CougarTech 2228
2013-2014
Team Business Plan

Table of Contents:

Executive Summary

FIRST Team 2228 CougarTech strives to maintain a self-sustaining team that motivates young people to be leaders through challenging as well as exciting programs that build science, math, engineering, and technology skills. These skills are not only built on the challenges of build season but are also refined during the workshops that team 2228 offers during offseason. As a teaching team we inspire self-confidence, communication, and leadership. These interpersonal skills result in stronger partnerships among students, better strategic decisions, and help team members develop creative solutions.

In 2006 with the support of Honeoye Falls-Lima Central School District Team 2228 was formed. The team fields around 45 students each year. Team 2228 is hosted by Honeoye Falls-Lima Central School District in Honeoye Falls New York. From the start Team 2228 had two major sponsors. In 2010, this changed during the world-wide economic downturn. Team 2228 unfortunately lost one of our major sponsors. Thankfully the team got through 2010 with a grant from NASA. For several years the team focus on sustainability included adding a mentor skilled in corporate development. Our plan was successfully executed and we raise $20,000 yearly to continue the team.

Students on Team 2228 decide how funds are raised for the team. These fundraisers range from a pancake breakfast and a pancake dinner to displaying our robot at festivals. All team purchases are recorded in a purchase order form to keep track of the financial situation of the team. These records are shared with the Mendon Foundation and the school district. Sponsors for the team are approached by the students and the mentors. Sponsors receive benefits based on the sponsor's level of donation. Team members are recruited at the Activity Fair that happens every year in HF-L to get students into after school activities. FTC members at Rush Henrietta are encouraged to join Team 2228 due to their FRC team merging with ours. Mentors of the team may be parents, alumni, as well as alumni parents, and friends of team members.

Team 2228 engages team members by being a student run team. Team members make all the decisions with guidance from mentors. Team members are supported by mentors as they learn how to solve problems. This technique is the reason Team 2228 is known as a teaching team. During competition, sponsors' logos are put on the back of our t-shirt and the company names are announced at competitions. Sponsors are also invited to come to our banquet at the end of each year. Team 2228 owes the community for all its support and we try to give back whatever and whenever we can.

Team 2228 spreads the message of FIRST in its community activities. The team brings the parade robot to festivals, such as the Mendon Firemen's Carnival and the Mendon Station Festival, to get the community interested in FIRST. Team 2228 mentored, financed, and refereed for the HF-L FIRST Lego League. Team 2228 participates in Ruckus and Rally every year. During the Google sponsored event, CS4HS (Computer Science for High School Teachers), our team members were invited to lead a workshop for teachers about how to apply technology in high schools.

Team 2228's institutionalization of the design process will be a major goal because of how long it takes to decide on a design. Keeping the FLL team operational is critical to serve interest in the school district. The FLL team creates interest in FIRST in younger students. The team strives to effectively use social media. One of these goals is to programing an app that contains scouting data for competition so that it is all in one place. The team attempts to attend and organize 15 community activities each year. The Mendon Firemen's carnival and Mendon Station Festival are two events that the team attends each year. Team 2228 has usually been able to set aside enough money to plan ahead so that we can attend First events and events that promote FIRST in the next 2-3 years. This is due to maintaining sponsorship at $25,000 each year.

Team 2228 strengths include fielding 40 students to join the team each year. We are blessed to have mentors that are experienced in various careers as well as engineering. Two thirds of graduating students go in to STEM college programs and STEM career fields. Most college age alumni return to mentor the team during school breaks. Team 2228 has prided itself with being a teaching team to its members and other teams. Team 2228 weaknesses includes a large number of students have not taken calculus or physics yet. There are only a few students that have taken a business course. This year Team 2228 is mainly comprised of seniors. The long design process that the team uses makes production, testing, and competition preparation difficult. Finding large corporate sponsors is dependent on the abilities of mentors. The team has outside forces that we have no control over hindering our success. There is no guarantee that financial stability is achieved beyond two years. While Honeoye Falls – Lima Central School is highly ranked academically, it does not have machining capabilities. We compete against teams in our areas that have formed coalitions based on years of working together on both off-season and competition opportunities. External partnerships open opportunities for Team 2228. Team 2228 welcomes students from other schools. We have a permanent partnership with Rush-Henrietta High School for those students desiring an FRC experience. We have team members on the school district Safety Committee, and the Teaching, Learning and Technology Committee.

Overview

About our Team

Team 2228 is a US *FIRST* FRC robotics team established in 2006. Also known as CougarTech, our current team membership is composed of 45 students. Our team is composed of students from the Honeoye Falls-Lima (HF-L), Rush Henrietta (R-H) central school districts, and Allendale Columbia School. We are sponsored primarily by General Motors, Xerox, NASA, Ortho Clinical Diagnostics, General Electric, Southco, and Carosa Stanton Asset Management. Other support comes from Quality Vision International, Forsythe Technology, Pittsford Federal Credit Union, Qwicnet, Honeoye Falls-Lima High School, and The Mendon Foundation.

Our team is run like a small business, and no company would be complete without a business plan. This frequently updated document records our current financial position, strategic direction, and also functions as an introduction to our team. Team 2228's responsible bookkeeping is crucial to recording and supporting the growth of our organization.

Mission

Our mission is to maintain a self-sustaining team that motivates young people to be leaders by engaging them in exciting programs that build science, math, engineering and technology skills. We strive to inspire innovation and foster life capabilities including self-confidence, communication and leadership. As a result of participation in *FIRST*, team members should learn:

- Machine design
- Computer programming
- Machining and electrical systems
- Positive attitude and team building
- Marketing and presentation skills
- Time management and project management

Vision

"To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology heroes."

Dean Kamen, Founder of *FIRST*

History:

The Rookie Year   Rack and Roll
Team 2228 began in 2006 when a group of interested adults spread the word about regional competition, LEGO Leagues, and engineering design. To raise interest, technology teachers filled a bus with students and administrators and attended the Finger Lakes Regional Competition at the Rochester Institute of Technology. Experiencing the spirit and energy of this competition energized - the group.

The robotics grassroots community formed a steering committee led by Paul Fleming, a mentor for many years. The committee built a base of support for the new team by enabling participation of local companies for machining, transportation and food. With a grant from a local legislator, and the support of the Honeoye Falls-Lima Central School District, CougarTech was born. Our start-up contributor, Alstom Corporation, supported the cost of building the robot, competition registration, travel expenses, teacher stipends, and team shirts. We also gained the support of the Xerox Corporation, Southco, Icuiti Video Eyewear, Kirkwood Oil, and Simcona Electronics.

In our rookie year, Team 2228 won the *FIRST* Rookie All Star Award and the Highest Rookie Seed Award at Finger Lakes Regional. This earned us a trip to the national competition in Atlanta, which proved to be a fantastic bonding experience for the team and good competitive start for a rookie team.

The 2008 Season, Our First Finals   First Overdrive
In the 2008 season, our most notable achievements were made at the Ohio Buckeye Regional where we made it all the way to the finals. Our student retention rate for that year was ninety five percent, a great achievement for a second year team. Sponsors were Alstom Transport, and Xerox.

