TEAM MERCURY 1089

HIGHTSTOWN HIGH SCHOOL

2009-2010 Business Plan

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I. Executive Summary

Team Name: Team Mercury 1089

Mission Statement: Team Mercury will inspire students to pursue careers in science and technology by creating partnerships with parents, sponsors, and community members. Students will employ teamwork and organizational skills to simulate the environment of a small business. Through the development and presentation of a FIRST competition robot, Team Mercury will engage the community by participating in local outreach events. Lastly, the team will exemplify the spirit of gracious professionalism in its communication with all parties influenced by its projects, and have a blast while doing it!

Founding: Started in the beginning of September, 2002 to compete in 2003 game, Stack Attack; the team was comprised of 12 students and 5 mentors

Founders:
- Chris Gregory: Team Coach/Advisor
- Erik, Lauralynne, and Wayne Cokeley: Programming, financial planning, team organization
- Sara and Michael Reffler, Dr. Robin-Ann Klotsky: Non-technical mentoring, programming, sensor technology
- Matt and Neil Palmere: Robot construction, programming
- FRC Team 25, Raider Robotix

Number of Team Members: 35 "Mercurites" and over 15 mentors

Location: Hightstown High School (HHS), Hightstown, New Jersey

Sponsors:
- Bristol-Myers Squibb (BMS)
- East Windsor Board of Education (BOE)
- SPECO Tile and Marble, Inc.
- Machine Medic
- HHS Activities Department
- HHS Student Council

Services Rendered:
- Provide opportunities for students in leadership, business, project management, engineering, science, technology, communication, and gracious professionalism through mentor and student lead workshops
- Create and mentor sustainable and successful FRC, FTC, and FLL teams
- Support FTC program through annual scrimmage and volunteering at NJ FTC State Championship
- Support FLL program through volunteering at FLL events, providing assistance, and offering to host an event at HHS
- Promote FIRST in the community in innovative ways, robot demonstrations and participation in community outreach events, parades, and various fundraisers
- Educate the school about FIRST via viral ad campaign, fundraising, FTC scrimmage, recruitment demonstrations/presentations, and team shirt days
- Advertise FIRST via President's Circle submission and media contacts
- Promote FIRST to New Jersey Politicians, school board officials, school administrators, and teachers via regional VIP invitations and presentations

Sponsor Relationships:

- 8 year partnership with BMS, Machine Medic, and SPECO Tile and Marble, Inc.
- 5 year partnership with HHS Activities Department
- 4 year partnership with BOE and HHS Student Council
- Send information regarding the current season to sponsors throughout the year
- Present thank you letters, gifts, and/or trophies to sponsors at end of year
- Create and distribute BMS banners and "Proud to be a BMS team" buttons at competitions
- Attend the annual BMS "wrap party"
- Present robot and successes at end of year BOE meeting
- Receive dedicated mentors from *SPE*CO Tile and Marble, Inc. and Machine Medic
- BOE provides 3 classrooms, practice space, a computer server, and coach stipend
- Awarded grants from the East Windsor BOE and HHS Student Council
- Receive funding for transportation from the HHS Athletic Department

Team Functions and Successes:

- Organized modular "Committee of the Whole" structure to prioritize goals and responsibilities
- Comprehensive recruitment plan involving student orientations and robot demonstrations
- Largely student-run organization managed by a Student Executive Board
- Successful leadership development program (including 20 different team leadership positions)
- Over 25 alumni studying science/technology/engineering fields in top colleges
- Role models to student population through team "Code of Conduct" requirements
- Improved self-initiative and motivation in students by allowing students to lead project groups
- Over 15 educated mentors providing leadership and knowledge via resources and workshops
- Development of team parent organization to coordinate our FTC scrimmage, team dinners during build season, and increase corporate sponsorship/mentorship
- Change culture of the community via parades, town celebrations, media exposure, and movie premieres
- Introduce the school to the FIRST program via bake sales, building wood-chopping mechanism for upcoming musical, presentations for BOE, viral ad campaign, and team shirt days
- Creation/mentoring of 7 FRC teams, 2 FLL teams, and an internal FTC team
- Development of other team resources, delivered via our website and kickoff workshops
- Increase gracious professionalism by distributing supportive flyers at competitions
- Effectively beta testing Java platform for 2010 control system
- Recipient of numerous awards:
  - 2009 New Jersey Regional Chairman's Award
  - 2009 Philadelphia Regional Kleiner Perkins Caufield & Byers Entrepreneurship Award
  - 2008 "Snow Day Showdown" Most Gracious Team Award
  - 3 Regional Best Website Awards (2006/2008 New Jersey and 2009 Philadelphia)
  - 2 New Jersey Regional 2006/2008 Johnson & Johnson Gracious Professionalism Awards

Future Plans:

- Design and implement new methods for community outreach by volunteering at local programs and delivering robot presentations
- Develop more innovative methods to spread the message of FIRST to the school via hosting video game competitions, a benefit dinner for Haiti relief, and inviting the community to the New Jersey Regional
- Increase involvement in FTC and FLL through team creation, mentoring, and event hosting
- Create and mentor successful FIRST programs at other local schools
- Dynamically teach the values of FIRST to a younger generation through a kid-friendly website
- Start and mentor more FRC teams in Monmouth County

- Strengthen partnerships to foster team growth and sustainability

II. About FIRST

"To create a world where science and technology are celebrated...where young people dream of becoming science and technology heroes" - Dean Kamen, Founder of FIRST

Mission Statement: Our mission is to inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication and leadership.

FIRST (For Inspiration and Recognition of Science and Technology) is an exciting, international robotics program designed to inspire students and encourage the pursuit of careers in science, technology, and engineering. FIRST was founded in 1989 by Dean Kamen, inventor of the Segway, iBot wheelchair, and many other medical devices.

FIRST is comprised of five key programs:

- **FIRST Robotics Competition** (FRC): a high school level robotics competition that completes a robot in six weeks with the help of professional engineers
- **FIRST Tech Challenge** (FTC): another high school mid-level program for low budget teams
- **FIRST LEGO League** (FLL): a program that uses LEGO MINDSTORMS technology to build a fully autonomous robot for children ages 9-14
- **Jr. FIRST LEGO League** (Jr. FLL): a simpler version of the FLL program for children ages 6-9
- **FIRST Place:** a science and technology center and hands-on children's museum

In addition to annually building a competition robot, FIRST teams uphold *gracious professionalism,* the principal moral value of FIRST, teaching valuable business ethics and skills to the leaders of tomorrow. The concept behind gracious professionalism is treating everyone with respect, being friendly, and maintaining a positive attitude overall. Students and adults are encouraged to lend a helping hand to teams in need, without expecting anything in return. An often-used saying while teaching gracious professionalism is "act as though your grandmother were watching." The main goal of gracious professionalism is to teach others that, while there may be opponents in FIRST, there are no enemies.

Another key aspect of the FIRST program is the idea of "coopertition," which combines a fun and competitive sporting event with cooperation and good sportsmanship. Combined with *gracious professionalism*, teams are always respectful, courteous, and helpful to others, on and off the playing field.

III. About the FIRST Robotics Competition

"It's like a way of life. There's never enough information. There's never enough time. There's always a competition, and you need a strategy. We've created a microcosm of real engineering experience"
- Woodie Flowers, FIRST National Advisor

Age Group: High School (14 – 18 year olds)
Materials: Kit of Parts (includes motors, gears, wheels, electronics, and sensor technology)
Real World Application: Design, build and program a robot, teamwork, leadership, project management, responsibility, AutoDesk software, web design, organization, business management

The FIRST Robotics Competition (FRC) includes over 77,000 participants and volunteers, in almost 2,000 teams from a dozen countries (including Mexico, Canada, New Zealand, Germany, and more!). There are over 50 regional/district competitions, leading up to the Championship Event in Atlanta, Georgia. Over 130 colleges, universities, professional associations, and companies offer over 12 million dollars in scholarships to hardworking students. Many team members work hand-in-hand with professional engineers, which prepare them for their technological futures. Mentors and advisors guide and assist FIRST teams by acting as positive role models, teaching new skills and techniques, and constantly exercising gracious professionalism.

