

## Chairman's Award - Team 399

### Team Number

399

### Team Name, Corporate/University Sponsors

NASA Armstrong Flight Research Center/Lockheed Martin/The Boeing Company/Northrop Grumman/Lancaster West Rotary/High Desert Medical Group/Antelope Valley Fair Association/Right Way Driving/Golden State Jet/JT3/Pacific Coast Powder Coating/Lancaster Sunrise Rotary/Aeroviroment/Rocco's Honda/AV Board of Trade/Jeffrey H. Stein DDS/Scaled Composites/Theurer Orthodontics/Project Lead The Way/Meece Car Audio/Lancaster High School/California Cogeneration Council & Lancaster High

### Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2016/2017 year and the preceding two to five years

Our students' involvement gives them an opportunity to intern at agencies like NASA, Northrop, and others. For many of our students, these opportunities wouldn't be possible without FIRST. Some alumni have received scholarships to the finest institutions such as Carnegie Mellon, Cambridge, and MIT. FIRST stays with our alumni throughout their lives, as shown by two who have helped expand our outreach to foreign countries. Many come back to mentor us or other FRC teams, such as Teams 5871 & 4131.

### Describe the impact of the *FIRST* program on your community with special emphasis on the 2016/2017 year and the preceding two to five years

This past year, we have exposed over 100,000 people to FIRST through community events like the AV Fair and LA County Airshow. We mentored 30 students at the Boys and Girls Club, inspired toddlers through our Bots for Tots initiative, supported those in need with food and clothing drives, read books monthly to kids at our local bookstore, and more. The gracious professionalism of FIRST has inspired us to serve our community in time of need, such as when the Sand Fire raged close to home.

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

Recently, we added Bottle Rockets, Day of Code, and Mastering Multi-Media Workshops, among others. Our Eaglets Program and FIRST for Girls Workshop invite 6th-8th graders to work with us during different parts of our season to get first-hand FRC experience while shadowing our team members. This year, we went to a local middle school and aided 54 SPED students, ranging from moderate to severe, in building balloon cars. We also host a free, annual week-long robotics workshop open to 60 students.

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

Members act as teachers and role models through our Robotics University, a series of over 20 student-taught classes from Robot Mechanisms to Intro to Chairman's. In serving as role models, our members mentor FLL teams on a weekly basis, with one member even receiving the Youth Mentor Award. We work to inspire students from various backgrounds and skill levels through our free workshops and events, which has led to two schools expressing interest in starting Jr. FLL and FLL teams.

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

Last year, Team 399 assisted now-second year Teams 5869 & 6060, inspiring them towards robotics greatness by inviting them into our shop to teach them about robot mechanics, Chairman's, & team structure. Before FRC Team 5012 became a championship-winning team, they shadowed us prior to their first build season. Our cultural exchange program with Japan showcased FRC and FTC robots to introduce them to FIRST. Through our continued Skype relationship, we hope to guide them in starting a team.

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

This year, Team 399 has reached further to start FLL teams. Outside our area, we contacted an alumnus teaching in Spain & sponsored an FLL Kit for her class. We are currently in conversation with West Wind Elementary as they start on the path to forming a Jr. FLL team. Our Youtube video, "How to Start an FLL Team," has been translated into 8 different languages, including Mandarin and French, over the past 4 years. We formed FTC Team 8973 in order to train our large influx of rookies in 2015.

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

Our team has a solid mentor base for local FLL teams. While we currently mentor 5 teams, we hosted a new event this year in which our team members built, programmed, and competed with EV3 robots in an effort to expand our pool of qualified mentors. Team 399 also hosts and runs a non-qualifying FLL tournament for an average of 20 local teams and runs a qualifying competition, the AV Techno Classic. We have also housed and mentored FTC Team 72 for 10 years, guiding many students through FIRST.

**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)**

Team 399 lends a helping hand to FTC and FRC teams throughout the year with our Open Shop Concept. We welcome and guide younger teams with less equipment to use our shop and machines. We provide technical expertise and knowledge to FIRST teams through our online Robotics University courses posted on our Youtube channel, and regularly respond to email questions from newer teams from across the globe. Some of our team members also help FLL teams by mentoring at nearby schools.

**Describe your Corporate/University Sponsors**

Sponsors of Team 399 include organizations that range from local businesses to large companies. Being in the Aerospace Valley has helped us receive sponsorships from NASA, Northrop Grumman, and Lockheed Martin. We also receive support from small shops on our city boulevard, and larger organizations such as Best Buy, the Air Force, and College of the Canyons. We are proud that our sponsors come from different industries that recognize the importance of STEM and trust us to spread that message.

