

## Chairman's Award - Team 931

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2021 - Team 931

**Team Number**

931

**Team Nickname**

Perpetual Chaos

**Team Location**

Saint Louis, Missouri - 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.**

Team 931, Perpetual Chaos, works to push our participants to thrive by developing their inner leader, learner, and thinker. Upon graduation, 100% of alumni from the past three years of the Gateway STEM Robotics programs have gone into the STEM workforce or post-secondary STEM education. 100% of the past 3 years of participants have reported improved 21st century skills, along with an increased desire to learn about STEM career fields.

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

Our team is hosted in a title1 district, serving students who are primarily from lower-income families. Amassing financial resources and student talent from all of the schools in the district, allows us to alleviate the cost of *FIRST* for students and expand our reach to usually underserved portions of St. Louis. Located in the largest high school of St Louis Public Schools, our team has the opportunity to reach large groups of middle schoolers through high school enrollment fairs.

**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?**

By making fun and engaging displays at school recruiting fairs, FLL events, and during community service, our team encourages students to join or continue the *FIRST* progression of programs. We advocate *FIRST* to local, state, and school and district leaders, and through our media presence. The sheer number of students after each event who talk to us about *FIRST* and its progression of programs as a part of their future shows the reach of our efforts.

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

Our team members lead volunteering at our FLL qualifier. Demonstrating the FTC & FRC Robots allows us to generate a dialogue with FLL students about the progression of *FIRST* and STEM education. Our team members are also community role models, as we display gracious professionalism inside and outside the robotics room. Over the past 2 years our team has nominated members who have been selected as Dean's List finalists. Their lead helps exemplify gracious professionalism to other *FIRST* students.

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

In the past 3 years, our team has Mentored FLL teams in our district, and hosted Botshops in partnership with slsra.org to assist FTC rookie teams. We also mentored FRC team 7746 Culture, from Blewett Alternative School, and assisted team 8077 DRE@M, from the Magic House @ MADE. In the 2019-20 school year, our team worked with the Superintendent of Career/Technical Education to fund registration for the districts 12 FLL jr, 18 FLL, 4 FTC and 1 FRC teams, plus new teams in future years.

**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?**

Over the past 3 seasons Team 931 has helped host the Ucity Library's monthly Rockin' Robots program and the Sankofa Scouts code webinar, showcasing robotics and various entry ways to STEM. Dozens of children attended each session and by the end, most showed an interest in getting into STEM or joining/ starting a *FIRST* team. Attending high school recruiting fairs, representing our flagship school, Gateway STEM, has also proven effective as many of the students we talk to enroll at our school.

**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**

St. Louis Public Schools, our host sponsor, funds much of our season, as well as offering us our primary platform for spreading the mission of *FIRST*. Custom Machine Works assists us with major precision machining projects, and has begun helping us outfit our shop with CNC technology. The Belleville Kiwanis Club helps us perform community service, accompanying their \$300 sponsorship. The University City Public Library offers us another outlet for community service, with their youth programs.

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

By virtue of location, we have opportunities to promote racial inclusion, diversity, and equity, offering students of various ethnicities a place to thrive in STEM. This season we joined the Together in *FIRST* coalition to join other teams looking to make *FIRST* more equitable and inclusive to people with disabilities. In the 2020 summer our team taught early code concepts to elementary students from the Sankofa Scouts, a group who serves black students in Illinois, Missouri, and South Africa.

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

By creating relationships with our district, we can ensure that there is always a set of teachers and mentors, as well as the funds, to promote the mission of *FIRST* and Gateway STEM Robotics. Many of our initiatives are intentionally created in partnership with another team or organization, allowing our program to grow and continue through other entities.

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

Our business Sub-team contacts student-suggested businesses, informing them how funds are used and their benefits as a sponsor, such as robot demonstrations and logo displays, which aids retention. We align sponsors with team goals to build synergy around shared goals. SLPS shares STEM education goals. Boeing shares community service goals, and we recruit mentorship from them. Belleville Kiwanis Club shares community engagement goals; together we build GoBabyGo cars for kids with Spina Bifida.

