

Inspired by FIRST, powered by Harris, supported by Penfield High School (PHS), FIRST Team 1511 has kept the thunder rolling for 8 years. Building on sponsor, school and community partnerships, we have a strong base for growth and development. Measuring our impact in Thunderbolts, and an ever growing FLL/JFLL program, we inspire the next generation of STEM leaders.

Our main sponsor, Harris, provides 14 mentors (3 new this year) and assists with manufacturing student CAD parts. Harris invites us to its events, attends ours, and features us in its annual report and newsletters. 1511's female mentors and students were recognized by Harris at the Women in Tech Day and networked with USAF Lt. General Kenne and Sen. Gillibrand. Harris holds an annual mentor luncheon and students present on the past year. Harris recognizes the value of FIRST and keeps supporting 1511, even when reducing charitable funding.

1511 partners with many businesses through a Patron Drive, our biggest fundraiser. Annually, students meet with 250+ businesses to tell them about FIRST. Sponsors receive newsletters, FIRST info, and invites to robotics events. They also support us by making robot parts.

We make many parts in our school shop thanks to a strong partnership with PHS. It renovated the tech wing to meet our needs, tripling our workspace! 1511's lead teacher worked with PHS to obtain a mill, drill press, band saws and a lathe. PHS allows us to use other parts of the school for events and testing, like shooting hoops in the gym. We thank the school board yearly with a robot demo and presentation.

Teachers and administrators wear red camo pants to 1511 school events and Spirit Days! Many attend competitions. The PHS IT staff formatted the tech computers for our Game Night and played with us. They provide us with any software and equipment that we need.

1511 impacted the PHS curriculum; we got The New Cool added to the 2012 summer reading list and donated 30 copies to the school and local libraries. We incorporated FIRST into Project Lead the Way classes where our mentors work with students on engineering design projects such as robot drivetrains. This year, a 1511 student's independent project was a shop equipment safety program used by PHS tech classes.

Our team communications keep us organized so that we can run our many events that inspire future STEM leaders. The team is updated via weekly emails, forums, Facebook and Twitter. 1511 also has an online engineering notebook to publicly share daily progress in Build Season.

Our student leadership team organizes recruitment, team building activities and communications. They receive training, lead meetings and subteams and help us meet our 9 goals. Students attend Leadership Boot Camp to learn public speaking, personal development, time management and more.

1511 is family. In Build Season, families make team meals and the custodians join us. Each fall, students engage in team building activities: an FLL challenge, learning the engineering design process in a Mock Build Season and building newspaper towers and spaghetti bridges. A first aid certification class is held for team members. Subteams develop electrical, mechanical, CAD, programming, website and marketing skills. Students applied these skills to redesign an old robot for demos.

A continuous flow of students comes from recruiting, FLL alumni and robot demos at school events like Pep Rally, Clubs & Activities Fair and Freshman Orientation. This year, we had a 95% student retention rate. We replace our graduates and then some every year.

In 8 years, 92% of our alumni have gone to college, 85% pursuing STEM careers. We keep track of 40+ alumni on Facebook, LinkedIn, 1511 forums and email. An alumna founded the Alumni Association to keep them involved in FIRST. Alumni visit often and volunteer at 1511 and FIRST events. 3 are back as 1511 mentors. Our Team Leader is working with Harris to recruit alumni; 1 alumnus works at Harris and 2 interned there.

Our alumni's success in college acceptances and scholarships is due in part to mentor recommendation letters. 1511 has engineers whose expertise inspires STEM leaders of tomorrow. Our non-engineering mentors share ideas about team sustainability through FIRST NEMO meetings and presentations. Mentors volunteer at FIRST Regionals such as FTAs and MCs. With our strong community presence, we have drawn 14 non-Harris mentors, some are parents of alumni, many are STEM professionals.

We do at least 2 demos and 1 community service event a month that are organized by students. This year, we held the FIRST MegaDrive on Make a Difference Day with FRC Team 340. We collected 40 units of blood, 145 food items, 1018 kid's books and 3500 lbs. of electronics to be recycled. For Toys for Tots, we wrapped over 800 toys and plan to do it next year!

The community has come to rely on 1511. Penfield reaches out to us to clean up the town as we participate in Clean-Up Day every year. We've raised over \$2000 each for the Cystic Fibrosis Foundation and the Leukemia & Lymphoma Society; we organized

a blood drive for LLS. Our impact is global. We participate regularly in InterVOL, sorting medical supplies for countries in need and aiding its Haitian Relief effort.

