

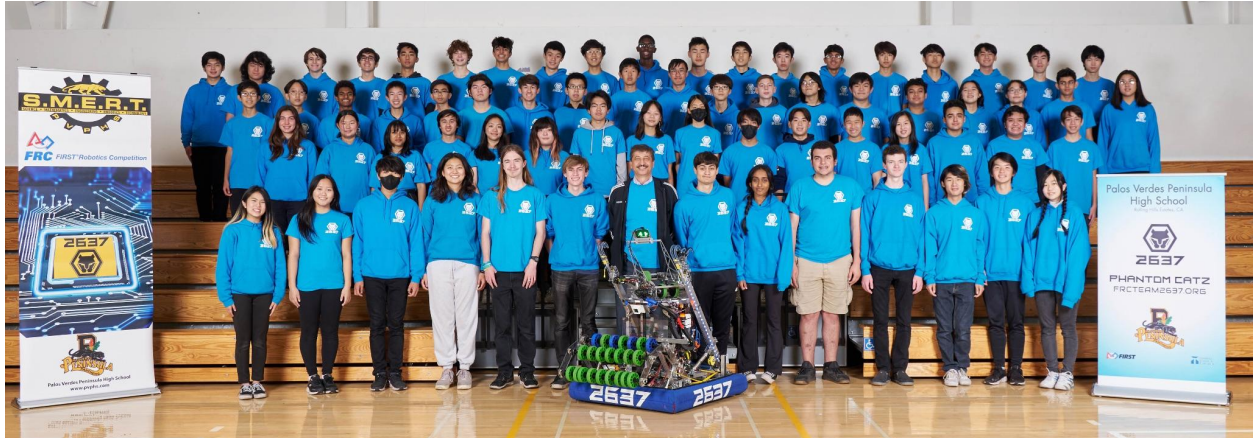
Table of Contents

▶ Executive Summary	1
Mission Statement	
▶ Team Information	2
Team Demographics	
Social Media	
▶ Team Organization	4
○ Organizational Structure	
○ Leadership	
○ Subteams	
○ Other Team Subgroup	
▶ SWOT	8
○ Strengths	
○ Weaknesses	
○ Opportunities	
○ Threats	
▶ Purchasing and Build Process	9
○ Iterations of the Build Process	
○ Previous Seasons	
○ Changes for this Season	
○ Role of the Budget	
○ The Purchasing Process	
▶ Outreach	11
▶ Marketing	14
○ Team Branding	
○ Outreach	
○ Sponsor Outreach	
○ Student Recruiting	
▶ Financials	15
○ Sponsors	

- Fundraisers
- Donation
- Other Financial Info

▶ Five Year Plan	21
▶ Closing Statement	23

Executive Summary



Team photo for the Charged-Up Season

Mission Statement

Team 2637 aims to develop a sustainable and diverse FRC team that educates and inspires all generations to learn about Science, Technology, Engineering, Math, and Innovation.

Team Information

The Phantom Catz Story

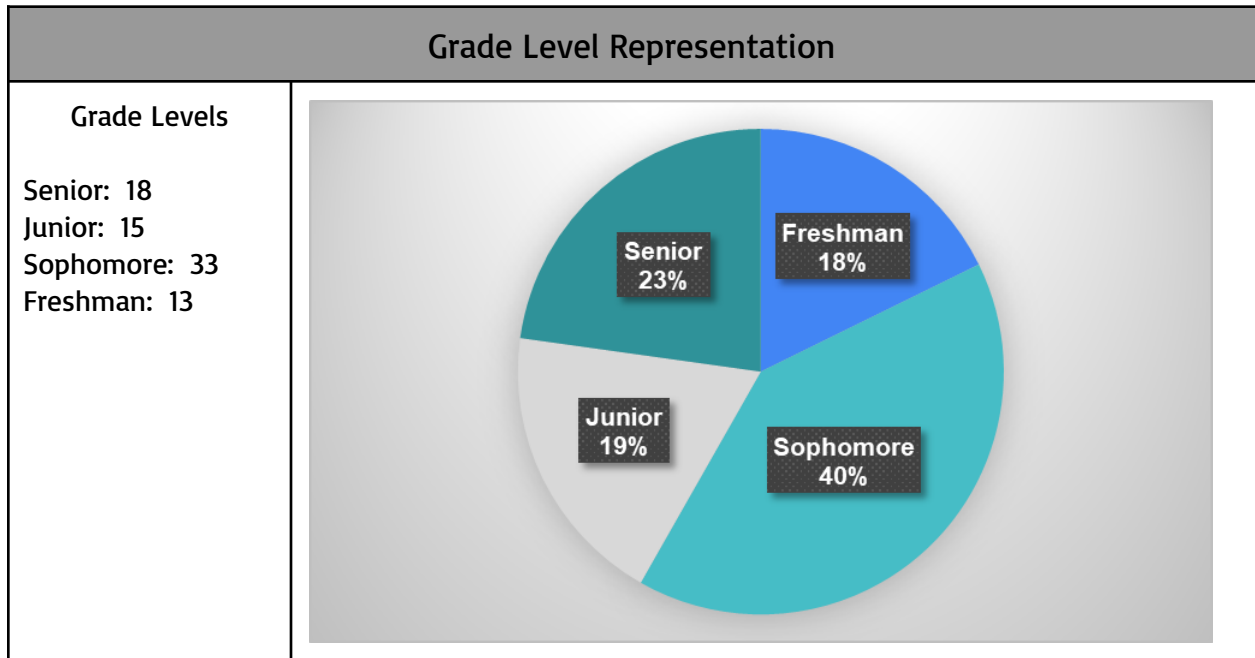
Our team is made up of students from Palos Verdes Peninsula High School located in Rolling Hills, California. We were founded in 2008 by five passionate students working out of a garage, who all shared an interest in robotics. Today, we have grown to approximately 80 team members, 23 mentors, 13 corporate sponsors, and 25 family sponsors.

