

2015

**FLAGSHIP
TEAM 3140
FIRST
ROBOTICS**

**Ms. Jane Skinner and
Ms. Aundrea Mitchell**

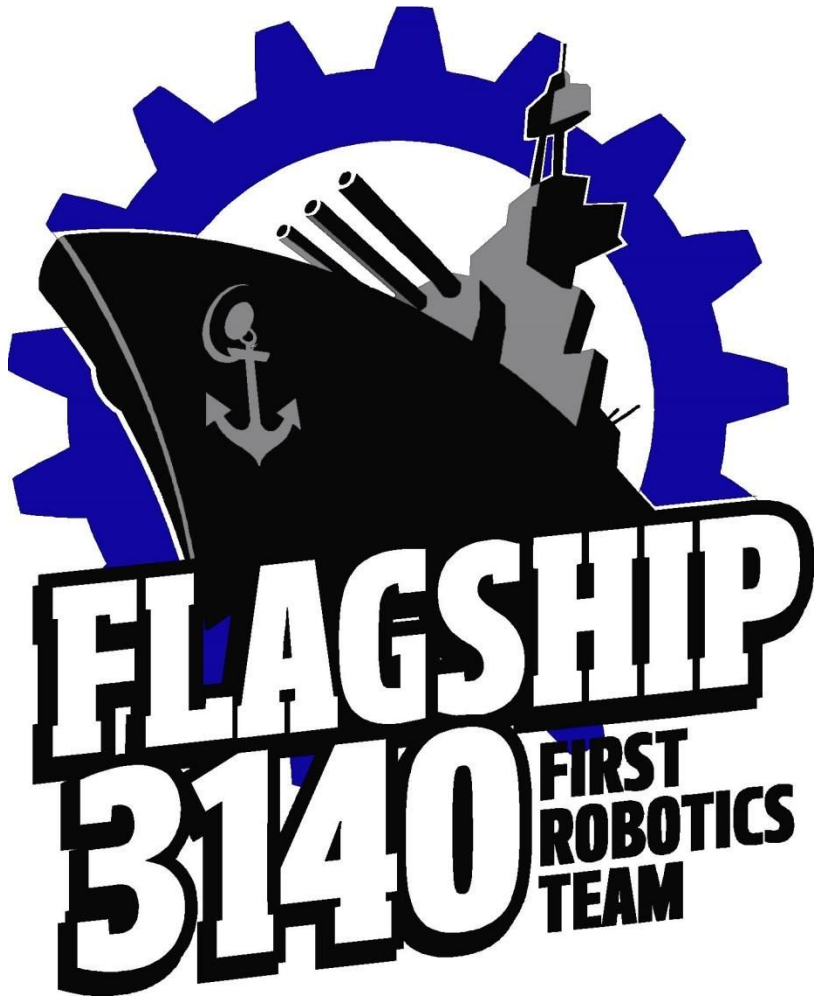
2014-2015 BUSINESS PLAN

Preliminary Business Plan outlining the course of the team's activities for the year 2014-2015. This plan includes the planned competitions, planned community outreach, Christmas Season, build season, and all major and minor purchases, with a yearend wrap up and end of year celebration.

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell



1 Table of Contents

1	Executive Summary	1
1.1	Introduction	1
1.2	Our Mission Statement	1
		
1.3	What is <i>FIRST</i>	1
1.4	Team and Business Plan Vision	1
1.5	Financial Summary	2
2	Team 3140	4
2.1	The Beginning	4
2.2	Basic Team Data	4
2.2.1	Location	4
2.2.2	FHS teacher sponsors and mentors	4
2.2.3	Student Demographics	4
2.2.4	Mentors Demographics	4
2.2.5	Team sponsors	4
2.3	Team Benefits	5
2.3.1	Students	5
2.3.2	Mentors	5
2.3.3	School and Community	5
2.3.4	Sponsors	6
2.4	Team and FRC Growth	6
3	Structure and Organization	7
3.1	Engineering Teams	7
3.2	Business Teams	8
3.3	Non-Engineer Group	8

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

3.4	Safety	9
3.5	Schedule	9
3.6	Preseason	9
5.0	Build Season	10
4	Outreach	11
4.1	Boy Scouts of America Workshop	11
4.2	Summer Robotics Camp	11
4.3	Fourth of July Parade	11
4.4	Summer Insanity	11
4.5	Robot Demonstrations	12
4.6	NEW FRC TEAMS	12
4.7	Outreach Schedule	12
5	Operations and Project Management	13
5.1	Communications	14
5.2	Build Season	14
5.3	Project Management	14
6	Marketing	15
6.1	Farragut High School	15
6.2	Area Schools	15
6.3	Specialized Robots	15
6.4	Sponsors	15
6.5	Graphic Arts	17
7	Financial Information	18
7.1	Historical Data	18
7.2	Fund Flow 2014-2015	18
7.3	Sustainability	19
8	Planning	20

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

8.1	Team 3140 Strategic Plan	20
8.2	Planning Process	20
8.3	SWOT (Strengths Weaknesses Opportunities Threats) Analysis	20
8.4	Action Plans and Mitigation	20

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

2 Executive Summary

2.1 Introduction

This document is our business plan for Team 3140, Flagship Robotics. The plan follows the guidelines identified by FIRST. This document lays out the Business Plan and provides details of the path Team 3140 will take throughout this school year and the tenants that will carry FLAGSHIP into the future.

