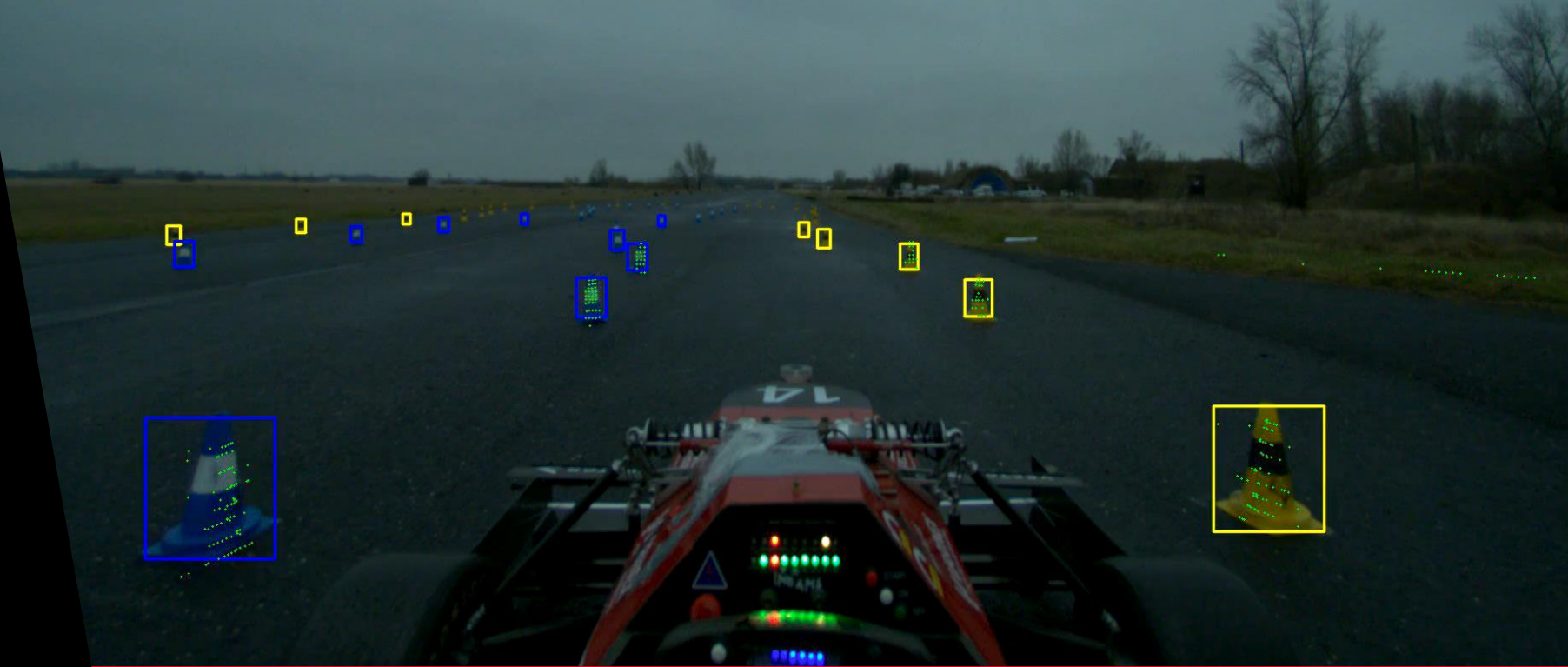




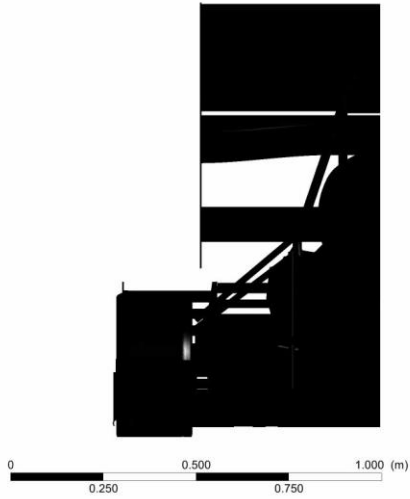
DV SYSTEM OVERVIEW

SOFTWARE OVERVIEW









AERODYNAMICS



BME FORMULA RACING TEAM



BME FORMULA RACING TEAM

AERO PACKAGE

FRONT WING

REAR WING

SIDE BOX

REAR DIFFUSER

COOLING

ACCESSORIES

(DV CAM DAMPER COVER,
COOLING FAN)