How Two Teams Became One, the 2009 Season   Lunacy

In the 2009 season, Team 1930, The Comets of Rush Henrietta (R-H), New York found itself unable to continue as a FIRST FRC robotics team. Losing the team was devastating for its most dedicated members, especially since the school district could not provide assistance. The team was well respected and a symbol of technological innovation and scholarship. But there were no resources to draw upon. Early in November of 2008, members of former team 1930 came to HF-L to ask if there was any possibility of becoming part of team 2228. Without hesitation, the team unanimously voted to graciously accept seven complete strangers from R-H to their team. Since then, this relationship has become well cultivated.

Achievements for that year included advancing to the quarterfinals at the Finger Lakes Regional and participation in the Hartford regional. We also added Parsons Engineering as a sponsor. That year we received a generous donation from the Garelick family in memory of Lee Garelick, an important patron to the Rush-Henrietta team. Other primary sponsors were Alstom, Xerox, and Sage Rutty.

The 2010 Season, CougarTech Meets the Real World   Breakaway
In the 2010 season we lost one of our lead sponsors, Alstom, a severe blow to the financial security of the team. Fortunately we received the continued support of Xerox, along with new support from Forsythe Technology. We also earned a NASA grant, which allowed us to travel to Raleigh to attend their regional. We were semi-finalists in Raleigh and we attended the Finger Lakes Regional for our fourth consecutive year. We also continued the partnership with the students from R-H, who formed a rookie FTC team that school year.

The 2011 Season, a Breakthrough Year   Logo Motion
The 2011 Season was a year of accomplishment at competition. We placed 7th at the RIT Finger Lakes Regional. We won the Entrepreneurship Award *sponsored by Kleiner Perkins Caufield & Byers* and the Coopertition™ Award. This was the *FIRST* year a mini-bot was used for competition; our bot was very successful. This was also one of our most difficult financial years because of lack of sponsors. A large percentage of our financial support came from only two sponsors, Xerox and Forsythe Technology. Our other sponsors could not donate money, so instead they donated their services, i.e. welding, cutting aluminum, providing acrylic plastic, and electrical wire. We thank Smidgens, Dynak, Allworx and Mendon Foundation for sticking with us.

2012   Shooting for the Stars, Scoring in the Middle Basket   Rebound Rumble
The 2012 season went particularly well for CougarTech. Our team consisted of 41 members, and was 17% female. This year our team competed at two regionals, the RIT Finger Lakes Regional and the Buckeye Regional, which was achieved through a record corporate sponsorship. At the Finger Lakes Regional, we won the Entrepreneurship Award *sponsored by Kleiner Perkins Caufield & Byers*. The highly reliable autonomous scoring helped us be alliance captains at both regionals. Additionally, we won the Industrial Safety Award *sponsored by Underwriters Laboratories* at the Buckeye Regional, something we had worked particularly hard to accomplish. Team 2228 achieved Website Excellence much to the pleasure of everyone on the team.

After the team's 2011 financial crisis, CougarTech made a plan to get more sponsors. Our plan consisted of finding a mentor who specializes in corporate sponsorship, having students give presentations to local companies, and asking our mentors to approach their management. General Motors and Carosa Stanton Asset Management became supporting sponsors. Along with our continued support from Xerox, Forsythe Technology, Allworx, and the addition of Quality Vision International, and Dynak we finally reached a sustainable level of contributions. We operate on about $20,000 per year.

2013   The Year of the Flying Discs   Ultimate Ascent
Reliability is the key word for 2013. At competition, Tiberius, the robot, consistently scored in autonomous mode guaranteeing 18 points. Robot designers perfected maneuverability and

consistent high goal scoring. By the end of the competition season, the drivers could direct the robot to climb to the first bar of the pyramid while scoring in the middle goal. The highest competition ranking was 5th at Buckeye Regional. Off the field, the team sustained corporate sponsorship, and increased community projects to a record breaking 14. Primary sponsors are General Motors, Xerox, Forsythe Technology, and Carosa Stanton Asset Management. QwicNet, Quality Vision International and Southco rounded out the list of corporate sponsors.

Meanwhile, Honeoye Falls-Lima was exploring ways to increase STEM course offerings and interest. Team 2228 was tasked with helping the school district meet their strategic goal.

2014   Aerial Assist

In 2009, FLL Team GearFreeze from Honeoye Falls – Lima Central School participated in the FIRST World Championship. By 2012, the students moved on to high school, the parents moved on with the students, recruitment was diminished, a new school advisor was not appointed until after competition registration was complete. The FLL team had degenerated into an afterschool interest activity. Over the summer of 2013, FRC Team 2228 decided that FLL needed to be revived. Team 2228 took responsibility for paying FLL team registration, finding a place to work, locating and consolidating parts kits, and supplying one student mentor.

Team GearFreeze competed in our 2013 local competitions. Corporate support is located for next year, and parent and advisor support is ready for future years. The student team mentor is now assisting with an afterschool robotics club for fifth graders. The goal of creating on-going interest in robotics is achieved for this year.

Sustaining sponsors are GM, Xerox, Ortho Clinical Diagnostics, grant from NASA to attend New York Tech Valley Regional. Other sponsors are General Electric, Carosa Stanton Asset Management, QwicNet, Quality Vision International, Southco, and a gift in memory of Richard A. Loiselle.

1 Goals

Current Position
This year is beginning to bear the fruit of the changes made last year. First, the design process introduced in 2011 was followed to help us become a more competitive team. After improving our financial situation using our business plan, we are now able to attend two regional competitions each year, and will continue to do so for the foreseeable future. The mentor experienced in corporate development is teaching students and mentors how to reach out to potential sponsors. We are now thriving financially and have enough money to provide for next year. Last year's experiment with social media is being refined to support our award winning website.

The initiative for 2014 concerns FLL. In 2009, FLL Team GearFreeze participated in the FIRST World Championship. By 2012, the students moved on to high school, the parents moved on with the students, recruitment was diminished, a new school advisor was not appointed until after competition registration was complete. The FLL team had degenerated into an afterschool interest activity. Over the summer of 2013, FRC Team 2228 decided that the FLL Team within the Honeoye Falls - Lima School District needed to be revived. Team 2228 took responsibility for paying FLL team registration, finding a place to work, locating and consolidating parts kits, and supplying one student mentor. Team GearFreeze competed in our 2013 local competitions. Corporate support is located for next year, and parent and advisor support is ready for future years. The student team mentor is now assisting with an afterschool robotics club for fifth graders. The goal of creating on-going interest in robotics is achieved for this year.