**Describe the strength of your partnership with your sponsors with special emphasis on the 2016/2017 year and the preceding two to five years**

Team 399 has established strong relationships with longstanding sponsors and has earned the support of new ones by giving robot demos and providing support at public events - including NASA at their Black Entertainment Television Fan Fest booth, Northrop's Boys & Girls Club STEM Camp, and Lockheed's LA County Airshow Tent. Recently, we've renewed our relationship with local rotaries and chambers of commerce. When gaining new sponsors, we establish a personal connection that will last for years.

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

FIRST (For Inspiration and Recognition of Science and Technology) is an organization which encourages the youth of today to become future leaders in STEAM (Science, Technology, Engineering, Art, and Mathematics) by focusing on the fun of learning. There are different levels of FIRST, ranging from elementary to high school. At each level, students and mentors participate in creating a robot that is engaged in competition with other teams, while inspiring students to reach out to their community.

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

This year, we pursued Dean's homework by contacting House Majority Leader, Kevin McCarthy, to ensure the bill's reintroduction in the current session of Congress. After months of trying to get in contact with his DC office, we finally received a call. From then on his office reported all updates to our team and we are happy to say Representative Fred Upton will be reintroducing the bill. Currently we are starting the process over with our Senators from California to guarantee the bill's passage.

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

Kirsten Barrow

**Essay**

Over the past 18 years, Team 399 has built strong ties in our community. While recognizing the benefits of being an established team, we recently challenged ourselves to serve our community in new ways, build new relationships, and consider how STEM can be applied in areas we had not before considered. With this new direction, we are gaining learning opportunities and reaching an even broader audience than before. This audience includes special needs students, toddlers, and art programs within our school. Opportunities such as working with our local middle schools have grown to include students we had not reached before. While previous efforts were focused on recruitment, this year we went a different route and helped 54 SPED students build and race balloon cars. We noticed that these students are not always the priority with STEM funds and wanted to help them learn about

the field. With new initiatives such as Bots for Tots, we exposed toddlers to robotics. What started as a local parents group teaching the letter R became a chance to provide toddlers and their parents with shop tours and demos. Now those toddlers know that R is for Robot!

This school year, we have added an emphasis on the arts and are moving forward full STEAM ahead to showcase how science and technology can be applied in creative ways. Recently, the Air Force became a new sponsor by allocating 399 and Scratch Crew, a music production club on campus, funds to construct 4 theremins - musical instruments that manipulate electromagnetic waves to produce sound. Their construction is currently being finalized and we will be demonstrating them in upcoming workshops and events to teach the principles of science. To further demonstrate our commitment to add art to STEM, we helped our theater department by designing and building an 18 ft., 5-headed dragon. In addition, our robot performed as a character in the play.

This year, another new sponsor to 399, Best Buy, helped us provide a high-quality non-qualifying FLL tournament to teams from So-Cal. With their support, we created new staging and tables for our High Desert Lego Tournament, an event we ran and hosted for 18 teams. We then loaned out these materials to Joe Walker Middle School as they hosted the Antelope Valley Techno Classic, an FLL qualifying event that we've run for 8 years. While we have continued to mentor 5 FLL teams, we have searched for new ways to spark interest in FLL. This year, we brainstormed, hosted, and ran a new event - LegoBlast. This gave our team members who do not have FLL experience the chance to build, program, and compete with EV3 robots, while preparing our team for future FLL mentoring.

NASA, a long time sponsor through the House Team Program, counts on us to assist in spreading an awareness of STEM. They invite us to the Black Entertainment TV Fanfest to help run their booth. Also, NASA and other FIRST teams support us in hosting and running our week-long Summer Robotics Workshop, where 60 5th-8th graders learn to manufacture a VEX robot and participate in a competition designed by our team. Our workshops and demos give youth an opportunity to experience new interests at no cost. Workshops we have sustained, run, and hosted over the years include our Eggstronaut Workshop and Eaglets. Through Eggstronaut, 5th-8th graders are introduced to the engineering design process, while Eaglets offers 7th and 8th graders first-hand FRC experience. Our Bottle Rockets Workshop combines the two by both teaching the 6th-8th grade participants the engineering design process and introducing them to FIRST with a presentation for students and parents. Building off momentum from previous successes we are moving in a new direction to expand our STEAM outreach by adding several workshops this year. The first, our Day of Code Workshop which we host and run, provides kids coding experience by using Scratch to practice block coding. Another new workshop that we run and host is our Mastering Media event, teaching over 20 students how to create through Adobe suite.

We have established a close relationship with the Lancaster Academy of Multimedia Programming and Engineering (LAMPE) at our school. In both LAMPE and Robotics, students are introduced to innovations and career paths in technologically advanced fields. These new partnerships bring us together and allow us to continuously interact and provide on-demand support year round. For example, we partnered with LAMPE to host and run a free, weeklong summer STEAM day camp, Gateway Academy, for middle school kids across our valley. In addition, we collaborate with them in our new "ScribbleBots" workshop for 150 5th graders, demonstrating the connection between art and STEM by building robots that draw.

Recently, we've focused on involving more young women in STEM. Working with a teacher on campus, we invited several female engineers to speak to over 100 students at our Girls for STEM Seminar. We also presented at a Tech Trek award ceremony to show 8th grade girls the steps to take in high school to continue on an engineering path. Within our shop, we invite middle school girls to shadow our team, giving them the opportunity to imagine their future in robotics through our FIRST for Girls event.

In addition to these new initiatives, we are proud of the events we sustain. We've written get well cards for the children's hospital since 2014. Also, our team has made holiday cards for active military and hosted over 25 blood drives with the American Red Cross. As advocates for No Kid Hungry we have collected over 4,000 pounds of nonperishable food for our community, and have helped assemble over 1,600 Thanksgiving baskets to families in need. We have volunteered over the past 10 years at the Painted Turtle, a camp for children with life-threatening diseases. To promote literacy in our community, we participate in Laps 4 Literacy and run & host monthly Robot Read Alouds to read to kids. For the last 2 years, we have invited the general public, dignitaries, sponsors, and alumni to our Open House, highlighting our team. In addition to these events, we are honored to advocate the ideals of FIRST to over 220,000 people at numerous public events including the Poppy Festival, LA County Airshow, and AV Board of Trade Conference.

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Our community knows it can count on us in times of need. When local schools want to spark an interest in coding, they invite us to bring our robot and showcase how coding is used. In crisis situations, we come together to meet the need. In July of 2016, a fire ripped through a nearby community. The Sand Fire took 1 life and burned 40,000 acres. At the height of the firestorm, 10,000 homes were evacuated, displacing residents. Team 399's shop quickly became a drop-off point for food, water, animal feed, and emergency supplies such as shovels, buckets, and blankets. With ashes raining down, team members and parents began shuttling carloads of supplies to the local emergency shelter. We are pleased that our community knows we are here for both predictable events and unexpected emergencies.

Not only do we support our local community, we also support our FIRST community. One of our most acclaimed

successes, RoboProm, has become a well-known, recently trademarked event at World Champs. Although we have run and hosted RoboProm since 2007 for those unable to attend their own prom, this year we have expanded it to accommodate both Championships. At RoboProm, 1800 guests have the chance to express their unique personalities. Two years ago, we introduced our \$500 RoboProm Scholarship, recognizing a high school student's dedication to their FRC or FTC team. This year we are awarding this scholarship to one person at each Championship.

Through our social media platforms, we bring the excitement of our events to our growing audience of nearly 5,200 on Facebook, Instagram, Twitter, and YouTube. We upload weekly recap videos during build season and have translated our "How to Start an FLL Team" video into 8 languages to spread FIRST globally. In addition to our shop level training, we founded our Robotics University last year, consisting of over 20 student-taught classes. By recording and uploading video tutorials of these classes, including introductions to Chairman's and milling, we are making them available to people everywhere. Our relatably captioned photos called #JustFIRSTthings has grown popular in the FIRST community, with one post reaching over 36,000 views. To keep our community informed, we write monthly newsletters and press releases which are often published in our local news.

Beyond our social media outlets, we have expanded our international outreach this year to include both Japan and Spain. We skyped high school students in Japan twice to teach them the basics of engineering and FIRST, showcasing both an FTC and FRC robot. In Spain, we sponsored an FLL kit for a group of children ages 6-12 to give them an introduction to robotics. By establishing and sustaining these relationships, 399 hopes to engage in cultural exchange and continually inspire youth globally.

Both our legacy of promoting FIRST and our new efforts to incorporate the arts and reach even more people have left a lasting imprint on the community. These efforts have been recognized with awards such as the Golden Bell. Presented to us last year by the CA School Boards Association, this award celebrated our team mentality in which every individual is important, making us the first robotics team to earn this honor in the co-curricular category. Because of our reputation of providing quality programs, we approached our school district and had robotics approved as a course to be offered next school year. We have also confirmed with Rep. McCarthy that H.R. Bill 5168 will be reintroduced this term of Congress, providing funding to FIRST. The experience we've gained has motivated us to reach new places with the message of STEAM, leading us in a new direction.