

## 2014-2015

## kickoff

*Elizabeth Kunkel*

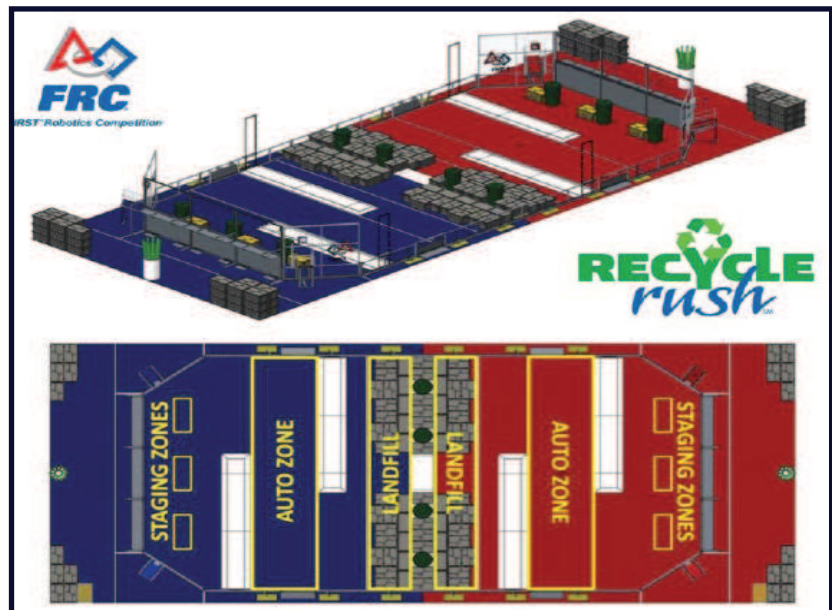
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At the start of each build season, after the New Year, FIRST teams gather to watch a live video announcement revealing the rules for the year's competition. This year, the game is Recycle Rush: a recycling themed game in which robots move about plastic totes, recycling bins, and litter. There are two sides of the field, each occupied by alliances of three, whose robots simultaneously work to score points. A small step prevents the robots from crossing onto the other team's side, limiting interaction and allowing for robot bumpers to be optional this year.

The game starts with the autonomous period, during which the robots must act without human control to move yellow totes and recycling bins into the Auto Zone. The Auto Zone is the space between the scoring platforms in front of the Staging Zone, where the robots begin, and behind the Landfill, where the totes and recycling bins are located. Yellow totes have tape on them to aid vision recognition during the autonomous period. After the autonomous period is finished, drivers take control, and teams score points by stacking totes on the scoring platforms and recycling bins on top of the stacked totes. Additional cooperation points are awarded if the alliance has four totes simultaneously on the scoring platform; these points are doubled if the totes are in a single stack. Disposing of pool noodle "litter," in the recycling bins scores extra points, as

does throwing litter into the other team's Auto Zone. Litter can only be thrown into the other team's Auto Zone during the last twenty seconds, but any litter an alliance accidentally drops into their Auto Zone, or unprocessed litter, also counts against them. Both litter and totes can be obtained from the human player, but robots can also find totes at the landfill, whereas litter is exclusively introduced to the game through the human player.

The game manual, which regulates gameplay rules and regulations concerning the construction of the robot, is now available to teams online as well as on the App Store. Parts have been shipped out to teams, who can now begin to design and build their robot. Cybersonics is busy brainstorming and designing, preparing to build a robot worthy of competition. The build season is the busiest time of year for FIRST teams, and Cybersonics is prepared to face the challenges that come with it.



Field layout for 2015 FRC Game Recycle Rush. Courtesy of FIRST Competition Manual.

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# preseason competition

*Elizabeth Kunkel*

Before build season begins and the game is announced, Cybersonics had many successes at the two preseason competitions it attended. Annually, Cybersonics attends both Ramp Riot and Brunswick Eruption, preparing its team for competition season and instilling the team with spirit.

