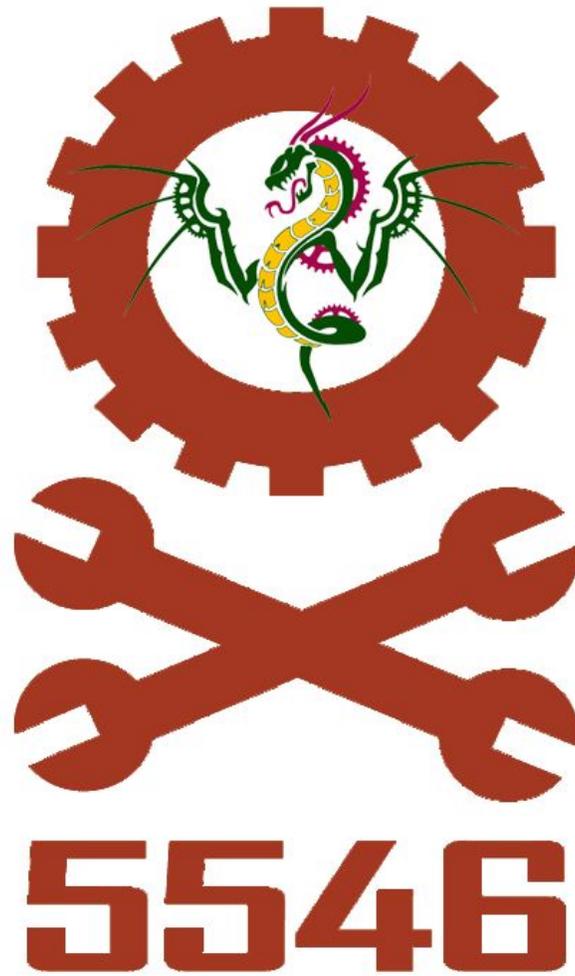


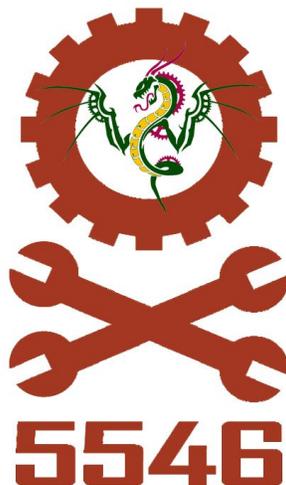
ARGS Robotics Team

A.R.T.



A.R.T. FRC Team 5546 Business Plan (Nov 2018)

For More Information, visit argsrobotics.com



2018 Business Plan ART, FRC Team 5546

Petersburg, Virginia

November 2018

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1.0 Executive Summary

Mission Statement

“The ARGS Robotics Team (A.R.T.) is committed to making positive change in our community, state, and nation by reaching out to disadvantaged communities to spark interest and passion in science, technology, engineering, and mathematics (STEM) using robotics and the principles of FIRST ROBOTICS to create inspirational, creative, and engaging activities.”

The Team

The Appomattox Regional Governor's School (ARGS) student body is incredibly diverse, because our school pulls from over 14 counties. Students on the robotics team come from every socio-economic, ethnic, and cultural background, from cities to farms. The combination of these two components makes ARGS and its robotics team, A.R.T., special.

Sponsors

NASA, Adobe, Waste Management, Rolls Royce, Anthem, Blueprint Automation, SAME, Rudy L. Hawkins, FAACV, Patient First, United Technologies, Parham’s Welding & Fabrication, VSU, Simmons Computer Solutions, and Jen’s Cut N Curl have been invaluable resources throughout the existence of this team. We appreciate their generosity and support and hope to continue these relationships moving into the future.

Future Growth Projection

A.R.T.’s plans for the future includes educating younger members on design, building, and programming processes to continue the strength of the team as members graduate. A.R.T. will continue to induct students and mentors, which will, as a result, improve student-mentor relationships. We plan to expand our public outreach and internal influence. As a team, we are always looking for ways to make our team more financially stable and sustainable. We will continue to build strong relationships with our existing sponsors and establish a strong foundation with our new sponsors. In addition, we hope to keep examining and experimenting with new technology and techniques to refine our skills and team as a whole. Due to ART’s firm foundations in relations, innovations, and dedication, we are prepared for long-term sustainability, continuity, and impact.

