

Chairman's Award - Team 1619

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2018 - Team 1619

Team Number

1619

Team Name, Corporate/University Sponsors

Seagate Technology&The GEAR Alliance

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

-Students learn life skills such as leadership, teamwork, public speaking, & gracious professionalism -Students learn technical skills like machining, programming, and CAD from industry professionals -Students connect with like-minded peers across the school district -17 jobs/internships at 7 different companies from mentors -100% of 42 grads (last 5 years) went to college -93% of 42 grads (last 5 years) pursuing STEM degrees -Alumni have become *FIRST* mentors and started their own *FIRST* teams

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

We have logged 10724 volunteer hours in the last 4 years. We distribute food baskets through the Emergency Family Assistance Association, provide curricula for local schools, and provide CS Education week activities. In each of the last 2 years, we have offered 15 different week-long summer camps (1530 student-hours of instruction total). We provide unique summer camps not available in our area including computer aided design, competition math and a STEAM camp for girls.

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

-Ran 'Engineering Inspiration' tours for 120 middle school students (2016) and 150 students (2017) -Created & executed a *FIRST*-inspired computer programming competition to expand the opportunities to celebrate technical skills in 2014 & 2016. -Promote *FIRST* at events like Festival on Main, CS Ed week, and Maker Faires. -By providing *FIRST* activities to students from 9 different high schools and 5 different middle/elementary schools, we are increasing the awareness of *FIRST* throughout our region

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

Initiative: Student-led projects to share STEM with underrepresented populations Service: 30+ hours per student of supporting our community Mentoring: Building significant relationships with elementary and middle schoolers to teach robotics and model GP Inclusion: Students of different socioeconomic backgrounds work as a team Growth: Students grow in leadership positions on the team Share Knowledge: team members learn design and engineering processes & share our knowledge with other teams

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

We enthusiastically help teams that need assistance. Whatever is needed. We partnered with Team #1339 Angelbotics to hold an 'Elevate Your Game' Workshop where we shared our methods with 80 people from around CO, WY and SD. Additionally, we invite teams to come to our shop to make parts, to use our field, and to learn how to operate our machines. We demonstrate our enthusiasm and set a good example for the community so people will want to join FIRST.

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

UACR is committed to growing FIRST in our community. 2017: Started 5 FLL teams & expanded our FTC team 2016: Started 3 FLL teams & 1 FTC team 2015: Started 3 FLL teams We recruited more mentors to support these teams. We share our facility with our FLL and FTC teams so the younger students work alongside FRC students. Our FRC students mentor FLL students.

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

- At UACR we provide a complete path from FLL to FTC to FRC, providing an easy progression through the program. By hosting FLL, FTC and FRC teams in the same facility younger students can envision their future in FRC - Provided 493 volunteer hours at FLL tournaments (Qualifiers & States) - Our FRC students are role models for the FLL and FTC students - Provide assistance to rookie FLL teams in CO and out of state - Created "Project Line Cross" a Git repo, to help FRC teams with autonomous code

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)

- Mentored 18 FLL teams in last 3 years - Mentored and assisted FLL teams not only those that are a part of UACR but also those outside of UACR. - Ran Lego Mindstorm summer camps to provide skill for future FLL students - Taught FTC students computer-aided design and machining. - We are always open at FRC competitions to help out other teams with any issues they could be having, be it in software, hardware, or electrical.

Describe your Corporate/University Sponsors

Long-term relationships with diverse sponsors -Long-term sponsors (lifetime of team): Seagate Technology, St. Vrain Valley School District, Longmont Breakfast Optimists -Other sponsors: Ball Aerospace, Boeing, Colorado Water Jet, DYCO, Fifth West Investments, First RF, Google, Instant Imprints, JBJ Precision Industries, MCAD, NEON, Xilinx

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

UACR's support of our sponsors varies based on their needs. We provide marketing with logos on our robots and t-shirts. We provide some sponsors with robot demonstrations. For our school district, we promote STEM in the community at festivals and at school board meetings. We help other sponsors with their community events such as Seagate's Halloween Treat Street or Ball Corporations Bring-Your-Child-To-Work Day. We also provide technical support, such as parts testing, for other sponsors.