For our contributions to the community, we were proclaimed as a Youth Asset Builder by Penfield's Parks & Rec Director and Monroe County Youth Bureau. We've also been recognized by the Penfield Town Board and Monroe County Legislature and with a NYS Senate Resolution.

We also reach out through robot demos. A new demo and E-Watt fundraiser was Greentopia Festival, an environmental fair with over 19,000 people! We held over 30 robot demos this year: NYS Fair, 4 elementary schools, Finger Lakes FLL (FLFLL) Champs, Rochester Rhinos soccer games, for sponsors, museums & science centers and the 4<sup>th</sup> of July Parade. In an effort to get girls involved in STEM we had Girl Scout troops visit during Build Season.

1511 thinks that the best way to introduce FIRST is to see it in action, holding 5 major events.

Rochester Rally is a pre-ship scrimmage for local FRC teams to practice on a full field we build. Tech sponsors speak and we open our shop to teams for repairs.

Sponsored by Harris, led by 1511 and organized by a committee of community FIRST members for 8 years, Rah Cha Cha Ruckus is an offseason, Halloween-themed competition. 24 teams attend, even from Canada! Teams donate food to Foodlink; we've collected over 1400 lbs in 2 years!

Since 2006, Rumble has been an offseason FLL competition where FLL teams see our robot and replay the game to stay involved in FIRST.

Our rookie year, we started All Rookie Meet and Greet at Champs to celebrate the rookie teams' success. We've continued this event for rookies to meet each other and have fun.

At Rampage, our newest event started in 2009, we invite local FRC teams to demo a competition to over 35,000 people at the 5-day Monroe County Fair. We hand out info on FIRST and promote FLL with robots and a hands-on kid play table. We inspired a woman we met there to start a 4H FLL team that competed last year. The Fair Association gave us the 2011 Civic Achievement Award for promoting technology in the community!

Rookie FRC teams are important for the growth of FIRST and are potential STEM leaders. Every Build Season, we provide hands-on help by mentoring, providing tools

and expertise. We mentored FRC73 the last 2 years, which became a new inner-city STEM school in 2011. This year we're building a permanent Finger Lakes Regional (FLR) Rookie All-Star crate for future winners after giving ours to last year's winners. The Rochester Kickoff Robot Quick Build has been run by 1511 for the last 2 years, helping 8 teams. Veteran teams visit us for programming help and ThunderMart, where they borrow tools, spare parts and mentors. This year, we've helped Israeli team FRC1946 with mechanical advice and translating files. We also worked with a veteran team to strengthen their team structure and focus on their sustainability, recruitment and fundraising. We've assisted 250+ FRC teams with everything from programming and team structure to emergency robot support at competition.

We love to share our knowledge and resources. At Champs for the last 2 years, mentors and students have given seminars on PR, leadership and how to run an offseason event. We also presented at Regionals on student leadership, safety and starting FLL teams. We've beta-tested FIRST's C++ control systems for 4 years, presenting our findings at Kickoff and other events. The FLR committee has asked us many times to do robot demos and mentor/student presentations to potential sponsors (PTC). We are proud to help them spread FIRST!

We also spread FIRST through our website, linked on [usfirst.org](http://usfirst.org), where people contact us to get help, start a team, use our resources and learn about FIRST. People can watch our progress on our Build Season webcast.

We expand our outreach by participating in all FIRST programs. For 5 years, 2 mentors helped run the FTC and FLL tournaments at Clarkson University. We've been inspiring FLL students since 2005 with grants and student mentors. Last fall, we put FLL in 4 Penfield schools and got the district to buy 28 NXT kits for use in the tech classes. In 8 years, we've created 86 FLL/JFLL teams, mentoring 30 FLL teams. This year, we started 12 JFLL and 11 FLL teams. Our students mentored 10 FLL teams; 9 of them qualified for FLFLL Champs. For 7 years, we've run FLL coach seminars, help-sessions and 4 summer camps for 100+ students and adults per year. Every year 1511 members make up most of the volunteers at the local FLL qualifiers and FLFLL Champs. Since 2008, we've funded the FLFLL winners to go to St. Louis!

Through mentoring, we develop our own engineering and leadership skills, becoming STEM leaders through the process of inspiring the next generation. As our motto states, the Thunder just keeps getting louder!