2.0 Team Background Information

This section of the business plan outlines A.R.T.'s long and compelling history with robotics.

2.1 The Team

Rookie Year	2014
Location	Petersburg, VA
School Affiliations	Appomattox Regional Governor's School for the Arts and Technology (361 students)
Team Demographics	46 members (over 10% of student body) 50% female, 50% male 65% Caucasian, 32% African American, 3% other
Mentors	Dr. Anita Crowder and Mr. Alex Salas

2.2 Our Values, Mission, and Goals

Values

Members of A.R.T. are taught to practice **PITCH** inside and outside of robotics events, competitions, and meetings. They learn to uphold these values in everyday life to contribute to a world where these values are essential.

PITCH

PITCH is our team's value principle. It represents the practice of Professionalism, Integrity, Teamwork, Compassion, and Honor. Our members strive to practice these values during team meetings, fundraising events, build sessions, competitions, and in daily life. These values ensure our members are professional during all sponsor outreach, have integrity in their team meetings, work together during build sessions, have compassion for local and global teams, and honor their achievements.

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Goals

Short Term

- *Fundraise necessary money for the team*
- *Keep an organized team*
- *Teach and mentor new students in their area of interest*
- *Create an effective robot unique to each year of competition*
- *Keep up to date with build schedule*
- *Ensure all team members are on schedule with assignments*
- *Earn awards*
- *Win admittance into district championships*

Long Term Goals

- *Have a team body of 50+ students*
- *Educate youth on the importance of STEM and FIRST at community events, public libraries, middle and elementary schools, and team-designed STEM workshops*
- *Build long standing partnerships with other teams and businesses*
- *Increase social media presence while teaching students how to use social media responsibly*
- *Maintain a sustainable school and extra-curricular balance*
- *Win District and Finals*

2.3 Benefits: Students, Mentors, Schools, and Sponsors

Students will:

- Learn to build a functional robot which solves the given problem
- Learn skills such as organization, marketing, business planning, scouting, website designing, and computer programming
- Have the opportunity to earn college scholarships or credits for other institutions
- Become involved in community outreach and volunteer opportunities
- Create meaningful relationships with fellow team members and mentors
- Learn to collaborate through teamwork
- Experiment in the world of STEM

Mentors will:

- Have the opportunity to share knowledge and past experience with interested students
- Become involved in community outreach and volunteer opportunities

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- Learn to teach/mentor youth in a technology focused environment
- Teach students to creatively problem solve
- Teach students to manage schedules

Sponsors will:

- Have the opportunity to have their company publicized
- Use their resources to inspire the next generation of STEM workers
- Develop next generation employees
- Inspire students to join the STEM field

School will:

- Support a student developed program
- Encourage student STEM participation and education
- Increase school recognition
- Attract potential students
- Help students with scholarship opportunities

2.4 Team 5546 History

The ARGS Robotics team has a long history with FIRST. Our team was first founded in 2000 as Team 404, but the team disbanded due to insufficient funding. However, student interest revived the team and in 2014, the ARGS' Robotics Team, or A.R.T. came to life as team 5546. The team has annually competed in the FIRST Robotics Competition for four years. The students have six weeks to prototype, build, and debug the robot designed for the year specific game. Based on a combination of the team and the robot's performance, the team can advance from the regional level, to the district level and finally to the world level. Our team has earned the privilege to attend the world championship three years in a row.

2.5 Team 5546 Awards

In its brief history, A.R.T. has earned numerous awards, which are listed below.

