Business Plan
and
Risk Profile

2017-2018

FIRST Team 1741
Red Alert Robotics

Center Grove High School

2717 South Morgantown Road

Greenwood, IN 46143

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WHO WE ARE

MISSION STATEMENT

FIRST® Team 1741, Red Alert Robotics, will operate in the spirit of *FIRST*® in our minds and actions. We will operate in *FIRST*®'s image with quality, safety, Gracious Professionalism®, and respect; inspiring future generations to incorporate the core values of *FIRST*® into their lives.

VISION STATEMENT

We create leaders by giving students real world problems to solve, which gives them experience in more than just science and technology.

1741 will reach its mission and vision through these objectives:

General Team:

- Our students will learn engineering and business skills, as well as life skills and use them throughout their careers.
- Our students, parents, and community will understand the bigger picture of *FIRST*®.
- We will be successful while also maintaining good character and Gracious Professionalism®.
- We will continue to be inspired to be the best we can be as well provide positive role models to our Jr. *FIRST*® LEGO LEAGUE, *FIRST*® LEGO LEAGUE, and FIRST TECH CHALLENGE teams.

Team Outreach:

- We will inspire and encourage our community to take part in STEAM.
- We will help make STEAM more accessible to visually or hearing impaired students.
- We will help rookie and developing teams on their way to success.
- We will continue to provide guidance to teams in need of help.
- We will sustain and lead while creating more *FIRST*® teams from Jr. *FIRST*® LEGO LEAGUE to *FIRST*® ROBOTICS COMPETITION.

Building:

- We will do our documentation while we are building our robot.
- We will improve our communication and student leadership skills.
- We will try our best to be proactive when design/build problems arise.

Operations and Media:

- We will increase the variety of outreach and do more community service.
- We will improve mentor and student relations.
- We will implement all of our social media accounts into the team image.
- We will apply all our skill sets and advantages to reach out to our community and beyond.

Competing:

- We will be a prime example of Coopertition® and Gracious Professionalism®
- We will try our best to compete in the World Championship and earn an award at that level.
- We will win a blue banner for the robot.
- We will strive to earn the World Chairman's Award.
- We will portray a sense of fun and team spirit at every competition.

TEAM HISTORY

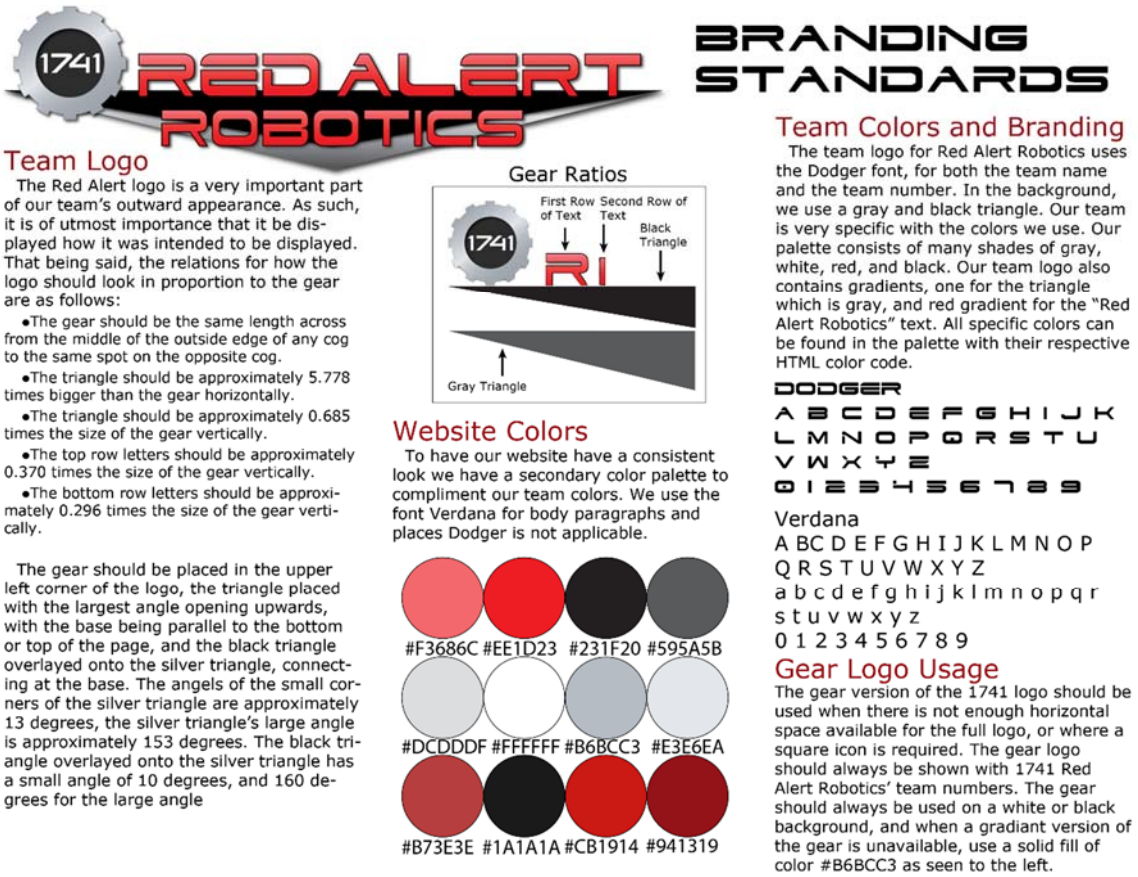
FIRST® Team 1741 Red Alert Robotics is located at Center Grove High School in Greenwood, Indiana. For the past 13 years, since our team was founded in March of 2005, Red Alert has been led by a group of students, mentors, parents, and the Center Grove School Corporation, focused on spreading the mission of *FIRST*®.

In 2005, Center Grove School Corporation noticed that there were very few school activities celebrating science and technology. Summer Ehresman, a Center Grove High School teacher, and two families, the Baxter's and the McCoy's, decided to form a *FIRST*® team to remedy this problem. Linda McCoy and Sharon Baxter established the Non-engineering side of Red Alert Robotics (NEngA/Operations), and were the founding members of the Red Alert Robotics Parent Organization (RARPO), a non-profit organization, formed in 2008, run by parents in order to help our team. Steve McCoy and Dwight Baxter founded the Engineering side of the team teaching students life skills in science and technology.

Over the years, we have had a lack of consistency with corporate sponsors, teacher connections with our school, and growth of student members and mentors. Starting in August 2015, Gregory Valenta, stepped up as our teacher sponsor. Three years ago there was a major shortage of space for our team to expand the impact of STEAM. Through the efforts of our students, mentors, parents, and alumni we secured a new, approximately 15,000 square foot, facility. The Innovation Center houses our team and serves as a place students K-12 can use for STEAM activities. As of the 2018 season, FIRST Team 1741 is made up of 36 students and 18 mentors.

BRANDING

To maintain *FIRST*® Team 1741 Red Alert Robotics' visual identity, please keep to these branding standards. There are always exceptions to these



standards.

