

# Chairman's Award - Team 1619

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2021 - Team 1619

**Team Number**

**1619**

**Team Nickname**

Up-A-Creek Robotics

**Team Location**

Longmont, Colorado - USA

**Describe the impact of the FIRST program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in FIRST programs as mentors/sponsors.**

1619 provides a welcoming and safe space to explore new and challenging experiences in STEM and community service initiatives. In the last 3 years, we've done 24 student internships, with a total of 41 internships at 11 companies since 2016. Every 1619 student graduates high school and 100% of students attend college or industry, with 95% in STEM degrees. When students graduate they might leave the team, but they don't leave the FIRST community: our alumni volunteer at FIRST events & mentor.

**Describe your community along with how your team addresses its unique opportunities and circumstances.**

We are a part of 3 communities: the CO FIRST Community, the Front Range region, and the St. Vrain District STEM Community. Our part of the Front Range is a patchwork of small cities, rural areas, unincorporated towns, & farmland, with poverty rates near the national average. Our school district is rich in STEM pathways & includes Longmont and small communities in 4 counties. Because of the distanced nature of our region, we have made our building a central hub for STEM, FIRST, & local families.

**Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?**

In FIRST you have to see a competition to really "get it." That is why we began our Engineering Inspiration (EI) Tours in 2016. We partner with a middle school to provide class tours during the Colorado Regional each year. We reached 367 students and many later join 1619. We are organizing 2021 virtual EI tours. A student who joined 1619 said "the passion for their robots that the teams shared with us and the energy of the competition definitely made me excited to become a part of it myself."

**Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.**

In 2019 we started our Kindness Washer initiative, which reaches internationally. At events we give out painted & branded washers to recognize acts of kindness & GP. So far we've created 370 washers & distributed them at four FIRST competitions. A student in Reno, NV said "I got it from volunteering at a FIRST outreach event where all the middle schoolers in my county were attending a career fair! The FIRST Senior Mentor thought that I was so cool for volunteering that she gave me this washer!"

**Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.**

1619 started 25 FIRST teams since 2015 & 2 FLL Explore teams in 2019. We mentor 2 FLL Explore, 3 FLL Challenge, & 1 FTC team annually in our FIRST Pathway & fund teams with the GEAR Alliance. We assist the CO FRC community via workshops & Team Support Tech. Teams use our build space, tools, & equipment. We hosted 7 FRC scrimmages & teach 4-8th graders in our FLL Summer Learning Series. Last summer we developed & published FLL tutorials to assist teams virtually; they've been viewed 3000+ times.

**Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?**

In the past 3 years we've worked hard to foster our own STEM Education Community. We developed & implemented a STEM curriculum which has been taught to 1,800 students since 2018. We host & teach STEM summer camps, including a new Junior Camp for grades K-4. After the summer camps, campers join teams in our FIRST Pathway. We taught 400 campers & expanded our STEM education program efforts with Girls Scout Days & STEAM Camp in a Box. FIRST teams are available to every K-12 student in the district.

**Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years**

Business & organizational partnerships support our team mission & sustainability. 25% of 1619 mentors are employees at Left Hand Robotics and we share a build space. We get inspiring experience with the robotics industry. Our partnership with UCHealth began in 2018 by building & donating 18 IV pole stands (Lily Pads) for kids. We've since helped with an emergency drill & created 3D printed hospital models for hospital donors. We get to share our resources & STEM knowledge to advance their work.

**Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.**

Our primary inclusion initiative is engaging girls in STEM programs to foster & promote the visibility of women in STEM. In the past 3 years, we identified sustainable ways to involve girls in STEM. We recruit many girls to 1619 and 58% of our student leaders are girls. Kassi, our Fabrication mentor, is a team alum & works in STEM industry. Like all our women mentors, she is an inspiring example for 1619. We teach K-8 girls STEM through our Girl Scout program, GEMS day, & our all girls FLL team.

**Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future**

In 2015, we created the GEAR Alliance 501(c)3 to clear a path for us & our teams. We reliably secure new recruits for all of our FIRST teams with Engineering Inspiration tours, summer camps, and Girl Scout Days. We guarantee funding stability through a diversified model: we run fundraisers, recruit sponsors, solicit material donations, and apply for grants. Our STEM curriculum has been adopted by the district, ensuring 1619's STEM impact for thousands of students and for years to come.

**Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years**

We utilize our network of parents and mentors to recruit sponsors and supplies. Mentors help us recruit their employers as sponsors, like one of our newest sponsors, FIRST RF Corp. We engage and retain sponsors by ensuring our partnerships are mutually beneficial. Ball Aerospace & Seagate are legacy sponsors, but stay engaged as mentors and FLL volunteers, and we demo at company events. FIRST RF provides laptops and equipment for our FLL Qualifier and we support their company as student interns.

**Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.**

In 2018, we launched Project Line Cross. Since teams struggle with autonomous, we published foundational code to give teams a clear place to start. In 2019, we built on this concept by creating Team Support Tech (TST). 4 students & mentors spend competitions on standby to provide technical support for teams in need. However, we are not satisfied with the small reach of TST. We are iterating the project to make it more visible & training students to expand the hardware & code we can troubleshoot.

**Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.**

On 1619 we learn to be self confident & well rounded leaders as we fulfill the 1619 and FIRST missions in our 3 communities. In our FIRST Pathway, K-12 students learn FIRST values. 1619 & our GEAR Alliance students go to college for STEM, come back to mentor, and volunteer with 1619 and FIRST. Even outside of FIRST, we teach STEM skills to Girl Scouts and district students. We cultivate leadership at team-wide Leadership Days & are inspired by our mentors, who are STEM professionals & teachers.

**Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.**

We started a path locally which now extends STEM around the world. In 2018, a school in Bolivia was interested in STEM activities and starting an FRC team but lacked funding. We sent a drive kit and held Skype meetings to teach about FIRST and technical skills. But we never lose track of the work we do here. From making FIRST available to every student in our district, to annual features in the Left Hand Courier, which reaches 6000 households, we strive to make FIRST known and accessible to all.

## Essay

On 1619 we're building a pathway of our own. While ensuring team sustainability, our focus is on three main communities: the Colorado FIRST Community, our own STEM education community, and the Front Range region. Within our team we build lifelong skills, friendships, and STEM appreciation. Across the state, we connect FIRST teams with the resources to succeed. We are paving a pathway that connects students in our region to high quality STEM education opportunities. By supporting community resources, we help people make pathways of their own. Whatever their path may be, 1619 gets people to where they want to go.

Before 2015, 1619 was incomplete: we lacked a reliable build space and the means to be competitive on and off the field. In 2015, a sponsor donated a 6000 sq. ft. build space. This enabled us to form the GEAR Alliance 501(c)3 with mentors, parents, and community members to support & fund FIRST programs in Longmont, with 1619 as the flagship program. This paved a new path for 1619. Since then, we turned our space into a centralized resource hub for CO FIRST teams and STEM education regionally. These developments allowed us to focus on our communities rather than internal sustainability. Since then, our mission has been to expand and elevate the Colorado FIRST community, to provide support for existing community resources in the Front Range region, and to create K-12 STEM education opportunities in and outside of schools, while forging pathways for long-term student and team success. We are striving to clear a path for our team and our communities.

For our first step forward we started teams and formed our FIRST Pathway. Since 2015, we started 2 FLL Discover, 24 FLL Challenge and 1 FTC teams. Our FIRST Pathway is a progression program including all four levels of FIRST that are housed, funded, and mentored by 1619 and the GEAR Alliance. In 2019, we expanded the FIRST Pathway to include 2 FLL Discover teams. Each year our Pathway supports 120+ students across all four FIRST Programs.

Beyond starting FIRST teams, we extend resources to existing teams to forge their own paths. In the last 3 years, we assisted 55 FRC teams from CO, WY, ND, TX, UT, OK, and ID. With our Open Shop Policy for all CO FIRST teams, we provide one-on-one support & access to our build space, tools, and equipment. We use our build space as a workshop hub for teams in Colorado and neighboring states by hosting two Elevate Your Game workshops and a 2019 Chairman's Bootcamp. We hosted the Colorado FRC Mentor Meetup and 7 FRC scrimmages at our build space. These events are important because when teams perform at their best, students learn more and teams are better positioned to thrive. We assist FLL teams with our new 12 part video series for FLL coaches and an annual Summer Learning Series which prepares 4-8th graders to join FLL in the fall.

At competitions, teams sometimes need help regaining their footing. To address this, we provide technical assistance for teams at events through our Team Support Tech, and host Chairman's Exchanges. We've hosted 6 Exchanges for teams to collaborate and receive feedback before presentations. In 2019 we founded the Kindness Washer initiative. At competitions, each 1619 student gives a washer to someone they see acting with kindness, which they then pass on. Students coded a database & site to track each washer so recipients are able to see the logged journey of their washer. We are expanding the initiative by developing a Kindness Washer guide for teams to bring others along the Kindness path.

We host, run, and volunteer at FIRST tournaments to support competition opportunities and demonstrate the progression of programs. We began hosting the new St. Vrain FLL Qualifier in the 2018/19 season and we volunteer at the Boulder & Greeley FLL Qualifiers since 2019. Though COVID-19 has put obstacles in our path, in Fall 2020 we hosted a mini qualifier for our three FLL teams, which we streamed for parents and spectators. We are also volunteering at 2021 virtual Colorado FLL Qualifiers. Increasing the number of qualifiers makes FIRST more accessible in the Northern Colorado region.

