

## FIRST Impact Award - Team 4400

### 2025 - Team 4400

#### Team Number

4400

#### Team Nickname

Cerbotics - Peñoles

#### Team Location

TORREON, COA - Mexico

**Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.**

Cerbotics has been building an ecosystem where students discover their capabilities and get immersed into robotics. Going beyond setting the initial FIRST K-12 program in Mexico, 100% of our members attend college, with 87% pursuing STEAM careers and 100% receiving scholarships in private universities. Thanks to their sense of belonging in the team, 47 of our alumni have either volunteered at 22 events, mentored all categories, or sponsored +7,900 USD for our team and FIRST events.

**Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.**

In the heart of the Comarca Lagunera, and surrounded by the largest desert in Mexico, Team 4400 is based in Torreón, Coahuila. It's estimated that 64% of Torreon's population is economically disadvantaged, while 107K people are in an educational lag; problems that are spread throughout Latin America. Regardless, we have a hardworking spirit and strong cultural pride; so with the right tools, STEAM can become a pillar of our culture, creating transformative opportunities through education.

**Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.**

Looking to break down barriers in Las Dalias, one of the most underserved areas in Torreón, we partnered with Cemex's community center to bring STEAM demos to 500 students from 16 schools. Since mid-2024, this center has become one of the first public robotics academies in northern Mexico, where +50 kids assist weekly to learn and create through LEGO and Arduino. Recently we started a FLL team, and invited other FRC teams to give their own courses, making Las Dalias a STEAM hub in East Torreón.

**Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.**

In Mexico only 2.9% of GDP is invested in education, a very traditional education system which features a shortage of accessible STEAM programs. Despite this, we aim to fulfill FIRST's Vision by showing new generations what people from their same age and context can achieve. Cerbotics has contributed to our community by becoming a focal point for robotics across the country. With 11 local projects we've impacted 42,000 people, showing kids how STEAM can introduce a whole new world for them.

<b>What impact has your team seen from your efforts described in the above question? How does your team measure impact?</b>
Even though it's difficult to measure results precisely, we know that awakening a new passion opens up endless possibilities. This season, Team 4400 started collaborating with our state's education department to train teachers at a public elementary school on how to introduce kids to robotics. Collaborating with troop Tikalli 45 we ran workshops for 25 scouts to receive their STEM badge. And by manufacturing 128 low-cost didactic toys, we reached children in underserved areas and foster houses.
<b>Please provide specific examples of how your team and team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. How do you share these best practices with other teams?</b>
Over the years, we've been seeking to be a model team by providing worldwide tools for others to keep growing. 4400 is the only Spanish translator for WPILib, translating over 10K programming strings for 92 Spanish-speaking teams. Globally we host the FRC Warm Up, a free annual webinar where teams present live conferences with real-time translations to Spanish and Portuguese. In the past three years, it has reached 493 teams from 20 countries, becoming one of the biggest unofficial FIRST events.
<b>Describe your team's initiatives to Assist, Mentor, and/or Start other <i>FIRST</i> teams with emphasis on activities within the past 3 years.</b>
Cerbotics fosters a Coopertition atmosphere, with projects that scale from our workshop to the rest of the world. FIRST Seed is aimed at helping Latin American teams with their registration process and continuous assistance; resulting in 7 started teams, 14 mentored, and even helped to start 2 FLL teams at an orphanage in Honduras partnered with 8048. Through workshops, conferences and 3,000 USD in donations, we've supported +600 teams, including 80% of FRC teams in Mexico and 14% worldwide.
<b>What other initiatives have you created, grown, sustained, or participated in (<i>FIRST</i> or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?</b>
Grand Novelty Expo (GNE) is a day full of experiments in which 500 students have had their first approach to STEAM, and the opportunity to pave their way into Cerbotics. Since last year we started collaborating with NASA A.C. not only to introduce their dynamics in GNE, but to make an impact beyond our halls. We've replicated their experiments in summer camps, foster houses and in the Torreón Planetarium when it was NASA's headquarters for the 2024 total solar eclipse, reaching +12K attendees.
<b>Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.</b>
Managing a close collaboration between FIRST, companies, our city hall and community, 4400 has been running all FTC events in Coahuila since 2022. This includes 2 season Kickoffs, 4 Regionals, 1 National Championship, and the first Week 0 event in Mexico. We've provided teams a more accessible place to compete, as well as contributed to our city with an economic benefit of 221,000 USD. This synergy has helped robotics gain visibility and bring more people to know and be part of FIRST.
<b>Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.</b>
Despite our differences, we all share the same spirit. It's following this idea that Cerbotics is certified on FIRST EDI training and enact a gender violence protocol, which contributed to reaching gender parity in the team. Inside FIRST, we host roundtables for girls to share their experiences, and with team 1868, we act as Mexico's Menstrual Equity Ambassador, supporting 428 teams at 19 events. Finally, Genias is a podcast that encourages women to get involved in STEAM, reaching 28K views.