FRC mainly consists of a friendly community of teams and their interactions with each other. This competition teaches participants how to better handle deadlines and work under pressure. Cooperation and collaboration, as well as appreciation for mentors, volunteers, and advisors are optimal goals of every team in FIRST. FRC also encourages the importance of knowing all aspects of a project and the need for marketing, information research, and mechanical knowledge. The values of FIRST, such as teamwork, responsibility, organization, respect, and consideration for others, are learned skills that will not only be applied to a professional career, but to every aspect of one's life.

Like every team, 1089 has learned from FIRST. Each member has the opportunity to learn about motors, drive train components, pneumatics, and sensors. They have also learned mechanics and engineering technology through the use of prototyped designs. Team Mercury allows students a hands-on opportunity to learn during build season and into the off-season by constructing and programming a robot with merely the advisement of mentors. Members create their own promotional slogans and designs for buttons and outreach posters each year to spread the message of FIRST and Team Mercury to the community. FIRST is a life-altering and career-molding experience for students not only on 1089, but worldwide.

IV. About Team Mercury

The Hightstown High School Robotics Team located in Hightstown, New Jersey, functions as a small business, requiring dedication through a yearlong work schedule that sometimes seems stressful and hectic. Advised by math and computer science teacher Mr. Chris Gregory, students work together to design and build a fully functioning robot in six short weeks. The robot must weigh less than 120 pounds (excluding batteries and bumpers) and fit in a 28 x 38 x 60 inch box and will, upon completion, be entered into the FIRST Robotics Competition. Whether it is in the heat of competition or within everyday life, we always treat others with the respect we wish to receive.

The team has grown from 12 members in 2003, to over 35 incorporated and motivated team members in the 2009-2010 school year, each working to educate, inspire, and learn more about robotics, science, technology and engineering. This year the team continues to grow, improve, and pursue new directions. Before the competition season begins, students engage in organizational activities such as fundraising and community outreach events to help build team spirit, unity, and communication. The team works together to achieve goals in many areas, each area representing an important facet of the team. This season, students worked to develop a list of contacts to invite to the New Jersey Regional for Dean's 2010 homework assignment while other students designed our robot and programmed using original code. Build season was full of student-driven design and programming applications, writing for award submissions and newsletters, and student designed buttons and promotional materials.

V. Team Purpose

Team Mercury 1089 is much more than an ordinary team. As a member of the FRC community, 1089 strives to complete a robot in a frenzied six weeks, while maintaining a functional team in the process. The team builds leadership, self-confidence, and encourages the pursuit of engineering to its members. The team's overall goal is to instill an appreciation of science, technology, and engineering on its participants through the use of student-lead projects that promote both team involvement and commitment.

Mercury 1089 strives to do all of the following through participation in various events, helping to maintain a student-run team:

- Inspire students to pursue the fields of engineering, science, and technology
- Educate the community about the importance of science and technology as well as its impact on everyday life
- Exemplify the spirit of gracious professionalism at all team meetings, events, and communication between teammates
- Provide an exciting and focused environment that encourages students to grow
- Have fun while learning valuable lessons in responsibility

VI. Team History

Hightstown High School's Team Mercury is a dedicated group of students interested in science, engineering, mechanics, computers, technology, and a plethora of other disciplines. With the help of our gracious sponsors, mentors, coaches, and parents, Team Mercury is able to annually compete in the international FIRST Robotics Competition.

2003

As a rookie team in 2003, HHS Robotics was quickly renamed to Team Mercury, both in reference to the NASA space team and the silver lacquer of the metals used for robot construction. The black, silver and orange colored team was then assigned a competition number, 1089, making Team Mercury unique and identifiable.

The 2003 robot was aptly named, "Quicksilver," a nickname for mercury itself. During the *Stack Attack* Game, Quicksilver could stack boxes, deploy wings to knock down stacks, and was extremely strong, as it was able to dominate the field in most of its rounds. The robot spent most rounds pushing other teams around and Team Mercury finished as semi-finalists at the Johnson & Johnson Mid-Atlantic Regional in New Brunswick, New Jersey.

2004

The 2004 season lead to the creation of a very speedy robot, named Quicksilver++. It was built to hang from a 10-foot pole and was successful at many competitions throughout the season. The team and their robot competed at the New Jersey Regional in Trenton, New Jersey and the Chesapeake Regional in Annapolis, Maryland.

Even through many cabling difficulties with its mechanical arm, the team managed to successfully push their way through *FIRST Frenzy: Raising the Bar*, the 2004 Competition, finishing as quarter-finalists at the New Jersey Regional. They went on to compete in off-season events, and won Frenzy Finale at Bridgewater-Raritan High School allied with Team 19 (Staten Island) and Team 25 (Raider Robotix).

2005

2005 brought out new and tremendous changes for both Team Mercury and their knowledge of robot building. This was the first year that the team submitted for the Chairman's Award, at the New Jersey Regional, and the team became more focused and organized. Additionally, 1089 started a rookie team, Red Bird Robotics, Team 1807, and has maintained a strong partnership since.

The team created and developed a theme in reference to Mercury, the Roman God, and chose to name the 2005 robot, "The Messenger". The robot was built to play defense, as well as cap tetrahedrons (called tetras) on large pyramid-shaped goals. The team finished again as quarter-finalists at the New Jersey Regional and continued on to the Championship Event in Atlanta, Georgia. There, competing against 85 teams in the Galileo Division, 1089 finished undefeated and ranked first seed.

2006

As the end of the 2005 season closed, Team Mercury objectively analyzed their strengths and weaknesses to improve team organization. It was decided that a committee system would be

established, and that a chairperson would lead each committee. These committees were set up to create a focused working environment but in the long run, became unsuccessful, due to a lack of leadership. Though these odds were stacked against them, Team Mercury was able to claim the 2006 Best Website Award and Johnson & Johnson Sportsmanship Award at the New Jersey Regional!

The year's robot, "Silver Lightning", was successful at shooting balls and scoring during the *Aim High* season. This robot went on to win Monty Madness, an off-season event hosted by Team 1403, Cougar Robotics. In addition, 1089 assisted in starting multiple teams in the surrounding communities and even attempted to host an FLL scrimmage to promote involvement in the FIRST program to team members and the community at large.

2007

Team Mercury began the 2007 build season like any other, drawing up possible robot designs and thinking about the game in various ways. The end result was a robot that successfully competed in the 2007 game, *Rack 'n' Roll*, by placing tubes on the rack at all three levels due to strategic programming.

Coupled with creating a productive machine, the team submitted for the Chairman's Award and were successful in delivered a strong presentation. Team Mercury also tried to start an FLL team at the local. middle school, but failed due to a lack of support. Though no competition awards were won, the team's successes were carried into the 2008 season, inspiring new members, particularly freshmen, to do their absolute best.

2008

The 2008 season was off to a great start when Team Mercury began to hold its own set of weekly workshops to teach new members the value of teamwork and gracious professionalism, as well as the various parts of the robot. Team 1089 invited Nemesis, 2590 to these meetings to help organize an FRC Team in Robbinsville.

In addition to having a strategic edge for the 2008 season from pre-season workshops, 1089 was designed a fully function robot for the 2008 game, *FIRST Overdrive*, able to hurdle trackballs and place the ball on top of the overpass at the end of each round. The robot went on to win an off-season event, Duel on the Delaware, hosted by 365, The Miracle Workerz, and 316, The Lunatecs. Though valuable seniors graduated, their efforts were not forgotten when many incoming sophomores took over their project groups during the summer, beginning with the planning of an attempted FRC event, co-hosted by Team 25.

