FIRST Impact Award - Team 9545

2026 - Team 9545

Team Number

9545

Team Nickname

Caracal Robotics

Team Location

SARIYER, 34 - Türkiye

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.

As a third-year team, measurable change is already visible. 100% of our seniors are preparing for university, and all plan to pursue STEM degrees — marking a cultural shift within our vocational high school. Over the past three years, 10+ students completed their FIRST journey, with more than half accepted to universities in the USA, Netherlands, and Italy. Beyond technical growth, FIRST built leaders: 9 graduates now mentor rookie teams, transforming participants into mentors.

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.

Caracal Robotics operates from our vocational high school in Istanbul to rural villages in Şırnak, Hakkari, Hatay, and underserved communities in Chad and North Macedonia. Many students face limited technology, financial and language barriers, and in some areas, unreliable electricity and internet. International STEM pathways were once rare. Through mobile STEM labs and structured mentorship, FIRST becomes a bridge — transforming limited access into global opportunity.

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.

We advance the FIRST mission by removing STEM access barriers. Through PEY, we established labs, delivered applied workshops, and built structured FTC-to-FRC pathways. The STEM Truck reached 10,000+ individuals across 10 schools, while solar-powered Caro STEM Boxes ensured continuity in low-infrastructure regions. Sustainability is reinforced through structured mentorship and digital tools like RoboSwap, strengthening the FIRST ecosystem.

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

Our goal is to build self-sustaining STEM ecosystems in underserved regions, enabling students to become future science and technology leaders. In the past three years, we founded and mentored 16 FTC and FRC teams, reached over 10,000 students, expanded initiatives to Africa and the Balkans, and developed structured education pathways. These efforts do not only teach robotics — they transform communities into active, independent FIRST hubs.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

Building self-sustaining STEM ecosystems reshaped our team into a mission-driven organization. Through our STEM 101 → FTC 202 → FRC 303 pathway and mentorship culture, we strengthened leadership and knowledge transfer. We measure impact through mentorship and team sustainability: 20+ students mentored 16 teams, many of which continue competing and mentoring others.

Please provide specific examples of how your team and team members act as role models within the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

Over the past three years, our members have acted as role models by mentoring 16 rookie teams and supporting 130+ students through structured online trainings and hands-on workshops. Beyond technical guidance, we trained teams in fundraising, management, and outreach, enabling 8 teams to compete independently. Through shared toolkits, digital platforms, and sustained mentorship networks, we actively transfer best practices and cultivate new leaders within the FIRST community.

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

Over the past three years, we established and mentored 16 FIRST teams in underserved regions, supporting 500+ students. In Hatay, Şırnak, Hakkari, and North Macedonia, teams completed 450+ hours of structured STEM 101 → FTC 202 → FRC 303 training. As a result, 8 teams now compete independently, while 20+ youth mentors continue guiding rookie teams — creating a self-sustaining mentorship ecosystem.

What other initiatives have you created, grown, sustained, or participated in (*FIRST* 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?

Beyond FIRST competitions, we launched hands-on STEM programs, the STEM Truck mobile lab, digital learning platforms, and international outreach initiatives in Türkiye, Africa, and North Macedonia. Over the past 3 years, these initiatives reached 22,000+ students across 60+ regions through 6,000+ hours of structured training. As a result,students developed problem-solving, leadership, and innovation skills with many advancing into robotics teams, STEM studies, and community leadership roles

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.

Over the past three years, Caracal Robotics built partnerships with schools, local authorities, NGOs, and sponsors to expand STEM access. Through 3 joint projects, we supported disadvantaged students and helped establish 16 FIRST teams. These collaborations expanded our impact across Türkiye, North Macedonia, and Chad, reaching thousands through mobile and digital STEM programs and strengthening sustainable regional FIRST ecosystems.

Describe your team's efforts in the past 3 years to promote *STEM for Everyone*™ within your team, *FIRST*, and your communities.

Over the past 3 years, we advanced STEM for Everyone™ by ensuring inclusive access to robotics education in rural and underserved communities across Türkiye, Africa, and North Macedonia. Through free trainings, mobile STEM programs, and digital platforms, we reached 22,750+ students and reduced financial and geographic barriers. We actively engage girls, students with special needs, and first-time participants, creating pathways where every student can see themselves as a future STEM leader.

Explain how you ensure your team and the initiatives you have created will be sustainable.

We ensure sustainability through a structured long-term pathway (STEM 101 → FTC 202 → FRC 303) that develops students into leaders and mentors. Schools are supported in forming FIRST teams, assigned youth mentors, and gradually transitioned toward independent competition and management. As a result, supported teams continue competing and mentoring others, creating self-sustaining STEM ecosystems.