Team Goals
- Recruit directly from the middle school in addition to recruiting from the LEGO team.
- Training efforts outside the build season to include:
    o Basic electrical skills
    o Sensors
    o Basic tool usage
    o Java programmers
    o Animation software
    o CAD Inventor
    o Gears and gear ratios
    o Mechanical arms and actuators, pneumatic and electrical
        ▪ Measurement: Each team lead will deliver a training module to the team before the beginning of the build season.
- Continue to be a teaching team
    o Open Participation
    o Open Training
    o Everyone be successful

- Increase student interest in STEM scholastic programs, increase student skills, and increased parent involvement at Honeoye Falls Lima High School.
  - o Measurement: Robotics incorporated into physics, technology and math curricula.
  - o Measurement: Enroll students in Computer Science classes on a regular basis
  - o Measurement: Add art and business students to team roster
- Documentation in the form of schematics, drawings, and written notes
- Improve internal communication
- Improve task/time management
- Ensure that all members make a commitment to joining a team that meets all year, not just during build season.
  - o Measurement: Keep attendance at least 70% year round.
- At Regional Competition, be a captain of an alliance or be selected into an alliance at competition
- Pursue the following regional awards: Safety Award, Chairman's Award, and Entrepreneurship Award every year.
- Increase community activities by five per year.
  - o Measurement: Starting point in 2013 is 10 activities
  - o Measurement: By 2017, achieve the goal of 15 activities
  - o Measurement: By 2019, maintain a total of 20 activities every year.
  - o Measurement: Record student and mentor participation at each
- Involve parents into mentor roles
  - o Measurement: Add one parent mentor skilled in engineering each year
- Strengthen ties with FLL.
  - o Measurement: By 2015, have student FRC members as mentors to FLL
- Identify skills needed for each team lead so as to prepare a skills based succession plan
  - o Measurement: Provide a leadership development and training meeting for student team leadership and adult advisors held weekly. Known as 4-square
- Follow safety practices at all times
- Increase the number of FRC graduates earning college scholarships based on their participation in *FIRST* programs.
  - o Measurement: Starting point is 6 *FIRST* scholarships per year. Increase that by one a year until we reach 10 every year. The goal of 10 shall be achieved by 2015.
- Establish the baseline of social media for the team
  - o Measurement: Have account and activity on 3 sites
  - o Develop a scouting database that is easy to share

Financial Goals

- Increase corporate sponsorship to assure that this team attends two regional competitions every year.
    - Measurement: Sponsor total of $20,000 for each season.
- Maintain a level of funding so that we do not have to ask parents for funding.
    - Measurement: By 2014, we have at least 4 sponsors able to provide consistent year over year funding in the range of $5,000 to $10,000 each
- Begin each September with the funding needed for that year's competition
    - Measurement: Examine the financial records at the end of each competition season and assess our success.
    - Measurement: Promote sponsor search among parents and mentors on an ongoing basis
    - Measurement: Win grants whenever possible.
- Explore methods of funding and find ways for teens to approach developing business relationships.
    - Measurement: Approach High School Business department for training ideas and delivery methods.
    - Measurement: Mentors commit to developing relationships and expanding personal networks to promote funding of this team.

2 Meet Our Team

Team Leadership

The Team Captain and Vice-Captain are elected as a team and are empowered to make decisions that affect the entire team. They set the direction for the team and are responsible for communications from the team to outside organizations. While the Team Captain is responsible for approving the final budget for the team, Vice Team Captain is expected to assist the Team Captain and to stand in when the captain is absent.

Team Organization

In order to add more leadership positions to encourage more involvement by younger members and to help in our self-sustaining efforts, this year CougarTech reorganized the team operations. Major changes in the organization were the splitting up of the Marketing Sub-team, the creation of Branch Directors, and the creation of new sub-teams. These changes will also improve communication, equalize and divide the workload of the Marketing Sub-team, and to improve relations between the Executive and the Technical and Marketing Branches

Traditionally, in the spring of each year, persons interested in heading each sub-team are elected by majority vote of students and mentors. As noted in their nomination statements, the new leaders can focus on training, recruitment, fundraising, community outreach or off-season build. The strength of Team 2228 is in the passion of the student leadership.
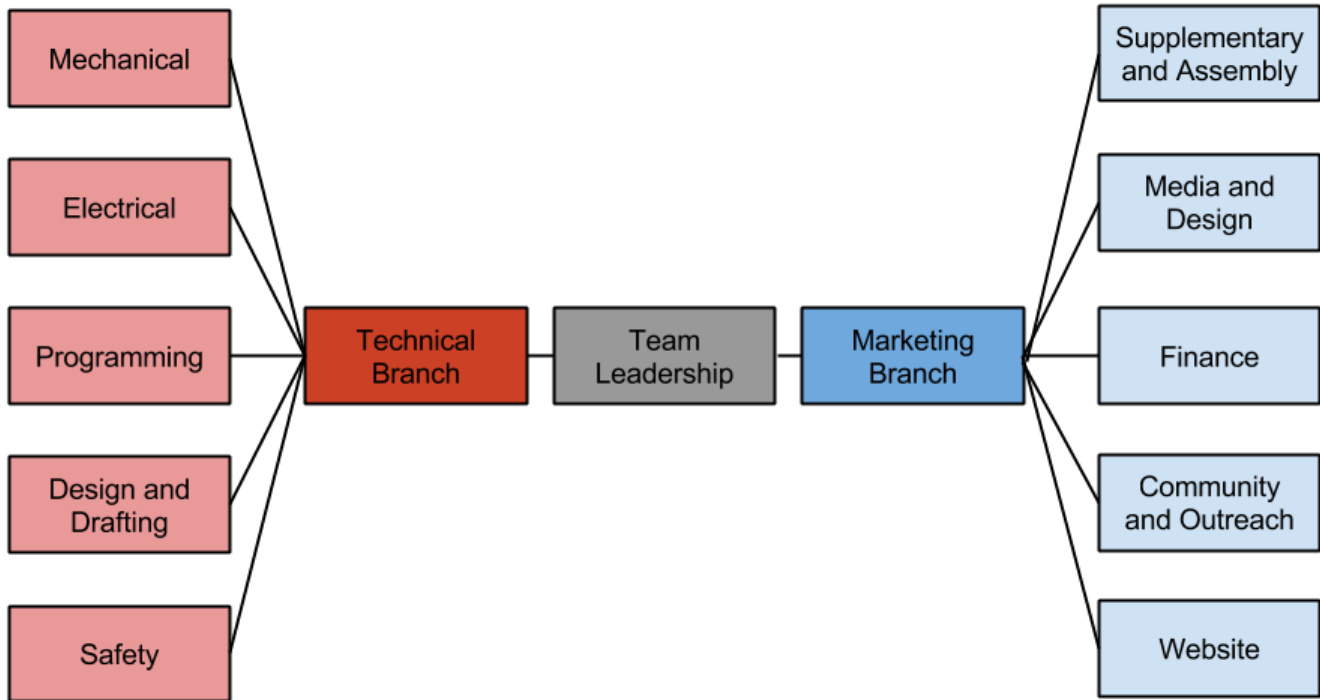
Technical - the lead for this branch is appointed by team captain to define the general work of each of the following sub teams, steps in if skill training is needed, seeks mentor assistance, and works with executive branch

- **Drafting:** Responsible for drafting all the robot hardware elements. This team maintains the mass, properties, and other data on the robot. They are responsible for submitting the Autodesk Award to *FIRST*. They also perform training and process improvements relative to CAD in the off-season.
- **Electrical**: Responsible for designing, procuring, assembling, and testing the robot's electrical system. They perform electrical system training, research, and development in the off-season.
- **Mechanical**: Responsible for designing, procuring, and testing the robot's mechanical systems.

