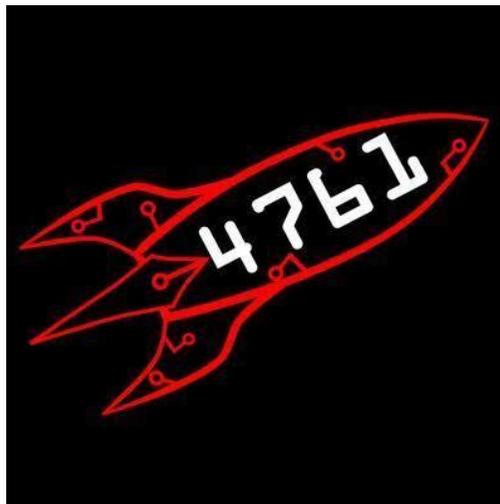


**Team 4761**  
**“The Robockets”**  
**2016-2017 Business Plan**



## **Team Mission Statement**

FRC Team 4761 “The Robockets” promotes a fun, interactive, out-of-the-classroom, educational experience for high school students that supports STEM (Science, Technology, Engineering and Math) and business management initiatives. We challenge students to collaborate as peers under the guidance of teachers and adult mentors who are subject matter experts in technical and business disciplines required to make a successful team. Students foster innovation to challenge themselves with hands-on learning to design, fund, and build a robot. The team implements core skills such as cooperation, teamwork, sportsmanship and strategy to overcome real-life problems. Through 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 and alliances with fellow teams, sponsors, and our schools, thus creating an expansive community. This process enables students on the team to contribute to the community and develop excitement for future STEM careers.

Along with exposure to critical thinking and problem-solving skills, our team provides students with training in the fields of marketing and business development, allowing them to learn skills necessary for a successful business. Our business team seeks to work with our community and give back to our supporters through fundraising and STEM outreach efforts. Our business plan supports our team by providing a financial and organizational foundation for students participating in FRC.

## **Team Origin**

FRC Team 4761, The Robockets, assembled in 2012 to support students emerging from FLL programs as they entered Reading Memorial High School. The Ultimate Ascent game challenge was our team’s first season. The team, comprised of 18 students and 5 mentors with no funding, competed in the Boston Regional event. As Rookie All-Stars, we also qualified and attended the World Championships in St. Louis.

In 2014, with limited funding, expenses from the previous season, and restricted space, we managed to solicit sponsors, establish a budget, and win the Rhode Island District championships. In 2015, capitalizing on this growth, our team hosted the North Shore District Event.

The astonishing growth of the Robockets was manifested in 2015 - 2016 when the team was awarded the Chairman's award, as one of the youngest teams to ever do so in FIRST. In 2015, the team also began hosting an annual Science Expo in the local town of Reading to encourage interest in STEM in the community.

During 2017, the team has continued to grow, redefine team roles, and improve manufacturing abilities. There has been a large movement to transfer responsibility from mentors to students. For the third year, our team will once again host the North Shore District event.

2013: Rookie All-Star Award (Boston Regional)

Highest Rookie Seed Award (Boston Regional)

2014: Rhode Island District Event Winners (RI District Event)

