

Chairman's Award - Team 2062

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2019 - Team 2062

Team Number

2062

Team Name, Corporate/University Sponsors

Rockwell Automation/PowerMation/GE Healthcare/School District of Waukesha/Accenture/Carroll University/Fastenal/Generac/Toshiba/Urban Manufacturing/Wisconsin DPI/SCORE&Waukesha Engineering Preparatory Academy&West High&South High&North High&Waukesha Academy of Health Professions

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

CORE builds more than robots; CORE builds leaders. Team member Avery says, "Through FIRST I've grown to be a stronger leader, teammate, and person. FIRST is also what inspired me to pursue a career as an engineer and taught me to never let doubt shape my future." Like Avery, over 90% of our team felt CORE helped them improve their communication, time management, problem solving, programming, mechanical, business, and CAD skills. More than 85% of CORE members plan to pursue a STEM related career.

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

By demonstrating our robot and our excitement, CORE raises community awareness and interest of STEM at over 100 events reaching out at schools, businesses, and public events. CORE impacts over 19,000 people as we inspire all ages including the next generation of students at events such as STEM for Girls, Hillcrest Math Night, and WI State Fair. By hosting VEX regionals and FLL regionals and sectionals, CORE engages students with the excitement of science and technology.

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

CORE contacted 100+ businesses in the past five years, spreading awareness of FIRST's message and our team. Nearly 30% of these chose to sponsor us. With this increase in funds, CORE is investing in switching district schools from VEX to FLL. Additionally, we combine the fun of FIRST with events like Serve Our City, Waukesha County Fair, and the WI State Fair where our robot demonstrations actively engage the audience in ways such as driving, operating, or playing catch with the robot.

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

CORE makes a year-round commitment to spreading the FIRST message. In the last five years, CORE hosted and ran FLL events including 2 regionals, 3 sectionals and 3 scrimmages, impacting over 500 FLL teams and totalling over 7,700 impact hours just to FLL. CORE embodies GP™ and Coopertition™ on and off the field, aiding other FRC teams with mechanical, programming, and other issues. We also share our award-winning safety program by doing over 2800 safety demos at tournaments.

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

In 2016, CORE helped CyberSaders 5967 during their rookie year. We provided controls training and shared our safety information with them during the pre-season. Once the season began, we shared technical advice, a practice field and mentor time with them. We also shared equipment and helped them troubleshoot problems. We were excited that we were able to help such an outstanding team win the Rookie All Star Award.

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

Five years ago, CORE sent 2 FLL kits, an expansion pack, and a field set to a school in Costa Rica to help start the first FLL-based program in the country. Currently, Costa Rica has 40 FLL teams and 60 Jr. FLL teams and asked CORE to help them add FTC next year. At outreach demonstrations, we provide information about how to start FIRST teams. Through grant applications and sponsorship, CORE has funded 8 FLL teams, some in high-need schools. CORE started 7 FLL teams in the local area.

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

CORE creates a positive tournament experience for over 530 FLL teams moving through the FIRST program. This fall, CORE dedicated 2k+ impact hours running, hosting and assisting at 9 FLL tournaments. In our third year running the sectional, the CORE family provided nearly 90% of all volunteer hours needed. As the Wisconsin FLL Affiliate Partner Lisa Bartig has said, "Without CORE, Wisconsin FLL would not be as successful, impactful and be able to grow the number of teams as consistently."

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)

3 years ago, CORE created an FLL scrimmage to assist rookie teams. Through promotion in Lisa Bartig's weekly email, the number of participating teams increased from 4 to 16. This past summer, a nearby school district requested CORE's help to lead an FLL programming workshop. We prepared lessons, and trained students to teach. Unfortunately, administrative changes prevented the workshops from happening. In 2018, CORE started 3 FLL teams and mentored them in programming, presentation, and more.

Describe your Corporate/University Sponsors

CORE is grateful to this year's 38 partnering sponsors. This year, 13 of CORE's sponsors donated over \$1,000—2 of whom are new sponsors. Of our total 38 sponsors, 12 sponsors are first-time contributors who were eager to learn about FIRST and spread its message. We have a diverse base of sponsors; the school district, two universities, small businesses, and large corporations. The largest long-term sponsors include Rockwell Automation, Power/mation, GE Healthcare, and Toshiba.

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

CORE maintains our partnerships by sending out weekly emails and inviting sponsors to attend meetings, tournaments, and an end-of-year banquet where they receive a personalized banquet. This year CORE has 12 new and 26 returning sponsors. CORE has eleven students interning and seven mentors working for sponsors. CORE has attended eight plant tours and demonstrated our robot and promoted FIRST at sponsors' events, like Rockwell's Engineering Week, GE Girls, and MSOE Cub Scout STEM Fair.