We apply a heavy focus on improving both the professional and life skills of our team members, with the goal of developing new student leadership each year. Through mentorship and cross-training we strive to grow and diversify our new team members each year, strengthening our foundation and securing the future of the team.

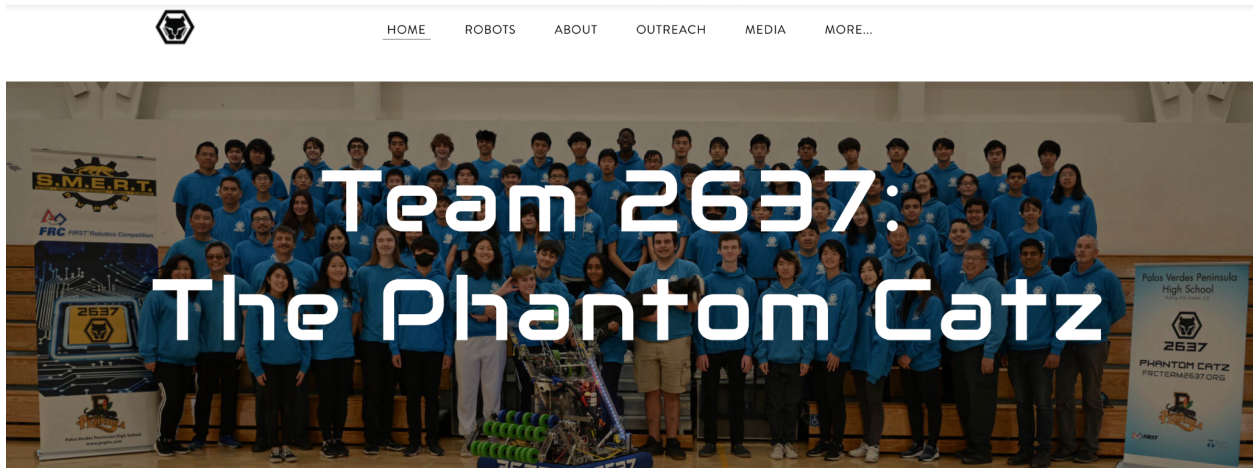
We strive for and achieve diversity and inclusion through our outreach programs, which encourage participation of women in Engineering classes. With programs in the past such as “Girls Who Code”, a series of all girls STEM Development Courses, and partnering with the Society of Women Engineers, we look to provide resources and training to bring our Gracious Professionalism to a diverse community.

Demographics

- Students of Palos Verdes Peninsula High School
- Location: Rolling Hills, California
- Rookie Year 2008
- 79 Students, 23 Mentors









Social Media



Home page of our team website

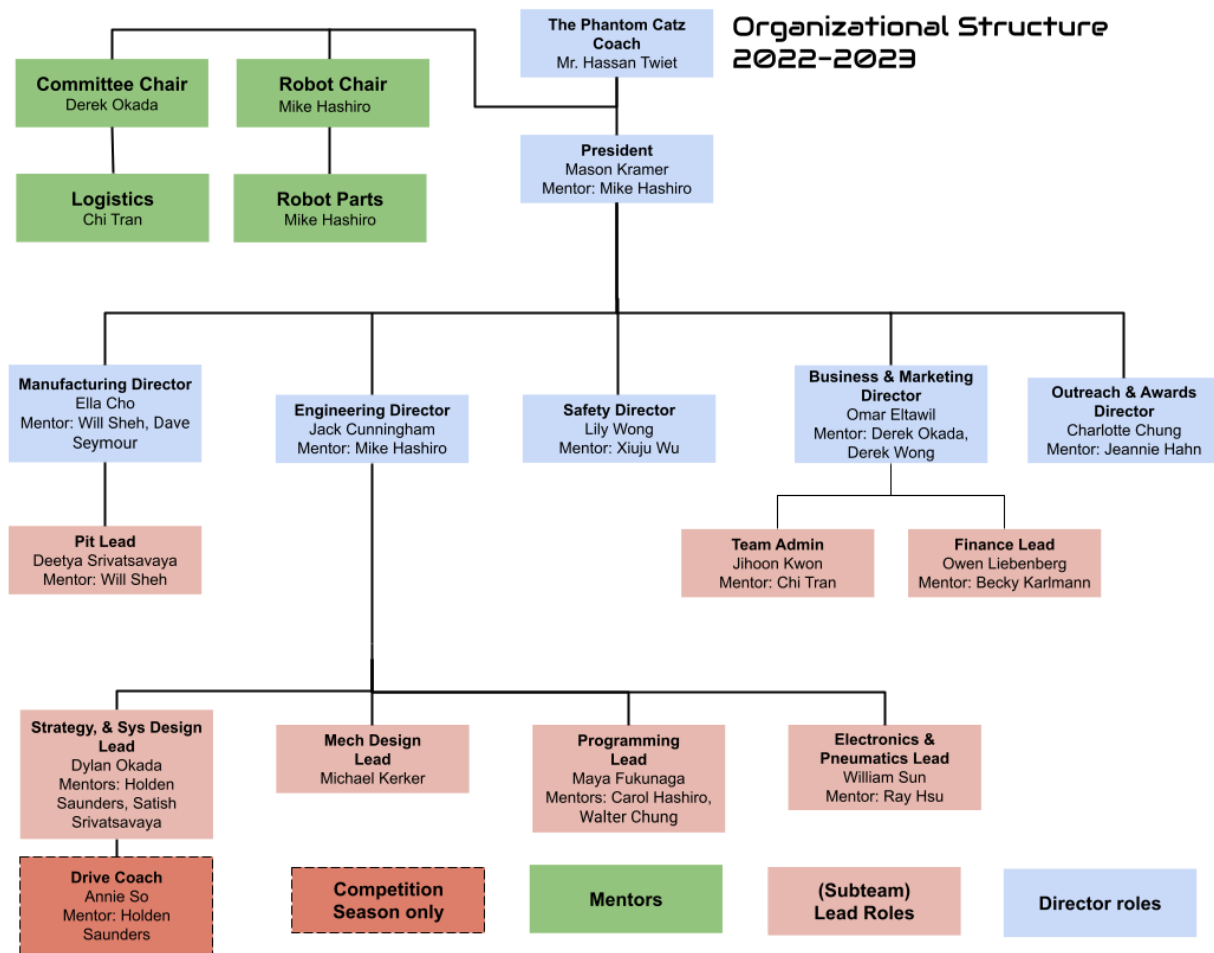
Our Team stays connected with our community and our sponsors through our various social media platforms. These platforms allow our team to share our success and growth with our community, which helps to spread the influence of STEM.