2018

CHS District Northern Virginia Event - Haymarket, VA

- Rank 1 with a record of 12-5-0
- Quality Award sponsored by Motorola Solutions Foundation

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CHS District Hampton Roads Event sponsored by Newport News Shipbuilding - Portsmouth, VA

- Rank 6 with a record of 13-6-0
- District Event Finalist

FIRST Chesapeake District Championship - College Park, MD

- Rank 5 with a record of 8-7-1

World Championships

Carson Division - Detroit, MI, USA

- Rank 36 with a record of 3-8-0

2017

CHS District Hampton Roads Event - Portsmouth, VA

- Rank 18 with a record of 6-9-1
- Innovation in Control Award sponsored by Rockwell Automation

CHS District Central Virginia Event - Glen Allen, VA

- Rank 18 with a record of 5-8-1

2016

CHS District Hampton Roads Event - Portsmouth, VA

- Rank 4 with a record of 15-3-0
- District Event Winner
- Creativity Award sponsored by Xerox

CHS District Central Virginia Event Doswell, VA

- Rank 6 with a record of 11-5-1
- Judges' Award

FIRST Chesapeake District Championship - College Park, MD

- Rank 18 with a record of 7-5-0

World Championships

Hopper Division - St. Louis, MO

- Rank 19 with a record of 6-4-0

2015

Virginia Regional - Richmond, VA

- Rank 59 with an average qual score of **25.38**
- Rookie All Star Award

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World Championships

Carver Division - St. Louis, MO

- Rank 67 with an average qual score of 90.00

2.6 For Inspiration and Recognition of Science and Technology (FIRST®)

FIRST®, an acronym for For Inspiration and Recognition of Science and Technology, was founded in 1986 by inventor Dean Kamen. It is a competitive robotics event whose mission is:

“To inspire young people to be science and technology leaders by engaging them in exciting mentor-based programs which build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self- confidence, communication, and leadership.”

Based in Manchester, New Hampshire, FIRST® offers five different programs:

- FIRST® Robotics Competition (FRC®) for Grades 9-12 (ages 14-18),
- FIRST® Tech Challenge (FTC®) for Grades 9-12 (ages 14-18),
- FIRST® LEGO League (FLL®) for Grades 4-8 (ages 9-16; 9-14 in the U.S. and Canada),
- Junior FIRST® LEGO League (Jr.FLL®) for Grades K-3 (ages 6-9), and
- FIRST® Place™ for ages 6 to adult

Every year, as a team, A.R.T. has competed in FIRST®'s Robotics Competition (FRC). We prepare students with the necessary information and skills for competing during the off-season (Fall months). We also introduce new students to the competition and teach them what being on an FRC team is about.

3.0 Organizational Plan

A.R.T. has spent the last few years learning and developing a team structure that will lead to team sustainment and growth.

3.1 Team structure

A.R.T. is lead by two head co-captains, who each help oversee the six sub-teams. Mentors collaborate with the co-captains and the sub-team captains during the year. The sub-teams are business, scouting, public relations (PR), build, safety, and programming. The students are given the option to join any of the six teams, or multiple if the schedules permit.

Students in leadership positions must be entering their sophomore year or above, and maintain grades with a maximum of two C's. Interested team members express their interest to the team mentor, and then provide a small speech to the team, and finally the team votes on the candidates. This allows the students to be led by experienced, interested, and dedicated students. The sub-team captains are responsible for leading their sub-team to work collaboratively to meet mandatory deadlines. The co-captains oversee the work of all sub-team captains and may lead sub-teams if desired. Mentors check in on the co-captains and sub-team captains, then advise them and instruct them as necessary.

See 7.1 for a detailed team structure chart

3.2 Human resources

Recruiting

Recruiting students starts as early as elementary school. For many years, we have spoken at local school events and demonstrated our robot. Children who go to these events may develop an interest and curiosity in science and technology throughout their elementary and middle school life. Online and print media allows us to reach students in the local communities as well. Social and print media allows us to reach students we may not have reached during our outreach. When these students graduate to high school, their budding interest influences them to join the team and become a part of ART Robotics and FIRST®.

Not only do we recruit students, but we also recruit mentors. A.R.T. primarily focuses on recruiting parents of team members because they are the most interested. Often times, parents of future team members also come to help mentor our team.

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Retaining

A.R.T. strives to retain as many students as we possibly can. We do this by providing ample communication and ensuring no one is left out when there is work to be done. We also require students to be present at a majority of the meetings in order to be eligible to go to competitions. Students are never left without a task to accomplish. If their sub-team does not have any current tasks, they are assigned tasks from other sub-teams.