QUICK FACTS

Team Name: FIRST Team Red Alert Robotics
Founding Year: March, 2005
FIRST Rookie Year*:* 2006 (build season)
Current team students: 34
Number of female students: 10
Team Mentors: 17
Mentors W/O a Child on the Team: 15
Number of Female Mentors: 2
School Corporation: Center Grove High School
Located in: Greenwood, IN
Team Colors: Red, Grey, Black, White

Year	Robot Names
2006	The Revolver
2007	Mantis, IRI: Nessie
2008	Thaddeus
2009	μ and Sherman
2010	Scorpion and Kirby
2011	Sampson, Destroyer of Worlds, Minibot: He-man, Master of the Universe; Squeaky, Minibot: Pipsqueaky
2012	Swish and Mordecai
2013	Whisbee and Rizzler
2014	Jaws and Inertia
2015	A.N.D.Y (Awesomeness, Nobility, Determination, and Youthfulness) and The Claaaaaaw
2016	KnightFury and Ballista
2017	Black Widow and Nibbler
2018	Otariinae and Cubert

ACTIVE FRC STUDENTS

Name	Years in FIRST®	Name	Years in FIRST®	Name	Years in FIRST®
Seniors		***Juniors***		***Freshmen***	
Horne, Taylor	7	**Scifres, Gabrielle**	2	**Patel, Parthiv**	2
Rayner, Aaron	3	**Strange, Veronica**	7	**Crews, Noah**	1
Schneider, Zach	4	**Potturu, Sripranav**	2	**Potturu, Vaibhava**	2
Schnurpel, Madi	3	**Henderson, Erik**	2	**Tugan, Annalise**	4
Simpson, Reis	4	**Bontrager, Cole**	1	**Rodriguez, Isaac**	1
Snyder, Cory	8			**Tisdale, Kaleb**	3
Kogut, Ben	4	***Sophomores***			
Lovrinic, Jacob	8	**Horne, Imogen**	5		
Isanaka, Ahkil	7	**Kassoumis, Hailey**	2		
Haines, Elvieanna	3	**Kuntz, Claire**	6		
Ripberger, Riley	3	**Orender, Logan**	2		
Petty, Alex	2	**Rivas, Chase**	4		
		Stevenson, Joshua	5		
		Mahtei, Ethan	5		
		Beshears, Kevin	3		
		Fain, Meredith	5		
		Piechan, Alexander	5		
		Hassett, Rylan	1		

ACTIVE FTC STUDENTS

Name	Grade	Name	Grade	Name	Grade
Noah Bowersox	9	**Adam Kuntz**	8	**Sharvi Bhat**	8
Walker Grove	9	**Garrett Richards**	9	**Travis Carpenter**	8
Parthiv Patel	9	**Zach Shaver**	8	**Wolfgang Eslinger**	9
Stephen Reeves	8	**Jacob Tallman**	9	**Kris Huff**	9
Shashank Seerum	9	**Cade Winiger**	8		
Shrayas Seerum	7	**Connor Ziegler**	9		
Sam Shr	8	**Emma Gonzales**	8		
Sahil Sura	8	**James Misener**	8		
Kaleb Tisdale	9	**Brinna Porat**	7		
Andrew Gault	8	**Prakhar Saxena**	8		
Jason Smith	8	**Zach Schwuchow**	9		
Spence Aldridge	9	**Adam Sorley**	9		
Rahul Appaji	9	**Kimberlee Townsend**	9		
Jake Coffey	8	**Izzy Baxter**	9		

ACTIVE MENTORS

Name	Years in *FIRST*®	Name	Years in *FIRST*®
Baxter, Sharon	13	**Miller, Jordan**	11
Cardwell, Jon	7	**Osborne, Chris**	6
Coulombe, Nathan	8	**Schmoll, Bob**	5
Crider, David	6	**Settles, Tim**	11
Frampton, Patrick	12	**Thielmeyer, Rich**	9
Hamilton, Bob	7	**Meyer, Hugh**	12
Horne, Mark	4	**Beshears, Gary**	3
Valenta, Greg	3	**Ikegwuonu, Valentine**	7
Miller, Rachel	11		

EXPECTATIONS OF THE ENTIRE TEAM

EXPECTATION OF STUDENTS

- If a mentor or student in leadership requests you to do something, you will comply with the best of your ability. If you feel a request is beyond the scope of your capability, you are encouraged to attempt the task then speak to a mentor.
- If you see others who are not being safe, encourage them to stop working and, in a positive manner, show them how to do it correctly. If you are not certain, ask the nearest mentor.
- Perform to the best of your abilities at all times.
- Have respect for yourself, all fellow students, and mentors.
- Have a willingness to learn new things.
- It is the responsibility of all students to teach and mentor younger or new students to foster continuation of FIRST® principles and enable younger students to take on responsibilities as upperclassmen graduate.

EXPECTATIONS OF MENTORS

- Demonstrate the highest level of integrity.
- Listen and show respect for students, especially during times of disagreement.
- Demonstrate exemplary conflict management skills.
- Maintain temper and tone, even in times of stress.
- Maintain constant communication with your students and sub-teams.
- Notify your designated sub -of any absences.
- Mentors need to adhere to Youth Protection Program standards.

EXPECTATIONS OF STUDENT LEADERS

GENERAL CAPTAINS

- Act as a liaison between the Red Alert Robotics Parent Organization and the team members
- Oversee all outreach and team events
- Be a mentor and example to all other students
- Act as a 3rd party during a disagreement /difficult experience
- Represent the team at all events
- Keep an even temper during times of conflict
- If absent, be sure leadership is present at all meetings

TEAM CAPTAIN

- Oversee and manage the team's year-round program
- Be responsible for the team year-long calendar of events
- Make general decisions concerning the team
- Facilitate team discussions
- Lead weekly captains and team meetings

ENGINEERING CAPTAIN

- Communicate with overall team captain progress and problems
- Oversee and manage the building of the competition robot
- Oversee all off-season engineering/build projects
- Act as a liaison between the team captain and the engineering sub-teams
- Make general decisions concerning the engineering sub-teams
- Assist Operations Captain coordinating robot demonstrations.
- Facilitate engineering team discussions
- Attend weekly leadership meetings
- Collaborate with Design Captain

DESIGN CAPTAIN

- Communicate with overall team captain progress and problems
- Oversee and manage the design of the competition robot
- Ensure all CAD is complete for the competition robot
- Oversee all off-season design projects
- Facilitate engineering team discussions
- Track weight and cost of the robot.
- Attend weekly leadership meetings

Operations Captain

- Communicate with overall team captain progress and problems
- Oversee and manage the non-engineering sub-teams
- Oversee all team outreach and events
- Act as a liaison between the team captain and the non-engineering sub-teams
- Make general decisions concerning the non-engineering sub-teams
- Facilitate non-engineering team discussions
- Attend weekly leadership meetings

Safety Captain

- Oversee and manage the safety sub-team
- Ensure safe practices are followed in the shop and all events
- Oversee the safety animation submission
- Design/maintain the robot cart
- Design/maintain the pit layout
- Track any injuries on the team
- Maintain the First Aid Kits
- Attend weekly leadership meetings

Digital Media Captain

- Communicate with the overall team captain about all progress and problems
- Oversee and manage the communications sub-team
- Send out weekly team newsletter
- Manage team social media accounts
- Maintain the team website
- Attend weekly leadership meetings

Strategy Captain

- Communicate with the overall team captain about all progress and problems
- Oversee and manage the strategy sub-team
- Oversee all scouting activities
- Make general decisions concerning the strategy sub-teams
- Facilitate strategy team discussions
- Attend weekly leadership meetings

SUB-TEAM CAPTAINS

- Communicate with the engineering captain about all progress and problems
- Communicate with the Operations Captain about all progress
- Lead their respective sub-team
- Oversee activities for which the sub-team is responsible
- Act as a liaison between the team captains and their sub-team
- Be a mentor and example to all other students
- Act as a 3rd party during a disagreement /difficult experience
- Make general decisions concerning their sub-team
- If absent, communicate with assistant to make certain leadership is present at all meetings and team events.

