**Drive Team Introduction**

The Drive Team is a key aspect of any FRC team. Throughout the build season they will play an important role in overall design and strategy of the robot, as they will be the ones that actually have to use the robot. Drive team members are also usually very involved in the construction of a robot.

While at competition the drive team is undoubtedly the most important part of the team. These individuals are the figurehead of the team. Their reactions and attitudes will become the entity that forms other people’s opinions of the team. The most important thing about the drive team however is that they will not always be able to win a match or regional. This is just because of the fact that the team may not have a very good robot. However a drive teams actions *always* have the potential o lose a match or regional. It is this fact that makes choosing the right people for a drive team so important.

**Drive Team Positions**

**1)** **Drive Coach**

The drive coach should have a near-perfect understanding of the game and the meta-game. Knowing which decisions will get you more points and which decisions will impress the top teams are key elements for a DC. They should also know the limits of their robot and drive team, while not being afraid of pushing these limits. Off the field the Drive Coach should be someone who's fun to be around. One of the most important aspects of the DC is being able to keep the drive team energized, calm, and as stress-free as possible. The drive coach should be strategic in thinking, but cool and decisive in acting.

**2)**   **Primary Driver**

The driver needs know the limits of the robot. Knowing which areas their robot excels in and where they struggle are key aspects. Lining up a shot or where to place a game piece should be second nature to them. The coach tells the driver a generic task and the driver should know every detail of how to do so.    The driver should be bold and steadfast. If the driver sees a game piece he or she should think “That's mine, I'm not going to let anyone stop me.” “Those totes? Our totes.” While being bold, the driver should be very confident of their coach. As a driver, only focus on what the robot is doing. A driver should work to perfect the little details of his driving while the DC gives him a plan. The DC trusts the driver has perfect control of the robot, and the driver trusts the drive coach will tell him the right actions to perform to have perfect teamwork with their alliance partners.

**3)**  **Secondary Driver**

As the driver knows the ins and outs of how the robot handles, the manipulator should know the fine details of how to control the scoring mechanisms. Picking up an inner tube or how to stack totes should be down to muscle memory.   The best manipulators are the ones that aren’t noticed. As the primary driver moves the robot around the field, it should feel like all the other mechanisms are autonomous. Right as a shot is lined up, the robot should fire. As the robot approaches a bridge, it should lower automatically.   This is the mission that the secondary driver needs to accomplish, often even more difficult than being primary driver. As for personality, a secondary driver needs to be fine with others making the decisions and will do their best without the need to be told to. A very laidback secondary driver is often a good thing.

**Drive Team Selection**

The first thing that all drive team candidates need to understand is the fact that when they say you want to be on drive team, they are effectively saying “All the work the build team, the programmers, and the hard work of whole the team it is now on me to execute our designed strategy to the fullest extent of my ability”. When (not if) they make a mistake driving, someone is going to be unhappy, maybe even angry because all of their hard work is not being utilized correctly. A drive team member needs to be able to respond to this and not be overwhelmed. If he thinks that he was right in his actions he needs to be able to explain why and then stick with what he was doing. However, if he was wrong, he needs to accept it, do something different, and move on. If a drive team candidate is not able to handle this then he or she should not be on the drive team.

After all potential drive team candidates understand this and accept it, you can move on to the selection process.

 1) Driver candidates may not touch the robot controls until they take a written test that covers every rule mentioned in that year's "The Game" document, and must score over 90%. They can take the test as many times as they want, and the test doesn't change - the only thing that matters is that they learn the rules of the game until they are second nature. --Having a test of any kind helps you identify the candidates who are willing to put in effort for this opportunity --No robot time until they pass the test makes for a great motivator for learning the rules --A drive team that knows the rules by heart can perform some fairly impressive feats and make quick judgment calls on the field

  2) Drive team candidates then choose a specialization - Driver, Operator, or coach. They also list who they would prefer to Drive/Operate/coach alongside with. --You already get so little practice time during the season, you want to make sure that candidates are spending as much time focusing on their area of expertise as possible. You want to have the best possible driver and the best possible operator, not the best possible driver and the second best driver who reluctantly is now the operator --Many of the candidates are probably friends, share classes, etc., and there can be excellent performance improvements when they bring that synergy to the field, instead of having to form it in a few weeks.

  3) Drive candidates are then put through a series of practical tests using a practice chassis or old robot (a driver might go through a series of slaloms, or other difficult maneuvers, for example) --Some candidates will just have more aptitude for a particular robot or design, and you want to see that before you make your decision

  4) The drive team is then chosen, using all the data from steps 1-3. The other candidates become the backup drive team (in case of illness, etc).

  In the end drive team members need to be extremely dedicated. Arguably the most dedicated members of the team, willing to spend hours every day driving the robot, and repeating drills over and over. They need to be perfectionists, understanding that they are never done. Even if they've become "good" at driving, there is always more they can work on. They should never need to be asked to practice, or to do a drill again, or pestered to practice more. They need to want to do it themselves, and get angry and hold others accountable when for some reason they can't practice.  Good reflexes, good decision-making, the knowledge of what can break and when it's all right to push your robot that extra step. Look for people who will back up to get a ball instead of turning around to pick it up, then turn around again to score it. Look for people who understand things will break, and that in some matches you may need to keep going even if it gets worse (elimination matches or sometimes high-priority matches) and some matches where it's alright to stop and be careful for the duration. Also, make sure they're aggressive enough to not back away from hitting something for a point, but not overly aggressive to get penalties or to hit things just to hit things. It's a balance that is hard to find and realize sometimes.

**Drive Team Training**

Once you get three people selected have them practice together and only in those roles that they have been selected for. Have them practice with others watching, and when others aren't watching. Make sure they see they're mistakes but don't overdo it when pointing out such mistakes. Little pointers that that point out very specifically the mistake goes a long way.

  Given that your drive team will command the robot for about 2.5 minutes every match, with a rough average of 10-16 matches per regional, that's 22.5 to 36 minutes of operation. There's no way to master something in that amount of time.

Thus, any direct or indirect practice you can do will vastly increase the skill of your drive team.

1) Before shipping the robot, prioritize letting the drive team get their hands on the robot whenever possible. An incomplete robot with expert drivers will still be a force to be reckoned with, but an amazing machine with novices at the controls will be a disappointment.  --Even if your robot doesn't have the right mechanisms to push for a win by itself, showing that you know how to use it will often lead to being picked by other teams during alliance selection.

2)   Have the drive team stick together, get used to each other as much as possible, and encourage a friendly rapport. Try to make sure they're doing the same activities, this will help them develop efficient non-verbal communication. --When your drive team really knows each other, you'll start to believe one incredibly effective person is operating the robot.

3) Try to maximize "time on the sticks" whenever possible. If this year's robot isn't available, have them drive the old one. There are meta-skills at play (changing your mental reference frame when operating tank drive, for example) that will remain constant across years.

4)   If no robot is available, visualize. Have your drive team just spend time imagining matches, how they would respond to changing circumstances, how they'd move the robot around.

**Drive team at competition**

The most important thing to remember is that, going on to the field, each member of drive team should know exactly what they are going to be doing every match. I don't mean that as in knowing the match strategy, though they should, I mean in terms of what types of calls they will be making and what things they are going to be saying. This will depend on your drive team dynamic but talk to your drive team and come up with a system. For instance, our coach relays instructions to the human player, and gives our driver/operator updates on what is happening elsewhere on the field. Our driver handles the doings of the robot. This means that he moves the robot around the field and tells the operator exactly what action he is going to take. The Secondary Driver then needs to be ready to take instant action the second that an arm needs to be moved or a game piece grabbed.