

## Chairman's Award - Team 4400

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2021 - Team 4400

**Team Number**

4400

**Team Nickname**

CERBOTICS

**Team Location**

TORREON, Coahuila - Mexico

**Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.**

Cerbotics has become a full lifecycle that supports our members before, during and after being part of it. We've started teams from all FIRST categories in our school; by this way 77% of our members have already been part of another FIRST program, and 35% of them now act as mentors at our FLL or FTC teams. Also 93% of our alumni attend college and 78% of them pursue a STEAM related career. The abilities and curriculum they develop in the team become important tools to apply for scholarships.

**Describe your community along with how your team addresses its unique opportunities and circumstances.**

Torreon is a growing city with a strong sense of unity and it has been an important reference point to many states in the medical field. However, the sudden appearance of the COVID-19 pandemic created a shortage of the necessary material for healthcare personnel in hospitals. So, we developed a PPE network with 24 enterprises, associations and FIRST alumni. Adding up to +3.3k pieces of health equipment donated, benefiting 25 medical centers. Thus, our social security system saved +120k MXN.

**Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?**

The Robotics Festival allows us to bring together our city hall, FIRST teams, universities, enterprises and our community; all in one place embracing the FIRST message. Working hand by hand with our municipality, we set up the Science and Technology Day in our city, in which we run the event giving the opportunity to 7k people to get involved in STEAM. Through the years, more people have joined our efforts and we now have a greater impact; giving this initiative a bigger reach.

**Please provide specific examples of how your team members act as role models within the *FIRST* community with emphasis on the past 3 years.**

Cerbotics is one of the pioneer teams in our country to carry activities like Mexican Sign Language robotics courses, PPE fabrication for healthcare workers and week zero events, inspiring others to emulate them. This year, we developed projects to promote unity between the FRC community, such as Make It Loud, a series of transmissions between teams from Mexico; and FRC Warm Up, where students from 5 countries were assistants and speakers of FIRST related conferences.

**Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.**

We've run and participated in 40 workshops, developed a remote mentoring method for FLL and FTC teams, and published our whole documentation online. With these we help not only local teams, but national and international ones. In alliance with Tigres 6652 we created *FIRST* Seed, a team opening project to expand the *FIRST* community in our country. Putting this together, we have assisted 103 teams, mentored 15 and started 23 over the last 3 years.

**Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?**

Through "Cachiripa", team 4400 gave show offs to children from different social backgrounds, and later provided them a 12 week course, teaching 36 kids about robotics. This year we created ThinkKit; an initiative to produce low cost toys so children learn about STEAM basics, handing over 100 kits. A few months ago a FLL Costa Rica's association reached us to explain to them more about *FIRST*; expanding ThinkKit upon a global sketch, as the first step in the introduction of FTC and FRC programs.

**Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years**

Partnerships have been crucial for the development of projects. With our sponsors we have carried out different ones. With the help of Peñoles and our school we ran the Peñoles-Cervantes Try-Out, the first non regional event in Mexico, having 24 teams on its ninth edition. Last season, along with Fundación Azteca we organized one of the biggest cleaning campaigns in our city. Besides, our magazine OMG Robots allows us to connect with 36 teams and people in *FIRST* from all around the world.

**Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.**

We have developed new strategies to increase the participation of underrepresented groups in STEAM. For more than 3 years, team 4400 has given robotics courses to hearing impaired teenagers. In 2019 we started STEM Girls, a discussion panel to search more involvement of women in *FIRST*, carrying it out 3 times impacting 419 girls at regionals and at our virtual conferences series; where we also hosted one of the first conferences about the recognition of the LGBTQ+ community in *FIRST* Mexico.

**Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future**

The early involvement of all our students in activities and stepping into leadership roles is the key to ensure the growth and creation of projects. Through summer camps, STEAM courses and presentations at our school, we encourage kids to become part of the Cerbotics Family; our K-12 educational program that engages them to be part of the FLL to FRC teams, ensuring our future generations. In these ways, we have managed to keep running and improve 17 activities for at least 3 years.

**Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years**

During recruitment we explain our team's mission, what *FIRST* is and how their brand can be benefited by the impact we can reach with their help. To retain and engage their interest we make them feel part of the Cerbotics family. By being a participant of our projects, they realize the big change we are doing together in our country. In the last 3 seasons we have organized 8 *FIRST* show offs and STEAM courses to our main sponsors, starting 10 teams and with plans to open many more.

**Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.**

Over the years we realized that the design area has the most growing opportunities. Last season 60% of our mechanics members were rookies so they lacked abilities as 3D design. To keep that knowledge, mentors and experienced members gave preseason courses. Despite the incredible robot designs Cerbotics develops, we don't have enough tools to build them. Therefore, we found sponsors who give us discounts on the machining robot parts, and are now getting a financed CNC to work more efficiently.

**Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.**

Cerbotics main goal is to make STEAM approachable in every single place of Mexico. To achieve this, we are working hand by hand with our local and state government, universities and organizations. Along the last three years, we have developed 28 projects and activities, most of them focused on the diffusion of science and technology. All this work has been the cornerstone for our 64 media appearances. With this, Team 4400 has reached +2.31M people at local and national levels.

**Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.**

In 2018, our city hall gave us the "Bulmaro Valdéz" medal for our work on the diffusion of STEM. Our impact has gone

beyond, by representing Mexico in the FIRST Global Challenge 2 times in a row: winning the "Dr. Mae Jemison" award for International Unity in 2019. This boosted our media appearances. Also, to help some of the most marginalized zones in our city, we have organized 8 donation campaigns, benefiting around 500 people.

## Essay

### Start-up

Building a team starts when you imagine it. Creativity and passion led us to become changemakers, to have a vision of what we thought impossible and keep going until we make it. We are Team Cerbotics 4400 from Torreon, Coahuila, Mexico, and we started imagining and building 10 years ago.

### Making STEAM-ed communities

We believe STEAM should be part of every child's education. To achieve this, Cerbotics is constantly working to provide spaces where young people can explore their potential through STEAM tools. Each year, we run Grand Novelty Expo, a whole day dedicated to science and technology learning; and RoboCamp, a 2 week robotics summer course, allowing us to introduce kids from our school community to STEAM. This season we are currently working in 2 projects that take our STEAM efforts to an international sketch through collaborations. To give our sponsors more opportunities to support STEAM directly, we partnered with Team 2468, from Austin Texas, in their initiative STEM Connect; where we will be giving robotics related courses for our sponsors community. In the same way, looking for a low cost alternative, we started ThinkKit, which consists in the development and distribution of steam-ed toys; with our sponsors support, we are already starting the pilot project with 100 ThinkKits delivered in our community. But its sustainability allows us to have a bigger scope and take ThinkKit to other parts of our continent. We are working to use ThinkKit as a tool to make a first approach to STEAM in Costa Rica; after a FLL association from there reached us to implement FRC and FTC programs, being guides by giving them virtual conferences about these programs.

### Equity and Inclusion

It has been a long journey for the acknowledgement of underrepresented groups; working to open new spaces for themselves. For more than 3 years Team 4400 has been working with the Instituto Lagunero de Audición y Lenguaje, giving robotics courses to hearing impaired kids, who later participate at Roboleague, our own robotics competition. In 2019, Team 4400 created STEM Girls, a discussion panel to strengthen links between girls from Mexico and the world; running it 3 times at FIRST related events, impacting 419 girls from 42 teams. Finally, this last season we collaborated with the organization LGBTQ+ of FIRST, which gave conferences about inclusion to the teams; this presentation had a big response with the registration of 339 students from Mexico and even other countries.

### Beyond the robots

Since the beginning of Cerbotics, we have been focusing on identifying our community's necessities and searching sustainable solutions to them. One of the most outstanding problems we have in our city is pollution; so in collaboration with Limpiemos Mexico we took hands into action by organizing one of the biggest cleaning campaigns in our region. With more than 400 volunteers from our school community and other FRC teams, we joined our efforts to gather 4 tons of waste and clean 98,443 m2 of our local river's dry bed, making our community part of the solution in a more active way.

We also support our community in every aspect it needs, as health, another concerning issue here in Mexico. One of the main causes of death is cancer. To create direct support for its early detection, each October we carry out our own self-examination campaign "Autoexplorate"; through videos and dynamics on social media we have impacted 2.7k people, raising awareness about breast cancer. Besides for 5 years now, we have supported "Destapa una esperanza" by collecting over 550k bottle caps for the funding of chemotherapies for children. Likewise, during the COVID-19 pandemic, we developed different projects and partnerships to build solutions for the main issues. First, at the beginning of the pandemic our country faced a lack of PPE for healthcare workers, so we established a face shield network; collaborating with 24 enterprises and organizations. We have even made a national distribution of the design files after FRC teams and the Universidad Nacional Autónoma de México asked for them. Team 4400 managed to manufacture +3.3k medical protection equipment for the health personnel benefiting 25 hospitals from 5 different cities. Then, in collaboration with Laguna Yo Te Quiero and COPARMEX, some of the top organizations in our city, we created "Iniciativa TRC", focused on solving the lack of sanitizing supplies and resources for the proper operation of schools after this pandemic. We set a collection center of sanitizing material, gathering 230 kg of supplies and impacting +600 students from 2 schools. Proving, once again, that together we can help way more people.