Alumni

83% of our students graduate from high school and go onto STEAM related fields. 53% of our graduated students stayed involved with *FIRST*® as mentors or volunteers. We try to keep in touch with our alumni through social media. Most alumni are a part of the Red Alert Alumni Facebook Page and continue to keep a close relationship with their past teammates throughout college.

A * by their name indicates they stayed involved with *FIRST*® after graduation.

A ** by their name indicates they are currently involved with *FIRST*®.

2006

- Nathan Dubbs – IUPUI
- *Cory Foster – Purdue University
- *Kurt Mauer - Engineering at Purdue University- Cincinnati

2007

- Emily Baumgartner - Navy Electrical Engineer
- David Doane - Video Game Design at Manchester College in England
- **Patrick Frampton - Computer Science at IUPUI- Apperatis
- Autumn Holman - Law at IUPUI- (Mills) Murphy USA
- Scott Pace - Electrical Engineering at Purdue University
- **Betsy Smith-Baxter – Special Education teacher

2008

- *Eric Andrews - Media Arts and Science at IUPUI- Marriott
- **Charlie Baxter – The Med Institute- West Lafayette
- *Aaron Clay - Computer Science at Purdue University- Twitch Video streaming CA
- Devin Dressler - Farming Technician at Ivy Tech
- *Michael Foley - Graphic Design at IUPUI
- James Kramer - Management Information Systems at Washington State University- Boeing
- *Mike McCoy -Mechanical Engineering at Purdue University- Impact Seattle

2009

- *James Dugan- Working at Allison Transmission and Engineering at Ivy Tech

2010

- Andrew Alderson - Computer Science at IUPUI
- *Colin Ballast - Computer Science at IUPUI
- Tim Barnett - Music at Ball State- Graduated
- *David Foley - Mechanical Engineering at IUPUI
- Kelsey Hart -Civil Engineering at Purdue University- Microsoft
- Jeremiah Hansen - Nursing at IUPUI
- Zack Hansen – Construction Engineering at IUPUI
- Ben Hyatte - Environmental Science at IUPUI-Menards
- Jacob Hyatte - Chemistry at Purdue University- AMRI Global Research Scientist
- *Alyssa Inman-McCoy -Economics through Purdue University
- *Mike Kobierski – Industrial Engineering at Purdue University
- Ryan Martin –EMT
- *Matt Misner - Informatics and Security at IUPUI- Amazon in Seattle
- Colton Sprague – Independent video game tester
- **Trevor Settles - Physics at Purdue University graduated
- *Levi Miller - Electrical Engineering at Purdue University- Apple
- *Craig Roberts - Electrical Engineering Technology at IUPUI- Dallora Indy Car Racing
- *Zach Stanley - Electrical Engineering at Purdue University- Cummins

2011

- Robin Eid - Electrical Engineering at IUPUI
- Alyx Kopie - Painting at Herron School of Art at IUPUI- Tattoo Artist
- **Jordan Miller – Media Arts and Science at IUPUI
- *Carly Morris - Entomology at Purdue University
- Cynthia Rose - Engineering at Purdue University- Co-op at NASA
- **Nick Roeder - Engineering at Purdue University
- *Austin Settles - Biology at Purdue University- Studying overseas
- Justin Sluka - Computer Science at Purdue- Apparatus

2012

- **Rachel Daniel - Technology Education at Indiana State University
- *Steven Himebrook – Architecture at Ball State University
- Rushi Patel – Electrical Engineering at Purdue University
- **Alden Ray – Electrical Engineering at Purdue University

2013

- Darius Choksy – Physics at University of Chicago
- **Rick Clark – Chemical Engineering at Rose-Hulman
- *Josh Raker – Computer Information Systems at IUPUI
- Ethan Kring – employee at Walgreens
- **Lane Matthews – Elementary Education at IUPUI

2014

- Brandi Butcher- Psychology at University of Indianapolis
- **Nathan Cardwell- Biomedical Engineering at IUPUI
- Torben Eid- Computer Engineering at IUPUI
- Jessica Kobierski- Psychology and Sociology at IUPFW/IUPUI
- Ryan Leser- Mechanical Engineering at IUPUI
- Dustin McKnight- Computer Science at IUPUI
- Mariah Smith- Materials Engineering at Purdue University
- Amy Tam- Industrial Design DAAP (Design, Architecture, Art, and Planning) School at University of Cincinnati

2015

- Hailey Rose- Accounting at IUPUI
- Travis Leser- Interdisciplinary Engineering at IUPUI
- Tyler Ray- Nuclear Engineering at Purdue University
- Sean Reeves- Computer Science at Vincennes University
- Tyler Hamaker- Technology Education at Ivy Tech
- Nathaniel Ziegler- unknown
- Justin Kiggins- unknown
- Cameron Davis- employee at Target
- Joey Martz- United States Air Force
- Thomas Ramirez- Business Management at Purdue University

2016

- Andy Miller- Interior Design at Indiana University-Bloomington
- Sarah Rasche- Aerospace Engineering at Purdue University
- Juhi Kekre- Mechanical Engineering at Purdue University
- Adam Kogut- Computer Science, Actuarial Science, & Statistics at Purdue University
- Ciana Sorrentino- Business Management & Music Technology at IUPUI
- Conner Osborne- Electrical Engineering at Purdue University
- Chris Mock- Civil Engineering at Rose-Hulman
- Caleb Vaught- HEIL refuse equipment employee
- Caleb King- Studies at Huntington University

2017

- Nick Crews- Workforce
- Emma Franco- Veterinary Sciences at Purdue University
- Max Newport- Engineering Physics at Stanford
- Talmage Lange- Political Science at IUPUI
- Zach McDaniel- First Year Engineering at Purdue University
- Logan Montgomery- Engineering at Wabash University
- Marie Reeves- Nursing at Indiana State University
- Ben Roeder- Computer Science at Purdue University
- Sarah Morrow- Pre-Law at Ashland
- Andrew Schmoll- Chemistry at Purdue University
- Colin Scifres- United States Air Force
- Adam St. Louis- Computer Science at Purdue University
- Michael Staats- Game Design at Purdue University
- Nick Stevens- Political Science at IUPUI
- Greyson Terrell- First Year Engineering at Purdue University
- Aaron Thielmeyer- First Year Engineering at Purdue University
- Noah Tugan- Mechanical Engineering at IUPUI

OUR PARTNERSHIP WITH OUR COMMUNITY

2013-2014 Season

- Adopted a Military camp: Sent letters of appreciation & care packages to the Military camp in Afghanistan.
- Girl Scouts of America Partnership: Fundraising and Gold award.
- IT girls club and App club: a middle school club that encourages students to pursue STEAM.