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

We are enhancing our transitions. While our team has formal sub-teams, officers/leads, and captains, the duties and expectations of the officers and other team members are not set in writing, creating confusion around tasks and responsibilities. Administrative documentation will improve our team during leadership transitions. Our team, throughout this season, has actively worked on documenting concepts we use, along with creating a sub-team whose task is to update documentation between seasons.

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

We interpret the Mission of *FIRST* as preparing and teaching students about the STEM movement, while working to make the world a more gracious, and well rounded place. Our team goals to promote the mission of *FIRST* include a multitude of events hosted by various schools, sponsors, and outreach partners showcasing the skills students learn from *FIRST* programs. We also create a media presence through social media and district news appearances, increasing the reach of the mission of *FIRST*.

**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.**

Our team's focus at the start of the COVID-19 pandemic was to create a safe environment for our students. Some team members and mentors created and gave away masks and PPE. Additionally we created a series of virtual meeting

activities that would push students to learn while at home. We also used these meetings to plan for the 2020-21 season, a season that will be our first without our founding mentors.

## Essay

Founded in 2002, Team 931 Perpetual Chaos and Gateway STEM Robotics was created to fill a vacuum. Prior to our founding the Saint Louis Area lacked organizations that allowed students to learn STEM and 21st century skills, all while making their community a better place. Since then working to create change in the community has been a central part of our team ethos. Our team believes that ensuring that our community is succeeding, growing, and learning right along with us is the way to truly thrive. Even if our organization is performing well in competitions, if we don't collaborate with our community to get there, we aren't thriving, we're just surviving. Our task is not just to survive, but to thrive.

In recent years our team has succeeded in competition in ways we didn't think possible at the time, making it to eliminations for each 2017-18 event and all but one 2018-19 event. We achieved this by learning precision manufacturing techniques that increased our design quality, and building a larger school presence than we've had in a long time. All of these accomplishments, however, would be naught if we hadn't simultaneously worked to unite and build our community up.

To build our community's FIRST presence, we advocate FIRST and STEM to state and district leadership. In 2019 we, along with eight other Missouri teams led by FRC team 3284 Camdenton LASER, traveled to the Missouri capital to raise awareness for FIRST. Over the summer of 2019 we created a summer display at the downtown Saint Louis Public Schools (SLPS) headquarters where anyone could look at our robot and read about our team, STEM, and FIRST, furthering our message. We also work heavily with elementary schools to develop the FIRST Lego League Program. We began hosting and running an FLL qualifier in the 2018-19 season, allowing ALL of the district's FLL teams to compete with each other. Additionally, our team annually sends student mentors to assist and mentor FLL teams, teaching the techniques of problem solving and brainstorming to improve the quality of output, helping them to thrive.

To ensure that students have the ability to progress through FIRST, our resident pre-freshman program allows an 8th or 7th grade student to be admitted onto the Gateway STEM Robotics teams, encouraging the pipeline through FIRST. In order to ensure this pipeline can continue to thrive, in 2019, with the support of our former principal and then superintendent of Career and Technical Education, an annual budget item was added to support team/event registration, coaches pay, and travel for the majority of the teams in the district. We also ensure that there are coaches and mentors to support the teams. In the 2019 off-season we began hosting a training seminar at the 2019 SLPS Technology Fair that introduces SLPS teachers and leaders to FIRST. We displayed the multitude of FIRST programs and offered our services as mentors to the teachers in attendance.

