

## Chairman's Award - Team 4013

### Team Number

4013

### Team Name, Corporate/University Sponsors

Lockheed Martin/NASA/Mills & Nebraska Door & Trim/Walt Disney World Co Design & Engineering/State of Florida/Florida Fluid Power Society&Orlando Science Middle High Charter

### 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

FIRST allows our team members to hone in on key traits like responsibility and leadership. Our alumni were inspired to major in engineering and accepted into schools like Virginia Tech, Purdue, University of Notre Dame, Georgia Tech, and Tuskegee. Our team members get hands on experience in CAD, programming, and machining. Many members have overcome their fear of public speaking and have presented to hundreds of people. The CEO of VEI Systems has offered the team internships and jobs.

### 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

From our team's success in FIRST, our school added engineering based classes such as programming, CAD, 3D Animation, an Engineering Academy, and an Autodesk Inventor certification testing center. This has helped to increase the student body from 225 to 1700 students; our efforts inspired the opening of 3 new STEM schools. Through the District 5 Youth Advisory Board, we introduce underprivileged youth to STEM. In total, our team has clocked 6600+ hours of community service.

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

To spread the FIRST message we use Twitter, Facebook, Instagram, our team website, newspapers, magazines, and news channels. We also present to different schools and organizations and take part in demos and conventions like I/ITSEC and Otronicon to instill FIRST in the community. Our most innovative method was with our robotics summer camp in Turkey and our 3 year interaction with a Japanese high school. Through our community outreach and media sites, we've reached over 6.7 million people.

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

Our members serve as role models to youth locally and internationally. One alumni member is a 2015 World Championship Dean's List Winner and many from other FIRST teams look up to him. We've also had team members talk in official FIRST Panels at Orlando Maker Faire, Otronicon, and Elliott Massie's Learning Convention about education and FIRST. Three of our alumni mentor FLL, FTC, and FRC teams. We also helped start the District 5 Youth Advisory board to educate kids and establish STEM programs.

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

We attend Otronicon, I/ITSEC and Orlando Maker Faire with our FRC robots to demo and spark interest. We've helped FTC 6090 progress through FLL to FRC and still mentor their teams. As their first year in FRC as team 6473, we presented tips for a successful FRC year, held a FIRST demo at a local Boys & Girls Club to interest kids in joining FRC team 6473, and provided help with programming.

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

We've started 31 FIRST teams and helped Rockstar Robotics transition from FLL to FTC to FRC. To start teams, we attend open houses and visit schools, where we demo our robots and introduce parents and students to FIRST. We've held workshops for FLL coaches to help them start teams and host robotics camps that introduce youth to FIRST to get them interested. We helped Olympia High School start FTC, providing them with a Kit of Parts for 3 seasons and letting them use our workspace and machinery.

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

In total we've mentored 35 teams, graduating them through the FIRST programs; some examples include Techno-Turtles, who we've helped progress from Jr.FLL through FTC, Rock Star Robotics from FLL through FRC, and Nerdvana, from FLL to FTC. In addition, we help many students transition from FLL and FTC to FRC. We think it is important to keep the students interested in the program so they progress through the programs and apply what they've learned.

**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)**

During FTC Build-It Days and FRC Practice Days we work with other FIRST teams to help mentor the younger teams. We provide teams such as Rockstar Robotics FRC and Robotic Titans FTC assistance with programming issues, allow them to borrow tools or anything else they might need such as our workspace. We also do workshops; one example from last year was a Chairman's Workshop we did at our FRC kickoff to spark an interest in the teams to prepare a submission for the Chairman's Award.

**Describe your Corporate/University Sponsors**

We appreciate the continued support of our corporate sponsors. Many sponsors provide more than just financial help. We have a mentor from Lockheed Martin and we have the support of members from the Fluid Power Society, who help us with pneumatics. Mill & Nebraska also gives us our main workspace for free. Our school has also provided us with workspace, event space, and equipment such as our milling machine. The CEO of VEI Systems, a past mentor, has offered the team internships and jobs.

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

Whenever our sponsors host events, we make it a priority to attend. This year is our 2nd time attending Rocket City Regional thanks to NASA's grant. We also volunteered at the Lockheed Martin FLL tournament, worked with VEI Systems' CEO, who mentored and allowed us to use the company's machine shop, attended Eweek with Lockheed Martin for 2 years, and held a FIRST demo for 2 years at Tom Joyner Family Reunion with NASA. Additionally, Disney has been a strong sponsor for 6 years.

