Chairman's Award - Team 4761

Print Close

2016 - Team 4761

Team Number

4761

Team Name, Corporate/University Sponsors

United Technologies / Analog Devices / Teradyne / Gath Electric / Textron Systems / Reading Educational Foundation / Raytheon / BAE Systems / Nelson Burbank / Pfizer & Reading Memorial High

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2015/2016 year and the preceding two to five years

All past team members have continued to pursue science and engineering fields in college. Presently, alumni study varying types of engineering at colleges such as MIT, RPI, Bucknell University, Syracuse University, the Universities of Massachusetts at Amherst and Lowell, and the Universities of Vermont, Pittsburg, and Delaware. Team alumni have also received scholarships to RPI and the Embry-Riddle Aeronautical University. All current team seniors are planning to pursue STEM majors in college.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2015/2016 year and the preceding two to five years

4761 presented to the Reading School Committee and Board of Selectmen about FIRST and our team resulting in support to expand the existing STEM program across the school district. The expansion includes curriculum that teaches CAD, pneumatics, electric and mechanical engineering, allowing students to develop STEM skills. FRC is supported within these classes as an extracurricular STEM option. Without our presentation, expansion of the program across the district would not have occurred.

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

This year, the biggest way our team spread FIRST's message was by hosting (per FIRST's definition) Reading's very first Science Expo. The Science Expo was filled with hands-on experiments, robot demos, and student science presentations that specifically targeted elementary and middle school students who are interested in science. The goal of the Science Expo was to encourage younger kids in the community to engage in STEM activities, to join FLL and FRC teams and take STEM classes.

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

There is a conscious effort by our student team leaders to train all new members. At the end of each season experienced team members are nominated by the mentors to be next season's leads, with the two most dedicated becoming the co-presidents. These students guide the team for the oncoming season. During preseason we hold bi-weekly workshops to teach incoming members. Team leads and mentors use the 'show and do' teaching method to train new members, preparing them for the build season.

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

Team 4761 aspires to be a resource for any rookie FRC team that needs help; we invite other teams to do outreach at our events, and attend their events to give them a bigger presence in their own town. Last season we assisted rookie team 5735 the Control Freaks who qualified for Worlds yet had no experience planning or budgeting for a trip. We also provided public resources (per FIRST's definition) including our business plan and season presentation to our mutual sponsor Teradyne with them.

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

As described, 4761 plays a fundamental role in Reading's FLL organization. Our team also supports local rookie and younger FRC teams. During the 4 years we have been a team, we have grown tremendously, partly due to the support we receive from veteran FRC teams. Our team believes in giving back, now that we are more successful and no longer rookies. By assisting FLL and other FRC teams we are providing these teams with the same fundamental support we received when we were first forming.

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

In order to assist students through the FIRST program, 4761 encourages all types of local STEM organizations by coaching, inviting them to our events, and supporting theirs. These groups include 4 middle school science teams, 15 FLL teams, and 5 local FRC teams. 4761 also welcomes junior members who are middle schoolers that participate in our team activities and meetings. Current junior members have been participating for 1 - 5 years, and have positions on the business, drive and design teams.

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)

4761 plays a fundamental role in mentoring the FLL teams in Reading. There are approximately 15 local FLL teams and every team that needed an assistant coach has a student from out team on board. This allows there to be more teams with less kids per team in our town. Smaller teams facilitate a better student experience, with more focused 1:1 time with their coaches during the season. We also support FLL during competitions as referees or judges.

Describe your Corporate/University Sponsors

Corporations sponsor 4761 on three levels. Our Gold Sponsors are prominent on our competition t-shirt, robot, and website, are officially recognized by FIRST, and receive a 4761 robot demo. These include Epsilon, BAE Systems, Teradyne, UTC, and United Technologies, and have donated $2,500 or higher. Our Silver Sponsor Raytheon has given $1,000 and is displayed on our robot, shirt and website. Bronze Sponsors of $500 and higher are recognized on the website.

Describe the strength of your partnership with your sponsors with special emphasis on the 2015/2016 year and the preceding two to five years

4761's partnership with our sponsors has skyrocketed; in the past 3 years we have given back with robot demos and participation in their events. We also present annually to our sponsors, demonstrating how their support has led 4761 to success. For Teradyne our tech talk and robot demo are a highlight at their yearly company BBQ. With REF we donate a STEM Christmas tree to their annual Festival of Trees fundraiser. 4761 is constantly striving to demonstrate appreciation to our sponsors.