 @frcteam2637	 www.frcteam2637.org	 frcteam2637@gmail.com
 @frcteam2637	 The Phantom Catz	 @frcteam2637

Team Organization

Organizational Structure

We operate on a Subteam system where each Subteam has its own function and duties. Seven (7) Subteams are managed by five (5) appointed Directors, who are responsible for driving the success of their Subteams by delivering on the functional aspect of the team. These Subteams allow for more work to be done simultaneously, which provides a smooth, effective, and efficient line of work that is balanced for all members. This system is also optimal for maintaining a Transition of students into different leadership roles.



Leadership Team

Our team is managed by a set of outstanding students who make up our Leadership. The Leadership Team is led by the Team President, who acts as the official spokesperson and representative of our team. Alongside the Team President are the five (5) directors who manage the various Subteams. Some directors have subsequent captains and leads, who aid the director with managing their Subteam or team aspect. This system ensures a fair, balanced distribution of labor management, which improves the overall efficiency of work on our team.

Leadership Position	Roles and Responsibilities
Team President	<ul style="list-style-type: none"> ● Highest student leader on the team ● Responsible for overseeing all nontechnical and technical activities ● The official liaison of the school, our local community, and our sponsors ● Coordinates team management with mentors and leadership to ensure smooth and efficient work flow
Business & Marketing Director	<ul style="list-style-type: none"> ● Highest student leader on the Business & Marketing Subteam ● Responsible for coordinating team administrative functions as well as overseeing public relations, marketing, and sponsorships ● Administrative functions include team communications, finances, competition logistics, social media management, and team roster.
Outreach & Awards Director	<ul style="list-style-type: none"> ● Highest student leader on the Outreach & Awards Subteam ● Coordinates and executes FRC award activities ● Oversees the development and execution of outreach activities ● Manages our team's FIRST Lego League (FLL) teams.
Engineering Director	<ul style="list-style-type: none"> ● Highest student leader on the technical side of the team ● Accountable for leading the prototyping effort ● Coordinates work and progress of the various technical Subteams. ● Accountable for delivery of a fully functioning robot in time for the competition season
Manufacturing Director	<ul style="list-style-type: none"> ● Highest student leader on the Manufacturing Subteam ● Responsible for providing a safe manufacturing environment ● Trains team members to safely and effectively use the tools provided and build quality robots and field pieces ● Accountable for ensuring the team has the material needed to build, maintain, and repair the robots during competition season
Safety Director	<ul style="list-style-type: none"> ● Highest student leader on safety management ● Responsible for maintaining a safe working environment ● Promotes a safety oriented mindset to all team members and ensures accountability of all team members ● Develops safety procedures and trains students to follow them ● Creates guidelines, and ensures leaders are accountable for safety requirements
Team Administrator	<ul style="list-style-type: none"> ● Team Lead supporting the Business & Marketing Director ● Responsible for overseeing communication between the team and facilitating outgoing and incoming emails

Leadership Position	Roles and Responsibilities
	<ul style="list-style-type: none"> ● Facilitates communication between the Subteams and Leadership to keep a steady work flow ● Notates future team plans and decisions made at Leadership Meetings ● Tracks student attendance and engagement ● Helps organize all team documentation
Finance Lead	<ul style="list-style-type: none"> ● Team Lead supporting the Business & Marketing Director ● Responsible for documenting funding received from sponsors, students, fundraising efforts, and the district ● Purchases based on our purchasing process with the Team Coach ● Updates Leads, Directors, and Mentors regularly on the team's financial state
Strategy & Systems Design Lead	<ul style="list-style-type: none"> ● Team Lead supporting the Engineering Director ● Responsible for defining the game and match strategy, scouting, conceptual robot design, and defining robot requirements
Mechanical Design Lead	<ul style="list-style-type: none"> ● Team Lead supporting the Engineering Director ● Responsible for the mechanical design during build season ● Responsible for providing drawings to the Manufacturing Subteam for fabrication
Electronics & Pneumatics Lead	<ul style="list-style-type: none"> ● Team Lead supporting the Engineering Director ● Responsible for designing and deploying the electronics and pneumatics subsystems on the robot
Programming Lead	<ul style="list-style-type: none"> ● Team Lead supporting the Engineering Director ● Responsible for developing all software used by the team, including the software to operate the robot and scouting applications
Pit Captain	<ul style="list-style-type: none"> ● Team Lead supporting the Manufacturing Director ● Responsible for managing operations in the pit during competitions ● Completes competition schedules ● Repairs broken or malfunctioning mechanisms on the robot during competitions

Subteams

As mentioned before, our team is divided into 7 Subteams, each of which carry out specific duties for the team.

Subteam	Functional Responsibility
Business & Marketing Subteam	Responsible for managing team communications, finances, competition logistics, Social Media management, marketing, and student attendance.
Outreach & Awards Subteam	Responsible for coordinating and executing FRC award activities as well as overseeing the development and execution of outreach activities locally and abroad.
Manufacturing Subteam	Responsible for building, maintaining, and repairing the robot and each of its individual mechanisms.
Electronics & Pneumatics Subteam	Responsible for designing and deploying the electronics and pneumatics systems on the robot.
Mechanical Design Subteam	Responsible for all mechanical aspects and their design during build season. Design is responsible for providing drawings to manufacturing for fabrication.
Programming Subteam	Responsible for developing all software used by the team. This includes software to operate the robot as well as applications to support scouting.
Strategy Team	Responsible for defining the game and match strategy, scouting, creating conceptual robot designs, and defining robot requirements. Also responsible for training the Drive Team.

