ADAMBOTS
Team 245

Adams High School

and

Stoney Creek High School Robotics
Rochester Hills, Michigan

Business Plan for FISCAL YEAR 2011

www.AdamBots.com

Contributors:

Ryan Cesiel: Project Manager

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ADAMBOTS *Team 245*

Executive Summary

Mission statement

The AdamBots' mission is to teach students abilities vital to success in the real world. A method to accomplish this mission is to foster a strong relationship between student, mentors, and sponsors. Another vital method to accomplish the mission is to nurture a family-like relationship between members.

Methods for continued success

- Exhibit gracious professionalism
- Have fun
- Diversity in members
- Mentored learning
- Hands-on learning
- Student leadership

Team Summary

- Team 245 started in 1999 as a rookie team from Rochester Adams High School.
- The team started under the mentorship of Mr. Alan Gibson, a physics teacher at Adams High School and Mr. Gasper Cairo and Mr. Paul Slaby, our connections with Siemens VDO.
- Year two brought Mr. Chris Smith, a physical science teacher, in to assist Mr. Gibson with the team.
- In 2001, Mr. Gibson retired and Mr. Smith continued to mentor the team.
- In 2003, Mr. Smith left Adams High School and Mr. John Hilburger, a physics and calculus teacher, took charge of the team. However, Mr. Hilburger moved out of state and Mr. Warren Hildebrandt moved from Rochester High School to Adams that year. Mr. Hildebrandt has been with the team since.
- Today, team 245 is made up of 43 students from Rochester Adams High School and Stoney Creek High School in the Rochester Michigan area.
- Our 24mentors include parents of the current students, adults who no longer have children on the team, and a retired teacher who is our coach.
- Team 245 meets year round. Summer activities include fundraising for the Oakland County Competitive Robotics Association (OCCRA) season and teambuilding activities including bowling & a Road Rally.
- Community service is also a part of the team 245. The robot is demonstrated at elementary, middle and high schools. Other activities include, working at the Dinosaur Hill Nature Center, helping with fundraising activities including the CROP walk and the Rochester Relay for Life 24 hour cancer walk.
- The team members also help with the financial side of the business by raising money through can drives and the Rochester Arts and Apples parking lot managment.
- The team works with our sponsors to maintain good financial support and also contributes to the budget through fund raising. We keep expenses to a reasonable amount so that we always have some funds to carry over to the next year. Team members who travel to distant competitions also pay approximately 50% of the cost to help conserve team funds.

ADAMBOTS *Team 245*

Robotic Competitions

FIRST (For Inspiration and Recognition of Science and Technology) fosters interest and inspires students in engineering, mathematics and science through the development of innovative programs. The **FIRST** Foundation, is a nonprofit 501©(3) organization founded in 1989.

Oakland County Competitive Robotics Association, or **OCCRA**, is a competition we play in the fall against about 20 other schools in Oakland County, Michigan. Each fall we are given a new game and must build a robot to fit the aspects of that game.

Sponsors

The AdamBots are sponsored by General Motors, Plex Systems, and Science Applications International Corporation . It is through the generous support of these sponsors that the team can participate in so many activities.

General Motors Global Product Development

General Motors will be paying for all of our entrance fees to each competition. Potentially, GM could be donating as much as $15,000! In addition, several of General Motors employees also donate their time to the team as mentors.

Plex Systems, Inc.

Plex Systems, Inc. has been kind enough to offer another $5,000 sponsorship this year. They have been a wonderful sponsor since 2009.

Science Applications International Corporation (*SAIC*)

SAIC selected our team to receive a $4,000 grant this year. We are very grateful for their support of our 2011 FIRST season!

Growth and Future Projections

This year the team is helping mentor a rookie team in Mexico, the LAMBOTS, team 3478. This has given us an opportunity to work with students in another country and enticed us to improve our documentation and business practices so we can share them. We will be attending the Alamo Regional with them to provide assistance, share our scouting skills, and continue to develop the friendships we've formed through Facebook, emails, etc.

The team is also working to improve our skills in the design and build process, including using more advanced electronic skills.

We are also hoping that one day we can expand enough to turn into two teams, one at each high school.

Basic Team Facts

Rookie Year	1999
Location	Rochester Hills, Michigan
School Affiliations	Rochester Adams and Stoney Creek High Schools
Team Demographics	43 students 6 girls 37 boys
Mentors	3 teachers 12 engineering mentors 4 non-engineering mentors (NEMOs) 3 technical mentors 2 college mentors
Sponsors	General Motors Global Product Operations, Plex Systems, Inc., Science Applications International Corporation (*SAIC*)

Team Values, Mission, and Goals

Values

Gracious Professionalism ™:

Gracious Professionalism ™ is the manner in which the AdamBots approach their work. It involves treating everyone with the utmost respect. Genuine encouragement is preferred over trash talking. Through Gracious Professionalism ™, the AdamBots work to improve themselves while encouraging the growth of others, a way in which every member of the community is valued and supported.

Coopertition ™:

Coopertition ™ describes the way in which the AdamBots approach the competition. It is a manner in which a respectful, fierce competition is nurtured. Coopertition ™ is a combination of the words "cooperation" and "competition." It involves helping others, whether they are teammates or members of a rival team, and encouring them to perform to the best of their abilities. By doing so, one ensures that the competition the team faces will consist of the teams at their best. Coopertition ™ nurtues the growth and development of everyone through mutual encouragement.

Gracious Professionalism ™ and Coopertition ™ are values which the AdamBots apply to events outside of robotics. Members uphold these values in their everyday life, helping creating a world in which respect and encouragement is evident everywhere.

Methods for continued success

- Exhibit gracious professionalism
- Have fun
- Diversity in members
- Mentored learning
- Hands-on learning
- Student leadership

Mission

The AdamBots' mission is to teach students abilities vital to success in the real world. The team seeks to teach students the importance of cooperation, innovation, communcation, and leadership. By offering an environment in which these characterstics are used, the AdamBots prepare its students for success.