- **Programming**: Responsible for designing, procuring, and testing robot control software. Perform programming training, research, and development in the off season.
- **Safety:** Responsible for educating team members on safety rules, regulations, and procedures (team developed and school required). They are responsible for ensuring safety of anyone who enters the pit during competition.

Marketing and Operations- the lead for this branch is appointed by team captain to define the general work of each of the following sub teams, steps in if skill training is needed, seeks mentor assistance, works with executive branch

- **Communications and Outreach:** Works on public relations as well as sponsor relations. The responsibilities of this sub-team involve all communication involving the team with outside organizations.
- **Media and Design**: Creates necessary graphics for the team image, such as buttons, t-shirts, pit design, and banners. Posters and other projects are completed as needed.
- **Social Media and Website**: Responsible for designing, procuring, and testing the website and as well as regularly updating the team's social media accounts
- **Supplementary and Assembly:** Responsible for designing, procuring, and testing field elements. Perform projects like crate and cart improvements in the off-season.
- **Writing:** Responsible for preparing award submissions with written elements, like essays. Writing is also responsible for sending letters to our sponsors, producing informative pamphlets about the team and *FIRST*

3 How is *FIRST* beneficial?

- ✓ Over the past 6 years, students from our team have received $400,000 in *FIRST* scholarships
- ✓ Almost all high school seniors are entering post-secondary study in the areas of mathematics, science, or engineering.
- ✓ Students gain valuable *FIRST* hand experience in science and technology from professionals working in the field, supplementing the school curriculum.
- ✓ Students are introduced to a more competitive, hands-on learning environment.
- ✓ It's fun!
- ✓ It creates opportunities for students to be involved in leadership.
- ✓ Students see how community service can touch lives.
- ✓ Students grow as a people by learning to be part of a team.
- ✓ Opportunity to develop interest and focus in science and technology
- ✓ Students learn to reap the benefits of hard work.
- ✓ The experience helps students decide on future careers.

4 Spreading the Message of *FIRST* through our Team Image

Cultivating an image that is both unique and memorable should be an important goal for any organization seeking to promote social change. Team 2228 takes its public image very seriously knowing we are a representative of the *FIRST* community and its message. For example, whenever the team is on an official outing, everyone is required to wear a team shirt, the design of which changes every year but is always black and includes *FIRST* and sponsor logos. Our team focuses on spreading the *FIRST* message through the media, volunteering, and presentations to a variety of audiences in the community. We give awards to other teams for gracious professionalism, team spirit, game play, design, and rookie teams. Our website maintains an updated online profile of our team that contains very useful information about our members and about the *FIRST* mission. In competition, we present ourselves as an enthusiastic and supportive team. In our schools, Team 2228 has been very active in promoting the *FIRST* mission. Also, our team has been featured in local media such as community newspapers and newsletters.

Website and Social Media
In 2007, Team 2228 launched its first website. Hosted by one of the team member's family, the website was updated each year. In 2011 with major changes to the banner, the website was re-launched. Finally, in 2012, with an experienced adult website mentor, and a new host, the website was redesigned and expanded. One of the most serious problems we face is that the school district does not teach html or any other web design language. The skill building required to maintain the website is significant, but we still teach html to our members, rather than using a template.

Currently, Team 2228's website includes useful resources for rookie and veteran teams as well as information about FIRST and links to frequently used sites about science, technology, engineering and math. In 2013, the website team began to experiment with the use of social media. Because we work in a public school, we do not have access to every social media site. Nevertheless, we maintain some activity on Facebook. We are more consistent users of Twitter and YouTube. Our YouTube Channel currently is organized into video series. One series is *CougarTech's Tip of the Week*. Each week a different topic such as leadership, safety, public speaking, or writing is presented as a brief video. Team 2228's Twitter account is used to share videos, pictures, and status updates of CougarTech. The reason behind posting the same content to multiple sites is to reach wider audiences. One of the issues facing our team is the multitude of social media sites and the different audiences for each site. As a result, we have mentors posting comments and articles on LinkedIn and on other *FIRST* sites to involve our team within the organization, and students updating our team social media accounts to develop our team image outside of *FIRST*.

In the future, we would like to have meeting notes on the internet, a mobile app for our website, and more ways to engage potential users. We have not yet determined the best way to share our parts

cataloguing system or our scouting collection scheme. The challenge of our future is to maintain a relatively static website while increasing the use of the most popular form of social communication.

URL: http://www.hflrobotics.com/
Twitter: http://www.twitter.com/frc2228
YouTube: http://www.youtube.com/hflrhfirst

Digital Media
The basic social media strategy is to enhance communication and outreach in an innovative way. By 2015, we want:

- Secure platform positions for our team and establish baseline for each platform
- Website will be the hub of on-line outreach
- Identify target audiences for each of the distribution channels
- Prioritize the distribution channels and determine how each will promote a positive impression of FIRST and STEM
- Establish a content update process that will result in original interactive data that is visually appealing, and easy to navigate and read

Graphic Design
Graphic Design for Team 2228 includes a yearly update to the team graphics. As the game changes, so do the robot signs, clothing, and button designs. Each year the t-shirt is redesigned and formatted for printing at a local shop. The front of the shirt describes the game and promotes FIRST, while the back creates an image of a team with corporate support. One of the ways Team 2228 attracts sponsors is with different benefits based on level of sponsorship. In order for a sponsor to be included on the team shirt a company must be a Platinum, Sustaining, Leadership, or Associate Sponsor. The sponsor is advertised whenever the team competes or wears a shirt to a community event.

