

## Chairman's Award - Team 4400

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2022 - 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.**

Our students discover their potential as they grow with FIRST. Cerbotics became the first K-12 program in our country, that traces the development of students' abilities in one category as they jump into a new one to face more challenges. 62% of our members have been benefited from it, and an important part of them act as mentors of the teams they once were part of. But FIRST impact goes beyond K-12 grades, 100% of our alumni attend college, and 73% of them were inspired to pursue a STEAM major.

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

Torreón is a contrasting city. In the middle of the desert you will find a developed industrial sector built in a short time, thanks to its inhabitants who work to take our region further. We use this shared passion between private, public sectors, and FIRST teams to transform our city through education with STEM Reaction; a joint plan to identify areas where access to STEM is limited and establish centers where they develop their potential by attending robotics courses and joining a FIRST team.

**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?**

Thinkit started as a remote learning method, where we created low cost toys as an excellent approach to take STEM to neglected communities. Last year, as part of the pilot program, we distributed 100 kits to museums, public schools and charity homes. Its success allowed us to establish collaborations with local sponsors. Nowadays, Thinkit transformed into an international platform, where we are delivering 1000 kits within our continent.

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

Collaborating is working faster, lasting longer and staying stronger. Having joint projects as OMG robots magazine and WarmUp, of our own; STEM connect (2468) , Chairman's exchange (2486), The Compass Alliance (3132) and Menstrual equity (1868), allows us to not just teach but learn from different experiences and perspectives, reaching out to different parts of the world and to grow not just as teams but as the FIRST community. Changing is faster while being together.

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

Generating a stronger FIRST community is how we shape future changemakers. We created 2 collaborative projects focused on starting teams: STEM Reaction, reaching a local sketch and FIRST Seed for a national impact. To ensure sustainability we implemented a hybrid working method to mentor our FLL & FTC teams. And through hosting 49 workshops we assist teams from 7 countries, helping from robot design to business related topics. In 3 years we've started 24, mentored 14 and assisted 135 teams.

**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?**

We have the strong belief that "Anyone can be part of FIRST". Contributing to increasing the number of teams and their development in Mexico is the best part of being in the competition. To make this possible within our community we have created 13 events that show the people who aren't already involved what FIRST is really about, and inspire the ones who are already into the competition to continue with our purpose of making a bigger community of innovators.

**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**

Teamwork is what makes common people get extraordinary results. Last year FIRST Mexico invited us to partner with WPI as translators of the WPI Lib docs helping all Spanish speaking teams. As our partnership grew, so did FIRST in our country. Last season we acted as key partners in hosting events, carrying out the FTC and FRC remote events in Mexico. And now we're giving FTC, originally shadowed by FRC, the spotlight in our region by hosting a qualifying tournament and the national championship.

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

STEM functions better when we have diverse points of view. This is why our team created a multilevel plan to bridge the gender gap. All students take FIRST's EDI training. Then we have STEM Girls, which strengthens the bond within girls in FIRST, having 28 participant teams. Finally, to reach our community, we started "GENIAS", a podcast where successful women share their daily experiences in the work field. Our latest effort was to start and mentor the first deaf FTC team in Mexico.

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

We aim and plan our initiatives within 3 core aspects: technical skills, business management and community impact. Being sustainable means to implement the philosophy "everyone learns and everyone teaches". Through the years we've developed up to date manuals for rookie generations as well as taken finance management certifications given by prestigious colleges like Boston University and Columbia. With these efforts we are improving each season all of our cores as well.

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

Our sponsors go further from funding resources. We follow an approach that makes them part of the change. On its first stage, we give presentations to explain our mission, but FIRST is something you have to live to understand it. By inviting them to the FIRST local events we host, they can see the fruits of their support. Leading to the engagement stage, they act as important pieces in the organization of robotics courses, and in starting 11 teams at their facilities as well.

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

The beginning of this season was a big challenge for the programming area. With rookies that had never participated in FRC and a reduced space to test autonomous programs. With the collaboration of both mentors and alumni, we developed study plans that allow us to pass on knowledge to new generations. Along with our sponsors we were able to purchase tools such as ROMI to test our autonomous modes on a small scale to then put them into practice at the test field we designed and built this season.

