The rookie year of FRC Team 2550

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Created by the students of the
Oregon City Pioneer Robotics Organization

Team 2550

When our rookie team started this year's Overdrive project, we were also starting something much bigger: the foundations of Team 2550, a team that is not going away any time soon. Our team members formed an understanding of what it means to be a member of a real team working together to build a technological complex creation in a short amount of time. Students discovered how much thought is put into the technology that runs their lives, and how much easier it is to work with your competition than hinder them. At the very beginning of 2008, our team started its fascinating six week journey of the building of a robot and of a team.

Robotics in Oregon City is not new and we plan to continue it for many more years. Roger Collier, our team coach, has run Oregon City's FIRST program for four years. By 2007, it had already grown to eight FLL teams. Some of the students in FLL wanted to take it to the next level and started an FTC team, bending the age limit rules slightly as they were a bit too young. Roger then started the FRC team, which would allow high school students to build a full-sized robot while mentoring these enthusiastic but young students.

In a completely opposite sense were students like senior Nico Paris, who had been waiting for an FRC team. In eighth grade, he outgrew the age limit for FLL, and was left to do robotics in his free time. "I wish FRC would have come along earlier in Oregon City," he said.

From these two faucets, eager students flowed into the team, which was first formed in October 2007. News spread of the team's formation, and with FRC encompassing more than just plastic robots, students interested in subjects such as CAD, mechanics, and marketing joined our team. This year, we had upperclassmen who have begun to pass their skills down to the younger students, and a large group of underclassmen who will be carrying our program onwards.

Oregon City, meet FRC

◀ Team 2550 goes to its first FIRST event as a team, the Oregon Regional Kickoff Event. Here, our team learned of the 6-week task we'll need to complete. For some participants, this was their first taste of the community of FIRST.

▶ Our team visits mentoring Team 1425 of nearby Wilsonville, Oregon. Wilsonville had greatly helped us during our build season, from lending us access to their machine shop at Xerox to allowing us to use their time-tested scouting program at the world championship. Mentoring teams have helped level the playing field as they give us tips that they've learned from their years of experience.

Experiencing Gracious Professionalism

With our assembled team, we all met for the first time on January 3, right after winter break and two days before the kickoff. Standing to the side of the high school students was the young FTC team, whose members had been in robotics together for four years. At the kickoff, this separation between the older and younger students began to diminish. The FTC students participated in our discussions and we found that they knew about engineering. Some of the FTC team members had knowledge and experience that the upperclassmen didn't. We didn't hinder their efforts just even though they were younger. Age didn't matter; skill did.

At the kickoff, we experienced the first wave of gracious professionalism. Westview's Team sent over a mentor to go through our kit of parts with us and Wilsonville invited us to their brainstorming session, where we were able to get a taste of how an established team functions. Catlin Gabel invited us into their machine shop and gave us their leftover parts when the parts we'd ordered were delayed in shipping. Wilsonville has done similarly, and allowed us to use their machine shop. From getting started, to finding ways out of tough places, the partnerships we've formed with other teams have helped us greatly. In our future years, we earnestly look forward to practicing this aspect of gracious professionalism.

▲ Our team gathers to discuss our robot design for the first time after we learn our task. Kyle drinks his energy drink, as we had to wake up around 4 to watch the live broadcast from the east coast. The seniors and the young FTC students are working together, as they did through the entire program as FRC mentored FTC.

A to Z Services

Oregon City's second-year FTC team, *A to Z Services*, is simultaneously being mentored by our team members and helping the FRC team. New FRC members brought knowledge about electronics and robotics they had acquired independently and returning FTC members brought their knowledge of the FIRST program. These students will still be joint participants next year, when they hope to train new students to maintain the FTC team.

Our home

We worked for what we got. It wasn't handed to us. Our mentors related it to a business startup because we working against such a short deadline which made our lack of materials more noticeable. When we began the program, the school district was slow at getting us what we needed. Besides the unique things robot construction needs, such as drill presses and saws, we didn't have the necessities, such as enough tables, chairs, or any Internet access. But as cold and desolate as the old art building's basement was, the team had high hopes and came back every night to work with what we had. Eventually, we built up supplies from donations and the school found time to transport furniture. Now our prime engineers wouldn't have to drive out to Wilsonville to machine parts quite so often. The school sped up, putting our money orders through right away because they understood we only have six weeks to do this. We spoke at two Oregon City School Board meetings. At one, we had the Oregon FRC Regional Director, Deb Mumm-Hill, speak with us, which was very eye-opening to some of the board members. The school district is looking for a **permanent home** for us in the main Jackson Campus. In a school district that is rapidly growing and pushing smaller programs from place to place, this is a big deal. They are talking about offering robotics classes to students K-12, from JFLL, to FRC. They've realized that this is what STEM education is all about and they know that we are here to stay. With the FTC team becoming official FRC team members next year, the team can go nowhere but uphill.

▲ **Cody works on an FTC robot on a computer which is on the window sill. The reason behind this location is that for several weeks it was the only area in our team's workplace that had Internet access.**

OCPro and FIRST's impact on its students

"It allowed me the opportunity to work with people I would not have normally worked with."

- Jordan FRC

▲ **We fundraised at Oregon City High School. We sold shirts and pins featuring our logo to both raise money for Atlanta and to raise awareness of our program. Many, but not all OCPro team members come from this school in the Oregon City School District.**

Build Season

Our students and coaches were extremely enthusiastic about this project. Most of our core team members were working on the project every weeknight for three to five hours. We put ourselves together quickly and the team hierarchy appeared rapidly. In our team, no one was domineering, but the project stayed on track because of emerging leaders. We were open-minded about new ideas and never threw them out before trying them. Because of this, no engineers were furiously fighting for their idea to be used, in fear of it being tossed otherwise. We never really threw out ideas; instead, we kept them in our bag of tricks. At the scrimmage, the other teams awed over our robot that could herd, hurdle, and poke. This was apparently very ambitious for a rookie team. Our excuse is that we didn't know better. We were all enthusiastic kids who wanted to do as much as we could as well as we could.

OCPro and FIRST's impact on its students

"Well, other than being the best 6 weeks of my life, it's made me a better leader. I've learned things like how to delegate and keep people in line without going crazy. It's been great exposure to the STEM fields and it has cemented my career choice to be an electrical engineer."

- Nico team captain FRC

▶ We finally received our Mecanum Wheels and 80-20 shipment and built a base and cart to carry the robot on. We now wait for team captain Nico (in red) to decide on our next action.

◀ Jason and Cody work on wiring the electronics before they are put on the robot. The panel they are working on contains the four Victors for the four motors we have to work the Mecanum Wheels. The two wear the student-designed team sweatshirts they received that day. The arms read "No Magic Just Physics", as four team members are currently taking AP Physics and are finding ways to apply their knowledge on this project.