2009

The 2009 season began with winning Duel on the Delaware with our 2008 robot, Apollo and the spirit award at Brunswick Eruption, hosted by Team 25, Raider Robotix. After a six week long workshop series based on the 2004 game and build season process, new members were excited about the 2009 game, *Lunacy*.

The 2009 robot, Apollo II, can lift orbit balls off of the regolith and shoot them into the opposing robot's trailer via an Archimedes screw.1089 won the 2009 New Jersey Regional Chairman's Award for their hard work throughout the year. The team also won the Best Website Award and Kleiner Perkins Caufield & Byers Entrepreneurship Award at the Philadelphia Regional, and

finished as quarter-finalists. Despite unforeseen robot malfunctions, the team remained spirited throughout the competitions. The team went on to win a Judges' Award at Monty Madness.

2010

The 2010 season was off to a slow start when the team's membership decreased, and funding was cut. However, Team Mercury combated these disadvantages by implementing a new "team board" system, which selected three students to lead the team, in addition to our already strong committee system. This allowed more team members to get involved and grow technically through our new FTC Team 3944. 1089 was also selected as one of 15 teams for the 2010 Java Control System Beta Test. The team also has a lot of spirit, as shown by winning spirit awards at both Duel on the Delaware and Brunswick Eruption.

The year has been off to a great start, including a fully-student driven robot design. It is using a spring loaded and cam system kicking mechanism to shoot soccer balls. Utilizing Autodesk Inventor students and mentors devised a solution for climbing over the field bump by adding a raised axle in the center of our robot. Team members and mentors alike are eagerly awaiting the 2010 competition, Breakaway.

VII. Team Goals

1089 has built a successful, award-winning team by setting and prioritizing long and short term goals. The team encourages the public to recognize science and technology, and maintains a fully-functional and organized program accessible to high school students through our goal-oriented planning. This system also aids their student leadership team, teaching them to set deadlines and to accomplish tasks in a timely fashion. Below are 1089's goals and how they are annually accomplished.

Member Goals

Recruit new team members

- *Participate in "Rush Week"*
  - Promote FIRST and 1089 to students during lunch periods
  - Discuss FIRST and 1089 early on at team meetings
- *Have involved and interesting team meetings*
  - Team-building activities
  - Committee introductions and activities
  - Nightly workshops lead by both students and mentors
- *Become more visible at the annual eighth grade orientation in January*
  - Have the robot on display
  - Allow team members to demonstrate the capabilities of the robot
  - Talk about the team and impact of FIRST on team members
- *Attend the Curriculum Expo in the Spring (when applicable)*
  - Have previous year's robot on display
  - Present information about the season via a robot demonstration
  - Talk to those interested about team successes

Improve member involvement and retention

- *Make team meetings more interesting and productive*
  - Organize project groups with accountability
  - Take of logistics quickly at the beginning of meetings
  - Use the forums to track progress
- *Involve each committee and team member in meeting activities*
  - Committee chairs recruit committee members through presentation at first meeting
  - Discuss new projects in smaller groups
  - Post ideas in appropriate threads on the forums for each committee
  - Keep opportunities available for all team members to get involved
  - Hold student and mentor run workshops before build season
  - Discuss gracious professionalism, FIRST, and teamwork during the first few meetings in September
  - Hold evening workshops about robot parts and mechanisms
  - Have committee chairs prepare specialized committee workshops
  - Teach new robot mechanisms via workshops
  - Teach about teamwork, design principles, software engineering, and present the general basics of engineering
  - Delegate tasks to new members to keep interested
  - Student run and organized fundraisers
  - Hold robot demonstrations for the general public

- *Annually implement student leadership team*
  - Each year, elect 3 students to oversee each committee, alleviating stress on the team coach and mentors, called the Student Executive Board
- *Attend off-season competitions to involve new members in the Fall, and maintain membership in the Spring*

Improve team spirit
- *Redefine Mercury 1089 imagery with additional swag*
- *Celebrate team unity by wearing a silver soccer jersey at competitions*
- *Write cheers for the team based on the game and team theme, annually*
- *Organize a cheering section at competitions to encourage team drivers*
- *Encourage inter-team communication and excitement with team mascot interactions*

Increase Awareness of FIRST

Increase awareness of FIRST in our school
- *Promote FIRST in school*
  - Create a presentation for a staff meeting about the team and FIRST
  - Encourage team members to wear FIRST/1089 shirts on team shirt days; this year we have "Mercury Mondays"
  - Display a viral ad campaign prior to the New Jersey Regional
- *Participate in school outreach events including: pep rallies, rush week, 8th grade orientation, curriculum expo, Guitar Hero Tournament, distribute buttons, and advertise them on team members' backpacks*
- *Create a presentation to the Board of Education at the competition season*

Promote FIRST in community
- *Participate in various outreach events by talking about FIRST, 1089, and FRC, as well as handing out team paraphernalia and presenting information about the robot via robot demonstrations*
  - Hightstown Day
  - 4th of July
    Memorial Day Parade
  - Gadgetoff (2007 science exposition)
  - Local movie premieres (WALL-E and Terminator Salvation)
- *Submit Press releases prior to all team events to encourage turnout by the public*
- *Team nights at local businesses*
- *President's Circle Advertisement*
- *Invite the general public to regional*
  - Advertisement in local newspapers (for the general public)
  - New Jersey Politicians
  - Sponsors

Create Partnerships with Sponsors

Maintain strong connections with our corporate sponsor, Bristol-Myers Squibb by:

- *Annually attending end-of-year "wrap" party and presenting our yearly successes*
- *Present annual gift to them (team shirt and/or game piece) with trophies*
- *BMS team banner promoting partnerships between students and sponsors*
- *Include their logo on all team paraphernalia*
- *Circulate "Proud To Be a BMS Team" buttons*
- *Send end of year thank you letter/card*

Maintain a strong connection with the *East Windsor Board of Education* (our direct connection to our school district):

- *Present the season's successes at an end of year Board of Education meeting*
- *Invite as VIPs to the New Jersey Regional*
- *Include their logo on all team paraphernalia*
- *Send end of year thank you letter/card*

Show appreciation for companies that provide technical mentors/assistance (*SPECO* Tile and Marble, Inc. and *Machine Medic*)

- *Create Mentor Day cards for annual mentor day*
- *Award submissions (specifically WFA, Woody Flowers "Jr." Award, and Duel Master Volunteer Award)*
- *Maintain a website page dedicated to their efforts*
- *End of year mentor gifts/thank you cards*

Forge strong connections with the HHS Student Council and the HHS Athletic Department

- *Thank for button supplies and event transportation*
- *Recognize on team website*

Overall Organizational Goals

Improve team organization

- *Create responsible committees*
  - Appoint a chairperson for each committee
  - Each committee will create a list of action items, assigning responsibilities with deadlines and accountability
  - Each committee will create a calendar
  - Committees will keep minutes of meetings and report to the team on progress on action items via forum system
  - Recruit members at first meetings in September
  - Hold specialized committee workshops
  - Work with team coach, Mr. Gregory, to create a meeting agenda
- *Improve team-wide communication*
  - Subscribe to "Mercury Reminders": a system using SMS messaging and email to notify members of upcoming events
  - Utilize public team forum on website
  - Parent email and phone list
- *Document our efforts via the website*

    - Team communication via the forums
    - Update news content for community to read about accomplishments
    - Explain organization to general public
- *Create and maintain attendance binder*
- *Revise and implement a stable business plan*
    - Outlines and defines responsibilities of team and committee structure
    - Reinforces team goals and future plans
    - Tracks team history
    - Organizes an appropriate budget for each season
- *Analyze overall team strengths and weaknesses and improve upon them after:*
    - Discuss results using "roses, buds & thorns" after fundraisers, competition season, build season, and outreach events
    - Collectively and constructively develop solutions to prevent problems from occurring again