2014-2015 Season

- Craft Fair: Brought our robot and merchandise to our school's craft fair.
- Pop tab donation: Donated 6 pounds of recycled pop tabs to a young girl in honor of her brother.
- Vision Walk: Volunteered to assist with the event in honor of past, visually impaired, team members.
- Camp Atterbury: Toured the military camp and told them about *FIRST*®.
- Pacers Game: Demoed T-Shirt cannon robot

2015-2016 Season

- Camp Can Do: Engaged children who have disabilities and demonstrated our robot.
- Conner Prairie (Mini Maker's Faire): Demonstrated our robot and taught people about *FIRST*®.
- Girls Engineering Awesome Robots Successfully (GEARS): A program that is affiliated with Girls Scouts of America that gives young girls the opportunity to become passionate about engineering.
- Barnes & Noble Mini-Maker's Fair: Demonstrated our robot and introduced STEM-based toys to younger children.
- WFYI (NPR): Volunteer positions to assist with costume characters and interacted with the community.
- Ray Skillman's Clothe the Children Campaign: wrapped gifts for 1000 children during the holidays.

2016-2017 Season

- Children's Museum Demo: Organized STEM activities and demonstrated our robot.
- STEAM Fairs: Hosted at both of our local middle schools. Several experiments & activities are available for children of all ages.
- HAM Fest: Went to the Marion County Fairgrounds and demonstrated our robots.
- Celebrate Science: demonstrated our robot and collaborated with others about *FIRST*®
- Indy Pop Con: Collaborated with other FRC teams and demonstrated robots, talked to people about *FIRST*®, and explored the convention
- Conner Prairie (Festival of Machines): demonstrated our robot & collaborated with the visitors.
- Sponsor Presentation night: Robot demos displaying the benefits from the company's financial contributions.
- Johnson County Humane Society: volunteered with cleaning, feeding, and caring for the animals at a local shelter.
- Sponsor night: invited all of our sponsors and parents who generously support us each year. Students gave brief presentations about each subteam and the overall structure of Red Alert.

2017-2018 Season

- Space Camp: Demoed FRC robot and small robots for students at summer space camp.
- One Walk: Ran kids area at Juvenile Diabetes Research Foundation One Walk event at Victory Field.
- Strawberry Festival: As a result of fixing the Fire Departments Robot Dog we were invited to their local festival and awarded a community award.
- University of Indianapolis Summer Camp: Hosted our Radical Robots camp at local university impacting 16 families.
- Ingredion Demo: Hosted a robotics demo at sponsors community event.
- Indy 11: Through IndianaFIRST impacted over 8,000 people through a demo at their soccer game.
- Cummins Demo: Impacted over 1,000 people at a Cummins demo by partnering with FRC Team 4926, Galactech.
- Student Activity Center Open House: Was asked by the school corporation to participatie in a primarily sport team open house at their new facility that is designed to host an FRC tournament.

Continuous Events Each Year

- *FIRST*® team mentoring: Establish and sustain local *FIRST*® LEGO LEAGUE, *FIRST*® TECH CHALLENGE, and *FIRST*® ROBOTICS COMPETITION teams.
- Homecoming: Designed & built a float that represents school's theme and *FIRST*®.
- Club fair: collaborated with students at our booth and encouraged them to join robotics. This event is a wonderful recruiting tool.
- Indy South *FIRST*® LEGO LEAGUE Tournament: Hosted, organized, ran, and judged.
- Indy South *FIRST*® TECH CHALLENGE Tournament: Hosted, organized, and volunteered.
- Indy South *FIRST*® LEGO LEAGUE Jr. Tournament: Hosted, organized, ran, and judged.
- Library Demos: Promoted literacy and technology through interactions with children, to inspire them.
- Project Linus: Crafted blankets given to *FIRST*® responders to distribute to children involved in trauma.
- Radical Robot Summer Camp: Organized and taught a five-day summer camp for elementary kids Scouting at *FIRST*® Competitions: Working collaboratively with *FIRST*® community members to scout at regionals.
- Dine to donate nights: Demonstrated our robot and educated people about *FIRST*®.
- Freshman Froyo & Registration: two nights dedicated to integrating freshmen into our school extracurriculars. These events are also great recruiting opportunities for Red Alert and both *FIRST*® Tech Challenge teams.
- Endress Hauser: Participate in their Johnson County STEM Fair.
- HAM Fest: Local festival we demo at every year.
- Conner Prairie: Partnered with IndianaFIRST to demo at fastical of machines every year.
- STEM Nights at Local Schools: Participated and demoed at multiple STEM Nights across our district.

ANALYSIS AND STRATEGY

WWW (WHAT WENT WELL) / WNI (WHAT NEEDS IMPROVEMENT) REVIEW

This activity was performed in early October by the students in reflection on the 2016 Build and Competition seasons. The chart below is geared more specifically towards the productivity and needed improvements for build and competition seasons rather than a general evaluation of our team, which are later mentioned through our PEST and SWOT analysis.

What Went Well	What Needs Improvement	What We Have Improved (Since Then)
Our team is becoming better known in our community	Organization & communication throughout the team & sub teams	Leadership Skills
More efficient	Spirit for team and others	Organization & communication throughout the team & subteams
Relationships with other teams	Training new people	Training new people
Listened to Judges and input from other people	Check that ideas are realistic	Check that ideas are realistic
Business Plan and robot competition	Be more prepared for pre-competition scrimmages	Keeping things clean
We are role models to other teams	Feel more like a team	Have a better sense of game & robot design strategy
Innovation with the robot	Enforce Rules	Enforce Rules
Scouting was more effective	Follow schedules and meet deadlines	RARPO-student involvement
More involved with STEM incentive in district	Complete tasks before build season	Respect
Recognized by many	Decrease drama &/or deal with drama better	Decrease drama &/or dealt with drama better
Many Judges present at one time in our pit area	Have a better sense of game and robot design strategy	Improved CAD Database
Improvement	Respect	More Fundraising for students
Team work	Integration among members & mentors	
Team pride	More school involvement	
Attended 2 district events	Leadership Skills	
Team documentation	Keeping up on the game rules	
Partnerships with community	CAD Database	
Increased number of outreach events	Pit Crowd Control	
Increased girl participation	Robot Cart	
School administrators taking interest in our team	Keeping things clean	
Student productivity	RARPO-student involvement	

SWOT ANALYSIS

The SWOT (Strengths, Weaknesses, Opportunities, and Threats) Analysis was performed with students in May of 2016. In this analysis, students perform a review of issues internal to the team.