Training

All students are trained throughout the year. Training includes learning how to safely work and operate tools in the workshop, how to program the robot with the use of java, and how to use CAD software. When training, we prefer a direct sub-team captain to team member lesson style with minimal direct mentor influence. Although, on occasion, direct mentor to team member lessons are required for specialized knowledge (i.e. CAD software, programming, etc.) Along with the technical training, our sub-team captains mentor students so they can be leaders on the team.

Attendance, Participation, and Behavior Expectations

Attendance is recorded at every team, sub-team, and captains meeting. While students are not required to attend every meeting, they are strongly encouraged to do so. Students are required to attend a minimum 50% of general team meetings and 80% of sub-team meetings. General team meetings, primarily team informational meetings, are held at lunch and are scheduled at least a week in advance. Sub-team meetings are scheduled at least 3 days in advance. Students have to sign in for lunch meetings on a signature sheet, and the sub-team captain takes sub-team meeting attendance. Students must maintain a minimum C average in all classes to continue team participation. Team captains and sub-team captains are allowed a maximum of two classes with a C average in order to maintain their leadership roles. If these requirements are not met, the student is placed on a 30-day probation period, during which they can improve grade point average. After this period, if a student is unable to boost their grade average, they will consequently be suspended. Mentor assistance is encouraged for any student finding trouble in meeting these requirements. If available to attend competitions or events, the students must be on time, or early if they have special duties, and must practice PITCH principles at all times.

The students are expected to practice PITCH during competitions, which includes providing assistance and moral support for every team in attendance. It is expected the team members cheer appropriately for all teams, not just our own. PITCH must be practiced at all times, and the team members must be gracious whether they lose or win. It is highly important each and every

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member is compassionate and honest with their team members, whether it be through email, letter, posts, or by word of mouth. Examples of inappropriate behavior include spreading gossip, sending hurtful messages, acting vengeful or harmful, and acting with intention to deface a team or person.

Safety

All members of A.R.T. are trained to safely work in the workshop. Any members who have not been trained, or have no intentions to learn, are not allowed to enter the workshop. Safety training all members prevents injury within the workshop.

The use of special equipment such as the welder and the radial saw must be handled by an adult mentor.

In order to prevent injury within the pit at competitions, we try to maintain a limited number of team members inside the pit area. Team leaders keep track of the members in the pit to prevent overcrowding.

3.3 Location

A.R.T. has the opportunity to work in classrooms at Appomattox Regional Governor's School. The school has a single workshop with machinery and classrooms for programming and CAD.

3.4 Off-season Events and Projects

Projects

A.R.T. works with teachers, staff members and mentors at ARGGS to improve our skills in planning, prototyping, and building. Our team, taught a workshop at Tri-Cities Tutoring Services in which the children learned the engineering design process and then applied it to their project of constructing a teepee.

Outreach

During the off-season, we work with local schools and organizations to bring our competition robot from the previous build season to demonstrate to and inspire children. Our previous events include demonstrating at Tussing Elementary school, hosting STEM Week for Girls, running STEM camps at the Petersburg Public Library, and teaching a teepee workshop at Tri-Cities Tutoring Services. Some of our team members were able to go to Paris, France to participate in International outreach and marketing by publicizing our team during the trip.

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4.0 Operational Plan

The operational plan described in this section has been developed over the last few years as the team learns from its own experience, as well as the experiences of other teams.

4.1 Tasks

Every year, during the FIRST® season, A.R.T. is tasked with our primary focus, creating a robot based off that year's scenario. As part of this mission, throughout the school year, A.R.T. maintains the team by doing the following:

- Update or create a business plan
- Update website content
- Contact local and corporate businesses for sponsorships
- Design and purchase marketing resources
- Design and purchase team apparel
- Create and maintain team media
- Maintain a social media presence

Additionally, each year during this six-week time period, not only do we construct the robot, we:

- Design a CAD drawing of robot
- Prototype the robot
- Construct a mock field
- Build the competition robot
- Create scouting forms and update data collection system
- Submit Award Documents
- Create Safety Animation

4.2 Scheduling

General meetings in fall, or off-season, are on a bimonthly schedule. Most sub-teams meet weekly during the fall. During build season, build and programming teams meet every day after school. Summer meetings are infrequent, but sometimes necessary for outreach.

