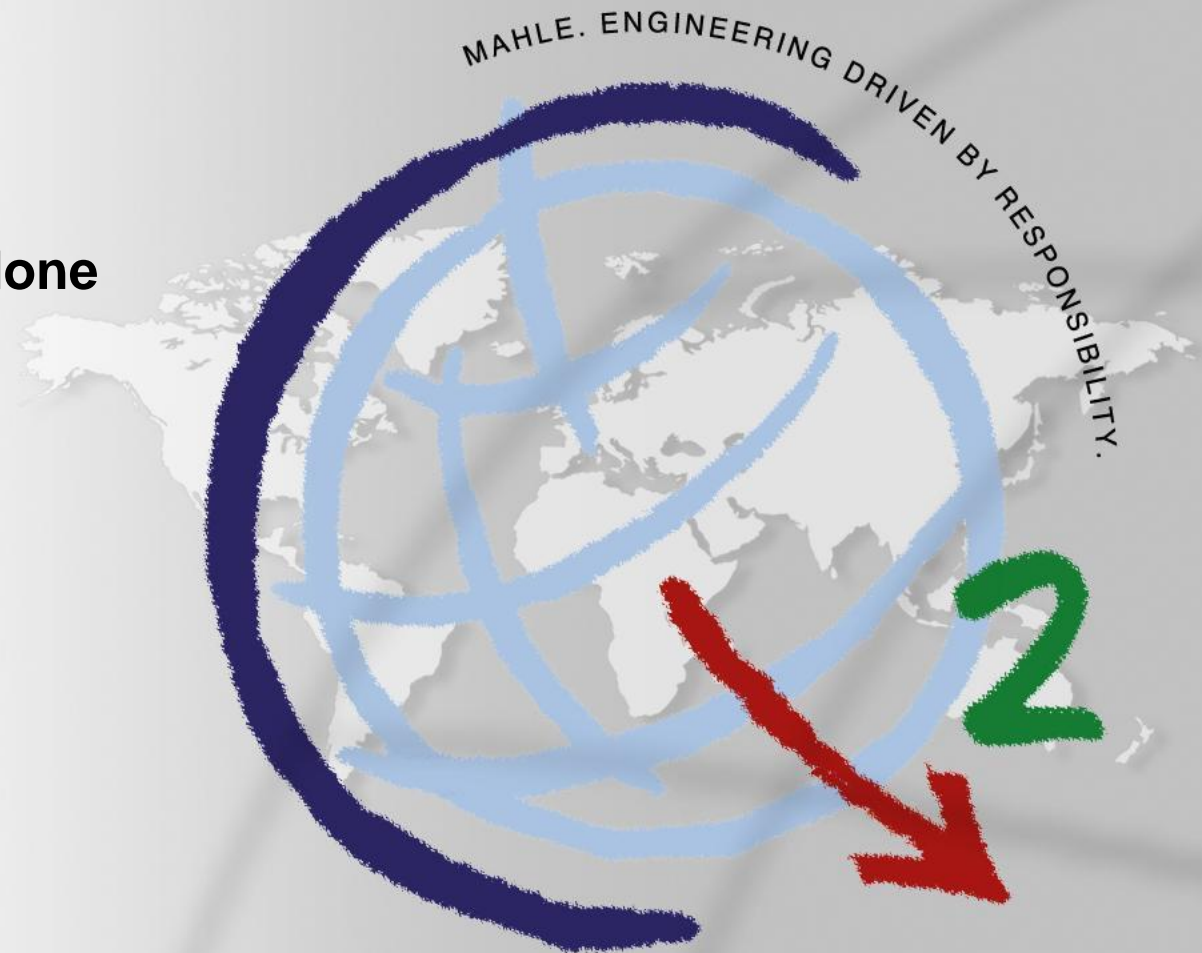


## Regional collaboration in VET:

### Getting things done

MAHLE Electric Drives Slovenija d.o.o.



A look in the past...



What is special on that photo from 1918?

Detroit Electric Model 42.

Detroit Electric produced thousands of electric cars from 1907 to 1939. It is estimated that 14.000 e-cars have been delivered by DECC.

## Why did we switch to gasoline?



And why we have switched than to gasoline?

- The price of Ford Model T was 300\$ and an electric car you could get for 3.000\$.
- The main stream was set, the development direction was logic and defined.

Cars are responsible for around 12% of total EU emissions of carbon dioxide (CO<sub>2</sub>), the main greenhouse gas.

