# Purple Precision
# Team 3176, Brownsburg High School
# Business Plan

# Executive summary

## Mission statement

Our Mission as a team is to inspire the youth of our community to be leaders in science and technology through engagement in FIRST's FRC that improve and foster skills in science, engineering and technology. Though the acquisition of these skills students become more adept in real life experiences and gain self-confidence, communication and leadership experience.

The Team strives to ignite a passion in students to learn and engage in STEM activities. Through engagement students learn the importance of values instated by FIRST and apply them as they continue their lives. Through experience, members of Team 3176 learn the keys of teamwork and the success it, when properly executed, can achieve.

We strive to put our name, Team 3176, into the community representing FIRST and its values. Community represents a large part of what Team 3176 hopes to impact. By impacting our community we spread an excitement for STEM. Because our community is where we derive our supporters and sponsors, we give back in a variety of innovative methods.


## Date Team Began

August 2009

## Program Summary

FIRST Robotics Team 3176 at Brownsburg High School enters the 2017 Competition Season with 7 previous years of experience in FIRST Robotics Competition. We continue to see our success in spreading the ideas of FIRST as we obtain more members each and every year we participate! As Team 3176 continues to grow, we see that challenges are coming our way, and our Student Advisory Board as well as our mentors are targeting these challenges with Precision.

Challenges we face include the need for faster communication to not only our students, but to their families as well. We see the need to maintain a 3:1 student to mentor ratio, along with the continual need of inspiring more females to join FIRST in order to be more involved in STEM activities. At the elementary and middle school levels, we have little to no programs offering insight to FIRST or STEM activities and opportunities. Because of this we see many students coming into high school with little to no expectations out of our program. With the impending renovations to our school, we run into the issue of losing the workshop we currently have.

None the less, these challenges do not seem to slow down Team 3176. Rather, the team sees these challenges as opportunities, and acts upon them.

Going forwards into the 2017 year, Team 3176 has XY male and XX female student members. It is understood that the need to inspire more females in STEM activities is important and a challenge that we will continue addressing.
Not only do our BHS teachers help out with spreading the message of STEM within the classroom, but are also involved within Team 3176 as mentors. Our mentors come from everywhere, ranging from our high school to local businesses to large corporations such as Rolls Royce and Eli Lilly. Wherever they come from, we wouldn’t trade them for the world, and are happy to have the best mentors FIRST has to offer.


## Location

Brownsburg High School, Brownsburg IN

## Current School Sponsors

Mr. Nathan Heidegger and  Mrs. Dawn Mayer

## Team Outreach and Impact

64% of the current team roster have taken or are currently taking a PLTW class. Team 3176 alumni continue their STEM relationship. Of our 37 alumni, 91% are involved in military, college or secondary education. 83% of them currently pursue STEM related education paths.

Team 3176 focuses on giving back to the community while promoting FIRST. We use community outreach events such as Polar Plunge which benefit the Special Olympics of Indiana and Relay for Life which benefit the American Cancer Society, to spread the message about FIRST and Team 3176.

In the 2016/2017 season Team 3176 Purple Precision started a new event hosted at Brownsburg High School called FIRST Engineering Night (FEN).


**Growth**

Team 3176 has grown greatly in the past 8 years in which it has served students. The team has increased in both mentor and student participation numbers. As the team grows the space is a constant and Team 3176 strives to use the space provided by the school for the best efficiency to allow the most students to participate. And with the upcoming renovations it just provides a new opportunity to grow and improve.

**Future Plans**

Team 3176 looks into new opportunities and plan for the future always looking to expand the scope and impact of the team. Team 3176 plans to foster a relationship between the robotics and STEM related clubs in the Brownsburg school corporation. A long term goal is to establish and mentor FLL team such that all Middle School age students have access to FIRST.

# Team Overview

## Team History

Team 3176 Purple Precision was started in 2009 at Brownsburg High School in preparation for the 2010 competition year. Since the beginning, we have seen consistent growth in the number of students participating on our FRC team. We started with just 4 mentors and 15 students. Now, in our 2017 competition year, we have 16 mentors and 47 students.