Strengths	Weaknesses	Opportunities	Threats
taking a breather	winning awards	gracious professionalism	losing IC
FLL Jr. Teams	recruitment	FRC/FTC interaction	losing programmers
FLL Jr. Showcase	lack of diverse outreach	improve safety	losing sponsors
FTC success	keeping shop clean	outreach forms	lack of CAD knowledge
team spirit	communication	CAD lessons	severe weather
organized	low essay participation	expand outreach	attrition
student lead	reliability of students	accountability system	distractions
many mentors	sticking to schedule	write an amazing essay	operations size
connections with teams	lack of focus	outreach robot	loss of driver experience
cooperation with teammates	CAD	expand controls	small junior class
pretty robot	mentoring underclassmen	student mentoring	summer participation
diverse team roles	summer participation	proof of concepts	outreach participation
% seniors in college	unreliable spirit	cleaning	lack of engagement for underclassmen
robot done early	mentor respect	organization	losing support of school corp
FIRST team levels	practice robot	planning	loss of mentors
tons of outreach	lack of programmers	machine training	life expectancy of old machines

PEST ANALYSIS

The PEST (Politics, Economics, Social Issues, and Technology) Analysis was performed with students in October of 2016. In this analysis, students perform a review of issues external to the team.

Political	Economical	Social	Technological
STEM Funding cut	losing sponsors	bad reputation	hacking
new school administrators	personal donations	misunderstanding of the team	unreliable internet
restructuring all of FIRST	recession	NOT battle-bots	new hardware
funding not available for FIRST	dilution of donations	website utilizations	3D printing
law requiring FIRST	income from new teammates	NEW website	vision tracking
decentralized education department	value of the dollar	utilize all social media outlets	new software
	inflation	sponsor opportunities	CAD
	shipping cost	elevator speech	SVN/Github

OUTCOMES AND GOALS

HOW WE DID IN 2017

TOURNAMENTS:

- Tippecanoe District- West Lafayette, IN
- Perry Meridian District- Indianapolis, IN
- Indiana State Championship- Huntington, IN
- Indy RAGE All Girls Event- Indianapolis, IN
- CAGE Match- Indianapolis, IN

TIPPECANOE DISTRICT

Quality Award- Celebrates machine robustness in concept and fabrication.

PERRY MERIDIAN DISTRICT

SemiFinalist- Alliance that makes it into the second round of elimination matches.

INDIANA STATE CHAMPIONSHIP

Finalist- Celebrates the Alliance that makes it to the final match of the competition.

INDY RAGE

Design- Celebrates form and function in an efficiently designed machine that effectively addresses the game challenge.

Finalist- Celebrates the Alliance that makes it to the final match of the competition.

Mentor of the Year- Presented to an outstanding Female Mentor in the robotics competition who best leads, inspires, teaches, and empowers their team using excellent communication skills.

CAGE MATCH

STEM Awareness- Celebrates outstanding success in advancing respect and appreciation for engineering within a team's school and community.

Alliance Winner- Celebrates the Alliance that wins the competition.

OPPORTUNITY PLAN

FIRST® Team 1741 will achieve their goals by following these values:

PRIORITY	The top priority of the entire team is the development of student leaders
FOCUS	Keeping the focus of the team on learning as well as the inspiration of science, technology, and business, that will never be sacrificed for distractions such as winning
INVOLVEMENT	Striving to always involve the students and community in our projects
COMMUNITY	Teaching team members the importance of giving back to the community
MENTORING	Mentoring our middle and elementary school students as positive role models
ACHIEVEMENT	Promoting the significance of academic achievement at all times
PRIDE	Encouraging students to have pride in their school, community, and team

WHAT WE WANT TO DO THIS YEAR

EXTERNAL GOALS

- Giving definition to changing technology in the Center Grove School District
- Be recognized throughout our community
- Help other teams get sufficient funding to be sustainable

INTERNAL GOALS

- Students do all designing and building
- Continue to win non-engineering awards
- Continue to win engineering awards
- Win a robotics district event
- Creating an environment where each student can find their strengths and are encouraged to excel
- Encouraging students to have pride in their school, community, and team

recognized perceived to be

IF WE SUCCEED IN THESE GOALS

WE WILL CHANGE OUR COMMUNITY BY:

- Bringing our community together in the same way our athletic teams do. We need to start in our school by making ourselves a common subject.
- Giving our community an idea of what their future generation looks like by showing them what we are capable of
- Showing our community how impressive our high school is by showing them how capable and diverse our students are
- Becoming a symbol that the community can look up to
- Bringing needed technology skills to the community
- Encouraging others to pursue careers associated with STEAM

TO DO THIS WE MUST:

- Advertise our activities in the school and community by updating media sites more frequently and by having our tournaments streamed online
- Become viral through social media, such as our website, Facebook page, Twitter, and Instagram accounts
- Wear our team t-shirts to school
- Make team presentations to more teachers and potential sponsors

FUTURE PLANS AND ENVISIONS

IN ONE YEAR

- Update Equipment for both the Engineering and Non Engineering side
- Incorporate classes- both during the off season and build season times
- Strengthen relationship between students and mentors
- Increase communication with school, local newspapers and TV stations
- Sustain the number of girls on the engineering side

IN THREE YEARS

- Start an *FIRST*® LEGO LEAGUE or Jr. *FIRST*® LEGO LEAGUE team in every local elementary school
- Female engineering mentor
- Establish a robot camp at two local elementary schools

IN FIVE YEARS

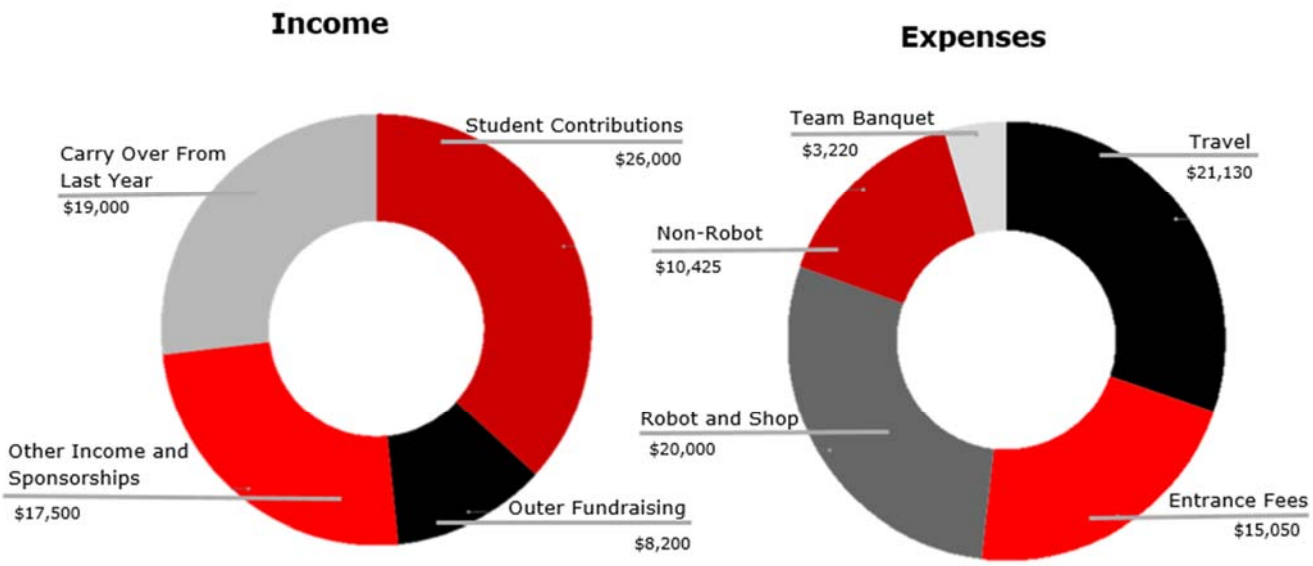
- Four additional Major Corporate sponsors
- GEARS (Girls Engineering Awesome Robots Successfully) in our district elementary school
- Organize and run one Jr. *FIRST*® LEGO LEAGUE event at a local school
- Have the majority of our cost supported by sponsors

IN TEN YEARS

- *FIRST*® robotics class as a part of High School Curriculum
- Create an *FIRST*® ROBOTICS COMPETITION & *FIRST*® TECH CHALLENGE team at every high school in our county

Finances

Early in the history of the team we established a 501c3 parent organization to support and maintain our financial stability. This organization is called the Red Alert Parent Organization, or RARPO for short. This has given us direct



control over our future, without relying on 3rd party administrators.

