

FAQs Regarding the FRC District Competition System

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Every year, I receive many questions about the FRC District Competition system used here in Michigan. These questions come from people both inside and outside our state. I was one of the principle architects of this system, and it appears that there are many misconceptions surrounding what we do, why we do it, which sections of the policy were decided by FIRST New Hampshire, and which parts were decided locally. I compiled this list of questions which are often asked by teams and team leaders in an attempt to bring clarity to some of these items and dispel some of the “Michigan Myths”.

Q1: “Why did you do this, what is wrong with the existing FRC competition model?”

A1: The existing FRC competition model served its purpose well in the early days of the sport, when the number of teams was small, and the population density was very low. After 20 years of growth, some regions now have a sufficient quantity and density of teams to allow a new operating model. The Regional model treats every competition even as an ‘open’, with no attempt at continuity between the individual events. The District Competition System is modeled after traditional tiered playoff sports structures, where teams play a season rather than a single event, and the best teams advance through tiered playoff tournaments. This new model is much better suited to meet the needs of the teams and fans in regions with lots of teams.

Q2: “What was your main motivation for doing this?”

A2: There are many reasons for this change, but the primary motivation was financial. FRC is expensive. It is way too expensive to ever achieve Dean Kamen’s goal of a team in every school without major changes. The District Competition System saves a lot of money as compared to the traditional FRC Regional model. Localized event production can cut event management costs by up to 90%. More events closer to home saves travel and logistics costs for the teams. Multiple events per season for a single registration price reduces the cost of playing time for the teams. Two day events reduce venue costs and reduce release time from work and school. Everything we have done serves to reduce the cost of our sport. We can run our entire state system of 12 competition events for less than the cost of a single larger FRC regional. We save hundreds of thousands of dollars per year in our state with this system.

Q3: “What were the greatest challenges in making this transition?”

A3: There were two major challenges. The first was convincing FIRST to let us try something new and to take the first step towards decentralization. This was remarkably difficult. For an organization which claims to want to change the world; FIRST can be surprisingly resistant to internal change. The second major challenge was to establish a solid group of volunteers to help us run this new organization. In Michigan, we have always been fortunate to have a large number of strong teams with committed mentors. These mentors were the key to our initial success in 2009 and continue to be the backbone of

our organization. We require each team attending each event to supply 2 volunteers to help us run the tournament. This connects the teams to the event production process in a tighter way than in the past, and helps us to identify and develop new key volunteers. Everyone who loves this sport works together to make our competitions run smoothly

Q4: “District Events have fewer teams and are in smaller venues than many Regionals. Does this diminish the experience?”

A4: No. In fact, many competitors in our area will tell you that the exact opposite is true. It is a lot like seeing a great band in a small club vs. in a huge arena. Small venues often have a much higher energy level and get the fans closer to the game. Smaller events allow teams to get more playing time. Smaller events allow teams a better likelihood of winning the event and a better likelihood of winning awards. Smaller events allow our high school robotics sport to be played in high schools where it belongs. Now we have home games every year. Probably the biggest visible difference between a Regional and a District is that Districts play with the arena lights on, which many of our competitors tell us that they prefer.

Q5: “Why are out of state teams not allowed to compete at Michigan events?”

A5: This is a boundary set up by FIRST New Hampshire, not FiM. FIRST wishes District Zones to remain isolated from other regions. Our only FiM restriction is that we insist that the teams in our system have registration priority over any outsiders. We want outsiders to be allowed to play here, and making open slots available to out of state teams is something we have repeatedly lobbied for with FIRST NH with no success. Our hope is that as other regions adopt similar systems, together we can find ways to remove these border restrictions. We never wanted Michigan to compete in isolation, and this remains one of our biggest open issues.

Q6: “Why are teams required to play at 2 events, why can’t we attend just one for half the price?”

A6: There are 2 reasons for this choice:

1. The pricing of the event registration is controlled by FIRST NH, not FiM. When we created the District System, we were able to give the teams increased playing time for their registration cost, but not a lower initial registration price. FIRST controls the pricing, not us.
2. Our studies clearly show that teams who play more than one event per year have a significant average improvement at their second event. Also, teams that play multiple events per year stay in the FRC league longer than teams who play only once. For these reasons, we feel that having the teams play at least two times per season will help improve the sustainability of the program and the overall satisfaction of the teams.

Q7: “Why does FiM assign every team to a ‘Home Event’?”

A7: The intent of this is to guarantee registration priority for the event geographically closest to each team. The closer a team is to the event, the lower the travel and logistics costs become. We want every team to have first priority to the event closest to where they live. That said, some teams prefer to choose a different events and to not attend their home event. We have provisions in our registration sequencing to allow this.