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

FIRST is an international organization using varying levels of robotics to inspire students (from ages five to eighteen) in STEM, creativity, teamwork, and leadership. These experiences prepare students for their futures as they grow in their soft skills such as problem solving, communication, and time management. The highest level, FIRST Robotics Competition, runs like a small business-funding, designing, and building a robot while reaching out to sponsors and the community.

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

One of CORE's main focuses is promoting FIRST through community outreaches and quality FLL events. Lisa Bartig shared, "The 'CORE family' does demos, runs scrimmages, tournaments, on the FLL Planning committee and volunteers-without these I don't think FLL would continue to grow every year." CORE prides itself on its world recognized safety program-having won 5 safety awards and demonstrated 2800 safety demos to other teams in the past 5 years.

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

Benjamin Garbedian

Essay

On September 12, 1962, President John F. Kennedy stood in front of nearly 40,000 people in Houston, Texas to declare that by decade's end, the US would put a man on the moon. When he announced this, there was little scientific need to attempt this feat, and the vast majority of American scientists lacked skills that would help with this nearly impossible dream. Nevertheless, thousands of engineers, scientists, and physicists got to work. Their hard work and countless failures paid off. Almost seven years after they received their mission, on July 20, 1969, around the world, millions watched as Neil Armstrong became the first human to set foot on the moon's surface.

A FRC season on CORE is similar to the mission JFK laid out in 1962. Each fall, about a dozen rookies join our team. Some are new to FIRST, most have few technical skills, and all are eager to learn. We train them in STEM skills such as CAD, programming, and mechanical and electrical systems. By the end of each season, they have built a working robot-something they might not have fathomed a year earlier.

Our mission states, "CORE 2062 strives to be a place where the passions of our students become skills, concepts transform into physical products, and zeal creates a positive community impact." We create a fun, welcoming atmosphere where students not only build robots, but also build valuable leadership skills and relationships with team members, mentors, sponsors, and the community. According to our annual student and alumni surveys, CORE has greatly increased not only our students' technical skills, but life skills as well. About 66% note an improvement in their communication and time-management skills, while 84% report improvements in their problem-solving skills.

CORE BUILDS LEADERS

Our team's student-led structure trains students to become science and technology leaders. CORE alumnus Erik said, "CORE's model of student leadership forced me to develop my communication and leadership skills in a way that only this team could. To this day, I use the leadership skills I learned through CORE at work with Rockwell Automation, and as lead mentor for FRC Team 2830."

The four elected team leaders-President, Engineering Project Manager, Communications Director, and Safety Captain-run the team. Each subteam has a student leader directing their decisions, tasks, and training. All CORE rookies receive subteam training designed by their subteam lead who works to improve upon previous years' rookie training. For example, five years ago in the Mechanical subteam, training was often done on an "as needed" basis, with no strong guide for what or when rookies would learn. As a solution, student leaders developed and implemented broader training, with solid schedules for when rookies would learn each skill. Student leaders work with rookies and test them to ensure proficiency. By evolving the methods, CORE student leaders make subteam training smoother and more comprehensive.

CORE BUILDS A MODEL FOR SAFETY PROGRAMS

Since the team was formed in 2007, we have won 15 safety awards. In the pre-season, all students-regardless of their subteam-are thoroughly trained on every machine in our metals and wood shops. They also receive general safety training and are required to pass all ten safety tests. During the build season, weekly safety briefs are held about various topics-such as the five S's of Safety and LOTO. Our team's dedicated Safety Captain and designated safety representatives from each subteam spread our safety principles throughout the team.

In the past five years, CORE has given over 2,800 safety demonstrations to other teams at competitions. Rookie FRC teams are appreciative of the safety model we provide. At FRC Regionals, we are often affectionately called "the earplug team," since we actively distribute earplugs when our decibel meter readings show unsafe sound levels. An eyewash station, first aid kits, and injury report forms are easily available near the front of our pit. Our "no-drop zones" permit safety equipment accessibility.

