

**B.R.E.A.D.  
FIRST Team #5940**



**Business Plan 2015-2016**

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# **1. Executive Summary**

## **1.1 Mission Statement**

Our mission is to foster innovation and scientific interest by applying design thinking to the creation of our robot.

## **1.2 Team Summary**

Breakthrough Robotics Engineering and Design (BREAD) is an up and coming rookie team for the FIRST Robotics Competition. We consist of 39 members, all of whom are students at Design Tech High School ("d.tech" for short). d.tech is a public charter high school in Burlingame, California in its second year. The student body consists only of freshmen and sophomores. Being a rookie team consisting of 9th and 10th graders, we have many skills to learn and many hurdles to jump through. Without the experience from juniors and seniors, we have a lot of opportunity to gain more technical & business skills.

## **1.3 Program Summary**

The robotics competition that we are participating in is the FIRST® Robotics Competition. For Inspiration and Recognition of Science and Technology (FIRST) is an organization that supports and encourages the use of Science, Technology, Engineering and Mathematics (STEM) in education and activities.

## 2. Team Summary

### 2.1 Community Involvement

As a rookie team, BREAD has the unique opportunity to inspire fellow Design Tech students to apply design thinking to real world problems, and approach challenges with a growth mindset and optimism- that anything is possible with passion and determination.

### 2.2 Team Impact/Outreach

We are incredibly excited to solve problems in the community and help others. On January 23, 2016, eight members volunteered at the Jewish Home of San Francisco to distribute food from the SF-Marin Food Bank. We are also volunteering at many robotics competitions, such as the FLL tournament at Burlingame High School and the Madera FRC regional tournament. After those events, we plan to take our work to neighborhood middle schools and use it to spread interest in STEM, and possibly convince schools to begin an FIRST® Lego® League team of their own. We try to improve the community and help others in as many ways as possible, and will continue to do so in the future.

### 2.3 Strengths, Weaknesses, Opportunities & Threats

<b>Strengths</b> <ul style="list-style-type: none"><li>• Enthusiasm of being rookies</li><li>• Strong school, mentors, and parent support</li><li>• Partnership with Oracle Corporation</li></ul>	<b>Weaknesses</b> <ul style="list-style-type: none"><li>• Inexperience with managing a complex project under limited time and unlimited pressure</li><li>• Uncertain funding sources</li></ul>
<b>Opportunities</b> <ul style="list-style-type: none"><li>• Collaborating with other FIRST® robotics teams</li><li>• Sharing fun of science, engineering and innovation with local elementary and middle schools</li></ul>	<b>Threats</b> <ul style="list-style-type: none"><li>• Lack of experience</li><li>• Lack of coordinated vision</li><li>• Unforeseen technical hurdles</li></ul>

#### Strengths:

As a rookie team, we are very enthusiastic about competition and FIRST®. We come from a strong school, and have a partnership with Oracle because of it. We also have lots of parent and mentor support, which helps us to stay organized and productive. While we are a team of only Freshmen and Sophomores, Design Tech has given us a place to gain skills that most high schoolers never get the chance to gain. We have a team of extremely talented students who are willing to put in the time and effort to succeed.

