

Neutrino

FIRST Robotics Team #3928

Entrepreneurship Award

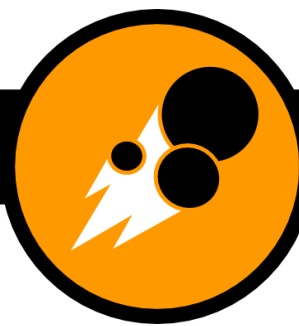
2017

■ TEAM MISSION STATEMENT: Please briefly indicate what you believe to be the “driving engine” of your team. Your mission should be clear and concise. It should represent to any reader exactly what your business plan strives to accomplish. (1600 characters allowed, including spaces and punctuation)

The mission of Team Neutrino is to provide high-school students with hands-on STEM (Science, Technology, Engineering, and Math) experiences that would not otherwise exist. The team serves as an outlet to apply material learned in the classroom in a real-world setting. 3298 creates a robot that is competitive in the *FIRST* Robotics Competition and sustains a positive and recognizable impact on the local community.

Team Neutrino understands the importance of maintaining a professional image and reaching out to the business world to recruit support. They uphold robust standards to contact and work with supporters via monthly newsletters, thank-you visits, and other recognition to create and keep strong relationships with local engineering firms. 3928 operates like a business, realizing the necessity of funding and organization. Their 17 sponsors & partners appreciate their business plan, which records structure, goals, finances, SWOT analysis, and action plans. It provides integral documentation for internal use to ensure sustainability and for external use as a resource for sponsors.

By pairing ongoing outreach with the regular build season, the team provides ample opportunities for an incredible range of interests, and builds upon already existing skills including but not limited to the technical, public speaking, communication, and business skills necessary to be successful in an ever-changing industry. The team also reaches out to the younger generation to inspire future STEM innovators and spark their interest in STEM careers.



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■ **TEAM ORIGIN:** Please provide the date that your team formed, the location of your team, the current number of team members (highlighting any growth over past years) and describe the challenges the team had to overcome in order to participate in FIRST events. (1600 characters allowed, including spaces and punctuation)

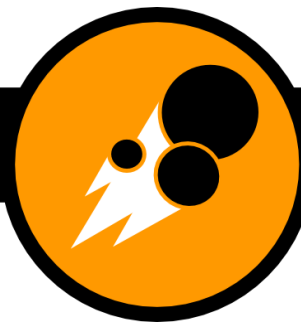
Team Neutrino was formed in 2011 by FIRST alumni and 9 Ames High School students. That year, the team won the Highest Rookie Seed award at the Midwest Regional. Since then, 3928 has changed dramatically, learning with each new challenge.

In 2012, 3928 lost their high school buildspace; however, they were able to gain the sponsorship of Iowa State University (ISU), whose space they now use for meetings & workspace.

In 2015, 3928 membership increased to the point where not all members were beneficial to the team. To address this, the team created an application process for members to ensure full commitment. 3928 now has 31 members that have gone through this application process. Also in 2015, 3928 realized that some of its strongest leaders would be graduating at the end of the season. To ensure that the team would maintain its organization, a system of subteams was created to delegate tasks to groups of students and give them a chance to be leaders and train new members.

With subteams in place the summer of 2016, 3928 saw issues with team communication that led to inefficient organization and animosity between members. To address this, the team held meetings in which members addressed the issues and discussed ways to communicate effectively and prevent such problems from occurring again.

Most of 3928's mentors are ISU students and will graduate, threatening team sustainability. To solve this, 3928 reaches out to sponsors to gain mentorship from its employees. This has so far been successful; at a sponsor visit an employee was so impressed that he became a team mentor.



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■ **ORGANIZATIONAL STRUCTURE:** Please detail how the team is structured to 1) Raise funds; 2) Ensure funds are properly spent; 3) Find and engage sponsors; 4) Recruit team members/ mentors for current & future seasons; 5) Ensure FIRST principles remain core to the team's efforts. Uploading an image of your team organizational chart below, will also satisfy this requirement. (1600 characters allowed, including spaces and punctuation. Graphic image allowed in addition to or as an alternative to text - upload 5" x 4" 100 dpi resolution images that end in .JPG or .GIF)

Students are divided into subgroups to make management easier and to keep the team efficient and cohesive.

