

## Chairman's Award - Team 4481

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2018 - Team 4481

### Team Number

4481

### Team Name, Corporate/University Sponsors

AAE/MTA/Fontys University of Applied Sciences/Zwijzen College/Heerbeek College&Team Rembrandts

### Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

FIRST creates STEM opportunities for our students by integrating the FIRST progression for ages 12 to 18 within our schools. This is unique in the Dutch school system and provides students with an opportunity to develop business and professional skills by mentoring their own FTC and FLL teams, thus embodying Youth Inspiring Youth (YiY). Team members can earn SOLIDWORKS certificates like Certified SOLIDWORKS Associate and Professional expanding their skill set for a brighter future in STEM.

### Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

When asked about community impact, the Dean of Engineering at Fontys University, Ella Hueting, said "In an inspiring way Team Rembrandts... are often mentioned as an example in our Brainport Region of what wonderful results can come out of an intensive cooperation between education, business and society." Last year alone, we were featured in over 35 news articles and 2 national radio interviews. We were also invited to the largest Dutch talk show but have not had the opportunity to attend.

### Team's innovative or creative method to spread the *FIRST* message

We believe that the best way to inspire youth is for young students to learn from their older peers. Because students choose their academic focus at the age of 15, early recognition of STEM is crucial. To support this idea, we integrated FIRST into the curriculum of the schools with which we are partnered. Student interest in our team has grown 65% per year, proof that this model works. Other teams have already borrowed this system, and we look forward to expanding our program to other schools.

### Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

"I've had the pleasure of seeing Team Rembrandts in action at FIRST Robotics tournaments and I have no hesitation in saying that this is the most positive, energetic, engaging team that I have ever seen" - B.Westhoven, Mentor, Team 1086 Our team members act as role models for other FIRST teams by organizing events such as FTC regionals and hosting a scrimmage for the other European teams. Our students also mentor FLL and FTC teams to spread their enthusiasm and knowledge to younger members.

**Describe the team's initiatives to help start or form other FRC teams**

In 2014, we brought a Dutch FTC team on board and started their transition to FRC the following year. This team became Team 5412 Impossible Robotics. We have also been working with three pre-rookie teams, one each from Germany, Denmark, and Greece. These teams will register in the 2019 season; meanwhile, we have been helping them find funding and school board support. We also traveled to Germany to present to 80 students and teachers, some of whom will join us for the February scrimmage.

**Describe the team's initiatives to help start or form other FIRST teams (including Jr.FLL, FLL, & FTC)**

Open Dutch FTC regional organizer together with STEAM Up (FIRST Netherlands) since 2014: 330% Growth, from 16 to 54 attending teams Teams from 9 different countries including America, Russia, Saudi Arabia and Romania Changed to district system in the Netherlands in 2018 due to the enormous growth. Helped organize an Italian FTC regional, a new FTC regional in Germany as well as coaching a new UK affiliate for the 2019 season. We help on an organizational level and volunteer at most of the events

**Describe the team's initiatives on assisting other FIRST teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the FIRST program**

In addition to producing over 50 Dutch SOLIDWORKS video tutorials and material for rookie FTC teams, we have created a SOLIDWORKS course for all FIRST teams to improve their design quality. We mentor the first Norwegian team by frequent skype calls and help them with difficulties of being the first team in their country such as shipment, traveling and the language barrier. We also facilitate part orders for our fellow EU teams by being a point of contact for AndyMark and VEXPro.

**Describe how your team works with other FIRST teams to serve as mentors to younger or less experienced FIRST teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

Together with Team 2512, we co-mentor the new Swedish team, Team 6819. We assist them with designing their robot, finding sponsors, and arranging shipments and travel. In addition, we have been invited to the Compass Alliance as the European representative. This alliance, formed in 2017 by 10 teams from around the world, acts as a resource for FRC team development, sustainability, and community involvement. Once our integration is complete, we will be the first addition to the core team.

**Describe your Corporate/University Sponsors**

We refer to our assisting companies not as sponsors but as partners as we cooperate to achieve the common goal of spreading STEM and FIRST. We have had a substantial growth in partners, from 1 to 47 in our 6 years of participation. Our lead partners consist of AAE, MTA and Fontys University. Together these partners help us with: All of our robot related costs and registration related costs Engineering advice for robot designs Management advice for team structure Help in recruiting new partners

**Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years**

For the second time, we and our partners Apex and Lenze will demonstrate FIRST and its power of cooperation at the biennial WoTS fair, the Netherlands' biggest STEM fair with 25,000 visitors. We also organize Dutch Technology Week with several partners, during which we attend events across our region. Each year, we do up to 6 different events with 4-5 partners. Finally, 90% of our university graduates later work for current or potential partners, thus improving their involvement in our program.

