



# The Celt-X Knot

Keeping you linked with Bishop Ryan Robotics  
Volume 1, Issue 2, January 2017

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The 2017 FIRST Robotics Competition Season “Kick Off” is coming up at the end of this week. We have a busy few months ahead of us! Before the build consumes all of our attention, we’d like to take a minute to review all of Celt-X’s accomplishments over the last few months since our last newsletter. Among other things, the team has put a lot of effort into our outreach initiatives, attended an off-season event, hosted another off-season event, and worked hard to transform the Robodrome into a facility we are proud to call home for the next few months. Robotics sees a level of engagement – from parents, mentors, and the community – that is unprecedented. We would like to thank all of you for everything you do to make our team what it is. On with the show!

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## Fundraising Update

Our fundraising team has been doing a great job getting some repeat sponsors as well as finding a few new sponsors for our team. As you know, robots are expensive, but thanks to the hard work of our fundraising team, the generosity of our sponsors, and the success of our STEMley cup and Bake sale events, Celt-X has raised around \$20000. That puts us about half way to our fundraising goals for the season! We would like to take a moment to recognize the companies, without whose support this would not be possible:

### Gold Level Sponsors (\$5000+):



### Silver Level Sponsors (\$1000+):

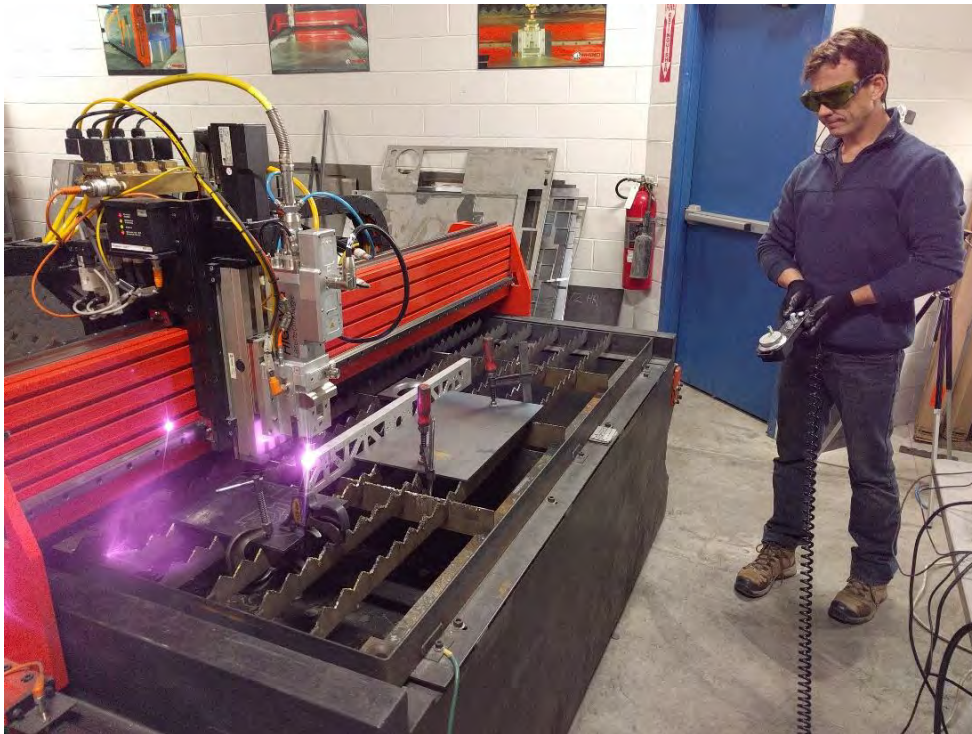


## Sponsorship In-Kind

While we are always appreciative of monetary donations, some businesses are able to provide donations in kind to support our team. So far we have received:

- Computer equipment from Stern Laboratories
- A metal lathe from McMaster University
- Furniture from Hamilton Health Sciences
- 3D printed parts from Mohawk College,
- Machining services from Siebert Machine
- Internet access from Rogers Communication
- Laser cutting from Rhino Cutting Systems

We are very pleased to add Rhino Cutting Systems to our list last month. They helped us to laser cut a test chassis from aluminum sheet. This allowed us to verify that this design could work, and may be the frame we opt to use in the upcoming season. Assistance of this sort is greatly appreciated.



