Chairman's Award - Team 1311

Print Close

2018 - Team 1311

Team Number

1311

Team Name, Corporate/University Sponsors

Kell Robotics/Kennesaw State University/Shaheen & Company/United Technologies/GE Volunteers/Novelis/Automated Logic/Lockheed-Martin Aeronautics/USG (University System of Georgia)/TCSG (Technical College System of Georgia)/R Design Works/Johnnys Pizza/Nypro/Peterson Aluminum/AM Castle/STEM Leadership Foundation/Cobb EMC/Arylessence/ASME/Dow/Atkinson Construction/Cana Communication/Gardner Denver/AGCO/Check Point Software Technologies, Inc.&Kell High School&Kennesaw Mountain High School&North Cobb High School&Harrison High School&Etowah High School

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

Working with the team and having fun while designing, coding, and building a robot is what inspires a growing passion for STEM among our team members. These passions have led to many taking on internships, research projects, and part-time jobs. In addition to this, FIRST has helped develop our members' personal skills, such as communication and team building skills. This led students to become leaders in their schools and community, and to be at the forefront of a new STEM education culture.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

Our signature effort, the 21st Century Education Model, expands STEM education by incorporating FIRST into the classroom. In addition, we teach engineering, coding, and design skills at our Girl Scout workshops. This introduces girls to FIRST opportunities and STEM oriented careers. Another way our team impacted the community was through creating the manufacturing support network. This network supplies aluminum to teams across the state and has grown to include Statesboro, Columbus, & Augusta.

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

Through our extensive outreach program, we have showcased at over 50 events, briefings, & presentations this year, surpassing 320 total in our history. These include the Atlanta Science Festival, school STEM nights, & Science Olympiad. Our most innovative method of spreading the FIRST message is through the implementation of FIRST as a state approved CTSO. This accomplishment enables teachers to be paid for coaching an FRC team & allows the Georgia state government to promote FIRST statewide.

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

Our team works year-round to spread the message of FIRST through the press and our community outreach program. In addition to starting and mentoring teams, we build partnerships that help all teams in our community. Members act with a high level of professionalism, integrity, and respect for others. This fosters an open environment where students can work with others to help them succeed and grow.

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

We have found that the best way to start teams is through an extensive outreach program. Effective outreach allows us to inspire and attract students, explain FIRST to the world, and network with others. These initiatives enable us to start new teams. The connections we create allow us to invite school leaders, administrators, teachers, students, and parents to the Kell Robotics Innovation Center. Here, they can learn more about FIRST, the impact of FIRST, and how to form a team.

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

Our team collaborates with school districts to identify opportunities to start teams. This year, we have worked with the Girl Scouts of Greater Atlanta to start 1 FTC team and are currently in the process of starting 2 FLL teams. To maximize our impact, we host monthly Girl Scout workshops where girls can learn programming, CAD, and manufacturing skills. We have also started 14 other FLL teams, and use outreach events to facilitate new team starts.

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

With help from our partners, we work to develop a statewide manufacturing support network. Along with this, our team conducted five workshops at the annual Georgia FIRST symposium, teaching subjects such as CAD, programming, and public policy. We share information, loan out our robots, and invite teams to use our workshop. This year, our team created a training robot kit which helps new teams learn how to build and program a robot. We also host FLL regional and super-regional competitions.

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)

Throughout the years, Kell Robotics has opened their doors to various teams, providing them with the tools necessary to succeed. Our reach is not only limited to our Innovation Center. Our students also travel to mentor multiple FLL, FTC, and FRC teams. The past few summers, we have supported FLL summer camps with several other FRC teams at Dobbins Air Force Base (Dobbins AFB). Overall, Kell Robotics has mentored 25 FLL teams (5 this year), 1 FTC team, and 18 FRC teams.

Describe your Corporate/University Sponsors

We partner with a variety of leaders, including those of school districts, universities, technical colleges, and businesses. We have over 20 corporate and foundation sponsors who provide financial support. The largest sponsors include United Technologies, the Department of Defense (DoDSTEM), General Electric, and Novelis. Educational and political partners include Kennesaw State University, the Technical College System of Georgia, the University System of Georgia, & the Lt. Governor's Office.

Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years

Our partners give us the ability to implement strategic initiatives to grow and support FIRST. These partners have helped us add FIRST to the Georgia CTSO program, which has enabled extended pay for teachers who coach teams. They are also key to the expansion of the Georgia FIRST manufacturing partnership - an informal coalition of public and private partners that support teams by manufacturing parts. Additionally, sponsors provide us with mentors who train our students for future positions.