2.2 Our Mission Statement

“The mission of the Farragut Flagship FIRST Robotics Team is to let students explore all areas of education and to work with mentors to share and apply knowledge of engineering, business, and leadership skills through a fun, hands-on experience. As a team, members work toward a common goal of designing, building, marketing, and operating a competitive robot in a business-like environment while supporting the ideals of FIRST. As a member of the FIRST family, you’ll learn to perform high-quality, well-informed work while learning and competing intensely, but treating one another with respect and kindness in the process – this is called “Gracious Professionalism.” You will also enjoy the satisfaction of knowing that you have acted with integrity and empathy. Flagship and the FIRST organization are not just about robots; we are first and foremost about ideas and people.



2.3 What is FIRST

FIRST (For Inspiration and Recognition of Science and Technology) is an international youth organization that operates the FIRST Robotics Competition (FRC), FIRST LEGO League, Junior FIRST LEGO League, and FIRST Tech Challenge competitions. Founded by Dean Kamen and Woodie Flowers in 1989, to inspire young people interest in engineering and technology and is noted for its philosophy of cooperative competition in a spirit of gracious professionalism. You can learn more about FIRST, by visiting their website: <http://www.usfirst.org>.

2.4 Team and Business Plan Vision

Team 3140’s Vision is to have a structure and organization that emphasizes a Student-driven Team. The expectation is that students will contribute meaningfully to and

accomplish all aspects of robotic construction and team operation and will leave the team with experiences and skills that will have a direct impact in their future success.

Our philosophy is that our robot is student designed and student built. Sub-Teams design their components of the robot and student leaders work together to incorporate the designs into one robot. They must meet all rules set forth by FIRST. Mentors are there to guide and review issues, but it is ultimately the students' decision.

The winners of FIRST competitions are teams, not individuals. Being a team means not fighting over who is right or wrong. Discussion and compromise are the foundation for a successful team. For better or worse, this is a student-designed and built robot.

Our Business Plan has been created to help Team 3140 in our quest to generate interest and develop skills in the fields of engineering science and technology in our local community. We invite all interested students of Farragut High School, all high school aged students in the greater Knoxville area, any interested mentors, and members of our school community to join our team. We will strive to become involved with our middle schools, elementary schools, home schools and local youth programs to encourage these students to participate in the FIRST organization.

2.5 Financial Summary

Team 3140 finished the 2013-2014 FRC Season with the Smoky Mountains Regional and our year-end celebration. We graduated 5 seniors who have grown within our organization and are now further developing their skills and education. These young adults deposited a large part of themselves to the growth of Team 3140 and leave behind the seeds of greatness in their fellow under classmen, mentors and teachers. We also had to say goodbye to Ms. Jill Hudson, a teacher/mentor, who was with the team since our inception in 2009. We look forward to the incoming freshmen to grow our numbers, a new teacher/mentor and will reach out to our community to add additional mentors and sponsors.

We finish a successful year with a balance of \$9,977.74 in our account and have added 3 new sponsors. We raised \$24,031.73 from the following sponsors; ORNL, UT-Battelle, Lockheed Martin, Smoky Mountain Solutions, Tennessee Society of Professional Engineers, Consolidated Nuclear Security, Farragut High School Education Foundation, Knox County Schools, Chili's, Papa Murphy, Alcoa, Northrop Grumman, Remotec, TVA, MilleniTeck, Prestige Cleaners, Intertech Foundation, Kohl's, UCOR, 3D Systems,

2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

Coca-Cola, Bertelkamp Automation, Team 3140 added an additional \$7996 in fundraising activities fundraised an additional.

Community outreach is an integral part of our team and Flagship was actively a part of several service projects. Some of the outreach that Team 3140 complete FIS Field Day, Farragut 4th of July Parade, Week-long summer robotics camp for 7th-9th graders, Summer Insanity, T-shirt launching at the Bearden football game, Farragut Primary School Fall Festival, UTK Engineers Day, BSA Merit Badge Workshop, Academy Night, FIRST Lego League qualifier tournament, FRC Meet and Greet, GEARS grant award TN Society of Professional Engineers, Farragut Intermediate School Family Night, Anchor Fest, and Farragut High School Academy night.

3 Team 3140

3.1 The Beginning

Farragut Flagship Team 3140 was formed in the Fall of 2009 from a partnership with The University of Tennessee at Knoxville engineering department, FHS Science Academy, and the pre-engineering department of the FHS CTE group. JC Penney (Turkey Creek location) was our primary sponsor during our “rookie” season, providing our entry fee for the Peachtree Regional, t-shirts for competition, an additional \$1000 for incidentals raised by their employees, and lots of moral support. In January, a core group of 20 members attended the 2010 kickoff in Atlanta, Georgia and competed in the “Breakaway” at the Peachtree Regional competition in Atlanta Georgia in early March.

