

FIRST Impact Award - Team 4400

| |
|--|
| 2024 - Team 4400 |
| Team Number |
| 4400 |
| Team Nickname |
| Cerbotics - Peñoles |
| Team Location |
| TORREON, COA - Mexico |
| Describe the impact of the <i>FIRST</i> 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 <i>FIRST</i> programs as mentors/sponsors. |
| <p>Cerbotics is pioneer of the FIRST K-12 program in Mexico where students can walk across all categories; not only do they learn about robotics, but become confident leaders who improve their surroundings. With a 100% graduation rate, 80% of scholarships awarded by prestigious universities and 79% active STEAM major alumni, we create a permanent bond where our alumni represent the entirety of our mentors, have volunteered in at least 26 competitions and even sponsor our team and FIRST events.</p> |
| Describe your community along with how your team addresses its unique opportunities and circumstances. |
| <p>Torreon is a young city that began as a railroad connection point across the nation. Over the decades, its growth has been uneven, with 64% of the population living in economic disadvantage and 107,000 people lagging behind in education. To act as a bridge between social spheres and link them with science and technology, Team 4400 divides its efforts into 5 interconnected axes that, one step at a time, let us spread STEM, improve our community, and involve it in FIRST.</p> |
| Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> message in ways that are effective, scalable, sustainable, and creative. How does your team measure results? |
| <p>Since 2014 we've ran Grand Novelty Expo, a day full of activities where kids can have their first approach to STEAM. In its last edition we partnered with NASA A.C. by introducing their experiments into GNE. To increase STEAM's accessibility in our community, we also implemented those experiments in our city's planetarium, creating Festival de Ciencia Sombra del Sol. With all of this, we reached +2500 people and we're now working in another festival to celebrate the solar eclipse in April 2024.</p> |
| Please provide specific examples of how your team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. |
| <p>Through 4 editions, Cerbotics has run the FRC Warm Up, a free webinar where 372 teams from 16 countries participated. In 2021, we became the only Spanish translator at WPILib, making the largest</p> |

FRC programming library accessible to all spanish speaking teams. Also, we've collaborated with 8 international teams to organize their initiatives in our country like The Compass Alliance (3132, a call center), STEM Connect (2468, robotics courses), Impact Exchange (2486, Q&A sessions), among others.

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

Cerbotics stepped up to ensure sustainability for teams in Latin America. FIRST Seed is a team opening project, in which we've started 6 teams and mentored 13 since 2021 by helping during the registration process and through regular support. Via our published resources, conferences and volunteering we've assisted or helped +450 teams. Finally, this season we partnered with team 8048 and a children's home in Honduras to open their own FLL teams and set the ground to start their own FTC team.

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?

Inspiring and being inspired through STEAM is the heart of what we do. During the last 3 years, Team 4400 has worked with institutions such as CANACINTRA, Santos Laguna and NASA, to run 22 outreach events that attracted +20,000 people. Searching for alternatives where kids can learn about robotics in a fun way, we have delivered low cost toys that teach kids physics lessons across town, and in alliance with team 6357 we translated their children's book from English to Spanish.

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

In 2021, FIRST Mexico asked us to organize all the FTC, FRC and FGC events in our country. This led us to win the Volunteer of the Year Award and we ran 11 different FIRST events at a local and national level. By involving the government, local enterprises and volunteers passionate about STEM, we've received around 148 teams, generated an economic benefit of 31,578 USD for Torreón; and most importantly, these events have become a meeting point that increases the visibility of FIRST in Coahuila.

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

Everyone should be comfortable while doing what they love and enjoy. 4400 is certified on FIRST's EDI Trainings and has implemented a Protocol against Gender Violence. At competitions, we run a roundtable with girls to share their experiences in FIRST and work along 1868 to supply menstrual products, reaching more than 183 teams at 9 different events. Beyond FIRST, we're hosting the 2° season of our podcast GENIAS, where outstanding women inspire young girls, getting more than 17,678 views.

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

Cerbotics family was the first K-12 program in our country, involving 6 to 18 year-old students in FIRST. While growing, they become mentors for the younger teams, while graduates become mentors of the FRC team; achieving that 66% of our students came from younger categories, and the average age of

our mentors is 21 years. Furthermore, we have a project manual that details how to run each of our activities and is updated annually, making sure that the students have the right tools to develop.

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

In a growing city with few major companies, Team 4400 has found the way to expand its sponsor base from 7 to 21. We achieved this by engaging entrepreneurs that represent our local talent, and pursuing grant opportunities with companies like REV and John Deere. Throughout the season, not only do we maintain a close contact, but also involve them in our events as judges or volunteers, encourage them to act on our social projects and provide free courses for employees' children.