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

FIRST is the hardest fun you will ever have. It is six weeks of real world experience in the field of engineering, working together with mentors to create a robot. But it's more than those six weeks. FIRST is also learning technical skills, life skills, and supporting our community all year round. We go out into the community to share our enthusiasm for science and technology with others. It is coming together as a team to support our community, and building a robot while we're at it.

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

- Up-A-Creek Robotics is a year-round team - Our team members attend 9 different schools. - School comes first on UACR. Mentors offer tutoring to students, comments on college applications, recommendation letters. - Our team has had a continuous increase in number of female students on team over the last 4 years (with 33% of current team members female)

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

Chelsea Bandi

Essay

We are FRC Team #1619, Up-A-Creek Robotics (UACR), a student-run, year-round team with students from 8 different high schools including some that are homeschooled. In 2015, we were faced with issues limiting the time we could meet and the amount of space that we had to work in. At one point, we were practicing in a Sears store that was slated to be demolished and didn't have heat or access to internet. Our team started off just like a stream. One drop, insignificant, becoming something greater, gathering speed and allies, until it becomes a rushing river. We started off small, but wanted to grow to be something great. Because of this, we decided to form our own 501(c)(3) organization and find space that we could have access to on weekends and late into the night. We did that - a mentor donated space for us and we formed a non-profit. At this point, we had the opportunity to expand our programs and a need to generate revenue to make our team sustainable. We made a purposeful decision to engage in STEM outreach that would benefit our community and provide sustainability for our team. This new initiative included summer camps that were not previously available in our area, and FLL and FTC teams. In the last 4 years, we had a total of 10724 volunteer hours expanding FIRST in our community, helping those in need and improving STEM literacy.

Before 2015, we started and assisted FLL teams, but with our new team structure and facility we are now able to provide a pathway through FIRST and into the workplace. We have been able to expand the number of FLL teams from 3 teams in 2016 to 5 teams in 2017. Our FRC student mentors teach the 4th-8th graders robot design, programming and Gracious Professionalism. This provides an opportunity for us to share our experiences with the younger students. It also creates relationships between the FRC and FLL students so that the younger students are excited to join FRC in the future. Some FLL students go on to join our FTC team and others join FRC directly. All the Up-A-Creek robotics teams (FLL, FTC and FRC) share the same facility. One student, Ava, describes her experiences transitioning from FLL to FTC and then FRC: "I was introduced to FIRST by my middle school technology teacher. Every year I learned something new that I could apply to my life, from gracious professionalism, to being a team leader, programming and learning how to use drills. I am constantly learning in FIRST. I hope to continue on with FRC and continue to mentor FLL teams and teach future FIRST participants in summer camps. I hope to eventually go into a career where I can apply what I have learned." Our pathway through FIRST doesn't stop there. We have long-lasting relationships with our alumni and many return to help mentor FRC when they have breaks from college and some have returned to be year-long mentors for UACR and other teams after graduating from college. Our team network helps students get internships and jobs. Twenty-two students have gotten technical jobs at 10 different companies because of the UACR network. One student is a flight controller for a NASA spacecraft. Two of our mentors founded a company and more than half of their employees are FIRST alumni with many interns from UACR. One of our recent grads, Jackie, had this to say about the impact of FIRST on her career path: "My FIRST family at UACR is made of people that care about their students and mentors, and really want to see their students explore new opportunities and build irreplaceable skills for a head start in college and in life. If it wasn't for the team, I don't know if my current life path would be as exciting and successful as it is right now. I'm now a senior at Purdue University about to earn a degree in programming, with a great full time job as a Platform Engineer waiting for me after I graduate."

We have many ways to help other FIRST teams across all programs. Last year, we supported FLL by volunteering more than 490 hours at FLL tournaments. We supported FTC by hosting an FTC scrimmage last year before the super-regionals where all advancing teams from Colorado were invited to come and participate. We have many initiatives to support FRC teams. In 2017, we hosted a Chairman's Exchange at the Utah Regional to have teams learn from each other so we can all be our best. We share our practice field and machine shop. Last year, a number of teams (#1339, #2261, #1584) came over to try out their mechanisms with our high-fidelity field elements. In conjunction with FRC Team #1339, we hosted a workshop called 'Elevate Your Game' with ~80 people from FRC teams from CO, WY and SD where we shared our knowledge and processes with other teams. A student on FRC Team #4293 said: "I came away with a lot of valuable information. I found their tips on prototyping and scouting to be super helpful." We like to share the F.U.N., both figuratively with a mentor who makes regular appearances on FIRST Updates Now, and literally by hosting a picnic last fall with FRC teams across CO.