**Describe how your team would explain what FIRST is to someone who has never heard of it**

FIRST is an international organization with the idea that technology, knowledge and enthusiasm are something to share, enjoy and create together. Within the progression of programs for different ages, there is an ideal mix of skills of the 21st century and the current maker culture. As a program where everyone inspires each other to rise above themselves, FIRST fosters a community where helping each other is central.

**Briefly describe other matters of interest to the FIRST judges, if any**

Both during his lifetime and long after, the Dutch painter Rembrandt van Rijn was a great inspiration to many people both within and outside of his field. In addition to being a teacher to other painters, he is also one of the foremost names of the Dutch Golden Age. In choosing to name ourselves after such an icon, we hope to follow in his footsteps and usher in a new Golden Age for technology and science education in the Netherlands and beyond.

**Team Captain/Student Representative that has double-checked this submission.**

Teun Dobbelsteen

## Essay

### Youth Inspiring Youth

"Why don't we let 8th grade kids show the younger kids that science can be fun and challenging, and that it is a lot less scary than they think?" - Ron Visser, TedX Brainport 2013

Think about it: who was your role model when you were younger? Who did you look up to?

How do we make up for teachers who are not passionate about STEM and provide role models who are easier to look up to than Elon Musk, to whom few can relate?

We believe that youth best inspire youth. That they, we, can show younger generations what's possible when you put your mind to it, and that jobs typically done by professionals suddenly seem doable when accomplished by someone only a few years older. From this vision came Team Rembrandts, the first native Dutch FRC team. At that time, only 3 FRC teams and a handful of FTC teams existed in Europe. In order to spread our vision of Youth inspiring Youth (YiY) and realize our dream of having a European FRC regional, we had a lot of work to do.

Initially, we had to create a solid foundation in our school upon which we could grow. Our home base is Fontys University of Applied Sciences in Eindhoven, Netherlands. We persuaded our school to integrate Team Rembrandts into the curriculum so that second-year mechatronics engineering students earn credits for mentoring Team Rembrandts projects. This generates enthusiasm for FIRST and creates new, committed team members.

Over 6 years, we created so much enthusiasm that we needed more supply to cover the demand. Thus a second team, team 6968 Pi, was started last year at our university, and a group of our alumni split off to start team 6920 Force Fusion. As these teams start to progress and grow, we mentor them along the way, providing them with financial support, arranging their shipments and giving technical advice where needed.

Once we established our base, our next goal was to expand outside of our school, so in 2015, we began a partnership with Zwijsen School, for ages 12-18. Team Rembrandts members introduced STEM and FIRST to high school students between the ages of 15 and 18: a prime example of YiY. To expand the effect, we started 12 FLL and 3 FTC teams within the school for the younger students, which our high school students mentor. These teams now form the backbone of our sustainability and fully leverage the effects of YiY. To increase the impact, we have expanded to a partnership with Heerbeek School, where we are in the process of setting up a similar system. To better manage the expanding flow of new students, Team Pi has been included in the cooperation.

Our next large step in realizing the dream of an EU FRC regional was creating stability and growth within European FTC as a solid base for future FRC teams. In 2014, we started organizing the Dutch Open FTC regional together with FIRST Netherlands, now called STEAM Up. 5 years ago the regional had a total team count of 16 and attracted a small audience. Today, both organizations have grown the regional to a two-day event with 54 teams, representing 9 different nations. Due to financial difficulties and the enormous growth we're changing the competition format to a district model. Instead of one big regional we're organizing multiple smaller competitions all across Europe. Since last year, we are helping to organize the Italian Aviano regional, another new regional in Germany for the 2018 season and coaching a new UK affiliate for the 2019 season. Team Rembrandts helps on organizational level and volunteering roles at most of the events.

In 2014, an FTC team from Groningen, Netherlands, got inspired by our enthusiasm and joined us for a season to see what FRC had to offer, becoming members of our team in preparation for beginning their own. The following year, we helped them transition into the second native Dutch FRC team, Team 5412 Impossible Robotics, proving the concept YiY. We still mentor them today with technical, financial, and organizational support.