## Parents – Help us Connect with Sponsors

The FIRST Robotics program is uniquely effective at inspiring students to pursue careers in Science, Technology, Engineering, Arts and Math (“STEM” or “STEAM”). In today’s rapidly advancing world, companies are keen to help students become tomorrow’s innovators. It’s easy to get sponsors excited about our team once they see the passion on our students’ faces.

It is primarily through parent connections that we are able to reach potential sponsors. If you have business contacts who may be willing to support our team, please share our sponsorship booklet with them (available on our website), pass their contact information on to us, and help us achieve our goals.

## Pre-Season Replay Highlights

### Rochester Ruckus

On Halloween weekend, in the wee hours of the morning, Celt-X filled an entire coach bus, and headed to Rochester, New York, to compete in the “Rah Cha Cha Ruckus” off-season event. Firstly, we are absolutely amazed at the turn out – most of our students attended and it turned out to be a thrilling day!



The past year’s game – Stronghold – was definitely hard on all robots. Despite this, our team pulled out the stops to seed an amazing 2<sup>nd</sup> place in qualifiers. Our scouting team gathered some exceptional data that informed our final alliance selections. As a result of all these factors, our alliance dominated the quarter and semi-final matches. Our finals matches went to a nail-biting 3<sup>rd</sup> match tie-breaker, where mechanical issues worked against us but we still managed to walk home with a shiny new “finalist” trophy.

This unofficial event gave us a low-stakes opportunity to test the abilities and dynamics of potential drive teams, and were very pleased with the results. Our media team did an excellent job interviewing other teams and photographing notable moments. We are all very proud of the hard work shown by our entire team to make it this far, and are confident that it bodes well for the upcoming season.

### The STEMley Cup

Once again, this year, we co-hosted the STEMley Cup with St. Mary’s Makeshift Robotics. This event drew 30 teams from across Ontario and even the U.S. The STEMley Cup provides us with an opportunity to show the wider community the innovation, excitement, and engagement that results from robotics. The event was an unquestionable success, with over 1000 people in attendance, some significant media coverage



for the event in local newspapers and on TV, and many teams informing us that this was the best off-season they had attended.

There were over 100 volunteers, composed largely of parents and students from the two host teams. Without the support of these amazing people, this event would not have been possible. We hope that between Ruckus and STEMley, you have all had a chance to at least get a feel for the excitement of a robotics competition. We assure you that the actual competitions are even more energetic and captivating.

As our team played a major role in organizing the event, we opted not to compete. Despite this, we had two robots in the competition. In the weeks leading up to the STEMley Cup, Celt-X spent some time repairing our competition robot, 'Squirt', and reshaping our practice robot, 'Lola', into a strong defensive robot. As we reported in the last issue of the Knot, we are mentoring students from St. Jean de Brebeuf as they prepare to launch their own team next year. Celt-X was pleased to have Squirt driven and maintained by a team comprised entirely of St. Jean de Brebeuf students. We also had a chance to mentor students from SLS Robotics, based out of Stephen Lewis High School, in Mississauga, who drove Lola. Both teams performed excellently at STEMley.

In addition to the opportunity that STEMley provides for spreading awareness and outreach, it is also a significant source of revenue for us. Through the sale of concessions and the proceeds from registration fees, Celt-X raised nearly \$4000 from STEMley.



## Outreach Demonstrations

### Student Voice

As science, technology, engineering, and mathematics, continue to garner more attention in schools, we are often called on to present to administrators of the school, the board, and beyond. Typically, these presentations are made entirely by students – giving the school board's administration an opportunity to see, first hand, how much of an impact robotics has on our students. We recently were asked to present to school superintendents, and as always, our students did an amazing job.

