

Chairman's Award - Team 2500

Team Number

2500

Team Name, Corporate/University Sponsors

Coloplast/Boston Scientific/General Mills/The Bakken Museum/EJ Ajax & Sons Inc./Medtronic/NASA/St. Thomas University/Loram/Carlson Advisors LLP/Install This Sign and Awning Co./Girl Scouts of Minnesota and Wisconsin River Valleys/Minneapolis Public Schools Career and Technical Education/Patrick Henry High School Booster Club/Shingle Creek Neighborhood Association/Dunwoody College of Technology/GOFIRST/Patrick Henry High School Foundation&Henry Senior High

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2016/2017 year and the preceding two to five years

-Students develop skills in communication, building, programming, problem solving, public speaking & leadership. - Involvement in FIRST provided 24 internships in five years, giving students real-life experience of working in industry. - Nearly 100% of Herobotics alumni have gone on to pursue STEM careers. -Granted college scholarships for students, highlighting college & career pathways for students, many being the first in their family to attend college.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2016/2017 year and the preceding two to five years

-Provided 9,000+ hours of community outreach in five years. (up 12% from 2016 season). -Engaged in 160+ outreach events to community & region. -Promoted FIRST to an audience greater than 100,000 over five years. -Increased CP program enrollment by 600% since first offered. -Provided new FTC experience to 50 urban students in our community. - Established collaboration between 14 urban schools through MURA's 17 FIRST teams. -Connected school with notable politicians as a result of STEM programs.

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

-Founded robotics hub: Minneapolis Urban Robotics Alliance (MURA), to strengthen team sustainability & urban engagement in FIRST. -Secured FIRST STEM Equity Community Innovation Grant to expand influence of FIRST programs within our urban community. -Engaged in numerous non-STEM events to expand the reach of the FIRST message to new audiences. -Assisted in the creation & operation of an annual community STEAM Expo. -Promoted FIRST to visiting Swedish Educators Institute members.

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

-Presented workshops on diversity & inclusion to support initiatives in teams across Minnesota. -Hosted numerous FTC & FRC teams in our shop over 3 years to support urban success. -Promoted the value of Gracious Professionalism everywhere. -Focused extensively on promoting FIRST in outreach to the community. -Always willing to support others in FIRST. -A leader in the sustainability of urban FIRST teams in Minneapolis. -2016 Woodie Flowers Finalist. -2014 & 2016 Dean's List Finalists.

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

We view urban sustainability as a core feature of our team. Minneapolis already has FIRST Robotics Competition teams in every high school, & as a result, we've put our efforts toward promoting the sustainability of teams through MURA. We have helped teams overcome problems with urban sustainability by giving them the tools & support to address those challenges. We do have intentions to expand MURA by creating & mentoring new FRC teams in the future.

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

-Started FLL team at local community center to engage urban youth in FIRST programs. -Started five FTC teams in local middle schools through receiving the FIRST STEM Equity Community Innovation Grant, totalling \$27,700. -Applied for 2017 continuation grant to expand MURA FTC program to include four more teams & ensure the sustainability of the five created this year. -Encouraged urban parents & faculty at MPS FLL tournament & STEM Expo to form FIRST teams in their own schools & neighborhoods.

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

-Served as judges & presented about FTC & FRC at FLL tournament to encourage youth to stay involved. -Generated *FIRST* pathway from FLL to FRC in Minneapolis as a result of *FIRST* STEM Equity Community Innovation Grant. - Increased comfort level for middle-school youth to participate in *FIRST* beyond FLL through formation of new FTC teams. -Conducted presentations to FRC teams on awards, marketing, diversity & inclusion, & mentoring. -Expanded MURA to include FTC teams & generate feeder programs.

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)

-Hosted Saturday FTC 101 Workshops for new FTC teams this year. -Mentored FLL & FTC teams through their first season to support success -- FLL team won Team Spirit Award & two FTC teams won Judge's Awards. -Founded MURA, including 11 FRC Teams: 2129, 2480, 2500, 2513, 2549, 3630, 4626, 5278, 5340, 5637, & 6176, & 6 FTC Teams: 9890, 11611, 11615, 11677, 11724, & 12183, to mentor less experienced teams. -Mentored MURA members 4626 & 5637 on robot design, award submissions, & event preparation.

Describe your Corporate/University Sponsors

-Corporate Partners: Coloplast, Boston Scientific, General Mills, Medtronic, NASA, LORAM, E.J. Ajax and Sons, Carlson Advisors LLP. -Community Partners: The Bakken Museum, GOFIRST, Install This, Girl Scouts of Minnesota and Wisconsin River Valleys, Shingle Creek Neighborhood Association, Patrick Henry High School Foundation, Patrick Henry High School Booster Club. -Education Partners: Minneapolis Public Schools, St. Thomas University, Patrick Henry High School, Dunwoody College of Technology.

