

## Chairman's Award - Team 2152

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2019 - Team 2152

**Team Number**

2152

**Team Name, Corporate/University Sponsors**

Rotomation/VMA/Lockheed Martin/Ford Motor Co./Boeing/State of Florida/FPL/Embry-Riddle Aeronautical University&Spruce Creek High School&University High School

**Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years**

Whether it is designing, building, programming, communicating with mentors, or working on awards team members develop valuable skills and a passion for STEM. While working throughout the year members develop soft and hard skills needed to be successful in today's job market and higher education. About 95% of team members choose to go to college and 75% receive scholarships, and 1% acquire internships with employment potential.

**Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years**

Our team has started a community outreach program, Robots on the Road (ROTR) dedicated to spreading the message of FIRST. ROTR demonstrates student-built robots at businesses, community events, and schools. ROTR has been to 27 events since 2016. They have reached over 5,000 people to educate and inform them about FIRST. This year ROTR has been working with FIRST coaches and teachers to educate and encourage the use of FIRST curriculum standards in the classroom.

**Team's innovative or creative method to spread the *FIRST* message**

Ten years ago the coaches of team 2152 started the Academy of Information Technology & Robotics. This academy was created with curriculum based on the mission of FIRST. Since its inception, the academy has become a model for schools in Detroit, Louisville, and our own school district. AITR engages students in problem and challenge based learning using ideas from our business partners. Team 2152 now assists in spreading the word and changing education through FIRST.

**Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate**

We inspire students through our community outreach. Team SMASH hosts a summer camp for children ages 8-12, that embodies FIRST and ignites students passion for STEM. Many of the children have never been exposed to LEGOs or robotics before. ROTR is involved in the FIRST Total District Implementation (TDI), by mentoring all the FLL teams in our district. We travel to schools, run training expos, and are available to help wherever we are needed.

**Describe the team's initiatives to help start or form other FRC teams**

Currently, SMASH is the only FRC team in Volusia County. We are trying to change this using TDI to create a logical progression of FIRST programs in our school district. Our goal is to have at least one more FRC team in Volusia County in the next five years. We are also working several high schools to add FTC teams by next school year. We hope that this will allow for the teachers involved to be able to get comfortable with FIRST before jumping up to FRC.

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

Team 2152 works closely with Amy Monahan, the STEM coordinator for Volusia County to make strides on the TDI plan. Team 2152 have assisted in starting 17 FLL teams and 31 FLL Jr. teams this year. We also host training expos, scrimmages, and Pre-Qualifiers in Volusia County. These events involve the entire community with the plan to get them involved with FIRST. By 2023 we plan to have FIRST in all 69 Volusia County schools for grades K - 12.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

Our team has found that mentoring and guiding new teams throughout the years allows them to become passionate about FIRST. Through the goals and guidance of TDI we are able to promote growth through the FIRST programs as more teams are established at more schools in Volusia County. Our goal through TDI is to have students progress from FLL Jr. all the way to FRC during their educational journey.

**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

Team 2152 hosts an FLL and FLL Jr. training workshop called - FLL-ibration, annually. This workshop allows new teams, coaches, and mentors to be exposed to the world of FIRST with needed support and education. Team 2152 teaches many of the classes that are provided. Our team works with other FIRST teams by hosting competitions across the county. We provide Judges, referees, and the Core Values challenge. This plays a huge role in supporting new teams and raising their interest in robotics.

**Describe your Corporate/University Sponsors**

Embry Riddle Aeronautical University (ERAU), Volusia Manufacturing Association (VMA), Thomas & Betts (ABB), Florida Power & Light (FPL), Rotomation, Courteaux Electric, Futures Foundation, Boeing, Gatorland, State of Florida, Lockheed Martin, Ford Motor Company, Mullinax Ford, Rotomation, Steven Thornton (Universal Studios Engineering), Paul B. Hunter and Constance D. Hunter Charitable Foundation Inc., Weather Flow, Law Office of J. Peyton Quarles

**Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years**

Our tournament registration fees have been paid through FIRST grants from Boeing, Lockheed Martin, State of Florida, Ford, and FPL for the past 5 years. We design and run a robotics tournament each year for the VMA Showcase and we assist with the yearly golf tournament fundraiser. VMA helped fund our new onsite machine shop two years ago along with the Hunter Foundation and Futures Foundation and they continue to help fund materials to keep it running. Many of our sponsors provide mentors.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