3.2 Basic Team Data

3.2.1 Location

FRC Team 3140 is school team of Farragut High School and is located at 11237 Kingston Pike, Farragut, Tennessee, 37934, (865) 966-9775. The team operates out of the Career & Technical Education (CTE) Building on campus.

3.2.2 FHS teacher sponsors and mentors

The team’s FHS teacher sponsors and mentors are Ms. Aundrea Mitchell and Ms. Jane Skinner. They are responsible for the interface with Farragut High Administration, Knox County Schools Board of Education, sponsors, students and Non-FHS Mentors.

3.2.3 Student Demographics

Team 3140 is made up of 31 students, 27 males and 4 females, 5 seniors, 5 juniors, 10 sophomores, and 11 freshmen.

3.2.4 Mentors Demographics

Twelve mentors and 2 student mentors support Team 3140, 2 teachers, 4 engineers, 2 technical professionals, 4 business professionals and 2 university students.

3.2.5 Team sponsors

ORNL, UT-Battelle, Lockheed Martin, Smoky Mountain Solutions, Tennessee Society of Professional Engineers, Consolidated Nuclear Security, Farragut High School Education Foundation, Knox County Schools, Chili’s, Papa Murphy, Alcoa, Northrop Grumman,

Remotec, TVA, MilleniTeck, Prestige Cleaners, Intertech Foundation, Kohl's, UCOR, 3D Systems, Coca-Cola, Bertelkamp Automation and Leidos.

3.3 Team Benefits

3.3.1 Students

- Develop confidence and improve communication and leadership skills
- Have fun and be responsible to each other
- Learn how to plan, design and build working robot
- Develop a new school community and work as a team
- Help others through community outreach
- Ask more of yourself and enjoy it
- Develop practical STEM (STEAM) skills working on electrical, pneumatic, and mechanical systems, along with software programming, 3D printing and CAD
- Develop business skills producing plans, budgets, plan community outreach events, marketing and public relations
- Develop and submit data to FIRST for award consideration at competitions.
- Develop and web based team social media sites
- Learn safe work practices, teach and live safety and develop safety animations
- Develop multi-tasking and time management skills
- Develop opportunities to earn scholarships and obtain internships
- Learn from and work with mentors that bring professional experience in science, technology, business, energy, medicine, engineering and math

3.3.2 Mentors

- Nurture student confidence, improve their ability to communicate and provide them with lesson on leadership
- Enjoy the growth and development of driven students
- Have fun and share in the growth of responsible young adults
- Share your knowledge and experience
- Learn as much as you teach
- Share in the development of the FHS robotics community and the outreach to the greater community
- Re-energize your life helping develop young minds and our future
- Provide life experience the young adults don't get in their regular classroom

3.3.3 School and Community

- Student leaders
- Young adults that look to give back to their communities

- A group that promotes STEM (STEAM) by their actions
- Promotes FHS and community at competitions in different states
- Brings diverse groups together as a team, students, community, teachers, mentors and outside professionals
- Develops young adults with real world experience
- Support students and community through scholarship opportunities
- Allow students to support school and community activities

3.3.4 Sponsors

- Opportunity to present your company to the FIRST community
- Market your group to a new generation of future leaders
- Plant philanthropic ideas in young adults
- Support your community
- Help develop future employees
- Inspire students to enter STEM (STEAM) and business fields

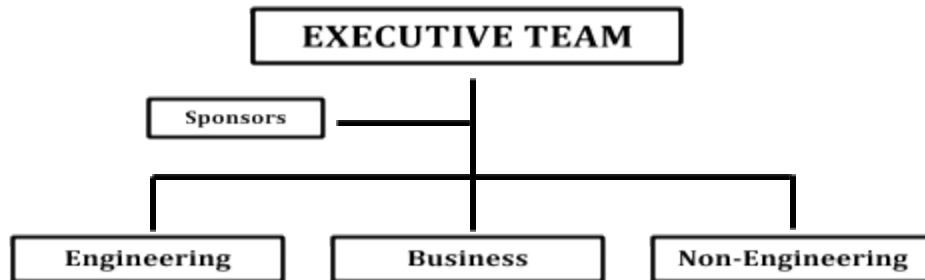
3.4 Team and FRC Growth

Farragut Flagship Team 3140 outreach has helped inspire other Knox county schools establish FRC programs by including students from other high school to be a part of 3140, running summer robotics camps, and providing student support. Three additional FRC teams have grown from this outreach. Team 3140 will continue to reach out to any high school aged students and to our greater community in Knoxville, Tennessee.

We also have plans to increase our team members from 31 to 50 in the next 2 years and triple the number of female members during the same time frame. To accomplish this planned growth, we will continue with our outreach, but we are developing a pointed plan to address the needs of female students within our team and have asked each team member to reach out to at least one student. With this planned growth, we will need additional mentors and are actively reaching out to our community to increase the number of mentors, through direct contact and by partnering with present mentors, our community and sponsors.

