



II Glossary

Term	Definition
AIRSHIP	a structure that features an elevated hexagonal deck, slanted walls, rails with AXLES to mount GEARS, four (4) ROTORS, three (3) LIFTS, a STEAM TANK, and three (3) ROPES attached to DAVITS
ALLIANCE	a cooperative of up to four (4) FIRST® Robotics Competition Teams
ALLIANCE CAPTAIN	The designated student representative from each ALLIANCE in a Playoff MATCH
ALLIANCE STATION	an 8 ft. 9¼ in. (~269 cm) by 23 ft. 1½ in. (~705 cm) infinitely tall volume bounded by the ALLIANCE WALL and ALLIANCE colored tape
ALLIANCE WALL	the physical structure that separates ROBOTS from DRIVE TEAMS (except the PILOT) and consists of a BOILER, three (3) PLAYER STATIONS, an Overflow LOADING STATION and a Return LOADING STATION.
ARENA	all elements and areas of the game infrastructure that are required to play FIRST STEAMWORKSSM: the FIELD, AIRSHIPS, carpet, scoring elements, and all equipment and areas needed for FIELD control, ROBOT control, and scorekeeping
ARENA FAULT	an error in ARENA operation that includes, but aren't limited to those listed in Section 10.8 MATCH Replays .
AUTO	the first fifteen (15) seconds of a MATCH in which ROBOTS operate without any DRIVE TEAM control or input
AXLE	a 7⁄8-in. diameter (~2 cm), 2-in. (~5 cm) long shaft which fits the central hub of a GEAR. AXLES are installed on the RAIL of the AIRSHIP.
BACKUP TEAM	The Team whose ROBOT and DRIVE TEAM replaces another ROBOT and DRIVE TEAM on an ALLIANCE during the Playoff MATCHES
BANNER	a Team's flag to be displayed on their PLAYER STATION during MATCHES (see specifications here)
BASE LINE	a green line that spans the width of the FIELD and is 9 ft. 4 in. (~284 cm) from the ALLIANCE WALL diamond plate
BOILER	a FIELD element which converts FUEL to steam. There is a BOILER on each corner of the FIELD opposite the scoring table. The base of each BOILER is 3 ft. 6 in. wide (~107 cm) by 3 ft. 6 in. (~107 cm) deep by 8 ft. 1 in. (~246 cm) tall. There are two (2) openings, or GOALS, for loading FUEL into the BOILER: the High Efficiency GOAL and the Low Efficiency
BUMPER	a required assembly which attaches to the ROBOT frame. BUMPERS are important because they protect ROBOTS from damaging/being damaged by other ROBOTS and FIELD elements
BUMPER ZONE	the volume contained between the floor and a virtual horizontal plane 7 in. (~17 cm) above the floor in reference to the ROBOT standing normally on a flat floor
BYPASSED	any ROBOT which is unable or ineligible to participate in that MATCH as determined by the FTA, LRI, or Head REFEREE resulting in a ROBOT which is disabled)
COACH	a precollege student or adult mentor member of the DRIVE TEAM responsible for acting as a guide or advisor
COMPONENT	any part in its most basic configuration, which cannot be disassembled without damaging or destroying the part or altering its fundamental function
COTS	a standard (i.e. not custom order) part commonly available from a VENDOR for all Teams for purchase. To be a COTS item, the COMPONENT or MECHANISM must be in an unaltered, unmodified state.





