



BUSINESS PLAN  
AND  
TEAM CONTINUITY PLAN  
2009

# Cyber Blue Team 234 Business Plan 2009

## Table of Contents

1. Executive Summary .....	3
2. Program Summary .....	6
3. <i>FIRST</i> Description .....	7
4. Team Description and History .....	8
5. Team's Impact on <i>FIRST</i> , Our Community, and Our School .....	9
6. Goals, Challenges, and Success Measures .....	11
7. Long Term Growth .....	14
8. Team Management and Organization.....	15
9. Robot Design Cycle and Process .....	26
10. Budgeting for Success .....	28
11. Marketing Strategy .....	29
12 For More Information .....	30
<b>**New for 2009**</b>	
<b>Cyber Blue Team Continuity Plan .....</b>	<b>31</b>

## 1. Executive Summary

### **Our Mission Statement:**

Cyber Blue's mission is to cultivate interest, understanding, and skill in the fields engineering and technology. We seek to encourage creativity of thought, perseverance in the face of obstacles, and cooperation and compromise as individuals who are part of a team. And we seek to develop life skills in students through team membership, community outreach, public speaking, critical thinking, and unique experiences. We operate like a small business and encourage full participation of all students in every aspect of the team.

Such a mission is never fully accomplished – the accomplishment is in the actions and plans that the team undertakes to move closer to accomplishment. Our **Business Plan** and **Team Continuity Plan** are living documents that define and guide our actions to achieve our mission in an ever-changing environment and help ensure our viability in the future.

### – **TEAM BEGINNING**

- Cyber Blue began in late 1998.
  - Our *FIRST FIRST* competition season was 1999, “*FIRST* Double Trouble”.
  - 7 students and 4 mentors comprised this team.

### – **FOUNDERS**

- Mr. Ed Henry, school principal and Mr. Scott Ritchie, teacher, founded the team.
  - Mr. Henry retired in 2006 and returned to the team as a welding mentor in 2007 and 2008.
  - Mr. Ritchie was the school team leader from 1999 – 2007, when he left to become principal at another high school. He is working to form a *FIRST* program at his new school.

### – **CURRENT LEADERSHIP**

- The team has two school board recognized / acknowledged leaders
  - SCHOOL - Mr. Lloyd Gough, Math teacher
  - VOLUNTEER – Mr. Chris Fultz, Rolls-Royce Corporation
- Mentors – 11 Mentors
- Student Leaders – 2 Co-Captains, 8 Sub-Team Leaders
- Parent Crew
- Robotics Council (Administration, Corporate Sponsor Reps., Teacher, Parent Crew, Team Captains)

### – **TEAM MEMBERS**

- 39 High School Students
- 11 Sponsor and Community Mentors
- 1 School Mentor (Teacher)

### – **LOCATION**

- Metropolitan School District of Perry Township
- Indianapolis, Indiana

- **SPONSORS**
  - Major Corporate Sponsors
    - Rolls-Royce Corporation, Allison Transmission, and Morris Machine
  - Government Affiliates
    - NASA, Indiana Workforce Development
  - Community Businesses
    - Approximately 80 Community Businesses
  - Our Proud Grandmas
  
- **WHAT WE DO**
  - Design, Develop and Build a Robot for the *FIRST* Robotics Competition (FRC)
  - Mentor high school students to encourage creativity of thought and critical thinking skills while developing their abilities to work as part of a high performing team.
  - Community outreach, develop communication skills, development life skills.
  - Create unique opportunities to share the excitement of science, engineering and technology in local schools, our community, and other high schools with an interest in creating a *FIRST* program.
  - Create opportunities for students to obtain co-op and internship placements and *FIRST* related scholarships for continuing education.
  - Take specific, focused actions to assure our continued viability as a *FIRST* team.
  
- **RELATIONSHIPS WITH SPONSORS**
  - 5 mentors from our major corporate sponsors
  - Rolls-Royce - 11-year sponsor, Allison Transmission – 6-year sponsor
  - Support Sponsor Initiatives – Pack to School, Open House, Demos, Relay for Life
  - Student Interns and Co-Ops, Full Time Employment Opportunities
  - Senior Engineers and Managers form our Design / Program Review Panel
  - Proud Display of Sponsor Logos on Robot, Pit, T-Shirts, Web-Site
  - Corporate Sponsor Links on Team Web-site
  - Thank You Plaques, Team Sponsor Poster with all community sponsors
  
- **SUMMARY OF GROWTH**
  - 1999 – 7 Students, 4 Mentors, 2 Major Sponsor (including NASA)
  - 2009 – 39 Students, 12 Mentors, 5 Major Sponsors (including NASA)
  - Actions to Grow and Develop Team
    - Video and Print Promotion within the School and Local Media
    - VEX, FTC, LEGO teams at “feeder” schools
    - Introduction of “Project Lead The Way” engineering curriculum in school
    - Fall “Interested Students” Recruiting Open House Night
    - Working Year-Round on Technical and Outreach Activities
    - Application, Interview and Formal Feedback for Student Team Members
    - Students actively Obtain Community Sponsors
    - Formal Business Planning, Team Continuity Plan

– **SUMMARY OF 2009-2010 PLAN**

- Community & Sponsor Open House on the Night Before Ship Day
- Weekly Video Updates to High School (morning announcements)
- Teacher Sponsor Program to Promote Faculty Awareness
- Township Web-Site Exposure
- Robotics Council (Launched in 2009 Season)
- Indiana Robotics Invitational – Co-Sponsor of Largest Off-Season Competition
- American Cancer Society – Relay for Life (2<sup>nd</sup> Year)
  - Challenge other *FIRST* Teams to Participate
- Robot Buddies at local Elementary School

## 2. Program Summary

Cyber Blue Robotics, Team 234, is the *FIRST* Robotics Team in Indianapolis, IN. Our team is comprised of high school students, teachers, and faculty from the high school and the township, and adult mentors from corporate sponsors and the community.

In an effort to cultivate interest in science and technology, we build a competition robot during a six-week “build season” to complete a specific game challenge each year. Each spring, we compete with our robot at regional competitions around the country, as well as at the Championship Event in Atlanta, Georgia when we qualify.

In addition to the robot competitions, we also market our team for financial and other support from sponsors, spread the word of *FIRST* by helping to start new teams and doing presentations and demonstrations in the community, and co-hosting a large out-of-season competition.