Scrimmage

After staying up late to complete the robot, on February 16, our team drove to Tualatin for the regional scrimmage. Many teams showed up, including our mentors teams 1425 and 1510. After testing the robot, we discovered we needed to redistribute the weight on the robot. With the help of members of team 1510, we were able to fix this problem. However, after modifying and testing the robot again, we accidently fried a Victor and our robot was dysfunctional until we had replaced the piece back at the Art Building.

Even so, the scrimmage seemed to be a success because it was a collection of FIRST participants. Along with networking and scouting other teams and their robots, we were able to receive support from other FIRST people with our robot's shortcomings.

▲ After working all night to finish the robot for the scrimmage, our team watches the test-drive of the robot.

▲▼ A member of 1510 visits to help us redistribute the weight of our robot. We were thankful for the scrimmage for multiple reasons, even if we didn't get any good practice rounds in. We were not only able to test our robot, but we were able to receive help from other teams as we tried to fix it.

▼ Even after a tough day of trial and error, our team is able to smile for a team picture, thanks to the gracious professionalism in other teams. From left to right, Roger, Zach (back), Oliver, Kyle, Morgan, RJ (front), Cody, Nico, Sean, Jessica.

Oregon Regional

After two weeks without our robot, we uncrated Trifecta at the Memorial Coliseum. *Oregonian* newspaper reporters watched and took pictures, as they were running a story on our team. In a similar way, some of our members reported on other teams as part of scouting, additionally collecting pins.

Our team itself handed out a box-full of handmade buttons, which were all quickly taken by the other visitors. We also handed out the cards that gave information about our robot (see page 32). We had been spending the last week preparing these publicity materials, with students designing the materials and hand-making the buttons.

We eventually went to our first practice match. Unfortunately, the wheels weren't working correctly, and we brought it back to the pits where we spent our next scheduled match trying to fix it.

By the third match, we were ready to test. We were also able to squeeze in during some matches where a team was absent. Through these matches, we were able to learn a few of our weaknesses which we then tried to fix in between the matches. Like the scrimmage, we are glad for these practice rounds where we were able to get help from other teams. We were lucky enough to be right across the aisle from three of our mentor teams, 1540, 1510, and 1425. Not only that, but we were able to help some of the other teams, lending them our spare parts.

We began Friday excited about our front-page article in the Metro section of the Oregonian (see page 22). It was also on the front page of the OregonLive website. The Oregonian is Oregon's major newspaper, and the Metro section is said to be the most-read section. We then headed off to the Memorial Coliseum.

There we worked on finishing the robot for the first seed match. Some changes were made to the programming to account for the errors we discovered yesterday. We then watched the Opening Ceremonies, with speeches by people such as Oregon Governor Ted Kulongoski and Portland Mayor Tom Potter, as well as FIRST's regional director, Deb Mumm-Hill.

Back in the pits, we had decided that because of the instability that the arm caused, we would remove the claw so it would not fall over. We found that the robot was quite fast, and easily got about six laps in the first two seed matches.

OCPro and FIRST's impact on its students

"It's introduced me to a lot of people that I wouldn't have met otherwise, and it has also opened up new doors for me and has given me a lot of opportunities that I wouldn't have had otherwise."

- Erica FRC

It was soon time for the top seeded teams to choose their alliance, rather than being paired randomly. It went through the line of the eight highest seeded teams from highest to lowest as they chose one of their two alliance teams. Then it went back, and went from lowest to highest. We were nervous because if we weren't chosen, we would just go back and start to pack up, but with the slight chance of being chosen by a team

midway through the elimination. At the same time, as the teams chose their third alliance partner, if we were chosen, we would be on a higher ranked team and more likely to win.

At last, we were chosen by our friends, team 488, the second-highest seeded team. They liked us for our lap record, which was the second highest in the competition. We were ecstatic. Their alliance of team 488 and 100 was almost the best in the seed rounds, and we were now a part of it!

We won the first two rounds against the same alliance, qualifying us for the semifinals. The games went through quickly. We had only a few minutes in between each match to repair our robot. Semifinals were tricky and with two hurdlers on the opposition, they were scoring the same amount of points as us. We unfortunately lost the semifinals after three matches of ties and close calls.

Then we went back to the pits to drop off the robot and headed to the stands to watch the final match. After that was the last awards ceremony. Today had the important awards. The ones that would get teams to the Championship in Atlanta.

And we were one of them. We won the Rookie All-Star award, almost like a Chairman's Award for Rookies.

It was amazing. We screamed and jumped and ran down to the court where we received our awards. We are going to Atlanta. We won't have to watch Dean Kamen and Woodie Flowers on a recorded movie; we are going to see them in person.

◀ A person visits our pit area at the Oregon Regional. Our pit features checkered flags to honor the competition, "Overdrive."

▼ After removing the arm, we still have weight distribution problems, so we made a serious call for "dead weight." Team 1432 graciously lent us a large piece of rusty metal, which we attached and it worked great.

We left the Oregon Regional with three awards.

Awards

Oregon Regional Rookie All-Star Award

Team 1510's "Rockin' Rookie" Award

Team 2002 TETRA's "This Rookie Rocks!" Award

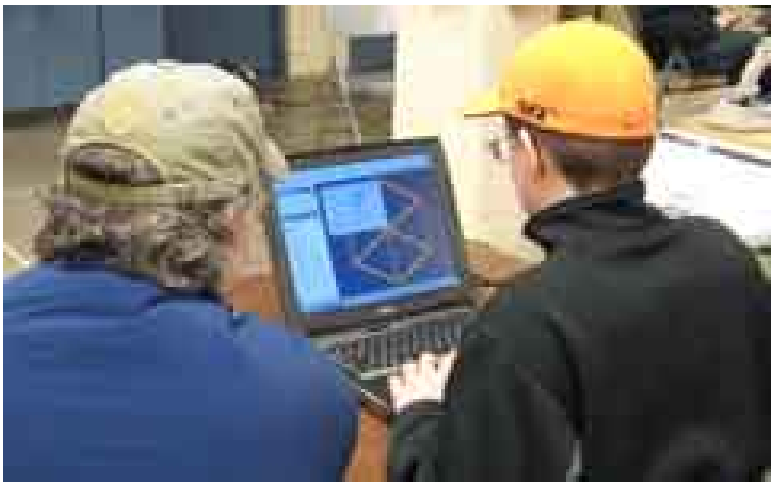
Mentors

▶ When Coach Roger Collier isn't giving us inspirational pep talks, he is communicating with people in order to organize various robotics events. The school district even created a new position for him: He is the District Robotics Coordinator. This era of Oregon City Robotics began when he began running FLL teams after the last robotics coach left. He runs the entire Oregon City Robotics program, had started our team and has since then, helped us acquired many sponsors and connections.

