



SECURE CONNECTIONS
FOR A SMARTER WORLD

The NXP CUP 2020

BUILD. PROGRAM. RACE.



In collaboration with



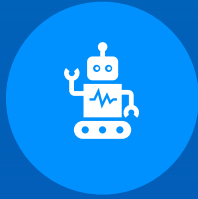
[Link to YouTube](#)

The NXP CUP

The most successful autonomous robotics and automotive challenge in EMEA



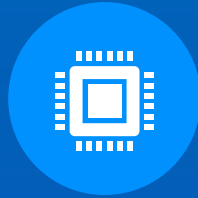
Autonomy



Robotics



Automotive



Mechatronics



Teamwork



Coding



Challenge

2019 Season's Facts

More than 400 students fighting for the championship



158 TEAMS



16 COUNTRIES



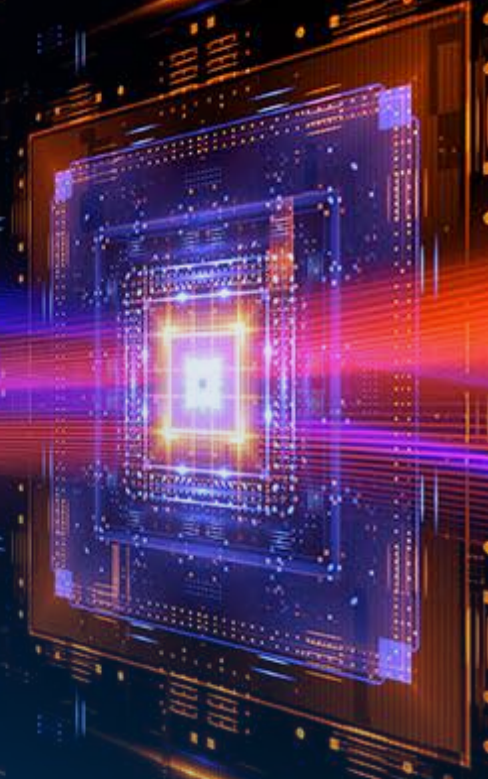
59 UNIVERSITIES



6 QUALIFICATIONS



1 EMEA FINALS



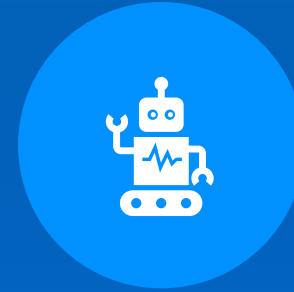
All students welcome



High School and
STEM groups



Universities
Bachelor, Master, PhD



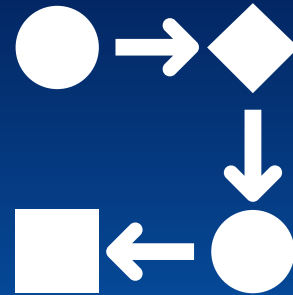
Robotic Clubs

Developed for Students



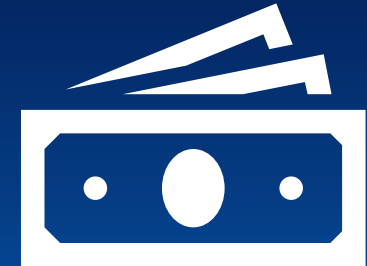
SUPPORT

Ready to use courses and code snippets, community approach



SOFT SKILLS

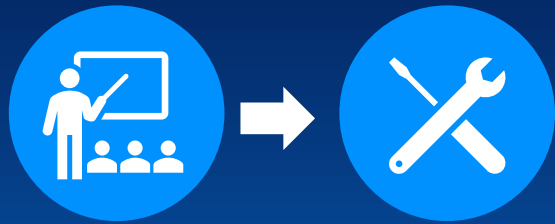
Helps to develop soft skills such as teamwork and project management



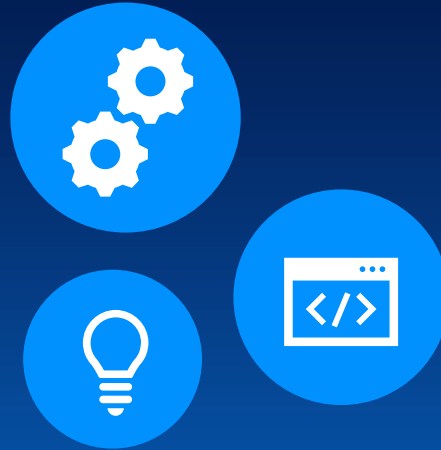
EMPLOYMENT

Great addition to the CV and opportunity for networking

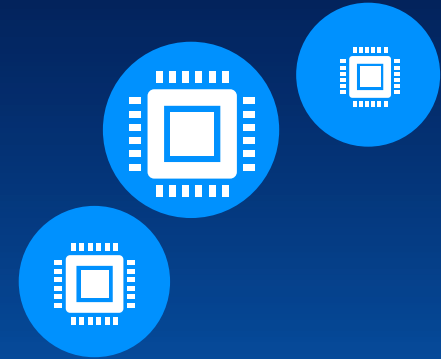
...and Professors



THEORY-TO-PRACTICE
Driving the motivation from students to apply their learning into a practical and exciting program