Another major component of our program is beyond the construction of the robot and competitions. We spend a lot of our time assisting our community. We help a local elementary school by reading to a kindergarten class once a month and we also built bookshelves for the school. We also participated in American Cancer Society’s Relay for Life. We raised \$1,600 dollars and also demonstrated our robot during the twelve hour walk.

From our budgeting process to team member selection to product design and evaluation, Cyber Blue is run as a small business. We keep our current goals and challenges in mind as we seek to ultimately develop life skills of communication, teamwork, and critical thinking in all team members.

It is so much more than just a robot.

### 3. FIRST Description

*FIRST* (**F**or Inspiration and **R**ecognition of **S**cience and **T**echnology) is an international non-profit organization, that aspires to transform culture, making science, math, engineering, and technology as exciting for kids as sports are today.

*FIRST* was founded in 1989 by Dean Kamen, inventor of the Segway Human Transporter. *FIRST* operates the *FIRST* Robotics Competition in which teams of high school students, sponsored and assisted by local companies and volunteers, design, assemble, and test a robot capable of performing a specified task in competition with other teams. *FIRST* also runs the *FIRST* LEGO® League for children 9-14 years old and *FIRST* Place, an innovative science and technology center, including a hands-on children's science museum. Along with this, *FIRST* Tech Challenge allows students another opportunity to get involved in *FIRST*. *FIRST* was founded on partnerships with businesses, educational institutions and government. Many Fortune 500 companies provide funding, in-kind donations and volunteers to support the program.

*FIRST* Robotics Competition (FRC) is a unique varsity sport of the mind designed to help high-school-aged people discover how interesting and rewarding the field of engineering and researchers can be.

The *FRC* challenges teams of students and their mentors to solve a common problem in a six-week timeframe using a "kit of parts" and a common set of rules. Teams build robots from the parts and enter them in competitions designed by Dean Kamen, Dr. Woodie Flowers, and a committee of engineers and other professionals.

*FIRST* redefines "winning" for these students because as are rewarded for excellence in design, demonstrated team spirit, gracious professionalism, maturity, and the ability to overcome obstacles. Scoring high is a secondary goal. Winning means building partnerships that last.

What is unique about the FRC program?

- It is a sport where the participants play with the pros and learn from them
- Designing and building a robot is a fascinating real-world professional experience
- Competing on stage brings participants as much excitement and adrenaline rush as conventional varsity tournaments
- The game rules are a surprise every year<sup>1</sup>

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<sup>1</sup> Information courtesy of the *FIRST* Robotics Web Site, [www.usFIRST.org](http://www.usFIRST.org)

#### 4. Team Description and History

*FIRST* Robotics Team 234 “Cyber Blue” began in 1999 as an opportunity to expand the reach of the “School to Work” program at Perry Meridian High School. As the *FIRST FIRST* team in Indianapolis, and the 4<sup>th</sup> team in Indiana, Cyber Blue expanded our program within the school as well as supported and created growth of *FIRST* teams in the state of Indiana. As we enter our eleventh season in 2009, we have grown to 39 students and 10 adult mentors. Corporate sponsors include the corporations of Rolls-Royce (a founding sponsor), Allison Transmission, and Over 80 community sponsors also support the program with contributions of money, material or manufacturing.

As a *FIRST* team, we design and build a robot for competition. The partnership between students and adult mentors blurs the line between student-built and mentor-built programs; as these groups work side by-side in a mentoring and sharing relationship, where each group continually learns from and teaches the other.

Since 1999, Cyber Blue has been a part of starting over ten new *FIRST* robotics teams in Central Indiana. The students also mentor *FIRST* Tech Challenge teams and *FIRST* LEGO League teams at two elementary schools.

We have developed strong partnerships with our corporate sponsors - Rolls-Royce and Allison Transmission. These corporate sponsors provide funding and other resources to support us. Each spring, senior managers and engineers from these companies provide their insight into our design by way of a Critical Design Review.

Cyber Blue has a 100% high school graduation rate, a 100% college attendance rate, with approximately 70% going into science, engineering, and technology fields.

Although our team is engineering focused, we recruit members to support all aspects of our team. We provide opportunities for web site, communications, public relations and other team roles for those who want to be a part of Cyber Blue but do not have an interest in the engineering field.

## 5. Team's Impact on *FIRST*, Our Community, and Our School

Cyber Blue and *FIRST* have had a positive impact on each other. The team has helped start several new robotics teams in the Indianapolis area. Based on the immediate positive affiliation between Cyber Blue and Rolls-Royce, Rolls-Royce has expanded its financial support to every team in the Indianapolis area, the Boilermaker Regional and the *FIRST* Championship Forums.

Cyber Blue alumni continue to play an important role in *FIRST* by working with other *FIRST* teams, volunteering at regional competitions and helping *FIRST* in other ways. Approximately 50% of recent Cyber Blue alumni are still involved with *FIRST* programs at some level.

Cyber Blue is a key host of the Indiana Robotics Invitational (IRI) and has helped this event grow from 20 teams in 2000, to 72 teams in 2008. Our entire team, including the parent crew, work at this off-season tournament. Working closely with Team 45, the TechnoKats (founders of the IRI), and Team 1024, the Kil-a-Bytes, the event has found a way to provide both an excellent Robotics Competition as well as providing a high level of community support. In 2008, over 100 teams registered for a chance at one of the 72 open positions. Teams from several states including Hawaii, and Canada competed in a tournament highlighted as "the best of the best."

The IRI is much more than just a great robotics competition. It also supports the community through such programs as donations of 2nd Grade Backpacks, a Charity Auction (\$3200 in 2008) and College Scholarships (\$8000 in 2008). The 2008 IRI also featured a "Pre-Rookie Challenge" to allow newly forming teams to compete against one another in a special series of matches.

Our team has spread the word of *FIRST* in the community in many ways; we host our own open house where the community and sponsors are invited. At the open house, visitors can observe our new robot, learn about *FIRST*, the game challenge, see our facilities, tour our website, and view our CAD designs.

We have created a special kind of partnership with Abraham Lincoln Elementary School, a school that has struggled with low test scores but has recently adopted a new reading curriculum. We began our partnership by building and painting bookshelves for their classrooms. One of the teachers who received these bookshelves stated, "Knowing that the Robotics team has assembled them assures us all that not only will the quality be "Top Notch", but plant they will be reliable and dependable. Thanks for all the time and effort that went into providing us with a much needed addition to our classrooms!" We have developed a personal relationship with one of the kindergarten classes and have donated books, spent time reading to the students and teaching them simple robotics lessons, and letting them drive our small robots. This spring, we will be involved at their fifth grade science fair to encourage them to become involved in *FIRST* in upcoming years.