Graphic Design is also responsible for pit décor, videos, brochures, the letterhead, and presentation materials. As the major designers of the team image, they are responsible for ensuring the visual promotion of *FIRST* at every event we attend. Graphic Design also ensures that each of our sponsors is represented properly.
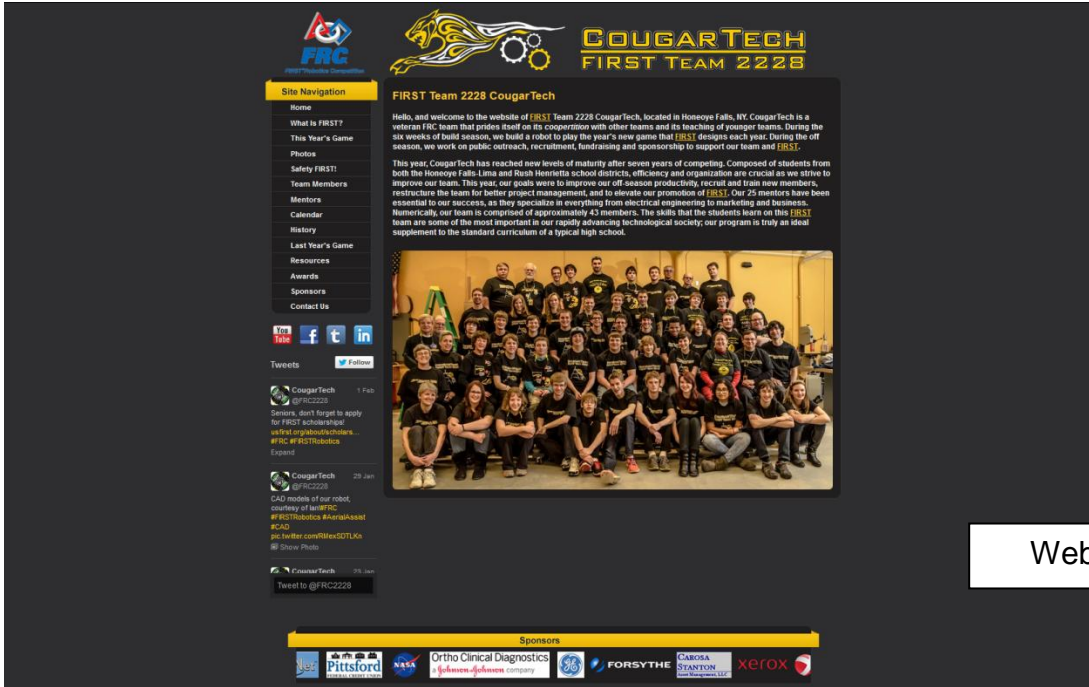
Website Landing Page

McDougall Communications discusses the finer points of creating a consistent team image.

5 Community Service, the Joy of Giving Back

Team 2228 has been involved with many projects over the past years to serve the community that so graciously supports us. We believe that the message of *FIRST* extends beyond the robotics competition and the team alone. Our team participated in cardboard city, a fundraising event to aid the homeless. As part of the experience, participants lived in cardboard boxes for night to simulate the life of a homeless person. We performed some garden maintenance and repotting for an elderly couple in the town of Honeoye Falls. Also, we maintain a booth at the Mendon Fireman's Carnival and the Mendon Station Festival every year. Several of our team members assisted team 1511 with their community outreach, Rochester Rampage, at the Monroe County Fair. The Rochester Institute of Technology held a Google Sponsored Event, CS4HS (Computer Science for High School Teachers). Our team was invited to lead a workshop for teachers about application of technology in high schools. Every year the Rochester Museum and Science Center offers a summer fun camp for K-12 students. Some members of the team helped and mentored at the camp. Several members of the team presented and demonstrated the robot while spreading the message at The University of Rochester during the FLL Regional Championship.

As part of our goals to spread the message of *FIRST*, Team 2228 became more involved with the school district. In 2012, HFL tried "Pico-Cricket", a web based program that teaches elementary age children basic engineering and design concepts. In 2012, college courses in biochemistry, cellular biology, and human biology were made available to high school students through GCC (Genesee Community College.) In 2013, we participated in an hour of coding, financed and mentored our FLL Team, assisted in after school robotics clubs for 5th graders, and supported an after school computer club. We like to think that our team's help was instrumental in helping HFL offer an elective in computer science for the first time in three years.

Community Activities:
- ✓ Cardboard City
- ✓ Gardening and Plant Sale
- ✓ Lima Crossroads Bed Race
- ✓ Mendon Firemen's Carnival and Parade
- ✓ Family Fun Night
- ✓ Set-up of new Mendon Library
- ✓ Apple clean-up of Mendon Station Park
- ✓ Boy Scout dunking booth
- ✓ Tour de Cure
- ✓ Black Diamond Run
- ✓ HF-L District Safety Committee
- ✓ 5th grade Robotics Club Mentor
- ✓ Food and Can Drive
- ✓ Participate in ROC The Day, United Way fundraising
- ✓ Mendon Station Festival

✓ Provide manpower for various Eagle Scout projects

Other *FIRST* Programs:
- ✓ FTC-FRC Mini-Bot Cooperation
- ✓ Mentored and financed one HF-L *FIRST* Lego League Team
- ✓ Refereed Jr. *FIRST* Lego League Local Competition
- ✓ Mentored Jr. *FIRST* Lego League Team
- ✓ Share Our Award Winning Business Plan with the Naples FRC Team 1551
- ✓ Let's Solve Water 2013
- ✓ Judges for FRC Finger Lakes Regional
- ✓ Some team members belong to FTC Team 3750
- ✓ Participation in Ruckus and Rally

Spreading the Message:
- ✓ Present and Demonstrate the Robot at Mendon Fireman's Carnival
- ✓ Present and Demonstrate at Mendon Station Festival
- ✓ Give Presentations to HF-L Elementary and Primary Schools
- ✓ Present and Demonstrate at Honeoye Falls Open House
- ✓ Present and Demonstrated at Honeoye Falls Annual Music and Arts Festival (Cougar Creations)
- ✓ Present at the HF-L Club and Activity Recruitment Fair
- ✓ Participate in Family Wellness Night
- ✓ Participate in Rochester Rampage
- ✓ Present and Demonstrate at the Google Sponsored Event, CS4HS (Computer Science for High School Teachers), at Rochester Institute of Technology
- ✓ Present and Demonstrate at the RMSC's (Rochester Museum and Science Center) Summer Fun Camp
- ✓ Present and Demonstrate at the Finger Lakes FLL Regional Championship
- ✓ Social media to spread the message of *FIRST* through digital media
- ✓ Created a LinkedIn group, "US *FIRST* Robotics-Greater Western New York Mentor and Alumni Network," an open forum for US *FIRST*, FRC, FLL, etc. for *FIRST* mentors and alumni in the Greater Western New York area.
- ✓ Mendon Foundation (Newsletter)
- ✓ Sentinel Publishing (Local Newspaper)
- ✓ Henrietta Post (Messenger News)
- ✓ News 10 NBC (Local TV News Station)

Several team members participated in the Xylem Solve the Water project.

Every year we participate in the local post season competition Ruckus.

FLL team GearFreeze is mentored and financed by Team 2228.

Robotics Night at Frontier Field before the baseball game. Two teams brought their 2013 robot. We brought the parade robot to demonstate.
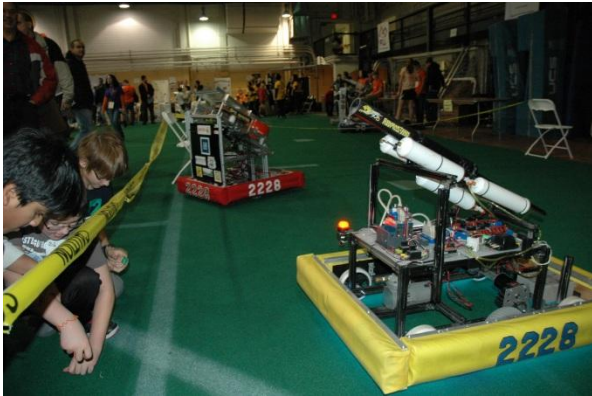
Several members of our team presented and demonstrated at the Finger Lakes FLL Regional Championship

Several members of our team cleaned up apples in the town park, Mendon Station Park.