4.3 Communication

Each student on the team has a school email, which is the foundation of our communication system. Team communication includes daily school announcements, emails, calendar updates, and by word of mouth. Leaders communicate with members directly through email or calendar updates on the team website. Our PR team maintains the social media outreach.

4.4 Project Management

ART uses calendars, email systems, and customer-relations management (CRM) programs to manage projects. If a team captain or sub-team captain needs assistance with a large project, they delegate team members to help them. Mentors ensure projects and assignments are completed by the assigned deadlines.

5.0 Marketing Plan

5.1 Target Audience

Appomattox Regional Governor's School Administration

The administration at Appomattox Regional Governor's School allows us to use their workshops and classrooms.

Sponsors

Our sponsors provide the most support, financially and non-financially. They provide many of the resources our team would not normally have access to without their help. A.R.T. targets previous, current, and potential sponsors in order to ensure continued support and gain new sponsors.

5.2 Marketing Mediums

Robot Demonstrations / Public speaking Events

A.R.T.'s public events include exhibiting our robots and spreading the message of FIRST®, our team, and STEM Education. In the past, we have spoken at Tussing Elementary School, run STEM Week for Girls, and run after school STEM camps at the Petersburg Public Library.

Imagery: Posters, Robot Graphics/Colors, T-shirts, Flyers, Giveaways, etc.

One of our primary focuses in marketing is imagery. Our public image is a very important part of marketing because it shows who we are and makes us easily recognized. Strong and consistent imagery makes the team more recognizable and memorable. Our team's colors are maroon and white, colors used in every aspect of our team: our logo, our website, our robot, and team apparel.

Online Presence

A.R.T. has a completely team programmed website. The website has had more than 100 unique visitors from many different countries and states since its debut. We also maintain social networking accounts on sites such as: Twitter, Facebook, and Instagram.

Word of Mouth

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Along with public events, imagery, and our online presence, we rely on word of mouth. We post posters around school and post announcements in the school's bulletin for those who do not know about the team yet. Team members tell their friends about the team and mentors tell their co-workers about the team, which results in team growth.

6.0 Financial Plan

A.R.T. ensures long-term success by focusing on long-term financial viability. Financial support comes from three main sources: Sponsors, fundraisers, and team member relationships. In order to facilitate financial viability, we provide seed funding for the following year. All of our finances are recorded in an annual budget.

See 7.1 for Operations Budget

6.1 Sponsors

Sponsors are our primary source of financial support. NASA, Rolls-Royce, and Adobe have been large sponsors of our team we reached through FIRST's and other's sponsorship programs.

Each year, we look to establish new sponsor relationships. Building on our in school and local fundraising is a great way to accomplish this. We have found marketing our team to attract potential sponsors is best accomplished by robot demonstrations and student representatives.

6.2 Fundraisers

Fundraisers provide for our second largest source of financial support. Throughout the year, our team has restaurant fundraisers. We contact local restaurants, which subsequently donate to us a percentage of the revenue from customers with our fliers. We have previously had fundraisers at restaurants such as Chick-fil-a.

6.3 Donations

Both members and non-members have provided financial support for our team. We have created GoFundMe, Amazon Smile, and PayPal pages/accounts to accept online donations.

6.4 Team Member Contributions

Team members also contribute to our team financially. In order to make our club more desirable, we charge students only \$35 to join our team. This provides enough for a hat, two t-shirts, and a lanyard for every team member. When competition time arrives, we calculate travel costs and charge members the amount which cannot be covered by our budget.