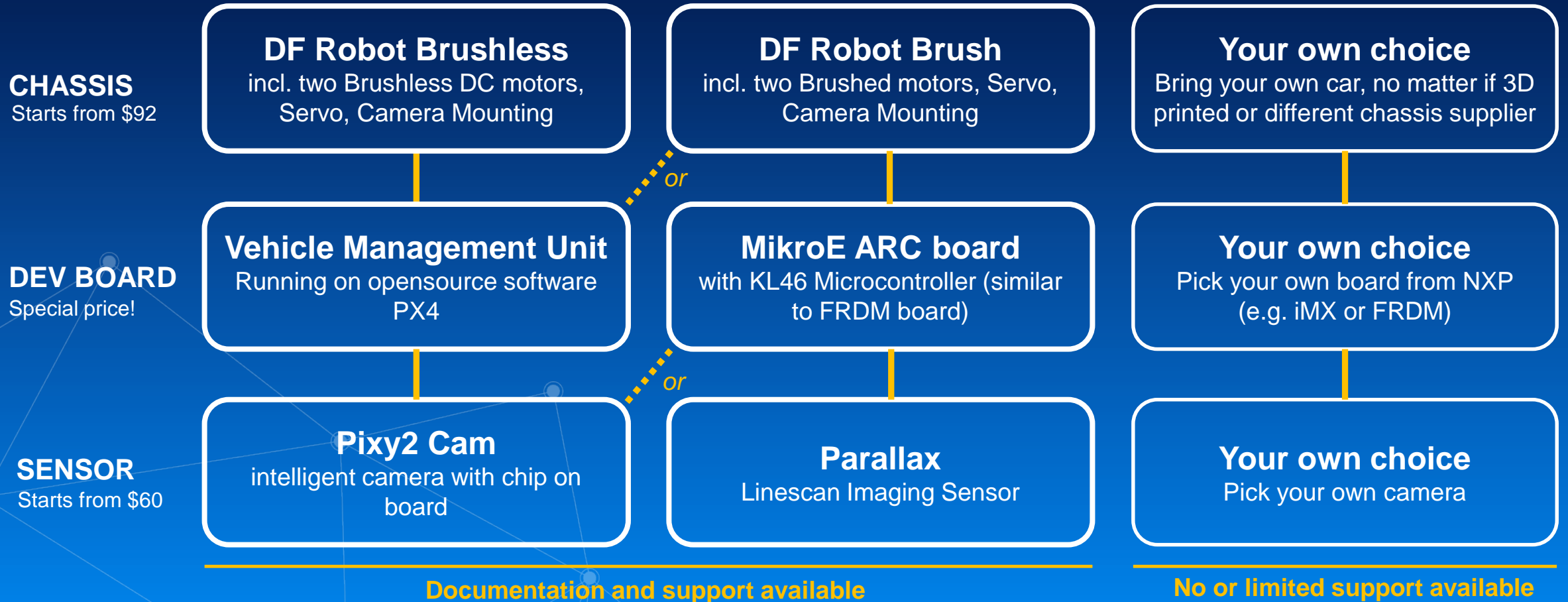
MULTI-DISCIPLINES
Teams of max 3 students with Electronic, Electric and Mechanical Engineering skills into one challenge



LATEST TECHNOLOGIES
Hands-on with the latest technologies for robotics and autonomous robotics

Chassis and Hardware

There are two default car chassis and development boards off the shelf. You pick!



All cars and boards can be purchased via Mouser Electronics. Prices are not final yet!
Landzo Model C and Alamak from previous seasons are allowed to the challenge.

Courseware

Courseware created by professors in various languages to help integration into the classroom programs

- ARC Ingenierie Switzerland: Introduction course to automation systems - considerations for camera(s) positioning on the car chassis (Fr)
- ESIEE Paris, France: FRDM-KL25Z NXP Cup course material (Fr)
- University of Applied Sciences Mannheim, Germany: NXP Cup Courseware (Ger)
- NXP Flight controller RDDRONE-FMUK66 documentation

All course material can be found [online](#)



Courseware (cont.)

