

Chairman's Award - Team 1622

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2020 - Team 1622

Team Number

1622

Team Name, Corporate/University Sponsors

GitLab/TUV SUD America/Evolution Controls Inc./ViaSat/BAE Systems/Qualcomm/Bayer Fund/DoDSTEM/Northrop Grumman/Palomar Technologies/Leidos/SES Secure E-Waste Solutions/Lockheed Martin/Clippard/City of Poway/INCOSE/PTC/Raytheon Integrated Defense Systems/Brain Corp/General Atomics Aeronautical Systems Inc./General Atomics Sciences Education Foundation/TechFlow/Senior Aerospace&Poway High School

Briefly describe the impact of the *FIRST* program on team participants within the last five years.

Spyder members acquire engineering skills and more importantly soft skills, like teamwork, leadership, and public speaking, that prepares them to be future STEM leaders. Gracious Professionalism and Coopertition will have a lasting impact on their professional lives. In serving others Spyders are developing compassion and empathy in serving others, to create a culture of kindness. Nearly 100% of students coming out of Team Spyder attend college or enlist in the armed forces.

Describe the impact of the *FIRST* program on your community within the last five years.

We believe that all students should have access to a STEM education with emphasis on FIRST Robotics programs. Not only do we help start and create teams, we ensure that they are successful by mentoring, assisting, and hosting scrimmages, workshops, and tournaments. In the past few years we have created 21 teams. We have almost every school in our district participating in FIRST. We advocate for grants for Title 1 and inner city schools. We are creating a sustainable future for our community.

Describe the team's methods for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative.

FIRST is not just robots, it's helping others, especially the underserved and disadvantaged. Since 2014, we have advocated for a resolution with our school district to declare a district wide Robotics Day. It has evolved into participation of all high school and almost all elementary and middle schools FIRST teams. We use social media as a platform to promote FIRST with #spydermentoring, #spreadthstem, and #togetherweinspirefirst. We engage local and state politicians for political advocacy.

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

Leadership is a foundational goal for our team. We are a force for change by having 100% of our team members mentoring or assisting teams. We host Championship Conferences in sustainable fundraising and safety. At our regionals we host safety activities to educate attendees of proper safety procedures. We lead by example by having our students certified in CPR, AED, and First Aid. We are FIRST ambassadors in the global community by mentoring FGC teams and travelling to 4 continents.

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

Team Spyder started off as one of the only robotics teams in our school district, and since then has generated a multitude of interest throughout our community by hosting STEM outreach. This has helped FRC teams to be started in most high schools in our district, and we have donated supplies and machine access to newly forming teams. We also helped organize the Tijuana showcase with 26 other FRC teams, and have travelled to Mexico to start and mentor FRC TJ Robotics 7753 and RobyBam 7752.

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

In the spring, we promote FLL and FLL Jr. by hosting numerous informational nights at our local elementary and middle schools. These informational nights have been very influential in creating teams before the kids leave for summer vacation. These teams get a headstart in learning core values and programming to ensure a successful season. We also help launch the kickoff to further the kids' excitement for the season. We have created over 50 FLL and FLL Jr. teams in the last two years.

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

On our team, we focus on assisting teams, locally and globally. We are partnered with FTC team 16884 Mechanical Advantage to help fund their team. We give them opportunities to volunteer at competitions and outreach that we host. We have assisted 1000+ teams by funding teams in Mexico and purchasing equipment, providing mechanical parts, building FLL tables and giving robots to teams. We host FLL, VEX and FTC tournaments which gives students the opportunity to give advice on team projects.

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)

Everyone on our team mentors at least one FLL Jr, FLL, FTC, or FRC team. The new members of the teams are able to shadow returning members, so in the future they are prepared to mentor their own team. Although there are many local *FIRST* teams that our team members can mentor, several students are active on a global level. We mentor teams from Paraguay, Benin, Togo, Mexico, Brazil, and Bolivia, through weekly video chats so we are able to inspire worldwide.

Describe your Corporate/University Sponsors

Our sponsors include Qualcomm, Northrop Grumman, Viasat, Lockheed Martin, Raytheon, and more. In order to maintain our relationships with our 20 sponsors and demonstrate all our hard work, our team holds demos annually and participates in different challenges, such as Northrop Grumman's Innovation Challenge. Our Engineering Academy has partnerships with 88 colleges and universities through PLTW, where students can receive college credit, be recruited, and teachers can get training.

Describe the strength of your partnership with your sponsors within the last five years.

We maintain great relationships with our sponsors: including General Atomics, Jinx, Abbott Labs, and more by staying in touch with them through press releases and demonstrating to them what makes our team so successful. In return, our sponsors contribute materials, offer internships, and give expertise to the team. Spyder also invites sponsor employees to act as mentors and role models for the team, allowing Spyder students to build good relationships with them.

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

FIRST is not only an engineering and robot building program. It also teaches skills such as leadership, teamwork, and creativity. There are a variety of roles on each team, whether it is public speaking, graphic design, or robot building. Anyone can find their place in *FIRST*. There are countless skills that students learn that are not taught in a traditional classroom. They also get the opportunity to participate in competitions while making new connections with teams worldwide.