Our team has created many innovative ways to spread the message of *FIRST*. During the off season, we participated in the American Cancer Society Relay For Life, with the help of our parents, relatives, sponsors, and raised \$1,600 for Cancer research. We not only participated in the walk, but also introduced participants to *FIRST* by demonstrating our past

robot and explaining the game. We also invited people to drive some small robots on a playing field we constructed. We have challenged all Indiana FRC teams to get involved in this event next year.

During the summer and fall of 2007, Cyber Blue became a part of a new exhibit at the Indianapolis Children's Museum called "Robots + Us." We began working with the museum in January of 2007 to create a program that would be interesting and exciting for visitors to the museum. Our finished product was a "VEX Challenge," where children (and parents!) visiting the museum operated Vex robots through an obstacle course. The obstacle course and robots were built by members of Cyber Blue, and then we staffed the exhibit on 12 days during the fall and winter of 2007 – 2008. On the opening weekend of the "Robots + Us" exhibit, the team held a demo to present our 2007 FRC robot and explain *FIRST*. Hundreds of visitors (young and old) had the opportunity to "Rack N Roll" on the lawn of the museum.

At the IRI, the team participates in the Pack-To-School program sponsored by Rolls-Royce. In this program, backpacks are filled with school supplies and donated to aid low-income second graders in nearby Indianapolis schools. Cyber Blue also creates "Care Packages" for new Indiana FRC teams. These "Care Packages" include snacks and a note of encouragement to help them through the build season. These care packages are sent out during the third week of the build season, when many teams start to feel the time crunch and effects of burnout.

Cyber Blue also donates money towards many charitable causes within our school. This past year, the team made donations to the Make-A-Wish Foundation, the March of Dimes, Schools 4 Schools, and for purchasing Christmas gifts for needy families in the township.

Cyber Blue communicates excitement and impact within our school, community, and beyond through several different techniques. To get our school more involved and interested in *FIRST*, we have begun showing weekly videos of our progress during the build season. This has sparked enthusiasm and interest from both students and teachers for the robotics program and our team. One teacher acknowledged that saying, "I think that the Robotics team is one of the best programs at Perry, and because competitions are elsewhere and the work is all done in the dungeon of the 13 hallway, many people at school don't realize how amazing the program is. I want to help promote the excitement of the program." New this year, each student has recruited at least one "teacher sponsor" to be their personal supporter during the season. Our teacher sponsors are encouraged to visit our lab during the build season, to ask their student about the team's progress, and they have been invited to our open house at the end of the build season. The response has been more than we expected, and now there are over 40 teachers and administrators with a direct link to our program.

## 6. Goals, Challenges, and Success Measures

### **Team Goals**

Team Goals are separated as Overall *FIRST* goals, Community Focus goals, Technical goals, and Award goals.

Cyber Blue has several long-term team goals that represent multiple areas of team focus:

#### Overall FIRST 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 fields as they select college and university level education.
- \* To become an ingrained, mainstream program in our school system and to other students through morning announcements, presentations and demonstrations about the overall purpose of *FIRST*.
- \* To start new teams at other the Indianapolis area schools.
- \* To continue to find new ways of spreading the *FIRST* message in our community.
- \* To maintain a 100% high school graduation rate and achieve 100% college attendance rate.

#### 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, *FIRST* Tech Challenge teams, new *FIRST* Robotics Competition teams, at the local Children's Museum, and other demos throughout the community.
- \* To continue to grow the Indiana Robotics Invitational as a top "out of season" event.

#### Technical Goals

- \* To build a successful, technically challenging, competitive robot through a combination of both mentor and student contributions.
- \* To increase manufacturing and design capabilities by the 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.
- \* To create a detailed plan and schedule for the build season and the upcoming competitions and continue to refine the plan for future years.
- \* To win a Regional and / or Championship Robotics Competition Title.

### Award Goals

- \* To win a Technical Award.
- \* To repeat a Regional Chairman's Award and be honored as the Championship Chairman's Award team.
- \* To win a National Website Award.
- \* To have at least one senior receive a *FIRST* related college scholarship each year.

### **Team Challenges**

Cyber Blue faces many of the same challenges of other school clubs and organizations, as well as unique challenges because of the nature of the *FIRST* program and partnerships involved.

- \* Maintaining student interest with multiple other choices of school related programs
- \* Supporting corporate sponsors who provide a majority of the team funding
- \* Sustaining our team while also providing support and encouragement of other local teams (sponsorship, mentors, etc.)
- \* Sustaining a strong mentor base of active, talented volunteers
- \* Maintaining school facilities to support the program (lab area, machines, teacher support)
- \* Providing a positive, valuable and learning experience for a "new team of students" each year
- \* Continuing to create energy around new programs and opportunities

## Success Measures

The majority of the success measures for Cyber Blue are subjective, and many cannot be realized until several years in the future as the true impact on team members' lives unfold. Listed below are success measures that can be reviewed collectively to measure the success of the Cyber Blue program.

- \* Number of maintained / sustained team members (i.e. 3 and 4 year members)
- \* Number of maintained / sustained team mentors
- \* Percentage of students who continue on to college and on to technical careers
- \* Placement of students into internships and co-op programs with sponsors
- \* Student *FIRST* participation at the college and post-college level
- \* *FIRST* related scholarship achievement by team members
- \* Participation from previous *FIRST* LEGO League and *FIRST* Tech Challenge students on the FRC high school team
- \* Growth and diversity of team membership
- \* Judge and Peer recognition of the team organization and operational structure
- \* Judge and Peer recognition of the robots technical, design and quality level
- \* Expansion of technical capabilities in robot function (auto mode, hybrid mode)
- \* Robot on-field performance
- \* Growth and success of the Indiana Robotics Invitational
- \* Growth of additional *FIRST* teams in Central Indiana

## 7. Long Term Growth

To ensure the long-term growth of the team, we do many things both inside and outside the team. Skills are passed to students through the expertise of the mentors, and in turn, we pass on the skills we learn to the students we mentor in LEGO and FTC teams. We expose elementary school age children to the beginning of the program through student-led LEGO teams, and then help them advance to the FTC and VEX teams at the middle school level.