CORE BUILDS COOPERTITION

Understanding that FLL is an exciting introduction to FIRST, our team works diligently to provide FLL teams with a positive tournament experience and inspire a further passion for learning and STEM. Lisa Bartig, the WI FIRST LEGO League Affiliate Partner, said, "Without CORE, WI FLL would not be as successful, impactful and be able to grow the number of teams as consistently. CORE is an integral part of WI FLL with hosting FLL tournaments, being super volunteers, and planning the future of FLL in Wisconsin." CORE hosted and ran two Regionals and three Sectionals in the last five years. This season alone, the CORE family (comprised of current and past team members and their families) accumulated over 2,500 impact hours at FLL events at nine different tournaments, with all available students volunteering. In the last five years, we have dedicated over 14,500 impact hours to FLL, affecting over 500 teams. In the past three years, the FLL Sectionals we hosted and ran impacted 128 teams and over 3000 people. For 2018's 32 team Sectional, CORE provided nearly 90% of the total volunteer hours needed. In the words of Lisa Bartig, "CORE hosts one of the best FLL tournaments every year."

In 2016, we hosted our inaugural FLL scrimmage, which was designed to prepare rookie FLL teams for the competition environment. The scrimmages are hosted and run entirely by the CORE family. With the help of Lisa Bartig's weekly emails to inform teams, our scrimmage participation quadrupled the past three years, with 16 teams in attendance this year.

CORE BUILDS YOUTH ROBOTICS TEAMS

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CORE invests in youth robotics in the School District of Waukesha (SDW) to grow involvement. Over 88% of our team members participated in robotics programs prior to joining CORE. Since our beginning in 2007, we used the VEX program to introduce robotics to students at six schools. We hosted and ran VEX League Nights and Regional tournaments.

Through grant applications and sponsorship, CORE funded eight FLL teams in the last five years, some in high-need schools. In the 2014 season, CORE sent two FLL kits, an expansion pack, and a field set to a school in Costa Rica to help start the first FLL-based program in the territory and establish a FIRST presence there.

This year, we began transitioning SDW from VEX to FLL. In fall 2018, CORE started and mentored three new FLL teams at a local elementary school. Our future goal is to find and train new leaders in each school and to increase our funds to help with the retooling.

CORE BUILDS STEM AWARENESS

Along with our involvement in these robotics programs, CORE is heavily involved in SDW events. CORE displays our robot at all three high school open houses, telling all attendees about our team. At the SDW Open Enrollment Day, we extend the message of FIRST to about 800 people of all ages as we drive our robot and inform others about FLL and FRC. Through our presence promoting FIRST at school events such as 8th grade interest nights, pep rallies, Hillcrest Math Night, and STEM For Girls, CORE impacts over 2,000 students, staff, and members of our community.

CORE's impact extends beyond SDW as we engage in year-round promotion of FIRST at businesses, schools, and local events. This year, we contacted 49 new businesses, introducing many of them to FIRST. We promote FIRST at sponsor events, such as GE Girls and Rockwell Automation's UPAF Fundraiser, and at community events such as the Waukesha County Fair, State Fair, Summerfest, and Serve Our City.

CORE BUILDS STUDENTS OF EXCELLENCE

Providing a culture of like-minded students, CORE encourages learning and academic success among our members. 97% take advanced math classes, over 86% take advanced science classes, and 80% take engineering or PLTW classes. CORE members excel in areas beyond STEM, taking an average of 7.7 AP courses. All of our students will continue on to post-secondary education, with 83% of the team planning to pursue a STEM-related career; 8% changed their goal toward STEM due to their FIRST experience.

Before joining CORE, current senior Avery was not planning to go into the STEM field. But as a member of CORE's mechanical subteam, she discovered a passion for engineering while designing and building the robot. She now leads the mechanical/design subteam. Due to her experience on CORE, her career goal now is to be a industrial and systems engineer.

CORE alumna Haley also switched her career path due to her involvement with FIRST. Inspired by our student-driven atmosphere, she explored different areas of the team. She eventually served as team spokesperson, working with all subteams and running outreach events. She won the 2013 Dean's List Finalist at the Wisconsin Regional. Due to the passion and confidence that CORE inspired in her, Haley is now completing her aerospace engineering degree at MIT. When asked about CORE's impact on her, Haley responds, "I never would have gotten into MIT or built the skills necessary to secure a job at NASA JPL [without CORE]."

CORE BUILDS A FUTURE

CORE has many goals for future seasons. We are compiling subteam "Books of Knowledge" and continuing to improve subteam organization and rookie training. We want to grow our outreach to introduce FIRST at more public events in Waukesha, including at public library and city events. In our long-term goals, CORE is working to introduce FLL in all SDW elementary and middle schools. We are also working with SDW to introduce FIRST in summer school programming to inspire K-8 students. We are developing plans to respond to the Costa Rican FIRST program's request that CORE help them introduce FTC in their country.

Kennedy's mission inspired a nation; FIRST inspires the world. Both fuel a passion for STEM, and drive individuals to innovate new solutions. CORE, like JFK, chooses to do all these things not because they are easy, but because they are hard.