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

No matter who you are, FIRST is a chance to make a big impact on the community and around the world by changing the culture. FIRST is this massive, ever-growing community of students and volunteers collaborating to create a smarter and friendlier world; a family of problem solvers. FIRST is what allows us to not only try out the jobs and careers we want to do in the future, but to pull others into this contagious program as well as to help their futures as much as FIRST helps ours.

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

Our team comes from a variety of ethnicities, backgrounds, and cultures, in efforts to show minorities FIRST opportunities. Even though we all come from a variety of places, we are one team with the same dream: to be a part of something big. Clockwork Mania is a single big family composed of dedicated mentors, students, and alumni. We all strive to change the culture by introducing STEM everywhere.

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

Martin Granger

**Essay**

The world we live in is ever evolving, our minds constantly striving for improvements. Since we live in an era of innovation, a practical education must prepare you for work that doesn't exist yet. Education is the most powerful weapon you can utilize to change the world. We, 4013 Clockwork Mania, are an army of dedicated students, who push for new methods of education through FIRST.

Our team comes from a variety of ethnicities and backgrounds, and we exhibit diversity on a daily basis. We show young women and minorities the opportunities that FIRST provides.

Clockwork Mania starts with a strong bond within the team; we are one big family, composed of dedicated alumni, members, and mentors. We work with a system of student team leaders, who teach and guide the newer members. In the off-season we have weeks of preparations and learning, with student and mentor led workshops such as: Safety, CAD, and Theory of Inventive Problem Solving. The year before we began FRC, we were an FLL team. That same year,

Dean Kamen personally challenged us to expand and we jumped in headfirst to become a team that participates in FRC and FTC every year.

FIRST has greatly impacted our team members allowing us to get hands on experience with CAD, programming, and machining. Last year's Alumni are majoring in engineering and were accepted to schools like Virginia Tech, Purdue, University of Notre Dame, Georgia Tech, and Tuskegee. Our team members and mentors serve as role models to the youth in our community. We have 2 mentors that have been recognized as Woodie Flowers Finalists, an alumni member that is a World Championship Dean's List Winner, and 3 alumni members mentoring FLL, FTC, and FRC teams.

We appreciate the support of our distinguished sponsors. Throughout the years, we have partnered with various sponsors including Best Buy, Atkins Global, Lockheed Martin, Disney, Boca Bearings, NASA, Rockwell Collins, OUC, State of Florida, VEI Systems, Orlando Science Schools and Fluid Power Society. Whenever our sponsors host events, we make it a priority to attend. We volunteered at the Lockheed Martin FLL tournament, attended E-Week with Lockheed Martin for 2 years, and held a FIRST demo for 2 years at the Tom Joyner Family Reunion with NASA. Also, the CEO of VEI Systems has offered the team internships and jobs.

We have a 3 part outreach program called "Making the Clock Work". Our "Making the Community Tick" program focuses on engaging the local community with student run programs. In "Meshing with Public Figures" we collaborate with major media and political figures to create self-sustaining STEM programs and connect them with a larger audience. With the "Winding up the World" initiative we introduce, expand, and sustain STEM programs in foreign countries to inspire an international community of problem-solvers.

#### Making the Community Tick:

Clockwork Mania is well-known in our school's community. Our trophies are proudly displayed in our school's trophy case to show our accomplishments. The team plays a major role in revolutionizing our school's curriculum. From our team's success and the team members' constant requests for more engineering opportunities, our school added engineering based classes such as CAD, Programming, 3D Animation, an Engineering Academy, and a CAD certification testing center. The enriched curriculum has attracted students and grown our school's student body from 225 to 1,700, with 2,500 on the waiting list. We've held a STEM presentation for the Seminole County Public Schools Board; our work has influenced the opening of 3 STEM campuses. We hold robotic demonstrations at all 3 campuses and open houses to increase the number of school applicants by exciting students about FIRST robotics. We also reach out to the local community by hosting weeklong robotics camps; many students, such as two of our team members, join a FIRST team after attending.

We constantly visit local schools, where we introduce FIRST to the next generation of scientists, innovators and engineers in our initiative to start teams. Not only do we start FIRST teams, but we also continue to mentor and expand their knowledge. Olympia High School is one of the schools that we have established FIRST teams with. When their team first started, they lacked the funds to purchase a Kit of Parts, so we've provided them with one for the past 3 seasons. We also let them use our workspace and machinery, and mentor them on programming and mechanical issues.