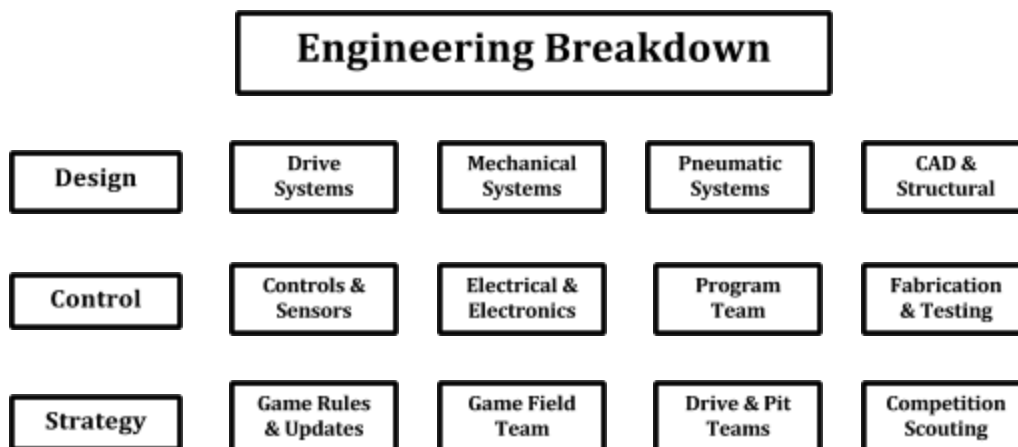
4 Structure and Organization

The Flagship Robotics Team is managed by an Executive Team. The high level team structure is divided into Engineering, Business and Non-Engineering. These groups are then divided into specialized Sub teams that will focus on specific aspects of the yearlong project. Teams are led by a Student and one or more Mentors. Final decisions are made by the Executive Team with the teacher/mentors as the final arbiter.



4.1 Engineering Teams

Team 3140 Engineering Teams and Sub-Teams have been developed over the years and present below, but we are always open to organizational changes that would improve the efficiency and educational values of the team and our long term vision.



4.2 Business Teams

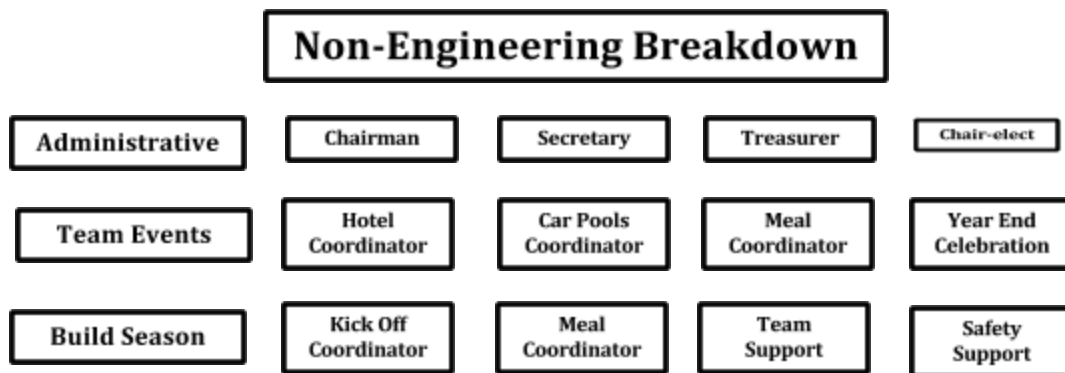
Team 3140 Business Team and Sub-Teams have been modified over the last year and are presented below, but as with engineering we are always open to organizational changes that would improve the efficiency and educational values of the team and our long term vision.



We are a student lead group but we are actively seeking additional adult mentors to assist with our Business Team. Our focus is to grow our business teams. The business side is often overlooked and neglected, but it is this side that allows the team to function. Business brings funding, manages finances, provides community outreach, exposes non-technical students to STEM, and brings recognitions and distinctions to the team.

4.3 Non-Engineer Group

Flagship's Non-Engineering Mentors (NEMO) also have critical roles to play in the success of our Team. The structure of our non-engineering group is presented below.



2014-2015 Business Plan

Flagship Robotics Team 3140

Ms. Jane Skinner and Ms. Aundrea Mitchell

4.4 Safety

Critical to all portions of work, travel and competitions is the safety and well-being of our team, our community, volunteers, other teams and family members. We strive to put **“Safety FIRST”** and require all members of Flagship Robotics Team 3140 to not only know the safety requirements for our team be to live them.

4.5 Schedule

Team 3140 has four distinct seasons, Preseason, mid-August through the end of December, Build Season, six weeks starting the first Sunday in January through mid-February, Competition Season, mid-February through the end of April, and Summer Season, starting the first of May through the end of July. The 2014-2015 Plan is to compete in one preseason competition, SCRIW in South Carolina, and two during Competition Season, Perry Regional in Georgia and the Smoky Mountains Regional in Knoxville. As with every season, our goal is to compete in the **FIRST** Championship in St. Louis, Missouri the end of April. Also, every Summer Season, Team 3140 runs a Robotics Summer Camp for all middle school aged students in our greater community.

