

# **FIRST** TECH CHALLENGE NETHERLANDS

Sustaining FIRST Tech Challenge in the Netherlands and  
impacting the next generation of changemakers.



# Overview

Our society has a growing need for engineering and scientific talent. In the United States of America, FIRST (For Inspiration and Recognition of Science and Technology) has attractive programs that encourage youth to explore opportunities in Science, Technology, Engineering, Arts and Mathematics (STEAM). Although European teams can participate in the FIRST Tech Challenge (FTC) and FIRST Robotics Competition (FRC), the barrier to fly to the US for a Regional Event is high in terms of cost and organization. This inhibits schools to start FRC and FTC teams.

By organizing local FTC Events and helping schools to start FTC teams in the past five years, we built a community of FTC teams in the Netherlands. Now it is time to level up and professionalize these local events to official qualifiers.

In this plan we outline a FTC strategy based on the metro league approach in the US. We will build a network of local partners that can organize league meets which will qualify teams for a FTC NL League Championship. The number of local partners will grow and increase the playing opportunities for new teams.

Currently Europe has approximately 16 FRC teams of which 4 are located in the Netherlands, where FTC has approximately 30. Due to high costs and insufficient infrastructure for starting a FRC team it's currently out of our scope to actively start new teams. The growth strategy and implementation plan are built upon creating more local qualifying opportunities for FTC teams to boost the team growth and gaining more FIRST knowledge in general.

This plan contains a multi-year strategy to reach the ultimate goal of a European FTC Championship and an official European FRC Regional.





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# About FTC Netherlands

## Vision

The need for scientific and engineering talent is higher than ever and fresh “smart” blood is required to prosper in a world of new smart devices. We see a huge opportunity for FIRST to play a role in the fulfilment of this need.



FIRST is more than robots. The robots are a vehicle for students to learn important life skills. Kids often come in not knowing what to expect - of the program nor of themselves. They leave, even after the first season, with a vision, with confidence, and with a sense that they can create their own future

*Dean Kamen*

*FIRST's programs are recognized by industry and academia in the United States for their role in awakening and growth of scientific and engineering talent*

Conversely, in Europe, the existence of FIRST and integration in European industry are still immature, except for FLL in some countries of Europe. Currently Europe (with over 500 Million people) has only 16 FRC teams.

One of the largest obstacles is the high investment for FRC teams to participate in FRC Events in the US. Travel and lodging

expense for an entire team takes most of the budget, so the entry barrier is high. To overcome this barrier and grow the number of European FRC and FTC teams, a FIRST culture and infrastructure has to be developed on the European continent. Where FTC NL will start and focus on implementing a new infrastructure within the Netherlands and Belgium firstly.

Our strategy is to build this from the bottom up, which we have been doing for the last few years. Now we are at a turning point where we have to plan for the future FIRST infrastructure within the Netherlands and Belgium. Creating a sustainable basis and growth within FTC and establishing a supportive transition into FRC. This allows us to replicate the programs to other local regions and countries in Europe and work towards a FIRST joint-effort with other parties involved.



## Stakeholders

In our main scope for the Netherlands, we have three major stakeholders in mind: Educators (Schools, teachers), Industry (Technological companies) and Students. We aim to offer a win-win-win situation for all of them.

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### Educators

Schools are aware of the need to improve and modernize technical education. Finding methods that work and that appeal to students is a challenge. Successful initiatives still depend on motivation and creativity of individual teachers who are willing to spend a lot of their free time to develop and manage projects in their schools. FIRST programs offer a proven structure, where students are challenged to solve complex technical problems in a certain timeframe. Students will be intrinsically motivated to find resources that help them to excel. Because the challenge is offered as a competition, students are inclined to look beyond their current frame of reference because good is not good enough to win the game.

FTC and FRC allow to highlight typical STEM subjects and beyond those. Because the programs have a strong emphasis on collaboration and social skills, students will acquire a balanced set of 21<sup>st</sup> century skills and hands-on manufacturing experience.

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### Industry

For industrial companies, FIRST offers the possibility to engage with students and share excitement about science and technology. Companies may encourage and facilitate employees to spend time with student teams to help them in their exploration of technical problems and show them their own passion for the job.