## Grade 8 Night

In order to build a sustainable team, we need to ensure we have solid numbers of students interested in Robotics. Historically, our largest pool of new members has been Grade 9 students. We have been repeatedly informed that many students choose Bishop Ryan specifically for its Robotics program. In order to continue fostering this association of excellence in Robotics, and to spread awareness, we put on a display in the Bishop Ryan Forum for Grade 8 Night. We were able to engage many prospective students, and had a chance to show-case one of our T-Shirt cannons (repurposed to fire stress balls).



## Parent Teacher Interviews - Bake Sale

On the night of Parent-Teacher interviews, Celt-X held a bake sale at Bishop Ryan. We received unbelievable support from parents and had several tables covered with delectable delights that visitors were eager to sample. Throughout the night, parents and students kept the bake sale staffed and helped to not only bring in around \$600 but also to spread awareness about what Robotics entails. Overall, this was an exceptional experience and we are looking forward to hosting another bake sale in the second semester on the evening of Parent -Teacher interviews (Thursday, Apr. 6 - the day before the McMaster District Event).



## Scouts Presentation

In continuing with our outreach initiatives, we were invited to showcase our robot to a local scout troop. A small group of Celt-X students spoke about the past season, the variety of things we do and learn at Robotics, and some of what the future holds. They also demonstrated some of the robot's capabilities, and answered questions from the eager scouts. Celt-X prides itself on its community connections – the more young people we can engage, the brighter our future looks.

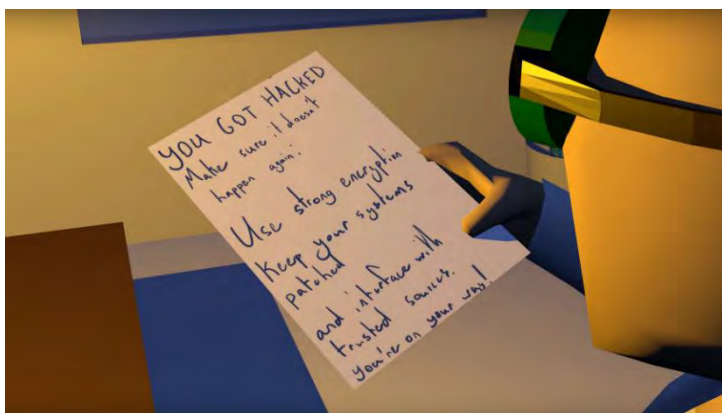




## Media Efforts

As we continue to grow our team, one major facet that we hope to continue focussing on is our media efforts. Of particular note, we created and submitted a safety animation. The animation was entirely computer-generated and done in full 3D. This project was entirely student led, and all the work (script, animation, sound effects, etc.), was done by students. An animation of this calibre is no mean feat, and required hundreds of hours to accomplish. We are thoroughly impressed by the effort, initiative, and leadership, shown in creating this animation.

Our media team has also created several videos – for the video announcements at Bishop Ryan, as well as a video application to a grant. While we were not successful in this application, it was still an excellent opportunity for our team to refine their skills and increase our exposure to the wider community.



## FIRST Lego League (FLL)

Many of our students were first exposed to Robotics through Lego Robotics in elementary school. We have an ever-growing number of schools in this board – nearly half at this time - that run an FLL team. A number of our students return to their elementary schools to help mentor an FLL team. Additionally, many of these students were assigned official roles (such as judging) at the regional FLL qualifier. Celt-X is very proud of the initiative and leadership shown by these students. We would like to encourage more students to help support our FLL teams.

Celt-X hosted its first ever FLL “Tournament Workshop” in November at the Robodrome. We had a few local FLL teams attend, practise, and present. As with any first attempt, this was a learning experience for all involved. We had many dedicated parents and mentors who helped organize a successful day. The teams in attendance all were very pleased with the outcome of the day, and felt it was a valuable experience. These same teams performed very well at the regional qualifier.

The local qualifier for FLL was held in early December at Cardinal Newman. Celt-X was well represented with several mentors and students judging and other students mentoring teams or volunteering at the event. Additionally, Celt-X students also briefly presented and demonstrated our robot and stress ball launcher. We were thrilled to see that some of the best FLL teams were those mentored by our students.