Other Team Subgroup

In addition to our Subteams, our team has one additional subgroup that manages other operations.

Subteam	Functional Responsibility
Media Team	Responsible for the production of content and upkeep of our team's various media outlets. Also responsible for updating our sponsors on all progress made during the season, especially at competitions, via our social media platforms.

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Strong community of returning students and mentors to help provide guidance and expertise for shared team success. ● We have been successful in our Outreach programs and have given back successfully to our local and international communities. ● Project Management tools such as Gantt charts and Trello create an efficient and well-organized team. ● Our team addresses risks and opportunities through weekly leadership meetings. ● Mentors host leadership training sessions, allowing us to gain skills in team management. ● To minimize loss of skills and knowledge, our team keeps a lesson-learned log, "Team 2637 Lessons From Past Seasons," which is shared with every member of our team. 	<ul style="list-style-type: none"> ● Our team's large size can make it difficult to communicate and allocate work effectively. ● Year-over-year student turnover is also a key challenge. ● Even though members return as alumni-mentors, lots of information and skill can be lost as experienced members and mentors leave.

Opportunities	Threats
<ul style="list-style-type: none"> ● Our organization allows students to have a positive impact in the community. ● We strive to grow our local sponsorship of small businesses to help build mutually beneficial partnerships in our community. ● We can grow the mentorship team and look for ways to manage the time of those who are volunteering more efficiently. ● We can build close relationships with other local schools, which will allow us to host more school events and STEM camps, which will drive knowledge of engineering. ● By continuing our outreach programs outside of our community, we can expand further to international audiences. ● Building on our successful partnerships with underserved communities and cultures can help us to continue to promote the advancement of STEM and technology. 	<ul style="list-style-type: none"> ● New Mentor turnover has been an ongoing issue, and can cause knowledge gaps and have a negative effect on the morale of returning students. ● The COVID-19 pandemic has made it difficult to maintain a steady supply of necessary parts and materials. ● The economic toll has caused some of our smaller sponsors to halt donations of essential parts and funds.

Purchasing and Build Process



Photo of our Manufacturing Team working on our new robot

Iterations of the Build Process

Our team has spent years refining an efficient build process, and this year was no different. We reflected on the issues with our previous design and build process to change issues that had existed for years. Throughout our build process we have multiple design reviews to ensure the quality of our robot and its components. There are two main types of design reviews that the team conducts. The first is called a Preliminary Design Review and the second is a Critical Design Review. Our team has come a long way from working out of a garage to the modern and professional lab in which we currently operate. This huge improvement has allowed us to expand our operation and accept more students into the program.

Previous Seasons

Our planning for the build process has always started before the competition season kickoff. We prepare one drivetrain in preparation for the season so that, as soon as the game is announced, members of our team can begin working on and testing autonomous code, and provide a robot with which our drivers can practice. It is also during the pre-season where we re-inventory our parts and send out orders for commonly used parts, such as rivets, screws, and spacers.

On Kickoff Weekend, our team prepared a preliminary strategy, which was created by our strategy team that the broader team then iterates on to create different mechanism recommendations for Mechanical Design to manufacture and improve upon.

After Kickoff, Mechanical Design finished all the mechanism designs in the first three to four weeks of build season. This enabled the team to have a week buffer to order any necessary materials for the build.

Changes for this Season

This year, our team President, formerly a member of Mechanical Design, pointed out a major flaw in the prototyping process. When we were using prototypes to decide which mechanism ideas to build, our data was influenced by the fact that we would occasionally not use the optimal design which was difficult to prototype, and would therefore perform (as a prototype) worse than inferior designs. Additionally, there would later be a second round of prototyping of specific mechanisms to get specific values or “magic numbers,” as the President put it. This realization led us to change our Kickoff plan for 2023.

On the day of Kickoff, the initial change was that the strategy team led the preliminary strategy development, so that they could gather data that was more relevant to what they would need later in the season. Then, the preliminary strategy was given to the Mechanical Design Subteam, so that they could create mechanism ideas that fit what would be required by the strategy and be attainable by the team. This pushed prototyping to post Kickoff, setting us up to have a better version of the mechanism design we decided on, rather than a more inaccurate version of a possibly inferior design.

Role of the Budget

During the offseason, before Kickoff, our team generates a budget based on fundraising and sponsorships received up to that point. From this number, we break our total budget down into Outreach, Robot, and Infrastructure budgets. The budget is incorporated into the design for our robot on Kickoff, at which point we not only determine whether a design will be achievable by our team, but whether we are able to afford all mechanisms, collectively.

The Purchasing Process

Our team’s purchasing process has improved over the years to maximize responsiveness. Our goal with the current process is as follows: once Mechanical Design knows what parts will be on the robot, the inventory is checked. Our team’s Robot Parts Mentor (see the Org chart on page 4) has the role of initially checking what we are spending our money on. The Finance Lead then performs another check before making the purchase with the Team Coach, who is the final check.

Outreach



Photo with STEM Development Course

Our team's focus is not limited to purely engineering; because of our Outreach programs we are leaders in providing STEM and FIRST programs within our community. While our wide-reaching outreach endeavors originally began with a simple goal, to bring STEM education to our area, we've already created an expansive network of STEM Development Courses, community events, and FLL teams. Moving into the future, we are planning to double the number of FLL (FIRST Lego League) teams in our school district and reach out to new areas.

STEM Development Courses

In 2017, we hosted our first ever STEM Camps at two local schools in our district: Soleado and Silver Spur. With the aim of fostering curiosity and a love for learning, we guided the students through hands-on projects, teaching them the basics of engineering and giving them physical experience for a future in STEM. The next year, we knew we had to expand to host more STEM Camps to reach communities beyond our own. Thus, we spread our influence to Hickory Tree School in Torrance, while continuing our first STEM Camp, bringing STEM education to another 45 elementary students. At the same time, we set our goals even higher: to have an international impact. That same year, we partnered with Seoul Yangjin Elementary School in South Korea, teaching 30 students basic principles in engineering, making full use of this rare opportunity. Ever since, we've continued to enlarge our team's impact each and every year.