We also strive to keep in contact with our sponsors to ensure strong partnerships. In addition to our corporate sponsorships, we continue to explore opportunities to 'give back' to our sponsors through participation at corporate events and volunteer activities such as helping with product displays at the Rolls-Royce "Heritage Trust" Museum.

While Cyber Blue is a well-funded team, we do not take our sponsors or financial resources for granted. Sponsors are formally thanked for their support, and all are invited to our open house and competitions. Our sponsor poster allows us to proudly display their support for the team and these posters are hand delivered to the businesses that support us.

We are aware that for multiple reasons, team sponsors can 'disappear' almost overnight due to a sudden change in the business climate. To manage this risk, we continue to recruit and support multiple sponsors at all levels and manage our cash such that we could compete in at least one event in a season if over ½ of our sponsors could not continue to support us.

We have developed a Team Continuity Plan, which is attached as Appendix A. It is our plan of action that would allow us to continue operations in case of a major even that could threaten our team. This document identifies and defines potential risks, their impact, and what actions we are taking to address these risks.

## 8. Team Management and Organization

### **Management and Organization**

Cyber Blue operates at three different organizational levels: Partnership Build Season, and Competition. At the highest level, the team is a partnership of the school, community, students, *FIRST*, corporate sponsors, mentors, and parents. This over-riding organization (see Figure 1) provides the necessary guidance and direction for the program. For the team, there are two “working level” organizations – one during the build season and one during the competition season.

During the build season (see Figure 2), the senior person in the organization is the School Sponsor. As a school sponsored organization, this person is responsible for the overall team organization, compliance to school guidelines and rules, overall safety of the students and mentors, and is the communication link between the school, township and the team. Next in line is the team captain, usually a junior or senior member of the team, and the mentors. We believe that the Captain and Mentors share the responsibility for the team and team performance and believe this organization supports that view.

The budget team is a critical part of the program to insure funds are received and distributed in an equitable way. As a school organization, we must maintain compliance with the State Board of Accounts Rules and Audit Guidelines, and for this reason, the team leader (Adult, School Employee) leads the Budget Team.

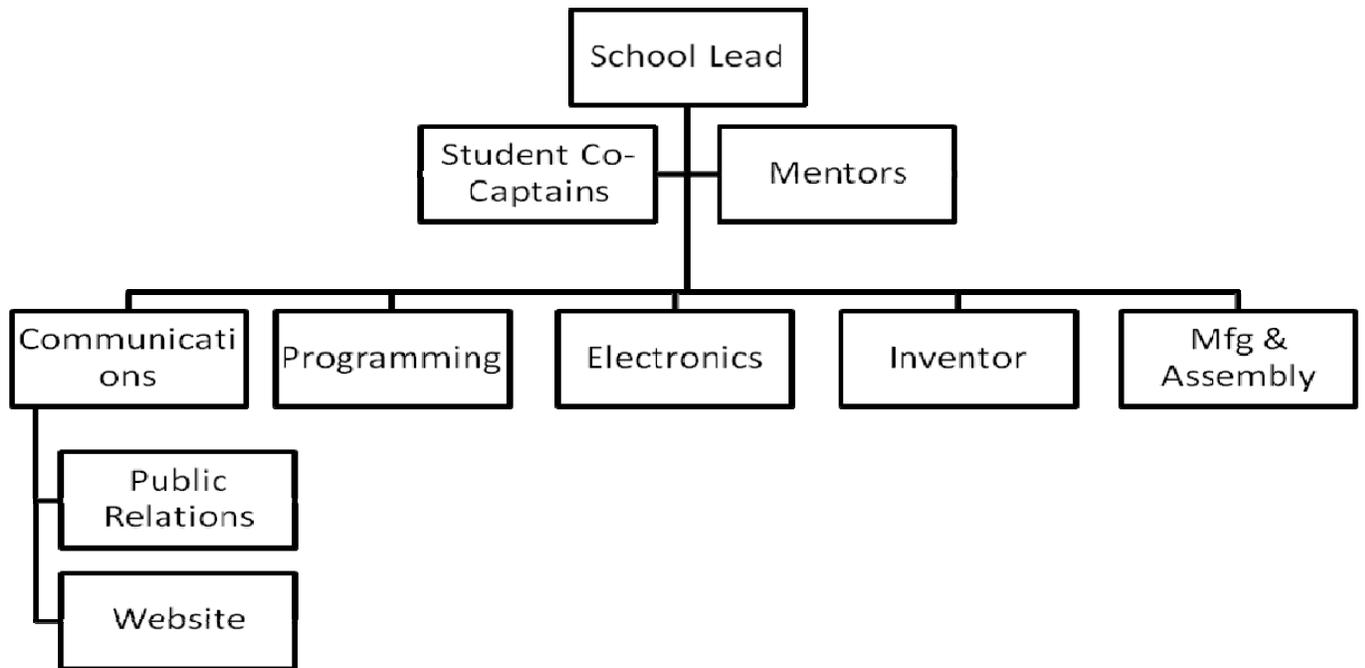
Next are the sub-teams of public relations, electronics, inventor, manufacturing, and programming. In each sub-team, there is a student lead and a mentor lead. The mentor lead advises and works with the sub-team members to teach new skills, help solve problems, create strategies, and to experience as 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 on specific areas.

During competitions (Figure 3), the team is organized into a different structure to meet the unique needs of regional and championship events. The school leader is still in place, with the team captain and mentors one level down. Once again, there are multiple sub-teams but they are different from the sub-teams that are part of the build season. Competition sub-teams include the drive team, judge liaisons, pit support, publicity, and scouting. The drive team includes the students that drive and operate the robot during the matches 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. Other students talk to visitors, hand out buttons, suckers, and other goodies to kids of any age and are Ambassadors for the team and *FIRST*. This group also takes still and video pictures to use for other team activities. The scouting team is in charge of scouting and observing the other robots and matches on the field and helping create strategy for each match based on the capabilities of each team in the two alliances. This group also provides valuable information and insight at draft time when Cyber Blue is a drafting team.