Improve financial status

- *Create a budget for each season*
    - All committees to submit requests for line items in the budget
    - Create and maintain financial records for the team via records and business committee
- *Hold monthly fund raisers (car wash, bake sales, FTC scrimmage, team night out, etc.)*
- *Explore new fund raising ideas, striving to increase profit per event*
    - Solicit local businesses for donations
    - Create a generic letter for donations from businesses on team letterhead
    - Game for kids at local shopping center
    - Raffle
    - Sell 1089 paraphernalia to parents and siblings

Improve organization during build season and at competitions

- *Prior to build season, design pit layouts and vote on the best one*
- *Create a list of vendors for parts and supplies*
- *Perform an inventory of parts, tools, and supplies*
- *Organize robot storage room and label for more efficient use*
- *Purchase a team laptop for programming*
- *Continually build the robot in a location that is easily accessible to all team members*
- *Convene the scouting selection committee to determine potential alliance(s) (based on pre-made sheets)*
- *Utilize "tool tags" to track loaned materials at competitions*

Increase adult participation

- *Hold Parent meeting in beginning of year*
    - Committee presentations
    - Discuss parent organization
    - Organize FTC scrimmage
    - Set up fundraisers
    - Solicit local businesses
- *At least one parent, mentor, or alumni overseeing each committee*
- *Create a campaign for adult attendance at competitions*
- *Encourage parents to participate during build season by providing meals for members*

GOALS WITHIN FIRST

Improve understanding of FIRST awards

- *Prior to start of build season, divide awards among committees*
- *Each committee to present to team purpose of each award*
- *Brainstorm and implement ideas to improve team's qualifications for awards*
  - Stress the importance of everyone's efforts
  - Emphasize that the recognition is great but it's about the team's actions for others to emulate
- *Encourage juniors and seniors to apply for FIRST scholarships*

Mentor new and returning teams

- *Start new teams*
  - Find schools that do not have a FIRST program and implement one
  - Guide new teams through their first year in FIRST and help in all areas of team functionality
  - Offer programming and mechanical assistance at competitions and in organizational structure via presentations and coach/student communication
  - Lend them a robot to compete as "pre-rookie" at Duel on the Delaware and/or Brunswick Eruption in the Fall
- *Mentor teams*
  - Help teams that request mentoring on their TIMS page
  - Offer assistance by giving workshops about machining parts, programming, general team management, and other components to a FIRST team
- *Maintain strong connections with teams that we have started and/or mentored*
  - Allentown High School, FRC Team 1807
  - Steinert High School, FRC Team 2180
  - Nottingham High School, FRC Team 2191
  - Hamilton West High School, FRC Team 2495
  - JP Stevens High School, FRC Team 2554
  - Robbinsville High School, FRC Team 2590

Increase involvement with FLL

- *Start teams by presenting information about FLL to the principal of a middle or elementary school*
- *Mentor teams by offering programming, design, and research guidance during Challenge Season*
- *Attempt to host an FLL competition*
- *Volunteer at existing FLL competitions*
- *Hand out information at fundraisers and outreach*
  - Speak about FLL and Jr. FLL at local movie outreach
  - Encourage creation of teams to youth at outreach
- *Started/mentored teams*
  - Hightstown, FLL Team 2594
  - Howell Middle School North, FLL Team 491

Increase involvement with FTC

- *Host an FTC scrimmage annually ("Snow Day Showdown")*
  - Mentors judge awards, referee, game announce
  - Student body at HHS cheers with 1089
  - Members participate as queuers, field reset, and other volunteer roles

    - Parents and members organize and operate refreshment table
- *Volunteer at New Jersey FTC State Championship*
- *Start and mentor an FTC Team by providing various workshops on FIRST and technical concepts*
    - Hightstown High School, FTC Team 3944

Strengthen partnerships within the FRC community

- *Support local teams by participating in off-season competitions*
    - Monty Madness (Cougar Robotics, Team 1403)
    - Second off-season event in Spring or Summer
    - Duel on the Delaware (MOE, Team 365 and Lunatecs, Team 316)
    - Brunswick Eruption (Raider Robotix, Team 25)
- *Create partnerships with other teams at FIRST competitions*
    - Hand out tools and offer technical help in the pits
    - Distribute "we're here to help" flyers at all competitions
    - Volunteer at FIRST competitions, during both official competition and off-season
- Participate in scrimmages with other teams
- Host rookie and kickoff workshops
- Attempt to host off-season FRC event
- Mentor and start more FRC teams at local high schools

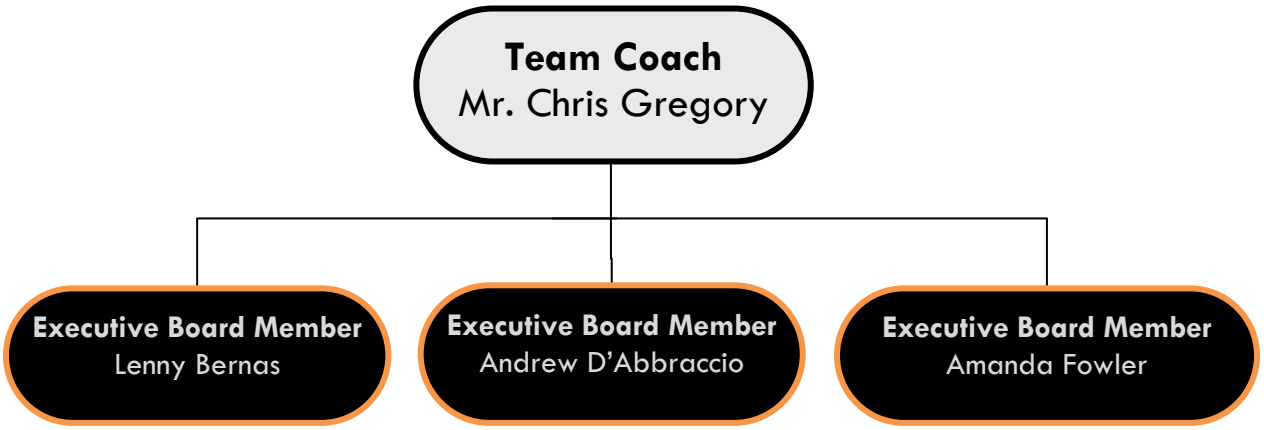
VIII. Team Organization

Team members learn the roles of individual responsibility and teamwork through veteran members offering workshops and leading project groups. Students manage their own weekly goals where they can organize their ideas to create a successful product. At the start of daily meetings, the team plans the day's agenda and distributes tasks. At the end of each week, during build season, student leaders and other mentors coordinate the next week's goals.