## Paris Climate Agreement 2015

Ambitious and balanced agreement, the first important multilateral agreement of the 21st century defines a global action plan, by which we will prevent the hazardous climate changes limiting global warming to a lot less than 2°C.

The agreement defines a global action plan, which gives orientations, implementing of which the world could avoid the dangerous climate changes as it would limit the global warming well below 2 ° C.

### What does this mean? - Emission reduction

Which again brings us to an electric car. MAHLE EDS has been working in this field for more than twenty years. And it's not just about the driving motor. There are many auxiliary systems in a car that base upon electric energy, i.e. electric motor.

EU ratified Agreement on 5th October 2016

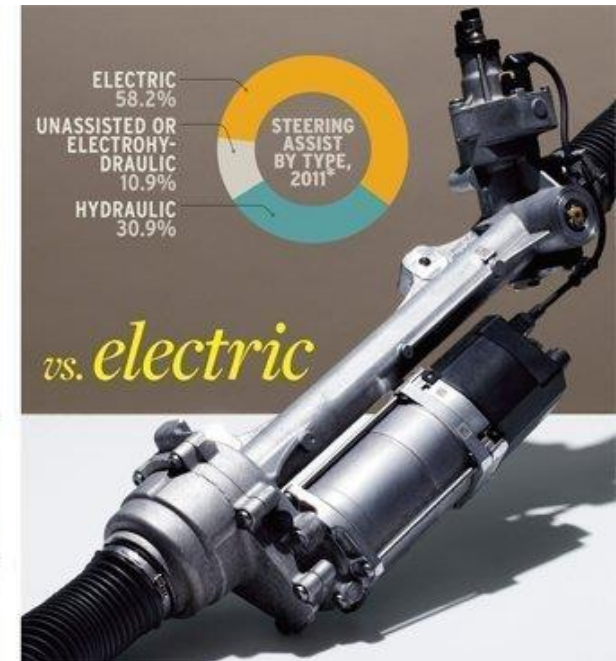
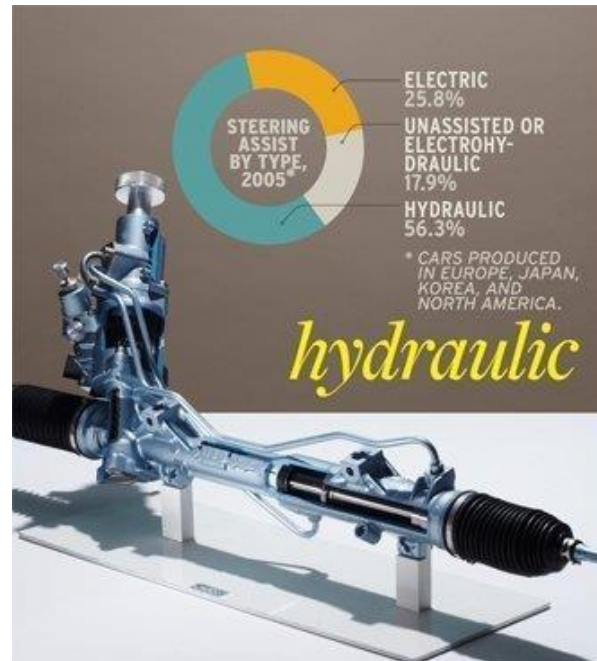


169 of 197 Parties have ratified to the Convention. Enters into force in 2020, replacing Kyoto protocol.

## Replacement of a combustion engine with an electric motor. What about other functions?

A car today is likely to have a major difference in the power steering than older cars. The steering system relies on an electric motor instead of a hydraulic piston for power boost. The majority of new cars sold today use electric power steering.

Fuel economy has been one of the major drivers of the switch to electric power steering systems.



In a hydraulic system the pump is always sapping energy from the engine (constantly putting drag on the engine), whether you are turning the wheel or not. EPAS uses electricity generated by the engine, but it only needs that energy when you are turning the wheel. EPAS saves 90% of energy vs hydraulic system. At the end it means 2.5% lower consumption on the mid range car. So the auxiliaries in the mobility future are electrically driven.