## “Dragster” Group Build Project

The FRC build season is a fast-paced and exciting dash. Students will work harder than ever before, gain a multitude of new skills, and hopefully be inspired to continue on with Robotics (and related fields) for years to come. In order to develop a strong foundation of key skills that we will need during our build season, we decided to embark on a build project over the past few weeks. Students started the season rotating through groups and learning some of the basics of robot control systems, 3D modelling, and programming. They used these skills to complete and interpret the engineering drawings of our dragsters – in order to cut, shape, and assemble all the necessary components as well as to wire up the control systems of these little remote-controlled cars. Students worked in small groups, so that everyone was involved and given a chance for some hands-on learning. We believe that this project was well received and highly beneficial for all involved, and look forward to seeing our creations race on Kickoff day!

## Parent Night #2

We held our second parent information night in mid-December – and it was very well attended. We try to limit the number of these that we hold, but feel it is important to share information in person and provide a clear picture with what the upcoming months entail. Thank you to those who did attend, hopefully you have a good idea about what our upcoming season will look like.

## Robodrome Renovations

As you are aware, we have been working out of the Robodrome since November. We have had an excellent turn-out at our weekly meetings, typically around 40 students, and hope that most people have managed to make transportation arrangements. As we transition to daily meetings, we highly encourage carpooling to and from the Robodrome in order to work with everyone's varied schedules, and to minimize the toll that these daily commutes will take on parents.

We have put considerable effort into making the Robodrome a functional and safe workshop. We have acquired and repaired several machines as well as outfitting each with the necessary safety devices for certification and installing an eye wash station. Safety is a top priority for us – in addition to ensuring our machines are safe to operate, we have provided each student with a pair of safety glasses (which they are responsible for having with them at every meeting and competition). Every student is required to complete a safety contract as well as written and practical tests on the equipment we use.



We have been able to add more computers to the facility through several generous, in-kind donations, and have outfitted our workshop with a projector. Through the support of Hamilton Health Sciences, we have acquired many additional chairs and tables, which will help support all the teams that use the facility.



We have also spent some time during the preseason re-organizing our storage at the facility and disassembling some parts of our field, as well as acquiring some additional tools to support our growing team. There are a few machines we would like to acquire over a longer term at the Robodrome – of note, we would like to obtain a large CNC milling machine, another drill press, a 3D printer, and metal brake. We are also hoping to rewire our workshop to support the increased electrical demand of the new machines. If you have any contacts who may be able to assist with these items, please let us know.

Thanks to all this hard work, the Robodrome is ready to be our workshop, computer lab, practice field and home for the next few months!



## Celt-X Social

Before the holidays, we took a bit of time to have some fun as a team. We recognize that the upcoming build season will be a stressful time – it pushes us to our limits, demands everything we have to offer, but at the same time is hugely rewarding. Before we embark on this journey, we feel it is important to form strong bonds as a team – as these will help us to get through the tough times – and eating together and playing together go a long way towards achieving that goal. 40 Celt-X members went to Montana's for dinner, followed by a few hours of Laser Tag. We are confident that all who attended had a lot of fun, and will remember it fondly in the future.



## Upcoming Events

### Kick-off & Pot-Luck

Celt-X will be hosting a kick-off at Bishop Ryan on January 7<sup>th</sup>. We intend to start the day at 9AM with dragster races. At 10AM we will gather in the auditorium to watch the live stream of the game reveal. Following the game reveal, we will spend the rest of the day, until around 4:30PM reading through the game manual in groups and ensuring we all have a clear idea of what the task is for the upcoming season. We will break for a pot-luck lunch around 12:30PM. B. Bring your favourite dish!

We encourage parents, siblings, sponsors, potential mentors and anyone else who may be interested to attend the morning activities. This one day sets the path for everything we will do over the upcoming four months and is one of the most exciting days of the season. None of us knows what the upcoming challenge will entail, and we will all find out together – along with 3000 other teams from across the world – on Saturday morning. Exciting!