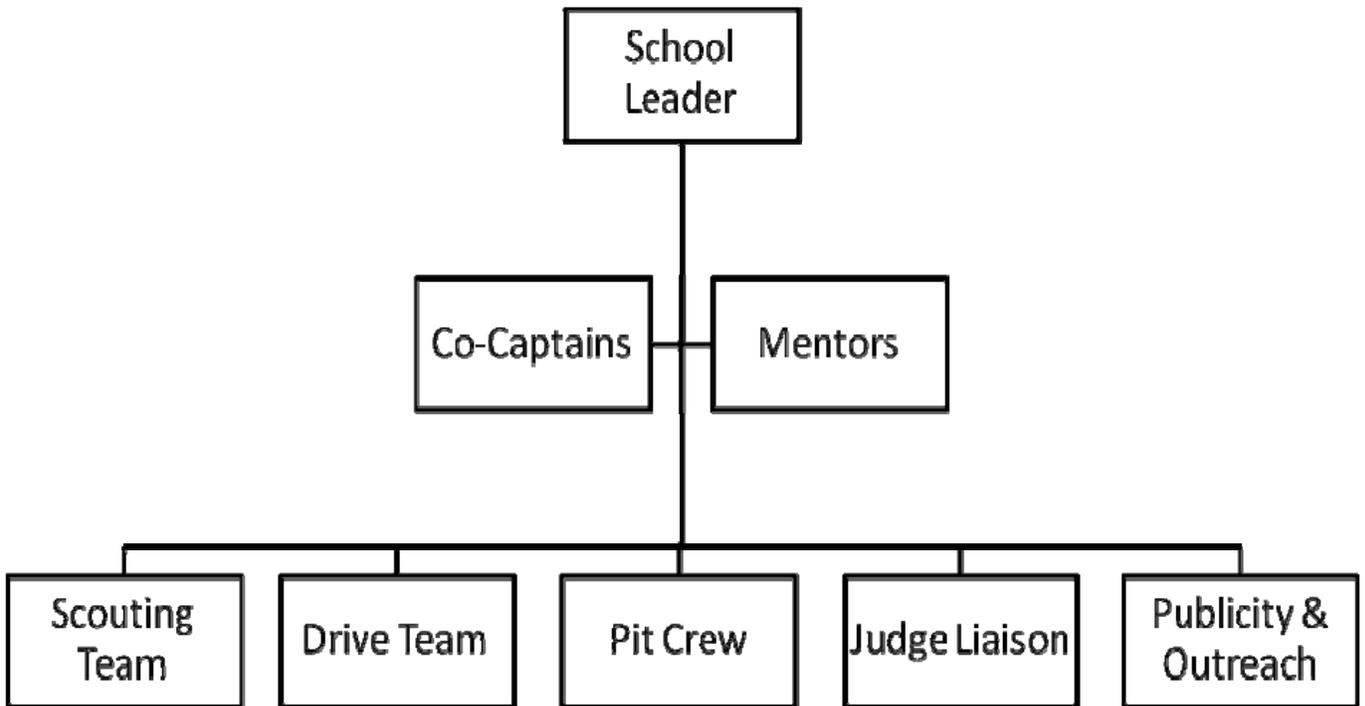
## Overall Organization (Figure 1)



## Build Season Organizational Chart (Figure 2)



## Competition Organizational Chart (Figure 3)



## **Team Membership**

Being a member of Cyber Blue, either as a student or mentor, provides certain privileges and responsibilities.

### Student Responsibilities

Students must maintain compliance to the PMHS Student Code of Conduct at all times.  
Students must be enrolled at Perry Meridian High School as a full time student  
Students must maintain a grade no lower than C- in all classes  
Students must obtain approval from every teacher before each travel event  
Students are expected to be role models in the school and at any Cyber Blue related event.  
Students represent their team, their school and their sponsors.  
Students must maintain an 80% attendance level during the build season.  
Unless agreed in advance, students are expected to participate in summer and fall team activities, such as IRI, fund-raisers, FTC and LEGO, and demonstrations.  
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.  
Students should approach team membership as an opportunity to learn, to share and to grow,  
while developing strong friendships with teammates, mentors and other *FIRST* persons.

### Mentor Responsibilities

Mentors must request approval to be a part of the team through the school leader.  
Mentors must agree to and pass a township 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 are expected to share knowledge and provide an environment where students can learn, explore and develop their skills in engineering, design, manufacturing and other team activities.  
Mentors are expected to be positive role models for each and every student.

## **Team Application and Interview Process**

Students must submit a résumé and complete an interview process to become a part of Cyber Blue. Even returning students must apply and complete an interview process each spring to continue to be a part of the team.

A sample application is included as Figure 4. Sample interview questions are included as Figure 5.

Cyber Blue employs this “Application and Interview” process for several reasons, some are defined below:

- \* Students gain valuable real life experience by creating a resume, completing a team application, and completing an interview with adult mentors.
- \* Students receive formal feedback on their performance in previous years and areas for growth and improvement.

- \* Students have a formal opportunity to provide feedback to the team mentors.
- \* Students must think about what they have accomplished (or plan to accomplish) as part of the team, and what steps need to be taken to reach those goals.

The interview process allows the mentors to learn information about the students, especially new students coming into the program. This helps with initial sub-team placement of new members.

The interview process shows students that there are both great benefits as well as great responsibilities associated with team membership. Students know, in advance, what the expectations are for attendance, participation, grades and behavior.

### **Interview Period**

In May of each year, students can apply for membership on the team for the upcoming season. During the May interviews, current freshmen, sophomores and juniors are invited to apply and interview. Team member decisions are made quickly and the new team announced in mid-May. This team begins working as Cyber Blue for all summer and early fall activities. A team captain and sub-team leaders are identified from this group. The team captain decision is based on input from team members, seniors that are leaving the team and mentors. The final decision on team captain is from the school lead.

In the fall of each year, new students (primarily incoming freshmen) can apply for team membership. These students also complete an application and interview and become part of the team following a successful application process.

### **Removal from Team**

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

Situations that can cause removal from the team include:

- \* Inappropriate behavior, in direct violation of the school 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.

# Cyber Blue Robotics Application: 2008-2009

Thank you for your interest in Cyber Blue Robotics, the *FIRST* Robotics Team from Perry Meridian High School. As a member of the robotics team, you must be willing to donate much of your time to assist in “promoting” the program and “creating” the robot.