Term	Definition
CRANK	a handle located with the first GEAR in the set
CUSTOM CIRCUIT	any electrical component of the robot other than motors, pneumatic solenoids, roboRIO, PDP, PCM, VRM, RSL, 120A breaker, motor controllers, relay modules, wireless bridge, or batteries.
DAVIT	one of three steel frames that attaches a ROPE to the AIRSHIP
DISABLED	a state in which a ROBOT is commanded to deactivate all outputs, rendering the ROBOT inoperable for the remainder of the MATCH
DISQUALIFIED	the status of a Team, as determined by the Head REFEREE, in which their Team receives zero (0) Match points in a qualification MATCH or causes their ALLIANCE to receive zero (0) Match points in a Playoff MATCH
DRIVER	a precollege student member of the DRIVE TEAM responsible for operating and controlling the ROBOT
DRIVE TEAM	a set of up to five (5) people from the same FIRST Robotics Competition Team responsible for Team performance during a MATCH
FABRICATED ITEM	any COMPONENT or MECHANISM that has been altered, built, cast, constructed, concocted, created, cut, heat treated, machined, manufactured, modified, painted, produced, surface coated, or conjured partially or completely into the final form in which it will be used on the ROBOT
FIELD	a 27 ft. by 54 ft. 4 in. (~823 cm by ~1656 cm) area, bounded by and including the upward- and inward-facing surfaces of the GUARDRAILS and ALLIANCE WALLS
FIELD STAFF	REFEREES, FTAs, or other staff working around the FIELD
FMS	the Field Management System (FMS)
FOUL	a penalty assessed by a REFEREE upon a rule violation resulting in 5 points credited towards the opponent's total score
FRAME PERIMETER	the polygon contained within the BUMPER ZONE, that is comprised of fixed, non-articulated structural elements of the ROBOT
FTA	a FIRST Technical Advisor
FUEL	a GAME PIECE used to generate steam for the AIRSHIP and is represented by "Screamin' Yellow," 5 in. (nominal) diameter Gopher ResisDent™ polyethylene balls
GAME PIECE	GEAR or FUEL
GEAR	a GAME PIECE that is a toothed wheel used to start ROTORS on the AIRSHIP. Each GEAR is made from gold (Pantone PMC 124C) polypropylene, has 10 teeth, an 11 in. (~28 cm) diameter, 10 in. (~25 cm) pitch diameter, and is 2 in. (~5 cm) thick
GOAL	an opening for loading FUEL into the BOILER
GUARDRAIL	a system that consists of transparent polycarbonate supported on the top and bottom by aluminum extrusion. The GUARDRAIL prevents ROBOTS from inadvertently exiting the FIELD during a MATCH.
HOPPER	a pair of containers located just outside the FIELD and used to store FUEL at the start of the MATCH
HUMAN PLAYER	a pre-college student DRIVE TEAM member responsible for managing GAME PIECES
KEY	an infinitely tall volume in the ALLIANCE'S LAUNCHPAD bounded by the ALLIANCE WALL, GUARDRAIL, and ALLIANCE colored tape
KOP	Kit of Parts, the collection of items listed on any Kickoff Kit Checklists, distributed via FIRST® Choice, or obtained via a Product Donation Voucher (PDV).
LAUNCHING	shooting in the air, kicking or rolling across the floor with an active mechanism, or throwing in a forceful way