We knew that with an increase in number, an increase in quality had to come as well, and we altered our STEM Camps to become STEM Development Courses, to better match what our goals were with this program. These Development Courses specialize in education for the students by going beyond guiding through a simple activity, and instead featuring an even further detailed and structured lesson plan for more complex yet educating projects. It is designed to provide as much experience and knowledge as possible in wider areas of engineering, in order to give opportunities for STEM careers to as many students as possible.

Locally, we brought our courses to more schools within our district, created an all-district course, and hosted courses based on each Subteam's specialty. On a more widespread level, we brought our reach to Guasave, Mexico, and Holbrook, Arizona, hosting STEM courses online, free of charge for the students. Due to the economically disadvantaged nature of the areas we reached, we provided all materials and established their first STEM education programs for the schools. Our focus on Accessibility, Inclusivity, and Diversity (AID) was what inspired us to seek out these programs and more, including a special education-focused course. As special education students are an overlooked and underrepresented group, we found it extremely important to provide opportunities for the students to make their way into the STEM field, and have taken special care to modify each project such that each and every student can be properly accommodated. Our focus to make STEM accommodating for special education students has never been lost from our minds, and has played an instrumental role in deciding where and to whom we spread our influence next. As of early 2023, we've held a total of 50 events (eight of which were in the last school year), and reached 140+ students, 700+ total since 2017. Because of our successes, we look to host 10 courses next year, continuing to maintain our partnerships and welcoming new opportunities as they present themselves.

Maintaining Relationships and FLL

Although STEM Development Courses are a great way for our team to establish an anchor in a community, the most common next step for us once we've established a relationship with a school is to establish and run FLL teams for the elementary and middle grade students. FLL is a great representation and starter for what our team does, as the format, concepts, and team experiences are incredibly similar to FRC. We have found it to be not only highly engaging, but also extremely rewarding for the students in terms of gaining crucial skills and practice.

We acknowledged the lack of representation for women in STEM fields, and with our focus on aid, we were inspired to create local FLL teams with a focus on providing women more and better opportunities to enter into STEM related areas and activities. Team 54040, the Phantom Cubz, is our all-girls elementary team and team 30714, the Phantom Botz, is split evenly between boys and girls. We take special pride in these teams, knowing we have and will continue to help increase the diversity of a field dominated by men. Since their founding, 100% of graduates from both teams have joined our FRC team; students tend to join our team once they reach high school, which not only creates a stable pathway into STEM for the students, but ensures our sustainability as a team. However, these 2 FLL teams are only one half of our Phantom Catz FIRST Alliance (PCFA), which combines 4 FLL teams, contains 40 students, and spans 2 states.

We knew we couldn't stop at impacting just our own local area with this program, so we looked to one of our major partners: Holbrook Indian School in Arizona. Having already provided many STEM Courses in the past and established a long standing, consistent relationship with the school, we began talks with the school and started and completely funded 2 more teams, teams 30713, the Phantom Eaglez, and 59876, the Phantom Mustangz. In order to bridge the distance gap, we meet with these teams over Zoom, making sure to provide just as much care, attention, and guidance as we do for the teams we host locally. In the future, we plan to continue our pattern of creating more opportunities for even greater STEM learning through expanding our other STEM Development Course partnerships to include FLL teams as well.

Community Events

Our team is ever grateful to our greatest supporter: our own community. Thus, we not only actively participate in many of the events our community holds, but also host and establish our own with the goal of giving back. An embodiment of this concept would be the donation drives we've held over our many years, during which we have donated over 1200 items to 3 different organizations. Our first drive began in 2019, for Covenant House, which directly supported the homeless individuals of our area. In 2022, we decided to maintain our focus on the homeless, while switching to a different organization: Long Beach Rescue Mission. Together, we were able to donate crucial items with a focus on school supplies, fostering education on a level we had yet to reach. Finally, our most recent donation drive was focused internationally: Living Hope for Children focuses on bringing higher STEM education to many schools in Africa, and we partnered with a small school in Uganda, sending them various classroom materials and supplying them with our STEM course lesson plan and kits.

No matter how large we become as a team, we strive to continue to focus on our local community. Participating in community events brings mutual benefit, and one of the greatest examples of this are the numerous Holiday Parades which we've participated in, with our own robots fully decorated with holiday cheer, since 2019. Besides being amazing for our morale, this parade allows us to reach thousands of viewers while showing off the creativity and ingenuity of our team. Another case of events bringing in viewership and publicity is the 8th Grade Night Open House, where we partner with our host school to exhibit how interesting STEM and FIRST actually are to hundreds of prospective members and students each year. Events like these drastically improve our reputation within our community and help maintain the integral myriad of new students joining our team. As always, we plan to maintain our annual events, but looking forward we will maintain our lookout for new opportunities through our own members' connections, social media, and online research.

Marketing

Team Branding



Our team logo

In order to ensure that our team is well recognized amongst our robotics community, we have set brand and design standards to distinguish our team. Our team can be identified through the colors Sapphire and White, as well as our signature panther head and Audiowide font. This specific branding represents our team and our community well. The white of our team represents the grand and vast Pacific Ocean, with its white caps of the surf crashing against the rocks stretching out upon the beautiful coast of California and our Peninsula home. The Panther represents Peninsula's school mascot, a fierce and intelligent hunter, illustrating the drive and passion our team has for STEM and competition. The blue, Sapphire, represents the often clear and sunny skies above our majestic campus, high atop the hills of Rolling Hills Estates. Our colors and mascot represent more than just our brand, they represent our team, which has touched the lives of thousands.