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

The FIRST environment allows kids to come up with innovative ways to solve problems, so that they are prepared to one day be experienced and intelligent STEM workers. Students learn skills like handling various types technology and coding, while experiencing what a typical classroom lacks like teamwork, group brainstorming, meeting new people, hands-on learning, leading others in a real-world task and setting, and business management skills like writing grants and making presentations.

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

We have no other matters to discuss. Please enjoy the essay!

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

Claire Walsh

Essay

In 1926, Robert Goddard invented the first liquid-fueled rocket, marking the beginning of the Modern Rocket Era. Previously, rockets had been used as projectiles in a limited range of activities, such as fireworks and warfare; over time they became increasingly more powerful, accurate, and deadly. With Goddard's invention, however, rockets were seen in a whole new light, becoming significantly more advanced, sophisticated, and productive to society. In the span of a few short decades, his creation led to the German V-2 rockets and NASA's Saturn V liquid-fueled rockets, which landed the first humans on the Moon in 1969. This was, as Neil Armstrong so eloquently put it, a "giant leap for mankind"; and Robert Goddard had started it all. FRC team 4761, the Reading Robockets, has made a similar journey. A small, passionate group of aging FLL members came together in 2013 to create team 4761, but were limited in workspace and tools. Despite this, 4761 became increasingly more powerful and accurate. With our second year came reinvention; like Goddard's liquid-fueled rocket, we started our own Modern Robocket Era within our community, and have been evolving and advancing ever since.

In order to embark on its journey, 4761 relied on its dependable members; we have quadrupled in size since our inception. In our first year we had 18 students and 5 dedicated mentors (who, in fact, are still active with the team today). As a rookie team, we were literally working out of a closet in our school, constantly spilling out into the hallways and classrooms. 4761 did not start out with any grants or sponsors, and had to pay back thousands of dollars in loans during the post-season of our first year. There was no organized budget, meeting time, structure, or outreach plan. 4761 could have easily succumbed to its limitations and failed to continue as an FRC team.

But, our rookie season was extremely successful, and 4761 proudly attended Worlds as Rookie All-Stars and winners of the Highest Rookie Seed Award. Our team grew in our second year to 30 members and 8 mentors. In order to overcome our limitations financially and physically, we tackled grant writing and fundraising. In 2015, our team grew to

45 students and 15 mentors. 4761 focused on team structure, officially dividing into technical and business teams. The new business team eagerly focused on outreach, FIRST awards, grant writing, media, and fundraising. Not to be left behind, the technical team began moving towards strategy, prototyping, and project management. Now in 2016 our team has 60 members and 12 mentors; in just four short years, 4761 has grown tremendously. We continually push beyond our limits, forming an interactive learning experience, a thriving business, and a growing community in the process.

The Robockets recognize that the FIRST program contributes to building real life experience by (gently) forcing us to operate like a corporate engineering company with strict rules, limited resources, and time constraints. To accomplish our many missions, we have systemized our intentions and carry them out with proud precision. One of the business team's most outstanding accomplishments, which details our qualities and actions, is our business plan. This plan supports our team by providing a financial and organizational foundation for students participating in FRC. We strive to provide both an awareness and an incredible experience for Robockets while continuing to grow and inspire others.

Our team mission statement, written by the Robockets as a group, succinctly expresses all of our values, beliefs, and personal goals. It first states that FRC Team 4761 "The Robockets" promotes a fun and interactive out of the classroom educational experience that supports STEM initiatives within our schools. To ensure that we carry out this mission and begin each season on a high note, 4761 developed an extensive year-round program that includes training, non-competitive robot building, fundraising, and outreach. Our preseason schedule boosts team morale, member involvement, and focus and passion during build and competition season.

The 4761 business team is able to focus on grant writing and fundraising as a part of the offseason program. Grants are submitted so that we are financially ready for the build and competition seasons. Most of our major grant applications, including United Technologies and BAE Systems, are due in mid September; 4761 is able to meet these deadlines because of our preseason schedule. During this time we also organize presentations and robot demos for local sponsors and fundraisers with local businesses. The technical team has taken advantage of the preseason to build robots just for the fun of it. During the 2015 preseason, the tech team built a t-shirt cannon robot, which provided hands-on training for new members in while testing out new build and design tactics.