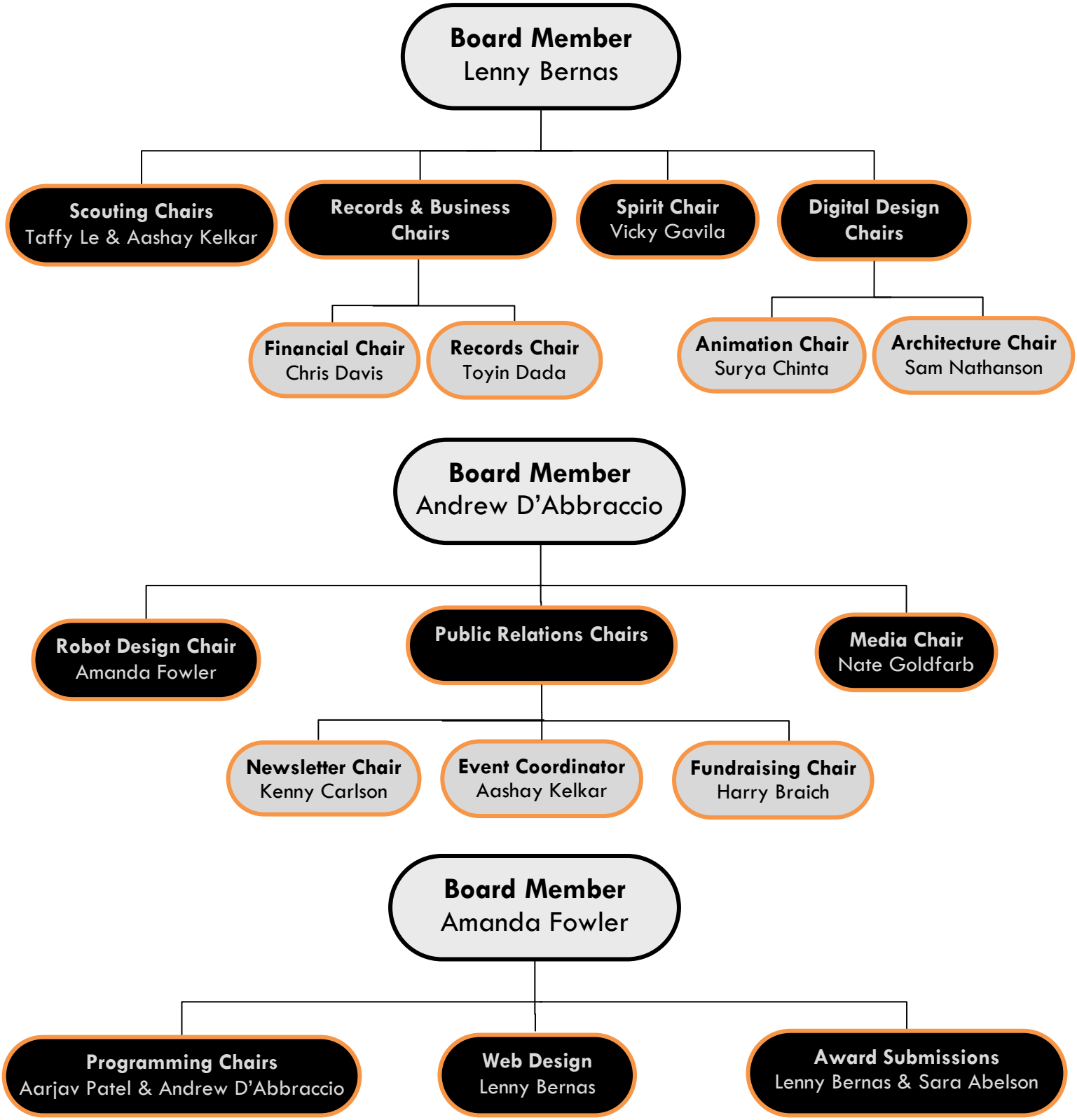
Each committee goal focuses on a specific aspect of the team. Members gain essential knowledge and skills to better prepare them for the future. They also learn project management and organization skills, and the value of hard work throughout build season and the school year.

The team "chain of command" is shown below, and is used to help increase member involvement/retention/activity:

Notes: Names and structure are based on the 2009-2010 season. Board member oversight of individual committee chairs is shown on the following page.

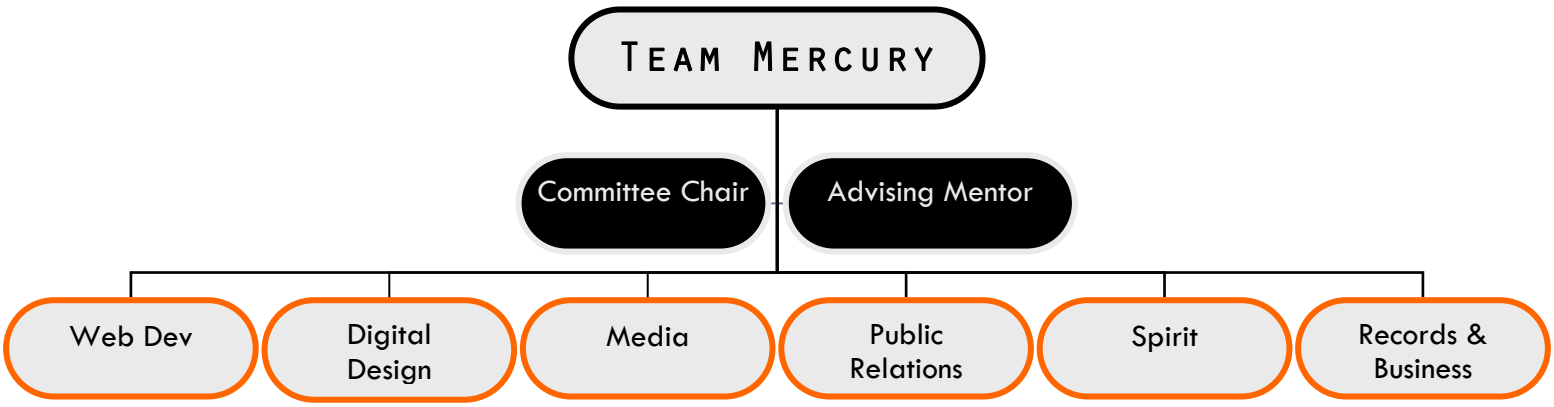


Board Member Responsibilities

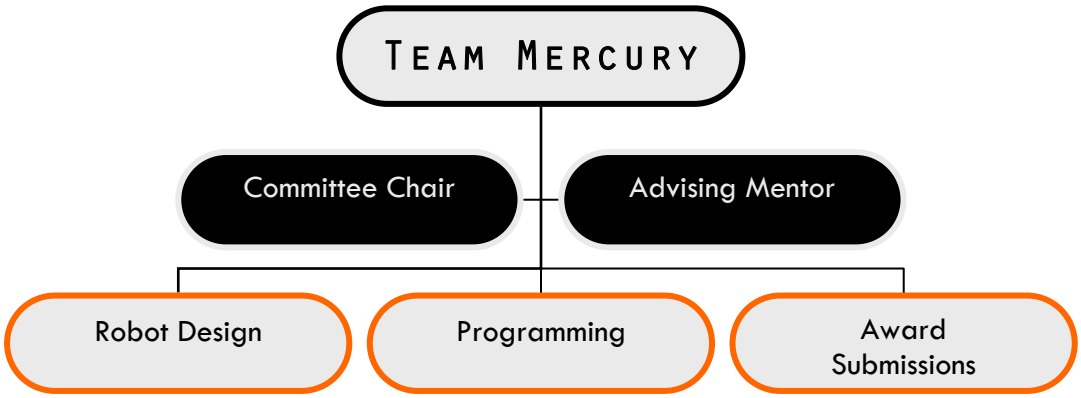


The overall "Committee of the Whole" structure for year-round project groups is shown below:

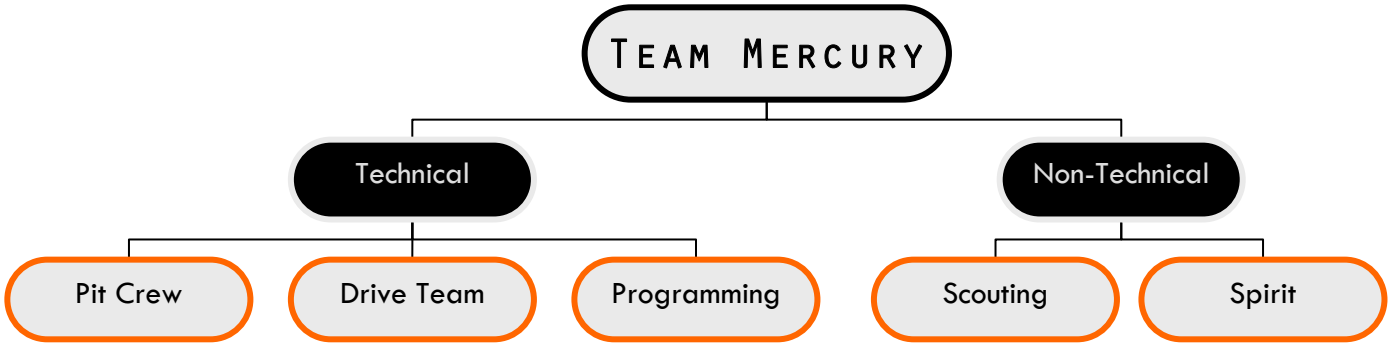
Year-Round Structure



Build Season Structure



"Ad Hoc" Competition Structure



IX. Committee Responsibilities

Each committee is responsible for completing specific tasks pertaining to their ultimate objective of visualizing the team's identity in all actions. They are responsible for creating a functional team through the completion of these specialized jobs. Overall, the team works hard to meet these goals using a modular "Committee of the Whole" structure, in which each committee presents their progress to the team monthly via a special committee head forum, where updates are posted by committee chairs to keep the team updated.