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

In every race there's always a time to pass on the torch and we want to be ready for that moment. We seek to shape the new pioneers that will sustain the momentum to keep generating change. That's why we started 12 STEM diversity education initiatives, supported 149 teams and expanded our ability to cause a bigger impact through 55 media appearances. Every action we take develops into something thrilling, guiding us to our 5 defined core areas that help us become a positive influence.

**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.**

Covid-19 caused tough times, and Cerbotics committed to help by beginning a PPE production network with the association of enterprises and FIRST Alumni that benefited 25 medical centers with +3.3K health equipment in our

country. Besides, since 2019 we've represented Mexico in the FIRST Global Challenge by winning the "Dr. Mae Jemison" award for International Unity; with this we hope to raise the odds for us to interact with teams from all around the world, while increasing our impact in FIRST.

## Essay

### Revolution

How would you define revolution? You may think of 2? rad or of a radical change, but for us it goes beyond all that. It's about making science and technology available for all, changing the perspective of a whole nation and taking FIRST Forward. We are Cerbotics 4400, from Torreon, Coahuila; and we are about to tell you how we are revolutionizing our world.

### Sharing a purpose

Building STEM communities is more than a purpose, it is the way to change the world. In 2019, with the help of 14 enterprises, universities & teams who come together to share their ideas and enthusiasm for technology, we established the regional Robotics day. We celebrate it by running the Robotics Festival; a day where technology takes the spotlight in our city, reaching 7k people. Yet, we want to go further, hoping that our community becomes more than attendees, but part of the change. STEM Reaction is a structural project to transform Torreón into a STEM capital. This involves going along with a step by step plan; identifying zones where access to technology is limited, introducing robotics in those areas through show offs and inviting them to visit their local STEM hub, a center where they will receive free robotics courses and have the opportunity to join a FIRST team.

As we are bridging the educational gap in our country, we are working to take another step. Think-it consists of low-cost toys with which kids can explore basic science concepts, and realize that STEM isn't as boring or difficult as they think. In our pilot program we delivered 100 kits within our region. But thanks to our collaboration with the association "En el semáforo se aprende" we are going to deliver 1000 kits in Torreón, Queretaro, Mexico City, and surpass borders by collaborating with an institution from Bolivia.

### Changing perspectives

STEAM is built for everyone despite their gender, ethnicity or age. It's an environment for young people to be themselves. Unfortunately, there are always some left behind, and we are working towards making a spot for them. Our team has been supporting ILAL, an educational institution for deaf kids; this is not just a one sided impact, as we teach them robotics, we learn Mexican sign language. 6 years ago we started imparting arduino and LEGO courses as an introduction into the world of science & technology, the kids could share their work at Robo League, our own robotics competition. Now, it's their turn to create a change. We are witnessing the first generations we taught become part of ILALbotics 21091, the first FTC team of deaf students in our country. And this season, being hosts of the Qualifying and Championship Tournaments led us to find opportunity areas in FIRST Mexico regionals, so as part of volunteer training we added basic sign language courses that included new signs we set up for technical FTC terms.

Everyone deserves to have a seat on the table. In the past 3 years we have been working in girl-powered activities that seek to give representation in media and role models for younger girls, and most importantly give them protagonism in science & technology. With STEM Girls, we are creating a strong support community inside FIRST with discussion panels where women from 28 teams share their experience and learnings. Since we saw how much potential the possibilities and prospects this project had, we decided to reach a bigger number of girls. That's how GENIAS was born. Our first action was to convey a podcast where successful women share their day-to-day experiences in their work field to empower others to fulfill their dreams.

As part of empowering girls, this year we celebrated the International Day of Women and Girls in Science in our school by introducing them into STEM through fun experiments and explained how they worked. At first they were hesitant to ask questions, but after a while they realized there was nothing wrong with speaking up and sharing with us what was on their minds.

### Give and take

However, there's a lot of room for improvement in Mexico. To tackle the different needs of our community, we developed several campaigns along with it, based on a quick response society that generates programs able to be sustained for a period of time. Over the last 3 years we have run 10 collection centers to help 775 people from charity homes and schools in need gathering supplies, food, clothes and books.

