The crowd, the cheer, the excitement. We missed it all.

After COVID-19 prevented our team from competing at regionals in Sydney for 2 years, we felt disheartened. Discouraged and exhausted, we craved the rush of the match, the intense strategy and the chaos in the pits. With the various restrictions on the 2021 regionals, such as the limit on attendee numbers, our team decided it was finally time to make our dream of a Western Australian offseason event a reality. As we set out to ignite a passion for STEM in our community, we also pushed to reignite our own.

OUR CORE VALUES

Ignite, Improve, Innovate. This is our motto and our mission. We are 4788 Can't Control, a team of 45 students from Western Australia (WA) - our home and our community. We strive to IGNITE a passion for STEM, IMPROVE our community and our reach, and INNOVATE to succeed in inspiring and preparing students to be future leaders in STEM.

IGNITE

With classes such as CAD and mechanical to media and programming, Preseason aims to introduce our sub-teams and activities to students. This is vital to upskilling members in preparation for the challenges of Build Season, ensuring everyone can contribute to the team and our community. Preseason is great for team bonding, as members get comfortable with their teammates before the hustle and bustle of the build ahead. Even if students do not attend Build Season, Preseason stands alone as a program that ignites a passion for STEM activities by building and expanding on the school curriculum, developing students' skills in media production, Autodesk Inventor, C++, and engineering methodology.

Midnight strategy, designing, and team bonding. Kick-off has been our exciting start to the FRC season since our inception, pulling together students and teams for a night of games, fun and the streaming of the game reveal. The night gives students another chance to get to know each other before the season starts and makes the midnight game reveal even more exciting. Kick-off reignites a passion for FIRST and engineering by sparking discussion and exploration to achieve a common goal. The late-night designs and strategy increase the team's anticipation for the exhilarating season ahead.

Igniting an interest in STEM within our community, team presentations and showcases at events and programs broaden our impact. Through presentations, 21 of our current students have been inspired to join the team in the past 3 years. Presenting at programs such as Girls Engineering Tomorrow (GET) and the Indigenous Australian Engineering School has given us the opportunity to focus on groups who are traditionally underrepresented in STEM pathways. We have presented at many community events: during Coogee Live, we promoted science and technology studies to countless students and families; at the Perth Resources and Technology Showcase we reached >150 primary school students; and at Curtin University (CU) Open Days,

we've recruited numerous students and mentors. We ignite a passion for STEM across WA, encouraging people to pursue STEM-based interests.

Starting early, we ignite a passion for robotics in children aged 8-15. RoboAcademy (RA) is a program run within CU that uses Lego Mindstorm robots. The 2-day workshop aims to teach coding and mechanical skills to establish a beginner's understanding of the basics of programming and engineering processes. By targeting younger children, RA provides a base for future FIRST endeavours including FLL and FRC, igniting a curiosity for learning new skills for the future through experience. All volunteers for RA are current team members and all profits go back into the FRC budget, contributing a total of AUD 108,466 since its inception in 2016, thereby increasing the team's self-sustainability. RA makes our team more self-sufficient and provides children with the chance to develop a long-term involvement and love for STEM.

A fun and competitive way for teachers and coaches to learn about the new FLL game, the annual FLL Hackathon is a one-day competition that gives coaches the chance to ask questions whilst creating connections within the community. The event allows them to develop methods of better encouraging and assisting their team. Since 2018, it has promoted FIRST and STEM to countless teachers and schools, and allowed coaches to understand the importance of FLL as a FIRST program.

IMPROVE

Expanding our community and bringing FIRST to more people, we have grown FLL in WA over the last 9 years. We have assisted the growth of FLL within our community, going from 1 competition in 2013 to 10 regionals and a national championship in 2021, broadening our reach and expanding FIRST within the community. FLL has helped provide STEM knowledge for many students (primary and secondary) in an attempt to prepare them for future career paths and challenges. Our FLL competitions now cater to both FLL Challenge teams and FLL Explore teams, of which 14 are registered. We aim for this to launch FLL Explore in WA in the near future. Students of 4788 started 4 teams at nearby schools - Burrendah Primary School and Perth Modern High School - to expand the reach of FLL and its positive impacts on the learning and development of children. Teams Technically Nachos, Incredibots, The Constellations, and Peanuts, were mentored by 14 of our students, demonstrating our passion for improving the reach of STEM within WA.