Technical

Captain

- ~Co-run team meetings
- ~In charge for competition and building events
- ~Oversee technical subteams during build season

CAD

- ~Render robot mechanisms
- ~Take charge of ensuring all parts can be made

Mechanical

- ~Construct the frame, drivetrain, and scoring mechanisms
- ~Take charge of testing each component

Programming

- ~Build and program controls
- ~Write and test robot code

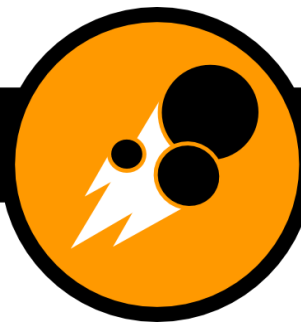
Electrical

- ~Wire and design electronics configuration

Safety

- ~Ensure members and mentors follow guidelines outlined by FIRST, 4-H, and Boyd Lab
- ~Read and understand the FRC Safety Manual
- ~Keep 3928's Safety Manual updated

Scouting



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- ~Develop scouting database and data collection system
- ~Organize the scouting subteam at competitions

Non-Technical

Co-Captain

- ~Co-run team meetings
- ~Oversee non-technical managers
- ~Exercise final approval on submissions
- ~Coordinate the Chairman's submission

Image

- ~Maintain website & social media
- ~Ensure high-quality pictures are taken
- ~Create videos for Robot Reveal, Chairman's submission, Wrap-Up, IRI application

Fundraising

- ~Organize & maintain relationships with sponsors
- ~Apply for grants
- ~Keep the team within budget

PR/Outreach

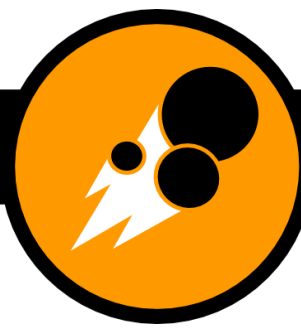
- ~Document community and volunteering events
- ~Plan and organize 3928's outreach and volunteering
- ~Primary contact for outreach event coordinators

Mentoring

- ~Communicate between 3928 and FLL/FLL Jr. coordinators
- ~Assign mentors to 3928's 17 FLL & FLL Jr. teams and Robot Basics Camp

Awards

- ~Write *FIRST* awards submissions



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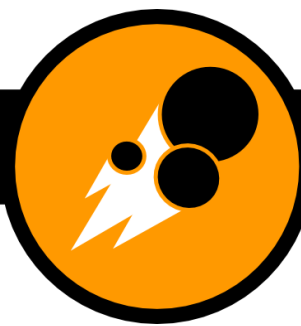
■ **RELATIONSHIPS: Please detail team efforts to specifically engage, inspire, educate and retain 1) Team members; 2) Mentors; 3) Sponsors/Community. (1600 characters allowed, including spaces and punctuation)**

3928 is composed of students from Story County with interests in STEM, machining, graphic design/marketing, writing, filmmaking, and more. Returning members promote sustainability by teaching new members through camps and offseason projects. 100% of team alumni graduate high school and 86% have gone on to pursue a STEM career.

3928 mentors include ISU students, parents, & sponsors. All college mentors are *FIRST* alumni returning to mentor because of their personal experience and success in *FIRST*. Mentors let students take initiative, but are guides to promote growth; not only do the students learn more, the mentors are able to pass on their experiences in a process that benefits both students and mentors. Outside of *FIRST*, mentors serve as guidance for career & college choices and benefit both personal & professional development of team members.

3928 inspires kids through demos, events, and activities designed to spark STEM interest. 3928 mentors 17 *FIRST* teams and annually runs 8 summer and school-year camps for 100+ students to increase community access to STEM. This impacts future engineers and scientists and current members also gain essential life skills such as public speaking, communication, and business skills. 3928 reaches the community via the Team Website, Newsletters, Emails, Facebook, Twitter, Instagram, Snapchat and Flickr.

The team fosters reliable relationships with sponsors via newsletters, annual sponsor visits, demos, and events. 3928 recognizes sponsors through benefits that can be found the team website, www.teamneutrino.org.