#### Weaknesses:

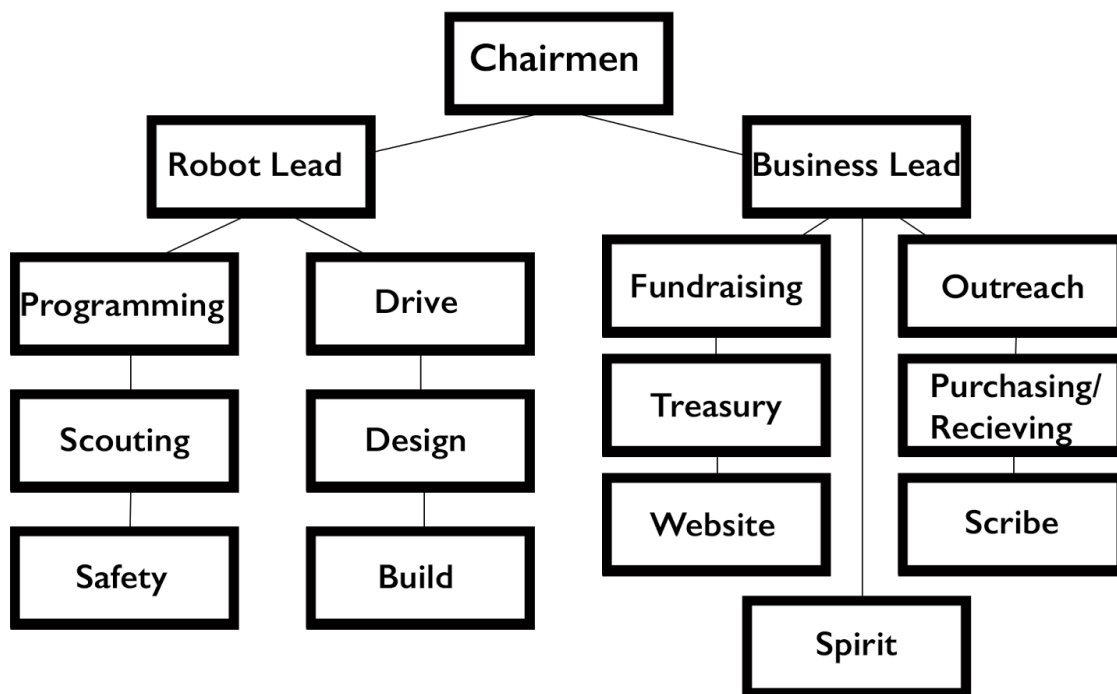
Because we are a rookie team, we struggle with managing such a complex project. We are also struggling to gain funding, because we have few for-sure sponsors. In the beginning of the year, we also struggled with building a sense of community within the team as well as establishing a team leadership that worked for everything. Since then, however, we have grown a lot, even if our leadership system is still a work in progress.

**Opportunities:**

We have had (and hopefully will continue to have) many opportunities to share our love of science, engineering, and innovation with the people around us. Earlier this year, we participated in a workshop held for us by the Space Cookies (Team #1868). Nueva's team, Bot Provoking (Team #4904), also hosted us for the kickoff this season, and gave us the opportunity to learn more about how to prepare for competition as well as about the way FIRST works.

**Threats:**

Some of the things that threaten us include things like lack of experience, an uncoordinated vision, and unforeseen technical hurdles. These things threaten us mostly because we are a rookie team and most of us are brand new to this type of environment.

**2.4 Team Structure****Leadership (Chairman & Co-chairman, Heads of Robot, Heads of Business):**

Leadership is accountable for supervising the separate subgroups to ensure that the team is working to the best of its abilities. They coordinate with members to clarify what their job is, monitor day to day progress and activities and have weekly calls to discuss the previous week and plan the following. During that call Leadership makes the agenda for the coming Wednesday meeting and ensures everything is organized. They monitor assignments to know when they are completed and keep team members on task.

## **ROBOT DIVISION**

### **Programming:**

The Programming team is responsible for making the robot do what it does. Without proper code, the robot would be an immobile metal box! The Programming team also leads the wiring of the electronics on the robot. Money allocated to Programming will be used to secure access to computers and software.

### **Build:**

The Build team's main purpose is to construct the competition robot. They collaborate with the CAD team to plan a design and make exact measurements prior to assembly. Once assembled, Programming adds the necessary electronics and code to make the robot function. Their provided budget goes entirely to tools in the build space and parts the robot. The Build team constructed an AndyMark® chassis before the season started and applied skills learned to the competition robot chassis.

### **Electronics:**

The Electronics team, a subteam of Programming, is responsible for wiring and powering the different mechanisms on the robot. We are using our allocated funds to buy electrical components essential for a functional robot and have successfully completed wiring on two full-scale AndyMark® robots.

### **CAD:**

Based on prototypes, the CAD team designs the robot's mechanisms in SOLIDWORKS® before the Build team manufactures and assembles them. This allows the Build team to ensure that there is not any overlap between parts and to help integrate the multiple systems throughout the robot.

### **Safety:**

The Safety coordinator is responsible for making sure that all team members follow the safety guidelines of FRC. Members are trained on tools and equipment by the safety coordinator with the help of a technical mentor. The Safety coordinator is also responsible for maintaining the Safety Binder and first-aid kit.

## **BUSINESS DIVISION**

### **Outreach and Public Relations:**

The Outreach and Public Relations team is tasked with organizing and executing outreach events in the community and manages public relations. They have organized events in San Francisco and the team plans to volunteer at a local FLL tournament and the Madera FRC regional.

### **Fundraising:**

Fundraising is in charge of making sure the team has all the funds necessary for us to be successful. Apart from holding fundraising events, Fundraising helps members reach their required \$150 minimum by giving them papers to hand out and suggesting ways to

ask for money. The team approaches local businesses and offers them sponsor opportunities as well.