## Build Season Schedule

After kick-off, Celt-X will be on a new meeting schedule. Due to the limited time we have available, we meet five days a week, and take Fridays and Sundays off. All meetings will take place at the Robodrome.

- Saturday, Jan 7<sup>th</sup> – 9AM to 5PM – Kick-off - Bishop Ryan
- Sunday, Jan 8<sup>th</sup> – 12PM to 5PM – Strategy Meeting - Robodrome
- Monday to Thursday – 5PM to 9PM - Build Meeting - Robodrome
- Friday – No Meeting
- Saturday – 10AM to 6PM - Build Meeting, Field Work, Driver Practice - Robodrome
- Sunday – No Meeting

We expect to maintain this schedule through the end of our competition season, possibly with slightly reduced hours after our stop build (aka bag day) on Feb 21.

## Build Season Student Attendance Expectations

We expect students to be in attendance most days (at least 60% of our meetings), but we appreciate that some time must be dedicated to schoolwork and other activities. Students are welcome to bring some homework to meetings to work on if they have spare time. There will be no meeting on the weekend before exams, and students are not permitted to attend robotics if they have an exam in the two days following a meeting.

The success of Celt-X's 2017 season depends on everyone working hard together. Find a healthy balance between robots, school and your other commitments, and during the robots slot, give everything you can to the team. You will get as much out of the competition as you put in!

## Parents - Pot Luck and Snack Help Needed

Weekday build meetings will be starting at 5PM. We expect students to eat supper before coming to meetings, and will not be providing food during weekday meetings.

On Saturdays we would like to have pot luck lunches at the Robodrome. We will have about a dozen Saturdays from Kick-off until the end of our competition season where we are at the Robodrome. All parents are asked to volunteer to bring food one of these Saturdays, so that we have around 3 families providing lunch on each of those. A big thank you to those families who have already brought in food or snacks for meetings and events.

## Practice Field Build Party

One of the major advantages that Celt-X has over many other robotics teams is the use of a nearly full-sized practice field. This assists us in designing our robot, allows us to test our robot in realistic scenarios, helps us generate autonomous routines for the robot, and enables us to give our drive team valuable drive experience.



We would like to thank McMaster Innovation Park for sponsoring the lumber and metal needed to rebuild the practice field again for 2017. MIP has sponsored the practice field every year since the Robodrome was opened in 2015.

In order for us to take advantage of this facility, however, we must tear down the old field structure and construct the new field each year. This year, we have decided to do both of these after the release of the game (once we have field drawings available). We expect that some of the teardown work will be done during regular meetings, but we will be setting aside a day to build and assemble all the new field elements. We will be coordinating our build party with other teams and expect this to be held on Saturday January 14<sup>th</sup>. The field is built entirely from wood. We can use all the help that is available, and would be grateful for any tools we can borrow for the day.



## Robodrome Scrimmage

The Robodrome practice field is too amazing to keep to ourselves. We will make the facility available to other teams throughout the season. We will also host an informal game of STEAMWorks, on February 18 just before bag day (perhaps the first game in Ontario!) We expect to see around 10 teams in attendance and feel this is an excellent chance for a bit of friendly competition before the real events begin.

Sponsors are welcome to attend the Robodrome Scrimmage. Seating is limited, so please contact us at [celtxrobotics@gmail.com](mailto:celtxrobotics@gmail.com) to reserve your seat.

## Ontario District Competitions!

This year, Ontario teams will be participating in a district-based system of competition. Previously, winning any competition was a guaranteed bye into the next round. In the district system, you accumulate points at your first two district qualifiers, and the teams with the most points at the end of the district events will advance to the district championship. Teams earn additional points at the District Championship, and the top teams will advance to the World Championships. It is our expectation that about 30% of teams will advance to the District Championship, and of those, 50% will advance to the World Championships.