◀ Co-Coach/mentor Sean Halley (right) helps Nico lift the arm of the robot. Sean helped us with basically everything, and as a real engineer for Freightliner, kept our ideas practical. He was dedicated to our team and shows up every night. He's been with Oregon City Robotics since this era began, helping FLL, FTC, and FRC teams.

▶ Aaik van der Poel is a mentor from Mentor Graphics. He primarily helps our team with marketing, but on this day, he was showing Nico a possible arrangement for the pneumatics. He has helped the marketing department prepare marketing presentations. From left to right, Sean, Aaik, and Nico.

▶ **Paul Normand, a mentor from Autodesk, shows Oliver the basics of Autodesk Inventor. This program, donated by Autodesk, was used to model our robot and test various prototypes. See page 30 for designs.**



Dale Yocum of Catlin Gabel's robotics organization helped us begin as a rookie team. From tips on writing the NASA grant proposal, giving us parts, and inviting us to learn and share with 1540.

Ben Stoner of Xerox and Wilsonville Robotics gave us on-site training at Xerox's machine shop, as well as donating parts, and tools.

▼ Over the past two weeks, we've additionally had **John Gates**, a homebuilder, help us build the second crate which transported our repaired cart and supplies.

OCPro and FIRST's impact on its students

"I don't look at things as just another item. I look at how long it took to engineer, build and produce said item. I appreciate everything more now."

- RJ FRC/FTC

◀ **Kyle's aunt, Heidi, brought us material to cover the bumpers. She later sewed the amazing flag we now have (see page 32). Family members like her have really helped us.**

We not only welcomed adults with technical skills, but also parents who wanted to help us. From food to flags, parents have really helped us survive during the build season and beyond.

Sponsors

Through this program, we have received sponsorship from many different companies, from Starbucks to NASA. We began with a $6,000 NASA grant, but immediately began searching for other companies willing to sponsor us. By mass-emailing the Oregon City Chamber of Commerce members, we received many small donations. One of our key goals in marketing is not to receive short large bursts of donations, but long-term partnerships with companies. However, we are thankful for every donation we receive and put it to good use.

▲ **Our team receives its meal and check from Oregon City's Taco Del Mar. Donations like these kept our team fed during the build season and regional competition.**

▶ **Aaik van der Poel of Mentor Graphics, a tech company based in Wilsonville, delivers Mentor's donation. We made a presentation to their company, which then donated $2,500 to help finish the robot. After we won the Rookie All-Star award, Mentor donated $5,000.**

Mentor Graphics

Autodesk

NASA

FLIR

PLATT

platt.com

xerox

▶ **The coupon distributed prior to the Old Spaghetti Factory event. Over 150 people spent $1,700 on dinner at OSF that night in our name. We met supporters such as Deb Mumm-Hill, the FRC Regional Director, and Oregon State Senator Kurt Schrader who feasted that night. Senator Schrader even made an additional personal donation to our team. Also, supporters from SAO, Platt, OC Chamber of Commerce Members, OC Schools Employees, and parents, family, and friends.**

▶ **Mark Twietmeyer, president of URS Electronics, and our team stand in front of URS. URS allowed us to take home whatever electronic pieces we needed. We plan to use these pieces in the upcoming years.**

SUNSTONE CIRCUITS

PHOENIXGOLD.

Software Association of Oregon

TechStart

URS ELECTRONICS, INC.

FIRST Involvement

Along with the events depicted in the rest of this book, several of our events featured specifically on helping FIRST by volunteering and raising awareness. Team members volunteered at the Seattle Regional and set a table up at a major boys basketball game.

Another such occurrence was on Friday, February 29, after the tournament, our team, as well as team 1425, went to Flir to **welcome six out-of-state teams**. We received pizza and drinks donated by Mentor Graphics, toured Flir's facility, and even had an infrared team photo taken of our team members.

Two OCPro members **represented FIRST** at PSU's Simon Benson Awards, where Senator John Glenn spoke about philanthropy and education. We had a photo with Glenn. A table was graciously bought for us by philanthropist Scott Howard.

OCPro and FIRST's impact on its students

"It's definitely taught me to stick through a difficult task all the way through the end with little or no errors. It's also taught me to put a large time commitment into a certain area."

- Taylor FRC/FTC

▲ Members of our team volunteered at the Seattle Regional during Spring Break, helping the FIRST program by doing a number of things, such as distributing goggles.

◀ Our team set up a stand in front of Oregon City High School during a Boys Basketball playoff game. The event attracted a lot of attention, so our people were selling T-shirts and raising awareness about the FIRST program, from camps to FLL to FRC.

FLL, Camps, and Classes

The new era of Oregon City Robotics began with a FIRST Lego League team four years ago. Since then, the program has grown into a myriad camps, classes, FLL teams, and an FTC and FRC team.

With over 500 students taking part in 7 camps, 18 classes, 12 FLL teams, and hundreds more watching multiple demonstrations in Oregon City over the past four years, it's no wonder that an FRC team was started. About two-thirds of the FRC team has been through one of the FIRST programs or camps offered in Oregon City, and with the formation of the FRC team, team members are giving back to these programs by volunteering at the camps, classes, tournaments, and coaching teams.

This year, Oregon City hosted the regional FLL tournament with 20 teams from Oregon and Southwest Washington. Next year, we are hoping to host the FTC State Competition. This summer, most FRC students will be helping at camps, and next fall, we have several people who will be coaching FLL and JFLL teams. Besides increasing the number of and participants in teams and camps in Oregon City, Oregon City Robotics hopes to make Oregon City a major hub for FIRST robotics in Oregon.

FIRST Lego League

What began as ten students in the first Lego League team has now grown to almost 80 in the program, on eight teams: six teams from local elementary schools, two teams from middle schools.

In December 2007, we also hosted a regional FLL competition at Gardiner Middle School which included over 20 teams from Oregon and Southwest Washington. Our coach was the Master of Ceremonies at both this event and the State Finals. Similarly, we hope to host the FTC regionals Oregon City next year.

Our current students are planning to take over some of the elementary school's FLL teams. Next year, we will have at least one school's FLL team completely ran by FRC students.

▲ **Oregon City School District's Superintendant, Roger Rada, presents Gardiner Middle School's FLL team with an award at the Regional Competition hosted in Oregon City.**

We are thankful for the volunteers that run FLL teams and camps that Oregon City Robotics maintain. The FLL team coaches who dedicate their time, energy, and love of technology, do so expecting nothing back except the satisfying feeling that they have impacted the future by inspiring a young mind.