Describe the strength of your partnership with your sponsors with special emphasis on the 2016/2017 year and the preceding two to five years

-Established durable & strong mutual partnerships with all of our sponsors. -Maintained connection with 10 business partners for at least eight years. -Added new partners to our *FIRST* family each year. -Collaborated with partners on strategic STEM advocacy & outreach events. -Expanded strength of partnerships with on-site company visits. -Offered 24 internships to team members through partner support. -Formed Engineering Advisory Board with 8 partners to advance school's engineering programs.

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

FIRST is a life-changing, worldwide robotics competition for K-12 youth; it transforms culture & expands innovation in STEM. However, it's more than just the robots; through partnerships with 3500+ sponsors, *FIRST* grants participants a solid blueprint for their future. *FIRST* benefits all students by creating scholarships, college opportunities, & careers in STEM. Together with more than 10,000 teams from around the globe, *FIRST* is "building the future" generation of innovators & leaders.

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

Herobotics has always sought to have an impact beyond our team, & contribute to our greater community. We seek to change STEM culture by supplying new *FIRST* opportunities to our community, encouraging the success of urban teams, & being of service to others year-round. We don't just serve within *FIRST*, we also support our community through food distributions, outreach events, & student-led charity fundraising campaigns. Our community influence has helped in "building the future" of STEM.

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

Jared Voight

Essay

FIRST Team 2500 Herobotics strives to change the face of science, technology, engineering, and math (STEM), by inspiring underrepresented youth to reach for new heights, discover their limitless potential, and pursue their dreams. We show that anyone, regardless of who they are, can follow their interests in STEM. All it takes is tenacity, passion, and a solid blueprint for their future. By breaking down barriers and giving urban youth the tools to succeed, we are elevating diversity and inclusion in *FIRST* and building the future generation of engineers, creators, and leaders.

After ten years of innovating and reaching for new heights, Herobotics has become more than a tenacious start-up; we have become leaders in urban robotics. By supporting *FIRST* to thrive in Minneapolis, we have strengthened

opportunities for underserved youth, and opened up STEM pathways for students who wouldn't otherwise have them. Recognizing the challenges that urban teams face with sustainability, we created the Minneapolis Urban Robotics Alliance (MURA), which brought together 17 FIRST Robotics Competition (FRC) and FIRST Tech Challenge (FTC) teams, including more than 200 urban participants sharing expertise and promoting success in FIRST. We've opened up our workspace to all of these teams and have mentored them on robot design, award submissions, and event preparation. We support teams in MURA to ensure they remain in FIRST, like 5637 and 4626, which were able to restart and become sustainable once our support system was in place. FIRST in Minneapolis has had a nearly 100% retention rate as a result of MURA, and all teams are better prepared for greater success in competition.

Herobotics has a history of championing diversity and inclusion. We remain one of the most diverse teams in Minnesota as a result of our unique team culture, recruitment efforts, and diversity initiatives. We construct a safe and inclusive team culture year after year to ensure everyone feels welcome and a part of the FIRST program. Our innovative recruitment efforts to culturally diverse groups have historically resulted in greater than 50% female representation as well as team members collectively speaking 13 languages. Building upon our diverse foundation, we turned to advocating for all teams across Minnesota to develop their own diversity and inclusion efforts. We do this by presenting on diversity and inclusion initiatives at numerous FIRST events. Our workshops have reached teams across the state, motivating them to help change the face of STEM in their own communities, and increase opportunities for all youth to get involved in FIRST. Our efforts have even caught the attention of FIRST President, Don Bossi: "Thanks again for all you do to create opportunity for kids from all backgrounds. That is very important work and greatly appreciated...We'd definitely like to share and highlight best practices in Diversity and Inclusion throughout our community and clearly you are doing some great work."

Expanding upon our MURA and diversity initiatives, we worked to pave the way for new FIRST opportunities reaching more urban youth. Building on the strength of our partnerships, we formed a coalition with the Shingle Creek Neighborhood Association and applied for the 2016 FIRST STEM Equity Community Innovation Grant. In a very competitive process, our efforts were acknowledged with the awarding of a grant totalling \$27,700. Despite Minneapolis having a large presence of FIRST LEGO League (FLL) and FRC teams, there was only one FTC team in the entire city. Our grant enabled us to start five new FTC teams in Minneapolis to reach underserved youth, increase urban engagement in FIRST, and construct a FIRST pathway from FLL through FRC. This effort has gifted 50 new students the opportunities and inspiration that FIRST provides, all of whom are planning on continuing in FIRST through high school. In 2017, we have applied for a continuation grant to start four more new teams in Minneapolis and support the sustainability of the existing five teams. Corbin Rice, one of the new FTC coaches said: "This was a fantastic first year at Northeast, and we have an excited team already thinking about next year, and who our new recruits will be."