Over the last six  years FIRST Robotics Team 3176 has earned many awards. At the 2010 Boilermaker Regional, we took home the highest honor for a new team: the Rookie All Star Award. This qualified us for the World Championships, where the team competed with 300 of the top teams. During the following year, FIRST Robotics Team 3176 built upon the solid rookie season. We earned both the Coopertition® Award and Gracious Professionalism Award sponsored by Johnson & Johnson at the 2011 Boilermaker Regional for exemplary help to other teams during the competition. Recently we have been the recipients of various awards surrounding our teams'  unity and spirit. These awards include the Team Spirit Award at the 2016 Indiana FIRST District Tippecanoe Event and the Imagery Award at the 2016 Indiana FIRST District State Championship. Our organization would not exist without the assistance of our surrounding community. In return for support and sponsorship, FIRST Robotics Team 3176 makes a high priority to giving back to the community, thereby promoting FIRST in all that we do. The Special Olympics of Indiana is an important organization for our team. We have raised over $10,000 for them through our participation in the Polar Plunge and Plane Pull.

# Team Management

## Team Membership

Membership on Team 3176 is open to all who attend Brownsburg High School. Membership is a commitment for the entire school year. Team 3176 prides itself in the ability to train new members and inform them of our rules and regulations, so no prior knowledge is required.

To become a full member of Team 3176, students must have read and understood the Business Plan and Team constitution. They must then sign to commit to the rules and regulations put forth in both documents.

Members are expected to actively participate and attend meetings and competitions. A member of Team 3176 should be an example of FIRST values and be a role model for other students of Brownsburg High School.

## Management Structure

Team 3176 is managed and lead by students with assistance and guidance from adult sponsors. The governing and decision making body is called the Student Advisory Board (SAB) consisting of seven students. The SAB contains two levels of management, the Project Management Team (PMT) and the Student Consultants (SC). The SAB is selected by a selection committee of lead mentors and graduating SAB members in conjunction with an election and interview process.

The Project Management Team has three distinct positions:

Project Manager

- Responsible for the overall function of the team and adherence to schedules and plans.
- Work directly with the Lead Mentors
- Work directly with a representative of the Parent Group
- Be a representative to Chain Link for the House of Representatives
- Assist in determining policies for the team
- Facilitate communication to the team

Business Director

- Oversee any and all operations of Team 3176 from a business standpoint
- Maintain proper communications between the Sub-teams.
- Formulate and set goals for each individual Sub-teams on Business Operations.
- Work with Financial Sub-team to maintain stability and sustainability.
- Prepare reports on progress of Business Operations for Project Management Team, Co-sponsors, and Mentors.
- Help maintain positive team image of Team 3176 for the community and sponsors
- Motivate all members to be active on Business Operations. .

Chief Engineer

- Adhere to and set a schedule for delivery of the product
- Take steps to set and achieve goals in robot progress
- Has authority to use the ideas and input of the team to make final design decisions
- Work with Project Manager for cohesive communication through the team

The Student Consultants have 4 distinct positions

Technical Lead

- Meets with the technical sub-teams leads and chief engineer for design meetings
- Supplements knowledge and expertise to help the PMT make informed decisions.
- Be able to convey all the needs and achievements of the technical sub-team
- Responsible for monitoring the completion of the bill of materials

Finance

- Be able to convey financial information (ie. Budgets, cash flow, expenses, etc.) To the PMT and/or to the finance team
- Responsible for building relationships with sponsors; generally knowing the standing with sponsors; responsible for delegating who will reach out to sponsors
- Responsible in ensuring stability and sustainability for Team 3176.
- Responsible for working with Technical Consultant and Chief Engineer in the completion of the Bill of Materials.