Health is also a top list priority. Our region is characterized by being a reference point in this sector within northern Mexico, we support these institutions by developing yearly programs. Each October we run our campaign called Autoexplorate and Tapatón, both of which are focused on the awareness and treatment of cancer. Autoexplorate gave us the tools to be able to spread information for preventing breast cancer through social media. And in Tapatón we gather plastic bottle caps to cover the expenses of chemotherapy treatment, congregating 650k caps in the past years. The beginning of the pandemic represented a hard time for the health sector, so we decided to help with what was in our reach as the shortage of medical protective equipment. Cerbotics collaborated by creating 3D-printed face shields from our homes, and with the assistance of 24 enterprises, it escalated into a manufacturing network that delivered 3.3k pieces of EPP to 25 hospitals from 5 cities.

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Some people may not know what it is to grow up in the desert, but to us it means a lot; it is part of our history, present and future. And as a community, the responsibility of taking care of our ecosystem rests on our shoulders. Therefore we began working with Limpiemos Mexico, organizing one of the biggest cleaning campaigns in our zone, and with the help of 400 volunteers, we reached 4 tons of waste recovered from our local river.

### Building a name

Social media lets us connect not only with other people, but with other teams. It shortens the distance, taking us to places we can't reach by ourselves. "Get louder", our media plan, is the method that allowed us to increase our impact ratio from Torreón to all around the globe. Each strategy is thought for different purposes and has a different scope. This year we started our own radio in collaboration with BienTV. At the same time, with 55 appearances on TV and local newspapers we shared our work in FIRST and invited our community to STEM related events. Our impact exponentially increased after being selected to represent our country in the FIRST Global Challenge, being broadcasted on some of the largest television networks in Mexico. With the task of connecting our team and our community, we also developed initiatives to reach others around the globe. We featured more than 30 countries in our show "GLOBAL Talks", a series of broadcasts where we encouraged them to share their culture. Moreover, each season we publish our own magazine, "OMG Robots", both physically at regional events and, since this year, electronically as well. In its six editions, 37 FIRST participants and teams have collaborated on it, promoting the spirit of cooperation in a worldwide sketch.

### The foundation

FIRST inspires thousands in an infinite number of ways. Through the years we have evolved our impact scope, passing from just reaching local teams to starting and mentoring others all over the country. To achieve the expansion of the competition and engage more teenagers in science and technology we created FIRST Seed; a team-starting initiative where we created manuals to guide rookie teams and interested organizations to start and sustain teams from all categories. In addition, we have developed courses and projects to show our community what FIRST is really about, and to encourage them to be part of it. All this together has been essential for the starting of 24 teams. Furthermore, we have become a key part for the development of FIRST in Mexico not only because of how many teams we started but also because of how many events we carried out. And even more during the COVID-19 pandemic as we ran, hosted and assisted 13 FIRST related events like: kick-offs, week 0 events, regionals and the national award ceremony.

Each year FIRST reaches thousands of new people around the globe, and it is easier to dive into something new with the right resources and knowing how to take advantage of them.

Since last season, by an invitation from WPILib, we act as official translators of the FRC Control System documentation, making language no longer an obstacle for the almost 100 Spanish-speaking teams. This led us to now hold one of the first virtual events in Spanish, such as the career webinar in collaboration with Johnson & Johnson.

With FRC Warm Up, a series of online conferences we facilitate resourceful content for FRC teams. What was originally thought to help rookie teams from Mexico escalated into an international event where in its 2 editions 20 expert teams have joined us as speakers and 78 as viewers from 7 different countries.

This gave us the opportunity to be recognized by more teams and led us to collaborate in international projects that go from hosting Lego Camps at some of our sponsors facilities, providing assistance in a 24/7 online server for teams from all over the world, to being ambassadors for Menstrual equity and run Chairman's Award discussion panels at FIRST events.

### Outcome

A revolution must be remembered for what it stood for, not for the people that were part of it. 10 years ago we started changing the lives of a small group of students and now we are revolutionizing our world by seeding a simple idea inside other people's lives: do things from the heart. These are the things that are truly remembered over the years, and ensure that, even 4400 years later, our revolution will still change the world.

\*All terms used to describe our team's efforts strictly match FIRST definitions for 2022 Chairman's award submission.

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