▲ **In 2007, Oregon City had a total of eight FIRST Lego League teams from six elementary schools and two middle schools. Our intent is for these students to continue participating in either FLL, FTC, or FRC yearly for the rest of their time in the Oregon City School District, then hopefully return to mentor our future teams.**

◀ **The Clackamas County Bomb Squad did a presentation for the FLL teams, showing their bomb squad robot.**

Adam's Story

◀ Adam was a perfectly normal kid. He participated in soccer and sports, until he was diagnosed with a heart defect.

He had to stop nearly all of his activities. He started attending Cascade Academy, an alternative school in Oregon City which is flexible enough to accommodate his frequent absences due to the medical problem.

Last year, Roger invited him to help at camps. Adam accepted, and soon fell in love with the program. He joined the FTC team and was hired at the school district to teach robotics to extended day students.

He has now decided to go to college and study manufacturing technology. His involvement with FIRST gave him this opportunity, inspired him to go to college, and earned him a $36,000 scholarship at ITT Technical Institute.

Camps and Classes

Robotics camps take place several times a year, including winter, spring, and summer breaks. Through these classes, students simulate the 12-week FLL program in one week of 6-hour-days. The students build a Lego robot and research for a presentation, acquiring skills in robotics, research, leadership, teamwork, as well as the FIRST ideology of gracious professionalism. For example, this year, over a hundred camp participants created group presentations about renewable energy sources. This summer, additionally, we'll be offering a similar class using VEX parts instead.

Oregon City Robotics similarly offers classes after school at elementary schools in the district. These six-week classes introduce the basics of design build and programming. Usually, these students go on to take a camp and then a FLL team. Twelve-week Robotics classes are also offered at Oregon City High School.

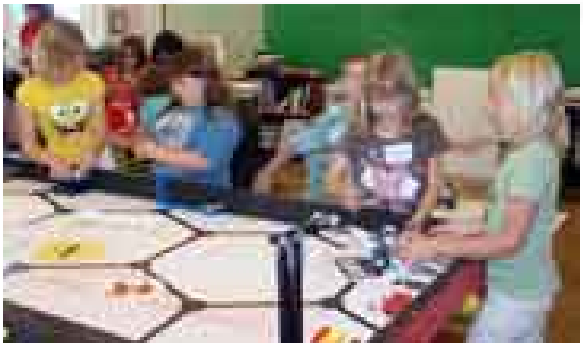
Several of our current FRC students have been through a camp, and now that they are part of this program, are in turn teaching at camps. Some of the FTC/FRC students mentored at camps and classes over the past summer, and this upcoming summer, we already have several people who have volunteered to be counselors of camps and helpers in classes.

This summer, Oregon City Robotics is also going to hold **an all-Spanish camp** with the help of a member from another team.

OCPro and FIRST's impact on its students

"FIRST has introduced me to an amazing community of students who I'm confident in to help save the world. It's an amazing feeling to know that I'm part of this program. I wish I would have been part of FIRST longer, and I want to inspire others to be involved younger."

- Jessica FRC



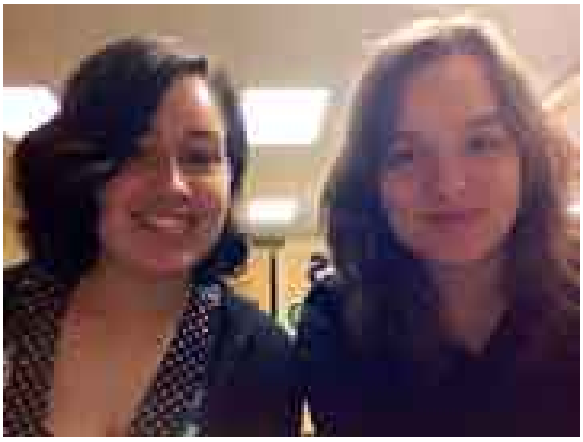
▲ Students at a summer Lego camp test their robot. The robots will compete in a smaller version of a Lego Tournament.

▶ During this past summer, Oregon City Robotics also offered an all-girl robotics camp in order to encourage women in the STEM fields. We plan to continue offering this camp.

Next year

OCPro is not a one-hit wonder. We are only losing four seniors (on the facing page), and plan to nearly double our team size next year with new students, now that they've seen what our program has done.

During the next few months, we will be stressing admittance and fundraising, as well as having the seniors pass on their skills to the remaining team members.



▲ Erica and Jessica will run the robotics team next year. They will also be coaching FLL and JFLL teams prior to the build season.

◀ These team members are sophomores and younger. We are an extremely young team, who will be continuing for many more years.

Join FRC 2550

For the next few months, we will be advertising our team to the various schools from around the area. We are scheduled to appear at assemblies, and are in the progress of scheduling more. We will also appear at Oregon City High School's Club Fair in October 2008.

We also have students from high schools outside of the district interested in joining our team, as their high school has not formed one themselves. Our priority will be to help them start their own team, but otherwise, we will openly accept them to our organization.

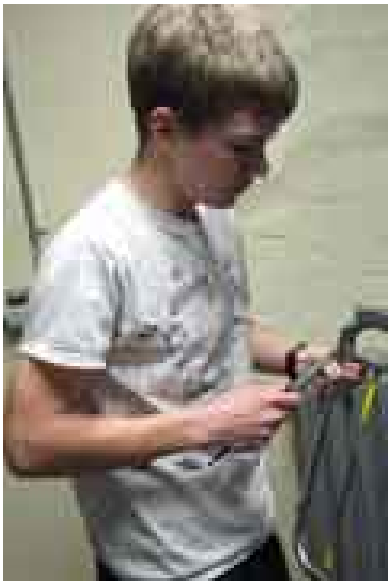
Grassroots

Another strategy we are taking is encouraging elementary school students to join FLL and JFLL teams. We hope these students will go on to join an FTC team and eventually our FRC team, creating an extremely knowledgeable team that can then train newcomers. Already, two-thirds of OCPro students have been in an Oregon City FIRST camp, class, or team. We hope to continue this tradition, if not increase that percentage. See page 18 for a depiction of our long-term plans.

Seniors

Four of our students are graduating from high school this June. All of them are going to college, and many promise to continue to help our team when they are gone. They have been a tremendous help and were key to our team. We hope to fill their positions well, although we will savor their tips, suggestions, and training which will take place over their last months in Oregon City.

◀ Nico, our amazing team captain, has been accepted to Carnegie Mellon and Reed College. If he chooses to leave Oregon to go to Carnegie, he promises to telementor us. Nico helped with every aspect of our team, from engineering, building, managing, to even marketing.