Every committee has a leader, known as the committee chairperson. All of the chairpersons are responsible for completing the outlined tasks for their committee and working with their "advising mentor" in the completion of these tasks. In addition, they are responsible for moderating special committee forums on our online forums and keeping their groups focused. Additional tasks for the chairpersons are listed in their committee task outline.

X. Year-Round Committees

Each of these committees on 1089 works hard all year round to teach each other and instill the values of FIRST upon new team members. The main job of these groups is to consistently get results. Because these groups work all year, they are the role models for the other committees and are expected to present their successes monthly. In addition, these groups are expected to complete tasks because of their year round timeline.

The committee chairs for these committees are expected to have high work ethics and are expected to think of additional tasks for their committees with help from their advising mentor. Additionally, mentors are expected to attend meetings as often as possible to oversee the committee's progress.

Build season should be greeted with minimal work done by these committees because of their ability to work prior to build season. However, it is expected that the committee chairperson continue to monitor their committee's results during build season and prepare award submissions by meeting specified deadlines.

WEB DESIGN

Current Committee Chair: *Lenny Bernas*

The Web Design Committee is responsible for managing and updating all online team information. The main goal of these projects is to teach valuable web design and computer graphic design skills while informing the public of the team's progress. The skills learned here will inspire computer engineers and teach about maintaining a *target audience*, primarily used when writing content pages and designing website layouts.

Committee Chairperson Responsibilities
Manage the team website
Teach web design skills (including CSS, HTML, PHP, etc.)
Upload changes made to the site via an FTP login
Manage team communication on the forums via administrative power
Moderate the web design sub-forum
Update the website calendar via Google Calendar
Update website news for the public via team website news script
Annually submit the website as "student awards submitter"

Committee Responsibilities
Design and vote on multiple page layouts for the website each year and validate it annually
Create website pages via notepad software and *XHTML Strict 1.0*
Promote FIRST and the team on the website

Awards
Best Website Award (Received in 2006, 2008, 2009)
Website Excellence (Received in 2006, 2008, 2009)

DIGITAL DESIGN

Current Committee Chairs: *Surya Chinta (animation) and Sam Nathanson (architecture)*

The Digital Design Committee utilizes AutoDesk Inventor and 3d Studio MAX software to create a robot design and two animations each year. By teaching valuable computer graphic skills, the Digital Design team members are able to appreciate animations and robot designs. The objective of these tasks is to use computer generated designs to inspire an appreciation of science and technology on its members.

Architecture Chairperson Responsibilities
Learn AutoDesk Inventor Software
Teach AutoDesk Inventor to committee and other teams
Collaborate with robot design to create an Inventor drawing of the robot
Moderate the Digital Design sub-forum

Animation Chairperson Responsibilities
Learn 3DS MAX Software
Teach 3DS MAX to committee and other teams
Moderate the Digital Design sub-forum
Submit the Safety Animation to FIRST
Submit the Autodesk Visualization Award Submission to FIRST via FIRST Awards

Committee Responsibilities
Prepare a safety animation using 3d Studio MAX
Prepare an AutoDesk Visualization Award Submission using 3d Studio MAX
Work with AutoDesk Inventor to create a robot design

Awards
Excellence in Design Award
FIRST Safety Animation

MEDIA

Current Committee Chair: *Nathaniel Goldfarb*

The overall objective of the Media Committee is to document team efforts with pictures and videos. Their main job is to create team videos by using a variety of software through individual and group projects. They are also responsible for taking pictures at competitions, outreach events, and team activities. This committee teaches how to create videos using editing software and utilizes photo-editing programs, such as *Adobe Photoshop*.

Committee Chairperson Responsibilities
Teach a variety of picture and video editing software
Organize for members to take pictures and videos at all events
Oversee both filming and editing crews
Moderate the media committee sub–forum

Filming Group Responsibilities
Document team's successes by taking pictures and videos at all team events

Editing Group Responsibilities
Create a President's Circle video submission
Create a Chairman's Award video submission
Create team videos after each competition season
Organize pictures and videos for the general public
Edit pictures for brochures and posters
Edit pictures for the website and other committees

Awards
Chairman's Video
President's Circle Challenge (Received in 2008)

PUBLIC RELATIONS

Current Committee Chairs: *Harry Braich (fundraising), Aashay Kelkar (event coordinator), and Kenny Carlson (newsletter editor)*

The Public Relations Committee organizes team fundraising and outreach events to inform the community of 1089's progress in FIRST. The goal of this group is to inform the general public about FIRST and the many opportunities available to its participants. Additionally, they set up fundraisers to ensure team sustainability. The members of this committee learn valuable lessons in communication and coordination of events for the team.

Fundraising Chair Responsibilities
Organize fundraisers
Fill out bake sale/fundraising forms
Moderate the Fundraising and Public Relations Committee sub-forums

Event Coordinator Responsibilities
Organize community and school outreach events
Moderate the Public Relations Committee sub-forum

News Editor Responsibilities
Distribute press releases to local newspapers
Send out thank you letters
Edit the monthly newsletters
Moderate the Public Relations and Newsletter Committee sub-forums

Committee Responsibilities
Coordinate fundraisers and outreach events
Complete Dean's homework annually
Prepare press releases
Write thank you letters
Create a monthly newsletter to distribute to parents and sponsors
Create and maintain team brochures
Prepare Judges' packets for competition
Organize team building exercises during and outside of team meetings
Design promotional materials for the pit (with Spirit Committee)

Awards
Johnson & Johnson Gracious Professionalism Award (Received in 2006, 2008)
Judges' Award

SPIRIT

Current Committee Chair: *Vicky Gavila*

The overall goal of the Spirit Committee is to create a team image in the community through participation in outreach events and utilizing the team banner, flag, and mascot. Spirit Committee also extends into competitions where they prepare team cheers and excite team members about the year's competition. The skills acquired through this committee are marketing from publicizing the team to the community as a whole.

Committee Chairperson Responsibilities
Organize spirit supplies for competitions
Coordinate the creation of pit materials with Public Relations
Moderate the Spirit Committee sub-forum

Committee Responsibilities
Brainstorm and present ideas for the team image (for the current year)
Create and maintain a team mascot
Create banners and uniforms for competitions
Make giveaways for competitions and outreach events (including buttons)
Create posters
Create and maintain team photo album
Design promotional materials for the pit with Public Relations

Awards
Chrysler Team Spirit Award
Imagery Award

RECORDS & BUSINESS

Current Committee Chairs: *Toyin Dada (records) and Chris Davis (financial)*

The Records & Business Committee is responsible for organizing team activities involving paperwork and advanced planning. Their main focus is to track finances and create a work-focused environment for students and mentors alike. The skills learned in this committee introduce its members to running a small business and basic accounting techniques, including specialized organizational skills.