Our year-round program is unique and important because it fully challenges students to collaborate as peers with our mentors. Building maturity and experience that lasts for build season and beyond, the training gives our team members a broader real world perspective. 4761 mentors are predominantly engineers and/or managers in successful businesses; because of this, students are able to learn and accomplish more on a high school team than most college students do before their junior year. (Our alumni who have graduated college have confirmed this). All members are trained across all workstreams, providing every Robocket with a well-rounded skillset.

The Robockets engage with the community through social media, including local newspapers, our website (www.robockets.org), Facebook (FRC Team 4761 'The Robockets'), Instagram (Robockets.4761), Twitter (@FRC4761), and Reading's Superintendent Blog. 4761 also presents yearly to the Reading School Committee, Reading Rotary, Reading Education Foundation and the Reading Board of Selectmen, as well as to many of our sponsors including Teradyne, Textron and Salem 5. These presentations foster community awareness and support for FIRST and our team. Developed to provide organizational structure and resources, our outreach plan outlines how we will spread our enthusiasm for STEM and FIRST across all of our communities. Our extended community includes:

Reading Memorial High School
Reading School District

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Reading and other local towns
Our corporate sponsors
FRC community
FIRST community (e.g. FLL)

For the first time this year, the business team held a science expo aimed at engaging elementary and middle school students in STEM subjects while spreading awareness of FIRST Robotics. There were hands-on experiments, robot demos from two other FRC teams, and over 50 student science presentations made and presented by elementary and middle school students interested in science. Overall, the expo attracted more than 200 visitors of all ages. It was truly an interactive and exciting community event; an excellent addition to 4761's already extensive community outreach efforts.

4761 was also chosen just last year to host the FIRST North Shore District Event at RMHS. This is an honor above all honors, and we took it on with enthusiasm and applied all that we knew to make it a successful event. Most importantly, we worked to showcase FIRST to the Reading community through this massive event. Approximately 2500 people attended this event, and all were blown away by how kind, helpful, and professional our team members were.

The Robockets value attending community and professional events, where there is always something new to learn. We interact consistently with other FRC teams including 2876 the Burlington DevilBotz, 4909 the Billerica Bionics, 3467 Windham Windup Robotics, and 5735 the Wayland Control Freaks. With them we have held a Business Plan Development Alliance meeting and Round Table Chairman's discussion. We showed off our robots and participated in collaborative learning at the Billerica Robot Day, Beantown Blitz at Northeastern University, and even a Home Depot Shop tour. To expand our knowledgebase we attend WPI programming workshops, Northeastern Training Days, collaborate with engineering students at Merrimack College, and compete at the NH tech fest.

Through interactions with community leaders including Superintendent Dr. Doherty, Woodie Flowers and Dean Kamen, who attended the NE District competition that we hosted, Monica Mederios, a candidate for MA state representative,

and John Tierney, the MA state representative, our team has learned how to speak professionally about our team's accomplishments and the FIRST initiatives. As always, 4761 spends the bulk of our time interacting with the town community at events like Reading's Friends and Family Day, Street Fair, Future Freshmen night, REF Festival of trees, Metco BBQ with Boston families, and at workshops with Girl Scout troops, FLL teams, our local library, and the Reading middle schools.

The Robockets FRC team 4761 certainly had a unique inception. Created with limitations already chaining it down, our team persevered through its first year, coming out on top and beginning the next year anew, in the Modern Robocket Era. We reinvented our structure, organized our mission, and began to grow rapidly, involving communities in our massive network layer by layer, from local to professional. Robockets members train and prepare extensively during the offseason so that our competition robot can be on par with German V-2 rockets and NASA's Saturn V liquid-fueled rockets. But at the end of the day, 4761 members value meeting new people and building alliances the most. These connections form an expansive community they'll proceed with in the rest of their lives; truly, those results are priceless. There are no longer any limits for team 4761 and its members; we have evolved, blasted off, and will soon take a "giant leap" on the moon!

2016 - Team 4761

Picture 1

2016 - Team 4761

Picture 2