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### Students

For students, FRC and FTC are an excellent opportunity to get acquainted with technology. They get the chance to experience hands-on how technical problems are solved and they can find out whether they want to pursue a career in this direction.

Participation in FIRST has proven to be an asset on one's CV in the United States. Our goal is to build this recognition in Europe as well. Successful participation in FIRST competitions indicate that a student has solved problems in a multidisciplinary and collaborative way and has acquired a skillset that is not offered by traditional, formal education.

Most importantly: it is fun. Working together on a challenge bonds people and create relationships for life, not only within the teams, but also with others in the country and around the globe.

## Meet Our Team

The initiative for FTC NL is run by FIRST adopters and their firsthand experience. Backgrounds in volunteering and coaching FLL, FTC and FRC teams. The entire team is driven by the following members:




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**Ron Visser**

Chairman

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Ron finished his bachelor degree in mechatronics and is the founder of FRC Team Rembrandts. Since the start of Team Rembrandts, he's been majorly involved with all the aspects of running an international team. Gaining hands-on experience in both FRC and FTC since 2013. Increasing FTC within the Netherlands and organizing FTC events, expanding his FIRST network further. Now partially working for MTA, a high-tech machine manufacturer which converts challenges into projects with positive business cases and a fast time-to-market. Being responsible for the internal technology fieldlab and strengthening ties with educational partners with opportunities to adopt FTC beside their Rembrandts FRC commitment.

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**Nicolle Visschers**

Secretary

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Nicolle has been a FIRST enthusiast and volunteer since 2009. Having firsthand experience as a FLL parent she noticed FIRST was a whole lot more than a science project. She's been FLL Head Judge for multiple years and joined the FTC NL organizational team from the beginning. Mainly focused on volunteer interaction, event co-ordination and judging process as Judge Advisor during FTC events. Besides this all she's financial controller at the Catharina Hospital in Eindhoven.

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## Irene Hulsen

Treasurer

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Irene has been involved in FIRST since 2006. She has experience in FTC and FLL as organizer, judge and volunteer. She has been the coach of the successful FLL team NXT Generation for almost 10 years and participated in national and international tournaments. During this period, she saw the impact FIRST has on kids. After the team had to stop because of their ages, Irene decided to stay involved in the FIRST programs as volunteer. She is also working at the office of the FLL Benelux partner.

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## Bas Koomen

Member

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Bas, CTO at Cadmes in the Netherlands, is involved with FLL and FTC since 2012 as a coach and judge. As CTO at Cadmes he collaborates with Dutch educational networks on the development of STEM curriculum and he teaches statics and mechanics at Avans University of Applied Science. He also developed supporting material in 3D CAD design for FTC and FLL teams in collaboration with the educational team of SOLIDWORKS in the United States and France. Working on his PhD research project with Cadmes and University of Twente in the field of Product Lifecycle Management (PLM).

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## Roel van Os

Member

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After gaining 3 years of experience within the FIRST programs, Roel is very passionate about FIRST. While studying mechatronics, he joined FRC Team Rembrandts in 2017. After a year within the team, Roel was stunned by the impact FIRST has. This is why he decided to spend the next year working full time for the team. As former president of the Rembrandts STEAM Foundation, Roel is now motivated and goal driven to contribute to FTC NL.

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## Wouter Levering

Member

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As a veteran team member within Team Rembrandts, Wouter knows a lot about FIRST. Joining the team from the start in 2013 Wouter saw what kind of impact FIRST can have on youth. After his graduation as, Mechanical Engineer he started his job at Cadmes. With the experience he gathers at Cadmes, Wouter is always busy teaching these skills to the upcoming generations and developing educational resources for teams.

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## Dutch Community of *FIRST* Volunteers

In the past decade of FIRST (FTC and FLL) events in the Netherlands, a community of motivated and experienced volunteers has emerged. We can call on these people for local and regional events in the Netherlands. Some of them are more than willing to collaborate with new communities in other regions to share experience and know-how.

This entire community has to be expanded throughout the Netherlands and Belgium, with the help of new sponsors and partners. More local playing opportunities would contribute to this and will be one of the main goals.