4.6 Preseason

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5 Outreach

The Flagship Robotics Team has five community outreach events that we run or participate in to spread the tenants and awareness of *FIRST* and to give back to our community. Additionally, Flagship has had the honor of incorporating students from other high schools in our area. This cooperation has led to the development of two new FRC Teams.

5.1 Boy Scouts of America Workshop

Team 3140 brings scout troops from all over East Tennessee to allow the scouts to achieve various merit badges. Team members are available to support the various troop needs, developing various work areas allowing hands-on work, putting together various demonstration, and planting the seeds of *FIRST* in all scouts.

5.2 Summer Robotics Camp

This camp is for all girls and boys who are interested in Robotics or Engineering and who will be in the 7th through 9th grades next year. Campers will be introduced to engineering and robotics through hands-on experiences utilizing the labs in the Farragut High School Technology Engineering Facility.

- SolidWorks 3D computer modeling to assemble and test robotic components.
- Introduction to Basic Electronics and Soldering (take-home project)
- Build Parallax SumoBots, Program using Basic Stamp, and compete in a tournament
- FLL Sampler (7th-8th graders), FRC Sampler (9th)
- Explore of Robotics Systems: Drive Systems, Electronics, Pneumatics, Chassis Structure, and Control Systems

5.3 Fourth of July Parade

Flagship participates in the annual Farragut Fourth of July parade. We generally have our robot on display with signs and team members walking with the robot. The team also hands out flyers and candy along the parade route.

5.4 Summer Insanity

This is a back to school function that occurs annual prior to the start of the school year. We display our robot, discuss the team and hand out flyers to students.

5.5 Robot Demonstrations

We exhibit our robot and a smaller number of team members at various functions and events each year. These include Farragut High events, middle school groups, elementary school fairs, and various sponsor locations. These demonstrations allow the team to spotlight the **FIRST**, to advance students the interest in STEM (STEAM), and to give our sponsors a view of what they have help construct through our partnership.

5.6 NEW FRC TEAMS

Flagship has had the honor of incorporating students from other area high schools into our TEAM 3140. This cooperation has led to the development of FRC Team 4504, BCRobotics, Blount County High School, and FRC Team 5571, Ratchet, Bearden High School. We are happy to assist any and all teams and strive to integrate the spirit of **FIRST** in all endeavors.

5.7 Outreach Schedule

May 2014	FIS Field Day
July, 2014	Farragut 4th of July Parade
Jun 9-13, 2014	Week-long summer robotics camp for 7th-9th graders
Aug 2, 2014	Robotics Revolution
Aug 4, 2014	Summer Insanity
Aug 14, 2014	Freshman Assembly
Aug 19, 2014	Robotics Open House
Oct 17, 2014	T-shirt launching at the Bearden football game
Oct 18, 2014	FPS Fall Festival
Oct 23, 2014	UTK Engineers Day
Oct 25, 2014	Chili's Pancake Breakfast
Oct 27, 2014	Chili's Give Back Night
Nov 8, 2014	BSA Merit Badge Workshop
Nov 13, 2014	Papa Murphy's
Dec 2, 2014	Academy Night
Dec 6, 2014	the FIRST Lego League qualifier tournament
Dec 11, 2014	Papa Murphy's
Dec 13, 2014	FRC Meet and Greet
Feb 19, 2015	GEARS grant award TN Society of Professional Engineers
Mar 6, 2015	FIS Family Night
Mar 24, 2015	Anchor Fest
Apr 20, 2014	March to the Arch, hosted Knoxville Area Championship send-off
Apr 28, 2015	FHS Academy night
Ongoing	Recycle small electronics, ink jet & toner cartridges