<b>Explain how you ensure your team and the initiatives you have created will be sustainable.</b>	
To ensure sustainability from an early age, we've incorporated robotics into the school curriculum of all 1,200 kindergarten and elementary students, serving as an initial step before joining a team. With 53% of our members coming from younger categories, many of them still mentor the FLL & FTC teams they once were part of; similarly, 95% of our mentors are Cerbotics' alumni. This sustainable path, boosted by project manuals, can be seen in 22 of our initiatives lasting longer than 3 years.	
<b>Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.</b>	
For many years, 4400 has been working on improving automation and programming. With a focus on learning, we took the chance to try out new ideas. Since 2024, we've made progress by using odometry with Kalman filters, trajectory planning, and machine learning, allowing us to win both the Winner and Innovation in Control Awards at the Laguna Regional. We also created a custom driver app with a control panel to select target locations, making improvements to it throughout the off-season.	
<b>Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.</b>	
As a team which seeks to grow every year, we've understood that resources represent an important part to do so; and more taking into account the exchange and taxes we must cover as a foreign team. In the last few seasons we've increased fundraising 128% by expanding collaborations with our school, and tripled sponsors by involving local businesses and applying for FIRST related grants. This has lowered students' expenses while providing them with tools and opportunities to develop their skills.	
<b>Judge Feedback</b>	
	<b>Do you consider the information in the executive summary and essay is well distributed, or we should have explained something more in detail?</b>  <b>An area the team has an opportunity to improve.</b>  <b>Something that really impressed the judges.</b>
<b>Essay</b>	

What if everything you know isn't all there really is? It's natural to think every aspect of life is a coincidence, or even to call it destiny. After all, none of us chooses many of the situations we go through or the limitations we face. Our community struggles with challenges that hinder access to resources which, for some, might seem basic. Despite having significant industrial development, Torreón persists in a situation of inequality caused by economic, educational and social factors. Approximately 20% of students are behind in school, while 38% of the population doesn't have access to social security and up to 108,000 people have some kind of food insecurity. But what if there was something waiting for anyone to see beyond?

67 111 109 109 117 110 105 116 121: Cerbotics embarked on a mission to address the fundamental problems facing our community, from lack of healthcare access to environmental challenges, as a way to break free from limitations and take control of our future. By collaborating with our city's environmental department and inviting other FRC teams to join, we have participated in 5 reforestation campaigns to plant 250 trees across approximately 120,000 m² of public parks. Likewise, as our state takes the 6th place for mortality by breast cancer in Mexico, we launched a virtual awareness campaign "Autoexplórate", reaching over 3,000 people on social media. And by setting up a permanent collection center for bottle caps in our school as part of our "Tapatón" initiative, we've gathered more than 678,989 caps in the past 3 years, funding oncology treatments for children. In some areas of our region the opportunities people have to access goods vary considerably. Thus, since

2012, Team 4400 coordinates annual donation campaigns, delivering food, blankets and toys to 3 rural communities on Christmas Eve. Partnered with the National System for the Development of the Family (DIF) and the Cultural & Sporting Unit "La Jabonera", located in one of Torreón's most insecure areas, we've provided 5 computers, 200 packs of diapers and 400 pieces of educational materials. Finally, whenever an emergency situation comes up, our workshops have become a national collection center to aid victims of the flood in Muzquiz 2022 and Hurricane Otis in Guerrero 2023, gathering 3 tons of supplies.

79 117 116 114 101 97 99 104: 4400 not only creates a direct impact on its community, but also leverages the media to spark curiosity in others. That's why we consider each of our outreach activities and channels to be a way to awaken more people. In order to accomplish this, we start by using social media as a platform to connect with multiple groups, increasing our scope by 20% and reaching +1.4 million views across our platforms and external appearances. The latter ones also extend to magazines, newspapers, radio programs and TV shows. Parallel to having built a strong online presence, we expanded our efforts into closer face-to-face interactions. With 37 expositions in spaces such as public elementary schools, the largest theater in our city, and the local soccer stadium, we've been able to share how robotics has transformed our lives with 37K people. Seeking to extend FIRST's core values to new audiences, Team 4400 started its own online radio program in 2022. Over the course of 2 seasons, we covered topics related to robotics and our experiences at competitions on a weekly basis. Within FIRST, we started our own magazine "OMG Robots", where 36 teams from 12 countries have participated and is delivered at competitions. The impact our team has had with these projects has helped us broaden our collaborations, such as participating in a webinar organized by Johnson & Johnson to promote the participation of women in FIRST, as well as in the "Build a future" campaign with Lucasfilm.