Logistics / community outreach

- Oversees the organization of team/community outreach events
- Collects any forms given out to students
- Is in charge of the attendance
- Coordinates with the designated logistics sponsor (currently Mrs. Mayer) about food donations for team events
- Responsible for communications within the team

Graphics

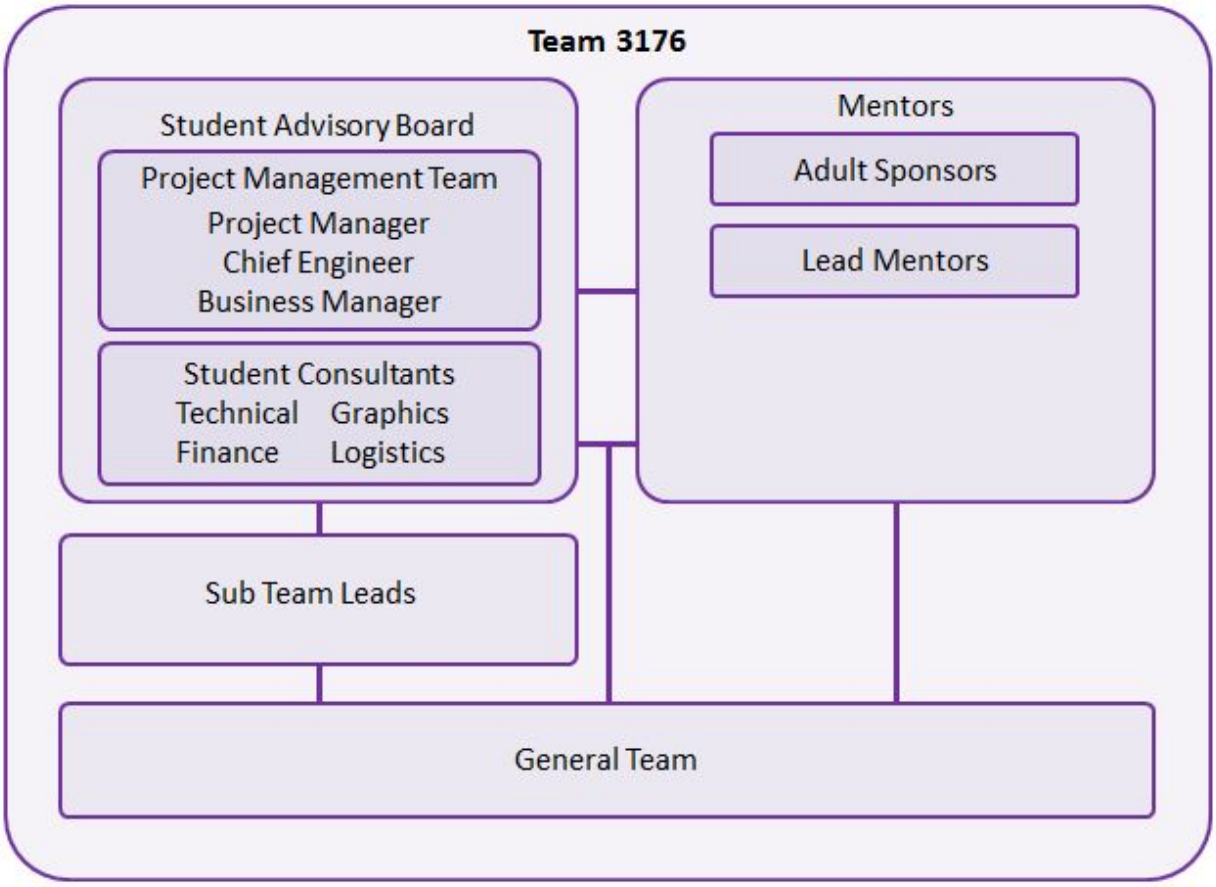
- Coordinates with chief engineer/technical sub-teams for robot-related graphics
- Conveys all the needs and achievements of the graphics sub-team
- Communicates with any printers of team graphics (ie. T-shirts and robot graphics)

Prerequisites

- Need to have at least one year on the team
- Good academic standing

Expectations

- Project management
- Organization
- Responsible and timely communication
- Good time management
- Follow-through on commitments
- Able to express opinions and listen to other members




## Team Structure

Team 3176 has formed two groups containing 13 sub-teams that collaborate for a successful season. Below is a brief description of each sub-team's responsibilities:

The Technical Team consists of 7 sub-teams.