**Treasury:**

The Treasury team monitors all of the money that comes in and out of the team. They deposit the money that the team receives from donors and sponsors and keeps track of what the team spends the money on. The Treasury team also constantly updates the budget to ensure an accurate estimate and regulates spending to stay on budget.

**Website:**

The Website team has designed and created the team's website, team5940.org. The Website team continues to update the website with the team's most recent work and events, as well as keeping a running blog and publishing weekly summary videos.

**Spirit:**

The Spirit Team is responsible for creating and designing team merchandise and finding ways to show team spirit at events. They design everything that is a way to represent the team such as shirts, banners and standards. In addition, they design posters and other visual representations of the team.

**Scribe:**

The Scribe is responsible for keeping track of what happens in our meetings. Every meeting the Scribe takes detailed minutes for later reference. They also compile scouting reports about other teams and maintain organization in the team Google Drive folder.

## **2.5 Code of Conduct**

- I. Show respect to:
  - A. Mentors
    - 1. Understand they are spending their own free time to help us.
    - 2. Be appreciative; a simple "Please" or "Thank you" will cost you nothing.
    - 3. We need them. They don't need us.
  - B. Speakers
    - 1. Give your full attention to the speaker, don't have side-conversations or play games during the meeting. You will have time for that after the meeting.
    - 2. Unless given permission from the speaker, have your computer closed and devices away. If this rule is not followed a leader or mentor may confiscate your device.
    - 3. If you are distracting to others you may be asked to leave.
  - C. Contacts
    - 1. Answer your emails within 24 hours, even if you are at home. Just letting them know you received it or cannot do it is enough.
  - D. Your teammates
    - 1. Help out whenever possible.
    - 2. Speak in a professional manner.
    - 3. Don't turn down any ideas, elaborate on them.
  - E. Team's Tools and Equipment
    - 1. Use tools properly.

2. Take necessary safety precautions.
  3. Put away tools in proper places.
  - F. School Property
    1. Respect it the same as you would to any of the team's personal property
- II. Leadership
- A. Understand your responsibilities as a leader
    1. The subteam you lead has to be able to look to you for guidance as to what to do and/or how to do it.
    2. You are expected to be more experienced and more dedicated than most members.
    3. Use mentors as a resource for guidance and suggestions.
  - B. Do not abuse your power as a leader
    1. Leadership is not void of any rules.
- III. Mentors
- A. Mentors are present to assist and advise
    1. Mentors may not assign tasks, only suggest tasks to Leadership which they will then delegate.
    2. Mentors may attend Leadership calls only if invited, and may not plan mandatory meetings.
    3. Mentors may only assist in construction and prototyping if requested to
    4. Students come to mentors with questions, mentors may not come to students with assignments.
    5. Mentors may only assist in team decision making when specifically requested to.
    6. Mentors must abide by student rules (signing up for work sessions, consenting to Code of Conduct, signing up for team meetings, etc.)
- IV. Attendance
- A. Try your best to attend as many meetings as possible.
    1. Meetings are an important part of the team and if you do not attend you will be unable to participate in discussions.
    2. If you can't come, it's your responsibility to read the meeting notes.
  - B. Fill out the invitation form sent out two days prior to every meeting.
    1. If you are unable to attend please specify accordingly.
  - C. Make sure to sign-in before every meeting starts.
  - D. Sign out on the roster if you leave a meeting early.
  - E. Numerous absences from meetings will be questioned.
    1. If you are an inactive member of the team, it's not fair for you to receive the same benefits of being an active team member.
- V. Consequences
- A. Violations of these rules may result in the following consequences:
    1. Suspension from the team for a decided upon duration based on severity of action.
    2. Removal from working group and relocation to a different group - if you are continuously off task and/or dangerous in your working group you may be moved to a different group.
    3. Dismissal from the team if your actions are determined to be of appropriate severity.
- VI. As a leader you have more authority, and using that to your advantage can result in demotion.