Starting FRC teams around WA has been one of the best ways for us to improve the FIRST WA community and encourage students to pursue STEM. By starting teams 6524, 7779, 8035 and 8613 - which amounted to 67% of teams in WA at the beginning of 2021 - we were able to improve our reach to a wider community of WA students and drive them towards engineering future pathways. Teams started in Perth have integrated the FRC program into their school, improving the standard of STEM in high school and introducing FIRST to more students. Participants of teams from such schools - for example Atwell College and Lynwood High School - have attained high academic standing, which they attribute to the benefits of having FRC in their school.

Collaborating and learning even during challenging times, CodeWorks is a program designed and started in order to combat the repercussions of the COVID-19 pandemic. Members of Curtin FRC volunteered to set up online classes teaching students to code in C++. Challenge levels ranged from making a basic calculator to creating a fully playable snake game. We engaged 14 non-FRC students through the program, improving our community by igniting an interest in coding. Our efforts expand our reach to school students outside of FIRST programs and engage the general public.

INNOVATE

Helping people around the world, one of the biggest ways we as a team innovate is through our codebases and shared code libraries such as CJ Vision, WML, and GradleRIO. CJ Vision, developed by our mentor and alumnus, CJ Buchel when he was a student, uses Vision Detection to make tracking code easier for teams and has been downloaded ~500 times worldwide since 2019. It simplifies the process of setting up and deploying vision code to the robot, and reduces the amount of code that teams need to use from the equivalent of 500 lines to only 30. It increases the accessibility of computer tracking, and can execute without inhibiting other processes on the RoboRio as it has the ability to run on any Unix-based platform, allowing teams to use a separate device.

WML promotes code modularity, creating the ability for the user to combine components in a block-like manner. Originally created to simplify the production of FRC code, it eventually evolved into a broader platform that we then shared with our community to help ease the development of robot code. We sent an email to all teams in WA, sharing the code base link with them. The library hosts a collection of programs that we have used over the years, and so helps with coding joystick controllers, elevators, and much more. Curtin FRC has been working on this for years, and we were excited to share it with our community.

Created to be fast, reliable and highly-configurable, GradleRIO, made by alumnus Jaci Brunning, is an alternative to the previous Build Season software. Announced as the official build system for all Java and C++ teams at the 2018 Houston Championship, GradleRIO is now used by over 76% of all teams worldwide. Over the years, our team members have consistently developed innovative software solutions that have reached hundreds of teams worldwide.

The competition, the energy, the cooperation. The WA Robotics Playoffs (WARP) was the offseason event with it all. During the pandemic, the FRC community was disheartened by the lack of competition. WARP was our method of combating this. The offseason event allowed us to bring more FIRST opportunities to those within our community. WARP was held at CU on the 21st and 22nd of August 2021. The event saw 13 teams around WA participate, 10 of which were pre-rookie teams from new schools, and gave way to a previously unapproached community of students by developing skills and a passion for FIRST. As one of our most effective initiatives to start and develop pre-rookie teams to competition level, the event gained support from government bodies, industry and educational institutions, broadening the reach of

FIRST and expanding the FRC community in WA. Our team is proud to have been part of the body that organised this event - an innovative solution to the challenges that our community faced due to COVID-19.

Over the last 3 years, our team has gone through many changes, growing into what it is today. Through our mission, as well as the mission of FIRST, our team has continually pushed to expand FIRST and STEM within our community to prepare for a better and more advanced future. We are team 4788. We Ignite, Improve and Innovate, because that is what we do and who we are.