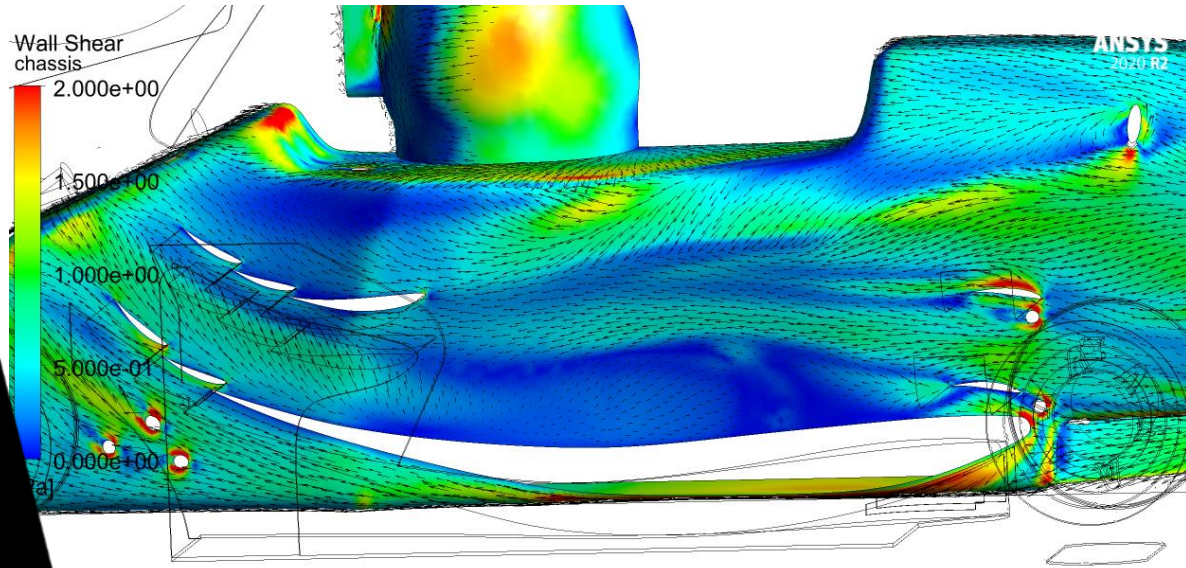
COMPUTATIONAL FLUID DYNAMICS

A BRANCH OF FLUID MECHANICS THAT USES NUMERICAL ANALYSIS AND ALGORITHMS AND ANALYZE PROBLEMS RELATED TO FLUID FLOWS

OPTIMIZE THE AIRFLOW AROUND OUR CAR AND TO GENERATE DOWNFORCE

WHAT IS A MESH IN COMPUTATIONAL FLUID DYNAMICS?

OUR MESH SIZE: 14-20 MILLION CELLS



CFD

Computing Capacity Requirements

**HIGH COMPUTATIONAL
CAPACITY IS REQUIRED (~50
GB RAM)**

**YOU CAN'T RUN A
SIMULATION ON AN AVERAGE
NOTEBOOK**

**PROCESSOR & RAM IS THE
MOST CRUCIAL**

Simulation time reduction with Oracle cloud


WE USE LINUX BASED OPERATION SYSTEM → MAXIMIZE THE PERFORMANCE

BEFORE:

**2 REMOTE ACCESS USERS
12 CORES, 256 GB RAM
12 HOURS (15 MILLION CELLS MESH)**

AFTER:

**5 REMOTE ACCESS USERS
64 CORES, 512 GB RAM
3,5 HOURS (15 MILLION CELLS MESH)**




CLA

front\rear	15	17,5	20	22,5	25	27	29	31	33
15	3.904	4.200	4.170	-	-	-	-	-	-
17,5	3.896	4.022	3.993	4.104	-	-	-	-	-
20	3.859	4.015	3.919	4.000	4.007	-	-	-	-
22,5	-	4.037	4.096	4.148	4.126	4.022	-	-	-
25	-	-	3.963	4.126	4.067	4.104	4.044	4.089	4.081
27	-	-	-	4.037	4.081	4.022	4.022	3.978	4.037
29	-	-	-	-	3.956	3.978	4.059		3.911
31	-	-	-	-	3.881	3.815		3.933	3.889
33	-	-	-	-	3.763		3.726	3.711	3.711