We support our sponsor, the Mendon Foundation, and show our robot at the Mendon Station Festival. We talk about our schools robotics team.

Combined membership from Rush-Henrietta and Honeoye Falls-Lima schools since 2009.

Every year we volunteer and showcase our robot at our local Mendon Fireman's Carnival. We talk about our schools' robotics team and how it promotes advancements in technology.

We invited all local teams in the Rochester area to an ice skating event.

To raise money, we held a pancake breakfast at a local Applebee's. The event was organized and run by students, and demonstrates our drive to be financially self-sufficient.

We presented and demonstrated our robot to the Honeoye Falls Elementary and Primary Schools.

We had a food and can drive to support the local FISH pantry in Honeoye Falls.

Most years, we showcase the practice robot at HF-L Wellness Night. We talk to community members about the importance of science and technology and allow kids to drive the robot.

Our team hosted a Summer Learning Academy to help train team members in new skills, such as programming.

Several members of our team participated in the Lima Crossroads Bed Race.

Each summer, we build a parade robot to demonstrate on the streets of our community. This is the parade robot launching candy to the spectators.

We taught local children about science with a demonstration of Oobleck, which has both liquid and solid properties.
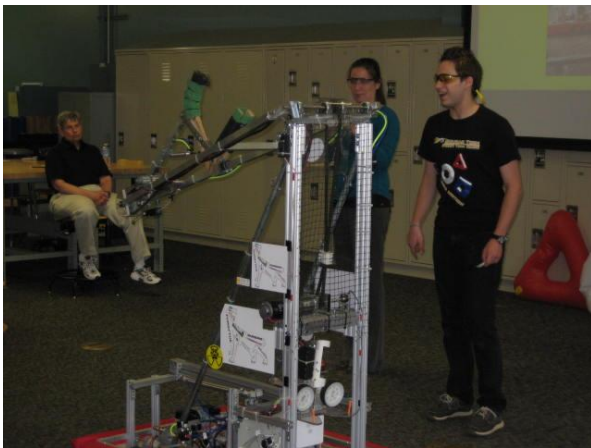
We presented our robot at CS4HS, a workshop for high school teachers that demonstrates some of the benefits of integrating technology into the school curriculum.

Team 2228 participated in the HF-L activities fair to recruit new members.

MENDON FOUNDATION

Our team has written articles for the Mendon Foundation newsletter and The Sentinel, a local newspaper. We have also had articles written about us in the Mendon Foundation newsletter, the school newspaper, HFL District News Letters, and the Democrat and Chronicle. We have even been featured in the News 10 NBC Morning Program.

6 Balance Sheet

2013-2014 Budget

Revenue	Budgeted
Direct (Corp) Sponsorships	12250
Indirect Thru (Corp) Sponsorships	9000
Pen and Jam Sales, Pancake Breakfast, and Shirt	2200
Deposits for Travel and Banquet	13515
In Kind Donations (Not included in Revenue Totals)	548
Revenue Totals	$ 36,965

Expenses	Budgeted
Technical Expenses	5850
Marketing and Operations Expenses	5400
One Time Expenses	0
Registration Expenses	9850
Postage and Shipping Expenses	250
Regional Food and Transportation Expenses	12615
Banquet Costs	900
Recurring Expenses	300
Expense Totals	$ 35,165

	Actual
Excess of Revenue over Expenses	1800
Account Balance	$ 21,147

Our Budget Sheet helps to keep each sub-team aware of how much money is available for their use. We update this frequently.

2008-09 was the model and goal for all our financial planning.

In 2012, a new mentor joined who was more experienced in handling professional budgeting systems, and organized our team's finances. We are now more efficient with our fiscal responsibilities.

Financial Data for 2012-2013

Revenue	Budgeted		Collected		Outstanding
Direct (Corp) Sponsorships	8600		11100		-2500
Indirect Thru (Corp) Sponsorships	9000		9000		0
Individual Sponsorships	800		1510.62		-710.62
Pen and Jam Sales, Pancake Breakfast, and Shirt	600		1284		-684
Deposits for Travel and Banquet	0		13234.4		
In Kind Donations (Not included in Revenue Totals)	500		548		
Revenue Totals	$ 19,000		$36,129.02		$ (3,894.62)

Expenses	Budgeted		Actual		Remaining
Technical Expenses	5400		3651.99		1748.01
Marketing and Operations Expenses	4200		4850.36		-650.36
One Time Expenses	3300		3078.86		221.14
Registration Expenses	9100		9155		-55
Postage and Shipping Expenses	250		41.23		208.77
Regional Food and Transportation Expenses	0		11595.82		
Banquet Costs	0		864.73		
Recurring Expenses	300		494.95		-194.95
Expense Totals	$ 22,550		$33,732.94		$ 1,277.61

	Actual		Projected Season Ending
Excess of Revenue over Expenses	$ 2,396		$ (3,550.00)
Account Balance	$ 19,917		$18,639.08

Financial Data for 2011-2012

	Budget 2011-2012	Actuals '11-12	
Beginning Balance:	**$14,025.98**	**$14,025.98**	
Revenue:			
Corporate Sponsors	$9,000.00	$14,850.00	
Fund Raising	$2,000.00	$1,685.00	
Grants	$0.00	$0.00	
Individual Contributors	$5,000.00	$2,930.00	
Regionals & Ruckus (parents)	$0.00	$0.00	
Miscellaneous	$0.00	$0.00	
Total Income:	**$16,000.00**	**$19,465.00**	
Expenses:			**Remaining to Spend**
Marketing	$1,200.00	$264.61	$935.39
Support & Awards	$500.00	$202.06	$297.94
Ruckus	$250.00	$190.66	$59.34
Regional Registration	$9,000.00	$9,000.00	$0.00
FLL teams	$0.00	$0.00	$0.00
Tools	$700.00	$619.90	$80.10
Robot parts	$3,400.00	$1,907.89	$1,492.11
Regionals (food & tranportation)	$0.00	$0.00	$0.00
Food & Banquet	$350.00	$0.00	$350.00
Shipping	$500.00	$113.97	$386.03
Miscellaneous	$100.00	$1,017.61	($917.61)
Total expenses:	**$16,000.00**	**$13,316.70**	**$2,683.30**
Amount Left:	**$14,025.98**	**$20,174.28**	

Data for 2011-2012 is accurate as of 2/4/2012

	Budget 2010-2011	Actuals '10-11
Beginning Balance:	**$10,189.63**	**$10,189.63**
Revenue:		
Corporate Sponsors	$5,000.00	$5,300.00
Fund Raising	$2,000.00	$3,372.00
Grants	$0.00	$0.00
Individual Contributors	$6,000.00	$5,320.00
Regionals & Ruckus (parents)	$0.00	$0.00
Miscellaneous	$0.00	$494.00
Total Income:	**$13,000.00**	**$14,486.00**
Expenses:		
Marketing	$1,200.00	$966.19
Support & Awards	$500.00	$129.11
Ruckus	$100.00	$122.37
Regional Registration	$5,000.00	$5,000.00
FLL teams	$0.00	$0.00
Tools	$350.00	$449.34
Robot parts	$3,500.00	$1,736.72
Regionals (food & tranportation)	$0.00	$0.00
Food & Banquet	$100.00	$751.00
Shipping	$500.00	$223.12
Miscellaneous	$100.00	$1,271.80
Total expenses:	**$11,350.00**	**$10,649.65**
Amount Left:	**$11,839.63**	**$14,025.98**