### Get louder

This year, social media is the main resource we use to connect and share our work, progress and knowledge with others. We use our youtube channel and web page platforms to share useful resources to other teams, as our whole documentation from past seasons and video conferences of FIRST related topics. Through Facebook, Instagram and Twitter we have reached +179k since march 2018. Our outreach activities and STEM diffusion projects have not been limited to our city; through 54 newspaper articles, 8 TV appearances and 2 radio broadcasts, we achieve a national impact for some of our bigger projects. By these means, Cerbotics 4400 has reached +2.29M people.

### Advocacy.

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Mexico needs to increase the support of science and technology development, and the government's involvement is crucial. We collaborated with our municipality, giving robotics show offs in marginalized neighborhoods of our city. The people's response was incredible, so we organized robotics courses with the kids who had attended. After 12 weeks of work, they demonstrated and shared their learnings during the Robotics Festival, the biggest STEAM diffusion event in our city, counting with 14 FIRST teams, Universities and local enterprises. We have taken our advocacy further than a local level. By meeting with Coahuila's Secretary of Education, Cerbotics discussed the STEM ambassadors initiative, which consists in giving robotics courses to different schools from all around our state. Last season our state's governor and deputies visited our workshops and we presented our idea of hosting a FTC Regional and an official FRC offseason, establishing their support with facilities for these events.

### FIRST growth and support

After experiencing first-hand all the positive changes FIRST has inspired us to achieve, we have set as a top priority to create strategies so other people can feel the same passion as we do. For 3 years now, we have helped in the organization of 12 FIRST related events. One of these is our week 0 event, the Peñoles- Cervantes Try Out, hosted since our Cerbotics's inception; where 24 teams from all around Mexico test their robots in a regional simulation, gaining experience and feedback on their work.

This year, Team 4400 has focused on online events to strengthen the relationship among the FIRST community in Mexico and the world. We started Make it Loud, weekly streams where Mexican teams share their experience in FRC and provide advice for others. Besides, we ran FRC Warm Up 2021 to help teams who didn't have a chance to receive the right training during quarantine. It consists of a series of conferences about important competition related topics, having in total 35 teams registered. After the excellent results we had organizing virtual events, FIRST Mexico gave us the opportunity to run and host the FRC Kickoff event in our country, as well as the 2021 Season Participation for Mexico Teams Awards Ceremony next May, and a FTC Regional in our city next season.

In the same way, we are always willing to participate in more projects where we can reach out to any team who needs assistance or mentoring. In Mexico we have helped several teams; either by receiving them in our workshops, maintaining a close-iterated contact during all the season or donating materials they may need. Through alliances, we are able to take our impact to a global sketch. Since 2018, we have partnered with 2486 by running 6 Chairman's Exchanges in different countries, where we talk about the essential topics teams should know when applying to this award. Last year the Worcester Polytechnic Institute chose us to be top translators for the official FRC Control System documentation in spanish, so non english speakers can have a better understanding and wouldn't be in disadvantage while programming their robot. Our members translated 8,08k chains of information, supporting around 100 FRC spanish speaking teams.

After seeing how participating in FIRST for 10 years impacted us and our city, we wanted to replicate this in other parts of Mexico. Each year, Cerbotics designates a certain amount of our income for the starting and maintenance of teams from FLL Discover to FRC, developing a FIRST hand by hand educational program in our school, which has gone from investing 3.5k to 350k MXN. In alliance with FRC 6652 we created a sustainable team opening project named FIRST Seed with 3 Mexican teams who this year joined as collaborators. In a 3 year span we have started 23 teams involving 237 students in science and technology; all of this, to make the FIRST community grow.

### We are Cerbotics

A lot of things have happened over the years. Even for us it is hard to believe how much we have grown; starting with a team from scratch, to impacting millions of people. Cerbotics has made STEAM part of the day-to-day life of our community, showing them how science and technology can change the world. We have forged our knowledge by overcoming challenges; we have grown, but we never forget where we come from. And as a few students said 10 years ago, we are just starting to imagine and build.

\*All terms used to describe our team's efforts strictly match FIRST definitions for 2021 Chairman's award submission.