Student Recruiting

In addition to our most effective recruitment tool (word of mouth from our students), our team employs many methods to recruit new students prior to and during the initial weeks of the school year. We display flyers and banners across the campus to advertise our team and our individual Subteams. Additionally, we advertise on our various social media outlets as well as our school's daily bulletin. These methods typically attract around 40 prospective members, with an average member retention rate of 75%.

Sponsor Communication

Because building a robot is an expensive endeavor, sponsors are very important contributors to our team. To ensure that our relationship with our sponsors is always successful, we have developed a step-by-step recruitment process. First, we research possible corporations and local businesses that might sponsor us. Having assembled a list of possible sponsors, we then draft individualized emails to them, explaining our proposal and the benefits they can experience if they partner with us. If they accept, we ensure that we maintain a positive, involved, and professional relationship with them. One of the ways that we develop this relationship is by inviting them to attend team events and sending them videos of our team in action.

Financials

Typical season income and expenses are shown below.

Income		
		Typical Incoming
Grants & Sponsorships \$23,100	Grants & Sponsorships	\$ 17,500.00
	In-Kind Donations	\$2,000
	Corporate Volunteer & Donation Matching	\$3,600
Student Contributions \$39,500	Participation Donation	\$21,000.00
	Merchandise	\$2,400
	Competition Travel Fees	\$12,000
	FLL Student Donations	\$3,600
Fundraising & Donations \$6,700	Private Contributors	\$500.00
	Friends & Family Campaign	\$5,000
	Restaurant Partnerships	\$1,200
Total		\$68,800

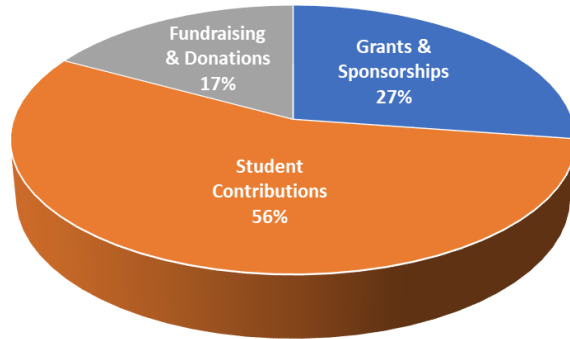
Expenses		
		Typical Outgoing
Team Registration \$9,400	FIRST Season Registration	\$6,000
	Regional Competition	\$3,000
	Offseason Competition	\$400
Competition Travel (approx 50 students)* \$16,000	Transportation	\$3,000
	Hotel	\$7,500
	Food	\$3,500
	Robot Transportation	\$1,000
	PVPUSD Staff Stipend	\$1,000
Branding \$4,950	Team Merchandise (T-Shirts, Hoodies, Caps)	\$4,000
	Buttons, Brochures, Banner, Spirit	\$800
	Website	\$150
Outreach \$5,500	FLL Teams	\$3,500
	Go Baby Go	\$1,500
	STEM Development Courses/Other	\$500
Season Program \$6,800	Team Lunches & Snacks	\$5,000
	Year End Banquet	\$1,000
	Senior & Sponsor Gifts	\$800
Robot Build \$23,800	Competition Robot, Prototyping, Spare parts	\$20,000
	Field & Game Pieces	\$1,800
	Equipment & Infrastructure	\$2,000
General Expenses \$1,350	Safety	\$500
	Training	\$200
	Office Supplies	\$100
	Fundraising	\$150
	Miscellaneous	\$400
Total		\$67,800

*Excludes potential travel if qualifying for World Championships; travel covered by student reimbursement

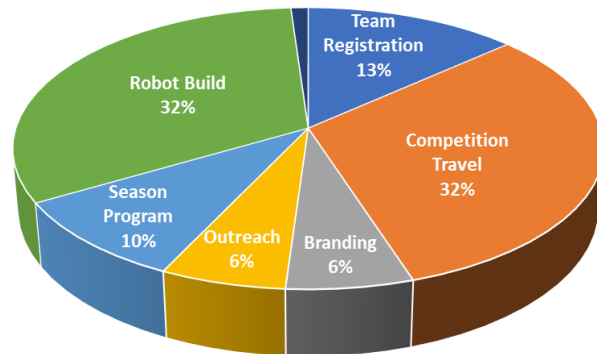
**Any residual savings year to year is put toward infrastructure and program improvements.

For the 2022-23 season, the anticipated income and expense breakdown is shown below. A highly successful Friends & Family Fundraising Campaign, pursuing of additional grant applications, and vast individual donations enabled the team to offset higher than anticipated robot and travel expenses.

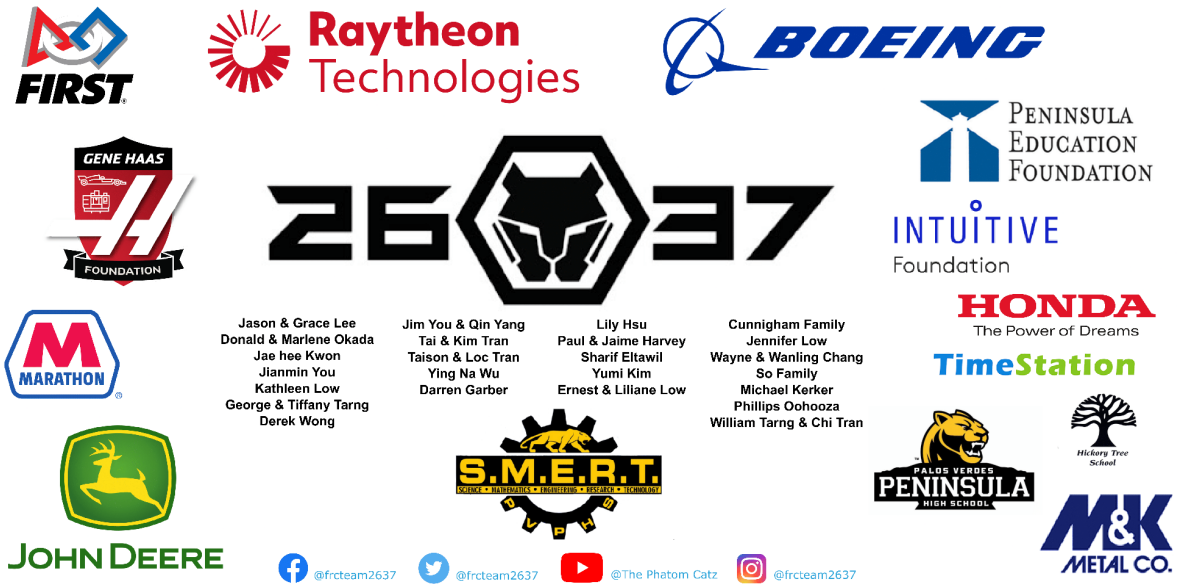
Projected 2022-23 Season Income	
Grants & Sponsorships	\$29,819
Student Contributions	\$60,640
Fundraising & Donations	\$18,510
Total	\$108,969



