Chairman's Award - Team 503

Print Close

2019 - Team 503

Team Number

503

Team Name, Corporate/University Sponsors

Magna Seating Systems (Primary Sponsor)/Denso/The Nissan Foundation/Tata Technologies/Ford Motor Company/Novi Community School District/NGK Sparkplugs/ASCO Numatics Inc./Autodesk/Michigan Department of Education&Novi High School

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

On 503, our team members discover how their interests become a career path and gain confidence to achieve their goals. They develop technical skills, leadership, communication and teamwork skills that transfer beyond robotics. FIRST opens doors to scholarships, internships and a career network. Our alumni volunteer at events and mentor teams during college and beyond. FIRST inspires our team members to share their passion for STEM, opening doors for others in underserved communities.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

We partner with the library, elementary schools, Girl Scouts, and summer lunch program to offer STEM activities for 600+ students. We've shared our robot and excitement for FIRST at 71 community events in 3 years. We influence STEM curriculum in our school. To give every student the opportunity to participate in FIRST, we implemented registration through the district. Our team partners with the athletic department, participating in football games, pep rallies and parades.

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

We use creative alliances to spread the message of FIRST. In May 2018, we joined Detroit Tigers Math Day to present real world math uses to 2600 students. We work with 2 separate Detroit community centers to form a sustainable pipeline of FIRST programs for underserved youth. We partnered with the Detroit Police Athletic League to scale that model to 32 Detroit schools. Teaming up with our library enabled us to expand our prosthetic hand project from 1 elementary school to all 5 district wide.

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

We were the first to implement the full progression of programs. Our townhall meeting, team training and embedded mentor model has been replicated across the state. We taught 2 other FRC teams how to run a competition by sharing our experience and key volunteers. This season we are releasing our paperless scouting app so all teams have access to strategy data on any device. We've created the Motor City Alliance inspiring a network of 9 FRC teams to support the Detroit progression of programs.

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

We started teams 3547 and 4840 in southeast Michigan. We also shared our mentors and buildspace with 6 local teams to ensure that they had a strong foundation in their early years. In 2014, we provided the FIRST expertise needed to start the robotics program at the Robotics & Engineering Center of Detroit (RECD) and mentored the first 2 teams. With our help over the next 3 years, the RECD is now a self-sustaining, successful robotics program housing 10 FRC, 3 FTC and 2 FLL teams.

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

We've started 99 teams in 3 years. Our team realizes that having a strong progression of programs results in more experienced students and a stronger FRC team. We introduce new families to FIRST via our townhall-style meeting, resulting in 53 new or repopulated teams in Novi the last 3 years. To strengthen FIRST in Detroit, we started 2 FTC and 3 FLL teams at the SAY Detroit Play Center. For a larger impact, in partnership with Detroit PAL, we started 21 FLL and 20 FTC teams in Detroit schools.

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

In the past 3 years, we have held 38 workshops, camps and training events. From new coach meetings and rookie workshops to advanced FTC programming workshops we've committed 2,465 hours to help teams succeed. We run an FTC kickoff, an FTC Girls camp and a Detroit FTC summer camp. For our Detroit PAL teams, we held workshops every 3 weeks to help them prepare for competition. We designed The Orange Alliance, a FIRST-sanctioned website that provides access to team stats, results, and history.

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)

Embedded mentors have spent over 425 hours this season with our Novi FTC/FLL teams. In addition, twice a week, we travel 30 miles to mentor at SAY Detroit Play Center. We teach our Novi FTC/FLL teams the importance of mentoring by including them when we mentor and run workshops for FIRST teams in Detroit. In May of 2017, we traveled to China to mentor a pre-rookie FRC team. For 2019, we are mentoring rookie teams 7598 and 7912, providing them with support to ensure a strong season.

Describe your Corporate/University Sponsors

Our founding sponsor, Magna, has supported us for 18 years, providing facilities, mentors, printing, and the majority of our funding. Recently, we've reached out to our community, diversifying our sponsor base to include 13 automotive and technology companies. They provide monetary and in-kind donations such as equipment, software, and internship opportunities. Novi Schools provides meeting, machining, assembly and practice space to support the growth of FIRST in our community.

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

We engage our sponsors in a collaborative partnership through regular visits and monthly newsletter updates. We gain mentors for our team and valuable real-world professional feedback from an industry standpoint. Our partnership with Lear allows us to source sponsors for FRC teams across the globe. As their flagship team, Magna invited us to star in a promotional video highlighting their support for FIRST. Recently, our team conducted product testing for Magna.