# Growth Strategy

## FTC Netherlands 2019 Season

The 2019 season has been a successful pilot of the Metro League format for FTC, increasing match playing opportunities for 36 teams by at least 400% compared to previous seasons. This means event count is increased from 1 regional competition to 4 league meets and a league championship.

For FTC there will be a focus on expanding our network and teams towards Belgium while embedding FTC in the high school curricula. Eventually in 2022 there will be a bigger framework around FTC where there are more teams, more sponsors and partners. That would be the time to look at possibilities for expanding FRC in the Netherlands.

## Metro League

Leading up to the League Meets, FTC NL supports the local partners with volunteer training and event co-ordination while providing the host with field equipment and materials. During the League Meets, FTC NL will facilitate a judging area where teams can ask questions or practice their judging session in preparation for the FTC NL League Championship.

The amount of League Meets will grow each year, increasing the capacity for new teams, where the FTC NL League Championship will slowly increase throughout the years in total spots. This will give the League Meets more importance and increase the effort teams will put into their preparation.

### What is the Metro League Competition Format?

A Metro League is a group of Teams that compete together in a series of League Meets. The intent of the League Structure is to provide teams with more opportunities to participate in the annual Challenge, which in turn provides teams with additional opportunities to try new, creative design elements, without fear of losing an opportunity to advance. This enhances the iterative process that we encourage teams to embrace while designing their robots for the competition.

## Experience Days

To facilitate the continuation of FTC teams, an off-season Experience Day event will be hosted by FTC NL. A variety of masterclasses will be given, covering all the aspects that are involved within running a FIRST team. Besides theoretical classes there will be SolidWorks, hardware and software workshops. Further details have yet to be determined, for the 2020 season the experience day and kick off for the new season will be combined.

This will be hosted at PRIVA, a partner that makes hardware and software and supplies services for process management and climate control in non-residential buildings, in horticulture and in industry. A close working relationship between FTC NL, Teams and Partners will be the pith of matter for the Experience Day.