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

One area we aim to improve is strengthening our technical depth in advanced robotics systems, including programming, automation, and mechanical optimization. While we have built strong outreach and leadership programs, we are actively increasing technical workshops, mentor-led training sessions, and internal project-based learning. We have expanded our testing processes, documentation systems, and peer-review practices to ensure continuous technical improvement.

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, particularly noteworthy, or had a large impact.

What distinguishes our team is our ecosystem-building model. We do not measure success by the number of events we organize, but by the number of teams that become independent and begin mentoring others.

By training local leaders, youth mentors, and structured pathways, we ensure that communities continue expanding FIRST without our direct involvement.

Our impact is not temporary outreach — it is permanent capacity-building.

Essay

Have you ever looked closely at the Caracal Robotics(CR) logo? It is not artwork—it is our operating system.The seven symbols within it represent the seven pillars that guide every initiative we build: Expansion,Replication,Visibility,Solidarity,Partnership,Leadership and Sustainability. Each project we launch reflects one of these forces. Together,they transform outreach into self-sustaining FIRST ecosystems that endure far beyond a single season

Spear of Neptune – Through Path of Potential Equality(PEY)

CR leads PEY Hatay–Şırnak,PEY STEM Truck,PEY for Balkans and PEY for Africa long-term initiatives embedding FIRST sustainably into underserved regions. Since 2023,PEY Hatay–Şırnak has reached 13 schools and 10,000+ individuals in disadvantaged villages,evolving from a single online meeting into the structured Caracal STEM Digital Bridge Program. One under-resourced school received focused support,including the establishment of a computer laboratory. 2 students were later hosted in Istanbul to experience an FRC Reg. firsthand with all costs covered.

In 2024,on-site visits delivered workshops in each school: AI,LEGO,Drone,Robot Construction. An FRC robot was disassembled and rebuilt with students,turning theory into tangible learning. Despite electricity shortages and limited infrastructure,the program continued uninterrupted. With the support of the Şırnak CCI,12PCs were secured. Students who completed the Digital Bridge pathway advanced into FTC-focused programs and 36 participants from 13 schools were hosted at the Marmara Reg. to experience FIRST culture directly. By 2025,5 village-based FTC teams were established: Siyabot,Sefiron,İkizce,Orontes&Roborabat. All were hosted at the FTC Competition with full sponsorship support.

Siyabot earned Think Award and later founded ŞAL RoboRage,Şırnak's first FRC team,which went on to support Botan Robotics (Siirt),Berçelan Robotics (Hakkari),demonstrating a self-replicating mentorship model. Today,5 of Türkiye's 45 FTC teams originate from Caracal-led village initiatives.

During visits,CR embeds robotics through structured FTC-to-FRC pathways,securing sponsorship and institutional support with local authorities and CCIs.

For every new team,a trained Caracal student is assigned as a dedicated mentor,ensuring teams are competition-ready and self-sustaining.

This model integrates schools into the global FIRST ecosystem with long-term independence.

In a Şırnak village, 11-year-old Beritan first met robotics through our workshops. We later hosted her at an FRC Reg. in Istanbul,her first time leaving her village.She returned as captain of Siyabot, one of the five FTC teams we established. The next season, they competed instead of watching.Under her leadership, Siyabot organized STEM festivals across three provinces, introducing hundreds to robotics."Robots were once something I only watched. Now I build them."Her journey embodies our model: inspiration transformed into community leadership.

Beyond infrastructure,our deepest impact is on our students. Though a 3rd year team with no graduates Yet change is measurable: students have already earned university acceptances in the Netherlands,Italy,and the US,while 100% of upperclassmen now plan to pursue STEM degrees marking a cultural shift within our vocational high school. FIRST did not simply build engineers; it expanded horizons,redirecting futures before graduation.

Beyond Şırnak,CR supported Bezoar (Hakkari),Urartu (Van),and The Power of Skopje (North Macedonia). Bezoar later founded Simurg,while Roborabat founded RamBot,validating our self-replicating ecosystem model.

Through structured sponsorship development and İstanbul Governorship-approved partnerships,the first-ever FTC and FRC teams were established in these regions. Through the Caracal STEM Truck,10.000 individuals across 10 schools in Hakkari,Şemdinli,Yüksekova were reached regions with limited technological access. A fully equipped mobile STEM lab,deployed with local authorities,delivered hands-on AI,robotics and engineering workshops. Beyond instruction,the STEM Truck catalyzed new team formation,establishing a sustainable mobile FIRST ecosystem in previously unreachable communities.