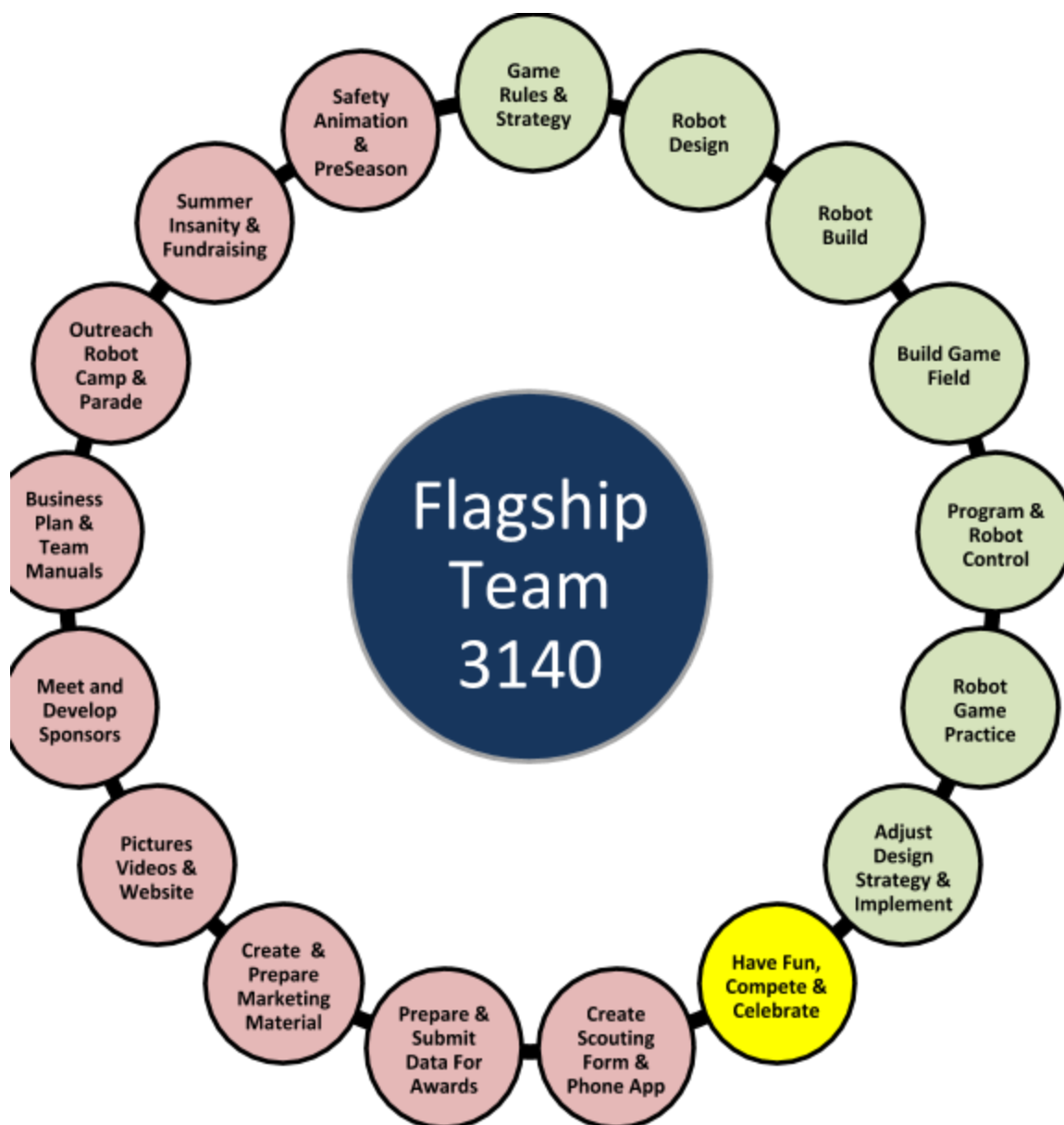
2014-2015 Business Plan

Flagship Robotics Team 3140

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6 Operations and Project Management

The Flagship Robotics is an organization that functions around the Knox County school year and our primary focus is develop young adults with a working knowledge of science, technology, engineering, business and a desire to improve their community. All this is center around designing, building, competing and demonstrating a new robot each year. Our student led organization requires robot builds that meet the skill level of our team. The 6 week EPC (engineer, procure, construct) schedule is challenging and demands student focus and mentor support. The yearlong operation is summarized below:



6.1 Communications

Team communications are accomplished with all team meetings, sub team meetings, executive team meetings, emails, text messages, parent meetings and website posts. All events that involve the entire team will be communicated via email, team members, mentors and parents. All parent meetings will be followed up with meeting minutes in an email. All formal decisions will be followed up with email to the interested parties. Public

information will be communicated on our Website, www.farragutrobotics.org, and on Facebook, Flagship Robotics, along with general information.

6.2 Build Season

Typical Build Season schedule is Monday through Friday from 3:35 pm to 9:00 pm and Saturdays from 9 am to 4 pm. Engineering teams are required to spend enough time during the 6-week build that there is no delay in completing the robot on time. Students also need to remember that "SCHOOL WORK COMES BEFORE OUR TEAM." We expect all members of our team to take part in the Build Season and any event on our schedule. Developing time management skills on our team will help in all aspects of the members' life. We continue our Executive and NEMO meetings during build season.

6.3 Project Management

Project management is the planning, organizing, motivating, management of resources, procedures and practices to achieve a specific project or goal within a defined period of time. Producing a new robot each year is a temporary goal that contrasts with our general operation of developing young minds in an atmosphere of enjoyable learning. The robot build is constrained by student/mentor skills, new **FIRST** game, 6 week build schedule, tools and material available and our budget. We utilize an Executive Team to evaluate our team and assign a project management that strive not to reach too far outside any one of these constraints and to insure we do not adversely impact the quality and competitiveness of our robot.

The Engineering Sub Team student leaders and mentor conduct short review meetings every Saturday afternoon to status their portion of the build. Some of the items to be included in the status are; 1) Is the design complete, 2) Can we build from drawings, sketches, or ideas, 3) Are we on schedule, 4) Does design meet expectations, 5) Do we need to make changes, and 6) What can we do to get back on schedule. This status will be emailed to the Executive Team and all student leaders and mentors. Any changes to the design must be approved by the Executive Team.

"

7 Marketing

7.1 Farragut High School

The Flagship Robotics marketing starts at home with Farragut High School and Knox County Schools. We attempt to present our group to the Administration through meetings and conversations to insure they have a concrete understand of Flagship Team 3140. We formally invite the greater student body to competitions and specific administration and teachers to events we host on campus. Each year we work with Farragut High to be a part of Summer Insanity, a welcoming back to school for all students, a freshman fair presenting different after school organizations that the school offers and several other school demonstrations promoting FRC to students and parents of our community.