- Developing products that contribute to well-being
- Establishing environment for long term sustainable development

# PARTNERS





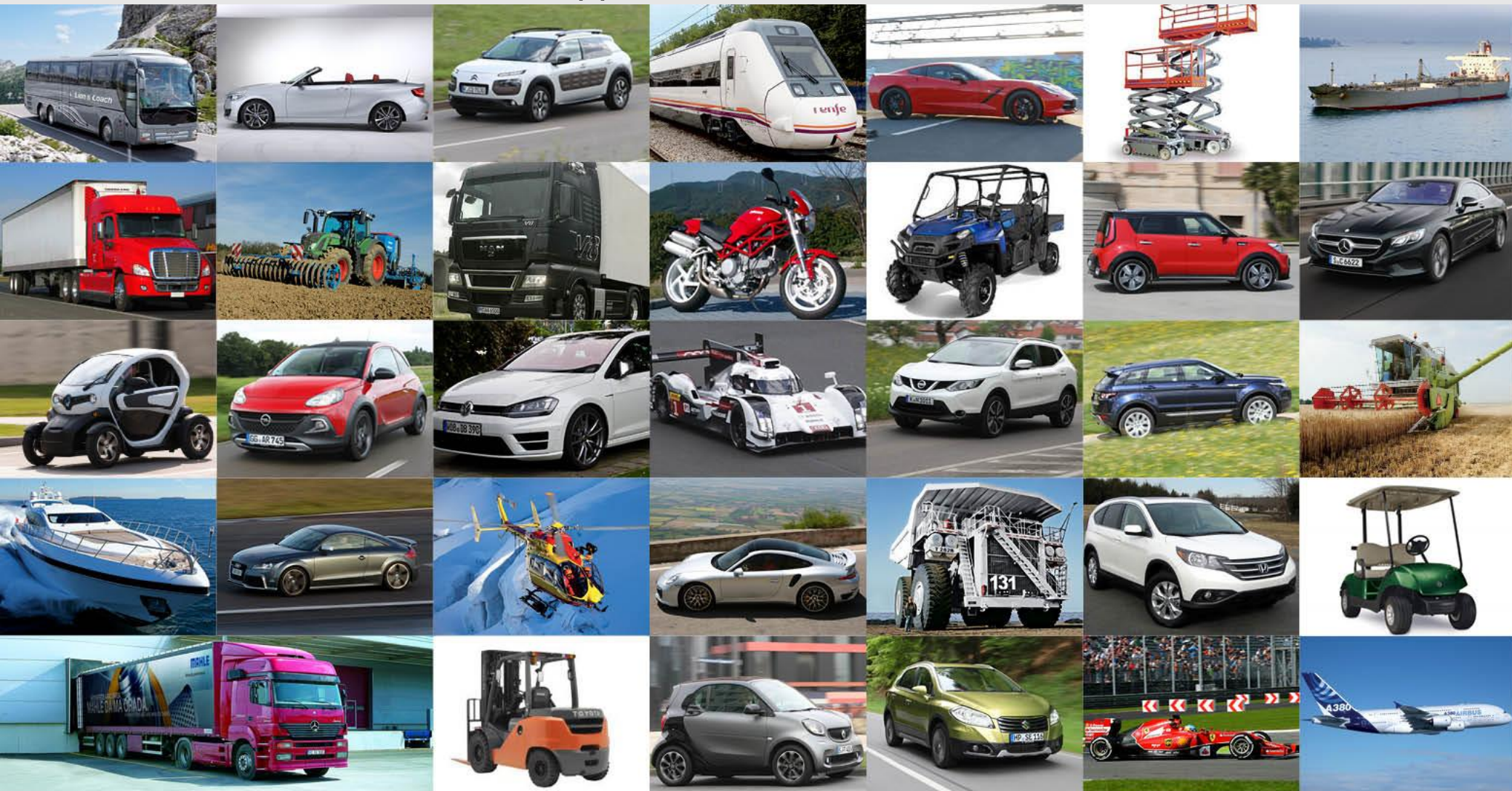
**MAHLE products are installed in more than 50% of all cars produced worldwide**

MAHLE Mechatronics

MAHLE Group – Strong customer base  
for automotive and industrial applications

**MAHLE**

*Driven by performance*







# Who are our future co-workers?

## "Technical" competences:

- Deep knowledge and keeping it profound (specialization):
  - mechatronics
  - mechanical engineering
  - electrical engineering
  - IT
  - digitalization
- industry 4.0 (keep more complex workplaces, as the transfer of manual workplaces to the countries with lower labour costs is in full swing)
- Languages
  - Slovenian and foreign languages