◀ Jordan, who participated in managing as well as many other parts of the robot, has been accepted to Western Oregon University and is waiting to hear from Oregon State University. Although quite a drive away, he will visit our team.

◀ Tim has been key in design and CAD. He has modeled several prototypes in CAD which went on to help decide our design. Tim is going to college at the University of Portland or theOregon Institution of Technology to study engineering.

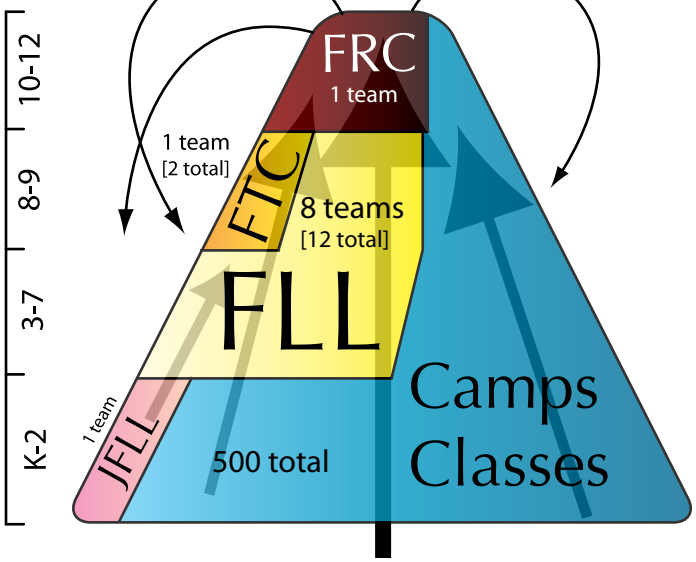
◀ Tom has been an enormous help with his intense physics and mathematical skills. He's been accepted to 11 colleges including Caltech, Stanford, Harvard, Yale, and Harvey Mudd. He promises to keep in touch.

Future of Oregon City Robotics

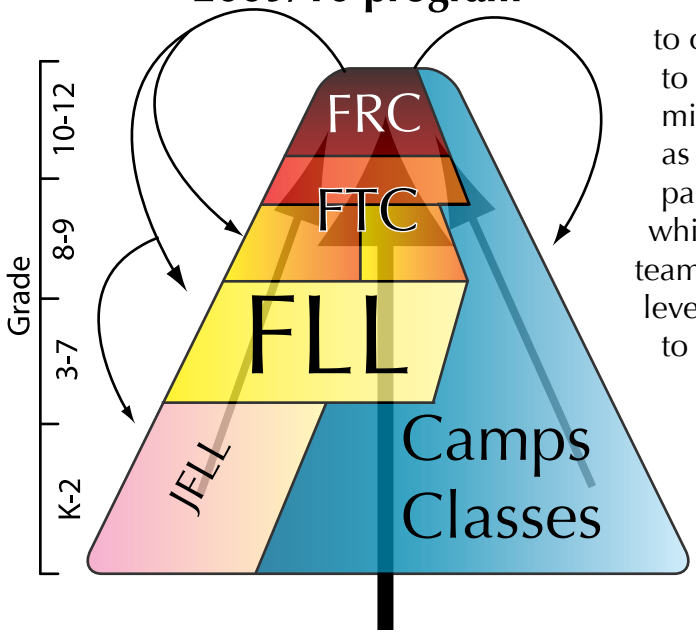
Since Roger took over the robotics program in 2005, robotics in Oregon City has grown exponentially in size. This year, we had eight FLL teams, and a running total of over 500 students in Oregon City who have been through a FIRST program in Oregon City. As great as this is, we want to create more opportunities for the advancing students in the upper grade levels. Although this is expensive, we are acquiring more interested sponsors often, and in the next few years, hope to make our program an integrated part of Oregon City.

The current volcano-looking program features a strong base of camps and classes, a large group of FLL teams, funneling into one second-year FTC team and one rookie FRC team. Experienced FRC students will then coach FLL teams and volunteer at their tournaments, and help at the camps and classes. Camps and classes are held for students of all ages, although it is concentrated in the elementary and middle school levels. This has formed a terrific bank of robotic-knowledgable students who will need somewhere to go in the coming years.

2007/8 program



2009/10 program



Our goal for this program is for students to continue through the program from JFLL to FRC. Although the graph narrows, that is misleading as we don't want to lose students as they get older. We wish to eventually expand to three FTC teams, two for beginners, which will be mentored by the third FTC team and FRC team. Members of the second level FTC team may work with the FRC team to introduce them to the program.

However, even with this hierarchy, we don't want to discourage students for joining the program late in their school careers. The key is that students have the opportunity to be acquainted to robotics early on. Students who are older will be encouraged to join the FRC team if they show a great interest.

Ambitious? Perhaps, but plans make thing possible

OCPro's 2008-9 plan for local growth

Overall goals: Increase number of JFLL teams, and retain the eight FLL teams. Try to start a second FTC team and hold regional championship in Oregon City. Raise enough money for the FTC and FRC teams, as well as to give scholarships to low-income students for robotics camp and class tuition.

Spring, 2008

- After returning from Atlanta, begin recruiting students to FRC team to help with the following plans.
- Get into video announcements, assemblies, and so on.
- Before school is out, have at least one FRC awareness event at OCHS.
- Visit elementary, middle, and alternative schools with FLL, FTC, or FRC robot.

Summer, 2008

- FRC team has biweekly meetings to train and plan for the following year. This will also be documented online for people out of town.
- Fundraise for coming FLL, FTC, and FRC season.
- FRC students volunteer at camps, encourage students to join a JFLL, FLL, or FTC team.
- Communicate with local Elementary and Middle Schools about forming JFLL and FLL teams and using rooms at the school.
- Visit sponsors
- FRC students train for FLL and JFLL season.

June 23 to 27, Techstart will be hosting a Robotics SuperQuest class for K-12 teachers in Oregon City. SuperQuest is a course that educates teachers about teaching technology (in this case, robotics specifically). Along with drawing teachers from the area to realize Oregon City has a model robotics program, this should increase the number of local teachers willing to help coach robotics teams.