- There are many team meetings at which your attendance is required
- You will be required to give time during the summer and school year to help promote the team and participate in fund-raising activities.
- From approximately January 3<sup>rd</sup> until February 17<sup>th</sup>, you will be required to meet almost every weekday evening and several weekends to design, manufacture and create our robot and prepare our team for competitions.
- This program will provide you with a great challenge as well as a great opportunity.
- Applications are due before the end of the day on FRIDAY, OCTOBER 3, in the main office.
- Questions? Mentor – Chris Fultz, [chrisfultz@att.net](mailto:chrisfultz@att.net), 317-885-1907

## Personal Information (print clearly)

Name \_\_\_\_\_

Current Grade Level \_\_\_\_\_ E-mail Address \_\_\_\_\_

(you will be contacted by email – be sure this is legible)

Home Phone # \_\_\_\_\_

- 1) The robotics team is more than “building a robot” and traveling. Number the following groups from 1 to 6 according to your interests and skills (1 is the highest).
- \_\_\_\_\_ Web-Site Design
- \_\_\_\_\_ Public Relations and Marketing (bi-monthly newsletters, videos, Chairman’s Award)
- \_\_\_\_\_ CAD (design: computer drawings)
- \_\_\_\_\_ Electronics / Programming
- \_\_\_\_\_ Manufacturing

- 2) List all activities (and years of participation) in which you have been involved while in high school.

_____	_____
_____	_____
_____	_____

- 3) List all activities in which you will be participating this year (2008 – 2009).

_____	_____
_____	_____

- 4) On separate paper, please include a short explanation of why you are interested in the robotics team and why you are qualified to be a member. Tell what special qualities and/or skills you possess that would make us a stronger and more productive team, and how you became interested and/or heard about the team.
- 5) Obtain Signatures from 3 PMHS teachers who would recommend you for the Robotics Team.

Teacher Signatures: 1) \_\_\_\_\_

2) \_\_\_\_\_ 3) \_\_\_\_\_

**IMPORTANT INFORMATION – STUDENTS AND PARENTS**

- \*\* Students will be responsible for paying a \$300 membership fee to assist with travel expenses. (Due January 7, 2009).
- \*\* Students will be responsible for purchasing team shirts (\$50 payment).
- \*\* Students will be responsible for paying for food items while on robotics trips.
- \*\* Students will be responsible for securing team sponsorship from the community (\$250).
- \*\* Students must meet team and school academic requirements and obtain agreement from all teachers before traveling with the team to competitions. If a student becomes ineligible to travel, there will be no refunds given for team fees.

I understand these costs and expectations and am willing to make these payments if my son/daughter (student) is accepted as a member of the Cyber Blue Robotics team.

Parent / Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

Student (Applicant) Signature \_\_\_\_\_ Date \_\_\_\_\_

Parents: The Cyber Blue Parent Crew is active in supporting the team and the Parent Crew leaders work to keep all parents informed of team activities. Please provide your email address below so you can be added to the Parent Crew distribution. There is no membership fee to be on the Parent Crew.

Parent(s) Email address(s) \_\_\_\_\_

**APPLICATIONS ARE DUE NO LATER THAN OCTOBER 3<sup>rd</sup>  
TURN IN APPLICATIONS TO THE “ROBOTICS” BOX IN THE MAIN OFFICE**

**YOU WILL BE CONTACTED BY EMAIL TO SCHEDULE AN INTERVIEW  
INTERVIEWS WILL BE THE WEEK OF OCTOBER 13**

(Figure 4 – Application)

# Sample Interview Questions

## New Applicants:

Who do you most admire? Why?

Describe a project that you previously completed where you went beyond the expectations of the project.

Which teacher would give you the best reference? What would this teacher tell us about you?

What interests you the most about the robotics team?

How do you feel you can help the robotics team next year?

How do you feel the robotics team can help you next year?

## Previous Members:

Identify one specific contribution you will make for the (next) season.

How did you help with community outreach during last season?

Why do you think we want you to post on Chief Delphi?

Why do we ask for students to get \$250 in sponsorship?

What was your favorite moment from the (last) season?

Who is the most important member of the robotics team?

Who do you think would be best as Team Captain? Why?

(Figure 5 – Sample Interview Questions)



# Cyber Blue Robotics Sponsorship

Cyber Blue is the Robotics Team from Perry Meridian High School. We compete as part of *FIRST* (For Inspiration and Recognition of Science and Technology) and build a competitive robot while learning the basics of science, engineering and technology. In addition to building a robot, we are active in our school and community, including work with elementary and middle school students. We actively support several Indianapolis charities through our work. For the 2009 season, we have over 40 students involved.

Cyber Blue is a nationally recognized, award winning team. Since 1999, we have received several awards for our team management, outreach activities, design and use of technology and competition success. We have a 100% high school graduation and college attendance rate among our seniors.

Your financial support will allow the team to design and build a competitive robot, travel to competitions, purchase needed tools and materials and help to further extend our outreach activities to the community.

There are five ranges of support –

\$25 - \$249 Your name on our Sponsor Poster

\$250 - \$499 As above, plus Business Card Ad on Sponsor Poster, End of Season Team Photo

\$500 - \$999 As above, plus Your Logo and a link to Your Website from the Cyber Blue Website

\$1000 - \$4999 As above, with larger, prominent placement, and Your Name on our Robot

\$5000 – up As above, with Headline Placement as a Sponsor, Your Name listed as a sponsor on the team materials with *FIRST*, including Announcement with the team name at competitions.

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**For more information about Cyber Blue 234 go to [www.cyberblue234.com](http://www.cyberblue234.com).**

**For more information about *FIRST* Robotics go to [www.usFIRST.org](http://www.usFIRST.org).**

**Cyber Blue Robotics**  
**Thanks You for Your Support!**  
(See Back For Additional Information)

(Figure 6 – Sample Sponsor Form)

# Cyber Blue Robotics Sponsorship 2009

## SPONSORSHIP INFORMATION

www.cyberblue234.com



**Business Name** \_\_\_\_\_

**Contact Person** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

**Code** \_\_\_\_\_

**Phone**

(\_\_\_\_) \_\_\_\_\_ **Email** \_\_\_\_\_

**Business website** \_\_\_\_\_

*(Please Print or Type so that we can accurately include your information)*

*Please make checks payable to: Perry Meridian High School / Cyber Blue.*

*Federal Tax ID: 35-6006-777/0*

*Give checks to your student contact, or mail to: Perry Meridian High School,*

*Attn: Lloyd Gough, 401 W. Meridian School Road, Indianapolis, IN 46217*

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# Thank You for your Support!

Your Generosity is truly appreciated and will be put to great use.