A method to accomplish this mission is to foster a strong relationship between student, mentors, and sponsors. This relationship is an important link for valuable knowledge and experience from mentors and sponsors to be transferred to future scientists, a means by which mentors and sponsors can nurture the next generation and apply their skills in areas outside their job.

Another vital method to accomplish the mission is to nurture a family-like relationship between members. The AdamBots is not only a group of people who work with each other and share a passion for science but a surrogate family whose members encourage each other to succeed in all aspects of life whether they pertain to robotics or not.

Goals

Short Term:

- Follow our project management calendar
- Finish building the robot on time
- Perform well at competitions

Long Term:

- Maintain a sustainable team

Member Benefits – Students, Mentors, School and Sponsors

For Students:

- To learn how to plan and build a working robot through programming and construction.
- To start or build upon skills in the non-building department, which would include marketing, business planning, scouting, and website design and coding.
- To be part of a community and to work as a team through collaboration and teamwork.
- To have an opportunity to be involved with outreach programs and volunteer opportunities.
- Providing students with the chance to garner scholarships for colleges and other institutions.
- If a student wishes to study in engineering or a field related to Robotics, they will be able to get a head start.
- Provides individualism for a student; teaches them to manage their own schedule and times outside of school and work.
- To work with and learn from engineering and non-engineering mentors.

For Mentors:

- To share their knowledge and experience with students to help them accomplish their tasks, in both engineering and non-engineering areas.
- To be part of a community and to work as a team through collaboration and teamwork.
- To have an opportunity to be involved with outreach programs and volunteer opportunities.
- To help give the students an experience they cannot get in the regular classroom, through sharing their problem solving techniques.
- Provides individualism for a student; teaches them to manage their own schedule and times outside of school and work.

For Sponsors:

- To have an opportunity for their company name to be heard.
- To pass on their own resources and money for possible future engineers and employees.
- To reach out to the community in a positive way
- To help develop future employees
- To help inspire students to enter the fields of science and techology

For School:

- Support an outstanding student development program
- Support science and technology interests in their students
- Increase name recognition as a school that helps develop outstanding students
- Help support students in scholarship opportunities

History

At first, the AdamBots were simply known as the "Adams High School Engineering Club." The second year the team decided to use the name "Golden Eyes," but it didn't take hold. It wasn't until the team's third year that the name AdamBots was chosen as the official team name.

The team started under the mentorship of Mr. Alan Gibson, a physics teacher at Adams High School and Mr. Gasper Cairo and Mr. Paul Slaby, our connections with Siemens VDO. Year two brought Mr. Chris Smith, a physical science teacher, in to assist Mr. Gibson with the team. In 2001, Mr. Gibson retired and Mr. Smith continued to mentor the team. In 2003, Mr. Smith left Adams High School and Mr. John Hilburger, a physics and calculus teacher, took charge of the team. However, Mr. Hilburger moved out of state and Mr. Warren Hildebrandt moved from Rochester High School to Adams that year. Mr. Hildebrandt has been with the team since.

For four years after the team's conception, the AdamBots experienced minimal success. It was considered a huge accomplishment to build a working gear box; however, this all changed in 2003.

The game in 2003 was called Stack Attack. The object of the game was to stack boxes on top of each other. A senior on the team, Carl Fristad, suggested a simple design for this challenge: build a robot capable of performing one simple task very well. The team decided upon a simple design of a powerful drive train with two simple arms extending from the edges of the robot. The arm design was eventually simplified to just two flaps extruding from the edges of the robot. The robot was named Penelope. At the first regional of the season, the Mid West Regional in Chicago, the robot performed exceptionally. Team 45, The TechoKats, from Kokomo, Indiana chose our team as an alliance partner. This led to our first Regional victory. At the next regional, the West Michigan Regional, the team won again.

In 2005, the team found the perfect solution to the *FIRST* game, Triple Play. There was much debate about the design of the robot, but eventually the fork lift design was decided upon. Rich Schuster and Jeremy Clemens were the builders extraordinare. They lead the building of the 2005 robot and eventually dubbed the robot Victoria.

The team did extremely well in its first regional. The team went to Sacramento and placed first in seeding matches. Team 245 asked for the assistance of teams 766 and 1072, and, in the finals won first place at the Sacramento Regional. The team went on the win the Detroit regional with teams 217 and 301 and won a Silver Medal, second place, at the West Michigan Regional. The team won their trip to the Nationals where the team placed 2nd in the elimination round and picked teams 217 and 766 as alliance partners. The team went on to win the Archimedes division at the *FIRST* Championship. The team placed third at Nationals losing to the eventual National Champions, Team 67 HOT, by only a few points.

In 2008, the team lost its main corporate sponsor Siemens VDO after a buyout by Continental Corporation. Team 245 was limited in its budget, but GM Finance Department picked up the slack and we were able to enter in both the Detroit and Ypsilanti competitions. The team also graduated

all members of the successful 2005 season. Despite the challenges, the team won website awards and made the elimination rounds at both competitions.

In 2009, the AdamBots once again received a generous donation from General Motors, but the team lost the great Siemens VDO work area it used since it's inception. The team was left with only the option to work out of a back closet in the CAD room with only a small drill press. The team worked through these challenges and created Olympia , a very simple but extremely effective robot. Olympia had zero failures in 110 matches, and won multiple quality awards. The team won the Kettering District Event, MARC Competition, TARDEC IGVC Invitational and was a Finalist at the Lansing District Event. We also gained another website award.