2015: Entrepreneurship - Reading, Districts

2016: Chairman's - Reading, Districts

Creativity - Districts

Pit Safety - Districts

Play of the Day - Team Award Districts

## **Organizational Structure**

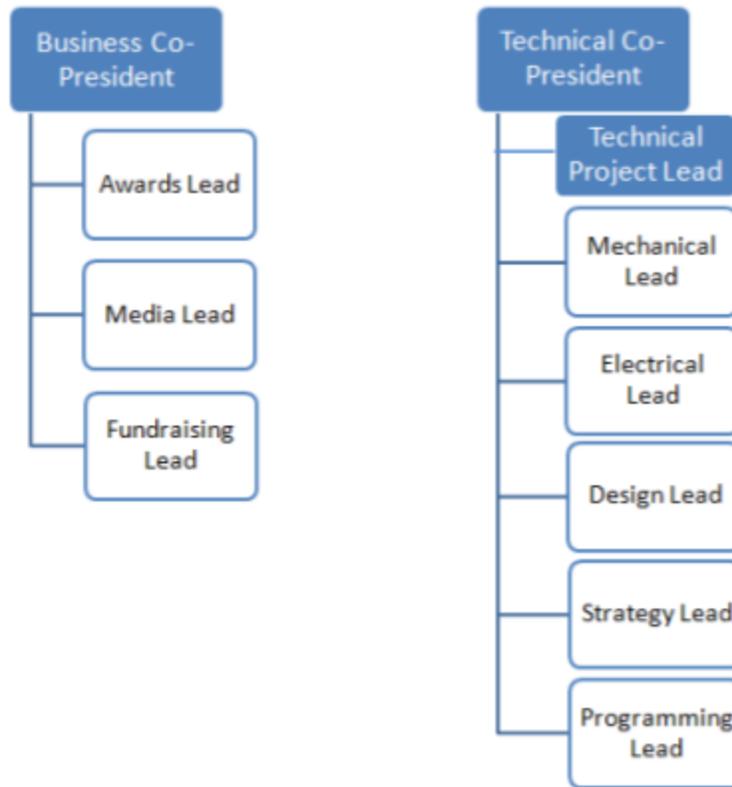


Figure 1: Team Organization

As shown in Figure 1, our team is divided into 2 sub-teams: Business and Technical. Each sub-team lead oversees specific roles and responsibilities. The following list describes the activities of each sub-team. The Co-Presidents are responsible for coordinating the team leads, managing teams tasks, and creating timelines.

Technical Project Lead - 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

Awards - Develops FIRST Award submissions

Media - Event documentation through pictures and video; updates team social media and website

Fundraising - Communicates with new and old sponsors, and coordinates outreach events

The business and technical co-presidents are in charge of giving weekly operational presentations to update members and mentors on the team's status. These OPS-presentations cover resource management, milestone tracking, accomplishments, near term goals, and issues.

All purchases are required to be logged on the expense tracking sheet. 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**

Our team engages, inspires, educates and retains members, mentors and sponsors while encouraging FIRST's mission in our community. As shown in Organizational Structure, our structure includes student sub-team leads who educate new members via hands-on experience. Students are seldom idle, but if they are, team leads provide direction.

Students and mentors have a mutual learning experience as they work together. Because of the team's dedication and enthusiasm, our mentors stay with the team and inspire us in ways nothing else can.

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: Give 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, such as Reading School Committee, Reading Education Foundation, Reading Rotary and Reading Town Selectmen, to emphasize the importance of STEM in our community
- Mentoring: All local FLL teams who want a student mentor have at least one robotics team member mentor
- District-wide Science Expo: An annual science fair hosted by our team to promote STEM in our district's education

We have a diverse outreach plan for the team detailed in a separate document. This outreach plan is compilation of all events and outreach activities that FRC Team 4761 has participated in or run over the past years.

## **Deployment of Resources**

One of the main goals of the business team is to provide organizational structure and resources to allow our team to engage all of our communities - RMHS, Reading, FIRST and other FRC teams - to provide both an awareness of and an incredible experience with FIRST, so that we continue to grow and inspire others.

By hosting the FIRST North Shore District Event at RMHS our team showcases the FIRST message beyond just the Reading community. We work on community engagement through social media, like the local newspapers, our website, Facebook, Twitter, Instagram, and Reading's Superintendent Blog. Team 4761 has presented to the School Committee, Reading Rotary, Reading Education Foundation, and the Board of Selectmen to gain community awareness and support for FIRST and our team.

This past fall, the team hosted the second annual District-wide Science Expo to promote STEM in our community. The event included several student presenters

from the middle and elementary schools, and brought in many spectators. We were able to show students what FIRST is about and spark an interest in science outside of the classroom.

Through such experiences, our team is able to ignite an interest in STEM, and teach others about FIRST. They provide an opportunity for members to learn skills outside the technical sphere. Financial management gives students the opportunity to gain entrepreneurial skills that no other extracurricular can offer. The team provides a fun, inspirational learning environment, while stressing the importance of the combination of skills FIRST emphasizes.

## **Future Plans**

Every year senior members graduate and leadership passes into new hands. In response, our team has focused on teaching new members and planning for succession. This includes training future team leads, gathering feedback, and creating documents to stay organized for the upcoming season.

Improving time management for upcoming seasons consists of the technical project lead and team co-presidents creating project plans outlining project deadlines. These plans ensure our team stays on schedule and work is delegated across the team. This documentation has and will continue to improve communication and management this season.

The team is looking to expand membership in the future. We strive to keep students coming back, and raise community awareness for STEM and robotics. We also plan to extend invitations to surrounding towns in our area without robotics programs. We have especially been focusing on outreach to girls, and hope to foster a closer relationship with local Girl Scout troops. We also regularly attend school events such as the annual Pep Rally and Future Freshmen Night.