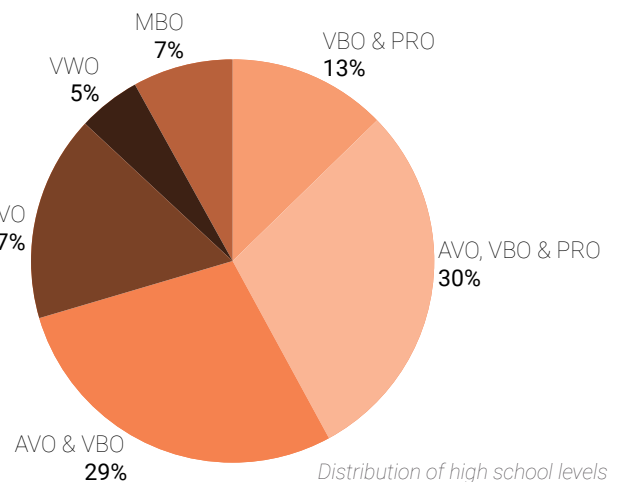


## Educational Expansion

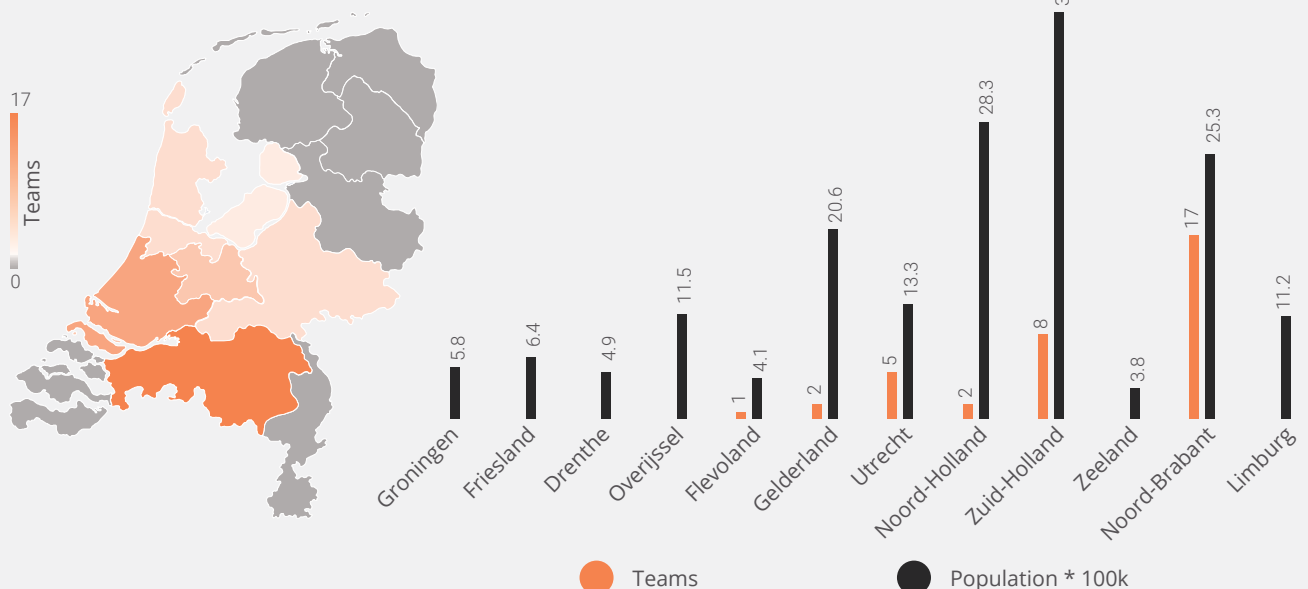
During the 2019 Rover Ruckus season, 35 Dutch FTC teams and 1 Swiss team have competed. The national geographic spread of teams is currently mainly focused on the provinces Noord-Brabant and Zuid-Holland. Other provinces with a high population, such as Noord-Holland and Gelderland, will be our first priority to focus on for expansion and team growth. Analyzing the distribution of high school levels in the Netherlands provides us with these target groups:

- ✓ **PRO**  
Practical education
- ✓ **VBO**  
Pre-vocational education
- ✓ **MBO**  
Secondary vocational education
- ✓ **AVO**  
Secondary education
- ✓ **VWO**  
Pre-university education
- ✓ **Technasium**  
Specialized R&D curriculum on AVO and VWO schools

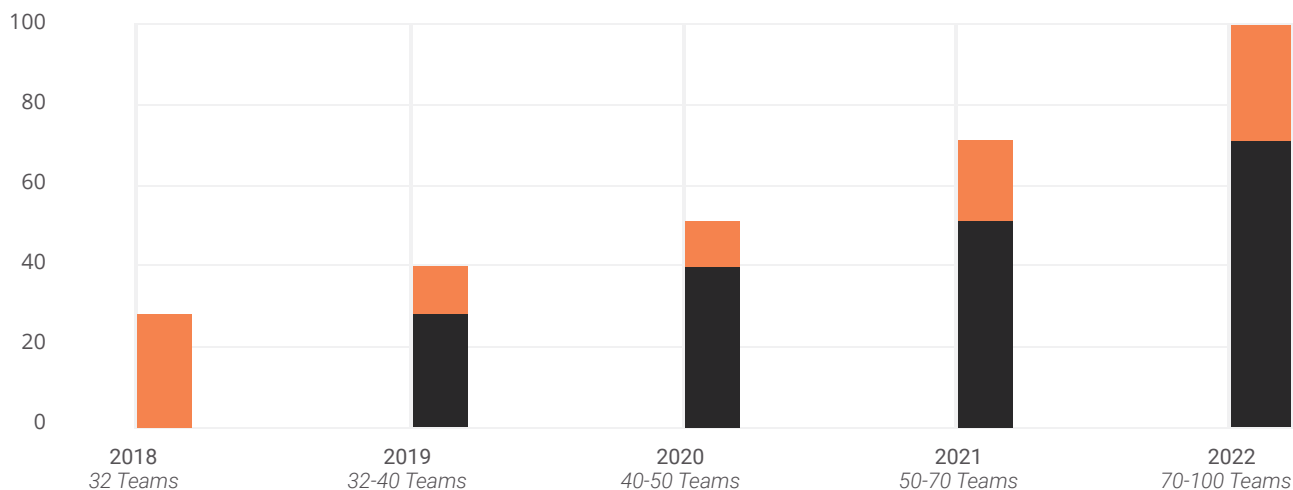
Each group asks for a different approach to assist them to embed FTC within their curricula. FTC NL wishes to develop educational starter kits for schools and teachers to train themselves and properly guide their students, with a specific pathway which fits for the team. Combining the educational starter kit with a hardware rookie kit will allow teams to compete in no-time and start their iterative process.