Total Estimated Income = $51,700.00
Total Estimated Expenses = $ 69,825.00

Budgeted Income

Item	Amount
Sponsors	
Rolls Royce	$3,000
Endress and Hauser	$2,500
Transformation Trust	$5,000
Center Grove Education Foundation	$1,000
Cook Medical	$1,000
Indiana Reality Pros, LLC	$2,500
CrossRoad Engineers	$10,000
Local Corporate Sponsors	$5,000
Fundraising	
Student Contributions	$26,000
Travel Fees	$7,500
Profit from FLL/FTC Concessions	$1,500
Golf Tournament	$2,500
FLL Tournament Entry Fees	$1,200
Other	$1,500

Total Budgeted Income= $51,200.00

Budgeted Expenses

Item	Amount
CAGE Match Registration Fee	$250
District Entry Fees	$5,000
Indiana State Championship Fee	$4,000
Travel	$20,425
World Championship Registration Fee	$4,000
Robo Parts	$15,000
Shop Permanent	$4,000
Shop Consumable	$75
Game Field	$1,000
Team Banquet	$3,220
Outreach	$1,000

Total Budgeted Expenses= $57,970

2017-2018 Finance Detail

Student fees= $600 per student, with financial aid to those unable to

Sponsorships include:

- Crossroad Engineers, PC
- Rolls-Royce
- Endress+Hauser
- Southside Pediatrics
- Renny Express
- Thrivent Financial Dept.
- Workforce Development of Indiana
- Cook Medical
- Indy Wiring
- City BBQ
- Indiana Realty Pros, LLC
- Dr. Michael Reeves, D.D.S
- MedExpress Urgent Care

Fundraising:

- Candy Bars
- Concessions from Indy South FIRST®LEGO LEAGUE Tournament and FIRST® TECH CHALLENGE Tournament
- Mums
- Poinsettias
- Friends and Family Letters
- Popcorn
- T-shirts
- Coffee

Entry fees:

- Tippecanoe and Plainfield District Events
- Indiana State Competition (If qualified)
- World Championship (If qualified)
- IRI (If qualified)
- CAGE Match at Southport High School

Travel:

- Hotels
- Bus rental
- Gas for the trailer

Banquet:

- Food
- Mentor/sponsor awards
- Decorations

Non-engineering:

- Spirit wear
- Office supplies
- Homecoming float
- Media
- Outreach
- Other expenses

Trailer:

- Registration

Awards

2017

- Quality- Tippecanoe District
- Finalist- Indiana State Championship
- Finalist- Indy RAGE
- Design- Indy RAGE
- Mentor of the Year- Indy RAGE
- STEM Awareness- CAGE Match
- Winner- CAGE Match

2016

- District Chairman's Award- Perry Meridian District
- Entrepreneurship Award- Tippecanoe District
- Gracious Professionalism® Award- Walker Warren District
- Spirit Award- Indiana State Championship
- Mentor of the Year- Indy RAGE
- Spirit- Indy RAGE
- Winner- CAGE Match
- Finalist- CAGE Match
- Spirit- CAGE Match

2015

- Judge's Award- Lawrence North District
- Engineering Inspiration Award- Boilermaker District
- Gracious Professionalism® Award- Indiana State Championship
- Best Display- CAGE Match
- Finalist- CAGE Match

2014

- Creativity Award – Boilermaker Regional
- Regional Finalists – Chesapeake Bay Regional
- Entrepreneurship Award – Chesapeake Bay Regional
- Gracious Professionalism Award® – Chesapeake Bay Regional
- Industrial Safety Award – Chesapeake Bay Regional
- Winners – Indiana State Championship
- Winners – CAGE Match

2013

- Entrepreneurship Award - Crossroads Regional
- *FIRST*® Dean's List Finalist – Boilermaker Regional
- Regional Finalist – Boilermaker Regional
- Regional Chairman's Award – Boilermaker Regional
- Innovation in Controls Award – Boilermaker Regional
- Winner- CAGE Match

2012

- Entrepreneurship Award—Boilermaker Regional
- Engineering Inspiration Award—Queen City Regional

2011

- Regional Chairman's Award – Boilermaker Regional
- Entrepreneurship Award – Boilermaker Regional
- Most Charitable Donations - CAGE Match

2010

- *FIRST*® Dean's List Finalist – Boilermaker Regional
- Gracious Professionalism Award®-
- Regional Finalist – North Carolina Regional
- Most Charitable Donations - CAGE Match
- Humanitarian Award - MARC

2009

- Most Charitable Donations - CAGE Match

2008

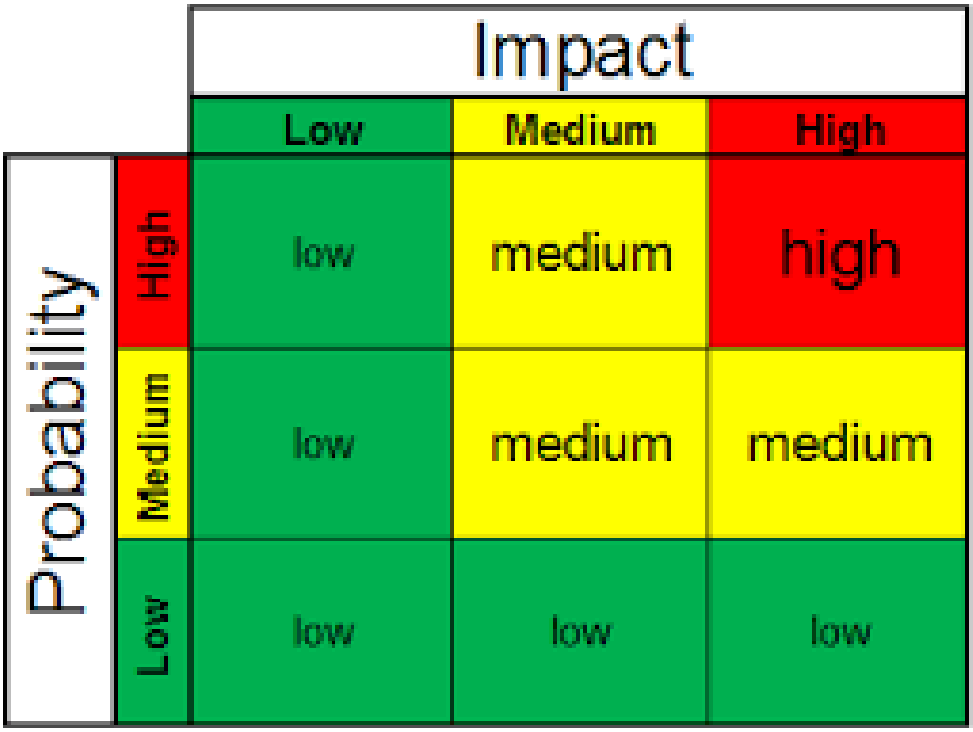
- Motorola Quality Award – Boilermaker Regional
- Xerox Creativity Award – St. Louis Regional
- CAGE Match Finalist
- Most Charitable Donations - Cage Match