Up-A-Creek believes in the importance of helping our community, even outside of STEM. For the past 8 years, we have delivered food baskets to those in need in the Boulder County area. We have also helped the Inn Between, a local non-profit supporting the homeless, with events like a donor appreciation dinner. Our team also participated in Startup Longmont by hosting a panel. We also support events hosted by our sponsors, like Seagate's Treat Street where we hand out candy and Ball Aerospace's Bring-Your-Child-To-Work day where we demonstrate our robots. Our relationship with our sponsors is a two-way street - while they support to our team, we also support them.

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At Up-A-Creek robotics, we are committed to provide opportunities in our community to learn about STEM. This year we hosted an event for Computer Science Education Week, teaching both Scratch programming and Lego Robotics to kids as young as 4 years old! We have a number of curriculum initiatives. We have written robotics curricula that are being used across the school district to aid technology teachers. We have written a curriculum on engineering and computer science used at a local high school as well as written a curriculum based on Processing used in a local K-8 charter school (Flagstaff Academy). Our team strives to inspire young students in our community to engage in FIRST, so we have partnered with Flagstaff Academy since 2016 to bring more than 100 middle school students to the Colorado regional. These students study the FRC challenge in their class, then we give tours of the pits, and cheer alongside our FRC team at the event.

In the past, we had a Summer Learning Series at a mentor's house, but with our new building we have been able to greatly expand our outreach. The UACR facility is bustling with activity all summer long. During the day we have morning and afternoon summer camps. In the evenings, we have FRC meetings to build skills in the off season, drop-in nights open to the community, and FLL meetings to prepare for the upcoming season. In the summers of 2016 and 2017, we offered 15 summer camps with unique subjects that align with our goal to embrace STEM education and make STEM cool. The summer camps are designed and run by our FRC students and include computer-aided-design, Photoshop, competition math, robot fun, and STEAM camp for girls. The STEAM camp for girls was a new offering in 2017 and it incorporated art into science, technology, engineering, and math. It was so well received that we ran the activities in the after school program of a K-8 school. We look forward to running many summer camps in 2018 including our STEAM camp for girls.

We encourage both boys and girls to engage in STEM activities through FIRST and we go out of our way to make sure that the girls are engaged. This year we had an all-girls FLL team. One-third of our FRC team is women and this relatively large fraction makes a supporting environment for students of any gender. We have women in leadership positions including Director of Operations, Controls Lead, Spirit Team Lead, and Outreach Lead. This provides role models to young women on the team so they can envision themselves in positions of leadership.

Our team has an interest in international outreach with students from 14 different countries and 44% are first generation in the USA. Inspired by how well the FRC competition engages students, we designed and executed an innovative project to create an online programming competition to engage more high school students in CS, called "Operation: Code Clash". We ran competitions in 2014 and 2016 with over 175 students (representing 51 teams) registered from 4 countries. The competition was very successful with great feedback. A student from FRC Team #4944 said, "I'd like to thank the people behind Operation Code Clash for the great learning opportunity and fun game as well!" After the competition we even had a request to keep the site up "so myself and others could continue to work and learn Java in the preseason of FRC". Operation Code Clash has inspired students around the world. We wanted to expand our international outreach and our STEAM camp is a great first step along this path. We modified the camp activities to create a STEAM-camp-in-a-box. We sent our STEAM-camp-in-a-box to an orphanage in Peru and we are finalizing the materials for a middle school in Chino, Japan (the sister city to Longmont, CO). We look forward to building on these connections in the future.

UACR is proud to be more than just a robotics team. Just like a river, we have grown from a small team focused on the robot, into a thriving community that has an impact well beyond our local area. From a trickling creek, we have become a rushing river.