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**Student Contact:** \_\_\_\_\_

**Amount Donated:** \$ \_\_\_\_\_ **Check #** \_\_\_\_\_ **Cash** \_\_\_\_\_

**Materials Donated:** \_\_\_\_\_

(Figure 6 – Sample Sponsor Form)

## 9. Robot Design Cycle and Process

Cyber Blue utilizes a formal, industry proven design process to allow the team to explore multiple options, select the best alternative, review with a panel of outside professionals, design, fabricate and build, and critique the team's performance for continuous improvement.

### **Basic Design Process**

#### Capture Requirements

The team begins by capturing requirements. This includes reading the rules, watching videos, and utilizing forums and question / answer options. Once identified, the requirements and rules are captured and made available for easy access and referral.

#### Identify Options

The next step is to discuss options for a strategy and then potential designs to play out that strategy. We work to avoid determining a design too quickly, because we believe it is more important to have the design follow the strategy than to have the strategy follow the design.

Once we have agreed on an overall game strategy, we begin to work on possible designs. We brainstorm possible ideas, create sketches of basic models, make rough prototypes and create rubrics of two or three final options before making a decision.

#### Prototyping

Prototyping takes several forms. Some ideas are prototyped in Inventor, some in wood or aluminum to see how well the idea works on the real game objects or in conjunction with other robot parts.

#### Inventor Files

The entire robot is created in Inventor files. In some cases, the design is created and then the piece parts manufactured; in other cases, a part is made through a series of prototypes until a working solution is created, and then the Inventor file is created to match the part. In the end, the goal is that the robot and Inventor files are "mirror images" of each other.

#### Design Review

Mid-way through the season, the team completes a design review with an independent panel of senior engineers and managers from some of our sponsoring companies. The team presents the game, the strategy options, the evaluation process, and the final design. The review panel provides input and asks question about the decisions that have been made. Some questions lead to immediate design changes, others are more general and lead to changes in the overall design approach for the team.

#### Parts Manufacture and Robot Assembly

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 for build into the finished robot. As issues with the design are identified, the needed changes are incorporated into the drawing files 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 on an older robot 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.

### Testing

Prior to shipment, the robot is tested and adjustments made as much as possible.

### Competition

The true test of the robot and the design is how well it performs its intended function in the actual competition matches. During practice and matches, the robot functions are evaluated and modifications, repairs and adjustments are made during the competition. The robot is subjected to continuous, real time improvements as the realities of the game and the competition unfold during the matches.

### Review

Following the season, the team does a thorough review of the season and the design and function of the robot. The team captures what was done well (and should be repeated) and what was not done well and needs to be corrected. When appropriate, the team utilizes root cause techniques to determine the “why” for the specific issues and then corrective actions are implemented.

## 10. Budgeting for Success

Like any business, 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.

In the fall of each year, a draft team budget is created that reflects expected expenses (travel costs, shirts, entry fees, materials, any special purchases required, etc.) and expected revenues (sponsorships, student fees, remaining funds from previous year, grants, etc.). Based on this preliminary budget, the team 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.

It is both smart business practice and a legal requirement for all expense claims to require a receipt. All expenses are claimed through the team leader who submits the paperwork to the school treasurer for reimbursement. All team members who make purchases have access to a tax-exempt form, as sales tax is not reimbursable.

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

An effective budgeting process and detailed records also assists the team in doing “what- if analysis”. An example of this is the team’s recent purchase of a trailer to pull to competitions. Although the trailer was 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.

This budgeting process also allows the team to support school and community programs as a way of giving back. We have created an annual scholarship fund to benefit graduating seniors and we also give to worthy causes such as the Make-A-Wish Foundation, March of Dimes, School4Schools, and help provide holiday assistance for needy families.

Through careful analysis of our past, present, and future finances, Cyber Blue ensures the growth of our team and support for our community and *FIRST*.

## 11. Marketing Strategy

Cyber Blue places 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.

One of our primary marketing tools is our team website. This site contains information about past and present teams and robots, team member profiles and sponsors. We highlight any ongoing activities and provide links to other relevant sites and to our team leaders.

Each student is responsible for collecting at least \$250.00 in team sponsorship. This requires the team members to meet with companies and community members to explain all aspects of our program (see Figure 6 - sample Sponsor Form). 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.

All sponsors' names are placed on our team website, on a sponsorship poster, and on a sponsorship banner displayed at competitions. Sponsors receive a plaque in appreciation for this donation and these are hand delivered whenever possible, by the student who initially solicited the sponsor for their support.

For larger contributors, logos are displayed on our robot, cart, pit displays and our official "*FIRST*" name that is announced at competitions.

Cyber Blue has appeared in several local and regional publications. The program has been highlighted in local newspapers, on television stations, in the Rolls-Royce worldwide newsletter, on our school district's website, in the Indianapolis Children's Museum magazine, and in several videos in connection with the Children's Museum ([www.Igot2know.com](http://www.Igot2know.com)).

Through our corporate sponsors, mentors and the team have been highlighted in several publications in the business community. Recently, these include Business and Commercial Aviation, BizVoice (Indiana Chamber of Commerce) and the Indianapolis Business Journal. One of our mentors presented "*FIRST* Volunteering" at a Program Management Forum as a method of employee skill development.

The team takes great pride in creating pit displays for competitions and robot demonstrations. Each year, a slightly different approach is used to encourage creativity with the students as they develop the displays. Acknowledging that a picture is worth a thousand words, Cyber Blue's displays provide insight into the outreach programs sponsored by the team through a combination of pictures, collages and words, and a video screen showing the team's activities.

Students also promote the team through corporate events and activities. The team participated in an Engineering Career Day, highlighting the benefits of *FIRST* mentoring for young engineers. The Critical Design Review each spring is an opportunity to share the message of *FIRST* with a group of senior managers from our corporate sponsors.

We are regular volunteers at *FIRST* events as "VIP" guides and thoroughly enjoy explaining *FIRST* to new visitors and invited guests at competitions.

## 12. For More Information

For more information about Cyber Blue and *FIRST*, stop and talk to team members at any event or competition, or access us through our team website at [www.cyberblue234.com](http://www.cyberblue234.com)

Team Faculty Leader, Mr. Lloyd Gough, may be contacted at Perry Meridian High School at 317-789-4446 or [lgough@msdpt.k12.in.us](mailto:lgough@msdpt.k12.in.us)



# Cyber Blue 234 Team Continuity Plan

## Introduction to Continuity Plans

Many businesses, large and small, have created “Business Continuity” plans of action to allow them to continue operations in case of a major event that could threaten their business. These events could include major power outages, tornados, floods and other natural disasters, financial events, labor issues and the loss of key leaders. Some plans include actions such as backup computer systems, generators, phone calling lists and the creation of multiple work sites to reduce the risks to ongoing operations.