Fall, 2008

- Start as many FLL and JFLL teams as possible
  - 6-10 FLL teams and 2+ JFLL teams.
- Begin recruiting again for FRC and FTC teams, focusing in high school and alternative high schools.
- Increase FRC meetings to twice a week.
- Continue fundraising
- Cement general FRC team list
- Communicate with other high schools to encourage FRC teams
- Volunteer at FLL tournament

Winter, 2008-9

- Volunteer at winter break camps
- Try to start a second FTC team
- Begin FRC and FTC build season
- Visit local schools
- Oregon and Seattle FRC Regional

PROCLAMATION

Designating the Oregon City High School Robotics Team as

Ambassadors for the City

Whereas The Oregon City High School Robotics Team had six weeks to design, build and program a full-sized robot that was judged on how well it raced around a track and handled a ball; and

Whereas The Robotics team built Trifecta, a 10.5 ft tall 105 pound robot with aluminum rods, pneumatic pistons and a brain full of colored wires and multidimensional wheels; and

Whereas Trifecta helped the Robotics Team place 3rd out of 55 teams from Oregon, Washington, California, Idaho, Montana, Michigan, Hawaii, and Canada; and

Whereas This talented team won the Rookie All-Star award by being the most outstanding rookie team at the tournament (winning over Intel, LEGO and Caterpillar plus 7 other teams), in front of a crowd of 3,000 people; and

Whereas By winning this honor and award, the Robotics Team will advance to the World Festival in Atlanta, Georgia; and

Whereas This outstanding team, consisting of 18 students, 3 coaches and parent chaperones, is raising money to go to Atlanta for a week of competition; and

Whereas this team will represent the City of Oregon City as well as Oregon City School District.

Now, Therefore, I, Alice Norris, mayor of Oregon City, do hereby designate the Oregon City Pioneer Robotics Team as official ambassadors of Oregon City during the World Championship Festival in Atlanta, and we expect you to fulfill this special honor by bestowing friendship, respect, and good sportsmanship during your ambassadorship thereof. And I further urge that the citizens of Oregon City send good will, good luck, and financial contributions with these science and technology students as they embark on this important mission.

Alice Norris

ALICE NORRIS, Mayor

Dean's Homework

Dean's homework this year was to publicize the FIRST program. Even as a rookie team, we decided to pursue this and were awarded with ambassadorship, as well as several newspaper articles to raise awareness of our program and the FIRST way.

OCPro, City Ambassadors

▲◀ **Oregon City Mayor Alice Norris reads the document to the city officials, our team, and audience proclaiming our team ambassadors of Oregon City on our trip to the world competition in Atlanta.**

◀ **The document given to us by Mayor Norris at the City Council meeting.**

On Wednesday, April 2, our team completed a bit of Dean's last homework as we were recognized by the government of the City of Oregon City. Our team was named ambassadors of the Oregon City during the world FRC Championship at a City Council meeting. We hope to represent Oregon City well to the rest of the world, though we plan to do this anyway because of the practice of Gracious Professionalism. We stayed after the presentation to listen to how the local government works with issues. The commission was very welcoming and even explained some of their procedures. Additionally, the meeting was broadcasted on cable-access television.

Also, at our Old Spaghetti Factory fundraiser event, we also ate dinner with Oregon State Senator Kurt Schrader, who made a personal donation to our team.

Additional Media

In the following pages, you will see how our team was publicized by the media. In short, we had:
3 newspapers mention us in **7 articles** (**5 featuring us and FIRST exclusively**).
At least 2 news stations talk about us, and one linked to us from their webpage. **At least one radio station** also mentioned us. We appeared at **2 School Board** meetings and **1 City Council** meeting, all of which were broadcasted on the **local TV station**. Prior to the Oregon Regional, we posted **fliers** around downtown Oregon City and in several Oregon City schools (page 31).

The Oregonian - February 29, 2008: Day 2 of Oregon Regional

With less than an hour to go before the Oregon City team's first practice run, Nico Pedri (left) and Jordan Gates ask for a little help from Max Heard (foreground) of the Catlin Gabel team. Meanwhile, Oregon City Pioneer Robotics Organization's co-coach, Sean Kelly, sets the team's pit boundaries. More than 30 high school robotics teams are battling it out this weekend at the Memorial Coliseum.

Warning! Kids building robots

Regional competition is today and includes Oregon City's first entry

By WENDY OWEN

The other teams have already wowed their fellow robots from wooden alleys when the Oregon City robotics team arrives Thursday morning.

Rookies, the 28-member Oregon City Pioneer Robotics Organization is among the "pit" denizens when regionals from Sunnyside, Idaho and Gresham, among high schools, compete in the basement of Memorial Coliseum.

Teams are arranged from Cedar Cabal, a Portland private school, and Wilsonville High School, both of which are local rivals for Oregon City.

[illegible] the day before the FIRST regional competition — For Inspiration and Recognition of Science and Technology — and 33 teams from as far away as Michigan and Hawaii have gathered to compete. On Saturday, the top-scoring teams, which compete in three-team alliances, vie against each other. The winning alliance heads to the International Championship in Atlanta in April. A fourth team, selected for exceptional community support, among other qualities, also gets to go to Georgia.

The practice day starts well for Oregon City. Worried about damage during shipping, three team members gingerly open the crate, making vacuum-sealed values with their mouths as if opening a snack.

Hilberta, the robot, appears healthy, like — a team member specifies Hilberta is female — frame full pounds of aluminum rods and pneumatic pistons plus a brain full of colored wires and microprocessor chips, an engineer would describe.

From the ROBOTICS, Page 00

Robot contest

What: FIRST — For Inspiration and Recognition of Science and Technology — Robotics Competition

When: Today and Saturday at Memorial Coliseum. Tech Robotics and Portland Manor Tom Peterson will cook over the opening ceremonies at 9 a.m. Awards and closing ceremonies are at 3:30 p.m.

Who: Fifty-five high school teams from eight states on their life-size robots against one another in a timed and skill challenge. At least four teams will advance to the International Championship in Atlanta.

METRO

Robotics: Teams urged to give mutual aid and advice

Oregon City Pioneer Robotics Organization's team captain, Nico Parts, (center) pins buttons from competing teams on his shirt Thursday. It is one of the quirky rituals behind the scenes at the robotics competition this weekend at the Memorial Coliseum.

Continued from Page B1

The tops out at 10 feet, 9 inches but must compact into a starting position that is 28 inches by 38 inches by 60 inches to qualify for the competition.

The challenge changes every year, requiring returning teams to build and program their robots to perform different tasks.

This year, the robots must race around a track. As they pass under a 6-foot-high rack, the robots can gain additional points by knocking a 40-inch fabric-covered ball off the rack, herding it around the track, hurdling it over the rack on the next pass and, finally, placing it back on the rack.

Not all robots can do all three tasks, which is why the teams compete in three-team alliances. Teams try to pair themselves with those that have skills their robot lacks.

That's where the Oregon City team excels. Trifecta is good at all three skills — hence her name.

She's the utility player a top-seeded team with a specific strength might choose, says Oregon City's co-coach, Sean Daly, a mechanical engineer with Daimler Trucks.

But he adds, "these guys have to sell it."