Q8: “Why are some teams still playing at Regional events out of the state?”

A8: FiM makes no attempt to restrict teams’ involvement outside of our state. Teams are free to do as they choose. If teams have the will and the means to travel to a distant Regional, they are free to do this if they choose. Teams have a variety of reasons for doing this:

1. Desire to travel to some place outside the state.
2. Affiliations with teams from other regions.
3. Additional attempts to qualify for the FRC Championship.

Only a small number of Michigan teams continue to do this. It is much more cost effective to play in-state.

Q9: When can teams register for District events? Is there a hard deadline?

A9: This is pretty much the same as the rest of FRC. When registration opens, all teams can pick their first District event. In the first round, everyone can only sign up for their ‘home’ event. 2 weeks later, all teams get to sign up for a second event. Teams who do not wish to go to their home event must wait until round 2 to sign up. Events rarely sell out in the first round. In some cases, the FiM leaders may ask teams to consider changing their selections for alternate events to try to balance the districts, but for the most part, teams can go where they choose. 3rd event registration is via a lottery held in early February, long after main registration is closed. Any team can put their number in for the lottery. There is a live conference call where the lottery selections are made. We do not have a lottery every year; it depends on our vacancy percentage

Q10: “Why do you allow some teams to play a third district, isn’t this an unfair advantage?”

A10: One of our primary goals is to increase FRC team participation wherever possible. In pursuit of this goal, we feel that offering vacant slots to teams who want them serves the goals of FIRST and FiM better than leaving them empty. While this does give additional playing time to some teams, all teams who wish to play at an additional event are free to enroll in the annual lottery for these available slots. All teams have equal opportunity for these lottery slots.

Also, if we left these spots empty, we would be giving additional advantage to any team attending a partially unfilled event. Mathematically, the system is fairer overall if the events are all fully attended. We want all events to have the same statistical significance in our system.

We add events in units of 40 slots. Growth forces us to add events each time we add 20 new teams. Usually the number of teams/40 leaves a remainder of 15-20 spots open. We prefer to fill these for event balancing.

Q11: “If teams play at 3 district events, why can’t they use the results from their 2 best events, rather than using the results of the first 2 events?”

A11: One of the core concepts of the FRC build season is the “tools down” concept surrounding bag day. The intent is that the robots are done at the end of the build season. For this reason, all teams are on equal standing relating to available build and upgrade time at their first and second events. This is not true at the 3rd event. For this reason, as long as FRC continues to have machine access restrictions, we will continue to use only the results from the first 2 events played in our ranking system.

Q12: “Why is there no out of bag period prior to the State Championship?”

A12: This decision for this was made by FIRST NH, not FiM. FIRST considers the State Championship a “Traditional 3 day Regional”, and as such the machine access rules for standard Regionals apply. Practice and rework time is provided at the MSC event on Wednesday evening and Thursday morning, so FIRST feels that no additional time should be offered to teams prior to the MSC event. FiM would prefer that teams can inspect and repair their machines on their own time prior to attending any event. This allows for faster inspections and a better quality event.

Q13: “Why does the State Championship cost \$4,000 per team?”

A13: This pricing is set by FIRST NH, not FiM. In our original plan, the State Championship was intended to be FREE. Yes, that is correct: FREE. FIRST NH imposed traditional Regional pricing on this event in 2009, and FiM has been unsuccessful in attempts to change this for the past 5 years. It was never our intention to financially penalize teams \$4000 each for the honor of being good enough to attend our Championship. FiM receives no revenue from team enrollment for this event. We fund and produce the MSC event entirely from our local sponsorships.

Q14: “Why don’t District Event winners get to automatically go to the State Championship?”

A14: One of the core concepts of the District system is that teams now play a season, not a single event. As such, we consider the results of any single event to be secondary to a team’s overall season performance. We advance teams based on their cumulative season points. Winning an event gets a team a lot of ranking points, but they may still require a decent showing at the second event in order to advance.

Q15: “Where did the FiM Ranking system come from?”

A15: This system was the product of a great deal of analysis by a small group of FRC veterans including a few with strong backgrounds in statistical analysis and computer programming. We used many years of league wide FRC history data as a basis for this analysis. Many ideas were evaluated from other types of competition challenges in a variety of sports and contests. I used a Mahalanobis-Taguchi method approach to determine which factors in FRC competition had more importance than others and how to properly balance the weighting of these items in the total system. The goal was to create a fully scalable system, capable of being used in a league of 50-500 teams, without any direct game design dependencies. We wrote a variety of computer simulations to analyze thousands of permutations of potential ranking solutions. This took several months in the summer of 2008. The result was the system we launched in 2009. We continue to re-evaluate our system after each FRC season concludes. Our system is subjected to an enormous amount of examination and mathematical scrutiny. I do not believe that the same can be said for traditional Regional advancement method, which is quite literally “advance if you win” and is not scalable, as evidenced by recent capacity issues at the World Championship.