In 2010, the Team grew by including students from Stoney Creek High School. We also gained a new sponsor, Plex Systems, Inc. GM continues to sponsor the team. The team attended the Kettering Districts, earning the Imagery Award and getting to the quarter-finals. The team attended the Detroit Districts, again getting to the quarter-finals and earning a spot at the State Competition. At the off-season TARDAC, the team won the finalist trophy.

The team had a very successful OCCRA this in the fall of 2010 winning numerous awards including the County Championship. The team also earned the Foundation Award, which is the highest award given an OCCRA team, at the December 2010 awards banquet.

Oakland County Competitive Robotics Association (*OCCRA*)

Oakland County Competitive Robotics Association, or *OCCRA*, is a competition we play in the fall against about 20 other schools in Oakland County, Michigan. Each fall we are given a new game and must build a robot to fit the aspects of that game.

OCCRA and **FIRST** differ in many ways. One of the rules of *OCCRA* is teams are not allowed to use any precise machining. Robots can only be built with lighter machinery(?), such as hacksaws and drills. Also, teams are not allowed any kind of corporate funding. This forces team members to come together and fundraise. The biggest difference is in *OCCRA* robots must be student designed, built, and ran. Mentors are not allowed to help with any part of the robot. This gives students more responsibility over their own projects and allows them to be part of the build process from start to finish.

One very important benefit of *OCCRA* is it allows us to prepare for **FIRST** and allows for team bonding. Before **FIRST** begins new students already have some experience building robots and being aware of what goes on to build a robot. Also, with a team as large as ours, it allows for new members to find their place on the team and become friends with other students. With *OCCRA* we are able to try new building techniques or experiment building something we have never tried before. This gives the team more building experience for **FIRST**.

OCCRA Mission:
The Oakland County Competitive Robotics Association (*OCCRA*) shall organize and administer a high school competitive robotics league in Oakland County for the purpose of:

1. Generating enthusiasm for technical and academic disciplines such as design, engineering, physics, mathematics, and electronics through student designed and built robots
2. Providing a format for integrating and applying diverse scientific, technical, and other areas of study within the high school curriculum
3. Providing recognition and encouragement for students who devote their energies to these technical, scientific, and other areas of study
4. Promoting team/workplace skills and good sportsmanship
5. Raising awareness within high schools of the diverse technical career options available in our county and state
6. Creating partnerships with corporations and the educational community that will enrich the high school experience for our students by providing greater accessibility to people in scientific and technical careers.

OCCRA Mission Source:
http://www.oakland.k12.mi.us/Departments/CareerFocusedEducation/OCCRA/AboutOCCRA/tabid/587/Default.aspx

For Inspiration and Recognition of Science and Technology *(FIRST)*

FIRST, an acronym that stands for For Inspiration and Recognition of Science and Technolgy, was founded in 1989 by Dean Kamen. Its 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."
-Its headquarter is located in Manchester, New Hampshire.

FIRST consist of five different programs:

- **FIRST** Robotics Competition for Grades 9-12 (ages 14-18)
- **FIRST** Tech Challenge for Grades 9-12 (ages 14-18)
- **FIRST** LEGO League for Grades 4-8 (ages 9-16; 9-14 in the U.S. and Canada)
- Junior **FIRST** LEGO League for Grades K-3 (ages 6-9)
- **FIRST** Place for ages 6 to adult

The AdamBots compete in the **FIRST** Robotics Competition every year. As mentioned earlier, we use the OCCRA season in the fall to help develop the team and introduce newer students to robotics. We use the **FIRST** season, starting with the kick-off event in January through the World Championship in April, to continue to develop our team. We also use post-season **FIRST** based events to continue our growth opportunities and refine our skills.

The remainder of our Business Plan will discuss how we organize the team and continue our development, mostly based on **FIRST** principles and goals.

Team Structure

Our team is divided into two sections, engineering and non-engineering. In order to be more efficient, sub teams are created within the engineering and non-engineering sections to handle the specific tasks of the team. Each sub team is assigned a student team leader, team mentor, and students. Focus is placed on a having a student led team rather than an adult led team.

Students fill out forms ranking their top team choices and nominating themselves or others for leadership positions. Current student team leaders and adult mentors then meet to decide what teams are needed and in which teams students or mentors belong. Students are generally given their top two team selections and student leaders are only given one team to lead. Each student is required to attend their team's meetings and help with their team tasks. See Appendix for the organizational chart of this year's team structure.

Team meetings are held often during the year as one of the main ways of communication. During the build seasons of each of our competitions, meetings primarily pertain to design and build. Everyone is involved in the design of the robot during first week of build season. After the first week, meetings are held during the week and on Saturday to keep all team members informed. Each student team leader and mentor provides updates on what their team has done and what they plan on doing. During these team meetings, the project management team analyzes the build status and decides on changes that need to be made or things that need to happen to stay on schedule. See the section Project Management for more information on how we manage the build season.

Communication on the team involves team meetings, email blasts, team leader-to-team member communication, and the website. The team manager sends emails to all team members regarding events that involve the whole team. Team leaders and mentors send emails or communicate with their team members in the easiest form of communication available. On our website, AdamBots.com, we maintain an updated calendar with both specific sub team tasks and general team events.

Project Managment

Our team employs a Project Management Team that consists of both students and a mentor (or mentors) to help keep our team on task and on schedule.

The "project" in the project management is the building of the robot and the creation of everything necessary to be a successful team. Since there is a limited amount of time available during the build seasons, the Project Management Team exist to ensure everything is complete on time. We do this by creating a project management board that includes each team's tasks, timeline, milestones, and relations to other teams. The Project Management Team communicates with each sub team throughout the season to keep an updated board. Design review meetings are held to analyze progress and to ensure that the plan/schedule layed out is being executed.