Ramp Riot was hosted at Wissahickon High School and proved to be an exciting competition for the entire team. As the first robotics competition many of the Cybersonics' members have attended, Ramp Riot played an important role in setting the tone for the rest of the season, by introducing those members to the FIRST community. Cybersonics

is proud to say that at Ramp Riot they played in the winning alliance, alongside of 4-H Palindrome Team 4954, Vulcan Team 1218, and Malvern Team 1168. In addition to their victory, Cybersonics also received the Spirit Award for cheering along both their team and other FIRST teams. FIRST's system of alliances promotes good sportsmanship and helps teams forge friendships between their local and international competitors.

During preseason, Cybersonics also attended the Brunswick Eruption, where the team made it to the elimination rounds but not the final round. At both events, Cybersonics had the chance to sample different drivers,

and give those team members who are not usually driving a chance to participate. These matches are great for assisting mentors to form the optimal drive team for this year's game and helping the drivers learn the difficulties of operating a robot at competition.



*Team members Emma Woehr (left) and Karli Blanchard (Right) at Ramp Riot.*

# team building

*JoAnna Detweiler*

The success of every association, be it a sports team, a non-profit organization, or a corporate empire, rests exclusively on the shoulders of its members. Each member is a valuable player that must contribute his or her unique talents for the organization to function. In a team, a group of individuals must work effectively together and combine their various skills and ideas in order to achieve a common goal. The team's success as a whole widely depends on the individuals' ability to cooperate and donate their efforts to a single project. This year, the Cybersonics Technology Team has implemented a variety of engaging teambuilding activities alongside the typical off-season training, mentoring,

and fundraising. These activities specifically focus on strengthening the collaboration among students and developing problem-solving skills. For example, the team revisited past FIRST Robotics challenges and worked in several smaller groups to brainstorm the best solution in terms of mechanical operation and strategy.

Throughout the school year, Cybersonics has placed emphasis on setting goals at the individual level. The team offers new members a wide variety of different tools and resources in each department so that they can learn about the subjects that interest them. Cybersonics encouraged its new members to select the aspects of engineering,

marketing, business, web design, or video production that interested them the most, and to set either a personal goal within that field or a general goal to accomplish through the team. Seasoned members of the team also proposed yearlong objectives, such as becoming more actively involved in our community and earning awards at competitions in addition to these personal goals.

These exercises have revealed the teams drive and helped forge important bonds between the members this season. After the teambuilding exercises, students began to use positive goal setting techniques, and the team began showing that they are as close and devoted as ever.

A new year is beginning, and as Cybersonics Technology Team looks forward to another year, they express sincere thanks to their generous sponsors, who made last year and all previous years a success. Last year, Cybersonics built an outstanding robot, compose a comprehensive business plan, and find financial support, while simultaneously battling adverse weather. Throughout the history of Cybersonics Team 103, the support the team has received has allowed the team to achieve FIRST Hall of Fame status and maintain it every year. Each year the team travels to St. Louis FIRST National Championships to visit the Hall of Fame and meet Dr. Woodie Flowers,

FIRST Executive Advisory Board Co-Chair & Distinguished Advisor.

Cybersonics has always worked hard to establish its image and brand and is widely recognized among the FIRST community as an outstanding team, reaching out to other teams through their rural support program.

Being a seasoned FIRST team, Cybersonics has significant experience fundraising and finding support for its program. Cybersonics, historically, has received a wealth of support from the community and school. Team 103 is proud to keep relationships with their sponsors individualized and personal, using a variety of methods to reach out to their sponsors. Cybersonics

wishes to express their tremendous gratitude toward everyone who has supported the team thus far and those who continue to do so.

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*Cybersonics Technology Team would like to offer a few of their college mentors a special thank you. Thank you to Luke Chadwick, Karl Demalt, and Aaron Willey for their help editing the newsletter.*

# technology jargon

In the near future, beachgoers may find drones in replacement of traditional lifeguards, patrolling the waterfront. The PARS drone, first conceived by Amin Rigi and manufactured by RTS Labs in Iran, is designed to save struggling swimmers at beaches by deploying up to three life preservers for the swimmers to use as floatation. The PARS drone was first used in 2013 in the Caspian Sea and may soon see mass production.