7.2 Area Schools

The Flagship Robotics members setup up demonstrations with various middle schools in our area. These demonstrations target any students that have an interest in STEM, but also we are striving to bring onboard those interested in sports, arts, reading, student leadership, and any student that wants to give of their time to be a part of a team and reach out to their community. We create flyers for our local regional competition and for our robotics camp. These are distributed to these area schools to help plant seeds in the students. We also support *FIRST* Lego Leagues, FLL, that are active in these schools.

7.3 Specialized Robots

Team 3140 built a stationary tee shirt launcher that we take to football games each year to promote our team. This is a positive and fun activity for the student body and our team. In an effort to add to more effectively presenting our team, we plan to construct a mobile tee shirt launcher that we can use as a marketing tool at sporting event.

7.4 Sponsors

We are forever thankful for our sponsors. Our sponsors provide us the necessary financial support to continue our team and our mission. The following page is devoted to our sponsors and we want to again thank them for their support and assistance through the years. Our goal is not only to continue with the support of our present sponsors, it is to add additional sponsor so that we can reach additional young adults and provide additional community outreach.

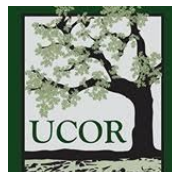
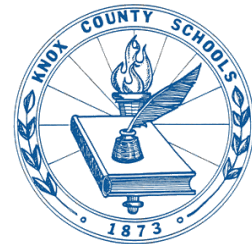
Sponsor logos



FARRAGUT HIGH SCHOOL



EDUCATION FOUNDATION
Supporting Excellence



Bertelkamp Automation, Inc.
INDUSTRIAL AUTOMATION SPECIALISTS SINCE 1975



Follow us on Facebook - Flagship Robotics and at farragutvbs.org page 25

7.5 Graphic Arts

Photography, printmaking, animations, computer graphics, posters, bindery, leaflets, flyers, and videos are part of team activities each year. Photos and videos allow us to capture memories for our team, mentors and sponsors, but they also provide a view to the attributes of **FIRST**. How can anyone visiting any competition not come away excited to be around young adults that are our future? These photos and videos forever capture this and presenting them on our website and through social media provide that view of **FIRST**. Each year our Business Team produces the tee shirts the team wears to competition, along with signage for the robot and placards for the competitions.

Team 3140's website, farragutrobotics.org, is up and running. Additionally, we operate various social media accounts on Facebook, Instagram, Twitter, and YouTube. With these sites, we communicate and outreach to our student body, friends, family, sponsors and our community. Our links to **FIRST** help direct interested parties to their website, adding to the reach of **FIRST** throughout our world.