Furthermore, this year we began mentoring two new rookie teams, one from Sweden and one from Norway. Like 4481, these teams are the first native teams in their countries. We had the pleasure of welcoming the Swedes to our kickoff, where we gave several crash courses on important FRC topics such as game analysis, SolidWorks, and robot design during their 3 day visit. As the cherry on top, we organized a 4-way Skype meeting with both the Swedish and Norwegian teams, as well as Team 2512, the Duluth East Daredevils, with whom we co-mentor the Swedish team. At this meeting, we helped the rookie teams analyze the game and brainstorm possible designs.

To continue our expansion of FRC within the EU, we are in the process of starting first native teams in Germany, Greece, and Denmark, all of whom will be rookies in the 2019 season. In December, we made the 4-hour drive to Bremen, Germany, where we gave a presentation on FIRST and demonstration to potential team members and mentors, as well as to the school board. In February, potential students and mentors visited our workplace in Eindhoven to see FRC firsthand. While we have not yet been able to meet the Greek and Danish teams in person, we are helping them to prepare for their upcoming rookie season through email and Skype.

To unite and assist the current European FRC teams, Team Rembrandts hosts a three-day, full-sized scrimmage near the end of the build season, currently the only event of its kind in FRC within Europe. In the past, teams from 3 countries have joined us for this scrimmage, and this year we look forward to hosting teams from the Netherlands, Germany and France, including the aforementioned pre-rookie German team. We host the event in our workshop, where teams are welcome to work, practice and sleep. This provides an opportunity to collaborate with our fellow European teams on the future of FRC on our continent. This has been the second time we organise the event. It will serve as one of the final stepping stones towards a European Regional.

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Together with our partner Cadmes, a SOLIDWORKS reseller, we enhance the quality of engineering education in the Netherlands and the wider FIRST community. We ensure that all our students are Certified SOLIDWORKS Students and Associates. We also offer the opportunity to obtain the professional certificate, giving them a distinct advantage over their peers. We now provide this opportunity to all students within our university, not just those involved with our team.

To assist the FIRST community in improving their SOLIDWORKS skills, we have translated the training material used by our partner Cadmes to train teachers and students across the Netherlands. This material exists of 13 tutorials, 558 pages in total, that explain the workflow step-by-step to create a full understanding of SOLIDWORKS. SOLIDWORKS's worldwide Director of Education and Early Engagement, Marie Planchard, recognized our contribution, stating that: "I think that the success Team Rembrandts had with tools like SOLIDWORKS, they were able to show other FIRST teams how to raise the bar in CAD modeling, Simulation, engineering documentation and technical drawings."

To expand our vision to a global scale, we joined the Compass Alliance, a consortium of teams working to create a "one-stop shop" for FRC and FIRST. We were invited to join the alliance by one of the founders: Team 125, The NUTRONS.

They recognised our efforts within Europe and asked us to be the European representative. The alliance's vision of sustainability fits our own, so we became an alliance partner for all three major resources: FIRST Help Now, FIRST Help Hubs, and FIRST Tag Team. The first of these, FIRST Help Now, is an FRC help desk staffed 24/7 by award winning teams all over the world. The goal is a resource accessible for teams at any time of the day and in any part of the world. This way no one has to wait endlessly hoping for an answer on FIRST forums. The second, FIRST Help Hubs, connects teams with the facilities that they need, such as machine shops, workshop space, practice fields, and more. FIRST Help Hubs isn't exclusively about in-person help; its primary goal is connecting teams with the facilities and resources that they need most during build season. The third resource, FIRST Tag Team, connects experienced veteran teams and mentors with help seeking teams throughout a season, or to get through a difficult process. Tag Team guidance ranges from strategy and project management to programming and award submissions. We also provided the alliance with helpful resources such as the SOLIDWORKS tutorials as mentioned before.

In six years, we have fostered the growth of an FRC ecosystem by integrating FIRST in our school curriculum. We built a solid FTC base in the Netherlands by co-organizing one of the world's most expansive FTC regionals and inspiring thousands continent wide. We are uniting all European teams by improving their skills using our kick-off and scrimmage events and spread our knowledge and passion worldwide as an alliance partner to the Compass Alliance. Through these efforts, our dream of hosting the first European FRC regional is closer than ever. FIRST judges at Championships, recognizing our strengths, inspired us to shine brighter, build harder, and continue to paint FIRST masterpieces across Europe when they shared these words:

"This team's spirit is as brilliant as the sun's bursting rays. Their enthusiasm for spreading FIRST transcends cultures, geography and builds a foundation for future generations. Their master's paintings are known throughout the world and this team is making FIRST known throughout their continent." - Team Spirit Award ceremony FRC World Championships 2015