Financial Plan

It is very important for the team to be financially sound for us to continue to operate as an ongoing concern. We use several methods to obtain the funds necessary to cover all our expenses and to leave so "seed money" for the new year. These methods include:

- Seeking sponsors to either pay for our registration fees or donate to the Rochester Community Schools Foundation, a 501 (c) 3 non-profit organization that acts as our fiduciary
    - General Motors pays the registration for Michigan events
    - Plex Systems donates to the Rochester Community Schools
    - SAIC paid for the Alamo Regional registration
- Raising funds through various methods including bottle and can drives and running the parking lot for the Rochester Arts and Apples festival
- Students contribute to the schools club fund, which goes directly to the school and is not used directly by the team
- Students help pay for transportation to events
    - Fees are collected for school bus transportation during the OCCRA season
    - Students and mentors pay for transportation to Michigan events
- Students and mentors pay for approximately half of the cost for out-of-state events
- Students contribute to the budget through *FIRST* participation fees
- Donations or sponsors pay for handouts at events
- Students and mentors pay for team T-shirts

The specific budget for this year is covered in the appendix

Off Season Events, Community Outreach, Relationships with Other Teams

Members of the AdamBots participate in outreach programs to promote sciences and robotics in the community outside of Adams and Stoney Creek High Schools. Students, mentors, and people all over the community benefit from these events.

2010 was the first year that the AdamBots took part in the Buddy Walk. The Buddy Walk is a walk around the Palace of Auburn Hills that benefits people with Down Syndrome. The team walked for a silbling of a team member.

The AdamBots, along with the Killer Bees (Team 33), the Juggernauts (Team 1), and the FEDS (Team 201), built a parade float for the Rochester Christmas Parade this past December. The float featured all four teams' robots on a float designed to look like a candy factory. A few students from each team walked next to the float, carrying signs and posters for **FIRST**. The float won first place in the high school and college category.

The CROP Walk is a walk for hunger that the Rochester community takes part in every year. Sponsored by the Church World Service, CROP Walks help to end hunger in the community and around the world. Participants raise money for the walk before taking part in the activity. The AdamBots do the CROP Walk every year because it is important to not only the community, but the world.

TARDEC, or Army Tank Automotive Research, Development, and Engineering Center, holds a competition every year in the Oakland community. They set up a tent and hold a robotics competition in the summer after a **FIRST** season. The same game is played as was played during the **FIRST** season. The AdamBots were finalists at TARDEC in 2010 and won in 2009.

MARC, or Michigan Advanced Robotics Competition, is an off-season event that takes place during the summer. MARC is arranged for students to have fun and practice driving their robots at competitions off-season. It is set up like a normal competition but does not count points towards the previous seasons.

The Boy Scouts of America are introducing the Robotics Merit Badge during April, 2011. To help promote this new badge, our robotics team worked with the Boy Scouts and the Killer Bees Team 33 and the FEDS Team 201 in displaying robots at Oakland University on December 5, 2010. Hundreds of Cub Scouts and Boy Scouts attended the event to learn about various kinds of robots. To help inspire the young people who attended the event, we set it up so they could operate the robots. We specifically selected the 2009 robot because of the experice in picking up the moon rocks and shooting them into the trailer.

The Halloween Hoot takes place at the Dinosaur Hill Nature Preserve in the Oakland community every year in October. It is completely run by the community: children in the elementary schools decorate and carve pumpkins, teens act out halloween skits with well-known Halloween characters, and members of the Rochester Hills Women's Club provide cider and doughnuts. The AdamBots clean up after the last night of the Halloween Hoot. We take down the decorations and pick up after everyone is gone from the trails. The AdamBots participate in the Halloween Hoot because it provides a much- needed service to the community.

The Relay for Life is a walk for cancer. The AdamBots participate in this event every summer. Members raise money by selling luminaries to people that know of someone that has been diagnosed with cancer. The luminaries are then placed around a track in memory of loved ones that have lost their battles to overcome cancer and for support for those who are still fighting. Our team has raised thousands of dollars from donations, especially from those supporting the team's own Rick Drummer. Rick has been a mentor on the team for many years and is a dear friend to everyone. It is very important to our team to properly honor him and support him in his battle. The Relay for Life allows us to help him and everyone else who suffers from cancer.

Mentoring the LamBots

2010 marked the beginning of a new team, the LamBots (Team 3478). One of our sponsors, General Motors, asked for exeriences teams in **FIRST** to help rookie teams in Mexico that were also being sponsored by GM. The AdamBots gladly rose to the challenge and have been communicating with the Lambots since before the beginning of the season. The Lambots are located in San Luis Potosi, Mexico. A few of the mentors have flown up to Michigan to meet with and design with mentors from our team. The students have kept in contact over Facebook and videochat. For example, students on our programming team have emailed the programmers for the Lambots and the business captains have connected through Facebook. In March, the AdamBots are flying to San Antonio, Texas, to take part in the Alamo regional competition. The LamBots will meet us there and we will help cheer them on to victory and make new friends along the way.

Spreading the Message and Recruiting

Our team attends different conventions and events throughout the year, often bringing our past robots to show to possible future engineers and students who are interested in Robotics. An example of this would be TARDEC or demonstrations to elementary schools.

We held a recruiting event at Stoney before our OCCRA season, inviting those interested in Robotics to have a first-hand look at our robots.

We participate in outreach activities, giving our name and team out to the community.

Parents often get involved with team, and considering many students get their aspirations of engineering from their parents, the parents often like to help out and cooperate with the team and their child.

We rely on word-of-mouth as well. We post announcements during the school day, displaying a simple message to those who do not yet know of the club. Friends of the students also join the team, and many do get involved in the processes of the team.

Our team attempts to keep things diverse between the engineering and non-engineering fields on our team. Students may engage in marketing and website to building and programming. By providing a vast amount of opportunities for students, we are able to make the team a much more diverse and more attracting club to the vast majority.