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

FIRST is a worldwide robotics program where students do more than build robots. It helps students discover their passions, achieve their goals, and inspire others. It brings together students of all backgrounds and challenges them to work towards a common goal. It gives students a place to flex their creative muscles. It motivates us to give back to something bigger than ourselves. FIRST is inspiring the future generation of leaders who will change the world.

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

Our priority is growing FIRST communities by building successful, sustainable programs. Taking what we learned by implementing the progression of FIRST programs in our community, we applied our efforts where it could make the most impact. In 2016, we won the Positive component of the MI Governor's Relentless Positive Action Award for our impact on the growth of FIRST in the state, particularly Detroit. In 2018, we won the Action component for our efforts to start 40 new FIRST teams in the city.

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

Anne George

Essay

OUR MISSION
Frog Force stays a leap ahead by engineering a world-class team, spreading STEM far and deep, growing FIRST communities, and pioneering new programs and initiatives.

ENGINEERING A WORLD CLASS TEAM
Building a competitive team begins in the off season. Our team consists of 12 student-led subgroups, allowing students to develop time management, problem solving and leadership skills. Students create 6-week training programs to teach the basics before the rigorous build season begins. Team members gain self-confidence while learning transferable skills such as CAD, programming, and budgeting. Once the game is announced each year, our team breaks into small groups to follow a design process based on Quality Function Deployment. This process leads to a strategic prioritization for our robot build, backed by detailed technical documentation.

Our sponsor relationships go both ways. Sponsors provide funding, mentorship, fabrication and industry experience. Working alongside them allows us to learn about manufacturing processes, present our designs and benefit from their advice. This year, we helped one of our sponsors with product testing, and we hold an annual open house as well as sponsor recognition night at the school board. These ongoing partnerships lead to internships, scholarships and careers.

SPREADING STEM IN OUR COMMUNITY
We are more than just a robotics team. We give back to the community which supports us through events like Relay for Life, Rouge River Cleanup, Adopt-A-Family and more.

To inspire interest in STEM and transform culture in our community, we share our robot at 20+ community events annually. Our T-shirt shooting robot excites the crowds at school football games and city parades. This year, we were invited to Detroit Tigers Math Day to share how our team uses calculus in programming and statistics in scouting. Also new this year, we introduced STEM Days at our local summer lunch program, Feed the Need. We planned each session and led activities for 100 students to explore STEM concepts. We then scaled this project to create an elementary STEM Night for 150+ attendees. All of our outreach includes a FIRST component to give attendees the next step on the path towards being on a team.

SPREADING STEM IN OUR SCHOOL DISTRICT
New this year, we implemented FIRST registration through the school district. FIRST is advertised online, in community ed catalogs and over the district listserv, reaching every family. We've started teams in every school in our district at every level by introducing families to FIRST, registering teams, ordering equipment and applying for grants. In our schools there are 34 FIRST teams engaging 250+ students.

We pushed for the first programming classes in our high school. As a direct result, there are now 13 classes with waiting lists due to their popularity. Our school district was inspired by how our team works and wanted to pattern this experience as part of the curriculum. This prompted a new course, The Incubator, where students can design, build, and market their product ideas for high school credit.

SPREADING STEM TO GIRLS
We realize the importance of encouraging women in STEM. Our student leadership has grown to 59% female. In 2017 we started an all-girl STEM workshop to promote FIRST to young girls. We designed a 5-day curriculum to teach them how to code, build, and design an FTC robot for a game we created. When half the girls joined an FTC team in the fall, we knew this camp--by girls, for girls--was a success.

In 2016, a 503 member created a Girls Who Code chapter in our school which has grown to 65+ members. New this year, we continued to close the gender gap in STEM by developing a workshop for three levels of Girl Scouts. 35 scouts participated in activities that taught them about designing, building and coding.

GROWING FIRST IN OUR COMMUNITY
Sparking an interest in STEM isn't enough. Growing and sustaining FIRST teams is our priority. Our Novi Robotics townhall meeting draws 175 families annually. We support our teams with embedded student mentors, coach training, and workshops at all levels. Due to our efforts, we've created a sustainable pipeline in Novi where students progress through the FIRST programs and mentor younger teams along the way. We then taught other FIRST teams how to implement this program in their communities, inviting them to our townhall meeting and sharing our resources.

New this year, we created a 6 week advanced Java programming workshop for our FTC teams to take them to the next level.

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GROWING FIRST COMMUNITIES IN DETROIT
Taking what we learned in our community, we've challenged ourselves to build a sustainable FIRST program where it can make the most impact. Towards this goal, we've started 3 different Detroit programs.

