

Team 4761
Reading Memorial
High School
THE ROBOCKETS
2017-2018 Business Plan





Team Mission Statement

FRC Team 4761, otherwise known as the “Robockets”, is a Massachusetts-based organization that promotes a fun, interactive, out-of-the-classroom educational experience and work environment offered to high school students. We support STEM and business management initiatives. We enable students to collaborate as peers under the guidance of adult mentors who are subject matter experts in technical and business disciplines. Students challenge themselves to design, fund, and build a robot. The team implements core skills such as cooperation, teamwork, sportsmanship and strategy to overcome real-life problems. Because of this, we take pride in our accomplishments as a team and gain experiences that will aid us in the future. One of our greatest achievements is building relationships with fellow teams, sponsors, and our school, thus creating an expansive community dedicated to education and STEM. This process enables students on the team to contribute to the community and develop enthusiasm for future STEM careers.

Along with engineering and problem solving exposure, our team provides students with training in the fields of marketing and business development, allowing them to learn skills necessary to run a successful business. Our business team seeks to work with our community and give back to our supporters through fundraising and STEM outreach efforts.

Team Origin

The work to organize the Reading Robockets, team 4761, began in 2011 by members of the Board of Reading Engineering Teams, Inc as the next step for students coming out of the town FLL program into the local Reading Memorial High School. This work was completed in time for the 2013 Ultimate Ascent

challenge. With only eighteen students, five mentors, and a few bank loans, the team competed to a six win and six loss record at the Boston Regional Event and qualified to go to the Worlds event in St. Louis as a New England Rookie All-Star.

Following this performance, the team worked to outdo itself. We secured sponsors to ensure a future for the team and created a budget. Taking the Rhode Island District Event in the FRC challenge “Aerial Assist”, the team won its first blue banner in 2014.

After these first two years the team grew in size and moved into a larger space in the basement of the high school. Capitalizing on the local robotics craze, the team took on the challenge of helping to host both the North Shore FRC District Event in the high school gymnasium, and an annual STEM-focused science expo. These developments enabled the Robockets to win the Chairman’s award in 2015, one of the youngest organizations to do so. The team won both the home event for the first time in 2017, and the Engineering Inspiration award.

At six years old, the Robockets are going into the FIRST PowerUp challenge with 44 students from three different towns. We are looking forward to hosting the North Shore event again this year.