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

We are Boy Scouts ITECH Exploring STEM partners, and helped Sisu Academy to start their free boarding high school for girls with unique needs. We also started Paraguay's first SWE chapter. We are excited to work with Rector Edmond Hajrizi in the University for Business and Technology in Pristina, Kosovo.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.

Since the start of Team Spyder in 2004, we have worked to break stereotypes in STEM and encourage everyone to join Team Spyder. This led to a diverse team comprised of 30% women. We want to teach students that STEM is worth pursuing in hopes that they promote STEM. We do this by visiting international teams we mentor and running several competitions. Our Engineering class and Academy was the first in our district, serving as a role model for other schools in our district to follow.

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

Lilian Rueckert

Essay

Tracy Van Houten, a rocket scientist at JPL, a member of the Mars 2020 Rover Mission and Poway High Alumna, believes "our STEM workforce should be focused on solving the problems of the world," and "inspiring the next wave of young women and those within STEM backgrounds." Like Tracy, Team Spyder promotes STEM diversity, especially to underserved and disadvantaged communities. We have also travelled abroad to South America, Africa, and Europe, spreading the message of FIRST and bringing STEM opportunities to students. FLL Partner for Southern California, Lynn Crockett, acknowledges the impact "Team Spyder has transformed FIRST Lego League in Southern California by starting and mentoring teams, especially the underserved and underrepresented." We strive to create a generation of leaders prepared to inspire local and global change through STEM education, because for Team Spyder FIRST is more than robots.

FIRST Growth & Support

This season, we started 21 teams (3 FLL Jr, 6 MBOT, 4 ASES, 1 FTC, 1 FRC and 6 FLL) and mentored 35 teams (8 FLL Jr, 18 FLL, 3 FTC, 5 FGC and 1 FRC). Within 5 years, we hosted 25 competitions (MBOT Maze/Fishing Frenzy, FTC Meets/Scrimmage, VEX Robot Rodeo/Poway QT, FLL Jr Expo, FLL Poway QT, & ASES), started 63 teams, mentored 59 teams, and assisted over 1000 teams through workshops and safety training. Since 2014 we participated/hosted over 400 outreach events to start FIRST teams and promote FIRST locally and globally.

Since 2010, Dean Kamen inspired us to go into the inner city and Title 1 schools to serve the underserved and disadvantaged and that's exactly what we did. At the Monarch School for the Homeless, a K-12 program, we taught students how to build and program EV3 robots. Last year we started and mentored Title 1 schools: 3 Wilson MS teams with 1 competition team 38538, Valley ES 40122, and Garden Road ES 33898. We ensured their successful season by procuring ViaSat \$1000 grants, building their FLL table, and preparing them with scrimmages and workshops.

In 2018-19, we developed a traveling STEM curriculum at events (SD Maker Faire, Fleet Week, and SDSA STEM Expo). Since 2016 we inspired over 1000 students annually by hosting science/info events at multiple K-8 schools (Midland, Shoal Creek), and our STEM/Robotics Summer Camp. We exhibited at the WEST and NDIA conferences. We are starting a FIRST Program at Cristo Rey, a new inner city high school for limited economic means.

Global Outreach

To promote FIRST/STEM we invited FTC 11128 and 16884 to travel 3 times to Asunción, Paraguay (\$22,000) holding workshops to start and run FIRST teams. We hosted an FTC Scrimmage (Nov 2019), mBot Maze (Nov 2018) and mBot Fishing Frenzy (Nov 2019) competition starting 12 MBOT teams from the 20 MBOTS (\$3,600) we donated to coach Ian Bajac of FGC Paraguay and CEL. Through our efforts they started a National Open Robotics competition and showcase (42 teams) where we helped run the events, sponsor (\$1,500), and grow teams in Paraguay with the Minister of Education. We started a partnership with the Universidad Nacional de Asunción (UNA) through Rectora, Dr. Molinas, and Dean Salas, aimed at providing a STEM education across Paraguay. We also visited and mentored FLL Mbaretebot's and established a partnership to increase FLL in Paraguay. We connected Project Lead the Way's (PLTW) VP Jessica Hooper to provide curriculum to all Paraguayan and Benin schools. Ian Bajac will represent UNA by attending PLTW Engineering training in 2020.

In 2019 we traveled to Benin, Africa to spread FIRST/STEM with Rachael Orumor, the head coach of FGC Team Benin by creating a STEM/Robotics committee to jumpstart STEM in every school in Cotonou and Parakou. We shipped 30 mBot's and jointly created 14 mBot teams in Benin. We were supported by the US Embassy, Minister of Technology and Education by a grant to translate the game instructions in French. We worked with SEME City for the first National Robotics competition including Togo and Nigeria.

In 2018-19 we mentored FGC team Paraguay and Benin (w/ FTC 11128), and in 2019 added Togo (w/ FTC 11128), Bolivia, and Peru (w/ FTC 16884). We continued to mentor them traveling all the way to Dubai, UAE.