In 2014, we partnered with a Hispanic community center to develop the Robotics & Engineering Center of Detroit (RECD). We provided a road map for the project, designed the shop, acquired equipment, trained mentors and helped the teams recruit students. The first season we spent 30-40 hours per week mentoring onsite. Since then, we've stayed a vested partner, running workshops, co-hosting events, and adding FIRST teams at all levels. As a direct result of our partnership, RECD has grown to 10 FRC, 3 FTC and 2 FLL teams. FIRST has had a lasting impact on this community, providing students with scholarships to pursue college degrees, and internships that lead to permanent jobs. RECD alum have returned to the city to mentor and grow the program.

Seeing the success at RECD, we continued this community center model at the SAY Detroit Play Center. Located in one of the most dangerous parts of Detroit, the center is an afterschool safe haven for students to receive academic support and participate in sports. In 2016, we introduced FIRST robotics to the center as a 'Sport for the Mind.' We sourced funding through the FIRST STEM Equity Grant, helping the center receive $100K. We transformed a workout room into a dedicated FIRST robotics space. For the past 3 years, we've been onsite 2x a week, providing student mentors for the teams. We run workshops, coach training, FTC Kickoff, and FLL competitions at the center. We run an annual week-long FTC camp, building robots and inspiring future team members.

In 2017, we approached the Detroit Police Athletic League to add FIRST to their program. They already operate sports teams at many schools and loved the idea of adding FIRST as another way for Detroit youth and officers to positively interact. This partnership has allowed us to scale the community center model to 32 Detroit schools. We've started 21 FLL and 20 FTC teams by introducing schools to FIRST, helping with registration and arranging funding. We've held coach training, constructed playing fields, hosted kickoff, and run local competitions. We were onsite every 3 weeks during their season, leading workshops and providing guidance. Connecting with inner city youth in Detroit has given our work a brand new purpose. We're proud to be an integral part of growing FIRST in the city.

New this year, we created the Motor City Alliance, inviting 8 other FRC teams to join us in our mission of growing and supporting FIRST programs in Detroit.

GROWING FIRST COMMUNITIES IN MICHIGAN
We are proud to play a key role in making FIRST in MI one of the largest programs in the world. Our students plan and run 6 FIRST events every year. At the Detroit FTC Kickoff, we led workshops on build, programming, CAD and strategy. This fall our annual FTC Competition, Frog Force Frenzy, hosted 36 FTC and 13 FLL Jr. teams while our Detroit FTC Qualifier simultaneously hosted 32 teams, all on 1 frog-tastic day! Our students filled key roles like game announcer, referee, and scorekeeper. In the spring, we run a Detroit FLL qualifier for teams that need more time to complete the program.

GROWING FIRST COMMUNITIES GLOBALLY
Spreading FIRST may start in our community, but it definitely doesn't end there. We mentored a Chinese pre-rookie FRC team through the 2017 season, sharing our resources and best practices. We flew to China to mentor and work alongside them for 12 days, building a robot that competed in, and won, the FIRST China International Competition. We were also invited by FIRST Australia to the Mentors Without Borders conference to share our knowledge of team sustainability, awards, and game analysis.

PIONEERING NEW PROGRAMS AND INITIATIVES
A Lear Corp. VP was inspired by our team to connect Lear with FIRST teams across the globe. We acted as the liaison between Lear and these teams, finding local Lear facilities, then crafting letters of introduction--in 4 languages! We've helped 31 teams receive $93,000 from Lear.

We are a founding member of The Compass Alliance (TCA), a group of 10 world-class FRC teams who came together with the goal to improve team sustainability. TCA's website is a one-stop-shop for all things FIRST with tutorials, curricula, and more. We lead the pairing of newer teams with veteran mentor teams who provide continual support. New this year, TCA has become an official partner with FIRST, creating original content for them.

Our partnership with e-NABLE, a non-profit that gives prosthetic hands to kids all over the world, started with an alliance to construct 3D-printed hands. Now we are an e-NABLE chapter which allows us to make custom prosthetics fitted to a specific child. This past season, we partnered with our library to run build sessions at all 5 of our elementary schools, showing 400 4th graders the positive impact they can have on others through engineering.

OUR IMPACT
We inspire youth to be science and technology leaders by building world-class robots. We spread FIRST far--from Detroit to Shanghai--and deep--building successful sustainable programs. We grow FIRST communities where they have the most impact. We pioneer new programs that reach across the world. Our mission is FIRST's mission.