

# Saar Racing Greenteam

Formula Student @ Saarland University



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# What's Formula Student?

- International design competition
- More than 500 universities
- Initiated 1981 by SAE
- Competitions all over the world
- Electric race cars since 2010 in Germany



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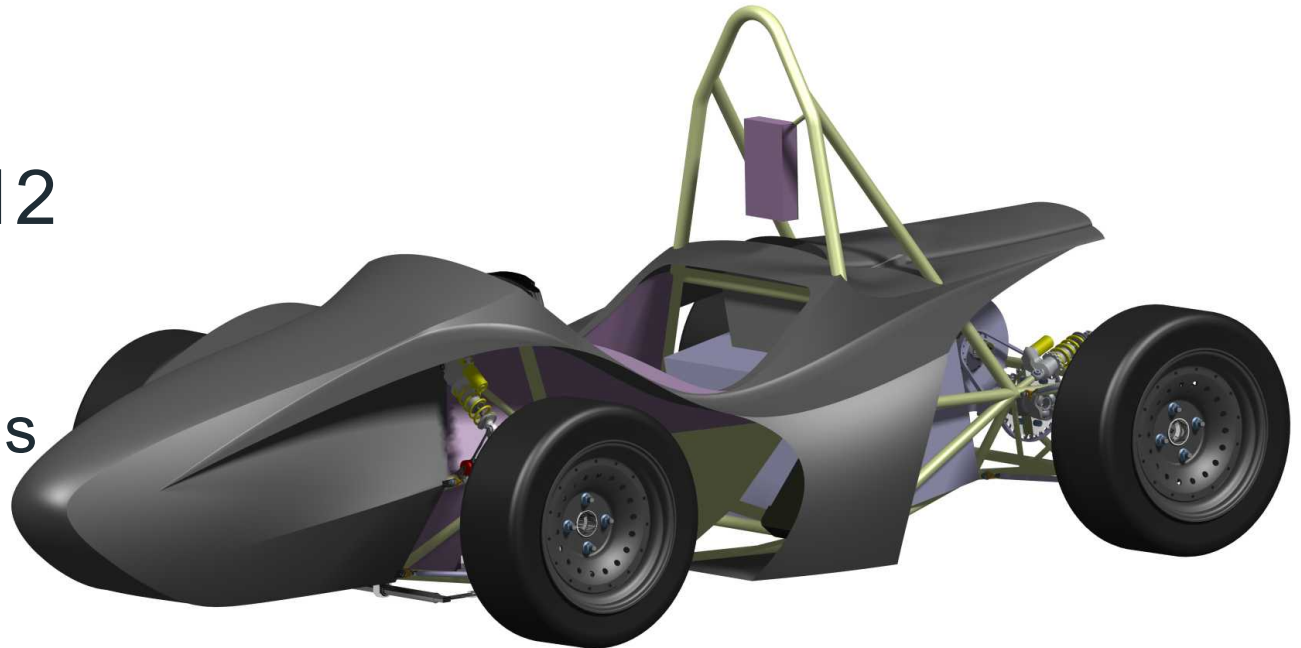
# Disciplines

- Static events
  - Businessplan presentation
  - Design report
  - Cost report
- Dynamic events
  - Acceleration
  - Skid Pad
  - Autocross
  - Endurance



# Saar Racing Greenteam

- Founded in 2011 by „Lehrstuhl für Konstruktionstechnik“
- 25 students
- First car for 2012
- SRCe01
  - 40kW continuous
  - 80kW peak
  - 290kg
  - 324 VDC
  - 6,48 kWh



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# Electronic System

- Normal for FS-cars: one central ECU
  - Problem: a lot of cables
  - other systems are difficult to integrate
- Other possibility: some simple nodes, connected via CAN bus
  - other systems are easy to integrate
- One industrial controller for tractive control system