2006

- Rookie Inspiration Award – Boilermaker Regional
- Regional Finalist –Boilermaker Regional

RISK MANAGEMENT PLAN

RISK MATRIX



Due to several levels of severity and technicalities present within each situation, Red Alert has rated the following risks based on how it would impact **us.** For example, the first risk deals with our team potentially losing the Innovation Center. It is not probable to happen; however, the impact would be extremely high since we

In case of Loss of Innovation Center

Probability: Low; Impact: High

The effect this would have on our team:

- We would have to move out of the Innovation Center. We have arranged a worst-case-scenario with parents who own barns. They may offer this as an option to us, should this happen.
- If barns or similar facilities are not available, the team may need to rent a space to use.
- We currently have 1/3 of the Innovation Center and 3 classrooms at the high school allotted for our use and should we move off-site, this space could be reduced and we would no longer have use of the

school's equipment (i.e. lathe, mill, band saw, et al.)

How we would handle this, should it arise:

- The engineering side of the team may need to meet separately from the non-engineering side of the team, in order to save space.
- We would need to reassess our budget to allow for purchasing of rental space or needed resources, such as tools.
- Market our team to other facilities, for example, Local Central 9 Career Center, in hopes of seeking alternative permanent meeting space; also continue contact with Center Grove in hopes of earning our meeting space back.

In Case We Lose Key Sponsors

Probability: Low; Impact: Medium

The effect this would have on our team:

- With fewer sponsor dollars to use, our team has had to adjust our budget. We would likely continue to spend less in all areas such as build cost, promotions, and outreach funding.
- If severe enough, the team may need to increase the cost of team membership to students, likely having them pay more to participate in the team, pay to travel, or pay their own hotel expenses.
- Mentors may also see a cost increase, possibly having to pay their own travel and hotel arrangements.
- If funds run low enough, we may attend fewer competitions, or possibly only one.

How we would handle this, should it arise:

- The team would need to do more fundraising and begin it earlier – not starting at the start of the school year, but possibly at the end of the previous year's competition season.
- Our team would need to market ourselves to attract new sponsors and to work towards a greater relationship with current sponsors.
- Start a team "Emergency Fund" which contains exactly enough money for a build expenses and one competition expense for the following year.

In Case RARPO Reduces our Funding

Probability: Low; Impact: High

The effect this would have on our team:

- First, we would need to alert the proper authorities that this issue had arisen.
- The resulting loss of funds would have a similar effect as the Loss of Key Sponsors.

How we would handle this, should it arise:

- Our team would need to create new bank accounts for all of our funds.
- Anyone who has access to *FIRST*®® Team 1741's funding would need to be bonded and ensured to handle our money.
- We would work to generate new funds through fundraising and finding new sponsors.
- We would work harder to apply for grants to fill in the missing funding.

In Case We Lose Our School Liaison

Probability: Low; Impact: Medium

The effect this would have on our team:

- With the support of our school's administration, the team can sustain without a school liaison as long as we work to inform this administrator, i.e. a Vice Principal such as Mr. Betts, of our team's activities.
- With the loss of this liaison, we would lose access to needed student information such as grades, attendance, and even locker numbers
- Without a school liaison it is often difficult to arrange for team traveling and team events within the school.

How we would handle this, should it arise:

- The school approves a mentor to be the sponsor and grants that mentor a key to access the building.
- The team would appoint a mentor to accept team mail.
- The team would work to document activities with the school.
- The team must work to recruit a new liaison.

In Case of Snow and/or Ice Storm

Probability: High; Impact: Medium-High (depends on severity)

The effect this would have on our team:

- Every day the school is closed, we are not permitted to meet. This shortens the amount of time we have to design and build the robot during build season.

How we would handle this, should it arise:

- We have a schedule tailored for each build season that maps out deadlines. Within this schedule, we have extra days implemented as buffers in case we should fall behind due to unsafe weather.
- If we should run out of buffer days, we will arrange several various strategies to continue progress.
- If school is cancelled early on into Build Season, during the brainstorming and design process, the Engineering captain and sub-team captains shall arrange to communicate and continue progress through the technology available to us.
- If school is cancelled during the later stages of Build Season, the Engineering captain and sub-team captains shall arrange to meet at an off-site work site to continue progress.
- If school is cancelled, the Operations captain will arrange communication with their team and continue progress through the technology available to us.

In Case of an Epidemic

Probability: Medium; Impact: Medium

The effect this would have on our team:

- Because we work together daily and still attend school, there are many possible times where a team member could come into contact with the flu or another virus and can distribute the virus throughout the team before becoming sick themselves. This could cause many students among our team to fall sick during the crucial points in build season.
- Without the majority of our students, we would fall behind schedule and could possibly not finish by bag day.

How we would handle this, should it arise:

- If it should spread enough to affect the schedule, we would use our buffer days to catch up and/or increase the meeting times to make up the lack of workforce.

- We encourage our students to wash their hands frequently during the Flu season and practice the proper coughing technique. Also, if they are feeling unwell the student may choose to stay home as to not spread the virus. If an epidemic should break out among our team we would send home students that were affected and try to conduct business as usual.

In Case of Tornado

Probability: Low; Impact: Medium-High (depends on damage)

The effect this would have on our team:

- In the past, the damage caused by tornados that would affect our team is road damage or blockage. The road blockage would be cleared within a day or two allowing us to continue to meet.

How we would handle this, should it arise:

- Our team practices tornado drills in case we were in the building when one struck.
- If a tornado would create road blockage or damage, we would find alternative routes to the school and if that was not possible then rearrange the schedule and use a buffer day. If we were out of buffer days then we would increase the length of team meetings to make up for lost time.

In Case of Flood

Probability: Low; Impact: Medium

The effect this would have on our team:

- In the event of a flood in our facility, not only would we not be able to enter the building, there would be a chance of damage to our team documents, machines, tools, and computers.

How we would handle this, should it arise:

- In case of damage, there are certain items of ours that are insured by the school. We would fundraise to replace anything else.

In Case of Student Leadership Incapacitation

Probability: Low; Impact: Low

The effect this would have on our team:

- There would be little to no impact on our team in case this should happen. We have set up our team with a leadership system where each captain has a sub-captain that can take over in case of emergency.

How we would handle this, should it arise:

- We have an aforementioned system of captains so our team is always prepared for this situation.

In Case of Severe Injury

Probability: Medium; Impact: Medium-High (depends on severity)

The effect this would have on our team:

- Depending on the severity of the injury, the school district could take away machines and even our team.