Marketing and scouting are key.

Armed with a stack of trading cards depicting a computer-generated diagram of Trifecta along with her capabilities, Taylor Kerr and BJ Riley scope other teams and market themselves.

The fourth-year robotics veterans ... Robotics Team works on a 4x4 robot designed with grabbers rather than a forklift scoop like Trifecta. Gresham's robot uses a pole that shoots up to knock the ball out of the rack.

The two boys eye the designs. Kerr jots down notes.

... back at the pit, Oregon City team captain Nico Parts, a senior, is working with Cadin Eubel, student Max Schwarz on programming the robot.

... the first competition is based on "gracious professionalism," and teams are expected to assist one another.

Schwarz shows the Oregon City team the proper computer code, allowing the robot to move sideways.

By Thursday evening, Oregon City had received its first official inspection sticker, clearing the team for today's competition.

◀ **February 29, 2008: The Oregonian's article.**

▶ **The Oregonian's website, OregonLive.com, which featured us on their homepage.**

On the first day of the Oregon Regional, reporters from Oregon's major newspaper visited us in our pits as we prepared our robot for the matches. This story was then published Friday, February 29, the morning of the second day of the regional, on the *front page* of the Clackamas Metro Section. This is considered to be the most-read section of the paper and is distributed to around **300,000 people** in the northwest. The story was also featured on the *home page* of the OregonLive.com, the Oregonian's website.

▶ **March 3, 2008: We had a short story on the second page of the Metro section of the Oregonian. This featured both Oregon City and Catlin Gabel, the only two teams in Oregon who qualified for the world FRC Championship. Catlin Gabel is also one of our mentoring teams.**

High schoolers win big at Oregon robotics contest

Teams from Catlin Gabel and Oregon City high schools won top prizes in a run-up to a world championship robotics competition next month in Atlanta.

Fifty-five teams from seven states and Canada competed Saturday in the Oregon FIRST Robotics Competition at Memorial Coliseum in Portland. FIRST is "For Inspiration and Recognition of Science and Technology."

Working in three-team alliances, students had six weeks to build robots that were judged on how well they raced around a track and handled a ball. More than 3,000 people watched the competition, including teams from 23 Oregon high schools.

Catlin Gabel students, working with partners from McKinley High School in Honolulu and San Ramon Valley High School in Danville, Calif., won the final competition.

Oregon City's team earned the Rookie All Star Award for its presentation, showing team spirit, professionalism and an understanding of technology.

The FIRST Chairman's Award went to the team from Issaquah (Wash.) High School for making a difference in its community by promoting technology education issues.

Finishing second were teams from Jesuit High School in Portland; Tahoma High School in Maple Valley, Wash.; and Corvallis High School in Corvallis, Mont.

— Holly Danks

▼ **January 3, 2008: Oregon City's camps were featured in the Clackamas County Weekly, a weekly insert in the Oregonian.**

SCHOOLS

Robot camp's lessons are disguised as fun

OC students' robot going up against the best in U.S.

History of program

Spectators welcome

▲ **February 26, 2008: Prior to the Oregon Regional, this story was run in the Oregon City News regarding our robotics team.**

OregonCityNews

Additionally, KATU and FOX12, two northwest news stations, mentioned our team in their stories about the competition. Portland radio station K103 read our Oregonian article Friday morning and discussed us. Our website is linked to from KATU's website.

katu 2

FOX 12 OREGON

K103 fm

▼ **March 20, 2008: This short news brief was ran in the Clackamas County Weekly insert of the Oregonian.**

Milwaukie

Career center wins grant to build pens

Oregon City

Robotics team raising cash for world festival

Oregon City Robotics is raising money to travel to Atlanta for the world robotics festival in April.

Milwaukie

Rex Putnam High will offer an IB program

NASA grant jump-starts new OC robotics team

Members of this year's new robotics team are hard at work. From left to right, team coach Roger Collier, eighth grader Kyle Hamon, senior Jordan Cates and sophomore Andrew Bragg gather around a prototype of the robot. The team is funded by grants from NASA and other companies. Their robot will compete in the FIRST Robotics Competition in early March.

Megan Ibelin

For the first time, Oregon City is participating in the For Inspiration and Recognition of Science and Technology (FIRST) Robotics Competition. Each team must build a remote-controlled robot in six weeks using common parts.

The robot must complete a task – this year it must drive around a track, racing other robots and collecting balls for points.

With help from Oregon City School District superintendent Roger Rada, Team 2550 was awarded a $6,000 grant from NASA Robotics Alliance Project to fund their robot. The money covers the minimum amount needed to participate, buy basic parts and enter 2550 in the competition.

The program is a progression from Lego Robotics and VEX competitions, so the middle schoolers on the team generally have more robotic experience. Two team

See ROBOT on page 12

12 news Monday, January 28, 2008

Robot

continued from page 1

The new team is building and programming their robot at Jackson Campus

▲ The Elevator, Oregon City High School's student newspaper, published two articles about our team. The above was in the January Issue.

▶ The article on the facing page is from the online Elevator newspaper, but was also in the paper issue. This was published in mid-March, after we had learned we were going to the world competition.

The Elevator
Oregon City High School's student newspaper

Distribution: 1,500 + online

Additional Publicity in Oregon City Schools

Along with being in Oregon City High School's student newspaper twice, OCPro has been featured on "OCTV", OCHS's video announcements. We posted fliers around multiple schools before the Oregon Regional, inviting people to the Regional (see page 31). Our team's website was featured on OCHS's website for the week surrounding the Regional. We also spoke in front of the school board twice, once at the beginning of the build season, and once after the regional, at which Oregon Regional coordinator Deb Mumm-Hill spoke for our team. Both meetings were broadcasted on the local cable-access channel.

The Elevator
Oregon City High School's student newspaper on the web

STUDENT-RUN ROBOTICS TEAM MAKES WORLD CHAMPIONSHIP

[News by Elizabeth Chamberlain]

OCPro controls their robot with their two alliance teams from Washington and California on the third day of the Oregon Regional. Their alliance made it to the semi finals.

The Oregon City Pioneer Robotics Organization (OCPro) is going to the world championships. This is the sixth year that Oregon City has participated in the FIRST (For Inspiration and Recognition of Science and Technology) Robotics Program, but this is the first year OCPro has created a team to compete in the FIRST Robotics Competition. OCPro, team number 2550, made it to semifinals in the regional competition against about 60 other teams and won the Rookie All Star Award, allowing them to compete in the national competition.

The regional competition was held at the Memorial Coliseum in Portland from February 28 to March 1. Teams from all over the northwest, including Washington, California, Idaho, Michigan, Hawaii and Canada, traveled to compete in Oregon's regional. It was televised on the Oregon Public Broadcasting (OPB) channel.