**Mechanical**: assembles and builds systems to satisfy objectives of the game that integrate to make a complete robot divided into smaller focused groups as follows:

Chassis/movement

Manipulator 1

Manipulator 2

Manipulator 3

**Electrical**: Designs and assembles the control system for the robot. Other responsibilities include terminating wires, setting up electrical components, managing and maintaining a steady flow of power to the motors and tracking signals of electrical

components. Communicating clearly with programming team or proper integration of software and hardware.

**Pneumatics**: Understand pneumatics and provide the solutions on the robot.

**Programming**: Programs the robot to work independently and creates a comprehensive user interface for drivers to interact and control the robot. Must communicate and collaborate with every sub-team for cohesive control of the robot.

**CAD**: Uses Computer-Aided-Design (CAD) software like Autodesk Inventor to create representations used in prototyping, construction, troubleshooting, and presentations.

**Safety**: ensures adherence to safety regulations and assesses unsafe situations or hazards in our workspace or events.

The Non-Technical Team consists of 6 sub-teams.

**Awards**: The award submission process documents team history and achievements while spotlighting improvement opportunities. Submits essays, presentations, videos, signage, and data also develop student marketing skills.

**Public Relations**: Manages internal and external communications through the team website, twitter, blog, YouTube, radio, television and newspaper. This group also manages external volunteer opportunities and community outreach initiatives. Our public relations sub-team creates brochures, PowerPoint presentations, and newsletters to encourage new sponsorship opportunities.

**Finance**: This sub-team has budget and sponsor responsibility. We find businesses to fund the team or supply tools and materials. The Finance sub-team uses Customer Relationship Management tools to identify and engage prospective sponsors. We also help find mentors from these same prospects. The finance sub-team collaborates with the marketing sub-team to spread the FIRST message.

**Graphics**: focuses on branding and support materials for sponsorship efforts by the Finance sub-team. This includes all marketing communications and graphic design. They also have responsibility for logo and brand control for Team 3176. The marketing team also creates art for promotional items like apparel and logos.

**Photography/Media**: Documents and compiles digital media of Team 3176 and works

closely with graphics to insure a unified team brand. This group films and edits promotional content for both awards and for public relations.

**Logistics**: coordinates team travel and lodging at events. They manage the workshop during build season and the pit area during competition. They also work with the marketing team to develop merchandise, team uniforms and name tags.

**Scouting**: analyzes game strategy and develops a scouting plan for use at competitions. The collected data is used to set strategy at later matches and select partners in final rounds of competition.

# Strategic planning/ SWOT

Any organization has strengths, weaknesses, opportunities, and threats (SWOT). The SWOT analysis can also vary by perspective. Team 3176 students and mentors created SWOT analysis separately. Below represents a combination of both perspectives.

Strengths

- Our team is vast in numbers. Many individuals stepped forward this year and joined in divisions that have been weaker in the past few years.
- We are proud to have wonderful mentors working with us every step along the way. They are not only here to help us develop ideas and aid us in the build phase of the season, but they push us and educate us in ways to apply the teachings of STEM education in our everyday lives.
- We developed a strong sense of unity and imagery for our team this year. From new shirts that would be seen every day in the halls to the unified hats that all parents, mentors, and students alike wore during competitions, Team 3176 was without doubt a team that was easily recognized by all.
- All of these strengths combined led to one overall goal. Team 3176 experienced one of the most successful years to date as our robot worked its way through the season to end in a semi-final match at the Indiana District State Competition.