How we would handle this, should it arise:

- In case equipment is taken from us, we would work with private companies to machine our parts.
- In case the school discontinues our team, we would relocate the team.

In Case of Loss of key mentor(s)

Probability: Low; Impact: Medium

The effect this would have on our team:

- Each mentor has certain roles they perform, without those tasks being accomplished, our team would fall behind.
- If we were to lose our teacher sponsor, our team would not have a connection to our school.

How we would handle this, should it arise:

- The captains will have to identify the mentor's roles and divide them amongst themselves.
- We would have to work with the administration on finding a new connection to the school.

TEAM SUSTAINABILITY

SUSTAINABILITY WITH *FIRST*®

FIRST® Team 1741 believes the best way to create sustainability is to help facilitate younger teams. Within the past few years, we have started new teams for younger students and tried to foster a love and interest in science and technology. We have done this through our eight *FIRST*® LEGO League teams, two *FIRST*® LEGO League Jr. teams, and our three *FIRST*® Tech Challenge team. Since we reach these children at a young age, we hope to instill in them a love of *FIRST*® so that they continue to participate in it through high school. In case we lose a major sponsor, we have created a list of fundraisers we could do. We are working on building up our school support to make sure we always have sponsors and the ability to travel.

We have built a strong partnership with many local teams, and even deliver care packages to a few teams in need. For the last few years, we have supported Team 1529 in setting up their local off season competition C.A.G.E. Match. This year we stepped up and Co-Hosted the event with them while running 2 robots to allow several students experience what it is like to be on a drive team. We also strive to assist other teams to the best of our ability, in order to enable their Chairman's, strategy, robot, and Business Plan to be successful.

FIRST® Team 1741 is interested in expanding all levels of the program. We have started three *FIRST*® Tech Challenge teams of 7th, 8th, and 9th graders to work alongside our team. The 9th graders are a part of both teams, allowing them to increase their knowledge of *FIRST*® and spread Gracious Professionalism®. We are proud to say that we have started and facilitated many *FIRST*® LEGO League teams over the past several years. *FIRST*® Team 1741 hosts the Indy South Tournament - the only official *FIRST*® LEGO League event in central Indiana and the only event sponsored and run by an *FIRST*® Robotics Competition team. We also host a *FIRST*® LEGO League Jr. Expo and a *FIRST*® Tech Challenge Qualifying tournament.

DEVELOPING SUSTAINABILITY WITH OUR TEAM

We are determined to build a better team. We strive to do our best in all areas and aspects of *FIRST*®. Students gain transferable skills in leadership, public speaking, business, and teamwork. We pride ourselves in the strenuous processes of high-level planning and decision-making of our team. Each student must show their commitment and willingness to make decisions for the good of the team and work in harmony with each other. We

build our strength in these fields through unforgettable memories and experiences geared towards inspiring students to pursue STEAM fields.

Before build season begins, we focus on improving the skills of our students. We offer training sessions in areas including teamwork, Chairman's, scholarships, programming, electronics, scouting, CAD, leadership skills, machining, drivetrain, and safety. Before the build season begins we hold several design exercises to demonstrate the design process to our students in order to give them an idea of what it takes to design a robot. During the design exercises, students must partner with other team members to design certain tasks such as a roller coaster, Jaguar box, a spaghetti tower, and a t-shirt canon robot. In addition to our other expectations, grades are very important to our team in order to emphasize that school is the first priority. During the build season, our mentors monitor grades to ensure students are succeeding in their classes. Over the past 13 years, Red Alert has maintained a 100% high school graduation rate.

SUSTAINABILITY WITH OUR STUDENTS

We are committed to building a better "us". Students gain transferable skills in leadership, public speaking, and business, designing and construction, along with self-discovery, self-esteem, and teamwork. We build our strength in these fields through unforgettable memories and experiences geared towards inspiring students to pursue STEAM fields.

During the off-season our team meets once a week. During these weekly meetings we hold training sessions for new students wanting to join the team, as well as regular meetings to perform outreach and to enhance our skills. The training classes we teach include teamwork, Chairman's, scholarships, programming, electronics, scouting, CAD, leadership skills, machining, drivetrain, and safety. Before the build season begins we hold several design exercises to demonstrate the design process to our students in order to give them an idea of what it takes to design a robot. During these exercises, students must partner with other team members to design certain tasks such as a roller coaster, Jaguar box, a spaghetti tower, and a t-shirt cannon robot. Grades are extremely important to our team. In order to travel, a student on our team may not have an 'F' in any class, no more than two 'Ds', and must have at least a 2.0 GPA. During the build season we do regular grade checks; if a student is struggling in a class we offer tutoring during the meeting. We partner with each other by offering a safe place to learn and offer help with homework assignments.

DEVELOPING SUSTAINABILITY WITH OTHERS

Our strongest partnership is with our mentors. Even though we are a student lead team, our mentors are always there to guide us every step of the way and put in immeasurable volunteer hours to see us succeed. From this commitment we learn what it is to be dedicated. Our mentors are people who continuously inspire us with science and technology and encourage us to keep going. Most of our mentors do not have a student on the team and never have had a student on the team. This shows that we have inspired them just as much as they have inspired us in the ideals that FIRST® has created.

Without a partnership with sponsors, our team could not function. Their ability to extend their knowledge and resources keeps us running and gives us a glimpse of our future through donations, summer internships, and jobs. We try to give back to our sponsors by updating them on our success throughout the year by giving presentations and inviting them to our competitions.

To help our local and extended community we serve Pack Away Hunger, which is a non-profit organization whose mission is to improve the lives of children and others who suffer from hunger and malnutrition in the United States and developing nations. We stuffed letters and cleaned some of their equipment after a packing event. This year we also funded a packing event through this organization and the meals we packed were sent to Africa to aid with the Ebola crisis. Red Alert wants to have a lasting impact on our local and extended communities and by volunteering at Pack Away Hunger we are able to achieve this goal.

During the Christmas season our team partners with a worldwide organization, Operation Christmas Child, to help pack care packages. We helped pack 1300+ boxes to be shipped across the world. FIRST® Team 1741 also partnered with a local Girl Scout troop for fundraising. We helped another Girl Scout create GEARS, a mini robotics and science club (Girls Engineering Awesome Robots Successfully), for her Gold Award. GEARS reaches out to girls in grades 3rd through 5th inspiring them to become involved with science and technology and feed them in-to our *FIRST*® LEGO LEAGUE teams.

CONCLUSION STATEMENT

Now that we have mentioned multiple details regarding the functions of Red Alert, the rigorous work of spreading *FIRST*® continues to be a top priority on our agenda. We, as a united team, believe that every person should have the opportunity to pursue their passion in STEAM. The first step begins with simply encouraging younger generations to explore their capabilities. *FIRST*® Team 1741 has learned that STEAM can impact not only the community, but also beyond our common surroundings. Even if it takes rigorous planning and budgeting, the rewards that *FIRST*® reaps are unmeasurable. This program benefits students in various ways, and our team is certain that their future holds amazing opportunities. On Red Alert, we acknowledge that throughout our 13 years as a team we have impacted thousands. However, our work is far from done.