This year, we will be competing at 3 district events. While only the first two count for our rankings, Victoria Park was a last minute addition that we feel will give us a strategic advantage. All three events have their challenges, with many good teams in attendance. We are hopeful that a good performance at our first two events will secure us a place at the District Championships

We expect that the calibre of play will increase as the season progresses, and expect to see some tough competitors at McMaster. As it stands, McMaster will not count for our qualification score, but it will give

us a chance to test new additions to our robot in competition, and a chance for parents and sponsors to watch us in action. We hope to see you there!

Our district events are:

- Mar. 17-19 – Victoria Park, Toronto
- Mar. 24-26 – Georgian College, Barrie
- Apr. 7-9 – McMaster University, Hamilton

## Student Attendance at Competition

We would like all students to attend the McMaster event. As this event is being held in Hamilton, there will be no accommodation or bussing costs. Students will be responsible for carpooling or taking public transit to the venue.

We would like students to attend one of the other events. This will allow us to have a smaller group of students at each competition, and ensure that everyone is constructively occupied. We are currently exploring bussing options for both events and will likely spend one night in a hotel at each. It is expected that the cost per student for each of these two events will be around \$150. Once we know how many students are attending each competition, we may invite students who wish to attend all three.

We are also planning to attend the Ryerson event on March 11 or 12th as spectators, in order to see the game in action before we compete. This will be an informal, optional outing. We will meet at the Hamilton (Hunter St) Go Station and take public transit to and from the (Toronto) venue. Further details will be made available as the date approaches.

If we are successful in our qualification events, there are two additional levels we may be able to advance to:

- Apr. 12-15 – District Championship – Hersey Centre, Mississauga
  - It is expected that the cost per student for this event will be around \$300
- Apr. 25-30 – World Championship - St. Louis, Missouri, U.S.A
  - It is expected that the cost per student for this event will be around \$600

## Awards Submissions

One way to guarantee advancement to the next round is by winning certain awards. Other awards are worth points that will help a team's rankings. As you can see in this newsletter, Celt-X has done many notable things in the past year – more than enough to make for an outstanding awards application! However, it takes time and effort to create effective applications to each award.



For students, mentors and parents who are interested in getting involved with Robotics but do not wish to participate in the technical side of things, awards is an area where we could definitely use the help. Please get in touch!

## Student Registration, Earn Your Jersey, Swag Sale & Survey

It is mandatory that students register with FIRST. You will not be permitted to attend events as part of the team if you have not registered. We would like everyone registered before Kick-off. At present, about half the team has completed their registration. Registration must be completed by parents. Please go to [firstinspires.org](http://firstinspires.org) to complete your registration, if you have not already done so.

As mentioned in the last newsletter, In 2017 Celt-X students who carry themselves in accordance with our code of conduct, complete their safety certification, assist in fundraising and awards submissions, help other students, attend meetings frequently, and generally go the extra mile for the team will earn the right to wear an exclusive patch on their Jersey, similar to that shown below. Students who won “Celt-X awards of distinction” in previous years will be given patches from those years too. This is a little different than our earlier plan – now all students will be able to wear Jerseys, but look out for the amazing Celt-X students rocking these award patches!



Jerseys, extra T-shirts (with sponsor logos), hats and hoodies will all be offered for sale in January so you won't miss your chance to bundle up in Celt-X swag before competition.

Finally, we would like to get feedback from students and mentors about the 2016-2017 Pre-Season. Please take some time to fill out the survey form here: <https://goo.gl/forms/oVZ0d9Fi5atguVmY2>

## Thank you & Good Luck!

Once again, we would like to extend our thanks to everyone who makes Robotics possible – the sponsors, mentors, parents, school/board, and most especially, the students. You all do an amazing job! The upcoming months are very much a trial-by-fire, but it is only when your limits are tested that you truly realize what you can accomplish. We are confident that the greatest challenges bring out the best in people, and are looking forward to embarking on the journey ahead with all of you.

As always, you can keep track of our day-to-day schedule using our team calendar at: <http://5406.ca/calendar.html>

If you have any questions or comments, please feel free to email us at: [celtxrobotics@gmail.com](mailto:celtxrobotics@gmail.com)

We hope you have a great 2017, and hope to see you all on the other side. Go Celt-X!