Weaknesses

- Our team lacked formal communication between sub teams and individuals.
- An overabundance of people led to a mass group of non-productive individuals with no jobs to complete.
- Our off season was not as productive as planned and stated at the start of the school year.
- Challenges in our prototyping and design phase led to a complicated delay in the build season.
- A system of power tool training for incoming members was never established and in turn only a few individuals were able to do all the needed cutting and drilling.
- Safety procedures were strongly enforced at the start of the year but were lacking by the time build season came around.

Opportunity

- We would like to expand into other FIRST divisions such as FLL and FTC.
- We are looking for ways to reach out into the community and other surrounding communities to make a larger impact in not only STEM education, but also in other charities and corporations such as our involvement in Plane Pull, Polar Plunge, Relay for life, and many others.
- A goal we have for this year is to develop better relationships with other FIRST teams.
- We are looking to start programs and camps to promote STEM education and engineering fundamentals. These programs include an expansion of our already successful and known engineering nights held at one of our elementary schools

and a plan to partner with our town's parks and recreation department to start day camps that promote STEM education through hands on experiences.

Threats

- With the current plans and redesigns our school corporation is facing, our robotics club has been affected negatively in many ways. First of all a ban on all portable usb storage devices has been introduced school wide. Secondly, we must plan ahead and get permission and access granted to install and use the many needed softwares and drivers. Lastly, our school has released plans of demolition and reconstruction projects. Phase 1 of this plan would render our current robotics room useless and unusable during the construction and no temporary rooms for us have been proposed.
- With a large base in the community comes a large number of individuals wanting to join. We are expecting even a larger amount of members on the team this year than last year – a year that already posed challenges from overpopulation.
- Our team is now facing the loss of both mentors and a sponsor for our team.
- With the many expansions and projects we are planning on starting in the community, we are concerned about earning the backing and the support we will need from the community.

**Long Term Goals**

- To Acquire a Trailer to become independent and self sufficient in transporting the robot
- Bringing FIRST to the middle, elementary school level and the Brownsburg community.
- Hosting a District Level Event
- Attending World's competition
- Hosting a Kickoff Event

**Financial Plan**

| Income | | | Expenses | |
|---|---|---|---|---|
| Corporate Sponsors | $9,000 | | Match Registration | $9,250 |
| Student Fees | $10,800 | | Transportation | $5,000 |
| Donations | $2,000 | | Tshirts | $1,300 |
| Foodie | $500 | | Marketing | $1,500 |
| | | | Robot | $4,000 |
| | | | Website | $250 |
| | | | Inventory | $1,000 |
| | | | | |
| Total | $22,300 | | Total | $22,300 |

**Sponsor Benefits**

Purple $5000+

- Name and logo on homepage website
- Name and logo on Banner/Display boards in large font
- Name/ large logo on Competition Robot
- Article written highlighting company in monthly newsletter
- Large logo displayed in school display case

Platinum $2500-$4999

- Name and logo on website
- Name and logo on Banner/Display boards in large font
- Name/ large logo on Competition Robot
- Article written highlighting company in monthly newsletter
- Small logo displayed in school display case

Gold $1000-$2499

- Name and logo on website
- Name and logo on Banner/Display boards in large font
- Name/small logo on Competition Robot
- Article written highlighting company in monthly newsletter

Silver $500-$999

- Name and logo on website
- Name and logo on Banner/Display boards in medium font
- Name on Competition Robot

Bronze $100-$499

- Name on website
- Name on Banner/Display boards in small font

**Team Contact Information**

General

Website: team3176purpleprecision.weebly.com/

Twitter: @Team3176

Remind101: text @frc3176 to 81010

Meeting Information

Location: Brownsburg High School D104

Times: 6:30-8:00pm every Monday (Offseason)

Sponsorship Information

Checks should be made payable to: (Correct Team Name)

Donations may be tax deductible; please contact the team for more information.

Mailing Address

Team 3176 Purple Precision

% Brownsburg High School

1000 S. Odell St.

Brownsburg, IN 46112