Financial Data for 2010-2011

Financial Data 2009-2010

	Budget 2009-2010	Actuals
Beginning Balance:	$11,818.32	$11,818.32
Revenue:		
Corporate Sponsors	$16,000.00	$1,600.00
Fund Raising	$1,500.00	$968.50
Grants	$6,000.00	$5,000.00
Individual Contributors	$0.00	$275.00
Regionals & Ruckus (parents)	$9,660.00	$5.00
Total Income:	$33,160.00	$7,848.50
Expenses:		
Marketing	$1,500.00	$37.95
Support	$600.00	$48.74
Ruckus	$300.00	$100.00
Regional Registration	$9,000.00	$6,500.00
FLL teams	$0.00	$0.00
Tools	$750.00	$0.00
Robot parts	$4,500.00	$761.15
Regionals (food & tranportation)	$9,660.00	$0.00
Food & Banquet	$100.00	$0.00
Awards	$100.00	$0.00
Shipping	$500.00	$33.52
Miscellaneous	$100.00	$78.00
Total expenses:	$27,110.00	$7,559.36
Amount Left:	$17,868.32	$12,107.46

Notes:
All CougarTech financial data assumes a July 1 start date. Our fiscal year runs from July 1 to June 30.
If we have not raised enough money for competition by September 1, we do not compete that year.

Financial Data 2008-2009

	Budget 2008-2009	Actuals
Beginning Balance	$ 20,859	$ 20,859
Revenue		
Corporate Sponsors	$ 17,550	$ 7,010
Fundraising	$ 1,250	$ 1,270
Regionals (parents)	$ 9,660	$ 9,766
Miscellaneous	$ -	$ 1,089
Total Income	$ 28,460	$ 19,135
Expenses		
Marketing	$ 2,000	$ 1,430
Support	$ 750	$ 569
Ruckus	$ 350	$ 379
RIT Regional	$ 6,000	$ 6,000
FLL Teams	$ 600	$ 600
Tools	$ 750	$ 818
Robot parts	$ 3,550	$ 4,141
Connecticut Regional	$ 4,000	$ 4,000
Regional. food & transport	$ 9,660	$ 9,237
Banquet	$ 100	$ 312
Awards	$ 200	$ 67
Shipping	$ 400	$ 508
Miscellaneous	$ 100	$ 114
Total expenses	$ 28,460	$ 28,175
Amount Left	$ 20,859	$ 11,819

2008-2009 serves as the model year. We met the target date of September 1 for sponsor and fundraising support to enable two regional competitions. We did not spend all the revenue, but had some to carry over to future years.

Note: This model requires significant parental support for travel costs.

SPONSORSHIP BENEFITS	Platinum Sponsor $10,000+	Sustaining Sponsor $5000 - $9,999	Leadership Sponsor $2,500 - $4,999	Associate Sponsor $1,000 – $2,499	Sponsor $500-$999	Patron $100 - $499
Thank You Note	X	X	X	X	X	X
Pictures of Team	X	X	X	X	X	X
Website Presence	X	X	X	X	X	N/A
Print Media Presence	X	X	X	X	X	N/A
T-shirt Promotion (size/name)	Top Billing Largest Font	Second Billing Medium Large Font	Third Billing Medium Font	Fourth Billing Small Font	N/A	N/A
Robot Promotion (size/name)	Large Sign	Medium Sign	Small Sign	N/A	N/A	N/A
Tickets to Team Awards Banquet	X	X	N/A	N/A	N/A	N/A
Team Support at Sponsor Corporate Event	X	N/A	N/A	N/A	N/A	N/A
Company Name Listed in Conjunction with Team Name	X	N/A	N/A	N/A	N/A	N/A

Our Sponsor Fact Sheet establishes a donation structure. It demonstrates what benefits sponsors received at each level of donation.

7   Risk Analysis

Strengths:
1. Team 2228 creates enough interest in the community to field 40 students each year.
2. We are blessed to have mentors that are experienced in many fields including engineering.
3. Two thirds of graduating students go into STEM college programs and STEM career fields.
4. Many college age alumni return to mentor the team during school breaks.
5. Honeoye Falls-Lima, Team 2228's host school, is ranked third academically in Monroe County, a positive measure of student capabilities and college readiness.
6. Through an education charitable foundation, we get 501c3 IRS status.
7. Team 2228 prides itself by being a teaching team.
8. Team programmers successfully challenge the AP Computer Science exam each year.

Weaknesses:
1. Team 2228 has many students that have not taken calculus or physics yet. This makes the design process slower than we would like.
2. Very few students have taken a business course. Marketing and how to use marketing is new territory.
3. This year Team 2228 is mainly comprised of seniors. With most of the skill and the experience about to leave the team, the risk to next year's team is obvious.
4. The long design process makes production, testing, and competition preparation difficult. The design process includes finding the problem, coming up with a strategy, designing, and prototyping, testing, and then refining the design. But, if we change our design process to make it more efficient, we will lose much of the learning that happens in that part of the build cycle. Too much responsibility will be on the mentors, and not enough responsibility on the team members.
5. Another weakness is our dependence on mentors to bring in large corporate sponsors. The team has no guarantee that financial stability is achieved beyond two years.

External Threats:
1. The national and local economic environment affects all businesses, including this robotics team. When the economy is booming, corporate sponsorship is easier to come by. When the economy is not doing well, corporate leaders are likely to constrain their support of high school extracurricular activities. Turning to smaller local business is not an option because they are bombarded by requests for funds from every sports team, scout troop, and scholarship fundraiser in town. When the economy experienced a downturn in 2009, the financial support of Team 2228 also experienced a downturn. While we have developed new ways of getting and maintaining corporate sponsorship, general economic downturn continues to be a threat to our continued existence.
2. In addition to the economic environment, other external factors can affect Team 2228. In the high school, other extracurricular activities such as sports and music may draw away many potential students. Our school advisor was once laid off, and took several years to replace. Many teachers are not able to commit to the extensive hours required to advise a robotics team.

3. Mentors are all employees of local engineering, manufacturing, and technology companies. At any time, the companies may close, sell the company to another entity, or experience lay-offs. The economy of the Rochester New York Metropolitan Area is stable overall, but the economy experiences shifts in skills and companies every year. While healthcare and higher education are huge employers in this area, neither of those organizations are known for support of high school extracurricular activities. As a result, our mentors may be relocated, laid off, or simply decide to retire. All of these events dilute our mentor skill base.

4. While Honeoye Falls – Lima Central School is highly ranked academically, it does not have machining capabilities. The team works in classrooms and a wood shop. When we need metal parts, we must send out the work to one of our suppliers or corporate sponsors. With the financial pressure on schools to control their school budgets, some elective courses were eliminated or downsized. Computer programming is now offered once in a four year cycle with elimination of the Advanced Placement Computer Programming course.