Through the continued academic success of The Academy of Information Technology and Robotics, AITR has become a model for changing education. Through the FPL Empowering Stem Educators grant, we are educating teachers in Volusia County on how to bring the FIRST vision to their school. Teacher teams are seen touring our academy and observing our students working on robots. We are often called to bring our student-built T-Shirt cannon to local events through our ROTR initiative.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

FIRST is a community where individuals can express and enhance their teamwork, communication, and organizational skills. We do all this while working on a team to build a robot for a competition. The first week of January, FIRST releases a new game and gives teams six short weeks to design and build a robot to compete. During this time you work with peers, mentors, and teachers to build an amazing robot and participate in a program that you can take pride in.

**Team Captain/Student Representative that has double-checked this submission.**

Madisyn Wells

## Essay

As Team 2152 looks back to the start of their journey as a team, we see growth within our team, our community and most importantly in education. In 2007, seven students began an after school Robotics club that has since touched the lives of over 5,000 people who would never have had any experience with robots otherwise.

Each year we added a new successful initiative, like RobotFest, our annual FLL and now FLL Jr. qualifying tournament, STEAM Summer Camps for children in our community from eight to ten years old, and Robots on the Road (ROTR) a training and demonstration team. We also collaborated with our school district to start ten new FLL teams, and provide training to teachers, coaches and students in county workshops called FLL-Elebration. All this culminates with our biggest initiative: working with the school district to implement TDI which is Total District Implementation of FIRST. Team 2152 strives to bring the message of FIRST to schools and the community by incorporating FIRST into education. We have become a part of an educational revolution as ambassadors of this new movement. We would like to take you on our journey as we rewrite the rules of education in our school district.

In the early years of SMASH, the founding coaches, Dru and Fred Urquhart, came to believe that problem-solving, teamwork, commitment, creativity, and skills development (the qualities of FRC), provided a unique educational opportunity. In 2010 they designed an entire academy around the standards of FIRST and the six week build season. The Academy of Information Technology and Robotics (AITR) is made up of a seven teacher team who also mentor Team 2152. AITR has abandoned the traditional school model and is now a "school within a school." We incorporate six week, or "hexmesters," putting FIRST curriculum into STEM challenges. At the beginning of each hexmester, students are presented with a challenge and tasked to create a solution. Challenges incorporate all aspects of the core curriculum as well as the student's chosen technology track. For example, in the 10th-grade curriculum, one of the hexmesters is CSI AITR, where teachers stage a murder and students "apply" for jobs and solve the murder using DNA and blood spatter analysis, computer forensics, and other techniques. They then stage a mock trial in front of a jury of other students of all grade levels. Another challenge we've called MakerFaire gives students the opportunity to create personal projects, many of them STEM related. This event is open to all students and faculty at Spruce Creek High School.

Our teachers, who've won several awards such as the Volusia Manufacturing Association's (VMA) Teacher Team of the Year recently were awarded the EmPOWERing STEM Grant from Florida Power and Light (FPL) and have been educating other teacher teams in the school district. They are sharing implementation strategies for starting this model in schools throughout the district including University and Pine Ridge High. Galaxy Middle School is using a partial model during the trial stage. Through Ford Next Generation Learning (NGL), AITR teachers mentor teacher teams in schools in Detroit, Michigan, and Louisville, Kentucky with the hope of replicating this academy and eventually establishing more robotic teams. Mr. Urquhart, a retired robotics teacher from University High, and one of Team 2152's lead mentors took the process to the next step. He helped write the middle school and high school Robotics Curriculum standards, which were approved through the Florida Department of Education (FDOE). Now students have the unique experience to get high school credit for their work in Robotics.

Since 2011, AITR has been named a Volusia County Gold Star Academy. Since 2013, our graduation rate has remained 29.4% higher than our school district's 23.9%: higher than the state's average, and 19% higher than the national average each year. Students from SMASH and AITR have been offered internships at noteworthy companies such as Raydon, Lockheed Martin, and Rotomation. This collaboration between academies and schools helped our team establish our main mission: Encourage students to find a passion in STEM fields and to think outside the classroom.