The PARS drone possesses LED lights on the bottom of each arm, allowing for rescue missions at night and in poor lighting. The drone currently has capacity for three life preservers and may be able to hold more in the future.

The drone, which currently requires an operator, has recorded

flight times 60 seconds faster than its human lifeguard counterpart, reaching the swimmer in only 22 seconds.

During testing, the drone's manufacturers found that it was difficult to aim the life preservers but as the operator progressed and practiced further, the drone was extremely precise.

RTS plans to add floating charging stations that would be solar powered to recharge drones as they rest. RTS research lab also plans to create fully autonomous drones, meaning they can rescue swimmers without human help.

The lab believes that this drone can be used for more than just lifeguarding recreational sites, but also execute offshore

missions, and rescues during floods and natural disasters. Reception within the robotics community has been positive, and engineers are excited to see practical application of this new technology.



*PARS lifesaving drone. (Image courtesy of Good News Network)*





## From the Editor's Desk:

*A new year for Cybersonics Technology Team 103 always marks a new adventure, and I am proud to say this year, I take over as Editor in Chief of Tech Talk. I would like to offer my gracious thanks to my mentor Luke Chadwick, for he has taught me all I need to know to edit our team's newsletter and has helped me develop my style as a writer. Our new members seem to be adjusting well to the team environment of Cybersonics, and the older members express the utmost excitement for all of the improvements that we aspire to integrate into our team.*

*The team is busy with many new projects, and build season is seeing a wonderful beginning. We expect an exciting year and are eager to face Recycle Rush, a game that we believe will be a valuable challenge. There are many new members, and I expect to see a wider variety of writers appearing in the Tech Talk this year. As fundraising season comes to a close and build season starts, I am glad to release this year's first edition of the Tech Talk, and keep our supporters and the community informed.*

Elizabeth Kunkel

# fundraising update

*Jacob Dill*

The process of building a robot, especially one over a hundred pounds, requires a vast amount of materials, and the purchase of such materials can put strain on the budget of any team or organization. To the expensive materials, such as titanium or electrical systems, which may be required to create a functional robot, funds are dearly in need. Cybersonics, as with all FIRST robotics teams, must hold fundraisers to afford materials for the robot, costs of travel, and other fees associated with competition.

It is now build season, and the Cybersonics team has held its annual fundraising events, including October event, Basket Bingo. Whether on the team or simply playing, everybody enjoyed the event. In preparation for the event, members of the Cybersonics team were each assigned baskets to assemble that were later used at Basket Bingo as prizes. Many prizes included Vera Bradley bags, and generous parents of team members donated many door prizes as well. Basket Bingo was a huge success for the team, given that they raised around \$12,000 with tickets and sponsors. Basket Bingo was the new members' first experience in fundraising with the team. It oriented them with the process of attending events and the idea that fundraising is required for a successful season. The new members

also got to see how favored the team is within the community and even got to meet some of the supporters. Sponsors and supporters were able to meet with the Cybersonics community and become familiar with its purpose.

In November, Cybersonics hosted its spaghetti dinner. For the first time this year, it was hosted at the Riegelsville Fire Company. Family and friends came to talk, eat, and have an opportunity to meet with the Cybersonics members and community. Tickets were sold through Cybersonics members and sold at the door. Every ticket sold went to the Cybersonics community. The Cybersonics team needs more support than ever this year. Every ticket and every sponsor is essential for the team to function; therefore, Cybersonics is glad for its success fundraising this year.



*Patrons enjoying their bingo game as a basket is presented.*

## Upcoming Events

**Competition: Mt. Olive High School NJ**  
March 6-7

**Competition: Orlando**  
March 18-25

**Competition: Brigwater High School NJ**  
Mar. 28-29

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