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■ **DEPLOYMENT OF RESOURCES:** Please detail how the resources of your team (Financial or otherwise) have been deployed to 1) Engage the community to spread the message of FIRST; 2) Inspire others to get involved so that FIRST continues to grow; 3) Ensure all team members get the most out of their FIRST experience. (1600 characters allowed, including spaces and punctuation)

3928 inspires, educates, and improves, working to carry out the FIRST message. So far, they have:

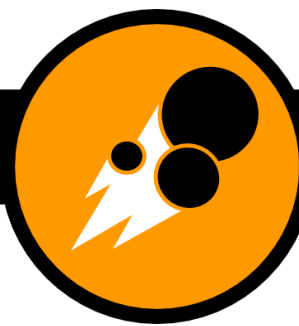
- ~Mentored 500+ kids through 40 teams and 8 camps annually
- ~Impacted 479,000+ people via outreach
- ~Volunteered for 5,500+ hours across Iowa
- ~Partnered with the ISU Program for Women in Science & Engineering and created a Girls Who Code club at Ames High School
- ~Instituted a MakerSpace for students at an elementary school

At 3928's start, FIRST presence was limited to FLL. Now, 3928 has made FIRST available to all K-12 students in Ames, creating programs at 7 of 8 Ames schools, as well as 2 schools outside Ames. 3928 has started, mentored, and funded 27 teams over 3 years:

- ~3 FLL Jr. teams at Edwards Elementary in 2015 & 18 teams at 3 more schools since
 - ~1 FLL team in Ballard in 2014, 2 FLL teams at Edwards in 2015 & 2 at other elementary schools in 2016
 - ~Currently in talk with FTC mentors & coaches to start teams
- 3928 prepares coaches so teams are sustainable after 1-3 years, then remains available to mentor/provide resources

3928 is a diverse team, providing providing an inclusive environment and the ability to excel for all.

- ~Over 65% of 3928's current members are FLL and FTC alumni, 40% coming from Neutrino-led programs
- ~Females hold 5/11 student leadership positions and make up 36% of the mentors
- ~Underrepresented STEM groups make up 61% of 3928
- ~3928 has grown 400% over 6 years
- ~ At the first Iowa Regional, the team organized a Chairman's Exchange for 7 teams
- ~ 3928 is not affiliated with an individual high school, but rather draws talents from 5 different schools



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■ **FUTURE PLANS:** Please indicate specific plans the team has for the next 3 years in regards to sponsorship, team and community outreach (including helping FIRST grow) and detail how you expect to be able to accomplish these goals. (1600 characters allowed, including spaces and punctuation)

Sponsorship

~Maintain a positive & recognizable team image through branding, presence in community, and volunteering events

~Sustain strong sponsor ties through events and consistent communication

Team

~Apply for all awards 3928 is eligible for; compete at the top level in *FIRST* with strong Gracious Professionalism and by acting as a well-rounded team

~Build a competitive robot: use team resources, machine lab, and workspace

~Provide high-school students with hands-on STEM experience; accomplished through participation on 3928

~Increase sustainability by ensuring effective management via subteam leaders, member involvement, and team recruitment through outreach & mentoring programs

Community Outreach

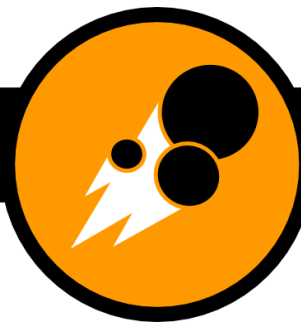
~Promote STEM, FIRST programs, and 3928 at community events through volunteering & outreach, running summer camps, demoing at schools & science fairs, and working with museums

~Be a role model to other *FIRST* teams through active volunteering, mentoring, and assistance

~Increase collaboration with the *FIRST* Community: contact local teams to assist them in any ways 3928 is able; partner with local organizations to network with teams

~Inspire students to join *FIRST*: increase awareness of *FIRST*, start & sustain teams, continue to demo & present in the community to increase team recognition