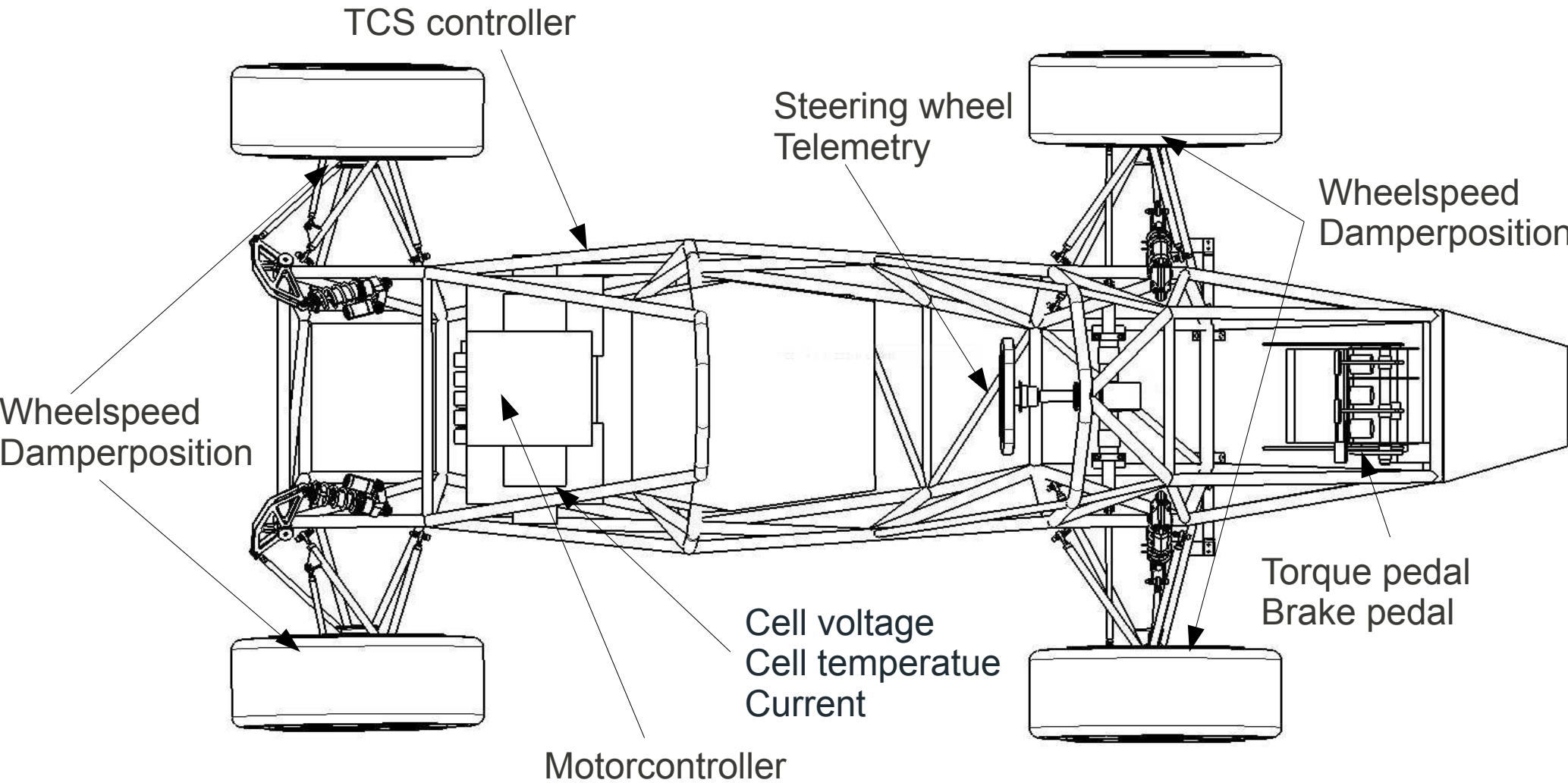


# CAN

- Controller Area Network 2.0 A/B
- Developed in 1983 by Bosch
- State of the art in automotive applications
- Simple network topology
- Differential signal transmission
- Up to 1 MBit/s
- Near to real time
- Safety features like CRC, ACK, error frames