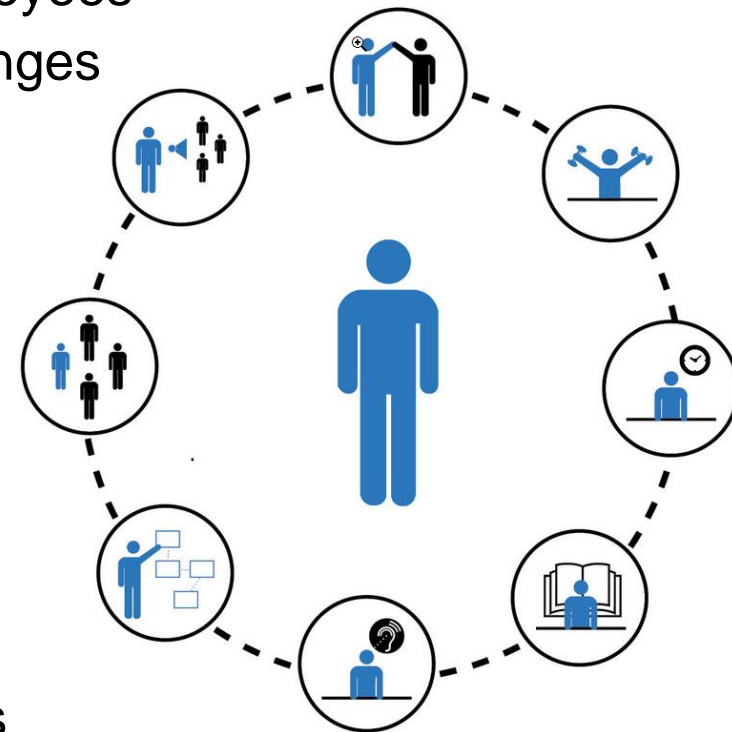
## Who are our future co-workers?

### "Soft" competences:

- increased requirements of workplaces demand more independence, responsibility, sense of initiative of the employees
- continuous flexibility of workplaces and changes require better communication skills
  - expressing opinion
  - presenting arguments
  - constructive feedback
  - negotiation

This applies to both sides:

management that introduces the changes  
 employees that are included in the changes



# Where are our challenges?

## **Challenge for the VET providers**

Particular knowledge and practical training for the students that are employed immediately after finishing VET and broad general knowledge for the students that continue their studies

## **Challenge for the Higher VET providers**

bringing up independent co-workers capable of taking decisions and managing groups