Organizational Structure

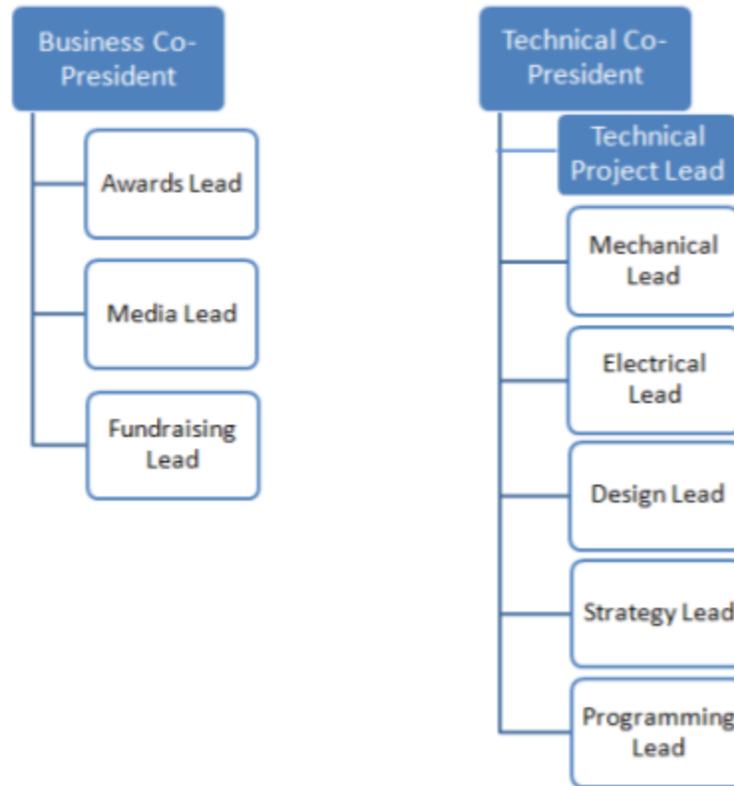


Figure 1: Team Organization

As shown in Figure 1, the co-presidents are responsible for coordinating the team leads. They are also responsible managing teams tasks, and creating timelines. The business and technical co-presidents are also in charge of giving weekly operational presentations to update members and mentors on the team's status. Each team member also belongs to a component team, which have leaders themselves, in charge of building one piece of the robot.

Subteams:

Technical Project Manager- Details and ensures that each team delivers required robot functions

Mechanical - Designs, prototypes and builds robot structure

Strategy - Gathers info on other teams and determines game strategy

Design - Designs and assembles robot components on CAD software

Electrical - Wires robot and relays data between code and sensors

Programming - Writes software for automatic and manual control

All purchases are required to be logged in Intuit's QuickBooks™ accounting software. The data is compiled into graphs to keep team members and mentors informed.

Recruitment is the responsibility of all members and necessary to maintain our team. Engagement of new members comes from local events where students can interact with robots while learning about our team.

Relationships

Students and mentors work together, which provides a mutual learning experience. We make sure that every student on the team takes away an enjoyable learning experience. Because of the team's dedication and enthusiasm, our mentors stay with the team and inspire us in ways nothing else can. They enjoy passing on their expertise and increasing enthusiasm for their fields. The

work ethic of our team helps to spread and encourage FIRST's mission in our community.

Sponsor and community outreach are essential to our team and include:

- Sponsor demo days: Visits to sponsor sites where we present and demonstrate our robot, illustrating our accomplishments
- Pitch decks: We pitch presentations to various tech companies and venture capitalists to recruit new corporate sponsors
- Community days: Participate in various community fundraisers to engage community members in FIRST and our team
- Presentations to local leadership: We present to various organizations such as Reading School Committee, Reading Education Foundation, Reading Rotary, and Reading Town Selectmen, which emphasizes the importance of STEM in our community
- Science Expo: An annual science fair hosted by our team for kids to promote STEM throughout our community and develop interest in STEM early

We maintain an outreach plan for the team detailed in a separate document. This outreach plan is a compilation of all events and outreach activities that our team has participated in or run over the past years.

Deployment of Resources

Our greatest stakeholder is the student, so the team puts time and resources towards improving the student experience. This process begins before students come to the high school. The team invests in events to create visibility within the community.

The Robockets also host a Science Expo at a local middle school to promote STEM education. We provide an experiment area for attendees, and a gallery of

student-made science experiment posters. Finally, we cap the event with a robot demonstration, which builds excitement and interest in the work that we do.

After people join the team, we collect feedback data throughout the build season through surveys that are compiled and analyzed to conduct a “post-mortem” meeting. We discuss our problems, and solutions are suggested and implemented.

The team hosts the North Shore District event and actively promotes it at all outreach events. The hope of this practice is to encourage people to become inspired by the hard work of all of NE FIRST’s teams.

The Robockets members invest heavily into volunteering. Many Reading FLL teams are coached entirely by team members, and the local GirlsWhoCode club is mentored by our programmers. This helps introduce STEM related careers to the children at an early age, further helping the mission of FIRST.

Our work towards spreading the word about the team and FIRST’s mission returns high dividends. We are often recognized in local television programming, and the Superintendent’s “State of the Schools” address.