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Beyond just inspiring the next generation of engineers, Clockwork Mania also helps sustain existing FIRST teams. For the past 6 years, Clockwork Mania has volunteered and hosted annual FIRST events such as: FLL and FTC tournaments, FTC judgment days, and FRC kickoffs. In total, we've hosted 259 local and international teams in 21 events! We've started 31 and mentored 35 FIRST teams by helping them register and apply for grants and providing continued guidance, resources and access to our shop. We also help various teams graduate through the FIRST programs; some examples include Techno-Turtles, who we've helped progress from Jr.FLL through FTC and Rock Star Robotics from FLL to FTC and FRC; this being their first year in FRC, we presented to them tips on how to successfully transition and mentor them by providing help with programming and mechanical issues.

#### Meshing with Public Figures:

Our team went to a Charter and Private School Expo to explain to current educators what FIRST is and why it is so important to incorporate it into everyday learning. We gave a presentation at the Elliott Massie's Learning Convention, a massive conference in education, with the biggest names, innovators and educators of our time. At the convention, we had the opportunity to meet Ken Johnson, director of FTC. We were invited by District 5 Commissioner, Regina Hill, to attend the Back to School Fair to promote STEM education and FIRST. We are working with her to design and start STEM programs across the district, which is a low income area. Along with that, we helped form the District 5 Youth Advisory Board, a program designed to help underprivileged youth receive a positive influence from their peers. We attended the District 5 STEM Expo where we had the opportunity to demonstrate our robots to underprivileged youth and expose them to real world applications of engineering. We also work with local Boys & Girls Clubs and Boy and Girl Scouts to teach them the basics of FIRST, robotics, and engineering.

Clockwork Mania also looks into attracting political support for STEM Education. We had the Mayor of Orlando and Senator Darren Soto come to our school, where we were able to introduce them to FIRST and its applications on STEM education. We have met with Mayor Dyer three times since, discussing the importance of STEM programs in the community. We've also met with Senator Bill Nelson and the Mayor of Lake Mary at the grand opening of our Seminole County STEM school where we introduced them to FIRST Robotics. We also look into attracting engineers to FIRST. We've attended conferences such as the Engineering and Construction Contracting Association Conference, Emmerson Exchange, and Association for Advancing Automation Conference, where we had the opportunity to interact with thousands of professional engineers from all over the world to demonstrate our robots and introduce FIRST robotics. We've also had a booth at I/ITSEC for 2 years and Otronicon for 5 years, where we've interacted with over 120,000 national and international exhibitors, professionals, and students.

#### Winding up the World:

Clockwork Mania also stretched across the globe all the way to Izmir, Turkey, where we gave a one and a half week robotics summer camp to ten local high schools to inspire them to pursue STEM education. Our work helped start a robotics club at Gediz University. We are also in contact with a few foreign schools. Meizen High School from Fukuoka, Japan, has visited our school for the past 3 years; we introduced them to FIRST robotics and showed how we use our machinery. We plan to go to Japan to start FIRST teams there. This year, while hosting a robotics demo at the Orlando Japanese Festival, we made a new contact with the head of a Japanese school district who wants us to start FIRST teams in Japan. We've also met with FLL Flying Pandas from Beijing, China to help them grow as a team and have hosted Brazilian and Columbian teams at our FRC kickoffs. With a contact we made from kickoff, we mentored 2 Brazilian teams through Skype.

Our team has been featured on local, national and international news multiple times. Our coach was interviewed for Latina Magazine for a featured "Girls in STEM" article. We've been featured on "Good Day, Orlando" displaying our robot, our accomplishments and how the team works, as well as on a FOX News segment on the grand opening of our new STEM school. While our team was in Turkey, local and national news channels broadcasted our event at Gediz University live. Two of our members were also featured live on an international European news channel, talking about the importance of STEM and FIRST. Through our community outreach and media sites, our team has reached over 6.7 million people. This number comes from 4.2 million through magazines and newspapers, 1.7 million through television, 800,000 through direct outreach, and 40,000 through our social media.

Our impact on our community is timeless, having clocked over 6,600 hours of community service. Our team always strives to serve as a role model team and exemplify the true meaning of FIRST. It is our mission to change our culture by introducing and sustaining STEM programs in our community and around the world to improve the lives of underprivileged youth. Because we know all the work we do amount to great things, we believe that even the smallest gear makes the clock work.