## FTC Team Distribution within the 12 Dutch Provinces



# Implementation Goals



## 2019



4 League Meet events | 1-day event & 16 teams



FTC Netherlands League Championship | 1-day event & 24 teams



Masterclass Session at FTC NL League Championship



Support and key-volunteering at scrimmages, off-seasons or international events.

## 2020



6 League Meet events | 1-day event & 16 teams



FTC Netherlands League Championship | 1-day event & 24 teams



FTC Experience Day | 1-day event



Support and key-volunteering at scrimmages, off-seasons or international events.

## 2021



8 League Meet events | 1-day event & 16 teams



FTC Netherlands League Championship | 1-day event & 28 teams



FTC Experience Day | 2-day event



Support and key-volunteering at scrimmages, off-seasons or international events.

## 2022



10 League Meet events | 1-day event & 16 teams



FTC Netherlands League Championship | 2-day event & 32 teams



Off-season event at the World of Technology and Science fair [WOTS]



All other 2021 activities

# Yearly Budget

	Subject	2020	2021	2022
Corporate Partner	Affiliate Partner Fee	€5.000,00	€5.000,00	€5.000,00
	Materials & Logistics	€2.250,00	€2.250,00	€2.250,00
	Marketing	€2.500,00	€2.500,00	€2.500,00
	Housing & Office	€7.500,00	€12.000,00	€12.000,00
	FTC NL Development	€19.200,00	€38.400,00	€38.400,00
Strategic Partner	League Meets	€29.970,00	€16.020,00	€21.360,00
	New League Meets		€9.990,00	€9.990,00
	League Championship	€49.450,00	€56.100,00	€62.750,00
	Hardware Starter Kit	€7.500,00	€15.000,00	€22.500,00
	Educational Starter Kit	€10.000,00	€7.500,00	€5.000,00
	Experience Days	€5.000,00	€7.500,00	€10.000,00
	<b>Total</b>	<b>€138.370,00</b>	<b>€172.260,00</b>	<b>€191.750,00</b>

## League Meets

Field perimeter, components, volunteer expenses and co-ordination. Previous hosts keep their field hardware, for new partners it will be donated by FTC NL for their first event.

## League Championship

Audio & Visual, Media & Branding, Pits & Field peripherals and project co-ordination. Location rental expenses are excluded.

## Experience Days

A variety of masterclasses will be given, covering all the aspects that are involved within running a FIRST team. Besides theoretical classes there will be SolidWorks, hardware and software workshops.

## Starter Kits

The hardware kit will contain all the needed equipment to build a rookie robot. Educational starter kits will be focused on education implementation and teacher training resources.

## Housing & Office

To store materials, equipment, tools and facilitate all FTC NL employees in an office environment.

## FTC NL Development

Responsible for the creation of long-term value for the teams, sponsors and partners. Collaborating and integrating knowledge and feedback both in development and implementation.

# Sponsorship Opportunities

## What's in it for me?



### Employee Engagement

Together we will create the right conditions for your employees to give their best each day, committed to your organization's goals and values, motivated to contribute to organizational success, with an enhanced sense of their own well-being. Facilitated by rich employee volunteer opportunities at events and mentoring teams, renewing inspiration to engineers and employees, and having an excellent teambuilding platform which increases positive feelings for employers.



### Workforce Development

By strengthening your company reputation in the STEM community, you will gain recognition across FIRST properties and our events. Students develop STEM skills and practice engineering principles, while realizing the value of hard work, innovation, and working together as a team. Being involved in this amazing program creates a pipeline for your new interns and future employees.