Q16: “Your ranking system is rather complex, isn’t this confusing for the teams?”

A16: Our system is actually rather easy to understand. At an FRC competition, there are four separate and distinct phases: Qualifying rounds, Alliance Selection, Elimination rounds, and the Awards Ceremony. In our system, points are awarded discretely in each of these phases. Teams can easily keep track of their results as they progress through the event, since each phase employs only a few simple rules. It is no more complex than it needs to be in order to work properly.

Q17: Are teams' point progress publicly tracked through the season?

A17: Yes, there is a spreadsheet on the FiM results webpage with individual event totals and a master season total. This is updated every week. We usually have this up very shortly after the events conclude each week. We would like this process to be fully automated, however FIRST has never answered our request for the FMS data updates which would enable this, so there are still a few details we must confirm manually before posting this data. If these updates were made, we could make this a real-time system.

Q18: “Why are there no ranking points associated with the Chairman’s Award, Engineering Inspiration Award, and Rookie All Star Award?”

A18: This decision for this was made by FIRST NH, not FiM. FIRST considers these 3 awards to be “Culture Changing Awards” and wishes them to remain apart from the rest of the competition awards. FiM disagrees with this position, and we feel that the decision not to award points for these items actually degrades the prestige of these awards relative to the others by making them worth nothing in our system.

Q19: “Why do the District Chairman’s Award winners automatically go to the State Championship?”

A19: FIRST New Hampshire felt very strongly about this and insisted on this rule. FiM feels that there should be no automatic advancements in our system. We would prefer that all advancement in our system is based on cumulative merit and not on any individual award or action. We conceded on this item because in reality, most of the District Chairman’s Award winning teams already are eligible due to competitive merit, so this automatic promotion method typically only affects one or two teams each year. In practice the Chairman’s award is the only award given at the District Level which requires a written submission and a team presentation for eligibility. This requires considerable advanced preparation by the teams attempting to win this award. Submitting teams only have one chance to win the District Chairman’s Award, compared to two chances for all other awards. This award also showcases our very best role model FRC teams. For these reasons, we agreed that all District Chairman’s Award winners should be eligible for the State Championship.

Q20: “Why don’t Engineering Inspiration Award winners and Rookie All-Star winners get to automatically go to the State Championship?”

A20: The honest answer is ‘We have to draw the line somewhere or our system will not be scalable’. Our goal is to have a ranking and advancement system which works well regardless of the number of teams and events in the system and can be used unchanged for many years to come as the league continues to grow. We do not want automatic promotions of any kind in our system, but we made an exception for the Chairman’s Award due to the reasons stated above. If we gave out 6 automatic promotions per event like the rest of FIRST, our system would already be seriously compromised.

Q21: “Don't FiM teams who attend a third district just treat it like a workshop? They could just spend the entire event in their pits, working on their bot to get ready for MSC.”

A21: While this is possible, we have not really ever seen this happen. On-field experience is way-way more valuable than pit time. Most teams want extra plays to train their drivers, not to build the machine. By the 3rd event, many teams are more or less done with mechanical upgrades. We have no policy to prevent what you describe, but social pressure would be heavy on a team to take the field and support their various 24 qualifying alliance partners at any event they attend.

Q22: “Why does our region only get one WFFA winner for the entire state, when other regions get one for every event?”

A22: This was a decision of the Woodie Flowers Award Committee. The WFA Committee has a huge burden in judging 50+ WFFA candidates from all the Regionals each year at the Championship. This committee decided that in order to make this process more manageable in the future, they wish to have each region present only their very best candidate for final consideration at the World Championship. This method will be implemented in other regions when they migrate to similar systems.

Q23: “Why are some of the judged awards worth more than others in your ranking system?”

A23: We feel that all awards should be something in our system, but all awards are not equal. We have conducted numerous statistical studies to correlate each of the awards to other success measures using many years of FRC data. The awards with high correlation to competitive success are worth more in our system than awards that do not.

Q24: “Other regions are awarded more spots at the World Championship as they add more events, why is the number of Michigan teams advancing frozen at the same level since 2004?”

A24: This decision was made by FIRST NH, not FiM. Despite considerable growth, we were not granted any more CMP enrollment spots for many years, unlike all other regions. We recently convinced FIRST to adopt a “representation by population” method for the future. Michigan currently has 8% of the teams in the FRC, so we now have 8% of the available spots at the FRC Championship (27 spots for 2013). This strategy will encourage growth and competition between the regions, and is a fully scalable approach, unlike the method used at the Regional Events.