Outside FIRST, we have created a regional STEM community by partnering with our school district and local organizations to shape a unique path for all 33,000 students in our district. These STEM initiatives begin in our building and reach across the US and internationally. Each year at the Colorado FRC Regional, we lead middle schoolers on Engineering Inspiration (EI) tours, reaching 367 students since 2016. This season we are leading virtual EI tours. Three years ago we developed a STEM curriculum which has been adopted by five district schools, reaching 1,800 students. One teacher said "the Up-A-Creek Robotics Processing curriculum has been an invaluable resource as it is a perfect gateway into industry standard programming languages." We promote FIRST in our district with demonstrations and volunteer events like the Future Ready Robotics showcase, back to school nights, and school board presentations.

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To create STEM opportunities in our region, we established a centralized STEM hub outside of school with initiatives offered at our building. We annually teach 12+ week long K-12 summer camps at our building, including STEAM Camp for Girls and a new Junior Engineering Camp in 2019. Inspired by the success of STEAM Camp for Girls, in the 2018/19 season we developed STEAM Camp in a Box. The contents provide a hands on STEM experience using household items and an adjustable curriculum with accessibility in mind. We partnered with a local K-8 school to run a trial of our curriculum before sending boxes to a LA Boys & Girls Club, our sister city in Japan, and Peru.

Oftentimes, girls grow up without a clear STEM path; surveys show that by age 15 most girls have lost interest in STEM. Considering this disparity, we organized our STEAM Camp for Girls. 1619 also has team members who are Girl Scouts, which inspired us to generate a new STEM initiative for girls. 3 years ago, we started Girl Scout badge days for troops in Northern and Central Colorado. So far we taught 300 Daisy, Brownie, and Junior Girl Scouts and awarded 1000 badges. In 2019, we offered a cyber security badge in addition to 3 robotics badges. Multiple Girl Scouts joined our all girls FLL Challenge team.

We are committed to supporting our community beyond simply providing STEM paths. We partner with local organizations to volunteer and share our STEM skills, and demonstrate at dozens of events promoting FIRST and STEM. Prominent events include the Boulder County Fair, Energy Day, and Festival on Main, which 18,000 people attended. We demonstrate and volunteer at events for sponsors, including Seagate's Treat Street and Ball Aerospace's Take Your Child to Work Day. These annual events show our community the STEM path and build support from a range of individuals across the state.

In FIRST and beyond, building new partnerships is at the center of a strong community. The Boulder Emergency Family Assistance Association is the oldest marker on our service path. Since 2010 we deliver food boxes annually to community members, mainly low income seniors. We delivered over 1,000 food boxes, and many people now recognize our 1619 logo. Even through the pandemic, we volunteered while following safety guidelines. We formed a bond with the OUR Center, one of Longmont's most prominent resources. The OUR Center helps community members in or at risk of poverty by providing wrap-around housing & material assistance. We host food drives for the center annually since 2018, and hygiene and winter clothing drives in 2020 as a response to challenges with the pandemic.

Our most recent collaboration is with UCHealth Longs Peak, beginning with the Lily Pad Project three years ago. The quality manager at the hospital said "thank you so much for the Lily pads and for your participation in our Community Disaster Drill. You have made such an impact on all of us at Longs Peak Hospital and our patients, especially our little ones. Seeing a smile on their faces when they 'ride' the lily pads is priceless!" In 2019, we volunteered for the hospital emergency drill, and later created 25 3D hospital models for their donors. We were also invited to the Donor Appreciation & Scholarship Celebration where the models were distributed. One of the employees at the hospital said "you all were amazing students to work with! I appreciated your responsiveness, talent and creativity." In the future we will broaden this path by donating coloring books and STEM activities, and periodically reaching out to hospitals in the network to check on their Lily Pad supply.

As we build strong partnerships in our community, we seek new service paths. In 2019, we collected 10,000+ tabs for the Ronald McDonald House Charities and in the 2018/19 season we packed backpacks at Sunset Middle School for Crayons to Calculators. In 2020, we sent 108 holiday cards to active duty service members. We care deeply about people in our Front Range region and constantly seek new paths to support people across the community.

We have mapped a series of divergent paths to illuminate a route forward for our students, school district, FIRST teams, and community. Since 2015, we've continued to look outward to address specific needs in our three communities by utilizing and sharing the unique resources available to our team. As we said before, 1619 gets people where they want to go: Whether that's a STEM career, a FIRST competition, or a Girl Scout badge. Delivering a food box, handing out a kindness washer, or building a lily pad may not seem like a culture-changing event, but all of these are steps on a path to a brighter future for ourselves and our region. As we traverse an uncertain path, 1619 will continue to build a community which celebrates STEM, provides ample opportunities, and where we each seek new ways to support each other.