

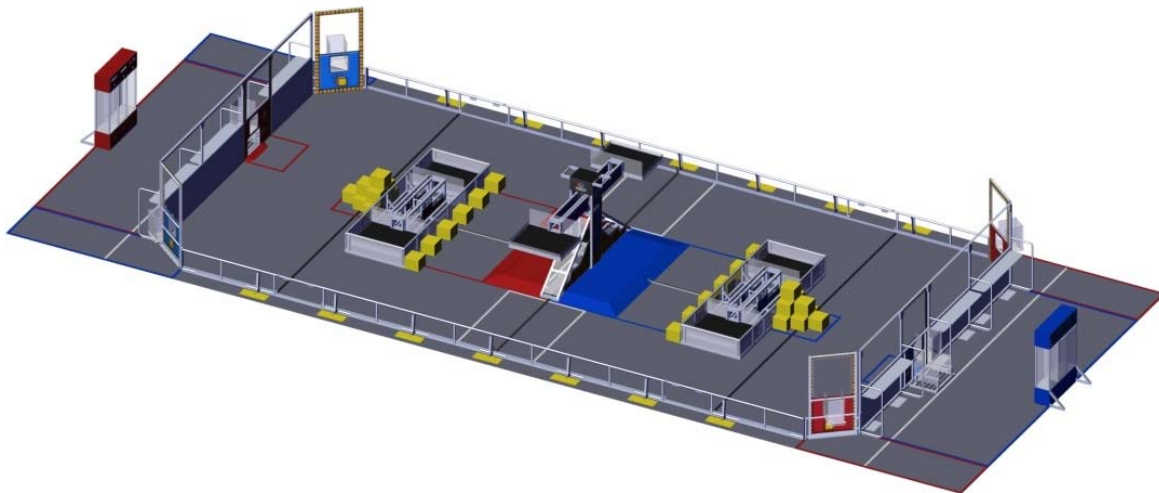
2 FIRST® POWER UPSM Overview

FIRST® POWER UPSM, the 2018 FIRST® Robotics Competition game, includes two alliances of video game characters and their human operators who are trapped in an arcade game. Both alliances are working to defeat the boss in order to escape!

Each three-team alliance prepares to defeat the boss in three ways:

- 1. Control the Switches and the Scale.** Robots collect Power Cubes and place them on Plates to control Switches or the Scale. When the Scale or their Switch is tipped in their favor, it is considered owned by that Alliance. Alliances work to have Ownership for as much time as possible.
- 2. Earn Power Ups.** Robots deliver Power Cubes to their humans who then place them into the Vault earning the Alliance Power Ups. Alliances use Power Ups to gain a temporary advantage during the Match. There are three Power Ups available to teams: Force, Boost, and Levitate.
 - Force gives the alliance ownership of the Switch, Scale, or both for a limited period of time
 - Boost doubles the rate points are earned for a limited period of time
 - Levitate gives a robot a free climb
- 3. Climb the Scale.** Robots Climb the Scale in order to be ready to Face The Boss.

Figure 2-1: FIRST® POWER UPSM playing area



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Each match begins with a 15-second Autonomous period in which Robots operate only on pre-programmed instructions. During this period, Robots work to support the three efforts listed above as well as earn points for crossing their Auto Line.



Table 2-1: Autonomous Point Values

Action	Value
Cross the Auto Line (a.k.a Auto-Run)	5 points
Switch Ownership	2, + 2 points per second
Scale Ownership	2, + 2 points per second

During the remaining 2 minutes and 15 seconds of the match, the Teleoperated period, student drivers control Robots. Teams on an Alliance work together to continue to control their Switch and the Scale. They can also trade in their Power Cubes for Power Ups. During the final 30 seconds, teams work together to Climb to Face the Boss. Points for these efforts are awarded as shown in Table 2-2.

Table 2-2: Teleoperated Point Values

Action	Value
Switch Ownership	1, + 1 point per second
Scale Ownership	1, + 1 point per second
Power Cube in Vault	5 points
Boost Power Up Bonus	2 points per second
Parked on Platform	5 points
Successful Climb	30 points

Alliances are seeded in the Qualification tournament using ranking points which are awarded based on a combination of their Win-Loss-Tie record (2 points for a win, 1 point for a tie), the number of times they achieve three Climbs (1 point), and the number of times during Autonomous they complete three Auto-Runs and gain Ownership of their Switch (a.k.a the Auto-Quest) (1 point).

For full details, read on!