In January of 2018, Volusia County became one of the first FIRST Total District Implementation (TDI) counties in the country and the only in the state of Florida. The goal of TDI is to create FIRST teams countywide. Team 2152 works with Amy Monahan, the Volusia County STEM coordinator, and County TDI Facilitator. In the past year we started 31 FLL Jr. teams, 17 FLL teams, and have begun creating interest in FTC with a plan to have a team by the next season. There are currently 21 elementary and nine middle schools, involved with FIRST in Volusia County. We have roughly 25% who are girls in the FIRST programs. Our goal is to reach 50% in the next five years. Mrs. Monahan recently said this of Team 2152:

Team SMASH has been vital in the decision to become a TDI district. We at Volusia County Schools cannot do what we do without the help and support of Team SMASH. This team plays a key role in supporting the new teams as they have done for every FIRST team in the school district. The team, their teachers, coaches, and mentors are my go-to people for helping me raise interest and excitement around robotics, specifically FIRST. This would not be possible without SMASH. In 2016, Team 2152 created a new community outreach program called Robots on The Road (ROTR). SMASH takes its past competition robots and a six-barrel t-shirt cannon to businesses, schools, and community events. Since its inception, SMASH has held 27 ROTR events (an average of more than one per month), including school assemblies, STEM Day at the local art museum, and STEM Fest, a two-day community event with special transportation provided to area wide schools. Since taking our six-barrel T-shirt cannon on ROTR events, we have been invited to the Spruce Creek High football games as well as the Bethune Cookman University Home game.

Team members organize and host our annual STEM summer camps for children ages 8-12. Our goal is to help spark interest in STEM as well as introduce them to FIRST ideals and programs. Our camp will be entering its eighth year this coming summer. We are pleased to find that we are approaching gender balance in our camps, with girls making up 40% of our attendees last year. SMASH team members teach the basics of robot programming and conclude the week with a LEGO Mindstorms competition.

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Through our community outreach, SMASH has acquired students from all over the county, including: New Smyrna Beach, Deltona, and Ormond Beach. SMASH has developed multiple techniques to allow the team to work effectively despite the geographic challenge as our district is very extensive. This includes Skype calls, Slack messaging, and meetings that begin at noon and end at 6pm during the week and full days on weekends. We are not just a school team, we are a Volusia County FRC team.

SMASH assists with the running of all FLL scrimmages and qualifiers in Volusia County along with hosting RobotFest, a regional qualifier for which we provide all judges and referees. We also take great pride in designing the core values challenges for each. SMASH held its first annual training seminar called "FLL-ebraction" in 2017 and this year the attendance has tripled. FLL-ebraction brings FLL teams, their coaches, mentors, and parents, to Spruce Creek High and provides workshops run exclusively by SMASH members. Workshops include Table Construction, Strategy, Programming, Building, Project, Core Values, and Fundraising.

Our journey has taken us beyond the school district and at points beyond our country's borders. Our team members use social media to connect with teams all over the world and to share ideas about robot construction, team organization, goal setting, sponsorship. We also advise foreign teams on how to incorporate FIRST into their curriculum. Team 2152 members have become ambassadors for STEM education wherever possible.

All successful journeys require assistance. We could not do this without support from our mentors and sponsors. This amazing business relationship has provided opportunities for training new team members on our donated CNC router and CNC mill. Mentors also provide valuable advice on designing and problem solving. Spending time with mentors provide improved communication skills by giving the team opportunities to give presentations to over 175 business leaders at events such as the annual VMA Golf Tournament given to raise money for STEM academies in our district. Mentors also provide new perspectives when problem solving, as well as a chance to network thus obtaining valuable internships. Two former SMASH team members have internships in mentor businesses while they attend college paid for by those businesses. Team 2152 members have become ambassadors for a change in education through partnerships with local and national businesses.

It is always fascinating to look back on the start of a journey and consider how monumental the passage of time is on any endeavor. Our team has become a unique model for others to implement through our active curriculum reform, community involvement, and mentorship of other FIRST teams. We've made, and will continue to make, significant impacts in Volusia County Schools through innovation in education. We've initiated, and will continue to initiate, FIRST growth in our school district by starting and mentoring teams. Community outreach events further our goals by spreading the word of FIRST. We have taken FIRST's mission to heart and started a culture of change that will continue to evolve. To quote FIRST founders, "It is more than just a robot; it's about the people, the community, and the future." Because of SMASH we are together and together we are FIRST.