Team Participation Requirements and Expectations

Attendance Expectations:

Student are expected to attend all major meetings, which includes the first design/planning meeting after the first game announcement. Team meetings are in the CAD room every Tuesday beginning at 2:45 and ending at 3:30. If a student is unable to attend, a mentor or team captain should be aware of his or her absence.

Students must attend their own group's meeting on a weekly or daily basis, depending on the demands of the group. If a person's group is meeting on a certain weekday, the times between 2:30 and 4:00 will solely be dedicated to homework time. Engineering and Non-engineering groups will then meet from 4:00 to 6:00. If a student is unable to attend, the team captain must be aware of his or her absence.

Participation:

For a student to remain on the team, he or she must have passing grades in all of her or his classes.

A student must participate in at least 3 outreach activities. The student will have an opportunity to sign up for these activities throughout the *FIRST* season.

It is encouraged for all team members to participate in Team Building activities.

Students are expected to be on time for meetings, events, and matches. Students attend competitions to not only help support the robot, but to also provide moral support for all the teams attending. Playing on one's electronic device or other form of entertainment is discouraged.

Behavior:

Team members are expected to be "Gracious Professionals," or in the words of Woodie Flowers, "Never do anything you wouldn't want your Grandmother to see." Team members will work together peacefully and cooperatively, remembering to be gracious in winning and losing.

Students must not spread invective through e-mails, letters, postings, mouth, or any other form of communication. This includes an intention to spread hurtful messages, gossip, or acts of revenge and hate.

Students are recommended to not bring their electronic devices that do not provide a positive impact on the building process to team meetings, competitions, or work sessions.

Students who are working with the robot in the back room or in the pit, MUST WEAR SAFETY GLASSES. The use of power tools will have to be supervised from experienced mentors. Safety is the team's first priority.

Students who attend competitions will have to exhibit Team Spirit, or the act of cheering for not only our team, but for others as well. All cheers are expected to be upbeat, clean, and positive.

Competitive Analysis

There are two kinds of competitive analysis in our business plan:

- Competitive Analysis of other teams at competitions
- Competitive Analysis of other activities that pull students and mentors away from the team

Competitive Analysis of Other Teams at Competitions

During the competition seasons, a Scouting Team is formed to help analyze other teams for their strengths, weaknesses, and to assess their potential as partners for elimination rounds. Information on the reasons for scouting is in the appendix as well as the scouting sheets for this year's game.

Competitive Analysis of Other Activities

There are many school activities and outside activities that compete for the time and talent of our students and mentors. The team realizes that we need to keep the team activities relevant so that the members have a reason to stay with the team and not leave it for other activities. Some of the competitive activities include:

- Jobs
- Other school clubs
- Sports
- Homework
- Friends and peers that compete for time
- Parents not sure of the value of the team
- More exciting activities, games, etc.

We use a "Balanced Scorecard" to help us measure our success in the Learning and Growth Metrics (see Balanced Scorecard in appendix). Through consistent recognition, involvement, access to information, and mentoring activities, we believe that engaged and valued students will stay with the team. We also believe this is true for mentors.

We currently have eight mentors with the team who do not have children on the team. These mentors tell us they stay with us because we do make it meaningful and fun. They also feel they can contribute to the mission and goals of the team, therefore, helping us to be an ongoing success.

Alumni

One of the measures of our success is "What decisions have our alumni made after they leave high school". We have been extremely successful in our business planning mission of inspiring our members in the areas of science and technology. Listed below are our graduates and where they are attending college or what they are doing now:

Class of 2010

Eduardo Cerame (*Michigan*)
Mark Derry (*Oakland Community College*)
Chris Greene (*Kettering University*)
Lucas Mitchell (*Michigan*)
John Watkins (*Oakland University*)
Jack Wink (*Michigan*)

Class of 2009

David Cesiel (*Michigan*)
James Lindsay (*Arizona State*)
Quentin Sheets (*Purdue – North Central*)
Brett Garstick (*Michigan State*)
Matt Li (*Michigan State*)
Sean Losinski

Class of 2008

Anthony Curley (Michigan State)
Bhajanpreet Kohli (Michigan)
Danielle Smith (Grand Valley)
Jonathan Immers (Kettering*)*

Class of 2007

Patrick Pannuto (*Michigan*)
Braden Leinbach (*Michigan State*)
Caitlyn Bolewitz (*Grand Vally State*)
Kevin Kozlowski (*Michigan*)
Kevin Tom
Nolan Wyatt (*Eastern Michigan*)
Patricia Schuster (*Michigan*)
Tanya Das (*Michigan*)
Kevin Schalte (*Michigan*)
Kevin Huang (*Michigan*)
Emily Thomas (*Michigan*)
Scott Theuerkauf (*US Air Force Academy*)
Scott Walls (*Michigan*)
Chris Park

Class of 2006

John Dong (*MIT*)
Alexander Piazza (*Michigan*)
Bhajneet Kohli (*Michigan*)
Grace Gahman (*Oakland University*)
Jeremy Clemens
Katie Pendock (*Oakland University*)
Stephanie Roth (*Michigan*)
Ye He (*Michigan*)
Fiona Turett (*Washington University St. Louis*)
Chris Lee

Class of 2005

Richard Schuster (*Michigan/Oakland University*)
Katrin Augustyniak (*Oakland University*)
Matt Benoit (*Oakland University*)
Jenny Stein (*Oakland University*)
Hayley Lawson (*Oakland University*)
Stephen Krause (*Michigan*)

Class of 2004

Riva Das (*Duke/Penn State*)
Danny Demp (*Michigan*)
Carrie Hauser (*Eastern Michigan/Indiana State*)
Jason Lewer (*Michigan State*)
Jim Liu (*Michigan*)
Katie Olson (*Michigan*)
David Pirozzo (*Oakland University*)
Eric Plagens (*Wayne State*)
Jeff Rogers (*Michigan*)
Bill Stoffel (*Michigan*)

Class of 2003

Adnan Asif
Christian Catalan (Michigan)
Alex Drummer (Northen Michigan/Wayne State University)
Carl Fristad (Minneapolis College of Art and Design)
Edward Hong
Dan Krause (Michigan)
Bin-Bin Mao (Michigan)
John Morgan (Michigan)
Steve Moy (Michigan State)
Hunter Nie (Michigan)
Lauren Olson *(Michigan State)*
Kevin Smith *(Michigan State)*
Kaylyn Soller *(Michigan Tech)*
Jason Yee

Class of 2002

Amanda Armstrong
Andrea Brown
Joe Gothomy
Brian Hamburg *(Michigan State)*
Nathaniel Johnson *(Oakland University)*
Kevin McCulum
Max Peters
Mou Sangupta *(University of Michigan)*

Class of 2001

Mike Albertus
Kirsten Fristad *(Macalester College/University of Oslo)*
Nicholas Goodard
Jeremy Gouldy
Vicky Wilson *(Albion College/Purdue)*

Class of 2000

Karen Ault
Lauren Davenport
Cindy Drebus
Andrew Drummer *(Carleton College/Oakland University/Wayne State)*
David Hockey *(Michigan)*
Dan Hulme *(Michigan)*
Niko Kanagawa *(Albion College)*
Nicole Nelson
Ben Palmer *(Case Western)*
Bryan Wilson *(Western Michigan)*

Class of 1999

Paul Albertus *(Michigan/Berkley)*
Philip Smith
Edward Vollenweider
Robert Gable *(Central Michigan)*
Nicholas Czechowski
Derek Herbert
Ken-Pei Leung *(Michigan Tech)*
Nicholas Reeck *(Michigan)*
Joseph Pirozzo *(Oakland University)*
Sean Hallid

Website and Resources

Our Website: AdamBots.com

We use our award winning website, www.AdamBots.com, as a primary means of communications with other teams, people interested in our team, and for team scheduling (using the team members sections).

Helpful Links

The links below are very popular links within the *FIRST* community and are quite helpful.

FIRST *http://www.usfirst.org*

US *FIRST*'s official website with information on all *FIRST* Robotics events.

FIRST Forums http://forums.usfirst.org/

The official place to discuss all things *FIRST*.

FIRST LEGO League (FLL) http://www.firstlegoleague.org/

The website for *FIRST* LEGO League.

FIRST Tech Challenge (FTC) http://www.usfirst.org/roboticsprograms/ftc/default.aspx?id=968

Information on registration, the game, programming and more.

Chief Delphi http://www.chiefdelphi.com/forums/portal.php

The most popular forum of the *FIRST* community.

FIRST Chat http://www.firstchat.net/

Great resource for team and event information as well as scouting data.

AndyMark, Inc. http://www.andymark.com/

A great place to buy parts for the robot.

Autodesk FIRSTbase http://students.autodesk.com/?nd=first_home

Great resource for Inventor and 3ds Max.

FIRST CAD Library http://www.firstcadlibrary.com/

CAD library of robot components.

 for match information/media and coverage of different *FIRST* events.

FIRSTwiki http://www.firstwiki.net/index.php/Main_Page

A wonderful resource that covers a wide variety of topics.

Appendix

FY 2010/2011 Budget (September 2010 – August 2011)

Budget not included in online, public version

Sponsors

General Motors (Global Product Development)

General Motors will be paying for all of our entrance fees to each competition. Potentially, GM could be donating as much as $25,000! In addition, several of General Motors employees also donate their time to the team as mentors.

General Motors has a long history of sponsoring our team. We have been sponsored by several of their divisions including the Finance division, and, new this year, Global Product Operations. We are proud that GM has been such a dedicated sponsor, staying with us even through their tough bankruptcy not long ago. Thank you General Motors!

Visit the website of General Motors

Plex Systems, Inc.

Plex Systems, Inc. has been kind enough to offer another $5,000 sponsorship this year. They have been a wonderful sponsor since 2009.

Visit the website of Plex Systems, Inc.

Science Applications International Corporation (SAIC)

SAIC selected our team to receive a $4,000 grant this year. We are very grateful for their support of our 2011 FIRST season!

Visit the website of SAIC

Team Awards

Awards Quick Facts
- **17** *FIRST* Awards
- **1** *FIRST* Chairman's Award
- **1** *FIRST* Woodie Flowers Award
- **5** *FIRST* District/Regional Championships
- **1** *FIRST* Division Championship (and Einstein appearance)
- **54** *OCCRA* Awards
- **1** *OCCRA* Foundation Award
- **4** *OCCRA* Championships
- **3** *OCCRA* Women's Tournament Championships

Awards

FIRST Awards
2010
- Imagery Award – Kettering District
- Off-Season Events
- Invitational Finalist – TARDEC IGVC

2009
- Motorola Quality Award – Kettering District
- Website Award – Kettering District
- Champions – Kettering District
- Motorola Quality Award – Lansing District
- Finalist – Lansing District
- FIRST Teacher of the Year Award (WWJ) – Mr. Hildebrandt

Off-Season Events
- Champions – MARC Competition
- Champions – TARDEC IGVC Invitational Champions

2008
- Best Website Award – Detroit Regional
- Best Website Award – Great Lakes Regional

2006
- Chairman's Award – Davis-Sacramento Regional
- Woodie Flowers Award – Mr. Hildebrandt – Davis-Sacramento Regional

2005
- Judge's Award – Detroit Regional
- Champions – Detroit Regional
- Champions – Davis-Sacramento Regional
- Finalist – West Michigan Regional
- Champions – Archimedes Division – World Championships