At the end of the FIRST section of the STEM pipeline lie FTC and FRC teams. Annually we work to assist and mentor FRC teams to affect change in the present. In the 2019 season we partnered with St. Louis Student Robotics Association to host a "botshop", where we shared our buildspace and design process with rookie FTC teams. Building partnerships is an important part of expanding our community. Over the past three seasons we have assisted rookie teams 7746 Culture from the Blewitt Alternative School, led by the Mentors In Motion program, and 8077 DREAM based at the Magic House Annex @ MADE maker space. Working with team 7746 in the 2019 season brought up many challenges, as they could not visit our school per district policy. Our main focus was to ensure that their team members were ready for competition. After "bag" day we lent them our practice robot for their driver team to practice with. We assisted 8077 DREAM mentors and students during the preseason with team organization and recruiting. Then at kickoff, we paired with them off site to help inventory their kit of parts and begin the process of learning the game and developing a winning strategy. Throughout the 2019-20 season we partnered closely with DREAM, with almost weekly meetings to socialize, develop a sense of team, and share parts and ideas.

In addition to partnering with rookie teams, our team works to create useful presentations and documentation free for all to use. Our team's strong sheet metal program has led us to present at the STL FRC training camp in 2019, and in 2020 we released our FTC sheet metal chassis on ChiefDelphi, a link now with over 170 clicks, in an effort to "raise the floor" by bringing effective and inexpensive sheet metal manufacturing strategies to FTC. Our "Instagram Initiative" works to provide a means of communication between our and other teams, alongside providing timely updates about our team and season. This season we partnered with team 1836 Milken Knights to present our team practices and robots alongside 19 other teams in their West Coast Virtual Showcase. Our teams have appeared in a publication by Romanian FTC team 17962 Ro2d2, in a podcast and gameshow by SoCal FTC team 12675 Hermit Social Club, and we joined the Together in FIRST coalition, a coalition of teams working to make FIRST more accessible to disabled students.

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STEM, through FIRST, can be of great help identifying and solving the problems of our community. As such, we have partnered with the Belleville Kiwanis Club for our inaugural Go Baby Go event customizing seven cars so children with muscular disorders such as Spina Bifida, Cerebral Palsy, and DiGeorge Syndrome could operate the vehicles and experience a new level of mobility. We provided the technical expertise to develop specialized kits to modify the ride-in car for each child and lead volunteers to modify and fit the cars at Belleville West High School in October of 2019. The need for a more custom car led three of the seven children to have their car finished at our school or Children's Hospital instead. We also identified litter as a problem to solve, as it is a barrier to taking pride in our community, and our approach has been to spend time picking up trash on the school campus. We also partnered with Great Rivers Greenway to clean 50 pounds of plastic trash from the River Des Peres. For our trash treks we built "trash-bot", a 32 gallon, mobile trash can that allows us to increase the distance we go when we pick up trash, while creating a way for us to talk to passersby about FIRST and STEM.

Increasing access to FIRST and STEM is a crucial part of improving our community. This season we joined forces with FRC team 1706 Ratchet Rockers, becoming some of the inaugural members of the Together in FIRST coalition. The coalition works to collect information on the needs of the community, and promote change by advocacy and information outreach. Our Audio Manual Initiative takes one of the Together in FIRST projects, advocating for easily accessible audio versions of the FIRST manuals, and shows what that could look like in practice. Over the 2020 summer our team also led a virtual seminar for children from the Sankofa Scouts, a group based out of Champaign Illinois, who serve students from Champaign, Illinois, St. Louis, Missouri, and Johannesburg, South Africa.

Also crucial to building our community is the recognition of those who also work to improve our community. Annually we have honored our nation's veterans by participating in the Veteran's Day Parade. Our team recognizes that any attempt to improve or change our community is a team effort and we want to acknowledge the hard work and sacrifice of everyone involved in making our home a better place to live.

The team effort that is changing our community would not be possible without our partnerships. We maintain our partnerships through support of our students, alumni, and mentors. Frequently mentors remark about how inspiring the students are, and how the lessons learned and taught by the students are what keep them returning. Through mentorship we urge and inspire alumni to pursue a STEM post-secondary education or employment with one of our sponsors, continuing on to the workplace section of the STEM pipeline. Many alumni have gone on to be leaders of change in their communities, creating a STEM positive future. Every FIRST team, every initiative, and every student helps us grow and inspire our community to create a future for all to thrive.