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

FRC is an expensive competition, especially when you have to convert your expenses from MXN to USD, as well as cover other taxes and shipping costs. So, through the effort of each team member, the backup of their parents and a supportive community; we anticipated the season's expenses, tripled our sponsors and worked to have more and better economic activities. At this moment, we've had a 168% increase in fundraising compared to last year, and we plan to reach 200% before the end of the season.

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

Our goal is to inspire new generations, showing them that people from their same age and context are capable of achieving great things. Cerbotics has been able to organize and carry out +73 projects and activities to enhance the familiarity with STEAM in our locality, country and at a global scale. Using this proximity, we bring our community close to FIRST through innovation and inclusion, being able to fulfill our mission while having reached +2.38 million people.

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.

We strive to empower Mexico wherever we go. Throughout 4 consecutive years we represented our nation at the FIRST Global Challenge traveling to Dubai and Geneva. Along this journey, Team 4400 won 4 medals, including the most prestigious award. We keep focusing our passion to spread Coopertition and Gracious professionalism by being volunteers in each event and assisting teams from more than 70 countries. This led us to be recognized by one of the ambassadors of Mexico in Switzerland.

Judge Feedback

| Who/When | Feedback |
|---|---|
| Mar 02, 2024 02:17:35 PM EST Essay | <p>We decided to write the essay as if it were a letter to ourselves in the past. Do you like and understand the idea?</p> <p>An area the team has an opportunity to improve.</p> <p>Something that really impressed the judges.</p> |

Dear Cerbotics: If our calculations are correct, this essay will be going 4400 days back to our rookie season. We're reaching out because we want to warn you. There is a long journey in front of you, where you not only have to build a team but change a community. We're searching to guide you through what we've done, in order to maintain and increase the impact of science and technology. As Cerbotics has grown its efforts in accomplishing this mission for 12 years, we've divided them into 5 interconnected axes, which have been designed to better fit our community's needs.

1. **COMMUNITY SERVICE:** Our locality is a significant pillar of our mission, it's the place that has seen us grow and has supported us along this journey. However, there are many troubles that affect it; and although it's impossible to address them all, we categorized 3 sub-axes to have a better organization to support our community: i. **Health:** Coahuila takes the 6th place for mortality by breast cancer in Mexico. Most cases could've been detected, had the necessary information been available for everyone. Thus, Team 4400 has created an online campaign called "Autoexplórate", that has incentivized 2.7K people to promote self-examination and prevent any late diagnoses. Also, with the support of our school, we've donated 297K bottle caps by our campaign Tapatón, said caps are used at the payment of medical procedures for patients with cancer. ii. **Donations:** Due to the inequality that occurs in our region, we started collecting food, toys and blankets every year, which are delivered to 3 rural communities. In the last 2 seasons we donated 5 computers and 200 pieces of educational material to DIF (National System for the Development of the Family). Furthermore, every time an emergency situation comes up in our country, Cerbotics acts as a collection center in our workshops. Since 2021, we've gathered more than half a ton of supplies that were distributed to the forest fire of Arteaga 2021, the flood of Muzquiz 2022 and the Hurricane Otis in Guerrero 2023. iii. **Environment:** Our city is known for having arisen in the middle of the desert, which has meant limited access to green areas. Hence, last season we took action by collaborating with non-governmental organizations and the municipal environmental department. With their help, we've supported 4 reforestation campaigns across Torreón to plant 177 trees in 41,891m2 of public parks.

2. **OUTREACH:** Over time, you'll come to the conclusion that to really focus on helping our community, it's crucial to connect with people and engage them with STEAM. It may be an opportunity to change their lives, but you'll never know unless you increase the visibility of science and technology first.

Through 38 appearances in the last years, Team 4400 has reached 1.3M people in different newspapers, magazines, radio programs and TV shows at a local and national level. Social media has been another key to reach audiences from new places, so by developing a more engaging strategy we've impacted 79K people, increasing our scope 28% from last season. And to foster this impact, we've settled relationships with our government to increase the awareness of robotics in Coahuila, having our mayor and governor at our workshop, and welcoming visits from consuls at competitions in Houston and Fresno.

As we've worked to escalate the visibility of STEM in our community, Cerbotics has started other projects that aim to increase it, especially in FIRST. Annually we publish our magazine, "OMG Robots", that has become a space for people to share experiences and a common message; 30 teams from 7 different countries have been invited to participate in it, and the magazine has been handed in 8 regionals during the last 3 years. Our collaborations have broadened by working together with Lucasfilm in their "Build a future campaign", and participating in a webinar about girls in FIRST hosted by Johnson and Johnson. Furthermore, we started a radio program, "Bien Robotics Team", where our team discusses diverse topics that approach the audience to FRC every week, getting more than 3K views.