### Cause Marketing

Impact the next generation of changemakers! FIRST is More Than Robots. FIRST participation is proven to encourage students to pursue education and careers in STEM-related fields, inspire them to become leaders and innovators, and enhance their 21st century work-life skills. Together we can keep inspiring youngsters and transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders.

## Support us and we support you

FIRST is the leading STEM program for students ages 6-18. With support from over 200 of the Fortune 500, FIRST designs accessible, innovative programs to build self-confidence, knowledge, and life skills while motivating young people to pursue opportunities in science, technology, and engineering.

We cultivate innovative collaborations and strategic partnerships with corporations that share our vision. This support, including financial contributions, in-kind donations, employee volunteerism and mentoring, provides vital resources for FIRST organizational growth, and is a testimony to the value found in FIRST programs.

Our partnerships are divided in three different types, which are outlined below in order. All our wonderful partners will be listed on the website, marketing materials and clothing by sponsor level. On the website they will be categorized on type of partnerships. The yearly budget is split up into corporate and strategic expenses. Your organization is allowed to choose on which fronts they support FTC NL and the teams. All the other benefits associated with your partnership are outlined in the matrix: Partnership Opportunities & Benefits.

## Presenting Partner

As the Presenting Partner, your organization will receive exposure at every opportunity throughout the complete event season marketing cycle. The FTC NL SEASON X Presented by "Company Name" will be used in all marketing materials, press releases and social media. To become Presenting Partner the total sponsorship of your organization will be higher than 35% of the total budget for the specific season.

## Corporate Partner

As a Corporate Partner, your organization will support FTC NL in running the entire season and cover operational expenses. Without Corporate Partner support a season can't be coordinated for all our teams and volunteers. Your organization will receive special exposure during the season kick-off and FTC NL League Championship.

## Strategic Partner

As a Strategic Partner, your organization will facilitate teams with playing opportunities, hardware and knowledge. You are allowed to brand the sponsored items with your own marketing materials and social media. For example: "FTC NL League Meet powered by "Company Name"".



## Partnership Opportunities & Benefits

### Sponsor Recognition

	Platinum €30.000 +	Gold €10.000 - €30.000	Silver €5000 - €10.000	Bronze €1000 - €5000
Opportunity to provide a 90 second video to be shown at the FTC NL League Meets and League Championship	✓			
Link to the sponsor homepage via your sponsor logo for the sponsored FTC NL League Championship	✓			
Opportunity to serve as guest master of ceremonies for 5 (five) matches at the FTC NL League Championship	✓			
Speaking opportunity at the FTC NL League Meets and League Championship	✓	✓		
Gain support from FTC Netherlands in starting sponsor originated FTC teams and hosting an FTC event at a desired location	✓	✓		
Opportunity to hand out award during award ceremony at the FTC Netherlands League Championship	✓	✓		
Media interview opportunities at the FTC Netherlands League Championship	✓	✓		
Meeting/conference room provided at FTC Netherlands League Championship	✓	✓		
Opportunity to have a premium exhibit space at the FTC Netherlands League Championship and Experience Days	✓	✓	✓	
Opportunity for qualified employee volunteers to participate at the FTC Netherlands League Championship and League Meets	✓	✓	✓	
Ability to distribute branded merchandise to the sponsored FTC Netherlands event attendees (upon FIRST approval)	✓	✓	✓	
Opportunity to have a standard exhibit space at the FTC Netherlands League Championship and Experience Days	✓	✓	✓	
Recognition by sponsor level in press releases, banners, social media, web links, invitations, on site collateral of the League Championship	✓	✓	✓	✓
Listing, by sponsor level, on the FTC NL website and League Championship program book	✓	✓	✓	✓
Listing, by sponsor level, on the FTC NL League Championship volunteer t-shirts	✓	✓	✓	✓

# FIRST<sup>®</sup> LEGO<sup>®</sup> LEAGUE JR.

*Captures young curiosity by exploring real-world scientific challenges, learning teamwork, and working with motorized LEGO<sup>®</sup> elements*

It's never too early to discover STEM. FIRST LEGO League Jr. is designed to introduce STEM concepts to kids ages 6 to 10 while exciting them through a brand they know and love - LEGO<sup>®</sup>.