Outreach runs in Herobotics' blood. We inspire urban K-8 youth to cultivate their interests in science and technology and pursue their dreams. Over the last five years, Herobotics has engaged in more than 160 year-round outreach events ranging from STEM fairs to street fairs, generating more than 9,000 hours of community service. As a result of these efforts, we've promoted FIRST to an audience of more than 100,000 people and increased the engagement in FIRST programs within the city of Minneapolis.

Our impact annually reaches diverse groups, especially young women, through a wide range of events, including a Girl Scouts 3-Day summer LEGO robotics camp at St. Catherine University. Since 2009, we have mentored over 600 Girl Scouts at the event in robot construction and programming, and inspired them to envision a future in STEM. Each girl left the event with a wide smile on their face and motivation to get involved in FIRST.

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After a decade of promoting FIRST through outreach events, we see the impact that we've had on students who had seen us as elementary and middle schoolers. One such event is the Minneapolis Public Schools (MPS) FLL Tournament, which attracts more than 2,000 youth and adults annually. Yanyua, a freshman team member, recalls the influence our team had on her continuation in FIRST: "I saw Herobotics at the MPS FLL tournament. Their robot was very cool and complex. I was very nervous about joining Herobotics, but my friend recruited me to their new FTC program at the school. FTC helped me get comfortable working with bigger robots. I learned that if I could do FTC, I can do FRC." The impact of Herobotics and FIRST has reached deep within Minneapolis and the metro area, further strengthening our vision to expand the continuity of FIRST programs citywide.

FIRST culture permeates many aspects of our school. Despite 95% of our students being eligible for free and reduced lunch, Herobotics has drawn new students to our school and strengthened our STEM programs. We've helped integrate a triad of complementary programs that allow students to apply their learning outside the classroom. Students apply teamwork, design, and problem solving skills that are central to FIRST in their work in the Project Lead the Way program. Herobotics was also a catalyst for our school to be one of 20 in the world to pilot the International Baccalaureate Career-Related Programme (CP), which combines rigorous, global-minded coursework with hands-on

STEM experiences. As a result of Herobotics recruitment efforts, we have been able to increase enrollment 600% (from 5 to 30 students) since CP was first offered. These programs integrate well with FIRST, as students continue to engage in technical courses, and gain intercultural understanding and ethical discernment, both skills that greater prepare them for their future. This integrated design of our programs has attracted several notable individuals to our school, including US Congressman Keith Ellison, MN Senator Al Franken, and CP Senior Curriculum Manager Dominic Rubeau.

Herobotics builds upon the old proverb of "each one teach one". It starts with our adult mentors, and their love of FIRST: "It took me ten seconds to realize how powerful and amazing the FIRST program is for these students. I've been involved ever since, and I'm still in 110%." said long time mentor Julie Voight. Alumni mentors continue to commit their time and energy to the team, passing on the knowledge they gained to team members: "The FIRST program is definitely life changing, and I'm happy to share my knowledge with newer members." said Noah Wrolson, 2015 alumnus. Team leaders create an ongoing culture where each person teaches newer members what they know. We apply this same adage to support other teams, having our team members mentor other FTC and FRC teams in Minneapolis. Through solid mentorship, we build the sustainability and strength of FIRST programs beyond our team.

Through the forging of durable, symbiotic relationships with our sponsor organizations and businesses, we build lasting partnerships that strengthen STEM initiatives to underserved youth. We have built strong and enduring relationships with our original partners, and connected with new partners each and every year. As a result of these strong relationships, our partners have connected us with many new groups, including international educators, manufacturing teams, and corporate CEOs, further inspiring them to get involved in the FIRST program.

With the support of our partners, the FIRST program has connected our urban youth to life-changing opportunities. Team members have received 24 internships from corporations such as Coloplast, Boston Scientific, and EJ Ajax and Sons. Through these internships with our partners, students have gained real life experiences of working in the STEM industry. FIRST has inspired our students to be able to see their future in science and technology through numerous scholarships and academic opportunities. As a result, nearly 100% of team alumni have gone on to pursue tech or business-related careers including bioscience, computer programming, and mechanical engineering.

Herobotics is invested in building the future. Through collaboration and mutual efforts across diverse boundaries, we further strengthen our community, generate the workforce of tomorrow, and expand the reach of FIRST in our city and beyond. We are changing the face of STEM, elevating diversity and inclusion in FIRST, and building the future generation of leaders. Herobotics dedicates ourselves to these values, because we believe that "Together we will build a new heroic future."