Our team is thankful to our sponsors, and we aim to strengthen our relationships with them. During preseason and post-season, we hope to do more demonstrations and presentations to local corporate and community supporters. This includes continuing to host the annual Science Expo and present our pitch decks to tech companies in Boston. The Robockets would also like to get our

sponsors more involved with the team by recruiting mentors and inviting them to our North Shore district event.

## Financial Statement

**ROBOCKETS (FRC Team 4761)**  
**2016-2017 BUDGET**

<b>INCOME</b>	
Corporate Sponsorships *	\$18,500.00
Foundation & Community Organization Support	\$1,100.00
Individual Donations & Other Direct Public Support - event collections	\$2,000.00
Parent Support (incl Fees)	\$4,500.00
Restaurant Team Nights - % of Sales	\$450.00
North Shore District Event	\$20,000.00
<b>TOTAL INCOME</b>	<b>\$46,550.00</b>

<b>EXPENSES</b>	
Administration	\$795.00
Fundraising & Development	\$200.00
Team Sponsored Science Expo	\$900.00
Marketing, Public Relations, Community Outreach	\$650.00
Hosting North Shore District Event (concession sales)	\$10,500.00
Scholarships	\$3,050.00
Build (subtotal)	\$15,400.00
<i>Design &amp; Build of two robots</i>	<i>\$8,000.00</i>
<i>Mechanical &amp; Shop</i>	<i>\$4,500.00</i>
<i>Systems Controls (Electrical Supplies/Programming Software)</i>	<i>\$2,000.00</i>
<i>Maintenance for Robot Demos</i>	<i>\$900.00</i>
Competitions (subtotal)	\$15,000.00
<i>Travel- including trailer rental</i>	<i>\$3,500.00</i>
<i>Uniforms</i>	<i>\$1,500.00</i>
<i>FRC Competition Registrations*</i>	<i>\$9,000.00</i>
<i>Off Season Competitions</i>	<i>\$1,000.00</i>
<b>TOTAL EXPENSES</b>	<b>\$46,495.00</b>

\* FRC Competition Registrations does not include \$5K for the World Championship.  
 If team attend the World Championship, travel expense will also increase by approximately \$10K.  
 (This assumes a family contribution for each team member.)

Figure 2: Financial Statement 1

This season, with our business plan in place, we are on track to meet our budget for the year. Despite the loss of some sponsors, we have gained new ones, and we hope that our district event (a significant contribution to our income) will run smoothly this year. Borrowing from previous experiences, we will optimize revenues from food sales this year at the North Shore District Event.

In 2016, our team raised \$21,000 over our initial budget of \$49,500. A significant portion of funding came from corporate sponsors and concession sales at our

district event. This surplus in funding compared to the previous two seasons, where the minimum budget requirement was met, was due to our increased outreach with local and corporate sponsors. Majority of our revenue, about \$26,000, was spent on travel expenses to the St. Louis World Championships.

This year, our team has raised \$22,500 and we are on our way to meeting our expected budget of \$46,500. This figure would cover travel expenses for all of our competitions, two robots, and outreach projects. Our team has spent around \$9,000 so far, within budget.

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 created a form directly linked to the expense tracking sheet, and it is consistently used by the technical and business team as expenses are made. 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**

Our team has grown strong in the past 5 years. Some of our strengths include:

- Growth: we have doubled in size over the past 3 years
- Structure: new structure that allows for teaching and management
- Lots of opportunities for students to fill in leadership positions
- Mentors: a supportive mentor base to help the team
- Community Support: many local leaders support FIRST and our team
- FLL Teams: nearly every team has a Robockets student assistant
- District Event: increasing visibility for FIRST/STEM in our community

The Robockets have a few weaknesses including:

- Low number of mentors
- Workspace: our shop is separated from our computer lab
- Lack of experience with advanced machinery
- Lack of training and team leadership
- Girls: we don't have many female members

- Business Team: we need more students involved with business
- The team tends to be behind schedule

Opportunities:

- Succession Plan: train team members to take over lead positions
- Outreach: more outreach to our community and sponsors
- Establishes connections with companies
- Team Relationships: developing connections with other teams in our area, especially younger teams
- Better training of returning team members
- Mentors: recruiting more parents and professionals to assist the team
- STEM Curriculum: tying our program with science and engineering classes

Several things threaten our team. These include:

- Graduating Students: many of our leads graduate each spring
- Parent Mentors: many of our mentors will turnover each spring
- Teachers: more school involvement needed



Figure 3: SWOT Analysis

**Pictures**