Projected 2022-23 Season Expenses	
Team Registration	\$14,358
Competition Travel	\$33,841
Branding	\$6,513
Outreach	\$6,457
Season Program	\$10,172
Robot Build	\$34,634
General Expenses	\$1,163
Total	\$107,137



Sponsorships



Our Sponsor Banner for the Charged-Up Season

Sponsors play a key role in our team’s success. They provide crucial materials and funding for our program and allow our team to flourish. In return for their support, we advertise them on social media, our website, team merchandise, and the sponsorship banner, and we invite them to team events and send them emails and E-Newsletters to notify them about our team’s progress. Sponsors are the keystone for maintaining the healthy economic growth of our team, and we welcome and appreciate their continued and unwavering support throughout the years.

Sponsors

Platinum Sponsors (\$5,000 or Greater)



Palos Verdes Peninsula High School is a New American and Blue Ribbon high school located south of Los Angeles on the Palos Verdes Peninsula, near the Southern California coastline. Peninsula High can attribute much of its success to its fine teaching and administrative staff as well as its 2500 students. Together, they make up the Panther Family.



JOHN DEERE

U.S. John Deere is the brand name of Deere & Company, an American corporation that manufactures agricultural, construction, and forestry machinery, diesel engines, drivetrains (axles, transmissions, gearboxes) used in heavy equipment, and lawn care equipment.

Gold Sponsors (\$2,500 or Greater)




Boeing is the world's largest aerospace company and leading manufacturer of commercial jetliners, defense, space and security systems, and service provider of aftermarket support. With corporate offices in Chicago, Boeing employs more than 153,000 people across the United States and in more than 65 countries.



The Gene Haas Foundation was established in 1999, by Gene Haas, founder and owner of Haas Automation, Inc., to support the needs of the local community, through grants to such local charities as the Boys and Girls Clubs, Food Share, Rescue Mission, and others.


Sponsors	
	<p>The Raytheon Company is a major U.S. defense contractor and industrial corporation with core manufacturing concentrations in weapons and military and commercial electronics.</p>
	<p>Marathon Petroleum Corporation is a leading petroleum refining, marketing, and transportation company. They operate the country's largest refining system.</p>
	<p>M&K Metal Co. works to provide you with the largest range of metals at the best service possible. They stock one of the largest inventories of steel, stainless, galvanized brass, copper and aluminum in Los Angeles and can process materials quicker than just about any metal distributor in the area.</p>
	<p>The mission of Peninsula Education Foundation is to raise and grant funds to enhance educational excellence for PVPUSD students.</p>
<p>Silver Sponsors (\$1,000 or Greater)</p>	
	<p>The Intuitive Foundation was created in 2018 to promote health and advance education by making grants to section 501(c)(3) organizations and foreign charities medical and technology research; science, technology, engineering, and math-related educational programs, training, and fellowships; healthcare training programs and facilities; direct disaster relief; and for other similar purposes.</p>
<p>Bronze Sponsors (\$500 or Greater)</p>	
	<p>Time Station operates a quick-to-setup, easy-to-use time and attendance system that runs on smartphones and tablets. It allows the employees to sign in and out instantly.</p>

Sponsors

	<p>Hickory Tree School is a private, non-sectarian school. The preschool and elementary school divisions offer an academically-based program geared specifically for each stage of growth. Their qualified and experienced staff provides the personal care and support needed to enhance emotional development.</p>
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	<p>Honda Motor Company, Ltd., Japanese Honda Giken Kōgyō KK, leading Japanese manufacturer of motorcycles and a major producer of automobiles for the world market. Headquarters are in Tokyo. Since 1959 it has been the top-selling motorcycle company in the world.</p>
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Friend Sponsors (\$100 or Greater)

	<p>Malaga Bank, a subsidiary of Malaga Financial Corporation, is a full-service community bank headquartered on the Palos Verdes Peninsula with six offices located in the South Bay area of Los Angeles.</p>
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Sponsorship Benefits

<p>\$100 Friend Level</p>	<p>Team decal, subscription to our E-newsletter, and company name listed in the E-newsletter</p>
<p>\$500 Bronze Level</p>	<p>All benefits of Friend Level and company name listed on team website and banner</p>
<p>\$1,500 Silver Level</p>	<p>All benefits of Bronze Level as well as an invitation to all competitions, team t-shirt, Name/logo listed on website, and an invitation for 2 to our season banquet</p>
<p>\$2,500 Gold Level</p>	<p>All benefits of Silver level as well as company logo on robot, company name listed at FIRST competitions and Invitation for 4 to our season banquet</p>
<p>\$5,000 Platinum Level</p>	<p>All benefits of Gold level and an invitation for 6 to our banquet and company logo placed on all season assets</p>

Fundraising

Our team sets up fundraisers with local businesses as another method of generating income. During each of our fundraisers, we amass an average income between \$200 to \$500. We advertise these fundraisers via flyers, our social media outlets, and our school's daily bulletin, which spreads our message school-wide. These fundraisers not only benefit our team, but also benefit the businesses by increasing traffic and revenue.