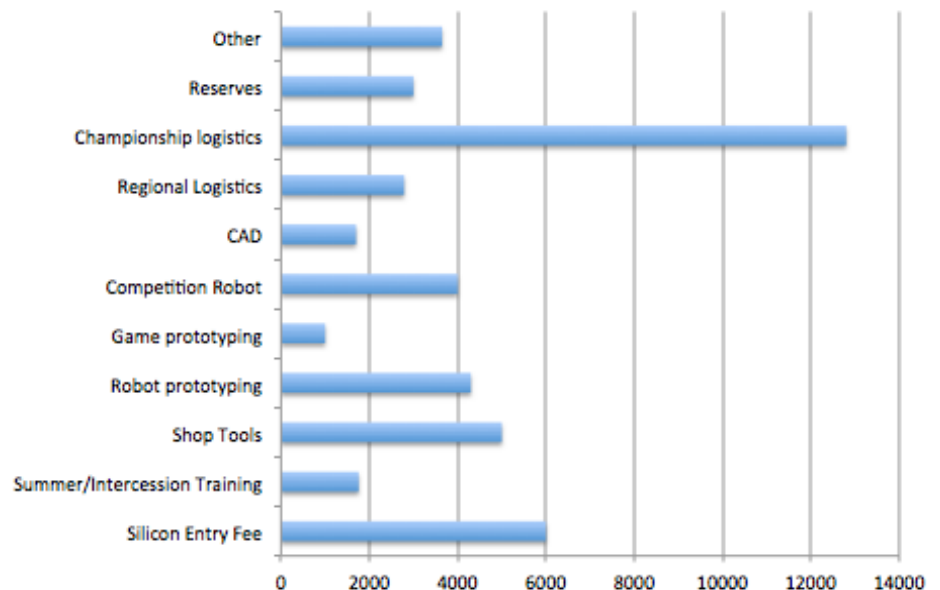
1. Leadership is not about the title, it is about the effort. If a leader is chosen and has shown to be incapable of leading/teaching/guiding/managing his/her subgroup, they are subject to demotion

## 2.5 Team Commitment

There are 39 students in total registered for the team. Of those, 16 (about 41 percent) are in leadership positions. Every member is required to raise at least \$150 and contribute to at least one subgroup of our team's structure. Apart from that, we are required to have every student fill out an entrance and exit survey before the build season and after the competition as part of the requirements for the NASA Grant. Leaders must attend every Sunday leadership call and most Wednesday meetings. Most members attend the weekly meeting but there is no specific requirement for meeting attendance.

## 2.6 Budget

Silicon Entree fee - \$6,000  
Summer/Intercession  
Training - \$1,760  
Shop Tools - \$5,000  
Robot Prototyping - \$4,300  
Game Prototyping - \$1,000  
Competition Robot - \$4,000  
CAD - \$1,700  
Regional Logistics - \$2,790  
Championships Logistics - \$12,800  
Reserve - \$3,000  
Other - \$3,650  
TOTAL - \$46,000



## 2.7 Team History

Founded in October 2015, less than 4 months before the January 9 kickoff of the 2016 season, team BREAD has a heightened sense of urgency and commitment to learn and achieve success. Applying the principles of design thinking, which students are taught in robotics and in the regular education at d.tech, the team is confident that focus and determination will yield great results.

## 2.8 Mentors

The team is supported by an outstanding group of mentors, with eight technical adult mentors and four business and organizational parent mentors. These people help the members of our team produce better work more efficiently, and gain skills that we will use for the rest of our lives. Our experience as a team would be drastically different if our mentors were not present. With help from them, we strive to be the best robotics team we can be.

## 2.9 Sponsors

Our sponsors include:

- Oracle
- Design Tech High School

- NASA
- Splunk
- SolidWorks
- Beausoleil Architecture
- Bulletproof Documentation

Our sponsors are what truly keep us going, what allow us to do what we do. Without their help, none of what we do would be possible. Our robot, our outreach, and all the learning we do would not happen. Without organizations like Oracle and NASA funding us we would never have been able to do everything we have done, nor will we be able to do what we want to do in the future.

## 2.10 Sponsor Benefits

Team BREAD is extremely grateful to all supporters of our endeavor. Your commitment, demonstrated through financial contribution or sharing of time and expertise is sincerely appreciated and will be publicly acknowledged unless requested otherwise. Your investment in BREAD will yield extraordinary dividends by demonstrating unbridled confidence in the limitless potential of young minds.