In a similar way, *FIRST* Robotics teams face “Team Continuity” risks that could threaten the long term viability of the team and the program. Some of these risks can be alleviated, others can be managed, and others still must simply be accepted. For *FIRST* teams, these risks are real, and evidence can be seen by the number of teams that are active for 1 or 2 years, or more, and then seem to disappear overnight, taking with them the opportunities for students that are unique to *FIRST*.

This document captures the Team Continuity Plan, Risks and Actions for *FIRST* Robotics Team 234, Cyber Blue, from Perry Meridian High School, Indianapolis, IN. The document contains an identification and definition of the risks, the potential impact, and what actions the team has taken or needs to take to address the risk.

Like other team management documents, this is a living document and will be updated as the team and its environment grows and changes.

## Background

Cyber Blue, the *FIRST* Robotics team from Perry Meridian High School, was formed in 1999. The *FIRST* year, the team had 9 students, a few mentors, a small work area, financial grants, and a few small business sponsorships. The team struggled to compete.

Since 1999, the team has grown to over 40 students and 12 mentors. The team has corporate and community sponsors, grant funds, strong school support and access to a machine shop and computer lab. This growth has been well thought out, planned and nurtured, but there is also an awareness that team’s “fortune” could change quickly due to many factors, some of which are outside of the team’s control.

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 has completed

brainstorming activities and created this Team Continuity Plan. It provides a roadmap to help insure the long term viability of the program. There are no guarantees, but it is believed that the implementation of these ideas will help the team weather difficult times when they appear.

### Risk Identification and Action Plans

This section identifies major risks to the team, the likelihood and impact of occurrence, and the action the team plans to take to avoid these possible risks.

The following standard format is used:	
<b>RISK</b>	Statement of the Risk Item
<b>Likelihood</b>	What is the “probability” of the risk occurring
Low	Less than a 25% chance
Medium	between 25 and 50% chance
High	Greater than 50% chance
<b>Impact Level</b>	If the event occurs, what is the impact to the team?
Low	Minor impact, Reduced activity level
Medium	Reduced participation in <i>FIRST</i> events
High	Major disruption to the team, Threatened team continuation
<b>Impact on Team</b>	Basic Description of what the impact to the team would be
<b>ACTION</b>	Actions the team is taking to alleviate the occurrence of the risk, or to minimize the impact if it does occur

**Risk:       Loss of a Major Corporate Sponsor**

**Likelihood:**     Medium

**Impact Level:**   Medium

**Impact on Team:**

- Attend fewer regional competitions
- Limit team travel
- Increase costs to mentors and students
- Reduce or restrict fall projects
- Reduce support of school groups
- Increase team fundraisers

**ACTION:**

- Continue to do demonstrations at sponsors to highlight our program
- Send sponsor thank-you letters and posters
- 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 be a role model of team behavior and community presence
  - Maintain careful budgeting
  - Forward our budget planning
- 

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

**Likelihood:**     Low

**Impact Level:**   High

**Impact on Team:**

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

**ACTION:**     Same as above.

---

**RISK:        Loss of School Mentor** (This has happened to Cyber Blue twice in two years)

**Likelihood:**     MEDIUM

**Impact Level:**   MEDIUM

**Impact on Team:**

- Team can sustain for a short period of time with volunteer mentors without a school-based leader
- There is no access to student information
- More difficult to coordinate travel and building use
- The school administration would need to recruit a new person quickly.

**ACTION:**

- Maintain a strong mentor base,
  - Document activities and procedures (travel forms, reimbursements, suppliers)
  - Work to maintain two school mentors on team
  - Create official volunteer leader with some school board directed authority
  - Create Robotics Council made up of school administrators, sponsors mentors, Teacher Lead, and Parent Crew Lead
-

**RISK:        Loss of Key Team Student Leaders**

**Likelihood:**     MEDIUM

**Impact Level:**  MEDIUM

**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
  - 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:**     MEDIUM

**Impact Level:**  MEDIUM

**Impact on Team:**

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

**ACTION:**

- Maintain 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
  - Create Robotics Council made up of school administrators, sponsors mentors, Teacher Lead, and Parent Crew Lead
-

**RISK: Loss of Build / Shop Area**

**Likelihood:** LOW

**Impact Level:** HIGH

**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 area clean and organized
  - Work to be safe and limit any injuries
  - Fix things that break
  - Share space with Project Lead The Way classes and other school groups – encourage partnerships
  - 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
  - Obtain "Teacher Sponsors"
  - Provide special presentations to the school faculty and school board
- 

**Risk: Serious Injury in the Lab**

**Likelihood:** LOW

**Impact Level:** HIGH

**Impact on Team:**

- Immediately stop all activity, obtain emergency care
- Report the event to the proper authorities
- Understand what happened and determine how to prevent a re-occurrence

**ACTION:**

- Keep area clean and organized
- Work to be safe
- 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 at all times in the lab
- Maintain a current list of emergency phone numbers in the lab

- Keep a *FIRST* Aid kit in the lab and know where Automated External Defibrillators (AEDs) are located
  - Ensure all team members understand the “RED BUTTON” that cuts off all power in the shop and when to use it
- 

**RISK: Team Captain Removed From or Leaves the Team**

**Likelihood:** LOW

**Impact Level:** MEDIUM

**Impact on Team:**

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

**ACTION:**

- Appoint Co-Captains
  - Develop Sub-Team Leads
  - Improve Captain Selection Process (student input, mentor decision)
- 

**RISK: Loss of *Auto Desk Inventor* software on School Computers**

**Likelihood:** LOW

**Impact Level:** MEDIUM

**Impact on Team:**

- All team work would need to be done on home / laptops
- Possible loss of team historical data and active files

**ACTION:**

- Install *Auto Desk Inventor* on team laptops
  - Maintain support of school and Project Lead The Way classrooms
- 

**RISK: Broken Machines, Broken Equipment**

**Likelihood:** LOW

**Impact Level:** HIGH

**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
- 

**RISK:        Student Leaders Not Able to Travel / Sick on Trips**

**Likelihood:**    LOW

**Impact Level:** MEDIUM

**Impact on Team:**

- Less experience with driving, robot controls, repairs
- Less experience talking to judges and visitors
- Limited scouting ability

**ACTION:**

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