Beyond national borders,PEY for Balkans reached 750 students across 3 schools in Macedonia,leading to the country's first FRC team,formally congratulated by FIRST. Supported by grant funding and institutional cooperation,the initiative evolved from outreach into a permanent ecosystem.

Through Caracal-led initiatives,first-ever FRC teams were established in Hakkari,Hatay,Siirt,Şırnak,Van,Macedonia,Chad,introducing competitive robotics to regions with no prior access to FIRST.

Through PEY for Africa,CR initiated long-term transformation in Chad by redesigning one school as the country's first Software Education Center,in coordination with the Turkish Embassy in Chad,TİKA(Turkish Cooperation and Coordination Agency),Maarif schools and NGOs.

This institutional model goes beyond outreach by embedding sustainability at its core and includes the formation of Chad's first-ever FRC team Etincelles Sahara Robotique integrating competitive robotics into the school's educational identity.

In parallel,3 additional schools were reached through hands-on workshops using our FRC robot,drones and VR. To ensure continuity,we donated Caro Solar STEM Box kits,each equipped with a solar-powered battery system,a dedicated computer,robotics materials and French-language STEM resources enabling education even without electricity or internet access.

Through this strategy one institution for system-building and 3 schools for scalable access CR provided direct STEM education to over 2,000 students and reached thousands more across Chad,establishing the foundation of a sustainable national FIRST ecosystem,while successful and highly engaged students will be hosted at the Avrasya Reg.

At the Avrasya Reg. CR will fully sponsor and host The Power of Skopje, ŞAL RoboRage, and Bezoar in Istanbul, covering all competition expenses. Alongside them, 15 students from 10 Hakkari village schools will experience FIRST on the regional stage.

They are not guests—but ecosystems once supported, now standing independently beside us.

This moment proves that CR does not create temporary success,but builds enduring,community-driven STEM systems that extend far beyond a single season.

Enneagram – Interconnected Growth

Under the Enneagram pillar—our model of interconnected impact—CR extends learning beyond competition. Through this approach, 2,000+ children were introduced to STEM, 10,000 community members engaged, and 1,000 students received structured training, while sustained volunteer partnerships with LÖSEV, TEMA, and Kızılay strengthened social responsibility.

The Owl represents our strategic communication model CR has been featured seven times on national television, including repeated coverage on Türkiye's official state broadcaster, reaching an estimated 10 million viewers nationwide..This visibility drove structural impact: 3 high schools contacted CR,leading to FRC teams #11537,#11531,and #11520,integrated into our mentor ecosystem for sustained guidance and long-term independence.

Bismuth

Bismuth represents CR' commitment to community solidarity.

Through a needs-based approach,we established a support network across 13 schools in Şırnak,Hakkari,Hatay identifying urgent requirements directly from school administrators.

In response,3 full trucks of essential supplies valued at $12K were delivered,ensuring targeted and immediate support to communities most in need.

Hamsa Symbol + Sunflower Union:

Today,CR operates with 25 partners,including Evyap,the Istanbul CCI and Radisson Collection. Our model is balanced: approximately 50% financial and 50% in-kind technical support,ensuring operational sustainability and engineering capacity.

Over 3 years,this values-aligned structure has generated $160K+ in sponsorship value,funding competitions,PEY rural expansion,STEM Truck deployments and international initiatives. By aligning projects with our partners' missions,sponsorship evolves beyond transactional support into long-term collaboration.

Antimony – Community Leadership at Scale

CR launched the FIRST season with a flagship Kickoff at Radisson Collection,bringing together 21 teams and 600+ students. Hosted at one of Türkiye’s most prestigious venues,the event demonstrated our capacity to organize large-scale national STEM gatherings and unite the robotics community.

Crescent Moon

Under the symbol,CR developed 2 digital systems to strengthen collaboration and sustainability. RoboSwap enables teams to exchange surplus parts or request urgent components,creating a shared hardware network. TeamCompass was established as an online forum where rookie and developing teams can seek guidance on topics including championship travel, robot shipping procedures, and building long-term team sustainability.

The Celestial Pair – Sun&Moon

The Sun and Moon symbolize balance—public visibility supported by institutional strength. This was exemplified when Radisson Collection hosted students and teachers from Hatay and Şırnak.

Institutional collaboration included the TİKA,Turkish Embassy in Skopje,Yüksekova and Şemdinli DoNEs and the Yüksekova CCI. International engagement was reinforced through meetings with the Istanbul Governor and Consuls General (Skopje,Chad,Houston,Chicago,LA),alongside strategic dialogue with the Evyap and partnerships with Dow,Rockwell,3M,Murr,TYSD,Can Klima as well as participation in TEKNOFEST and SDN Expo.

CR does not export robots to communities.We build communities that export opportunity. ;