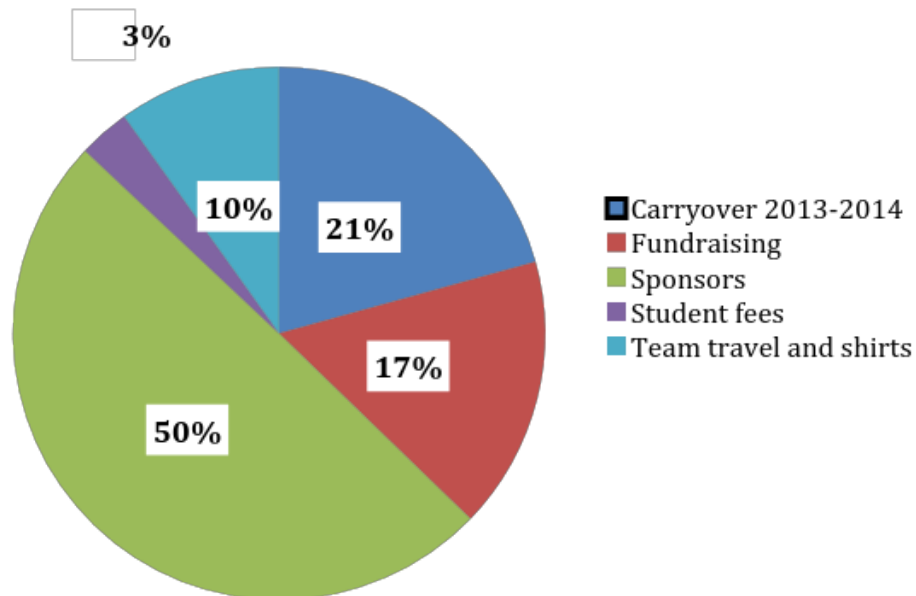
8 Financial Information

8.1 Historical Data

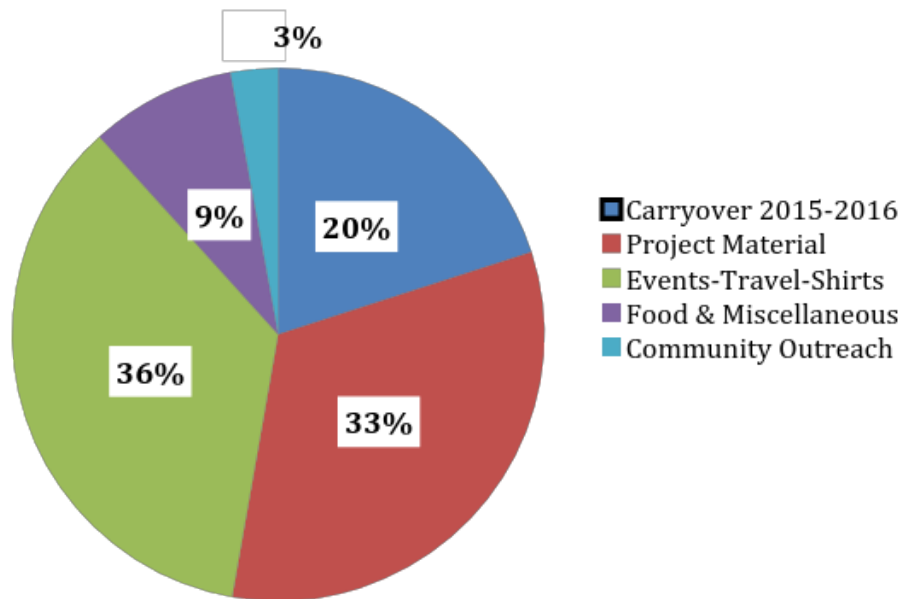
We end last year with \$4,324.38 in our account

8.2 Fund Flow 2014-2015

Funding Sources		\$48,280.17
Carryover 2013-2014	21%	\$9,977.74
Fundraising	16%	\$7,996.64
Sponsors	50%	\$24,031.73
Student fees	3%	\$1,500.00
Team travel and shirts	10%	\$4,774.06



Funding Uses		\$48,280.17
Carryover 2015-2016	20%	\$9,654.68
Project Material	33%	\$15,821.93
Events-Travel-Shirts	35%	\$17,148.65
Food & Miscellaneous	9%	\$4,262.64
Community Outreach	3%	\$1,392.27



8.3 Sustainability

Long-term financial sustainability hinges on our ability to maintain funding from three sources, fundraising events, student fees and sponsors. The Sources of Funds Chart shows our most critical source of funds is sponsors. We need to maintain these sponsors adding to the list and double our efforts to grow our fundraising activities. One additional interesting item is shown by the chart and that is the Carryover Funds. Team 3140 needs to grow these Carryover Funds as a contingency for less successful fundraising and sponsor funding years.

9 Planning

9.1 Team 3140 Strategic Plan

Flagship robotics strategic plan was developed to meet several major goals that listed below, developed implementation strategy and have defined metrics to measure the success of our plan. ***Flagship robotics strategic plan to be fleshed out.***

9.1.1 Goal 1 – Developing student skills

Cross train students in all aspects of the team

9.1.2 Goal 2 - Grow a more diverse team

Add more females and non-engineering students with additional mentors

9.1.3 Goal 3 – Maintain student built emphasis

Student designed and built robots

9.1.4 Goal 4 – Build a robust Business Team

Emphasize the business part of FRC

9.1.5 Goal 5 – Cultivate Leaders

Develop leaders throughout the team asking more and rewarding all

9.1.6 Goal 6 – Increase Outreach and Funding

Build community asking more of our team and our Sponsors.

9.2 Planning Process

Flagship robotics planning process to be determined

9.3 SWOT (Strengths Weaknesses Opportunities Threats) Analysis

Composite SWOT Analysis of Team 3140 - Flagship Robotics

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<u>Strengths</u>	<u>Weaknesses</u>
<ul style="list-style-type: none">• Student Lead• Solid Financial Resources• Teachers Mentors• Team has a strong interest STEM curriculum• Solid Facilities and Team Foundation• Large Knowledge Base• Friendly environment and good camaraderie• No one left behind	<ul style="list-style-type: none">• Team Diversity• Team Branding• Business Team activities• Inefficiencies completing Designs• Award Submittals• Number and Diversity of Mentors• Meeting Deadlines• Community Outreach• Outside Machine Facilities• Web Site
<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none">• Increase Student Diversity• New Sponsors and Happy Current Sponsors• Add Business Team Opportunities• Develop/Refresh Team Brand• Cross Training – Both Business & Engineering• Increase Community Outreach• Preseason Activities• End of Week Status & Punch List for Build Season• Workshops for New Members• Prepare & Present to Our Community & for Awards• Add Mentors and Machine Facilities	<ul style="list-style-type: none">• Loss of Teacher Mentors• Loss of Outside Mentors• Loss of Sponsors• Loss of Knox County/Farragut Support• No Change in Student Diversity• No Vehicle to Pull Trailer• Loss/Breakdown of Shop Machinery

9.4 Action Plans and Mitigation

Team 3140 - Goal 1 - Developing student skills

Action Plan	Responsible Party	Completion Date
1.	1.	1.
2.	2.	2.
3.	3.	3.

Team 3140 - Goal 2 - Grow a more diverse team

Action Plan	Responsible Party	Completion Date
1.	1.	1.
2.	2.	2.
3.	3.	3.

Flagship robotics will complete and determine remaining