Courseware created by professors in various languages to help integration into the classroom programs

- Rose-Hulman Institute of Technology, Indiana, USA: NXP Cup Autonomous Driving Design Exercise book (En)
- University of Iasi, Romania: NXP Cup Design with MCU Lab exercises based on ARM mbed (Rom)
- Deggendorf Institute of Technology, Deggendorf, Germany: NXP Cup Car Implementation course (Eng)
- NXP Semiconductors, Texas, USA: The book of Eli (from Eli Hughes) 35 module video course based on FRDM-KL25Z applied to the NXP Cup (Eng)



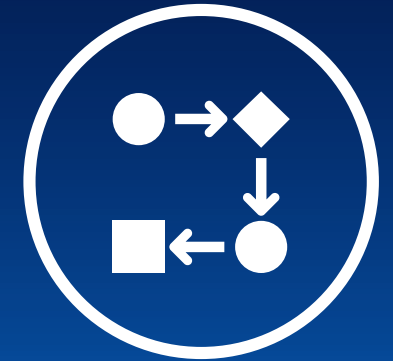
All course material can be found [online](#)

Source code and programming support

The source code offers you a quick start. Take it from here and fine tune your car

- ARC Ingenierie Switzerland: ARC Board schematics, code samples, Labview support package for Model C and Alamak chassis
- NXP Semiconductors:
 - FMU board with 1 Brushless motor on Turnigy chassis
 - FMU board with 2 Brush motors on DFRobot chassis
 - FMU board with 2 Brushless motors on DFRobot chassis
 - ARC board with 2 Brush motors on DFRobot chassis
 - FRDM-KL46 with 2 Brush motors on DFRobot chassis

All course material can be found [online](#)

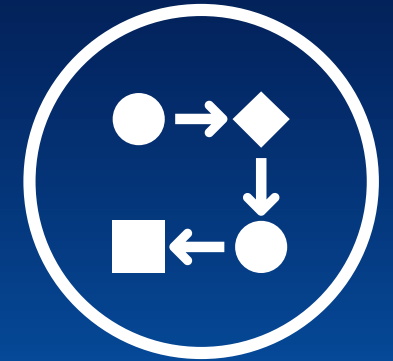


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 - FRDM-KL46 with 1 Brush motor on DFRobot chassis

All course material can be found [online](#)



2020 season starting in October '19

Highlights

Multi Disciplinary

Multi disciplinary
approach for robotics,
mechatronics and
automotive

Creativity

All car kits,
regardless of make,
origin, source are
allowed

Open Portfolio

Access to the whole
NXP board
solutions portfolio
including K66-FMU,
FRDM-KL25z
and i.MX

Champions board

Get the board from the
2019 champions
HE-ARC Ingenierie
Switzerland

New Car Chassis

DFRobot new
car chassis
available via
[mouser.com](https://www.mouser.com)



max. 200 points

Figure 8

The Figure 8 is a precision and reliability task.

Participants will have 60 seconds to complete as many laps as possible.

The team with the most laps completed wins.

This challenge is optional.



max. 150 points

Speed limit

When the car sees the beginning of the speed zone, it must reduce its speed significantly.

When the car sees the end of the speed zone, it must resume its original speed.

This challenge is optional.



max. 150 points

Obstacle avoidance

After completing the first round, the jury will place an obstacle on one of the straight track segments.

The race car has to avoid this obstacle.

Neither the tires nor the chassis are allowed to touch the obstacle.

This challenge is optional.



max. 500 points

Timed Race

The Race start order will be determined by a random drawing.

Fastest lap time wins this challenge.

This challenge is mandatory.

2019/20 Key Dates



October

Registration opens

Get your kits!



November

End of Registrations

Start working on your cars

*Racecar development
and programming!*



March

Qualifications

Choose your location



April-May

EMEA Finals

Win the NXP CUP 2020



Win

We invite all qualified teams to the multi-day technology event in Bucharest



Bucharest

Bucharest, Romania will be the site of next season's NXP CUP Finals in EMEA



Travel voucher

Every team that qualifies will get a 200€ travel voucher per person



Accommodation

Mouser Electronics will sponsor accommodation and transfer in Bucharest



Food

Food will be provided to all finalists for free during the event



Party

Party with us on a multi-day technology event



Win

Winners will get **3000€** Plus there is an extra chance to win the **Electromaker Innovation award!**

Learn more:

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<https://www.nxp.com/nxpcup>



<https://www.youtube.com/watch?v=ulR4u7kXjco&t=2054s>



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