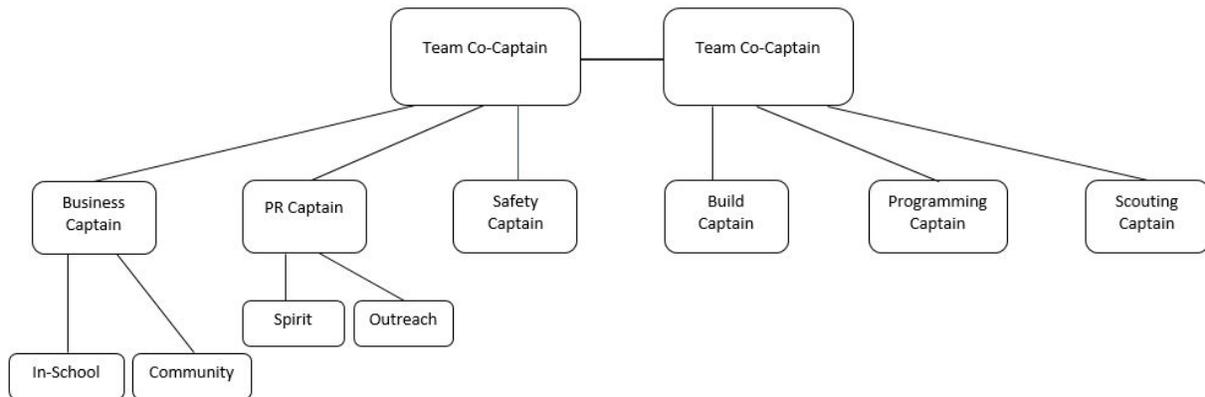
7.0 Appendix

A-1 Operations Budget

Name	Description	Price
Regional Registration	Registering for both regional events	\$5,000.00
District Registration	Registering for district championships	\$4,000.00
World Championship	Registering for world championship in Detroit, MI	\$5,000.00
2019 Robot	The 2019 Deep Space Robot	\$3,000.00
Trailer Rental	Renting a trailer for 4 weekends at \$50 a weekend	\$200.00
Spare Parts	Anderson Powerpoles 100 pack, Quickrelease Pins 1/4th in. diameter, etc.	\$300.00
T-Shirts	\$10 x (# Seniors + # Sub-Team Captains) + \$6.50 x # Other Team Members	\$700.00
Total		\$18,200.00

A-2 Team Structure Chart

The team structure chart shows how the team is organized. It shows who reports to whom and who is in charge of each sub- team. It also shows the title of each member in leadership.



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A-3 Sponsor Levels

Please consider sponsoring the ARGS Robotics Team! Among the many thanks that you will receive, we will promote your business through this website, in our pit at competitions, and on our robot. Your company/organization will reach 14 different localities, cities, and counties throughout Virginia.



LIZARD – Less than \$100

- Our appreciation and thanks for supporting our team!
- Name on our website and social media



BASILISK – \$100+

- Our appreciation and thanks for supporting our team!
- Name on our website and social media
- Small logo on team t-shirts
- Logo posted in event pits (electronic sign)



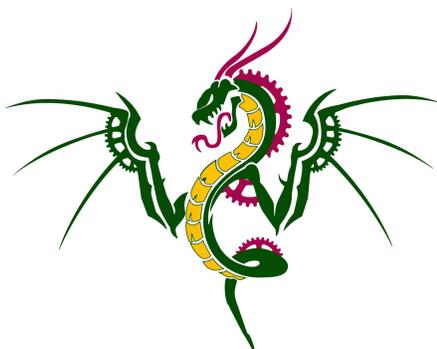
HYDRA – \$500+

- Our appreciation and thanks for supporting our team!
- Name on our website and social media
- Medium logo on team t-shirts
- Logo posted in event pits (electronic sign)
- Name listed on our robot



WYVERN – \$1,000+

- Our appreciation and thanks for supporting our team!
- Name on our website and social media
- Large logo on team t-shirts
- Logo posted in event pits (permanent sign)
- Small logo displayed prominently on robot
- T-shirts shipped to sponsor
- Sponsor's name is announced at events



DRAGON – \$5,000+

- Our appreciation and thanks for supporting our team!
- Name on our website and social media
- Large logo on team t-shirts
- Logo posted in event pits (permanent sign)
- Large logo displayed prominently on robot
- T-shirts shipped to sponsor
- Sponsor's name is announced at events
- Within 50 miles from us, we'll take our robot directly to your company/organization for a demonstration