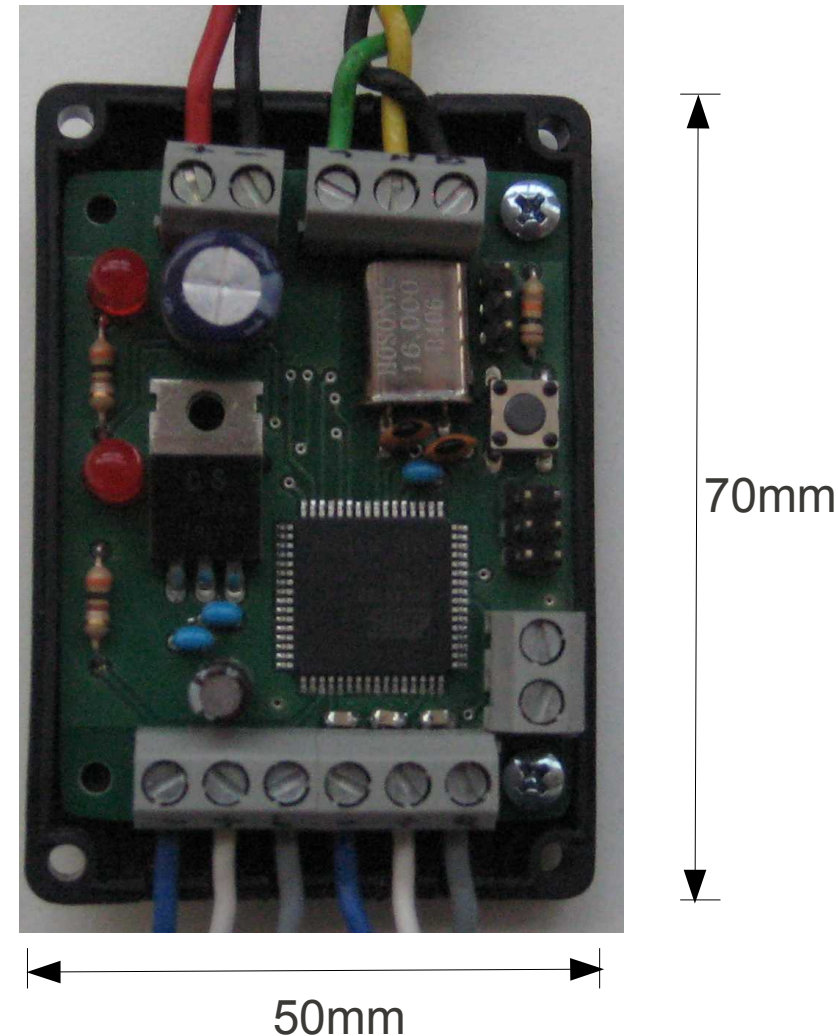


# Car system



# CAN Node

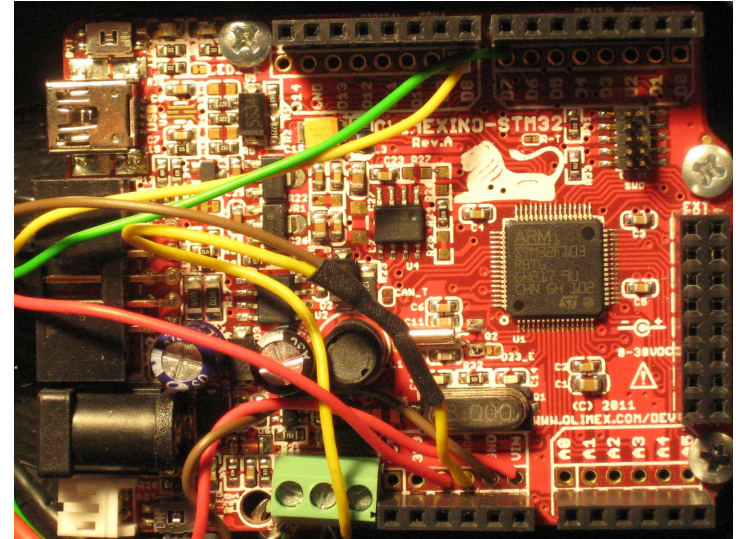
- Self developed
- Several inputs
  - AD-Converter
  - Counter
  - Digital Inputs
- Easy to reuse
  - Only two different layouts for different purpose
  - Minimized costs





# Monitoring

- Logging of all car parameters send via CAN
- Self developed software solution
- Uses a STM32 controller on a Olimex Maple Board
- Saves data on MicroSD as file
- Future: real time monitoring by wireless technology



# Upcoming Topics

- Telemetric monitoring unit
  - Wireless transmission (e.g. Bluetooth, GPRS,...)
  - Software for real time monitoring/analysis
- Simulation of CAN network using state of the art tools (Vector CANoe)
- Software development for internal systems (e.g. Battery Management System, Tractive Control System,...)
- Web based document management system

# Thank you for your attention!

Questions?  
Interested in the project?

Ask us or email to:  
[info@srg.uni-saarland.de](mailto:info@srg.uni-saarland.de)



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# Our Platin Partners