83 84 69 77: The truth is that it's not enough to discover STEAM, there have to be opportunities through which science and technology can take part of people's lives. GNE, ThinkIt, and our collaborations with the Torreón Planetarium and NASA Astro Camp (NASA A.C.) have been great ways for children to cultivate their creativity and imagination. Meanwhile, projects such as the robotics academy at the CEMEX community center ensure a lasting impact on children's lives. Beyond inspiring the next generations, Cerbotics has built strong relationships with the government to prioritize and promote the inclusion of STEAM. From inviting our city mayor to the FTC regional we host, to being recognized by our state's education department and our municipality, we've given robotics greater visibility in Coahuila. Additionally, our team has received the visit of consuls and ambassadors while competing in the U.S.A., Switzerland and Greece. And taking a further move, 4400 has collaborated with governmental agencies to start initiatives that promote STEAM at a regional level; either by training teachers at an elementary school to introduce robotics, or by organizing LEGO expositions at "La Jabonera".

69 68 73: Once we've helped people connect with STEAM, the next step is to create safe spaces where everyone can reach their full potential, starting within our team and expanding internationally. Within Cerbotics, we ensure every member is respected. Every year we make sure all our students are certified on FIRST EDI trainings, and enforce a protocol that promotes the participation of women within our team as well as the events we organize. We took a course where we learned and made sure that our team was a safe place to work with people living with autism, and proudly stand as an LGBTQ+ at FIRST Ally team. But our mission extends beyond our workshop; for 6 years, we collaborated with the Institute of Hearing and Language in our region (ILAL); and in 2022, we started the world's first FTC team for deaf students: ILALBotics 21091. We strive to make FIRST a more inclusive space globally through Gracious Professionalism and Coopertition. Our Genias podcast amplifies dozens of women's voices, allowing us to invite girls from 8 different countries who participated in FIRST Global Challenge 2024 to share their experience while inspiring change worldwide. And through Menstrual Equity, in partnership with Team 1868, we ensure menstrual hygiene products are available at 100% of FTC & FRC official events in Mexico.

70 73 82 83 84: The same spirit that drives us to break down barriers in STEAM accessibility also fuels our commitment to expand the reach and impact of FIRST, starting with a local approach and growing into an international sphere. Beginning by easing the opening of new teams, we developed FIRST Seed, a project that has guided us to start 7 teams, mentor 14, and helped to start 2 FLL teams at an orphanage in the department of Santa Barbara, Honduras. In the last 3 years, Cerbotics has been a crucial part for the growth of FTC locally. Besides hosting and running a regional that has represented a stable place for teams to compete, 4400 has organized events that seek to act as additional support. Since 2023, we invite teams to watch the kickoff live stream in our workshops, and later share presentations about various topics. On top of that, this year we hosted the first ever Week 0 event in Mexico. As part of the results, Torreón has now turned into the city with the most schools that have an FTC team in the country. At a national, and even international level, Cerbotics aims to break language barriers by providing Spanish speaking teams resources

that may not have been within their reach. Through conferences, published resources, and initiatives such as translating the WPILib, 4400 has increased accessibility to information. And by hosting the FRC WarmUp, we start expanding this perspective into a worldwide approach. On a global scale we've had the chance to represent our country at the FIRST Global Challenge on 5 occasions, traveling to Dubai, Geneva and Athens. Looking to embody FIRST values, we created different initiatives. Global Talks is a series of livestreams, where among different nations, we shared about our countries' culture and progress during the build season. By developing an AI chatbot equipped with official documentation, we helped other teams answer their doubts about the competition or any other matter. Based on one of our projects, we hosted the FGC Warm Up, where our team gave conferences about technical and non technical topics for 3 days. And finally, we started FGC 101, a series of 5 video tutorials of how to build a robot, program it, and even design documentation. For these videos, we uploaded the list of materials, CAD designs, full code and a documentation model. Furthering our support into the competition, we managed to assist over 100 countries, even taking part of the REV hospital. Thanks to these efforts, our team has won 3 gold and 2 silver medals, including being recipients of the most prestigious award twice. 83 121 115 116 101 109 32 70 97 105 108 117 114 101: It's no coincidence that you are reading this essay, nor that we have written it. There is no predetermined destiny tracing our path; we have all made choices that led us here. Some were small and others were life-changing, sometimes with full confidence and others filled with doubt, but always choosing the path we wanted to follow. Faced with the reality we have encountered since the first day of our existence, we have always had two options: remain in monotony and keep everything the same, or make the choice to imagine and build something beyond our limitations; not as an individual, but as a community advocating to awaken others. Now it is your time to decide. Are you ready to wake up? \*All terms used strictly match the FIRST definitions for 2025 FIRST Impact Award submission :) ;