Records Chairperson Responsibilities
Teach business skills to committee members
Create and maintain a membership list, including address, email, and phone number
At the end of each month, place committee progress reports in the committee binder
Store meeting minutes in team minutes book
Organize an attendance binder to log service hours for team members
Moderate the Records and Business sub-forum

Financial Chairperson Responsibilities
Prepare a financial statement and present it to the team
Create a budget for each year
Copy deposits and check requests to keep in the financial spread sheet
Balance the team account monthly
Moderate the Records& Business sub-forum

Committee Responsibilities
Prepare an agenda for team meetings
Take meeting minutes and post on the forums
Annually edit the business plan

Award
Kleiner Perkins Caufield & Byers Entrepreneurship Award (Received in 2009)

XI. Build Season Committees

Each of the seasonal committees on 1089 works hard during build season to design, test, program, and build the robot. Members write award submissions for the Chairman's and Woodie Flowers Awards. The main job of these groups is to learn all of the skills necessary to accomplish their goals during the off-season so that they are prepared during build season.

These committee chairpersons are expected to consistently attend meetings and work with the advising mentor to organize projects in their designated timeframes. The committee chairperson is expected to have taught workshops about their committee's goals and be able to accurately accomplish these tasks in a timely manner.

Build season should arrive with a large amount of preparation done and quickly work on the robot design and programming ideas. In addition, Award Submissions should have outlines prepared for the awards and be written during the first week of build season. It is crucial that the committee chairperson oversees these tasks and gets them done in the allotted time.

ROBOT DESIGN

Current Committee Chair: *Amanda Fowler*

The main objective of the Robot Design Committee is to design and build a fully functional robot each build season. This is done through the use of various types of metal and parts. The committee's main tasks, aside from the physical construction of the robot, include designing a pit layout and crate to ship the robot in. The skills learned in this committee fuel the imagination of team members and inspire a greater appreciation of engineering by working with professionals.

Preplanning (*these tasks should be completed by the end of week one of build season*)
Create a parts and tools inventory
Research, purchase, and organize team tools
Build a robot cart
Create a pit setup chart
Finalize the robot design with the team
Coordinate with the Programming Chair to get a design set with specific functions
Coordinate with the Animation Chair to create a robot design

Committee Chairperson Responsibilities
Set up a robot construction calendar
Budget robot expenses
Moderate the Robot Design Committee sub-forum

Committee Responsibilities
Research parts for the robot
Build a crate to ship the robot
Research other teams designs of past robots
Create a fully functioning robot by the end of build season

Awards
Xerox Creativity Award
Engineering Excellence Award
Motorola Quality Award
General Motors Industrial Design Award

PROGRAMMING

Current Committee Chairs: *Andrew D'Abbraccio and Aarjav Patel*

The Programming Committee plays an important role in the robot design process. Because they have to program the robot for competition, their schedule is very strict and equally important. The practicality of this committee is two-fold; members learn not only how to program a robot but time management skills through software engineering. The overall processes gained from these experiences will aid members in electrical engineering as well and instill a greater appreciation for technological advancements.

Preplanning (*these tasks should be completed by the end of week one of build season*)
Learn about changes to programming software (by FIRST)
Research new technologies (sensors, gyros, etc.)
Teach about programming and its importance
Coordinate with Robot Design Chair to develop specific robot functions to program

Committee Chairperson Responsibilities
Learn programming software and be prepared to teach it throughout build season
Moderate the Programming Committee sub-forum

Committee Responsibilities
Aid in the creation of the robot design
Learn about programming via workshops lead by committee chairperson and advising mentor
Program the robot using LabVIEW by the end of build season
Create a fully functional control board by the end of build season

Award
Rockwell Automation Innovation in Control Award

Award Submissions

Current Committee Chairs: *Lenny Bernas and Sara Abelson*

The Award Submissions Committee writes valuable essays to inform FIRST of Team 1089's progress. These are also used to gain sponsorship for the season and show the importance of the team's efforts. The skills learned from writing these submissions are especially useful to schoolwork and projects, and teach the importance of time management. Overall, they work hard to outline the team's goals and successes and present them to the FIRST community.

Preplanning (*these tasks should be completed by the end of week one of build season*)
Determine the theme for the Chairman's Award essay and presentation
Outline and determine the goals to list in Chairman's Award Essay
Determine a Woodie Flower's Award candidate and outline their importance to the team

Committee Chairperson Responsibilities
Develop and present the Chairman's Presentation with two other team representatives
Moderate the Award Submissions sub-forum
Submit the Woodie Flower's and Chairman's submissions via FIRST Awards

Committee Responsibilities
Write the Chairman's Award essay
Write the executive summaries
Edit the yearbook pages
Work with the Media Committee to create a Chairman's video
Complete a Woodie Flower's Award Submission for a dedicated mentor

Awards
Woodie Flowers Finalist Award/Woodie Flowers Award
Regional Engineering Inspiration Award/Engineering Inspiration Award
Regional Chairman's Award (Received in 2009)/Chairman's Award

XII. "Ad Hoc" Competition Committees

Each of the competition committees on 1089 works hard during competitions to prepare the team for success when driving the robot and making alliance selections. Each committee prepares the week before an event for organizational purposes.

The committee chairpersons are expected to be very active during build season to prepare for these positions at events. This includes knowing the possibilities of possible robot malfunctions and having a well developed scouting system.

The three of these committees; pit crew, scouting, and drive team are all expected to be gracious professionals because they represent our team. Additionally, they hand out buttons and "We're Here to Help Flyer" to other teams.

Pit Crew

The pit crew organizes the pit during competitions and prepares the robot for matches through the use of a robot check list. The pit crew is also responsible for taking care of programming issues in the pits. Additionally, these members work well together and are the basis of our robot's success on the field. Skills learned through this are mechanical and software engineering, used to construct a robot.

Preplanning (*done in the morning of the first day of competition*)
Design a robot checklist for matches (*done during the first week of regionals*)
Uncrate the robot
Set up the pit (based on the pit layout)

Pit Safety Captain Responsibilities
Oversee the preplanned tasks are completed
Ensure the robot is ready for its matches when queued

Committee Responsibilities
Ensure the robot is fully functioning
Prepare the robot for its matches
Fix the robot after its matches with the help of mentors
Talk to judges during pit interviews

Awards
Underwriters Laboratory Industrial Safety Award
Judges' Award

Drive Team

The drive team is responsible for driving the robot during its matches. In addition, they are required to know the rules of the game and are well prepared for the match by working with the robot in the pits. They are also required to be gracious professionals at all times being crucial to the robots success.

Preplanning (*completed during build season*)
Know the rules of the game
Have a general understanding of the robot and its mechanisms
Practice drive and have a human player selected before the New Jersey Regional

Responsibilities
Prepare the robot for its matches
Fix the robot after its matches with the help of mentors
Ensure the robot is fully functioning
Drive the robot during its matches
Discuss strategy with alliance partners

Awards
Regional Champion/Regional Finalist
Championship Champion/Championship Finalist
Off-Season Champion (Received in 2004, 2006, 2008)/Off-Season Finalist (Received in 2006)
Coopertition Award

SCOUTING COMMITTEE

Current Committee Chairs: *Aashay Kelkar and Taffy Le*

The Scouting Committee creates a form for both round and pit scouting at competitions. This is used as a reference when making important decisions during alliance selections, developing strong decision making and persuasive argument skills of why a robot should be ranked higher than another. The job of the Scouting Committee is to compile the scouting sheets into a list, used by the team representative on the field to generate a successful alliance.