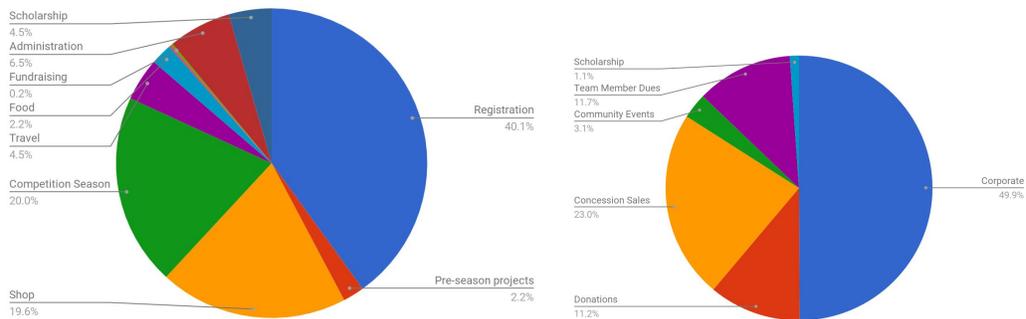
Future Plans

Each year, our senior members graduate and leadership is put in new hands. In response, our team is focused on teaching new members skills necessary to sustain the team, as well as planning for next year. We plan on improving time management for upcoming seasons, which involves the technical project manager and team co-presidents creating project plans outlining deadlines. These plans ensure our team is on schedule and work is divided across the team. This documentation has, and will continue, to improve management for next season.

Regarding our outreach of new members, our team has taken notice of athletic teams at our high school travelling to the two middle schools that feed into RMHS to hold informational meetings. This idea was put forth by some of our business team members, and we have incorporated it into our ever expanding list of recruiting opportunities. We also hold informational meetings at the school for current RMHS students. One big event at our school where students can learn about our team is Future Freshman Night, where freshmen are introduced to the different clubs and extracurricular activities offered at RMHS. The team is also looking to get more students from surrounding towns to join, as many surrounding towns do not have a robotics team.

Our team hopes to continue hosting the annual Science Expo and present our pitch decks to tech companies in the Greater Boston area. The Robockets also strives to get our sponsors more involved with the team by recruiting mentors and inviting them to events.

Financial Statement



With our new business plan in place in the 2018 season, our team is projected to meet our financial goals for the year. One of our largest sources of revenue comes

from hosting our own North Shore District Event. A lot of the revenue from this event comes from food and concession sales. A large amount of money comes from corporate sponsors as well. While most of our money goes towards registration fees and building the robot, we try to save a large portion of our income to benefit our team in the future.

In order to avoid past issues of excess spending and lack of financial tracking, we have been careful to track our expenses and manage our finances to stay within our yearly budget. The business team has started to use an accounting software, known as Quickbooks. Due to this new management, the Robockets have learned to be aware of our spending and maintain our team budget for this season.

Risk Analysis

We know that we are strong in the following ways.

- Very well **connected to our community** corporately with internship programs, but also locally. We are a recognizable community icon.
- Locally connected well, we see **new members** inspired by our various outreach events
- Finally the Robockets are **very structured** in leadership positions.

However, we as a team take accountability for our weaknesses.

- **Amount of free space** in our workspace **shrinks** with more members and tools. We are unable to find more space.
- A **flexible work schedule system has disrupted the continuity of our project work** as assembly changes hands, which is directly linked to a **lack of consistent attendance** by members of the team.
- Finally, we sometimes **repeat mistakes** after meetings meant to fix them.

While the team has existed for six years, there are still opportunities to explore.

- **Talented students in nearby towns**, especially Woburn, have started to show an interest in joining.
- **The Greater Boston Tech Scene** will be receptive to the Robockets in the future for event interaction, and sponsorship.
- **Administration in Reading Schools** such as the middle schools will be more welcoming to Robocket activity.

Finally, the team is at risk.

- **Lack of teacher involvement** persists. Charles Strout, the only teacher involved in robotics, may become fatigued.
- **The availability of mentors** is concerning after the graduation of the classes of 2018 and 2019. We are looking towards freshman class parents.
- **Turnover of sponsors** is a possibility for sponsorship connections made through mentors and parents who will leave with their students.

Pictures:





