

S.P.A.M. Robotics FRC 180 Business Plan

Our Mission Statement:

To inspire high school students to be tomorrow's science, technology, and engineering leaders by engaging them today in a mentor-based program where we design, fabricate, build, program, and test a robot for the FIRST Robotics Competition whereby gaining essential skills needed to be successful in a professional workplace.

Team Information:

TEAM ORIGIN: In 1997, S.P.A.M. Robotics, also known as FRC Team 180, was formed when engineers from Pratt & Whitney Corporation collaborated with teachers from Martin County High School and South Fork High School to offer FIRST robotics to students in our community. Our first competition season was 1998, FRC Game "Ladder Logic" held at the Kennedy Space Center.

ORGANIZATIONAL STRUCTURE: S.P.A.M. consists of students from South Fork High School, Martin County High School, Jensen Beach High School, Clark Advanced Learning Center, and home school students in our school district. Students are guided by mentors who come from diverse professions including engineers, programmers, teachers, machinist, and other professional careers.

A leadership board of adults and students oversee the team and is elected at the beginning of each season. The purpose of the board is to create an overall strategy to fulfill S.P.A.M.'s mission and to maintain sustainability. Main tasks include: securing adequate resources, developing the annual budget, and providing guidance and oversight for team direction

Each adult role has a student counterpart as follows:

Adult role	Student role
President	Captain
Vice President - Technical	Vice Captain - Technical
Vice President - Community Outreach	Vice Captain - Community Outreach
Vice President - Community Service	Vice Captain - Community Service
Treasurer	Secretary/Treasurer
Secretary	

Key committees and their subcommittees allow for smooth functioning of daily activities of the team and are as follows:

- Robot design

- Engineering design
- Programming
- Electrical
- Pneumatics
- Drive system
- Machining
- Community Service
 - Outreach
 - FLL tournaments
 - FLL camps
 - Spirit
 - Martin County Fair
 - SUMO LEGO
- Awards
 - Chairman's Award
 - Dean's list Award
 - Woodie Flowers Award
- Marketing
 - team shirt design
 - fun shirt design
 - brochure
 - buttons
- Pit/Facilities
 - safety
 - strategy
 - game rules
 - practice field
 - robot features
 - pit organization

LOCATION: Our build facilities are located at South Fork High School, Martin County School District, Stuart, Florida.

SPONSORS:

Without the support of our family of sponsors, S.P.A.M. Robotics would not be able to compete in regional and championship events. While many sponsors contribute money, manpower, and materials to the team, the key partners that sustain this team consist of the following organizations: Pratt & Whitney, United Technologies, Florida Power & Light, The Education Foundation of Martin County, Martin County School District, Indian River State College, AT&T, UL/Pure Safety, Seacoast National Bank, Edward Dugger + Associates, Inc. and The Business Development Board of Martin County.

These sponsors can be found on our website, robot, team shirts and sponsor board which is displayed at competitions.

WHAT WE DO: As a team, our focus has been on generating interest in our school district and community. We perform demonstrations of our robot at libraries, schools, the county

fair, the annual Stuart Christmas parade, an annual local Boy Scout merit badge camp, local Boys and Girls clubs, at our sponsors' facilities, and anywhere we are requested and can make arrangements to increase awareness of our program. In addition, we train leaders and provide students as mentors to support of FIRST Lego League teams in our elementary schools. We also host an annual FLL Tournament.

RELATIONSHIPS: S.P.A.M. has a number of activities that engage, inspire, educate, and retain the following groups:

- team members
 - adopt a rookie,
 - rules and safety quiz,
 - demos, team meetings,
 - communication,
 - CAD classes,
 - student leadership,
 - tournament,
 - ambassadors

- mentors
 - empowerment (everyone has a voice)
 - cover travel costs
 - allow for flexibility in scheduling and roles
 - encourage involvement in the FIRST community beyond our team

- sponsors/community
 - robot demonstrations
 - community involvement
 - reciprocal relationship
 - communication
 - invitations to kick off, banquet, pit, tournaments
 - sponsor recognition: website, robot, plack, team shirt

Through FIRST programs, SPAM provides opportunities and awareness in our community that makes STEM relevant and accessible.

We have a long term relationship with Pratt & Whitney. Over the past few years, we have developed a strong relationship with The Education Foundation of Martin County, The Business Development Board of Martin County and more recently with AT&T and Florida Power & Light.

GROWTH: Since the 2004/2005 season, the team has expanded with the addition of students from the Clark Advanced Learning Center, Jensen Beach High School, and our home school community. We've also seen a marked growth in the number of girls who are now part of the program.

PLANS: Our goal is to promote leadership of the student members through participation on

the Team's Student Board, team project assignments and veteran students teaching rookie classes. Each student will work to gain sponsorship from one small business. We plan to support *FIRST* LEGO League teams in our elementary schools, and we will work to see how we can create training material for the Boy Scout programming merit badge. We are implementing training classes for all students to promote safety.

2. Program Summary – S.P.A.M. Robotics Team 180

We are S.P.A.M.!

S.P.A.M. Robotics is a high school robotics team made up of students from the Martin County (Florida) School District -- Jensen Beach High School, Martin County High School, South Fork High School, Clark Advanced Learning Center, and home schools. We are Student Programmers, Animators, and Machinists. We are future engineers, teachers, designers, and programmers being led by current engineers, teachers, designers, and programmers.

S.P.A.M. competes in robotics competitions organized by **FIRST** (For Inspiration and Recognition of Science and Technology). Founded in 1989, FIRST is supported by a network of Fortune 500 corporations, educational and professional institutions, foundations, and individuals. In 1998, S.P.A.M. organized as FIRST Robotics Team 180 and has competed in FRC regional and championship events ever since.

Each year FIRST develops a game for which FRC teams from across the world must design, build, and program their robots in SIX WEEKS to be ready to compete in athletic style competitions. The rules are strict, the resources are limited and the time is “never enough.”

The “I” in FIRST stands for Inspiration and S.P.A.M. considers it the mission of everyone involved with the team to INSPIRE the next generation of Science, Technology, Engineering, and Math professionals. By giving students exposure to “real world” engineering opportunities, S.P.A.M. helps to create self-confidence and to develop communication and leadership skills. Our season starts in September when we familiarize our new students with fundamentals such as brainstorming, design & fabrication, electrical & controls, strategy & scouting to be prepared for kickoff in January. Veteran students assist in the new student training and start preparing for the upcoming kickoff and build season.

We market our team! S.P.A.M. strives for market recognition to gain financial and in-kind support from sponsors, to spread the word of *FIRST* by helping to start new FLL teams, by making presentations and giving demonstrations in the community at libraries, schools, parades, museums, the county fair, and sponsor facilities, and hosting an FLL tournament.

We give back to our community! S.P.A.M. has enjoyed the support of an entire **community** of education and business leaders. It is our responsibility to give back to the community by educating young people, by being good stewards of our resources, by practicing “gracious professionalism”, and by sharing our talents with others.

We have fun!!!

Most of all, S.P.A.M. is FUN. We make friends, we work hard, we combine our talents, and we change lives.

Postscript: And in case we failed to mention it, on April 28, 2012, we became the FIRST ROBOTICS 2012 WORLD CHAMPIONS!

4. TEAM DESCRIPTION & HISTORY – S.P.A.M. Robotics Team 180

In 1997, engineers from Pratt & Whitney Corporation decided to participate in FIRST Robotics along with students from Martin County and South Fork High Schools. Pratt & Whitney Government Products Division already sponsored a team in Palm Beach County and was looking to having another United Technologies team in the South Florida area.

The first year we decided on our team name, colors, and our initial logo. Students wished for our team name and colors to represent each group of the team as well as stick in people's minds. The acronym S.P.A.M. was created using the name of each group: South Fork High School, Pratt & Whitney and Martin County High School. Yellow, blue and red were chosen as the team colors. The team created a logo by combining the Pratt eagle, South Fork bulldog, and Martin County tiger. In 2000, the logo was changed to the "Super S.P.A.M." design that also included the participating school names and our primary sponsor's name.

In the 2004/2005 season, the team expanded with the participation of students from the Clark Advanced Learning Center and the newly constructed Jensen Beach High School. The "Super S.P.A.M." logo design was retained; however, the school and sponsor names were removed from the logo design. The S.P.A.M. acronym changed to Speed, Power and Maneuverability to reflect the type of robot that we were known for.

Over the past 17 years, we have gained the confidence and skills we need to be able to design, fabricate, build and program a robot, work together as a team and have fun learning and reinforcing science, technology, engineering and math skills. Our students have gone on to pursue careers in engineering, science, computer science and mathematics (and more) because of the experience of participating in FIRST.

We have attended 23 Regional events and 16 Championship events during our 17-year history. Among our accomplishments are 7 regional champions, 2 regional finalists, 2 championship division wins, 1 championship divisional finalist, 1 championship finalist, 1 World Championship, 2 Regional Woodie Flowers recipients, 2 Dean's list finalists, 3 gracious professionalism awards, 2 sportsmanship awards, 2 visualization awards, 3 industrial design awards, 1 engineering excellence award, 1 entrepreneurship award, 1 quality award, 1 judge's award and 1 incredible play award.

Without the support of our family of sponsors, S.P.A.M. Robotics would not be able to compete in regional and championship events. While many sponsors contribute money, manpower and materials to the team, the key partners that sustain this team consist of the following organizations: Martin County School District, The Education Foundation of Martin County

Pratt & Whitney, United Technologies, Florida Power & Light, IRSC, AT&T, UL/Pure Safety, Seacoast National Bank, Edward Dugger + Associates, Inc. and The Business Development Board of Martin County. These sponsors are recognized by the team by proudly displaying their logos on our website, robot, team jerseys and team sponsor board which is displayed at competitions.

We have a long term relationship with Pratt & Whitney, over the past few years, we have developed strong relationships with The Education Foundation of Martin County, The Business Development Board of Martin County and more recently with AT&T and Florida Power & Light.

As a team, our focus has been on generating interest in our school district and community. We perform demonstrations of our robot at libraries, county fair, parade, local Boy Scouts, local Boys and Girls clubs and at our sponsors' facilities to increase awareness of our program. In addition, we provide training in support of the FIRST Lego League and hold FLL Tournaments.

S.P.A.M. students have a 100% high school graduation rate and a near 100% college attendance rate, with students pursuing degrees that include the sciences, engineering, technology fields, marketing, and teaching. Many of our alumni mentor teams while in college and after college graduation.

We were proud to represent FIRST at the 2013 Macy's Thanksgiving Day Parade where it took a full team effort to prepare our robot for this prestigious honor. This opportunity allowed us to promote STEM and FIRST to a new and wider audience.

5. TEAM IMPACT – S.P.A.M. Robotics Team 180

FIRST has had a positive impact on S.P.A.M. and vice versa. Here are a few examples: In 2012, S.P.A.M. was nurturing UL/Pure Safety as a new sponsor. While at the Championships, we invited the CEO over to have a picture taken with the team. When we won the World Championship, we took another picture with him holding the Championship trophy. The following Monday, a corporate-wide email was posted stating that he wanted a UL sponsored FIRST team in every location where UL has a presence.

In 2010, S.P.A.M. began a relationship with the Education Foundation of Martin County as part of their STEM initiative. They were impressed with the program and continued their support in 2011 with additional grants, strengthening a relationship with the Martin County Business Development board and providing us a means of obtaining credit card donations via a link on our website. In 2012 they were able to sponsor six Jr FLL teams. Then, with the support of S.P.A.M. mentors and students, they followed that up in 2013 with 11 FLL teams in each of the school district's elementary schools and then included the middle schools in 2014.

Many of the S.P.A.M. students discover their passion from their participation in FIRST and become inspired to pursue careers in physics, engineering fields such as biomedical, chemical, electrical & mechanical, computer programming, digital design and the like.

S.P.A.M. is proud that many of our alumni continue an association with FIRST through

- mentoring an FRC team where they attend college
- volunteering at FIRST events, such as FLL tournament, FRC regional event, Championship, and off-season events
- mentoring FLL teams
- mentoring an FRC team where they live

In 2012, a pivotal and momentous event occurred. SPAM, along with its alliance partners, won the FRC World Championships. With this awesome accomplishment came an equally awesome opportunity—take our heightened attention to our community and spread the importance of STEM and the message of FIRST. With a dedicated group of mentors who foster independence, leadership and self-discovery as well as a team of newly energized and passionate students, SPAM rapidly expanded from a team that builds robots to a year-round organization of role models and leaders with an enhanced mission to weave the importance of STEM and the impact of FIRST into the fabric of our community.

SPAM hosts LEGO and Techknow camps and is now able to include an underserved student population who have not had access to these STEM enrichment programs. This year we had a 30% increase in student participation in our LEGO camps. We also partnered with our county library system to assist with their VEX summer robotics program as a result of funding they received for promoting STEM. We continue to teach our VEX robotics programs and demonstrate our robots to diverse audiences. SPAMmers intern at a local learning center to teach children from ages 5-14 about building robots and programming. These classes include more than 150 students.

SPAM reaches out to the larger community by participating in several other activities. At our county fair, as many as 70,000 people pass by our displays. During those nine days, we offer children and adults the opportunity to drive our robots. Each year our program expands and the number of activities we offered increases. Through these hands-on activities, we inform participants about STEM and FIRST.

The Treasure Coast Food Bank approached our team to participate in CANstruction, an event whose purpose is to design a sculpture constructed of canned goods and non-perishable items to be donated to the local food bank. SPAM collected 1269 pounds of food to construct the FIRST logo. Our structure was on display at our local mall for two weeks where mall patrons were able to read about the missions of FIRST and SPAM. We were able to expose a wide audience to STEM and FIRST. Most importantly, our donation provided enough food for 845 meals

6. TEAM STRUCTURE and ORGANIZATION – S.P.A.M. Robotics Team 180

Management and Organization

S.P.A.M. operates utilizing Board structure at the highest level. This over-riding organization provides the necessary guidance and direction for the program. The Board is comprised of a

President /Team Leader, two Vice Presidents (VP-Technical, VP-Community Outreach), Treasurer and Secretary.

The President serves as the primary contact to FIRST, oversees the Board and has the responsibilities of registering the team for events, submitting team rosters at events, presiding at team meetings.

The Vice President-Technical serves as the secondary focal to FIRST, assists the President as needed and has direct oversight of the robot design, pit/facilities, scouting and training/safety subcommittees.

The Vice President-Community Outreach assists the President as needed and has direct oversight of the fundraising, sponsor, community outreach subcommittees and is liaison to the school principals and community leaders.

The Vice President-Community Service assists the President as needed and has direct oversight of the community service subcommittees and is the focal for spreading the message of FIRST and SPAM in the community through tournaments, demonstrations and participation in community activities such as fairs, parades and food drives

The Secretary is responsible for team communications and has oversight of the kick-off, press release/website, and promotional items subcommittees.

The Treasurer is responsible for the budget, fee collection, team books, liaison with the school bookkeeper and oversight of the travel committee.

Financial management is a critical part of the program to ensure funds are received and distributed in an equitable way. As a school-based organization, we must maintain compliance with the State Board of Accounts Rules and Audit Guidelines, and for this reason, the receipt and dispersing of funds is conducted by the school bookkeeper under oversight by the Treasurer.

As a school-sponsored organization, the stipend school board employee is responsible for compliance with school guidelines and rules, the overall safety of the students and is the communication link between the schools and the team.

The president, vice presidents and secretary roles are mirrored with (4) student positions. These students are veteran juniors or seniors and are elected by the veteran students of the team.

We believe that the students and mentors share the responsibility for the team and team performance and believe this organization supports that view.

The subcommittees may have sub-teams: Example, the Robot design Sub-Committee may

have sub-teams for engineering design, programming, electrical, pneumatics, drive system, machining, fabrication and assembly. On each sub-team, there is a student lead and a mentor lead. The mentor lead advises and works with the sub-team members to teach new skills, help solve problems, create strategies, and to accommodate as many new ideas as possible. During the build season, the team may meet as a large group for certain activities (brainstorming, final design decisions, travel planning, etc.) or as sub-teams as the activities become more focused.

Approximately twelve weeks prior to FIRST kickoff, the team has a kickoff meeting to orientate potential members and parents about S.P.A.M., FIRST and the program. During alternate weeks there are weekly meetings with rookie and veteran students. The rookie meetings acclimate the students on what to expect and cover subjects including FIRST, S.P.A.M., FIRST kickoff, brainstorming, design, fabrication, electrical, controls, strategy, scouting and FIRST awards. The veteran meetings cover various projects to prepare the team for FIRST kickoff and the election of the (4) student leadership positions.

Build season commences at FIRST kickoff. Immediately following the game presentation, the team organizes into three groups to strategize how to play the game, discuss what is important about the game and discuss robot capabilities based on the game video and rules. The goal is to capture requirements and agree on an overall game strategy. Follow-up meetings define the design concepts for the robot to play out the overall game strategy. Brainstorming is utilized to identify possible ideas and create sketches of basic models. Once the robot design is solidified, the sub-teams work toward the common goal of being prepared for competition. Some ideas are prototyped using wood or aluminum or 3D printer to see how well the idea works on the real game objects or in conjunction with the other robot systems. The majority of the parts are made in the team workshop and by the students. As parts are manufactured, they move into the assembly area to build into the finished robot. As issues with the design are identified, the needed changes are incorporated and parts are modified. After the mechanical assembly is complete, the electrical and pneumatic systems are installed. The robot is then ready for software and practice. The robot software is often developed with a hot bench that can be used to test out new sensors, logic, and control functions. Once the new robot is complete, the new software is loaded and customized to the new machine. Prior to shipment, the robot is tested, as much as possible, and adjustments made accordingly.

Our goal is to build 2 robots each season. The competition robot is a fully functional robot that reflects the design concepts and configuration for competition. A practice robot reflects the competition robot as close as possible. The goal is to keep the practice robot current to the configuration of the competition robot so that the practice robot can be used for drive team training, modifications and programming work.

During competitions, the team is organized to meet the unique needs of regional and championship events. There are multiple sub-teams that differ from the build season sub-teams. Competition sub-teams include the drive team, judge liaisons, pit support, spirit, and scouting.

The drive team includes the driver and operator of the robot, human player and the mentor who supports them on the field. The judge liaison team is well-versed in every aspect of the team and talks to the judges about the robot and what the team does outside of the robotics competition. The pit support team works in the pit to repair the robot, make new parts, change programming, charge batteries, and make sure that we have a safe working area. This team also provides most of the support to other teams who may need tools, spare parts, or assistance in solving a problem with their robot. The spirit team leads team cheering and works to promote team recognition at competitions. The scouting team is in charge of scouting and observing the other robots and matches on the field and helping create a strategy for each match based on the capabilities of each team in the two alliances. This group also provides valuable information and insight at alliance selection.

During practice and matches, the robot functionality is evaluated and modifications, repairs and adjustments are made accordingly during the competition. Continuous, real-time improvements are made as the realities of the game and the competition unfold at the tournaments.

Budgeting

A strong financial structure is required to maintain a successful FIRST program. FIRST teams need and consume significant quantities of cash, and the funds and budgets must be maintained in a professional manner so that the team is a good steward of the funds provided to it by sponsors.

Each year, a preliminary budget is drafted that reflects expected expenses (travel costs, shirts, entry fees, materials, any special purchases required, etc.) and expected revenues (sponsorships, student fees, remaining funds from the previous years, grants, etc.). Based on this preliminary budget, the board agrees on the number and location of competitions and other general expenses.

As the year progresses, the budget is continually updated to reflect actual receipts and expenses to confirm that the team is fiscally sound.

All expense claims to require a receipt. All expense claims are processed through the team leadership who submits the paperwork to the school bookkeeper for reimbursement.

An effective budgeting process allows the team to meet the needs of the build season, travel to competitions, and begin each year with some funds in the account.

An effective budgeting process and detailed records also assists the team in doing “what-if analyses”. An example of this is the team’s recent purchase of a trailer to pull to competitions. Although the trailer would be a significant, one-time expense, the budget was reviewed and the team determined that by attending only local regionals where they could pull the trailer, they could effectively “pay for” the trailer in one season with the savings from the elimination of

excess shipping weight with an added bonus of promoting team recognition by adding our logo to the trailer. Ultimately, the trailer was donated further enhancing the cost savings.

This budgeting process also allows the team to support school and community programs as a way of giving back. We have created a submission form as a vehicle to communicate budgetary and personnel requests to the board.

Through careful analysis of our past, present, and future finances, S.P.A.M. ensures the growth of our team and support for our community and FIRST.

Team Membership

Being a member of S.P.A.M., either as a student or mentor, provides certain privileges and responsibilities.

Student Responsibilities

- Students must abide by the Martin County School Board Student Code of Conduct at all times.
- Students will be respectful to their teammates, teachers and mentors.
- Students must be enrolled as a full-time student at Martin County High School, Jensen Beach High School, South Fork High School, Clark Advanced Learning Center or homeschooled in Martin County.
- Students must maintain a 2.5 unweighted GPA in the current or previous nine-week period (depending on travel dates) in order for that student to be eligible for team travel. Students will submit interim and nine-week grade reports to verify grade status. This grade requirement is strict, is not trivial, and is included in the student contract. Students should put their grades before any team needs. There are no exclusions or exceptions to this requirement.
- Students must obtain concurrence from every teacher before each travel event.
- Students are expected to be role models in their school and at any S.P.A.M. event.
- Students are expected to act in an exemplary manner at all times.
- Students must have a minimum attendance requirement of 75% of the meetings and 50% of the fundraising and community service activities to travel.
- Students are expected to participate in summer and fall team activities.
- Students must treat the machines and tools with respect and use them in a safe manner.
- Students must not use machine tools before being trained on how to operate them properly.
- Students must obtain community sponsors and meet the financial commitments to the team.
- Students should approach team membership as an opportunity to learn, share and grow while developing strong friendships with teammates, mentors, and other FIRST

individuals.

- Students must complete and submit the necessary school, school board and FIRST forms.
- Students are encouraged to register online as a team member of FRC Team 180 at <https://my.usfirst.org/stims/site.lasso> and complete the electronic version of the FIRST Consent and Release form.
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- Students must pass the test covering the FIRST game rules and the S.P.A.M. Robot description.
- Students must abide by the S.P.A.M. Robotics Team Student Contract
- Students must show pride for S.P.A.M. and FIRST

Parent Responsibilities

- Parents are encouraged to reply to an e-mail confirmation to complete the FIRST Consent and Release form electronic signature process.
- Parents are encouraged to help out in any way they can to assist the team.
- Parents are encouraged to aide in the fundraising activities of their students.
- Parents are encouraged to attend a FIRST offseason, regional or championship event.
- Parents are encouraged to show pride for S.P.A.M. and FIRST.

Mentor Responsibilities

- Mentors must request approval to be a part of the team through the team leadership. Mentors must agree to and pass a School District mandated personal background check.
- Mentors must operate with the highest degree of integrity to all students, other mentors, and others associated with the program.
- Mentors must treat the machines and tools with respect and use them in a safe manner.
- Mentors must not use machine tools before being trained on how to operate them properly.
- Mentors are expected to share knowledge and provide an environment where students can learn, explore, and develop their skills in engineering, design, manufacturing, programming and other team activities.
- Mentors are expected to be positive role models for each and every student.
- Mentors are encouraged to complete an electronic version of the FIRST Consent and Release form at <https://my.usfirst.org/frc/tims/site.lasso>.
- Mentors must show pride for S.P.A.M. and FIRST.

Removal from Team

In rare occurrences, students may be removed from the team or potentially not allowed to be a part of the team.

Situations that can cause removal from the team include:

- * Inappropriate behavior, in direct violation of the Student Code of Conduct
- * Grade / Academic issues
- * Extremely poor attendance
- * Limited / no participation in team activities
- * Unsafe or disruptive behavior that endangers others on the team

Limited Participation / Probation

In some cases, students may be offered a limited level of participation on the team. This is normally due to academic performance, where the team leaders and parents agree that the student can still participate, but on a few nights and possibly with no school time travel.

2018/2019 SPAM Robotics Team Student Contract

By signing below, I acknowledge and agree to all of the following rules and conditions:

1. I have read the 201X/201Y S.P.A.M. Robotics Team Handbook.
2. Team members are expected to attend competitions. I understand that I may be absent from school (excused absences) during travel to the Regional and Championship competitions. I am responsible for all make-up work while absent and will stay focused on my schoolwork.
3. I will attend at least 75% of all team activities, workshops and meetings involved with S.P.A.M. In addition, I will actively participate in at least 50% of all fundraising and community service activities. If I do not achieve the required level of participation, my status will be reviewed by team leadership and I may be dismissed from the team.
4. I am responsible for arranging my transportation to and from the S.P.A.M. Pit at South Fork High School and other meeting locations.
5. The cost to attend each competition is the same for all team members regardless of any alternative transportation or housing arrangements that are made.
6. Team members who arrive late or leave early from a competition must have made prior arrangements with the team president and must check in or out at the competition with either the team president or teacher in attendance.
7. If the number of team members traveling to a competition has to be limited (if there are more students wishing to travel than can be accommodated), the members selected to travel will be determined by their grades, the number of hours of participation and years on the team. The Board reserves the right to make final decisions in the selection process.
8. I understand that I am responsible for my schoolwork. If my unweighted GPA is below a 2.5 during the grading period prior to a competition trip, then I will not travel to the team event. If I don't meet these grade requirements, then I can only attend the event as a spectator and only if accompanied by my parent or legal guardian.
9. I will pass the test covering the FIRST game rules and the 2019 S.P.A.M. Robot description.

10. I agree to safely use all tools and equipment while working on any project. I respect the severity of a possible accident and agree that I may be dismissed from the team if I don't work safely. I also agree that I will not operate any tool or item of equipment unless I have been trained to use it safely.
11. I understand that when at the Pit and at competitions **closed toe shoes** and **safety glasses** are **mandatory** for everyone. When working on any machinery, long hair must be tied back and no jewelry is allowed.
12. No hand-held entertainment devices such as I-pods, DS's etc. will be brought to the Pit or competition arenas.
13. I will maintain an acceptable level of productivity while at all team activities.
14. **I WILL ABIDE BY THE MARTIN COUNTY SCHOOL BOARD STUDENT CODE OF CONDUCT AND WILL BE RESPECTFUL TO MY TEAMMATES, TEACHERS AND MENTORS.**
15. If I violate any of the above rules, I understand that I may be dismissed from the team.

Printed name of student _____
School / Grade _____
Student's signature _____
Parent's Signature _____
Date _____

7. TEAM RISK and RISK MANAGEMENT – S.P.A.M. Robotics Team

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FIRST Robotics teams face risks that could threaten the long term viability of the team and the program. These risks need to be alleviated, managed or must simply be accepted.

This portion of the Business Plan captures our risk mitigations. It contains an identification and definition of the risks, the potential impact, and what actions the team has taken or needs to take to mitigate the risk.

To help identify and address these risks, as well as to provide the students the opportunity to participate in this type of planning activity, the team conducts brainstorming activities to create this mitigation plan. It provides a roadmap to help insure the long term viability of the program. It is believed that the implementation of these ideas will help the team weather difficult times when they appear.

S.P.A.M. utilizes a scoring methodology. Low, Medium and High are valued at 1, 2 or 3, respectively. A "Risk Score" is generated based on the Probability and Impact values being multiplied. The higher the Risk Score, the more important the risk is to the team. We use a Probability / Impact Diagram which shows the Risk Scores in a 3 x 3 matrix.

The following standard format is used:

Risk Statement of the Risk Item

Likelihood (Probability) What is the “probability” of the risk occurring
 3 - High Greater than 50% chance
 2 - Medium between 25 and 50% chance
 1 - Low Less than a 25% chance

Impact Level If the event occurs, what is the impact to the team?
 3 - High Major disruption to the team, Threatened team continuation
 2 - Medium Reduced participation in *FIRST* events
 1 - Low Minor impact, Reduced activity level

Risk Score
 1 – 9 Likelihood (Probability) x Impact Score
 Higher scores require increased attention and focus
 9 Key Risks (RED) – Critical and Require Significant Attention
 4 – 8 Major Risks (YELLOW) – Require Action and Management
 1 – 3 Minor Risks (GREEN) – Require Some Action but are Lower Importance

Impact on Team Basic Description of what the impact to the team would be

ACTION Actions the team is taking to alleviate the occurrence of the risk, or to minimize the impact if it does occur

Risk Matrix (Probability – Impact Diagram):

LIKELIHOOD	HIGH	Y	A	R
	MED	Y	A	A
	LOW	Y	Y	Y
		LOW	MED	HIGH
		IMPACT		

RISK SUMMARY – 2015 UPDATE:

Total Risks Identified **14**

Key Risks (RED) None

Major Risks (AMBER) 2

Minor Risks (YELLOW) 12

L I K E L I H O O D	HIGH	0	0	0
	MED	0	2	0
	LOW	0	8	4
		LOW	MED	HIGH
		IMPACT		

Risk Categories

Sponsorship Two (2)

Team Members *Eight (8)*

Facility / Robot / Equipment Twelve (12)

SPONSORS

Risk: Loss of a Major Corporate Sponsor

Likelihood: 2 - Medium

Impact Level: 2 - Medium

Risk Score: 4 – Major (A)

Impact on Team:

- Would attend fewer regional competitions
- Limited team travel
- Increase costs to mentors and students
- Reduced or restricted fall projects
- Increased team fundraisers

ACTION:

- Continue to do demonstrations at sponsors to highlight our program

- Continue to send sponsor thank-you letters
- Maintain a diversified sponsor base, continuing community sponsor activity
- Retain enough money in the bank to pay for one event entry fee at the end of each season
- Strive to be a role model of team behavior and community presence
- Maintain careful budgeting
- Look into the future with our budget planning

Risk: Loss of ALL major corporate sponsors / 50% Budget Cut

Likelihood: 1 - Low

Impact Level: 3 - High

Risk Score: 3 - Minor (Y)

Impact on Team:

- Same as above, but likely attend only one local competition during the season.

ACTION: Same as "Loss of Major Corporate Sponsor"

TEAM MEMBERS

Risk: Loss of two Stipend School Board Employees

Likelihood: 2 - Medium

Impact Level: 2 - Medium Risk

Score: 4 - Major (A) Impact

on Team:

- Team can sustain for a short period of time with one stipend school board employees
- No access to student information
- More difficult to coordinate travel and building use
- The school administration would need to recruit a new person

ACTION:

- Maintain a strong relationship with high school principals
- Document activities and procedures (travel forms, reimbursements, suppliers)
- GOAL: Work to maintain at least two stipend school board employees on the team

Risk: Loss of Key Team Student Leaders

Likelihood: 1- Low Impact

Level: 2 - Medium Risk Score:

2 – Minor(Y)

Impact on Team:

- Loss of some skills within the team depending on the individual and their role (leadership, programming, electronics, manufacturing)
- Reduced abilities in design, fabrication, build, communications

ACTION:

- Maintain a large team with students from all grade levels
- Continue with the “Adopt a Rookie” program with veterans coaching rookies
- Use sub-teams with student and mentor “co-leads”
- Train formal or informal back-ups
- Seniors train their “replacements” before graduating

Risk: Loss of Key Team Volunteer Mentors

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- Loss of some skills within the team depending on the individual and their role (leadership, programming, electronics, manufacturing)
- New mentors may be needed to quickly fill key positions
- Could increase reliance on outside facilities (machining, welding), thus increasing the cost to the team.

ACTION:

- Maintain a strong and diverse mentor base
- Document activities and procedures
- Ensure sub-teams have student and mentor “co-leads”
- Appoint formal or informal back-ups for most roles

Risk: Loss of Board Member

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- Loss of some skills within the team depending on the individual and their role (President, Vice President, Secretary, Treasurer)
- A new volunteer may be needed to quickly fill the position

ACTION:

- Maintain a strong and diverse mentor base
- Document activities and procedures
- Appoint formal or informal back-ups for most roles
 - Maintain budget plan
 - Maintain business plan

Risk: Student Leaders Not Able to Travel / Sick on Trips

Likelihood: 1 – Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- Less experience with driving, robot controls, repairs
- Less experience talking to judges and visitors
- Limited scouting ability
- Less leadership in some areas
- The potential loss of Parent support

ACTION:

- Train multiple students in key areas
- Always have established back-ups ready to fill in

Risk: Loss of Key Team Volunteer Mentors

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- Loss of some skills within the team depending on the individual and their role (leadership, programming, electronics, manufacturing)
- New mentors may be needed to quickly fill key positions
- Could increase reliance on outside facilities (machining, welding), thus increasing the cost to the team.

ACTION:

- Maintain a strong and diverse mentor base
- Document activities and procedures
- Ensure sub-teams have student and mentor “co-leads”
- Appoint formal or informal back-ups for most roles

Risk: Team Captain Removed From or Leaves the Team

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- More responsibility for co-leaders and sub-team leads, increased mentor leadership

ACTION:

- Appoint multiple leadership positions
- Develop Sub-Team Leads
- Evaluate Captain Selection Process

Risk: **Serious Injury in the Pit**

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 – Minor(Y)

Impact on Team:

- Creates concern with parents and administration on Safety in the Pit
- Causes work stoppage
- A student/mentor has been hurt

ACTION:

- Implement a plan in case Accident
 - Immediately STOP all activity, obtain emergency care
 - Report the event to proper authorities
 - Understand what happened and determine how to prevent re-occurrence
- Work to be safe
- Keep areas clean and organized
- Only allow students to operate machines with a mentor present and when they are properly trained and know the safety rules
- Have experienced students work with newer students when they begin using machine tools
- Wear safety glasses and closed toe shoes at all times in the Pit
- No loose clothing or jewelry when operating equipment in the Pit
- Maintain a current list of emergency phone numbers in the Pit
- Keep a *FIRST* Aid kit in the Pit
- Ensure all team members understand the “RED BUTTON” that cuts off all power in the shop and when to use it

FACILITY / ROBOT / EQUIPMENT

RISK: Loss of Build / Shop Area

Likelihood: 1 - Low

Impact Level: 3 - High

Risk Score: 3 - Minor

(Y) Impact on Team:

- May be reduced to very small build space (garage or classroom)
- Loss of machine tools and build area, loss of field practice space
- May need to reduce team size
- Potential move off of school property for meetings

ACTION:

- Keep the area clean and organized
- Work to be safe and limit any injuries
- Fix things that break
- Don't be in other parts of the building during meeting time
- Keep the principal aware and informed of the team activities
- Say "Thank You" to the administration
- Provide special presentations to the school faculty and school board

Risk: Broken Machines, Broken Equipment

Likelihood: 1 – Low

Impact Level: 3 – High

Risk Score: 3 - Minor (Y)

Impact on Team:

- Possible significant loss of capability
- Delay in production schedule
- Possible increased risk of injury
- Added expense to team

ACTION:

- Provide routine maintenance
- Involve facilities leaders with team and program
- Budget team funds for replacements / spare parts
- Identify/maintain a mentor or other contact who can repair machines
- Maintain relationships with sponsors and other teams in area
- GOAL: Get machines refurbished in off-season

Risk: Robot Damage or Loss During Transit

Likelihood: 1 - Low

Impact Level: 3 - High

Risk Score: 3 - Minor (Y)

Impact on Team:

- Could not compete at a competition
- Requirement for significant repair at competition
- Loss of practice time
- Cost and resources to make prototype “competition ready”
- Financial impact

ACTION:

- Secure and lock trailer and other vehicles
- Maintain trailer in good mechanical condition
- Secure items in trailer – mentor verification
- Caution with “Bag” for Bag & Tag transport
- Strong shipping crate and robot securely fastened down

Risk: **Stolen Property (Tools, Computers, Etc.)**

Likelihood: 1 - Low

Impact Level: 2 - Medium

Risk Score: 2 - Minor (Y)

Impact on Team:

- Difficult to troubleshoot and repair robot
- Need to purchase / borrow tools from other teams
- Loss of practice time
- Financial impact

ACTION:

- Students / Mentors responsible for specific equipment
- Keep critical items with us at all times
- Secure and lock trailer and other vehicles
- Secure and lock vehicles if equipment is left inside

8. TEAM PLANNING – S.P.A.M. Robotics Team 180

Team planning and schedule calendar is maintained in the team calendar on the team website www.spamrobotics.com

9. TEAM GOALS and CHALLENGES – S.P.A.M. Robotics Team 180

Team Goals are separated as Overall Team goals, Community Focus goals, Technical goals, Award goals, and Long Term goals.

Overall Team Goals

- To teach about engineering, science, and technology through partnerships with mentors who have backgrounds in these fields
- To inspire students and team members to seek careers in engineering, science, and technology as they go on to college and university level education
- To become mainstream program in our community through presentations and demonstrations about the overall purpose of *FIRST*
- To facilitate new team start-up at other Martin County area schools
- To continue to find new ways of spreading the *FIRST* message in our community
- Maintain a 100% high school graduation rate and 100% college attendance rate
- Continued creativity in ways to increase the awareness of *FIRST* and our team in the community
- Student recognition and awards through *FIRST* related scholarships and opportunities

Community Focus Goals

- To continue to receive and seek media coverage of both our team and *FIRST* as a whole
- To achieve more year-round team involvement and spread the word of *FIRST* through activities with *FIRST* LEGO League teams, new *FIRST* Robotics Competition teams, and other demos throughout the community

Technical Goals

- To build a successful, technically challenging, competitive robot through a combination of both student and mentor contributions that can compete at the Regional and Championship level
- To increase manufacturing and design capabilities through use of new technologies, machinery, and equipment
- To enhance engineering design through building on the strengths of the previous years and improving our capabilities through use of new engineering technologies

Award Goals

- Mentors submit two students for the Dean's List award
- Students submit a mentor for the Woodie Flowers award
- Apply for and win the Regional Chairman's award

Long Term Goals

- S.P.A.M. has enjoyed a steady growth rate over the past few years that has resulted in an overcrowding condition in the Pit. This in conjunction with the fact that field pieces and game robots over the past few years have exceeded the Pit's height limitations causing the team to find alternate places to practice. It is a goal that S.P.A.M. find or acquire a facility that can allow S.P.A.M. to continue to expand the program. The ideal facility would be approximately 12,000 sq.ft., 14ft high ceiling, WiFi, space for a machine shop, computer room, storage and office space.
- As FIRST continues to grow, it becomes increasingly challenging to sustain our attendance record at the Championships. There is tremendous amount of valuable information available to the students at the Championships relative to business internships and scholarships in a face to face environment, that it would be lost if we were not able to attend. To this end it is a goal of S.P.A.M. to become a Championship Chairman's award winner and become a Pre-Qualified FRC Team for Championship registration.

Team Challenges

S.P.A.M. faces many of the same challenges that other school clubs and organizations with some additional unique challenges due to the nature of the FIRST program, being multi-school oriented and the partnerships involved.

- Maintaining student interest in FIRST =
- Supporting corporate sponsors who provide a majority of the team funding
- Sustaining our team while also providing support and encouragement for other local teams (sponsorship, mentors, etc.)
- Sustaining a strong mentor base of active, talented volunteers
- Maintaining school facilities to support the program (Pit, machines, teacher support)
- Providing a positive, and valuable and learning experience for students each year

Success Measures

Listed below are success measures that can be reviewed collectively to measure the

success of the S.P.A.M. robotics program.

- Number of maintained / sustained team members (i.e. 3 and 4 year members)
 - *For 2013, we have a xx% retention of 2012 members*
- Number of maintained / sustained team mentors
 - *For 2013, we have a 100% retention of 2012 mentors*
 - *x mentors have over 5 years mentoring experience with the team*
 - *3 mentors are former team members*
- Percentage of students who continue on to college and on to technical careers
 - *100% continue to college within 1 year of graduating from the team / high school*
- Alumni participation in FIRST
 - *y are active as mentors or volunteers*
 - *z works for a major FIRST supplier*
- FIRST related scholarship achievement by team members
 - *m have received direct FIRST related scholarships*
 - *Multiple others have received scholarships influenced by FIRST participation*
- Participation from previous FIRST LEGO League students
 - *n of the 2013 team members were on an elementary school or middle school affiliated team*
- Expansion of technical capabilities in robot function (auto mode, hybrid mode)
 - *Extensive use of sensors and automation in 2013 robot.*
- Growth of additional FIRST teams in Martin County
 - Increase in FLL teams
- Judge and Peer recognition of the team organization and operational structure
 -
- Judge and Peer recognition of the robots technical, design and quality level
 -
- Robot on-field performance
 - *All to be determined as 2013 competition season is completed.*
- Growth and success of the S.P.A.M. LEGO League Tournament
 - *Continued interest, high number participants, outreach growth*

Long Term Growth

To ensure long-term growth of the team.

- Skills are passed to students through the expertise of the mentors, and in turn, those students pass on the skills to the students in LEGO teams. We introduce elementary children to the beginning of the program through student-mentored LEGO teams.
- We strive to keep in contact with our sponsors to ensure strong partnerships. In addition to our corporate sponsorships, we continue to explore opportunities that provide us the ability to develop new partnerships
- Thanks to our sponsors, S.P.A.M. is well-funded and we recognized the criticality of their support. Sponsors are formally thanked for their support, and all are invited to

our year-end banquet and competitions. Our sponsor board and team shirt allow us to proudly display their support for the team.

- We are aware that for multiple reasons, team sponsors can ‘disappear’ almost overnight due to a sudden change in the business climate. To mitigate this risk, we continue to recruit and support multiple sponsors at all levels and manage our cash in a manner that would allow us to compete in at least one event in a season if over half of our sponsorship funding was not available.

10. SUSTAINABILITY & MARKETING – S.P.A.M. Robotics Team 180

S.P.A.M. puts the community at the center of its marketing strategy. The team as a whole is responsible for spreading the team vision and goals as well as the message of *FIRST* to local businesses, to the school community, and to elected officials.

Our team website www.spamrobotics.com is one of our marketing tools. This site contains information about past and present teams and robots, required school forms, team handbook, student contract, wish list and sponsors are listed on the site. We highlight any ongoing activities on a team calendar and provide links to other relevant sites.

Each student is responsible for soliciting team sponsorship. This requires the team members to meet with companies and community members to explain all aspects of our program. In addition to the financial benefits to the team, this requirement also helps students develop their communication skills as they coordinate directly with these sponsors. A team brochure and sponsorship form are maintained to support these efforts.

Based on level of sponsorship, sponsors’ names are placed on our team website, on a sponsorship poster board displayed at competitions, on our team shirts and robot. Sponsors receive a thank you letter in appreciation for this donation and their support.

For larger contributors, logos are displayed on our robot, display board, website and our official “*FIRST*” name that is announced at competitions.

S.P.A.M. has appeared in several local and regional publications. The program has been highlighted in local newspapers, on television stations, in the FPL newsletter and promotional video.

S.P.A.M has been recognized by local government proclamations, letters from congressman, senators and the governor.

Students and mentors also promote the team through corporate events and activities.

S.P.A.M. has participated in demonstrations and tours at a couple of our major sponsors. This activity serves raise awareness of the program and *FIRST*, generates mentor interest and provides the students an opportunity to see the diversity of engineering / technical fields available to pursue.

We are regular volunteers at *FIRST* events as announcers, as referees and as “VIP” guides enthusiastically explaining *FIRST* to new visitors and invited guests at competitions.

Branding is important to any business or team to assure a consistent message is delivered.

- The “S.P.A.M. Logo” is used wherever possible.

- S.P.A.M and FRC 180 will be identified on all team materials
- S.P.A.M and FRC 180 will be on all team shirts and fun shirts
- Team shirts are blue with the team logo of the front and sponsor names on the back.

In order to maintain proper respect in maintained to the team and our sponsors, team shirts Do Not get traded.

- A consistent type font and numbering style will be used year on year
- Fun shirts are black with some sort of team identification designed into the shirt



www.spamrobotics.com

S.P.A.M. ROBOTICS

Clark Advanced Learning Center, Jensen Beach HS, Martin County HS, South Fork HS

Sponsorship Packages

<u>Level*</u>	<u>Amount</u>	<u>Recognition</u>
Platinum	\$5,000 +	Team Name (yours would become a part of ours) announced each round during competitions
Gold	\$1,000 +	Logo on Robot
Silver	\$ 500 +	Logo on T-shirt and Website
Bronze	\$ 250 +	Name on T-shirt
Aluminum	\$ 100 +	Name on Sponsor Board
S.P.A.M.	\$ 50 +	Name on Website
Other	\$ _____	

*Note that each sponsorship level also will receive all the benefits of those levels listed below it.

Name: _____

Position: _____

Company: _____

Street: _____

City, State Zip _____

Phone number: _____

E-mail address: _____

Make checks payable to: SFHS / SPAM Robotics

Send check to: Linda Higgins c/o South Fork HS
10205 SW Pratt Whimsey Road, Stuart, FL 34997

Donate by credit card on-line:

www.educationfoundationmc.org
Donate Now >>> SPAM Robotics

Please attach business card and or company logo.

Thank you for your generous contribution.

Responsible SPAM member _____ Payment Received _____

11. FOR MORE INFORMATION – S.P.A.M. Robotics Team 180

For more information about S.P.A.M. and *FIRST*, stop and talk to team members at any event or competition, or access us through our team website at www.spamrobotics.com.

Follow us on Twitter @gospam.

Email us at frcteam180@gmail.com.