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

FIRST is a robotics organization that gives students of all ages the opportunity to learn real-life programming, designing, & manufacturing skills that are otherwise missed in school. The program not only teaches technical skills, but also personal skills like leadership, cooperation, & time management. In addition, students learn how to operate a business by working directly with business partners & sponsors. FIRST provides unique opportunities that shape the next generation of STEM leaders.

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

We created the 21st Century Education model to introduce proposals for STEM education and integrate FIRST into schools. One aspect of this is working on enabling FIRST alumni to enter the teaching profession through new degree programs. Another is the concept of STEM gyms, which give students access to a facility fully dedicated to robotics. Together, these two initiatives will help achieve the goal of placing FIRST into every school.

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

Mackenzie Sicard

Essay

OUR MISSION & VISION
Our mission is to extend FIRST opportunities and STEM education to every student in order to inspire the next generation of Scientists, Technologists, Engineers, Mathematicians, and Leaders.

The solution to this is simple: connect FIRST to the classroom.

We are making strides towards this every day. Through outreach, formulating public policy, nurturing STEM learning, creating infrastructure, and building partnerships, we are changing the future of STEM education.

Education
We envision that one day every STEM teacher will be a FIRST alumnus. Throughout the past few years, we have established a framework that has brought us closer to this vision.

We designed a new method for creating the next generation of K-12 technology, engineering, and computer science teachers. In late 2016, our team released a publication on www.issuu.com entitled "The STEM Pipeline is Broken: Addressing the Teacher Supply Crisis for Technology, Engineering, & Computer Science". The publication, which has already been read 1,380 times, focuses on this method in detail and allows others to replicate our process.

In 2017, we persuaded the Georgia state legislature to make FRC a Career & Technical Student Organization (CTSO). Teachers are now eligible for extended pay for coaching FRC and FTC teams. Since then, the CTSO has increased awareness and growth of FIRST initiatives in the state.

New for 2018, we have made the following advances in building on those accomplishments.

We believe the best 21st century STEM teachers will come from FIRST. With this, we have developed a resource kit that explains how to approach universities and advocate for educator programs that incorporate FIRST alumni.

We also initiated a teacher professional development program through our partner, Kennesaw State University (KSU). It is the largest initiative in the state for teaching educators about the engineering design process. This program is taught by a Doctorate in engineering design processes and provides teachers with 32 hours of professional credit. This unique initiative is 100% funded by Kell Robotics.

Advocacy
Since starting our political advocacy in 2009, we have met with U.S. Congressmen and Senators, and state leaders such as the Governor, Lt. Governor, House representatives, and Senators. In 2010, we were invited to brief the U.S. Congressional Robotics Caucus. We also participated in President Obama's 2012 White House Science Fair as a representative of the Lemelson-MIT Inventeams. Educating leaders about the importance of FIRST has helped lead us to our success with connecting FIRST to educational and workforce initiatives.

New for 2018, at the request of the Georgia Department of Economic Development, we developed a report to facilitate a strategic effort to advance our vision of a 21st education. Fulfilling the request and working with state legislators will lay a foundation for initiatives in the 2019 legislative session.

Gender Diversity
We are glad to have the opportunity to collaborate with one of the country's most inclusive organizations, the Girl Scouts. Our partnership with the Girl Scouts of Greater Atlanta began in 2007 and has grown ever since. Two years ago, we began hosting monthly workshops that introduce girls to robotic engineering. After completion, each girl is awarded with a badge to commemorate all they have learned.

In addition to these workshops, we also reach out to the Girl Scout community in different ways. We support the annual Girl Scouts STEM EXPO, which draws over 3,500 girls each year. We also train future Girl Scout coaches. This current level of training activity is substantial, and demand is increasing annually.

New for 2018, we started a Girl Scouts FTC Team. Along with this, our two team leaders, Danielle Newman and Mackenzie Sicard, serve as Community Liaisons for The KSU Presidential Commission on Gender and Work Life Issues. Here they focus on engaging women in technology and highlighting STEM programs.

FIRST Growth & Support
We have started 25 FRC, 1 FTC, and 14 FLL teams, and mentored 23 FLL teams.

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With the continued progression of the Georgia system, support and training for new teams has shifted towards indirect support. With this, our main FRC training classes are at the state CTSO Symposium. At the symposium, we conducted classes in vision processing, designing, advanced programming, and advanced control systems. We shost classes at the Kell workshop as well.