Term	Definition
LAUNCHPAD	an infinitely tall volume in the FIELD bounded by the GUARDRAILS, the ALLIANCE WALL, and the LAUNCHPAD LINE. The volume above the LAUNCHPAD LINE is part of the LAUNCHPAD.
LAUNCHPAD LINE	a tape line that is the width of the FIELD and collinear with the edge of the AIRSHIP deck that is closest to the center of the FIELD
LIFT	an assembly used to transfer GEARS from the ROBOTS to the PILOTS
LINEUP	The list of three (3) Teams participating in the MATCH and their selected PLAYER STATIONS
LOADING LANE	an area bounded by and including ALLIANCE colored tape, edge of the carpet, the RETURN BIN Table, and the opponent's ALLIANCE WALL
LOADING STATION	an assembly used to feed FUEL and GEARS on to the FIELD. Each Return LOADING STATION includes a 6 ft. 6 in. (~198 cm) in. tall and 6 ft. 3½ in. (~192 cm) wide polycarbonate panel with two (2) openings, aluminum frame.
RETRIEVAL ZONE	an infinitely tall volume inside the FIELD bounded by the ALLIANCE WALL, GUARDRAIL and ALLIANCE colored tape. The RETRIEVAL ZONE includes the volume above the tape.
MATCH	a two (2) minute and thirty (30) second period of time in which ALLIANCES play <i>FIRST STEAMWORKS</i>
MECHANISM	a COTS or custom assembly of COMPONENTS that provide specific functionality on the ROBOT. A MECHANISM can be disassembled (and then reassembled) into individual COMPONENTS without damage to the parts
MXP	MyRIO eXpansion Port, the expansion port on the roboRIO
NEUTRAL ZONE	an infinitely tall volume on the FIELD bounded by the GUARDRAILS and the LAUNCHPAD LINES. The volume above the LAUNCHPAD LINES is not part of the NEUTRAL ZONE
OPERATOR CONSOLE	the set of COMPONENTS and MECHANISMS used by the DRIVERS and/or HUMAN PLAYER to relay commands to the ROBOT
OVERFLOW BIN	one of the plastic open-topped containers, 2 ft. 9½ in. (~85 cm) wide by 1 ft. 6 in. (~46 cm) deep by 1 ft. 1 in. (~33 cm) tall, and each has a capacity of approximately fifty to sixty (50-60) FUEL
PASSIVE CONDUCTORS	any device or circuit whose capability is limited to the conduction and/or static regulation of the electrical energy applied to it (e.g. wire, splices, connectors, printed wiring board, etc.)
PCM	Pneumatic Control Module
PDP	Power Distribution Panel
PILOT	a pre-college student DRIVE TEAM member responsible for installing GEARS, starting ROTORS, and deploying ROPES
PLAYER STATION	one (1) of three (3) assigned positions in an ALLIANCE WALL from where a DRIVE TEAM operates their ROBOT
RED CARD	a penalty assessed for egregious ROBOT or Team member behavior, or rule violations, which results in a Team being DISQUALIFIED for the MATCH
REFEREE	an official who is certified by <i>FIRST</i> to enforce the rules of <i>FIRST STEAMWORKS</i>
RETURN BIN	one of the plastic open-topped containers, 2 ft. 9½ in. (~85 cm) wide by 1 ft. 6 in. (~46 cm) deep by 1 ft. 1 in. (~33 cm) tall, and each has a capacity of approximately fifty to sixty (50-60) FUEL
ROBOT	an electromechanical assembly built by the FIRST® Robotics Competition Team to perform specific tasks when competing in FIRST® STEAMWORKSSM. The ROBOT must include all of the basic systems required to be an active participant in the game – power, communications, control, BUMPERS, and movement. The ROBOT implementation must obviously follow a design approach intended to play FIRST STEAMWORKS





Term	Definition
ROPE	a strong, thick string composed of twisted or braided strands of manila, hemp, flax, or the like, secured to the airship, and used to secure robots for flight at the end of the match
ROTOR	one of four (4) rotating airfoils
RP	Ranking Point, a unit credited to a Team based on their ALLIANCE'S performance in Qualification MATCHES
RS	Ranking Score, the total number of Ranking Points earned by a Team throughout their Qualification MATCHES
STARTING CONFIGURATION	the physical configuration and orientation of the ROBOT at the beginning of the MATCH where no part of the ROBOT shall extend outside the vertical projection of the FRAME PERIMETER, with the exception of its BUMPERS and minor protrusions such as bolt heads, fastener ends, rivets, etc.
STARTING LINE	a white tape line that runs the width of the carpet and is 2 ft. 6 in. (~76 cm) behind the ALLIANCE WALL diamond plate
STEAMACRIT	one who complains about non-working gears being used while coating a Nerf gun with paint and calling it a raygun.
STEAM PIPE	a clear PVC pipe that transfers steam from the BOILER to the STEAM TANK on the AIRSHIP
STEAM TANK	a 6-ft. (~183 cm) tall hexagonal container with a diagonal dimension of 2 ft. (~61 cm) centrally mounted on the deck. It is "filled" via a STEAM PIPE that originates at the BOILERS.
SURROGATE	a Team randomly assigned by the FIELD Management System to play an extra Qualification MATCH
TECH FOUL	25 points credited towards the opponent's total score
TELEOP	the second period in a MATCH and is two minutes and fifteen seconds (2:15) long
TIMEOUT	a period of up to six (6) minutes between MATCHES which is used to pause Playoff MATCH progression
TOUCHPAD	a 10 in. (~25 cm) polycarbonate plate mounted 4 ft. 10 in. (~147 cm) above the carpet and used to determine if a ROBOT has successfully latched on to the AIRSHIP
VRM	Voltage Regulator Module
WITHHOLDING ALLOWANCE	a static set of FABRICATED ITEMS that shall not exceed 30 lbs. (~13 kg.), brought to an event (or Robot Access Period) in addition to the bagged items, to be used to repair and/or upgrade their ROBOT
YELLOW CARD	a warning issued by the Head REFEREE for egregious ROBOT or Team member behavior or rule violations. A subsequent YELLOW CARD within the same tournament phase will lead to a RED CARD.