The national competition would be more accurately described as a world competition, with teams attending from Canada, Brazil and Israel, as well as from all over the United States. It takes place in Atlanta, Georgia on April 17-19. OCPro needs to raise $35,000 in order to pay for flying down to nationals.

"Because of their diligent work effort of treating everybody like a person, we're going to the world championship," said coach Roger Collier, Robotics coordinator for Oregon City Schools. "That's because of who we are as a team, not solely because of our robot."

The team is almost completely student-run. It is up to the students to acquire donations from local businesses around Oregon City to help pay for the trip. There are 18 student participants, 12 of whom have prior robotics experience, and three adult mentors. "The team this year is absolutely phenomenal," said Collier.

As an alternative to the U.S.'s focus on sports and entertainment, the FIRST Robotics Program has aimed to increase math and science participation for the past twelve years. The point of the robotics program is to get high school and middle school students involved in the creation of a robot that has the ability to complete certain tasks. Such tasks include picking up certain objects and moving them around. Each team spends six weeks creating the most efficient robot possible.

The students become involved in robot design, fabrication, software, marketing, community outreach, website development, research and transportation logistics. "Robotics is a lot of fun," said OCPro competitor, junior Erica Smith. "You get to learn leadership skills, marketing, how to build a robot - pretty much any practical skill you can think of."

Anyone can join the robotics team at the beginning of each season in January. Joining the team can have a positive influence on post high school career goals. "There are a lot of college scholarship opportunities you can get from being a part of robotics," Smith said. "And you also get a lot of information about colleges. There's some possible internship opportunities that you wouldn't get otherwise and are normally only offered to college students."

As a result of the FIRST program, team members have been enlightening about the STEM fields. For example, FTC member RJ mentioned that he "now viewed things from an engineering viewpoint." He said that he appreciated the work people put into even the simplist things that surround us. Erica and Jessica had joined the team to do web design and marketing, but found themselves involved in building the robot itself. Erica found that she was born to strip wire and Jessica wants to learn programming and electronics so she could more actively participate next year in the building process. Several of our students are in AP Physics and they have found that they were actually able to apply what they were learning in class. Thanks to this program, we've found application of school work, recognition of engineering in the world around us, and realization of our potential in the STEM career fields.

The events of the last few months have taught us the meaning a lot of technical tips: Think twice, cut once; wiring backwards is very bad; two heads are better than one. Although we learned the hard way on a few of these things, even in our downfalls, we've stuck it out. We've become a family, as overused as that saying is. This opportunity has been breathtaking. Students usually divided by grade level or social groups have come together to build this rookie team, as well as build a robot. We had a lot of assistance from other teams, which made us understand that this idea of gracious professionalism that was pulsing through our team was also passionately expressed by the entire program.

Executive Summary

Briefly describe the impact of the FIRST program on team participants with special emphasis on this year and the preceding two years.

FIRST provided a place for our team members to gain interest in the STEM fields and to communicate with other students and professionals with similar interests. The team members became close as we constructed our robot in a short amount time, much like a business startup working against a hard deadline. As a rookie team, we were shocked by the effect of gracious professionalism, as experienced teams eagerly helped us. Team members who joined to perform a certain task became interested in other areas.

Examples of role model characteristics for other teams to emulate.

Our students and coaches were extremely enthusiastic about this project. Most of our core team members were working on the project every weeknight for three to five hours. We put ourselves together quickly and the team hierarchy appeared rapidly. In our team, no one was domineering, but the project on track by leaders. We were open-minded about new ideas and never threw them out before trying them. Because of this, no engineers were irrationally fighting for their idea to be used.

Describe the impact of the FIRST program on your team and community with special emphasis on this year and the preceding two years.

FIRST has grown in Oregon City over the past four years. Our coach, Roger, began teaching Lego League four years ago and since then, the program has grown to eight teams at almost all of Oregon City High School's feeder schools and we've hosted a regional FLL competition. This, along with robotic camps and classes that Roger has started, has inspired interest in a large number of students. We are now mentoring the FTC team and plan to mentor FLL teams as well.

Team's innovative methods to spread the FIRST message.

We have had several articles published about us in local and state-wide papers. Posters have been posted around Oregon City for the regional and during our Atlanta fundraising. Knowing how useful the Internet is, we quickly set up a website to provide information about FIRST and our team. The website covers everything about our team, and all of the FIRST programs in Oregon City, including FLL to FTC.

Describe the strength of your partnership with special emphasis on this year and the preceding two years.

Our program has grown from camps and FLL teams to include an FTC and an FRC team. Additionally, as a rookie team, we received help from experienced teams who were keen to mentor us. We have formed a bond with the Catlin Gabel and Wilsonville teams, who have given us spare parts, mechanic shop usage, and tips. Their help has gotten us out of tight spots. Knowing how much gracious professionalism has helped us, we look forward to helping rookie teams in the future. We've formed professional partnerships with our sponsors.

Team's communication methods and results.

We communicate with the online community using our website. Additionally for providing information to the community, this has attracted members of other teams to email us with questions or information. After qualifying for the Championship, we met Monday with parents as well as students in order to communicate our plans for the trip.

Other information about your team

Our team met formally for the first time on January 3, two days before the kickoff event. Because of this, our team has completely focused on building the robot. After our two competitions, we have many plans to visit other schools and companies, with two confirmed visits, and many more pending.

APPENDIX

Autodesk Models

We received copies of Autodesk Inventor as a donation from Autodesk. We began by using it to test various prototype arm designs. Recently, it is being used to create accurate drawings of the robot.

▲ **Andrew worked on building the entire robot in Autodesk Inventor. All of these models are by him.**

▼ ▲ **With Andrew's careful attention to detail, and Autodesk's capabilities, we were able to mitigate our separation anxiety with these Autodesk CAD drawings.**

Publicity Materials

▼ **This poster was put up in businesses of downtown Oregon City and Oregon City High School prior to the Oregon Regional. Since then, our robot has been changed.**

Watch Oregon City students' robot

FIRST Robotics Competition

Friday, **February 29** and Saturday, **March 1**

9:20am - 3:00pm

Portland Memorial Coliseum

Watch a robot built by **Oregon City School District students** compete against other high schools' robots. Support our team and attend this **high-tech spectator sporting event.**

Free!

OCPro's robot,
"Trifecta"
5′ to 10′8″ tall
105 lbs.

OregonCityRobotics.com

▲ **Our two robot fact-sheets, disguised as trading game cards. The left was the robot at the end of the build season and the one to the right is the robot after its arm was amputated at the Oregon Regional.**

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Most pictures by OCPro