Even with the realignment of training efforts, our center is busier than ever. We average two+ visits a week from political, policy, corporate, and educational leaders. These leaders come to learn how they can participate in the growing GeorgiaFIRST system and how to more effectively incorporate FIRST into their institutions.

We also support FIRST by running and hosting competitions. We have hosted and ran FTC regional competitions for the past eight years. In addition, we have been hosting and running FLL regional and super regional competitions yearly since 2009.

New for 2018, to accommodate the level of growth in the region, we have developed a custom designed training robot. We created it to be a teaching tool in classrooms and on rookie teams. The system can use either the new RoboRio or older CRio control system, and offers maximum visibility of components. We are creating and delivering systems with materials our team currently owns, and are working with our partners to deliver even more kits.

GeorgiaFIRST Manufacturing Partnership
We worked with KSU in 2015 to create a manufacturing support center. FIRST robotics teams are encouraged to use KSU's in-house facilities, such as their new waterjet, to craft parts and fix machinery. In 2017, we expanded this by creating a partnership between us, KSU, Novelis, and GeorgiaFIRST. Through this partnership, Novelis donated $154,000 of aluminum, helping all teams across the state.

New for 2018, we rebranded this initiative as the "GeorgiaFIRST Manufacturing Partnership". The system is evolving organically into a regional effort of teams, universities, technical colleges, and corporate partners. This evolution was exactly our intent. The aluminum in this partnership has "magnetic" properties, attracting potential new partners, and most importantly, demonstrating how to build public/private educational partnerships.

OMAX joined the effort, providing the CNC software that students can use to learn about advanced manufacturing, and how to better manufacture a robot. We conduct the team training and manage the software distribution.

The 2008 vision of a statewide support network is now, after 10 years, emerging. Aluminum is being distributed to an organically evolving system of support centers in Atlanta, Columbus, Augusta, Marietta, and Statesboro.

The operational cost of the waterjet KSU is 100% paid for by Kell Robotics.

FIRST in Georgia Factbook
To educate sponsors, policy makers, and the public about FIRST, we created the "FIRST in Georgia Factbook". This book offers detailed information on how others can contribute to the FIRST program.

Since then, we have seen evidence of how this factbook contributes to the recruitment of new partners and sponsors to FIRST. We are now better equipped to explain what FIRST is and what impact it has on the students, and to inspire these crucial companies to support the FIRST community.

HOW WE DO OUR WORK
We couldn't achieve our goals without important facets in place. Through our outreach, media, and partnerships, we are able to spread the knowledge of and participation in FIRST to people across the nation.

Outreach
We bring FIRST to students across the state and nation through our outreach initiatives. At these outreach events, we showcase our robots, advocate for FIRST, give presentations, help people start their own FIRST teams, and teach students valuable STEM skills. Over the past thirteen years, we have demonstrated at over 320 exhibitions, briefings, and press events, covering over 40 this year. Examples include the Atlanta Science Festival, the State Science Olympiad, and STEM expositions.

This year, we added the Technology of Georgia conference and the state Career, Technical, and Agricultural Education conference to support the CTSO initiatives. In addition to this, on March 16, 2018, we will represent FIRST programs at the international National Science Teachers Association conference.

Media
Through the media, we are able to increase public awareness of FIRST. Over the past thirteen years, we have been featured in 6 national magazines, 14 regional press articles, 13 television segments, and one international broadcast. The television broadcasts are on GPB, CBS, NBC, and ABC affiliates in Georgia and South Carolina.

These unique opportunities allow our team to make connections with people and promote FIRST to new communities.

Partnerships
It would not have been possible to spread FIRST at the rapid rate at which it is spreading without the help of our strong partnerships. We use this to expand our partners and encourage more people to support FIRST. Our financial sponsors provide the funding we need to build our program, and our strategic partners help us develop our education initiatives. We don't just seek these opportunities for our own personal gain, we believe other teams should be able to benefit from their own partnerships.

The strength of our partnerships is key to our success. Our partners agree with our vision of transforming education, and help to advance it by providing the financial and material foundation needed to advance our mission. Without their constant support, none of this would be possible.

BROADER IMPACTS
After these efforts have been fully implemented within Georgia, we plan to expand our efforts to other states throughout the country. We believe our efforts could serve as a potential model for others seeking to change their communities and to grow FIRST.