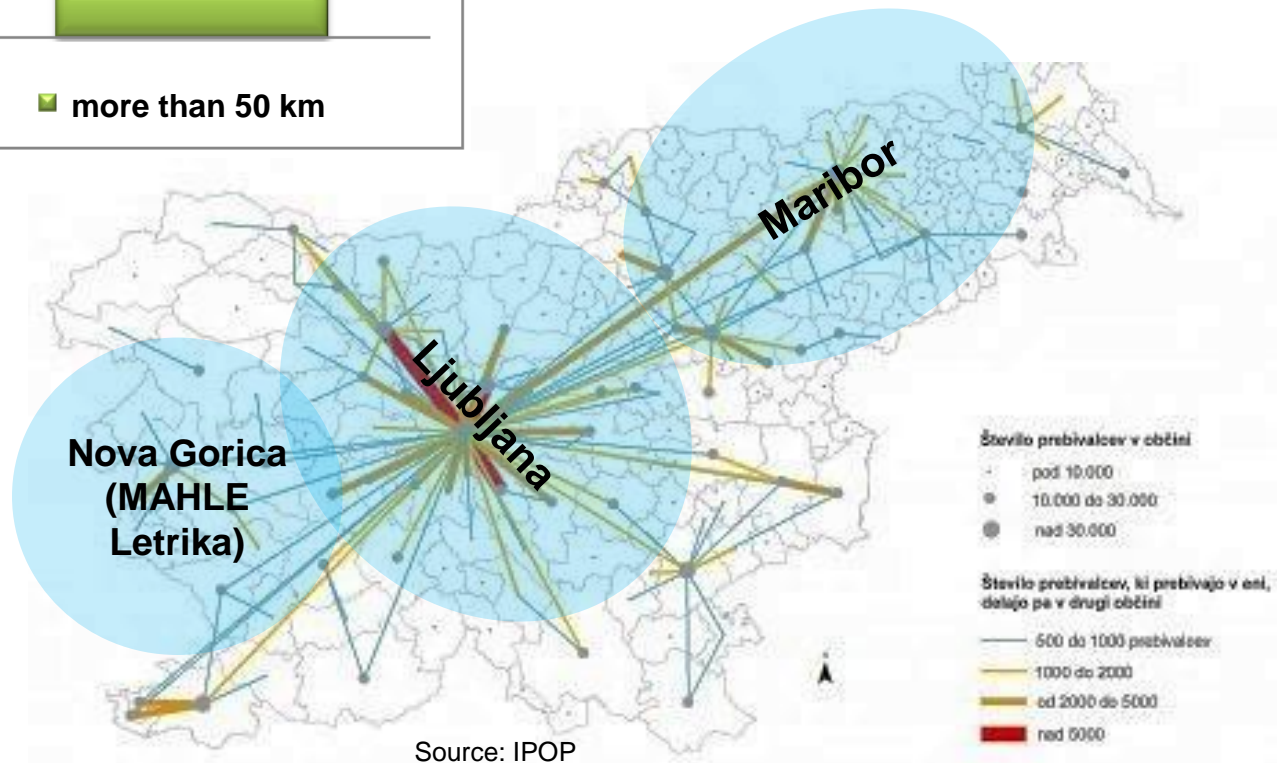
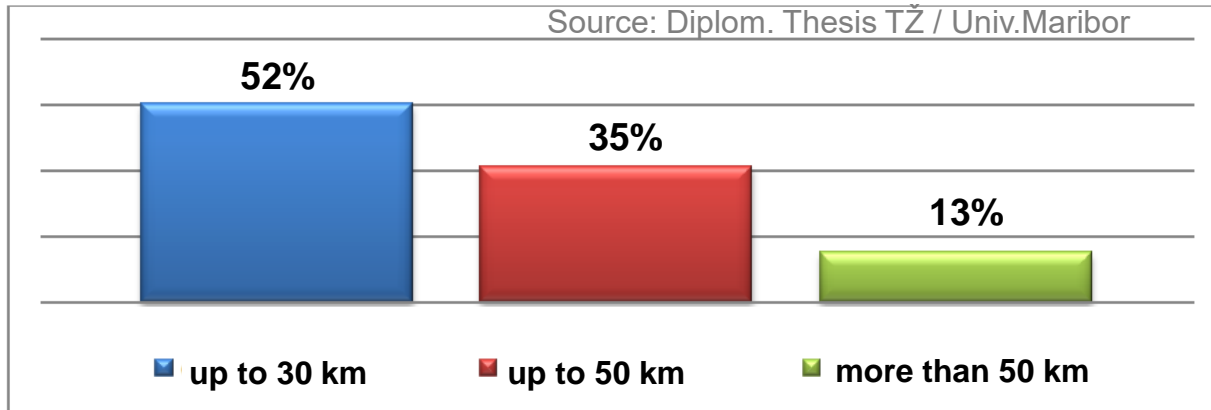
## **Challenge for the employers**

creating interesting workplaces for the new co-workers, so that they want to work and stay there for a longer period of time (keep the experienced workers)



## Where are our future employees?

Source: Diplom. Thesis TŽ / Univ.Maribor



# And what are our activities?

## ■ Scholarships

Over 160 scholarships, including 40 for secondary school, the rest are bachelor and master university students (mechanical and electrical engineering)

Integrate students into company through:

internships

summer work

bachelor and masters final thesis

project assignments

and company visits

## ■ Internships

More than 200 per year

Mostly technical profiles (from vocational to university levels)

Good way to promote the company and attract, train and employ new colleagues



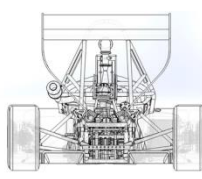
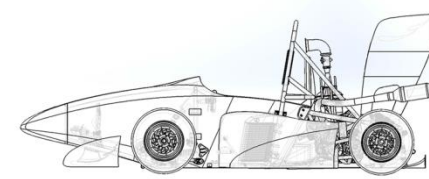
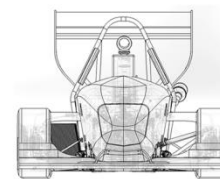
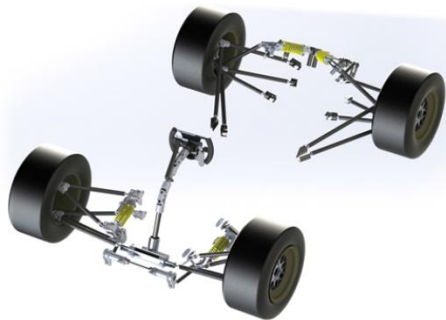
# The project "*Formula Student*"



# MAHLE

Driven by performance

- "*Formula Student*" is a world student engineering competition, in which student teams from around the world compete with a formula racing car designed and built by themselves.
- The winner is not the fastest team, but the one with the best package - best design, best characteristics, best financial and sales planning.



# MAHLE

*Driven by performance*

*Hvala!*