Note: *The committee will contain a drive team member and four team members that are experienced with scouting, all known as the committee chairpersons and lead by the Scouting Captain(s).*

Preplanning (*done during build season*)
Explain the scouting sheets to the team before official competition
Create a round scouting sheet
Create a pit scouting sheet
Determine the best way to pick an alliance via overall analysis sheets

Scouting Captain(s) Tasks
Provide an explanation of scouting to the team
Organize a scouting list for all team members
Get scouting information to drive team for both elimination and qualifying matches
Analyze the best choices for alliance selection

Committee Chairpersons Tasks
Organize the team to do scouting at competitions
Arrange for "veterans" to help new students while scouting
Analyze the best choices for alliance selection and get them to the Scouting Leader

Team Tasks
Scout robots in both the pits and during qualification matches (including overall comments about the team's robot)

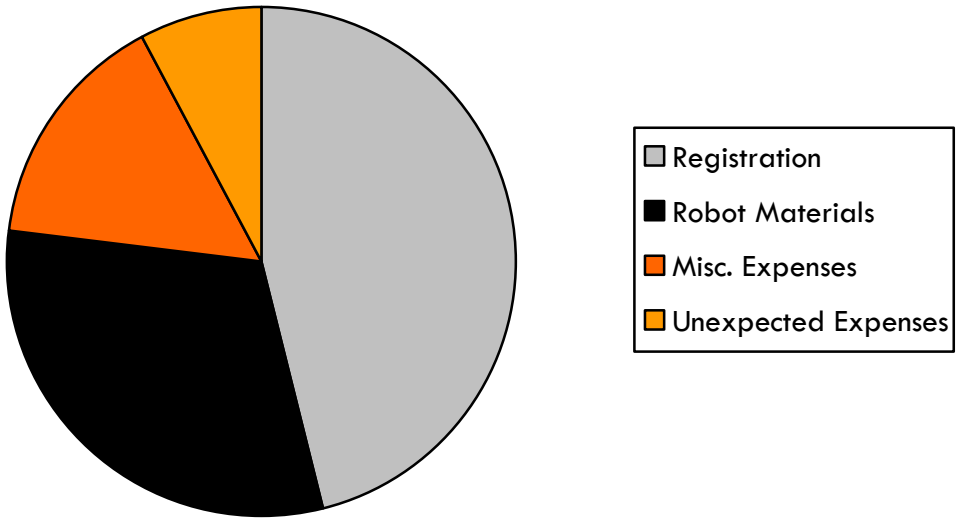
XIII. Financial Plan

1089 factors in the cost of building a robot, travel, and committee materials, as listed below. Through a strict budget, 1089 remains a low-cost team to operate and is able to succeed from year to year because of this effective system.

Item	Annual Cost (approximate)	Description
FIRST Registration Fee	$6,000	The cost of the year's kit of parts (among other supplies) and registration for the New Jersey Regional.
Robot Materials Expenses	$4,000	Total allotted cost to spend on the 2010 robot and parts and supplies.
Miscellaneous Expenses	$2,000	Covers the cost of committee materials (spirit supplies, tools, etc.), team shirts, off-season registration, and fundraising supplies.
Unexpected Expenses	$1,000	Unanticipated supplies are needed to aid in the construction of the robot and other team expenses. *This money is basically a buffer in the event other supplies slightly exceed the budget allotted for them.*
Total Annual Budget	**$13,000**	

Team Finances 2010

Broken down by category above



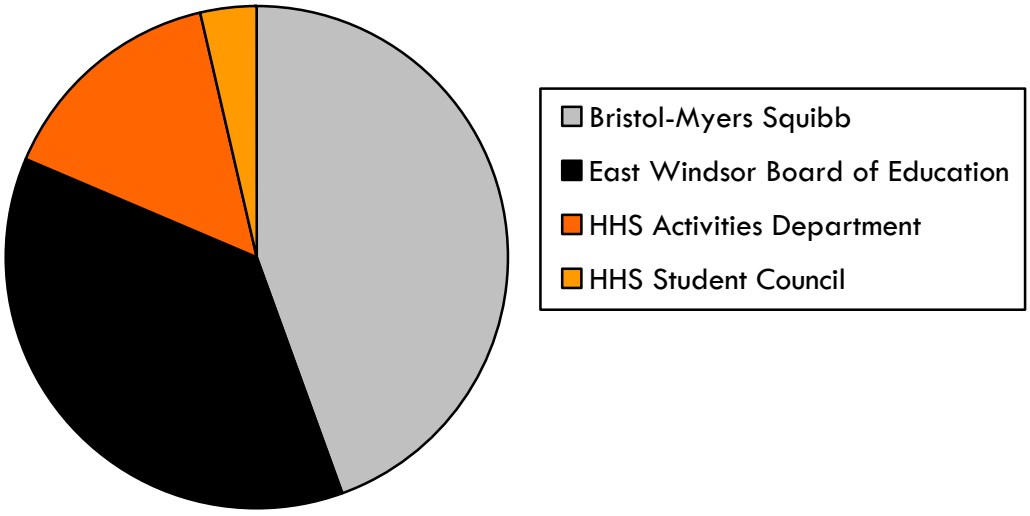
XIV. Sponsorship

1089 has many sponsors that offset the costs of supplies each year. Each grant is used in a different way; whether it's for button supplies or registration for events, our sponsors subsidize the main costs of an FRC team.

Sponsor	Grant/Donation	Money uses (if applicable)
Bristol-Myers Squibb (Grand Sponsor)	$6,000	Annual team registration New Jersey Regional
East Windsor Board of Education	$5,000 Classroom Space	Robot expenses
SPECO Tile and Marble, Inc.	Invaluable mentorship	
Machine Medic	Invaluable mentorship	
HHS Athletic Department	Bus to regional competition	Travel costs
HHS Student Council	Grant for publicity supplies	Button machine Button supplies

Financial Sponsorship

Broken down based on financial contributions above



XV. FUNDRAISING

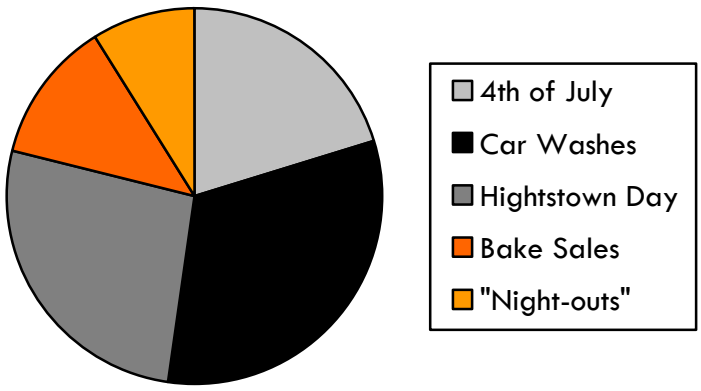
In addition to sponsorship, 1089 holds self organized fundraisers each year, including bake sales and other outreach events. This is particularly important to reach the team budget annually and keep a well-structured team. Below are the team's fundraising events and the average revenue from them.

Fundraiser	Amount	Description
Fourth of July Fundraiser	*Supplies: $200* *Total Raised: $700* **Profit:** $500	Annual event hosted by the community where 1089 sells food, as well as informs the public about FIRST. Held on July 5.
Car Wash	*Supplies: $20* *Total Raised: $800* **Profit:** $780	Held in early September, 1089 car washes are used to subsidize costs of supplies for Hightstown Day early on.
Hightstown Day	*Supplies: $200* *Total Raised: $850* **Profit:** $650	Annual event hosted by the community where 1089 paint pumpkins with the children in community and sell food, as well as inform the public about FIRST. Held in the beginning of October.
School Bake Sales	*Supplies: supplied by team members* **Profit:** $300	Held in the beginning of the school year, 1089 bake sales are used to subsidize the costs of supplies early on, especially for Snow Day Showdown and Hightstown Day.
Team "Night-outs"	**Profit:** $220	Held throughout the season, the team goes to a local restaurant and a percentage of the cost goes to the team.
Total Fundraised	**$2,450**	

Through team fundraising efforts and annual sponsorship, 1089 is able to succeed as FIRST Robotics Competition team, having stayed on track with the annual team budget.

FUNDRAISING SUCCESS 2009-2010

Based on totals above



XVI. For More Information

To learn more about Team 1089, visit the team's website at **www.mercury1089.com**. Additional information about the FIRST program and the team's progress can be viewed there.

Additionally, the team coach, Mr. Christopher Gregory, is available at **cgregory@ewrsd.k12.nj.us** or his school extension, (609) 443-7738 x 1924. He is happy to answer any questions about 1089 or the FIRST program.