Donations

Even with our generous sponsors and our fundraising efforts, we often need to generate more revenue for our team to run fluidly. One way we do this is via donations from our team's friends and family fundraiser drive. Our team members are the heart of our organization and provide donations throughout the season to help support the program.

Other Financial Info

Our team operates under the 501(c)(3) charter of our local high school, Palos Verdes Peninsula High School, and we are funded by sponsorships, fundraisers, and donations. The majority of our income comes from donations that are received when new students join the team (which total approximately \$60,600 annually). Our largest expenses are robot construction and travel expenses (approximately \$40,000 annually). To remedy these expenses, students work hard throughout the year to gain and retain sponsors by sending letters and attending events such as parades. These partnerships are mutually beneficial. In return for any funding, materials, and donations, we give our corresponding levels of recognition, such as having their logo placed on our website, social media, banners, e-newsletter, and robots. Further, to reciprocate their generosity, our team has attended company charity events to support our sponsors.

For budgeting, we allot certain amounts of funds to different areas of our team based on previous years' total expenses and any anticipated changes. The budget for each area is projected based on previous expenditures and challenges, while factoring in lessons learned. We keep track of all purchases online through purchase request orders and then add those to the total expenses of the year.

Five Year Plan

As an FRC team, our primary goal is to make our robot as successfully competitive as possible and increase awareness of our program. Beyond that, our continued goal of inspiring sustainable and diverse STEM programs inside and outside our team comes from our desire to improve ourselves and benefit the world, in whatever small way we can. Additionally, we strive to achieve a higher caliber of safety in all of our activities. Alongside our goals for our team's internal development, we also strive to continually grow our Outreach programs to promote STEM education to more people.

Improving Safety

Safety is an area that our team continually focuses on while recognizing that there is always room for improvement. We want to improve the quality of safety training among our team members while increasing safety awareness and culture by creating more simple memorable acronyms for safety best practices as well as emergency situations. One example is our battery spill acronym "CANDO" which stands for "Clear the Area", (wear) "Appropriate attire", "Neutralize the spill", "Dispose of the battery" and "Organize the area". We strive to use simple mnemonics like this to increase safety awareness and adoption. There is also a need to expand our current early action safety incident recognition, which this year was changed from a safety walk every meeting to nominating a safety representative for the duration of the meeting. While this change did have the desired effect of shifting the focus on safety attentiveness away from a single time during the meeting, we further plan to create a more permanent safety captain role for team members to further improve upon this system.

Growing Outreach

As part of our team's continued goal to grow our various outreach programs, the Outreach Subteam's goal is to continually grow our Phantom Catz First Alliance (PCFA) of FLL teams and reach out to impact more communities. Initially we can double the number of local FLL teams by continuing our relationship with our school district, opening more teams. We plan to continue growth from there with our local community by fostering relationships with communities that have hosted our STEM Development Courses, and bringing them into FIRST through FLL.

Improving Our Team

Due to our large team, it is always necessary to improve our leadership structure to ensure that our team can manage the ongoing training of team members. To achieve this, we need to prioritize leadership training to ensure that all leads and directors are able to accomplish their roles effectively during competition season. Training materials are developed by current and future leads to help improve communication within leadership, and between leadership, members, and mentors. One area which we have identified as an area of improvement is task planning, where an attempted process improvement spiraled into multiple issues. Over the next five years we want to successfully institute an improved version of the proposed change, while creating better documentation about how to use existing task tracking systems.

In order to support our team's growth, our team's business must grow with it. As of right now, we have 13 corporate sponsors. Within the next 5 years, we plan to increase that number by at least 25%. We hope to do this through a number of methods. First, we will audit our team's business documents and spreadsheets to ensure all printed and digital materials are up to date and up to standard. Secondly, we will update our communications procedures to ensure a higher level of sponsor recruitment and engagement. Lastly, we will increase the quality and quantity of media content on our social media platforms. This will ensure that our sponsors and our potential sponsors will see the best of our team, thus increasing the likelihood of receiving corporate support.

Adequate infrastructure and tools is also essential to improving our team as it grows. Each season, we seek capital funding via grant requests to support further investment in our

infrastructure and/or program improvements. We have built up our robotics lab by attempting to purchase additional equipment each season through generous grants from the Peninsula Education Foundation, Chuck Miller Grant and other sponsors. The last two seasons we have made infrastructure upgrades via purchase of a trailer for use at competitions and a new storage shed. In the next few years, we hope to procure a donated or discounted sea container to expand the team's storage given our need to house legacy robots, spare parts, as well as team merchandise. We maintain a list of long term program and infrastructure improvements that we re-evaluate and prioritize each year for grant applications and as funding becomes available.

Improving Our Robot

Different Subteams have their own plans for growth to help us improve our robot. Some Subteams are pushing forward while others first must deal with internal issues. The remaining Subteams not listed here are helping with the goals of the Electronics and Pneumatics and Manufacturing Subteam, either through brainstorming or having gone through similar issues in their own history.

Our Electronics and Pneumatics Subteam's goal is to nurture an effective Subteam by proceduralizing the creation and management of better wiring standards. This year, the goal is to document any current assumptions about our standards and any setbacks caused by our current standards (or lack of). Following this, the new standards will be looked into and discussed, tested through the following few years, and new members will be taught using these new standards, with the newly created training made to easily adapt to any changes. With this, after the next four years, the Subteam will have fully adopted and understood the new, well documented, tested standards.

On the other hand, our Manufacturing Subteam before anything else is tasked with creating procedures, and training programs for them, related to team inventory. Our team inventory is not terrible, however digital documents about what is in the inventory are often wrong, and attempts to correct them are stifled by the fact that many items are stored in multiple locations and newer members tend to only know of the primary location, and be unaware of potential others. However, within three years, if we begin to institute proposed changes, we will have fewer issues and the manufacturing subteam will be operating more efficiently.

Closing Statement

In closing, The Phantom Catz wish to thank our school, sponsors, mentors, parents, students, community and Team Coach for their continued support and guidance. We would not be able to continue our commitment and growth without their dedication and any success our team achieves is through their generous contributions.