2003
- Champions – West Michigan Regional
- Champions – Midwest Regional

OCCRA Awards
2010
- Foundation Award
- Champions - County Championship at Holly
- Strategic Design – County Championship at Holly
- Spirit of the Competition Award – Birmingham
- Spirit of the Competition – Roeper
- 2nd Place – Roeper
- Technical Excellence Award – Waterford
- 2nd Place – Waterford

2009
- Beautiful Bot Award – Walled Lake
- Quality Award – Birmingham Seaholm
- VEX Award – Diversity (Royal Oak) Tournament
- Spirit of the Competition Award – Waterford Kettering
- Technical Excellence Award – County Championship at Holly
- Champions – County Championship at Holly
- Foundation Award Finalist – County Championship at Holly

2008
- Spirit of the Competition Award – Walled Lake
- Judges Award – Birmingham Seaholm
- Judges Award – County Championship
- Semi-Finalist – County Championship
- Safety Award
- Teacher of the Year Award – Mr. Hildebrandt

2007
- Judge's Award – Walled Lake
- Quality Award – County Championship
- Foundation Award Finalist – County Championship

2006
- Best Play of the Day – Walled Lake
- Quality Award – Women's Tournament
- Spirit of the Competition – Detroit Catholic Central
- Spirit of the Competition – County Championship
- Champions – County Championship

2005
- Judge's Award – Hazel Park
- Semi-Finalist – Women's Tournament

2004
- Spirit of the Competition – Holly
- First Place – Berkley
- Best Play of the Day – Berkley
- Champions – County Championship
- High Score – Women's Tournament
- Strategic Design – Women's Tournament
- Champions – Women's Tournament

2003
- Second Place – Berkley
- High Score – Berkley
- Spirit of the Competition – Berkley
- General Motors Technical Excellence Award – Lamphere
- Judge's Award – Holly
- Spirit of the Competition – County Championship
- Semi-Finalist – County Championship
- Spirit of the Competition – Women's Tournament
- Champions – Women's Tournament

2002
- Spirit of the Competition – Rochester
- Champions – Women's Tournament
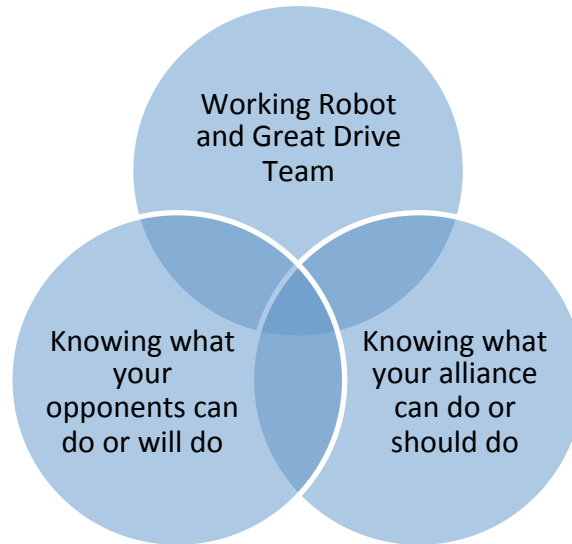- Judge's Award – Women's Tournament

2001
- Spirit of the Competition – West Bloomfield
- Spirit of the Competition – Troy
- Spirit of the Competition – County Championship

2000
- Spirit of the Competition – Brandon
- Best Play of the Day – Brandon

Includes Parts Taken From Team 358 Website

Scouting Builds Winning Alliances and Winning Strategies

A working robot, a great drive team, and scouting -- all three are required to win
In the *FIRST®* Robotics Competition (FRC®), no one plays alone!
Who will you choose and why?
Who will choose you and why?

One of the most important *competition* aspects of FRC, scouting other teams, is too frequently overlooked.

- Knowing your opponents strengths/weaknesses wins matches
- Knowing your alliance partners strengths/weaknesses wins matches
- Knowing your own strengths/weaknesses wins matches

Remember, scouting can be as simple as one or two members watching all or most of the matches, and they can be students, parents, chaparones - whoever is sitting in the stands.

Scouting is much more than casually watching each match to see one robot that is better than the others. Good scouting lets you pick out that under-appreciated robot that scores or defends consistently and brings home a steady dependable match every time even when the rest of their alliance under performs and they lose the match and end up way down in the rankings.

Why is Scouting so important?

It's part of a plan that succeeds year after year, because it affects:
- Match-by-Match Strategy: For effective strategy your drivers need to know what to expect from alliance partners as well as opponents in any match.

- Alliance robots: Select partners that can bring home a task better than you, so together you are greater.
- Alliance strategy: Select partners that complement a general strategy you plan for the finals, e.g., score or defend.
- Marketing: Promote your own team based on your strengths. Use real data to prove what do you do better than anyone
- Future designs!: Gain from the creativity of 50 to 1500 other teams. Spearhead an engineering analysis of:
  - What designs worked best,
  - How they were countered,
  - What strategies succeeded/failed,
  - What might fit with your tools/talents/skills,
  - What can you improve on,
  - What should you strive for?

Face it, even if you never expect to finish in the top eight, you'd at least better understand what other teams look for in a partner. Be the partner they want, do what they can't do, be easy to work with, be strong and accomodating in strategy, perform consistently, be dependable, don't draw penalties.