3. STEAM: Some things have changed in the past 12 years. STEM has turned into STEAM, embracing arts as part of its message. With this in mind, Team 4400 continues stating its mission; we execute projects and activities to show people the innovation and creativity behind all these fields, and we bring them closer to STEAM.

For example, we organize the Grand Novelty Expo (GNE), a whole day dedicated to exploring science experiments mixed with artistic features. During the last two editions we welcomed +350 kids, who very often decide to later join the team in younger categories. Last year, we started collaborating with the NASA Astro Camp to include their activities not only at GNE, but also at other expositions such as Festival de Ciencia Sombra del Sol. Here, we collaborated with our city's planetarium to display our robots and perform experiments with kids while witnessing a solar eclipse, reaching 2K people. This opened the door for working together in our future, when a total eclipse takes place in April 2024; and by donating 4 computers to offer free robotics courses. Additionally, Cerbotics has given 22 showoffs in spaces like our city's soccer stadium, public plazas or our school's Open House, reaching 20K people.

We've also forged partnerships that increase the accessibility to education. With the help of local entrepreneurs, we started ThinkKit: we designed, assembled and delivered 100 didactic toys that cost less than 5 USD which were distributed in museums and schools in our region. Another great project is "Mi querida escuela", in which we're working together with the Municipal Environment Department and CEMEX. Through this project, we've given exhibitions to 16 schools; the goal for the future is having a robotics center established with free courses in one of the areas with the highest rates of poverty in Torreón.

4. EDI: Although time has passed, there still are struggles to make STEAM accessible for everyone. That's why Team 4400 keeps expanding the doors, in hopes that it becomes a space where people can develop their potential.

Everything starts in our team, where all members and mentors have done FIRST's EDI training, and a protocol against gender violence has been implemented in our workshops and at the FTC events we host. After that, the next step is making FIRST more friendly to women, so during competitions we provide teams with feminine hygiene products through Menstrual Equality, and STEM Girls, a roundtable where women can share their experience in robotics. Finally, we produce a podcast called "GENIAS" that awakens interest of women in STEM; and we run activities to commemorate February 11th.

At the same time that we try to break gender stereotypes, other initiatives have been developed to diversify the opportunities for the underrepresented. For example, this season (in 2024) we attended courses on how to manage a team with members living with autism. In addition, in 2021 we opened the first FTC team with deaf students, to whom we first started giving robotics courses for over 6 years, then mentored throughout their rookie year and supported them with around 2,923 USD, covering their registration fees and a robot starter kit.

5. FIRST: This is the last axis, where all of what we do connects. Along our way, we've created an environment focused on robotics that starts in Torreón and reaches an international level. In 3 years, Cerbotics ran 11 FIRST events and supported three more; this represents the entirety of the FTC and FRC competitions in Coahuila, and 48% in México. To achieve it, our students and mentors have done 3K man hours of volunteering in 26 events.

Moreover, we have expanded the competition and its values, opening new opportunities for more students to join a team. One of the ways to achieve these goals is FIRST Seed, a project to start and mentor teams. Whether with support during their registration process or funding them, we've started 6 teams (5 FLL & 1 FTC) in the last 3 years. We also helped a children's home in the department of Santa Barbara, Honduras to open two FLL teams. Currently we're preparing to expand this project, planning to start the first FTC team in Honduras, and two more FTC teams in the Planetarium of Torreón.

Every year, FIRST encourages young people from all over the world to be part of it; unfortunately there are cultural, economic and technological barriers that prevent teams from having the same opportunities. Thus, for 3 years we've mentored 13 teams (7 FLL, 3 FTC, 2 FRC & 1 FGC) either by maintaining a close contact or providing them with mentors during all the season; we've even raised over 54,385 USD to fund 9 of these teams. Team 4400 has also worked in 39 activities that have assisted or helped more than 443 teams. The two major initiatives are: The WPILib, where, thanks to the invitation of FIRST Mexico and the Worcester Polytechnic Institute, we've translated 9638 strings in Java that are now available for 116 Spanish-speaking teams. The second initiative is the FRC Warm Up, where together with teams 1868 and 1159, we organized a series of free online conferences that were broadcasted in Spanish, English and Portuguese. In four editions, we had 1804 registered people, from 372 teams in 16 countries.

Now we're in 2024, 4400 days after the beginning of this journey, one that has been filled by numerous highs and lows throughout the years. However, our current time line wouldn't exist if these hadn't happened. We know you are walking a rocky start, but it's time for you to imagine the goals we're gonna build. Today, we're ready to travel again to see what's coming next for all of us. So, are you ready to go back to the future?

Best regards, Cerbotics 4400 (of the future).

*All terms used strictly match the FIRST definitions for 2024 FIRST Impact Award submission :);