Guided by adult coaches and FIRST Core Values, students build models using LEGO<sup>®</sup> Education WeDo 2.0 and create Show Me posters to present what they learned. The program focuses on building interest in science, technology, engineering, and math (STEM) through a real-world challenge – to be solved by research, critical thinking, and imagination.



# FIRST<sup>®</sup> LEGO<sup>®</sup> LEAGUE

*Elementary and middle school-aged students research a real-world engineering challenge, develop a solution, and compete with LEGO-based robots of their own design*

Young innovators practice imaginative thinking and teamwork. FIRST LEGO<sup>®</sup> League focuses on solving real-world problems such as food safety, recycling, energy, and more using STEM concepts, plus a big dose of fun. With the guidance of two or more coaches, teams (2-10 members, grades 4-8\*) apply science, technology, engineering, and math (STEM) concepts to solve a real-world problem.

Teams design, build, and program a LEGO<sup>®</sup> MINDSTORMS<sup>®</sup> robot, then compete on a themed table-top playing field. Along their journey, students develop critical-thinking and team-building skills, build STEM self-confidence, and gain valuable perspective on the importance of failure in the learning process.



# FIRST® TECH CHALLENGE

*Teams of middle and high school-aged students are challenged to design, build, and program a robot to play a floor game against other teams' creations*

It's way more than building robots. FIRST Tech Challenge teams (up to 15 team members, grades 7-12) are challenged to design, build, program, and operate robots to compete in a head-to-head challenge in an alliance format. Guided by adult coaches and mentors, students develop STEM skills and practice engineering principles, while realizing the value of hard work, innovation, and working as a team.

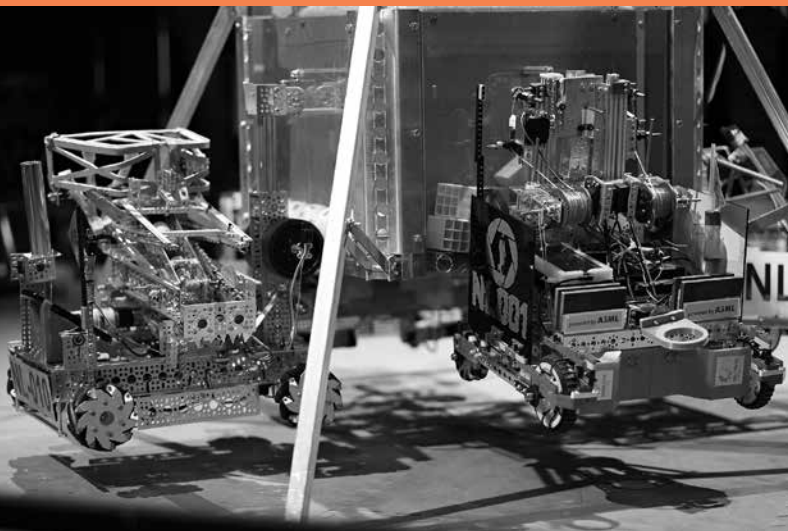
The robot kit is reusable from year to year and can be coded using a variety of levels of Java-based programming. Teams design and build robots, raise funds, design and market their team brand, and do community outreach to earn specific awards. Participants are eligible to apply for \$80M+ in college scholarships.

# FIRST® ROBOTICS COMPETITION

*High school-aged teams compete head to head on a special playing field with robots they have designed, built, and programmed*

Combining the excitement of sport with the rigors of science and technology. We call FIRST Robotics Competition the ultimate Sport for the Mind. High-school student participants call it "the hardest fun you'll ever have."

Under strict rules, limited resources, and an intense six-week time limit, teams of students are challenged to raise funds, design a team „brand," hone teamwork skills, and build and program industrial-size robots to play a difficult field game against like-minded competitors. It's as close to real-world engineering as a student can get. Volunteer professional mentors lend their time and talents to guide each team. Each season ends with an exciting FIRST Championship.





## Get in Touch



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