CDA

front\rear	15	17,5	20	22,5	25	27	29	31	33
15	1.489	1.496	1.504	-	-	-	-	-	-
17,5	1.489	1.504	1.511	1.504	-	-	-	-	-
20	1.481	1.496	1.511	1.519	1.519	-	-	-	-
22,5	-	1.511	1.548	1.519	1.526	1.526	-	-	-
25	-	-	1.570	1.511	1.533	1.526	1.533	1.533	1.533
27	-	-	-	1.519	1.526	1.519	1.541	1.541	1.578
29	-	-	-	-	1.585	1.526	1.556		1.541
31	-	-	-	-	1.526	1.519		1.556	1.533
33	-	-	-	-	1.504		1.519	1.519	1.533



What we used Oracle
Cloud until now?

AEROMAP

**SIMULATIONS FOR THIS
YEAR'S CAR**

CONCEPTS FOR NEXT YEAR

ACTIVE AERO SIMULATIONS

OUR SUPPORTERS

ORACLE



PEAK
TECHNOLOGY

Continental
The Future in Motion



BOSCH

Audi
Hungaria



Diabati



ZOLTEK
by Topy Group



FEMALK

elbol LOGISTICS 4.0

VECTOR



IN-CRAM

DEC

ProFill

E-T-N

MODUL



GENTHERM

AMK motion

Cursor CNC



embotech*

LOCTITE
TEROSON



MouldTech
Systems



ptc

creo

Ansys

hwid



TRUMPF

NCT Akadémia



AM
Amplas-TECH

Lenze
SCHMIDHAUSER

BENDER
"The Best in the World"

BW Papersystems

ELEMECH

BIOSTEK

WALTER
AUTO



HAFNER

KÖRBER

LOMEX

MIRA

MathWorks

wiha

VINK

meliorlaser

PORSCHÉ
HUNGARIA

Texas
INSTRUMENTS

TRACON
ELECTRIC

ETE

TE GROUP

GK KONTAKT

INOMED

LINAMAR

RACK-URST

RADIO SYSTEMS
PROFESSIONAL AND INDUSTRIAL SOLUTIONS

maxFire
TOOLTECH

Electrolux

MOUSER
ELECTRONICS

HUBER+SUHNER

Calspan

BÜTTNER



TECHSON

Weidmüller

GOSSEN METRAWATT

Autodesk

3M

MONYON
BODAPÉNY

Einhell

BULLHOFF

BIBUS METALS
STEEL SUPPLIER FOR THE WORLD

CENTROTOOL

CSERMÁK & TÁRSA

DIGI

EASY
polyurethane

FARIX
fémhélyhő

TRESZ
Fémhélyhő

IGUS

KARÁSZY

NOVIA

OBO

RATH

gov technik

SENCHU

Sensata

STÄUBLI

UNIPCB

AVL

roma

POWER BELT

MELEGHEGYI & TÁRSA

werth

KÖNIGFRANKSTAL

CDesigncare

rapidHARNES

VECTOPNAV

SzinMűvek

PRIMERIX CONTACT

ANALOG DEVICES

RECOM

JLPCB

ebmpapst

verth

MELEGHEGYI & TÁRSA

verth

KÖNIGFRANKSTAL

CDesigncare

rapidHARNES

VECTOPNAV

SzinMűvek

PRIMERIX CONTACT

ANALOG DEVICES

RECOM

JLPCB

ebmpapst

verth

MELEGHEGYI & TÁRSA

verth



ZOLTÁN ANTAL

TEAM CAPTAIN

zoltan.antal@bmefrt.hu

+36 70 429 1314



FANNI BELKOVICS

SPONSORING TEAM LEADER

fanni.belkovics@bmefrt.hu

+36 30 635 2107

THANK YOU FOR
YOUR ATTENTION!