Q25: What qualifies a team for CMP? Does a district-only team have to attend MSC to go to CMP?

A25: Yes, you must attend MSC, with 2 minor exceptions (The State EIA winner, and State RAS winner do not need to qualify for MSC in order to win these awards). It is mathematically impossible to make it to the CMP on competitive merit without attending States. This is all covered in the FiM rules supplement document which is on the FiM website. Teams can qualify through out of state regionals if they go to these. Any team qualifying externally, who are in the HOF, or have any other automatic advancement to this year's CMP are excluded from our annual State allotment.

Q26: "Why are the District trophies 'Less Impressive' than the Regional trophies?"

A26: This decision to change the trophies was made by FIRST NH, not FiM. This change came as surprise to us in 2012, and when we saw the result of this decision we were not happy with the design choice. We have corrected this issue in 2013 and the trophies are now more similar to the Regional trophies.

Q27: "Your system seems to focus heavily on winning, isn't that a departure from the rest of the FRC?"

A27: This is actually not the case; in fact the exact opposite is true. Our system focuses much less on winning than the standard FRC model. We do care about the ability of teams to play the game, but not about actually winning. In our system, you can advance to both the State Championship and the World Championship without ever winning a tournament or a major award. In our system you must be good to advance, but you do not need to win. Teams that repeatedly demonstrate that they can successfully play the game will advance in our system. This is not the case elsewhere.

Q28: "In order to qualify for MSC, do teams have to cross a certain threshold of points or does the event take the top X number of teams?"

A28: This is controlled by number of teams. We have 64 spots at the Michigan State Championship. This limit is driven by pit size and event schedule. The top 64 ranked teams get in to our Championship. We project a point threshold each year so teams can predict if they are likely to get in or not and can begin to plan to attend if they have a good opening event.

Q29: "Once MSC starts, do previous accumulated points matter, or are teams starting from scratch?"

A29: This is all covered in the FiM rules supplement document which is on the FiM website. The MSC event uses the same point structures as the districts except that all points are worth 3X what they are the districts. The Complete season results determine advancement. This was carefully engineered. This system allow a team who gets into States at 64th rank to still make it to worlds if they have a good performance at States but will also prevent a team who comes into States highly ranked from "sandbagging".

Q30: "What will you do when the State Championship is no longer large enough to house all of the good teams in the State?"

A30: This will be a good problem to have☺. We are still many years away from reaching any real limits in this regard. That said, if our population of teams continues to grow at its current rate, the threshold

to make it to the State Championship will continue to rise. When we launched the District System in 2009, 1/2 of our team population advanced to the State Championship. After 4 years, this percentage is down to 1/3rd. By 2016, we project this percentage to fall to below 1/4th. Entry will keep getting harder, and the competition will continue to increase. There are over 700 public high schools in our state plus hundreds more private schools. If we grow large enough to reach Dean Kamen's goal of a team in every school, then perhaps someday we will need to create a second Regional Championship. We will cross this bridge when we come to it.

Q31: "If other areas decide to convert to a District system, should they copy Michigan?"

A31: We believe that our way is a very good way of implementing such a system and is a very good model to follow. At the same time, we admit that our way is based on priorities we chose, and our way is certainly not the only way, and we don't have all the answers. If other regions have different priorities, they should be free to make modifications to this system as they choose with approval from FIRST.

Q32: "You have made many changes to the original FRC model. Are there more changes you wish to pursue?"

A32: Yes. This sport will continue to evolve, and we will continue to try new methods to reach a more sustainable future state. We feel that we have helped to take an initial transitional step, but there are still many things which much change before FRC can reach a truly sustainable destination state. Some of the large items include:

1. Registration costs: FRC still costs way too much. Until this is changed, ubiquity is not possible. FRC has a 20 year old pricing model on a sport which has grown 100 fold in this time period. Economies of scale should to allow lower team registration costs in the future.
2. Machine access: Let's face reality: machine access restrictions like bagging, crating and shipping are a vestige of the past and really only serve to make FRC more difficult, less stable, and harder to grow. The very belief that robot build and development only takes "6 weeks" is a falsehood and is simply untrue for a large percentage of the modern league participants. All such rules should be abolished and when they are, we will finally see how great this sport can become. Until this happens, FRC will never reach its true potential.
3. Borderless society. There is no reason for any kind of borders in the FRC. Different regions have differing promotional strategies are not a sufficient reason for preventing teams from travelling as they choose. Points and promotion can be shared between regions easily. The data is all on-line, we have programmers and computers. This is a simple problem to solve.

I hope this summary helps to improve understanding and addresses many of the frequently asked questions about our system. We are happy to answer addition questions to further improve clarity.

"Everything should be as simple as possible, but no simpler"

- ***Albert Einstein***