Level	Amount	Benefits
Platinum	\$2,500	<ul style="list-style-type: none"> <li>• Sponsor and logo displayed on robots.</li> <li>• Sponsor and logo displayed on back of T-shirts.</li> <li>• Sponsor mentioned in YouTube videos.</li> <li>• Sponsor noted in print and online 2015-16 sponsor documentation.</li> </ul>
Gold	\$1,500	<ul style="list-style-type: none"> <li>• Sponsor and logo displayed on back of T-shirts.</li> <li>• Sponsor mentioned in YouTube videos.</li> <li>• Sponsor noted in print and online 2015-16 sponsor documentation.</li> </ul>
Silver	\$500	<ul style="list-style-type: none"> <li>• Sponsor mentioned in YouTube videos.</li> <li>• Sponsor noted in print and online 2015-16 sponsor documentation.</li> </ul>
Bronze	under \$500	<ul style="list-style-type: none"> <li>• Sponsor noted in print and online 2015-16 sponsor documentation.</li> </ul>

## 2.11 Fundraising Opportunities

We are extremely fortunate to be at a school in a very industrial part of the Peninsula. We have recently begun going door to door to the different businesses on our road with very positive responses. Since this is an amazing opportunity to raise money and support local businesses, we want to take advantage of these possibilities before we move to our permanent campus in Redwood Shores. If we develop strong relationships with the local small businesses, we may even be able to stick with some of our sponsors even after we leave the immediate area.

### **3. Team Plans**

#### **3.1 Fundraising Plan**

BREAD has had quite a few fundraising activities months before build season. Our original estimation for how much money was around \$46,000, which has stayed fairly consistent over the course of the preseason and build season. Design Tech generously contributed \$10,000 to get our team started and help us in our rookie year. Thanks to d.tech's close relationship with Oracle, we are now the only team in the FRC who is sponsored by the Oracle Corporation. They gladly donated another \$10,000 and has guaranteed us another \$10,000 for every year we in which we operate. We had every member on the team raise a minimum of \$150, and many students went above and beyond. The members have accumulated slightly more than \$15,000 before the kickoff event. One of our fundraisers was a bake sale held at one of the Parent Coffee Chat events at d.tech. Over the thanksgiving break, we encouraged our members to raise a minimum of \$150 from their relatives, friends and neighbors. We gave them fliers and postcards to distribute to family and friends, wrote email templates to use and send, as well as trained members on how to approach strangers, such as neighbors, and ask for money. For those who could not raise the \$150, we assigned them to go door to door to businesses near the school. We also applied for the NASA grant and the FRC Rookie Grant and received the \$6,000 from the NASA grant.

#### **3.2 Future Plans**

The 2015/2016 BREAD rookie team is eager to discover and exploit untapped skills they didn't know they possessed, and tackle the challenges that come with starting a venture. BREAD is committed to growing our organization, sharing our passion for science, technology, engineering and mathematics and continually improving our FIRST® team performance. Every year our organization will continue to improve, our fundraising will be more proactive, and our robots will get better. Even from the start of the season, our team structure and organization has gotten exponentially better. While we did not begin fundraising until late October, we have successfully accumulated over \$40,000 in our rookie year. These amazing achievements will only become more impressive as the years progress. While we are not sure how our robot will perform in competition this year, we will use the lessons and skills we learned and gained when designing and constructing the bot for next year.

#### **3.3 Action Plans**

Our first goal for the start of the season was to ensure that our team started its first year to a good start. To do this we started training in several months before the season started. We also began fundraising efforts as soon as we could. We began training for not only the robot, but for fundraising as well. We also had to buy new tools for a new shops which increased how much we needed to fundraise. As a new team we also needed to set up a leadership system to organize all the tasks we had for our first year.

Before the season began we:

- Set up a leadership system
- Applied for grants
- Found mentors
- Taught students business skills
- Held workshops and built a practice robot to teach student technical skills
- Visited another team for a training workshop
- Approached families and friends for fundraising
- Approach local businesses for sponsorships
- Built a shop

#### **4. Final Statement**

As we are a rookie team, this season is more about learning the process of the competition and becoming an active member of the FIRST® community than it is about winning. As a team, we have already made an astonishing amount of progress. We have volunteered at FIRST® Lego® League competitions and helped hand out food at a Jewish Home in San Francisco. While we will do the best we can to win the April regional competition, as a team we appreciate that FRC is about much more than a robot. FIRST® stands for For Inspiration and Recognition of Science and Technology, and 5940 takes that to heart. We have all gained a completely new set of skills simply from our work before build season. We had the chance to go to Virtual Reality meetup in San Francisco and practice our public speaking and presenting skills. We were donated an AndyMark® chassis to build as practice before January 9th. We did a workshop in which we made miniature robots controlled by Arduinos. Design Tech High School helps us gain skills, and FRC has helped to enhance those skills for all 39 of its members. We are so excited to see how we do in competition and we are anxious to see where we will be next year.