5. Within the FIRST community, there are fewer threats but there are still some. We compete against teams in our areas that have formed coalitions based on years of working together on both off-season and competition opportunities making both our success at competition and name recognition more difficult. The new district model will limit variety within competition opportunities, too. For example, trips to Buckeye Regional in Ohio, or competitions in New Hampshire, Connecticut and Massachusetts will be eliminated. We will be limited to competition opportunities in Upstate New York because the team cannot afford the time to get to and money to stay in New York City to attend competitions there.

Opportunity

1. For every threat there is an opportunity. Creating those opportunities are the responsibility of team members. For example, Team 2228 revitalized the local FLL Team GearFreeze in order to guarantee an incoming freshman class interested in robotics with the capabilities to program computers.

2. Team 2228 welcomes students from other schools, within the laws that govern public schools. We have a permanent partnership with Rush-Henrietta High School for those students desiring an FRC experience. This year we have a student from Allendale-Columbia School. While we have many requests from Lima Christian School, a public school is limited by state law from sharing our teams with religious schools or home-schooled students. We forward all these requests to the Ignighters of McQuaid Jesuit High School.

3. Team 2228 continues to work with the school district to create visibility for STEM activities. This year, the hour of coding project (code.org) was embraced by every student in the high school. Also, our student FLL mentor is working as teacher assistant to an afterschool robotics club for 5th graders. We have team members on the school district Safety Committee, and the Teaching, Learning and Technology Committee.

4. Community service has been an important goal for several years. The team supports various Boy Scout Eagle projects, and collects food for a local pantry. Team members man water stations at biking and running events such as the Diabetes Association's Tour de Cure. There is much more to be done in giving back to our community.

5. Social media is also an opportunity to reach out to the community to increase involvement.

8 CougarTech Placements and Awards

Award Giver	Year Received	Event Received At	Title
Xylem	2013	Solve Water	2nd place Cost of Use
Ruckus	2012	Ruckus	Spellbinder
FIRST	2012	Buckeye Regional	*Underwriters Laboratories* Industrial Safety Award
G.R.R. Team 340	2012	Buckeye Regional	Best Autonomous
FIRST	2012	Finger Lakes Regional	Website Excellence Award
FIRST	2012	Finger Lakes Regional	*Kleiner Perkins Calvin and Byers* Entrepreneurship Award
Team 378	2012	Finger Lakes Regional	Best Partner
FIRST	2011	Finger Lakes Regional	*Kleiner Perkins Calvin and Byers* Entrepreneurship Award
FIRST	2011	Finger Lakes Regional	Coopertition Award
Ruckus	2009	Ruckus	Henchmen Competition Finalists
Ruckus	2008	Ruckus	Henchmen Competition Finalists
Ruckus	2008	Ruckus	Deadheads Gracious Professionalism Award
Lightning Bolts Team 2010	2008	Buckeye Regional	Outstandingly Motivated
X-Cats	2008	Buckeye Regional	Most Awesome and Fun Team Mascot
X-Cats	2008	Finger Lakes Regional	Outstanding Sportsmanship
Ruckus	2007	Ruckus	Restless Spirits Spirit Award
Sparx	2007	World Championship	Most Spirit Award
X-Cats	2007	World Championship	Outstanding Sportsmanship
X-Cats	2007	World Championship	Coolest Giveaway
FIRST	2007	Finger Lakes Regional	Highest Rookie Seed Award
FIRST	2007	Finger Lakes Regional	Rookie All-Star Award
Arctic Warriors	2007	Finger Lakes Regional	Best Team Spirit Award
Division By Zero	2007	Finger Lakes Regional	Rookie Sensation Award
MOE	2007	Finger Lakes Regional	Unique Design Component
X-Cats	2007	Finger Lakes Regional	Best Alliance Partner

9   Mentor Support

Mentors are the adult members of Team 2228. Since Team 2228 is a student run team, all decisions about the robot design, game strategy, off season activities, meeting schedules, agendas, and everything else are the responsibility of the students. The mentors do not have primary responsibility for the design, build, documentation, or sponsorship of the robot. Instead, all mentors support the direction of the team while providing lessons in skills the student team members may need. When an adult decides to join the team as a mentor, providing the correct level of support can be difficult to determine. Just as adults enjoy varying amounts of freedom in their work positions, so do students. The method most commonly used to build rapport and build skills is questioning. Mentoring looks like the Socratic Method, guiding the students to the knowledge they want by asking questions. Most mentors take a full build season to become comfortable with this technique. Every sub-team is assigned a mentor to guide them. Mentors also participate in community service.

Our mentors come from several sources. Some are the parents of team members with technical and marketing experience. Some are retired professionals, while others are volunteers from our sponsoring organizations. HF-L administration aids with training mentors and provides a school liaison.

Some mentors are interested community members with a passion for technology and teaching the next generation. Some of our mentors are alumni returned to the team during college breaks. In addition to officially FIRST enrolled mentors, we also have parents who assist in providing food, organizing a year end banquet, and identifying scholarship opportunities for juniors and seniors.

The work our mentors do is greatly appreciated. Without their guidance and leadership, Team 2228 would not be the thriving organization it is today.

10   Alumni

Every year the founder of *FIRST* Robotics, Dean Kamen, delivers homework. He tries to add variety every year, but one of the assignments appears on the list every time. This assignment is to follow team members and report on how they are using the skills they acquired while active in robotics. Team 2228 CougarTech, started in 2006, graduated its *FIRST* set of high school seniors in 2007. Beginning in 2011, one of our mentors checks with college graduates to ascertain their career direction. In the spirit of FIRST, Team 2228 is producing graduates that will make contributions to science, math, engineering, and technology. At this time, Team 2228 has produced four PhD candidates in biomedical engineering, electrical engineering, chemical engineering, and mathematics. Other team graduates are employed in computer science, mechanical engineering for major American companies, game design, wind technology, wildlife biology, software engineering, marine engineering, glass engineering, electro-mechanical engineering, as well as healthcare, teaching, psychology and the Armed Forces of the United States.

11 Conclusion

A business plan, like a business, is dynamic and ever changing. As we run our team like a business, we continuously alter and update our business plan to develop stronger partnerships, make strategic decisions, and develop creative solutions to whatever problems may arise. Our overall success due to this approach is incredibly mind-blowing, especially in terms of business revenues. We reached our goal of having $20,000 in corporate sponsorship, and plan to receive this amount every year. Also, our team has remained a strong competitor in awards and robot performance. Unlike some teams, ours is successfully led by students. Since our team is student run, we have a stronger overall connection and identity, which gives us an advantage over the opposing teams and creates a better experience for team members.

Though we work for six weeks straight to produce a marvelous robotic creation, the real product is the graduating seniors we send to STEM programs. Statistics show we currently place 66% of our high school graduates in STEM college programs. As we become a more prominent team in the community, spreading the word of *FIRST* to the next generation is becoming increasingly easier. This helps us help achieve the vision we share with Dean Kamen: "To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology heroes."