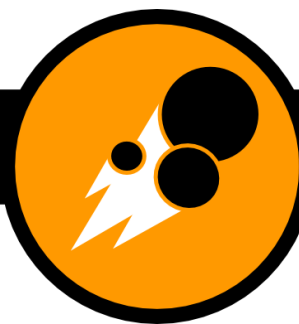
~Support & increase new Iowa FRC teams: continue to assist rookie FRC teams with team basics and questions they may have



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~Continue to expand *FIRST*: continue 3928's mentoring program and help sustain newly created teams, implement more teams introduce *FIRST* to less privileged districts



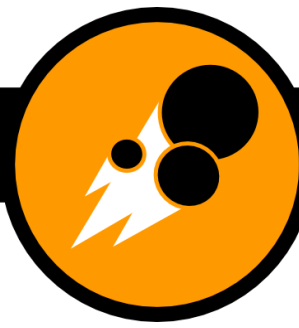
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■ **FINANCIAL STATEMENT:** Please include information on team finances (include financial statement detailing income and expenditures). Uploading an image of your team financial plan below, will also satisfy this requirement. (1600 characters allowed, including spaces and punctuation. Graphic image allowed in addition to or as an alternative to text - upload 5" x 4" 100 dpi resolution images that end in .JPG or .GIF)

The budget is developed through a combination of last year's estimates, promised sponsor donations, and estimations of the new season's expenses.

Projected Income		Projected Expenses	
Source	Amount	Item	Cost
Sponsorships	\$5,000	Regional Registrations	\$9,000
Grants	\$13,000	Championships Registration	\$5,000
In-Kind Donations	\$9,445	Competition & Practice Robots	\$6,000
Carryover Funds from 2015-16	\$7,000	Transportation, Lodging, and Meals	\$3,100
		Mentoring & Outreach	\$900
		Offseason Competitions	\$1,750
		Other (In-Kind, Apparel, Printed Materials, etc.)	\$8,695.5
Total:	\$34,445.50	Total:	\$34,445.50



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■ **RISK ANALYSIS:** Please describe the team's risk mitigation plan. Present a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis or narrative that describes the team plan to identify and respond to sustainability threats. (1600 characters allowed, including spaces and punctuation)

Strengths

~3928 is comprised of high schoolers from around Story County, providing a diverse group of students who bring unique perspectives to face challenges and tasks head on

~ISU provides access to their machine shop and workspace.

3928 students are dedicated to building a high-performing robot and outreach program

~3928 has developed a reputation of a competitive, helpful, professional team

~Mentors have a variety of interests and skills. Most have experience as part of an FRC or FTC team

Weaknesses

~With the expansion of ISU's mechanical engineering program, 3928's workspace is spread out

~3928 struggles with team spirit at competition

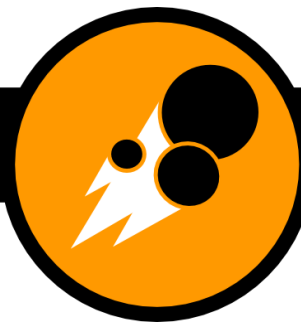
~At the start of the 2015 season, 3928 doubled in size. The team created subteams to maintain high standards. In 2016, an application process was implemented to ensure participation

~Since many mentors are college students, they graduate and thus there is an adjustment to changing mentors

Opportunities

~The community surrounding 3928 is very supportive, and provides 3928 with opportunities to procure sponsors

~With a larger team, 3928 has the opportunity to have a greater impact. 3928 emphasizes community outreach, so they sustain and expand their 30+ annual outreach opportunities

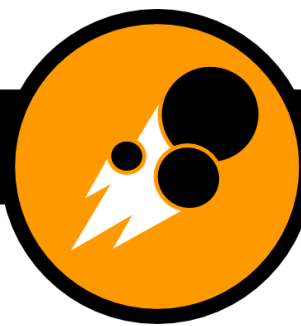


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Threats

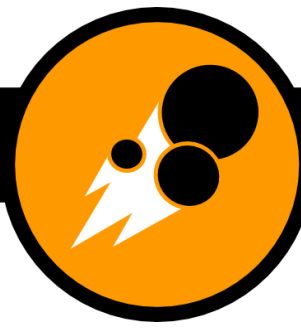
~Because 3928 uses Boyd Lab for their shop, they are unable to machine parts for the robot when classes are scheduled there. To overcome this, 3928 schedules their meetings for later times



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