In 2018-19 we participated and helped organize the Tijuana Mexico Showcase, which we created and mentored two new FRC teams in 2018, TJ Robotics 7753 and RobyBam 7752, and 2019 started Pioneer 8383 with Xiaver Aisek. We are mentoring FRC team 7459 Taubatexas from Brazil and lodging them to attend the Del Mar FRC Regional. In 2020 we are excited to assist Kosovo in starting their first robotics competition.

Leadership & Alumni

We build strong student leaders in our community who emulate the FIRST Core Values. Our team follows a business model consisting of an executive board, president and three VP's who each preside over different subteams. Our leaders train their protégés to become leads next season and embrace Gracious Professionalism and Cooperation. Through hands-on experiences of the 21st Century Skills, we are training our students to become STEM leaders. In 2020 three were recognized for leadership in SWE's STEM in Action award. Our students develop relationships with community and peers, becoming future project managers, entrepreneurs, and leaders; such as our alumnus Dusty Fisk who returned as a mentor.

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Media & Impact

To promote FIRST, in 2019, we were featured on Paraguay TV (Open Robotics) and Benin TV (Benin National Robotics). In 2018, we traveled to Poland to support FRC 5883 Spice Gears and ran an FLL info meeting where two FLL teams got started, and were featured on the Polish national TV with FRC Spice Gears 5883. Locally, in 2019 our SWE Chapter was on the cover of the 92064 magazine and Team Spyder Robotics in 2018. We also featured in the local Poway Chieftain, Pomerado News, San Diego Union, and FM 96.1 and AM 1170 radio. Since 2014 we participated in the Poway Parade, presented at the Rotary, Kiwanis and the Chamber of Commerce educating our 50K local community about FIRST. We changed our school culture through Engineering/Robotics Info nights, Pep Rallies, Open Houses and school newspaper. We expanded our message to all 3.3 million people in San Diego within five years by appearing on KUSI, ABC10, CW6, ABC7, FOX 5, and KPBS news regularly. Last year, our instagram follower count grew to 1200+ followers.

Education

In 2015 we created a Poway Engineering Academy/Pathway with PLTW curriculum to train students in STEM skills. We developed 12 Engineering classes that are UC a-g approved including AP Computer Science where students can earn college transferable credit through Palomar College and Rochester Institute of Technology. With 400+ students enrolled, we are our district's largest engineering program. Within 6 years we hosted engineering shadow days and info nights to promote STEM/FIRST.

Team Stability

In the last 10 years Team Spyder created a sustainable curriculum for entrepreneurship and fundraising supporting 191 countries in the Global STEM Corps. Team Palestine used our curriculum and won gold for fundraising at FGC Dubai 2019. We presented our curriculum at the FIRST Champ Conference 2019, which focuses on incorporating proven sales concepts, rules, and relationships with equal efforts between students, parents and community. We consistently raise over \$100K annually used to fund 5 regional competitions per season. We created lasting relationships with our business partners, many of which provide mentorship, sponsorship and internship opportunities for students, such as Northrop Grumman and Palomar Technologies.

Community Service

We annually volunteer at Fight Against Hunger food packaging events. We supported Project Mercy in Mexico building homes for the homeless, helping Syrian refugee families and attending INCLUDE Autism events.

Advocacy

We #makeitloud by contacting our city council, school board, and politicians around the world. We initiated and organized a resolution for Robotics Day in PowayUSD (2014-20), City of Poway (2018-20), City of San Diego (2018-20), and San Diego County (2020). We engaged the school board, Mayor of Poway, Senator Joel Anderson, State Senator Brian Jones, Assemblymember Brian Maienschein, and the Governor of California to promote STEM at the district, city, and state level. Through the support of Anderson and Maienschein, we helped create AB624 for California Robotics team sponsor contributions matched by state tax credit. Our VP of Public Relations traveled to the Capitol and met with Jones and Maienschein to discuss promoting FIRST/STEM education in CA in hopes to have a resolution initiative by 2021. At Poway High we made a culture where Robotics is equal to Football. We drove a Memorandum of Understanding (2016-20) which guarantees robotics coaches' a stipend as a head coach, adding robotics credit on students' transcripts districtwide, and academic lettering in Robotics. We petitioned for AP Computer Science to become a class, and for engineering courses to become UC HONORS.

Gender Diversity

We inspire girls to pursue STEM careers. In 2018 we created SWE and NCWIT chapters to promote girls in STEM through guest lectures, field trips, outreach, and mentoring. In both 2019-20 we submitted for, and won the Design Lab Community Engagement \$1000 grant at WELocal19/20 to promote STEM, and in 2019 won the National Design Lab Challenge. We are a STEM Partner with the Girl Scouts for outreach since 2018. Our team leadership is 50% young women who supported Lockheed Martin's Women in Engineering Days program for six years to bridge the gender gap in San Diego.

Like Tracy Van Houten, we are "inspiring the next wave" transforming our community locally, in the inner cities, and globally by changing lives. Now in our 16th year of FIRST we realize the impact of Dean's tenet of "more than robots" ? how we're just a high school team making a difference in our community and on a global stage!