Types of Scouting

- Internet scouting (*FIRST* team database, team websites, Chiefdelphi, Blue Alliance)
- Robot photos
- Match video (The Blue Alliance)
- Basic data
- Preliminary capabilities
- Team history of performance and reliability
- Pit scouting (roving packs of scouters)
- Talk to pit crews (drive teams too if you can)
- Take current robot photos
- Collect data on type of drive train, power (# of motors), wheel traction material, manipulators, complex or simple design, etc.
- Visually observe robots and pits. Does a robot seem to be under repair a lot? Do they have ready to go spare parts & assemblies?
- Collect robot information sheets describing robot capabilities, past performance, special characteristics Talk to other scouters (robot capabilities/record)
- Match scouting (sedentary group of scouters)
- Collect results, both subjective (defense success, speed, stability, drive team skill) and objective (points scored, mechanical reliability, penalities)
- What did they do in autonomous/hybrid. Will you interfere with one another as partners? Can they disrupt you or you them as opponents?
- Drive team impressions easy/hard to work with, cooperative/uncooperative
- What strategies defeat them?
- What strategies do they defeat?
- Remote event scouting (after the fact for robots you'll compete with at upcoming events)

- Standings
- Match Records

Scouting Process

- Decide what you want to know about each robot.
- Make simple pit & match scouting sheets.
- Watch, even visit, early regionals if possible to see what other data you missed
- Ask the coach/drive team/match strategist what they want to know each match.
- Train your scouters on Practice Day or match video from early regionals.
- Assign a scouter to every robot on the field for each match of the day (one or more people).
- Collect photos of every robot to prompt your memory later.
- As data comes available brief your drive team on partners & opponents for each match.
- Debrief drive team for impressions/details after each match.
- Review your data after the first day of Qualifiers.
  - Discuss pros & cons as a group with the photos to remind everyone.
  - Develop preliminary "best" lists that complement your robot & anticipated strategy. May be best offensive robots and best defensive robots.
- Watch the robots on your best lists during the last qualifying matches.
- Refine and finalize your lists. Don't forget to watch for late bloomers – robots that finally get it together after a rough beginning.
- Send your Team Captain to Alliance picks with your final lists, even if you aren't doing the picking. Compare lists for that all important third pick overlooked diamond.
- Joint Alliance briefing/strategizing on finals matches.

Some Issues to Consider

- Scout yourself as well as others to know where your real strengths and weaknesses lie
- How will you evaluate robot performance & reliability, drive team teamwork, and strategy
- Head Scouter must be well organized
- Scouts must be trained so every report is consistent in how performance is rated.
- Keep it simple
- Your scouting should match your people resources.
- Counts and multiple choice answers are easiest to sort and analyze team performance. Essay and freeform write in answers are only good as backup material.
- Paper records vs computerized
  - Paper never fails. It's easy to pull a team summary from and pass around, but is hard to sort and analyze all teams by different criteria
- Computer requires resources and data entry can be time consuming. Data can be forever lost. Convenient power outlets can be hard to come by. Very useful for displaying current robot photos.
- Save team performance, reliability, cooperation data year-to-year to build up a history for future seasons

Sub Teams

Planning & Development

Team Leader: Ryan Cesiel
Team Mentor: Rick Drummer

The Planning & Development Team exists to keep each part of the team running smoothly together, managing a project schedule for robot construction, and ensuring that each and every person on the team has a specific and important role on the team. This team also creates the written portion of several award submissions.

Scouting, Statistics & Strategy

Team Leader: Garret Sochanski
Team Mentor: Rick Drummer

The Scouting, Statistics & Strategy Team gathers information about teams before and during competitions to support alliance selection, game strategy, and team marketing.

Marketing & Website

Team Leaders: Edna Chiang, Emily Bolewitz, Ryan Cesiel
Team Mentor: Kim Twarozynski

As a *FIRST* team, we have to focus on more than just building the robot. The Marketing & Website team does just that, focusing on the marketing and promotion of our team. This team designs posters, flyers, giveaways, and other promotional items. As its name suggests, the Marketing & Website team also develops the website as another promotional tool to share both the message of our team and the message of *FIRST*.

Media & Documentation

Team Leader: Becky Everson
Team Mentor: Nestor Cerame

The Media & Documentation Team takes photos and videos of the team, our robot, the competitions, and the robots of other teams. They are also responsible for organizing and showcasing these pictures.

Build

Team Leader: Dean Keithly
Team Mentor: Warren Hildebrandt

The Adams Robotics Build Team is just that; it is the team dedicated to the design and creation of the physical robot. Each year, the build team is separated into several smaller teams based on the requirements of the game in order to efficiently build all the mechanisms of the robot. This year the build teams include: Chassis, Above Chassis, and Mechanism & Manipulator/Arm.

Chassis

Team Leader: Jerry Lin
Team Mentor: Gary Clark

The Chassis Team is in charge basic frame and drive system of the robot.

Above Chassis

Team Leaders: Alex Shultz and Drew Markel
Team Mentors: Joe Bolewitz and Rick McBride

The Above Chassis Team this year will be in charge of several important aspects of the robot. They will be handling the minibot and its deployment mechanism which are unique to this year's game.

Mechanism & Manipulator/Arm

Team Leader: Yutaka Iwasaki
Team Mentors: Larry Garstick and Andy Phillips

The Mechanism & Manipulator/Arm Team is in charge of the device(s) that we create to control and score the game pieces. This year, the team will be constructing a device to pick up inflated *FIRST* logo game pieces off the floor and placing them on the pegs for scoring.

Programming

Team Leaders: Stephen Ploog and Jason Merlo
Team Mentors: Valerie Keithly and Scott Shultz

The Programming Team is responsible for all computer-software aspects of the robot. This includes learning new programs and writing programs to control the robot.

Controls & Electronics

Team Leader: Tanay Patel
Team Mentor: Greg Cesiel and Gary Sochanski

The Controls & Electronics Team focuses on the wiring and electronics of the robot in relation to the field. They work closely with the Programming Team and Driving Team in order to create an easy-to-use and effective control system.

CAD / Design

Team Leader: Ian Cosgrove
Team Mentor: Warren Hildebrandt

The CAD / Design Team creates both 3D and 2D computer models of our team's robot design. These designs help us ensure that the robot will work and fit together properly before we physically build it.

Field

Team Leader: Sidd Menon
Team Mentors: Paul Slaby and John Markel

The Field Team creates a replica of the field or a replica of part of the field to provide a visual for the build team and a practice environment for drivers.